Working at Height Critical Risk Standard

Contents

1. PURPOSE

PMNZ recognizes working at height as a critical risk to safety as falls from any height can result in serious injury or fatality.

The purpose of this Standard is to set out ways of establishing a safe system of work to minimise risks of injury from falls from height.

2. SCOPE

This standard applies to all PMNZ sites and operations.

Self-performed projects under the control of PMNZ have work at height management approaches defined as either part of the Permit to Work and SSOW.

Contracted projects will be ringfenced and may be under the direct control and influence of the main contractor. In operations that are under the control of third parties, PMNZ will communicate, coordinate and consult with other PCBUs to ensure that acceptable standards at, or above, the level set out in this Standard are applied.

3. AUTHORITIES AND RESPONSIBILITIES

Role	Responsibilities
The Company (PCBU) & Officers	The PCBU & Officers of PMNZ have a responsibility to: ▪ Exercise due diligence to ensure all duties and obligations under HSWA 2015 are met including eliminating/minimising risks to health & safety so far as is reasonably practicable.
Critical Risk Sponsors (SLT)	Critical Risk Sponsors are responsible for: ▪ ensuring the requirements of this standard are adhered to. ▪ ensuring that adequate resources are available to ensure the full implementation of this standard.
Critical Risk Owner	The Critical Risk Owner is responsible for: ▪ ensuring this standard is implemented, kept up to date, and reported on. ▪ providing coaching to managers as required.
Managers	Managers have a responsibility to: ▪ ensure the requirements of this standard are met within their area of responsibility
Workers	Workers have a responsibility to: ▪ ensure the requirements of this Standard are applied where relevant to their roles. ▪ work at height safely and seek further information and advice if they do not believe they are competent to do so.

4. Work at Height Requirements

4.1 Work at Height Identification

Work at height includes the risk of low falls as well as high falls and hence encompasses a range of situations from access to trucks, vessels, roof mounted plant, working over pits and tanks, and from ladders, steps and platforms. There is no 'safe' height.

The work should be assessed in order to fully understand the nature of the risk and to consider the various options around how the work can be done safely. This includes access to the areas where work is to be carried out. Consideration should also be given to the associated risks of objects falling from an elevated work position. The following matters should be considered:

- Height of the potential fall.
- Potential severity of injury (including landing on unguarded machinery or pipes).
- Design of the platform, including size, condition, slipperiness, edge protection, etc.
- Distance between the work area and the leading edge of the platform, and the extent the worker is reaching or leaning over.
- Potentially fragile or unstable surfaces.
- Using equipment to work at the elevated level (for example, when using elevating work platforms or portable ladders).
- Sloping or slippery surface where slip resistance maybe inadequate
- Unprotected open edges.
- Hole, shaft or pit into which a worker could fall (for example, lift shafts or service pits).
- Access and egress from platforms
- Application of force, such as pulling, pushing, or downwards forceful cutting.
- Access to areas underneath where persons are working.
- Hand grip – places where hand grip may be absent or easily lost or both hands are required for the task.
- Where there is a risk of objects falling and striking people below.

4.2 PMNZ Working at Height Locations

- Link Span Towers
- Building Roofs
- Vessel masts
- Light towers
- On top of mobile plant/vehicles.

- EWP and man cages to access various above ground infrastructure

4.3 Permit to Work

For any work at height where there is a risk of fall greater than 2m, a PMNZ Permit to Work must be obtained. The Permit to Work will not be authorised until:

- A Safe Work Method Statement has been completed.
- Measures to control the identified risks have been established.
- The competency of those carrying out the work at height has been verified.
- Emergency procedures have been determined and are in place.

Am email permit may be issued, at the permit issuers discretion, for work from a scissor lift, or on a roof where the work is on or adjacent to designed and marked walkways and where engineered edge protection is in place.

The Permit to Work must be provided to the person responsible for direct control of the work and kept on prominent display at the work area.

4.4 Work Platforms, Stairways and Ladders

Work platforms, stairways and ladders should be constructed and designed to AS/NZS 1657, with appropriate fencing and/or guard railing to prevent the fall of a person, where practicable.

Surfaces of should be non-slip, free from trip hazards and should generally not exceed 7 degrees (1 in 8 gradient). Cleated surfaces, which provide greater slip-resistance, should not be steeper than 20 degrees (1 in 3 gradient).

4.5 Barriers/Edge Protection

Barriers (or edge protection) to prevent a person falling over edges should be provided on relevant parts of a solid construction. These include:

- raised platforms.
- the perimeters of building roofs or other structures that are accessed by people and pose a risk of fall.
- mezzanine floors.
- openings in floors and pits.
- the open edge of a stair, landing, platform or shaft opening.
- Structures where fall from heigh is greater than 1m
- Open excavations

The barrier should be designed and constructed to withstand the force of someone falling against it or should be placed sufficiently far away from the fall hazard (2m) to act as a warning.

The top of the guard rail or component should be between 900 mm and 1100 mm above the working surface. If a guard rail system is used, it should also have mid-rails and toe boards or wire mesh infill panels.

Toe-boards should be considered to prevent feet from stepping over the edge and tools/equipment from falling off.

Any scaffolding used as a barrier and/or edge protection must only be erected or dismantled by a person competent for such work.

4.6 MOBILE ELEVATED WORK PLATFORMS

Mobile elevated work platforms (MEWP's), which include cherry picker, scissor hoists, etc. are specialised pieces of equipment. It is essential that the correct type of machine is used for the job, and that it is set up and used by a competent person.

Operators in Boom type MEWPs shall wear a safety harness with a lanyard – fitted with an energy absorber or self-retracting lifeline (SRL). The harness must be attached to a certified anchor point. The lanyard shall be as short as practicable while allowing free movement within the confines of the MEWP. A person acting as a safety observer must be present while this type of MEWP is being used.

Work in scissor lifts with guard rails intact do not require a safety harness to be used if a risk assessment has confirmed there are no other factors that could compromise the safety of the operator.

The operator must be trained in the specific NZQA unit standard requirement for the EWP type they are operating.

4.7 SCAFFOLDING

"Everyone involved in the scaffolding process must have the knowledge, training and skills to perform the work safely, regardless of the height of the scaffold, and must have certification under the HSWA regulations where appropriate." *Worksafe 2016*

- All temporary access and/or work platform must be provided using certified scaffold or a structure designed and inspected by a temporary works design engineer.
- Scaffolding shall be designed and erected to suit the type of work to be carried out, the site conditions and the anticipated workload.
- All scaffolds from which a person or object could fall more than five metres, as well as all suspended scaffolds, shall be erected, altered and dismantled by or under the direct supervision of a person with an appropriate Certificate of Competency. This work must be notified to WorkSafe NZ
- The scaffolding shall be "tagged" or certified as being safe and updated weekly or as required by the scaffolder.

- If working around “live” plant or equipment, all plant and equipment shall be protected from falling objects or suitably safeguarded to prevent damage. No items shall be left unsecured.
- Ground stability shall be checked before erecting a scaffold.
- Persons erecting the scaffold, and not within the confines of the scaffold, shall use adequate fall protection, i.e. restraint system comprising of a safety harness & lanyard.
- Scaffold ladders shall be installed as per the Scaffold standards.
    - AS/NZS 4576.1 Scaffolding
    - AS/NZS 1576.1 Scaffolding: General Requirements
- Mobile scaffold (regardless of height e.g. under 3 metres). Any person who erects a scaffold must be competent to do so.

4.7.1 Scaffold Register and Inspection Requirements

For all scaffolding of 5m or more, a scaffold register or similar must be kept on site and be available for inspection. When complete the inspection records should show:

- Project name, address, or other clear identification.
- The location of the scaffold with respect to site coordinates or the location at the building or structure, so that the scaffolding can be clearly located.
- Miscellaneous details of the scaffold e.g. duty rating of working decks.
- A record of each inspection carried out.
- The inspections must be carried out at the following intervals:
    - Before the scaffold is first put to into use.
    - Weekly while the scaffold is in use.
    - After each structural alteration or addition.
    - Monthly while the scaffold is set up but not in use.
    - After any storm or occurrence that could adversely affect the safety of the scaffold.
- The inspection must be carried out by either:
    - A certificated scaffolder of the appropriate class; or
    - A competent person such as a chartered engineer.
- The entries of each inspection in the scaffold register must be made and signed by the person who carried out the inspection.
- See also the Notifying the Regulator Section 6.

4.8 Portable Ladders and Step Ladders

Before use, always consider whether using a ladder is the best and safest means of doing the job. The following are key points if considering using a ladder:

- They shall only be used for access or to carry out minor or routine work.
- Only one person shall use a ladder at any one time.
- Only industrial quality ladders as per AS/NZS 1892.1 may be used on a PMNZ controlled operational area.
- Check that the ladder is in a safe condition to use before use.
- Ladders should be set up at an angle of 4:1 ratio (4 vertical to 1 horizontal)
- The ladder should be secured against movement or sliding at top and bottom.
- Allow at least one meter extension above the step off point unless another form of adequate handhold is provided.

4.9 Personal Fall Protection

This standard differentiates between full fall restraint harness (which prevents a person from falling by a short, fixed line to a fixed anchor point), and a fall arrest harness (which arrests a fall). A restraint harness is preferable as it prevents a fall from occurring rather than mitigating injury from a fall.

A fall arrest harness is intended to safely stop a worker falling an uncontrolled distance and reduce the impact of the fall. Only when a restraint system is not practicable, should a fall arrest harness be considered.

All equipment used for fall arrest should be designed, manufactured, selected and used in compliance with the AS/NZS 1891 series of standards.

4.9.1 Harness Use

Key safety considerations in using harnesses are:

- that the equipment and anchorages are designed, manufactured, installed and periodically tested to be capable of withstanding the force applied to them as a result of a person's fall.
- fall arrest harnesses should be full-body or upper body (including shoulders).
- that workers using a fall arrest harness wear helmets with chinstraps to protect them in the event of a fall.
- that if the equipment has been used to arrest a fall it is not used again until it has been inspected and certified by a competent person as safe to use.
- When using a fall arrest harness, emergency and rescue procedures must be in place.
- They should only be used where it is not reasonably practicable to use higher level control measures.

4.9.2 Head Protection

Workers working at heights with fall arrest systems must wear a safety helmet to protect them from head injury during an uncontrolled fall. It must conform to one of the following standards, EN 397, EN 12492, ANSI Z891.1 2003, or equivalent standards. (This excludes the use of construction hard hats while working at heights).

4.9.3 Fall Protection Equipment Storage

All personal fall protection equipment must be stored as recommended by the manufacturer and regularly checked, cleaned (as recommended) and maintained.

4.10 Edge Markings

Where barriers or railings are not feasible, the edge of a platform should be marked in a bright contrasting colour in addition to other controls. Travel restraint systems should ideally be used so there is no risk of fall.

Underneath a platform or ladder should be clearly marked. A temporary platform should be marked by temporary barrier or cones.

4.11 "No Go" or Restricted Access Areas

These require clear signs warning people not to access the hazardous "height" area. Access control systems such as doors, gates and/or locking systems to ensure that no unauthorised person enters the area should be in place.

Barriers should be used in conjunction with signs to cordon-off areas where there is a risk of falling or being hit by falling objects. They should be highly visible and securely fixed to prevent displacement.

4.12 Organising and Sequencing of Work

Work should be organised so that people do not interfere with other workers or increase the risk to themselves or others. For example, sequence jobs so that different trades are not working above or below each other at the same time. Plan the work so work at height is minimised in extremely hot or cold weather.

4.13 Rescue Plan

Appropriate rescue procedures shall be identified, planned, and established. This will typically be in the case of someone suspended or stuck at height. Work at Height Permit Receivers must ensure that rescue procedures are communicated prior to work being started.

When developing rescue procedures consideration must be given to the following:

- The location of the work at height.

- Rescue or self-rescue situations.
- First aid or medical treatment requirements.
- Identification and control of hazards generated by the rescue process.
- Means of communication.
- Rescue and resuscitation equipment.
- Capabilities of rescuers.

5. TRAINING & COMPETENCY

5.1 USE OF SAFETY HARNESSES AND FALL ARREST SYSTEMS

Working at heights training is required and persons who are required to use a safety harness and fall arrest system must provide evidence of their training and competence.

WorkSafe's Good Practice Guidelines for Working at Height in New Zealand (April 2012) states:

"A recommended means of obtaining competence for workers who are involved in planning, installing, operating fall arrest systems and supervising staff is:

- 'NZQA Unit Standard 15757 – Use, install and disestablish proprietary fall arrest systems when working at height' or an equivalent or higher level of qualification.
- 'NZQA Unit Standard 23229 - Use safety harness system when working at height' is a prerequisite for achieving NZQA Unit Standard 15757."

The following unit is also recommended:

- NZQA Unit Standard 17600 explain safe work practices for work at heights.

This unit provides a higher level allowing personnel to rig anchors and access work areas using fall arrest and restraint systems in the workplace. It includes subjects including, but not limited to, risk assessment, anchor points, static lines, EWP's, planning, rescue and recovery.

5.2 USE OF MOBILE ELEVATED WORK PLATFORMS (MEWPS)

WorkSafe's Good Practice guidelines for Mobile Elevating Work Platforms (August 2014) sets out the following training recommendation, however there may be other ways to ensure competency:

MEWP TYPE	23960	23961	23962	23963	23964	23966
Scissor Lift (SL)	■					■
Truck Mounted (TM)		■				■
Self-Propelled Boom Lift (BM)			■			■
Trailer Mounted (TL)				■		■
Vertical Lift (VL)					■	■

5.3 SCAFFOLDING

WorkSafe's Good Practice Guidelines for Scaffolding in New Zealand (November 2016) sets out the following competency requirements:

4.1 COMPETENCY REQUIREMENTS BASED ON HEIGHT OF SCAFFOLD

HEIGHT OF SCAFFOLD *Measured from the highest component*	PERSON PERMITTED TO ERECT THE SCAFFOLD
Up to 5 m	**Competent person**: someone who has the knowledge and skills to carry out a particular task. Skills and knowledge may be acquired through training, qualification, or experience, or a combination of these. NZQA registered unit standards may assist in fulfilling the qualification requirement.
5 m and above	**Holder of appropriate class of certificate of competence**

Table 3: Competency requirements based on height of scaffold

Design (or verification of the design) of some types of scaffolding should be undertaken or verified by a chartered professional engineer (CPEng). See Section 7.3 for more information.

UNIT STANDARDS

Some unit standards may assist in demonstrating competence to erect scaffolds less than 5 m high.

UNIT STANDARD	TITLE
9184	Erect and dismantle non-notifiable prefabricated frame scaffolding up to five metres in height
13016	Demonstrate knowledge of the erection and dismantling of scaffolding up to five metres in height
13053	Erect and dismantle scaffolding up to five metres in height

Table 4: NZQA registered unit standards

6. NOTIFYING THE REGULATOR

The following work must be notified to WorkSafe NZ at least 24 hours prior to commencement:

- Construction work with a risk of falling 5 metres or more (see exclusions below). Exclusions:
    - work in connection with a residential building up to and including 2 full story's.
    - work on overhead telecommunications lines and overhead electric power lines.
    - work carried out from ladder only.
- Erecting or dismantling scaffolding with a risk of falling 5 metres or more.

7. MONITORING & REVIEW OF APPLICATION OF THE WORK AT HEIGHT STANDARD

Monitoring of application will be performed on a regular basis. The frequency of these will be dictated by the nature of the work at height and associated activity.

For work activity covered by a Permit to Work The PMNZ Permit to Work System and Permit Issuer will determine the nature and frequency of this.

For application of this Standard to work environments critical control effectiveness monitoring will be carried out as described in the PMNZ Critical Risk Famework.

8. ASSOCIATED DOCUMENTS

- PMNZ Critical Risk Framework
- PMNZ Hazard and Risk Management Procedure
- PMNZ Permit to Work Procedure
- PMNZ Health and Safety Management System (HSMS)

9. REFERENCES

9.1 RELEVANT LEGISLATION

Legislation available at http://www.legislation.govt.nz

- Health and Safety at Work Act 2015
- Health and Safety at Work (General Risk and Workplace Management) Regulations 2016

- Health and Safety at Work (Worker Engagement, Participation and Representation) Regulations 2016

9.2 OTHER DOCUMENTS

New Zealand/Australia

- Height - Best practice guidelines for working at height in New Zealand – WorkSafe 2014
- Mobile Elevating Work Platforms - Best practice guidelines – WorkSafe 2014
- Scaffolding in New Zealand - Good Practice Guidelines – WorkSafe 2016

Standards: New Zealand http://www.standards.co.nz and Australia https://infostore.saiglobal.com/

- AS 1418.13 Cranes (including Hoists and Winches) – Building Maintenance Units
- AS/NZS 1576 *Scaffolding* series
- AS/NZS 1657 Fixed platforms, walkways, stairways and ladders—Design, construction and installation
- AS/NZS 1891.1 Industrial fall arrest systems and devices—Harnesses and ancillary equipment
- AS/NZS 1891.2 supp:1-2001 Industrial fall arrest systems and devices—Horizontal lifeline and rail systems—Prescribed configurations for horizontal lifelines (Supplement to AS/NZS 1891.2:2001)
- AS/NZS 1891.3 Industrial fall arrest systems and devices—Fall arrest devices
- AS/NZS 1891.4 Industrial fall arrest systems and devices—Selection, use and maintenance
- AS/NZS 1892 *Portable ladders* series
- AS/NZS 4142.3 Fibre ropes—Man-made fibre rope for static life rescue lines
- AS/NZS 4389 *Safety mesh*
- AS/NZS 4488 Industrial rope access systems series
- AS/NZS 4488.2 Industrial rope access systems—Selection, use and maintenance
- AS/NZS 4576 Guidelines for scaffolding
- AS 2550.16 Cranes—Safe Use—Mast climbing work platforms
- AS/NZS 4994 Temporary edge protection series

10. DEFINITIONS & ABBREVIATIONS

Term	Definition
Anchorage / Anchor Points	Anchorage / Anchor Points are any fixed, travelling or self-locking anchorage that maybe used in conjunction with fall protection equipment, Ratings; 15kn 1 x person 21 KN 2 x people for Fall arrest.
Crane Man cages	Man Cage (Lift box) is a certified structure used to suspend personnel from a crane to conduct work at height.
Drop Zone	Drop Zone means the area underneath overhead work where objects from the overhead work location may fall
Edge Protection System, temporary & permanent	Edge Protection System complying with AS/NZS 1657 means guard railing of between 900mm and 1100mm high and a toe-board of not less than 100mm high fitted at sides, edges and openings except at points of access from a stairway or ladder. There shall be no opening of more than 450mm between guard railing (top rail and mid rail) and toe board and no more than 10mm between toe-board and platform deck
Fall Arrest Harness	Fall Arrest Harness means an assembly of interconnected shoulder and leg straps, with or without a body belt designed to spread the load over the body and to prevent the wearer from falling out of the assembly
Fall Arrest Static Line	Fall Arrest Static Line means a horizontal or near horizontal line, or vertical for a ladder, fall arrest system. The line is connected to a fixed anchorage point at each end, to which a lanyard can be attached. The line can be made of metal tube/ rod, steel wire rope, and synthetic webbing or synthetic rope.
Fall Arrest System	Fall Arrest System means a system designed to arrest the fall of a person. It consists of a Fall arrest harness connected to a lanyard assembly, as short as possible and slack working length not longer than 2 metres. Fall arrest systems only provide protection for the person using the safety harness once they have already fallen – they do not prevent falls. They are also only effective at heights above 6.5m. Residual Distance is the distance from the user to the ground after a fall. A distance of up to 1.0m should be allowed for the residual distance.
Fall/Travel Restraint System	Fall Restraint System means a full body harness connected to a restraint line and attached to an anchorage point. Its purpose is to limit generally horizontal movement from an anchorage point so that the user is totally restrained from physically reaching a position where either a free or limited free fall is possible or fall arrest harness

	connected to a lanyard assembly which restricts a free fall to not more than 600mm.
Ladder Fall Arrest Device	Ladder Fall Arrest Device means a device that travels along a fall arrest static line parallel to a ladder and locks to the line when loaded. The device can only be loaded in the direction of the line
Lanyard	Lanyard means a line used, usually as part of a lanyard assembly, to connect a fall arrest harness to an anchorage point or static line
Lanyard Assembly	Lanyard Assembly consists of a lanyard and a personal energy absorber. The lanyard assembly should be as short as practicable and the working slack length not more than 2 metres, (Limited to heights above 6.5 m)
Mobile Elevating Work Platform (MEWP)	A telescoping device, scissor device or articulated device, or any combination used to position personnel, equipment and materials at work locations above or below the base support surface.
Personal Energy Absorber	Personal Energy Absorber is used in conjunction with a fall arrest harness and lanyard to reduce the deceleration force imposed by a suddenly arrested fall and correspondingly reduces loading on the anchorage. The energy absorber may be a separate item or manufactured into the lanyard.
Rescue Plan	A rescue plan shall be developed before installing the harness system. It is critical that a suspended worker can be promptly rescued. This should include the rescue equipment required in order to effect a prompted rescue within ten minutes of falling, preventing long periods of suspension and to prevent suspension trauma.
Suspension Trauma	Suspension Trauma occurs when a person using a Fall Arrest harness remains immobile other suffering a fall and remains suspended. Suspension trauma can lead to fainting, nausea, breathlessness and if not quickly recovered unconsciousness and death.
Working at heights helmet	A safety helmet protecting a worker from head injury during an uncontrolled fall, conforming to the following standards, EN 397, EN 12492, ANSI Z891.1 2003, or equivalent standards. (This excludes the use of construction hard hats while working at heights)

11. REVIEW

This document will be reviewed every two years or after any critical event associated with it. The review will be performed by the Critical Risk Owner in consultation with key stakeholders, and any changes agreed by the Critical Risk Panel.

12. REVISION HISTORY

Version	Date	Brief Description of Changes	Owner
V001	20.09.23	New Document	GM - HSW

13. APPENDICES

Nil -