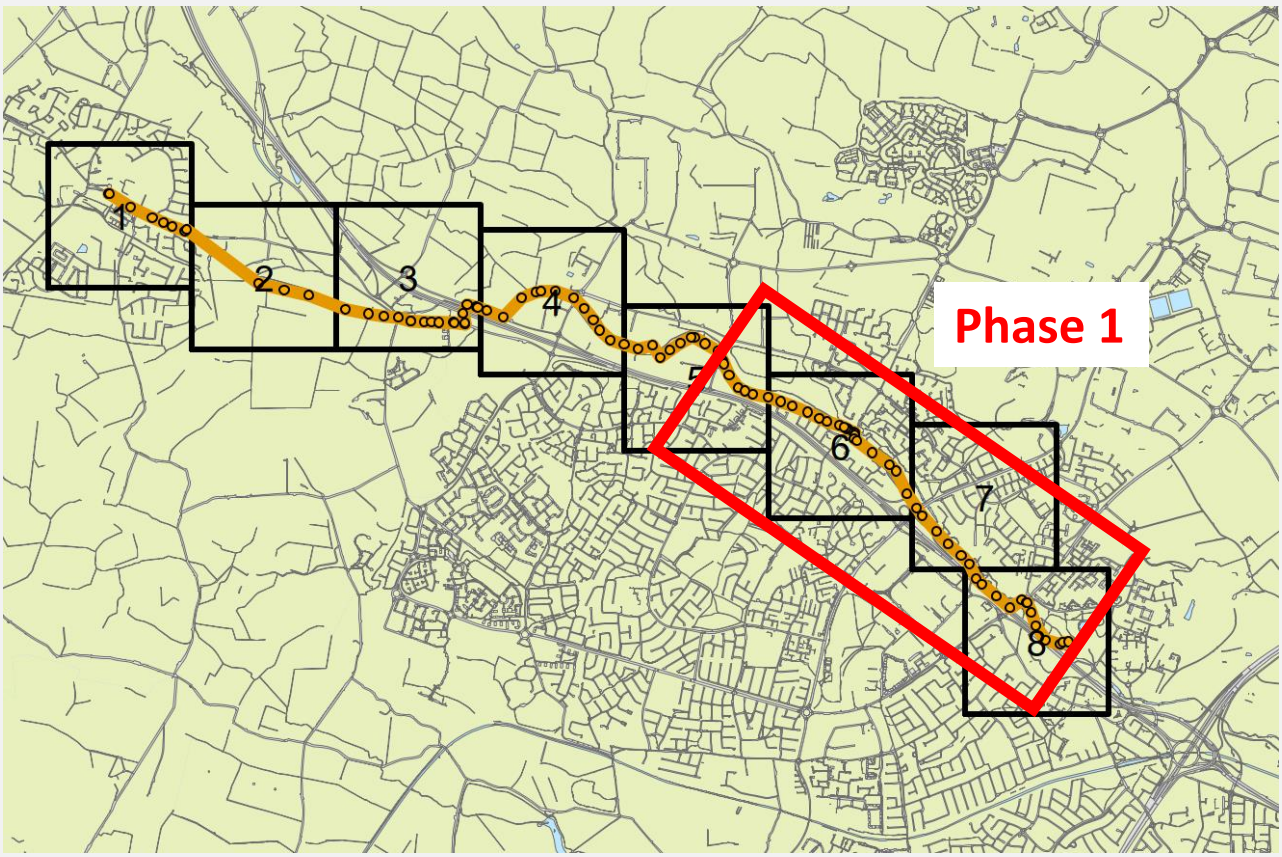
GMC Utilities Group Ltd

Sewer Cleaning & Surveying

Method Statement MST060

Author:	[redacted]	**Date of First Issue:**	27/5/2024
Approved:	[redacted]	**Last Revision Date:**	26/8/2024
Project Name:		Dundalk Sewer Rehab	
Site Address:	Navan Road, Tolka Valley Park, Church Road, Blanchardstown Road North, Corduff Park, N3, Snugborough Road, R843, Waterville Park, Adjacent Streets	**Duration of Work:**	As per project programme
Work Description	• 9C Sewer Cleaning & Sewer Surveying – Phase 1 (Navan Road to BRDS site) • Confined space work (NC3)		
Project Notification required to H.S.A.	Yes		



Supervisory Personnel		
Name	**Role**	**Contact No.**
[redacted]	Contract Manager	[redacted]
[redacted]	Site Supervisor	[redacted]
[redacted]	Site Engineer	[redacted]
[redacted]	HSQE Manager	[redacted]
[redacted]	HSQE Advisor	[redacted]

No's of Workers Involved up to:			Tick as Appropriate	✓
Key Plant & Equipment:	Gas detection equipment	✓	2" & 6" pumps	✓
	Harnesses	✓	Compressor and breaker	✓
	Generator - standby	✓	Traffic Management	✓
	Air blower - standby	✓	Heras Fencing	✓
	Tripod & winch	✓	Welfare unit	✓
	Escape sets	✓	Manhole Lifting Equipment	✓
	Full breathing sets - standby	✓	Spill Kits	✓
	Jet vactor / Jetting Van	✓	Flow monitor crew and equipment	
	CCTV Van	✓	Life jackets, buoy – where applicable	
	Work Vans	✓	Excavator	✓
	Shovels, sweeping brushes, water hose, buckets, hand tools			✓

Site-Specific Training:	**Qualification**	**Who**
	GMC Induction	All field-based staff
	Safe Pass	All field-based staff
	Confined Spaces	All persons involved in confined space works
	Manual Handling	All field-based staff
	Abrasive Wheels	All abrasive wheel's users.
	CSCS 3 Day SLG	At minimum one crew member
	CSCS LUGS	At minimum one crew member
	CSCS Plant Operator	All plant operators, where required
	Jetting Safety Training	Jet Vactor operators
	Spill Kit Training	All field-based staff
Other Requirements:		

Required Personal Protective Equipment:						
						
Yes	Yes	Yes	Yes	Yes	Yes	Yes
				 Bump Cap		
As required	As required	As required	As required	Yes		

Reference Documents:
➢ ***HSA Code of Practice for Working in Confined Spaces 2017***
➢ ***SAFETY, HEALTH AND WELFARE AT WORK (BIOLOGICAL AGENTS) REGULATIONS 2013 and 2020 - S.I. No. 572 of 2013 as amended by S.I No. 539 of 2020***
➢ ***2013 Code of Practice for the Safety, Health and Welfare at Work (Biological Agents) Regulations 2013 (S.I. No. 572 of 2013) as amended 2020***
➢ ***SAFETY, HEALTH AND WELFARE AT WORK (CONSTRUCTION) (AMENDMENT) REGULATIONS 2020 - S.I. No. 102 of 2020***
➢ ***HSE / Department of Health COVID 19 Guidelines***

Covid 19 Rules:
• Practice good hand hygiene – wash your hands thoroughly and frequently.
• Practice the cough and sneeze etiquette – cough or sneeze into you elbow or use a tissue.
• Wash your hands after you cough or sneeze.
• Wash your hands before and after you eat, smoke or use the toilet.
• Do not share objects that touch your mouth, e.g. bottles, cups or cigarettes.

Covid 19 Required Personal Protective Equipment:			
 Latex Gloves	 Hand Sanitiser	 Surface Cleanser	 Blue / White Roll
For use when cleaning surfaces or as required by specific task	For hand hygiene	For wiping down surfaces	For cleaning surfaces

Before Commencing Works:

This method statement will be briefed to all crews working on this site, including all management, operatives and delivery/grab drivers to site. All operatives performing this work must sign the Method Statement to show their understanding and agreement with the contents.

Confined Space Work (NC3)

For any man entry sewer works the following details must be complied with. All works must be set up in accordance with SOP-001-WAT Site Set Up. A mandatory Confined Space Entry Permit must be completed recording results of mandatory confined space entry checks prior to entering the confined space. Testing for gas in the space prior to entry and during the work is required – atmospheric monitors will be used at all times within and prior to entering the confined space. Atmospheric gas monitors will be in place at all times. A SSWP (Safe System of Work Plan) identifying the site-specific hazards and mandatory controls will be put in place before works commence. The SSWP must be briefed to, understood and signed by all on site operatives before any works can commence and by visitors before they are permitted on to the site.

Before anyone can enter a confined space, or any part of the sewer, a competent person will confirm that conditions are safe for persons to enter the confined space. He will then complete the confined space entry form which details the following:

- Hazard identification (Results of Atmospheric monitoring)
- Mandatory checks and controls (Method Statements / Safety Equipment)
- Documented history of evacuation procedures
- Record of compliance with the entry permit

Specialist equipment

In order to undertake works within a confined space, there will be a requirement to provide specialist equipment, this includes gas monitors, escape sets, and a tripod and winch. All equipment will be checked to ensure that it is fully operational and that all the components have current calibration certificates. Specialised PPE will include, full length working suits, waders, and arm gauntlets. The use of reinforced bump hats is necessary due to the limited space in the sewer, which also aids and assists with the wearing of headlights underground.

Access Shafts will have ladder access points. If existing manholes do not have step irons or ladders installed the GMC will provide ladders of adequate length.

Personnel

In order to undertake the works in a safe manner a seven-person team will be required. The team is structured in the following manner:

1 no. Site Agent.

1 no. Team Leader.

5+ no. Operatives.

(All operative will have undertaken confined space training)

The crew will possess 4 no gas detectors. Gas detectors will be positioned at entry manholes and each man in the manhole or sewer will have his own gas detector also at all times.

Appointment of a Supervisor

The project supervisor is responsible for ensuring that the necessary precautions are taken, and to check safety provisions at each work stage and remain in attendance while work is underway if necessary.

Appointment of an Entry Controller (Topman)

Duties of and Entry Controller include:

- Lower atmospheric monitor to confirm safe works space prior to man entry.
- Record atmospheric results within SSWP on confined space permit.
- Check entrant's personal safety equipment prior to entry (Harness, personal monitors, PPE)
- Keep unauthorised persons away.
- Maintain communication at all times with bottom man.
- Be aware of any change in conditions.
- Listen and look for problems.
- Raise the alarm if contact is lost or there is an emergency.
- Not to enter the confined space.

Entering Manhole & Access Points

Once the manhole lid is opened, a gas detector is to be lowered into the manhole to identify the presence of any dangerous gases. If gases are detected a no-man access is to be done. A downstream manhole is to be opened where possible to allow the sewer to vent. A compressor hose may be lowered into the manhole to create a flow of air in the sewer to purge any gases. After a period of five minutes has elapsed, the gas detector should be rechecked in the sewer to verify that the build-up of gases is removed. Readings should be taken every five minutes until a clear sample is taken. This is the same process for entering siphon houses as gasses may be present at ground level within the enclosed space. Forced ventilation may be necessary through openings, windows and doors.

All access points are to be assessed by the competent person who will determine the need for full tripod and escape set for the task. A top man is required for this task. The top man should also hold the relevant qualification for confined spaces. The winch and escape are to be inspected for defects prior to use. Any defects are to be notified immediately to the line manager and the works suspended until the equipment is replaced or declared safe by a suitably qualified person.

At all times during the works in the manhole a personal gas detector must be worn by the operative. If the alarm is activated the escape set must be activated and immediate exit from the confined space must be made.

Caution will be observed when entering the foul water system, as there may be hazards of sharp object washed into the manhole and pipes by the sewer flow. Examples of these are, glass, sharp steel objects, or needles. All operatives will wear the required PPE, including gloves and arm gauntlets when entering the system. If an operative receives a needle stick or puncture wound, they will inform the on-duty GMC supervisor immediately. The supervisor will assess the situation, and administer first aid by following these steps, encourage the wound to bleed ideally by holding it under running water, wash the wound using running water and plenty of soap, do not scrub the wound while you're washing it, do not suck the wound, dry the wound and cover it with a waterproof plaster or dressing.
Further medical advice or treatment may be required. The operative may require to be medically tested due to the nature of the injury.

Communication

Visual & verbal communication will be constant during the works between the Topman, bottom man, middleman, and face worker. 2-way radios may also be used if suitable for the task being conducted.
In the event that the weather conditions change dramatically, the top man will inform the crew in the sewer of the change and the crew will immediately cease operations and evacuate the sewer in a controlled manner.

Works Sequence

Phase 1 – Clean the piped sewers to allow for CCTV surveys to take place. Repair any defective areas in the invert, walls and crown to stabilise the structure, and prevent water ingress. This will involve man entry access to the culverts and robotic machinery to the pipes sewers via existing manholes on the lines. All manholes will be visually surveyed for access to the system prior to commencement. Temporary traffic management will be used during the works and removed after each shift.

Traffic Management

- Prior to the commencement on site, the local authority will be informed of the works in advance and all required permits and licences will be obtained. These will be available on site at all times during the works.
- Temporary traffic management will be used during the works and removed after each shift.
- Traffic management will be set up in accordance with the relevant TMP's in use. There will be a minimum of one person on site with a CSCS SLG qualification, who will instruct the correct procedure for setting out the TM.
- If changes are made to the TMP in use, these will be noted on the TMP or SSWP.
- Stop and go setups may be required for some works. These will be manned at all times and setup in accordance with the TMP's.
- Where existing traffic management is in place by another contractor, permission will be obtained to enter their site, if required, to carry out the sewer works.
- Traffic management setups will be required on a section of the N3. This will be carried out by certified operatives with the correct training.

Site Setup

- Sections of Heras fencing may be used to display signage. These will be setup at the rear of the site and secured in place.
- Only necessary plant and equipment should be moved into position as not to create an overcrowded site.
- Confined space work (NC3) if required.
- Following all required confined space checks and completed permit, proceed as follows.
- Place tripod and winch adjacent to the manhole.
- Open the manhole following correct manual handling procedure and ensure the tripod can be centred over the opening if needed.
- Lower the gas detector into the sewer or chamber and assess if conditions are suitable for man entry.
- If suitable, proceed with the man entry operation if required.

Manhole Works

Manhole covers may require some work to be used for gaining access to the system. This may be, locating, uncovering, raising and reseating them or constructing new access points.

- Locating manholes will consist transferring measurements from the CCTV survey to the road surface. A sonde attached to the CCTV camera may also be used and located with a detector at ground level. Covers may also be located by using a metal detector.
- Expose the manhole cover if covered, by removing the road surface with a mini digger or jack hammer.
- Sawcut around the existing manhole cover and break out with mini digger or jack hammer.
- Remove cover and frame and reseat to the correct level. Reinstate around cover. This may be done by forming a timber frame around the manhole cover and fixed in position. A concrete surround will then be poured to the required depth and floated to create a textured finish. The concrete may need to be transported to the location by dumper or trailer due to the distance from the road. Once laid, it will be allowed to cure before traffic resumes in the area. The timber frame will be removed and the area tidied up.
- Some manhole covers are located in parks and off road areas. These may be located with a metal detector and hand excavated to locate the opening. The area will be carefully excavated as the manhole may be in a sensitive location.
- An excavator will be required to expose the manhole covers in areas of heavy vegetation. This will be operated by a trained operator with a banksman to monitor ground conditions. The operator will be provided with drawing and an app to show the line of the sewer. These will be followed from manhole to manhole creating a walking path through the overgrowth. Once at the manhole location the soft overgrowth will be pushed back where possible to try and located the manhole cover. If thick heavy overgrowth is present around the cover then FCC parks will be contacted and asked to advise on the next course of action before clearing the material at this location.
- Some covers may require mechanical force to open. This will be carried out with an excavator, by placing a steel plate over the cover and using the hydraulic hammer to loosen the seized cover from the frame.
- If the cover requires replacing, the procedure detailed above will be followed. If necessary due to the location and once all work has been carried out, the exact position of the manhole cover will be recorded, and an assessment will be made on whether additional works will be required.

- Below are conditions in place for off road areas, advised by Fingal CoCo Parks,

ROL 2024DF1631 (Maxol to Mulhuddart):

Works to locate manholes shall comply to the following conditions:

- A track of 2.5m wide is permitted along the agreed access route in Tolka valley.
- Material should only be tracked over and not purposely severed/destroyed.
- At each manhole location an area up to 3m radius all around the manhole can be cleared of vegetation **excluding trees** to allow access.
- Material at the manhole locations should be pushed back and not severed where possible to preserve the open space.
- Vehicles should stay on the agreed access route.
- No soil is allowed to be piled on site.
- Care should be taken to minimise need for reinstatement.
- All soil/vegetation material to be left on site.

Cleaning of drains:

- Access points into the valley should be through existing gaps in the boundary.
- No vegetation is approved to be cut or removed along the boundary.
- Works should follow the existing paths created to locate the drains.

ROL2024DF1633 (Mulhuddart to Blanchardstown road north):

Works to locate manholes shall comply to the following conditions:

- A site meeting should be organised at least 3 days before works starting to agree access routes and issue keys/access to the parks.
- Vehicles should enter/exit the park by the agreed points.
- Vehicles should stay on the agreed access route.
- At each manhole location an area up to 3m radius all around the manhole can be cleared of vegetation **excluding trees** to allow access.
- Material at the manhole locations should be pushed back and not severed where possible to preserve the open space.
- No soil is allowed to be piled on site.
- Care should be taken to minimise need for reinstatement.
- All grass areas should be reinstated level and seeded.
- All soil/vegetation material to be left on site.

Cleaning of drains:

- Access points into the Park should be through the agreed points
- A site meeting should be organised at least 3 days before works starting to agree access routes and issue keys/access to the parks.

Manhole construction.

- The supervisor will mark the location of the new manhole. This will be saw cut prior to any excavation.
- The area will be broke out using a mini digger and kango and will be excavated to the required depth below the pipework. The spoil will be removed from site by the grab truck.
- A concrete base will be poured and allowed to cure. The excavation will be covered with steel road plates to allow traffic to resume.
- Once the base is cured to an adequate strength, the walls of the manhole can be built with blocks and bricks to the correct height.
- The cover can be installed level to the road surface and the excavation can be backfilled around the walls and reinstated.
- In areas of high vegetation and possibly adjacent to a water course, and additional manhole ring may be installed to raise the cover level above the ground, to identify the manhole and avoid flood water entering the system in the future.
- The benching will be installed to suit the existing pipework.
- A marker post may be installed to identify the manhole location with ease in the future.
- The area will be cleaned, and traffic will be allowed to resume.
- No manhole alteration works to be carried out in parks without the prior approval of FCC Parks.

Flow Control

- Every attempt will be made to carry out the sewer works during DWF conditions. However, this may not be always possible. An assessment will be made by the site supervisor at the start of each shift, weather works will proceed or not depending on the sewer flow.
- Prior to the works commencing, information will be gathered through desktop surveys and consultation with the Local Authority regarding the system and any possible diversions that may be put in place.
- The senior site manager will be in control of the operation at all times and make the decision to start or stop the works at any time.
- Weather conditions will be assessed, and the operation will be suspended during periods of heavy rainfall if the system has noticeable changes.
- Short sections may be over pumped, by constructing a sandbag wall and placing a submersible pump at the upstream side. The end of the discharge hose will be placed at the downstream side of a second sandbag wall in the sewer or through a close by downstream manhole, allowing work to proceed in between these.
- The attenuation tanks located at Blanchardstown will be used during the survey. Collaboration with Uisce Eireann will be required throughout the process to control the water level in the tanks and to ensure the tanks are empty before commencing. Due to the high volume of water in this system, the weather will play a pivotal role in the process. Storage capacity will need to be maintained in the tanks in the event of a storm surcharge in the system. GMC will monitor the weather in the days prior to commencing and the forecast will be viewed for the days after the planned operation. If heavy rain is forecast then the operation will not proceed as planned as storage capacity in the tanks may be reduced. A further decision will be made by the GMC foreman at the beginning of each shift, upon assessment of the sewer flow in the 9C.
- The tanks have a storage volume of 31,000m³ which on a dry period is approx. 1 days flow capacity.
    - Foul Wet Well – 600 m³
    - Foul Balance Tank – 7,946 m³
    - Storm Tank No.1 – 11,800 m³
    - Storm Tank No.2 – 11,000 m³ (Emergency storage)
- As GMC will be transferring a full flow for a 5-6 hours period each day there will be 20,346m³ available storage for the operation. However, Uisce Eireann will be required to empty the tanks after each shift in order to have the full volume available.
- All contributing flows into the tanks are to be monitored. This includes the 9C duplicate.
- Rubber inflatable stoppers will be used where suitable to hold the flow in the upstream section of the sewer, and diverting over the weir wall, while the cleaning is being carried out. These will be placed into position by a confined space operative, if it cannot be carried out from ground level. It will be tied off to a secure location at ground level. Once in place, it will be inflated to the correct pressure rated for its size via a site compressor. The system will be monitored upstream for any issues. These will be placed at cross connection 1 and cross connection 2 where the sewer can be diverted into the 9C duplicate line. When removing the bung, and due to the head of water built up behind it, it will be deflated from ground level and removed from the manhole at ground level.
- The sewer will be diverted at the CSO point (CC1 & CC2) which will send the flow into the 9C duplicate and to the tanks at the BRDS site, that can be used for storage while the works are being carried out between these locations. Spotters to be located at CC1(SO05407806), & CC2(SO06406311) and monitor the flow for any erratic changes, for example the level of water increasing dramatically. The method to be used will incorporate an inflatable stopper to stem the flow in the upstream section while diverting the water over the weir wall at the cross connection manholes for a 5-6 hours period in each shift, while the survey is taking place at night. This will be installed and removed as per the manufactures instructions by a confined space operative.
- There will be a dedicated GMC coordinator who will be a point of contact for the operation between GMC and Uisce Eireann. This GMC coordinator will be in direct communication between

all parties with all communication being relayed to the site foreman.

- GMC Coordinator: [redacted])
- GMC Foreman: [redacted])
- GMC Engineer: [redacted])
- Uisce Eireann Operator 1: _____ (_____)
- Uisce Eireann Operator 2: _____ (_____)
- Uisce Eireann Operator 3: _____ (_____)
- Uisce Eireann Operator 4: _____ (_____)

Step 1: The GMC Coordinator will contact the Uisce Eireann operator to confirm is that the water level has been pumped out to a low level in all tanks, foul wet well, foul balancing tank, storm tank 1, and storm tank 2.

Step 2: The GMC coordinator will contact the Uisce Eireann operator by phone to signal the operation is commencing and to switch off the tank pumps discharging into the sewer. Once the pump switch off is confirmed the operation will proceed.

Step 3: A flow stopper will be placed into the chamber and fitted into position by the confined space operative if required. This will be inflated to the correct pressure, and begin diverting the water over the weir wall. This will be tied off at ground level, to avoid movement. A sandbag wall, may also be constructed in the chamber by the confined space operatives. These will be tied off if needed, to avoid losing any equipment down the line.

Step 4: The GMC coordinator will be monitoring the tank levels on a handheld device on site. The Uisce Eireann operator will be monitoring the tank levels on site or remotely. The agreed cut off point will be 9.1m in storm tank 1. This is the overflow point from storm tank 1 into storm tank 2. Storm tank 2 will not be used for storage and will provide safety backup capacity in the event of an emergency. This level will be monitored remotely in real time, as the water rises in the tanks. Alerts will be set at increments to inform the operators of the rising levels in the tanks. At 7.5m the GMC coordinator will make the decision whether there is adequate time to continue the survey work to the next section or evacuate the crew and equipment. If not, the coordinator will instruct the foreman to evacuate the sewer.

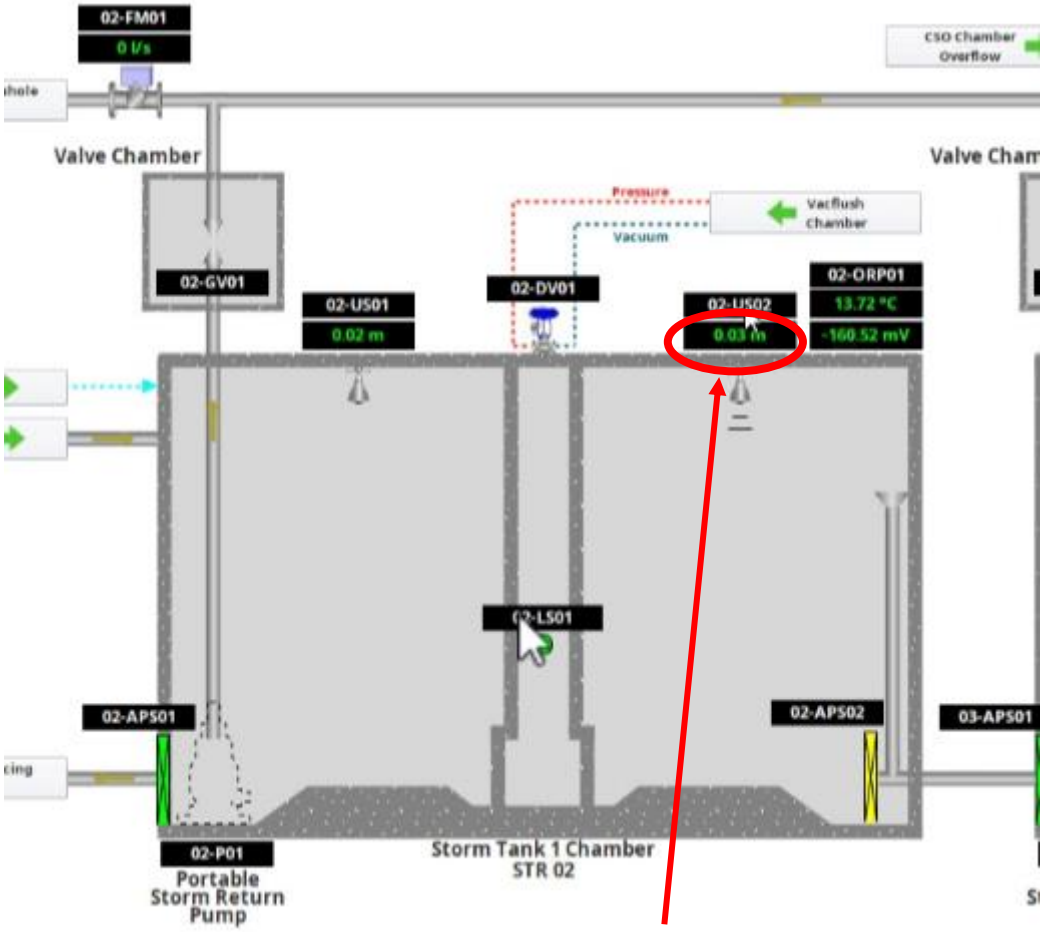
Step 5: Once the coordinator has given the order, the foreman will cease the surveying operation. All operatives will be instructed to evacuate the sewer and remove any equipment out of the line. This step will also apply if the work has been completed before the water reaches the cut off level in storm tank 1.

Step 6: When the above step has been confirmed, the flow diverting operation will stop. All flow control equipment will be removed from the sewer and the system will be returned to its original flow conditions.

Step 7: The coordinator will contact the Uisce Eireann operator by phone and inform them that the crew and equipment are out of the line, and the tank pumps are to be switched back on.
This process will be repeated, until all sewer sections have been completed.

Inflatable flow stopper in place

Cross Connection 3



Water height readout to be monitored. Work cut off point at 7.5m. with evacuation to be completed by 9.1m

Storm Tank 1

The process will be documented the flow control procedure – "Flow Diversion, 9C Sewer – Dunboyne Phase 1 (R01)"

Emergency Procedure:
In the unlikely event that the following emergencies occur GMC will carry out the following actions.

a) Erratic change in the sewer flow entering the BRDS site,
- Spotters to immediately inform site supervisor, and top men of issue.
- If man entry work is being carried out, the sewer and chambers are to be evacuated in a controlled manner.
- Post evacuation, the transfer of flow to cease.
- All flow diversion methods shall be removed immediately.
- The GMC coordinator will inform the Uisce Eireann station operator of the issue.

b) Surcharging of the system upstream of the diversion point,
- Spotters to immediately inform site supervisor, and top men of issue.
- If man entry work is being carried out, the sewer and chambers are to be evacuated in a controlled manner.
- Post evacuation, the transfer of flow to cease.
- All flow diversion methods shall be removed immediately.
- The GMC coordinator will inform the Uisce Eireann station operator of the issue.

c) Extreme weather event – Heavy Rainfall
- Dublin rainfall levels will be monitored using mobile weather apps by the site manager, engineer, and supervisor.
- Special attention will be given to the North and West side of Dublin and the South East of Meath.
- Flow levels will be constantly checked during the diversion and pumping procedure.
- The flow control procedure will not be carried out during periods of heavy rainfall and assessments will be made once flow levels subside.

d) Loss of contact between GMC Coordinator and Uisce Eireann Operator 1,
- Contact Uisce Eireann Operator 2
- Contact Uisce Eireann Operator 3
- Contact Uisce Eireann Operator 4
- Works will not proceed if contact cannot be made to any of the Uisce Eireann Operators

e) Injury to personnel in the sewer line during the cleaning operation,
- GMC to implement emergency rescue procedure and remove injured crew member as soon as possible.
- Emergency services to be contacted if required.
- Diversion to remain in place allowing storm tank 2 to fill up until sewer has been safely evacuated.

Sewer and Chamber Inspection

- For sewers and chambers with high flow, once the atmosphere has been deemed safe, the operative will enter while being attached to the fall arrest system. The operatives will begin to inspect the surround structure and take photographs. The water level will be measured by using a measurement device and any other relevant information will be noted.
- Additional anchor points may be installed if necessary. These will be drilled into a solid wall and fixed into place.
- Several manholes have been covered over with bushes. These will need to be located and opened to gain entry to the system. The crew will use hedge cutters and shovels to remove all obstructions restricting access. The covers may be located by using a metal detector or a sonde from below.

Hand Cleaning

- The sewer and chambers may be hand cleaned by shovelling silt, stone and grease into plastic buckets and wheelbarrows. This may also be vacuumed up by the Jetvac if available.
- Concrete may be present on the sewer invert or walls. This will be broken out with battery or pneumatic tools and removed manually. A compressor will be stationed at ground level and hoses fed into the manhole. The hardened concrete will be drilled to weaken its structure and will then be broken out in sections with jackhammers. Loose pieces will be removed by hand and removed from the sewer by rope and bucket. The concrete will be placed into 1-ton bags for removal to a licenced waste facility.
- Protrusions that are causing an obstruction may be cut back, broke out and removed.
- Connections will be checked and cleaned at their opening if required.
- Material will be removed in plastic buckets by lifting them out the manhole.
- The buckets will be carried to the pickup, lifted onto the back of it and emptied into ton bags. Caution will be observed as not to cause splashes of material when emptying of the buckets. A fragranced disinfectant may be used to mask any bad odours.
- The operative may use the Jetvac suction hose, if available, to vacuum out the material. The material may need to be broken up with shovels by the operatives first for the most efficient suction power.
- The sewer or chambers may be washed down manually, by using a water hose connected to a fire hydrant or a pressure washer, ensuring a stable footing prior to engaging the trigger.
- Larger chambers, such as siphon chambers or chambers with high flows, will be entered with the operative attached to the fall arrest system. The operatives may work while attached to the safety lines and begin removing material and passing it up to the top man in buckets.
- Additional anchor points may be installed if necessary. These will be drilled into a solid wall and fixed into place.

Mechanical Cleaning

- A jet vactor and off road jetting unit will be used to clean the culvert and pipework, where conditions are suitable, ensuring not to damage the walls and invert in the process. This will be monitored at all times.
- The jet vactor will need to fill with water prior to commencing. Water will be drawn off approved hydrants at suitable locations.
- When necessary, the off-road jetting unit will be used where manholes are located on soft ground. The supervisor will assess the ground conditions to and around the proposed manhole at the beginning of the shift and determine if it is suitable to proceed with the planned works. If deemed suitable the off-road unit will be tracked into position. The jet vactor will be stationed as close as possible to the off-road unit, which will be a site setup on the nearest road or carpark. The off-road unit will then be connected to the jet vactor water hose.

- Every attempt will be made to reduce the amount of moving that the off road unit needs to do in order to minimise the disturbance to the existing ground.
- Where hosing is required to be laid across pedestrian walkways a pedestrian ramp will be put in place, and an operative will remain at this location to ensure pedestrians/cyclists can pass the work area safely and without harm.
- The operator places the jetting hose and nozzle into the pipe and propels the nozzle upstream for a predetermined distance depending on the volume of silt in the pipe.
- The jet vactor will begin cleaning by pulling the hose back while still jetting moving material to the manhole. The power of this force depends upon the flow rate and pressure from the pump.
- The operator will maintain a steady rewind rate of 100mm to 200mm per second for effective cleaning. Depending on the debris/silt level, this process may have to be repeated to optimize the removal of all course material.
- Great care will be taken when pulling back the hose as it can cause both physical injury to the operator as wellas impact damage to the manhole or pipeline.
- Coarse material is transferred from the manhole into the unit debris tank through steel suction pipes or flexible hose using the air moving or vacuum suction equipment.
- This process is repeated going further along the line with each pass until the next manhole has been reached.
- Once all jetting work has been completed and if heavy material has accumulated at the manhole, confined space operatives may assist the jet vactor by using the suction hose to vacuum clean the sewer. This will be inserted through the manhole and additional lengths of flexible hose will be added if necessary. If a blockage occurs the suction will be switched off and the blockage will be released. Heavy material may also be passed up to the surface by rope and bucket. The confined space operative will exit the manhole once cleaning has been completed.
- Water from the jet vactor may be decanted into the sewer if necessary. This may only be carried out if fats, oils, and grease was not removed during the cleaning process, and silt has had time to settle to the bottom of the tank.
- The jet vactor will attempt to recycle the cleaning water but may need to fill with water to complete the cleaning. This can again be done by connecting to a fire hydrant close by or syphoning from the sewer if possible. Every attempt will be made to reduce the amount of water used as possible via the onboard water recycling unit.

Repairs

- Sections of the wall and invert of the brick sewers may be in need of repair throughout the system. These may be repaired to stop any further water ingress and deterioration of the sewer.
- Materials will be passed down into the manhole in buckets and carried to the required location. A cement paste will be used to repair the damaged sections of brickwork. This will be mixed in the sewer and surplus material will be removed.
- Broken connections will be cleaned at their discharge point into to the sewer and assessed for damage. Repairs will be carried out is required.
- Loose stone and brick work will be removed, cleaned, rebuilt, and pointed.

Once cleaning and repairs are complete, all tools and equipment will be removed from the sewers and manhole chambers.

Sewer Survey

- A post cleaning works CCTV survey of the sewer will be conducted to show its condition and to identify the need for rehabilitation.
- To ensure correct recording of chainage the camera crawler cable shall be pulled through the measuring device on the cable reel and the length of cable measured and compared with the length recorded by themeasuring device.
- The CCTV camera will now be lowered into the manhole and manoeuvred into position so that the camera is viewing the entrance to the pipe from the manhole. Care will be taken to ensure the camera does not snag on the side of the manhole as it may release suddenly. It may on occasion be necessary to enter the manhole to place the camera in the correct position. In this instance the same procedure as that used to enter during cleaning will apply.
- The Camera will be driven up the line at speed specified in Irish Water Code of practice for wastewater infrastructure. The speed of the camera in the sewer shall be limited to 0.10 m/s for sewers of diameter less than 200mm, 0.15 m/s for diameters exceeding 200mm but not exceeding 300mm and 0.20 m/s for those exceeding 300mm, or such other speed as will enable all details to be extracted from the recording.
- Additional lighting may be used, if necessary, in larger culverts. This will be supplied from 110v lights carried by an operative, behind the camera.
- The camera records continuously. If a reportable condition is observed the camera is stopped whilst the condition is recorded and if necessary, a Video Capture Photo is recorded and noted on the report. This procedure continues to the next manhole is reached. If it is the expected arrival manhole this is recorded as a completed survey. If it is not the expected arrival manhole this is noted on the report and the manhole is allocated a new reference. If the unknown manhole is buried the survey continues to the next known manhole reference.
- Where conditions are encountered which make it impossible to proceed further along the pipe, debris/silt, intruding connection, large pipe displacement, collapse or danger to camera such as a backdrop before an uncharted buried manhole, the operator will report the information and the survey will be abandoned and a survey overlap carried out from the next available manhole back to the point of abandonment. If possible and to avoid an abandoned survey, an operative may be able to assist the camera by moving it along the sewer to complete the survey.
- The CCTV survey will continue from the next available manhole and will return to the abandoned section to carry out a re-survey when informed that the problem has been eliminated.
- On completion of a CCTV survey of the line, the camera will be reversed back to the access manhole where it will be removed.
- This activity will be repeated until all lines are CCTV recorded.
- At the end of each day the operator will download all data captured and return the data along with the footage and report to the head office who will have the information processed.
- The information will show each entry manhole reference and direction of travel, date and time of survey, all joints, encrustations, tree roots, pipe settlement, cracks, anomalies, etc. Distances from origin to finish of each survey length together with a map with all manhole reference points will also be submitted.
- Photographs and measurements of the sewers will be taken via man entry.
- A dimensional survey will also take place. This will involve carrying a prefabricated template through the brick sewers, noting size change and clearance distance from the existing brickwork. Reductions in the crown will
- A manhole survey will be carried out at specific locations. This will involve confined space entry if required, into the manhole to allow for dimension checks and pipe level invert recording. The condition of the chamber will be recorded along with photographs of each element. Once

completed the operative will exit the manhole and cover will be closed. The GPS location will also be taken.

Manhole Survey

- A manhole survey will be carried out on all accessible manholes listed on the UE critical sewers list. These will be carried out in accordance with IW-TEC-100-09 Section 3.1.
- A team of operatives will carry out each survey. Once traffic management is in place the manhole will be opened. Details of the manhole dimensions, shape, condition, cover material, incoming and outgoing lines, and connections will be collected. Flow levels and defects will be noted. A photograph must be taken showing the flow going from left to right, and a sketch of the chamber will be included in the survey card. The GPS location will also be recorded.
- Once the survey is complete the manhole will be closed and the process will be repeated for the next and so on until all surveys have been carried out.
- If a manhole requires man entry to carry out the survey, the confined space procedure detailed above will be followed.

Site Completion and Clearance

- Once the operation has been complete at a location, and equipment and personnel have exited the sewer, the manholes will be closed, and traffic management will be removed.
- All material from site will be cleared or stored in a designated location and the area inspected before leaving site.

General Duties

- Timber or PVC cutting. This may be necessary at some point in the work process. This will be completed using all the necessary PPE required, including gloves, ear protectors and safety glasses. The material will be placed on a solid base and cut by hand, 110v electric equipment or consaw.
- Block or Brick Cutting. This will be completed using all the necessary PPE required, including gloves, ear protectors and safety glasses. The material will be placed on a solid base and cut by hand using hammer and chisel, 110v electric equipment or consaw.
- Manhole Opening. Manholes covers will be opened by lifting the covers up and sliding them to one side of the opening. Manholes that have not been opened recently, may be tight or stuck. These will be cleaned and loosened by hitting with a hammer and levered up. Once opened the cover and opening will be cleaned so reseating can take place with ease.
- Mixing of cement and Sika. When working with Sika and cement care must be taken when mixing both together (normally in buckets) to ensure that due to its high acidity, gauntlets and goggles are worn. Water can be added to delay the setting of the paste before application. All PPE and equipment must be washed down after use.
- Refuelling Equipment. Refuelling may need to take place for generators, consaws, compressors, pumps or heavy equipment. This will be completed in a safe manner using non leak, lockable containers, and drip trays. Spill kits will be available on site.
- Removal of sewer material from site. Material removed from the sewer by hand will be transported to the yard in ton bags. These bags will be lifted from the vehicle by a teleporter, operated by a competent person who holds the required ticket. The material will be stored in a segregated area awaiting removal from the yard to the required facility. Material removed by the jet vac will be transported directly to the waste facility.

Emergency Escape Plan

On entering sewer, the site foreman highlights any safety zones or staging and egress points that can be used in case of emergency. These could include upstream or downstream manholes depending on scope of works. The tripod and winch will be positioned at various manholes as instructed by GMC's supervisor.

The harnesses and tripod must be available on site at all times when any person is in the confined space. The harness and tripod must be inspected prior to first use and the results of this inspection recorded on the GA3 form. The insertion of a ladder into entry manhole and exit manhole if different will result in faster evacuation. Ten minutes escape sets will be available at all times and evacuations should be completed in approximately three and five minutes.

In the event of a critical emergency, the supervisor above ground will contact the Fire Brigade and the Gardaí on 999 or 112. The supervisor will advise the emergency services that he shall be installing temporary traffic management equipment, which will be left adjacent to evacuation manholes. The TM shall be put into place by the operative and the manholes opened. The emergency services will be briefed in advance on the works, conditions and procedures to be carried out by the operatives. They will be briefed by the supervisor regarding the condition of the operative and also the conditions within the confined space.

The following detail needs to be read in conjunction with the Traffic Management Plans detailed below, which has been already discussed, and agreed between GMC and the local Garda and Fire Brigade and is to be approved by the local authority.

2 no. 30 minute breathing apparatus sets will be available for emergency situations whilst the emergency services assess the situation for removal of an immobilised person. These sets will be sited adjacent to the main point of access.

The removal of a person from the sewer is dependent on the persons condition, and responsiveness. There are several actions as per the Code of Practice and the team's training, which dictate the course of action needed to remove an injured party,

A) If a person becomes unwell or gets a minor injury, such as a minor laceration, and is fit to do so, he will then remove himself from the sewer, and escorted, and aided by the other team.

B) If a person possibly suffers an injury or medical condition such that he is unable to remove himself from the sewer, such as a fracture or bad sprain, the team leader will determine the course of action. The emergency services will have been contacted at this stage, and ambulance and fire brigade will be contacted. The person of concern will be made comfortable, and it will be determined if the team will activate the removal stretcher. The injured team member will be placed on the stretcher, to which this will be winched or lifted by the two team members, to the egress manhole. The injured party will then be winched to the surface.

C) If a person is overcome with noxious gases, then the emergency breathing apparatus will be donned by other team members who will attach an escape set to the injured party prior to leaving the sewer.
The foreman will assess the situation and instruct operatives to don 30-minute working sets to perform a rescue prior to emergency services arriving.

Gas

Functional tests will be carried out immediately prior to commencement of each working session during which the gas detector instruments will be in use. Gas detectors will be used at all the times and there will be one escape set for each person working in the confined space which in the event of gas detection can be put on immediately.
Prior to entry into the manhole, gas detectors will be lowered into both manholes to check for the presence of gases. If gases are present, it will be necessary to use the air blowers to ventilate the area. When the crew are in the manhole or sewer and if gas alarm sounds, a ten-minute escape set will be donned by all employees within the confined space. The 10-minute escape set is worn by the operatives in the satchel provided with the breathing apparatus. The site foreman will organise for the tripod and winch to be brought to the nearest exit. The crew will then exit the manhole.
Where an employee has to be removed from the confined space his harness will be attached to the tripod and winch and hoisted out of the confined space.

Flooding

Monitoring of rainfall done by top men and constant checking of flow level (will be done at all the times). In the event of heavy rain or the flow significantly increasing, a controlled evacuation will take place. Constant verbal communication will be kept between the top man and the bottom man & entry crew. Contact will be made with local authority engineers prior to man entry into sewers in the case of any works being carried out by other parties upstream of works area.

Sewer Integrity

In the event of a collapse the flowing procedure will commence:
On being alerted of a potential collapse within the sewer the GMC topman (entry controller) will assess the condition of his man entry team. Where members of the team cannot be accounted for emergency services will be contacted immediately.
The potential for additional further collapses must always be considered as primary hazard and personnel must be aware that any action may disrupt the temporary stability and cause an additional collapse. The temporary stability, at any point in an operation, may be disturbed by removing soil or debris, by adding weight near the edge of an open cut or line of the sewer, by vibration (such as vehicle movement), rain, or simply by the passage of time.

Personnel and Equipment Placement

Brick and concrete sewer walls collapse because of many physical stresses. GMC must not add pressure or stress to excavations by placing apparatus, equipment, or personnel on top of, or in close proximity to the collapsed section.

The guidelines listed below should be followed in order to reduce this potential.

1. All non-essential personnel are to be kept away from the edge of the collapsed area. A Hazard Zone should be established, using barriers to define this area.

2. Vehicles will not be allowed to approach the collapsed area during rescue operations. If the apparatus is not needed for extrication, plant must be shut down to minimize vibration.

3. All traffic will be stopped or re-routed around the excavation to minimize vibrations by the SLG operative or TTOS for the site.

4. A staging area shall be established away from the collapsed area for vehicles that are not directly involved in the extrication. If the secondary collapse should occur, personnel that was originally on top of the sewer may become trapped. Keep all personnel back and reduce exposure by limiting the number of operating personnel to only those necessary to perform the work safely.

5. Contaminated Atmospheres - Since the sewer is classified as a confined space, emergency rescue personnel should be briefed on the results of air monitoring and the possibility of contaminated or oxygen deficient atmospheres. Specific requirements including on-going air monitoring, ventilation, and use of SCBA by rescuers will be decided by the Chief Fire Officer.

When emergency services arrive the GMC Topman will brief the Chief Fire Officer on the key hazards within the confined space and the number of personnel trapped in need of rescue. Post briefing GMC will follow instructions from emergency personnel.

Hazardous Substances identified:

 Skin Corrosion	 Irritant	 Flammable	 Acute Toxicity	 Oxidiser	 Hazardous to aquatic environment
Yes	Yes	Yes	No	No	Yes
 Biohazard					
Yes					

Identified Hazards:	
Biological hazards	R/A 67 Hazardous Materials, Biological Substances
Hydrogen Sulphide	R/A 12 Confined Spaces, SOP-008 WAT Working in Confined Spaces
Carbon Dioxide Gas	R/A 12 Confined Spaces, SOP-008 WAT Working in Confined Spaces
Carbon Monoxide	R/A 12 Confined Spaces, SOP-008 WAT Working in Confined Spaces
Adverse Weather	R/A 14 Weather
Structure and Layout within the Confined Space	SOP-008 WAT Working in Confined Spaces
Hazardous Substances	R/A 7 Chemical & Biological Substances
Use of Fuel	R/A 44 Use of Fuel

Emergency Details		
	**Location of First Aid box:**	Site Vehicle / Cabin
	Name of On-Site First Aider(s):	Recorded on the SSWP.
	**Location of Fire Extinguisher:**	Site Vehicle / Cabin
	Emergency Contact Details:	Site-Specific details in the crew folder.
	Fire Brigade / Gardaí / Ambulance	999 or 112
	ESB - Emergency Service	1850 372 999
	GNI – Emergency Service	1850 20 50 50
	ESB – Street Lighting	1850 372 372
	Health and Safety Authority	1890 289 389
	Environmental Protection Agency	1890 33 55 99
	Irish Rail – Emergency Contact	01 8555454

Hazardous Substances (Safety Data Sheets – SDS)

Reference No.	Material	Applicable?
SDS 1	Two Stroke Oil	✓
SDS 2	Diesel Oil	✓
SDS 3	Unleaded Petrol	✓
SDS 4	Concrete	✓

SDS 5	Line Marking Paint	✓
SDS 6	Calcium Hypochlorite	N/A
SDS 7	Engine Oil	✓
SDS 8	Hydraulic Oil	N/A
SDS 9	Bituminous Materials	N/A
SDS 10	Sperian Glass Cleaner	N/A
SDS 11	5% Hydrogen in Nitrogen	N/A
SDS 12	High Flow Grout	N/A
SDS 13	Disinfectant	✓
SDS 14	Ultracrete Instant Road Repair	N/A
SDS 15	Cold Joint Sealer	N/A
SDS 16	Antifreeze	N/A
SDS 17	Cement	✓
SDS 18	Propane	N/A
SDS 19	Nitrogen	N/A
SDS 20	Natural Aggregates	N/A
SDS 21	Limestone Aggregates	✓
SDS 22	Aggregates	N/A
SDS 23	Pre-cast Concrete Products	✓
SDS 24	Hot Bituminous Road Materials	✓
SDS 25	Ferric Sulphate Solution	N/A

SDS 26	Sika	✓

Environment		
Issue	***Applicable?***	***If yes, provide details***
General Environmental Nuisance Management	✓	⇨ All works shall be carried out in accordance with legal regulatory requirements and best environmental practices. ⇨ All cutting tools will have water tanks to suppress any potential dust. ⇨ All machinery and equipment is inspected on a weekly basis. ⇨ All operatives will ensure that there are no noisy or smoky emissions coming from any plant or machinery. ⇨ A road sweeper will be deployed if deemed necessary by the Project Manager. The Site Agent shall visually inspect work conditions during their daily inspections. ⇨ Good plant maintenance and communications with local residences and other interested parties shall be undertaken to minimise the noise impact and nuisance impact of the works on the surrounding areas. ⇨ Use of acoustically damped powered tools, compressors and generators. ⇨ All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order during the works. ⇨ Machines which are used intermittently will be shut down or throttled back to a minimum during those periods when they are not in use. ⇨ Plant such as generators or pumps will be surrounded by an acoustic enclosure if required to comply with current noise regulations. ⇨ No plant used on site will cause a public nuisance due to fumes, noise, and leakage or by causing an obstruction. ⇨ The best means practical, including proper maintenance of plant, shall be employed to minimise the noise produced by on-site operations.
Material Storage	✓	⇨ Dry materials shall be stored in designated material storage areas and protected from run-off, damage, deterioration and loss. ⇨ Fuel may be stored in fuel bowsers. ⇨ Fuel bowsers shall be equipped with certificates of conformity or integrity tested, in good condition and have no signs of leaks or spillages. ⇨ All plant shall be parked up in the designated area at the end of the working day or removed from site as required. ⇨ The bunded area shall be equipped with suitably sized spill kits and spill containment measures shall be in place.

		⇨ Spill containment equipment shall be stored at all work areas for use in the event of an emergency. ⇨ All fuels and oils shall be stored in the designated bunded areas and in bunded containers. ⇨ Smaller quantities of fuel shall be carried/stored in clearly labelled jeri cans. Green for diesel and red for petrol and mixes. The jeri cans shall be in good condition and have secure lockable lids. The jeri cans shall be stored in a drip tray or designated bunded area when not in use. ⇨ Materials deliveries will be scheduled as required to avoid excessive material storage and storage designated areas.
Water Management	✓	⇨ There should be no unauthorized discharge to water. ⇨ There shall be no direct discharges to surface waters – clean waters pumped from an excavation shall be discharged through a percolation system and not discharged directly to ground or to bare ground. ⇨ Spill containment equipment shall be stored at all work areas for use in the event of an emergency. ⇨ Dry materials shall be stored in designated material storage areas and protected from run-off, damage, deterioration and loss. ⇨ Waste materials shall be stored in designated, labelled receptacles/area, protected from run off and on an impermeable area to await collection by a permitted contractor.
Noise & Vibration Management	✓	⇨ Plant and equipment shall be fit for purpose, in good working order and well maintained so as to minimise noise and vibration emissions. ⇨ Static noise-emitting equipment operating continuously shall be housed within suitable acoustic enclosure, where appropriate. ⇨ Equipment shall not be left idling or running when not in use. ⇨ All acoustic doors and hoods on plant shall be kept closed. ⇨ Silenced plant shall be used where possible, and equipment shall shut down when not in use. ⇨ All compressors and generators will be “sound reduced” or “super silent” models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturer. ⇨ Excessive revving of all vehicles shall be avoided. ⇨ Unnecessary dropping of heavy items onto ground surfaces shall not be permitted. ⇨ The use of an excavator bucket to break up hard surfaces shall not be permitted. ⇨ Noise-intensive activities shall be restricted where possible to more acceptable hours of the day.

Waste Management	✓	⇨ Waste shall be managed in accordance with current waste legal regulatory requirements. ⇨ All waste materials shall be stored in a manner that minimises the risk of environmental pollution or ecological damage. ⇨ Waste materials are taken off site by permitted waste contractors for disposal, recycling or re-use at a Licensed / Permitted or Registered Waste Facility. ⇨ Excavation depths and volumes will be minimised, and excavated material will be re-used where possible. ⇨ Copies of all statutory waste management documentation shall be verified and validated by HSQE Officer or Environmental Manager prior to material being moved off site. ⇨ Good housekeeping practices essential. ⇨ Littering on site is not permitted
Dust Management	✓	⇨ Extractor fans will be used to mitigate dust levels within the space for workers. ⇨ Water suppression or dust extraction shall be fitted where possible to construction equipment that has the potential to generate dust e.g. drilling, cutting and grinding equipment. ⇨ Open surfaces that are being excavated or cleared (i.e. road surfaces removed) will be dampened prior to clearing or excavation where there is potential for excessive dust to be created. ⇨ Vehicle speeds on unhardened road surfaces shall be limited to 20km/h. ⇨ Drop heights during the loading and unloading of materials shall be minimised. ⇨ No fires will be lit on site – prohibited in accordance with current environmental legislation - Waste Management (Prohibition of Material Disposal by burning) Regulations 2009. ⇨ No stockpiling of material shall take place on site. ⇨ Measures will be taken immediately if dust is noted emanating from the works. ⇨ In the event that there is a build-up of dirt or mud on external roads, road-sweeping plant will be deployed immediately.
Environmental Emergency Response	✓	⇨ Emergency contact details available at each work area. ⇨ Environmental incidents are defined as “an event, an activity or situation, which has a risk of causing, or has caused, environmental pollution or damage”. ⇨ In the event of an emergency - Stop works immediately ⇨ Contact the Site Agent, Project Manager, HSQE Officer or Environmental Manager. ⇨ Try to contain any spills or leaks where possible using spill kits or river booms. ⇨ Do not carry out any tasks that pose a health & safety risk to you or anyone else in the area.

Notes:	

Checklist	
Item	**Applicable?**
Road Opening Licence (T2)	✓
Reinstatement Closure License (T5)	N/A
Road Closure Application	N/A
Work Request Form (on or near LUAS)	N/A
Discharge Licence	N/A
Deep Excavations (AF3)	N/A
Confined Spaces Permit	✓
Hot Works Permit	N/A
Safe System of Work Plan (SSWP)	✓

Additional Information (If Required):

GMC-HAS-R-0011. Confined Spaces

Severity: 2=Low 7=High X **Likelihood: 2=Low 7=High =** **Risk Rating: 4=Low 49=High**

Hazards	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Unsafe means of access to / egress from confined space.	Crew, delivery drivers and members of the public	7	4	28	**There may be a pre-existing fitted ladder within the access manhole for access to the sewers.** Where no such means of access pre-exists, properly secured EN 131 ladders may be used. Ropes and other unapproved methods must not be used for access. Suitable artificial lighting must be provided for operatives. Tripods and winches must be available where site personnel must enter chambers etc. where access may be hindered, or high risk of injury may be present within the confined space.	7	2	14
Accidental fall into manhole or other confined space.	Crew, delivery drivers and members of the public	7	5	35	Prior to opening the manholes GMC Utilities barriers are to be placed around the manhole, cellar or confined space in such a manner as to fully secure the work area. Only the work crew are to enter the barriered area. Until such time as the manhole, cellar or confined space is closed, the barriers must remain in place.	7	2	14

GMC-HAS-R-0011. Confined Spaces

Severity: 2=Low 7=High X **Likelihood: 2=Low 7=High =** **Risk Rating: 4=Low 49=High**

Hazards	**Persons in Danger**	**Initial Risk Rating**			Control Measures	Residual Risk Rating		
		Severity	**Likelihood**	**Rating**		**Severity**	**Likelihood**	**Rating**
Toxic Atmosphere, Oxygen Deficiency Oxygen Enrichment Flammable or Explosive Atmospheres Flowing Liquid or Free Flowing Solids	Confined space entry team.	7	7	49	Prior to entry into the manhole, gas detectors will be lowered into manhole to check for the presence of gases. If gases are present, it will be necessary to use the air blowers to ventilate the area. Only workers with full confined spaces and breathing apparatus training to carry out confined spaces work Before anyone can enter the confined space of the sewer or any manhole, a competent person, will confirm that conditions are safe for a person to enter the confined space. He/she will then complete the confined space entry checklist and permit to work. within the GMC Safe System of Work Plan GMC/HAS/D/0008/07 No operative shall enter a confined space without appropriate PPE which will include full breathing apparatus full body overalls, escape sets, protective footwear. Rescue equipment will include: Escape sets, ropes, harness, fall arrest gear, lifelines, lifting gear (Certified Tri pod) and other specialist equipment as needed. Rescue equipment to be certified on a 6-monthly basis. Staff to be informed of the risks and hazards associated with the proposed activities Full training to be given on handling and dealing with an emergency situation Adequate supervision will be provided to ensure that control measures remain valid for the duration of the work	7	2	14

GMC-HAS-R-0011. Confined Spaces

Severity: 2=Low 7=High X **Likelihood: 2=Low 7=High =** **Risk Rating: 4=Low 49=High**

Hazards	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Toxic Atmosphere, Oxygen Deficiency Oxygen Enrichment Flammable or Explosive Atmospheres Flowing Liquid or Free Flowing Solids		7	7	49	Atmospheric monitoring: Gas detectors and escape sets shall be within reaching distance in the sewer, with one gas detector upwind of the working area. Intrinsically safe equipment to be used. Exhaust emissions from plant and equipment to be sited away from accesses into the confined space Vent the confined space, purge the air and ensure adequate access/egress arrangements are in place Ensure full emergency/rescue procedures are in place before entry Test the atmosphere before and during entry. Entry Controller required to monitor situation Duties of and Entry Controller include: • Check entrants prior to entry. • Keep unauthorised persons away. • Maintain communication at all times. • Be aware of any change in conditions. • Check entrant's personal equipment. • Listen and look for problems. • Raise the alarm if contact is lost or there is an emergency. • Not to enter the confined space.	7	2	14

GMC-HAS-R-0011. Confined Spaces

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazards	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Toxic Atmosphere, Oxygen Deficiency Oxygen Enrichment Flammable or Explosive Atmospheres Flowing Liquid or Free Flowing Solids	Confined space entry team.	7	7	49	Ensure the confined space is isolated from incoming flows. Mechanical or electrical isolation of equipment is essential if it could operate or be operated indivertibly. A check should be made to ensure that isolation is effective when in use. A number of escape routes will have been identified on entering the sewer. These will be stated on the SSWP, examples include: (Ladders, Step rungs, Manhole covers or internal platforms) that can be opened and vacated from. Evacuation will either be manually or by tripod and winch.	7	2	14
Risk of head injury	Confined space team	5	6	30	Persons entering confined spaces will wear a bump cap – a bump cap is designed for use when there is a risk of bumping into stationary objects and when there is low or no risk of falling objects. In the sewers, there is very low risk of falling objects. Bump cap to fit correctly and must not be removed when in the confined space.	5	2	10
Punctures by hypodermic syringes or other sharp objects.	Crew, delivery drivers and members of the public	7	5	35	Where possible, all manholes, gully pots etc. should be cleaned prior to entry using tools such as brushes etc. Avoid using hands to sweep / clean gullies or manholes. When operating in gully pots or manholes always wear puncture-proof gloves where there is a risk of contact with hypodermic syringes or other sharp objects.	7	2	14

GMC-HAS-R-0009. Work at Height

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazards	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Fall from a height.	Crew, delivery drivers and members of the public	7	4	28	- Suitable means of access will be provided to allow access to heights. These may include scaffolds, stepladders, ladders, mobile elevating work platforms (MEWP) or other items of plant. - Barrels, drums or other unapproved items must not be used as a step/platform. Where ladders are to be used, they must be EN 131, in good condition, set in place in a safe manner and inspected every week on form GA3. - Ladders must extend a minimum of 1m above the parapet or flat surface to be accessed i.e. ground level in relation to excavations. - Where scaffolds or alloy towers are to be used, they must be assembled by a competent person who holds the appropriate CSCS ticket. The scaffold or tower must be inspected prior to first use, and a handover certificate received from the person who assembled it. No person may assemble an alloy tower or scaffold unless they are in possession of an appropriate CSCS ticket and are authorised by their manager to assemble said piece of equipment.	7	2	14
Fall from height while working at unprotected edges (excavations).	Crew, delivery drivers and members of the public	7	6	42	- Staff will be made aware of the dangers associated with the works during the course of their on-site induction. - The immediate area must be kept clear of all debris and trip hazards. - Where excavations are underway and where operatives are working in close	7	2	14

GMC-HAS-R-0009. Work at Height

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazards	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
					proximity, only those staff who must be in the vicinity may be so. - Barriers must be positioned around all excavations. Heras fencing should be used where deep excavations are left overnight.			
Fall from height while working at unprotected edges (Bridges).	Crew, delivery drivers and members of the public	7	7	49	- Staff will be made aware of the dangers associated with the works during the course of their on-site induction. - Where work at height is taking place in close proximity to, or on bridges where parapet or vehicle restraint systems are being installed, suitable edge protection must be in place. - Where edge protection is not available the appropriate fall protection equipment must be utilised. - No works may take place where edge protection or appropriate fall protection is not in place. - Any unintentional damage must be reported immediately to your line supervisor.	7	2	14
Fall from a ladder. Ladder slipping Falling objects	Crew, delivery drivers and public	7	4	28	- Ensure that your ladder is placed in a secure location and position. - If a ladder cannot be tied off at the top, it must be footed by another operative when in use. - Do not work at height if weather is dangerous, i.e. heavy rain/high wind etc. Always use your PPE when climbing – High-Vis vests, boots, safety helmet	7	2	14

GMC-HAS-R-0009. Work at Height

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazards	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
					with chinstrap etc. - Do not reach beyond your normal arm length when working from a ladder. Overstretching can unbalance the ladder. - When using ladders keep three points of contact at all times - The three points of contact rule is simple—always maintain one hand and two feet, or two hands and one foot, when climbing or descending ladders, trucks and equipment. When climbing a ladder, you must have both hands free and face the ladder. - All persons to be trained in basic ladder safety, including use, inspection and safety measures whilst working from ladders and at height. - Ladders to be securely tied off to prevent slippage and movement - Where a ladder cannot be tied or secured in any other way, it will be securely footed by another operative - If a ladder is being used to access a working platform the ladder shall extend 1.05m above the platform level - Use of ladders will only ever be used for short duration work where no viable alternative is available - Damaged ladders shall be removed from site immediately - The painting of ladders shall not be permitted as this may mask any defects			

GMC-HAS-R-0009. Work at Height

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazards	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
					The correct angle for a ladder is 75° or at a slope of 1:4 - Overreaching from ladders shall not be permitted			
Falling into unguarded cellar, manhole, culvert etc.	Crew, delivery drivers and public	7	6	42	- When crews are working at opened manholes, these must have GMC Utilities barriers in place to prevent unauthorised access. - Timber framed edge protection will be installed above access points for confined space works.	7	2	14
Items falling from a height	Crew, delivery drivers and public	6	6	36	- A hard hat must be worn when working at height or below an overhead work area. All tools and equipment are to be secured when working at height. - Keep tools in a tool belt and do not leave materials lying on or supported on the ladder while waiting to use these items.	6	2	12
Mobile Elevated Working Platforms (MEWPs) Falls from height Falling objects	Crew, Motorists public	7	5	35	- All operators to be trained in the safe use of the specific type of platform being used All persons using a MEWP should be provided with training for working at height - All persons using a MEWP shall be provided with training in the use safety harnesses and in the importance of ensuring a harness is always used and secured to the basket Ensure adequate supervision is provided and that control measures remain valid for the duration of the work - Checks shall be made prior to use to ensure that all MEWP's are in a	7	3	21

GMC-HAS-R-0009. Work at Height

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazards	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Overturning Collision with other plant or structures Failure of lifting mechanism Impact with overhead cables or other obstructions					serviceable state and are accompanied by a valid test certificate - The working area beneath the MEWP will be fenced off to safeguard any persons below from falling objects and from the risk of collision with the MEWP - The area in which it is anticipated the MEWP will operate shall be cleared of all materials, debris and other obstructions - The ground should be inspected prior to use by a competent person to ensure it is capable of sustaining the load - If fitted, stabilisers shall be extended prior to the raising of the platform - When not in use, the platform should be lowered, the keys removed, and the platform secured. - MEWPs will only be used on firm level ground			

GMC-HAS-R–0010. Use of Ladders

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazards	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Fall from a ladder etc.	Crew, delivery drivers and members of the public	7	4	28	- Do not use ladders that have damaged, loose or missing steps. - Ladders must extend 1m beyond the top landing when stepping off onto a platform or level ground. - Ladders must be used at a 4:1 height to distance ratio. Some ladders carry a tell-tale mark on the stile to indicate the correct angle. - Do not overstretch when using a ladder. Do not attempt to move/bounce the ladder along the work surface. Always get down from the ladder and then relocate it. Do not reach around corners or obstacles when working on or from ladders. Ladders must not be carried while extended or vertically, always reduce ladder to minimum size. - Do not attempt to extend the ladder by adding to it. - Ensure that the surface against which you are leaning a ladder is capable of taking the load of the ladder, your equipment and you. - When using ladders keep three points of contact at all times - The three points of contact rule is simple—always maintain one hand and two feet, or two hands and one foot, when climbing or descending ladders, trucks and equipment. When climbing a ladder, you must have both hands free and face the ladder.	7	2	14

GMC-HAS-R–0010. Use of Ladders

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazards	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Ladders in poor condition.	Crew, delivery drivers and members of the public	7	3	21	- Ensure that all ladders are in good condition and visually inspected prior to use. - Form GA3 Work @ Height Inspection Form must be completed weekly and a copy available on site at all times. Report any defects noted during the weekly inspection immediately to your line supervisor - All ladders are to be marked with a unique number which will be recorded on the GA3 form. - Ensure that all ladders are kept clean at all times. - All ladders used should be of the appropriate height for the purpose of the work. Ladders must be constructed to EN 131.	7	2	14
Incorrect use of ladder	Crew, delivery drivers	7	3	21	- Ladders are designed for a specific use; therefore, make sure that they are being used correctly for the task being undertaken.	7	2	14

GMC-HAS-R–0063. Sewer Jetting & CCTV Surveys

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Public/ Site Traffic	Operatives	7	5	35	Appropriate traffic management system- either site specific or generic- to be set up by SLG card holder prior to commencement of works. Traffic volumes must be closely monitored at each location to ensure suitability of system being applied. Where footpaths/ pedestrian walkways are blocked or obstructed, appropriate measures must be put in place for pedestrians for the duration of the works. All site vehicles to be parked safely and in compliance with road traffic legislation. Any site vehicles/ traffic crossing into live public carriageways to be accompanied by a marshal/ signalman to warn third parties of their presence. All persons operating plant must adhere to GMC's minimum site safety rules • Mobile phones may not be used while operating plant. • Keys must be removed from ignitions of unattended vehicles. • Never ride as a passenger on plant which is not designed for it. • Plant must always be operated within site speed limits. • All warning beacons, alarms and mirrors must be in good working order and activated while machinery is in operation. • All operators must be at least 18 years of age and hold the requiredtraining for the machine they are operating. Any ancillary equipment attaching to site vehicles-Hoses, Pipes- must be managed in a manner that minimises risk to site personnel and the public. Minimum standards of PPE to be worn by all operatives at all times on site. Convex mirrors should be fitted to provide the driver with adequate vision of his	7	2	14

GMC-HAS-R–0063. Sewer Jetting & CCTV Surveys

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
					surroundings. All seats are fitted with seat belts.			
Open chambers / manholes	Operatives, Public	5	5	25	All openings (chambers / manholes etc.) must be protected by barriers. The barriers must remain closed at all times, except for access.	5	2	10
Loose/ Sharp Objects	Operatives	5	5	25	All larger or sharp objects with the potential to cause a strike injury should be removed from the work area prior to the commencement of jetting. Any hypodermic waste or sharps encountered should only be removed using the sharps kit provided and never handled. Where works are to be undertaken in close proximity to the public, protective screening must be erected to protect the public from flying debris. Access to the works area must be strictly controlled during jetting operations.	4	2	8
Incorrect use of equipment	Operatives	3	5	15	Trained operatives only to use equipment. Manufacturer's instructions must be available with the equipment.	3	1	3
Sickness/ Ill Health/ Contamination	Public	6	4	24	Requisite levels of PPE to be worn at all times. PPE must be in good condition, regularly cleaned and appropriate for the work being carried out. Provisions must be in place for crew with regards to handwashing/ sanitation at break/ mealtimes.	6	2	12

GMC-HAS-R–0063. Sewer Jetting & CCTV Surveys

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
					Soiled PPE must never be stored or transported in the passenger compartment of the work vehicles.			
Trailing Hoses & Cables	Operatives, Public	6	4	24	Ensure all hoses and leads are behind the barriers or next to the kerb. When hoses extend beyond the limits of the barriers, hose ramps must be used.	6	1	6
Unsafe use of jetting equipment and CCTV	Operatives, Public				The sewer jet vehicle must be parked safely. The area between the jetting vehicle and the manhole / chamber must be barriered to prevent unauthorised access. Only competent operatives may use the jetting and CCTV equipment. The jet nozzle is never to be pointed in the direction of persons. All required PPE must be worn; this includes safety footwear, hi-vis vets/jacket, hard hat, full face visor and ear defenders, where required. The jetting vehicle and CCTV equipment must be inspected prior to use. If they are found to be faulty, the fault must be reported to your manager and a decision as to whether to continue will be made. The jetting vehicle must have a functioning, in date fire extinguisher and a first aid kit present. If access to the chamber / manhole is required, please consult GMC's risk assessment for Confined Spaces			
Oil or Fuel Leaks	Crew, Operator	4	2	8	All crews will carry a spill kit and will have received training in its use.	4	1	4

GMC-HAS-R–0063. Sewer Jetting & CCTV Surveys

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
					Work vehicles/ equipment must be maintained regularly in accordance with the manufacturer's guidelines.			
Flying Debris	Crew, Operator, Members of the Public	5	4	20	All persons in the operating area have been informed of risks associated with the high-pressure jetting. All persons are located safe distance away from the opening and the work area will be barriered off to prevent unauthorised access.	5	1	5
Eye injury	Operator and crew	6	6	36	All persons within the work area must wear safety glasses at all times during work operations.	6	2	12

GMC-HAS-R–0064. Hazardous Materials, Biological Substances

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Risk of exposure to sewage & the following diseases: Gastroenteritis, Weil's Disease, Hepatitis, Infection, Allergic Alveolitis.	Crew	7	7	49	Crew working in sewers, sewage suction works, or pipe jetting or any other works where they may be exposed to raw sewage must wear waterproof overalls, abrasion – resistant gloves, footwear, eye and respiratory protection. Full face visors are required. First aid arrangements must include access to clean water, first aid kit containing sterile, waterproof wipes and sterile, waterproof, adhesive dressings. All operatives to be instructed in the importance of exercising proper hygiene and are to be informed of the availability of the hygiene and welfare facilities which have been provided	7	2	14
Contaminated clothing/ equipment	Crew	7	6	42	All PPE and outer garments such as overalls must not be stored in the cab of the vehicle, but instead must be stored in the cargo section. All crews to be issued with duplicate sets of PPE to facilitate regular maintenance and washing. All tools and equipment to be cleaned after each use and stored in the appropriate sections of the work vehicles.	7	2	14
Contamination/ poor sanitation	Crew	5	5	25	All persons must wash their hands with soap and disinfectant prior to eating, drinking or smoking.	5	3	15

GMC-HAS-R–0064. Hazardous Materials, Biological Substances

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Risk of infection / disease as a result of consuming food, liquids, tobacco products or from soiled hands contacting the mouth or exposed wounds.	Crew	5	5	25	All persons must wash their hands thoroughly after work is completed.	5	2	10
Dermatitis	Crew	5	5	25	All crew folders to have safety data sheets for all chemicals or hazardous substances in use. All persons working with wet concrete must wear appropriate gloves and eye protection. If a person receives concrete splashes, they must be washed off immediately. All persons working with concrete must wash their hands prior to eating, drinking or smoking.	5	2	10

GMC-HAS-R–0105. Sewer Cleaning

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Hazardous atmospheres: - Oxygen levels (min & Max) - Carbon Dioxide (exhaled air) - Hydrogen sulphide & methane (rotting vegetation/tips) - Ammonia	Crew	7	5	35	The access and egress are via ladder with a backup Tripod and winch. However as this is first entry to the shaft, the shafts will be categorised as CAT B (Medium Risk). Atmosphere check prior to entry and during entry Confined space permit will be issued prior to any works. Crew to be issued with emergency contact numbers, during the normal working hours GMC are the primary contact so that an evacuation can be initiated immediately. The tunnel will be drained down under gravity, water discharging into the overflow river. The remained of water will be removed using suitable pumps at downstream end.	7	2	14

GMC-HAS-R–0046. Works Adjacent to Live Roads / Paths

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Being struck by works vehicles or public vehicles when footpaths are closed during the works.	Crew, delivery drivers and members of the public	7	7	49	Adequate safety signage will be posted to warn pedestrians and motorists of the works. Employees are encouraged to assist truck drivers when reversing and a banksman will be provided. Always wear Personal Protective Equipment, especially hi-visibility clothing. Keep all site traffic to maximum of 10 km/h. Only trained and authorized personnel are allowed operate works vehicles. All construction vehicles are to be provided with flashing beacons. Temporary pedestrian walkways will be created using barriers where required. Temporary lighting must be set up if working at night and if sufficient street lighting is not available. Ensure that routes for pedestrian traffic or goods traffic are in place. Ensure sufficient safety clearance is provided for pedestrians if means of transport are used on traffic routes. Ensure sufficient clearance is allowed between vehicle traffic routes and doors, gates passages for pedestrians, corridors and staircases. Ensure pedestrian routes and traffic routes are clearly identified for the protection of pedestrians. Traffic Marshall must be used in high-risk areas or to assist vulnerable persons.	7	2	14

GMC-HAS-R–0024. Night Work

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Poor light / visibility.	Crew, delivery drivers and members of the public	6	7	42	Where work takes place on roadway, all crews must ensure that correct PPE (Class 3) is used to ensure you are visible to other road users. Crews must ensure that PPE, particularly hi visibility clothing, is clean and that the reflective strips are present and in order. Where insufficient light is present, artificial lighting must be used to permit the staff to work safely. All crew will be issued with miner's lamps which can be attached to hard hats. To ensure that the technical aspects of the work are undertaken properly and where light is inadequate, the crew will use the miner's lamps. Where works take place on a footpath, barriers must be erected such that the reflective strips are visible to pedestrians. Appropriate retro-reflective signage must be erected. All signage must be clean, and all decals must be in good order. Crew must ensure that they do not erect barriers in a manner that creates unsafe conditions for pedestrians such as guiding them into potholes, depressions in grassed areas, badly broken or unstable walkways etc. Where temporary pedestrian walkways are to be placed on the roadway the required signage as per Chapter 8 and any relevant traffic management plans must be in place. Crew must exercise caution when crossing roadways. Where the crew judge the working conditions to be unsafe due to lighting conditions, they must escalate the issue to their agent for further advice.	6	2	12

GMC-HAS-R–0024. Night Work

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	**Persons in Danger**	**Initial Risk Rating**			Control Measures	**Residual Risk Rating**		
		Severity	**Likelihood**	**Rating**		**Severity**	**Likelihood**	**Rating**
Working near live traffic in hours of darkness	Crew, delivery drivers and members of the public	6	7	42	All road signage to be retro-reflective. All barriers to have reflective strips fitted. Barriers must be erected such that the reflective strip is visible to pedestrians, cyclists and motorists. All vehicles to be parked safely such that they do not pose a risk to motorists, pedestrians or cyclists. If work vehicles cannot be parked safely near the work site, the crew must find a suitable safe parking area. Crew must exercise caution when crossing roads. Tower lights should be used where possible to increase lighting within the works area. Caution must be taken when erecting tower lights on site due to the risk of overhead hazards. Tower lights must only be transported in the lowered position.	6	2	12

GMC-HAS-R–0085. Movement and Use of Mobile Tower Lighting

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Contact with overhead cables: Harm to operatives and public if not set up correctly. Damaged to vehicles in work area or passing.	Operatives, public	7	7	49	The lighting mast must be secured in the lowered position when it is being repositioned anywhere on site. Before raising the mast by either manually or through automated means the operator must look up (using a torch if required) through the lifting arc to ensure that it is not travelling towards cables “Overhead Lines Present” signs should be displayed. Teams will work to the ESB ‘Code of Practice for Avoiding Danger from Overhead Electricity Lines’. Before raising the mast, the operator must ensure that it is positioned on stable solid ground and that any outriggers / stabilising legs have been extended. Before raising the operator must ensure that in the event of the mast toppling over that the arc of the fall in any direction will not allow it to come into contact with or pass through the exclusion zone of any overhead power lines	7	2	14
Dazzle from lighting tower blinding motorists / other road users	Operatives and the public	7	3	21	In addition to the considerations for proximity of tower lights to overhead power lines they must also be positioned so as not to dazzle road users	7	2	14

GMC-HAS-R–0080. Handling Wet & Hardened Concrete

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Skin contact with wet concrete.	Operatives	6	4	24	Hand Protection: Wear suitable protective gloves. Skin Protection: Avoid contact with skin. Overalls should be worn. Footwear: Wear knee high rubber boots or similar with protective toecaps. Kneepads: Wear kneepads when kneeling on fresh concrete. Hand Protection: Wear suitable protective gloves. Skin Protection: Avoid contact with skin. Overalls should be worn.	6	2	12
Cutting, drilling or hammering of hardened concrete	Operatives	6	4	24	User must be able to apply water to dampen dust particles Masks: Wear appropriate respiratory protection when cutting, drilling or hammering hardened concrete. User and anybody in close proximity must wear suitable dust masks / respiratory protective equipment Eye Protection: Wear eye protection to approved standards to prevent eye contact from splashing of fresh concrete or flying particles when hammering hardened concrete.	6	2	12
Noise damage to hearing when using abrasive wheels mechanical and pneumatic breakers and hand held powered tools on hardened concrete	Operatives	6	4	24	Users and anybody in close proximity must wear suitable PPE to comply with the EN standards shown: Hearing protection (EN352-1 or 352-3) Noise Levels Produced: Stihl TS400 Saw 107 dB(A), Wacker Rammer 102 dB(A) and 14" Petrol Floor saw 105 dB(A) As a rule, if you have to raise your voice to make yourself understood both you and the person or persons you are talking to must wear hearing protection. See also separate Material and Handling / Storage Chemical Risk Assessments	6	2	12

Correct Installation/ Assembly of shuttering formwork in order to prevent collapse/ failure.	All crew involved in manhole installation.	7	7	49	The shutters will be cut to size, assembled and prepared for lifting overground. The assembled frame will then be lifted into the pit as per the method outlined in the pre arranged lifting plan, under close supervision of the appointed slinger/ signaller and the foreman. Once in position, the frame will be wedged and braced as per the requirtement s in the Temporary Works Design.	7	2	14

GMC-HAS-R–0086. Brick / Block Laying

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Manual handling/ Crushed limbs Dermatitis Slips/trips/falls	Operatives	6	7	42	All staff to be trained in manual handling techniques. All staff to be informed of the health hazards associated with contact with mortar. All staff to be instructed on the safe systems of work Ensure large heavy blocks are not specified Ensure PPE is made available and used by all operatives Ensure appropriate welfare and hygiene facilities are made available Ensure adequate supervision is provided and that control measures remain valid for the duration of the work Ensure the workplace is kept clean and tidy with walkways unobstructed Provide mechanical aids to lift blocks/bricks. Ensure pallets of material are left as close as possible to work area.	6	2	14
Entanglement with moving parts of cement mixer	Operatives	7	7	49	Ensure concrete mixers and other plant are regularly checked and inspected Buyers to purchase small (25kg) bags of cement Ensure operative has received all relevant training to use mixer. Ensure operative not wearing loose clothing and hi-vis vest is closed.	7	2	14
Inhalation of silica dust	Operatives	7	7	49	Ensure at least P3 dust mask is worn Ensure face fit testing is complete. Educate all operatives of the risks of silica dust. Suppress dust with water before cutting.	7	2	14

GMC-HAS-R. 9C Flow Diversion – Dunboyne Phase 1

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Placing flow stopper, risk of fall, equipment failure, removing stopper	Operatives	7	7	49	Inflatable flow stopper to be lowered into the chamber. A confined space operative attached to a tripod and winch will place the stopper in the correct position. Loose prefilled sandbags may be lowered into the chamber individually by a working rope if required. All confined space operatives will have the correct qualifications in place before proceeding. The flow stopper will be tied off to a fixed point at ground level to avoid movement. Caution to be observed by topman operative when lowering material into chamber to a receiving CS operative as not to cause injury. Stopper will be removed from ground level due. This will be deflated via the control valve and pulled out of the chamber with the restraint straps.	7	2	14

GMC-HAS-R. 9C Flow Diversion – Dunboyne Phase 1

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Risk of injury or fatality due to failure of diversion equipment.	Operatives	7	7	49	Flow diverted at CC1 & CC2 into the 9C duplicate and on to the BRDS site via an inflatable stopper lowered into place and inflated to the manufacturers specification. The pressure will be checked and maintained throughout the process. TW design will be in place for the flow stopper and signed off. Check sheet signed off on site to confirm correct installation as per installation procedure. Stopper to be tied off to a secured point at ground level to avoid movement. GMC coordinator and spotter to monitor the stopper operation for any changes, movement or unexpected events. The coordinator is to immediately inform the topman for the man entry crew to order a controlled evacuation of the system. Site compressors to be used to inflate the stopper. These are to be refilled with fuel prior to commencing and checked regularly for issues during the operation.	7	2	14
Storm tank level overflows	Public, Environment	6	6	36	The tank pumps will be switched from automatic to manual at the start of each shift. The level in the tanks will be monitored by a GMC and a Uisce Eireann operative. This will be done by a handheld device by GMC on site and on site or remotely by Uisce Eireann. Once the level in nearing or has reached the agreed point the signal will be given to evacuate the sewer. When the evacuation has been confirmed the tank pumps will be switched on. These details will be recorded on the procedure check sheet and signed off.	6	2	12

GMC-HAS-R. 9C Flow Diversion – Dunboyne Phase 1

Severity: 2=Low 7=High X Likelihood: 2=Low 7=High = Risk Rating: 4=Low 49=High

Hazard	Persons in Danger	Initial Risk Rating			Control Measures	Residual Risk Rating		
		Severity	Likelihood	Rating		Severity	Likelihood	Rating
Setup of site around diversion equipment	Operatives, Public	7	7	49	CC1(SO05407806) & CC2(SO06406311) are located in recreational parks. Sites to be fenced off and secured to avoid public access. Compressor to be located away from manhole with the exhaust pointed away from the confined space. All trailing compressor hoses at to have whip checks and are to be kept tidy and away from walking path in and out of the site. Flow stopper and equipment to be laid out and checked at ground level prior to installation. All equipment is to be fenced off from public access. Open manholes are to be manned at all times and closed when not in use. The site fencing is to be closed at all times and secured when not in use.	7	2	14

EMPLOYEE SIGNATURE LIST **(Employees sign below to confirm they have read and understand this method statement)**			
Name (Print)	Signature	Company	Date