

DEVELOPER WORKS

Electrical Safety for Work on Metallic Water Pipework

Seminar Objective

To safeguard Contractors, SWC workers, Developers and customers from electrical hazards arising when work is carried out on the water supply system

Why?

- Electrocution of maintenance employee in January 2005 and Yennora incident involving plumber March 2009
- Increasing incidence of electricity reported in water pipes, resulting in shocks and near misses
- Ignorance of associated electrical hazards in Plumbing Industry
- WorkCover Safety Alert: Electrical Hazards from metallic water services
- Repeated stop works by Developer Works Inspection Team -DWI

SWC Incidents – Yennora

- Plumber received a fatal electric shock whilst working on a water service within the property
- Service had been cut and no evidence of bridging conductors being used
- Electrical test identified a high resistance neutral & the earth bond had been removed from the water service



SWC Incidents – Padstow

- Plumber received an electric shock whilst repairing broken water service adjacent to water meter
- Service had been cut and bridging conductors were in place between the two pipes
- Bridging conductor not making good contact, pipe not cleaned properly and clamp was coated with mud
- Electrical test identified high resistance neutral

SWC Incidents – Killara

- Maintenance employee received an electric shock when he was about to use an Aquaphone listening device on a water meter to listen for a leak
- Holding the Aquaphone in both hands, employee leant towards the meter
- Felt shock go up left arm, across chest and down right arm. Employee was thrown back approximately 2 metres
- Electrical fault was identified on the street pole adjacent to the property

HSP0064 Electrical Safety

- Electricity can present a risk of injury or damage from electric shock, fire or explosion and may affect many activities performed by Sydney Water.
- Legislation and Codes of Practice define strict safety requirements for any work involving electrical hazards.
- Sydney Water has additional requirements aimed at reducing electrical safety risks to staff and contractors working on its assets. **HSP0064 lists these requirements.**
- HSP0064 aims to enable compliance and reduce the risks associated with electricity at Sydney Water.

HSP0064 Electrical Safety

Scope:

- This procedure applies to all Sydney Water staff working with electrical safety risks.
- This procedure applies to Contractors and Service Providers to Sydney Water are required to meet the requirements of this procedure through **their own systems of work.**

HSP0064 Electrical Safety

Mandatory requirements

Where work at Sydney Water involves electrical hazards, staff, contractors and service providers **must:**

- Identify electrical hazards & implement appropriate controls to eliminate the risk of injury or damage
- Ensure that the requirements of all relevant **Acts, Regulations, Codes of Practice, Australian Standards & Sydney Water procedures** are addressed in **Safe Systems of Work**
- Be **trained** in the relevant Safe Systems of Work
- Ensure that **only** trained & **competent persons** carry out the work
- Comply** with the requirements of relevant **Safe Systems of Work**

HSP0064 Electrical Safety

KEY ISSUES that have arisen are:

- The requirements to identify electrical hazards and implement appropriate controls (to eliminate the risk of injury or damage) is subject to ambiguity and interpretation
- The DWI team are confronted by good applications of control BUT often very naïve and dangerous applications of control
- Recent electrical safety audits have found that the information for electrical safety risks of work with metallic water pipework was not adequately accessible to all staff and contractors
- Sydney Water has introduced a new procedure **HSP0077 Electrical Safety for Work on Metallic Water Pipework**, in order to minimise the risks to staff, contractors and customers from contact with electricity when working on metallic water pipework

HSP0077 Electrical Safety for Work on Metallic Water Pipework

- Sydney Water has developed a list of appropriate controls that identifies the minimum requirements for Bridging Conductors and Insulated Electrical Gloves (ratings, Test & Tag requirements) when working on metallic water pipework

This is what tonight is all about!

- Following tonight's seminar, these are the minimum requirements that **MUST** be met. Or work **STOPS!**

We will not compromise on Safety!

You should not compromise on Safety!

HSP0077 Electrical Safety for Work on Metallic Water Pipework

- Review your Safe Work Method Statements (SWMS) for work on metallic water pipework to make sure that your controls meet the requirements of this procedure
- A range of controls are outlined in the new procedure
- A key requirement is that a minimum of two levels of control will always be applied when doing this work
- WSC's must regularly monitor this work to make sure it is done in accordance with the requirements of the relevant SWMS

HSP0077 Electrical Safety for Work on Metallic Water Pipework

Key Requirements:

- Always consider that metallic water pipework may contain electricity when doing the risk assessment for any work on it
- Always use insulated electrical gloves and non-conductive hand tools while inspecting the pipework and/or stemming the flow of water
- Do not touch any metallic water pipework with bare hands (or any other unprotected part of the body) until the risk of electric shock is controlled
- Do not start (or continue) any work on metallic water pipework if there is evidence of electricity or voltage greater than 5 volts in the pipework
- Always use Bridging Conductor(s)
- Always apply two levels of control when working on metallic water pipework

HSP0077 Electrical Safety for Work on Metallic Water Pipework

The Sydney Water Experience

- All **Main to Meter** and **Water Main** work requires a minimum of **two levels** of control to be in place to manage the risk of electricity
- The application of Bridging Conductors around the work area is **mandatory**
- Employing a voltmeter is **not a control** – it is a testing device – an indicator of flow.

HSP0077 Electrical Safety for Work on Metallic Water Pipework

The Sydney Water Experience

- Sample SWMS highlighting how Sydney Water crews manage the risk of electricity on metallic water pipework are now available for your reference.
- Sydney Water Electrical Folder for Supervisors booklet is now available for your reference.
- Electrical Safety procedures 0077 and 0064 are available for your reference
- Sydney Water and Work Cover NSW safety alerts are issued via the EQC / WSC Forum

Work Cover NSW Electrical Hazards Safety Alert



Electrical hazards from metallic water services:

Safety alert

This safety alert replaces a previous safety alert issued in 2005 and has been revised following the recent death of a plumber who was electrocuted while installing a new section of copper water pipe at a private residence. This is the second fatality of its type that has occurred in NSW since 2005.

Catalogue Number: WC05910

ISBN: 978 1 74218 155 4

<http://www.workcover.nsw.gov.au/formspublications/publications/Pages/safetyalertelectricalhazardsfrommetallicwaterservices.aspx>

Work Cover NSW Electrical Hazards Safety Alert



Electrical hazards for plumbers:

Safety alert

This Safety Alert has been prepared to highlight and reinforce recommended safe practices for plumbers and other related workers who carry out work on a customer's water service.

Catalogue Number: WC04584

http://www.workcover.nsw.gov.au/formspublications/publications/Documents/safety_alert_electrical_safety_for_plumbers_final_version_4584.pdf

Managing Risks – A Summary

- The correct application of Bridging Conductors around the work area is **mandatory**
- *This is an example of correct bridging conductors employed.*



Managing Risks

This is NOT ACCEPTABLE!



Managing Risks

Nor is this.....



Managing Risks – The DWI Team

- The DWI Team WILL stop work(s) The DWI Team WILL Stop work(s).
- The DWI Team will issue Corrective Actions against your company
- The DWI and Urban Growth will issue Corrective Actions against the WSC/Developer
- This as you can well imagine, will have a financial impact on you

Managing Risks

- Insulating gloves compliant to standard and insulated to the highest potential voltage expected for the work being undertaken.
- Records of inspection, testing and maintenance of bridging equipment and Plumbers Voltage Monitors **MUST** be maintained as part of your Inspection, Testing and Monitoring process.
- Be aware that new laws for Residual Current Devices (RCD's) took effect from 18th February 2011.
- Power circuits and specified electrical equipment are to be protected by an RCD.
- RCD's tested regularly by competent person.
- Owner of RCD must keep records of RCD testing

Contractor Management

- Contractors are required to have in place systems of work which comply with specified Sydney Water H&S policies, procedures and systems i.e. HSP0064 and HSP0077
- Contractors must also meet the intent of the key requirements of a number of other Sydney Water procedures through their own safe systems of work i.e. Confined Space, Flow Management and Asset Isolation, Traffic Control Plan – to name a few.

Contractor Management

- The contractor must apply a hazard identification and risk assessment process throughout the project - including when new sub-contractors are engaged or there is a significant change to the project scope
- For each contract, a specific Project Safety Plan* (PSP) is to be developed and implemented by the contractor

Note: * This PSP is based on the NSW Govt OHSMS Guidelines 4th Edition

Contractor Management

- All work activities identified in the HIDRA shall be addressed in work method statements or equivalent documents

Safe Work Method Statements must:

- Be on the relevant organisation's letterhead and show the name & registered office address
- Be signed and dated by a senior management representative, and authors of the work method statement

Safe Work Method Statements

- 1 Is SWMS on (Contractor's) company letterhead?
- 2 Is it signed by management?
- 3 Is description of work adequately stated?
- 4 Does SWMS set out step by step all the activities?
- 5 Are potential hazards & risks clearly identified?
- 6 Are control measures appropriate for identified hazards?
- 7 Does SWMS state all plant & equipment to be used?
- 8 Does SWMS identify relevant OHS Legislation, Standards, Codes of Practice that must be complied with?
- 9 Are any Engineering/Certificate/WorkCover approvals listed?
- 10 Is training required to complete work listed in SWMS?
- 11 Are personal qualifications clearly identified?
- 12 Are maintenance checks on plant & equipment detailed?
- 13 Is SWMS signed by all workers involved in the work activity?
- 14 Are SWC procedures/permits referred to? – HSP0064 / HSP0077 for example

Awareness Training

- Doug Hobart (Safety Consultant) will provide a presentation and demonstration of how Sydney Water applies these processes.

Remember:

- Sydney Water staff, contractors and service providers working on metallic water pipework **MUST** meet the requirements of this procedure via, **their own Safe Systems of Work**
- These controls must be incorporated into **Safe Work Method Statements** for that work
- Please review your Safe Work Method Statements (SWMS) for work on metallic water pipes to ensure that **your** controls meet the requirements of this procedure

Awareness Training

- You will leave this Awareness presentation and demonstration with sufficient information on how Sydney Water applies these processes.

It is important to remember:

- The Sydney Water documentation provided i.e. Supervisors booklet, safety alerts and Safe Work Method Statement are **Samples only**.
- They show how we at Sydney Water meet the requirements of these procedures.
- **Your Safe Systems of Work** (evidenced by **your Safe Work Method Statements**) must be developed separately and independantly showing controls that meet the requirements of this procedure.
- Our documentation provided are **SAMPLES Only**.