Contract	**Project Aungierstown 110 kV Substation**		
Document Title	**Outline & Planning Stage Construction Management Plan including traffic management Arrangements**		
Document Reference	**Aung110kV-Planning- 17-12-2020**		
			
The Client	CyrusOne	**Cyrus One**	
The Contractor/ PSCS	STRUCTURETONE	**Structuretone Ltd.**	
Consulting Engineers	PINNACLE CONSULTING ENGINEERS	**Pinnacle Consulting Engineers**	
Architect	TOT Architects	**TOT Architects**	
Project Scope	Construction of a new 110kV indoor GIS transmission substation will be contestably built on the site of the CyrusOne Dub 1 data centre, permitted under Reg. Ref. SD18A/0134 / An Bord Pleanála Ref. ABP-302813-18, for eventual handover to ESB Networks as the transmission asset owner and operated by Eirgrid as the Transmission System Operator. The station will be named Aungierstown 110kV Station and will facilitate two number transmission connections to a new customer MV substation located adjacent to the site. It is intended to connect the Castlebagot 220kV substation into Aungierstown 110kV Substation via two new 110kV underground cable connections, creating the Aungierstown – Castlebagot 110kV circuit. This will be achieved by installing 2 No. new circuit 110kV cables from Aungierstown into the Castlebagot 110kV GIS building within the Castlebagot 220kV Substation.		
Date	17th December 2020	**Status**	**Revision 1- for review**

STRUCTURETONE

CyrusOne

Document Verification

Job title: Aungierstown 110 kV Substation Project — Job number **72000455**

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Revision	Date				
		Filename	Construction Stage- Construction Management plan incl. traffic management arrangements		
Rev A	1.05.19	Filename	Construction Stage- Construction Management plan incl. traffic management arrangements		
		Description	Construction Stage- Construction Management plan incl. traffic management arrangements prepared as part of the planning and project approvals stage		
			Prepared by	Checked by	Approved by
		Name	Martin Donnelly	Laura Bowens	Jason Monks
		Signature			
Rev B		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
Rev C		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			

Contents

1. Abstract

The purpose of this abstract section is to detail the proposed overall construction management plan including all relevant traffic management arrangements specified as part of the planning application. This plan is prepared as part of the Pre-works project planning and co-ordination phase and will be supplemented following any successful planning application by other works plans to include the Project Execution Plan (PEP), the PSCS Safety & Health Plan, and the Environmental Management plan which are detailed in the suite of company ISO accreditations- ISO 9001, ISO 14001, and OHSAS 18001.

As part of the planning application process, STL are required to submit an overall Construction Management Plan with specific details included in the plan for traffic management arrangements. For the purposes of clarity these are detailed in separate sections of this plan, namely:

- Section 4- Overall Construction Management Plan
- Section 7- Outline Traffic Management Arrangements

The statutory requirements as detailed in Planning legislation will be the key guidance reference for the development and implementation of the Construction Management Plan.

The Construction Stage Construction Traffic Management plan has been developed to outline the traffic management arrangements that will be put in place by STL to ensure adequate consideration is given to traffic management controls throughout the construction.

Some important information of note for project include:

- Where possible muck away will be reduced by using excess material for landscaping
- All construction vehicles and site personnel will be instructed to access the site via the R134 which has a priority T junction with the Baldonnell road leading to the site entrance on Grange Castle Business Park South access road.
- There will be signage in place on the R134 to direct the traffic flow to the Baldonnell Rd. Locations for the signage noted on appendix A.1. STL require our HGV traffic and delivery trucks will exit the R136 at the Nangor Rd junction with the R134 and proceed approximately 2km along the R134 to the T junction at the Baldonnel Rd.
- Road straightening and upgrading works have been recently completed which include new designated footpaths and cycleways which will be in use for our commencement date.
- As there is no hard shoulder or footpath on the Baldonnel Rd site operatives not travelling by car, are to use the R134 route as a matter of safety.
- There is a regular No. 68 bus service every hour direct to Grangecastle Business Park with a stop 500m from the proposed site entrance. There are more frequent services to Grangecastle Business Park by way of the No.151 and No. 13.

1.1 INTRODUCTION

The contract for the design and planning submission of the new 110 kV GIS Substation, **Aungierstown 110kV Substation,** at Grangecastle Business Park South, Co. Dublin has been awarded to Structuretone Ltd.

Construction of a new 110kV indoor GIS transmission substation will be contestably built on the site of the CyrusOne Dub 1 data centre, permitted under Reg. Ref. SD18A/0134 / An Bord Pleanála Ref. ABP-302813-18, for eventual handover to ESB Networks as the transmission asset owner and operated by Eirgrid as the Transmission System Operator. The station will be named Aungierstown 110kV Station and will facilitate two number transmission connections to a new customer MV substation located adjacent to the site. It is intended to connect the Castlebagot 220kV substation into Aungierstown 110kV Substation via two new 110kV underground cable connections, creating the Aungierstown – Castlebagot 110kV circuit. This will be achieved

by installing 2 No. new 110kV cable circuits from Aungierstown into the Castlebagot 110kV GIS building within the Castlebagot 220kV Substation.

STL will develop this document further following the planning stage to allow its use as an operational management document to manage all works which have a potential impact on public highways abounding the site, and guide traffic management operations on the site in compliance with local authority guidelines and any conditions of the planning application.

The document below is drafted to comply with the required regulations, and any other relevant legislation, guidelines, and codes of practice which will be applicable to the works.

The document below also refers to the traffic management and co-ordination arrangements contained within the company Health & Safety management system which is accredited to the OHSAS 18001:2007 standard, and to the planning application. This Construction Traffic Management Plan will be a key construction contract document, the implementation of which will reduce possible impacts which may occur during the construction of the proposed development.

The objectives of this CMP are to:

- Outline minimum road safety measures to be undertaken at site access / egress locations, during the works and including approaches to such access / egress locations;
- Demonstrate to the developer, contractor and suppliers the need to adhere to the relevant guidance documentation for such works; and
- Provide a platform for future revisions of the Construction Management plan as it develops organically throughout the course of the project.
- Provide a medium for consultation for other projects which will ultimately be run alongside the development of the Aungierstown 110kV Substation building and who will share access routes following handover of Aungierstown 110kV Substation to ESB.
- Outline the responsibilities of all parties in successfully implementing the CMP.

The Client, CyrusOne shall be responsible for ensuring that Structuretone Ltd. (STL) manages the construction activities in accordance with this CMP and take remedial action where a non-compliance is observed.

Objectives and measures are also included for the management, design and construction of the project to control the traffic impacts of construction insofar as it may affect the environment, local residents and the public in the vicinity of the construction works.

2. RESPONSIBLE PERSONS

2.1 Contact Details

STL Mission Critical Director- Jason Monks 00 353 86 0401388

CyrusOne Project Manager- Kevan Harrison 00 44 7789 734519

STL Senior Project Manager- Martin Donnelly 00 353 87 269 0650

3. PROJECT DESCRIPTION

3.1 Introduction

The site location is within the Grangecastle Business Park South campus Dublin 22 off the Baldonnell Rd. All construction vehicles and site personnel will be instructed to access the site via the R134 which has a priority T junction with the Baldonnel road leading to the site entrance on Grangecastle Business Park South access road.

There will be signage in place on the R134 to direct the traffic flow to the Baldonnel Rd. STL require our HGV traffic and delivery trucks to exit the R136 at the Nangor Rd junction with the R134 and proceed approximately 2km along the R134 to the T junction at the Baldonnel Rd.

Road straightening and upgrading works were recently completed which include new designated footpaths and cycleways which will be in use for our commencement date.

As there is no hard shoulder or footpath on the Baldonnel Rd, we will advise our site operatives not travelling by car to use the R134 route as a matter of safety.

The location of the site is shown on the map extract below at Figure 1.

Figure 1: Site location (Source Google Maps)

3.2 Development Description

Construction of a new 110kV indoor GIS transmission substation will be contestably built on the site of the CyrusOne Dub 1 data centre, permitted under Reg. Ref. SD18A/0134 / An Bord Pleanála Ref. ABP-302813-18, for eventual handover to ESB Networks as the transmission asset owner and operated by Eirgrid as the Transmission System Operator. The station will be named Aungierstown 110kV Station and will facilitate two number transmission connections to a new customer MV substation located adjacent to the site. It is intended to connect the Castlebagot 220kV substation into Aungierstown 110kV Substation via two new 110kV underground cable connections, creating the Aungierstown – Castlebagot 110kV circuit. This will be achieved

by installing 2 No. new circuit 110kV cable from Aungierstown into the Castlebagot 110kV GIS building within the Castlebagot 220kV Substation.

4. CONSTRUCTION MANAGEMENT PLAN

4.1 Proposed site works

The development will consist of the construction of 110 kV GIS building for connection to the transmission system, incorporating relay room, battery room, workshop and storage room, the construction of 2 No. transformer bunds, construction of 2 No. 110 kV cable circuits connecting Aungierstown substation to Castlebagot substation, road entrance and exit.

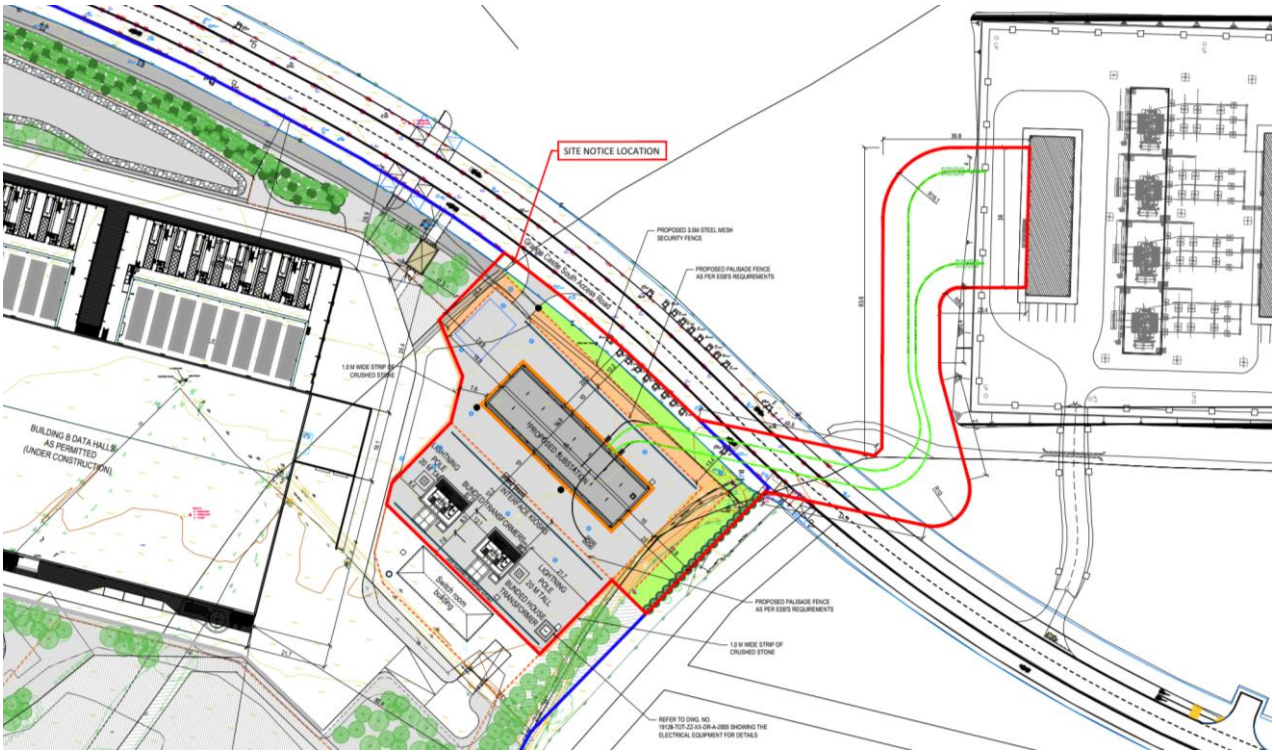


Figure 2: Development Layout

4.2 Extent of Works

The construction works will involve an indicative sequence of works, with a brief description outlined below. STL will clearly outline works which impact public spaces and thoroughfares within the Construction Management Plan that shall be submitted as part of the planning process.

4.3 Hoarding, site set-up and Formation of site access / egress points

The site boundary for the substation and compound works will be enclosed with Heras fencing or chain link fencing to secure the site. Fencing panels will be maintained and kept clean for the duration of the project.

For the construction of the circuit route to connect into the existing Castlebaggot 220kV substation, site fencing will be erected to segregate the works area from the public and traffic. The site fencing will be inspected and maintained daily to ensure public and construction safety.

This will involve erecting the fencing around the proposed site perimeter in line with the finished development description.

A construction materials compound and parking area will be facilitated within the wider Data Center site confines. The location of this compound is highlighted within the Construction Management Plan.

STL will be responsible for the security of the site. STL will;

- Operate a Site Induction Process for all site staff
- Ensure all site staff shall have current 'Safe Pass' cards and CSCS plant operator cards where relevant
- Install adequate site hoarding to the site boundary
- Maintain site security staff at all times
- Install access security in the form of gates for staff
- Separate public pedestrian access from construction vehicular access
- Ensure restricted access is maintained to the works and prevent access to unauthorised persons
- Provide appropriate site welfare and personnel accommodation including canteens on site. Ensure that any planned activities do not adversely impact on adjacent residences

4.4 Site clearance

Site clearance material will be stored onsite and used onsite for landscaping, with all excess materials to be removed from site and disposed of in a licenced landfill

The following is a high-level method statement for the site clearance of the building;

- Establish a site set-up and welfare facilities
- Carry out a detailed services survey of the site to identify all buried services, determine what services are live, redundant and potentially serve neighbouring properties.
- No anticipated necessary services diversions or decommissioning works
- Carry out a soft strip of the footprint of the Aungierstown 110 kV Substation compound to remove topsoil for landscaping use on site

4.5 Bulk Excavation

The footprint area of the substation and compound construction will involve the excavation of approximately 11,250m^3 of material. The construction and installation of the 2 circuits connecting into the existing 220kV Castlebaggot substation will involve the excavation of approximately 1,050m^3 of material. All sub-surface works shall comply with applicable planning conditions.

4.6 Construction Sequence of Substructure

The nature and type of the proposed development with its construction indicates that to prevent any potential risk of groundwater intrusion during the excavation of the building foundations and Transformer bunds that pumps will be maintained on site to facilitate any localised dewatering requirements through appropriate silt containment tanks (indicative method in photo below) in accordance with Department of Environment code of practice. The concrete works will involve concrete deliveries to site and adequate wash-down facilities will be provided for the concrete wagons appropriate to current code of practice.

Image 1: Silt Buster

4.7 Construction Sequence of Superstructure

The construction of the superstructure will involve sequencing of activities and various construction methodologies to deliver the Contract. The nature of the building, the column grid and economic factors, indicate a simple methodology with the installation of the steel frame and subsequent cladding. Scaffolding will not be required for the majority of the external envelope sequence, MEWPs and mobile cranes will be used.

The following outlines a general construction sequence for the superstructure:

4.7.1 Building Structure:

- Construction of the foundation pads
- Construction of Level 0 floor slab & cable basement

4.7.2 Envelope / Cladding:

- Commencement of steel works to full extent of roof and side envelopes, advancing of cladding behind the structure.
- Large MEWPs will be used to install façade cladding.

4.7.3 Mechanical & Electrical fit-out:

- First fix will commence at each area behind structure.
- This will be followed by the second fix and the final connections.
- Installation and build of GIS HV Switchgear

4.7.4 Fit-out:

- Initial installation of internal walls when cladding is complete, and floor is weather tight.
- Installation of equipment and associated connection to services;
- Completion of finishes.

4.7.5 Commissioning:

- The final commissioning period will commence once fit-out is complete.

4.7.6 Landscaping & Road Infrastructure:

- Entrance and access roads
- Formation of berms and other landscaping requirements
-

The above is an indicative construction sequence. It is envisaged that a few mobile cranes will be required to accommodate the construction works for the distribution of reinforcing steel, concrete skips, concrete formwork elements and general building materials. STL will ensure all necessary licences from the Local Authority are obtained where required. All lifting will be coordinated by a qualified AP.

4.8 Construction Sequence of Connecting Cable Circuits

The construction and installation of the connecting cable circuit will be carried out in several stages to systematically construct the circuit route. The initial stage will be to confirm the route selection and design. Once confirmed, construction of the duct trenching will be phased into manageable sections particularly where the duct crosses the road and temporary traffic management is required. On completion the ducts will be tested and cable pulled into their final position.

The construction methodology is detailed within the following sections below:

4.8.1 Circuit Route Confirmation:

To confirm the suitability of the circuit route, the initial stages will involve obtaining available existing utility records and drawings from utility companies as well as completing site surveys (both topographical and ground penetrating radar surveys). Subsequent to this several trial holes and slit trenches will be performed to obtain accurate locations and depths of existing utilities. This will allow for confirmation of route feasibility and also mitigate potential issues that may occur during construction.

Where required temporary traffic management measures will be implemented in line with the relevant standards and regulations as noted within Appendix A2.

Trail holes and slit trenches will be constructed using an excavator and hand digging where required in accordance with safe work procedures and HSA Code of Practice for Avoiding Danger From Underground Services.

4.8.2 Trench Excavation and Ducting install

- Work areas and trenching sections will be divided into several phases to allow for manageable work areas and also to accommodate temporary traffic management measures as noted in Appendix B.
- Site fencing will be erected and maintained to secure the perimeter of the work area and segregate works from the public and traffic
- All surveying, CAT scanning and trial holes will be carried out in advance of the works.
- Sawcut (where appropriate) and remove the existing surface
- All trenching will be constructed using an excavator and hand digging where required in accordance with safe work procedures and HSA Code of Practice for Avoiding Danger From Underground Services. Trenches will be excavated with stable sloping, benching where required and a suitable access and egress point. A suitable pump will be available on site and installed if groundwater is encountered to ensure trench stability and worker safety. All trenching will be constructed in accordance with guidance outlined within the Environmental Impact Assessment included within this application. Particular attention will be provided to the outlined requirements while working on the existing stream culverts crossing as well as in close proximity to the existing stream.
- Where existing utilities are encountered along the route and require supporting in place, the following process will be implemented. Note that 2 stream culvert crossings have been identified along the route:
    - Exploratory works will be carried out to assess existing utilities and/or culverted structure.
    - Where required Temporary Works Designs and Certificates will be completed and confirmed by the PSDP. The temporary works design will be installed as specified. Currently envisaged that the support of the existing stream culverts will require steel beams with support strapping to protect in place
    - Excavate and hand dig below existing utilities and culverts to required depth.
    - Install ducting trench as described below.
    - Reinstate backfill and surrounding material to specified requirements to ensure underside of utilities and culverts are fully supported for load bearing purposes on completion
- Ducting, bedding, surrounding fill material, warning marker boards and tape will be installed as per design in accordance with Eirgrid specification while maintain safe clearance from existing utilities.
- Chambers and sandpits to be installed as per design in accordance with Eirgrid specifications
- Trench will be backfilled with suitable material and surface finishes will be returned to original state.

4.8.3 Cable Installation:

- The entire installed duct route will be cleaned, tested and roped to ensure suitability
- Cables will be pulled from substation to substation through the duct by setting up cable drums at one end and pulling the cables with a winch set up at the other.
- Sandpits, where required, will be completed and surface finishes returned to original state.

5. ENVIRONMENTAL ISSUE

5.1 Dust

Dust prevention measures shall be included for control of any site airborne particulate pollution as per Department of Environment and relevant code of practice. STL shall continuously monitor dust over the variation of weather and material disposal to ensure the limits are not breached throughout the project. It is proposed to use a water spray machine in order to contain dust on site, if required. This dust suppression method is very successful in containing dust on-site. Stockpiles of relevant materials shall also be covered or capped if they are likely to release airborne dusts

5.2 Wheel debris

Given the volumes of construction traffic generated by the Site Works STL shall ensure that:

- A wheel wash shall be constructed and located within the site confines
- All vehicles will be required to pass through the wheel wash before exiting the site to the public road network. The wheel wash will be kept in place and used throughout the construction works. If conditions require, a manned power washer shall be put in place to assist the wheel wash system
- A road sweeper shall be utilised at particular time's during the groundworks if deemed necessary and Water supplies shall be recycled for use in the wheel wash. All waters shall be drained through appropriate filter material prior to discharge from the site as per 4.6 above.

5.3 Noise

STL shall implement measures to eliminate where possible and reduce noise levels where not. The proposed development shall comply with BS 5228 "Noise Control on Construction and open sites Part 1: Code of practice for basic information and procedures for noise control" (or such further limits as imposed by the planning authority).

5.4 Harmful Materials

Harmful materials shall be stored on site for use in connection with the construction works only. These materials shall be stored in a controlled manner as per guidelines and code of practice.

This may include paints, specialist floor coatings, Gas for HV switchgear and oil for power transformers. These shall be delivered on a JIT (just in time) basis and stored in protected containers.

Where on site fuelling facilities are used there shall be a bunded filling area using a double bunded steel tank at a minimum. An emergency spill kit shall be retained on site and located adjacent to any fuel storage.

No fuels will be stored near to the adjacent ditches as part of the works.

5.5 Storage of Spoil

No spoil, debris or rubble will be stored within 20m of any site perimeter

5.6 Existing Stream Culvert Crossings

Existing stream culverts will be clearly identified on site via exploratory works.

Where supporting of existing stream culverts is required, a temporary works design will be implemented as noted in Section 4.8.2 previously.

All environmental protection measures to the stream will be implemented as outlined within the Environmental Impact Assessment included within this application.

6. TRAFFIC MANAGEMENT ARRANGEMENTS

6.1 Purpose

The purpose of this section of the document is to outline the traffic control arrangements that will be in place throughout the works to co-ordinate all interface with public traffic.

6.2 Implementation

Key to the implementation of this CTMP is the dedication of an on-site construction manager who will regularly liaise with and update the Client's resident engineer (RE) and associated team on all environmental and construction programming issues relating to the site. All site personnel are charged with following good practice and encouraged to provide feedback and suggestions for improvements. All site personnel are also required to ensure compliance with the requirements of the site's CTMP.

At present the specific duty for liaison with the client resident engineer, Pinnacle, is Laura Bowens Mission Critical Project Manager who will co-ordinate discussions with the local authority roads engineer any works which affect any public roads or thoroughfares.

Other measures that shall be in place to aid in the implementation of the CTMP during the course of the works will include:

- Ongoing discussion regarding traffic management arrangements at the weekly site progress meeting, weekly safety meeting and subcontractor meetings.
- Development and review of method statements for invasive works, complex or higher risk works or works affecting traffic routes.
- The convening of the daily whiteboard meeting which is attended by nominated supervisors from all contractors. The purpose of the whiteboard meeting is to co-ordinate dynamic elements of the works which includes all traffic management and deliveries, or activities that affect traffic routes.
- Drafting of Safe Plan of Action documents for all trades and tasks.
- Induction for all new staff attending the project which has specific mention of traffic management arrangements, speed and parking restrictions, and requirements for transporting of materials on site.

6.3 Scope

The objective of this CTMP is to ensure that the residual impacts to the public road network during the construction phase of the project which have been identified in the application documentation are minimised and that transport related activities are carried out as safely as possible and with minimum disruption to other road users.

The CTMP has also been prepared for the purpose of identifying appropriate and safe methods of access for construction traffic to the Aungierstown 110kV Substation building and surrounding facilities. This CTMP describes the traffic management for the transportation of construction materials, equipment and personnel along the public road network to facilitate the construction of the proposed development. Light vehicles, such

as cars and vans, will be used by site operatives travelling to and from the site. Heavy Construction Vehicles (HCV) will be required to deliver general construction materials, such as concrete, to the site.

This CTMP remains a live document that will be reviewed by STL and expanded upon, where necessary, throughout the construction phase of the project, in order to ensure a comprehensive, effective and transparent CTMP is available and implemented through all stages of the construction.

6.4 Vehicular Access

The Aungierstown 110 kV Substation will be accessed from the Grangecastle Business Park South access road. This single carriageway stub is approximately 8m wide.

There is provision for 20 construction car parking spaces on site as part of the works. This level of parking is sufficient for all employee and visitor parking requirements.

Provision will be made for a HGV turning area in order to allow HGV's to make deliveries to the site in a safe and efficient manner and exit the site in a forward gear.

6.5 Pedestrian/Cyclists

Recent upgrade to the R134 and the Baldonnell Road has provided for separate cycle lane and footpath.

Appropriately designed cycle parking facilities will be provided close to the entrance of the proposed Aungierstown 110 kV substation.

The design and layout of the proposal has been prepared to fully comply with the rigorous design standards and specifications applicable to this form of development. The applicant has drawn upon considerable experience in the design and implementation of such proposals.

6.6 Temporary Traffic Management for Circuit Route

As noted previously in Section 4.8, temporary traffic management will be required when installing ducting underneath the existing road.

These temporary traffic measures will be implemented in line with the relevant standards and regulations as noted within Appendix B.

6.7 Overview

The construction site will be organised so that vehicles and pedestrians using site routes are segregated and can move around safely. The routes will be suitable for the persons or vehicles using them, in suitable positions and sufficient in number and size. This is so that incidents can be prevented by the effective management of transport operations throughout the construction process.

During construction, the pedestrians and vehicles can be kept apart by management of the following:

Entrances and exits - separate entry and exit gateways for pedestrians and vehicles will be provided at the main security turnstile;

Walkways - firm, level, well-drained pedestrian walkways that take a direct route will be provided both to the compound and site accommodation areas, and then to the front entrances to the main site buildings and surrounds.

Crossings - walkways cross roadways are clearly signed and lit crossing point where drivers and pedestrians can see each other clearly. As these crossings change in line with the progress of construction this will be outlined in advance through the site communications mechanism

Visibility - drivers driving out onto public roads will have full visibility in both directions and the existing entrance has a visibility splay to enable this. No fencing or construction materials will be permitted to block

visibility and site lighting shall be provided to ensure pedestrians who may be crossing the site entrance can be seen.

Obstructions –walkways shall not be blocked so that pedestrians have to step onto the vehicle route. Barriers will be installed to segregate pedestrians and vehicles. There is no envisaged construction activity of the roads or pathways in Grangecastle Business Park South and as any construction vehicles using these roads shall be for the purposes of entering or existing the site only.

Vehicle movement will be minimised on site due to the restricted areas in which the STL will have to work. This will be minimised by management of the following:

- Providing car and van parking for the workforce and visitors away from the work area in the site compound.
- Only vans or construction vehicles which are necessary for construction will be permitted into the site footprint. Vans etc. which can be unloaded of their construction materials will be advised by security that they must unload and then return to the construction compound.
- All vehicular access to the site will be controlled at the manned security gate and security will give instruction to all vehicle drivers.
- Storage areas will be planned Plan storage areas so that delivery vehicles do not have to cross the site.
- People who direct vehicle movements (banksmen) must be trained and authorised to do so.
- Making sure that all drivers and pedestrians know and understand the routes and traffic rules on site. (induction & security guard)
- Use standard road signs where appropriate using colours as detailed in Chapter 8 of the Department of Environment manual.
- Providing induction training for drivers, workers and visitors and send instructions out to visitors before their visit.

This management will be greatly assisted by utilising the following:

Banksmen - who are appointed to control manoeuvres and who are trained in the task. These shall be sourced from the appropriate contractors on site.

Clothing - pedestrians on site will wear high-visibility clothing as well as other relevant P.P.E.

Gate Security- to direct/summon banksmen from the worksite to guide long load or relevant vehicles

Speed limits- speed limits to be restricted on site for all vehicles. The site speed limit on the Aungierstown 110 kV Substation site is 15kmph and this shall be signed on site.

7. ENVISAGED CONSTRUCTION TRAFFIC GENERATION

7.1 Introduction

As part of the development of the CTMP, the traffic generation is calculated based upon similar construction activities which would have taken place in previous years on comparable developments. Staffing levels, material deliveries and envisaged plant requirements, and the associated access and traffic and transport impacts, are calculated based on similar project activities.

Automatic Traffic Counts were carried out as part of the design and planning stages to ascertain the typical existing traffic volumes currently using the roads which will be potentially impacted by the construction of the Aungierstown 110 kV Substation development. Details of the Automatic Traffic Counts are detailed in Traffic Assessment that is submitted to South Dublin County Council as part of the original planning application.

7.2 Days and Hours of Construction/Delivers

All deliveries will be advised, via the necessary delivery notification form, to the STL Project Manager/Traffic Management Co-ordinator at least 1 day in advance with specific times identified. These are collated and held

in a diary by the relevant site manager who will manage the deliveries daily. The daily whiteboard meeting will also be a pivotal element of the co-ordination process for managing site deliveries. The relevant site manager will highlight any clashes and anticipated busy periods to streamline the processing of deliveries.

On arrival at the agreed locations, drivers must wait at security in accordance to the relevant site signage. Security will contact the relevant site manager and the delivery will then be escorted to the appropriate location for unloading by the contractor's Banksmen.

Unloading will be carried out at one of the material storage areas until the delivery is scheduled to be immediately loaded into the building. All deliveries, where possible, must be able to be unloaded by forklift or mechanical means.

Times and deliveries will be restricted 7:00 hours on weekday and 9.00 hours on Saturdays nor after 19:00 hours on weekdays and 13:00 hours on Saturdays as per the South Dublin County Council planning conditions. No delivers will be scheduled for Sundays or Bank Holidays. All access roads used by contractors will be monitored for mud and any construction materials and cleared using a shovel and broom and if required a mechanical road sweeper. Vehicles exiting the site will do so via a wheel wash.

7.3 Traffic Generation: Site Clearance, Proposed Material Deliveries Temporary Construction Material Storage Yard, Construction

The construction of the temporary construction material storage yard and parking area inside the site gate has the potential to generate traffic associated with its construction. It is anticipated that up to 650 HGV deliveries of plant and equipment to/from the temporary construction material storage yard during the peak of the construction. This would consist of 100 HGV movements on average a month from March 2021 until September 2021 reducing to 10 HGV movements on average per month afterwards. It is also envisaged that there will be approx. 10 van deliveries at peak of construction which will level to 6 per day during off peak times (testing & commissioning, fit out stage).

The majority of traffic generated delivering materials during the project are envisaged to occur during the following construction elements:

- Site clearance
- Laying of internal road
- Concrete, steel, roofing and cladding material deliveries to site during the construction of structures

For the construction of the proposed development it will be necessary to transport the construction materials, equipment and personnel to and from the work areas.

This includes (but is not limited to):

- Establishing the construction site compounds
- The importation of relevant construction materials and equipment

Materials such as steel and concrete required in the construction of the development are likely to be sourced from manufacturers that are not situated within close vicinity of the proposed development. Accordingly, a temporary construction material compound which is located inside the security gate will be the source destination from which construction traffic, particularly for steel deliveries, will be generated.

Vehicles will access the road network from the temporary construction material storage yard using the R136 via the N7/M50.

The total number of vehicular traffic movements between the temporary construction material compound and construction site location will be determined by STL based on the phasing of the proposed development but as all movements are internal to the site this will not have any residual effect on public traffic.

Arrivals and departures to the proposed temporary construction material compound are to be carried out in as few vehicle movements as possible in order to minimise potential impacts on the road network.

7.4 Staff Levels – Enabling Works

At the peak of construction, it is anticipated that there will be a requirement for approximately 60 construction workers. This will vary over the life time of the project.

Arrivals and departures to the sites are to be carried out in as few vehicle movements as possible to minimise parking requirements and potential impacts on the local road network. This will be executed by the availability of a significant construction compound which allows bulk storage. The impact will be significantly less than the operational impact of the constructed development.

There are a number of Dublin Bus services located within 1km of the site which take approximately twelve minutes to reach at normal walking pace.

There are two bus stops adjacent to the Pfizer site within Grange Castle Business Park, which are within a walking distance of 1km (No. 13) and 1.1km from the site (No. 68), which has an associated walking time of around 12 minute and 14 minutes respectively. Dublin Bus services 13 and 151 serve these bus stops, with further details shown in Table 1 below.

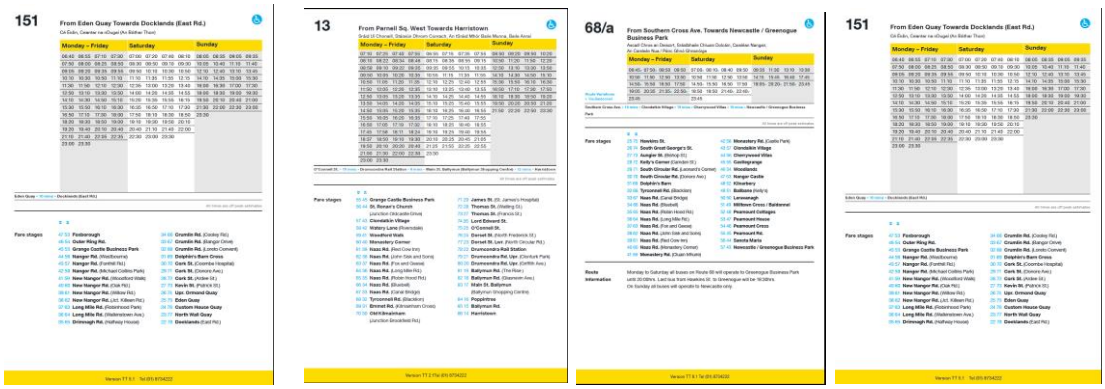


Table 1: Existing Dublin Bus services to Grange Castle Business Park

The above tables illustrate that there are regular services on all days which route to the existing bus stops. Additionally, a bus terminus has been constructed within the Grange Castle Business Park to facilitate the operation of the No.13 service.

Figure 3: Bus stop locations

Dedicated bus lanes are provided in both directions on the R136 Outer Ring Road and the R134 Nangor Road east of the Grange Castle Business Park Roundabout. These routes are part of Dublin's Quality Bus Corridor (QBC) network.

The nearest railway line runs east-west approximately 600m north of the site. Intercity services to Cork and Limerick run on this line, as well as commuter railway services to Portlaoise. The nearest stations are Adamstown, approximately 2.5km to the north-west of the site and Clondalkin Fonthill approximately 6km to the north-west of the site. These stations are served by around 20 suburban commuter trains in each direction during weekdays.

Given direct pedestrian linkage to public transport surrounding the development, there is the opportunity to cultivate increased bus and train patronage by workers travelling to/from the site and this is being carried out through contractor consultation.

For staff that choose to travel to site using cars or other motorised vehicle a vehicle a pooling system will be put in operation by STL through pre-works consultation with the subcontractors. Such measures shall be adopted in order to reduce traffic levels on the local road networks.

Parking of construction staff vehicles on the public road network will not be permitted. The public road network surrounding the site will be included as part of the daily site EHS inspection. Offenders will be required to relocate their vehicles immediately.

8. CONSTRUCTION TRAFFIC MANAGEMENT PLAN

8.1 Introduction

This section outlines the working content of the Construction Traffic Management Plan (CTMP).

The CTMP shall be termed a "Live Document", such that any changes to construction programme or operations can be incorporated into the CTMP.

STL is contractually required to ensure that the elements of the planning stage CTMP are incorporated into the construction stage CTMP and any commentary from the Local Authority or Planning Office is also incorporated into the Construction Stage CTMP. This has been carried out and any revisions are tracked. STL shall also ensure compliance with the CTMP and monitor the effectiveness of the CTMP throughout the construction process by regular site inspection, observation and testing of the safety controls.

The following headings shall be used to guide persons involved in implementing or revising this plan to ensure all requirements are afforded appropriate attention.

- Site Access & Egress
- Traffic Management Signage
- Routing of Construction Traffic / Road Closures
- Timings of Material Deliveries to Site
- Traffic Management Speed Limits
- Road Cleaning
- Road Condition
- Road Closures
- Enforcement of Construction Traffic Management Plan
- Details of Working Hours and Days
- Details of Emergency plan
- Communication
- Construction Methodologies
- Particular Construction Impacts

These items are explained in detail in the remainder of this section of the report.

8.2 Site Access and Egress

All construction vehicles and site personnel will be instructed to access the site via the R134 whichhas a priority T junction with the Baldonnel road leading to the site entrance on Grangecastle Business Park South access road.

The contractor shall provide advanced warning signs, in accordance with Chapter 8 of the Department of the Environment's Traffic Signs Manual 2010, on the approach to proposed site access locations prior to construction. This will be carried out in consultation with the Grangecastle Business Park South management company.

There will be Heras fencing, or chain link fencing secured to a minimum height of 2 metres alongside the construction site areas.

This fence will be checked daily and maintained as necessary and it will be the responsibility of the Site Manager to ensure that the gates are opened and locked each working day to ensure the site is not left open and unattended at any time.

Figure 4: Site Entrance Layout

8.3 National Road Network

Access to the site along the National Road Network will be via the N4 and N7 and from the M50. It is anticipated that the majority of construction related traffic will travel along the N4/N7.

8.4 Regional & Local Road Network

The majority of access / egress to proposed sites shall be facilitated from the local road networks. To mitigate against possible restrictions in visibility requirements STL shall ensure there is full site lighting at the site entrance to ensure full visibility is achieved. No adjacent residences are present, but the lighting shall be positioned so it does not create a nuisance of pollution to adjacent premises. The site entrance will be constructed to allow straight access for vehicles particularly oversize load vehicles, so vehicles do not slow or stall when entering the site thus posing an issue to other roads users.

8.5 Construction Material Storage Compound

As noted previously, it is proposed to construct a temporary construction material storage compound just inside the site security gate.

Access to the temporary construction storage will be through the site security gate which is approx. 150m from the entrance to Grangecastle Business Park South. STL shall ensure the access route to the compound is kept clear of materials at all times.

8.6 Traffic Management Signage

STL shall erect traffic management signage both internal and external to the site to coordinate traffic movements and outline any parking, speed or lay down restrictions that exist to ensure traffic on public thoroughfares is co-ordinated. Any traffic management signage that is erected on public thoroughfares such as the internal roads of the Grangecastle Business Park South will be erected in line with the specifications detailed in Chapter 8 of the Department of Environment road signs manual and with the agreement of the Grange Castle Management company.

Where delivery route and works signage are required, particularly permanent signage, STL shall consult with the relevant authorities for identifying and agreeing signage requirements.

Proposed signage may include warning signs to provide warning to road users of the works access / egress locations and the presence of construction traffic. All signage shall be provided in accordance with the Department of Transport's Traffic Signs Manual, Chapter 8 Temporary Traffic Measures and Signs for Roadworks.

http://www.dttas.ie/roads/publications/english/traffic-signs-manual-2010

In summary, the contractor will ensure that the following elements are implemented:

- Consultation with the relevant authorities for the purpose of identifying and agreeing signage requirements
- Provision of temporary signage indicating site access route and locations for contractors and associated suppliers
- Provision of general information signage to inform road users and local communities of the nature and locations of the works, including project contact details.

8.7 Routing of Construction Traffic

As outlined above, a temporary construction material storage yard will be utilised for the proposed development. Deliveries to the temporary construction material storage will be permitted to access the road network using the R134 via the N4/N7.

Traffic leaving the storage yard will turn left onto Grangecastle Business Park South access road then left or right onto R134 to the N4/N7.

It is envisaged that construction works travelling to the site will do so via the primary road network i.e. N4/N7 with access to Grangecastle Business Park South via the R134.

The use of local roads will be minimised as much as possible, particularly to avoid / minimise the encountering of narrow road widths, poor visibility and unsuitable bearing capacities.

8.8 Programming

To reduce impacts on local communities and residents adjacent to the proposed sites, it is proposed that:

- STL will liaise with the management of other construction projects and the Local Authorities to co-ordinate deliveries.
- STL will schedule deliveries in such a way that construction activities and deliveries activities do not run concurrently e.g. avoiding pouring of concrete on the same day as material deliveries to reduce the possibility of numbers of construction delivery vehicles arriving on site simultaneously, resulting in build-up of traffic on road network.

- STL will schedule deliveries to and from the proposed temporary construction materials storage compound such that traffic volumes on the surrounding road network are kept to a minimum.
- HGV deliveries to the Aungierstown 110 kV Substation site will be suspended in consultation with SDCC on the days of any major event in the area that have the potential to cause larger than normal traffic volumes.
- STL will interact with members of the local facilities and greater community to ensure that deliveries will not conflict with sensitive events such as funerals.
- HGV deliveries will avoid passing schools on the R120
- Times and deliveries will be restricted 7:00 hours on weekday and 9.00 hours on Saturdays nor after 19:00 hours on weekdays and 13:00 hours on Saturdays as per the South Dublin County Council planning conditions. No delivers will be scheduled for Sundays or Bank Holidays.

8.9 Recommended Traffic Management Speed Limits

Adherence to posted / legal speed limits will be emphasised to all staff / suppliers and contractors during induction training.

Drivers of construction vehicles / HGVs will be advised that vehicular movements in locations, such as local community areas, shall be restricted to 50 km/h. Special speed limits of 30 km/h shall be implemented for construction traffic in sensitive areas. Such recommended speed limits will only apply to construction traffic and shall not apply to general traffic. It is not proposed to signpost such speed limits in the interest of clarity for local road users.

8.10 Road Cleaning

STL will carry out road sweeping operations to remove any project related dirt and material deposited on the road network by construction / delivery vehicles. A wheel wash is available at the site entrance however the road sweeping will complement the operations of the wheel wash where necessary. Road Sweepers will dispose of material following sweeping of road network, to licensed waste facility.

8.11 Vehicle Cleaning

STL will provide wheel washing facilities, (wheel bath indicative below) and any other necessary measures to remove mud and organic material from vehicles exiting from the site. In addition, the cleaning of delivery trucks such as concrete delivery trucks shall be carried out at the material storage compound at the concrete wash out area and shall not be undertaken off site.

Image 2: Wheel Wash

8.12 Road Condition

The extent of the heavy vehicle traffic movements and the nature of the payload may create problems of:

- Fugitive losses from wheels, trailers or tailgates
- Localised areas of subgrade and wearing surface failure

STL shall ensure that:

- Loads of materials leaving each site will be evaluated and covered if considered necessary to minimise potential dust impacts during transportation. This shall be carried out by gate security personnel.
- The waste and groundworks contractor shall take all reasonable measures while transporting waste or any other materials likely to cause fugitive loses from a vehicle during transportation to and from site, including but not limited to:
- Covering of all waste or material with suitably secured tarpaulin/ covers to prevent loss
- Utilisation of enclosed units to prevent loss.
- The roads forming part of the haul routes around the site will be monitored visually throughout the construction period and a truck mounted vacuum mechanical sweeper will be assigned to roads along the haul route as required.
- Throughout the course of the construction of the proposed development, on-going visual inspections and monitoring of the haul roads will be undertaken to ensure any damage caused by construction traffic is recorded and that the relevant local authority is notified. Arrangements will be made to repair any such damage to an appropriate standard in a timely manner such that any disruption is minimised.

8.13 Road Closures

During the works, it is not envisaged that road closures will be required. However, if any are required STL will design to Chapter 8 of Department of Environment roadworks manual communicate and follow the SDCC requirements.

8.14 Enforcement of Construction Traffic Management Plan

All project staff and material suppliers will be required to adhere to the construction stage CTMP. As outlined above, STL shall agree and implement monitoring measures to confirm the effectiveness of the CTMP.

8.15 Details of Working Hours and Days

Times and deliveries will be restricted 08:00 hours on weekday and 9.00 hours on Saturdays nor after 19:00 hours on weekdays and 13:00 hours on Saturdays. No delivers will be scheduled for Sundays or Bank Holidays. All access roads used by contractors will be monitored for mud and any construction materials and cleared using a shovel and broom and if required a mechanical road sweeper. Vehicles exiting the site will do so via a wheel wash.

8.16 Emergency Procedures During Construction

STL will ensure that unobstructed access is provided to all emergency vehicles along all routes and site accesses and will provide to the local authorities and emergency services, contact details of the contractor's personnel responsible for construction traffic management. In the case of an emergency the following procedure shall 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 Site Team Management Team and the Safety Officer;

All construction traffic shall be notified of the incident (where such occurs off site); Where required, appointed site first aiders will attend the emergency immediately; and

The site Appointed Officer will ensure that the emergency services are in route.

8.17 Communication

STL shall ensure that close communication with the relevant local authorities and the emergency services shall be maintained throughout the construction phase. Such communications shall include:

- Where works are likely to affect normal road traffic:
- Submissions of proposed traffic management measures for comment and approval to the local authority;
- On-going reporting relating to the condition of the road network and updates to construction programming; and
- Information relating to local and community events that could conflict with proposed traffic management measures and construction traffic to implement alternative measures to avoid such conflicts.
- STL shall also ensure that the local community are informed of proposed traffic management measures in advance of their implementation if and where they arise.

8.18 Particular Construction Impacts

STL is aware of the following particular issues in relation to the construction of the proposed development.

- **National, Regional and Local Road Crossings** - STL shall include in the construction stage CTMP, proposed traffic management measures to be utilised for the installation and removal of guarding across National, Regional and Local Roads, if applicable. At this point no impact on any public road is envisaged as part of the design.
- Such plans shall be made available to the relevant local authorities, National Roads Authority and relevant stakeholders for consideration and approval. Such plans shall include for all stages as follows:
    - Pre-Construction Works
    - Site Preparatory Work
    - Construction of Roads
    - Building of Units

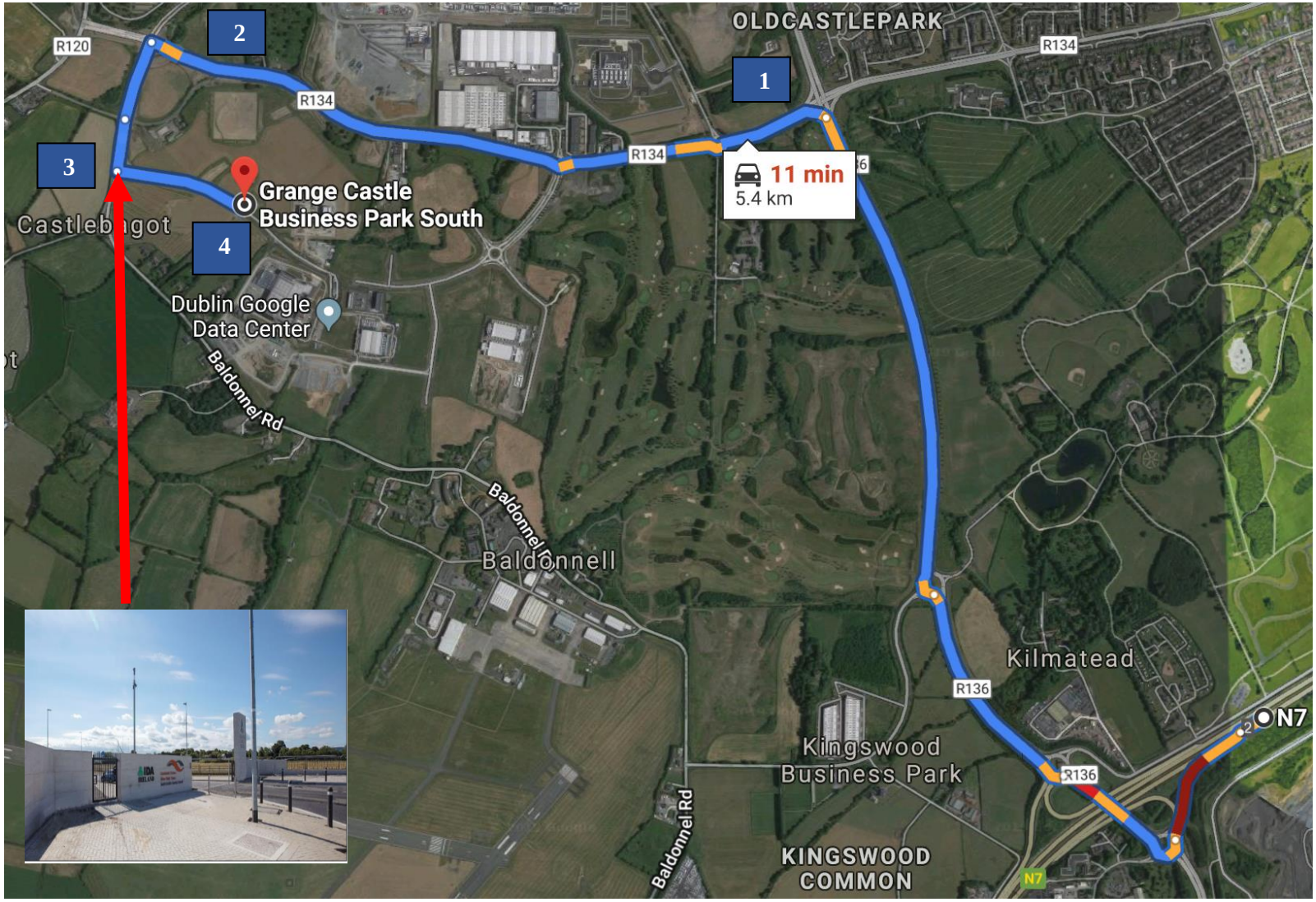
9. CONCLUSION

This Construction Management Plan will form part of the construction contract and is designed to reduce possible impacts which may occur during the construction of the proposed development.

The Construction Traffic Management Plan shall be used by STL as a basis for managing the traffic management arrangements to be implemented on site.

The Client, CyrusOne, shall be responsible for ensuring that the contractor manages the construction activities in accordance with this outline Construction Management Plan and shall ensure that any conditions of planning are incorporated into the Construction Management Plan.

10. A1. APPENDIX A - PROPOSED CONSTRUCTION TRAFFIC ROUTES



11. A2. APPENDIX B - PROPOSED TEMPORARY TRAFFIC MANAGEMENT PLAN FOR CIRCUIT ROUTE

GMC Utilities Group Ltd.,
Millennium Business Park,
Cappagh Road, Finglas West,
Dublin 11.

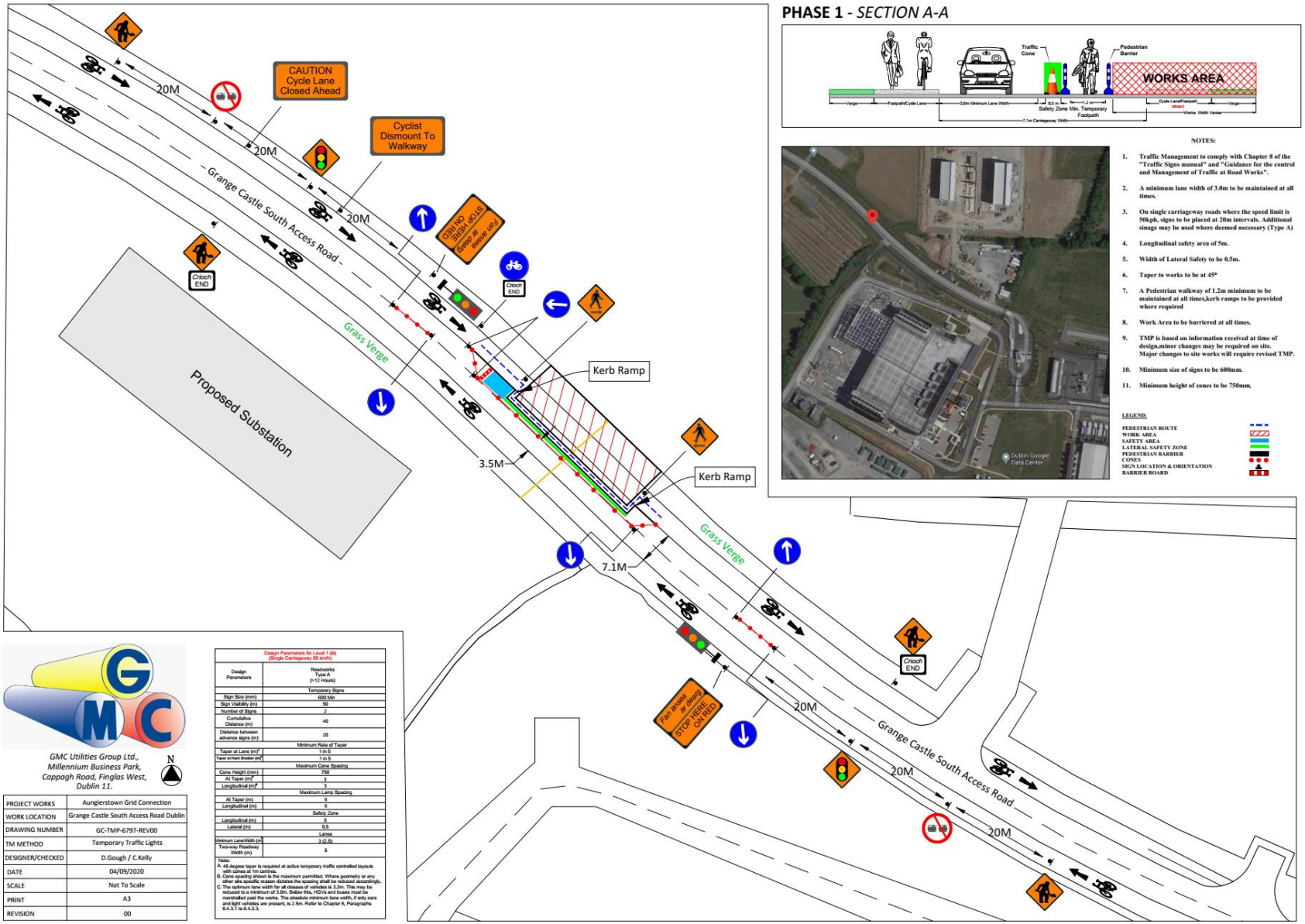
TRAFFIC MANAGEMENT PACK

Project; *Aungierstown Grid Connection*

Grange Castle South Access Road
Dublin

STRUCTURETONE

CyrusOne



PHASE 1 - *SECTION A-A*

NOTES:

1. Traffic Management to comply with Chapter 8 of the "Traffic Signs manual" and "Guidance for the control and Management of Traffic at Road Works".
2. A minimum lane width of 3.0m to be maintained at all times.
3. On single carriageway roads where the speed limit is 50kph, signs to be placed at 20m intervals. Additional sinage may be used where deemed necessary (Type A)
4. Longitudinal safety area of 5m.
5. Width of Lateral Safety to be 0.5m.
6. Taper to works to be at 45°
7. A Pedestrian walkway of 1.2m minimum to be maintained at all times,kerb ramps to be provided where required
8. Work Area to be barriered at all times.
9. TMP is based on information received at time of design,minor changes may be required on site. Major changes to site works will require revised TMP.
10. Minimum size of signs to be 600mm.
11. Minimum height of cones to be 750mm.

LEGEND:

PEDESTRIAN ROUTE
WORK AREA
SAFETY AREA
LATERAL SAFETY ZONE
PEDESTRIAN BARRIER
CONES
SIGN LOCATION & ORIENTATION
BARRIER BOARD

GMC Utilities Group Ltd.,
Millennium Business Park,
Cappagh Road, Finglas West,
Dublin 11.

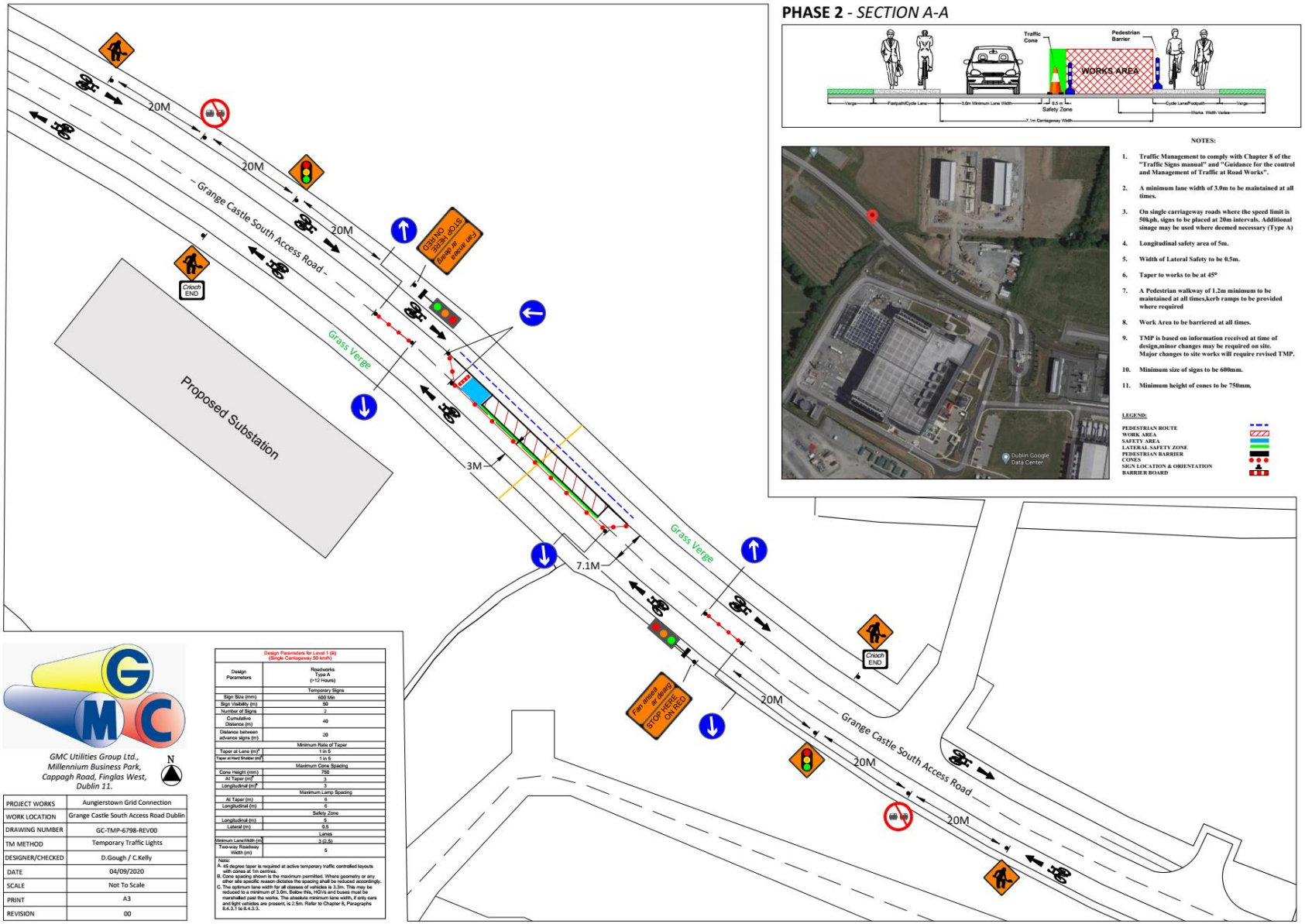
N

PROJECT WORKS	Aungierstown Grid Connection
WORK LOCATION	Grange Castle South Access Road Dublin
DRAWING NUMBER	GC-TMP-6797-REV00
TM METHOD	Temporary Traffic Lights
DESIGNER/CHECKED	D.Gough / C.Kelly
DATE	04/09/2020
SCALE	Not To Scale
PRINT	A3
REVISION	00

Design Parameters for Level 1 (B)
(Single Carriageway 50 km/h)

Design Parameters	Roadworks Type A (>12 Hours)
	Temporary Signs
Sign Size (mm)	600 Min
Sign Visibility (m)	50
Number of Signs	2
Cumulative Distance (m)	40
Distance between advance signs (m)	20
	Minimum Rate of Taper
Taper at Lane (m)*	1 in 5
Taper at Hard Shelter (m)*	1 in 5
	Maximum Cone Spacing
Cone Height (mm)	750
At Taper (m)*	3
Longitudinal (m)*	3
	Maximum Lamp Spacing
At Taper (m)	6
Longitudinal (m)	6
	Safety Zone
Longitudinal (m)	5
Lateral (m)	0.5
	Lanes
Minimum Lane/Width (m)	3 (2.5)
Two-way Roadway Width (m)	5

Notes:
A. 45 degree taper is required at active temporary traffic controlled layouts with cones at 1m centres.
B. Cone spacing shown is the maximum permitted. Where geometry or any other site specific reason dictates the spacing shall be reduced accordingly.
C. The optimum lane width for all classes of vehicles is 3.3m. This may be reduced to a minimum of 3.0m. Below this, HGVs and buses must be marshalled past the works. The absolute minimum lane width, if only cars and light vehicles are present, is 2.5m. Refer to Chapter 8, Paragraphs 8.4.3.1 to 8.4.3.3.



PHASE 2 - *SECTION A-A*

NOTES:

1. Traffic Management to comply with Chapter 8 of the "Traffic Signs manual" and "Guidance for the control and Management of Traffic at Road Works".
2. A minimum lane width of 3.0m to be maintained at all times.
3. On single carriageway roads where the speed limit is 50kph, signs to be placed at 20m intervals. Additional sinage may be used where deemed necessary (Type A)
4. Longitudinal safety area of 5m.
5. Width of Lateral Safety to be 0.5m.
6. Taper to works to be at 45°
7. A Pedestrian walkway of 1.2m minimum to be maintained at all times,kerb ramps to be provided where required
8. Work Area to be barriered at all times.
9. TMP is based on information received at time of design,minor changes may be required on site. Major changes to site works will require revised TMP.
10. Minimum size of signs to be 600mm.
11. Minimum height of cones to be 750mm.

LEGEND:

PEDESTRIAN ROUTE
WORK AREA
SAFETY AREA
LATERAL SAFETY ZONE
PEDESTRIAN BARRIER
CONES
SIGN LOCATION & ORIENTATION
BARRIER BOARD

GMC Utilities Group Ltd.,
Millennium Business Park,
Cappagh Road, Finglas West,
Dublin 11.

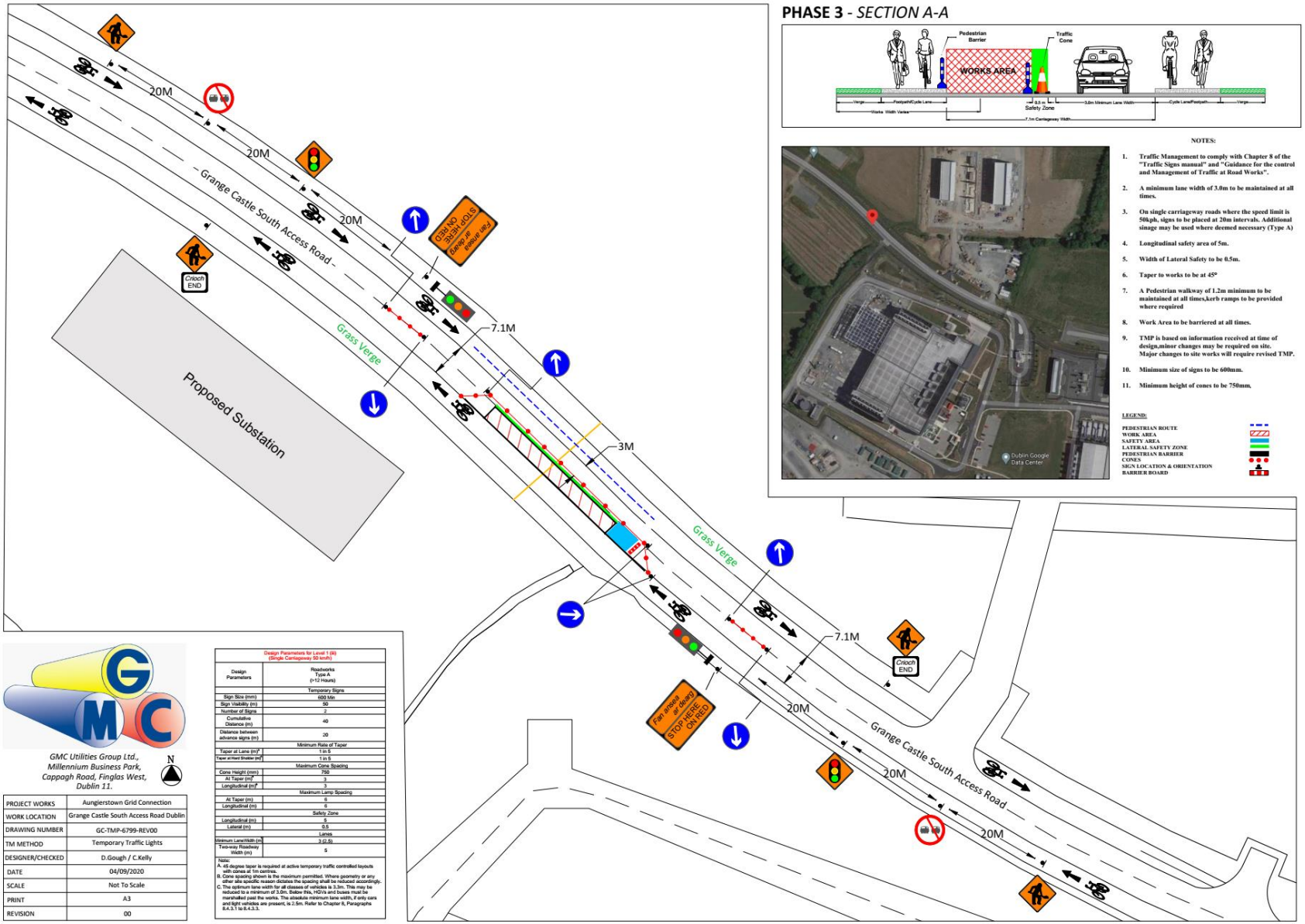
N

PROJECT WORKS	Aungierstown Grid Connection
WORK LOCATION	Grange Castle South Access Road Dublin
DRAWING NUMBER	GC-TMP-6798-REV00
TM METHOD	Temporary Traffic Lights
DESIGNER/CHECKED	D.Gough / C.Kelly
DATE	04/09/2020
SCALE	Not To Scale
PRINT	A3
REVISION	00

Design Parameters for Level 1 (B)
(Single Carriageway 50 km/h)

Design Parameters	Roadworks Type A (>12 Hours)
	Temporary Signs
Sign Size (mm)	600 Min
Sign Visibility (m)	50
Number of Signs	2
Cumulative Distance (m)	40
Distance between advance signs (m)	20
	Minimum Rate of Taper
Taper at Lane (m)[1]	1 in 5
Taper at Hard Shelter (m)[1]	1 in 5
	Maximum Cone Spacing
Cone Height (mm)	750
At Taper (m)[1]	3
Longitudinal (m)[1]	3
	Maximum Lamp Spacing
At Taper (m)	6
Longitudinal (m)	6
	Safety Zone
Longitudinal (m)	5
Lateral (m)	0.5
	Lanes
Minimum Lane/Width (m)	3 (2.5)
Two-way Roadway Width (m)	5

Notes:
A. 45 degree taper is required at active temporary traffic controlled layouts with cones at 1m centres.
B. Cone spacing shown is the maximum permitted. Where geometry or any other site specific reason dictates the spacing shall be reduced accordingly.
C. The optimum lane width for all classes of vehicles is 3.3m. This may be reduced to a minimum of 3.0m. Below this, HGVs and buses must be marshalled past the works. The absolute minimum lane width, if only cars and light vehicles are present, is 2.5m. Refer to Chapter 8, Paragraphs 8.4.3.1 to 8.4.3.3.



PHASE 3 - *SECTION A-A*

NOTES:

1. Traffic Management to comply with Chapter 8 of the "Traffic Signs manual" and "Guidance for the control and Management of Traffic at Road Works".
2. A minimum lane width of 3.0m to be maintained at all times.
3. On single carriageway roads where the speed limit is 50kph, signs to be placed at 20m intervals. Additional sinage may be used where deemed necessary (Type A)
4. Longitudinal safety area of 5m.
5. Width of Lateral Safety to be 0.5m.
6. Taper to works to be at 45°
7. A Pedestrian walkway of 1.2m minimum to be maintained at all times,kerb ramps to be provided where required
8. Work Area to be barriered at all times.
9. TMP is based on information received at time of design,minor changes may be required on site. Major changes to site works will require revised TMP.
10. Minimum size of signs to be 600mm.
11. Minimum height of cones to be 750mm.

LEGEND:

PEDESTRIAN ROUTE
WORK AREA
SAFETY AREA
LATERAL SAFETY ZONE
PEDESTRIAN BARRIER
CONES
SIGN LOCATION & ORIENTATION
BARRIER BOARD

GMC Utilities Group Ltd., Millennium Business Park, Cappagh Road, Finglas West, Dublin 11.

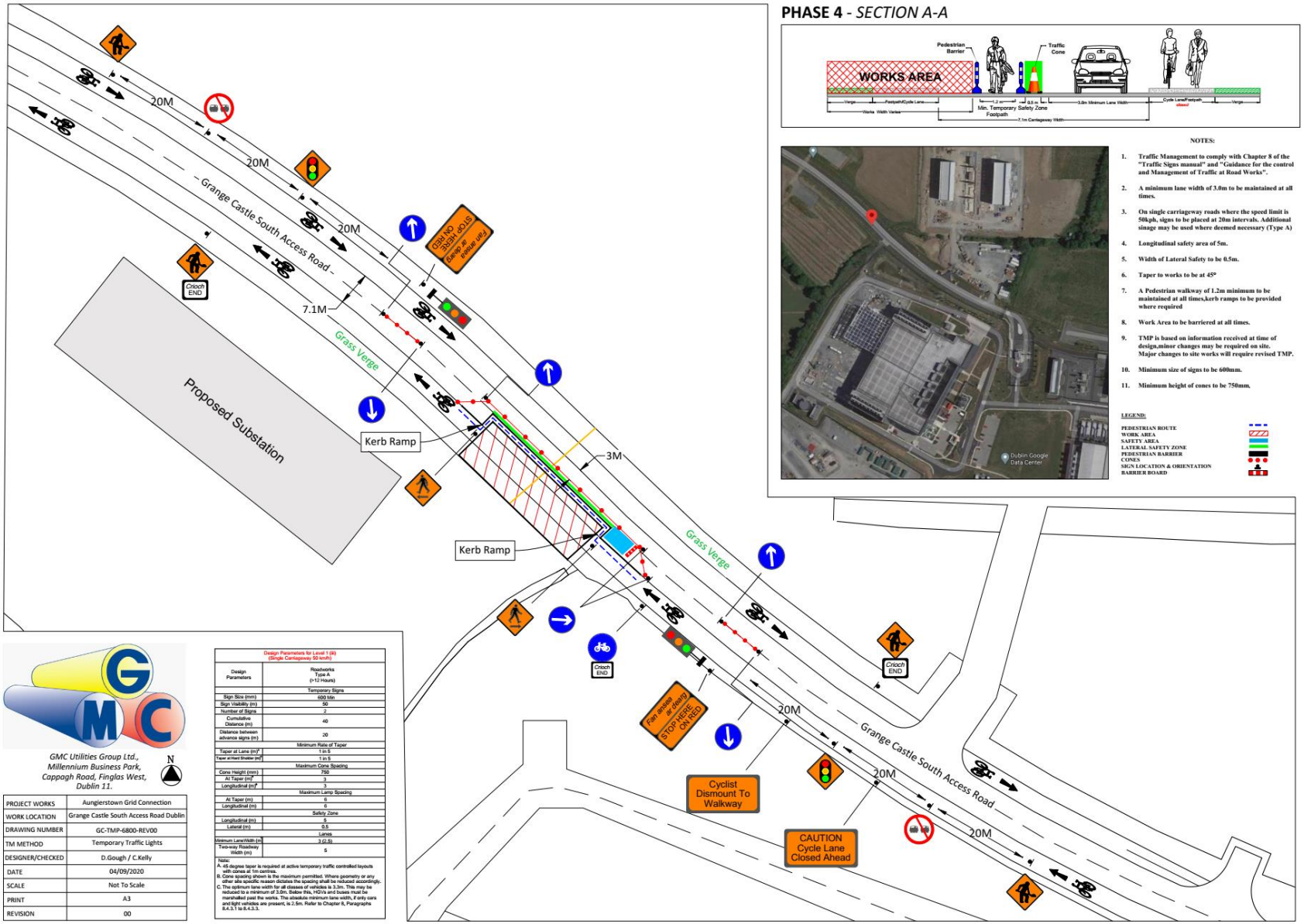
N

PROJECT WORKS	Aungierstown Grid Connection
WORK LOCATION	Grange Castle South Access Road Dublin
DRAWING NUMBER	GC-TMP-6799-REV00
TM METHOD	Temporary Traffic Lights
DESIGNER/CHECKED	D.Gough / C.Kelly
DATE	04/09/2020
SCALE	Not To Scale
PRINT	A3
REVISION	00

Design Parameters for Level 1 (B) (Single Carriageway 50 km/h)

Design Parameters	Roadworks Type A (>12 Hours)
	Temporary Signs
Sign Size (mm)	600 Min
Sign Visibility (m)	50
Number of Signs	2
Cumulative Distance (m)	40
Distance between advance signs (m)	20
	Minimum Rate of Taper
Taper at Lane (m)[A]	1 in 5
Taper at Hard Shelter (m)[A]	1 in 5
	Maximum Cone Spacing
Cone Height (mm)	750
At Taper (m)[B]	3
Longitudinal (m)[B]	3
	Maximum Lamp Spacing
At Taper (m)	6
Longitudinal (m)	6
	Safety Zone
Longitudinal (m)	5
Lateral (m)	0.5
	Lanes
Minimum Lane/Width (m)	3 (2.5)
Two-way Roadway Width (m)	5

Notes:
A. 45 degree taper is required at active temporary traffic controlled layouts with cones at 1m centres.
B. Cone spacing shown is the maximum permitted. Where geometry or any other site specific reason dictates the spacing shall be reduced accordingly.
C. The optimum lane width for all classes of vehicles is 3.3m. This may be reduced to a minimum of 3.0m. Below this, HGVs and buses must be marshalled past the works. The absolute minimum lane width, if only cars and light vehicles are present, is 2.5m. Refer to Chapter 8, Paragraphs 8.4.3.1 to 8.4.3.3.



PHASE 4 - *SECTION A-A*

NOTES:

1. Traffic Management to comply with Chapter 8 of the "Traffic Signs manual" and "Guidance for the control and Management of Traffic at Road Works".
2. A minimum lane width of 3.0m to be maintained at all times.
3. On single carriageway roads where the speed limit is 50kph, signs to be placed at 20m intervals. Additional sinage may be used where deemed necessary (Type A)
4. Longitudinal safety area of 5m.
5. Width of Lateral Safety to be 0.5m.
6. Taper to works to be at 45°
7. A Pedestrian walkway of 1.2m minimum to be maintained at all times,kerb ramps to be provided where required
8. Work Area to be barriered at all times.
9. TMP is based on information received at time of design,minor changes may be required on site. Major changes to site works will require revised TMP.
10. Minimum size of signs to be 600mm.
11. Minimum height of cones to be 750mm.

LEGEND:

PEDESTRIAN ROUTE
WORK AREA
SAFETY AREA
LATERAL SAFETY ZONE
PEDESTRIAN BARRIER
CONES
SIGN LOCATION & ORIENTATION
BARRIER BOARD

GMC Utilities Group Ltd.,
Millennium Business Park,
Cappagh Road, Finglas West,
Dublin 11.

N

PROJECT WORKS	Aunglerstown Grid Connection
WORK LOCATION	Grange Castle South Access Road Dublin
DRAWING NUMBER	GC-TMP-6800-REV00
TM METHOD	Temporary Traffic Lights
DESIGNER/CHECKED	D.Gough / C.Kelly
DATE	04/09/2020
SCALE	Not To Scale
PRINT	A3
REVISION	00

Design Parameters for Level 1 (B)
(Single Carriageway 50 km/h)

Design Parameters	Roadworks Type A (>12 Hours)
	Temporary Signs
Sign Size (mm)	600 Min
Sign Visibility (m)	50
Number of Signs	2
Cumulative Distance (m)	40
Distance between advance signs (m)	20
	Minimum Rate of Taper
Taper at Lane (m)[A]	1 in 5
Taper at Hard Shelter (m)[A]	1 in 5
	Maximum Cone Spacing
Cone Height (mm)	750
At Taper (m)[B]	3
Longitudinal (m)[B]	3
	Maximum Lamp Spacing
At Taper (m)	6
Longitudinal (m)	7
	Safety Zone
Longitudinal (m)	5
Lateral (m)	0.5
	Lanes
Minimum Lane/Width (m)[C]	3 (2.5)
Two-way Roadway Width (m)	5

Note:
A. 45 degree taper is required at active temporary traffic controlled layouts with cones at 1m centres.
B. Cone spacing shown is the maximum permitted. Where geometry or any other site specific reason dictates the spacing shall be reduced accordingly.
C. The optimum lane width for all classes of vehicles is 3.3m. This may be reduced to a minimum of 3.0m. Below this, HGVs and buses must be marshalled past the works. The absolute minimum lane width, if only cars and light vehicles are present, is 2.5m. Refer to Chapter 8, Paragraphs 8.4.3.1 to 8.4.3.3.