Fall and Height Safety

Couple of takeaways

- We are at risk of falls whenever we work across more than one level or near an edge, opening or on a surface that could allow a fall.
- The risk of falling, including falling objects, must be managed using the hierarchy of controls.
- A risk assessment is required for any work involving a potential fall risk, including work where a person could fall 2 metres or more, work near unprotected edges or openings, work on elevated, sloping, unstable or slippery surfaces, and the use of ladders, elevated work platforms, or other access systems.
- Requirements for when a Working at Heights SWMS are needed are outlined on page 2 of this procedure.
- All fall arrest and rope access work requires a rescue plan.

What is this procedure for?

This procedure provides guidance on how to manage the risks associated with people falling from one level to another and objects and people falling from height.

How is the risk of falls and working at heights managed?

We are at risk of falls whenever we work across more than one level or near an edge, opening or on a surface that could allow a fall. This includes working on or near a steep incline and should take ground conditions and the natural environment into consideration, such as loose rock or slippery and wet surfaces.

The risk of falling must be assessed during the risk assessment and planning phase of any activity and during the design of any infrastructure, plant and equipment.

A risk assessment must be completed where there is a risk of a person falling from one level to another, including but not limited to:

- Work where a person could fall 2 metres or more
- Work near an unprotected edge, opening, or surface that is fragile or not properly supported.
- Work on elevated, sloping, unstable, or slippery surfaces
- Work involving the use of ladders, elevated work platforms (EWPs), or other access systems
- Work where environmental conditions (e.g. wind, rain) may increase the likelihood of a fall

Guidance: Surfaces greater than 15 degrees increases the risk of falls and slips and should be risk assessed accordingly.

The hierarchy of controls are to be used to select the strongest and most reliable controls for an activity or design practicable. Examples of these controls include:

Elimination

Designing or purchasing infrastructure, plant and equipment to allow safe access without the risk of falling. Completing the work on the ground

level. Edge protection may eliminate the risk of falls but may not eliminate the risk of dropped objects.

Substitution

Substitute the activity for a safer alternative. Scaffold or an elevated work platform may be substituted for working from a ladder. Similarly, an EWP may provide a safer alternative than rope access systems or scaffolding. Each activity needs to be individually assessed to identify the best control for the work to be done.

Isolation

Isolate the worker from the risk of falling through such measures as barricading, edge protection, guard rails or fencing.

Engineering

Engineering controls include anything to modify the work area to reduce the risk of falls and falling objects. These may include:

- Installing non-slip floor coverings or coatings
- Providing stairs, handrails and walkways and temporary work platforms
- Work positioning systems or, if not possible to use, fall arrest systems
- Dropped object netting and tool lanyards

Administration

Signage, SWMS, supervision, high risk work licenses, emergency response plans could be regarded as administrative controls.

Personal protective Equipment (PPE)

Fall arrest and restraint systems, hard hats

When is a Safe Work Method Statement required?

To assist in determining whether a safe work method statement (SWMS) is required, the following table has been provided. A SWMS will be required where you answer yes to all of the questions in section A and at least 1 of the questions in section B.

Table 1

Section A: All questions to be answered yes	Yes or No
Is there a risk of injury from falling or sliding uncontrolled for more than 2 metres (This includes working on or near the vicinity of a slippery, sloping or unstable surface)?	
Is the risk or activity something other than using a permanently fixed ladder up to 6 metres for access only?	
Section B: At least one question to be answered yes	
Is there no compliant fixed edge or fall prevention?	
Is a harness going to be used as a means of control?	

For work where a fall risk of less than 2 metres exists, a risk assessment is to be completed to assess the risk of falling or from dropped objects. Controls are to be implemented that are in alignment with the level of risk and based on the hierarchy of control.

Fall and Height Safety

How do we ensure fall safety and working at heights equipment is properly inspected and tested?

Pre-use inspections

- All working at heights equipment is required to be inspected prior to use by a person qualified to use the equipment.
- The structural integrity of all equipment and surfaces is to be checked prior to use and before being placed under load.

Periodic Inspections

- Periodic inspection and tagging are to be undertaken in accordance with AS/NZS1891.4 Industrial fall-arrest systems and devices – Selection, use and maintenance and manufacturer requirements.
- Appendix A provides guidance on periodic inspection frequencies and who may perform them.
- All periodic inspections are to be documented and relevant tags applied.
- Equipment used in harsh conditions may require more frequent inspections.

Registers

Each area or business unit that owns or uses working at heights equipment is required to maintain a register of equipment. Register may be provided and maintained by a qualified service provider where practical to do so provided a copy is held by the owner of the equipment. The following information should be recorded on the register:

- Description of the Equipment / Anchor point Identification
- Location equipment is stored / Location of anchor point
- Name of manufacturer
- Serial Number, date of manufacture and withdraw from service date
- Last Inspection date
- Next Inspection due date
- Name of person who completed inspection
- Other comments

How do we manage specific work at heights risks?

The first controls that must be assessed before considering others, are the strongest and most reliable controls in the hierarchy of controls. The most critical opportunity to eliminate the risk of falls is during planning (such as hazard and operability studies) to design, manufacturer or source plant or structures.

Edge Protection

Edge protection must be installed where a person could be exposed to a working at heights risk. Other controls should only be used instead where edge protection is not possible or other controls are considered to be safer for the task. All edge protection, temporary or permanent, must be installed in accordance with the relevant standard.

Ropes, flagging and plastic mesh are not regarded as fall prevention and are not to be used as edge protection. However, these may be used to delineate and identify a known hazard provided it is placed a minimum of 2 metres from the edge or other hazard.

Dropped Objects

The risk of objects falling from one level to another are to be identified when assessing risks for the task. Suitable controls, selected using the Hierarchy of Controls, must be in place to prevent harm to people or equipment. Such measures include:

- Strongest control - elimination: designing work without the risk of dropped objects or planning work to be undertaken from ground level
- Less strong - preventing objects from falling:
  - Ensuring holes and openings are covered
  - Kick boards installed on handrails and scaffolding
  - Installing dropped object protection such as netting and mesh or purpose built catch platforms
- Least strong - arresting falling objects:
  - Tool lanyards and other specialised equipment for prevention of dropped objects
  - Using suitable tool carriers with a lid or other topping
- Other necessary controls:
  - Ensuring good housekeeping is maintained
  - Agreed communication for entering and exiting a drop zone
  - Clearly defined exclusion zones with signage and information to prevent access
  - Purchasing mobile plant with overhead protection
  - PPE
  - Signage for no go areas

Protection for holes and openings

Holes and openings through which a person could fall should be made safe immediately after being formed. Any hole or opening with dimensions greater the 100 mm x 100 mm or a diameter of 100 mm is to have either a fall protection cover fitted or be protected with edge protection. Openings smaller than this, are to be covered where a risk assessment identifies that the risk is to be controlled.

Where a cover is fitted, it must be installed according to manufacturer directions or an engineer's design and be able to withstand any static or dynamic impacts that could be expected to occur. Covers for temporary holes (such as those created or left during construction work) should be fitted with a "DANGER HOLE BENEATH" Sign. Australian standards apply to the design and installation of entry and exits (AS 1657)

Portable Ladders

- All portable ladders shall comply with the relevant Australian Standard, be fit for purpose, and have the correct rating for the person using the ladder.
- Ladders should only be used as a means of access and egress and should not be used as a working platform unless the ladder is designed as a platform ladder.
- Platform ladders must have a safety gate/rail installed where there is a risk of falling 2 metres or greater.
- All ladders must be of a suitable type for the task, be rated for industrial use with a minimum load rating of 120 kg.
- To mitigate electrical risks across Hydro Group sites, only fibreglass portable ladders are permitted for use. An aluminium ladder may only

be permitted as an exception if a risk assessment is conducted, confirming that the electrical risk does not increase.
  - This requirement also applies to any non-standard ladders that have been specifically procured or built to suit unique operational needs.
- Ladders are to be inspected by the user prior to use. Any ladder identified as damaged or with parts missing must be tagged and taken out of service.

Elevated Work Platforms (EWPs)

- All persons operating any EWP must have the relevant competencies as outlined in Appendix A and been deemed competent for the specific EWP being used.
- EWP's must be operated in accordance with the manufacturer's instructions.
- Fall arrest or restraint equipment must be worn in boom type EWP's.
- Persons are not to enter or exit an elevated platform unless the following have been met:
  - A SWMS must identify the relevant controls for entering or exiting the work platform.
  - Where the work platform is located over the landing, it must be at least 2 metres away from a 2-metre-high live edge unless a harness attached to a suitable anchorage is worn.
  - Where the platform is located next to the landing, the gap must be no greater than 100mm and a harness attached to a suitable anchor on the structure must be worn prior to access or egress.
  - Base controls are to be tagged to indicate the equipment is in use and not to operate.
  - Deflection that could occur during access and egress must be accounted for.
- When operating EWP within proximity of exposed electrical parts (LV and HV), a competent ground person must be appointed to provide guidance to ensure electrical safe approach distances are maintained and to assist in any planned rescue events.

Scaffold

For scaffolding requirements, refer to the Scaffolding procedure.

Work Boxes

Work boxes may be used where it is not practical or possible to use a preferred working platform such as an Elevated Work Platform or scaffold.

Work boxes must be design registered with a compliance plate attached and be used in accordance with the relevant Australian standards.

Workers must not enter or leave the workbox when it is suspended (except in an emergency) unless the controls identified under each specific workbox situation below is in place.

Telehandlers with Work Platform Attachments

- Only attachments approved for use on a specific model telehandler by the manufacturer of the telehandler or other competent person may be used.
- Used with a full body fall arrest harness attached to a designated anchorage point.

- Platform attachments must be fitted via a quick hitch and must not be attached to fork tynes.
- The telehandler must be setup in accordance with the specifications provided by the manufacturer for the telehandler/platform combination.
- AS 10896.1 requires telehandlers fitted with work platforms to comply with the requirements of AS 1418.10 Mobile Elevating Work Platforms.
- Persons are not to enter or exit a work platform attachment from a telehandler unless the requirements outlined under Elevated Work Platforms have been met.

Forklifts with Work Platform Attachments

- The forklift must be fitted with a mechanical lockout that will only allow the operation of up and down movements when the platform is being used.
- The operator of the forklift must be in the normal operating position and remain in this position when using the platform.
- The forklift compliance plate must display the work platform serial number.
- Persons are not to enter or exit an elevated platform unless the following have been met:
  - A SWMS must identify the relevant controls for entering or exiting the work platform.
  - Where the work platform is located over a landing, it should be positioned as far forward from the live edge as practically possible and a harness attached to a suitable anchor on the structure must be worn prior to access or egress.
  - Where the platform is located next to the landing, the gap must be no greater than 100mm and a harness attached to a suitable anchor on the structure must be worn prior to access or egress.

Crane Suspended Work Boxes

- Directions to the crane operator should only be provided from the workbox by a person holding a rigging or dogging license.
- Used with a full body fall arrest harness attached to a designated anchorage point or the crane rigging.
- If the workbox is out of view of the crane operator a primary and secondary means of communication must be established.
- Have lifting slings supplied to be attached to the lifting points by hammerlocks or moused shackles.
- If the crane is fitted with a free fall function, it must be locked out to prevent accidental operation.
- Persons are not to enter or leave the workbox when elevated unless the following conditions have been met:
  - A SWMS must identify the relevant controls for entering or exiting the work platform.
  - The structural integrity of the landing area has been established.
  - Where the platform is located next to the landing, the gap must be no greater than 100mm, the workbox must be secured to a suitable point and a harness attached to a suitable anchor on the structure must be worn prior to access or egress.

Person Suspended over Water

Where a work box or EWP is being used over water, a fall arrest harness may not be required provided the following conditions have been met:

- The risk assessment determines that the risk of drowning is greater than the risk of hitting the water or submerged objects.
- Persons within the work box or EWP are wearing a Personal Flotation Device (PFD), Buoyancy Control Device (BCD) or otherwise positively buoyant.
- Flotation devices are readily accessible for rescue purposes.
- A dedicated spotter/dogger/rigger must be present to guide and monitor the work.
- Fall arrest harness may not be removed until fully suspended over the water.
- Work boxes for diving work must be compliant to Australian Standards for Work Boxes unless a risk assessment and approved variance request accompanies its use.

What are the requirements for fall restraint and fall arrest systems?

Fall restraint and arrest systems are only to be used in conjunction with higher order controls (EWP, Work Boxes etc.) or where the use of higher controls is not possible or practical. All fall arrest and fall restraint systems must comply with the relevant Australian standards.

All fall arrest and restraint systems must only be installed and used by persons trained and competent to do so.

Lifting and rigging equipment may be used as part of a fall arrest or restraint system, in line with user instructions, however, once equipment has been used for lifting and rigging it shall not be used for height safety systems. Where lifting and rigging equipment is used as part of a height safety system, the inspection requirements outlined in Appendix 1 apply.

Fall Restraint Systems

- The use of a fall restraint system provides a higher level of protection over fall arrest.
- Workers using a fall restraint system must be able to maintain 100% tie off at all times.
- The system must be designed so that the worker is totally restrained from reaching a position where a fall would be possible.
- A restraint system may only be used where a user can maintain secure footing without having to put tension on the restraint line and without the aid of any other hand hold or support.
- A fall restraint system must incorporate a fall arrest shock absorber.
- The controls listed below for Fall Arrest Systems must be in place for Fall Restraint Systems.

Fall Arrest Systems

A fall arrest system must only be used where the use of a fall restraint system is not possible or the surface / work conditions make the use of fall restraint unsafe or not practical.

Where a fall arrest system is being used it must meet the following requirements:

- It must be designed / installed in such a way that there is a clearance zone below the work activity which ensures that a worker cannot strike the ground, plant or equipment in the event of a fall.
- The use of the fall arrest equipment must ensure that no more than 6kN of force is exerted upon a person whose fall is being arrested.
- A rescue plan is developed which identifies at least one other person on site who is trained, competent and able to perform a rescue if the person falls.
- A person must be appointed as a safety observer. The person must be nearby and assigned to monitor the worker/s using the system. Visual contact with the worker is preferred. The person may be part of the team conducting work using the fall arrest system.

Anchorage Points

Anchorage points for fall arrest and restraint systems must comply with the relevant standard for Industrial fall arrest systems and devices and will:

- Be located so that a user can connect their lanyard or device to the system prior to moving into a position where they will be at risk of a fall from height.
- Be designed by an engineer or be inspected and approved for safe use by a person with suitable qualifications and experience e.g. rope access technician, IRATA endorsed training qualification or similar.
- Have a capacity of at least 15kN for a one person, single point system or 21kN for a two person, single point system.

Where engineer rated and certified life safety anchor points are not available to be used, other structure may be used as an alternative anchor point provided the following requirements have been met:

- The anchorage and the structure to which it is attached shall be capable of sustaining an ultimate strength (the load at which the structure/anchorage must not fail) equal to or greater than that of the fixed anchorage requirements (15kN for a one person, single point system or 21kN for a two person, single point system).
- No more than 2 people may be connected to a single anchor point.
- Approval is sought to use the structure as an anchor point using at least the following methods:
- An assessment of the capabilities of the structure to withstand the necessary forces/loads by a suitably qualified engineer. The engineer must certify in writing that all combinations of loads in the worst case scenario will be safely contained by the structure/anchorage point; OR
- A person with suitable qualifications and/or experience to make an assessment of the capabilities of the structure to withstand the necessary forces/loads e.g. Rope access technician, IRATA endorsed, or other significant relevant industry experience; OR
- A combination of the two previous points.

Can we use rope access systems?

Rope access refers to a form of work positioning which allows workers to access locations while suspended by a harness and using ropes to ascend, descend, lead climb, aid climb and traverse. Rope access should only be used when all other methods of access have been considered and are not possible or practical or present a higher risk.

Where it is necessary to use rope access, the following requirements apply:

- Only person's trained and competent to use industrial rope access may install and work from rope access systems.
- All industrial rope access work must be set up and performed in accordance with the IRATA International Code of Practice and/or equivalent Australian Guideline or Standard.
- A rope access team shall consist of a minimum of two rope access technicians. One member of the work team must be qualified as an IRATA International Level 3 Supervisor or equivalent.
- Technicians shall buddy check prior to loading of rope access systems, to ensure, for example, that each other's harness buckles are correctly fastened and adjusted, that device lanyards and anchor lanyards are attached correctly and that connectors are fastened correctly. Only a twin rope access system shall be utilised, consisting of a working system and a back-up system, which are used together.
- Edge management and rope protection shall be managed using the following hierarchy process:
  - Remove (the hazard where feasible)
  - Avoid (the hazard)
  - Protect (against the hazard)
- Where protection is required, each rope shall be independently protected.
- Arborists performing rope access work in trees must hold a minimum qualification of a Certificate III in arboriculture and must work to the Minimum Industry Standards (MIS) for Arboriculture. Single rope access systems are permitted for work while suspended in trees only, provided they meet or exceed the requirements outlined in the MIS.

What training is required?

All personnel who are responsible for using, maintaining, installing and inspecting work at height equipment must be trained and competent to perform the task and hold the relevant qualifications or high risk work licences.

Where a person is using a working at heights harness and other fall arrest / restraint equipment, the person is to be trained in Working Safely at Heights as per the WHS Course Training Matrix and also be trained and competent in the specific working at height equipment.

Controlled descent escape training and training specific to the descent device (e.g. R550) is required where using a controlled descent device for self-rescue as part of an identified rescue plan.

Workers must be provided with training and information on emergency procedures and the procedures must be tested and proven.

How do we manage emergencies or incidents?

Rescue Plan

A documented height safety rescue plan is required for all work at height activities that require a SWMS. The plan must consider the likely types of emergencies and detail the equipment and methods that are to be used to perform a rescue based on the specific activity being conducted. Rescue plans must take into account the following:

- Mechanical failure at height
- Electrical failure at height

- A person falling
- A person suffering a medical episode
- A person being ejected from a workbox or elevated platform

The plan must also be tested and proven to work.

Incident Management

- Where an incident involving working at heights or dropped objects occurs, the incident management procedures are to be implemented.
- A WHS team member should be consulted to assist in the identification of a notifiable incident.
- In order to assist in the assessment, a dropped objects calculator (DROPS or similar) or engineering assessment should be utilised. Assessments are to be utilised as a guide only in assisting to determine the potential severity of an event.

Appendix A

Inspection requirements for Industrial fall arrest systems and devices. (From AS/NZS1891.4)

Item	Frequency
Personal equipment including harnesses, lanyards, connectors, fall arrest devices including common use devices	Before and after each use. By a person qualified to inspect height safety equipment
Harnesses, lanyards, associated personal equipment. Fall arrest devices (external inspection only) Ropes and slings	Thorough 6 monthly inspection. By a person qualified to inspect height safety equipment
Anchorages – Drilled in type or attached to timber frames Anchorages – Other types	12 monthly inspection As recommended by manufacturer to a maximum of 5 years 12 monthly inspection in the absence of such recommendation By a person qualified to inspect height safety equipment
Fall arrest devices – Full service	As recommended by manufacturer to a maximum of 5 years 12 monthly service in the absence of such recommendation By a person qualified to inspect height safety equipment
Horizontal and Vertical Lifelines – steel rope or rail	As recommended by manufacturer to a maximum of 5 years 12 monthly service in the absence of such recommendation By a person qualified to inspect height safety equipment
Horizontal and Vertical Lifelines – Fibre rope / web	6 monthly inspection By a person qualified to inspect height safety equipment
All items that have been stressed as a result of a fall	Inspection before further use By a person qualified to inspect height safety equipment

Appendix B

Elevated Work Platform Requirements

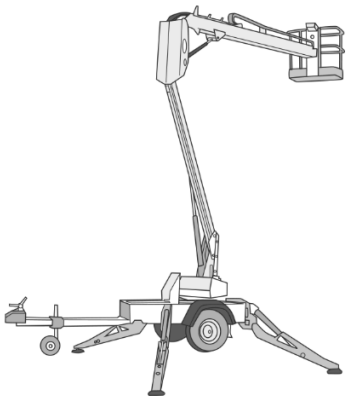
Image	Equipment Classification / Name	High Risk Work License (EWP)	Working at Heights Training	Safety Observer Required	WAH Harness and Lanyard	SWMS	Documented Rescue Plan
	Trailer mounted EWP (boom type – under 11 metres)	No*	Yes	Yes	Yes	Yes	Yes

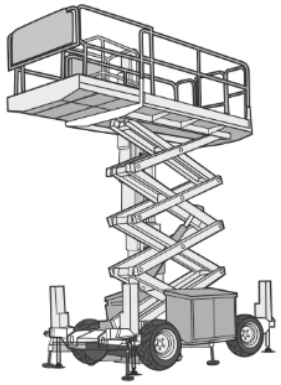
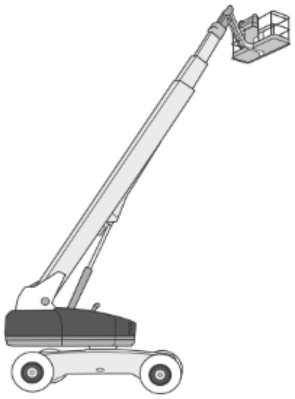
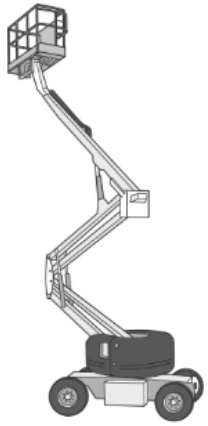
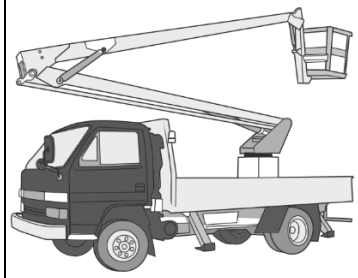
Image	Equipment Classification / Name	High Risk Work License (EWP)	Working at Heights Training	Safety Observer Required	WAH Harness and Lanyard	SWMS	Documented Rescue Plan
	Self-propelled EWP with scissor arms (scissor lift)	No*	May be required where harness and lanyard is used	Yes	Where risk assessment identifies a harness to be worn.	May be required where harness and lanyard is used or a risk assessment identifies the need	Yes
	Self-propelled EWP with telescoping boom (under 11 metres)	No*	Yes	Yes	Yes	Yes	Yes
	Self-propelled EWP with telescoping boom (over 11 metres)	Yes	Yes	Yes	Yes	Yes	Yes

Image	Equipment Classification / Name	High Risk Work License (EWP)	Working at Heights Training	Safety Observer Required	WAH Harness and Lanyard	SWMS	Documented Rescue Plan
	Self-propelled EWP with telescoping knuckle boom (Under 11 metres)	No*	Yes	Yes	Yes	Yes	Yes
	Self-propelled EWP with telescoping knuckle boom (Over 11 metres)	Yes	Yes	Yes	Yes	Yes	Yes
	Vehicle mounted EWP	Yes	Yes	Yes	Yes	Yes	Yes

*NB: 1 * Operator must still be able to demonstrate competence for the plant being operated through a formal or informal training record.*