DRAFT Procedure
Working at Heights

1. Purpose

This procedure details the processes to identify fall hazards, and eliminate or minimise risks associated with working at heights to Department of Planning, Transport and Infrastructure (DPTI) workers.

2. Scope

This procedure applies to all DPTI workers.

3. Definitions

TERM	DEFINITIONS
Competent person	A person who has, through a combination of training, education and experience, acquired knowledge and skills enabling that person to perform a specified task correctly.
Fall	A fall by a person from one level to another.
Fall arrest system	A system intended to safely stop a worker falling an uncontrolled distance and to reduce the impact of the fall. It must only be used if higher-level controls are not reasonably practicable or might not be fully effective in preventing a fall on their own.
Fall prevention device	Any equipment used to prevent a person from reaching a point from which they could fall.
Working at heights	Any work undertaken at such a height that an injury is likely as a result of a fall. This might include work undertaken above ground level or at ground level where there is a risk of falling into features such as trenches, pits or natural features (i.e. ravines or crevasses).
Work at heights permit	A formal, written, safe system of work to control potentially hazardous activities when undertaken at height. The Permit details the work to be done and the precautions to be taken.
Work positioning system	Equipment that enables a worker to work in a harness in tension in such a way that a fall is prevented. The use of this system requires completion of competency-based training by both the user and supervisor

4. Procedure detail

4.1. Risk of falls

Risk of a fall refers to situations where tasks are carried out above ground level or at ground level adjacent to holes, trenches, service pits or other below ground level spaces. This can include, but not be limited to tasks that are performed:

- at height, regardless of the distance from the ground;
- within the vicinity of an opening, surface, excavation, edge or ledge; and
- in areas where objects such as tools may fall from higher levels.

DPTI workers must not work above 2 metres without fall protection or prevention system in place.

4.2. Identifying the risk of falls

Managers/supervisors must ensure that hazards related to working at heights are identified in consultation with affected workers and Health and Safety Representative/s (HSR), where applicable, prior to the commencement of works.

Managers/supervisors are required to identify the risk of falls and determine appropriate controls to be implemented to eliminate or minimise associated risks, so far as is reasonably practicable (SFAIRP).

Factors to consider when identifying hazards may include work carried out:

- in or on an elevated workplace, including work at different levels where workers could fall from one level to another;
- near an opening or unprotected open edge, including open stairwell;
- in or on any structure or plant being built or fitted, demolished or taken apart, examined, tested, repaired or cleaned;
- on fragile surfaces, such as skylights, cement sheeting, rusty metal and fibreglass sheeted roofs;
- on potentially unstable surfaces, such as areas where there is potential for ground collapse;
- on equipment used to perform work at elevated levels, including fixed or portable ladders or elevating work platforms;
- on slippery or sloping surfaces where workers may find it difficult to maintain their balance, such as steep batters and culverts;
- close to holes, pits or shafts, such as lift shafts, service or inspection pits or trenches; and
- among crowded or cluttered working area where objects/tools falls could strike people below.

4.3. Risk Assessment

The purpose of a risk assessment is to identify appropriate controls that can be implemented to either eliminate or minimise the risk to worker/s who are working at heights.

Managers/Supervisors must ensure that where hazards are identified, a risk assessment is completed to determine the level of risk that worker/s will be exposed to.

Where the work involves construction work at a height of 2 metres or greater, a Safe Work Method Statements (SWMS) must also be completed for that task.

Risk assessments and SWMS must be conducted in accordance with the Work Health and Safety (WHS) Risk Management Procedure

A risk assessment should consider, but is not to be limited to, an assessment of the following factors, as relevant to the task:

- the design and layout of elevated work areas including the distance of a potential fall;
- the number and movement of people at the workplace;

- the proximity of workers to unsafe areas where loads are placed on elevated working areas, for example scaffolding, and where work is to be carried out above people and there is a risk of falling objects;
- the frequency of inspection and maintenance of plant and equipment;
- the adequacy of lighting for clear vision;
- weather conditions including the presence of rain, wind, extreme heat or cold which can cause slippery or unstable conditions;
- the suitability of footwear and clothing for the conditions;
- the suitability and condition of ladders including where and how they are being used;
- the adequacy of current knowledge and training to carry out work safely; and
- the adequacy of procedures for potential emergency situations.

4.4. Risk Controls

Where specific hazards have been identified, the risk/s must be controlled SFAIRP. The most appropriate risk controls are to be determined, monitored and reviewed in accordance with the WHS Risk Management Procedure. Where risks cannot be eliminated, effective risk controls will include but may not be limited to those detailed in the following sections.

4.4.1. Eliminate the need to work at heights

Conducting work activities on the ground or on a solid construction is the most effective way of protecting workers from the risk of falls. A “solid construction” means an area:

- with a surface that is structurally capable of supporting workers, materials and any other loads applied to it;
- provided with barriers around its perimeter and around any openings from or through which a person could fall;
- with an even and readily negotiable surface and gradient; and
- with a safe means of entry and exit.

4.4.2. Establishing work areas involving working at heights

Safe systems of work must be implemented to manage the risk of falling objects. Managers/ supervisors in consultation with workers must ensure that adequate protection is provided to ensure objects do not fall onto workers or other persons. This can include, but may not be limited to, the following:

- tethering or otherwise securing tools and materials to prevent them falling on people below;
- use of ‘exclusion zone’ where there is a risk of objects falling into an area. This will generally include posting clear warning signs and delineating the area with cones or bollards, or a physical barrier such as temporary fencing or barricades, as appropriate; and
- ensuring items stored above ground level (e.g. on storage shelving) are stable and will not fall easily if disturbed.

A spotter is recommended to be assigned to the work area to control the exclusion zone, observe personnel at height, and raise the alarm in the event of an emergency. Responsibilities of a spotter include:

- maintaining regular visual contact of personnel working at heights;
- staying within the work area; and
- promptly respond to an emergency situation at the work site.

4.4.3. Fall prevention devices

A 'fall prevention device' is material or equipment—or a combination of both—designed to prevent a fall for temporary work at heights, that once in place after initial installation does not require any ongoing adjustment, alteration or operation by any person to ensure its integrity. Fall prevention devices are discussed below.

Scaffolds

Scaffolding is a very effective means of protecting workers from falls. However, there are a few safety considerations that must be taken when using scaffolds:

- Scaffold can only by erected (constructed), altered and dismantled by competent people (see *Definitions*).
- Scaffolding which exceeds 4 metres in height requires workers to hold a scaffolding high risk work licence. For further information on licences, refer to Section 4.7.
- Workers must not be allowed to use the scaffold unless a competent person has inspected the scaffold and provided written confirmation that the scaffold has been completed in construction.
- Scaffold and its supporting structure must be regularly inspected for faults, damage and stability by a competent person before use, after any incident, after any repairs, and at least every 30 days.

Workers must be provided with information, training and instruction on the nature of the scaffolding work, the risks associated with scaffolding and the control measures implemented to reduce that risk, including:

- emergency response and procedures;
- the safety loads in which the scaffold can take;
- ladders used within the scaffold structure to be secured;
- work platforms to be kept clear of debris and access obstructions along their length. This includes removing all tools and equipment from scaffolds when not in use;
- immediate reporting of defects once found;
- kickboard and guardrails to be installed and secured in place;
- number of workers on scaffold at one time to be kept at a minimum;
- scaffold to be only accessed via identified access route, preferably internal ladders, and not to climb on the scaffold structure;
- scaffold to be kept well clear of powerlines/ electrical wires and that no part of metal scaffold to be closer than 4.6 metres horizontally or 5 metres vertically from any live powerlines; and

- be aware of the increased risk working on scaffold in poor weather conditions e.g. high winds and heavy rain;

Workers and other persons must not:

- make any unauthorised alterations to scaffold and to move the scaffold;
- access any incomplete or defective scaffolds;
- move mobile scaffold while people is on it; and
- access scaffolds until castors/ wheels are locked to prevent movement.

For further information on the safe erection and use of scaffolding, refer to *AS/NZS 4576 Guidelines for scaffolding*.

Elevated Work Platforms (EWP)

EWP include scissor lifts, cherry pickers, boom-type EWP and travel towers. Several risk control measures would need to be followed when using EWPs:

- EWP can only be used as a working platform and not as means of entering and exiting a work area unless with conditions set out in *AS 2550.10: Cranes, hoists and winches- Safe use- Mobile elevating work platforms.*
- EWP can only be used on a solid level surface, unless it is designed for use on rough terrain.
- The surface area needs to be checked to make sure that there are no penetrations or obstructions that could cause uncontrolled movement or overturning of the EWP.
- Workers working in boom type EWPs, travel towers or cherry pickers must wear an anchored fall arrest harness that is able to arrest a fall before the user hits the ground. The lanyard needs to be as short as possible and be attached directly to the designated anchor point, not to the guardrail (unless the guardrail is the specified anchor point).
- Workers operating boom type- EWPs with a boom length of 11 metres or more must either:
    - hold a boom-type EWP high risk work licence, or
    - are enrolled in a training course to obtain a boom-type EWP high risk work licence and are supervised by the holder of a boom-type EWP high risk work licence.

For further information on licences, refer to Section 4.7.

Work platforms supported by forklifts

Managers/supervisors must ensure that work platforms used on forklifts to elevate people to work at heights should be engineer designed and constructed in accordance with *AS 2359.1- 2015: Powered Industrial Trucks- General requirements.*

Several safety measures must be taken when using work platforms to provide an elevated work area:

- the work platform must be securely attached to the forklift carriage to prevent it from sliding off the forks;
- workers must remain within the work platform when it is elevated or being raised or lowered;

- no other device such as a ladder or pallet is used to gain additional height; and
- the safety gate is self-closing and kept shut when in the elevated position.

For further information on the use of work platforms with forklifts, refer to *AS 2359.2–2013: Powered Industrial Trucks- Operations*.

Gantry cranes

A gantry crane comprises a bridge beam or beams, which are supported at one or both ends by legs mounted to end carriages, capable of travelling along runways and has one or more hoisting mechanisms. The gantry crane may be operated from within a cabin mounted on the crane bridge or remotely from the ground, either through a hard-wired pendant control or radio control.

Workers operating the gantry crane must hold a bridge and gantry crane high risk work licence. For further information on licences, refer to Section 4.7.

Risk control measures in the Working at Heights - Gantry Cranes Fact Sheet must be followed.

For further information refer to *AS 2550.1- 2011: Cranes, hoists and winches- Safe use Part 1: General requirements* and *AS 2550.3- 2002: Cranes, hoists and winches- Safe use Part 3: Bridge, gantry, portal (including container cranes) and jib cranes*.

Perimeter guardrails

Guardrails may be used to provide effective fall prevention:

- at the edges of roofs;
- at the edges of mezzanine floors, walkways, stairways, ramps and landings;
- on top of plant and structures where access is required;
- around openings in floor and roof structures; and
- at the edges of shafts, pits and other excavations.

Guardrails should incorporate a top rail 900mm to 1100 mm above the working surface, a mid-rail and a toe board.

Before using a guard rail system, workers should check that it will be adequate for the potential loads. The required load resistance will depend on the momentum of a falling person. For example, the momentum of a person falling from a pitched roof will increase as the pitch (or angle) of the roof increases.

For further information, refer to *AS/NZS 4994- Temporary Edge Protection series*.

4.4.4. Work positioning systems

If eliminating the risk is not practicable and neither are the fall prevention devices, consider the category of safeguards referred to as “work positioning systems”.

These typically include industrial rope access systems and travel restraint systems. They prevent workers falling over an unprotected edge and are normally harnesses attached by lanyards to roof anchors or static lines, or harnesses with ropes and friction devices.

Because their effectiveness depends entirely on the skills of their users and how well the equipment is maintained, managers/ supervisors and workers must undertake competency-based training before implementing work positioning systems.

The equipment for the system must be regularly inspected and inspected before use for faults and damage by a competent person.

Workers should also be fit to perform the work and not be affected by alcohol or drugs including prescribed medication which may affect or impair their ability to work at heights.

Industrial rope access systems

Industrial rope access systems are used for gaining access to and working at a workface, usually by means of vertically suspended ropes. Although fall-arrest components are used in the industrial rope access system, the main purpose of the system is to gain access to a work area rather than to provide backup fall protection.

For further information, refer to *AS/NZS 4488: (set) 3: Industrial rope access systems.*

Travel restraint system

A travel restraint system is equipment worn by, or attached to, a person and designed for the purpose of physically restraining the person from reaching an edge or elevated surface from which the person may fall. The system consists of a safety harness that is connected by a lanyard to a suitable anchorage point or horizontal lifeline. Managers/ supervisors and workers should consider the following before using the system:

- the slope of the surface;
- the supporting material type; and
- the texture of the surface and whether it is likely to be wet, oily or otherwise slippery.

4.4.5. Fall arrest systems

Fall arrest systems are intended to safely stop a worker falling an uncontrolled distance and reduce the impact of the fall. These systems must only be used if it is not reasonably practicable to use a fall prevention device or work positioning system or if the controls might not be fully effective in preventing a fall on their own. Examples include catch platforms and individual fall arrest systems (including anchorage lines or rails).

When using fall arrest systems, the following key safety measures should be taken:

- fall arrest equipment is selected, installed and used correctly. Workers should be trained in the use of fall arrest equipment;
- the equipment and anchorages are designed, manufactured and installed to be capable of withstanding the force applied to them as a result of a person's fall;
- the system is designed and installed so that the person travels the shortest possible distance before having the fall stopped; and
- the use of fall arrest system must be properly supervised by a competent person.

Catch platform

A catch platform is a temporary platform located below a work area to catch a worker in a fall. The platform should be of robust construction and designed to withstand the maximum potential impact load. Scaffolding components may be used to construct fixed and mobile catch platforms.

Catch platforms should:

- incorporate a fully planked-out deck;
- be positioned so the deck extends at least 2 metres beyond unprotected edges of the work area, except where extended guard railing is fitted to the catch platform;
- be positioned as close as possible to the underside of the work area**.** The distance a person could fall before landing on the catch platform should be no more than 1 metre; and
- always be used with an adequate form of edge protection.

Individual fall arrest system

Individual fall-arrest systems consist of some or all of the following components:

- anchorages;
- lifelines, lanyard, shock absorber and inertia reel;
- rope and wire grabs;
- harness;
- snap hooks and karabiners (double or triple action to prevent rollout); and
- rescue equipment.

Several safety measures must be taken when using individual fall arrest system:

- equipment must be permanently marked or labelled to indicate their purpose, correct use, limitations and other relevant information to reduce misuse of the equipment;
- each component of the system and its attachment to an anchorage must be inspected by a competent person before it is used, at regular intervals and immediately after it has been used to arrest a fall;
- harness-based system must be installed in a way that the maximum distance a person would free fall is 2 metres before the system takes effect (a shorter distance is preferable); and
- full body harness must be worn and correctly fitted.

Each anchorage point should comply with the requirements in *AS/NZS 1891:4 Industrial fall-arrest systems and devices- selection, use and maintenance*. All anchorages should be tested and approved by a competent person before use.

4.5. Ladders

Ladders should only be used if it is not reasonably practicable to use fall prevention device, work positioning system and fall arrest system.

The requirements in the Working at Heights- Ladders Fact Sheet must be followed and a Checklist for Ladder Inspection is provided.

For further information, refer to *AS/NZS 1892: Portable ladders- Selection, Safe Use and Care.*

4.6. Maintaining and reviewing the risk control measures

Maintenance of control measures may involve the following:

- regular inspections of control measures;
- record of each inspection made;
- supervision to ensure workers are using the control measures properly; and
- training for workers on using and maintaining control measures.

Review and, where necessary, revise control measures in the following circumstances:

- existing risk control measures are identified as inadequate;
- a new hazard or risk is identified or there is a change in workplace conditions that could cause new and different risks;
- consultation with workers indicates a review may be required;
- an health and safety representative (HSR) requests a review. This may be based on the belief the existing controls do not address workers' safety requirements adequately; and
- after any incident occurred that involves a fall or a risk associated with a fall.

4.7. High Risk Work License and Permit

A Working at Heights Permit would need to be obtained by all workers before undertaking work at heights that are above 2 metres. Refer to the Working at Heights Permit form for more information.

Managers/supervisors and workers are also responsible for ensuring that they hold an appropriate current licence and comply with the *Work Health and Safety Regulation 2012*.

High risk work licences must be obtained for:

High risk work licence	Description of class of high risk work
Scaffolding work- basic scaffolding	Scaffolding work involving any of the following: a) modular or pre-fabricated scaffolds; b) cantilevered materials hoists with a maximum working load of 500 kilograms; c) ropes; d) gin wheels; e) safety nets and static lines; f) bracket scaffolds (tank and formwork).
Scaffolding work- intermediate scaffolding	Scaffolding work included in the class of Basic scaffolding; and scaffolding work involving any of the following: (a) cantilevered crane loading platforms; (b) cantilevered scaffolds; (c) spur scaffolds; (d) barrow ramps and sloping platforms; (e) scaffolding associated with perimeter safety screens and shutters; (f) mast climbing work platforms; (g) tube and coupler scaffolds (including tube and

	coupler covered ways and gantries),
Scaffolding work- advanced scaffolding	Scaffolding work included in the class of Intermediate scaffolding; and scaffolding work involving any of the following: (a) cantilevered hoists; (b) hung scaffolds, including scaffolds hung from tubes, wire ropes or chains; (c) suspended scaffolds
Boom-type elevating work platform	Use of a boom-type elevating work platform where the length of the boom is 11 metres or more
Bridge and gantry crane	Use of a bridge crane or gantry crane that is: (a) controlled from a permanent cabin or control station on the crane; or (b) remotely controlled and having more than 3 powered operations, including the application of load estimation and slinging techniques to move a load.

For further information on high risk work licence, refer to SafeWork SA High Risk Work Licences.

4.8. Incident Notification

Any hazards, near misses, incidents or injuries that occur as a result of work performed at height must be recorded in the department Hazard and Incident Reporting Module (HIRM).

In the event of an incident or identification of a hazard, mangers/ supervisors and workers must take actions in accordance with the Incident and Injury Reporting Procedure.

4.9. Emergency procedures

Managers/supervisors must ensure first aid and rescue procedures are developed, documented and relevant workers are made aware prior to commencement of activities at height.

Workers must be provided with suitable and sufficient information, training and instruction on the procedures, which should address the following factors:

- the immediate rescue procedures to be carried out after the fall;
- the impact of falls which could affect the rescue procedure. Injuries such as unconsciousness, blocked airway, impalement, serious head or abdominal injuries, fractures and suspension intolerance must be discussed; and
- training frequency in consideration of worker's competency and their ability to retain competency through regularity exposure to the equipment and skills needed to perform a rescue.

The emergency procedure should also address the following:

- location of the work area in determining if work is carried out in a remote or isolated place;
- specify whether trained first aiders are required, and if so, the number needed, the competencies required, and the first aid equipment necessary;

- identify the nearest hospital and medical treatment rooms and establish means of contacting the emergency services promptly; and
- establish the communication plan for emergency within the work area.

4.10. Training and supervision

Managers/supervisors in partnership with Organisation Performance and Development are responsible for determining training requirements in consultation with workers who may be exposed the risk of falls in the workplace.

Information, training and instruction provided to workers should include:

- the proper selection, fitting, use, care, maintenance and storage of personal protective equipment;
- the control measures implemented, including how systems are installed and to be used to prevent falls;
- the hazards and risks associated to working at heights;
- procedures for emergency and rescue; and
- procedures for reporting fall hazards and incidents.

Those supervising the work should also receive training. The amount and type of information, training and instruction required will depend on the nature of the work and the risk involved, as well as the type of fall protection measures used.

5. Record management

Any records and documentation pertaining to this procedure must be maintained in accordance with legislative and DPTI record keeping processes. Refer to the DP009 Recordkeeping Policy for information regarding records management.

6. Roles and responsibilities

ROLE	RESPONSIBILITIES
Managers/ Supervisors	Managers and supervisors are responsible for the elimination or minimisation of risk involved with working at height. They must ensure: • All tasks that could reasonably result in injury are identified. • Risks of work undertaken at height are assessed • Control measures are selected and implemented in consultation with workers to eliminate or reduce the risks of working at heights • Safe Work Method Statement (SWMS) are developed in consultation with workers for tasks associated with high risk work activities • Provision of safe plant and equipment, including PPE and harness, for work undertaken at height • Appropriate resources, training, instruction and supervision are provided to workers to mitigate the risk of falls • All equipment is properly inspected and maintained, according to the manufacturer's instructions • Workers do not work alone in a fall-arrest situation • High risk work licences are obtained for any high risk

	work undertaken, in accordance with *Work Health and Safety Regulations 2012* • Emergency and rescue procedures are established and in place
Workers	Workers must ensure that they: • Assist with the identification and assessment of all work that could be classed as 'working at heights'. • Report to managers/ supervisors if there are fall hazards in their workplaces. • Participate in consultation processes when selecting and implementing control measures to eliminate or reduce the risks of fall and also during the development of SWMS for work at height. • Comply with all reasonable instruction in relation to any work being undertaken at height. • Ensure that all equipment, including PPE, is fit for purpose prior to use and used in accordance with documented procedures. • Have the required high risk work license for any high risk work undertaken in accordance with *Work Health and Safety Regulations 2012* • Undertake training sessions in relation to working at heights.
Spotters	Spotters must: • Be trained in working at heights and in emergency and rescue procedure • Remain at their work station and to not be interfered when monitoring the workers • Have all required rescue equipment immediately available and raise the alarm in the event of an emergency • Have the authority to order workers to stop work immediately
Other Persons	Must: • Take reasonable care for their own health and safety • Take reasonable care that their acts of omissions do not adversely affect the health and safety of other persons • Comply with any reasonable instruction from a departmental manager or worker that is intended to ensure the department meets its health and safety duties, so far as is reasonably practicable.

7. Supporting documentation

- WHS Risk Management Procedure
- WHS General Risk Assessment
- Hazard and Incident Reporting Module (HIRM)
- Personal Protective Equipment Procedure
- Incident and Injury Reporting Procedure
- Safe Work Method Statements (SWMS)
- Ladder Inspection Checklist
- Working at Heights Permit
- Working at Heights - Ladders Fact Sheet
- Work at Heights - Gantry Cranes Fact Sheet

8. References

- *Work Health and Safety Act 2012 (SA)*
- *Work Health and Safety Regulation 2012 (SA)*
- Code of Practice for Managing the Risks of Falls at Workplace
- SafeWork SA High Risk Work Licenses
- AS/NZS 4576 Guidelines for scaffolding
- AS 2550.10: Cranes, hoists and winches- Safe use- Mobile elevating work platforms
- AS 2550.1- 2011: Cranes, hoists and winches- Safe use Part 1: General requirements
- AS 2550.3- 2002: Cranes, hoists and winches- Safe use Part 3: Bridge, gantry, portal (including container cranes) and jib cranes
- AS 2359.1- 2015: Powered Industrial Trucks- General requirements
- AS 2359.2–2013: Powered Industrial Trucks- Operations
- AS/NZS 4994- Temporary Edge Protection series
- AS/NZS 4488: (set) 3: Industrial rope access systems
- AS/NZS 1891:4 Industrial fall-arrest systems and devices- selection, use and maintenance.
- AS/NZS 1892: Portable ladders- Selection, Safe Use and Care

9. Document Amendment Record

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