

Plant, Equipment and Tools| Mirvac Minimum Requirements

1. Purpose & Scope

The purpose of this document is to eliminate or minimise the risk of injury and property damage when installing, commissioning and working with plant, equipment and tools, 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 - including for mobile equipment using public roads (refer Section 7); and
- product guidelines for installation, use or maintenance from the Original Equipment Manufacturer (OEM).

3. Critical Controls

- **Risk Assessment:** Prior to use of plant or equipment at site, a risk assessment must be conducted. All risks associated with plant, equipment and tools, throughout the lifecycle at the workplace, must be identified. Hazard identification must consider all activities that may be carried out during the life of the plant or equipment at the workplace: such as transportation, installation, commissioning, operation, inspection, maintenance, repair, storage and dismantling. The hierarchy of controls must be applied in determining the most appropriate method of controlling risks (refer Section Hierarchy of Controls Triangle).
- **Regulatory Authority Item Registration:** Where plant is supplied that requires item registration with a regulatory authority (such as Safe Work, WorkSafe or Workplace Health and Safety), evidence of current registration is required prior to use of the plant on site. Refer to Legislation, Codes and Standards for the region of operation for plant requiring registration (see Section 7). This typically includes but is not limited to:
 - mobile cranes with a SWL > 10t;
 - concrete placing units (truck mounted with boom);
 - tower cranes; and
 - Building Maintenance Units.
- **Regulatory Authority Design Registration:** Where plant is supplied that requires design registration, a check should be made that the item is design registered for:
 - Workboxes;
 - Boom EWPs;
 - Pre-fabricated Scaffolding;
 - Mast Climbing Work Platforms;
 - Lifts, Escalators and Moving Walkways;
 - Mobile Cranes (>10 T);
 - Tower Cranes designed after September 1, 2001(including self-erecting);
 - Person Carrying Hoists (e.g. Alimaks); and
 - Pressure Vessels.
- **Mobile Powered Plant:** A plant specific [Plant Arrival Checklist](#) must be completed when the plant arrives at site. This checklist provides detail of documentation that is required to be with the plant. A plant risk assessment must determine the inherent risk associated with the piece of plant and the potential interface that workers may have on site and must be available for review and incorporation

of appropriate parts, into a JSEA / SWMS. The Plant Risk Assessment must be completed. The [Plant Risk Assessment](#) template may be used where the manufacturer's Risk Assessment has not been provided. The risk assessment must be reviewed as part of the plant on-boarding process. The

JSEA/SWMS contains the Safe Operating Procedure for the piece of plant. The equipment on-boarding process requires the provision and checking of the Original Equipment Manufacturer's manual, the outcomes from the Plant Risk Assessment, site specific requirements and where there is a need for Roll Over Protection Systems and Falling Objects Protection Systems.

The daily plant inspections must be plant specific as defined within the OEM manuals and consider safety critical controls. Relevant emergency instructions relating to an item of plant must be clearly displayed on or near it.

Where determined by risk assessment a spotter must be used for reversing vehicles such as light or heavy trucks. Mobile plant must have audible reversing warnings and flashing beacons - a light vehicle can use hazard lights.

For earthmoving equipment and where ROPS and/or FOPS is not required by legislation, the plant risk assessment must be utilised to determine the need or otherwise for protective structures which must be fitted with a compliance plate, stating compliance to relevant standards (AS1636, AS2294). Seatbelts, where fitted, must be worn during operation of the plant.

Mirvac plant and equipment must be listed on the [Plant and Equipment Register](#) which may be housed within an online HSEMS (e.g. HammerTech) and Service Provider plant and equipment must be listed on an equivalent register.

- **Mobile Elevating Work Platforms (EWPs):** All boom-type EWPs on Mirvac sites must have secondary protection: i.e. secondary guarding to prevent a crush injury. Examples of this include physical barriers, pressure sensing devices or proximity sensing interlocks.

Where the risk of a crush injury is identified as a potential hazard when operating a scissor lift - type Mobile Elevating Work Platform (Scissor Lift), the hierarchy of controls must be followed to Eliminate, Substitute, Isolate or provide Engineering Controls where reasonably practicable to do so.

A secondary protection system is required for scissor lifts where the technology/controls are readily available and there is a risk of crushing. Where the risk of a crush injury cannot be prevented (through vertical or lateral Scissor Lift movement) a Support Person is required to observe the Scissor Lift operations. Where this is the case the following will apply:

- The Support Person can be watching more than one Scissor Lift concurrently, providing line of sight and verbal contact is kept and the Support Person is familiar with the ground-based controls of all the Scissor Lifts they are observing;
- If the Support Person moves out of contact with the Scissor Lift operator, the Scissor Lift is to maintain stationary (other than descending for an emergency) but the Operator may continue working in the Scissor Lift;
- Operators and Support person must remain vigilant to ensure adequate access to ground-based lowering controls is maintained;
- When moving an EWP from one location to another the EWP must be lowered clear of any overhead hazards prior to enabling the machine to travel;
- The requirements above must be listed in the JSEA/SWMS of all personnel and Service Providers, following the process of consulting with EWP Operators, Support Personnel and relevant Supervisors.

- **Fixed Plant and Equipment:** A plant risk assessment must be undertaken on all fixed plant and equipment, with operators provided with relevant information, JSEA/SWMS or other safe systems of work.



- **Other plant:** A risk-based plant receival process must be in place all other plant as listed below:

Generators (greater than 25kW) Plant Arrival Checklist	Air compressors Plant Arrival Checklist	Tower cranes Tower Crane Erection Climbing and Dismantling permit	Satellite concrete booms Concrete Pumping Permit
Hoists - Personnel & Material Plant Arrival Checklist	Stationary concrete pumps Plant Arrival Checklist	Concrete Finishers Plant Arrival Checklist	

- **Hand Tools:** All hand tools and hand operated equipment must be inspected prior to use. Where damage is evident equipment must be removed from service. Appropriate personal protective equipment must be worn when using hand tools and hand-operated equipment as designated in the JSEA/SWMS.

All residual current devices (RCDs), portable electrical equipment / tools and extension cords must be tested as per the [Working with Electricity MMR](#) requirements.

- **Maintenance and Inspection:** All plant, equipment and tools are to be serviced and maintained (including cleaning) to manufacturers recommendations, with ongoing checks of condition, with faults rectified before use. A program must be in place to proactively manage maintenance and repairs to plant and equipment. Records of repairs and maintenance must be kept.

The [Isolation Lock Out Tag Out MMR](#), where relevant, must be followed for service and maintenance work on fixed plant and equipment. Faulty or defective plant, equipment and tools must be tagged out of service following the [Isolation Lock Out Tag Out MMR](#).

- **Guarding:** Fixed, mobile or hand-held plant, equipment and tools must be securely fenced or guarded in compliance with regional legislation and codes of practice and AS 4024 *Safety of machinery (series)*.
- **Electrical Equipment:** All residual current devices (RCDs), portable electrical equipment / tools and extension cords must be inspected, tested and tagged by a licensed electrician in compliance with AS/NZS 3760 *In service safety inspection and testing of electrical equipment* and AS/NZS 3012 *Electrical installations - Construction and demolition sites*.
- **Operation:** All plant, equipment and tools are to be operated within their design capacity, for the intended purpose, by competent operators with adequate instruction and supervision.

Any alterations to plant, equipment or tools are to be conducted by the original designer or manufacturer, or where they cannot be contacted (for older plant or imported plant), a separate risk management process must be applied and undertaken by a qualified engineer, in accordance with the relevant technical standards. Relevant documentation confirming this review must be received prior to the item being put into service.

- **Movement of Plant:** Risks associated with movement of plant at sites must be documented in the R&O Register. Planning for movement of plant on Mirvac Construction Sites occurs daily through the morning pre-start process and where required, through the Daily Builders Brief / Pre-start. Exclusion zones and pedestrian walkways are installed to protect workers and pedestrians from operating equipment. Where room enables, exclusion zones require barricades, signage and where required, a sentry. Spotters are required to accompany moving plant where physical separation is not practical and where plant is traversing from one work location to another (e.g. through doorways or to another level). If a person is to enter an exclusion zone, permission must be gained from the plant operator/s with respect to the following:



- positive communication with the plant operator(s);
- all ground engagement tools or implements lowered to ground;
- plant controls disengaged to prevent inadvertent engagement;
- the operator's hands are visibly removed from controls; and
- any movement of plant is ceased.

Mobile plant must have audible reversing warnings and flashing beacons - a light vehicle can use hazard lights.

- **Decommissioning of Plant:** Where plant and equipment are to be decommissioned, dismantled, stored and disposed of; a risk assessment is to be undertaken and the process must be carried out by a competent person. All available information must be provided by the designer or manufacturer relevant to the dismantling and is made available that person.
- **Plant not in use:** Where plant is not use it must be packed up or stored in a safe manner and location and in accordance with the OEM specifications.
- **Concrete Pumping:** When using concrete pumping plant, processes must be in place to sight the relevant registrations and inspection, calibration and maintenance records for all concrete pumping equipment. All concrete pumping equipment must meet the requirements of AS/NZS 1418.15 Cranes (including hoists and winches). All concrete placing equipment requirements and the general requirements are specified in AS/NZS 1418.1 Cranes, hoists and winches General requirements.

All pipelines, hoses, clamps and other equipment must be appropriately rated to pressures specified by the pump manufacturer with appropriate identification, compliance plates and/or certification.

Mobile powered plant must have a completed Plant Risk Assessment before arriving at site, have a signed-off [Plant Arrival Checklist](#) and have a daily plant specific pre-start operational inspection, using the OEM log book (or similar), by the operator.

Prior to commencing concrete pumping operations, a risk assessment must be conducted and required controls included in the SWMS/JSEA.

- **Concrete Pumping Equipment:** Concrete pumps and booms must have planned inspections and preventative maintenance programs in accordance with the manufacturer's recommendations and AS2550.15 Cranes - Safe Use Part 15: Concrete Placing Equipment. i.e.
 - (a) daily prestart operational inspection
 - (b) weekly
 - (c) monthly
 - (d) three-monthly
 - (e) yearly, and
 - (f) six-yearly strip downs.

Annual inspections and 6 yearly inspections must be performed by a qualified 3rd party assessor.

There must also be appropriate fixed compliance plates, and/or appropriate certification for their use.

All pipelines, hoses, clamps and other equipment must be appropriately rated to pressures specified by the pump manufacturer.

Pipeline thickness monitoring regimes must be in place unless the manufacturer guarantees they are not required due to the nature of the material used to manufacture the pipeline. Where inspections are required, log books must be maintained recording wall thickness and pressure detail.

Each individual pipe section, bend and reducer must be indelibly and legibly marked (e.g. numbered) so it

can be readily identified against the record of test results in the logbook.

The [Concrete Pumping Permit](#) is required for concrete pumping. It is to be used for every set up of a concrete pumping activity and for every pour at a workplace where a Mirvac entity has control of the work.

Concrete pumping plant must not set up on site until the site (tower) crane crew and Mirvac crane supervisor have been notified of the intention to set up. The intent must be confirmed by all parties. The siting of the pump must be reviewed in consultation with all involved in the activity.

There are exclusion zone requirements for plant interface - refer section on Operational Interface (below) and to the [Cranes & Lifting MMR](#) for further requirements relating to concrete pumping and interface with site cranes.

Access to satellite pumps must be compliant with the requirements of AS1657 and where not compliant, the operator must use adequate fall protection measures (e.g. climbing protection systems).

In the event of an emergency plant must immediately cease operations and position away from the emergency area.

- **Water Discharges:** To prevent contamination of surrounding waterways or the stormwater system with concrete washings, in accordance with regional requirements, the following must occur.
 - Wherever practicable concrete pumping must be undertaken away from stormwater inlets, watercourses or other environmentally sensitive areas.
 - Where the above is not practicable temporary bunding, drain seals or other environment barriers must be in place before commencing pumping operations.
 - An impervious plastic lining or appropriate washout tray must be placed below the pump's hopper to contain any possible spillage.
 - A spill kit must be on site, as required by the [Environmental Management MMR](#).
 - Two options are to be decided:
 - concrete wash downs must not be provided at the workplace and by agreement with the supplier, concrete trucks will 'washout' at the concrete supplier's facility (preferred);
 - a dedicated wash down area must be provided which is fitted with an impervious floor and sufficient swales, hay bales and other barriers to contain slurry residues.
- **Operational Interface:** Where plant is operating in common areas (e.g. tower crane, mobile crane, concrete placing booms):
 - Plant operators must notify the Mirvac Crane Supervisor and site (tower) crane crew before setting up and the intent confirmed by all parties. Further Mirvac requirements will then be confirmed;
 - A separate radio channel must be provided for operator to operator communication;
 - Concrete pumping and crane crews must be briefed on each plant's operational zones by the Mirvac Crane Supervisor and issued a site plan showing the zones;
 - A 6m exclusion zone must be maintained for general operations of plant;
 - If either operator requires to move within the 6 m exclusion, the dogman and line hands must coordinate the move. As soon as practical, plant must be repositioned to maintain the 6 m exclusion zone. If unable to reposition and post consultation and a 1 m exclusion between plant applies and is not to be breached; and either of the plant that is nominated by the dogman and line hand must remain stationary; and
 - Once the concrete pumping operator informs the Mirvac Crane Supervisor that operations have ceased, and all equipment stowed securely, return to normal operations can occur.

4. Mirvac Forms

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

[Plant Arrival Checklist](#) - for plant arriving to site. Note: On Mirvac Construction Division projects, a Mirvac identification sticker is required on the equipment.

[Plant and Equipment Register](#) or equivalent

[Concrete Pumping Permit](#) – for use when pumping concrete

[Plant Risk Assessment](#) – for use when documenting a Plant Risk Assessment where the OEM Risk Assessment is not provided

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 Plant, Equipment and Tools

Type of Activity	Required Training
Operation of Licensed Plant	Relevant High-Risk Works License for the plant being operated;
Operation of Non-licensed Plant	Verification of Competency provided through: <ul style="list-style-type: none"> - VOC through CCF or another accredited RTO
Telehandlers <3 T	Telescopic Handler Association of Australia Gold Card
EWP, Boom Lifts	Refer Work at Height MMR
Cranes	Refer Cranes & Lifting MMR
Isolation of Fixed Plant	Refer Isolation and Tag Out MMR
Scissor Lift Support Person	Familiarity with the Scissor Lift ground-based lowering controls specific to the Scissor Lifts being monitored

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) (including Chapter 5, Plant and Structures)
Vic:	Occupational Health and Safety Act 2004 (Vic) Occupational Health and Safety Regulations 2017 (Vic) (including Part 3.5 Plant)
Qld:	Work Health and Safety Act 2011 (Qld) Work Health and Safety Regulation 2011 (Qld) (including Chapter 5, Plant and Structures)
ACT:	Work Health and Safety Act 2011 (ACT) Work Health and Safety Regulation 2011 (ACT) (including Chapter 5, Plant and Structures)
WA:	Occupational Safety and Health Act 1984 (WA) Occupational Safety and Health Regulations 1996 (WA) (including Part 4, Plant)

AS/NZS 3760: *In service safety inspection and testing of electrical equipment*

AS/NZS 3012: *Electrical installations - Construction and demolition sites*

AS 4024: *Safety of machinery (series)*

Refer Appendix 7 of the Workplace Management Plan for a list of Australian Standards relevant to Mobile Plant and Equipment

Safe Work Australia – Managing Risks of Plant: Code of Practice

Work Cover NSW - Managing the risks of plant in the workplace: Code of practice

Work Safe Vic – Plant: Code of Practice No.19

Work Safe QLD - Managing electrical risks in the workplace: Code of Practice

AS2294.1 Earthmoving machinery – Operator protective structures: Part 1 General Principles

AS 2550.15 Cranes - Safe Use Part 15: Concrete Placing Equipment.

AS 4987 Earth-moving machinery – Tip over protective structure (TOPS) for compact excavators – Laboratory tests and performance requirements

AS 2193 2005 (Incorporating Amendment No. 1, 2017) Calibration and classification force-measuring systems

ISO 3449 Earth-moving machinery – Falling object protective structures - Laboratory tests and performance requirements

ISO 3471 Earth-moving machinery – Roll-over protective structures - Laboratory tests and performance requirements

ISO 12117 Earth-moving machinery – Tip-over protection structures (TOPS) for compact excavators – Laboratory tests and performance requirements

ISO 12117.2 Earth-moving machinery – Laboratory tests and performance requirements for protective structures of excavators – Part 2: Roll-over protective structures (ROPS) for excavators of over 6t

8. Additional Information

[Working with Electricity MMR](#)

[Working with Electricity MMR Reference Document](#) (for Mirvac personnel only).

[Working with Services MMR](#)

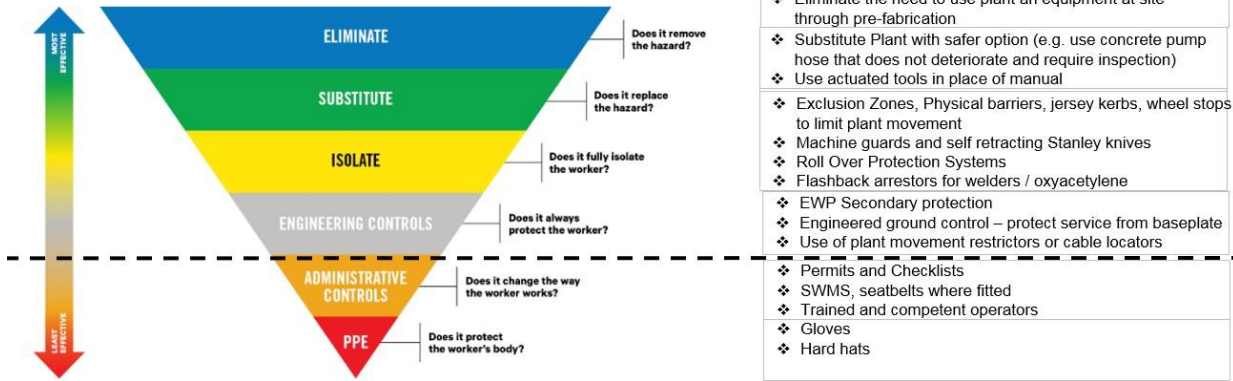
[Isolation Lockout Tagout MMR](#)

[Cranes and Lifting MMR](#)

[Work at Height MMR](#)

[Environmental Management MMR](#)

HIERARCHY OF CONTROLS



9. Hierarchy of Controls Triangle