



RAMS DR 48 - LSR Patch Lining

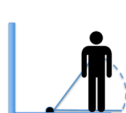
Project Name:		Project Number:	
Company:		Document/ Job Number:	
Title / Task:		Revision Number:	
Date of Issue:		Client Contact:	

Other Trade Contractors to be copied with Method Statements and Risk Assessments for information, co-ordination, and interface purposes	
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Description of Task/Activity:	Local structural repairs on pipes by using patch lining		
Client Name:	TBC	Client Ref: Contact Details Vision Ref.	To be advised
Site Address/ Location:	To be confirmed	Start Date/Time:	To be confirmed
		Finish Date/Time:	To be confirmed
Metro rod Personnel involved:	Position		
	Team leader		
	2 nd operative		
	3 rd operative		
Operations Manager:	All Applicable Operations Managers	Contact Tel No(s):	
Key Plant and Tools Required:	Portable Tools Portable tools used will be hand tools such as lifting/gulley keys, drain rods, screwdrivers, hammer. Special items will be detailed on the list of equipment to be used for each job. Mechanical Plant All plant brought onto site will be regularly maintained / calibrated and tagged for identification purposes. Mechanical plant will be as follows which will located as close to the work area as is permitted. • HPWJ Unit • CCTV Equipment • Confined space entry and safety equipment. • Compressor or pump. • Fernco Pipe Doctor kit (WRc approved), Patch Box repair kit or similar. • containing – Fibre grass matting, x2 Protective polythene sheath, matting test piece, Cable ties, tie wire, spatula, Section of plastic sheeting. • Resin and hardener • Inflatable packer/s • Air regulator (usually set to 2 bar) and pressure check gauge/s, flexi connectors, blue line (5mm), duct and insulation tape, Stanley knife. • Generator Temporary Lighting and Power Temporary lighting will be provided by: • Portable lighting rigs (as required)		

Key Materials Required:	Materials Manufacturers Safety Data sheets for any hazardous substances will be supplied in accordance with COSHH Regulations 2002 for the following key materials: Various Resins, accelerators, catalyst, fibreglass matting,
Other Essential Equipment:	<i>(i.e.: access platforms/winches/ladders etc)</i> Safety barriers, dust/plastic sheeting, guide tube. Safety signage (HPWJ) spare bursting discs, standpipe, and key. Guide tube. Various jets. Plastic measuring jugs, Plastic sheeting. Nylon rope, safety knives.
Specific Identified Residual Hazards:	Refer to Risk assessment
1	SCOPE This safe system of work is intended to supplement the training provided for all operatives who are involved in local structural repairs (patch lining) repairs, with information gained from experience and lessons learned from risk assessment/previous incidents. This is a Generic Method Statement and further details, and site specifics will be added by the relevant franchise. To outline and describe the procedures to be followed when carrying out operations, the objective is to ensure operations are carried out safely. This is a generic SSOW. Operators must use the relevant manufacturers user guide/manuals for more detailed information from Site Staff. Reference to be made to the following Legislation/Regulations & Procedures when undertaking the work stated (To be used only as a guidance as it is not comprehensive): • Health & Safety at Work Etc. Act 1974 • Control of Noise at Work 2005 • Control of Substance Hazardous to Health Regulations 2002 • Control of Vibration at Work 2005 • Management of Health & Safety at Work Regulations 1999 • Manual Handling Operations Regulations 1992 • Personal Protective Equipment at Work Regulations 1992 • Provision & Use of Work Equipment Regulations 1998 • Provision and Use of Work Equipment Regulations 1998 • RIDDOR Regulations 2013 • Work at Height Regulations 2005 • Workplace (Health, Safety and Welfare) Regulations 1992 • Manufacturers operating instructions. • Water Jetting Association Code of Practice • Confined Space Regulations 1997
2	ASSOCIATED DOCUMENTS This SSOW must be read in conjunction with the following risk assessments / Safe Systems of Work: • Manufacturers operating information. • Water Jetting Association Code of Practice • Point of Work Risk assessment • MSDS/COSHH assessment for Resin used

3	ADDITIONAL INFORMATION REQUIRED • Daily Pre-Use sheet for plant and vehicle • Service Engineers Manual Asbestos Register: Asbestos register should always be checked before works commence. If Asbestos Register is NOT available on site, DO NOT proceed with works and consult with supervisor / site contact.
4	AREAS/PERSONNEL AFFECTED All areas of operations Primarily Engineers are affected by this system of work however consideration is also given to the remainder of employees and pedestrians at the area of work.
5	ENVIRONMENTAL CONSIDERATIONS Working area and access, clear of debris, ice, and snow The working area should be clear of fluid spills and overhead hazards. Operating areas to be well lit Clear access and egress to and from the working area, check surfaces are level. During adverse weather conditions gritting of roads may be required before commencing work. If you notice ice in the working area, you should report this to your line manager.
6	EQUIPMENT INVOLVED Barriers, Various types of HPWJ units, CCTV equipment, compressor, generator, air- line and regulator, inflatable packers, 2m air rods or drain rods, flexi connectors, hand tools, confined space entry and safety equipment.

7	MANDATORY PERSONAL PROTECTIVE EQUIPMENT REQUIRED (✓ as appropriate)																							
																								
	Face Protection EN 166B When jetting		✓		Eye Protection EN 166F/B		✓		Dust Mask FFP3 EN 149:2001				Respirator EN 405:2001 FILTER If mixing resin in confined area		✓		Safety Harness BS EN361		✓		Hearing Protection EN352		✓	
																								
	Overalls BS EN ISO 11612:2008		✓		SCBA				Foot Protection BS EN 20345 Midsole/toe cap & ankle		✓		Gloves BS EN388		✓		Hi-Vis BS EN471		✓		Safety Helmet BS EN812/EN397 Chinstrap		✓	
																								
	Gas Monitor		✓		Escape Set		✓		Fall restraint Lanyard				Fall arrest Lanyard (If fall restraint not used)				Face Covering		✓					
	Other				Other				Other				Other				Other				Other			
It is the operative's duty to ensure that anybody who is working near him will also wear the appropriate PPE prior to operations commencing. If they do not have the appropriate PPE or refuse to wear the appropriate PPE work must cease immediately and the manager must be informed. Detailed records of monitoring, servicing and calibration of all equipment are available for inspection, along with records of issue and use of PPE. All equipment is to be checked prior to use, any found to be defective will not be used and will be reported immediately to the office. All calibrated equipment will hold current certificate. Protective clothing must be worn always whilst work is being carried out																								

8	COSHH COSHH assessment required Listed in the table below are the COSHH that will be used during the work. Details of any applicable COSHH assessments can be found in SYPOL and will be kept on file and all team members will be required to read and understand this file.	
	COSHH	Sypol Assessment ID
	<i>GENERIC - UNLEADED PETROL</i>	<i>3845472</i>
Storage and Handling of Hazardous Substances and Materials Care will be taken to ensure that all hazardous substances are stored and handled in accordance with the COSHH Regulations 2002 Work Permits and Licences If tools, equipment, and materials are to be left on site of the end of a shift, a storage licence will be obtained by prior arrangement from the client and a Permit to Work system will be used and a site-specific risk and method statement completed.		
9		Emergency Procedures: • Raise the alarm and request immediate help from personnel on site • Ensure that if emergency services are required, they are called, and clear information is provided • If possible, without endangering yourself or others, make the area safe remembering to use safe working practices and appropriate PPE • As applicable, administer First Aid treatment, taking care not to become a casualty yourself • Secure the area, protect the accident scene ONCE SITUATION IS UNDER CONTROL, CONTACT YOUR LINE MANAGER, REPORT THE INCIDENT TO THE IRS AND FOLLOW ANY CLIENT REPORTING ARRANGEMENTS Name of On-Site First Aider: _____ First Aid Box Location: In Vehicle Nearest A&E – TBC
		Fire IMPORTANT! Do not use water on an electrical fire! Procedures will be carried out as per site instructions. Emergency Procedures INCIDENT REPORTING NUMBER: 01625 507954

TRAINING REQUIREMENTS

Operators must be trained in HPWJ, asbestos awareness, CSCS card, manual handling, Confined space, Pipe lining repair, CCTV surveying, NRASW training.

Only persons who have read understood and signed this safe system of work are permitted to carry out the above activity.

GENERAL POINTS

1. Prior to leaving yard all vehicle and plant checks to be carried out, ensuring equipment is within calibration/inspection dates and safe and appropriate for use
2. On arrival at site contact responsible person and obtain necessary permits and note any special precautions required. All staff employed by Metro rod carrying out duties will have been through approved training. Team Leader to ensure all operatives are correctly wearing issued PPE
3. In addition to this method statement full compliance will be given to any rules / requirements as discussed at the site-specific induction in accordance with Client
4. Vehicles to be equipped with amber flashing beacons and safety barriers and warning signs
5. Where necessary road closures/traffic control will have been booked by the Main Contractor prior to works commencing. If closure is provided units will enter through designated works access with hazard beacons in operation. If no closure is provided by the Main Contractor a closure will be erected by the operatives
6. Provide signing, lighting, and guarding to isolate working areas if required, taking into consideration the protection of any properties in accordance with the basic principles of the Safety at Street Works and Road Works Code of Practice 2014
7. Notices warning of drainage work activities to be erected in prominent positions for the protection of the Client's employees and the public
8. Correct safety signage to be utilised on vehicle
9. Manholes/area where works is being carried out to be coned off and made safe with barriers placed around open manholes and once works are complete replace all covers, remove all signs and barriers
10. Any defects with any item of plant and equipment will be reported on a Defect Report Form and passed to the office for action
11. The Team Leader/Engineer will ensure the Client has signed all necessary paperwork upon completion of works
12. Ensure that public fence barriers (if utilised) are intact always
13. Ensure all loads are secure prior to moving location
14. Banks man to be always used when vehicles are being manoeuvred around area
15. Protection of the public is a high priority
16. All hand tools, etc to be returned to storage area on unit
17. Ensure site is left **CLEAN, SAFE AND TIDY**

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PROCEDURE

Safe working practices

Thorough and comprehensive checks of vehicles, tools and equipment must be made at the start of every shift with the plant check sheet completed, signed, and dated accordingly. If you are unsure about any potential faults, ASK! Vehicle checks should also be made throughout the shift as and where necessary, you are also required to carry out further checks at the end of your shift and any defects identified should be reported using the company defect reporting procedure.

DO NOT USE DEFECTIVE EQUIPMENT!

An LSR can be installed on the following defects.

- Cracks and fractures
- Holes
- Open joints
- Displaced joints
- Tree root infestation (post removal)
- Slight deformation
- Water infiltration

An LSR is not always the best option, and you should show caution in the following circumstances:

- When attempting to repair large holes in the pipe wall, whether a void is visible or not. The ground from behind the pipe may have been washed away and the packer may over inflate, causing it to burst. In this instance, do not inflate the packer to full pressure.
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- When installing a patch on a defect that is located close to a live lateral. Your measurements need to be precise, as you could potentially cause flooding at a connecting property.
- When the sewer/drain is heavily used. You may cause flooding upstream.
- Over pumping may be required to keep the water levels upstream under control.
- If there appear to be any sharp edges (broken pipe work) around the defect, which could also cause the packer to burst. The sharp edges could be smoothed with some type of lateral cutter or install a double skin patch. The increased thickness of the felt will act as a protective barrier (not always guaranteed to work)
- If there are displaced joints or bends – as the packer may not pass. In this case always attempt a dry run (no patch on the packer), then there will no wasted materials and time
- When cracks and fractures are present, as they can easily spread. The client/employee should be made aware of this.

Preparing an LSR for installation into a defective pipe, sewer or drain.

- First check all equipment is fit for purpose. You don't want to have the patch in place and then find out you have an air leak.
- You should now fix the 2 polythene sheaths to the packer, by fastening x2 cable ties at each end. Wrap the cable ties in Duct tape to cover any sharp edges that could snag on any joints in the pipe.
- Carry out CCTV to ensure the pipe is clean and free from any debris. Just because it was clean when the original survey took place, doesn't mean it is now.
- HOLD POINT – In the event that man entry is required to sort any problems, revert to MR/MS DR-019. Ensure an entry permit is completed.

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Gaining an accurate measurement to the point of the defect.

- Once the pipe is clean. Carry out CCTV in order to identify the defect and get an accurate measurement. Position the camera head level with the centre of the defect; mark the camera cable/rod at **the start of** the pipe (mouth of the pipe). On some occasions you may have to measure to what would be the front or back of the LSR, depending on the location and type of defect.
- Now that you have an accurate measurement. Lay the pushrod camera in a straight line on the ground.
- Lay the centre of the packer level with the end of the camera head (point of defect).



- Connect the rods to the packer and lay them out in a straight line next to the camera rod.
- Once you have laid out the correct number of rods, you must now mark the air rods with tape in the same way as you did the camera rod. It is highly important that the measurement from the centre of the packer to the tape on the rods are exactly the same as the distance marked on the camera cable/rod.



Preparing the Patch “wetting out.”

- Lay the matting (glossy/woven side up) on the polythene sheeting, to prevent any resin from contaminating the customers' driveway etc...
- Make sure all your tools and equipment are to hand or in position ready for when the patch is wet out. Once the resin is mixed you are working against the clock. You only have a certain amount of time before the resin will start to cure.
- Mix the Resin and hardener to the manufacturer's specifications. Once the resin is fully mixed you must be ready to spread it over the matting straight away, as the pot life of the resin is approx. only 25 mins (@15oC) and this is greatly affected by temperature. Any increase in temperature will reduce this working time and in colder conditions you will have more time.
- Apply the resin to the glossy side of the matting first, this side provides a good finish in the pipe.



Turn the matting over and apply the remainder of the resin to the rough side

- Make sure the matting is completely saturated in resin and do the same to the test piece of matting.
- Then either fold the matting in half or fold the 2 outer edges inwards to the centre point, so that none of the rough side is visible



Securing the patch to the packer.

- Line the centre of the packer up with the centre of the patch and place the packer on top of the patch
- Carefully wrap the fibre glass around the packer. The matting should overlap between 10 to 2 o Clock



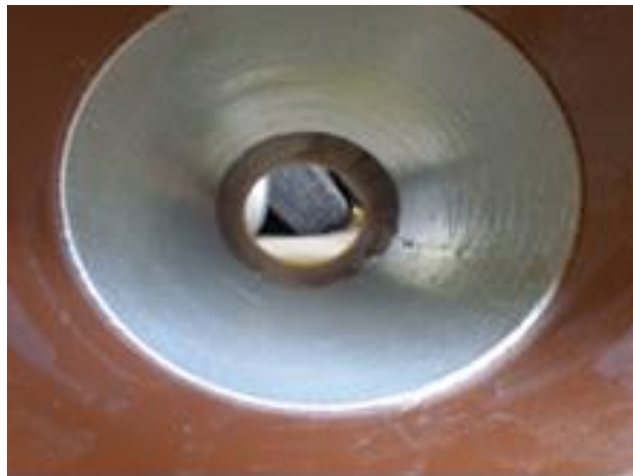
- Then secure the patch with tie wire or elastic bands, whichever is supplied. The matting is usually secured at each end and approximately 150mm from the sides of the patch.
- Inflate the packer slightly (0.2 bar) to help hold the patch in place. Sometimes the patch can move out of position on the packer when it is being pushed up/down to the defect.

Patch installation

- Now that the rods, airline are now connected, insert the packer carefully into the pipe
- Position the packer at the point of the defect, the tape mark should be level with the mouth of the pipe. Once you are happy that the packer is in place, it is good practice to have a quick look with the camera to see if the patch has moved along the packer – **BEFORE THE PACKER IS INFLATED.**
- Once happy, you can start to inflate the packer (**DO NOT EXCEED RECCOMENDED PRESSURE**). The recommended pressure will be displayed on the packer.
- The packer needs to remain fully inflated until the resin has completely cured – at 50C approx 2 hrs. Monitor your test piece of felt from time to time, to see how the curing process is progressing.
- Use a pressure check gauge to monitor the packer pressure. It might be necessary to keep topping the packer up with air.

Removing the packer

- Before you attempt to remove the packer, check that the fibre glass matting test piece has fully cured.
- Only then deflate the packer slowly.
- If possible, twist the packer carefully to help release the polythene from the patch.
- Once you are happy that the packer is fully deflated and freed, slowly retrieve it from the pipe/sewer.
- To complete the job, follow up with a CCTV recording to prove that the work has been carried out successfully.



ENSURE THE SITE IS LEFT CLEAN, SAFE AND TIDY!

OCCUPATIONAL HEALTH CONSIDERATIONS

Leptospirosis

This is a serious and sometimes fatal infection that is transmitted to humans by contact with urine from infected rats, and in the case of Hardjo leptospirosis, from cattle to humans. Both diseases start with a flu-like illness with a persistent and severe headache, which can lead to vomiting and muscle pains and ultimately to jaundice, meningitis and kidney failure. In rare cases the disease can be fatal.

Legionella

This is a collective term for diseases caused by legionella bacteria including the most serious Legionnaires disease, as well as the similar but less serious conditions of Pontiac fever and Lochgoilhead fever. Legionnaires disease is a potentially fatal form of pneumonia and everyone is susceptible to infection. Legionella bacteria are widespread in natural water systems, e.g., rivers and ponds. However, the conditions are rarely right for people to catch the disease from these sources. Outbreaks of the illness occur from exposure to legionella growing in purpose-built systems where water is maintained at a temperature high enough to encourage growth, e.g., cooling towers, evaporative condensers, hot and cold-water systems, and spa pools used in all sorts of premises (work and domestic). People contract Legionnaires' disease by inhaling small droplets of water (aerosols), suspended in the air, containing the bacteria.

Manual handling

Manual handling covers a wide variety of tasks including lifting, lowering, pushing, pulling, and carrying. Injuries can occur almost anywhere, when people are at work or at home, and for many reasons like heavy loads or awkward postures. In addition, previous or existing injury can increase the risk. Early reporting of symptoms, proper treatment and suitable return to work plans can help most people recover from their injuries and return to work. Due to having to move in restricted spaces, this can cause injuries and aches and pains.

- 12** Ensure you inspect the key holes on manhole covers for wear or damage. Plan the lift and ensure that both engineers move in the same direction to avoid a manhole key twisting in the keyhole and coming free. Ensure the manhole covers are placed in a safe location where they cannot fall into the hole or become a trip hazard.

Corona Virus & Respiratory Infections

Respiratory infections can spread easily between people. It is important to be aware of symptoms so you can take action to reduce the risk of spreading your infection to other people.

The symptoms of COVID-19 and other respiratory infections are very similar. It is not possible to tell if you have COVID-19, flu or another respiratory infection based on symptoms alone. Most people with COVID-19 and other respiratory infections will have a relatively mild illness, especially if they have been vaccinated.

COVID-19, along with many other respiratory infections such as influenza (flu), can spread easily and cause serious illness in some people. You may be infected with a respiratory virus such as COVID-19 and not have any symptoms but still pass infection onto others.

The risk of catching or passing on COVID-19 is greatest when someone who is infected is physically close to or sharing an enclosed and/or poorly ventilated space with other people. When someone with a respiratory viral infection such as COVID-19 breathes, speaks, coughs or sneezes, they release small particles that contain the virus which causes the infection. These particles can be breathed in or can come into contact with the eyes, nose, or mouth. The particles can also land on surfaces and be passed from person to person via touch.

You will not always know whether someone you come into contact with is at higher risk of becoming seriously ill from respiratory infections, including COVID-19. They could be strangers (for example people you sit next to on public transport) or people you may have regular contact with (for example friends and work colleagues).

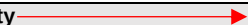
There are simple things you can do in your daily life that will help reduce the spread of COVID-19 and other respiratory infections and protect those at highest risk. Things you can choose to do are:

1. Get vaccinated.
2. Let fresh air in if meeting others indoors.
3. Practice good hygiene:

	4. Wash your hands 5. Cover your coughs and sneezes 6. Clean your surroundings frequently 7. Wear a face covering or a face mask. Face coverings and face masks can help reduce the chance of you spreading infection to others, especially in crowded and enclosed spaces, and may protect you from becoming infected by some respiratory viruses. If you have symptoms of a respiratory infection, such as COVID-19, and you have a high temperature or do not feel well enough to go to work or carry out normal activities, you are advised to try to stay at home and avoid contact with other people. If you have symptoms of a respiratory infection, such as COVID-19, and you have a high temperature or you do not feel well enough to go to work or carry out normal activities, you are advised to try to stay at home and avoid contact with other people. If you have symptoms of a respiratory infection, such as COVID-19, and you have a high temperature or you do not feel well enough to go to work or carry out normal activities, you are advised to try to stay at home and avoid contact with other people.
13	Environmental Protection • Always carry a spill kit and use it in the event of a spill! • Clear up any spillages immediately and report it • Keep noise to a minimum and ensure noise reduction equipment is operating correctly • If you need to refuel any equipment while you are on site, refuel on a hard standing using an appropriate filling device in a well-ventilated area, away from sources of ignition, water courses and surface water drains • Keep your worksite clean and free from debris • Keep waste separate and dispose of it correctly • Store waste to facilitate reuse or recycling • Leave your work site clean and tidy when finished • Avoid unnecessary damage to flora and fauna i.e. contact with trees, branches • Consider wildlife that may be affected by your activities Refer to the Environment systems of work (ESOW) for information and contact your supervisor if endangered or protected species, such as newts or badgers are found in your area. Reversing Operations Reversing/manoeuvring of vehicles must be where possible carried out under direction of a designated banksman. The vehicle MUST come to a complete STOP in the event of losing sight of the banksman, only resuming the reversing operation when visual contact has again been made with the banksmen and when instructed to do so by the banksman. The driver must be fully aware of blind spots. If a banksman is not available, then exit the vehicle and check the surrounding area for any hazards before you move the vehicle. Pedestrians / Mobile Plant If the driver is unsure of the movements of any pedestrians and/or mobile plant the vehicle MUST come to a complete STOP, only resuming operations when the intended path of any pedestrians and/or mobile plant has been ascertained

14	CLEANING Cleaning of equipment Ensure any equipment used are cleaned and are free of any contaminants. Once they are clean, check them for any faults and report them. Maintenance Maintenance and Servicing of vehicles/equipment is only to be carried out by trained and authorised personnel.
15	INCIDENT REPORTING All faults on vehicles/equipment must be reported to the office immediately, any faults noted / developed throughout the working day must also be reported to the office immediately. Operating the vehicle/equipment is then forbidden until advised safe to do so by your manager. Any accidents or near misses must be reported to your supervisor immediately. Any hazards that may be presented and have not been covered in this safe system of work must be highlighted to your supervisor or the Office Manager as and when they arise. Any environmental issues such as lighting, ground conditions etc. either on Metro rod or 3rd party sites must be reported immediately to your line manager.

Site(s)/Department		
Task Description/Activity/Area		
LSR patch Lining		
Risk Assessment Team - *Lead Assessor		
*David Corbett		
Equipment Involved:	Various Lining equipment, confined space entry equipment, Lining resins/chemicals, generator, compressor, pump, packer, air rods	

		Severity 				
		Minor Injury	Lost time/III health	Major 7 Day	Perm Disability	Fatality/ Multiple
Likelihood 	Very Unlikely	1	2	3	4	5
	Unlikely	2	4	6	8	10
	Likely	3	6	9	12	15
	Very Likely	4	8	12	16	20
	Certain	5	10	15	20	25

Hazards identified and consequences	Who is at risk?	Likelihood v Severity=Risk before controls			Current Controls - What are we already doing?	Additional Controls required – What do we need to do?	By Whom	Date?	Risk rating after controls		
		L	S	R					L	S	R
On route to Job and at Site Pedestrians & vehicles entering working area - Pedestrian/Vehicle collision leading to major injuries, worst case fatality. Manoeuvring/ reversing vehicle collision with pedestrian/vehicle/building leading to severe injury/fatality	Employees, Pedestrians	3	5	15	- Competent & trained drivers/operators - Drivers to abide by the road traffic act and highway code as well as company driving policies/procedures. Vehicle serviced at regular intervals. Driver to observe regular vehicle checks and record - Whilst working on the highway, or trafficked areas, all operatives must be competent, trained and adhere to New Roads and Street works Act, (NRSWA; Red Book code of practice). Work Instructions specific to task to identify any limitations in relation to Traffic Management Arrangements, (TMA). Works to be planned to take account of traffic sensitivity and pedestrian access requirements.	N/A	N/A	N/A	1	5	5

					▪ Signage/lighting as per Safety at Street works /Roadworks Code of practice 2014 to be used if required ▪ Barriers/Signage to be in place ▪ Vehicle movement Method statement ▪ Risk assessment & Method Statements ▪ PPE Hi-Viz clothing to be worn						
Ground Conditions - Pot holes etc. potentially uneven surface, trailing hoses or cables causing Slips, falls leading to injury/death	Employees, Third Party Drivers	2	5	10	▪ Departmental audits, workplace safety inspections, point of work risk assessment ▪ Toolbox talks, ▪ Roadways maintained to high standard ▪ Pre-use check on ground surface prior to starting operations ▪ Trained Engineers ▪ PPE Non -slip boots to be worn ▪ Ensure vehicle is placed so as not to obstruct highway or pedestrian walkways as far as possible. ▪ Where obstructions cannot be avoided assess need for signing to comply with street works requirements. ▪ Place appropriate warning signs and barriers and use orange flashing beacons, as necessary. ▪ Where working on highways, footways, or areas where there is vehicle movement, refer to guidance set out in 'New Roads and Street works' Approved Code of Practice. ▪ Ensure persons working in immediate area are aware of operations.	▪ Nil	N/A	N/A	1	5	5
Adverse Weather including snow & ice causing Slips, falls leading to injury/death	Employees involved in task	1	5	5	▪ Trained & qualified staff. ▪ Method statement ▪ PPE non-slip boots to be worn ▪ Stop job if weather conditions are not safe	▪ Nil	N/A	N/A	1	5	5

Poor lighting leading to slips trips, collisions causing injury	Employees, Third Party, Drivers	2	5	10	- Good lighting on site/vehicles - Regular Departmental audits, workplace safety inspections. Point of work risk assessment to be completed prior to work starting - Torches/portable lighting available	Nil	N/A	N/A	1	5	5
Equipment falling from vehicle resulting in severe injury/death	Employees, Third Party, Drivers	2	5	10	- Competent drivers - Pre-use inspections - Risk Assessments & Methods Statements - Storage points on vehicles - PPE-Hard hats, safety boots to be worn	Nil	N/A	N/A	1	5	5
Incorrect Manual handling causing strains / sprains. WRULDs/ crush injuries	Employees involved in task	2	2	4	- Manual handling trained personnel - Toolbox talks - Mechanical handling machinery to be used where available	Nil	N/A	N/A	2	2	4
Access/Egress to and from Vehicle/confined space causing repetitive strain injuries, trip/slip accidents possible fractures	Employees	2	3	6	- Access & Egress Risk & Method Statement - Trained drivers/engineers - PPE Safety boots to be worn	Nil	N/A	N/A	1	3	3
Over exposure to sun, cold, causing burns / eye injuries / dehydration/ cold injuries, hypothermia.	Employees involved in task. Personnel in vicinity	1	5	5	- Toolbox talks - PPE, thermal gloves, waterproof clothing - Canteen facilities/cold/hot drinks - Tinted safety glasses available - Regular breaks - Supervision	Nil	N/A	N/A	1	5	5
Mechanical Failure on Van – or equipment leading to Oil leaks, fires, electric shock, breakdown of equipment, Pollution incident	Employee Passing pedestrians Other road users	2	5	10	- MOT tests - Regular servicing & inspections of equipment - Pre-use checks - Trained drivers/operators	Nil	N/A	N/A	1	5	5
Entanglement/collision with moving machinery causing crush /pinch /	Employees	2	5	10	- Trained drivers/operators - Risk Assessments & Method Statements - PPE Gloves, hard hats, safety boots	Nil	N/A	N/A	1	5	5

loss of limb/ disability /cuts/ Fatality					Guards on machinery						
Explosion due to flammable atmosphere	Employees involved in task. Personnel in vicinity	3	5	15	- Trained & qualified operators - No smoking in vicinity of operation - Gas detector used to check for any dangerous levels prior to and during work. Ensure ATEX approved equipment is used. - Risk Assessment & Method Statements - Pre-Use and regular inspections of equipment	Nil	N/A	N/A	1	5	5
Working at height. Open manholes/chambers leading to falls, severe injuries/fatality	Employees involved in task. Personnel in vicinity	2	5	10	- Trained personnel - Risk assessment & Method Statements - Before works commence signage and barriers must be positioned to segregate the works from the general public including pedestrians and vehicles, adequate space must be provided within the barriers to accommodate plant and equipment including any debris from the chamber/pit. Operatives positioning signs and guards on/next to the highway must have NRSWA approved training and must conform to NRSWA; Red Book code of practice - Dependant on the size/depth of chamber/Pit; edge protection, fall prevention equipment will be used. - Signage/Barriers must be in place - PPE- Hard hats, safety harnesses, tripod, winch, safety boots	Nil	N/A	N/A	1	5	5
Preparation & use of lining chemicals and substances- Contact with chemical substances on skin, inhalation or ingestion causing injury, illness, or disease.	Employees involved in task. Personnel in vicinity	2	5	10	- Trained engineers - COSHH assessments must be available and adhered to. - PPE- appropriate PPE to be worn by engineers as listed in COSHH and method statements. - Ensure adequate ventilation is available - No smoking in the work area	Nil	N/A	N/A	1	5	5

Contact with asbestos, sharps sewage/oils/greases/CO SHH items leading to skin disorders, diseases/illness	Employees involved in task	2	4	8	- PPE- Gloves, Goggles, Face masks - Engineers are asbestos trained. Stop work if asbestos found or suspected - Safety data sheets available - Toolbox talks - Ensure care is taken when accessing all chambers - wear gloves and visually inspect to ensure no sharps of other material in the chamber. Use tools such as your screwdriver or brush to dislodge detritus/litter not hands. Should sharps be encountered advise supervisor and organise safe removal. Gloves to BS EN 388, cut category 4 minimum - Medical/rat cards carried by operators/vaccinations - Wash hands, fore arms, and face prior to eating, drinking, or smoking	N/A	N/A	N/A	1	4	4
Operatives are at risk when carrying out works in confined spaces through gas explosion, oxygen enrichment, oxygen deficiency and/or gas poisoning. Risk of drowning, Collapse of pipe/structure	Employees involved in task. Personnel in vicinity	3	5	15	- Confined Regulations and Approved Code of Practice must be adhered to - Site specific risk assessment to be completed, seek advice if unsure if risk is acceptable - Ensure generator is sited well away from the manhole/confined space - Confined space entry avoided where possible. Only to be used if no alternative. - Permit to enter system must be used - Trained & qualified operatives only to enter confined spaces. - Calibrated & serviceable safety equipment, gas monitor, escape set etc to be used - If water levels start to rise quickly or heavy rain starts to affect operations, exit the confined space. - Rescue plan must be in place and all personnel briefed before entry	Nil	N/A	N/A	1	5	5

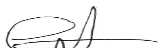
Cuts or abrasions from handling knives, work equipment, when cutting liner	Employees involved in task	2	3	6	- PPE- Gloves, eye protection, Face masks - Toolbox talks - Risk Assessments & Method statements - Trained & qualified operators	N/A	N/A	N/A	1	3	3
Incorrect use of or failure of equipment causing injury/death from high pressure water/compressed air	Employees involved in task. Personnel in vicinity	3	5	15	- Trained & qualified jetting operators - Water Jetting association Code of Practice must be adhered to - Risk Assessment & Method Statements - Pre-Use and regular inspections of equipment & hoses - Ensure correct bursting discs are fitted - Use lowest pressure possible to complete job - Ensure jets/hoses are not blocked or frozen - Signage and barriers and Isolation of area must be in place prior to starting job - PPE Face mask, goggles, Hard hat, safety boots, gloves	Nil	N/A	N/A	1	5	5
Risk of hearing damage due to high noise level	Employees involved in task.	2	4	8	- Experienced Engineers - PPE-suitable ear protection to be worn when noise levels reach 85db and above	Nil	N/A	N/A	1	4	4
Risk to health from exposure to corona virus or respiratory infection	Employees involved in task. Personnel in vicinity Members of the public	2	5	10	- Engineers and staff have been briefed and have access to, information on measures on how to prevent infection and contamination and on washing and disinfecting work areas and hands and what to do if they experience any symptoms. All employees instructed not to attend site if they are displaying any of the relevant symptoms of Covid or a Respiratory infection - PPE- You should wear the normal PPE for the task you are doing &	N/A	N/A	N/A	1	5	5

[illegible]

MANUAL HANDLING OPERATIONS CHECKLIST Mark boxes as appropriate. Every activity must be marked

Company:	Metro Rod	Project/premises:		Activity:	LSR Patch Lining
Materials to be handled:	Manhole covers, drain rods, packers	Hazardous contents:		Location:	
		Can manual handling be eliminated:	No		

TASK												
	Y ☒ N ☐	Y ☐ N ☒	Y ☒ N ☐	Y ☐ N ☒	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐
INDIVIDUAL						CONTROL MEASURES Staff to be trained in manual handling. Use lifting aids where possible. Loads to be assessed before lifting, operatives to be deemed physically capable and medically fit for the work activity. Plan the lift. Use correct manual handling methods. Operatives to take regular breaks and to change over tasks where possible. Use second man if required. Report any long term, back, muscular pain.						
	Y ☐ N ☒	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☐ N ☒							
LOAD												
	Y ☐ N ☒	Y ☐ N ☒	Y ☐ N ☒	Y ☐ N ☒	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☐ N ☒	Y ☐ N ☒		
ENVIRONMENT												
	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐	Y ☐ N ☒	Y ☐ N ☒	Y ☐ N ☒	Y ☒ N ☐	Y ☒ N ☐	Y ☒ N ☐
Assessor name:	D Corbett			Signature:				Date for Review:	07/06/2023			

NOISE ASSESSMENT										
Project:		Activity:	LSR Patch Lining		Sheet:		Completed By:	D Corbett	Date:	07/06/2022
Project No:		People affected / at risk of being harmed:								
No.	Activity	Tools in use	Pre-Control Risk Rating		Controls Required	Post Control Risk Rating				
			High Above 85dBa	Medium 80 – 85dBA		High	Medium	Low		
1	Patch lining of pipes	compressor	Yes		Wear suitable hearing protection when compressor is running			X		
GUIDELINES 80dBA is the First Action Level – hearing protection should be offered 85dBA is the Second Action Level – hearing protection is mandatory - Before resorting straight to PPE, look at the organisation of the work and consider if the risk can be reduced any other way. For example, by isolating the noisy work, reducing the number of people exposed, or the length of time someone is working in the noisy environment - Noise ratings can be determined using a sound level meter. Should you require a noise assessment, please contact the Health & Safety Dept - As a rough guide, if you must raise your voice to be heard from 2 meters away, the noise will be approximately at the first action level. If you are raising your voice to be heard at 1 meter away from the source, it is likely to be at the second level - Download the Noise Exposure Calculator from http://www.hse.gov.uk/noise/calculator.htm to calculate exposure from multiple activities or to calculate exposure duration before the action level is reached - Don't forget to consider other persons working within the noisy area Exposure limit values (ELV): These relate to personal exposure to noise and must not be exceeded, peak sound pressure of 140 dB										
Assessor name:	D Corbett		Signature:			Date for Review:	07/06/2023			

14	Sign Off & Approval (to be signed by the risk assessment team who completed this form & approved by the Franchise manager).			
	* Lead Assessor:	David Corbett 	Date:	07/06/2022
	Changes made by Franchise, Name:		Date:	
			Date:	
	Franchise Manager:		Date:	

15	INDUCTION				
	I the undersigned have been inducted in the above titled safe system of work, and sign to state that I agree to follow the safe system of work highlighting any issues as and when they arise.				
	Name (print)	Signature	Inductor's Name (print)	Inductor's Signature	Date of Induction