SWMS NUMBER: 21	Safe Work Method Statement (SWMS) CIVIL MAINTENANCE Electrical Safety for Water Main to Water Meter Maintenance and Repair (including emergency repairs) of metallic water services	Outcome: Work on main to meter with electrical safety measures in place	Sydney WATER

Purpose: to outline the safeguard requirements and measures for staff involved in repairs of metallic water services

PPE required	Equipment required	Training required (if any)
• Electrical safety gloves (minimum 500 volts rated)	• Service locating equipment • Bridging conductors • PVM tester • Emery cloth	• Electrical Awareness (mains to meter) • Electrical testing • Electrical notification process – after evidence of electricity

GENERAL REQUIREMENTS

ALWAYS APPLY TWO LEVELS OF CONTROL

If there is any evidence of electrical problems – DO NOT START WORK e.g. SPARKING OR VOLTAGE HIGHER THAN 5V. Contact Resource Co-ordinator immediately and they will contact the relevant electrical authority and report back to you – electrical notification process.

- **DO NOT** TOUCH ANY METALLIC WATER SERVICES WITH BARE HAND(s) OR ANY OTHER UNPROTECTED PART OF THE BODY UNTIL THE RISK OF ELECTRICAL SHOCK IS CONTROLLED

Use Insulated Electrical Gloves while inspecting the asset failure and/or stemming the flow of water from the WATER SERVICE

THESE FOUR PRELIMINARY STEPS MUST BE APPLIED FOR ALL MAIN TO METER TASKS

Activity	Hazard	Risk /consequence - What can happen? - How can it happen?	Rank 1-6	Controls	Revised Rank 1-6
Inspection and testing of insulated electrical gloves, Electrical Tester & Bridging Conductors	Damaged equipment Sharp objects	Ineffective safety measures and risk to safety	5	• Inspect Insulated 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	**DO NOT** touch the Water Service with Bare Hand(s) or other unprotected parts 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 the Resource Coordinator • Conduct risk assessment as per SWMS No.1 “Standard Start”, this information is entered into FRM • Hand dig (pot hole) to locate services as per SWMS 3 “Excavation” • Establish the size of the water service If greater than 25mm call the resource co-ordinator to arrange for a plumber. We **DO NOT** undertake work on services greater than 25mm. • 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.	3

SWMS NUMBER: 21	Safe Work Method Statement (SWMS) CIVIL MAINTENANCE Electrical Safety for Water Main to Water Meter Maintenance and Repair (including emergency repairs) of metallic water services	Outcome: Work on main to meter with electrical safety measures in place	Sydney WATER

Activity	Hazard	Risk /consequence - What can happen? - How can it happen?	Rank 1-6	Controls	Revised Rank 1-6
Isolate or Manage the flow of water	Electricity Water	Electrocution or Electric Shock Engulfment	1	• 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 service	3
Notify Customer of proposed activity	Lack of water supply to the customer	Burns/scalding Damage to equipment	2	• Give notice to customer – ensure they understand the water will be turned off but some hot water may still flow • Check if water is being used at the time – If water is being used **DO NOT** cut off supply until customer(s) has been notified. Reschedule work if needed.	4

SWMS NUMBER: 21	Safe Work Method Statement (SWMS) CIVIL MAINTENANCE Electrical Safety for Water Main to Water Meter Maintenance and Repair (including emergency repairs) of metallic water services	Outcome: Work on main to meter with electrical safety measures in place	Sydney WATER

1. REPAIRS ON DOMESTIC SERVICES 25 mm OR LESS - excluding work on main taps, elbows

APPLY FOUR PRELIMINARY STEPS

INSTALL PVM as per PVM work instruction to monitor voltage

METHOD 1A– Bridge around work area and wear gloves

GLOVES MUST BE WORN DURING 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.

Attaching bridging conductors around work area	Electricity	Electrocution/electric shock	1	• Whilst wearing Insulated Electrical Gloves clean pipe to bare metal using emery cloth. • Install a bridging conductor around the meter or damaged section of water service to be repaired, as applicable. Attach to water main side of the water service first, then the customer's side of the water service last. Wear gloves. Place a Safety Tag on the conductors at the point of attachment saying **DO NOT** remove. **(THIS IS THE SECOND LEVEL OF CONTROL)**	3
Effect Repairs	Electricity	Electrocution or Electric Shock	1	• Effect repairs as per SWMS 17 'Maintap to Meter' • **DO NOT** remove the bridging conductors until all work on the service is complete and all joints are restored and watertight	3
Re-establish the water service	Electricity	Electrocution or Electric Shock	1	• Wear Insulated Electrical Gloves • Check and ensure the section of pipe is a continuous metallic connection before removing bridging conductors. • Remove the Bridging Conductor from the repaired section, disconnect from the customer's side of the water service first, then from the water main side of the water service last. • 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 Co-ordinator 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.

ANY SERVICE GREATER THAN 25mm IS TO BE REFERRED TO THE RESOURCE COORDINATOR – DO NOT WORK ON THESE SERVICES

SWMS NUMBER: 21	Safe Work Method Statement (SWMS) CIVIL MAINTENANCE Electrical Safety for Water Main to Water Meter Maintenance and Repair (including emergency repairs) of metallic water services	Outcome: Work on main to meter with electrical safety measures in place	Sydney WATER

1. REPAIRS ON DOMESTIC SERVICES 25 mm OR LESS - excluding work on main taps, elbows

APPLY FOUR PRELIMINARY STEPS

INSTALL PVM as per PVM work instruction to monitor voltage

METHOD 1B– Bridge around work area and bridge to neighbouring service using 25 metre bridging conductor

GLOVES MUST BE WORN WHILST ESTABLISHING THE TWO LEVELS OF CONTROL (During set-up only)

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.

Activity	Hazard	Risk /consequence - What can happen? - How can it happen?	Rank 1-6	Controls	Revised Rank 1-6
Attaching 25m bridging conductors	Heavy objects Poor work posture	Strains & sprains	3	• Use controls as per SWMS 13 'Manual Handling'	5
	Electricity Spark or flash	Electrocution/Electric shock Burns or eye injury	1	• Whilst wearing Insulated Electrical Gloves clean pipe to bare metal using emery cloth • Install a Bridging conductor to the neighbouring property. Attach to neighbouring customer's side of water service first, then to the customer's side of water service to be repaired. Place a Safety Tag on the conductors at the point of attachment saying **DO NOT** remove. **(THIS IS THE FIRST LEVEL OF CONTROL)**	3
Attaching bridging conductors around work area	Electricity	Electrocution/electric shock	1	• Install a bridging conductor around the meter or damaged section of water service to be repaired, as applicable. Attach to water main side of the water service first, then the customer's side of the water service. **(THIS IS THE SECOND LEVEL OF CONTROL)**	3
Effect repairs	Electricity	Electrocution or Electric Shock	1	• Effect repairs as per SWMS 17 'Maintap to Meter' • **DO NOT** remove the bridging conductors until all work on the service is complete and all joints are restored and watertight	3
Re-establish the water service	Electricity	Electrocution or Electric Shock	1	• Wear Insulated Electrical Gloves • Check and ensure the section of pipe is a continuous metallic connection before removing the bridging conductors • Remove the bridging conductor from the repaired section, disconnect from the customers side of the water service first, then from the water main side of the service last. Remove 25m bridging conductor, customer side first. • 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 voltage higher than 5V. No work is to continue. Request the Supervisor/Resource Co-ordinator 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.

ANY SERVICE GREATER THAN 25mm IS TO BE REFERRED TO THE RESOURCE COORDINATOR – DO NOT WORK ON THESE SERVICES

SWMS NUMBER: 21	Safe Work Method Statement (SWMS) CIVIL MAINTENANCE Electrical Safety for Water Main to Water Meter Maintenance and Repair (including emergency repairs) of metallic water services	Outcome: Work on main to meter with electrical safety measures in place	Sydney WATER

2. WATER METER ASSEMBLY MAINTENANCE ACTIVITIES ON METALLIC WATER SERVICES

APPLY FOUR PRELIMINARY STEPS

INSTALL PVM as per PVM work instruction to monitor voltage

METHOD 2A - Bridge around work area and wear gloves

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

Conduct Pre-work - expose pipes if necessary, test for electricity – see test procedure

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.

Activity	Hazard	Risk /consequence - What can happen? - How can it happen?	Rank 1-6	Controls	Revised Rank 1-6
Attaching bridging conductors around work area	Electricity	Electrocution/electric shock	1	• Whilst wearing Insulated Electrical Gloves clean pipe to bare metal using emery cloth. • Install a bridging conductor around the meter of the water service to be replaced/repaired. Attach to water main side of the water service first, then the customer's side of the water service last. . Place a Safety Tag on the conductors at the point of attachment saying **DO NOT** remove. **(THIS IS THE SECOND LEVEL OF CONTROL)**	3
Effect Repairs	Electricity	Electrocution or Electric Shock	1	• Effect repairs as per SWMS 17 'Maintap to Meter' • **DO NOT** remove the bridging conductors until all work on the service is complete and all joints are restored and watertight	3
Re-establish the water service	Electricity	Electrocution or Electric Shock	1	• Wear Insulated Electrical Gloves • Check and ensure the water service is a continuous metallic connection before removing bridging conductors. • Remove the Bridging Conductor from the repaired section, disconnect from the customer's side of the water service first, then from the water main side of the water service. • 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 voltage higher than 5V. No work is to continue. Request the Supervisor/Resource Co-ordinator 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.

ANY SERVICE GREATER THAN 25mm IS TO BE REFERRED TO THE RESOURCE COORDINATOR – DO NOT WORK ON THESE SERVICES

SWMS NUMBER: 21	Safe Work Method Statement (SWMS) CIVIL MAINTENANCE Electrical Safety for Water Main to Water Meter Maintenance and Repair (including emergency repairs) of metallic water services	Outcome: Work on main to meter with electrical safety measures in place	Sydney WATER

2. WATER METER ASSEMBLY MAINTENANCE ACTIVITIES ON METALLIC WATER SERVICES

APPLY FOUR PRELIMINARY STEPS

INSTALL PVM as per PVM work instruction to monitor voltage

METHOD 2B – Bridge around work area and bridge to neighbouring service using 25 metre bridging conductor

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

Conduct Pre-work - expose pipes if necessary, test for electricity – see test procedure

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.

Activity	Hazard	Risk /consequence - What can happen? - How can it happen?	Rank 1-6	Controls	Revised Rank 1-6
Attaching 25m bridging conductors	Heavy objects Poor work posture	Strains & sprains	3	• Use controls in SWMS 13 "Manual Handling"	5
	Electricity Spark or flash	Electrocution/Electric shock Burns or eye injury	1	• Whilst wearing Insulated Electrical Gloves clean pipe to bare metal using emery cloth • Install a bridging conductor to the neighbouring property; attach to neighbouring customer's side of water service first, then the customer's side of water service to be repaired. Place a Safety Tag on the conductors at the point of attachment saying **DO NOT REMOVE**. **(THIS IS THE SECOND LEVEL OF CONTROL)**	3
Attaching bridging conductors around work area	Electricity	Electrocution/electric shock	1	• Whilst wearing Insulated Electrical Gloves clean pipe to bare metal using emery cloth. • Install a bridging conductor around the meter of water service to be repaired. Attach to water main side of the water service first, then the customer's side of the water service. **(THIS IS THE SECOND LEVEL OF CONTROL**	3
Effect repairs	Electricity	Electrocution or Electric Shock	1	• Effect repairs as per SWMS 17 'Maintap to Meter' • **DO NOT** remove the bridging conductors until all work on the service is complete and all joints are restored and watertight	3
Re-establish the water service	Electricity	Electrocution or Electric Shock	1	• Whilst wearing Insulated Electrical Gloves, check and ensure the water service is a continuous metallic connection before removing bridging conductors. • Remove the bridging conductor from the repaired section, disconnect from the customer's side of the water service first, then from the water main side of the water service. • 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 voltage higher than 5V. No work is to continue. Request the Supervisor/Resource Co-ordinator 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.

SWMS NUMBER: 21	Safe Work Method Statement (SWMS) CIVIL MAINTENANCE Electrical Safety for Water Main to Water Meter Maintenance and Repair (including emergency repairs) of metallic water services	Outcome: Work on main to meter with electrical safety measures in place	Sydney WATER

ANY SERVICE GREATER THAN 25mm IS TO BE REFERRED TO THE RESOURCE COORDINATOR – DO NOT WORK ON THESE SERVICES

3. MAINTAP REPLACEMENT or REPAIR OF MAINTAP OR ELBOW – Main tap out, elbow repair

APPLY FOUR PRELIMINARY STEPS

INSTALL PVM as per PVM work instruction to monitor voltage

METHOD 3A – bridging around work area using bridging saddle on water main and gloves

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

Conduct Pre-work - expose pipes if necessary, test for electricity – see test procedure

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.

Activity	Hazard	Risk /consequence - What can happen? - How can it happen?	Rank 1-6	Controls	Revised Rank 1-6
Installation of bridging saddle on water main	Electricity	Electrocution/electric shock	1	• Excavate to expose water main and main tap to enable test for electricity • Whilst keeping clear of the pipes, clean water main of excessive dirt/mud • Install bridging saddle on water main using gang nail plate between top of pipe and bridging saddle. • Tighten bridging saddle.	3
	Heavy objects Poor work posture	Strains & sprains	3	• Use controls as per SWMS 13 'Manual Handling'	5
Install bridging conductor between bridging saddle and customer service	Electricity	Electrocution/electric shock	1	• Whilst wearing Insulated Electrical Gloves clean both attachment points to bare metal using emery cloth (bridging saddle & customer service). • Install bridging conductor on bridging saddle first, then customer water service. Thus bridging is established around the work area (main tap). **(THIS IS THE SECOND LEVEL OF CONTROL)**	3
Effect repairs	Electricity	Electrocution or Electric Shock	1	• Effect repairs as per SWMS 17 'Maintap to Meter' • **DO NOT** remove the bridging conductors until all work on the service is complete and all joints are restored and watertight	3
Re-establish the water service	Electricity	Electrocution or Electric Shock	1	• Check and ensure the section of pipe is a continuous metallic connection before removing bridging conductors. • Remove the bridging conductor from the repaired section, disconnect from the customers side of the water service first, then from the water main side of the water service • 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 voltage higher than 5V. No work is to continue. Request the Supervisor/Resource Co-ordinator 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.

SWMS NUMBER: 21	Safe Work Method Statement (SWMS) CIVIL MAINTENANCE Electrical Safety for Water Main to Water Meter Maintenance and Repair (including emergency repairs) of metallic water services	Outcome: Work on main to meter with electrical safety measures in place	Sydney WATER

ANY SERVICE GREATER THAN 25mm IS TO BE REFERRED TO THE RESOURCE COORDINATOR – DO NOT WORK ON THESE SERVICES

3. MAINTAP REPLACEMENT or REPAIR OF MAINTAP OR ELBOW – Main tap out, elbow repair

APPLY FOUR PRELIMINARY STEPS

INSTALL PVM as per PVM work instruction to monitor voltage

METHOD 3B – Bridge around work area and bridge to neighbouring service using 25 metre bridging conductor

GLOVES MUST BE WORN WHILST ESTABLISHING THE TWO LEVELS OF CONTROL (During set-up only)

Conduct Pre-work - expose pipes if necessary, test for electricity – see test procedure

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.

Activity	Hazard	Risk /consequence - What can happen? - How can it happen?	Rank 1-6	Controls	Revised Rank 1-6
Installation of bridging saddle on water main	Electricity	Electrocution/electric shock	1	• Excavate to expose water main and main tap to enable test for electricity • Whilst keeping clear of the pipes, clean water main of excessive dirt/mud • Install bridging saddle on **water main** using new gang nail plate between top of pipe and bridging saddle. • Tighten bridging saddle.	3
	Heavy objects Poor work posture	Strains & sprains	3	• Use controls as per SWMS 13 'Manual Handling'	5
Install bridging conductor between bridging saddle and customer service	Electricity	Electrocution/electric shock	1	• Whilst wearing Insulated Electrical Gloves clean both attachment points to bare metal using emery cloth (bridging saddle & customer service). • Install bridging conductor on bridging saddle first, then customer water service. Thus bridging is established around the work area (main tap). **(THIS IS THE FIRST LEVEL OF CONTROL)**	3
Attaching 25m bridging conductors	Heavy objects Poor work posture	Strains & sprains	3	• Use controls in SWMS "Manual Handling"	5
	Electricity Spark or flash	Electrocution/Electric shock Burns or eye injury	1	• Whilst wearing Insulated Electrical Gloves clean pipe to bare metal using emery cloth • Install a Bridging conductor to the neighbouring property; attach to neighbouring customer's side of water service first, then the customer's side of water service to be repaired. Place a Safety Tag on the conductors at the point of attachment saying **DO NOT** remove. **(THIS IS THE SECOND LEVEL OF CONTROL)**	3
Effect repairs	Electricity	Electrocution or Electric Shock	1	• Effect repairs as per SWMS 17 'Maintap to Meter' • **DO NOT** remove the bridging conductors until all work on the service is complete and all joints are restored and watertight	3

SWMS NUMBER: 21	Safe Work Method Statement (SWMS) CIVIL MAINTENANCE Electrical Safety for Water Main to Water Meter Maintenance and Repair (including emergency repairs) of metallic water services	Outcome: Work on main to meter with electrical safety measures in place	Sydney WATER

Activity	Hazard	Risk /consequence - What can happen? - How can it happen?	Rank 1-6	Controls	Revised Rank 1-6
Re-establish the water service	Electricity	Electrocution or Electric Shock	1	• Check and ensure the section of pipe is a continuous metallic connection before removing bridging conductors. • Remove the bridging conductor from the repaired section, disconnect from the customers side of the water service first, then from the water main side of the water service • 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 voltage higher than 5V. No work is to continue. Request the Supervisor/Resource Co-ordinator 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.

ANY SERVICE GREATER THAN 25mm IS TO BE REFERRED TO THE RESOURCE COORDINATOR – DO NOT WORK ON THESE SERVICES

Note: Record in FRM (or job card if FRM is down) any new hazards or changes to the above activities/hazards along with controls to be used and advise your Field Supervisor.