

**ESSENTIAL
STANDARD
no.27**

Plant People Interface

**Safe People
Happy People
Sustainable Business**

KEY MESSAGES

- Plant & people must be segregated
- All sites should have dedicated pedestrian walkways, to separate foot traffic from moving vehicles & plant
- Ensure pedestrian footpaths and walkways are clearly identified with appropriate barriers & signage.
- Do not enter the restricted zone when machines are operational
- Always approach plant in the operator's line of sight & adopt the 'thumbs up' procedure
- Exclusion zones & Safe zones must be established around mobile plant

1. Introduction

The plant people interface refers to the physical & procedural interaction between people & plant on construction sites. It is one of the leading causes of workplace fatalities & severe injuries, making strict safety zones & communication protocols essential.

Managing the interface safely relies on three core pillars: segregation, exclusion zones & communication.

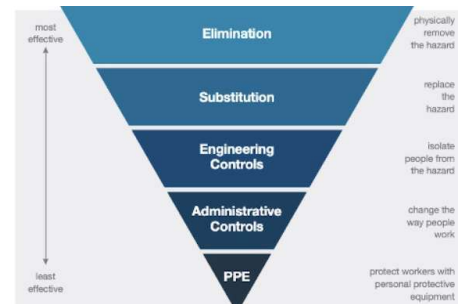


2. Hierarchy of Controls

The greatest risk from mobile plant is the interaction between people & moving plant.

The hierarchy of control for people plant interface is:

- **Elimination** – remove the hazard entirely. Plan operations so pedestrians are never in the same working area
- **Substitution** – replace the hazard with something less dangerous
- **Engineering Controls** - isolate people from the plant mechanically or electronically. For example, physical barriers, creating designated pedestrian walkways or using proximity sensors & human form recognition cameras
- **Administrative Controls** - change work procedures to reduce exposure – for example. Enforcing strict exclusion zones, using trained banksman, thumbs up approach
- **PPE** – the last line of defence, high visibility clothing to ensure workers can be seen



3. Pedestrian-Plant Segregation

Pedestrian routes on sites must completely separate foot traffic from moving vehicles & plant. This requires physical barriers, dedicated crossing points, clear signage & firm well drained walkways.

Key requirements for site walkways

- **Physical Separation** – install robust physical barriers to prevent pedestrians accidentally stepping into vehicle paths
- **Firm, Level Ground** – walkways must be free of debris, well-drained, & stable to reduce the risk of slips, trips & falls
- **Sufficient Width** – ensure routes are wide enough to avoid bottlenecks & allow for two-way passing where possible
- **Clear Signage & Markings** – use ground markings & high visibility signs to indicate directions, warnings & pedestrian only zones.

Intersections & Crossing

- **Designated Crossings** – where pedestrian & vehicle routes must intersect, establish clearly marked & protected crossing points

- **Visibility** – ensure both pedestrians & drivers have a clear line of sight. Remove obstructions like stacked materials near corners
- **Traffic controls** – consider traffic light, crossing points or speed humps to slow down plant & vehicles.



4. Reversing Controls

Reversing plant & vehicles is one of the highest risk operations in construction.

The hierarchy of control for reversing activities is:

- **Eliminate** – plan site layouts to use one-way systems & drive-through loading areas, completely removing the need to reverse
- **Isolate** – use rigid physical barriers to physically segregate pedestrians from plant operating zones
- **Control & mitigate** - enforce strict zoning systems & safe systems of work when physical segregation is impossible

Standard Safety Zone

- **Restricted Zones** – when ground workers must work near mobile plant, strict exclusion zones are used.

Traffic Management & Operator Aids – where pedestrians cannot be excluded during a reversing operation, sites rely on the following controls

- **Banksman** – trained marshals stationed in a safe zone to direct drivers using standardized hand signals or radios
- **Technology** – smart collision avoidance systems, AI pedestrian detection cameras, radar proximity sensors & 360-degree CCTV systems
- **Warning systems** – fully operational reversing alarms & flashing beacons

Training & Procedures

- All workers must understand the risks of heavy machinery, blind spots, & the site's specific traffic management plan
- Before approaching any machine, workers must follow a strict protocol, thumbs up'

5. Restricted Zone

The restricted zone is the working area of a plant, it is the full swing radius of an excavator, or the immediate area that a wheeled or tracked item can move into & hit you. Access to the restricted zone must be strictly controlled.



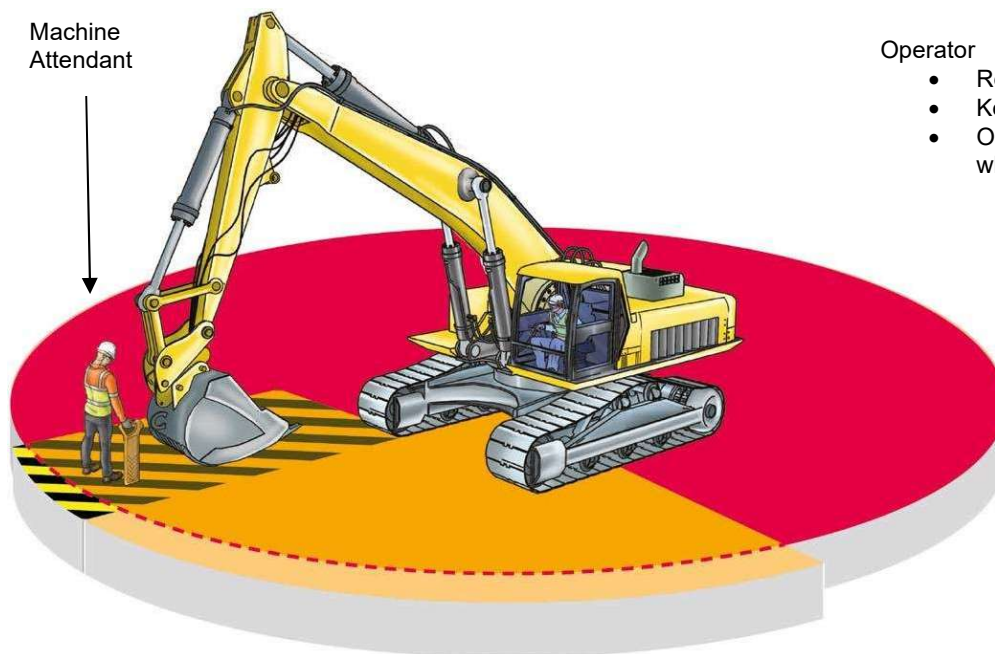
Excavator



Do not enter restricted zones when machine is operational

Operator's Line of Sight

- Safest zone for approach
- Wait for
 - Bucket on ground
 - Deadman's lever applied
 - Operator 'thumbs up'



Operator

- Remove keys when unattended
- Keep clothes clear of controls
- Only release Deadman's lever when everyone is clear

Forward Tipped Dump Truck

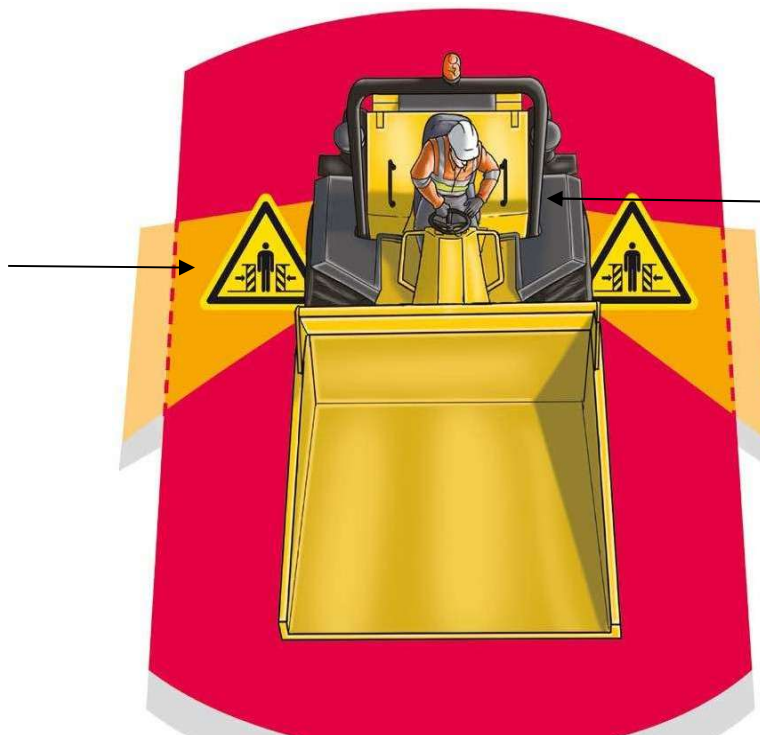


Do not enter a restricted zone when machinery is operational

Operator's Line of Sight

- Safest zone for approach
- Wait for
 - Operator to apply brakes & turn off the machine
 - Operator 'thumbs up'

Avoid crush areas at all times



Operator

- Lower bucket when people approach
- Remove keys when unattended
- Keep clothes clear of controls
- Only release brake when everyone is clear

Large Articulated Dump Truck 10t

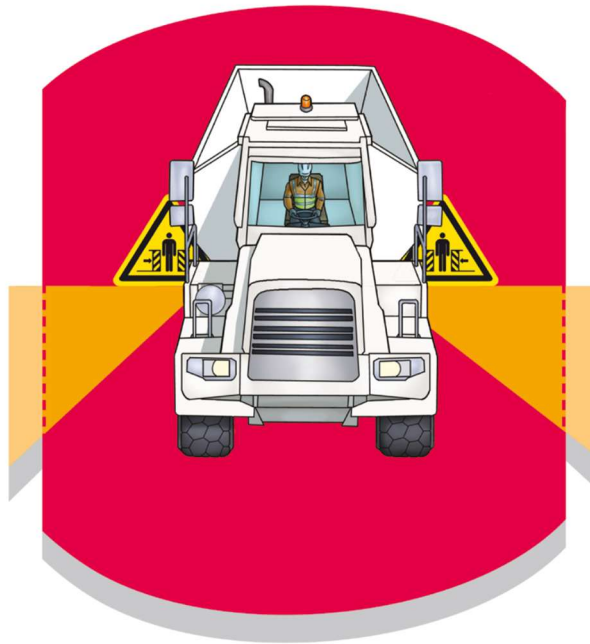


Do not enter restricted zones when machine is operational

Operator's Line of Sight

- Safest zone for approach
- Wait for
 - Operator to apply brakes & turn off the machine
 - Operator 'thumbs up'

Avoid crush areas at all times



Operator

- Lower body when people approach
- Remove keys when unattended
- Keep clothes clear of controls
- Only release brakes when everyone is clear

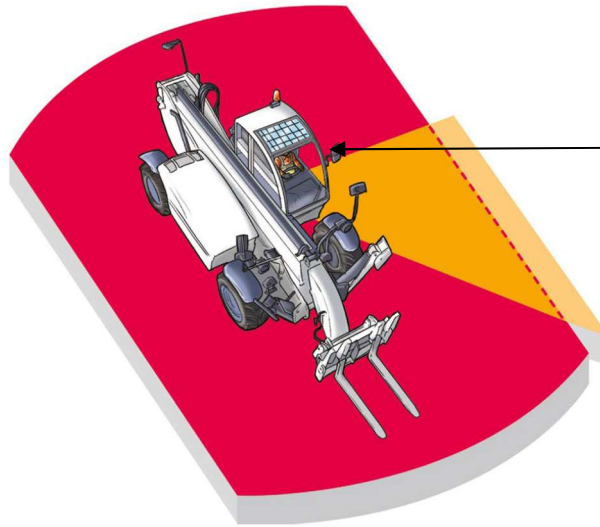
Telehandler



Do not enter restricted zones when machine is operational

Operator's Line of Sight

- Safest zone for approach
- Wait for
 - Operator to apply brakes & turn off machine
 - Operator 'thumbs up'



Operator

- Remove keys when unattended
- Keep clothes clear of controls
- Only release brake when everyone is clear

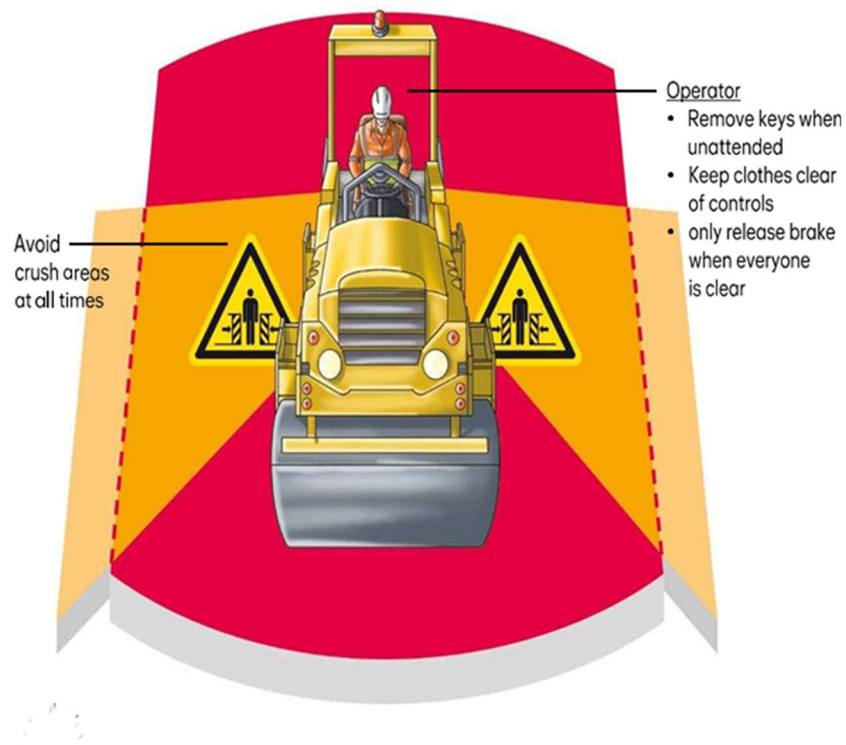
Small Sit-On Roller



Do not enter restricted zone when machine is operational

Operator's Line of Sight

- Safest zone for approach
- Wait for
 - Operator to apply brake & switch off the machine
 - Operator 'thumbs up'



Operator

- Remove keys when unattended
- Keep clothes clear of controls
- only release brake when everyone is clear

Avoid crush areas at all times



The 'thumbs-up' is a universal symbol that something is OK. If a task requires entering an exclusion zone, workers must follow a strict, systematic procedure to avoid being struck.

- Anyone approaching plant must only approach in the operator's line of sight.
- Establish sight & signal – make direct eye contact with the operator & give a clear 'thumbs up' your intention to approach & enter the restricted zone.
- Wait for the machine to isolate - the operator must ground the bucket/attachment, activate any safety levers & turn off the engine.
- Approach safely - Wait for the operator to indicate it is safe to approach, by using the thumbs up. Enter & remain only in the operator's line of sight
- Exit - Leave the same way in which you entered, only once you have signaled to the operator that you have left the restricted zone can the machine be restarted

6. Working in the Restricted Zone

If working in a restricted zone cannot be eliminated, then the following applies:

- Formal authorisation from the site manager
- Risk assessment & method statement in place for the works
- Plan safe entry & exit routes
- You must only enter the restricted zone to reach bucket or lifting points if you are:
 - Experienced in working alongside the specific machine
 - Briefed on the restricted (red) zone
 - Aware of proximity risks
- Operator can see worker in restricted zone at all times
- Agreed communication e.g. radios, verbal or hand signals

7. Exclusion Zones

Exclusion zones must be established around mobile plant activities where there is a risk of persons being struck, crushed, or injured by plant movement, attachments, or falling materials. These zones provide a physical separation between plant operations & pedestrians.

Where reasonably practicable, exclusion zones shall be created using robust physical barriers rather than solely relying on signage or supervision. Barriers must be suitable for the level of risk & the environment in which they are used.

Requirements

- Exclusion zones shall:
 - Encompass the full operating radius of the plant, including slewing areas, travel routes, & material handling zones
 - Take account of blind spots, loads, attachments, & potential for unexpected movement
 - Be clearly defined using physical barriers (e.g. fencing, pedestrian barriers or edge protection systems)

- Barrier standards
 - Must be stable, secured & capable of withstanding impact where required
 - Positioned to prevent encroachment into the danger area
 - Maintained in good condition & inspected regularly
- Access control
 - Entry into the exclusion zone is prohibited while plant is operational
 - Controlled access points must be identified where required
 - Only authorised persons must enter, following the procedure above, operator's line of sight & the thumbs up.
- Communication
 - Clear communication systems must be in place between operators & ground personnel (e.g. banksman, radios & hand signals)
 - Operators must maintain awareness of personnel at all times & stop operations immediately if a person breaches the exclusion zone
- Signage
 - Suitable warning signage must be displayed to identify exclusion zones & prohibited areas
 - Pedestrian routes must be clearly segregated from plant movements
- Exclusion zones must be
 - Detailed in RAMS
 - Communicated to all personnel during briefings & inductions
 - Reviewed & adjusted as site conditions or operations change
- Additional controls
 - Consider banksman or marshals to manage vehicle/pedestrian interfaces
 - Proximity warning systems on plant



8. Monitoring & Compliance

Monitoring & compliance of the people & plant interface on construction sites is a critical aspect of ensuring safety, efficiency, & legal adherence.

Effective monitoring begins with clear risk assessments that identify hazards associated with plant operations, such as moving vehicles, lifting equipment & powered tools. These assessments should define safe systems of work, including exclusion zones, traffic management plans, & communication protocols between operators & ground workers.

Regular site inspections, audits & supervision are essential to ensure these controls are being followed in practice, not just documented.

Compliance relies heavily on training and competence. Plant operators must be properly certified, while all personnel working near machinery should receive site-specific inductions and ongoing safety briefings. This ensures everyone understands the risks, signals, and procedures associated with working around plant. Supervisors play a key role in enforcing compliance by observing behaviours, correcting unsafe practices, and maintaining discipline on site.

Review of all incidents & near misses to prevent reoccurrence.

9. Roles & Responsibilities

Operators

- Maintain awareness of surroundings at all times
- Stop work immediately if a person enters a danger zone
- Isolate machine before allowing access
- Remove keys when unattended

Supervisors

- Enforce compliance with this standard
- Ensure RAMS & traffic management plans are implemented
- Conduct regular safety inspections

All Personnel

- Follow site rules & procedures
- Never enter restricted or exclusion zones without authorisation
- Use designated walkways
- Challenge unsafe behaviours

10. Emergency & Incident Response

In the event of unauthorized entry into a restricted or exclusion zone

- In the event of unauthorized entry into a restricted or exclusion zone, the operator must stop work immediately
- The area must be made safe before restarting

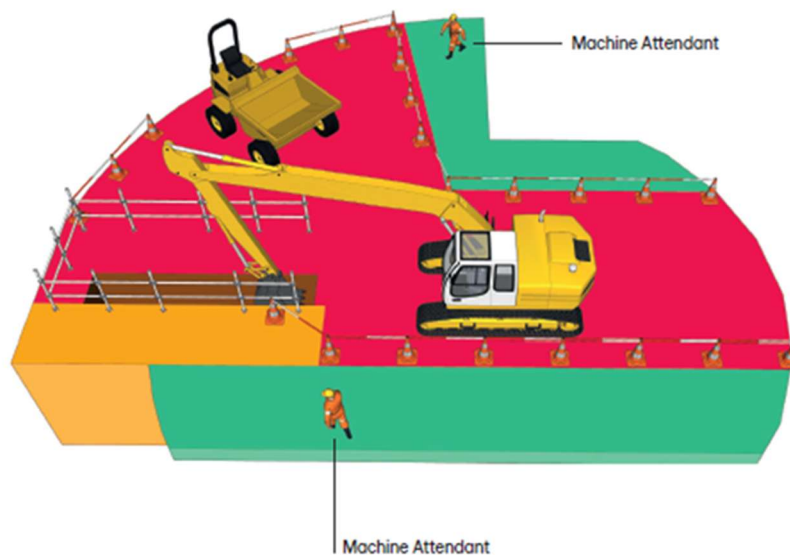
Incident or Near Miss

- Stop all operations
- Provide first aid where required
- Report immediately in line with Bridges 112 procedure
- Preserve scene where necessary for investigation

Stop Work Authority – STAR

- All personnel have the authority to stop work if unsafe conditions are identified

11. Good Practice



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