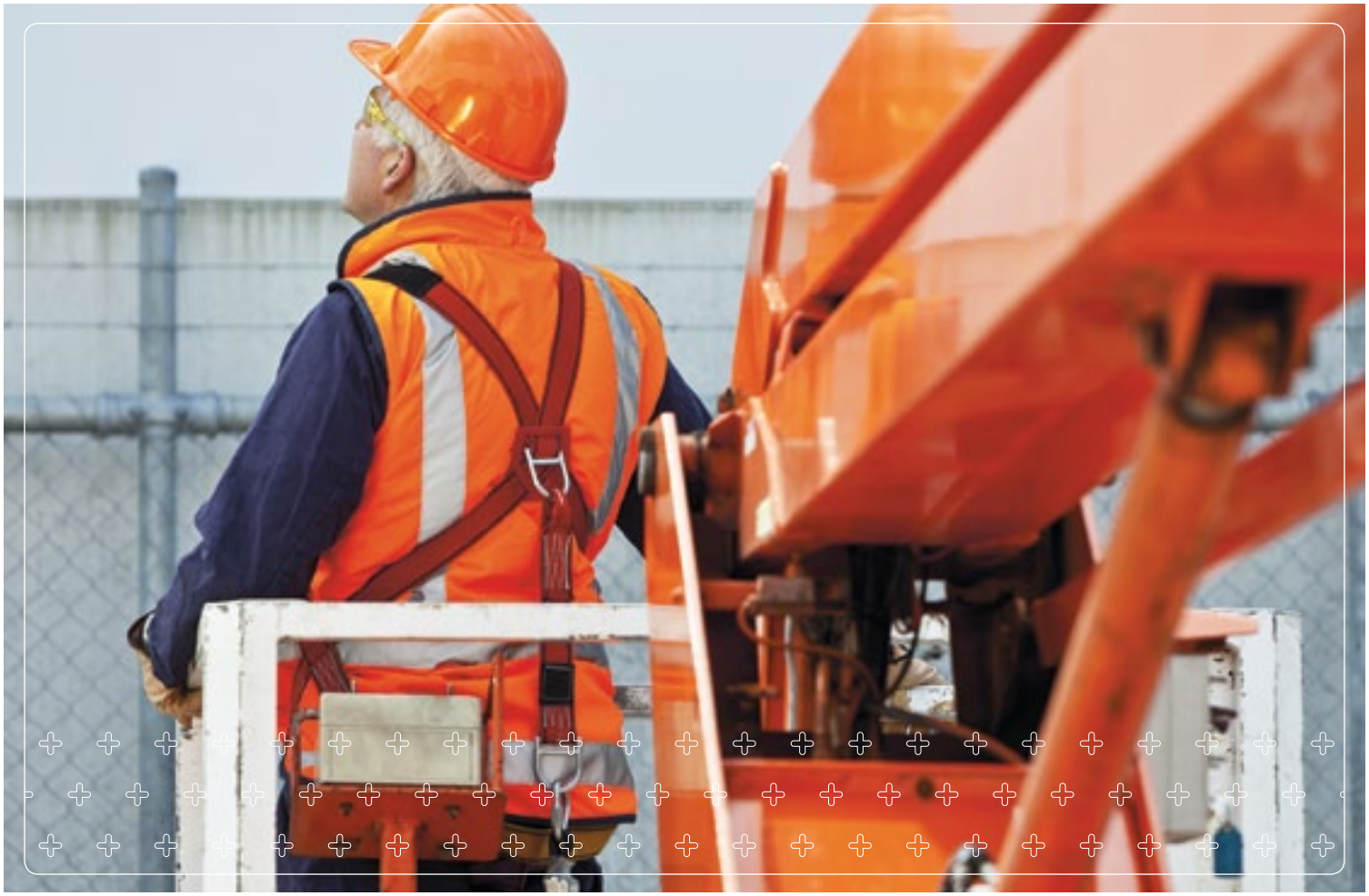
HEALTH & SAFETY

# Best practice guidelines for working at height in New Zealand

Modified July 2019



Ministry of Business, Innovation & Employment

Ministry of Business, Innovation & Employment

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The Ministry may change the contents of this guideline at any time without notice.

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**Note**: Figure 15 corrected July 2019.

# Acknowledgement

These Best Practice Guidelines are published by the Ministry of Business, Innovation and Employment and have been prepared in association with industry representatives involved in working at height. The purpose of these guidelines is to provide practical guidance to employers, contractors, employees and all others engaged in work associated with working at height on how they can meet their obligations under the Health and Safety in Employment Act 1992 and its associated Regulations. Accordingly, adherence to these Best Practice Guidelines is recommended.

It has been prepared in consultation with:

- Acrow Ltd
- Association of Wall and Ceiling Industries of New Zealand
- Certified Builders Association of New Zealand
- Crane Association of New Zealand
- Elevating Work Platform Association of New Zealand
- Fletcher Construction Company Ltd
- Height Safety Association of New Zealand
- Hire Industry Association of New Zealand
- Industrial Rope Access Association of New Zealand
- Registered Master Builders Federation
- Master Painters New Zealand
- Master Plumbers, Gasfitters & Drainlayers NZ
- New Zealand Specialist Trade Contractors' Federation
- New Zealand Contractors' Federation
- New Zealand Demolition and Asbestos Association
- New Zealand Safety Council
- Roofing Association of New Zealand
- Scaffolding and Rigging New Zealand Inc.
- Site Safe NZ Inc
- SKY Television Ltd
- Wesfarmers Industrial and Safety NZ Ltd

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This guidance also includes material from Worksafe Victoria (Australia).

# Contents

# 1. Introduction and context

## Preventing falls from height is a priority for the Ministry of Business, Innovation and Employment and it expects that work at height is actively managed so that people are not harmed.

Investigations by the Ministry of Business, Innovation and Employment into falls while working at height show that more than 50 percent of falls are from less than three metres and approximately 70 percent of falls are from ladders and roofs. The cost of these falls is estimated to be $24 million a year—to say nothing of the human cost as a result of these falls.

Factors contributing to injuries sustained from working at height include:

- lack of or inadequate planning and hazard assessment
- inadequate supervision
- insufficient training for the task being carried out
- incorrect protection or equipment choices
- incorrect use or set-up of equipment including personal protective equipment
- unwillingness to change the way a task is carried out when a safer alternative is identified
- suitable equipment being unavailable.

More injuries happen on residential building sites than any other workplace in the construction sector.

In 2012 the Ministry of Business, Innovation and Employment initiated a targeted harm reduction programme to address the issue through the Preventing Falls from Height Project. These guidelines are a critical element of the programme and will give all who are involved with working at height clear direction on how to manage the work in a way that will bring down the death and injury toll.

The Health and Safety in Employment Act 1992 (the HSE Act) sets out the performance required of duty holders. People with a duty must take all practicable steps to ensure the safety of workers when they are exposed to a fall or where the hazard of a fall exists.

Figure 1: A worker restrained in boom-style elevating work platform (EWP).

Where the potential of a fall exists, the following simple hierarchy of controls shall be considered by duty holders:

1. Can the job can be done without exposing persons to the hazard (*eliminate*). This can often be achieved at the design, construction planning and tendering stages.
2. If elimination is not practicable then steps should be taken to *isolate* people from the hazard. This can be achieved using safe working platforms, guardrail systems, edge protection, scaffolding, elevated work platforms, mobile scaffolds and barriers to restrict access.
3. If neither elimination nor isolation are practicable then steps should be taken to *minimise* the likelihood of any harm resulting. This means considering the use of work positioning systems or travel restraint systems, safety harnesses, industrial rope access systems and soft landing systems.

The *Best Practice Guidelines for Working at Height in New Zealand* is a generic guide that is not industry-specific. Many industries have their own guidelines that address the specific issues which are unique to their working environments, for example, the electricity sector. These also should be considered.

A hazard assessment shall be carried out for all work at height. It is essential that the hazards are identified before the work starts and that the necessary equipment, appropriate precautions and systems of work are provided and implemented.

*Doing nothing is not an option.*

# 2. Purpose

The *Best Practice Guidelines for Working at Height in New Zealand* provide health and safety guidance to all people working at height and those involved in the planning and preparatory stages of any project that includes work at height.

These guidelines also outline how people working at height and those involved in the process can meet their obligations under the HSE Act and the Health and Safety in Employment Regulations 1995 (HSE Regulations). These guidelines and adherence to them may be relevant as evidence in a court.

The guidelines apply to all people who have a duty (legal obligation) to provide a safe place of work and ensure safe work practice. A list of duty holders (pursuant to the HSE Act) is in section 8 of these guidelines.

Further information about working at height which supplements these guidelines is available on the Preventing Falls from Height page on the Ministry of Business, Innovation and Employment Labour Information website (www.dol.govt.nz/prevent-falls/).

These guidelines outline best practice methods for assessing the hazard of working at height and the control methods for preventing falls.

# 3. Scope and application

Work at height means working in a place where a person could be injured if they fell from one level to another. This can be above or below ground level.

Work at height does not include slipping, tripping or falling at the same level.

In these guidelines the terms "shall" and "should" are used. "Shall" is used where there is a requirement to meet legal obligations. "Should" is used as a way of indicating the practicable steps the Ministry expects to be taken on a particular matter.

### Regulation 21

Regulation 21 of the HSE Regulations is the source of the often-quoted "three-metre rule". It is mistakenly believed that no controls are needed where a person faces a fall of less than three metres. That belief is wrong and ignores the overarching duties in the HSE Act.

The HSE Act requires that if there is a potential for a person at work to fall from any height, reasonable and practicable steps must be taken to prevent harm from resulting.

*Doing nothing is not an option.*

### Short duration height work

Short duration work at height shall be treated the same way as any other activity at height. Appropriate fall prevention controls shall be put in place, regardless of the time duration of the task.

Short duration work means work that lasts minutes rather than hours. It may not be reasonably practicable to provide full edge protection for short duration work but it still needs to be considered during the assessment of hazards and should not be discounted.

# 4. Work plan

## Too many falls from height are caused by a failure to plan and organise work properly. Start by planning a safe approach.

Planning safe working at height means:

- *identifying* the hazards
- *assessing* the hazards
- *controlling* the hazards
- *monitoring* your approach
- *documenting* your approach.

### Identify the hazards

Identify any hazards of working at height where someone could fall. Four ways of identifying hazards are:

1. *Physical inspections*—walk around the workplace using a checklist to identify and manage hazards.
2. *Task analysis*—identify the hazards involved in each task of the job.
3. *Process analysis*—identify hazards at each stage of the production or service delivery process.
4. *Analysis of accident investigation*—identify hazards and causal factors from investigations involving similar types of work.

### Assess the hazards

Decide if the identified hazards are significant. How badly harmed someone would be if they fell and how likely a fall could be? If serious harm could result, then it's a significant hazard.

### Control the hazard

Now keep people safe from the identified significant hazards.

Select the best work method to **eliminate**, **isolate** or **minimise** (in that order) the potential for harm resulting from the significant hazard.

A combination of controls may need to be used to control the hazard. However, eliminating the hazard is the best option. But remember, doing nothing is not an option.

- Can the hazard of working at height be **eliminated**?
  - Could long-handled tools be used from ground level?
  - Could structures be built at ground level and lifted into position on completion?
- Can the hazard of working at height be **isolated**?
  - Could edge protection be used?
  - Could a guard-railed work platform (eg, scaffold or elevating work platforms) be used?
  - Could a total restraint system be used to prevent a fall occurring?
- Can the distance and impact of the fall be **minimised**? Only take this step when elimination and isolation options have been exhausted.
  - Could a fall arrest system be used?
  - Could nets or air bags be used to minimise the impact of a fall?

Where unguarded trestles or platforms are used, or the work will be done from a ladder or stilts, the risk of harm shall be minimised through management controls and the provision of appropriate training. Management controls include effective housekeeping protocols and clear procedures for safe use of the equipment.

*Group controls versus personal controls*

As well as the hierarchy of controls, think about the controls that protect multiple people from falling. These are group controls. The best work methods are those that don't require any active judgement by the workers to keep themselves safe, such as edge protection, scaffold, and elevating work platforms.

Personal controls only look after individuals and rely on active judgement by the user for them to work safely (eg, fall restraint harness and fall arrest). Training, inspection and equipment maintenance are critical for these personal control measures to be effective.

### How to select the right equipment

Figure 2 provides assistance for selecting the best equipment for keeping people safe at height. This figure steps through a comprehensive range of possible controls, starting with the most effective – *elimination*, and then working through *isolation* and *minimisation*.

As each control is assessed, it is practical to consider the following:

- **Working conditions**
  Slopes, poor ground, obstructions and traffic can determine the choice of work equipment. For example, an elevating work platform (EWP) could reach over bad ground or obstructions as long as its stability was not compromised. An EWP may be preferable to a tower scaffold in such circumstances.
- **Distance to be negotiated for access and egress**
  Ladders are likely to be less suitable for higher access.
- **Distance and consequences of a fall**
  A fall arrest system would be ineffective if the deployment length was greater than the fall height. The user would hit the floor before the system could deploy.
- **Duration and frequency of use**
  Long-duration, higher frequency work justifies a higher standard of fall protection, eg, a tower scaffold rather than a ladder. However, a ladder may be justified for short duration low-risk repetitive work.

› **Rescue**
If rescue from a deployed fall arrest system is going to be difficult, choose other work equipment, eg, an EWP.

› **Additional risk posed by the installation and removal of work equipment**
An EWP used by one person may entail less risk than exposing two or three people to erect a tower or scaffold for the one person to work safely.

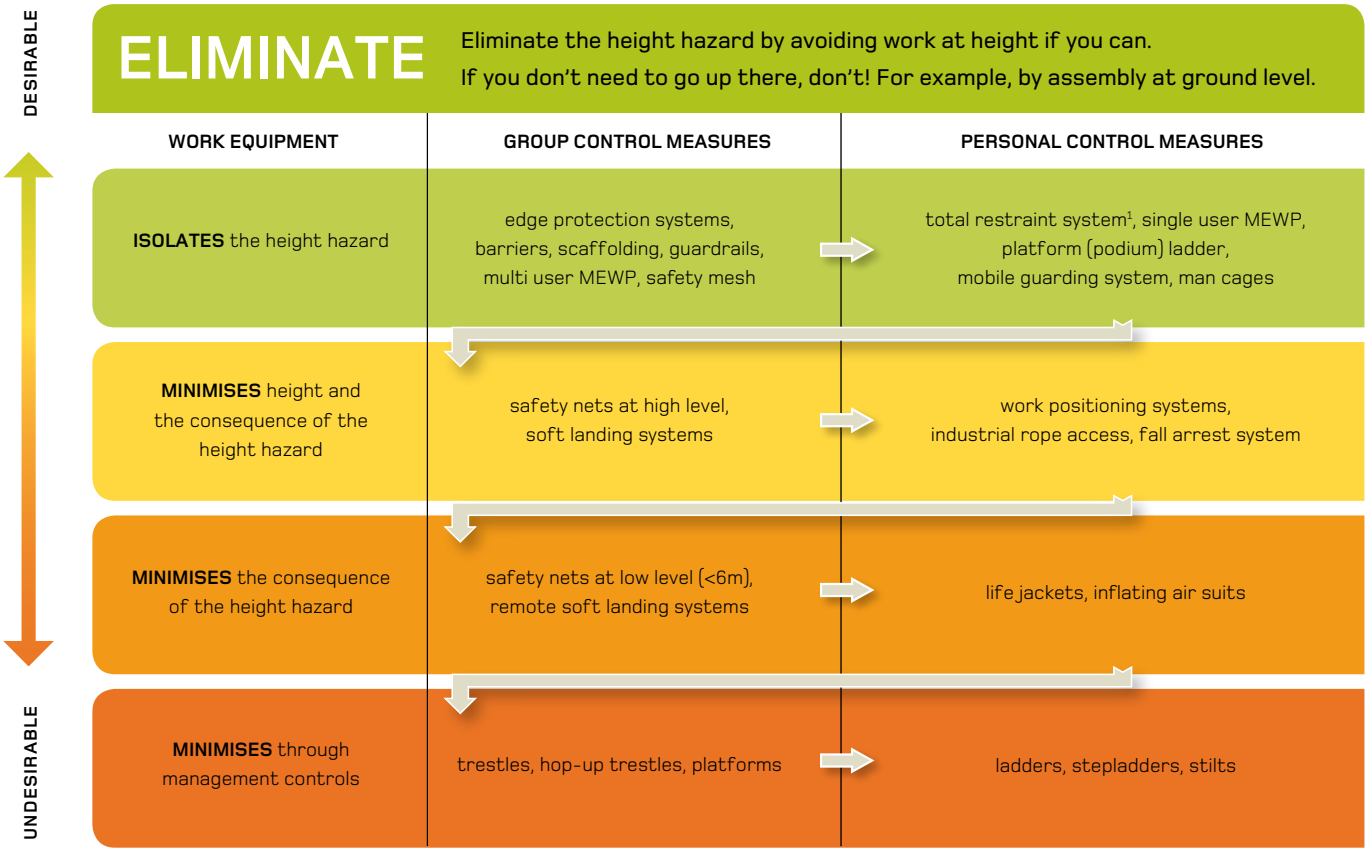
## Monitoring the approach to working at height safely

The approach should be constantly assessed to ensure it is effective and fit for purpose. This could mean carrying out regular inspections of the control measures, discussing the control measures at tool box talks and site meetings with contractors, and actively supervising the work.

## Document the approach to working at height safely

A good record of the planning process and communications with clients, contractors, workers, and other site visitors should be maintained.

Figure 2: The selection of work equipment linked to hierarchy of controls.




1. A total restraint system prevents the wearer from being exposed to a height hazard. Because a harness is classified as personal protective equipment it is treated as minimisation. In the order of desirability in fall prevention, it features higher than other minimisation methods.

# 5. Elimination controls for height hazards

## The best method of hazard control is eliminating the potential of a fall.

Consideration of elimination controls should occur early in the project development stage in order to allow necessary design, planning and coordination. Eliminating the potential of a fall can be achieved through:

- safer design
- using alternative construction methods
- using specific tools and equipment.

### Safer design:

Examples of safer design include:

- use of low-maintenance building materials
- locating air conditioning and similar plant at ground level
- installing walkways with handrails
- having permanent guardrails or other forms of edge protection, for example parapet walls.

### Using alternative construction methods:

Examples of alternative construction methods include:

- prefabricating wall frames horizontally before standing them up
- using precast tilt-up concrete construction instead of concrete walls constructed in situ
- prefabricating structures on the ground or before installation and lifting them into position
- pre-painting fixtures/roofs before installation
- installing and maintaining antennae and satellite dishes or air conditioning in areas other than at height.

### Use of tools and equipment:

Examples of tools and equipment include using long-handled tools, such as paint rollers or window brushes with extendable handles, thereby eliminating the need to work from a ladder.

# 6. Isolation and minimisation controls for height hazards

This section outlines a range of controls to isolate or minimise the potential for harm resulting from a fall. The preferred approach is to apply group controls that isolate multiple workers from the risk of falling.

Examples of group controls are:

- scaffolding
- edge protection
- mechanical access plant
- safety mesh.

Controls such as harness systems and temporary work platforms provide a lesser form of protection, and should only be considered when group controls are not practicable.

**Figure 3: Covered scaffolding on a single storey building.**

## 6.1 Scaffolding

Scaffolds are a common way to provide a safe work platform. There are a wide variety of scaffolding systems available.

All scaffolds should comply with the *Scaffolding, Access & Rigging New Zealand (SARNZ) Best Practice Guidelines for Scaffolding in New Zealand* or equivalent guidelines or a higher standard.

All scaffolds should be erected, altered and dismantled by persons who have been trained and have suitable experience with the type of scaffolding being used.

All scaffolds from which a person or object could fall more than five metres, as well as all suspended scaffolds, should 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 the Ministry of Business, Innovation and Employment as particularly hazardous work. A scaffold register should be kept on site as a

**Figure 4: Scaffolding on a residential building.**

**Figure 5: Scaffolding on a multi-storey building.**

record of regular inspection. More information about Notification of Particular Hazardous Work can be found in section 8.6.

All scaffolds shall be supplied with adequate information for the scaffold user, such as a scaffold tag or handover certificate. The information supplied shall include:

- its intended use
- safe working load
- dates of inspections (as applicable—the scaffold provider can advise the frequency of these dates)
- manufacturer's instructions for assembly
- any special conditions and limitations.

If a scaffold has been altered, modified, tampered with and/or appears to be unsafe, the scaffold shall not be used until it has been checked and certified as safe by a competent person as outlined in the *SARNZ Best Practice Guidelines for Scaffolding in New Zealand*.

Where work is performed using mobile scaffolds, employers should ensure that workers understand that the scaffold should:

- be erected by a competent person and used in accordance to the manufacturer's specifications
- remain level and plumb at all times
- be kept at least one metre from open floor edges and openings unless the edge is protected to prevent the scaffold tipping
- never be accessed until all the castors are locked to prevent movement
- never be moved while anyone is on it
- be clear from overhead powerlines.

Scaffolds must have:

- the height to the top-most platform not greater than three times the minimum base dimension
- safe access
- stable foundations
- stable and safe work platforms and enough room to work.

Where a scaffold is used as a means of protecting people working on a roof, it is preferred that the scaffold is set up in a manner that prevents a fall from occurring, regardless of the distance of the fall.

For further information on the safe selection, erection and use of scaffolds, including suspended work platforms, refer to the *AS/NZS 1576.1 – 6 Scaffolding Series*, and *SARNZ Best Practice Guidelines for Scaffolding in New Zealand*.

## 6.2 Edge protection

Edge protection is used to prevent persons, objects or materials from falling. Areas where the likelihood of a fall exists and edge protection should be used include:

- perimeters of working places
- openings
- where there is brittle material that cannot safely support the weight of a person.

Edge protection may be temporary, for example during the course of construction. It may also be used in completed buildings, for example a permanent balustrade preventing a fall from a mezzanine floor.

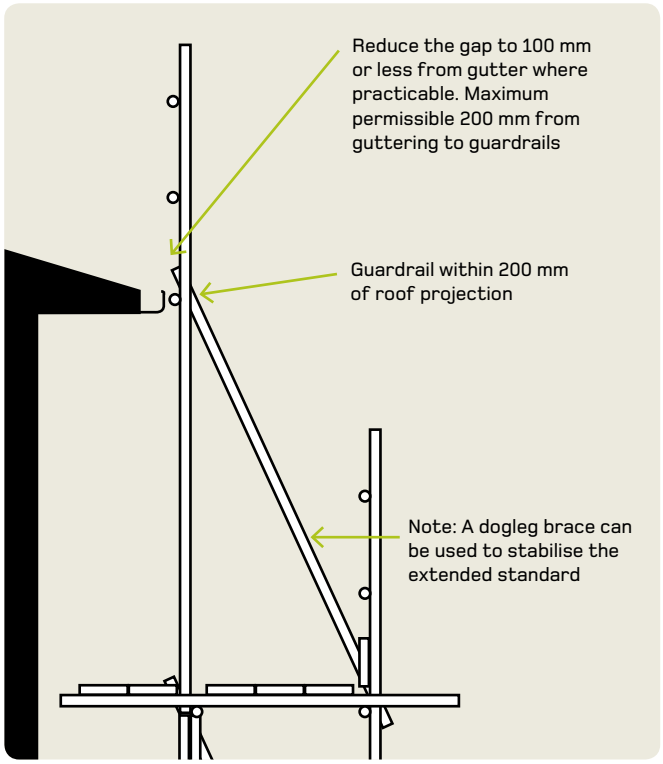



Figure 6: Scaffolding used as edge protection on a roof.

Figure 7: Example of edge protection on a roof of a residential home.

Edge protection may involve:

- a proprietary (engineered) system
- materials to form a guardrail and/or physical barriers
- erected scaffolding that supports a temporary edge-protection system
- a combination of solutions.

### Integrity of the edge protection

Ensure edge protection is:

- erected, used and maintained in accordance with its design information
- regularly inspected by a competent person
- inspected after a storm or other occurrence that could affect its purpose to prevent falls
- free of any defects before use.

### Erecting edge protection

Persons erecting edge protection could potentially be exposed to the hazard of working at height until the installation is completed. Pre-planning, such as a task analysis and a hazard analysis, will identify the hazards involved and which controls can be implemented to prevent harm during the erection process. Installation workers must have hazard controls in place.

### Guardrails

A guardrail is a barrier that is capable of physically preventing workers from falling. Guardrails are a group control that can be installed to protect workers from building edges, roof edges, building openings, lift shafts and other similar ducts with wall or floor openings.

A guardrail must be constructed to withstand the forces that are likely to be applied to it during as a result of the work. Temporary guardrails should generally be constructed using a proprietary metal tube and clip system.

*General guardrail systems* shall be between 900 mm and 1100 mm in height with a single mid rail located halfway between the work platform and the top rail. If there is a potential for tools or objects to be dropped during work a toe board should also be installed. Refer to the *SARNZ Best Practice Guidelines for Scaffolding in New Zealand.*

Guardrail systems that are installed to protect an edge of a sloping roof surface have specific design requirements because of the increased potential for workers to fall against them and the potential for a person to slip under the mid rail.

*Guardrail systems for sloping roofs* shall be configured to prevent a worker sliding between the roof surface and the rails. It is important that such systems are installed by a competent person. For guidance on the configuration of such edge-protection systems refer to the standard *AS/NZS 4994.2:2009 Temporary edge protection – Roof edge protection – Installation and dismantling.*

If the slope of the roof exceeds 25 degrees, a roof ladder should be used in addition to perimeter guardrails (or a harness system) to reduce the likelihood of worker slipping.

Floor openings may also be protected by a fit-for-purpose, fully decked working platform. Work inside of shafts should, when practicable, be undertaken from a fully decked working platform; if this is not practicable, a harness system shall be used.

#### *Barriers to restrict access (also known as bump rails)*

Barriers should be used to cordon off elevated areas including roofs, balconies and open excavations where edge protection is not provided and people are not permitted access. The barriers should be secure and with access restricted to authorised people only. Signs should warn against entry to a cordoned-off area.

Barriers should be placed at least two metres in from any unprotected edge or opening. They should be highly visible and capable of remaining in place during adverse weather conditions.

#### *Installing timber temporary edge protection*

Temporary timber guardrails are sometimes used for edge protection. Timber edge protection shall be constructed by a competent person and extreme caution is required to ensure the appropriateness of all materials used. Construction must

take into account the forces that are likely to be applied to the edge protection as a result of the work undertaken.

For further information, refer to the *SARNZ Best Practice Guidelines for Scaffolding in New Zealand: Section 6.14 Timber scaffolds*.

## 6.3 Mechanical access plant

Mechanical access plant includes all mechanically operated plant that can be used to gain access for the purpose of working at height. Commonly used mechanical access plant include:

- mobile elevating work platforms
- forklift platforms
- crane lift platforms
- vehicle extension arms
- knuckle boom.

These are specialised pieces of equipment often designed for particular types of operation. It is essential that the correct type of machine is selected for the intended work. The operator should be competent to operate the type of mechanical access plant.

It is essential that these types of plant are operated within the manufacturer's guidelines.

### Mobile elevating work platforms (MEWPs)

Common forms of MEWPs include cherry pickers, scissor lifts, hoists and travel towers. There are some key safety issues that should be considered before using a MEWP.

Some MEWPs are designed for hard flat surfaces only (eg, concrete slab), while others are designed for operating on rough and uneven terrain.

Units powered by internal combustion engines are not suitable for use in buildings or areas with poor natural ventilation unless appropriate artificial ventilation is provided.

Mobile elevating work platforms:

- need to be clearly marked with the rated lifting capacity
- need to have a six-monthly inspection certificate displayed.

Before use the operator should ensure that:

- the MEWP has been inspected and tested within the previous six months
- the MEWP is set up level and on firm surfaces
- hazards associated with power lines are appropriately controlled
- the MEWP will not create a hazard, eg, the boom will not swing out into the path of other vehicles
- the MEWP will not be overloaded or used as a crane. (As an estimate, a person plus light tools is deemed to weigh 100 kg.)

An operator in a boom-style MEWP shall wear a safety harness with a lanyard incorporating a short energy absorber attached to a certified anchor point. The line should be just long enough to provide free movement within the confines of the bucket.

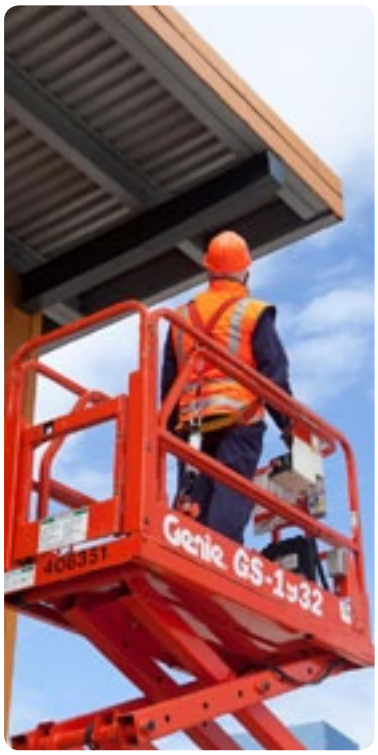



**Figure 8: A worker restrained in scissor lift.**

Operators should not over-reach or climb over the rails of the MEWP platform to reach a work area. The soles of both feet should be kept on the work platform.

Scissor lifts and other elevating work platforms such as cherry pickers can be used as a means of access to a work area. In this case, the worker should be protected by a double lanyard system fixed to a certified anchor point.

On a scissor lift a harness should be worn unless a hazard assessment has clearly demonstrated that the work can be undertaken without a harness and there is no risk of falling. The manufacturer's instructions should also be followed.

Some content from *Worksafe Victoria © Prevention of Falls in General Construction.*

**Figure 9: A worker restrained in a boom-style elevating work platform.**

## Forklift platforms

Work platforms may be constructed to be raised or lowered using a forklift and these should be used in accordance with the *Approved Code of Practice for Training Operators and Instructors of Powered Industrial Lift Trucks (Forklifts) – Ministry of Business, Innovation and Employment.* Non-integrated work platforms should be designed for the specific model of forklift truck.

Forklift work platforms should:

- be made in accordance with *Australian Standard AS 2359.1, Powered Industrial Trucks*
- be fitted with guardrails, mid rails and kickboards
- only have any gates that open inwards and that are installed with a spring-loaded latch
- have a two-metre-high guard that is sufficiently wide to prevent any contact with the lifting mechanism fitted to the back of the platform
- be operated with the tilt lever on the forklift controls locked out or made inoperable; alternatively, a fall-restraint system comprising a full harness and short lanyard, allowing free movement only within the platform confines, shall be used
- have operating instructions available

- have the safe working load displayed in a prominent position
- have the platform secured to the forks in such a way that it cannot tilt, slide or be displaced
- only be used by a competent forklift operator
- only be used while an operator is at the controls of the forklift or there is an independent means of access to and egress from the platform.

### Crane lift platforms

Where no other practical and suitable method is available, a working platform may be suspended from a crane and the worker must be attached to the hook. The crane operator and the person using the platform should discuss the operation and maintain direct communication by line of sight or by telecommunication at all times.

For further guidance refer to *AS/NZS 2550.1 Cranes, Hoists and Winches; Approved Code of Practice for Cranes; Crane Safety Manual Crane Association of New Zealand; NZS 3404 – The Steel Structures Standard;* and *NZS/ASME/ANSI B56.1 Safety standard for low and high lift trucks*.

### Knuckle booms

A knuckle boom has a second articulated joint partway along the arm to allow for extra flexibility and reach for the work platform. The arm can be folded away when not in use, and to vary the reach in use. Knuckle booms should be used and maintained in accordance with the *Approved Code of Practice for Power-Operated Elevating Work Platforms.*

If an extension arm is attached to a MEWP, a design certificate from a chartered professional engineer (CPEng) with experience in this field shall be obtained. Such certificates shall show that the platform meets the criteria in *AS 2359.1 Powered Industrial Trucks* for a power-operated work platform in relation to stability, strength and safety, provision of operating instructions and rated capacity.

Further information on the safe use of MEWPs is provided in the *AS 2550.10 Cranes, hoists and winches – Safe use – Mobile elevating work platforms.*

## 6.4 Safety mesh

Safety mesh is the preferred system for protecting construction workers against falling through a roof while they are laying roof sheets. If securely fixed, it also provides fall prevention for maintenance and repair workers.

Safety mesh should be used in conjunction with appropriate edge protection such as guardrails. If isolation is not practicable then a safety harness system should be used.

Safety mesh should comply with *AS/NZS 4389 Safety Mesh*. This specifies the minimum requirements for the design, construction, testing and installation of safety mesh for use in domestic, commercial and industrial building applications.

### Installing safety mesh

People installing safety mesh should only use mesh where the product information has been made available by the manufacturer/supplier, including evidence of compliance with *AS/NZS 4389 Safety Mesh.*

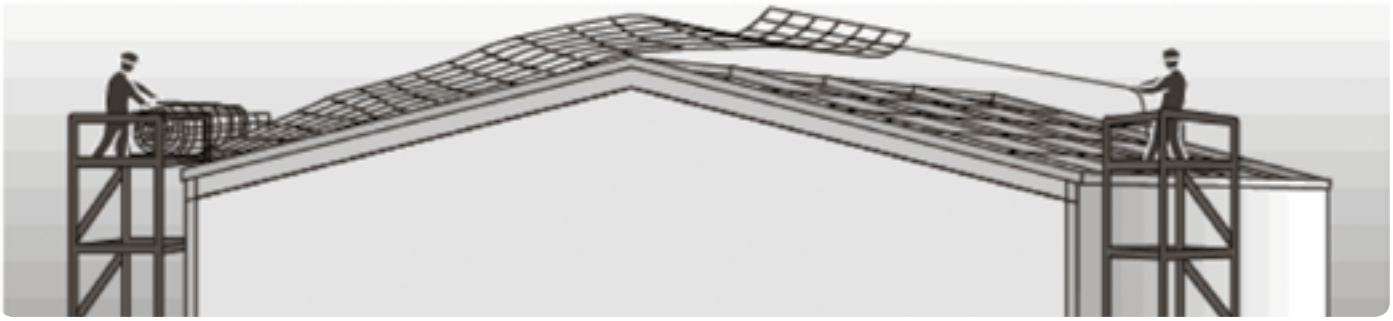
Particular care is required to ensure that the mesh is securely connected to the structure and the overlap between adjacent sections of mesh is sufficient to achieve the necessary strength to resist the force of a person falling onto it.

Use scaffolding or elevating work platforms to obtain safe access for installation workers.

The safety mesh should be covered by the roof cladding as soon as possible after it has been installed. However, the people installing the cladding should ensure that this does not happen until such time as the mesh has been formally inspected by a competent person as being installed in accordance with the manufacturer's instructions.

The mesh is first cut to the right length and is then run out over the roof using a continuous rope system. Installers should not walk across the open purlins to draw the mesh.

Figure 10: Example of how safety mesh should be safely installed.



Figures 11 and 12: Two examples of installed safety mesh.

## 6.5 Harness systems

A harness system enables a person to be positioned and safely supported at a work location for the duration of the task being undertaken at height. Harness systems are used for gaining access to, and working at, a workface where there is a risk of a fall. The most common harness systems include:

- total restraint systems
- fall arrest systems
- work positioning systems
- industrial rope access systems (see page 25 for relevant information sources)
- safety lines, lifelines, prescribed or proprietary (engineered) systems.

### Total restraint system

The preferred harness system for working at height is the **total restraint system** (sometimes referred to as a travel restraint system). This system protects a user from approaching an unprotected edge, thereby preventing a free fall from occurring.

The system consists of equipment rated for a fall—such as a full body harness that is connected by a lanyard or safety line to a suitable anchorage point or horizontal lifeline.

### Fall arrest system

A fall arrest system is designed to support and hold a person in the event of a fall. It is **not** a work positioning system as they are not designed to support a person while working.

Only when total restraint is impractical, should a **fall arrest system** be considered. Fall arrest is a minimisation measure as it does not prevent the fall from occurring. These systems require a higher level of operator competency and supervision.

A fall arrest system is an assembly of interconnected components consisting of a harness which is connected to an anchorage point by means of a lanyard incorporating an energy absorber. They can be used where workers are required to carry out their work near an unprotected edge.

When fall arrest systems are used an appropriate safety helmet shall be worn to protect the worker from head injury during an uncontrolled fall.

### Work positioning systems

Work positioning systems enable a person to work supported in a harness under tension in a way that a fall is prevented. Generally the arrangement allows for the worker to maintain a stable position and to work hands-free while completing a task. The harness arrangement should not allow a fall of more than 600 mm. This is generally achieved through the use of short lanyards of 300 mm.

Figure 13: Minor roof repairs can be undertaken with work positioning.

### Anchorage

*Permanent anchors*

A permanent anchor point should be designed by a chartered professional engineer. The manufacturer and designer should ensure that each permanent anchor is

uniquely identified so that its installation, testing and maintenance can be tracked during its lifetime.

Permanent anchor systems are exposed to environmental and other working stressors during their lives. They are also reliant on the condition and strength of the material they are installed into. Therefore, anchor testing and inspection regimes should consider all these factors.

The expected design life of the anchor and the required maintenance should be specified by the designer.

Anchors should have a rated load of 15 kN. All fall arrest and abseil anchors should be tagged and recertified annually to remain compliant with *AS/NZS 1891.4*.

### *Temporary anchorage*

**Figure 14: Working within an arc below the inertia reel.**

A temporary anchor can include proprietary fittings or an appropriate arrangement of strops and ropes. All temporary anchors shall be set up by a competent person. Where a proprietary temporary system is used, it shall be installed in accordance with the manufacturer's or designer's instructions and specifications.

The roof or other building component to which an anchor is to be attached shall be checked by a competent person to verify that it is suitable for supporting the anchor.

Anchor points should ideally be positioned above head height of the worker to limit the free-fall distance. This is particularly important when using an inertia reel, as this will prevent the line making contact with an obstruction and to limit the free-fall distance to that recommended by the designer/manufacturer.

For further information, refer to the *Best Practice Guidelines for Industrial Rope Access in New Zealand*.

### *Training*

All harness work requires training and competence and only trained and competent personnel can install and use harness systems on site. Persons not trained should be inducted by the system installer or other qualified persons before they are permitted to use the system. They should also be supervised at all times by another person who is also trained and competent.

For workers who are to complete basic work while under total restraint, a recommended means of achieving competence is *NZQA Unit Standard 23229 – Use a safety harness for personal fall prevention when working at height*, or an equivalent or higher qualification.

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* is a prerequisite for achieving *NZQA Unit Standard 15757*.

*Minimising the potential fall distance*

When a fall arrest system is being used, the potential free-fall distance should be less than two metres. Energy-absorbing lanyards should not be used in conjunction with inertia reels as this can result in an excessive distance of fall prior to the fall being arrested.

There should be sufficient distance between the work surface and any surface below to enable the system, including the action of any shock absorber, to deploy fully.

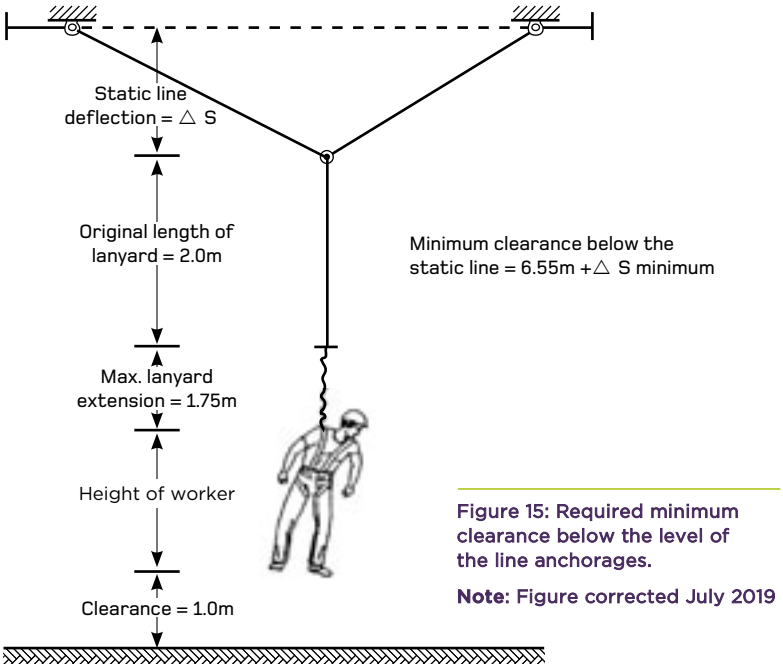



**Figure 15: Required minimum clearance below the level of the line anchorages.**

**Note:** Figure corrected July 2019

*Maintain minimum of slack in fall arrest line*

There should not be excessive slack in the fall arrest line between the user and the attachment. The anchorage point should be as high as the equipment allows. Never work above the anchor point, as this will increase the free-fall distance in the event of a fall, resulting in higher forces on the body and greater likelihood of the arrest line snagging on obstructions.

*Positioning the inertia reel anchor points*

Inertia reels should be anchored above head height to prevent the line making contact with an obstruction and to limit the free-fall distance to that recommended by the designer/manufacturer. The user should work within an arc of up to 30 degrees below the inertia reel unless otherwise specified by the manufacturer.

*Pendulum effect*

The pendulum effect is a potential hazard with the use of harness systems. It can occur in two situations, swing down and swing back.

To prevent the pendulum effect from occurring:

- place the anchorage point at a right angle to the position of the line at the perimeter edge; a mobile anchorage is of assistance here
- use secondary anchor points and/or anchor lines
- use a perimeter guardrail to prevent any fall over the perimeter edge.

Where the pendulum effect is possible, it is better to use a work positioning system or another means of access such as an elevating work platform.

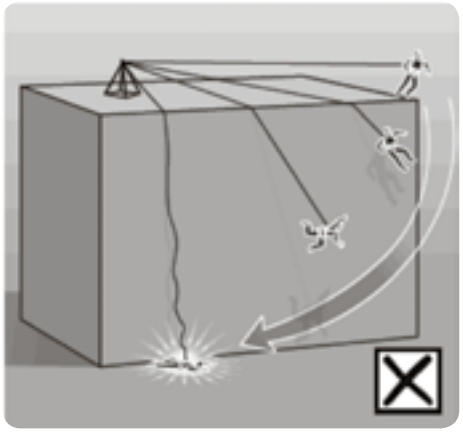


**Figure 16: Example of a poorly placed anchor point and rope that is too long.**

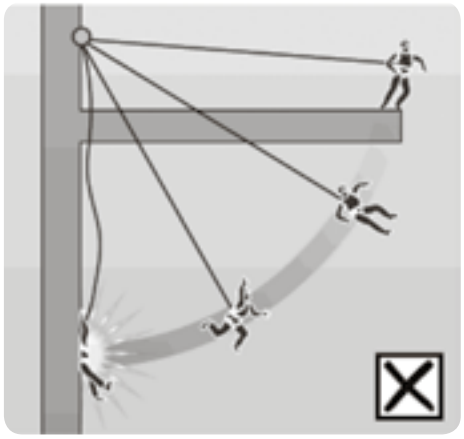


**Figure 17: Example of a poorly placed anchor point that leads to swing back.**

*Rescue planning*

A rescue plan should be developed before installing the harness system. It is critical that a suspended worker can be promptly rescued.

A worker suspended in a harness can develop suspension intolerance. This is a condition in which blood pooling in the legs can lead to loss of consciousness, renal failure and, in extreme cases, death.

A pre-rigged retrieval system is a good way of ensuring prompt rescue. A rescue plan should consider:

- the rescue method, ie, use of a crane or elevating work platform
- available equipment
- responsibilities and training
- communication
- medical requirements
- involving the emergency service.

Workers using fall arrest systems must never work alone.

A recommended means of achieving competency for rescue planning is *NZQA Unit Standard 23232 – Develop a rescue plan for recovery of a suspended individual after a fall* or equivalent or higher standard. *NZQA Unit Standard 23229* is a prerequisite for achieving *NZQA Unit Standard 23232*.

### *Industrial rope access*

Industrial rope access is a highly specialised work method. For further guidance see:

- *AS/NZS 1891 Industrial Fall Arrest Systems and Devices Series (Parts 1–4)*
- *Industrial Rope Access in New Zealand Best Practice Guidelines*
- *AS/NZS 4488.1 Industrial rope access systems – Specifications*
- *AS/NZS 4488.2 Industrial rope access systems – Selection, use and maintenance*
- *The Approved Code of Practice for Arboriculture*
- *IRAANZ Best Practice Guidelines Industrial Rope Access in New Zealand.*

### *Lifelines/safety lines*

Australia/New Zealand Standards that apply are:

- *AS/NZ1891.4:2009 – Industrial fall-arrest systems and devices – Part 4: Selection, use and maintenance*
- *AS/NZ4488.1:1997 – Industrial rope access systems – Part 1: Specifications*
- *AS/NZ4488.2:1997 – Industrial rope access systems – Part 2: Selection, use and maintenance.*

### *Prescribed systems*

A prescribed system is a lifeline that is designed and installed in accordance with *AS/NZS 1891.2 Supp 1:2001*. The end anchor loadings on these systems may reach up to 63.3 kN.

### *Proprietary systems*

A proprietary system is a lifeline that is designed and installed in accordance with a manufacturer's specification. These systems usually include shock-absorbing components that reduce the end anchor loadings of the lifeline. Some proprietary systems are installed with top-fixed anchors that depend partly on the strength of the roof sheeting.

Refer to *AS/NZ 1891 parts 1–4* and the manufacturer/designer instructions and/or specifications.

### *Engineered systems*

An engineered system is a lifeline that is designed and installed by a qualified structural engineer. These are not as common as proprietary systems but will accommodate most fall arrest systems.

Figure 18: To access stock a worker uses a step platform with barriers on all sides.

## 6.6 Temporary work platforms (TWPs)

Temporary work platforms should be constructed by a competent person and should be suitable for carrying out specific work that is most often under five metres in height.

They are either:

- a proprietary (engineered) work platform constructed and used in accordance with the manufacturer's instructions, or
- a constructed work platform using construction materials and built by a competent person.

### Scaffold temporary work platforms

The most common example is scaffolding—proprietary and tube and clip. The *SARNZ Best Practice Guidelines for Scaffolding* provides further information on this type of temporary work platform.

Guardrails, including mid rails and toe boards, should be provided on the exposed sides and end of all working platforms regardless of height.

All scaffolds or TWPs, from which a person may fall five metres or more, are required to be notified to the Ministry of Business, Innovation and Employment, and shall be erected by a person holding a relevant certificate of competency.

### Non-scaffold temporary work platforms

A variety of non-scaffold temporary work platforms are available, some with guardrail protection and some without. Where the work platform does not have any guardrail system it should be restricted to low-level use, for example, a hop-up platform or a step platform on a stepladder. The platform should be sufficient in area for the users to undertake their work safely.

Figure 19: Folding platform (with no edge protection).

Figure 20: Folding platform (with handrail).

Figure 21: Folding platform (with guardrail).

Figure 22: Podium platform with guardrail on three sides.

Proprietary TWPs are generally used on firm level ground and the manufacturer's instructions for the use of the platform shall be followed.

A hazard assessment shall be carried out to determine which TWP should be used for completing the working at height task. Always apply the hierarchy of controls.

Figure 23: A hop-up trestle.

### Podium, folding, and step-up platforms

These platforms come in a variety of design configurations and may be of a fixed height or have adjustable deck heights. They are available with full guardrail, handrail only, or no edge protection.

Podium, folding or step-up platforms and platforms with no edge protection are generally intended for short-term interior work. They should be used on firm level ground. If used outside on soft ground, sole boards should be used to ensure the podium platform is stable.

### Trestle scaffolds

Figure 24: A worker stands on a trestle scaffold.

Trestle scaffolds are only suitable for low-level work because of the difficulty of incorporating a guardrail system. An example of low-level work is when the worker may need to paint a low ceiling.

Guardrail systems are available for trestles and should be used wherever possible. Trestles without a guardrail system should only be used when the duty holder's hazard management systems show that the likelihood of a person falling and injuring themselves is low and the work is of short duration.

The hazard assessment also must show that other alternative controls that give more protection cannot be used.

Steel or aluminium fold-out trestles are used in conjunction with scaffold boards or staging. These trestles shall be manufactured and used in accordance with *AS/NZS 1892 Portable Ladders*.

Another form of trestle is a self-supporting stand including horizontal members designed to support one end of a light-duty work platform. It may be folding or telescopic.

The design and construction of these trestles shall comply with *AS/NZS 1576.5* or other accepted international standards.

### Step platforms

Figure 25: A worker uses a step platform.

A step platform provides a safer alternative to a stepladder, especially where the task involves working at height for extended periods or with restricted vision (such as welding or other hot work). The step platform is more stable and provides a much larger work surface than the stepladder. Some models are collapsible and should comply with *AS/NZS 1892.1*.

### Stilts

Stilts allow a construction worker to reach high places when taping, stopping and texturing plasterboard in the interior of the building. The stilts can also be used for other construction work. They should not be used on scaffolding or other equipment that might be used to elevate the worker.

Use stilts on even surfaces and on floor areas clear of rubbish or building materials, and where openings are covered. Stilts should be properly maintained between uses according to the manufacturer's instructions.

The use of stilts raises a worker's centre of gravity, making them less stable and prone to tripping, overbalancing, or falling through openings in floors or walls. Only workers competent in the use of a particular type of stilt may be permitted to use them.

Figure 26: A plasterer uses stilts to comfortably reach above door frames.

For the safe use of stilts:

- inspect the stilts every time before use
- use only on hard, level surfaces
- clear the area where workers will be working on stilts of any debris or construction materials
- provide barriers across any openings such as doors or windows that could create a fall hazard
- work directly over the stilts without reaching or leaning the body
- limit the amount of weight carried while working on the stilts.

*© Worksafe Victoria – Use of Plasterers Stilts.*

### Constructed temporary work platforms

Design, fabrication and erection of temporary work platforms from building materials must meet sound design and construction principles as prescribed by existing construction standards such as *SARNZ Best Practice Guidelines for Scaffolding in New Zealand.*

Where construction workers build their own work platforms they shall ensure that:

- no alternative forms of work platform are readily available
- they are constructed from suitable materials
- competent and skilled tradesmen construct or supervise the construction of the work platform
- the proposed structure can safely support the tradesmen, materials and plant necessary to complete the work
- guardrails, toe boards and mid rails are in place
- the proposed structure can stand up to the construction activities and processes necessary to complete the work safely.

Temporary work platforms must never be constructed from construction materials such as pallets, bricks, concrete blocks, buckets or barrels, furniture, nail boxes, or packing crates.

The platform width needs to be a minimum width of 675 mm.

The narrowest width of the platform should never be less than half of its height from the ground at the highest point. The span between supports should not exceed the recommended specifications of the *SARNZ Best Practise Guidelines for Scaffolding in New Zealand.* In the case of timber, maximum working load will be as for light-duty loading outlined in the *SARNZ Best Practise Guidelines for Scaffolding in New Zealand*. The maximum width of the platform width is 1200 mm wide and is covered in the general principles of light-duty platforms from the *SARNZ Best Practise Guidelines for Scaffolding in New Zealand.*

## 6.7 Catch platforms

A catch platform is a platform attached to a scaffold to contain debris falling from a working platform. A cantilevered portion of a catch platform is also called a fan. These platforms are designed to catch debris and should not be used to catch persons.

The platform shall be of robust construction and designed to sustain the maximum potential impact load. Scaffolding components may be used to construct a mobile catch platform.

More information on catch platforms and fans on scaffolds can be found in the *Best Practice Guidelines for Scaffolding in New Zealand.*

## 6.8 Soft landing systems (SLSs)

The purpose of a SLS is to mitigate the effect of falls from height during construction by providing an energy-absorbing landing area. Most SLSs have been designed for use principally inside a building where the bags will be enclosed by walls or partitions. SLSs do not prevent a fall, but they may minimise the harm from one.

Refer to *PAS 59:2004 – Filled collective fall arrest systems*, available from the British Standards Institute.

**Figure 27: A worker falls into a soft landing system.**

## 6.9 Safety nets

Safety nets are used on construction sites and similar works mainly to arrest a person's fall, although they can also be used to catch or contain debris.

Safety nets are manufactured from synthetic materials. They are lightweight and rot-resistant, but they can be easily damaged by improper use, wear and tear, heat or flame, handling, or storage. They can also be adversely affected by weathering, UV degradation and environmental factors resulting in some strength loss. It is therefore essential that safety nets are subject to regular examinations by a competent person and are periodically tested in accordance with the manufacturer's instructions. The manufacturer's instructions shall also be followed for installation, use and storage.

### Classification of safety nets

Safety nets conforming to *BS EN 1263-1* should be used. For further guidance see:

- *EN 1263:1 (2002) Industry Safety Nets*
- *BS EN 1263:2 Safety Requirements for the Positioning Limits*
- *BS 3913: Industrial safety nets.*

## 6.10 Fixed roof ladders and crawl boards

Fixed crawl boards and roof ladders may be used to provide permanent access to a work positioning system, or on pitched or brittle roofs to gain access to service plant. Crawl boards shall have a minimum width of 450 mm and should have handrails.

On brittle roofs guardrails should be permanently installed on crawl boards and fixed roof ladders. Crawl boards should have a non-slip surface or cleats, depending on their pitch. Ensure that permanent access complies with the Building Act 2004.

Temporary roof ladders and crawl boards should be of the same standard as for permanent installations. Roof ladders should be used on roof pitches over 25 degrees.

The bracket on the top of a crawl board or roof ladder should be sufficiently deep to reach over the ridge and lap the roof framing.

Crawl boards, when used on their own, do not prevent a fall. Where the potential of a fall still exists while using crawl boards, additional measures such as edge protection and/or fall restraint systems may need to be utilised.

## 6.11 Ladders, stepladders, and means of access

Ladders and step ladders do not offer fall protection and therefore should be the last form of work access equipment to be considered.

Ladders or stepladders should be used for low-risk and short-duration tasks. The user should maintain three points of contact with a ladder or stepladder to reduce the likelihood of slipping and falling.

Ladders and stepladders should be of trade or industrial standard and be rated at not less than 120 kg. In New Zealand, industrial-use ladders should be compliant with the *AS/NZS 1892* standard.

Ladders should be:

- clearly labelled as complying with *AS/NZS 1892.1.1996*
- structurally sound
- free of defects
- not covered in chemicals or other materials.

### Issues for ladder or stepladder use

- Overload—the person and anything they are taking up should not exceed the highest safe working load stated on the ladder.
- Over-reach—keep the line of the belt buckle (navel) inside the stiles with both feet on the same rung throughout the task.
- Do not keep tools or other items resting on the steps or hanging from the rungs.
- Carry tools on a tool belt.
- Stop at the third step from the top of a straight ladder.

Figure 28: Correct – user maintaining three points of contact with the ladder.

Figure 29: Incorrect – user over-reaching and not maintaining three points of contact.

## Working from stepladders

When working from stepladders, avoid work that imposes side loading, such as side-on drilling through solid materials. Face the steps of the ladder towards the work activity.

Where side-on loadings cannot be avoided, prevent the stepladder from tipping over by tying the steps to a suitable point, or use a more suitable type of access equipment.

Avoid holding items when climbing ladders and stepladders by using tool belts.

Figure 30: Correct – steps facing work activity.

Figure 31: Incorrect – steps are side-on to work activity.

## On a stepladder

Where a handhold cannot be maintained, the use of a stepladder should take into account:

- the height of the task
- whether a safe handhold is available on the stepladder
- whether it is light work
- whether it avoids side loading
- whether it avoids over-reaching
- whether the user's feet are fully supported
- whether the stepladder can be tied
- location, eg, away from driveways and doorways unless isolated
- that there is four metres clearance from electricity lines
- use of hand tools that require a high level of leverage.

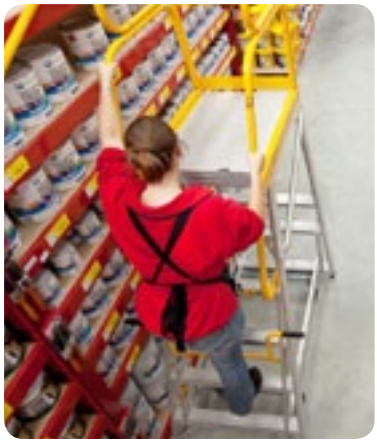


Figure 32: Maintain three points of contact climbing the ladder.

### Preventing ladders from slipping

All practicable steps must be taken to prevent a leaning ladder from slipping or falling. Where possible:

- tie (or equally effectively secure) the ladder at the top. If this is not possible tie it where practicable
- use an effective ladder stability device
- wedge the ladder against a suitable fixed structure, eg, a wall
- 'foot it' by facing the ladder with both feet on the bottom rung, each foot as far apart as possible on the rung (stile to stile), and both hands on the stiles.

The person footing the ladder should remain in the position described until the person using the ladder has descended to a point where they can safely step onto the ground. The user and footer should not overload the ladder.

When in use, the portable leaning ladder should:

- rest against a solid surface at the top
- rise at least one metre or three rungs above the landing point
- be positioned so users do not have to over-reach or climb over obstacles (users should be able to do the job with both feet and one hand on the ladder)
- rest on firm, level ground
- be in good condition and free from slippery substances
- be used with adequate clearance from traffic routes
- be at an angle of one metre out for every four metres up.

### Ladder stability devices (LSDs)

Ladder stability devices are available and may offer additional means of achieving ladder stability where other methods would not work, eg, tying or footing.

Ladder stability devices and ladder levellers should only be used strictly in accordance with the manufacturer's and supplier's instructions for use.

## Checking ladders before use

The following should be checked before using a ladder and after any incident (eg, ladder being dropped).

- Check all feet and caps are present and in good condition and securely fastened
- Ensure all side stays and clips are present and fixed in place
- All rivets are present and in good condition
- Rungs have not been bent or damaged
- Side stiles have no deformities, ie, dents or structural faults

## Access and egress

A single portable ladder set up and secured at a slope of a ratio of 4:1 (four metres up by one metre out) and extending at least one metre or three rungs above the stepping-off point is a suitable means of access and egress, provided it is:

- a step ladder of maximum length – six metres
- a single ladder of maximum length – nine metres
- secured against sliding top and bottom
- set on firm, level ground
- extending by one metre higher than the roof or other step off point
- used by no more than one person at a time except when footing.

Climbing a ladder to secure it at the top can be hazardous. It is advisable to have another person to secure the ladder at the bottom while this is achieved.

# 7. Other hazards that can impact on working at height

The following is a list of some of the more common issues that should be considered when identifying the hazard of working at height. The chart identifies a range of controls to prevent harm that should be considered for each issue.

This list or the controls should not be considered all-inclusive. It is essential that a full hazard assessment is carried out prior to any activities involving work at height. The hierarchy of controls must be applied when determining the control or range of controls that are appropriate for the work to be undertaken. In all cases, elimination controls shall be considered ahead of isolation controls, and minimisation controls shall only be adopted when neither elimination nor isolation are practicable.

| HAZARD | CIRCUMSTANCE | CONTROLS: EACH HAZARD MAY NEED A COMBINATION OF CONTROLS TO ADEQUATELY MINIMISE THE RISK OF INJURY |
|---|---|---|
| **Falls from height** | › Access between multiple levels<br>› Advancing edges of in-situ or precast concrete and steel erection<br>› Edges of roofs<br>› Edges of upper-level floors<br>› Ladders<br>› Mechanical plant: EWPs, crane lift platforms, forklifts<br>› Penetrations, openings or hoist areas<br>› Scaffolding: erection and use<br>› Unprotected shafts and excavations | **ELIMINATE**<br>› Organise work to be carried out on the ground<br>**ISOLATE**<br>› Provide stairs<br>› Provide guardrails, including mid rails<br>› Provide scaffolding<br>› Use elevating work platforms<br>› Cover or fence penetrations and openings<br>› Cover or fence excavations<br>› Cover roof areas with safety mesh before roofs are laid<br>**MINIMISE**<br>› Provide close spacing of roof battens<br>› Provide secure ladder access<br>› Install safety nets<br>› Use restraint (travel restriction) techniques<br>› Use work positioning techniques<br>› Use fall arrest systems<br>› Provide soft landing systems<br>› Use protective footwear that provides a non-slip and flexible grip |
| **Electrical shock and arc flash** | Working in the proximity of overhead power supply including:<br>› MEWPs<br>› scaffold<br>› ladder work<br>› working above or to the side of power lines.<br>**Access using insulated work platforms and insulated tools is specialist work, and may only be carried out by workers who have the required competency to industry standards, and in accordance with approved industry procedures.** | **ELIMINATE**<br>Have overhead services transferred to underground before commencing work at height.<br>**ISOLATE**<br>Overhead conductors are disconnected from service by the power supply company and the work area is confirmed to be safe. Obtain written confirmation from the person who disconnected the power to verify which work areas are isolated from power and which areas are not.<br>Contact the power company to obtain written confirmation of the safe working distance and then plan all work to be conducted from outside of the zone as per the instructions of the power company.<br>**MINIMISE**<br>Establish a plan that ensures that work can be achieved without likelihood that the minimum approach distances (MAD) (as set out in *The New Zealand Electrical Code of Practice for Electrical Safe Distances NZECP34:2001* (NZECP 34)) will be breached. Only allow work in the vicinity of the live lines if this is achievable.<br>Use a safety observer (this is particularly relevant if MEWPs are used, as the operator may become spatially disoriented and the work involves frequent movement or relocation).<br>CAUTION:<br>Work in close proximity of live lines should be completed by workers who have the required electricity industry competency.<br>**Access using insulated work platforms and insulated tools is specialist work, and may only be carried out by workers who have the required competency to electricity industry standards, and in accordance with approved industry procedures.**<br>Always contact the line owner to seek approval to work close to power lines. Find out what the safe distance is and seek advice on how to work safely.<br>The *New Zealand Electrical Code of Practice for Electrical Safe Distances NZECP34:2001 (NZECP 34)* is available from the website: www.energysafety.govt.nz |

| HAZARD | CIRCUMSTANCE | CONTROLS: EACH HAZARD MAY NEED A COMBINATION OF CONTROLS TO ADEQUATELY MINIMISE THE RISK OF INJURY |
|---|---|---|
| **Falls through upper level surfaces** | › Corroded metal roofing<br>› Fragile or brittle surfaces: asbestos cement, cellulose cement, glass, fibreglass, acrylic or other similar moulded or fabricated material<br>› Skylights and roof penetrations | **ISOLATE**<br>› Use walkways and crawl boards<br>› Cover or guard all brittle and dangerous areas<br>› Work from scaffolding or platforms immediately below brittle surfaces<br>**MINIMISE**<br>› Use mechanical access plant<br>› Use a bump rail or physical barrier to keep all people at least two metres away from brittle areas<br>› Assess roof conditions from below |
| **Struck by falling objects** | › Loads are placed on elevated work areas<br>› Overhead crane/lifting operations<br>› Work is to be carried out above other workers | **ISOLATE**<br>› Fit toe boards or equivalent protection<br>› Tether tools and equipment<br>› Secure storage of materials<br>› Install catch screens or platforms<br>› Erect a gantry or a protective screen over high-volume/public areas<br>› Fence off lower areas<br>**MINIMISE**<br>› Provide mobile construction plant with a falling object protective structure (FOPS)<br>› Provide warning signage<br>› Provide safety watch person<br>› Wear safety helmets and safety footwear |
| **Trips and slips** | › Changing levels<br>› Construction debris material/ poor housekeeping<br>› Crowded or cluttered work area<br>› Electrical leads<br>› Lapped planks<br>› Sloped work surfaces<br>› Surfaces that are wet/icy, polished, glazed or oily | **ELIMINATE**<br>› Keep surfaces clean and free of tripping hazards or materials<br>› Keep all work areas tidy and clean, and store materials when not in use<br>› Pull out, screw in, or trim up protruding nails, screws and bolts<br>**ISOLATE**<br>› Isolate any protruding reinforcing steel work<br>**MINIMISE**<br>› Provide adequate work area and good task lighting<br>› Provide non-slip work surfaces |
| **Manual handling** | › Handling materials which may be caught by the wind<br>› Momentary imbalance leading to sudden movement<br>› Work at height creating awkward body position | **ELIMINATE**<br>› Use lifting aids to deliver materials<br>**ISOLATE**<br>› Provide an enclosed work area<br>**MINIMISE**<br>› Reduce weight and size of objects<br>› Keep tool belts balanced and weight down<br>› Position work so it is in a neutral position and over-reaching or excessive holding is not required |

| HAZARD | CIRCUMSTANCE | CONTROLS: EACH HAZARD MAY NEED A COMBINATION OF CONTROLS TO ADEQUATELY MINIMISE THE RISK OF INJURY |
|---|---|---|
| **Environmental hazards** | › Earthquakes<br>› Heat (sun)<br>› High winds<br>› Icy conditions<br>› Rain<br>› Reflective glare off surfaces<br>› Wind | **ELIMINATE**<br>› Where necessary cease operations<br>**ISOLATE**<br>› Provide work shelters<br>**MINIMISE**<br>› Wear protective clothing<br>› Ensure footwear with good grip is worn<br>› Use sun screen<br>› Provide a stable work environment<br>› Provide emergency procedures<br>› Provide adequate fresh drinking water |
| **Plant and machinery injuries** | › Unguarded machinery: conveyors, augers, chain and belt drives<br>› Vessels and pipes at extreme hot and cold temperature<br>› Vessels and pipes leaking hazardous substances | **ELIMINATE**<br>› Disconnect power supply<br>**ISOLATE**<br>› Isolate equipment—lock out/tag out<br>**MINIMISE**<br>› Install guards<br>› Maintain minimum safe distances from operating machinery<br>› Provide safety watch person |
| **Electrocution** | › Electrical plant and machinery<br>› Gantry crane 'buzz bars' | **ELIMINATE**<br>› Disconnect or de-energise electrical supply<br>**ISOLATE**<br>› Isolate electrical supply—lock out/tag out<br>› Install insulating barriers, eg, sleeves, wraps, or tiger tails<br>**MINIMISE**<br>› Plan a safe work process<br>› Provide safety observer |
| **Confined space** | › Asphyxiation<br>› Explosion<br>› Fall from height<br>› Gas or fumes build up | **ELIMINATE**<br>› Work outside of confined space<br>**ISOLATE**<br>› Refer to *Australian Standard AS 2865:2009 Confined Space*<br>**MINIMISE**<br>› Refer to *Australian Standard AS 2865:2009 Confined Space* |
| **Excavations, trenches, openings, and shafts** | › Cave-ins<br>› Engulfment<br>› Fall through | **ELIMINATE**<br>› Do not work near excavations, openings, or shafts<br>**ISOLATE**<br>› Use barriers and keeping safe working distance<br>› securely cover<br>**MINIMISE**<br>› Refer to the Ministry of Business, Innovation and Employment's *Approved Code of Practice for Excavations and Shafts for Foundations* |

# 8. Duty holder responsibilities

The HSE Act applies to all people at work and others persons in, or in the vicinity of, a place of work. Responsibilities for duty holders are outlined in this section.

The HSE Act creates a number of duties for most people connected with places of work. There are a number of Regulations, Codes of Practice and industry best practice guidance documents that support the HSE Act.

The HSE Act and its regulations are the law. Codes of practice, guidelines and other guidance material endorsed by the Ministry of Business, Innovation and Employment are considered best practice.

### Principal

A principal is a person or a company that engages any other person or company, other than as an employee, to do any work for gain or reward.

A principal to a contract is responsible for the health and safety of employees of contractors and subcontractors. This responsibility extends to any contractor or subcontractor who is a self-employed individual. A principal might also have employees who will be owed separate duties because of this employer/employee relationship.

Putting work out to contract doesn't remove any of the principal's health and safety obligations. Legal responsibilities cannot be transferred to another party.

The legal responsibilities of a principal are set out in Section 18 of the HSE Act.

The steps that should be followed by a principal to ensure good health and safety outcomes when work is contracted out are:

- scope the work to identify the key health and safety issues before the work is put out to tender or the contract is formalised
- pre-qualify the contractor to ensure that they are competent to safely complete the required work
- negotiate health and safety requirements when the contractor is selected
- set out health and safety expectations in the contract documents
- monitor the contract to ensure that health and safety expectations are met
- complete a review after the contract for any learning that can be applied to future contracted work.

For further details refer to *A Principal's Guide to Contracting to meet the Health and Safety in Employment Act 1992* plus its summary, *Health and Safety in Contracting Situations*.

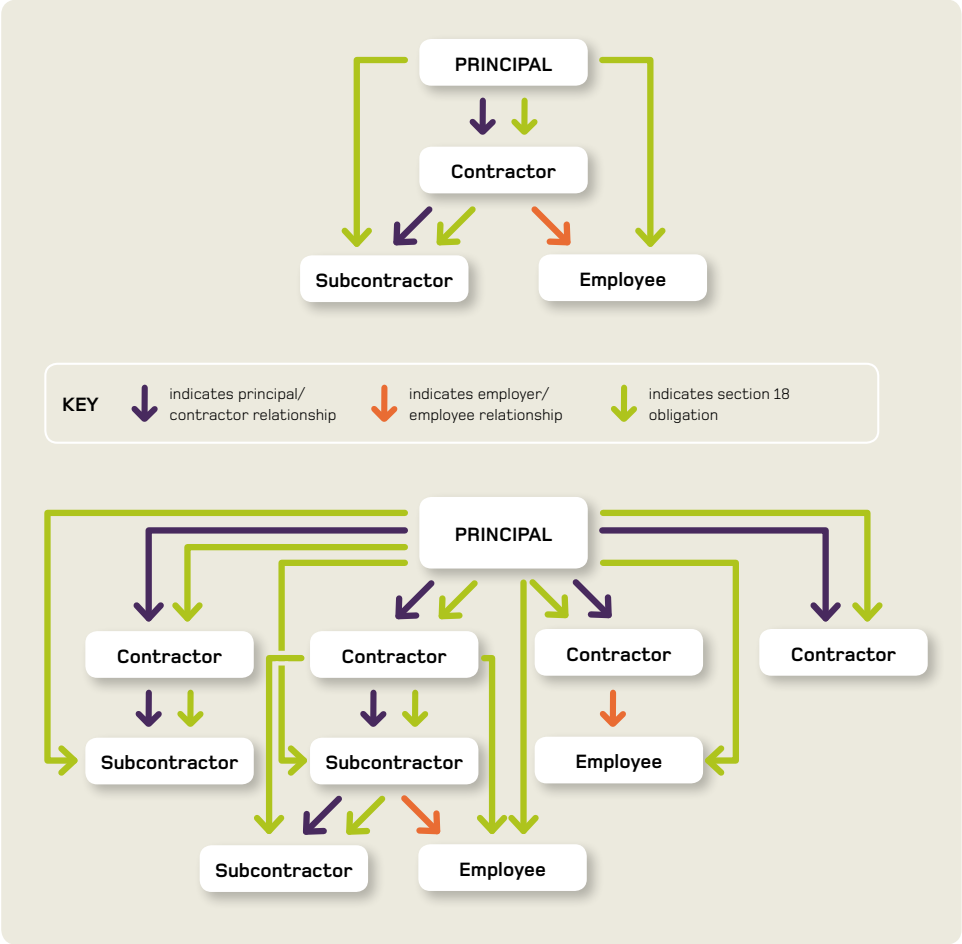



Figure 33: Typical principal and contractor arrangement.

## Employer

Employers are responsible for the health and safety of employees and of any other people who may be affected by the actions or inactions of employees.

An employer is required to take all practicable steps to ensure that work undertaken is safe.

Employers shall have an effective method for identifying hazards to employees at work and must take all practicable steps to ensure that those hazards are controlled.

Employers shall also take all practicable steps to ensure that employees are adequately trained and/or supervised to be able to work safely.

## Employee

An employee is defined by the HSE Act as any person of any age who is employed by an employer to do any work for hire or any reward under a contract of service, that is an employment agreement.

An employee is responsible for their own health and safety and must also ensure that their actions or inactions do not harm other people. In effect, employees have a responsibility to follow the safe work procedures that have been put in place by their employer.

Employees should bring to the attention of their supervisor any illness, ailment or other condition which may prevent or limit their ability to work at height. This is important for their safety and the safety of others. It will also assist supervisors with planning and work allocation.

### Self-employed

Someone is self-employed who is working other than as an employee in one or more of the following types of work: providing goods or services for hire or reward under contract for services, or carrying on a business as a sole trader, or a partnership.

A self-employed person is responsible for his/her own health and safety and must ensure that their actions or inactions do not harm other people. A self-employed person is responsible for undertaking relevant training and having the capability to safely complete their work.

### Person who controls a place of work

In relation to a place of work, a person who controls a place of work means a person who is:

- the owner, lessee, sublessee, occupier, or person in possession, of the place or any part of it, or
- the owner, lessee, sublessee, or bailee, of any plant in the place.

For the purposes of working at height, this may include the lessor of mechanical plant or a scaffold supplier/installer.

### Employee participation

Involving employees in hazard management is a requirement of the HSE Act. It is also an excellent process for implementing hazard controls. This can be done by delegating health and safety responsibilities to staff, analysing job safety, holding toolbox meetings and electing health and safety representatives.

Employers must provide reasonable opportunities for employees to participate effectively in on-going processes for the improvement of health and safety in a place of work. Where there are 30 or more employees, or where an employee or union representing employees requests it, the employer must develop, implement and maintain a system of employee participation in health and safety.

Where agreement cannot be reached on the system of employee participation, there are default provisions set out in the HSE Act.

Where employee health and safety representatives are elected, they are entitled to paid leave to attend approved training courses.

A trained employee health and safety representative may issue a hazard notice to an employer where they believe there is a hazard in the place of work, they have brought it to the employer's attention and the issue has not been resolved.

Employers and employees must deal with each other in good faith while seeking agreement on, developing and maintaining a system of employee participation.

## 8.1 Legislative framework

The HSE Act is the overarching legislation and compliance is mandatory. The HSE Act sets out duties which are supplemented by regulations, approved codes of practice and guidelines. Codes of practice are developed through collaboration between the Ministry of Business, Innovation and Employment and industry.

A full copy of the HSE Act and the associated Regulations can be downloaded at www.legislation.govt.nz.

Approved codes of practice are guidelines which have been approved by the Minister of Labour under the HSE Act. Their requirements are not mandatory or enforceable, but their observance is accepted in court as evidence of good practice.

Guidelines developed by, or in conjunction with, the Ministry of Business, Innovation and Employment are an important source of guidance for how to meet the requirements of the HSE Act.

Where appropriate, New Zealand or other standards may be cited in approved codes of practice or guidelines.

For further information about legislative requirements of the HSE Act and its regulations please refer to the Ministry of Business, Innovation and Employment's guidance material:

- *Keeping Safe at Work – A Guide for Employees*
- *Managing Health and Safety – A Guide for Employers.*

## 8.2 Definitions

### All practicable steps

This phrase applies to the general duties that must be carried out by employers, employees, self-employed people, people who control places of work and principals.

The HSE Act specifies that a person is required to take those steps only in respect of circumstances that the person knows or ought reasonably to know about.

Where the circumstances are known, or ought reasonably to be known, about the duty holder is required to take all steps that are reasonably practicable.

A step is practicable if it can reasonably be achieved in the particular circumstances having regard to:

- the nature and severity of any injury or harm that may occur
- the degree of risk or probability of injury or harm occurring
- how much is known about the potential harm and the means of eliminating, isolating or minimising the hazard from which the harm may arise
- the availability and cost of those means.

The degree of risk and severity of potential injury or harm must be balanced against the cost and feasibility of the safeguard. The cost of providing safeguards has to be measured against the consequences of failing to do so. It is not simply a measure of whether the person can afford to provide the necessary safeguards. Where there is a risk of serious or frequent injury or harm, a greater cost in the provision of safeguards may be reasonable.

Any judgement of whether a safeguard was "reasonably practicable" is to be made taking into account common practice and knowledge throughout the industry. Duty holders must do what is "reasonable" which means what a reasonable and prudent

person would do in the same situation. It is an objective standard determined by the standards and practices of the industry and society generally.

Guidance on the practicable steps that should be taken for known hazards can be found in regulations, codes of practice, guidelines, standards, industry publications, manufacturers' information, safety data sheets and user manuals.

### Anchorage

A component cast or fixed into a building or structure for the purpose of attaching a scaffold or safety line.

A rigid or flexible line secured to an anchorage point along which a fall arrest device travels, or a flexible line which unreels from a fall arrest device.

### Barrier to restrict access

A physical or visual barrier is a rope, tape or another visual prompt suspended at height to act as a boundary around a work area to prevent access to a hazard. It should be at least two metres away from a height hazard and the roof slope is less than 10 degrees.

### Chartered professional engineer

An engineer registered under the Chartered Professional Engineers of NZ Act 2002.

### Competent person

A person who has through a combination of training, education and experience, acquired knowledge and skills enabling that person to correctly perform a specified task.

### Contractor

A person engaged by any person (other than as an employee) to do any work for gain or reward.

### Construction work

(a) any work in connection with the alteration, cleaning, construction, demolition, dismantling, erection, installation, maintenance, painting, removal, renewal or repair of:
  (i) any building, chimney, edifice, erection, fence, structure, or wall, whether constructed wholly above or below, or partly above or below ground level;
  (ii) any aerodrome, cableway, canal, harbour works, motorway, railway, road or tramway;
  (iii) anything having the purpose of drainage, flood control irrigation, or river control;
  (iv) any distribution system or network having the purpose of carrying electricity, gas, telecommunications or water;
  (v) any aqueduct, bridge, culvert, dam, earthwork, pipeline, reclamation, reservoir or viaduct:
  (vi) any scaffold; and

(b) includes any work in connection with any excavation, preparatory work, or site preparation carried out for the purposes of any work referred to in paragraph (a) of this definition; and

(c) includes any work referred to in paragraph (a) or paragraph (b) of this definition carried out underwater, including work on buoys, obstructions to navigation,

rafts, ships and wrecks; and

(d) includes the use of any materials or plant for the purposes of any work referred to in any of the paragraphs (a) to (c) of this definition; and

(e) includes any inspection or other work carried out for the purposes of ascertaining whether any work referred to any of paragraphs (a) to (c) of this definition should be carried out; but

(f) does not include any work in any mine, quarry or tunnel.

### Crane-lifted work platform (man cages)

The equipment where employees carry out their work that is attached to a crane's hook block.

### Edge protection

Some form of guardrail or barrier designed to prevent a person reaching or falling over an exposed edge.

### Employee

A person employed by any other person to do any work for hire or reward, and in relation to any employer, means an employee of the employer.

### Employer

A person or organisation that employs any other person to do any work for hire or reward, and in relation to any employee, means an employer of the employee.

*Employment agreement*

(Employment Relations Act 2000):

(a) a contract for service;

(b) includes a contract for services between an employer and a home worker; and

(c) includes in an employee's terms and conditions of employment in

  (i) a collective agreement, or

  (ii) a collective agreement together with any additional terms and conditions of employment; or

  (iii) an individual employment agreement.

Every employee must have a written employment agreement. It can either be a collective agreement (involving a union) or an individual agreement. For further information on employment agreements: www.dol.govt.nz/er/starting/relationships/agreements/index.asp

### Fall-arrest harness (safety harness)

An assembly of interconnected shoulder and leg straps, with or without a body belt, and used where there is likelihood of free or restrained fall.

### Fall arrest system

An assembly of interconnected components comprising a harness connected to an anchorage point or anchorage system either directly or by means of a lanyard or pole strap, and whose purpose is to arrest a fall in accordance with the principles and requirements of *AS NZS 1891*.

### Fall hazard area

Any areas that have been identified during the hazard identification process and secured to avoid harm. This normally refers to anywhere within two metres of the exposed or unprotected edge of the roof.

### Fragile/brittle roofing

Consists of any flat, trough, or corrugated material such as asbestos cement, plastic or glass, whether reinforced or otherwise, or any other roofing material that, due to its properties, age or weathering, will not safely support a person at all points on its surface.

### Free fall

Any fall or part of a fall in excess of 600 mm either vertically or on a slope on which it is not possible to walk without the assistance of a handrail or line.

### Guardrail

A rail or barrier secured to standards or upright members, at a height above the work platform of 900 mm (minimum) to 1100 mm (maximum) and erected along the exposed sides and ends of working platforms to prevent persons from falling. It includes a lower rail that is fixed to standards midway between the guardrail and the platform. See the *SARNZ Best Practice Guidelines for Scaffolding in New Zealand.*

### Handrail

A rail at a height of between 900 mm (minimum) to 1100 mm (maximum) designed to assist a person to retain their balance. See the *SARNZ Best Practice Guidelines for Scaffolding in New Zealand.*

### Hazard

An activity, arrangement, circumstance, event, occurrence, phenomenon, process, situation, or substance, whether arising or caused within or outside a place of work, that is an actual or potential cause or source of harm; "hazardous" has a corresponding meaning.

### Height

Means the greatest distance from which a person or article may fall before coming to rest. In determining the distance that an article can fall, no account shall be taken of any obstruction that may delay or stop the fall unless there is no possibility of the fall continuing after the obstruction is reached.

### Hierarchy of controls

Controlling the hazard by implementing the most effective hazard controls using the "hierarchy of control" principle:

- eliminate the hazard
- if it is not possible to eliminate the hazard, isolate the personnel from the hazard for example, by providing a barrier between the hazard and the worker or
- if elimination or isolation methods are not practicable, (or, if the hazard still exists after elimination and isolation methods have been used), minimise the hazard by implementing controls that minimise personnel exposure to the hazard; and review the controls regularly to ensure that they are working as planned.

### The HSE Act

In this guide, the HSE Act refers to the Health and Safety in Employment Act 1992 and subsequent regulations.

### Kilonewton (kN)

A kilonewton is the general unit for the measurement of force and strength. A newton is the amount of force required to accelerate a body with a mass of one kilogram at a rate of one metre per second squared. A kilonewton is a thousand of these units.

As an approximation 100 kg hanging at rest on a line will exert a force of 1 kN on the anchor.

### Ladder

An appliance consisting of two stiles joined by steps or rungs and designed for the purpose of climbing and descending.

### Lanyard

A line used, to connect a harness to an anchorage point or static line, usually as part of a lanyard assembly which includes a personal energy absorber.

### Notifiable work

(a) Any restricted work, as that term is defined in regulation 2(1) of the Asbestos Regulations 1998;

(b) Any logging operation or tree-felling operation, being an operation that is undertaken for commercial purposes;

(c) Any construction work of one or more of the following kinds:

- (i) Work in which a risk arises that any person may fall five metres or more other than:
  - (A) Work in connection with a residential building of up to and including two full storeys;
  - (B) Work on overhead telecommunication lines and overhead electric power lines;
  - (C) Work carried out from a ladder only;
  - (D) Maintenance and repair work of a minor and routine nature;
- (ii) The erection or dismantling of scaffolding from which a person may fall five metres or more;
- (iii) Work using a lifting appliance where the appliance has to lift a mass of 500 kg or more a vertical distance of five metres or more, other than work using an excavator, forklift, or self-propelled mobile crane;
- (iv) Work in any pit, shaft, trench or other excavation in which any person is required to work in a space more than 1.5 metres deep and having a depth greater than the horizontal width at the top;
- (v) Work in any drive, excavation or heading in which any person is required to work with ground cover overhead;
- (vi) Work in any excavation in which any face has a vertical height of more than five metres and an average slope steeper than a ratio of one horizontal to two vertical;
- (vii) Work in which any explosive is used or in which any explosive is kept on the site for the purpose of being used;

(viii) Work in which any person breathes air that is or has been compressed or a respiratory medium other than air.

### Person who controls a place of work

In relation to a place of work, means a person who is the owner, lessee, sublessee, occupier or person in possession, of the place or any part of it; or the owner, lessee, sublessee or bailee, of any plant in the place of work.

### Pole strap

A work positioning strap designed to be placed around a pole or other vertical structural member and attached at two points, one on each side of a harness whilst the wearer is working on a pole.

### Principal

A person who engages any person other than as an employee to do any work for gain or reward.

### Restrained fall

A fall or the arrest of a fall where the person suffering the fall is partially restrained by a device such as a pole strap, or is sliding down a slope on which it is normally possible to walk without the assistance of a handrail or hand line.

### Roof work

Any work associated with roof cladding, gutters and spouting, or work carried out on a roof area. This includes roof installation and maintenance and installation of fixtures on a roof.

### Safe working load (SWL)

The maximum load calculated in accordance with sound and accepted engineering practice, which can be supported safely under normal working conditions.

### Scaffolding

Any advanced scaffolding, basic scaffolding, or suspended scaffolding or any framework or structure, of a temporary nature, used or intended to be used for:

(a) the support or protection of persons carrying out construction work or work connected with construction work, for the purpose of carrying out that work

(b) the support of materials used in connection with any such work, and includes:

(i) any scaffolding constructed as such and not dismantled, whether or not it is being used as scaffolding

(ii) any coupling, device, fastening, fitting, or plank used in connection with the construction, erection or use of scaffolding.

### Secure footing

That the combination of the type of shoes worn and the slope and surface friction of the surface being walked on will prevent the possibility of a person slipping or needing a handrail to assist balance.

### Standing scaffold

A working platform which is supported wholly or partly from its base.

### Static line

In relation to fall protection, means a rope, wire strop, or rail secured between two points and possibly at various points along its length in order to support anchor lines, fall arresters or other fall protection devices. It shall have a minimum breaking strength of 44 kN.

### Total restraint (also known as fall restraint or travel restraint)

A control on a person's movement by means of a combination of a full body harness, a line and a line anchorage which will physically prevent the person from reaching a position at which there is a risk of a free or limited free fall.

### Toe board

A scaffold plank, kickboard or purpose designed component fixed on edge at the edge of the platform to prevent materials falling from the platform.

### Work at height

Working at a place, above or below ground level, where a person could be injured if they fell from that place—that is, falling from one level to another. Access and egress, except by a staircase in a permanent workplace to, or within a place of work can also be work at height.

Work at height does not include a fall at the same level (for example, falling or slipping at ground or floor level).

### Work positioning system

Work positioning systems enable a person to work supported in a harness under tension in a way that a fall is prevented. Generally the arrangement allows for the worker maintain a stable position and to work hands-free while completing a task. The harness arrangement should not allow a fall of more than 600 mm.

## 8.3 Emergencies

An emergency plan outlines the actions required of all onsite personnel and must be accessible to all personnel on site.

The emergency plan must be easy for everyone to understand and effective immediately if required.

| EMERGENCY SCENARIOS – PREPARATION | |
|---|---|
| DEMOLITION ACCIDENT<br>› emergency numbers<br>› appropriate permits<br>› trained personnel in fire fighting<br>› fire extinguishers<br>› first aiders<br>› load shifting equipment available<br>› site control | EWP FAILURE<br>› equipment within six-monthly service<br>› emergency lowering system works effectively<br>› personnel operating machine suitably qualified<br>› designated ground personnel familiarised with emergency lowering system |
| FALL-ARREST<br>› emergency numbers<br>› recovery means – ladder, EWPs, cranes<br>› rescue kits<br>› training | FIRE<br>› emergency numbers<br>› trained personnel in fire fighting<br>› appropriate permits<br>› blankets<br>› fire extinguishers<br>› breathing apparatus |
| CONFINED SPACE/HSNO ISSUES<br>› permit of entry<br>› rescues from the confined space<br>› gas testing<br>› breathing apparatus<br>› protective clothing<br>› hot work | ASBESTOS CONTAMINATION<br>› relevant permits<br>› protective clothing<br>› respirators<br>› rescue teams trained around asbestos removal<br>› breathing apparatus<br>› containment of work area |
| ACCESS AND EGRESS SHOULD ALLOW FOR MASS EVACUATION FOR PEOPLE WORKING AT HEIGHT<br>› alarm systems<br>› clearly promoted evacuation plans<br>› phone numbers<br>› reporting areas identifiable<br>› designated safety staff<br>› safety staff distinguishing dress code | EGRESS FOR INJURED WORKERS<br>› phone numbers<br>› trained staff at rescue techniques (rope rescue)<br>› rescue kits and locations<br>› stretcher locations<br>› first aid kits located |
| ELECTRICAL CONTACT<br>› phone numbers<br>› first aiders<br>› electrical awareness of all staff<br>› first aid kits | |

## 8.4 Emergency rescue plan

| | | | |
|---|---|---|---|
| Type of emergency | | Location | |
| Team members | | Main contractor/principal | |
| | | company | |
| | | Supervisor | |
| | | Date | |
| Rescue component | | Training/competencies | Responsibilities |
| Nature of emergency | | | |
| Rescue method | | | |
| Rescue equipment | | | |
| Communication and contact numbers | | | |
| Medical requirements | | | |
| Emergency services involvement (if applicable) | | | |

| GUIDANCE NOTES | |
|---|---|
| Method: | This must be a detailed description of how the rescue is going to be performed. Include the individual steps that will need to be undertaken, describe the training and competency requirements, and assign the responsibilities to team members. Where all team members may be required to perform a specific duty, they will all be required to hold the appropriate qualification or experience. In some work environments additional requirements outside the direct rescue but related to that environment may need to be included in the description of the method. This includes the shutdown of machinery or production processes. Rescue methods must ensure the safety of rescuers. |
| Equipment: | This may include specialised rescue equipment such as height rescue lines or breathing apparatus sets, plant and machinery such as crane baskets, MEWPs or winch systems. This may also include communication equipment such as mobile phones, radios or alarms and medical equipment including first aid kits and resuscitation equipment. For equipment requiring certification the rescue plan should be accompanied by a copy of equipment certification. |
| Communication: | Communication equipment listed above must be considered in conjunction with a communication strategy to be implemented in a rescue. This will usually include notification of the situation to site management and the potential declaration of an emergency situation, as well as off site management of work teams. |
| Medical: | As a minimum on the job, first aiders must be present with suitable training and experience with injuries that may be sustained in the particular emergency rescue situation. Work teams should also give consideration to any ensuing medical response or evacuation that may be required. |
| Emergency rescue services: | This would be the Fire Service Rescue Division, however it may include private or voluntary rescue providers. If the rescue plan is going to include an external agency then it is essential that agency is included in the planning process. Verification of response times and capabilities must be recorded in the rescue plan. For on-going work a schedule of daily communication with the rescue service provider must be established. |

| TRAINING/COMPETENCIES | RESPONSIBILITIES |
|---|---|
| This may include copies of qualifications of each individual team member and/or records of drills or practice rescues undertaken. Training/competencies must be established for all elements of the emergency rescue plan. | Each element of the rescue plan must be assigned to a member(s) of the team. If the responsibility is an individual allocation then write in the person's name. Where the responsibility is to be covered by the entire team then it is acceptable to write "all" or "team". |

## 8.5 General emergency checklist

### EMERGENCY CHECKLIST (Example)

**This emergency checklist is to be reviewed:**

- **at the start of every new job site**
- **as new job hazards are identified**
- **in conjunction with any other site-specific procedures, eg, Hazard Board**

**ALL EMPLOYEES ARE TO BE MADE AWARE OF THE LOCATION AND THE IMPLEMENTATION PROCEDURES OF THIS PLAN.**

| | CIRCLE ONE | |
|---|---|---|
| NOTIFIABLE WORK ACTIONED (DEPT. OF LABOUR) | YES | NO |
| CORDON OFF AREA (PUBLIC SAFETY) | YES | NO |
| INTERNAL COMMUNICATIONS – Phone / Two-way radio (Crane etc) | YES | NO |
| PHONE NUMBERS, eg, internal switchboards | YES | NO |
| SITE FIRST AID KIT (LOCATION……..) | YES | NO |
| **EMERGENCY SERVICES** | | |
| FIRE BRIGADE (REACTION TIME……) CAPABILITIES | YES | NO |
| AMBULANCE (REACTION TIME……..) | YES | NO |
| **CRITICAL INFORMATION TO BE OFFERED TO EMERGENCY SERVICES** | | |
| HAZARDS PRESENT – known and introduced | YES | NO |
| LOCATION | YES | NO |
| DESCRIPTION OF INCIDENT | YES | NO |
| KNOWN INJURIES | YES | NO |
| **RESCUE OPTIONS** | | |
| LOCAL RESOURCES, eg, cranes, cherry picker, forklifts, ladders etc | YES | NO |
| TEAM RESCUE – unconscious patient rescue with rescue kits etc | YES | NO |
| ASSISTED RESCUE – conscious patient ropes / pulleys etc | YES | NO |
| **NOTIFICATION PROCEDURE** | | |
| EMPLOYER NOTIFIED | YES | NO |
| ACCIDENT REGISTER COMPLETED | YES | NO |
| MBIE NOTIFIED – VERBALLY, AS SOON AS POSSIBLE | YES | NO |
| MBIE WRITTEN NOTIFICATION (WITHIN 7 DAYS) | YES | NO |

## 8.6 Notification of particular hazardous work

The Health and Safety in Employment Regulations 1995 require employers as well as the person who controls a place of work to provide at least **24 hours'** notice to the Ministry of Business, Innovation and Employment about particularly hazardous work as defined below. Notifications of hazardous work assist the Ministry's workplace health and safety services to plan workplace visits to promote the prevention of harm to all persons at, or in the vicinity of, a place of work.

Notify the Ministry of Business, Innovation and Employment by either:

- submitting a Notification of Particular Hazardous Work online, or
- downloading the notification form and posting or faxing it to the Ministry's nearest office nearest to the site of the hazardous work.

## 8.7 Notifiable work as defined by the Regulations

(a) Any restricted work, as that term is defined in regulation 2(1) of the Health and Safety in Employment (Asbestos) Regulations 1998:

(b) Any logging operation or tree-felling operation, being an operation that is undertaken for commercial purposes:

(c) Any construction work of one or more of the following kinds:

- Work where workers could fall five metres or more, excluding work on a two-storey house, or work on a power or telephone line, or work carried out from a ladder only, or maintenance or repair work of a minor or routine nature.
- The erection or dismantling of scaffolds from which a person could fall five metres or more.
- Every excavation more than 1.5 metres deep in which people are required to work and which is deeper than it is wide at the top.
- Any form of tunnel or drive where workers work underground, irrespective of timbering or support.
- Those excavations where the excavated face is steeper than one horizontal to two vertical.
- Any construction work where explosives are used or stored.
- Work such as diving, where construction workers breathe air or any other gas that has been compressed or is under pressure.
- Lifts of half a tonne (500 kg) or more a vertical distance of five metres or more carried out by use of a lifting appliance other than by a mobile crane, excavator or forklift.

## 8.8 Task analysis examples

### Task analysis worksheet – Example 1

| JOB DESCRIPTION | PROJECT/SITE | EMPLOYER | DATE |
|---|---|---|---|
| Removal and replacement of damaged window panels on eighth floor apartment (north end). Site in Tory Street. | Glade Apartments<br>Wakefield St<br>Wellington | Straight Up Construction Ltd | 01 June 2010 |

| | | |
|---|---|---|
| PPE REQUIRED | Safety helmets, safety boots, hi-viz vests (orange), fall arrest harness (x2), inertia reels (x2), 1.2m fence panels (x8) | T/A COMPLETED BY:<br>Jack Rippen<br>Ben Theary<br>Josh Holmes |
| PLANT REQUIRED | Crane (x2), man cage, glass suction lifter, tag line. 2T slings (x4) | |
| SIGNAGE REQUIRED | Hazard cones (x20), signs (footpath closed) (x2), stop/go lollipops (x2) | |

| SEQUENCE OF BASIC STEPS | | POTENTIAL SIGNIFICANT HAZARDS | | HAZARD CONTROL METHOD | |
|---|---|---|---|---|---|
| STEP NO | List the steps required to complete the job. (Follow the flow of the product or the process.) | HZD NO | List the potential SIGNIFICANT hazards beside each step. Focus on what can cause harm and what can go wrong. | E/I/M | List the control methods required to ELIMINATE, ISOLATE or MINIMISE each SIGNIFICANT hazard. |
| 1 | Set up cranes – on north side of parking precinct with cabs facing end to end; 3m gap between bumpers; outriggers to fully extend to edge of precinct. | 1a | Traffic | M | Confine job to parking precinct. Cordon area with safety cones and post watch persons at each end of work area to control pedestrians and traffic. Stop/go lollipops and footpath fences and signs.<br>Schedule work for low traffic flow time.<br>Hi viz, helmets and safety footwear for all workers. |
| | | 1b | Pedestrians | M | As above for 1a |
| | | 1c | Incorrect crane set up | M | Qualified operator and dogman to set up<br>Crane certified<br>Outriggers fully extended<br>Slew area clear<br>Hook latch functioning<br>Slings certified<br>Shackles moused<br>Clear of power lines |
| 2 | Delivery of glass units to site. Eight sheets to be stacked in A frame | 2a | Traffic | M | As above for 1a |
| | | 2b | Pedestrians | M | As above for 1a |
| | | 2c | Falling loads | I | Panels secured in A-frames |
| 3 | Workers in man cage on #1 crane to remove damaged window units from building using suction glass lifter attached on #2 crane | 3a | Manual handling | I | Attempt to lift with crane |

| SEQUENCE OF BASIC STEPS | | POTENTIAL SIGNIFICANT HAZARDS | | HAZARD CONTROL METHOD | |
|---|---|---|---|---|---|
| | An offset attachment bracket has been supplied by Acme Cranes to enable the suction glass lifter to be suspended on the hook and clear the soffit | 3b | Falling lifting gear | I | Certified chains (single drop chain from hook) |
| | | 3c | Spinning load hitting building | I | Tag line to be used |
| | | 3d | Dropped tools | I<br>M | Ensure all tools have lanyard attached. Keep area below clear |
| | | 3e | Falling loads | I<br>M | Ensure suction frame securely attached. Keep area below clear |
| | | 3f | Working at height<br>Suspension trauma | M<br>M | Workers in man cage to attach inertia reel and harness to crane hook<br>In the event of a fall suspension, lower immediately to ground |
| | | 3g | Wind/rain conditions | E | Cancel lift |
| 4 | Fit replacement window units using man cage on #1 crane and suction frame on #2 crane | 4a | Manual handling – heavy lifts | E | All lifting to be with crane |
| | | 4b | Dropped objects – foot/head injury | M | Safety boots, safety helmets |
| | | 4c | Man cage and load swinging | I | Tag lines<br>Lock off man cage to building |
| | | 4d | Dropped tools | I/E | Ensure all tools have lanyard attached. Keep area below clear |
| | | 4e | Falling loads | I | Ensure suction frame securely attached. Keep area below clear |
| | | 4f | Working at height<br>Suspension trauma | | Workers in man cage to attach inertia reel and harness to crane hook<br>In the event of a fall suspension, lower immediately to ground |
| | | 4g | Wind/rain conditions | | Cancel lift |
| 5 | Remove damaged window units from site. Remove crane from site | 5a | Manual handling – heavy lifts | E | All lifting to be with crane |
| | | 5b | Traffic and pedestrians | M/I | Confine job to parking precinct. Cordon area with safety fences and post watch persons at each end of work area to control pedestrians and traffic. Schedule work for low traffic flow time. Hi viz for workers and stop/go signs. |
| | | 5c | Falling loads | I | Panels secured in A-frames |

## Team sign off (all team members working under this task analysis to sign)

Name:

Signature: Date: DD / MM / YYYY

Name:

Signature: Date: DD / MM / YYYY

Name:

Signature: Date: DD / MM / YYYY

Name:

Signature: Date: DD / MM / YYYY

## Task Analysis Worksheet – Blank Form

| JOB DESCRIPTION | PROJECT/SITE | EMPLOYER | DATE |
|---|---|---|---|
| | | | |

| | | | |
|---|---|---|---|
| PPE REQUIRED | | T/A COMPLETED BY: | |
| PLANT REQUIRED | | | |
| SIGNAGE REQUIRED | | | |

| SEQUENCE OF BASIC STEPS | | POTENTIAL SIGNIFICANT HAZARDS | | HAZARD CONTROL METHOD | |
|---|---|---|---|---|---|
| STEP NO | List the steps required to complete the job. (Follow the flow of the product or the process.) | HZD NO | List the potential SIGNIFICANT hazards beside each step. Focus on what can cause harm and what can go wrong. | E/I/M | List the control methods required to ELIMINATE, ISOLATE or MINIMISE each SIGNIFICANT hazard. |
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## 8.9 Publications

### Legislation — Acts

- Fire Service Act 1975
- The Health and Safety in Employment Act 1992
- Accident Compensation Act 2001
- Building Act 2004
- Electricity Act 1992
- Employment Relations Act 2000
- Hazardous Substances and New Organisms Act 1996
- Resource Management Act 1991

### Legislation — Regulations

- Health and Safety in Employment (Asbestos) Regulations 1998
- Health and Safety in Employment Regulations 1995
- Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999
- Electricity (Safety) Regulations 2010

### Australian and New Zealand Standards

| | |
|---|---|
| Confined space | AS 2865 |
| Cranes (including hoists and winches) – Serials hoists and winches | AS 1418.2 |
| Cranes Hoists and Winches – Safe Use – Mobile Elevating Work Platforms. | AS 2550.10 |
| Eye protection | AS/NZS 1337 |
| Industrial Fall arrest systems and devices. Part 1: Harnesses and Ancillary Equipment | AS/NZS 1891.1 |
| Fibre ropes – Three strand howser – laid and eight strand parted | AS 4142.2 |
| Fixed platforms, walkways, stairways and ladders – Design, construction and installation | AS/NZS 1657 |
| Industrial fall arrest systems and devices | AS/NZS 1891.1-3 |
| Industrial rope access systems | AS/NZS 4488.1–2 |
| Occupational protective helmets | AS/NZS 1801: 1997 |
| Occupational safety footwear | AS/NZS 2210.1 |
| Portable ladders, metal | AS 1892.1 |
| Portable ladders, timber | AS 1892.2, NZS 3609 |
| Protective/safety helmets | AS/NZS 1800, NZS 2264 |
| Rigging screws and turnbuckles | AS 2319 |
| Safety mesh | AS/NZS 4389 |
| Safety standards for high visibility clothing | EN 471 |
| Safety standard for rough terrain forklift trucks | NZS/ANSI/ASME B56.6 |
| Scaffold couplers and accessories | AS 1576.2 |

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|---|---|
| Scaffolding: General Requirements | AS/NZS 1576.1 |
| Scaffold planks | AS 1577 |
| Scaffolding: Prefabricated and tube and coupler scaffolding | AS/NZS 1576.3 |
| Scaffolding – suspended scaffolding | AS 1576.4 |
| Scaffolding – Prefabricated splitheads and trestles | AS/NZS 1576.5 |
| Scaffolding – Metal tube-and-coupler scaffolding | AS/NZS 1576.6 |
| Steel wire ropes (SWR) | AS 3569 |
| General structural design and design loadings for buildings | NZS 4203 |
| Specification for scaffold planks | NZS 3620 |
| Temporary roof edge protection for housing and residential buildings. | AS/NZS 4994.1 |
| Temporary edge protection – Roof edge protection – Installation and dismantling | AS/NZS 4994.2:2009 |
| New Zealand Timber Grading Rules | NZS 3631 |
| Timber-framed buildings Standard and Handbook Set | NZS 3604 |

## European Standards

- *ISO 16368:2010 Mobile elevating work platforms – Design, calculations, safety requirements and test methods*
- *ISO 16653-1:2008 Mobile elevating work platforms – Design, calculations, safety requirements and test methods relative to special features – Part 1: MEWPs with retractable guardrail systems*
- *ISO 16653-2:2009 Mobile elevating work platforms – Design, calculations, safety requirements and test methods relative to special features – Part 2: MEWPs with non-conductive (insulating) components*
- *ISO 16653-3:2011 Mobile elevating work platforms – Design, calculations, safety requirements and test methods relative to special features – Part 3: MEWPs for orchard operations*
- *British Standard BS 8411 Code of Practice for Safety Nets on Construction Sites and other works*
- *British Standard BS 4429 Specification for rigging screws and turnbuckles for general engineering, lifting purposes and pipe hanger applications*
- *BS EN 1263:1 (2002) Industry Safety Nets: Safety requirements, test methods*
- *BS EN 1263-2:2002 Safety Requirements for the Positioning Limits*
- *BS 3913:1982 Industrial safety nets*
- *PAS 59:2004 – Filled collective fall arrest systems*

## Codes of Practice

- *Code of Practice for Safety and Health in Tree Work Part One: Arboriculture* www.osh.govt.nz/publications/booklets/arboriculture-part1/arboriculture-part1.pdf
- *Approved Code of Practice for Cranes* www.osh.govt.nz/order/catalogue/10.shtml
- *Approved Code of Practice for Safety in Excavation and Shafts For Foundations* www.osh.govt.nz/order/catalogue/135.shtml
- *Approved Code of Practice for Training Operators and Instructors of Powered Industrial Lift Trucks (Forklifts)* www.osh.govt.nz/order/catalogue/527.shtml
- *Code of Practice for Manual Handlin*g www.osh.govt.nz/order/catalogue/68.shtml
- *Approved Code of Practice for Power-Operated Elevating Work Platforms* www.osh.dol.govt.nz/order/catalogue/pdf/platforms.pdf

## Best practice guidelines

- *Building Code Handbook* www.dbh.govt.nz/building-code-compliance-documents
- *A principal's guide to contracting to meet the Health and Safety in Employment Act 1992* www.osh.govt.nz/order/catalogue/contracting-guide.shtml
- *Best Practice Guidelines for Demolition in New Zealand* www.dol.govt.nz/consultation/demolition-guidelines/index.asp
- *Keeping Safe at Work – A Guide for Employees – Employee rights under the Health and Safety in Employment Act 1992* www.osh.govt.nz/publications/factsheets/keepingsafe.html
- *Managing Health and Safety: A guide for employers – Ministry of Business, Innovation and Employment – New Zealand* www.osh.govt.nz/publications/booklets/managing-health-safety-guide/01.asp
- *Best Practice Guidelines for Elevating Work Platforms in the Horticultural Industry* www.dol.govt.nz/consultation/ewps-horticulture/ewps-horticultural_13.asp
- *First Aid for Workplaces: A Good Practice Guide* www.osh.govt.nz/publications/booklets/first-aid-2009/first-aid-2009_02.asp
- *Best Practice Guidelines for Industrial Rope Access in New Zealand*
- *Best Practice Guideline for Working on Roofs*
- *Best Practice Guidelines for Scaffolding in New Zealand* www.osh.govt.nz/publications/booklets/scaffolding-09/scaffolding_05b.asp

## 8.10 List of illustrations

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