

## Hazard Profile – Sewer Rehabilitation

### Preamble

This Hazard Profile has been prepared by Hunter Water Corporation for the purpose of assisting Contractors with the identification of occupational health and safety (OHS) hazards associated with sewer rehabilitation and the subsequent preparation of Safe Work Method Statements. Although the Profile is reasonably detailed, it is not intended to be exhaustive. There may be other hazards associated with the work depending upon the site(s) and the construction technique proposed by the Contractor.

The Contractor must :

- undertake his/her own hazard identification and risk assessment for the particular site(s) at which the work under the Contract,
- determine the appropriate actions which must be taken to eliminate or satisfactorily control the risks,
- prepare Safe Work Method Statement(s) which include the specific requirements of the Contract.

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## Hazard Profile – Sewer Rehabilitation

| TYPICAL ACTIVITY            | WHAT CAN HARM YOU (Hazards)            | WHAT CAN HAPPEN (Risks)   | TYPICAL SAFETY CONTROLS TO BE CONSIDERED AND IMPLEMENTED WHERE APPROPRIATE  |
|-----------------------------|--|---|---|
| Secure Site                 | Public safety                          | Injury to a member of the public  | Provide the appropriate fencing and/or barricades as per site risk assessment<br><br>Apply appropriate signage and pedestrian control<br><br>Devise and implement system for site inspection and security<br><br>Ensure security and equipment suitable to minimise vandalism |
|                             | Traffic                                | Personal injury to members of the public or employees<br><br>Vehicle Accidents      | Traffic Control Plan (TCP) as per RTA regulations<br><br>Keep area clean & clear of obstacles   |
|                             | Inadequate access/egress               | Slips, trips and falls, abrasions, strains and sprains;<br>manual handling injuries | Conduct site inspection to ensure access/egress is adequate for the task activities   |
|                             | Contaminated soil                      | Exposure  | PPE, including chemical proof gloves and disposable overalls  |
| Work around access chambers | Removal and storage of access chambers | Manual handling injuries  | Correct manual handling technique, use an adequate number of people and/or lifting tools  |
|                             |  | Spider, snake bits<br><br>Cuts, abrasions   | PPE – gloves, be alert for spiders and snakes<br><br>Store covers away from access opening.   |
|                             | Entering/exiting access chamber        | Slips, trips and falls  | Wear confined spaces harness, attach to a fall arrest device, mounted appropriately, prior to entry<br><br>Wear non-slip footwear<br><br>Maintain 3 points of contact during descent/ascent   |
|                             |  | Exposure to atmospheric hazards   | Constant gas testing and ventilation if required, specialist gas testing if required, reference MSDS where available  |
|                             |  | High flows in pipes causing drowning  | Flow Bypass/Isolation Plan<br><br>Monitor Weather<br><br>Exit space immediately if bad weather creates a risk of flooding<br><br>Secure stopboards, monitor flow, select off peak times to overcome flow, lighting  |

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|                  |                             | Contract work occurring upstream or downstream of proposed works   | Flow Bypass/Isolation Plan  |
|                  |                             | Foreign bodies such as broken glass, debris and needles causing abrasions, hepatitis, AIDS   | Wear gloves and full protective clothing<br>Work with care<br>Ensure space is clean and free from foreign bodies. Take care when handling any foreign bodies<br>Employees to have appropriate vaccinations  |
|                  |                             | Rodents – bites, health hazard   | Gloves and full protective clothing   |
|                  |                             | Sewage aerosol, sludge leading to: hygiene hazards, illness eg Hepatitis A, eye infections, ear, nose and throat infection, biological hazards etc | Ventilate the space and wear respiratory protection for aerosols as required<br>Wear appropriate PPE, ie heavy duty red PVC gloves, disposable splash suits, rubber boots, eye protection, respiratory protection where needed and hard hat, safety boots, maintain hygiene practices and use antibacterial wash.<br>If required hose the space down prior to entry |
|                  |                             | Collapse of pipe/manhole, spalling of concrete during work due to poor structural integrity as a result of gas attack                              | No person to access unlined section of pipe   |
|                  |                             | Build up of toxic substances (spillage, introduced or leaks), leading to health related biological hazards and/or explosions                       | Obtain details of the chemistry of effluent/substance and handle as per controls identified on MSDS<br>Constant gas monitoring during work and constant ventilation if required<br>Emergency evacuation procedures to be in place.  |
|                  |                             | Working during wet weather and outside normal hours leading to high flows, wet and dark environment  | Protective clothing, clear visible work area, good lighting, postpone to more suitable time   |
|                  | Jet cleaning                | Hoses across road leading to Trip Hazard, vehicle Damage, Personal Injury  | Follow the traffic management plan and set up signs<br>Locate vehicles as close as possible to access chamber   |

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|                    |  | High pressure water hose uncontrolled causing injury<br>Fitting failure leading to fitting breaks or loosens causing injury | Visually inspect hose and fittings prior to use<br>Tie hose down  |
|                    |  | Removal of debris leading to manual handling hazards and falling objects due to overhead lifts                              | Insert collection devise either cage or bin in D/O MH to collect debris   |
|                    |  | Slippery surfaces leading to slips, trips and falls   | Washdown area, steel capped waterproof non-slip footwear<br>Work with care  |
|                    |  | Sharp section of access chamber cover leading to hose damage and possible injury  | Protective clothing, isolate sharp areas and cover hose with protective covers, keep hoses away from sharp edges  |
|                    |  | High pressure water causing residential flooding  | Do not operate unit above ground or in access chamber<br>Jet line from the downstream MH  |
|                    |  | High pressure back-spray infection and biological hazards   | Use barrier board to isolate area cover access chamber with protective material eg hessian to prevent additional spray during retrieval                               |
|                    |  | Refuelling leading to burns, explosion, fumes, spillage etc   | Unit to be switched off and refuelled<br>Use correct filling nozzles and appropriate filling techniques   |
| CCTV Inspection    | Loose cables   | Cause slip, trip injury   | Keep cables on draw, use only the amount of cable needed. Do not spread cables over the work site   |
|                    | Equipment<br>Electrical short circuit                          | Infection   | Glove used when equipment is removed from access chamber and facilitators available to wash down equipment<br>Use antibacterial wash and ensure hygiene good practice |
|                    |  | Electric shock  | Ensure equipment is maintained correctly and check for electrical faults<br>Wear appropriate PPE ie rubber-soled shoes<br>Do not stand in water                       |
| Liner installation | Lifting equipment<br>Concrete chips, dust, sharp edge on Liner | Manual handling injuries<br>Personal injury and cuts from liner   | Inspect lifting equipment prior to use<br>Wear appropriate PPR including gloves and safety eyewear and work with care   |

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|                  | Removing concrete debris   | Cuts, abrasions, infections                                 | Collect material using shovel and bucket<br>Use antibacterial wash and ensure hygiene good practice   |
|                  | Hoses and cables   | Trip hazard   | Ensure good housekeeping – store away unused hoses, use only lengths as required  |
|                  | Use of air tools   | Inhaling dusts, PVC dusts, carbon monoxide and hydrocarbons | Wear appropriate respiratory protection for ducts P1 or P2 filter<br>Ensure compressor intake is not exposed to intake of exhaust<br>Compressor should have a hydrocarbon filter in line                          |
|                  | Machine falling into access chamber                                | Crush injury  | Lower machine into clean access chamber. Do not enter access chamber until machine is in place.   |
|                  | Air hose disconnects   | Injury  | Test and inspect all fittings and tie off hose if required  |
|                  | PVC fragments dislodge while cutting                               | Personal injury   | Wear appropriate PPE including gloves and safety eyewear  |
|                  | Equipment operating above ground<br>Locking bar falls from profile | Cuts and injury from grinding<br>Personal injury            | Wear PPE including gloves and work with care<br>Tag locking bar to ensure it cannot fall into space   |
|                  | Electrical short circuit   | Electric shock  | All electrical equipment going into space is to be low voltage<br>Ensure equipment is maintained correctly and check for electrical faults<br>Wear appropriate PPE ie rubber-soled shoes<br>Do not stand in water |
|                  | Equipment  | Infection   | Glove used when equipment is removed from access chamber and facilitators available to wash down equipment<br>Use antibacterial wash and ensure hygiene good practice   |
|                  | End seal   | Skin irritation   | Attach delivery nozzle to can prior to use. Use glove to apply sealer   |
| Liner removal    | Rope break   | Trip hazard, personal injury                                | Supply and enforce use of proper safety equipment and attire and follow correct removal procedures and work with care   |
|                  | Damaged profile  | Cuts and injuries   | Neat site, use proper length  |

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|                        | PVC Fragment dislodge   | Personal injury   | PPE including use of safety eyewear   |
| Patch lining           | Resin<br><br>Lowering equipment into chamber<br><br>Hoses and cables<br><br>Equipment<br><br>Air hose | Chemical splash causing personal irritation to eyes and skin<br><br>Crush injury<br><br>Trip hazards<br><br>Infections<br><br>Disconnects, causing injury | Work with care  |
| Localised sewer repair | Limited access and egress   | Slip, trip hazard near open trench  | Isolate work site with barriers or barricades<br><br>Use of correct footwear<br><br>Ladders provided for entry and exit at excavation, ladders to be installed at 30m intervals<br><br>Ladders to be secured in trenches deeper than 1.5m   |
|                        | Existing underground services – dig up or cut   | Personal injury, disruption to the community  | Service providers identify location of services by issue of plan<br><br>Service providers locate services by site inspection as required<br><br>Hand dig around identified services<br><br>When underground services are parallel to and above the sewer line, insert timber support underneath the service |
|                        | Open trenches   | Pedestrian/workers slip, trip or fall causing personal injury   | Isolation of work site with banners, barrier mesh, barricades   |
|                        | Trench  | Collapse of trench walls may cause entrapment of worker   | Excavated trench to be supported if depth is greater than 1.5m or if extreme ground conditions are encountered  |

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|                  | Cutting existing pipe  | Fragment to injure worker                    | Personal protective equipment – glasses, gloves, hard hat when cutting pipe  |
|                  | Open pipe section  | Drowning caused by flooding                  | If repaired section of pipe is unable to be completed, a temporary flow through will be used until the repair is complete  |
|                  | Excessive fumes from traffic and machinery                           | Sickness                                     | During the period of occupancy, personnel will remain on standby and ensure exits are clear and kept open<br>Maintain standby ventilation equipment to carry out forced ventilation                                |
| Sewer bypass     | Bypass pump fails, work exceeds time window, communication breakdown | Surcharge causing drowning                   | Monitor pump operation regularly, ensure responsible person is available to raise evacuation alarm and remove stopboards to allow flow to return to normal.<br>Ensure adequate pump capacity and redundancy        |
|                  | Hose and stop board failure  | Increased flow and injury                    | Standby hoses available at site<br>Use double isolation to minimise risks  |
|                  | Insufficient flow storage  | Overflow leading to contamination, infection | Storage levels of adjacent manholes in the area monitored<br>Spillage containment or tankers in place to capture any overflow. Use of hay bails to direct flow away from potential hazard                          |
|                  | Refuelling   | Burns, explosion, spillage                   | Shut down equipment prior to refuelling, do not completely fill tank<br>Fire extinguisher available at site<br>Remove fuel container from immediate area after refuelling is complete                              |
|                  | Hose   | Slip/trip/fall injury to workers/pedestrians | Hoses at the upstream and downstream access chambers are properly anchored and will not be displaced by the pressure of the pump<br>Housekeeping – use the most direct route from access chamber to access chamber |