Planning and Environmental Consultants

Decommissioning Plan

Cleanrath Wind Farm

DOCUMENT DETAILS

Client:	**Cleanrath Windfarm Ltd.**
Project Title:	**Cleanrath Wind Farm**
Project Number:	**191223-a**
Document Title:	**Decommissioning Plan**
Document File Name:	**Decommissioning Plan F – 2020.08.12 – 191223-a**
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Rev	Status	Date	Author(s)	Approved By
01	Draft	15/07/2020	OC	MW
02	Final	12/08/2020	OC	MW

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1. INTRODUCTION

This Decommission Plan has been prepared by MKO on behalf of Cleanrath Windfarm Ltd. for the decommissioning of Cleanrath Wind Farm and relevant infrastructure including the grid connection to the national electricity grid which is hereafter referred to as the Cleanrath wind farm development . This document has been prepared as part of a Remedial Environmental Impact Assessment Report (rEIAR) for a substitute consent application to An Bord Pleanála. Decommissioning of the Cleanrath wind farm development is intended to take place after the planned 25-year lifespan of the Cleanrath wind farm development pending the outcome of the substitute consent process.

Should the Cleanrath wind farm development not be consented, there is the possibility that the decommissioning may need to be implemented early. If that situation were to arise, the content of this document will be agreed with the local authority prior to any decommissioning. Should the Cleanrath wind farm development continue operation for the intended lifespan of approximately 25 years, the Decommissioning Plan will be updated prior to the end of the 25-year operational period in line with decommissioning methodologies that may exist at the time and will be agreed with the competent authority at that time.

This report provides the environmental management framework to be adhered to during the decommissioning phase of the Cleanrath wind farm development and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for any environmental impacts to occur.

1.1 Scope of the Decommissioning Plan

This report is presented as a guidance document for the decommissioning of the Cleanrath wind farm development including its connection to the national grid. Where the term 'site' is used in the Decommissioning Plan it refers to all works associated with the Cleanrath wind farm development including enabling works. The Decommissioning Plan clearly outlines the mitigation measures and monitoring proposals that are required to be adhered to in order to complete the works in an appropriate manner.

The report is divided into six sections, as outlined below:

Section 1 provides a brief introduction as to the scope of the report.

Section 2 outlines the Site and Project details, detailing the targets and objectives of this plan along with providing an overview of works methodologies that will be adopted throughout decommissioning.

Section 3 sets out details of the environmental controls to be implemented on site including the mechanisms for implementation. A waste management plan is also included in this section.

Section 4 outlines the Emergency Response Procedure to be adopted in the event of an emergency in terms of site health and safety and environmental protection.

Section 5 sets out a programme for the timing of the works.

Section 6 outlines the proposals for reviewing compliance with the provisions of this report.

2. SITE AND PROJECT DETAILS

2.1 Site Location and Description

The Cleanrath wind farm development is located in the townlands of Cloontycarthy, Cleanrath North, Cleanrath South, Derrineanig, Derreennacarton and adjacent townlands in Co. Cork. The Cleanrath wind farm development comprises a total of 9 No. wind turbines, with a maximum ground to top blade tip height of up to 150 metres and all associated infrastructure.

The electrical connection from the main wind farm site to the national grid will be via an underground cable which will run within the public road corridor through the townlands of Cleanrath South, Derrineanig, Milmorane, Coomlibane, Rathgaskig, Derragh, Augeris, Gorteenakilla, Carrignadoura, Gurteenowen, Gurteenflugh, Lyrenageeha, Lackabaun, Co. Cork and Grousemount, Co. Kerry.

The town of Macroom is located approximately 12 kilometres northeast of the Cleanrath wind farm development and Inchigeelagh is located approximately 2.5 kilometres to the south.

2.2 Description of the Cleanrath Wind Farm Development

The construction phase of the Cleanrath wind farm development comprised civils works which included constructing the reinforced concrete foundations; access road construction and widening of existing access roads and junctions; construction of a temporary compound; upgrading existing an installation of new watercourse crossings and construction of underground cabling.

The design life of the project is expected to be 25 years.

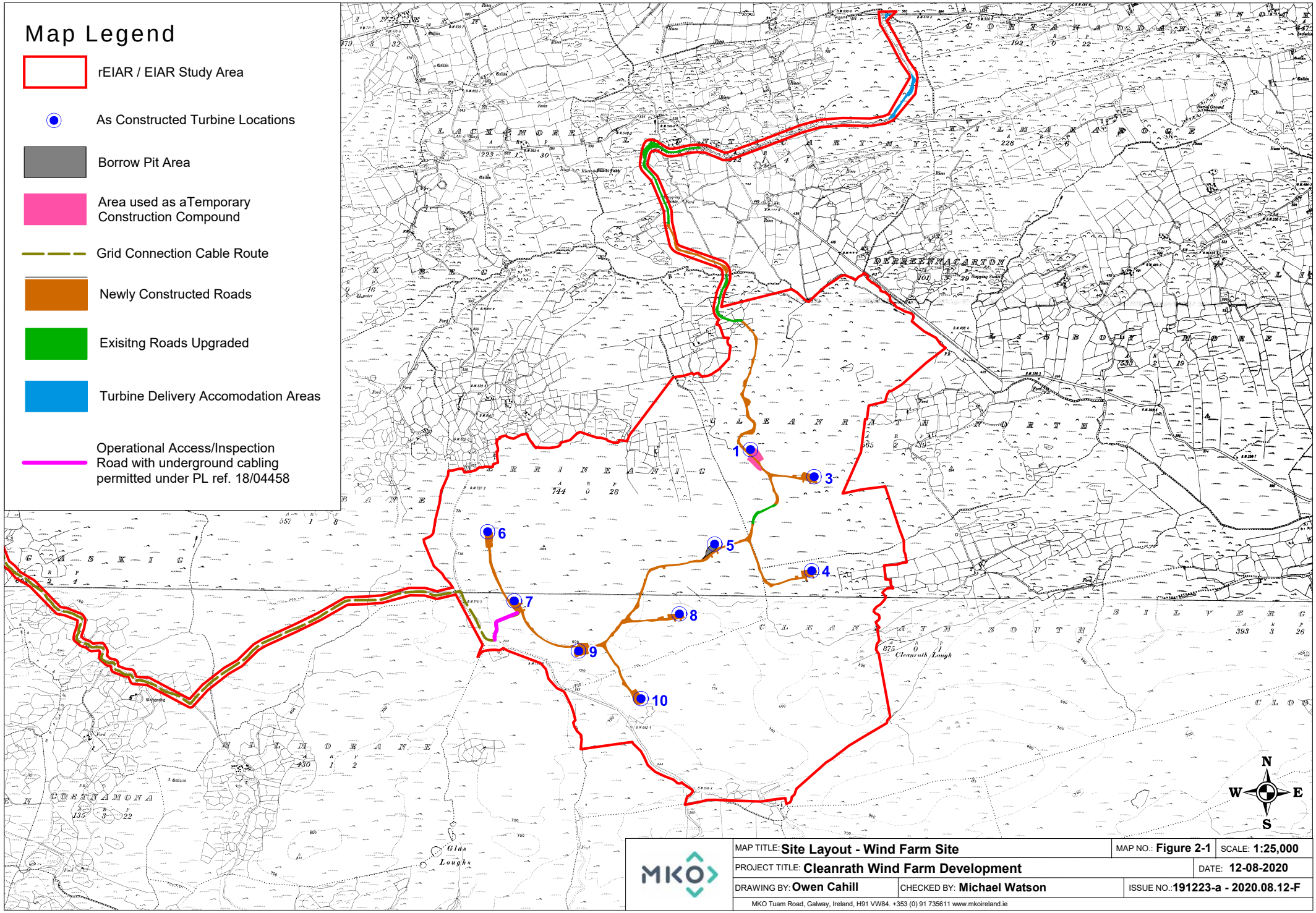
The key components of the Cleanrath wind farm development include the following:

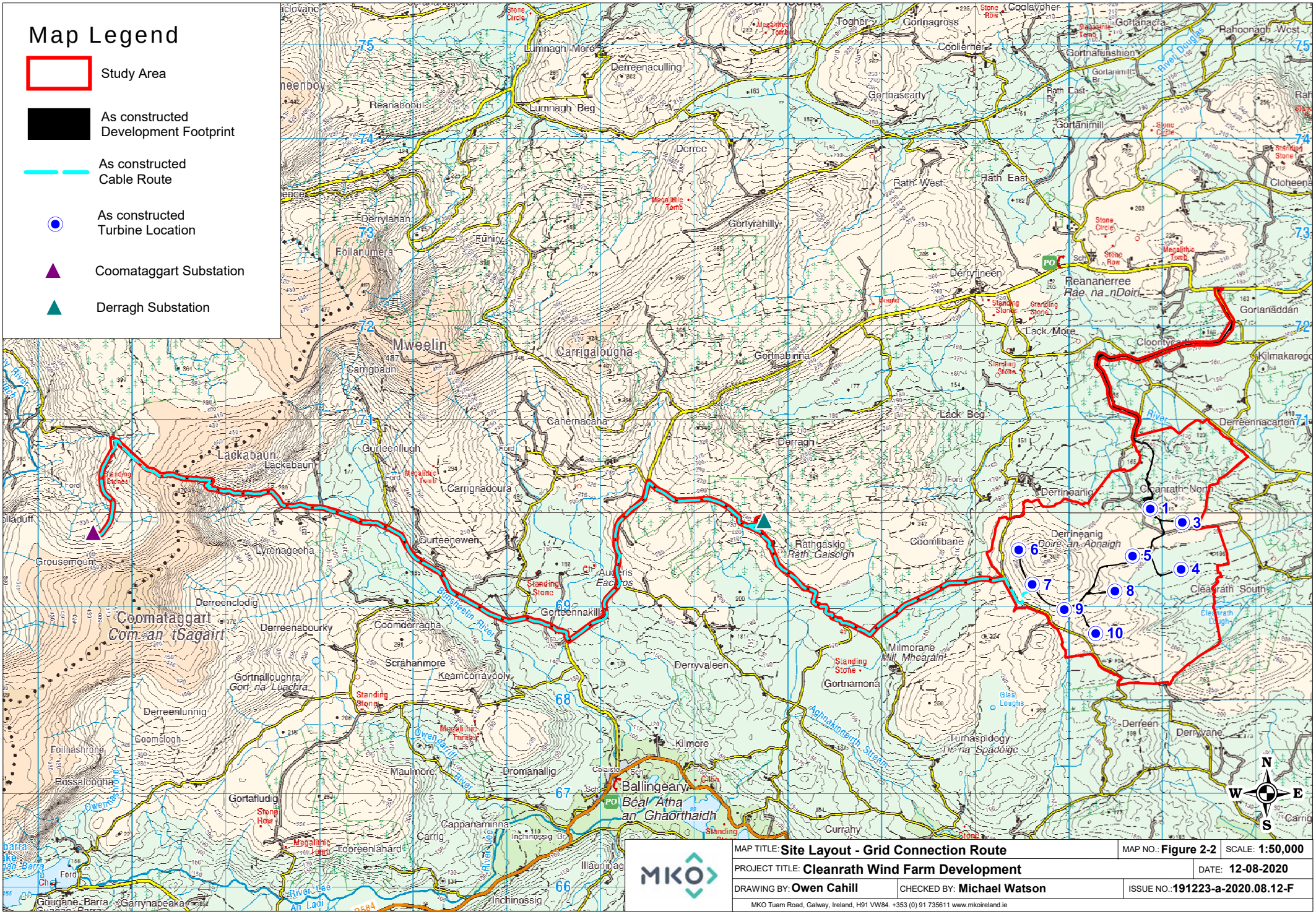
- 9 no. Wind Turbines with a maximum blade tip height of 150 metres;
- 9 no. Hardstand Areas to facilitate cranes for turbine erection and to act as construction material storage compounds;
- 1 no. temporary construction compound for the location of the site office and staging facilities, on-site car-parking for site workers during the construction phase, material storage and construction refuse storage prior to its removal from the site;
- New and upgraded access tracks;
- 1 no. borrow pit;
- Underground cabling, including connection to the national grid
- Accommodation works along the turbine delivery route
- Site drainage
- All associated site development and ancillary works.

The site layout showing individual elements of the Cleanrath wind farm development is shown in Figure 2-1 and 2-2.

As construction has been completed, elements of the project that were developed as a temporary facilitator have either been removed, restored to its original condition or will have naturally revegetated. These include the temporary construction compound and the borrow pit. All access roads and hardstandings areas form part of a site roadway network which will be required by the ongoing farming and forestry operations, and therefore will be left in situ for future use. It is intended that decommissioning will remove all above ground components from the site, underground cabling and reinstate areas where infrastructure is removed. The following elements are included:

- Wind turbines dismantling and removal off site.
- Underground cabling removal (ducting remaining)
- Turbine foundation backfilling (Underground reinforced concrete remaining in-situ)





MAP TITLE: **Site Layout - Grid Connection Route**		MAP NO.: **Figure 2-2**	SCALE: **1:50,000**
PROJECT TITLE: **Cleanrath Wind Farm Development**			DATE: **12-08-2020**
DRAWING BY: **Owen Cahill**	CHECKED BY: **Michael Watson**	ISSUE NO.: **191223-a-2020.08.12-F**	

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2.3 Targets and Objectives

The decommissioning phase works will be completed to approved standards, which include specified materials, standards, specifications and codes of practice. This decommissioning plan has considered environmental issues and this is enhanced by the works proposals as part of decommissioning.

The key site targets are as follows;

- Ensure decommissioning works and activities are completed in accordance with mitigation and best practice approach presented in the Remedial Environmental Impact Assessment Report (rEIAR), the accompanying Environmental Impact Assessment Report (EIAR) and associated planning documentation;
- Ensure decommissioning works and activities have minimal impact/disturbance to local landowners and the local community;
- Ensure decommissioning works and activities have minimal impact on the natural environment;
- Adopt a sustainable approach to decommissioning; and,
- Provide adequate environmental training and awareness for all project personnel.

The key site objectives are as follows;

- Using recycled materials if possible, e.g. soil and overburden material for backfilling and reinstatement;
- Ensure sustainable sources for materials supply where possible;
- Avoidance of any pollution incident or near miss as a result of working around or close to existing watercourses and having emergency measures in place;
- Avoidance of vandalism;
- Keeping all watercourses free from obstruction and debris;
- Correct implementation of the sustainable drainage system (SuDS) drainage design principles;
- Keep impact of decommissioning works to a minimum on the local environment, watercourses, and wildlife;
- Correct fuel storage and refuelling procedures to be followed;
- Good waste management and house-keeping to be implemented;
- Air and noise pollution prevention to be implemented;
- Monitoring of the works and any adverse effects that it may have on the environment. Decommissioning methods will be altered where it is found there is the potential to have an adverse effect on the environment;

2.4 Decommissioning Methodologies Overview

2.4.1 Introduction

An experienced main contractor will be appointed to undertake the of the decommissioning of the Cleanrath wind farm development . The main contractors will comply with the Construction and Environmental Management Plan (CEMP) prepared for the construction phase and the Operation and Environmental Management Plan (OEMP) implemented during operation and any revisions made to those documents throughout the phases in which they were adopted. An overview of the anticipated decommissioning methodologies is provided below.

2.4.2 Decommissioning Methodology

The proposed anticipated decommissioning methodology is summarised under the following main headings:

- Wind turbines
- Turbine Foundations;
- Underground Cabling;
- Transport Route Accommodation Works.

2.4.2.1 Wind Turbines

Prior to any works being undertaken on wind turbines, they will be disconnected from the grid by the site operator in conjunction with ESB Networks and Eirgrid. The dismantling and removal of wind turbines of this scale is a specialist operation which will be undertaken by the turbine supplier that completed the installation where possible. Turbine dismantling will be undertaken in reverse order to methodology employed during their construction. A number of large-scale cranes will be brought back to site utilising the existing hard stand areas. The dismantling of turbines will be bound by the same safety considerations as was the case during construction in terms of weather conditions where works will not be undertaken during adverse weather conditions and in particular not during high winds.

The turbines will most likely be removed from site in a similar manner to how they were transported to the site originally in extended articulated trucks the details of which are assessed in Chapter 14 of the rEIAR and the EIAR which accompany this application. The destination of the turbines post decommissioning is unclear at this time as a re-use option may be sourced if early decommissioning occurs. Therefore the removal of turbines from site is considered in terms of all turbine components being removed intact and as they transported to site.

The transport of disassembled turbines from the site will be undertaken in accordance with a Transport Management Plan which will be issued to and agreed with the competent authority at that time as part of a permit application for the delivery of abnormal loads using the local roads under the Road Traffic (Special Permits for Particular Vehicles) Regulations 2007. The Transport Management Plan will provide for all necessary safety measures, including a convoy and Garda escort as required, off-peak turning/reversing movements and any necessary safety controls.

2.4.2.2 Turbine Foundations

On the dismantling of turbines, it is not intended to remove the concrete foundation from the ground. It is considered that its removal will be the least preferred options in terms of having potential effects on the environment. Therefore, the nine turbine foundations will be backfilled and covered with soil material. As there is no usable soil or overburden material on the site after construction, this material will be sourced locally and imported to site on heavy good vehicles (HGVs). The imported soil will be spread and graded over the foundation using a tracked excavator and revegetation enhanced by spreading of an appropriate seed mix to assist in revegetation and accelerate the resumption of the natural drainage management that will have existed prior to any construction.

2.4.2.3 Underground Cabling

The electrical and fibre optic cabling that connects each turbine to Turbine no.7 on the wind farm as well as the 33kV cabling from Turbine no. 7 to the existing substation in the townland of Rathgaskig will be removed from the cable ducting. The cabling will be pulled from the cable duct using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at each of the joint bays/pull pits along the cable. The road will be excavated using a mechanical excavator at each cable pulling pit location and will be fully re-instated once the cables are removed. A

decommissioning phase Traffic Management Plan has been prepared for these works (Appendix 1) The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance for an underground element that is not visible.

The 38kV grid connection cabling from the existing substation at Rathgaskig to the existing substation in Coomataggart will be an ESB networks asset and will be part of the national electricity grid and therefore it is not proposed to remove this cable. However, should its removal be required it will be completed using the same methodology as outlined here.

2.4.2.4 Transport Route Accommodation Works

During the construction of the Cleanrath wind farm development , a number of road and junction improvements and the provision of a turbine delivery accommodation roadway were completed to provide access to the site during turbine delivery. All these accommodation areas remain in place for use during decommissioning and turbine component removal. The turbine delivery accommodation roadway and the junction upgrade adjacent to the sawmill in Cloontycarthy have boundary treatments and roadside berms installed to prevent access to these areas when not in use. This will all be removed temporarily for turbine component transport from the Cleanrath wind farm development and will be reinstated after the works. The berm will be reinstated using an excavator and will again be allowed to revegetate naturally.

3. ENVIRONMENTAL MANAGEMENT

The following sections give an overview of the drainage design, dust and noise control measures, a waste management plan for the site and the implementation of the environmental management procedures for the site.

3.1.1 Site Drainage

The site drainage features for this site during its construction and operation are outlined in Section 4.6 of the rEIAR and Section 4.4 the EIAR which accompany this application. As this Decommissioning Plan is a working document and is presented as an Appendix to the rEIAR and EIAR, the drainage measures are not included in this document. When the final plan is prepared prior to decommissioning and presented as a standalone document, all drainage measures will be included in that document as required. The drainage proposals will be developed further prior to the commencement of decommissioning if deemed necessary. However, it should be noted that by the time decommissioning is undertaken, early decommissioning or after the planned 25-year lifespan of the Cleanrath wind farm development, the areas within the site will have revegetated resulting in a resumption of the natural drainage management that will have existed prior to any construction. It is not anticipated that the decommissioning phase will interrupt this restored drainage regime in any way with the works proposed.

3.1.2 Refuelling, Fuel and Hazardous Materials Storage

The plant and equipment used during decommissioned will require refuelling during the works. Appropriate management of fuels will be required to ensure that incidents relating to refuelling are avoided. The following mitigation measures are proposed to avoid release of hydrocarbons at the site:

- Road-going vehicles will be refuelled off site wherever possible;
- On-site refuelling will be carried out at designated refuelling areas at various locations throughout the site. Machinery will be refuelled directly by a fuel truck that will come to site as required
- Only designated trained and competent operatives will be authorised to refuel plant on site. Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations.
- Fuel volumes stored on site should be minimised. Any fuel storage areas will be bunded appropriately;
- The plant used will be regularly inspected for leaks and fitness for purpose; and,
- An emergency plan for the decommissioning phase to deal with accidental spillages will be developed (refer to Section 4) Spill kits will be available to deal with and accidental spillage in and outside the refuelling area.
- A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the decommissioning phase.

3.2 Dust Control

Dust can be generated from on-site activities during decommissioning such as backfilling of foundations and travelling on site roads during prolonged periods of dry weather. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, i.e. soil, and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Site traffic movements also have the potential to generate dust as they travel along the haul route.

Proposed measures to control dust include:

- Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions;
- The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by the Site Manager for cleanliness, and cleaned as necessary;
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind;
- Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods;
- The transport of soils or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary;
- All site related traffic will have speed restrictions on un-surfaced roads to 15 kph;
- Daily inspection of the site to examine dust measures and their effectiveness.
- When necessary, sections of the haul route will be swept using a truck mounted vacuum sweeper; and,

3.3 Noise Control

The operation of plant and machinery, including site vehicles, is a source of potential impact that will require mitigation at all locations within the site. Proposed measures to control noise include:

- Diesel generators will be enclosed in sound proofed containers to minimise the potential for noise impacts;
- Plant and machinery with low inherent potential for generation of noise and/or vibration will be selected. All plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations;
- Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works;
- Compressors will be of the “sound reduced” models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;
- Machines, which are used intermittently, will be shut down during those periods when they are not in use;
- Training will be provided by the Site Manager to drivers to ensure smooth machinery operation/driving, and to minimise unnecessary noise generation; and,
- Local areas of the haul route will be condition monitored and maintained, if necessary.

3.4 Invasive Species Management

The soil material that will be imported to site as part of the foundation backfilling will be free of any invasive species (listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). The site manager will take steps to ensure this sourcing suitably clean material and verify the quality of the material by having it inspected prior to bringing it to site by a suitably qualified ecologist. Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of the berms that will be temporarily removed during decommissioning at the turbine delivery accommodation roadway and the junction upgrade adjacent to the sawmill in Cloontycarthy. The invasive species survey will also be undertaken along the cable route to identify invasive species at joint bay locations where excavation to expose the cabling for removal will be required.

3.5 Traffic Management

The Traffic Management Plan has been prepared to consider the decommissioning as a standalone project. The removal of turbines from site will be undertaken for a specialist haulier. The traffic management arrangements although similar to that implement for turbine delivery as outlined in the rEIAR will be agreed in advance of decommission (early or after 25 years of operation) with the competent authority.

A Traffic Management Plan for the decommissioning phase for the grid connection cabling is included in Appendix 1. Where grid connection decommissioning works are ongoing, the contractor will schedule and phase these works accordingly to ensure that these works do not coincide with turbine component transport from site and thus reduce the impact of concurrent construction specific to the wind farm.

3.6 Waste Management

This section of the Decommissioning Plan provides a waste management plan (WMP) which outlines the best practice procedures during the decommissioning of the Cleanrath wind farm development . The WMP will outline the methods of waste prevention and minimisation by recycling, recovery and reuse at each stage of decommissioning. Disposal of waste will be seen as a last resort.

3.6.1 Legislation

The Waste Management Act 1996 and its subsequent amendments provide for measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.

The Act requires that any waste related activity has to have all necessary licenses and authorisations. It will be the duty of the Waste Manager on the site of the Cleanrath wind farm development to ensure that all contractors hired to remove waste from the site have valid Waste Collection Permits. It will then be necessary to ensure that the waste is delivered to a licensed or permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits and authorisations.

The Department of the Environment provides a document entitled, '*Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects' (2006).* It is important to emphasise that no demolition will take place at this site, however, this document was referred to throughout the process of completing this WMP.

3.6.2 Waste Management Hierarchy

The waste management hierarchy sets out the most efficient way of managing in the following order:

Prevention and Minimisation:

The primary aim of the WMP will be to prevent and thereby reduce the amount of waste generated at each stage of the project.

Reuse of Waste:

Reusing as much of the waste generated on site as possible will reduce the quantities of waste that will have to be transported off site to recovery facilities or landfill.

Recycling of Waste:

There are a number of established markets available for the beneficial use of Construction and Demolition waste such as using waste concrete as fill for new roads.

At all times during the implementation of the WMP, disposal of waste to landfill will be considered only as a last resort.

3.6.3 Waste Arising from Decommissioning

The relevant components will be removed from site for re-use, recycling or waste disposal. Any structural elements that are not suitable for recycling will be disposed of in an appropriate manner. All lubrication fluids will be drained down and put aside for appropriate collection, storage, transport and disposal. Any materials which cannot be re-used or recycled will be disposed of by an appropriately licenced contractor.

The waste types arising from the decommissioning of the Cleanrath wind farm development are outlined in Table 3-1 below.

Table 3-1 Expected waste types arising during the Decommissioning Phase

Material Type	Example	EWC Code
Cables	Electrical wiring	17 04 11
Metals	Copper, aluminium, lead and iron	17 04 07
Fibreglass	Turbine blade component	10 11 03
Hydrocarbons	Oils and lubricants drained from the turbines	13 01 01,13 02 04

3.6.3.1 Reuse

Many construction materials can be reused a number of times before they have to be disposed of:

- Electrical wiring can be reused on similar wind energy projects
- Elements of the turbine components can be reused but this will be determined by the condition that they are as well as when decommissioning actually takes place.

3.6.3.2 Recycling

If a certain type of construction material cannot be reused onsite, then recycling is the most suitable option. The opportunity for recycling during decommissioning will be limited and restricted to components of the wind turbines.

All waste that is produced during the decommissioning phase including dry recyclables will be deposited in the on-site skip initially and sent for subsequent segregation at a remote facility. The anticipated volume of all waste material to be generated at the Cleanrath wind farm development is low which provides the justification for adopting this method of waste management.

3.6.3.3 Implementation

3.6.3.3.1 *Roles and Responsibilities*

Prior to the commencement of the decommissioning, a Construction Waste Manager will be appointed by the Contractor. The Construction Waste Manager will be in charge of the implementation of the objectives of the plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the decommissioning adheres to the management plan.

3.6.3.3.2 *Training*

It is important for the Construction Waste Manager to communicate effectively with colleagues in relation to the aims and objectives of the waste management plan. All employees working on site during the decommissioning phase of the project will be trained in materials management and thereby, should be able to:

- Distinguish reusable materials from those suitable for recycling;
- Ensure maximum segregation at source;
- Co-operate with site manager on the best locations for stockpiling reusable materials;
- Separate materials for recovery; and
- Identify and liaise with waste contractors and waste facility operators.

3.6.3.3.3 *Record Keeping*

The WMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The WMP can then be adapted with changes that are seen through record keeping.

The fully licensed waste contractor employed to remove waste from the site will be required to provide documented records for all waste dispatches leaving the site. Each record will contain the following:

- Consignment Reference Number
- Material Type(s) and EWC Code(s)
- Company Name and Address of Site of Origin
- Trade Name and Collection Permit Ref. of Waste Carrier
- Trade Name and Licence Ref. of Destination Facility
- Date and Time of Waste Dispatch
- Registration no. of Waste Carrier vehicle
- Weight of Material
- Signature of Confirmation of Dispatch detail

- Date and Time of Waste Arrival at Destination
- Site Address of Destination Facility

3.6.3.4 Waste Management Plan Conclusion

The WMP will be properly adhered to by all staff involved in the project which will be outlined within the induction process for all site personnel. The waste hierarchy should always be employed when designing the plan to ensure that the least possible amount of waste is produced during decommissioning. Reuse of certain types of construction wastes will cut down on the cost and requirement of raw materials therefore further minimising waste levels.

This WMP has been prepared to outline the main objectives that are to be adhered to and it will be updated as required prior to decommissioning.

3.7 Environmental Management Implementation

3.7.1 Roles and Responsibilities

The Site Manager and/or Environmental Clerk of Works (ECoW) are the project focal point relating to decommissioning-related environmental issues.

In general, the ECoW will maintain responsibility for monitoring the decommissioning works and Contractors/Sub-contractors from an environmental perspective. The ECoW will act as the regulatory interface on environmental matters. The Site Manager will be responsible for reporting to and liaising with Cork County Council and other statutory bodies as required.

The Site Manager in consultation with the ECoW will be responsible for employing the services of a suitably qualified ecologist and any other suitably qualified professionals as required throughout the decommissioning works.

4. EMERGENCY RESPONSE PLAN

An Emergency Response Plan (ERP) is presented in this section of the Decommissioning Plan. It provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection.

4.1 Emergency Response Procedure

The site ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require updating and submissions from the contractor/PSCS and sub-contractors as decommissioning progresses. Where sub-contractors that are contracted on site are governed by their own emergency response procedure a bridging arrangement will be adopted to allow for inclusion of the sub-contractor's ERP within this within this document.

This is a working document that requires updating throughout the various stages of the project.

4.1.1 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Supervisor/Construction Manager will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 4-1. In a situation where the Site Supervisor/ Construction Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 4-1. This will be updated throughout the various stages of the project.

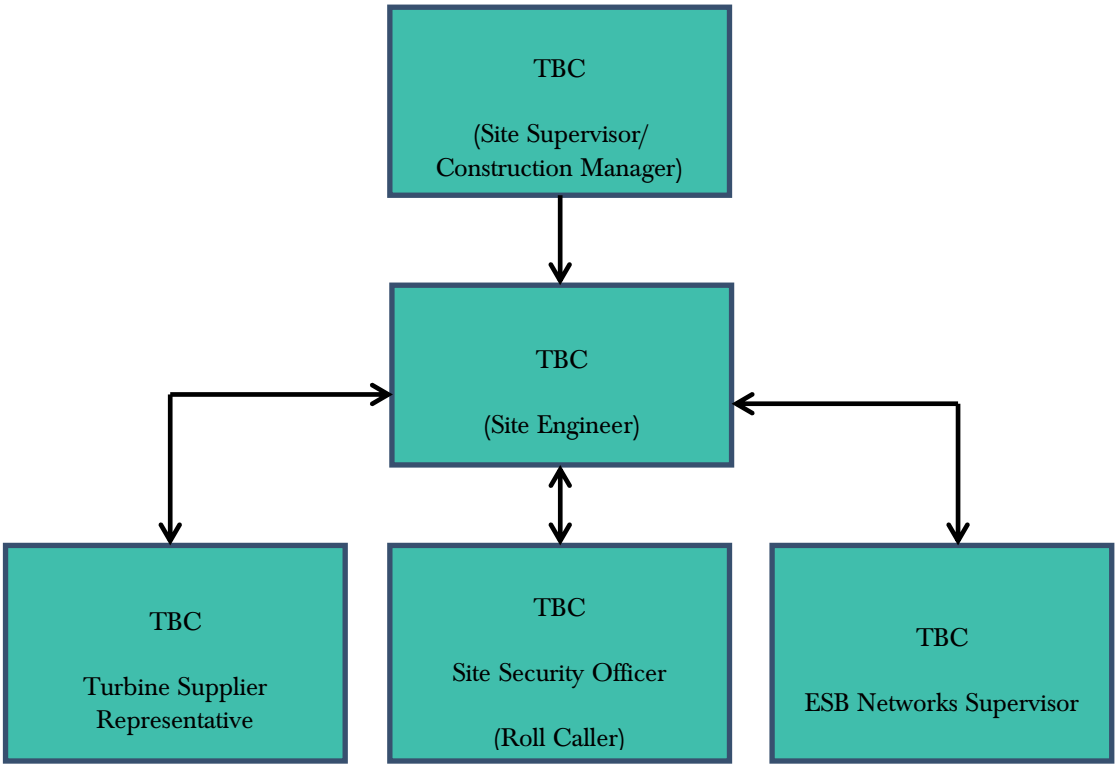

Figure 4-1 Emergency Response Procedure Chain of Command

4.1.2 Initial Steps

In order to establish the type and scale of potential emergencies that may occur, the following hazards have been identified as being potential situations that may require an emergency response in the event of an occurrence.

Table 4-1 Hazards associated with potential emergency situations

Hazard	Emergency Situation
Construction Vehicles: Dump trucks, tractors, excavators, cranes etc.	Collision or overturn which has resulted in operator or third-party injury.
Abrasive wheels/Portable Tools	Entanglement, amputation or electrical shock associated with portable tools
Contact with services	Electrical shock or gas leak associated with an accidental breach of underground services
Fire	Injury to operative through exposure to fire
Falls from heights including falls from scaffold towers, scissor lifts, ladders, roofs and turbines	Injury to operative after a fall from a height
Sickness	Illness unrelated to site activities of an operative e.g. heart attack, loss of consciousness, seizure
Turbine Specific Incident	This will be included the turbine manufacturers' emergency response plan.

In the event of an emergency situation associated with, but not restricted to, the hazards outlined in Table 4-1 the Site Supervisor/Construction Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/fog-horn that activates an emergency evacuation on the site. The Site Supervisor/Construction Manager must proceed to the assembly point if the emergency poses any significant threat to their welfare **and if there are no injured personnel at the scene that require assistance**. The Site Supervisor/Construction Manager will be required to use their own discretion at that point. In the case of fire, the emergency evacuation of the site should proceed, without exception. The site evacuation procedure is outlined in Section 4.1.3.
- Make safe the area if possible and ensure that there is no identifiable risk exists with regard to dealing with the situation e.g. if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone. If delegating the task, ensure that the procedures for contacting the emergency services as set out in Section 4.2 is followed.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g. cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required e.g. ESB Networks the numbers for which as provided in Section 4.3.
- Contact the next of kin of any injured personnel where appropriate.

4.1.3 Site Evacuation/Fire Drill

A site evacuation/fire drill procedure will provide basis for carrying out the immediate evacuation of all site personnel in the event of an emergency. The following steps will be taken:

- Notification of the emergency situation. Provision of a siren or fog-horn to notify all personnel of an emergency situation.
- An assembly point will be designated in the construction compound area and will be marked with a sign. All site personnel will assemble at this point.
- A roll call will be carried out by the Site Security Officer to account for all personnel on site.
- The Site Security Officer will inform the Site Supervisor/Construction Manager when all personnel have been accounted for. The Site Supervisor/Construction Manager will decide the next course of action, which be determined by the situation that exists at that time and will advise all personnel accordingly.

All personnel will be made aware of the evacuation procedure during site induction. The Fire Services Acts of 1981 and 2003 require the holding of fire safety evacuation drills at specified intervals and the keeping of records of such drills.

4.1.4 Spill Control Measures

Every effort will be made to prevent an environmental incident during the decommissioning phase of the project. Oil/fuel spillages are one of the main environmental risks that will exist on the site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. The following steps provide the procedure to be followed in the event of such an incident:

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the ECoW immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The ECoW will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The ECoW will notify the appropriate regulatory body such as Cork County Council, and the Environmental Protection Agency (EPA), if deemed necessary.

The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.

- The ECoW must be immediately notified.
- If necessary, the ECoW will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.

- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
- If the incident has impacted on a sensitive receptor such as an archaeological feature the ECoW will liaise with the Project Archaeologist.
- A record of all environmental incidents will be kept on file by the ECoW and the Main Contractor. These records will be made available to the relevant authorities such as Cork County Council, EPA if required.

The ECoW will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative works methodologies or environmental sampling, and will advise the Main Contractor as appropriate.

4.2 Contact the Emergency services

In the event of requiring the assistance of the emergency services the following steps should be taken:

Stay calm. It is important to take a deep breath and not get excited. Any situation that requires 999/112 is, by definition, an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.

Know the location of the emergency and the number you are calling from. This may be asked and answered a couple of times but do not get frustrated. Even though many emergency call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for some reason you are disconnected, at least emergency crews will know where to go and how to call you back.

Wait for the call-taker to ask questions, then answer clearly and calmly. If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.

If you reach a recording, listen to what it says. If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.

Let the call-taker guide the conversation. He or she is typing the information into a computer and may seem to be taking forever. There is a good chance, however, that emergency services are already being sent while you are still on the line.

Follow all directions. In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you do not understand.

Keep your eyes open. You may be asked to describe victims, suspects, vehicles, or other parts of the scene.

Do not hang up the call until directed to do so by the call taker.

Due to the remoteness of the site it may be necessary to liaise with the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable.

4.3 Contact Details

A list of emergency contacts is presented in Table 4-2. A copy of these contacts will be included in the Site Safety Manual and in the site offices and the various site welfare facilities.

Table 4-2 Emergency Contacts

Contact	Telephone no.
Emergency Services – Ambulance, Fire, Gardaí	999/112
Doctor – Macroom Health Centre	026 20650
Hospital – Cork University Hospital	021 492 2000
ESB Emergency Services	1850 372 999
Gas Networks Ireland Emergency	1850 20 50 50
Gardaí – Local Garda Station. Ballingeary	026 47002
Health and Safety Co-ordinator - Health & Safety Services	TBC
Health and Safety Authority	1890 289 389
Inland Fisheries Ireland (IFI)	1890 347 424
Project Supervisor Construction Stage (PSCS): TBC	TBC
Project Supervisor Design Stage (PSDS): TBC	TBC
Client: Cleanrath Windfarm Ltd.	021 7336034

4.3.1 Procedure for Personnel Tracking

All operatives on site without any exception will have to undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.

In the event of a site operative becoming in an emergency situation where serious injury has occurred and hospitalisation has taken place, it will be the responsibility of the Site Manager or next in command if unavailable to contact the next of kin to inform them of the situation that exists.

4.4 Induction Checklist

Table 4-3 provides a list of items highlighted in this ERP which must be included or obtained during the mandatory site induction of all personnel that will work on the site. This will be updated throughout the various stages of the project.

Table 4-3 Emergency Response Plan Items Applicable to the Site Induction Process

ERP Items to be included in Site Induction	Status
All personnel will be made aware of the evacuation procedure during site induction	
Due to the remoteness of the site it may be necessary to liaise with and assist the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable.	
All operatives on site without any exception will have undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.	

5. PROGRAMME OF WORKS

5.1 Decommissioning Schedule

The decommissioning phase will take approximately 3 – 6 months to complete from commencing the removal of turbines to the final reinstatement of the site.

At this time, it is not possible to determine when decommissioning will take place.

The phasing and scheduling of the main decommissioning task items are outlined in Figure 5-1 below, where the 1st January has been shown as an indicative start date for decommissioning to commence.

ID	Task Name	Task Description
1	Site Health & Safety	
2	Turbine Decommissioning	Disconnect power output
3	Turbine Dismantling	Disassemble turbine components
4	Turbine Removal	Transport of all turbine components off site
5	Cable Removal	Remove underground cables from ducting
6	Turbine Foundations Backfill	Reinstate foundation areas by covering with soil material
7	Accomodation Areas Reinstatement	Reinstate soil berm and boundary treatments

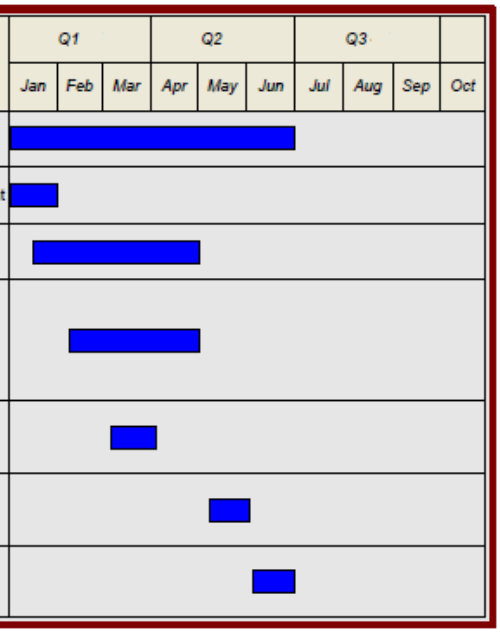

Figure 5-1 Indicative Decommissioning Schedule

6. MITIGATION PROPOSALS

All mitigation measures relating to the operational phases of the Cleanrath wind farm development were set out in the various sections of the Environmental Impact Assessment Report (EIAR) which accompanies this substitute consent application.

This section of the DP groups together all of the mitigation measures presented in the planning documentation. The mitigation measures are presented in the following pages.

By presenting the mitigation proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the operational phase of the project. The tabular format in which the below information is presented, can be further expanded upon during the course of operation and provides a reporting template for site compliance audits.

Table 6-1 Mitigation Measures

Ref. No.	Reference Location	Mitigation Measure	Audit Result	Action Required
		Operational Phase		
MM1	EIAR Chapter 6 OEMP Section 2	A habitat restoration and enhancement plan has been prepared to mitigate for peatland habitat loss		
MM2	EIAR Chapter 4 OEMP Section 2	An additional hectare of immature forestry will be removed to provide an area of enhanced peatland. Any further felling proposed for the site will be the subject of a Limited Felling Licence (LFL) application to the Forest Service. Replanting will be undertaken for any further felling		
MM3	EIAR Section 6,	The removal of woody vegetation will be undertaken in full compliance with Section 40 of the Wildlife Act 1976 – 2018.		
MM4	EIAR Chapter 8	As part of peatland restoration works, the following measures are proposed: › Brash removed during the restoration process should be stored up slope of the cleared area, to provide a buffer to surface water flows which may have the potential to erode, During tree felling brash mats will be used to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas.		
MM5	EIAR Chapter 8, 9	Wherever possible, vehicles will be refuelled off-site, particularly for regular road-going vehicles. On-site refuelling of machinery will be carried out at designated refuelling areas at various locations throughout the site. Heavy Plant and		

Ref. No.	Reference Location	Mitigation Measure	Audit Result	Action Required
	OEMP Section 3	Machinery will be refuelled on site by a fuel truck. This will only take place for a short period during peatland habitat restoration works.		
MM6	REIAR Chapter 8	The electrical control building was bunded appropriately to the volume of oils likely to be stored, and to prevent leakage of any associated chemicals and to groundwater or surface water. The bunded area was fitted with a storm drainage system and an appropriate oil interceptor;		
MM7	EIAR Chapter 6 OEMP Section 3	The operational phase drainage of the development has been operated in full accordance with the design and mitigation measures that are fully described in Section 9.6 of Chapter 9: 'Water' and in the Operation and Environmental Management Plan. In addition, the same measures will be employed during any future operation. The Habitat Restoration Plan that is provided in Appendix 6.8 provides details of additional measures that will be implemented to protect water quality during the operation of the wind farm and the felling associated with the habitat restoration should it be granted permission.		
MM8	EIAR Chapter 9	Various combinations/adaptations of the runoff control and drainage management measures during the operational phase are employed at the site depending on the local conditions and topography: › Natural vegetation filters are used regularly across the site where the local drainage and topography allowed attenuation of surface water runoff. › Where possible, interceptor drains are installed up-gradient of infrastructure to collect clean surface runoff, in order to minimise the amount of runoff reaching areas where suspended sediment could become entrained. It is now directed to areas where it can be re-distributed onto natural vegetation.		

Ref. No.	Reference Location	Mitigation Measure	Audit Result	Action Required
		Swales/roadside drains are used to collect runoff from access roads and turbine hardstanding areas of the site, likely to have entrained suspended sediment, and channeled it onto natural vegetation.		
MM9	EIAR Chapter 9	As part of peatland restoration works, the following water protection measures are proposed: › Brash removed during the restoration process will be stored up slope of the cleared area, to provide a buffer to surface water flows which may have the potential to erode; › During tree felling brash mats will be used to support vehicles on soft ground, reducing peat and mineral soils erosion and avoiding the formation of rutted areas; and, › Drain blocking and use of silt fencing and check dams until stabilisation has taken place.		
MM 10	EIAR Chapter 7	Operational monitoring at the Cleanrath wind farm development commenced in January 2020 and continued into May 2020. Appendix 7-6 of this EIAR contains the Post-Construction Bird Monitoring Programme. Post construction monitoring included and will include the following surveys: › Flight activity surveys: Vantage Point Surveys › Breeding Bird Surveys: Adapted Brown & Shephard. › Winter Walkover Surveys › Breeding Raptor surveys › Hen Harrier Winter Roost Surveys		

Ref. No.	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Targeted bird collision surveys (corpse searches) were/will be undertaken with training dogs. The surveys included detection and scavenger trials, to correct for these two biases and ensure the resulting data is robust.		
MM 11	EIAR Section 6	All mitigation measures as specified by the survey report and derogation licence was implemented by the client. Compensation habitat was provided to replace the relatively small area of habitat affected by the development and no significant impact on Kerry slug populations was predicted to occur as a result of this development.		
MM 12	EIAR Chapter 7	Following the precautionary principle and in accordance with the SNH (2019) guidelines, any future operation of the wind farm will be the subject of ongoing monitoring as described in Appendix 6-4. If, following monitoring, there is any uncertainty as to the impacts on bat species, mitigation will be implemented		
MM 13	EIAR Chapter 5 OEMP Section 3	During the operational phase there will be ongoing maintenance of the wind turbines and associated infrastructure. Access to the turbines is through a door at the base of the structure, which is locked at all times outside maintenance visits. An Operational and Maintenance Health and Safety Plan has been prepared for the wind farm and is included as Appendix A of the OEMP (Appendix 4-3).		
MM 14	EIAR Chapter 5, 11 OEMP Section 3	Best practice measures for noise control will be adhered to onsite during the operational phase of the Cleanrath wind farm development in order to mitigate the slight short-term negative impact associated with this phase of the development. These measures included: › No plant used on site will be permitted to cause an on-going public nuisance due to noise.		

Ref. No.	Reference Location	Mitigation Measure	Audit Result	Action Required
		› The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations. › All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract. › Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools were fitted with suitable silencers. › Machinery that will be used intermittently will be shut down or throttled back to a minimum during periods when not in use. › During the course of the construction programme, supervision of the works will be undertaken to ensure compliance with the limits detailed in Chapter 11 using methods outlined in British Standard BS 5228-1:2014+A1:2019 Code of practice for noise and vibration control on construction and open sites – Noise.		
MM 15	EIAR Chapter 5 OEMP Section 3	In periods of extended dry weather, dust suppression may be necessary along haul roads within the site to ensure dust does not cause a nuisance during use of plant or machinery. Where necessary, water will be spread with a bowser or water spreader to dampen down haul roads and the temporary site compound to prevent the generation of dust. Silty or oily water will not be used for dust suppression		
MM 16	EIAR Chapter 5 OEMP Section 2	All mitigation as outlined under noise and vibration, dust, traffic, visual amenity and shadow flicker in the EIAR, will be implemented in order to reduce insofar as possible impacts on residential amenity at properties located in the vicinity of the Cleanrath wind farm development works, including along the turbine and construction materials haul route.		

Ref. No.	Reference Location	Mitigation Measure	Audit Result	Action Required
		The installed wind turbines have been fitted with shadow flicker control units to allow the turbines to be controlled to prevent the occurrence of shadow flicker at properties surrounding the wind farm where necessary.		
MM 17	EIAR Chapter 10 OEMP Section 3	Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order that comply with the Road Traffic Acts 1961 as amended, thereby minimising any emissions that arise.		
MM 18	EIAR Chapter 5, 11 OEMP Section 3	Best practice measures for noise control was adhered to onsite during the construction phase of the Cleanrath wind farm development in order to mitigate the slight short-term negative impact associated with this phase of the development. The measures include: › Sensitive location of equipment, taking account of local topography and natural screening. › Working methods: construction noise was controlled by prescribing that standard construction work was restricted to the specified working hours. Any construction work carried out outside of these hours shall be restricted to activities that did not generate noise of a level that may cause a nuisance. The phasing of works had also been designed with regard to avoidance of noise impacts. › Plant was selected taking account of the characteristics of noise emissions from each item. All plant and machinery used on the site shall comply with E.U. and Irish legislation in relation to noise emissions. The timing of on- and off-site movements of plant near occupied properties was controlled. › Operation of plant: all construction operations shall comply with guidelines set out in British Standard documents 'BS 5338: Code of Practice for Noise		

Ref. No.	Reference Location	Mitigation Measure	Audit Result	Action Required
		Control on Construction and Demolition Sites' and 'BS5228: Part 1: 1997: Noise & Vibration Control on Construction and Open Sites'. The correct fitting and proper maintenance of silencers and/or enclosures, the avoidance of excessive and unnecessary revving of vehicle engines, and the parking of equipment in locations that avoid possible effects on noise-sensitive locations were employed. › Training and supervision of operatives in proper techniques to reduce site noise, and self-monitoring of noise levels, if appropriate.		
MM 19	EIAR Chapter 14 OEMP Section 3	For a period of three weeks, a number of HGVs and excavator delivery vehicles will come to site as part of peatland habitat restoration works. These works will be undertaken in accordance with the Traffic Management Plan prepared for the construction phase which is included within Appendix 4-4 of the remedial EIAR		
MM 20	EIAR Chapter 14	In the event of further scoping responses being received from the EIA consultees, the comments of the consultees and any mitigation measures are considered during operation of the Cleanrath wind farm development, subject to the outcome of the Substitute Consent process. The terms of the signed 2RN Protocol Document for the Cleanrath wind farm development will be adhered to throughout operation		

Ref. No.	Reference Location	Mitigation Measure	Audit Result	Action Required
		Decommissioning Phase		
MM 21	EIAR Chapter 4	Prior to the end of the operational period the Decommissioning Plan (Appendix 4-4) will be updated in line with decommissioning methodologies that may exist at the time and will agreed with the competent authority at that time.		
MM 22	DP Section 3	Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of the berms that will be temporarily removed during decommissioning at the turbine delivery accommodation roadway and the junction upgrade adjacent to the sawmill in Cloontycarthy. The invasive species survey will also be undertaken along the cable route to identify invasive species at joint bay locations where excavation to expose the cabling for removal will be required.		
MM 23	EIAR Chapter 9	Best guidance in relation to protection of freshwater pear mussel (FPM) sites will be followed from guidance document Forestry and Freshwater Pearl Mussel Requirements – Site Assessment and Mitigation Measures (Draft).		
MM 24	EIAR Section 6	All mitigation measures as specified by the survey report and derogation licence or any revision or renewals of this licence was implemented by the client. Compensation habitat was provided to replace the relatively small area of habitat affected by the development and no significant impact on Kerry slug populations was predicted to occur as a result of this development.		
MM 25	EIAR Chapter 6	Trees did not be replanted in the future within the felled areas. In areas of felling close to turbine bases brash was removed from the site, where not required for the upgrade of existing roads and to prevent rutting of the ground surface during felling operations, and management was put in place to keep the growth of regenerating scrubby/bushy vegetation down.		

Ref. No.	Reference Location	Mitigation Measure	Audit Result	Action Required
MM 26	EIAR Chapter 4 DP Section 2	On removal of turbines, the covering of the foundation will be completed using material imported to site as the required quantity of material does not currently exist at the site. The imported soil will be spread and graded over the foundation using a tracked excavator and revegetation enhanced by spreading of an appropriate seed mix to assist in revegetation and accelerate the resumption of the natural drainage management that will have existed prior to any construction		
MM 27	EIAR Chapter 4 DP Section 3	The following mitigation measures are proposed to avoid release of hydrocarbons at the site: › Road-going vehicles will be refuelled off site wherever possible; › On-site refuelling will be carried out at designated refuelling areas at various locations throughout the site. Machinery will be refuelled directly by a fuel truck that will come to site as required › Only designated trained and competent operatives will be authorised to refuel plant on site. › Fuel volumes stored on site should be minimised. Any fuel storage areas will be bunded appropriately; › The plant used will be regularly inspected for leaks and fitness for purpose; and, › An emergency plan for the decommissioning phase to deal with accidental spillages will be developed (refer to Section 4) Spill kits will be available to deal with and accidental spillage in and outside the refuelling area. › A programme for the regular inspection of plant and equipment for leaks and fitness for purpose will be developed at the outset of the decommissioning phase.		

Ref. No.	Reference Location	Mitigation Measure	Audit Result	Action Required
MM 28	EIAR Section 7	A Decommissioning Plan has been prepared (see Appendix 4-4) The following measures are proposed for the decommissioning phase: › During the decommissioning phase, disturbance limitation measures will be as per the construction phase (see Chapter 7 of the rEIAR). › Plant machinery will be turned off when not in use. › All plant and equipment for use will comply with the Construction Plant and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations 2001 (S.I. No. 632 of 2001). › A project ecologist will be appointed to oversee the decommissioning phase, with similar duties to those outlined above during the construction phase.		
MM 29	EIAR Chapter 14 DP Section 3	The Traffic Management Plan has been prepared to consider the decommissioning as a standalone project. The removal of turbines from site will be undertaken for a specialist haulier. The traffic management arrangements although similar to that implement for turbine delivery as outlined in the rEIAR will be agreed in advance of decommissioning (early or after 25 years of operation) with the competent authority. A traffic management plan has been prepared for the removal of cabling from cable duct on the grid connection route		

7. MONITORING PROPOSALS

All monitoring proposals relating to the operational phases of the Cleanrath wind farm development were set out in the various sections of the Environmental Impact Assessment Report (EIAR) which accompanies this substitute consent application.

This section of the DP groups together all of the monitoring proposals presented in the planning documentation. The monitoring proposals are presented in the following pages.

By presenting the monitoring proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the operational phase of the project. The tabular format in which the below information is presented, can be further expanded upon during the course of operation to provide a reporting template for site compliance audits.

Table 7-1 Schedule of Monitoring Proposals

Ref. No.	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
Operational Phase & Decommissioning Phases					
MX1	EIAR Chapter 4 OEMP Section 3	Monthly sampling for laboratory analysis for a range of parameters as adopted during pre-commencement and construction phases has continued for 6 months (although sample events were not completed in March and April 2020 due to the Covid-19 restrictions) after construction was completed Sampling will now continue quarterly into the operational phase for a period of one year	Quarterly	As Necessary	Site Manager
MX2	EIAR Chapter 4 OEMP Section 3	Turbidity monitors or sondes have been installed at locations surrounding the wind farm site as outlined in Figure 3-1. The sondes provide continuous readings for turbidity levels in the watercourse and are scheduled for removal at the next quarterly surface water sampling event	Ongoing	As Necessary	Site Manager
MX3	EIAR Chapter 7	Operational monitoring at the Cleanrath wind farm development commenced in January 2020 and continued into May 2020. The programme of works monitored and will continue to monitor parameters associated with collision, displacement/barrier effects and habituation during the lifetime of the project. Surveys commenced in January 2020 of Years 1. Thereafter surveys will be scheduled to coincide with Years 2, 3, 5, 10 and 15 of the lifetime of the wind farm. Monitoring measures were broadly based on guidelines issued by the Scottish Natural Heritage (SNH, 2009). Post construction monitoring included and will include the following surveys:			

Ref. No.	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
		› Flight activity surveys: Vantage Point Surveys › Breeding Bird Surveys: Adapted Brown & Shephard. › Winter Walkover Surveys › Breeding Raptor surveys › Hen Harrier Winter Roost Surveys › Targeted bird collision surveys (corpse searches) were/will be undertaken with training dogs. The surveys included detection and scavenger trials, to correct for these two biases and ensure the resulting data is robust.			
MX4	EIAR Chapter 4, 6	Post-construction surveys for badger and otter will be completed on the site for five years. These surveys will be undertaken following the same scope and methodology as proposed for the pre-construction surveys. All results will be sent to the Planning Authority and to the NPWS.	Annually for 5 years	Annually	Project Ecologist
MX5	EIAR Chapter 4, 6	The Kerry Slug Management Plan will be implemented in full, as will the conditions of the derogation licence. This provides for post-construction surveys that cover a five year period	Annually for 5 years	Annually	Project Ecologist
MX6	EIAR Chapter 4, 6	Post-construction monitoring and reporting programmes for birds (particularly Hen Harrier and Merlin), otter, badger and Kerry slug shall be submitted to, and agreed in writing with, the planning authority prior to commencement of	As required	As required	Project Ornithologist

Ref. No.	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
		development. The surveys shall be undertaken by suitably qualified and experienced specialists. Surveys shall be completed annually for a period of five years following commissioning of the wind farm and copies of the reports to the planning authority shall also be submitted to the National Parks and Wildlife Service.			
MX7	EIAR Chapter 5, 11	Post commissioning of the proposed turbine units it is recommended that the noise monitoring detailed in the relevant section of this report is repeated with a view to confirming that the operational units are compliant with the relevant day and night time noise criteria curves as presented in the body of this assessment. If this study work identifies any exceedances of the appropriate criteria relevant corrective actions will be taken/implemented.	Once	As required	Site Manager
MX8	DP Section 3	The Site Manager in consultation with the ECoW will be responsible for employing the services of a suitably qualified ecologist and any other suitably qualified professionals as required throughout the decommissioning works.	As required	As required	Site Manager
MX9	EAIR Chapter 6 DP Section 3	Prior to decommissioning, a suitably qualified ecologist will complete an invasive species survey of the berms that will be temporarily removed during decommissioning at the turbine delivery accommodation roadway and the junction upgrade adjacent to the sawmill in Cloontycarthy. The invasive species survey will also be undertaken along the cable route to identify invasive species at joint bay locations	As required	As required	Project Ecologist

Ref. No.	Reference Location	Monitoring Measure	Frequency	Reporting Period	Responsibility
		where excavation to expose the cabling for removal will be required.			
MX10	EAIR Chapter 6	Current and ongoing bat monitoring being conducted on site, where turbines are operating in sleep mode, will be utilised in conjunction with the 2015 bat survey findings. This will be used to assess bat activity patterns and to inform the design of any advanced site-specific mitigation requirements, including curtailment if deemed necessary, to ensure that there are no significant residual effects on bat species.	As required	As required	Project Ecologist

8. COMPLIANCE AND REVIEW

8.1 Site inspections and Environmental Audits

Routine inspections of decommissioning activities will be carried out on a daily and weekly basis by the ECoW and the Site Supervisor/Construction Manager to ensure all controls to prevent environmental impacts, relevant to the decommissioning activities taking place at the time, are in place.

Environmental inspections will ensure that the works are undertaken in compliance with this Decommissioning Plan and all other planning application documents. Only suitably trained staff will undertake environmental site inspections.

8.2 Auditing

An Environmental audit will first be carried out prior to the decommissioning phase of the Cleanrath wind farm development to ensure the construction and/or operational phase mitigation measures that are still in place as required are adequate. Further environmental audits will be carried out on a monthly basis during the decommissioning phase of the project and on completion of the decommissioning works.

In contrast to monitoring and inspection activities, audits are designed to shed light on the underlying causes of non-compliance, and not merely detect the non-compliance itself. In addition, audits are the main means by which system and performance improvement opportunities may be identified. Environmental audits will be carried out by the ECoW on behalf of the appointed contractor. It is important that an impartial and objective approach is adopted. Environmental audits will be conducted at planned intervals to determine whether the Decommissioning Plan is being properly implemented and maintained. The results of environmental audits will be provided to project management personnel.

8.3 Environmental Compliance

The following definitions shall apply in relation to the classification of Environmental Occurrences during the decommissioning of the wind farm:

Environmental Near Miss: An occurrence which if not controlled or due to its nature could lead to an Environmental Incident.

Environmental Incident: Any occurrence which has potential, due to its scale and nature, to migrate from source and have an environmental impact beyond the site boundary.

Environmental Exceedance Event: An environmental exceedance event occurs when monitoring results indicate that limits for a particular environmental parameter (as indicated in the Environmental Monitoring Programme) has been exceeded.

An exceedance will immediately trigger an investigation into the reason for the exceedance occurring and the application of suitable mitigation where necessary.

Exceedance events can be closed out on achieving a monitoring result below the assigned limit for a particular environmental parameter.

Environmental Non-Compliance: Non-fulfilment of a requirement and includes any deviations from established procedures, programs and other arrangements related to the Decommissioning Plan.

8.4 Corrective Action Procedure

A corrective action is implemented to rectify an environmental problem on-site. Corrective actions will be implemented by the Site Supervisor/Construction Manager, as advised by the Site Environmental Clerk of Works. Corrective actions may be required as a result of the following;

- Environmental Audits;
- Environmental Inspections and Reviews;
- Environmental Monitoring;
- Environmental Incidents; and,
- Environmental Complaints.

A Corrective Action Notice will be used to communicate the details of the action required to the main contractor. A Corrective Action Notice is a form that describes the cause and effect of an environmental problem on site and the recommended corrective action that is required. The Corrective Action Notice, when completed, will include details of close out and follow up actions.

If an environmental problem occurs on site that requires immediate attention direct communications between the Site supervisor/Construction Manager and the ECoW will be conducted. This in turn will be passed down to the site staff involved. A Corrective Action Notice will be completed at a later date.

8.5 Decommissioning Phase Plan Review

This Decommissioning Plan will be updated and reviewed prior to commencement of decommissioning.

APPENDIX 1

DECOMMISIONG PHASE TRAFFIC MANAGEMENT PLAN FOR THE CABLE ROUTE

MCE Ltd.

Civil Engineering

Traffic Management Plan: Cleanrath WF
Decommissioning 33kV & 38kV Cables Along Public Road

July 2020

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Lissarda Industrial Estate, Lissarda, Cork, Ireland.

MCE Ltd.

Civil & Electrical Engineering Specialists

MCE – Cleanrath Windfarm Traffic Management Plan

Contractor: MCE ltd.

Project name: Cleanrath Windfarm

Address: Cleanrath, Co. Cork.

Name :James Crowley 086 3979248
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chris.murnane@gmail.com

Site supervisor: TBC

Safety officer: TBC

Description of task: Traffic Management Plan for Cleanrath Windfarm cable decommissioning along public road

Key plant: 360 excavators
8 tonne dumper
Lorries
Roller
Submersible Pumps
Plate compactor
Generator
Spill Kit
Diesel Bowser
Drip Trays

Specific Training: FAS safe pass
CSCS plant ticket
Site induction

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MCE – Cleanrath WF Traffic Management Plan

Method of Access and Egress to the work Area	All operatives must complete pre works MCE Ltd. site induction before commencing work on the ducting route.
Fall Protection Measures: (Where work at height cannot be eliminated)	No persons are permitted within 2 meters of excavation. Trench support will be utilized if required. Open trenches will be fenced off or backfilled every evening to ensure the areas are safe for workers and local traffic. No persons allowed in trench when exclusion zone is not achievable for passing vehicles or when deemed unsafe.
Hazardous Substances: Applicable:	 **No** **No** **No** **No** **No** **Yes** **No**
Storage Arrangements:	No material will be used or generated during the course of this task
Mandatory and Additional PPE as Required:	 Safety Boots Yes Hard Hats Yes Kevlar Yes Yes Hearing Protection When required Eye Protection Yes Respiratory Protection N/A Other: 1. Hi-Vis
Emergency Procedures:	MCE Emergency Procedures (All employees informed at site inductions) All employees to be made aware of the nearest exit routes from site. All personnel to be in possession of the site coordinates at all times in case of need to contact emergency services for any reasons.
First Aid Facilities:	On-Site First Aider: Chris Murnane First Aid Box Location: MCE Site Vehicle & Site Office Nearest Hospital: Macroom Community Hospital – (026) 41002 Other Hospital: Cork University Hospital – (021) 4922000
Welfare Facilities:	Site office, canteen and toilet supplied by Mid Cork Electrical at site compound across from substation and assembly point.

MCE – Cleanrath WF Traffic Management Plan

Introduction:

This traffic management plan outlines the affected roadways for the 33kV & 38 kV cable decommissioning between Cleanrath WF and Coomataggart 110kV substation (Grousemount). This is to be read in conjunction with the works method statement in order to provide a safe system of work.

The total length of roadway affected is approximately 12.1km and can be seen in more detail in Fig. 1.0. It is proposed that a Stop/Go system will be put in place for the duration of the works as they progress along the route at each of the potential pull locations (see Fig. 1.1 for an overview and Fig.'s 2.0 – 14.0 for more detail). In the event that the road is too narrow for a Stop/Go to be feasible, an All-Stop system will be used. Access will be prioritised for emergency vehicles and local householders who are unable otherwise to access their homes. Traffic calming measures will be utilized to slow down vehicles and ensure the works can be carried out safely.

Prior to any works commencing a dilapidation survey will be completed of the entire route, photographing and noting any existing damage or defects to property or road surfaces. A copy of this will be submitted to Cork County Council prior to work commencing.

MCE – Cleanrath WF Traffic Management Plan

Local Access for Residents

As part of the traffic management plan local residents affected by the works will be alerted through the use of letter drops and prior consultation.

Every effort will be made to limit the effect on local residents and any residents who require special provisions to be made will be accommodated (i.e. Home carer, etc.). Traffic management plans will be reviewed on a daily basis and take into account all local parameter in the area where work is being carried out. All required traffic management calculation forms will be completed and kept on site.

Pedestrian & Cyclist Management

Pedestrians and cyclists will be accommodated along the routes. Operatives will be made aware to watch out for oncoming pedestrians / cyclists and to advise them accordingly.

Dealing With Emergency Services

Gardaí will be advised of the intended works to be carried out prior to commencement on the Gardaí Consultation form. Emergency services using the local roads will be prioritised and areas where the works are being carried out will be covered immediately with road plates so as to allow access.

Signage Plan

All works will be signed in accordance with the "Guidance for the Control and Management of Traffic at Road Works" (Second Edition 2010). The Routine Works Traffic Management Design, including the layout parameters is illustrated on attachment.

MCE – Cleanrath WF Traffic Management Plan

All traffic management will comply with guidance given in Chapter 8, Traffic Signs Manual, Department of Transport November 2010 and Control and management of Traffic at Road Work November 2007.

A fully certified and competent 'Signing Lighting & Guarding ' officer will sign off on the works before commencement and carry out routine monitoring. A qualified supervisor will be onsite at all times.

✓See attached traffic management design sheet for signage etc.

✓The entire traffic management system will be set up prior to any works commencing.

✓Only approved signs will be used along the works area.

✓All signs will be clean and clearly visible.

✓Once signs are in place the route will be assessed to ensure adequate visibility for drivers and pedestrians.

✓All signs will be secured and weighted down where appropriate.

✓Traffic will be reduced to single flow during all excavations on the roadside along sections which do not require a closure.

✓ At the end of each day the excavation is back filled and all materials will be removed from the roadside.

✓Contractor vehicles will be parked with consideration given to traffic management plan.

✓Where flag men are required, both flag men, the foreman and guarding officer will all communicate via two-way radios.

MCE – Cleanrath WF Traffic Management Plan

Traffic Management Plan Drawings:

The following drawings are included at the end of this document:

- Fig. 1.0 – Route Overview – Sections
- Fig. 1.1 – Route Overview – Cable Pull Locations
- Fig. 2.0 – Section 2 Pull Location 1
- Fig. 3.0 – Section 2 Pull Location 2
- Fig. 4.0 – Section 3 Pull Location 3
- Fig. 5.0 – Section 4 Pull Location 4
- Fig. 6.0 – Section 4 Pull Location 5
- Fig. 7.0 – Section 5 Pull Location 6
- Fig. 8.0 – Section 6 Pull Location 7
- Fig. 9.0 – Section 6 Pull Location 8
- Fig. 10.0 – Section 6 Pull Location 9
- Fig. 11.0 – Section 7 Pull Location 10
- Fig. 12.0 – Section 8 Pull Location 11
- Fig. 13.0 – Section 9 Pull Location 12
- Fig. 14.0 – Section 9 Pull Location 13

MCE – Cleanrath WF Traffic Management Plan

Signage Layout

The following is the layout for signage that will be in place on the approach to the road works. See attached drawings showing signage layout for the road closure which will be occurring .

✓Sign no 1: WK 001 Man with Shovel.

✓Sign no 2: Do Not Pass/No Overtaking.

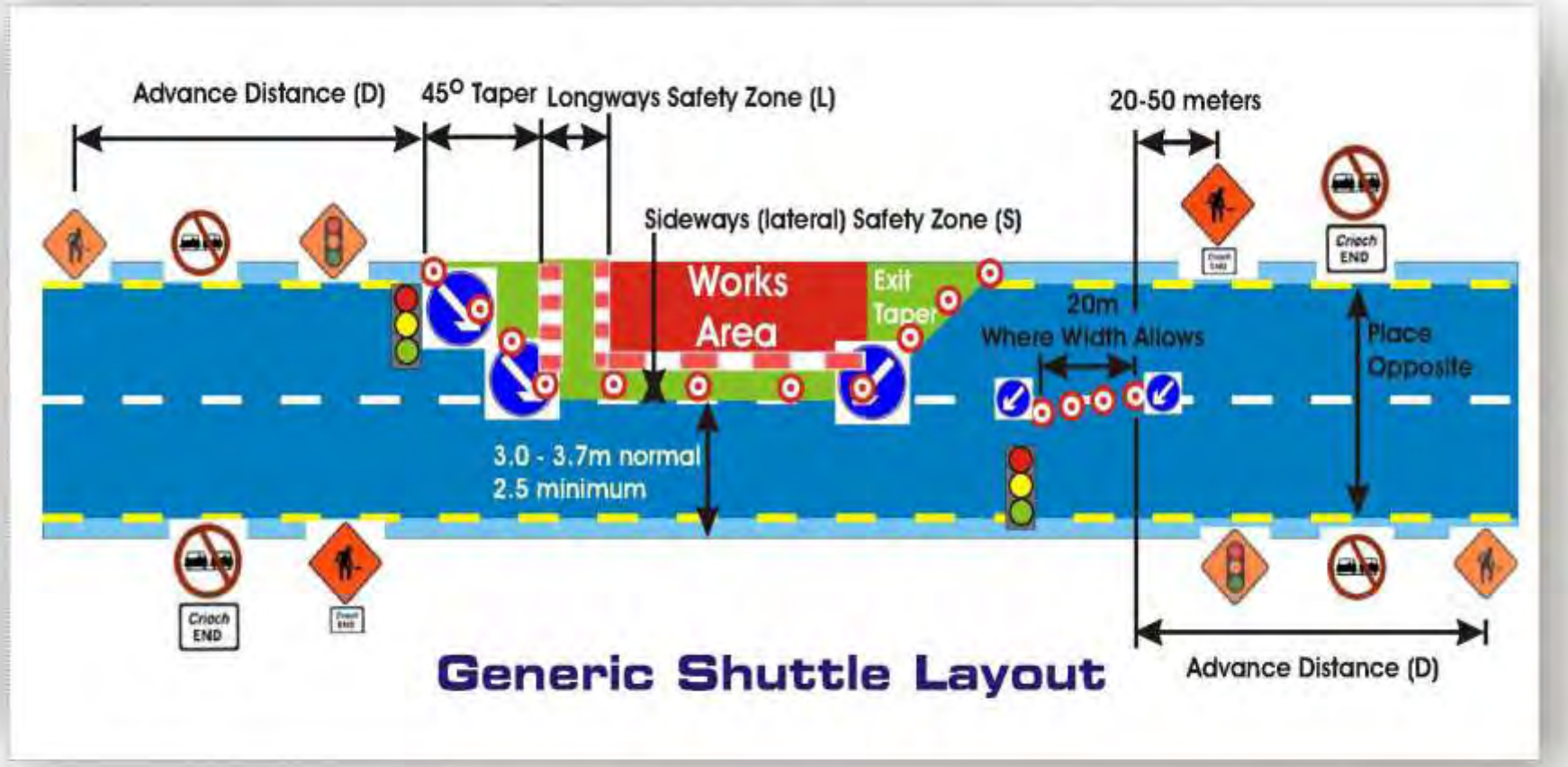
✓Sign no 3: Flagman or Traffic Light Ahead

✓Cones with reflectors start 50m before works location.

✓Signage after road words will indicate 'No Overtaking Ends' and ' End of Road Works'.

✓Traffic entering and exiting existing secondary road will continue as normal with construction traffic kept to a minimum.

✓See attached generic shuttle layout system for one-way stop and go. This shuttle layout will be set up onsite by the qualified signing lighting and guarding officer.



Generic Shuttle Layout

Civil & Electrical Engineering Specialists

MCE Ltd.

ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

Method	Max Speed Limit (km/h)	Length of Works (m)	Max Traffic (veh/hr)	3 Min Count	Notes	
All Stop	100	n/a	300	15	5-10 mins max.	
Give and Take	50	50	400	20	Clear Visibility required from both directions	
Priority	100	80	840	42	Speed Limit	Distance
	These Distances indicate the clear visibility distance from before an obstruction to a point an equal distance beyond the obstruction. If used at night, will require a warning beacon				50 km/h	60m
					60 km/h	70m
					80 km/h	80m
					100 km/h	100m
Stop/Go	100	20	500	25	Can be Single Man/Single Sign	
	100	100	1400	70	Can be single Man-Auto Sign	
	100	200	1250	63	Can be single Man-Auto Sign	
	100	300	1050	53	Has to be Two Man-Two Sign	
	100	400	950	48	Has to be Two Man-Two Sign	
	100	500	850	43	Has to be Two Man-Two Sign	
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated	

NOTE: WHEN USING SHUTTLE CONTROL, TAPERS ARE AT 45 DEGREES

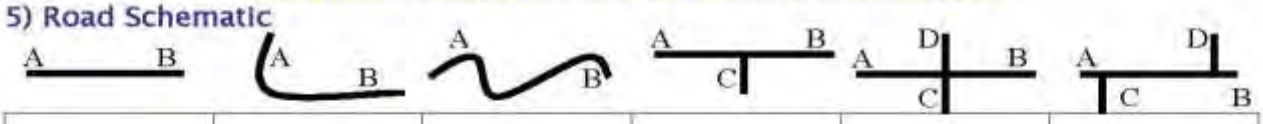
LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance Sign Distance (D) (m)	Min No. & Type Of Advance Signs In Sequence	Min clear visibility of Signs (m)	Min size of signs (mm)	Min height of cones (mm)	Long. Safety Zone (L) (m)	Side. Safety Zone (S) (m)	Long. Cone Space	Long. Lamp Space	Lane Taper Multiply factor	Taper Cone Spacing	Taper Lamp Spacing	Lead-in cone tapers (See Notes below) Recommended lengths	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED				Hard Shoulder Taper Multiply factor
														1 m	2 m	3 m	4 m	
Single carriageway road, 30km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	450	5	0.5	6	12	8	3	9	Length of taper (T) in (m)	8	16	24	32	4
													Minimum No. of Cones	4	7	10	12	
													Minimum No. of Lamps	2	3	4	5	
Single carriageway 50km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	450	5	0.5	6	12	8	3	9	Length of taper (T) in (m)	8	16	24	32	4
													Minimum No. of Cones	4	7	10	12	
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 80km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	90	750* 900*	750	45	1.2	12	24	35	2.5	9	Length of taper (T) in (m)	35	70	105	140	20
													Minimum No. of Cones	16	30	44	58	
													Minimum No. of Lamps	5	9	13	17	
Single Carriageway 100 km/h	800	1 (r.w.a.) 1 (n.o.) 2 (t.m.)	120	750* 900*	750	60	1.2	12	24	40	1	9	Length of taper (T) in (m)	40	80	120	160	20
													Minimum No. of Cones	42	82	122	162	
													Minimum No. of Lamps	6	10	15	19	
Dual Carriageway 60 km/h	600	1 (r.w.a.) 2 (t.m.) X 2	50	900	450	5	0.5	6	12	8	3	9	Length of taper (T) in (m)	8	16	24	32	4
													Minimum No. of Cones	4	7	10	12	
													Minimum No. of Lamps	2	3	4	5	
Dual Carriageway 80 km/h	600	1 (r.w.a.) 2 (t.m.) X 2	90	900	750	45	0.75	12	24	35	3	9	Length of taper (T) in (m)	35	70	105	140	10
													Minimum No. of Cones	13	25	37	48	
													Minimum No. of Lamps	5	9	13	17	
Dual Carriageway 100 km/h	1000	2 (r.w.a.) 3 (t.m.) X 2	120	1200	750	45	1.2	12	24	40	1	9	Length of taper (T) in (m)	40	80	120	160	20
													Minimum No. of Cones	42	82	122	162	
													Minimum No. of Lamps	6	10	15	19	

* Use 750mm signs where Vehicles Per Day < 5,000. Use 900mm signs where Vehicles Per Day > 5,000

TRAFFIC MANAGEMENT PLAN FOR ROUTINE WORKS

5) Road Schematic



6) Traffic Management Selection

6.1) Classification	Road Type	Road Width	Speed Limit	Urban/Rural	Traffic
					Heavy/ Light

6.2) Selection	All Stop	Give & Take	Priority	Stop/ Go	Lights	Tapers

6.3) Semi-Static	Will Semi-Static Management be used?	Yes		No	

7) Signage (Warn / Inform / Direct / End)

No	Sign	Dir	No	Sign	Dir	No	Sign	Dir	No	Sign	Dir
1		A			A			A			A
1+2 ARE SEMI-STATIC	SELECT PLATE BELOW	B	6		B	11		B	16	Pedestrian Barrier	B
		C			C			C			C
		D			D			D			D
	Deisiú Bóthair ROAD REPAIRS / Oibreacha Draenáil DRAINAGE WORKS / Bearnadh Fáil HEDGE CUTTING	A	7		A	12		A	17		A
		B			B			B			B
		C			C			C			C
		D			D			D			D
1+2 ARE SEMI-STATIC	2 km ar fad / FOR 2 km	A	8		A	13		A	18		A
		B			B			B			B
		C			C			C			C
2		D			D			D			D
3		A	9	YIELD (Priority)	A	14	Barrier Board	A	19		A
		B			B			B			B
		C			C			C			C
		D			D			D			D
5		A	10		A	15		A	20	Crioch END	A
		B			B			B			B
		C			C			C			C
		D			D			D			D

If Using Traffic Lights/ Stop-Go, Have Gardai Been Notified?	YES		NO	
Are All Required Cones /(Lamps & Beacons) In Place (and operating)?	YES		NO	

8) Workforce Induction & Communication

8.1) Has this Plan been Communicated to the workforce and does everyone know their role? Operatives to Sign Below	Yes		No	

8.2) Supervisor		

NOTIFICATION OF POSITIVE TRAFFIC CONTROL

Under the following Road Traffic Acts/Regulations

- Section 37 of the Road Traffic Act, 1994
- Road Traffic (Signs) Regulations 2006 (S.I. No. 637 of 2006)
- Road Traffic (Control of Traffic) Regulations 2006 (S.I. No. 638 of 2006)

The Roads Authority of

Hereby notifies

Of the use of

TEMPORARY TRAFFIC LIGHTS ☐

STOP–GO BOARD(s) ☐

at the following location:

Road

From a point

To a point

ON/ BETWEEN (delete as appropriate) the following dates

	and	

Observations (if any) should be faxed to: _____

Signed: _____

On behalf of the Roads Authority

PLANNED WORKS TRAFFIC MANAGEMENT SITE INSPECTION SHEET					
PROJECT NAME:			Phase:		
Date:		Time:	1).	2).	
1) TRAFFIC MANAGEMENT SET-UP/ MODIFICATION, INSPECTIONS					
1-1) Installation Checks					
Does the Traffic Management conform to the Design Layout and Parameters?					
Have all hazards been addressed in the Traffic Management Plan?					
Has allowance been made for the delivery and removal of materials?					
Have Gardaí been informed of any Traffic Lights/ Stop-Go Boards in use?					
Have Gardaí been informed of Roadworks Speed limits being introduced?					
2) TRAFFIC MANAGEMENT OPERATION INSPECTIONS					
2-1) Operation Checks				1	2
Are Safety Zones being kept clear of operatives, plant and materials?					
Are all the signs in good condition/ are all cones in good condition with sleeves?					
Are sign vision lines free from bends, hills/dips in the road, parked vehicles, hedges etc?					
Will the site be safe at night or in wind, fog, snow or rain? (delete as appropriate)					
Are all misleading permanent signs and road markings covered?					
Is the carriageway/footway being kept clear of mud and surplus equipment?					
Are materials/ plant that are left on verges or lay-bys being properly guarded and lit?					
2-2) Traffic Checks					
Is there safe access to adjacent premises?					
Does Signing and Guarding meet the (changing) conditions?					
Are traffic control arrangements working at the optimum level to reduce traffic delays?					
If present, are the needs of cyclists or horse riders incorporated into the layout?					
2-3) Pedestrian & Vulnerable Road User Checks					
Have the needs of pedestrians & vulnerable road users been addressed in the layout?					
If pedestrian route blocked, has a suitable alternative route been provided?					
Are pedestrian routes clearly evident/ indicated?					
If a footway in the road is to be used, are ramps to the kerb provided?					
Are pedestrian hazards sufficiently GUARDED at night?					
3) TRAFFIC MANAGEMENT CESSATION INPECTIONS					
3-1) Works Complete Checks					
Have all signs, cones, barriers, and lamps been removed?					
Have any covered permanent signs been restored?					
Have Gardaí been informed that Speedlimits/ Traffic Signals/ Stop-Go removed?					
4) EXCEPTIONS REPORT					
(Append attachments as necessary)					
Check Completed By:					

PROJECT CLOSEOUT SHEET	
PROJECT NAME:	

1) Procedures	
The extents of construction have been completed per the plans	
Pavement Surface has been visually inspected and deemed satisfactory (incl. sweeping of surfaces that have been surface dressed)	
Temporary Traffic Management arrangements (incl. Orders) have been removed	
Any Permanent Road Markings, Road Studs, and Signs have been installed	
2) Works Extents	
The length of work completed was (m)	
The average width of work completed was (m)	
3) Appointments	
PSDP appointment terminated	
Designer appointment terminated	
PSCS appointment terminated	
Contractor given completion certificate	
4) Records	
The safety file is complete and will be stored	
5) Site Inspection	
The site has been inspected by (print name) and deemed to be satisfactory:	
Signature:	
Date of inspection:	
6) Procedure Monitoring (to be completed by supervisor of person listed in 5 above)	
I recommend that the Project be deemed complete (print name)	
Signature:	
Date:	

INCIDENT/ ACCIDENT REPORT FORM

1) Job Details

1.1) Job Name	
1.2) Job Location	

2) Incident

2.1) Date of Incident				2.2) Time of Incident				
2.3) Incident Involves	Public	Layout	Operatives	Plant	Materials	Hired	Contractor	Environment
2.4) Incident Classification	Class 1			Class 2		Class3	Class 4	
	Long Traffic Delays	Pedestrian Danger		Near Miss	Minor Injury	3 Day Injury	Road Traffic Accident	Serious Injury or Death

2.5) Weather Conditions	Light:	Sunny	Cloudy	Fog	Dawn/Dusk	Night	Floodlit
	Rain:	Dry	Light Rain	Heavy Rain	Hailstones	Snow	
	Wind:	No Wind	Breeze	Windy	Gale		
	Temperature:	Warm	Cold	Freezing			

2.6) Locus	Carriageway	Footpath	Safety Zone	Working Space

2.7) Pavement Condition	Clean	Dirty	Dry	Wet	Granular	Wearing	Base	Chips	Markings

2.8) Number involved (Class 2 or greater)	

3) Traffic Management	N/A	Yes	No
3.1) Were the appropriate signs in their correct place?			
3.2) Were the signs in a good condition?			
3.3) Were all cones in place and in good condition?			
3.4) Were all TM Lamps in place and operating?			
3.5) Were all TM Beacons in place and operating?			
3.6) Were Plant Hazard Beacons operating?			

4) Site Health and Safety	N/A	Yes	No
4.1) Had operative appropriate CSCS card?			
4.2) Had plant/ equipment been checked for suitability?			
4.3) Were Safety Guards in place and in good condition?			
4.4) Were correct operating procedures/ guidelines used?			
4.5) Were operatives wearing appropriate PPE?			
4.6) Was there good housekeeping on site?			

5) Emergency Procedure

5.1) Services	None	First Aid	Driven to Aid	Ambulance	Fire Brigade	Gardai

5.2) Procedure	Good	Bad	None
Training			
Equipment			

6) Operatives (List operatives on site at time of incident)

7) Incident Description

8) Suggested Control Measures to Prevent Re-Occurance

9) Incident Sketch

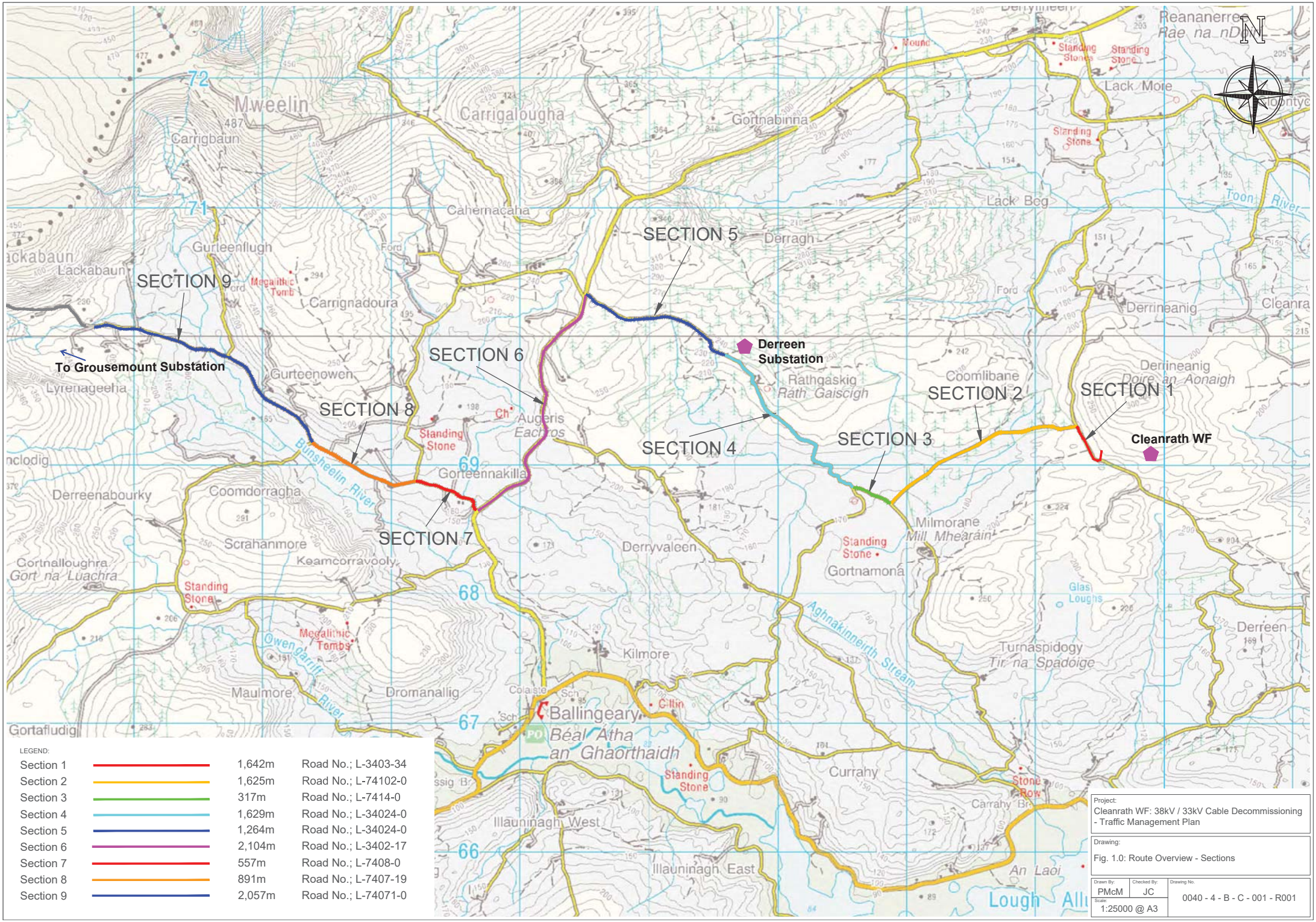
10) Report Completed By:		**11) Report Noted By:**	

MCE Ltd.

Civil & Electrical Engineering Specialists

MCE – Cleanrath WF Traffic Management Plan

	Name (Print)	Signature	I understand the details in the traffic management plan and agree to sign off (tick)	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				



LEGEND:

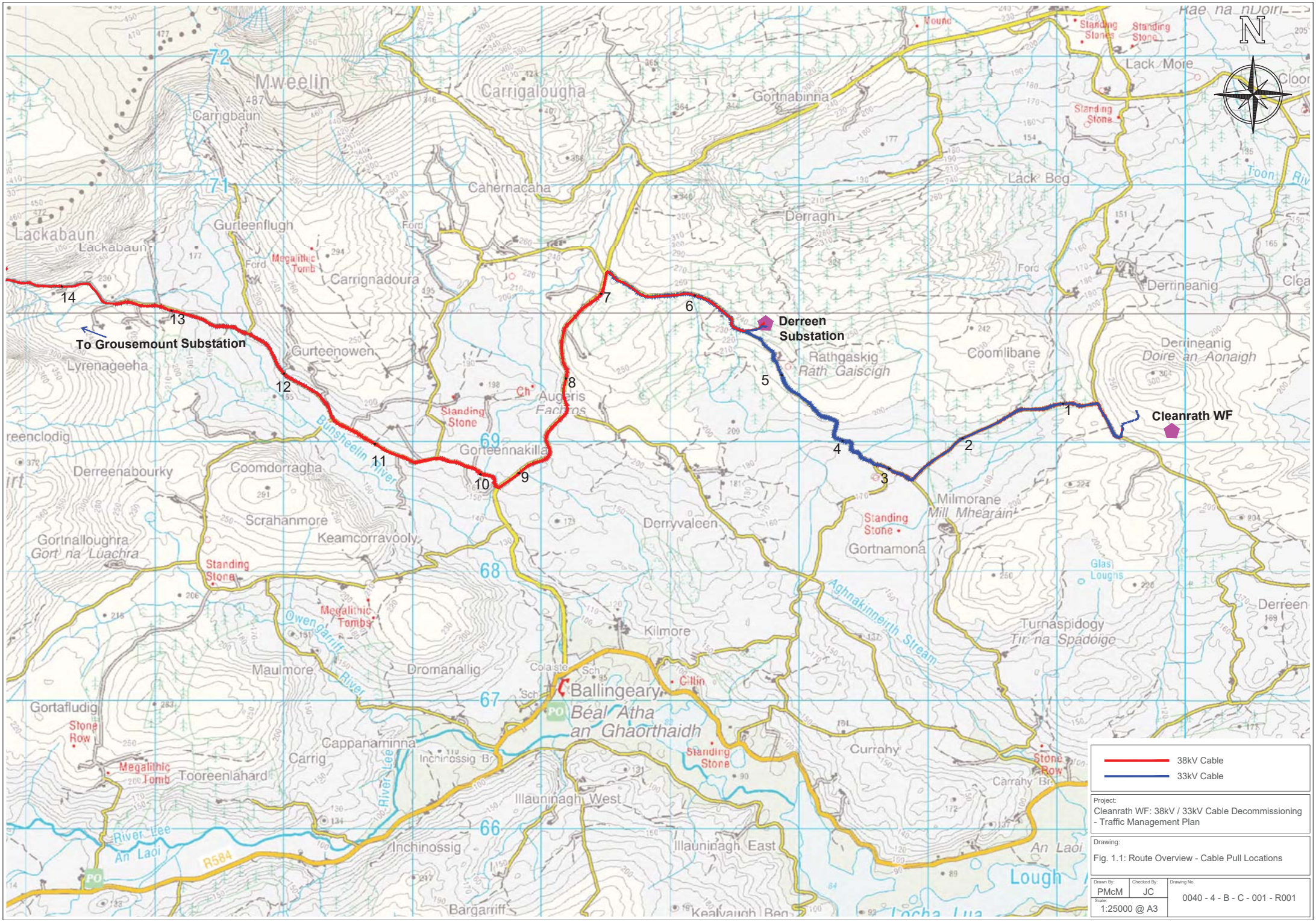
Section 1	1,642m	Road No.; L-3403-34
Section 2	1,625m	Road No.; L-74102-0
Section 3	317m	Road No.; L-7414-0
Section 4	1,629m	Road No.; L-34024-0
Section 5	1,264m	Road No.; L-34024-0
Section 6	2,104m	Road No.; L-3402-17
Section 7	557m	Road No.; L-7408-0
Section 8	891m	Road No.; L-7407-19
Section 9	2,057m	Road No.; L-74071-0

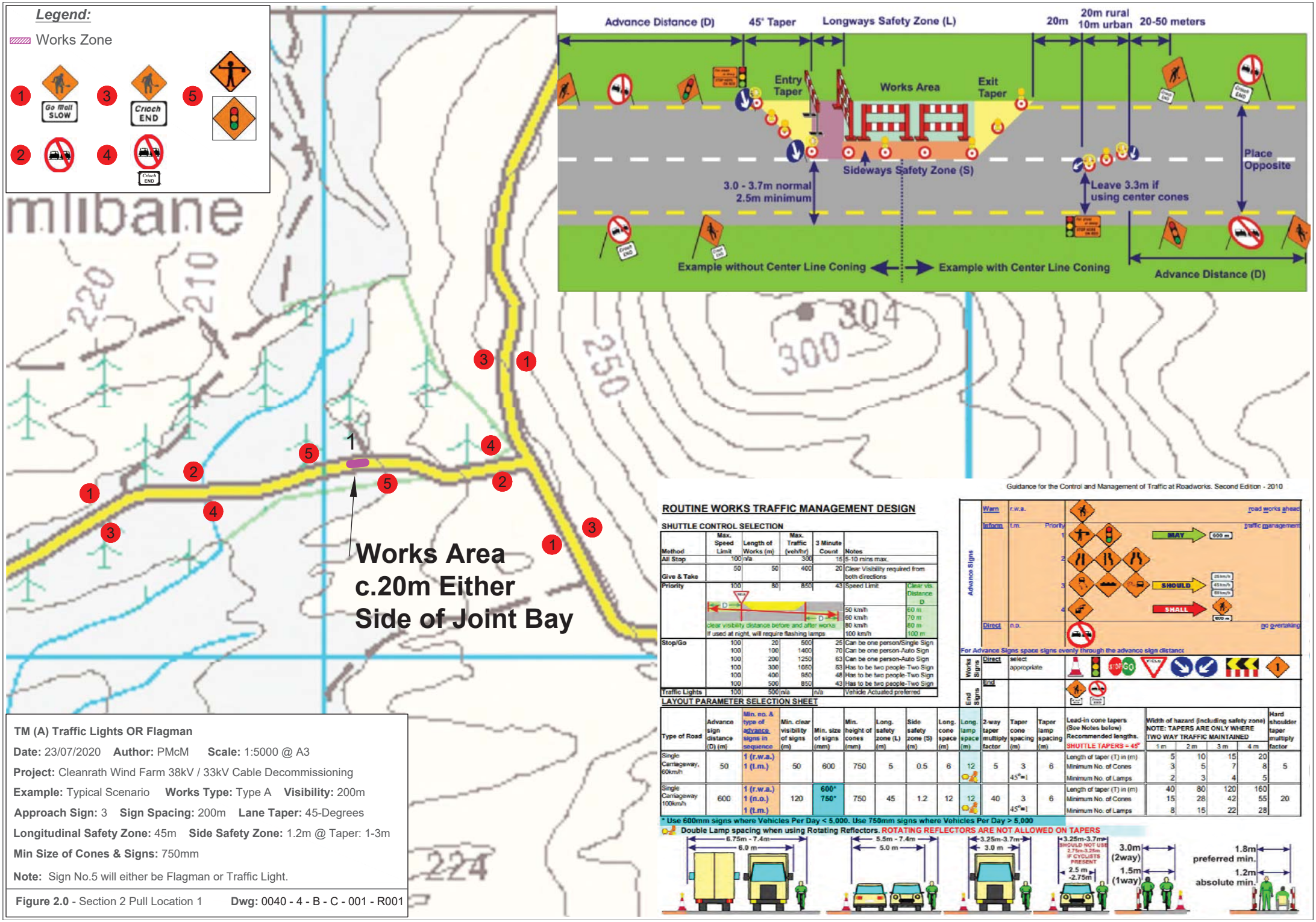
Project:
Cleanrath WF: 38kV / 33kV Cable Decommissioning - Traffic Management Plan

Drawing:
Fig. 1.0: Route Overview - Sections

Drawn By:	Checked By:	Drawing No.
PMcM	JC	0040 - 4 - B - C - 001 - R001

Scale: 1:25000 @ A3


N
Derreen Substation
Cleanrath WF
To Grousemount Substation
1
2
3
4
5
6
7
8
9
10
11
12
13
14
38kV Cable
33kV Cable
Project:
Cleanrath WF: 38kV / 33kV Cable Decommissioning - Traffic Management Plan
Drawing:
Fig. 1.1: Route Overview - Cable Pull Locations
Drawn By: PMcM
Checked By: JC
Drawing No. 0040 - 4 - B - C - 001 - R001
Scale: 1:25000 @ A3



TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 2.0 - Section 2 Pull Location 1 **Dwg:** 0040 - 4 - B - C - 001 - R001

Guidance for the Control and Management of Traffic at Roadworks. Second Edition - 2010

ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

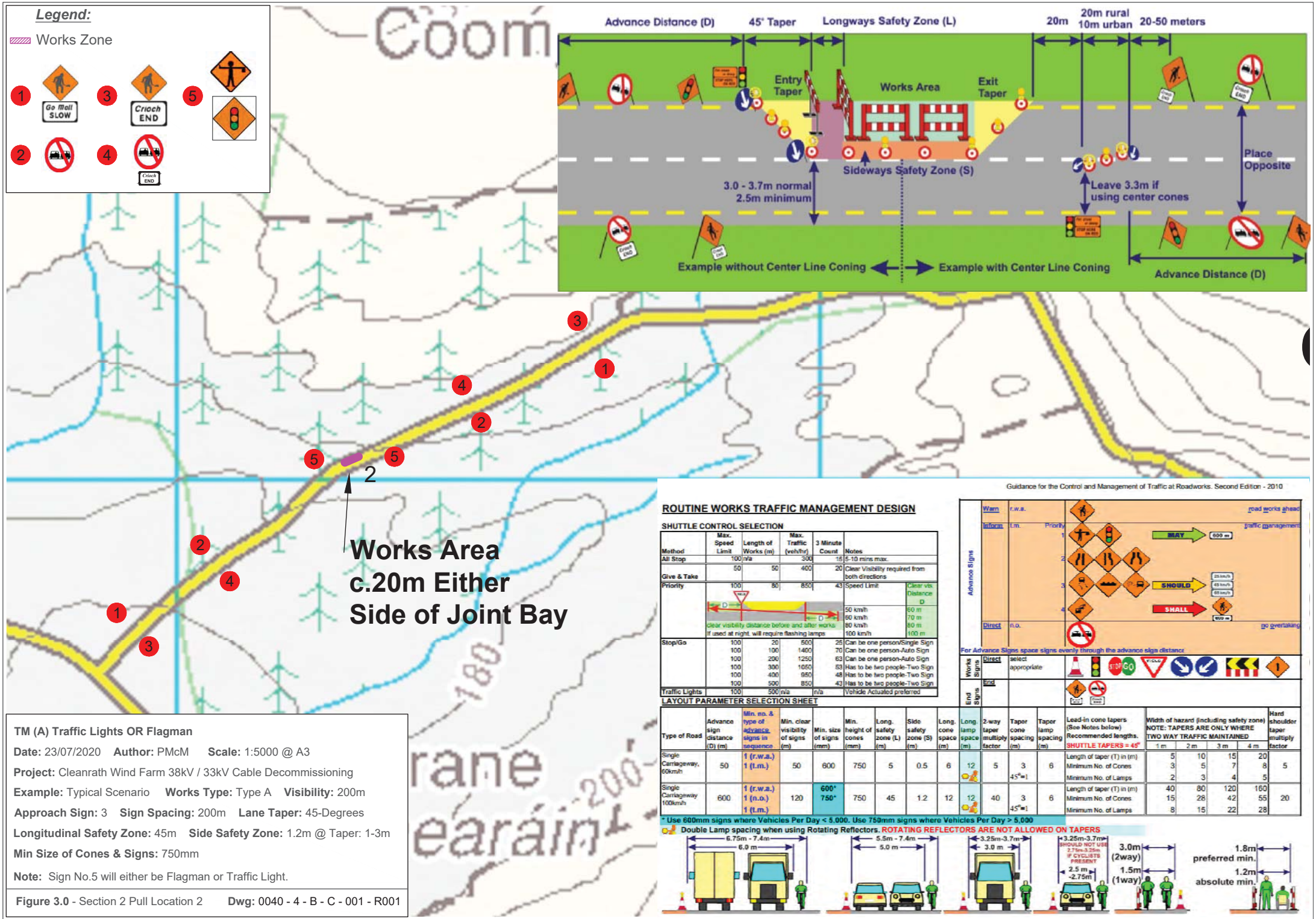
Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D: 50 km/h 60 m; 60 km/h 70 m; 80 km/h 80 m; 100 km/h 100 m. Clear visibility distance before and after works if used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 (45°=1)	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 (45°=1)	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS



TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 3.0 - Section 2 Pull Location 2 **Dwg:** 0040 - 4 - B - C - 001 - R001

Guidance for the Control and Management of Traffic at Roadworks. Second Edition - 2010

ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

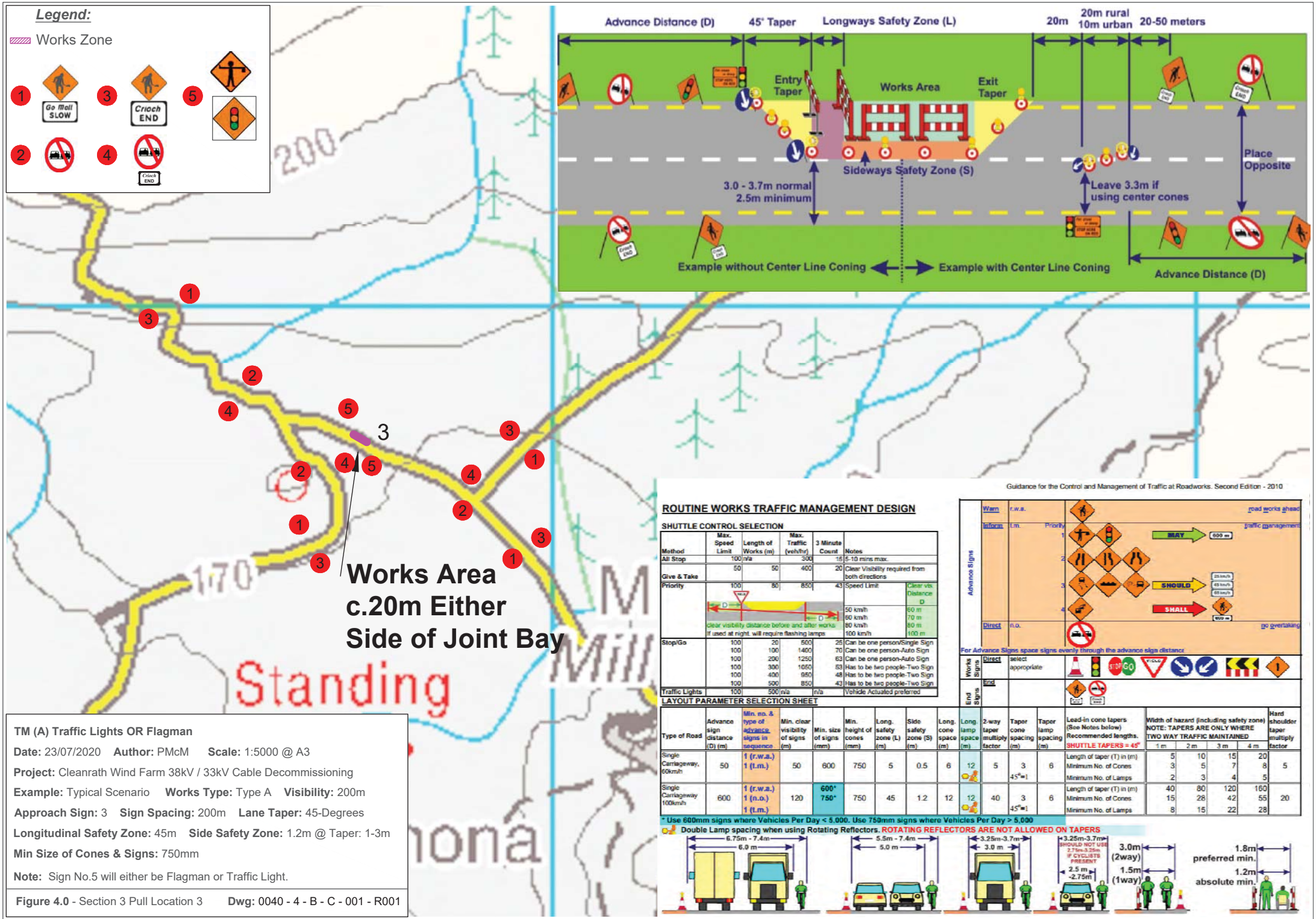
Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D: 50 km/h 60 m; 60 km/h 70 m; 80 km/h 80 m; 100 km/h 100 m. Clear visibility distance before and after works if used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS



TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 4.0 - Section 3 Pull Location 3 **Dwg:** 0040 - 4 - B - C - 001 - R001

Guidance for the Control and Management of Traffic at Roadworks. Second Edition - 2010

ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

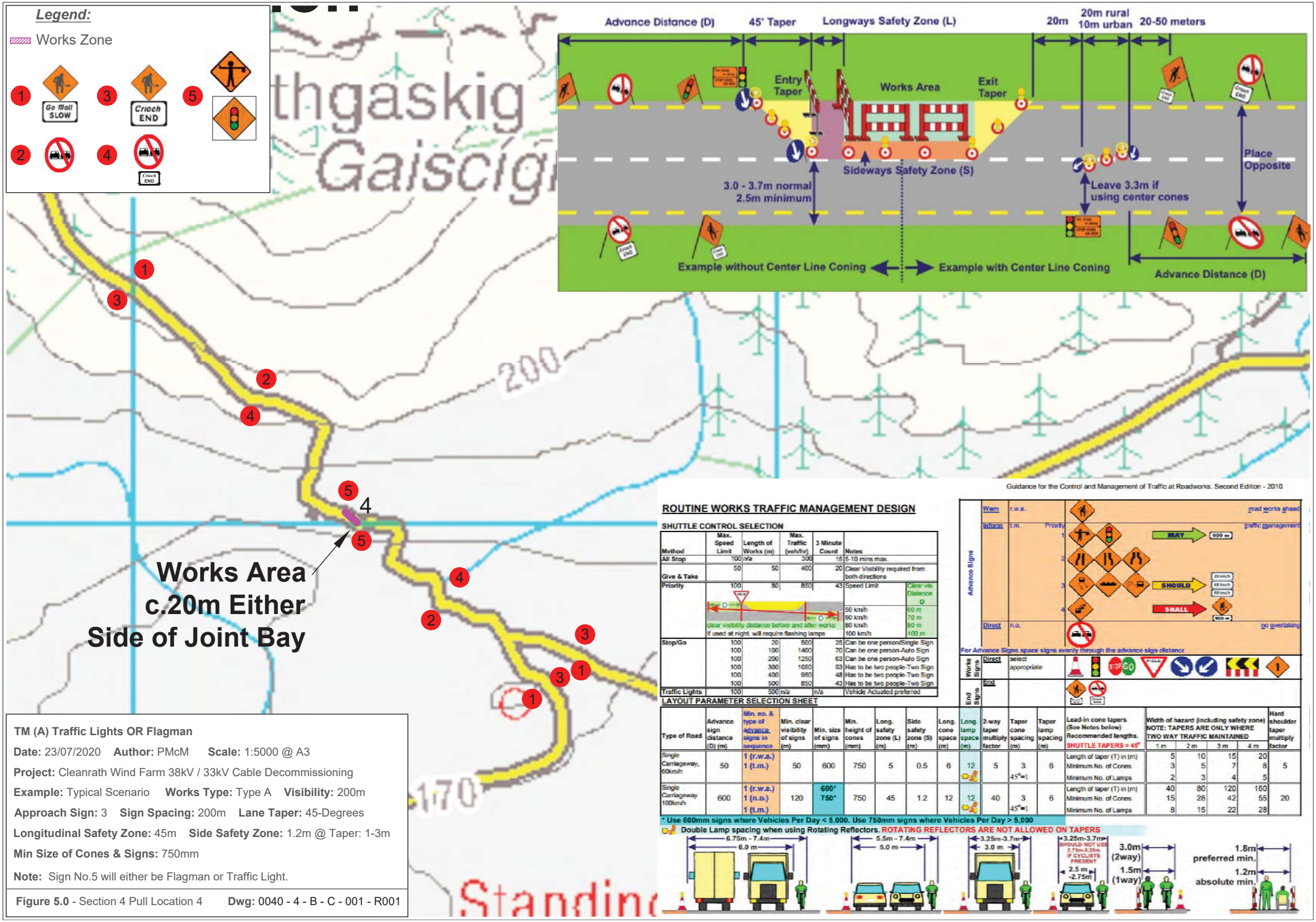
Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D: 50 km/h 60 m; 60 km/h 70 m; 80 km/h 80 m; 100 km/h 100 m. Clear visibility distance before and after works. If used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS



TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 5.0 - Section 4 Pull Location 4 **Dwg:** 0040 - 4 - B - C - 001 - R001

Guidance for the Control and Management of Traffic at Roadworks. Second Edition - 2010

ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

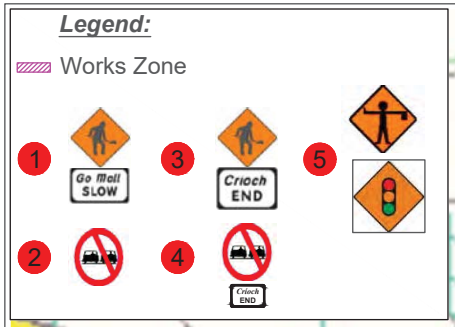
Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D: 50 km/h 60 m; 60 km/h 70 m; 80 km/h 80 m; 100 km/h 100 m
					Clear visibility distance before and after works if used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

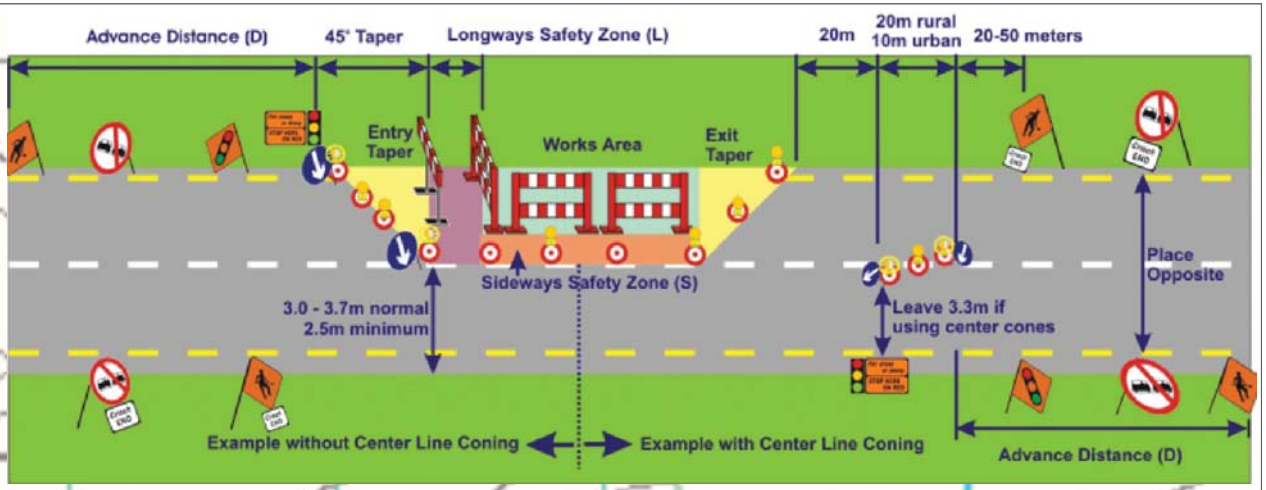
LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS





Derreen Substation

Works Area c.20m Either Side of Joint Bay

Guidance for the Control and Management of Traffic at Roadworks. Second Edition - 2010

ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D
					50 km/h 60 m
					60 km/h 70 m
					80 km/h 80 m
					100 km/h 100 m
					Clear visibility distance before and after works if used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS

TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

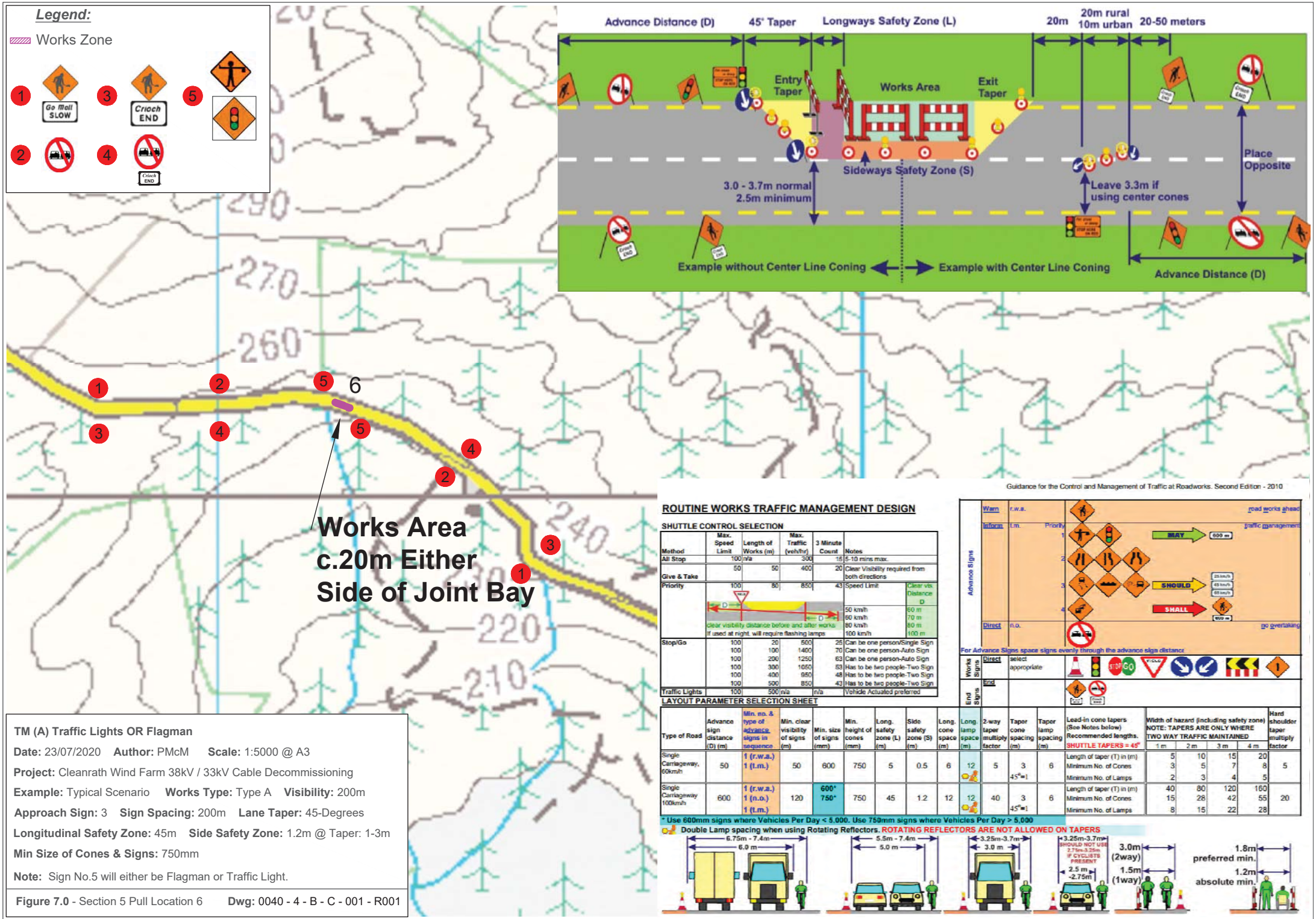
Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 6.0 - Section 4 Pull Location 5 **Dwg:** 0040 - 4 - B - C - 001 - R001



TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 7.0 - Section 5 Pull Location 6 **Dwg:** 0040 - 4 - B - C - 001 - R001

Guidance for the Control and Management of Traffic at Roadworks. Second Edition - 2010

ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

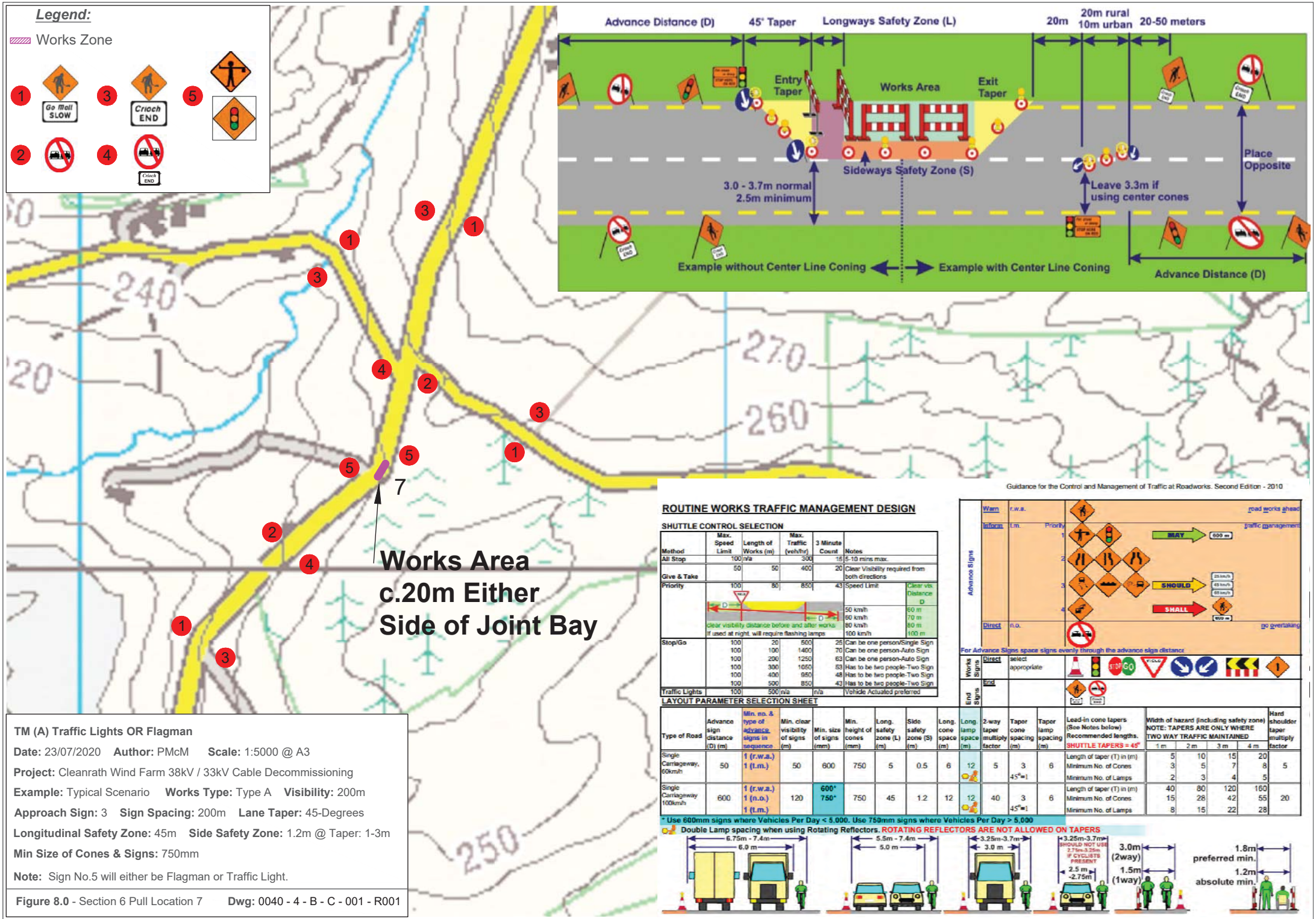
Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D: 50 km/h 60 m; 60 km/h 70 m; 80 km/h 80 m; 100 km/h 100 m
					Clear visibility distance before and after works if used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS



TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 8.0 - Section 6 Pull Location 7 **Dwg:** 0040 - 4 - B - C - 001 - R001

Guidance for the Control and Management of Traffic at Roadworks. Second Edition - 2010

ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

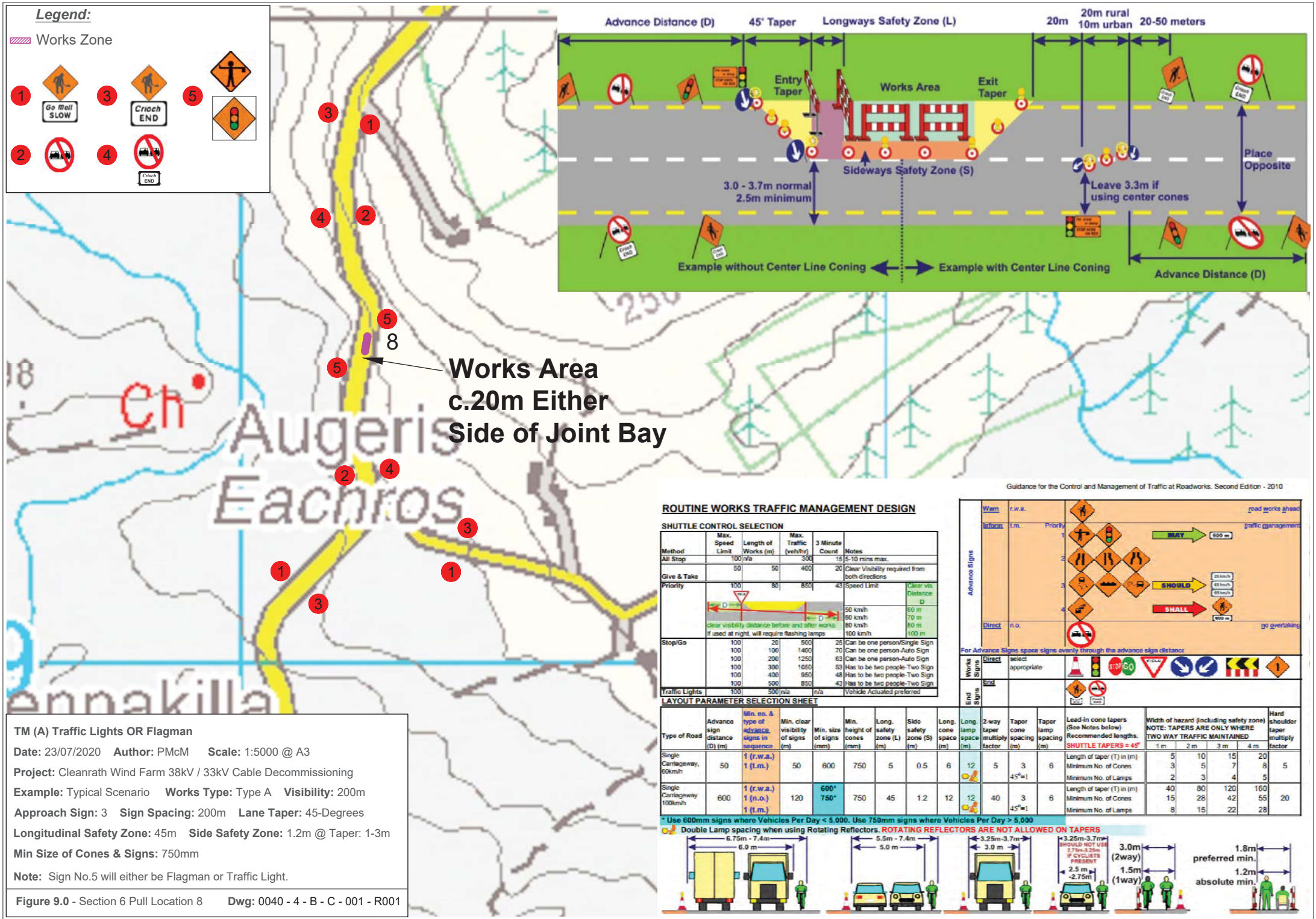
Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D: 50 km/h 60 m; 60 km/h 70 m; 80 km/h 80 m; 100 km/h 100 m. Clear visibility distance before and after works if used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS



TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 9.0 - Section 6 Pull Location 8 **Dwg:** 0040 - 4 - B - C - 001 - R001

Guidance for the Control and Management of Traffic at Roadworks. Second Edition - 2010

ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D: 50 km/h 60 m; 60 km/h 70 m; 80 km/h 80 m; 100 km/h 100 m
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

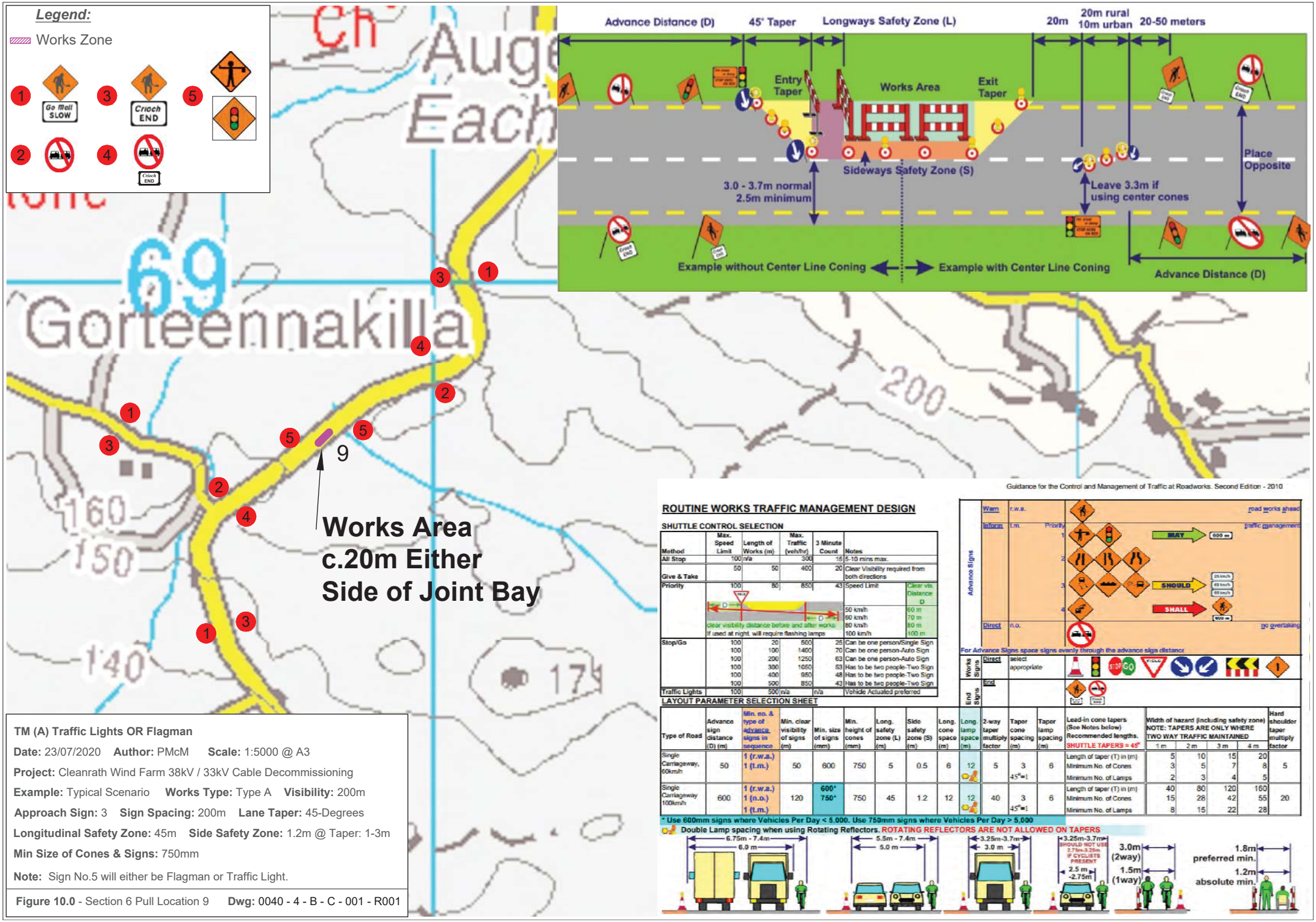
Clear visibility distance before and after works if used at night, will require flashing lamps

LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS



TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 10.0 - Section 6 Pull Location 9 **Dwg:** 0040 - 4 - B - C - 001 - R001

Guidance for the Control and Management of Traffic at Roadworks. Second Edition - 2010

ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

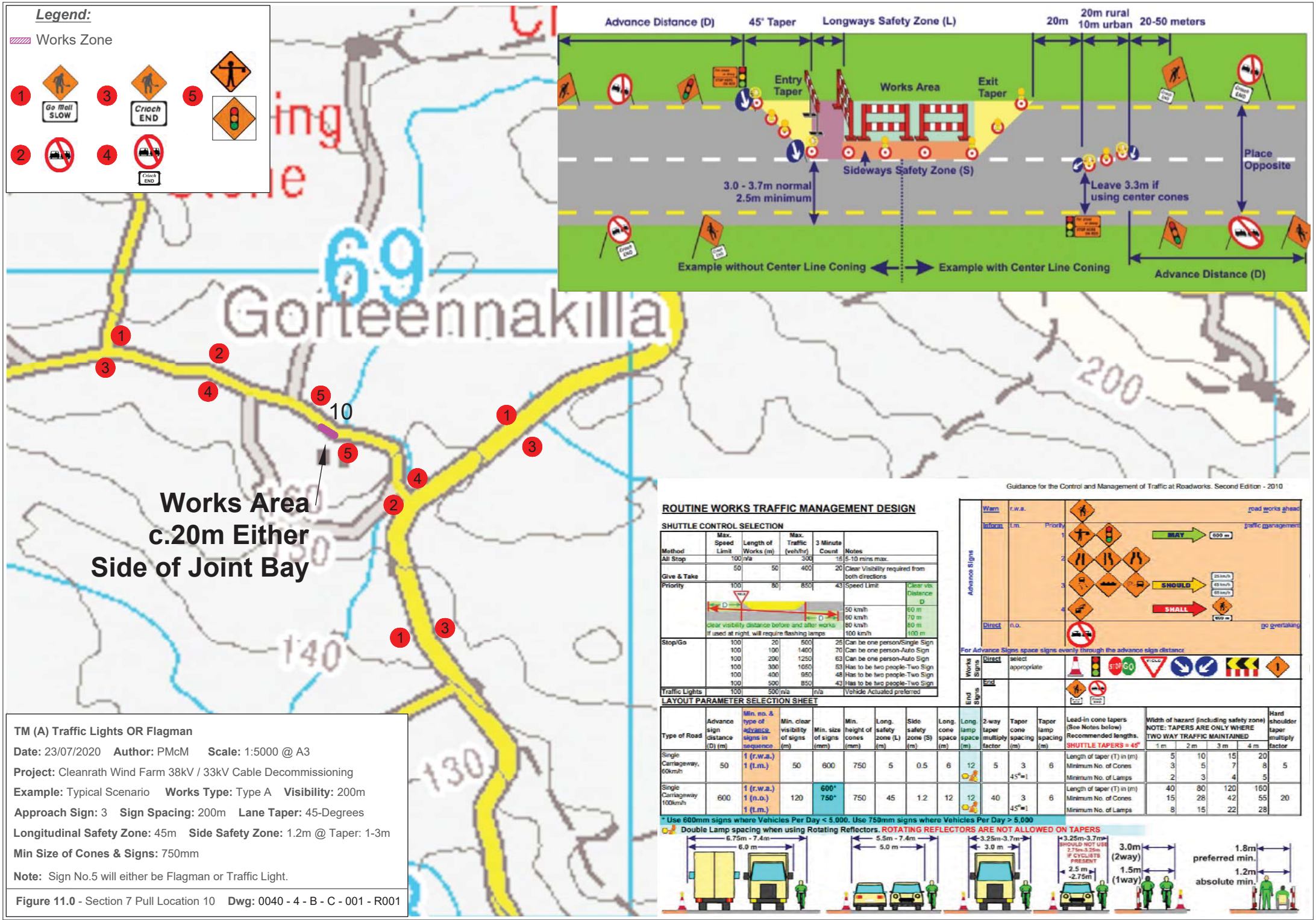
Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D: 50 km/h 60 m; 60 km/h 70 m; 80 km/h 80 m; 100 km/h 100 m
					Clear visibility distance before and after works. If used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS



TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 11.0 - Section 7 Pull Location 10 **Dwg:** 0040 - 4 - B - C - 001 - R001

Guidance for the Control and Management of Traffic at Roadworks. Second Edition - 2010

ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

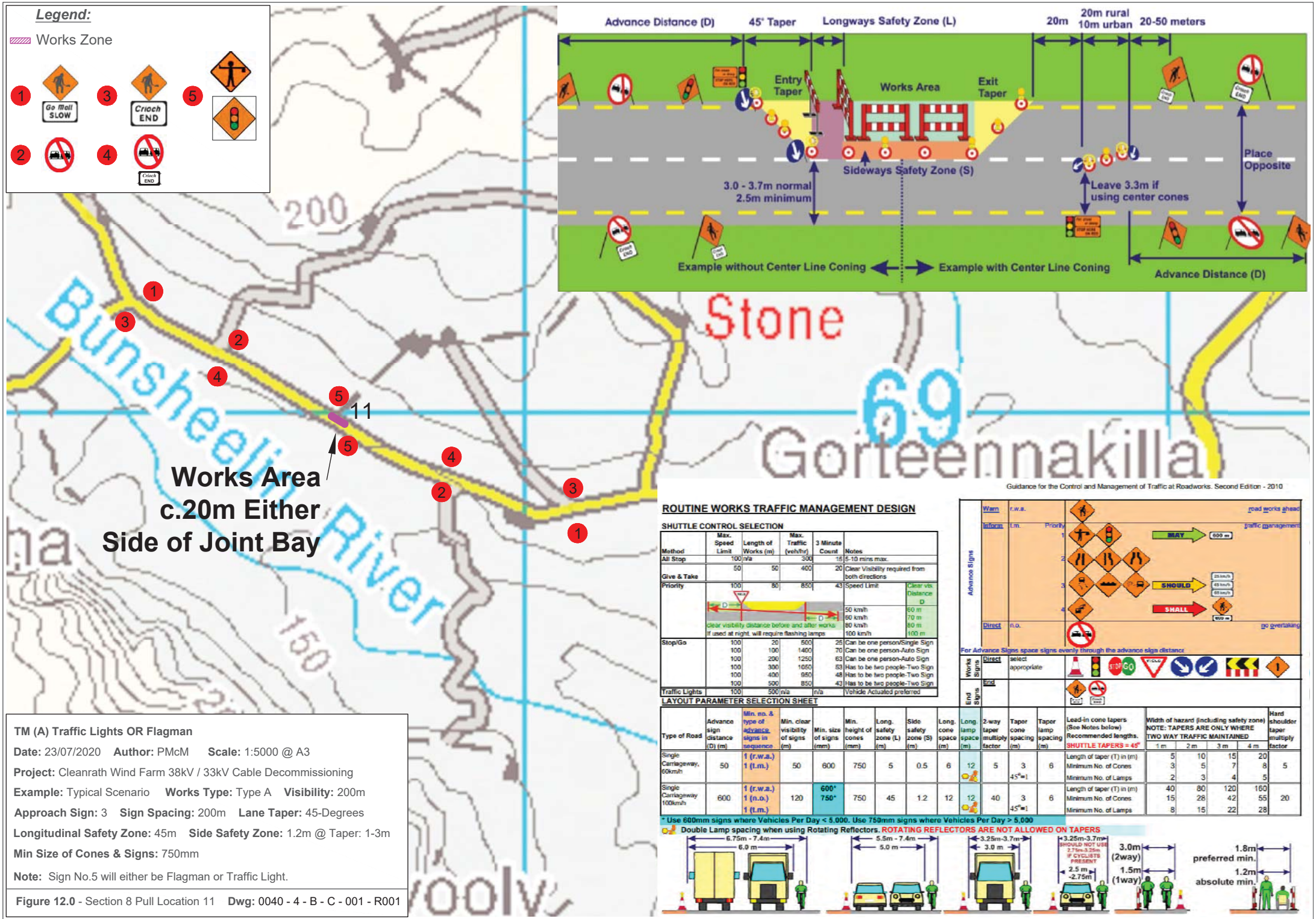
Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D: 50 km/h 60 m; 60 km/h 70 m; 80 km/h 80 m; 100 km/h 100 m. Clear visibility distance before and after works. If used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS



TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 12.0 - Section 8 Pull Location 11 **Dwg:** 0040 - 4 - B - C - 001 - R001

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ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

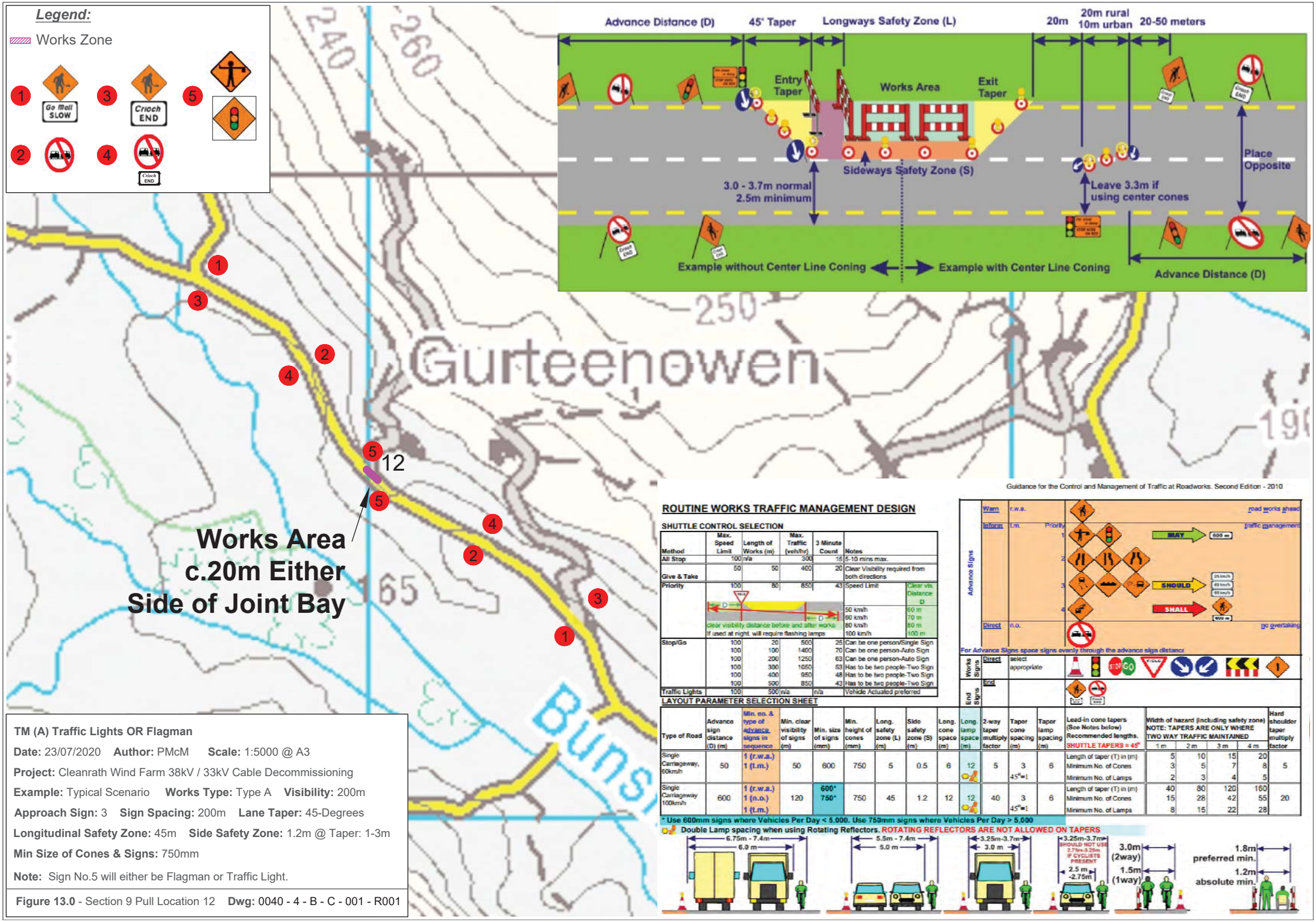
Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D: 50 km/h 60 m; 60 km/h 70 m; 80 km/h 80 m; 100 km/h 100 m. Clear visibility distance before and after works. If used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS



TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 13.0 - Section 9 Pull Location 12 **Dwg:** 0040 - 4 - B - C - 001 - R001

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ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

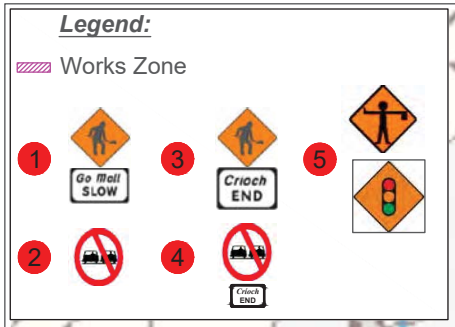
Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D: 50 km/h 60 m; 60 km/h 70 m; 80 km/h 80 m; 100 km/h 100 m. Clear visibility distance before and after works. If used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

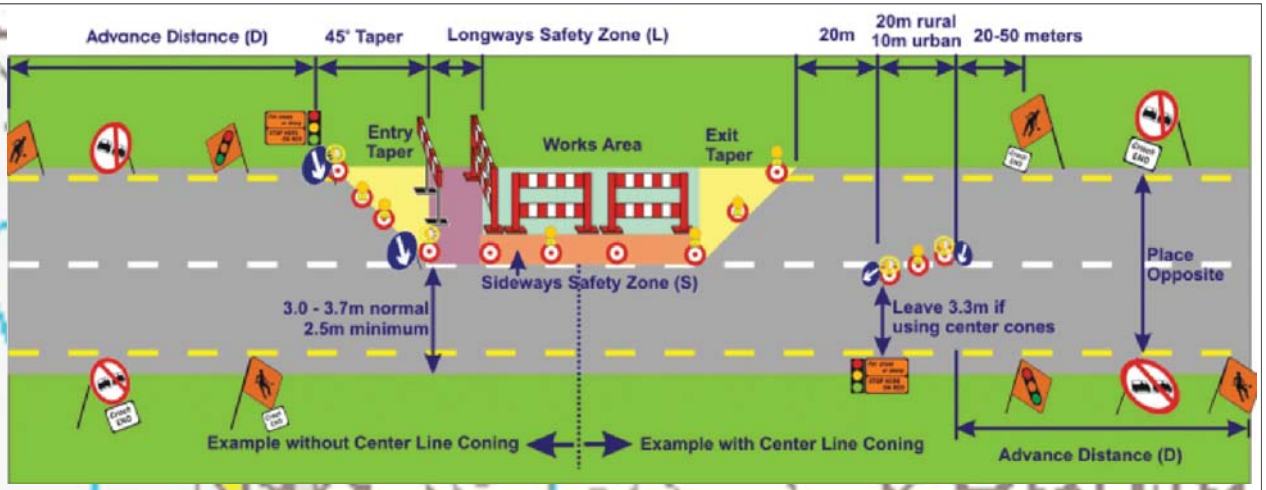
LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS





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ROUTINE WORKS TRAFFIC MANAGEMENT DESIGN

SHUTTLE CONTROL SELECTION

Method	Max. Speed Limit	Length of Works (m)	Max. Traffic (veh/hr)	3 Minute Count	Notes
All Stop	100	n/a	300	15	5-10 mins max.
Give & Take	50	50	400	20	Clear Visibility required from both directions
Priority	100	80	850	43	Speed Limit / Clear vis. Distance D
					50 km/h 60 m
					60 km/h 70 m
					80 km/h 80 m
					100 km/h 100 m
					Clear visibility distance before and after works if used at night, will require flashing lamps
Stop/Go	100	20	500	25	Can be one person/Single Sign
	100	100	1400	70	Can be one person-Auto Sign
	100	200	1250	63	Can be one person-Auto Sign
	100	300	1050	53	Has to be two people-Two Sign
	100	400	950	48	Has to be two people-Two Sign
	100	500	850	43	Has to be two people-Two Sign
Traffic Lights	100	500	n/a	n/a	Vehicle Actuated preferred

LAYOUT PARAMETER SELECTION SHEET

Type of Road	Advance sign distance (D) (m)	Min. no. & type of advance signs in sequence	Min. clear visibility of signs (m)	Min. size of signs (mm)	Min. height of cones (mm)	Long. safety zone (L) (m)	Side safety zone (S) (m)	Long. cone space (m)	Long. lamp space (m)	2-way taper multiply factor	Taper cone spacing (m)	Taper lamp spacing (m)	Lead-in cone tapers (See Notes below) Recommended lengths. SHUTTLE TAPERS = 45°	Width of hazard (including safety zone) NOTE: TAPERS ARE ONLY WHERE TWO WAY TRAFFIC MAINTAINED 1 m	2 m	3 m	4 m	Hard shoulder taper multiply factor
Single Carriageway, 60km/h	50	1 (r.w.a.) 1 (t.m.)	50	600	750	5	0.5	6	12	5	3 45°=1	6	Length of taper (T) in (m)	5	10	15	20	
													Minimum No. of Cones	3	5	7	8	5
													Minimum No. of Lamps	2	3	4	5	
Single Carriageway 100km/h	600	1 (r.w.a.) 1 (n.o.) 1 (t.m.)	120	600* 750*	750	45	1.2	12	12	40	3 45°=1	6	Length of taper (T) in (m)	40	80	120	160	
													Minimum No. of Cones	15	28	42	55	20
													Minimum No. of Lamps	8	15	22	28	

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

Double Lamp spacing when using Rotating Reflectors. ROTATING REFLECTORS ARE NOT ALLOWED ON TAPERS

TM (A) Traffic Lights OR Flagman

Date: 23/07/2020 **Author:** PMcM **Scale:** 1:5000 @ A3

Project: Cleanrath Wind Farm 38kV / 33kV Cable Decommissioning

Example: Typical Scenario **Works Type:** Type A **Visibility:** 200m

Approach Sign: 3 **Sign Spacing:** 200m **Lane Taper:** 45-Degrees

Longitudinal Safety Zone: 45m **Side Safety Zone:** 1.2m @ Taper: 1-3m

Min Size of Cones & Signs: 750mm

Note: Sign No.5 will either be Flagman or Traffic Light.

Figure 14.0 - Section 9 Pull Location 13 **Dwg:** 0040 - 4 - B - C - 001 - R001