

Guide Manual

**CONTINUOUS USE**  
**RISK LEVEL: HIGH**

## Dropped Object Prevention

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WCEF-GM-OHS-040-03

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**RISK LEVEL: HIGH**

Subject to confidentiality obligations.

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Reasons for Creating or Amending Document	Full Review of Document				
Actual Change Details	Section 5 Where tool tethers are used, they should be connected at all times (100% hookup). For tasks where there is potential for the tool to drop more than 1.8 meters or within 1.5m horizontal of a descent to lower level, (e.g. when working at/or near a handrail), edge barricading, drop mats or tool tethers shall be used.				
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## 1. Introduction

### 1.1 Purpose Statement

This procedure describes the minimum expectations to follow in order to eliminate the potential harm to personnel or damage to equipment from dropped objects.

Where the risk of a dropped object exists, controls for the prevention of dropped objects shall be implemented to prevent the occurrence of high potential injuries. This can be achieved through:

- a) Where practicable, eliminating the need to conduct the work activity at height;
- b) Conducting risk assessments:
  - Before the commencement of the work activity.
  - When the scope of work changes; or
  - When the risk of a dropped object increases.

### 1.2 Scope

This procedure applies to employees, contractors and visitors of all WesCEF operating sites and offices. It covers all work activities where personnel are employed to perform work at height or where they may be exposed to the risk of a dropped object by working below other personnel, tools, equipment and platforms.

This procedure does not cover the risk of persons falling from one level to another. For the management of the risk of personnel falling from one level to another—**REFER TO** WesCEF Working at Heights Procedure.

## 2. Responsibilities

### 2.1 Summary of Responsibilities

The roles identified in this table hold specific responsibilities in relation to this activity.

Role title	Summary of Responsibilities
Business Unit Manager	<ul style="list-style-type: none"> <li>• Providing a safe system of work where persons are not exposed to the hazards of dropped objects.</li> <li>• Ensuring that equipment shall not be used without controls in place where it is reasonably foreseeable for the equipment to become a dropped object.</li> <li>• Ensuring lanyards, tethering, lifting devices and barriers used to prevent dropped objects is compliant to this procedure.</li> <li>• Ensuring that information, instruction, training and supervision of all personnel is provided to enable them to safely perform their work free from dropped objects.</li> <li>• Ensuring risk assessments are conducted by competent personnel before the commencement of work and appropriate control measures are selected.</li> </ul>
Team Leader/ Responsible Officer or Accountable	<ul style="list-style-type: none"> <li>• Establishing where practicable, systems of work which eliminate the potential for dropped objects.</li> </ul>

Role title	Summary of Responsibilities
Person (for Contractors)	<ul style="list-style-type: none"> <li>● Ensuring all personnel are aware of and follow established procedures for preventing dropped objects.</li> <li>● Ensuring all Permit Holders and the team members carry out a field check to assess the work area for any potential hazards including the possibility of falling objects and setting up exclusion zones.</li> <li>● Ensuring Job Safety Analysis (JSA's) are developed and approved prior to the commencement of work and checking that required controls have been implemented when work is being undertaken.</li> <li>● Ensuring risk assessments are re-validated at any time the scope of work changes or the risk of dropped objects increases.</li> <li>● Ensuring that dropped object prevention equipment is inspected by the user before each use.</li> <li>● Informing the Permit Authority if exclusion zones or drop zones are required for the task.</li> </ul>
Planner/Scheduler	<ul style="list-style-type: none"> <li>● Ensuring that the requirements of this standard are included during the planning of the task (including maintenance shutdowns) by considering the hierarchy of control for the work being planned and making provision for appropriate controls to be available (e.g. tool lanyards, lifting buckets, drop sheets, barrier mesh).</li> <li>● Analyse the conflicting/competing works happening in an area and minimise them at the planning stage where practicable especially where work is happening at height, on the principles of elimination of hazard.</li> </ul>
Team Members	<ul style="list-style-type: none"> <li>● Participate in the development of the JSA and comply fully with its requirements.</li> <li>● Inspect all equipment intended to be used.</li> <li>● Do not commence work unless all control measures identified on the JSA have been implemented.</li> <li>● Stop work, update and re-sign the JSA if the scope of work or conditions change or the task ceases for any reason for an extended period of time and recommences. Ensure all team members understand the changes to the hazards and controls.</li> <li>● Set up exclusion zones as stated in Section 5.4.1.</li> </ul>

## 3. Dropped Objects - Overview

### 3.1 Dropped Object

A dropped object is any item with the potential to cause injury, death, or equipment damage, that drops down or over from its previous position. Dropped objects may be further classified as static or dynamic.

Dropped objects include (but are not limited to):

- An object free falling from a structure (for example, solid product, roof sheeting, scaffolding equipment and tools)
- An object free falling from lifting machinery, a vehicle or other plant equipment, including loads being lifted that are not well secured or are unstable.
- An object or material ejected while using machinery or hand tools.
- The collapse of a structure including racking systems and mezzanine floors not strong enough to bear the weight of the objects kept on them.

#### 3.1.1 Static Dropped Object

A static dropped object is any dropped object whose failure may be attributed to gravitational or natural forces (i.e., without an applied force, unsecured items or failure of fixings).

#### 3.1.2 Dynamic Dropped Object

A dynamic dropped object is any dropped object whose failure may be attributed to applied forces (e.g., from the impact of equipment, machinery, or other moving items, severe weather, or manual handling).

## 4. Risk Assessment

Prior to using tools/equipment at height, all persons must understand and actively participate in the WesCEF risk management process.

As part of the risk management process, a risk assessment for the task shall be completed. It shall identify all the potential dropped object risks and consider the following:

- a) The potential energy sources related to the task.
- b) The tools required to complete the task. The amount and type of tools/equipment used at height.
- c) A system to secure/tether tools and equipment to prevent objects from dropping.
- d) A system to prevent other personnel being exposed to the dropped objects risk. For example, an Exclusion Zone, Drop Zone or Spotter.
- e) The environmental conditions which may compromise the stability of tools, equipment and the structure.
- f) Any structures, work areas, overhanging material or product above the work area.
- g) The method of lifting, moving and transporting equipment. Snagging or collisions can occur when equipment is lifted without appropriate planning.

## 4.1 Hierarchy of Controls

Where tools and equipment are being used 'at height', the user must ensure the potential for the tool or equipment is controlled so far as reasonably practicable utilising the hierarchy of controls. The hierarchy of controls are:

1. Elimination - Eliminate the need to use tools and equipment 'at height', e.g. by locating or relocating items requiring inspection, maintenance or other attention, elsewhere.
2. Substitution - Provide alternative means of access to the items requiring inspection, maintenance or other attention which avoids the risk of a dropped object e.g. hinged light posts.
3. Engineering / Isolation - Barricade or enclose the tools and equipment so that it cannot reach an exposed edge.
4. Administrative – Exclusion zones, drop nets or the use of a spotter to keep personnel clear of dropped objects.
5. Personal protective equipment.

## 5. Dropped Object Prevention

All tools and equipment which have the potential to become dropped objects will only be used at height once control measures are implemented.

When using tools/equipment at height, the following general recommendations shall be observed:

- Where tool tethers are used they should be connected at all times (100% hookup).
- Objects shall not be thrown from height. When passing tools and materials, an adequate method of communication shall be maintained.
- All loose objects shall be secured.
- Tools or securing equipment shall not be modified.
- For tasks where there is potential for the tool to drop more than 1.8 meters or within 1.5m horizontal of a descent to lower level, (e.g. when working at/or near a handrail), edge barricading, drop mats or tool tethers shall be used.
- Where temporary or rental tool stores are utilized on WesCEF sites, the tools stocked in the tool stores shall be fitted with restraining devices or supplied with an appropriate restraining device.
- All tools used to construct scaffolding more than 2.0m from the ground level shall be affixed to the scaffolder by a lanyard system.
- The use of hard hat/helmet chin straps shall be considered during the risk assessment process for all activities being conducted 'at height'.
- If critical activity is to be completed during extreme wind conditions (as defined in [WCEF-PD-HSE-0036 Extreme Weather Procedure](#)), hard hats/helmets shall be secured using a chin strap, hard hat lanyard or similar.

Prior to working at height, it is recommended to conduct a 'buddy check' to ensure there are no loose items on the person that may become dropped objects e.g. water bottles, tools, hard hat (no lanyard) etc.

## 5.1 Elimination Control Methods

The primary option to control the risk of dropped objects is to eliminate the risk so far as is reasonably practicable. This means eliminating the need to use tools and equipment 'at height'.

Tools and equipment shall only be used 'at height' to complete a task when the option to use them on the ground level is not practicable.

## 5.2 Isolation Control Methods

### 5.2.1 Edge Barricades

Edge barricades may be constructed of either rigid mesh or flexible materials. Both options shall be adequately secured to the edge and direct objects inside the kick plate.

When selecting the style and materials of construction of edge barricade to be used, consideration shall be given to the mass, shape (geometry) and potential force of the dropped objects contacting the edge barricade.



#### 5.2.1.1 Toe Boards

Toe Boards (often referred to as kick boards) are types of edge barricades specific to scaffolding.

The minimum design requirements for Toe Boards are specified in the Working at Heights Procedure - Scaffolding.—**REFER TO** Working at Heights WCEF-GM-OHS-040-03.

#### 5.2.1.2 Drop Sheets

Drop Sheets may be used to stop smaller objects dropping through the mesh floors to the levels below. Drop sheets shall adhere to the following minimum design requirements. They shall:

- be sized to cover an area in radius equal to the height from which an object may drop.
- closely follow the contour of the plant and equipment when used adjacent to plant or equipment.
- be secured using zip ties or clips to prevent unintended movement.



## 5.3 Engineering Control Methods

### 5.3.1 Tool Tethering

When using tools and portable equipment at height, they shall be tethered as per the table below:

<b><i>Weight of Tools and Portable Equipment</i></b>	<b><i>Method of Tethering</i></b>
LESS THAN 2.3kg	Shall be adequately secured to either: a) The user using a wrist band and belt strap or b) A plant structure capable of supporting the load.
GREATER THAN 2.3kg	Shall be adequately secured to a plant structure capable of supporting the load.

#### 5.3.1.1 Tool Attachment Points

- Tools used at height shall have a lanyard attachment point that does not compromise the tool's effectiveness or introduce additional hazards.
- The tool attachment point shall be inspected by a competent person prior to use to it is fitted properly and not be damaged.

### 5.3.2 Moving Tools and Equipment Between Levels

When carrying tools and equipment between levels, the size and mass of the load must be assessed to identify the most appropriate method of transportation.

When using ladders, items must not be carried by hand.

When using stairs, items can only be carried in one hand to allow for use of the hand rail.

**Note:** Scaffold clips shall not be thrown through the air. Scaffold clips shall be hoisted to the appropriate level using a suitable lifting bag or similar apparatus.

#### 5.3.2.1 Backpacks/Tool Bags




When using backpacks or tool bags to carry tools at height, the following conditions shall be met:

- Openings and pouches must be secured to prevent tools and equipment from dropping;
- Tools and equipment must only be carried when enclosed by the backpack or the tool bag;
- The maximum weight of a tool bag carried by hand shall be determined by each individuals own fitness level and physical ability.

**Note:** No tool bag carried by hand shall exceed 20kg.

#### 5.3.2.2 Safe Lifting Systems

Loads which are assessed as being too heavy or awkward to utilise hands free bags or backpacks shall be transported using a safe lifting system. The most appropriate lifting device selected for use shall be based off the size and mass of the equipment.

LIFTING SYSTEM	DESCRIPTION
<b>Gin Wheels</b>	<p>Gin wheels are <b>not permitted</b> to be used at WesCEF sites.</p> 
<b>Braked Pulleys</b>	<p>When lifting equipment by hand in excess of 20kg, a braked pulley arrangement must be used with the brake automatically applied as soon as the operator releases the rope.</p>
<b>Lifting Bags/Buckets</b>	<p>For small tools and equipment, a rated rope and pulley system with a load rated lifting bag (or other device) conforming to AS4991 attached to structural plant shall be used.</p>  

## 5.4 Administrative Control Methods

### 5.4.1 Exclusion Zones

When a load is being lifted or has dropped object potential, an exclusion zone shall be established so that a falling object cannot strike a person.

The exclusion zone shall be demarcated by the use of red and white 'DANGER' tape encompassing all sides of the zone, to act as a barrier blocking entry into the zone. Information tags shall be attached to the danger tape.



The attached Information Tags shall contain the following information:

- Information regarding the nature of the hazard.
- The name and company of the person creating the exclusion zone.
- Contact details of the person creating the exclusion zone.

When the specific activity generating the dropped object hazard is complete, the exclusion zone shall be promptly removed. Exclusion zones shall only be established for the duration that the dropped object hazard exists.

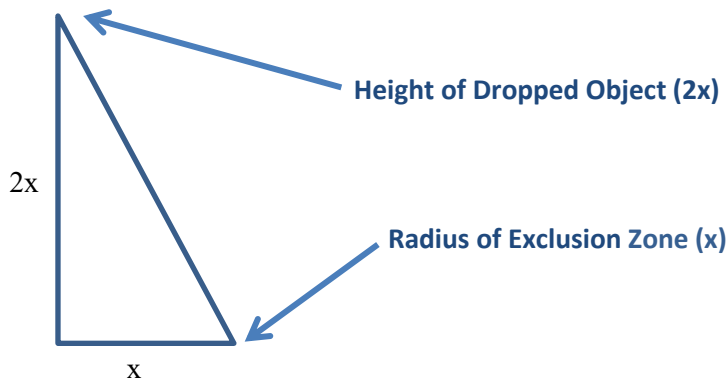
#### 5.4.1.1 Exclusion Zone Entry Process

To enter an exclusion zone, the person seeking entry shall contact the person creating the exclusion zone via the details on the information tag and gain authorisation to enter the area.

Before entry into the area is authorised, overhead work shall stop and all tools and equipment should be secured.

#### 5.4.1.2 Minimum Requirements - Exclusion Zone Radius Design

The minimum radius size of the exclusion zone shall be **equal to, or greater than half the potential drop height of the object.**



For additional guidance on the minimum exclusion zone radius size requirements—**REFER TO [Section 8.1 Minimum Exclusion Zone Requirements Table](#)**.

#### 5.4.1.3 Lifting/Hoisting Objects

If using a lifting device over an area accessible by personnel (e.g. hoists, chain-blocks, cranes over walkways/plants/work areas) the following requirements shall apply:

- An exclusion zone shall be established to prevent personnel from accessing the area underneath the load.
- The relevant rigging procedures shall be followed.
- The rigging equipment shall be inspected prior to use to ensure it is in good condition.

**Note:** A load shall never be lifted, lowered, or swung over personnel's head.

If the Operator of the lifting device has an impeded view in any way, a Spotter shall be used to assist the operator.

For additional information—**REFER TO** Slings, Rigging and Lifting Equipment CSBP-GM-11-038-02.

## 5.4.2 Drop Zones

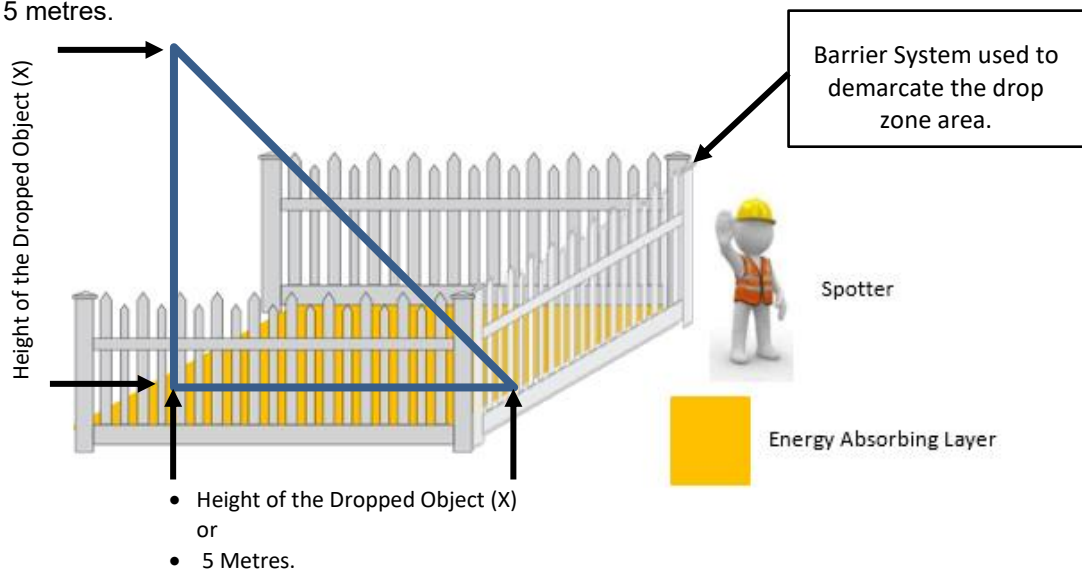
Drop zones are protected areas where objects are intentionally dropped from height in a manner such that they do not interact with personnel or plant and equipment. They shall have:

- A barrier system used to demarcate the drop zone area. The barrier system shall be used to establish an area which is able to contain any materials from being ejected from the drop zone.
- Spotters situated at access areas of the drop zone to maintain the integrity of the drop zone area.
- A clear system of communication between the Spotter and personnel dropping the objects. Prior to objects being dropped, the Spotter must indicate that the area is clear.
- An energy absorbent layer (300mm of sand or loose fill) applied when:
  - Objects are weighted greater than 50kg in mass, or
  - Objects are dropped from a height greater than 10 metres.

### 5.4.2.1 Minimum Requirements - Design Requirements

The size of the drop zone shall be the greater of the following values:

- the height at which dropped objects may deflect or;
- 5 metres.



For additional guidance on the minimum drop zone size requirements—REFER TO [Section 8.2 Minimum Drop Zone Requirements Table](#).

## 5.4.3 Spotters

Spotters may be used as a control measure to:

- Restrict personnel from entering an exclusion zone or a drop zone.
- Reduce the likelihood of objects at height contacting each other creating the potential for a dropped object.
- Assist the Operator of a lifting device if the Operator's view is impeded in any way.

## 5.4.4 Housekeeping

When using tools and equipment at height, the work area at height shall be kept tidy with tools and other materials kept away from walkways and edges. Any unused tools and equipment should be removed from height.

### 5.4.4.1 Equipment Storage

Equipment and materials shall be stored at ground level and be stacked on flat surfaces in such a manner so that they cannot slide, fall or collapse. If this is not practicable, they shall be secured to avoid movement.

## 5.5 Personal Protective Equipment

The effectiveness of personal protective equipment at preventing injury from dropped objects in WesCEF is minimal.

Hard hats are acknowledged as providing protection from very light dropped objects (<100g) and must be worn in required areas.

## 6. Continuous Improvement

Continuous improvement in the control and prevention of dropped objects will be achieved by the follow methods:

- Monitoring of incident trends by the health and safety department,
- Hazard and incident reporting through Cintellate, and
- Permit to Work system audits conducted as per the WesCEF auditing process.

## 7. References

### 7.1 Reference Documents

These documents were used to develop this procedure:

Title	Document Number
Safe Work Australia – Falling Objects Fact Sheet	
Working at Heights Procedure	WCEF-GM-OHS-040-03
Slings, Rigging and Lifting Equipment	CSBP-GM-11-038-02.

## 7.2 Key Terms and Definitions

This table provides a summary of the key terms used in this procedure:

Term	Meaning
At Height	1.8 meters above ground level or within 1.5m horizontal of a descent to lower level.
Drop Zone	A protected area where objects are intentionally dropped from height in a manner such that they do not interact with personnel or plant and equipment.
Exclusion Zone	An area demarcated using danger tape within which a load is being lifted or has dropped object potential which cannot be satisfactorily controlled using preventative controls.
Team Leaders	A person in charge of a shift or department to ensure daily work activities are carried out in accordance to safe work practices and approved processes / procedures.
Toe Boards	Boards attached to the floor level of the scaffolding and erected along exposed edges of the scaffolding to prevent objects from falling and employees from slipping off the scaffolding.

## 7.3 Record Keeping Table

These records, generate by this process, are to be retained as detailed here:

Record Details		Storage Medium	Storage Location	Indexing Method	Retention Period	Authorised Disposer	Disposal Method
Form No.	Title						

## 8. Attachments

### 8.1 Minimum Exclusion Zone Requirements Table

Working Height (2x)	Minimum Exclusion Zone Radius (x)
1 metre	0.5 metres
4 metres	2 metres
10 metres	5 metres
15 metres	7.5 metres
20 metres	10 metres
25 metres	12.5 metres
30 metres	15 metres
40 metres	20 metres
50 metres	25 metres
75 metres	37.5 metres

### 8.2 Minimum Drop Zone Requirements Table

Working Height	Minimum Drop Zone Size
<i>LESS THAN</i> 5 metres	5 metres
6 metres	6 metres
7 metres	7 metres
8 metres	8 metres
9 metres	9 metres
10 metres	10 metres
20 metres	20 metres
30 metres	30 metres
40 metres	40 metres
50 metres	50 metres