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| SWMS NUMBER: 22a | Safe Work Method Statement (SWMS) CIVIL MAINTENANCE Electrical Safety Watermain repairs and installation of new connections on metallic watermains | Outcome: Work on watermains with electrical safety in place |  |
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Purpose: to outline the safeguard requirements and measures for staff involved in repairs of metallic watermain

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| PPE required • Electrical safety gloves (minimum 500 volts rated) | Equipment required • Bridging saddles • PVM tester | • Service locating equipment • Bridging conductors | Training required (if any) • Electrical testing • Electrical awareness (watermains) | • Cleaning pipe and attaching bridging saddles • Cleaning watermain & attaching bridging conductor |
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GENERAL REQUIREMENTS

ALWAYS APPLY TWO LEVELS OF CONTROL*

*a) when the metallic water main is broken, there is a risk of the main breaking, b) you are going to break/cut the main, or c) the pipe has already been cut and a section of non-conductive pipe has been inserted

- If there is any evidence of electrical problems - **DO NOT** start work e.g. sparking or voltage higher than 5v - contact the Resource Coordinator immediately and they will contact the relevant electrical authority and report back to you – electrical notification process.
- **DO NOT** touch the water main or services with bare hand(s) or any other unprotected part of the body until the electrical risk is controlled
- Use insulated electrical gloves while inspecting the asset failure and/or stemming the flow of water from the watermain.

THESE THREE PRELIMINARY STEPS MUST BE APPLIED FOR ALL WATERMAINS

| Activity | Hazard | Risk /consequence - What can happen? - How can it happen? | Rank 1-6 | Controls | Revised Rank 1-6 |
|---|--|---|-------------|--|---------------------|
| Inspection and testing of insulating electrical gloves, Electrical Tester and Bridging Conductors | Damaged equipment Sharp objects | Ineffective safety measures and risk to safety Cuts & scratches | 5 | <ul style="list-style-type: none"> • Inspect Insulating Electrical Gloves - Conduct pre-use check as per manufacturers requirements. DO NOT use damaged gloves. • Electrical Tester (PVM) – conduct pre-use checks as per PVM work instruction • Inspect Bridging Conductors Ensure Bridging Conductors are cleaned (remove oxidation/dirt/mud from clamp contact surfaces) before use. DO NOT use damaged Bridging Conductors • Conduct pre-use check of bridging conductors for damage. | 6 |
| Inspect worksite for risks (including the neighbouring properties) | Electricity | Electrocution or Electrical shock by electricity finding a return path through SWC assets & customer services | 1 | <ul style="list-style-type: none"> • DO NOT touch the water service/watermain with Bare Hand(s) or any other unprotected part of the body before establishing control over the electrical risk • Dial Before You Dig if appropriate, look at plans, use service locating equipment • Visually inspect worksite to determine possible position of underground services and failure of overhead power lines, faults, e.g. wires down – DO NOT start work if evidence of electrical faults – immediately call and notify Resource Coordinator • Conduct risk assessment as per SWMS No.1 “Standard Start”, this information is entered in FRM • Hand dig (pot hole) to locate services as per SWMS No.3 “Excavation” • Check for voltage in metallic water service/s using PVM – (this step may come after hand digging if there is no exposed pipe.) Cease work immediately if there is any evidence of an electrical problem, e.g. sparking or voltage higher than 5V. No work is to continue. Request the Resource Co-ordinator to report the electrical fault in accordance with the Electrical Notification Process. | 5 |

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|-------------------------------------|-------------|---|-------------|---|--|
| Isolate or Manage the flow of water | Electricity | Electrocution or Electric Shock | 1 | <ul style="list-style-type: none"> Isolation of water services as per SWMS 17 "Maintap to Meter" Use approved Insulated Electrical Gloves to inspect damage and when stemming the flow of water from the main | 3 |
| | Water | Engulfment | 1 | | <ul style="list-style-type: none"> De-water excavation as per SWMS 20 "Watermain shutdown recharge" |

INSTALL PVM as per PVM work instruction to monitor voltage

METHOD 1- Bridge around work area – using bridging saddles & conductors and gloves during the entire job

GLOVES MUST BE WORN FOR THE ENTIRE JOB (THIS IS THE FIRST LEVEL OF CONTROL)

Cease work immediately if there is any evidence of an ELECTRICAL PROBLEM, e.g. SPARKING or VOLTAGE HIGHER than 5V No work is to continue. Contact the resource co-ordinator immediately.

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| Installation of bridging saddles on water main | Electricity | Electrocution/electric shock | 1 | <ul style="list-style-type: none"> Excavate to expose water main to enable test for electricity, as per SWMS 3 'Excavation' Whilst wearing Insulated Electrical Gloves & keeping clear of the pipes, clean water main of excessive dirt/mud. Install bridging saddles on water main using new gang nail plates between top of pipe and saddles. Tighten bridging saddles | 3 |
| | Heavy objects Poor work posture | Strains & sprains | 3 | | <ul style="list-style-type: none"> Use controls as per SWMS 13 'Manual Handling' |
| Attaching bridging conductors | Electricity | Electrocution/electric shock | 1 | <ul style="list-style-type: none"> Whilst wearing Insulated Electrical Gloves clean both attachment points to bare metal using emery cloth. Attach bridging conductor to bridging saddle attachment points. Thus bridging is established around the work area. <p style="text-align: center;">(THIS IS THE SECOND LEVEL OF CONTROL)</p> | 3 |
| Effect repairs | Electricity | Electrocution or Electric Shock | 1 | <ul style="list-style-type: none"> Effect repairs as per SWMS 11 'Repair/Replace Water/Wastewater Main/Pipe Fitting' DO NOT remove the bridging conductor until all work on the watermain is complete and all joints are restored and watertight. | 3 |
| Restore water supply | Large quantities of water | Engulfment | 1 | <ul style="list-style-type: none"> Use controls as per SWMS 20 'Watermain shutdown recharge' | 4 |
| Remove bridging | Electricity | Electrocution or Electric Shock | 1 | <ul style="list-style-type: none"> Remove the Bridging Conductor from the bridging saddles Remove saddles from water main Check for voltage in metallic water service/s using PVM. Contact the Resource Co-ordinator immediately if there is any evidence of an electrical problem, e.g. sparking or PVM alarms and voltage higher than 5V. No work is to continue. Request the Supervisor/Resource Coordinator to report the electrical fault in accordance with the Electrical Notification Process. | 3 |

**CONTACT YOUR FIELD SUPERVISOR IF YOU CANNOT APPLY THE ABOVE METHODS OF ELECTRICAL CONTROL
SITE SPECIFIC SAFETY PLAN MUST BE DEVELOPED**

Field Supervisor to arrange electrician to attend site, electrician to monitor for voltage and current. Field Supervisor and electrician to remain on site until completion of repair.

Note: Record in FRM controls to be used

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(or job card if FRM is down) any new hazards or changes to the above activities/hazards along with and advise your Field Supervisor.

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