Hazard Identification, Risk Assessment and Control (HIRAC) for Work at Height

Health, Safety and Wellbeing

❶ A. Introduction

Hazard identification and safety risk assessments should be conducted prior to carrying out any task where working at height is required. These assessments should be conducted in consultation with the workers who will perform the task and their *Health and Safety Representative(s)* (if applicable). "Work at Height" is defined as any University activity which has the potential for a person to fall more than two metres. Most often work at heights involve roof access for routine maintenance of mechanical devices, roof repairs, cleaning gutters etc. Other situations which may present a fall hazard include laying of data cable, forestry operations, primary industry activities, science projects, student activities, theatrical productions, etc. (Theatrical performances and sporting activities have a different status under legislation. However it is University Policy to conduct a HIRAC review when a hazard is present).

To manage the risk of injury during any work at height, the HIRAC process to identify and implement any risk control measures is necessary. The process for identifying these measures is outlined in Section ❷ of this document – *HIRAC Table for Work at Height*:

- in the first and second columns: identify and assess the risks specifically associated with work at height in that location/activity;
- in the third column: identify the risk control measures which will effectively and practicably eliminate or minimise the risks (see B & C below), and implement them in consultation with all stakeholders, including the contractors; and
- in the fourth column: verify that the risks have been eliminated or reduced to LOW.

B. Note on Assessing Risks

Risks can usually be assessed through a consultative process which makes use of the participants' experience and judgement. Where necessary, risks can be assessed more formally on the basis of 2 key factors: (a) the likely severity of any injury/illness resulting from the hazard and (b) the probability the injury/illness will actually occur. For more information, refer to the University's *Risk Assessment Guideline*.

C. Note on Controlling Risks

Working at Heights in an area or activity with EXTREME, HIGH or MEDIUM risks is **not acceptable**. Effective risk control measures (see table below) must be implemented to bring the residual risk down to LOW before the commencement of work becomes acceptable.

The risk control options below are ranked in decreasing order of effectiveness. Risk control measures should always aim to be as high in the list as practicable. The effective control of any given risk generally involves several measures drawn from the various options. It is inadequate to rely solely on administrative measures (e.g. permit) to control EXTREME or HIGH risks.

Risk Control Options for Work at Height:

Control Measure	*Description*
1. Elimination	Eliminate the need to access the fall-risk area (e.g. by locating or relocating items requiring inspection, maintenance or other attention, elsewhere). It is best to work on the ground or solid construction. The elimination of hazard is 100% effective and is therefore the control measure of choice where death or serious injury may occur (HIGH risk).
2. Substitution	Provide alternative means of access to the point or item to which access must be made which avoids the risk of a fall (e.g. walkways). The effectiveness of substitution is wholly dependent on the choice of replacement.
3. Isolation	Barricade or enclose the fall risk so that it cannot be reached. Examples include the use of barriers or guardrails. These can be used in conjunction with a passive fall prevention system (e.g. temporary work platform, roof safety mesh, etc.).
4. Engineering	Passive systems such as permanent access and work platforms that comply with AS 1657 are preferred. Other passive devices such as scaffolding, elevated work platforms, guard railing, roof safety mesh, walkways on brittle areas, etc., are acceptable.
5. Work Positioning	Work positioning devices such as Elevated Work Platforms, industrial rope access systems, and travel restraint systems, which enable a person to be positioned and safely supported while working at height.
6. Administrative	These measures include the use of guidelines, safe work practices and Work at Height Permit. Provide training to ensure only employees and contractors competent in the relevant safe system of work at height undertake the work. Certification may be required. Administrative control should include regular monitoring to ensure the safety controls identified in the training are being followed. They typically require significant resources to be maintained over long periods of time for continuing levels of effectiveness. Although administrative measures are insufficient on their own, they form an essential part of any risk control option other than elimination.
7. Personal Protective Equipment	Fall prevention/fall arrest systems usually include harnesses, lanyards, anchor points, and rope systems. Their actual effectiveness in realistic work situations can be much lower than thought, so this option is generally not suitable on its own for work at height. However, it has a legitimate place as part of a combination of risk control measures.
8. Ladders	The use of portable ladders is the least preferred means of working at height. Using a ladder to carry out work at heights must be supported by a risk assessment.

❷ *HIRAC Table for Work at Height in University Locations/Activities*

LOCATION/ACTIVITY UNDER REVIEW: _____ DATE REVIEWED: _____

PEOPLE CONDUCTING REVIEW: _____

Identify Risks	Initial Risk (Ext/High/Med/Low)	Implement Control Measures	Residual Risk
Are there risks due to the <u>physical environment</u> or <u>the design of the workplace</u>? **Examples** ☐ Uneven, steep, slippery or potentially unstable work surfaces. (Walkways should be provided on the roof for access to plant which need to be worked on or serviced if the stability of the roof is unknown) ☐ Poor housekeeping, uncontained spillages, wastes, or debris (e.g. leaves) or stored or stacked materials where they interfere with access to work ☐ Fragile, brittle roof surfaces (structural soundness of roof and frame to be checked before person walks on, or load is placed on, roof) ☐ Inadequate work platforms, stairs, ladders, guardrails, etc. ☐ Openings or gaps in walkways, handrails, balustrades or platforms ☐ Close proximity to an unprotected edge (edge of surface has a horizontal gap, void or space > 300mm and there is not a barrier to prevent a fall) ☐ Confined spaces, enclosed spaces or restricted/inadequate work area ☐ Inadequate lighting ☐ Exposure to harmful noise levels ☐ Inadequate fixed anchor points or roof access points (e.g. difficult access). If anchor point/s are needed and there are none, temporary anchor points are to be installed. If possible, postpone work until permanent points have been installed. ☐ Difficulty using equipment to gain access to an elevated level or to carry out the task at an elevated level ☐ Roof, floor, gutters, materials, plant, or structures damaged or liable to fall or collapse ☐ Mismatch between workplace and worker characteristics (e.g. height, strength, mobility, fitness, fear of heights, etc.) ☐ Exposure to hot components/items ☐ Extremely cold materials, components (e.g. dry ice) or radiation (ionising or non-ionising, lasers, ultraviolet) ☐ Unsafe scaffolding			

Identify Risks	Initial Risk (Ext/High/Med/Low)	Implement Control Measures	Residual Risk
☐ No safe method for transporting tools on to roof work area or for preventing tools from falling below ☐ Access to unauthorised personnel below the work area ☐ Rubble or impaling hazards are present in the surrounding area (keep a 2 metre clear zone and prevent unauthorized access) ☐ Rubbish or debris left after job is completed			
Are there <u>electrical</u> risks? **Examples** ☐ Contact with live components during testing, inspection, operation, maintenance, cleaning or repair ☐ Accidental contact with power cables (overhead, other) ☐ Explosion or ignition of electrical components, etc. ☐ Unauthorised access to electrical services, controls, etc.			
Are there <u>chemical</u> risks? **Examples** ☐ Flammable or explosive gases, vapours, liquids, or dusts ☐ Oxygen-depleted atmospheres (fermentation vessel, septic tank, etc.)			
Are there <u>mechanical risks</u>? **Examples** ☐ Entanglement of hair, fingers, clothing, or jewellery in moving components ☐ Entanglement in, or impact against, fixed protrusions ☐ Unexpected movement of machines, work pieces or loads ☐ Unexpected movement of access equipment (e.g. snorkel, EWPs, scaffold) ☐ Moving, sharp, hot, or "live" tools or components ☐ Risk of being pushed, pulled or thrown off plant, structures, etc. ☐ Components or materials liable to disintegrate (e.g. grinding wheels) ☐ Damaged, poorly maintained or unguarded equipment ☐ Failure of fall prevention equipment (e.g. harnesses, ropes, lanyards, or barriers)			

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Are there <u>manual handling</u> risks? **Examples** ☐ Having to carry equipment/tools to elevated levels (e.g. up stairs, ladders, etc). *Note: if the only option is using a rope to lift tools or small sized materials onto and off roofs, a rail or some type of restraining device shall be provided to keep the person loading onto the roof away from the roof's edge* ☐ Lowering equipment/tools from elevated levels ☐ Manual handling performed on roof when it could be done at ground level ☐ Potential to over-extend or over-reach during task ☐ Insufficient consultation with relevant people on suitable lifting methods ☐ Unavailability of mechanical or manual winching systems for lifting loads ☐ Handling device inadequate for lifting or moving loads ☐ No control measures for falling objects (e.g. containment sheeting, toe-boards, lanyards secured to tools, exclusion zones, hoardings, gantries, catch platforms, signs, warning devices, barricades, and traffic controllers)			
Are there risks arising from <u>organisational or procedural</u> deficiencies? **Examples** ☐ Insufficient first-aid equipment or trained personnel ☐ Insufficient evacuation, emergency or rescue planning for work at height ☐ Access to roof, heights without permit. ☐ Inappropriate, insufficient or poorly maintained personal protective equipment ☐ Employees of contractors required to work at height are not suitably trained in use of fall prevention equipment or in incident/emergency procedures ☐ The manager/supervisor is unaware of the work at height task and the expected time frame of the task ☐ Work at height performed alone (prohibited) ☐ No safe method of access to heights or method not used ☐ No communication link with personnel on the ground for emergencies ☐ Gutter cleaning schedule not developed or inadequate ☐ Hazards created to others (e.g. mechanical blowers used to clean gutters, etc.). Care is to be taken to ensure no disruption occurs to the University community in the immediate area. Seek advice from immediate area as to staff, student and class movements.			

Identify Risks	Initial Risk (Ext/High/Med/Low)	Implement Control Measures	Residual Risk
Are there risks arising from the <u>natural environment</u>? **Examples** □ Exposure to extreme environmental conditions (hot, cold, wet, snowy, stormy, frost, etc.) □ Lightning □ Possibility of falling tree limbs, etc. □ Exposure to sun □ Strong wind			
Are risks arising from the use of <u>temporary access equipment</u>? **Power operated mobile work platforms** **Examples** □ Does not comply with AS1418.10 □ Operated by untrained personnel □ Not secured against uplift or displacement □ Inadequate braking system to prevent unplanned movement □ Not fitted with edge protection system □ No suitably designed anchor point for fall prevention equipment □ Is not large or strong enough to support materials, tools and personnel □ Allows person's body to protrude from confines of platform while moving □ Too windy for safe use □ Used in the wet when not designed to do so			
Tower scaffolds and other scaffolds **Examples** □ Does not comply with AS1576 □ Installed by untrained & uncertified personnel □ Moved while people are on it			

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Portable ladders (the least preferred means of access to a roof/height and should only be used after an assessment is made of their suitability) **Examples** □ Set up incorrectly (angle of slope to be between 60º and 70º from the horizontal, the vertical distance shall not exceed 6m, and the ladder is secured top and bottom) □ Set up on uneven, slippery or soft surface □ Set up where a person or vehicle could hit it or where falling objects could hit someone □ Ladder unsuitable for task □ Not an “industrial use only” type ladder with a load rating of at least 120kg □ No nominated access point with a fixed ladder point □ Used in the arc of swinging doors □ Used to gain additional height from working platforms □ May contact overhead power lines □ Work being done off the ladder potentially causing over-reaching and loss of balance			