UWF Grid Connection

Environmental Management Plan (2019)

Tab 2

Traffic Management Plan

ECOPOWER

October 2019

Table of Contents

LIST OF FIGURES

Note: The numbering system for Figures follows the sequence 'Chapter Number-Figure Number'.

LIST OF TABLES

Traffic Management Plan

1.1 Introduction

This Traffic Management Plan (TMP) will be a key construction contract document, the implementation of which will reduce the potential for impacts to Public Roads and to Road Users which may occur due to the presence of construction traffic.

1.1.1 Objective of the Traffic Management Plan

The objective of this preliminary Traffic Management Plan (TMP) is to control and minimise the traffic impacts of construction insofar as it may affect the road network, local residents and the travelling public on the public roads close to and adjacent to the UWF Grid Connection construction site, through measures to maximise road safety while keeping traffic flowing as freely as possible.

1.1.2 Scope of TMP

This TMP **concentrates on the construction stage** of the UWF Grid Connection which is the critical phase in the context of safe and effective traffic management on the public roads and describes the traffic management for the transportation of construction materials and personnel along the public road network.

This TMP details the traffic management measures to be undertaken on the public roads;

- at and on approach to road works locations;
- at and on approach to the site entrance on the L2166-10 at Coole for the Mountphilips Substation, temporary compound and construction works at the Mountphilips Substation site;
- along local roads on the routes of concentrated construction traffic;
- on the R503, at and on approach to the junction of the local roads (routes of concentrated construction traffic) with the R503
- at any points along the route where road repairs are required following completion of the works.

Control measures for traffic management at off-road construction works locations (i.e. within the Mountphilips Substation site) are outside the scope of this TMP and will be included in the Risk Assessment and Method Statements (RAMS) for the construction stage, which will be developed by the PSCS for the Appointed Contractor prior to the commencement of construction works.

The operational stage of the UWF Grid Connection is also outside the scope of this TMP. In contrast to the construction stage, negligible traffic is associated with the operational stage of the UWF Grid Connection. Operational traffic will involve a monthly site visit by ESB Personnel to the Mountphilips Substation, along with annual maintenance at the Substation. Along the route of the 110kV Underground Cables, a yearly inspection will be carried out by an ESBN team who will travel along the route in a short vehicle – most likely a van. In total c.17 trips per year are expected for routine maintenance of the UWF Grid Connection. Very occasional maintenance or repair work may be required along the UWF Grid Connection route to replace a damaged cable section, this would require the delivery of an excavator and/or new cables and a cable pulling machine to some joint bay locations. Traffic management for the operation of UWF Grid Connection will be incorporated into the ESB Networks safe system of work.

1.1.3 Responsibilities

This TMP will be updated from time to time to include any relevant planning conditions in addition to any new information on 3rd party road works or events, which could affect the timing, route or control measures for construction material deliveries.

The Appointed Contractor will be responsible for carrying out and managing the construction activities in accordance with the TMP.

The Environmental Clerk of Works will be responsible for monitoring the compliance with the TMP throughout the construction stage, through weekly auditing and point of interest inspections.

The Community Liaison Officer will be responsible for communicating with the local community and wider public during the construction stage, including keeping the local community informed of project progress and any construction activities which may cause inconvenience to them. Contact will be maintained with local residents on the day-to-day timing of, and traffic arrangements around, road works.

1.2 Overview of the proposed UWF Grid Connnection project

UWF Grid Connection, comprises the following elements:

- A new 110kV electrical substation at Mountphilips townland (to be called Mountphilips Substation)
- A new 110kV underground electrical cable connecting the Mountphilips Substation to the consented UWF substation (to be called Mountphilips – Upperchurch 110kV UGC or 110kV UGC), and
- ancillary works, which include a new permanent access road, a permanent site entrance and temporary site compound at the Mountphilips Substation site.

The layout of the UWF Grid Connection is illustrated on Figure TMP 1: Location of the Grid Connection on OSI Discovery Mapping, which is included at the end of this plan (Section 1.6).

The purpose of UWF Grid Connection is to connect the Consented UWF Substation at Upperchurch Windfarm (UWF) to the proposed Mountphilips Substation at Mountphilips. Mountphilips Substation will be connected to the existing, adjacent Killonan - Nenagh 110kV overhead line and thereby export electricity, from Upperchurch Windfarm when constructed and operational, to the national grid.

This Traffic Management Plan forms part of the UWF Grid Connection Environmental Management Plan, which is appended to the UWF Grid Connection EIA Report (2019). The characteristics of the UWF Grid Connection are described in more detail in the EIA Report, see Chapter 5: Description of Development (UWF Grid Connection), in Volume C2 EIAR Main Report.

1.3 Overview of the Construction Stage of the UWF Grid Connection

1.3.1 Construction Process

The construction process for the UWF Grid Connection, is a relatively straightforward civil build. A number of separate dedicated 'crews' will work on different parts of the UWF Grid Connection. The workers will arrive and depart daily to and from the temporary construction compound at Mountphilips Substation site, parking spaces will be provided at the Temporary Compound. The various crews will then be transported to the specific works location by means of 'crew-cab' 4x4 vehicles or similar. Bulk deliveries of materials will be delivered to the Temporary Compound and stored there until needed. Materials needed at works locations will be transported by way rigid body vehicle or tractor and trailer. Aggregate and concrete will be delivered directly to works locations.

1.3.2 Duration & Timing

The duration and timing of the main civil and electrical construction activities for the construction of UWF Grid Connection is expected to take 12 to 18 months, and is projected to commence in 2020/2021.

The actual duration of works may be shorter or longer, depending on the final number of crews used, weather conditions etc. A formal programme of works will be prepared by the appointed Contractor prior to the commencement of construction activities.

1.3.3 Construction Hours of Work

Construction times will be daylight hours during the hours of 07.00 to 19.00 Monday to Friday and 08.00 – 16.30 on Saturdays. These normal hours of work will be further restricted at particular locations as outlined in Scheduling of Works.

1.3.3.1 Scheduling of Works

Scheduling of Works requirements main arise from the Project Design Measures (PDs). The Scheduling of Works PDs relevant to traffic management are listed below. This list will be updated with any further scheduling requirements of planning conditions or road opening licences.

- PD04: All construction works will be carried out during daylight hours.
- PD06: Construction works will not be carried out within 150m of Rearcross National School or Lackamore National School, during school hours. In addition, the project Community Liaison Officer will keep each school informed of construction timetables and scheduling.
- PD07: 110kV UGC construction works along the local roads L2264-50 and L6188-0, will not take place at the same time as the UWF Related Works Haul Route Works on these roads. The 110kV UGC construction works will also be scheduled so that the works do not occur on the same days as concrete deliveries for Consented UWF Turbines along these local roads.
- PD10: Flag-men will be used at 110kV UGC works locations on the public roads subject to one lane closures. These flagmen will control the movement of traffic on the public road, so that road users can continue to use the public road network in a in a safe and efficient manner. The works will be carried out according to the Traffic Management Plan for UWF Grid Connection. The Traffic Management Plan forms part of the Environmental Management Plan.
- PD11: Construction works for the 110kV UGC in Knocknabansha, Knockmaroe, Knockcurraghbola Crownlands and Knockcurraghbola Commons townlands, which are within 350m of local residences, will not take place at the same time as either the UWF Related Works or Upperchurch Windfarm where those works also occur within 350m.

- PD12: As requested by the Roads Department of Tipperary County Council, during pre-planning consultations, the works along the public road network will be scheduled to minimise impacts on schools and local businesses. The works will be scheduled so that they do not disrupt or interfere with Tipperary County Council's road works programme on the R503 through Newport town.

1.3.4 Road Works Locations

Road works will be required along the 110kV UGC where the route is aligned along the public road network. In total the 110kV UGC is routed along 8 no. public roads, as described in Table 1.

Table 1: Road Works associated with UWF Grid Connection

Road No.	Location	Extent of trenching	Duration of Road Works	Traffic Management
L2166-10	Coole / Freagh	0.7km	2 weeks	One lane closure
L6013-0	Foildarrig / Oakhampton	1.2km	3 weeks	Road Closure
L2156-0	Rockvale / Mackney (O'Brien)	0.4km	1 week	One lane closure
L2157-0	Mackney (Bourke) / Ahane / Newross	0.8km	2 weeks	One lane closure
L6009-0	Castlewaller / Carrowkeale / Derryleigh	1.8km	1 month	Road Closure
R503	Tullow / Cooldrisla, Kilnacappagh / Scraggeen / Derrygareen, Inchadrinagh / Knockancullenagh Inchadrinagh / Fanit Inchadrinagh / Lackamore Inchadrinagh / Tooreenbrien Upper Inchadrinagh / Tooreenbrien Lower Inchadrinagh / Reardnogy Beg Inchadrinagh / Reardnogy More Inchadrinagh / Shanballyedmond Inchadrinagh / Baurnadomeeny, Coonmore Inchadrinagh / Foildarragh Inchadrinagh / Kilcommon, Loughbrack, Knocknabansha	22.1km	9 months	One lane closure
L2264-50	Knockmaroe / Knockcurraghbola Crownlands	1.9km	1 month	One lane closure
L6188-0	Knockmaroe	0.3km	1 week	Road Closure

Road Closure: As outlined in Table 1 above, it is expected that the L6013-0 in Foildarrig / Oakhampton will be closed for c.3 weeks, the L6009-0 in Castlewaller / Carrowkeale / Derryleigh will be closed for c.1 month and the L6188-0 in knockmaroe will be closed for c.1 week, to accommodate the construction works. The closures will not be continuous throughout a given day, but will occur during daylight hours but outside of local peak or important traffic periods. There are alternative traffic routes to avoid the works available on all of these roads, and a diversion for road traffic will be setup for the duration of the closure. Signage of this diversion will be in accordance with Chapter 8: Temporary Traffic Measures and Signs for Roadworks of the Department of Transport, Tourism and Sport Traffic Signs Manual, November 2015.

One lane closures**:** The works on the public roads L2166-10 , L2156-0, L2157-0, R503 and L2264-50, can be accommodated with one-lane closures. Traffic flow will be maintained using a stop/go system with flagmen.

Relevant Traffic Management Plan Figures (included in Section 1.6):

Figure TMP 2: Location of Road Closures and One-Lane Closures along the 110kV UGC

1.3.4.1 Licences

All road closures and one land closures will be subject to Road Closure application to Tipperary County Council. All road closures will be subject to Road Closure Licence application to Tipperary County Council; will be carried out in accordance with the Department of Transport, Tourism & Sport Guidelines for Managing Openings in Public Roads (April 2017)

1.3.4.2 Flagmen at Road Works

Flagmen will be employed at road work locations to control the movement of traffic on the public road, so that road users can continue to use the local road network in a in a safe and efficient manner.

1.3.4.3 Advance Warning Signage for Road Works

Advance warning signage will be erected on both approaches to road works locations. The placement of this signage has been designed based on the recorded 85th percentile traffic speeds, or the posted limit, whichever is the higher.

Relevant Traffic Management Plan Figures (included in Section 1.6):
Figure TMP 3: Advance Warning Signage for Road Works on 50km/hr Roads
Figure TMP 4: Advance Warning Signage for Road Works on 80km/hr Roads

1.3.4.4 Maintaining Access to Properties

Where works take place in the vicinity of a property entrance (house/farms/businesses/sports facilities), traffic flow will be maintained by placing a steel plate over the 110kV UGC trench to allow traffic to pass over.

1.3.4.5 Engagement with Local Residents

Contact will be maintained with local residents on the day to day timing of the works. A Community Liaison Officer (CLO) will be appointed as the point of contact between the developer, the local community and the wider public. The CLO will keep very active contact with local residents on the traffic arrangements around the works day to day.

1.3.1 Reinstatement of Public Roads

Along the 110kV UGC route on the public road, confirmatory condition surveys involving pre-construction and post-construction inspections, high definition video surveys and FWD surveys will be undertaken. The road pavements/built surfaces will be reinstated according to the conditions of the Road Opening Licence, and will involve a combination of carriage lane reinstatement and full road reinstatement, per:

Reinstatement of Trenches: The construction works will proceed in a linear manner with on average 80m to 100m completed at each location, each day. At the end of each day, the completed sections will be reinstated with a temporary surface for road safety and trench integrity purposes. Full permanent reinstatement of the road surface/built surface will take place at the end of construction works.

Reinstatement of Joint Bays: Joint Bays are temporarily reinstated more than once; after the joint bay is constructed; after cable pulling; and after cable jointing. Following the electrical commissioning, the road surface/built surface over the Joint Bays will be permanently reinstated.

Trenches within road pavements will be reinstated in accordance with the Department of Transport, Tourism & Sport *Guidelines for Managing Openings in Public Roads* (April 2017).

Relevant Volume C3 EIAR Figures:
Figure TMP 5: Cross Section of 110kV UGC in the Public Road

1.3.2 Site Entrances

1.3.2.1 Permanent Site Entrance

The requirement for one new permanent site entrance on the L2166-10 at Coole for the Mountphilips Substation, temporary compound and construction works at the Mountphilips Substation site. This site entrance will be constructed at the location of an existing farm field entrance.

This entrance will be used to access the Mountphilips Substation (construction and operation stages) and the temporary construction compound (construction stage only). The existing farm entrances will be widened to 10m, with a visibility splay of 160m. The sightlines are based on the 85th percentile ambient traffic speed on the Local Road serving the access, as recorded during traffic count surveys. These sightlines will be provided through the partial removal of the roadside boundary and the pruning of any hedgerow or trees within the visibility splay. Any hedges or trees that are removed will be replaced with an equivalent length of hedge and/or number of trees which will be replanted behind the sight lines. The entrance will be fenced with post and rail and an entrance gate will be installed set back 4.5m from the road edge.

Relevant Traffic Management Plan Figures (included in Section 1.6):

Figure TMP 6: Plan View of Permanent Site Entrance at Coole (Mountphilips Substation Site Entrance)

Figure TMP 3: Advance Warning Signage for Road Works on 50km/hr Roads

1.3.2.1.1 Concealed Drain at Entrance

A permanent concealed drain will be installed at the substation entrance on the Local Road to prevent water runoff from construction areas, flowing onto the road. This drain will be directed into an infiltration trench. Existing roadside drainage which occurs close to road works associated with the substation entrance will be piped to maintain flow if necessary

1.3.2.1.2 Road Cleaning

The public road at the permanent site entrance will be regularly cleaned by a road sweeping machine.

1.3.2.2 Transition from public road to private paved road at Knockcurraghbola Commons

At the eastern end of the 110kV UGC, the route is along the public road L6188-0 and then along a private paved road to the Consented UWF Substation location. This private road is paved, similar to the public road, including at its junction with the public road. There is no requirement to widen the junction of the private road with the public road to install the 110kV UGC. The junction of the private paved road with the public road does not required any widening or sightline works. It already has the required sightlines of 70m, which satisfies the sightline requirements as set out in Table 10.1 of the North Tipperary County Development Plan 2010 (as amended).

Relevant Traffic Management Plan Figures (included in Section 1.6):

Figure TMP 7: Plan View of 110kV UGC at junction of L6188-0 with private paved road in Knockcurraghbola Commons

1.3.3 Construction Material Haulage Routes

The construction materials for the UWF Grid Connection are listed in Table 2 along details of the quantity and source of the materials.

Table 2: Quantities, type and source of construction materials

Materials	Quantity	Source of Materials
Concrete	10,870m³ / 1360 No. loads	Roadstone Killough, Co Tipperary Roadstone Bunratty, Co Clare
Aggregate (crushed stone and sand)	16,220m³ / 1350 No. loads	Rear Cross Quarry, Shanballyedmond, Rear Cross Co Tipperary
Surface dressing (public road sections)	2,250m³ / 210 No. loads	Oranmore, Co. Galway
Lattice towers (End Masts)	4 No. loads	Cork
Electrical cabling and plant	5 No. loads	EU
Switchgear	5 No. loads	EU
Communication cabling and equipment	2 No. loads	EU
Joint bay chamber and cover	10 No. loads	Offaly
Communication chamber and cover	5 No. loads	Offaly
Link Box Chambers and cover	5 No. loads	Offaly
Earth Sheet Link Boxes and connections	5 No. loads	UK
Duct jointing collars and draw ropes	5 No. Loads	Cork
Profiles for ducting and chambers	5 No. Loads	Cork
HDPE Ducting	140 No. loads	Cork
HDPE Comms Ducting	80 No. loads	Cork
110kV electrical cable	29 No. loads	Cork
Fibre Optic communication cables	5 No. loads	Cork
Red cable protection strip	1 No. loads	Cork
Yellow warning tape	1 No. loads	Cork
Steel protection plate	1 No. loads (if required)	Birr, Co Offaly
Marker posts and plates	1 No. load	Dundrum, Co Dublin
General building materials	11 No. loads	Various Irish Suppliers
Control Building doors	1 load	Tullow, Co Carlow
Reinforcing Steel	5 No. loads	Various Irish Suppliers
Geotextile material	2 No. loads	Nenagh
Hedging and tree species	1 No. load	Established nurseries in Ireland
Fencing materials, posts, rails, wire	1 No. load	Arrabawn Co-Op, Reiska
Sand (clean) bags	1 No. load	Newport, Co Tipperary
Splash plate	1 No. load	Cork
Clean rockfill for watercourse works	1 No. load	Roadstone, Killough or Bunratty

1.3.3.1 Delivery Vehicles - Axles

Delivery machinery will comprise

- Tractor units with 2-4 axel articulated flat-beds or tautliners.
- Standard 4-axel rigid tipper units for aggregate and concrete deliveries
- vans for smaller deliveries

1.3.3.2 Material and Delivery Traffic Haulage Route

The delivery of construction materials will be managed in the following manner:

Aggregate and Concrete:

HGV loads of aggregate, concrete and public road dressing will be delivered directly to construction works areas. The HGVs delivering this material will travel to the works areas along both the regional and local road networks, using the haul routes specified in Figure TMP 8: Haul Routes for Stone and Concrete Deliveries, which is included at the end of this plan.

Other Construction Material

Other materials, such as ducting, geotextile and other construction materials, will be sourced from various suppliers and will be transported to the Temporary Compound vat Mountphilips Substation site via the national and regional road network.

This material will be stored at the Temporary Compound until required at works areas. Each day a smaller truck will be used to deliver the daily volume of ducting, cable protection strip, warning tape, duct jointing collars etc. to each active works area, using the haul routes specified in Figure TMP 8.

1.4 Traffic Management Measures

Traffic will be managed to ensure that the construction traffic for the UWF Grid Connection works will travel safely and efficiently along the public road network.

1.4.1 Hazards Identified

The critical hazards identified in relation to traffic management are:

- Deliveries of construction materials,
- Access and egress at Mountphilips Substation site Entrance,
- Spoil and dust deposited on the public,
- Diversion of local traffic due to road closures for 110kV UGC trenching works, and
- Stop/Go systems due to one lane closures for 110kV UGC trenching works.

Measures to address the above indentified hasards are outlined below. These include measures dealing with roles and responsibilities, communication and information, on-going communication with Tipperary County Council Roads Section, materials deliveries, site personnel, scheduling of works, protection of the public road network from surface water run-off, minimizing debris on the road, repair and reinstatement of the road surface, signage and measures for road and lane closures.

Adavance warning signage for roads works are shown on Figures TMP 3: Advance Warning Signage for Road Works on 50km/hr Roads and on Figure TMP4: Advance Warning Signage for Road Works on 80km/hr Roads.

1.4.2 Traffic Management Measures

The control measures identified will be implemented during the construction of the UWF Grid Connection and the Environmental Clerk of Works will carry out weekly auditing to ensure the compliance with and the effectiveness of the Traffic Management Measures.

Title:	**Traffic Management Measures**
Environmental Commitment	
Manage construction works and construction traffic in order to control and minimise the traffic impacts of construction insofar as it may affect the road network, local residents and the travelling public on the public roads close to and adjacent to the UWF Grid Connection, through measures to maximise road safety while keeping traffic flowing as freely as possible.	
Responsibilities	
Project Manager	• Consult with Tipperary County Council • Consult with Gardaí • Agree Contractor arrangements regarding speed limits, alert beacons, haulage routes etc. • Oversee the implementation of the Traffic Management Plan
Design Engineer	• Design sight lines at permanent site entrance. • Design adequate drainage at permanent site entrance.
Construction Manager	• Install information, direction and warning signage in advance of road works, at site entrances and along haul routes. • Implement the Traffic Management Plan.

Environmental Clerk of Works	• Weekly auditing to ensure the compliance with and the effectiveness of the Traffic Management Measures.
Community Liaison Officer	• Act as point of contact with local community, • Keep the local community informed of construction and road works in their area.

Traffic Management Measures

Communication and Information

- The Project Manager will keep in contact with Tipperary County Council Roads Section, with a view keeping the Roads Section informed of up to date activities and to avoid any conflicting concurrent works and/or roads programmes and/or diversions that the Local Authority may have planned at the time of construction;
- Ahead of works in an area, the Community Liaison Officer will inform local residents and local community facilities (including schools) of the construction and delivery schedule. Residents and local community facilities will also receive a leaflet with an overview of the traffic schedule and the contact information for both the Community Liaison Officer and the Environmental Clerk of Works so that householders, local farmers and local community facilities can make enquiries to levels of usage and provide information on local events or work/activities which may conflict with the construction/delivery schedules.
- The Construction Manager will erect an information sign at the site entrance to the Mountphilips Substation site, at Derryleigh on the local road at junction with the R503, in Rear Cross village, and at Knockmaroe on the local road at the junction with the R503. This signage will give an overview of the construction traffic timetable; the contact numbers for the Environmental Clerk of Works and the Community Liaison Officer, and will serve as an advance warning to expect construction traffic on the roads.
- Directional signage will be installed at specific locations along the haul routes. The haul routes for construction materials deliveries to the Mountphilips substation works will have clear directional signs from Newport to the site. The haul routes for construction material deliveries to the UWF Grid Connection works will have clear directional signage to the work, and this signage will be relocated to indicate the location of the UWF Grid Connection works as the works progress along the grid connection route.

Measures for Delivery Personnel

- These Traffic Management Measures will be part of the induction to all haulage companies delivering to site.
- All machinery entering the site will have working rotating beacons and these beacons will be activated to indicate to other traffic of their intention to enter or exit the site.
- All companies delivering aggregate or concrete to works areas or delivering other materials to the temporary construction compound or Mountphilips Substation will be instructed to use the designated haul routes and will be informed of designated delivery hours for routine deliveries.
- A speed limit of 50km/hr on the Local Roads between the R503 and the works locations and site entrance at Coole will be implemented and communicated to the companies delivering materials to site.
- All material deliveries will have a maximum axle load of 12 tonnes per axle.

Measures for Site Personnel

- A speed limit of 50km/hr will be implemented and communicated to the personnel travelling on the Local Roads ('L' Roads) to Mountphilips Substation site, and to the works areas.
- There will be onsite parking for all construction personnel at the main compound.
- There will be no parking of any vehicles on the public road.

Protection of the Public Road Network from Surface water run-off

- To ensure that surface water run-off does not flow onto the public road surface, a concealed drain will be provided parallel to the public road network at the permanent site entrance at the Mountphilips Substation site.

Measures to protect Local Residents and Local Community
• All construction works will be carried out during daylight hours *(as per Project Design Measure PD04);* • Construction works will not be carried out within 150m of Rear Cross National School or Lackamore National School, during school hours; in addition, the project Community Liaison Officer will keep each school informed of construction timetables and scheduling, *(as per PD06).* • As requested by the Roads Department of Tipperary County Council, during pre-planning consultations, the works along the public road network will be scheduled to minimise impacts on schools and local businesses. The works will be scheduled so that they do not disrupt or interfere with Tipperary County Council's road works programme on the R503 through Newport town, *(as per PD12).* • 110kV UGC construction works along the local roads L2264-50 and L6188-0, will not take place at the same time as the UWF Related Works Haul Route Works on these roads. The 110kV UGC construction works will also be scheduled so that the works do not occur on the same days as concrete deliveries for Consented UWF Turbines along these local roads, *(as per PD07).* • Construction works for the 110kV UGC in Knocknabansha, Knockmaroe, Knockcurraghbola Crownlands and Knockcurraghbola Commons townlands, which are within 350m of local residences, will not take place at the same time as either the UWF Related Works or Upperchurch Windfarm where those works also occur within 350m, *(as per PD11).* • Flag-men will be used at 110kV UGC works locations on the public roads subject to one lane closures. These flagmen will control the movement of traffic on the public road, so that road users can continue to use the public road network in a in a safe and efficient manner. The works will be carried out according to the Traffic Management Plan for UWF Grid Connection. The Traffic Management Plan forms part of the Environmental Management Plan , *(as per PD10).*
Measures to minimize debris on road
• In order to minimize mud and debris deposited on roadway surfaces there will be a dry wheel wash facility positioned at the Mountphilips Substation site entrances, as required, and will be used by trucks exiting the site. • In addition to this a road sweeper will operate at the site entrance, as required, for the duration of the construction of the UWF Grid Connection and in particular, during the importation of aggregates and concrete. • The road sweeper will keep the roads at the site entrance clean and clear of mud and debris.
Road Repair and Reinstatement
• Along the 110kV UGC route on the public road, confirmatory condition surveys involving pre-construction and post-construction inspections, high definition video surveys and FWD surveys will be undertaken • Following road works for cable trenching, road pavements will be reinstated according to the conditions of the Road Opening Licence and in accordance with the national MapRoad Roadworks Licensing (MRL) system, supported by the Road Management Office (RMO) on behalf of all local authorities and TII, in accordance with the DoTTS Guidelines for Managing Openings in Public. • Along the additional local road L5337-1 at Tullow, which will be used for construction materials haulage only (i.e. no trenching works), confirmatory condition surveys involving pre-construction and post-construction inspections, high definition video surveys and FWD surveys will be undertaken along the routes of concentrated construction traffic between the R503 and the works locations on the local road network. Whilst it is not expected to occur, any damage to structures or road pavements will be repaired to at least as good a condition as pre-works, • Any road repairs if required following the end of the construction stage will be by arrangement with Tipperary County Council.
Signage
• Signage will be according to the Chapter 8: Temporary Traffic Measures and Signs for Roadworks of the Department of Transport, Tourism and Sport Traffic Signs Manual, November 2015. • The signage layout will take the individual features of the site into consideration. All signs will be manufactured using retro-reflective material and will be a minimum of 750mm X 750mm size. All cones will be 1m high and have reflector sleeves for additional visibility and sand bags will be used to weight down cones.

- All temporary traffic signs for will be placed such that they;
  - do not obstruct sight lines;
  - do not obstruct other signs; and
  - are themselves not obstructed by other signs.
- Where signs could be obscured by bends, hills or dips in the road, additional warning signs will be put in place.

Information Signs

- Information signage will be erected to provide an overview of the construction traffic timetable; the Environmental Clerk of Works contact number, the Community Liaison Officer and will serve as an advance warning to expect HGVs on the road.
- These temporary signs will be provided at the Mountphilips Substation site entrance; Rear Cross village, at Derryleigh on the local road near the junction with the R503, and at Knockmaroe on the local road near the junction with the R503will be installed at the Mountphilips Substation site entrance. This sign will give an overview of the construction traffic timetable; the Environmental Clerk of Works contact number, the Community Liaison Officer and will serve as an advance warning to expect HGVs on the road.

Directional Signage

- Directional signage will be installed at specific locations along the haul routes. All directional signage will be black on white background.
- The haul routes for construction materials deliveries to the Mountphilips substation works will have clear directional signs from Newport to the site. The haul routes for construction material deliveries to the 110kV UGC works outside the Mountphilips Substation site will have clear directional signs and this signage will be relocated to indicate the location of the works as the works progress along the 110kV UGC route.

Warning Signage

- Advance warning signage will be erected on both approaches to the temporary site entrance no.2 and road works locations. The placement of this signage has been designed based on the recorded 85th percentile traffic speeds, or the posted limit, whichever is the higher.

Measures for Road Closures

- Detour road signs will be erected on the closed road and along the detour route. The temporary traffic measures will be maintained during the works.
- Where necessary, cones, beacons, signs and reflectors will be cleaned and any signs knocked over or displaced will be reinstated.
- Access for local residents will be in place during the duration of the works. Construction personnel will attend barrier points during working hours.
- All construction vehicles will be parked so as not to cause obstruction or inconvenience to road users or local residents.
- In the event of emergency and should the need arise for the road to be fully opened, steel plates will be put in place across the excavation to all traffic to flow on both sides of the road. Steel plates will be kept on-site at all times.

Measures for Lane Closures

- The Construction Manager will ensure that layouts of lane closures consider the sight lines from perpective of both the road users and construction personnel, and ensure that provision of forward visibility and signing does not compromise the safety of either road users or construction personnels.
- An appropriate taper length will be implemented to reduce the width of the road to a single lane.
- An early indication will be given of the path that must be followed to avoid any obstruction in the carriageway.
- Temporary traffic signals will be implemented to allow road users safely through the roadworks by channelling them onto the open side of the road. The traffic signals will be in place prior to the works commencing and will remain in place until after the works are completed.
- A STOP/GO system will be operated by two flagmen who will be in radio contact with each other.
- Provision will be made for the availability of safe parking for traffic management and construction vehicles and

equipment.

- Where road works are situated near a bend in the road, and especially a left hand bend, adequate advanced warning will be given to the approaching drivers because of the reduced visibility.

On-going communication with Tipperary County Council Roads Section

The Project Manager for the construction of UWF Grid Connection will ensure that close communication with Tipperary County Council Roads Section will be maintained throughout the construction stage. Such communications will include:

- the specific traffic management measures to be implemented; and the manner in which road works and any road reinstatements will be carried out;
- Ongoing reporting relating to the condition of the road network and updates to construction programming will be provided to Tipperary County Council; and
- Identify any other works being carried out in the vicinity of the Upperchurch Grid Connection works, e.g. road surfacing works, and will co-ordinate the works with the local authorities so as to mitigate against any impacts arising from conflicting works.

References

- Department of Transport - Traffic Signs Manual: Chapter 8 - Temporary Traffic Measures and Signs for Roadworks of the Department of Transport, Tourism and Sport Traffic Signs Manual, November 2015
- Department of Transport, Tourism and Sport Guidelines for Managing Openings in Public Roads; Guidelines for the Opening, Backfilling and Reinstatement of Openings in Public Roads (Purple Book, April 2017)

1.5 Emergency Procedures

1.5.1 Emergency Contact Numbers

The telephone numbers for the Emergency Services are listed in Table 3 below;

Table 3: Emergency Contact Numbers

Emergency Service	Contact Number
Fire Brigade, Gardaí and Ambulance	Dial 112
Local hospital (University Hospital Limerick)	Dial 061 301111 (Main Switch) or 061 482343 (A&E)
Utilities - ESB Networks	Dial 1850 372 999
Utilities – Eir	Dial 1850 245 424
PSCS appointed by the construction contractor for the windfarm	TBC

These numbers will be prominently posted at the Mountphilips Substation site entrance and in the site offices. These numbers will also be displayed in machinery and works vehicles for works along the public road network.

1.5.2 Procedures in the case of incidents/emergencies

Emergency services vehicles will have priority over construction traffic vehicles at all times.

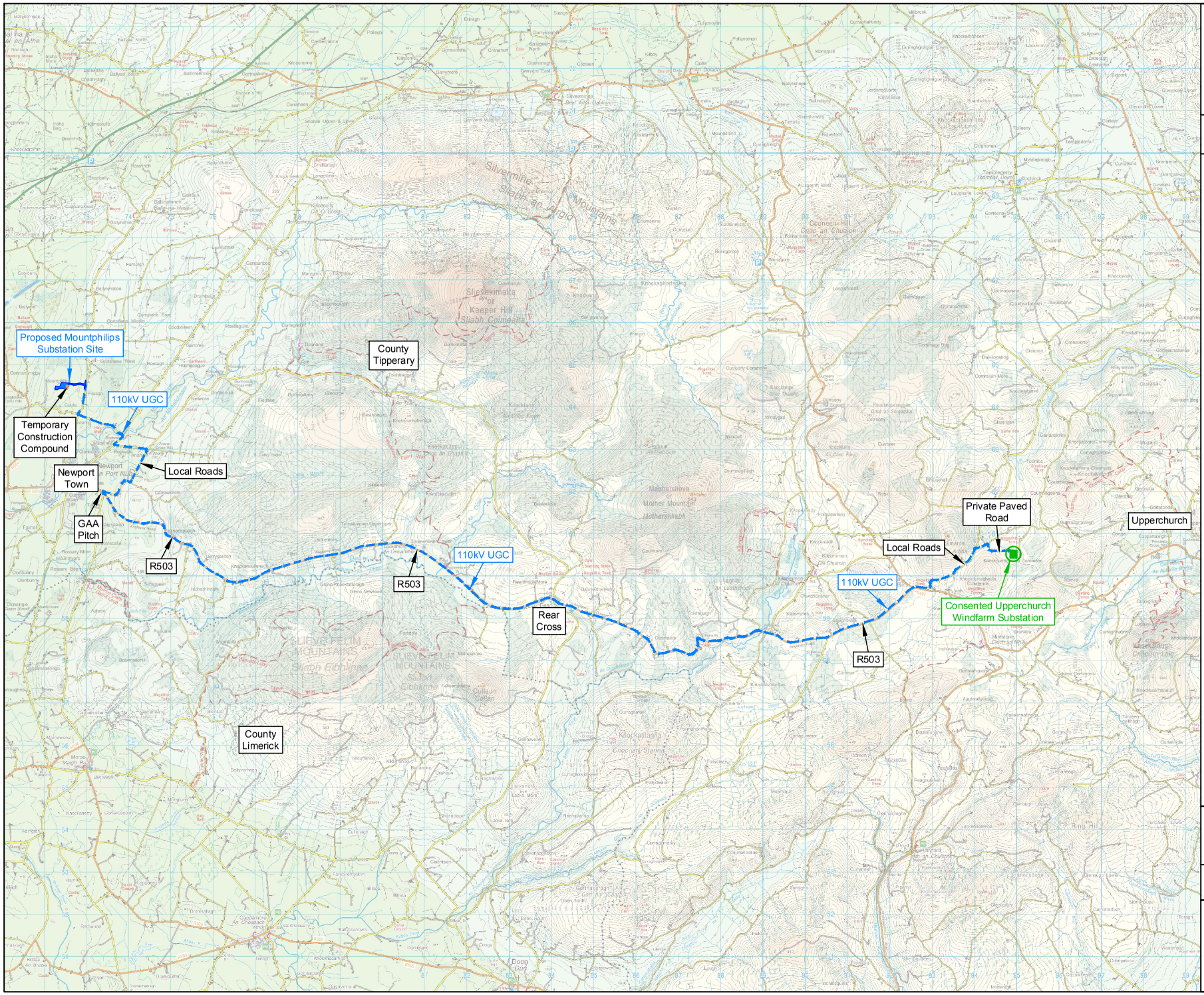
If an incident occurs due to construction traffic the PSCS (Project Supervisor Construction Stage) will provide all necessary assistance to the Gardaí, Ambulance and Fire Brigade services and local authority to deal with the emergency.

In the case of an emergency on the public road, the following incident management procedure will be followed:

- Emergency Services will be contacted immediately by dialling 112
- Exact details of the emergency / incident will be given by the caller to the emergency line operator to allow them to assess the situation and respond in an adequate manner
- The emergency will then be reported to the PSCS
- The PCSC will notify all other construction traffic in the area of the incident and
- The PCSC will ensure that personnel are available to guide the emergency services to the accident location.

All incidents will be recorded by the PSCS and remedial measures taken where appropriate. The incident management procedure will be part of the induction of all personnel coming onto the construction site including HGV drivers delivering to the site.

1.6 Figures and Mapping



EMP: Traffic Management Plan

Figure TMP 1

Location of the UWF Grid Connection on OSI Discovery Mapping

Map Number:

Overview Map

Legend:

- UWF Grid Connection - 110kV UGC
- UWF Grid Connection - Mountphilips Substation
- Consented Upperchurch Windfarm Substation
- Temporary Construction Compound

N

Project:

UWF Grid Connection (2019)

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AB	PK	October 19	A4

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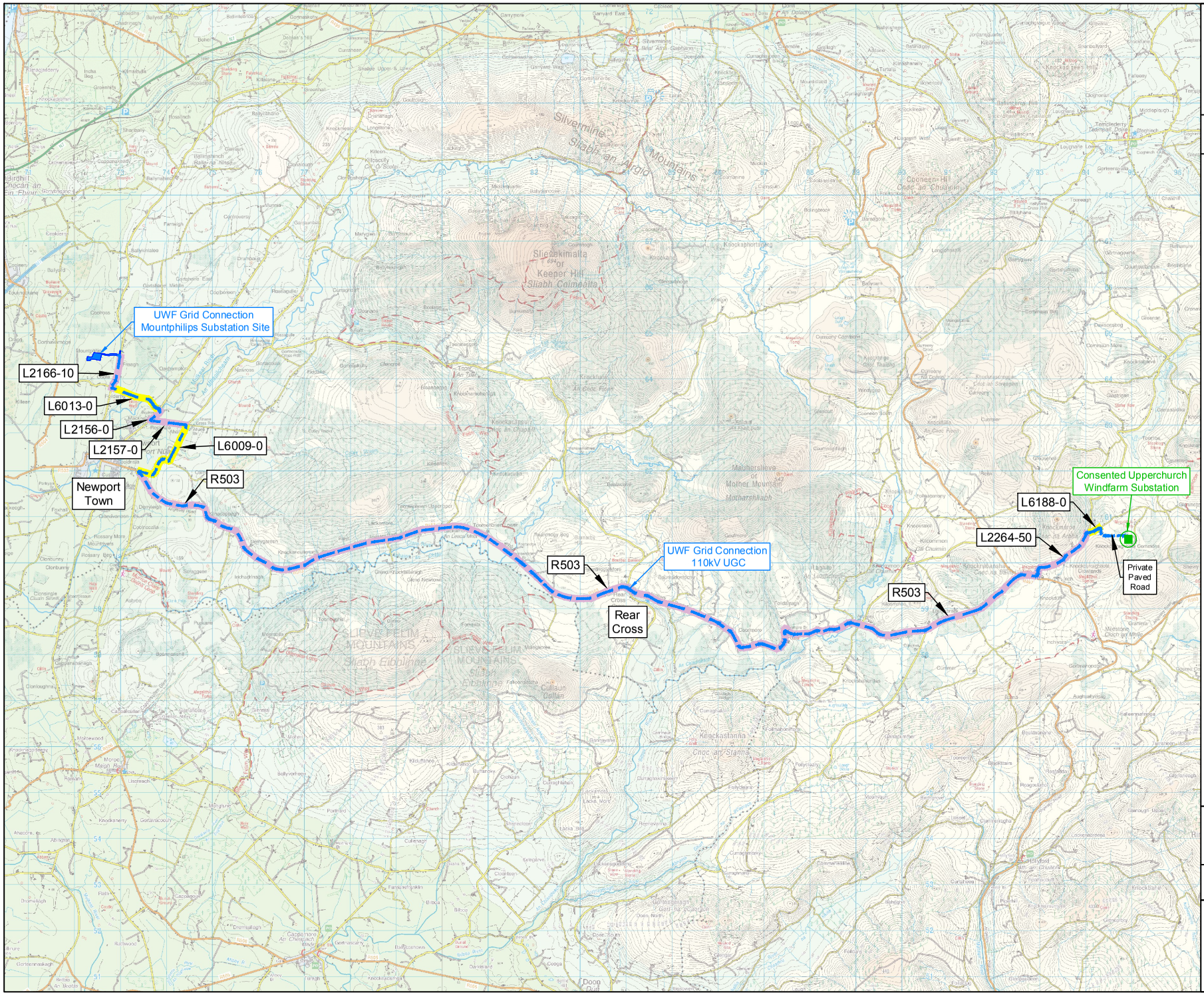

EMP: Traffic Management Plan

Figure TMP 2

Location of Road Closures and One-Lane Closures along the 110kV UGC

Map Number:

Map 1 of 1

Legend:

- UWF Grid Connection - 110kV UGC
- UWF Grid Connection - Mountphilips Substation
- Consented Upperchurch Windfarm Substation
- Public road subject to sequential one-lane closure during construction
- Public road subject to periodic road closure during construction
- L6188-0 Local Road Numbers

N

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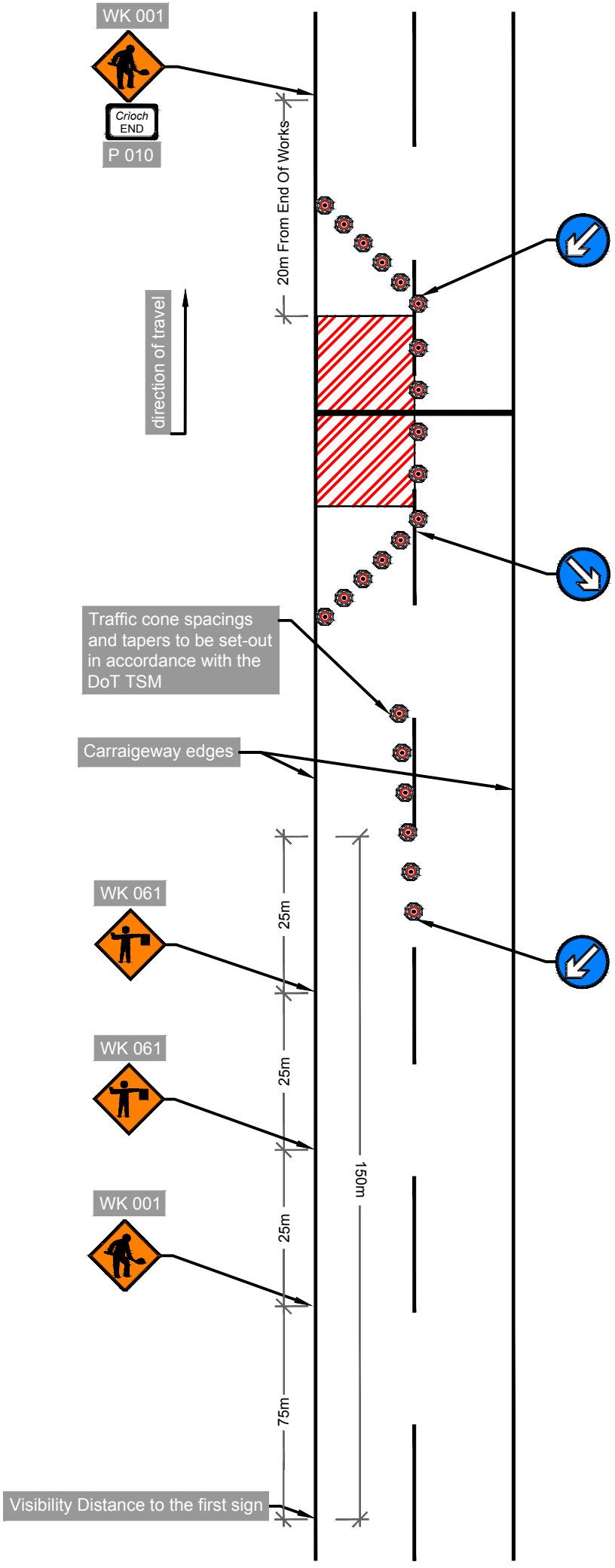

EMP: Traffic Management Plan

Figure TMP 3

Advance Warning Signage for Road Works on 50km/hr Roads

Designed in conjunction with

Malachy Walsh and Partners
Engineering and Environmental Consultants
Cork | Tralee | Limerick | London

Note: This drawing is not to scale

Department of Transport
Traffic Signs Manual 2010 (DoT TSM)

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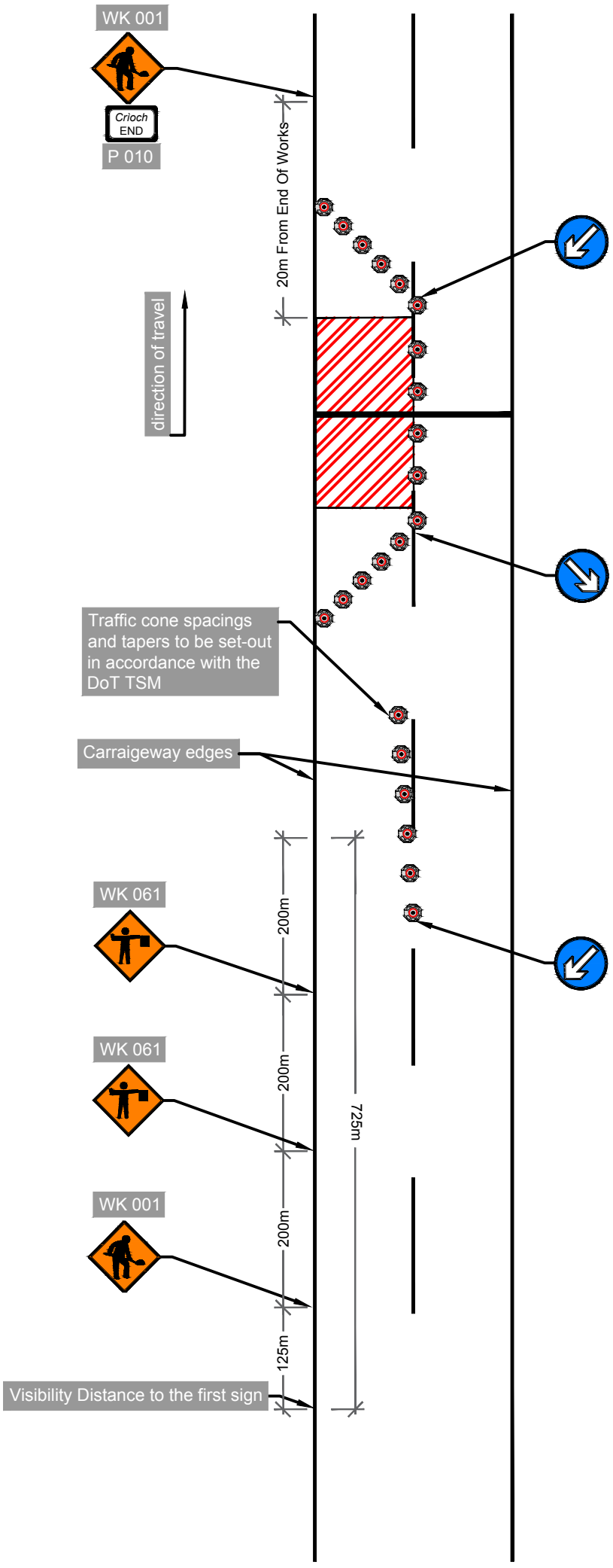

EMP: Traffic Management Plan

Figure TMP 4

Advance Warning Signage for Road Works on 80km/hr Roads

Designed in conjunction with

Malachy Walsh and Partners
Engineering and Environmental Consultants
Cork | Tralee | Limerick | London

Note: This drawing is not to scale

Department of Transport
Traffic Signs Manual 2010 (DoT TSM)

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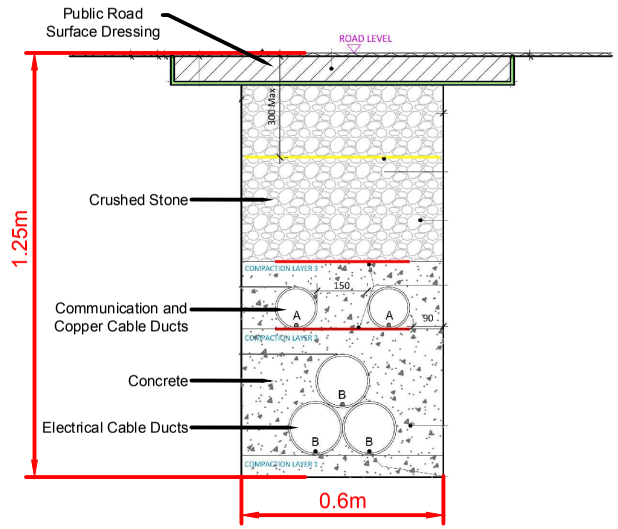
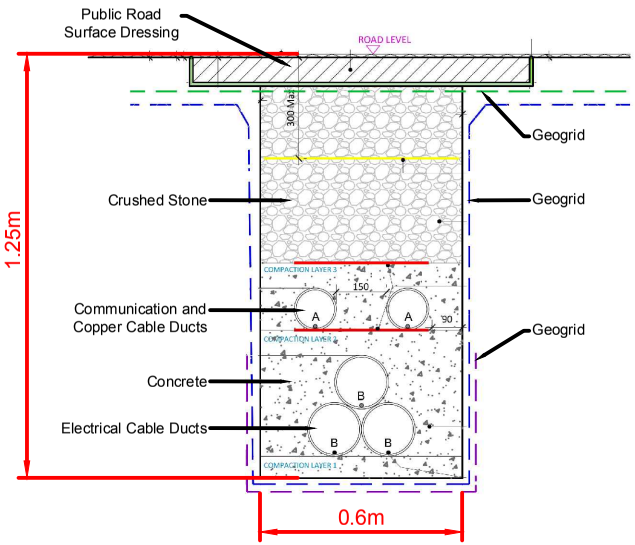
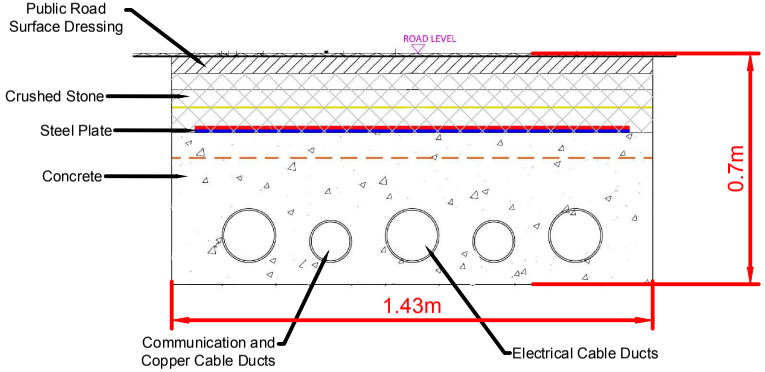


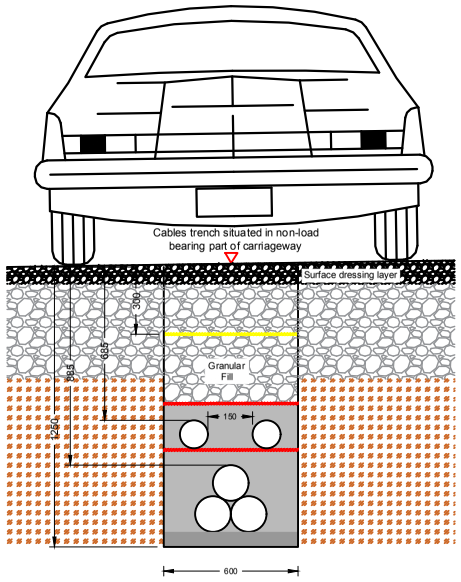
Elevation
110kV UGC
(along majority of UGC route)



Elevation
110kV UGC
(Supported trench through peat, if required)



Elevation
110kV UGC
(in Flat Formation over Bridges / Culverts / Services, if required)



TYPICAL SECTION OF 110kV CABLES TRENCH ALONG PUBLIC ROADS

EMP: Traffic Management Plan

Figure TMP 5

Cross Sections of 110kV
UGC in the Public Road

Map Number:
N/A

This figure is included as a scaled drawing in
Volume B: Planning Drawings
See drawings: 05652-529, 05652-530 & 05652-549

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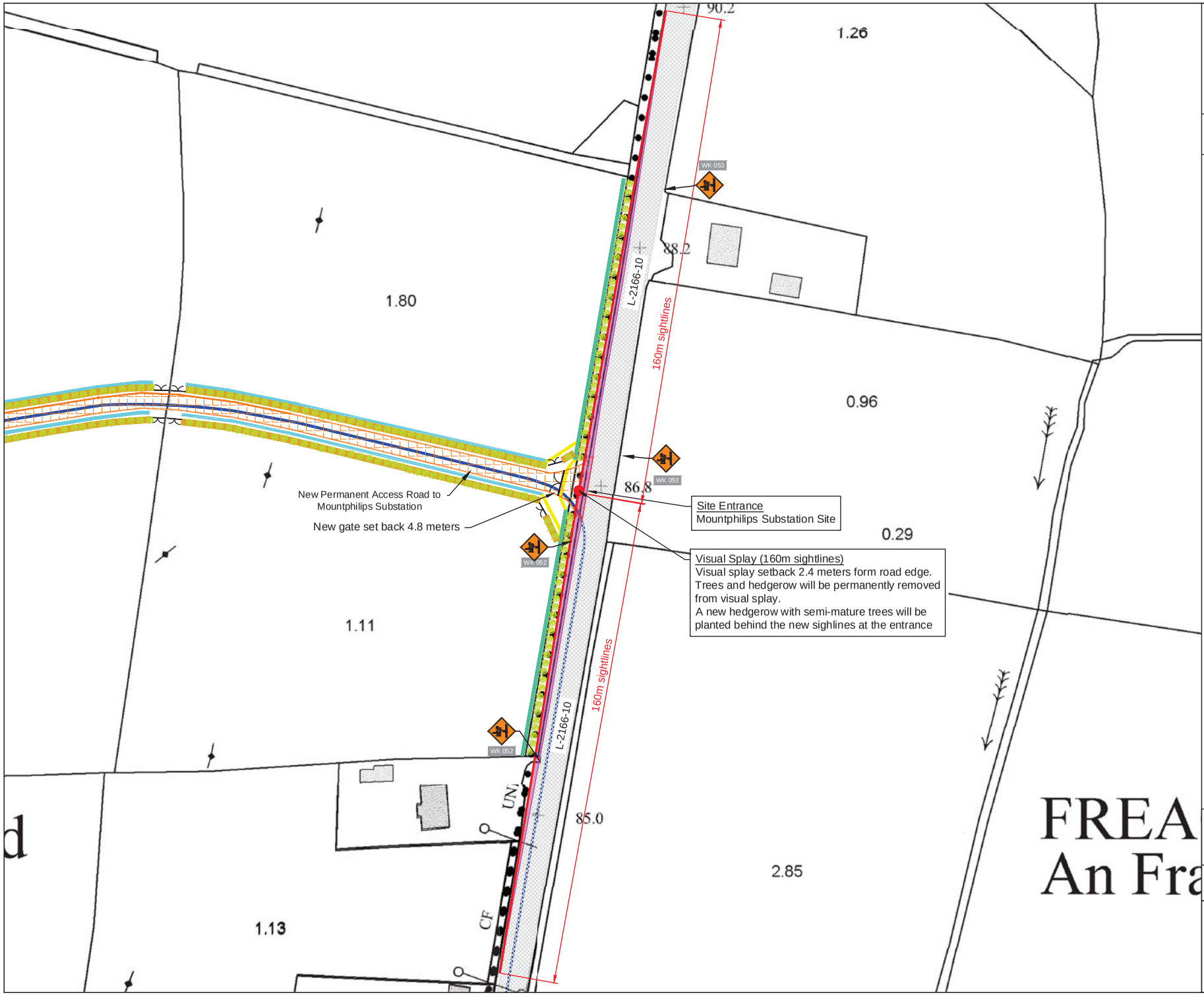

EMP: Traffic Management Plan

Figure TMP 6

Plan View of Site Entrance at Coole

(Mountphilips Substation Site Entrance)

Map Number:

N/A

Legend:

- UWF Grid Connection - 110kV UGC
- Hardcored site entrance and new permanent access road
- Public Roadway L-2166-10
- 160m Sightlines
- Visual Splay - Trees and hedgerow will be permanently removed from visual splay.
- New hedgerow with semi-mature trees will be planted behind the new sightlines at the Mountphilips Substation site entrance.
- New farm gate
- New permanent berms planted with new hedgerow
- New consealed drain at new entrance
- New field drains directed to existing field drainage
- Existing field drainage
- Traffic Management Signage (Construction Stage)

N

Project:

UWF Grid Connection (2019)

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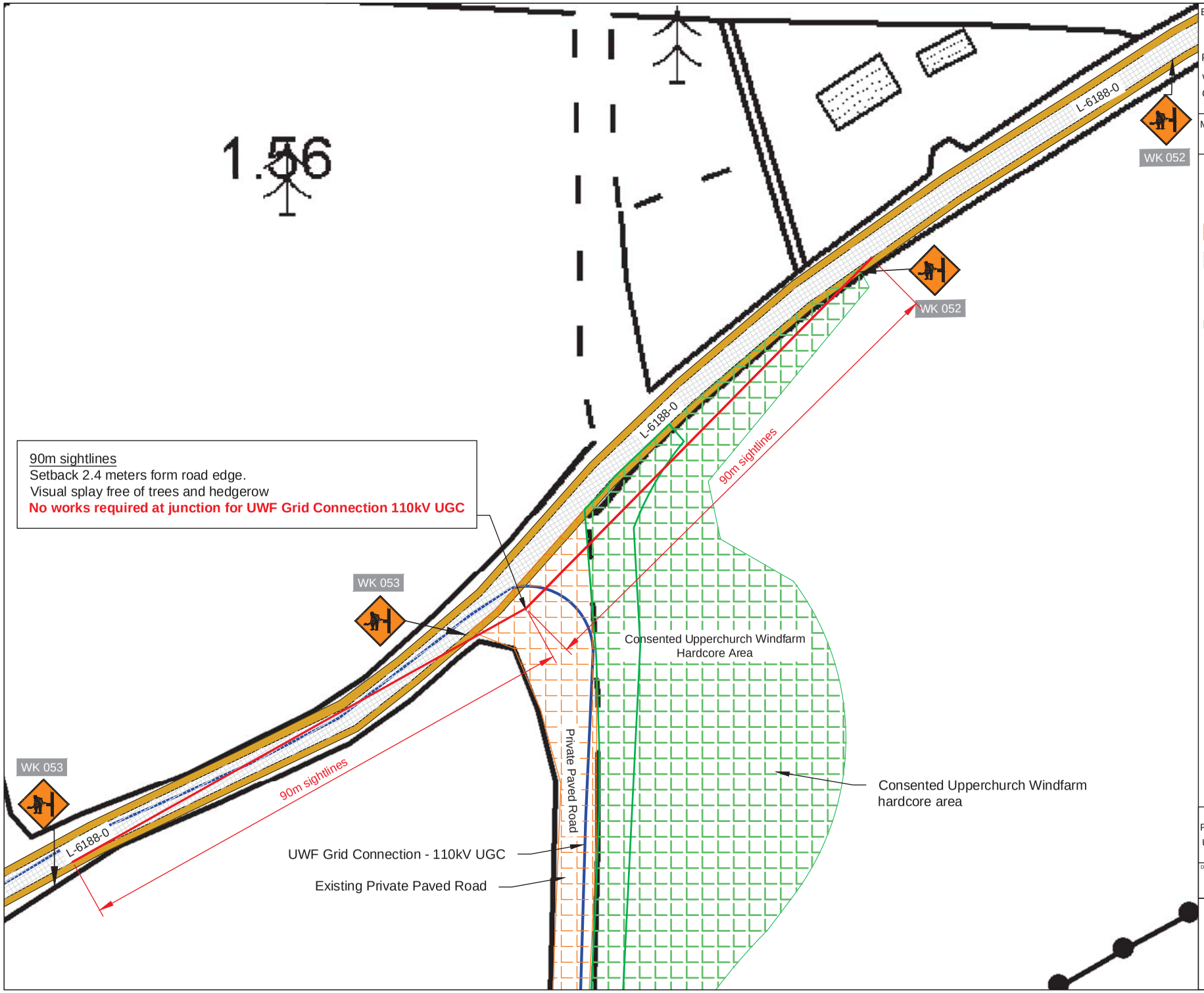

EMP: Traffic Management Plan

Figure TMP 7

Plan View of 110kV UGC at junction of L6188-0 with private paved road in Knockcurraghbola Commons

Map Number: **N/A**

Legend:

- UWF Grid Connection - 110kV UGC
- Existing Private Paved Road
- Public Roadway L-6188-0
- Roadside Verge
- Consented Upperchurch Windfarm Hardcore Area
- 90m Sightlines
- Traffic Management Signage (Construction Stage)

N

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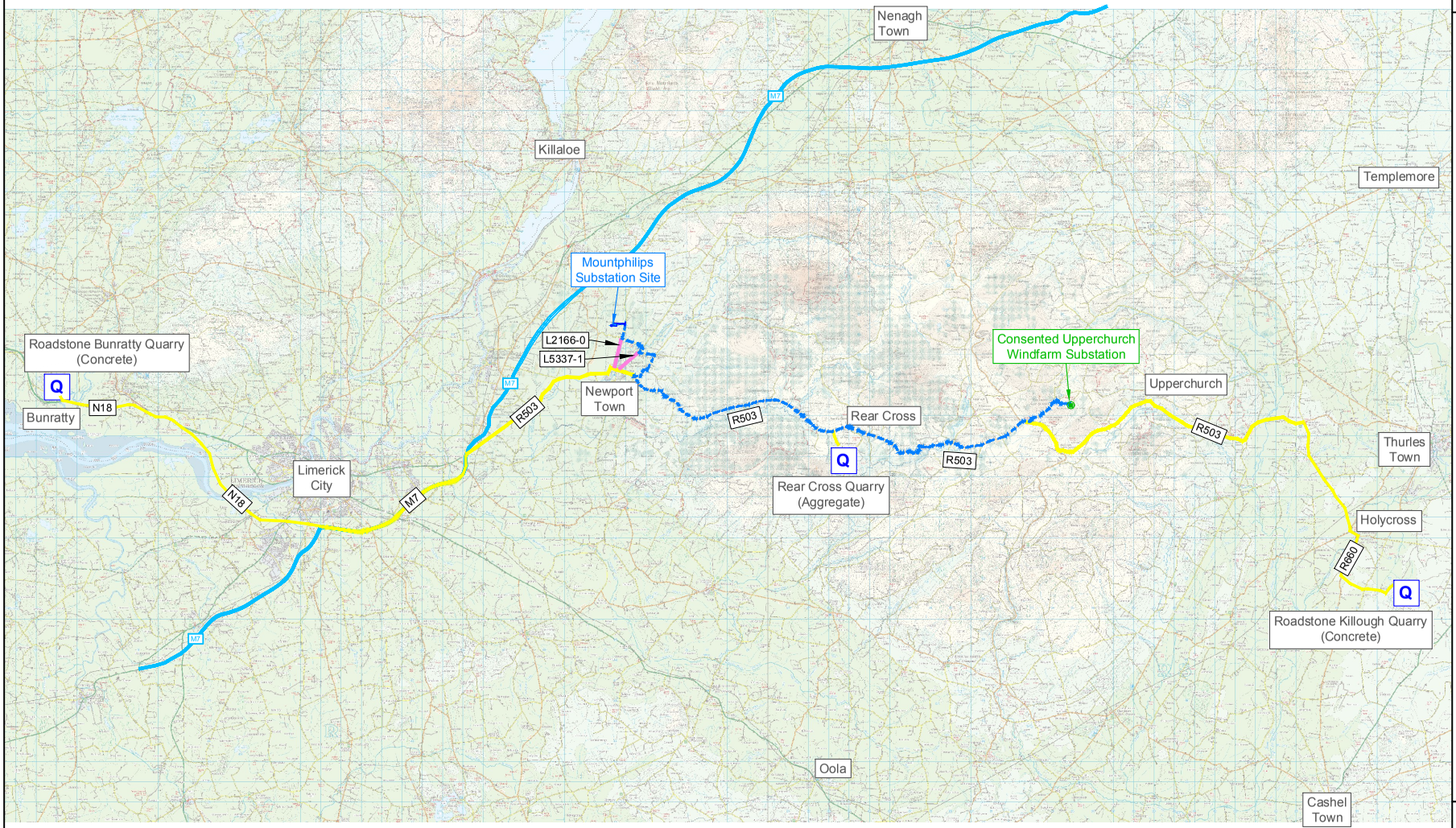
Figure TMP 8

Haul Routes for Stone and Concrete Deliveries

Map Number:

Map 1 of 1



Legend:

- Mountphilips Substation Site
- Consented Upperchurch Windfarm Substation
- Haul Route from Quarries
- Haul Route along Local Roads
- Haul Route along the 110kV UGC roads
- L2166-0 Local Road Numbers

N

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UWF Grid Connection (2019)

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