

Working with Services | Mirvac Minimum Requirements

1. Purpose & Scope

The purpose of this document is to eliminate or minimise the risk of injury when working with, or near, services (e.g. plant, equipment, telecommunications, data and energy sources) and pressurised systems involving strip out and demolition, as well as the installation, modification, energisation, commissioning and maintenance of pressurised equipment so far as is reasonably practicable.

This document applies to all workplaces under the management or control of a Mirvac entity.

2. Minimum Requirements

Mirvac personnel and Service Providers must have processes in place to ensure compliance with:

- the Critical Controls (refer Section 3);
- relevant Forms (refer Section 4);
- all relevant Legislation, Codes of Practice and Standards (refer Section 7); and
- product guidelines for installation, use or maintenance from the Original Equipment Manufacturer.

3. Critical Controls

- **Risk Assessment:** Prior to commencing work with, or near, underground, overhead, energised or pressurised services, a risk assessment must be conducted. The hierarchy of controls shall be applied in determining the most appropriate method of controlling the identified risks (refer examples in the Hierarchy of Controls Triangles in Section 9). All risks and associated controls must be incorporated in the Workplace R&O Register and the JSEA/SWMS must include the required controls.

Prior to the commencement of work that could be in proximity to services, a services search must be carried out to identify those services that may be in the proximity of the works, both overhead and underground.

All services must be considered live unless specifically determined otherwise.

An authorisation from the service/utility owner is required to carry out work on, or in proximity to, services.

- Prior to commencing work on or with pressurised systems, all identified risks and associated controls must be documented in the JSEA/SWMS, these must include the following hazards as a minimum:
 - Pressure test fails due to faulty material or incorrect installation.
 - Air accidentally trapped in the system creating stored energy.
 - System not fully de-pressurised after a pressure test.
 - Work requiring opening of a system resulting in an uncontrolled release of stored energy.
 - Pressure test exceeds safe limits.
- **Services Identification and Location:** Underground services must be located, verified and physically marked prior to excavation, trenching, piling, in ground drilling, boring or where stakes or star pickets are driven into the ground.
- **Underground Services:** Where the depth is greater than 200mm the [Excavation Piling Boring Trenching Permit](#) must be completed. The permit must reference all associated drawings, sketches and Dial Before You Dig (DBYD) information, with copies provided to the work crew supervisor and operator.

Underground utilities or services, including redundant or disused services, at the intended worksite, must be identified using:

- Dial Before You Dig (telephone service 1100);
- non-destructive digging (NDD is limited to hydrovac excavation as per utility owners' standards), hand tools (insulated or ceramic shovels, spades – excluding star pickets and pinch bars);
- as executed drawings;
- current information - obtained or refreshed not more than 30 days before work begins;
- information from the relevant authorities or site owners;
- site surveys; and
- ground-penetrating radar (GPR) – operated and data assessed by a certified locator.

For underground services pot holing distances must be agreed to prove the location of services. All services must be clearly ground marked (e.g. fluoro / dazzle) plus marked-up on the site plan.

Location of new services laid subsequently are to be updated on the as executed drawings.

Before using powered equipment to excavate within 1m of an underground service, there must be test pits / potholes dug to confirm their location. This entails a sampling of the area by hand digging or hydro excavation with non-conductive tools to expose the services.

If powered excavation or boring equipment is used, a spotter must be in place. Boring can occur up to within 1m of a known service (unless not permitted by the utility operator), then the services must be progressively exposed by hand or hydro excavation. This process is repeated in 300 – 500mm deep stages until all known services are located.

Further digging is to be alongside the service rather than above it with final exposure in a horizontal, rather than a vertical, direction.

HV cables must be specifically sign posted with their location easily identifiable in the field (see to the right).



- **Overhead Wires (OHW)** The distance of plant operations from OHWs at workplaces must be in accordance with those specified by the service/utility owner, State or regional legislative requirements or the Local Authority. As a minimum no part of any person, plant (e.g. cranes, scaffolding, elevated work platforms, concrete boom pumps or other) or materials with the potential to impact OHW may encroach within:

- 3 metres of a power pole(s) and its conductors; or
- 10 metres of an electricity tower(s) and its conductors.

In all cases, safe distances from OHWs should consider sag and sway of overhead conductors due to hot or windy weather. If work is planned to be in proximity to overhead services, the service/utility owner must be contacted to confirm voltages at the planning phase.

When working around OHWs, the risk assessment must consider the hierarchy of controls i.e. elimination or substitution through relocating the work or isolating the power, slew and height restrictors, exclusion zones with wheel stops or jersey curbs and other reminders and signage (Refer Section 9).

Note: Tiger tails, if identified through a risk assessment, are warning devices and do not provide protection from the electrical hazard of contact by people, cranes, mobile plant, tools or materials.

Design of Pressurised Systems: The following controls must be considered during the design phase for any hydrostatic pressure testing of pipework.

- Pipework should not be located in electrical switchrooms, communication or data rooms where possible.
- End caps can only be used as part of the permanent system via the approved design process and end caps can be used for staging of installation works as approved by Mirvac. A pressure relief point and gauge is to be installed on the end cap in all installations.



- *Ensure sufficient air bleed valves are installed and high points in the system are minimised to avoid air being trapped.*
 - *Installation of 20mm ball valves at either side of each system isolation valve where pipework exceeds 100mm in diameter. This will provide a testing point for the future disconnections and verification of stored energy within the pipework.*
 - *The design is to consider staging of installation works and the associated control measures.*
 - ***Pneumatic (air) testing of pipework is not permitted***, with the exception of very low air pressure testing of sprinkler pipework (5-10Kpa only) with a detailed risk assessment undertaken and the [Energisation Commissioning Permit](#) in place.
- **Installing Pipework Systems:** Before an installed pipework system is pressurised, there must be consultation with all involved parties that the installation is as per the relevant Australian Standards and approved design workshop drawings. **Labelling and warning signs must be installed at all valves and at periodic locations along the length of the pipework.** Written confirmation of compliance to these Standards and design workshop drawings is provided by the installing subcontractor.
- **Commissioning Pipework Systems:** The [Energisation Commissioning Permit](#) must be used where identified as a required control in the JSEA/SWMS. Before commissioning work is carried out on pipework systems, the equipment must be verified by a suitably qualified person to determine whether it can be commissioned (refer Section 6 training and competency). After testing, the approved Inspection and Test Plan (or Service Provider equivalent) is to be completed, certifying compliance with the applicable standards and approved design workshop drawings.
- Where isolation valves are used for the end point of a pressure test, there must be a suitable means of testing on the non-pressurised side of the valve. End caps may be used, however these will require gauges and 20mm isolation valves to be installed.
- Pressure testing should be completed before sensitive equipment is installed (electrical switchboards, communication and data rooms).
- The area under pressure test must have a suitable exclusion zone (minimum of 15m for pneumatic and 3m for hydrostatic testing or as deemed required in a site-specific risk assessment). The pipe testing ITP is to be completed by the installing subcontractor and witnessed by Mirvac. The procedure is to specifically note that large diameter pipe work needs to be filled slowly to avoid trapping air within the system. The process must include a check of all valves before and after testing to ensure pressure is not trapped within the system after de-pressurising. Persons undertaking the pressure testing must have relevant training and experience (refer Section 6 training and competency).
- **Decommissioning Pipework Systems:** *Where demolition, strip out (either complete or staged or partial) or de-energisation works are being undertaken*, the [Isolation Lock Out Tag Out MMR](#) must be followed to correctly de-energise the pipework system before any works commence.

In instances involving the strip out of existing buildings, or where the service is either unknown or unidentified, a services audit must be carried out by a qualified and competent contractor.

Works must have a 2 person inspection control measure (one competent person undertaking the testing and one observing to ensure the procedure is being correctly implemented).

Power tools should not be used for opening a system, only hand tools are permitted.

- **Working on or Near Live Systems:** There must be no work carried out on energised equipment, plant or parts (or where it has the potential to become energised). The [Isolation Lock Out Tag Out MMR](#) must be followed to de-energise so as to achieve zero energy state, and secure, before work is performed. The JSEA/SWMS must identify safe approach distances and any other precautions, including any required licenses, for relevant personnel involved with the activity. During design stage it is preferred that systems are not capped. Where end caps are required for staging or cannot be designed out, a pressure relief point and gauge is to be installed on the end cap.
- Where work is required on a completed or closed system, it is to be assumed "live" and the following must be in place:
 - The [Isolation Lock Out Tag Out MMR](#) must be followed.
 - The [Energisation Commissioning Permit](#) must be completed.
 - A detailed procedure to address potential of uncontrolled de-pressurisation is to be developed and approved. The procedure is to address:
 - testing points;
 - reference previous testing results;
 - have a 2 person inspection control measure (one competent person undertaking the testing and one observing to ensure the procedure is being correctly implemented);
 - mark up of schematic or pipework layout.
- Pipe design is to consider project staging and installation sequencing to limit revisiting existing pipework or providing sufficient control points to allow for safe de-pressurisation and verification.
- **General:** Unless fault finding or commissioning, work on pressurised pipework is not permitted at any time. The [Isolation Lock Out Tag Out MMR](#) must be followed to correctly de-energise the pipework or system. Each exposed part section of pipework installed must be treated as energised until it is isolated and determined not to be energised.
- **Services in Structures / Buildings:** Before entry into an enclosed roof space, or carrying out demolition, strip out or decommissioning work, the building's electrical installation and other service apparatus as identified in the risk assessment, must be de-energised and isolated.
- Prior to drilling, coring, boring or concrete cutting in any structure or building there is a compulsory hold point where services are located, verified and physically marked prior to any penetration. All services are to be considered live unless specifically determined otherwise. Refer to the [Coring Boring Concrete Cutting MMR](#).
Services that may need to be cut through must be disconnected in accordance with the [Isolation Lockout Tagout MMR](#).
- **Emergency Preparedness / Rescue:** Emergency procedures must be established for potential faults/contact/explosion incidents relevant to the scope of works being undertaken, including the safe rescue of persons if working near live parts or systems.

4. Mirvac Forms

Checklists and Permits are to be completed and then authorised by Mirvac representative prior to work

[Excavation/Piling Boring/Trenching Permit](#) – for excavation, trenching, piling or boring (including drilling) or minor works where stakes or star pickets are driven into the ground that exceed 200mm in depth.

[Coring Chasing Concrete Cutting Permit](#) – for coring, boring or chasing activities in structures or buildings.

[Isolation/Demolition/Decommissioning Permit](#) – for isolation, decommissioning and strip out works.

[Energisation Commissioning Permit](#) – for energisation of a pressurised system installation where there are other involved parties.

5. Roles and Responsibilities

The Mirvac Workplace Manager of each workplace over which Mirvac has control is responsible to ensure workers at the site are aware of and adhere to the performance requirements of this document and responsible to ensure workers are equipped with adequate tools, training, competency and licensing to undertake the work.

6. Training and Competency

Minimum Training Requirements for Work with Services

Activity	Required Training/Qualification
Work in proximity to the utility's "No Go Zone"	Refer jurisdictional requirements as defined in Section 7.
Services Location	Use of GPR or Cable Locators, Hydrovac.
Stand-bys for emergency rescue	Qualified First Aider with CPR
Isolation of any energy sources including <i>Work with pressurised pipework</i> (e.g. to install, test, verify, commission, decommission, repair, replace or adjust equipment, devices or systems)	Isolation Lockout Tagout Training and Competent in recognition of applicable hazardous energy sources, the type and magnitude of the energy and the methods and means necessary for isolation and control

7. Relevant Legislation, Codes of Practice and Standards

Document Title

NSW:	Work Health and Safety Act 2011 (NSW) Work Health and Safety Regulation 2017 (NSW) Electricity Supply (Safety and Network Management) Regulation 2014 (NSW) (including regs 32 -38; 299 – 302; 304 – 306)
Vic:	Occupational Health and Safety Act 2004 (Vic) Occupational Health and Safety Regulations 2017 (Vic) (including Part 5.1 and specifically regs 354 and 355)
Qld:	Work Health and Safety Act 2011 (Qld) Work Health and Safety Regulation 2011 (Qld) (including regs 32 -38; 299 – 302; 304 – 306)
ACT:	Work Health and Safety Act 2011 (ACT) Work Health and Safety Regulation 2011 (ACT) (including regs 32 -38; 299 – 302; 304 – 306)
WA:	Occupational Safety and Health Act 1984 (WA) Occupational Safety and Health Regulations 1996 (WA) (including Subdivision 6 - Excavations and earthworks)
SafeWork Australia – Working in the vicinity of overhead and underground electric lines: Guidance Material (Series)	
SafeWork Australia - Scaffolding Work Near Overhead Electric Lines: Information Sheet	
Dial Before You Dig - Best Practice Guide for Locating Underground Services	
Safework NSW – Demolition Work: Code of Practice	
Safework NSW – Excavation Work: Code of Practice	
Safework NSW – How to manage work health & safety risks: Code of Practice	
Safework NSW – Managing electrical risks: Code of Practice	
Safework NSW – Safe design of structures: Code of Practice	

Safework NSW - Working near utilities: Work health and safety procedure
Safework NSW - Work near underground assets: Guide
WorkSafe Vic - Guide for work near underground assets
WorkSafe Vic - Framework for Undertaking Work near Overhead and Underground Assets: Guide
Work Safe Vic - Safe concrete cutting and drilling: Industry Standard
Energy Safe Vic - No Go Zones and working around powerlines (website current)
WorkSafe Qld - Working near overhead and underground electric lines: Code of Practice
WorkSafe WA - Concrete and masonry cutting and drilling: Code of Practice
WorkSafe WA - Excavation: Code of Practice
WorkSafe WA - Horizontal Directional Drilling: Guideline
WorkSafe WA - Guidelines for work in the vicinity of Overhead power lines
Jurisdictional Utility Owner Standards (refer utility websites)

8. Additional Information

[Excavation and Trenching - MMR](#)

[Isolation Lockout Tagout MMR](#)

[Coring, Boring and Concrete Cutting MMR](#)

9. Hierarchy of Controls Triangle – Working With, or near, Services

