

Cranes & Lifting | Mirvac Minimum Requirements

1. Purpose & Scope

The purpose of this document is to eliminate or minimise the risk of injury arising from the use of cranes or lifting, 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 (OEM).

3. Critical Controls

- **Risk Assessment:** Prior to commencing any works associated with the use of cranes or lifting 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 associated with cranes and lifting must be listed in the R&O Register, with controls listed in the JSEA/SWMS.
- **General:** Only lifting equipment that complies with relevant Legislation, Codes of Practice and Australian Standards (refer Section 7) is permitted on Mirvac sites. Cranes, hoists and winches must be suitable for the task they are to perform and have accompanying documentation of registration and inspection in accordance with the requirements of the relevant Standards (refer Section 7 and Appendix 7 of the Workplace Risk Management Plan).

Positive communications must be established and maintained at all times during crane operations. Radio communication must be provided where conventional whistle and hand signals are not practical or where the load is out of sight of the crane operator.

The required risk assessment in relation to lifting operations set out above must, as a minimum, provide for a formal lift study (developed in accordance with AS 2550.1 and AS 2550.5) to be completed for:

- lifting loads over 50t;
- dual or multi crane lifts;
- lifting tilt-up / pre-cast concrete panels; and
- use of workboxes.

The Nominated Mirvac Representative must receive the lift study and review it for adequacy prior to the lift commencing.

A geotechnical assessment must also be completed for the above four dot points as well as the following:

- installation and dismantle of tower cranes;
- installation and dismantle of satellite concrete booms; and

- mobile cranes over 50t capacity.
- **Operational Interface:** In all instances where construction activities are being undertaken at workplaces under the management or control of a Mirvac entity the following applies. Where plant is operating in common areas (e.g. tower crane, mobile crane, and concrete placing booms):
 - plant operators must notify the 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;
 - crane crews must be briefed on each plant's operational zones by the 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 intends on breaching the 6m exclusion, the dogman and line hands must coordinate the move. If possible, plant must be repositioned to maintain the 6m exclusion zone. If unable to reposition, and post consultation, a 1m exclusion zone between must be maintained and is not to be breached. All plant that is nominated by the dogman and line hand must remain stationary; and
 - once the plant operator informs the Crane Supervisor that operations have ceased and all equipment stowed securely, return to normal operations can occur.
- **Mobile Cranes:** The Plant Arrival Checklist must be used to check the mobile crane when it arrives at site. For mobile cranes, the [Mobile Crane Permit](#) must be completed prior to first use and when moved and re-set. A crane must not be left unattended unless all loads are removed from the hook, the hook raised to a safe position, power turned off and appropriate motion brakes and locks applied. Separation distances must be maintained between people and the crane or lift during mobile crane operations: vertically 2m or greater and horizontally, 0.5m or greater. Where these clearances cannot be maintained, suitable barricades must be used to prevent persons coming into contact with moving parts. The mobile crane permit is not applicable for single lifting with a Telehandler or Franna. For a Telehandler or Franna the Plant Arrival Checklist must be used to check licensing, registration, maintenance records and verification of competency of the operator.
- **Vehicle Loading Cranes:** For vehicle loading cranes a risk assessment must be completed prior to use. Vehicle loading cranes must be operated from a position that prevents the boom or load being passed or lifted over the operator or other personnel. For Telehandlers and Frannas the [Mobile Crane Permit](#) must be used for operation of a vehicle loading crane where a High Risk Work Licence is required. i.e. a crane with a capacity of 10 metre tonnes or more, mounted on a vehicle to move a load onto or from the vehicle, including the application of load estimation and slinging techniques to move a load.
- **Tower Cranes:** When tower cranes are erected, commissioned, climbed and dismantled the [Tower Crane Erection, Climbing and Dismantling Permit](#) must be used to ensure all required steps are taken and hold points adhered to. When engaging 3rd party inspectors the scope of works must detail the performance requirement of the [Tower Crane Post Erection Inspection \(ITP\)](#). Tower crane operators must be taken through a crane specific familiarisation process utilising the [Tower Crane Operator Familiarisation Checklist](#). Tower crane operators, dogman / riggers are to be communicated the Mirvac's roles and responsibilities statements, Tower Crane Operator Roles and Responsibilities and Tower Crane Dogman Rigger Roles and Responsibilities.

Tower cranes must to be fitted with the following:

- visual assistance camera e.g. "Hookcam";

- fire Suppression or direct injection system;
- a 2.5kg ABE Fire extinguisher located at the cabin.

Other Considerations must be discussed with the Nominated Mirvac Representative:

- the use of anti-collision systems or slew limitation devices for multiple tower cranes operating in the same radius;
 - adequate tower access lighting specification;
 - the provision of sanitary hygiene processes for operator bodily fluid disposal;
 - aviation obstruction lighting;
 - emergency rescue procedures for tower crane operators;
 - secondary access points from structure, with unauthorised access controls, to minimise operator climbing heights.
- **Workboxes:** Tasks involving the use of a workbox suspended by a crane must complete the [Workbox Permit](#) before use. Workboxes used with mobile cranes require the [Mobile Crane Permit](#) to be completed as well.
- **Chutes:** If an inclined or vertical chute is to be used as a means of lowering materials the following conditions must be in place to ensure the chute is securely attached to the building structure.

Feed or open points of the chute must:

- be completely enclosed and may contain a hinged or sliding door that can be securely locked when material is not being fed into the chute;
- have a hopper that is fitted to the chute to channel material into the chute;
- have a 1m x 1m fence at each opening at 45 degrees to the building line to prevent material spilling outside the chute; and
- require doors / openings to be closed and locked before material is removed from the discharge area or before a bin is replaced.

Discharge end of the chute must:

- be open at all times;
 - have a designated area around the discharge end of the chute to be fenced with a hinged lockable gate. If a rubbish removal skip is used the fence must be at least 2m from the bin;
 - have rubbish removal skips that are structurally sound and designed for lifting (i.e. containing rated lifting points and indicate SWL) and be covered to prevent debris falling out while being lifted; and
 - have signs warning of the danger of discharged material on the access gate of the fence.
- **Gantries, Chain Blocks and Hoists:** Each hoist and chain block must be indelibly and legibly marked with:
- model type identification;
 - serial or batch number;
 - WLL or SWL;

- details of load chain/wire as follows:
 - normal size;
 - grade;
 - rated capacity for hoisting; and
 - name or identification mark of the chain hoist.

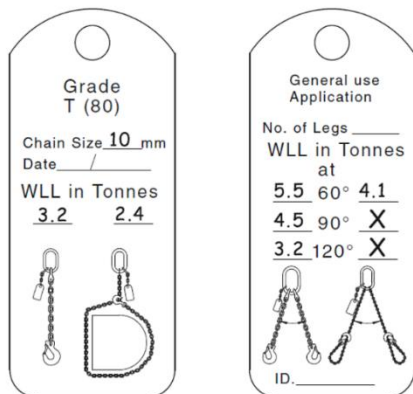
Only proprietary attachments are to be used and in accordance with the manufacturer's instructions. Any anchor points must be installed by a person competent to undertake the specified work and must be certified at required intervals (refer Section 6.).

Gantry beams must be marked with WLL or SWL and subject to regular condition inspection as per AS 2550.1 and AS 2550.3 and AS1418.1 and AS1418.3.

- **Lifting Gear:** Formal inspection of Mirvac rigging and lifting gear must be carried at the required intervals by a competent person at the frequencies designated in the table below.

Lifting Gear Item	Monthly Inspection	Three Monthly Inspection	Six Monthly Inspection	Annual Inspection
Chain Slings 1-5 lift cycles per week				√
Chain slings 6 – 25 lifting cycles per week			√	
Chain slings 25 – 200 lifting cycles per week		√		
Chain slings 200 plus lifting cycles per week	√			
Round and flat synthetic slings		√		
Lifting devices (e.g. bin lifters and stillage)				√

- The relevant inspection tag must be affixed to the lifting gear post inspection. The tag must be legible and contain the relevant information as per Australian Standards. Refer diagram below for required information for chain slings as per AS3775.1.



A record of the inspection must be maintained on a Lifting Gear Register, or similar (e.g. HammerTech on-line HSEMS). The register must be maintained in a central location. Service Providers must maintain a current Lifting Gear Register for their equipment and shall make this available to Mirvac when requested. When not in use:

- steel wire ropes and synthetic fibre slings must be stored in a dry covered area and where practicable suspended on pegs or hooks to protect against crushing;
- chains must be stored in a dry covered area to protect against corrosion.

– **Lifting Gear Inspection and Maintenance:** A program of planned inspections and maintenance must be in place for Mirvac or Service Provider lifting gear.

- **Lifting of Materials:** Any method for lifting of materials must be in accordance with AS4991. Pallets, bags, plastic buckets or drums with wire or plastic handles (not intended for lifting or not using appropriate lifting attachments) must not be used on Mirvac sites. For example, in relation to pallets, these may be lifted by a brick cage or certified attachment. When using a four-legged chain on a rigid load (like a metal bin), two legs must be capable of carrying the load whether the bin is full or empty.

4. Mirvac Forms

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

[Workbox Permit](#) – used to regulate controls for attaching a workbox to a crane and conducting a lift

[Mobile Crane Permit](#) – use prior to use of a mobile crane or a vehicle loading crane

[Tower Crane Erection, Climbing and Dismantle Permit](#) – use for all tower crane activities relating to erection, climbing and dismantling

[Tower Crane Post Erection Inspection \(ITP\)](#) – use to provide guidance about performance requirements on the minimum required inclusions for 3rd party reviewer documentation

[Tower Crane Operator Familiarisation Checklist](#) – use to familiarise tower crane operators with the tower crane, once erected

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, is 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 Cranes and Lifting

Type of Activity	Required Training
Preparation of Geotechnical Report	Engineer with relevant geotechnical experience
Pre-use inspection of Lifting Gear	High Risk Work License – Dogman or Rigger
Independent Inspection of Lifting Gear	Hold the LEEA accredited training qualification or equivalent
Review of Lift Plan	Knowledge, skills and experience in review of lift studies
Crane Operations	High Risk Work License and experience in operating the relevant crane

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 Part 3.1 (regs 32 – 38) Division 3.2.1 (reg 39), regs 206, 214, 215, 219, Division 6.3.2 (regs 299 – 303, and Reg 235 Major inspection of registered mobile cranes and tower cranes)
Vic:	Occupational Health and Safety Act 2004 (Vic) Occupational Health and Safety Regulations 2017 (Vic) including Part 3.5, 3.6 and 6.1
Qld:	Work Health and Safety Act 2011 (Qld) Work Health and Safety Regulation 2011 (Qld) including Part 3.1 (regs 32 – 38) Division 3.2.1 (reg 39), regs 206, 214, 215, 219, Division 6.3.2 (regs 299 – 303, and Reg 235 Major inspection of registered mobile cranes and tower cranes)
ACT:	Work Health and Safety Act 2011 (ACT) Work Health and Safety Regulation 2011 (ACT) including Part 3.1 (regs 32 – 38) Division 3.2.1 (reg 39), regs 206, 214, 215, 219, Division 6.3.2 (regs 299 – 303, and Reg 235 Major inspection of registered mobile cranes and tower cranes) Scaffolding and Lifts Act 1912 (ACT) Scaffolding and Lifts Regulation 1950 (ACT)
WA:	Occupational Safety and Health Act 1984 (WA) Occupational Safety and Health Regulations 1996 (WA) including regs 3.23 & 4.54
AS 1418.1 Cranes, hoists and winches - General requirements	
AS 1418.3 Safe use – Bridge, gantry and portal cranes (including container cranes)	
AS 1418.4 Cranes, hoists and winches – Tower cranes	
AS 1418.5 Cranes, hoists and winches – Mobile cranes	
AS 1418.8 Special purpose appliances	
AS 1418.11 Cranes, hoists and winches - Vehicle-loading cranes	
AS 1418.19 Cranes, hoists and winches - Telescopic handlers	
AS/NZS 1418.17 Cranes (including hoists and winches) - Design & construction of workboxes	
AS 2550.1 Cranes, hoists and winches - Safe use - General requirements	
AS 2550.3 Cranes, hoists and winches – Safe use – Bridge, gantry, portal (including container cranes), jib and mono- rail cranes	
AS 2550.4 Cranes, hoists and winches - Safe use - Tower cranes	
AS 2550.5 Cranes, hoists and winches - Safe use - Mobile cranes	
AS 2550.11 Cranes, hoists and winches - Safe use -Vehicle-loading cranes	
AS 2550.19 Cranes, hoists and winches - Safe use - Telescopic handlers	
AS 2550.20 Cranes, hoists and winches - Safe use -Self-erecting tower cranes	
AS 1353.1 – Flat synthetic – webbing slings - Product Specification	
AS 1353.2 – Flat synthetic – webbing slings – Care and Use	

AS 3775.1 Chain slings for lifting purposes – grade T(80) and V(100) – product specification
AS 3775.2 Chain and slings for lifting – grade T(80) and V(100) – Part 2 Care and use
AS 1666.1 Wire rope slings – Product specification
AS 1666.2 Wire rope slings – Care and use
AS 2741 Shackles
AS 4142.1 Fibre ropes – Care and safe usage
AS 4142.2 Fibre ropes – Three-strand hawser laid and eight-strand plaited
AS 4142.3 Fibre ropes – man-made fibre rope for static life rescue lines
AS 4991 Lifting devices
AS 2317 Collared eye bolts
Safe Work Australia - Guide to mobile cranes
Safe Work Australia - Guide to tower cranes
Safe Work Australia - General guide to cranes
Safe Work Australia - Guide to inspecting and maintaining cranes
Work Cover NSW - A Guide for Dogging
Work Safe Qld - Tower crane - Code of Practice
Work Safe Qld - Mobile crane - Code of Practice

8. Additional Information

[HSE Risk Management Procedure](#)
[Environmental Management MMR](#)

9. Hierarchy of Controls Triangle – Cranes and Lifting

