

HEAVY METAL



Toolbox Talk

MOBILE PLANT – SEGREGATION AND EXCLUSION



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MOBILE PLANT SEGREGATION AND EXCLUSION

Presenter guide

- Find a quiet space. Check that everyone can hear you and each other.
- This Toolbox Talk can be delivered in its entirety. Or, depending on the time available, audience and focus, each page can be delivered as separate smaller Toolbox Talks.
- Ask your workers to engage in discussion by sharing stories and asking questions.
- Consider giving a practical demonstration or show relevant photos, videos or diagrams.
- Print out the last page of this Toolbox Talk. Share as a handout and post on noticeboards.

FACTS

- Workers being hit, crushed by, or falling from powered mobile plant continues to be a leading cause of death and serious injury, especially in the construction industry.
- The size, inertia, weight and power of mobile plant presents significant hazards to people and equipment in their area of operation.
- Mobile plant can move unexpectedly at any time, and it is not limited to just forward and backward movements. It can also move up, down, out, swing around, slew, pivot or extend in many different directions.
- Work health and safety laws specify that a person conducting a business or undertaking (PCBU) that involves plant must ensure that risks associated with the plant colliding with pedestrians or other mobile plant are eliminated or minimised.

MESSAGES

- The hierarchy of controls must be applied when establishing control measures to prevent plant colliding with pedestrians and other plant.
- As it is not usually practicable to eliminate the use of mobile plant, exclusion zones and separating workers from mobile plant should be the first option for managing the risk of people/plant interaction.
- Solid barriers are preferred to physically separate people from moving mobile plant over temporary, easily bypassed barriers such as bunting, flagging or traffic cones.
- Engineering detection systems on mobile plant may be used to help detect if people or other plant come within the operational zone of mobile plant.
- Workers should never enter exclusion zones. If you must approach operating plant, never assume a plant operator has seen you. Always make positive contact (communication) with the operator (e.g., via radio, voice or signalling) and await positive confirmation from the operator. Mobile plant must be positioned in a safe, stand down position before entering an exclusion zone.
- Construction work, carried out in an area at a workplace where there is any movement of powered mobile plant, is high risk construction work. Therefore, a Safe Work Method Statement (SWMS) is required to be prepared prior to the construction work commencing.
- Critical Risk Protocols (CRPs) and Mandatory Safety Rules (MSRs) must be applied, as well as the hierarchy of controls, the requirements in the Original Equipment Manufacturers (OEM) manual and the results of the plant risk assessment.
- Site rules and site-specific processes relevant to the works must also be followed.

DISCUSSION QUESTIONS AND ANSWERS

DISCUSSION

One of the most common causes of incidents with mobile plant is when workers, members of the public or other items of mobile plant enter an exclusion zone with containing operating mobile plant.

QUESTION

Using the hierarchy of controls, what are some other ways to manage plant/people segregation?

ANSWERS INCLUDE

- **SUBSTITUTE:** mobile plant with lower risk plant, if possible.
- **ISOLATE:** with physical exclusion zones (barriers, safety rails, temporary fencing etc.) to separate pedestrians from moving plant and vehicles.
- **ENGINEERING** controls: fitted to plant, such as proximity sensors, reversing alarms and flashing lights.
- **ADMIN:** Plan the site's layout to minimise plant movement (e.g., drive-through access to minimise reversing, locating loading areas close to storage areas).
- **ADMIN:** Establishing plant movement plans to manage the general movement of traffic (parking areas, speed limits, stand down rules, entry and exit points).
- **Admin:** Using spotters or dedicated traffic controllers.
- **PPE:** Wear high-visibility clothing.

DISCUSSION

The best form of managing plant interacting with people and other plant is segregating them with barriers. But not all barriers are equal, as some can be easily bypassed.

QUESTION

What are some ways to create a safety barrier/exclusion zone?

Which is the best option?

ANSWERS INCLUDE (best to worst)

- Concrete (Jersey) or fixed steel barriers.
- Water-filled barriers.
- Temporary steel or plastic fences.
- Fixed bollards (solid but generally have gaps).
- Hazard barrier boards (moveable – but people can go under).
- Soft barrier mesh fences (moveable – no impact protection).
- Bunting and retractable belt barriers (moveable, but people can go under, and there is no impact protection).
- Traffic cones, moveable bollards and A-frame safety signs (moveable, people can go around and no impact protection).

QUESTION

How can an item of mobile plant be positioned/isolated to allow safe access?

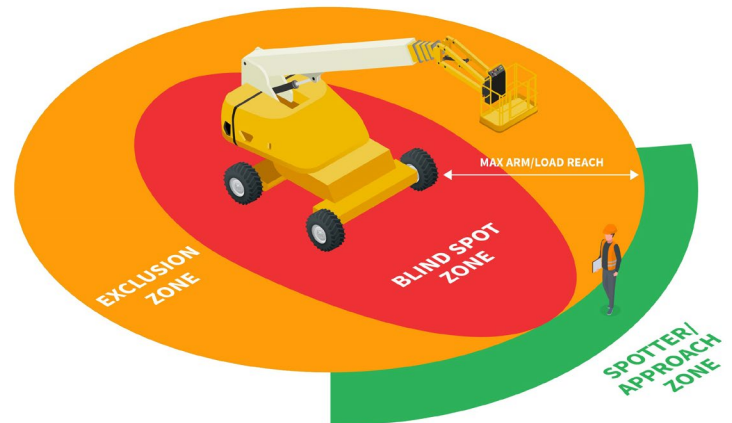
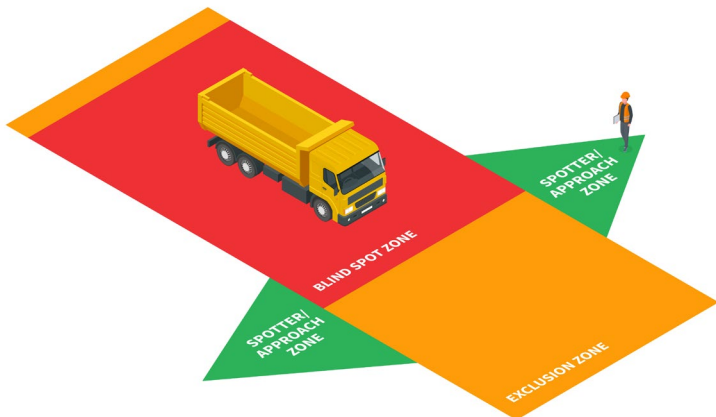
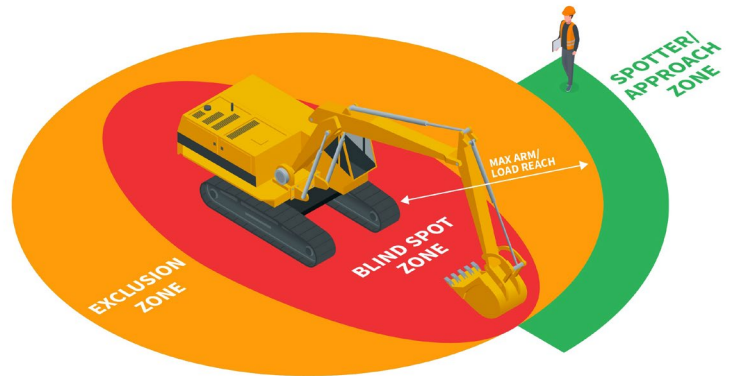
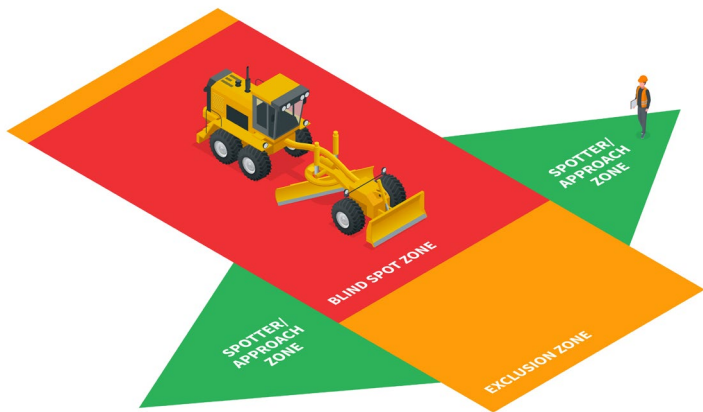
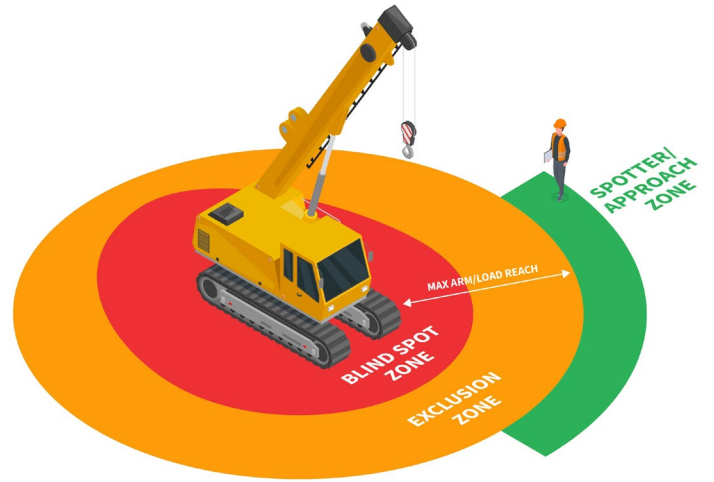
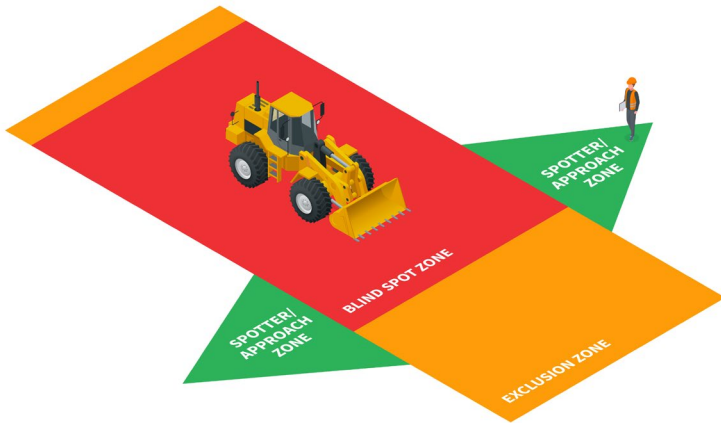
ANSWERS INCLUDE

- Lower the boom, bucket or load to the ground level.
- Position the machine to ensure unimpeded visibility of approaching person.
- Power down the machine and operate E-stop or Deadman switch.
- Remove keys when leaving the mobile plant.
- Operator gives positive contact, thumbs up or operates approach beacon/light on mobile plant to indicate safe to approach.
- Positive communication via two-way radio.

EXCLUSION ZONES

To ensure everyone's safety, it's vital that operating mobile plant is segregated, as far as is reasonably practicable, from all people and other items of mobile plant.

The diagrams below show examples of suitable exclusion zones for various items of plant.



NOTE

Consider location, site-specific requirements, task, type and size of plant and relevant jurisdictional requirements when assessing the required distances.

SCENARIO (OR SHARE A PERSONAL STORY FROM THE TEAM)



Example image for illustrative purposes only.

A 35-year-old worker suffered fatal injuries as they were walking through a construction site.

The worker was struck by an articulated truck that was reversing to dump material onto a stockpile adjacent to the workshop.

The site had no dedicated exclusion zones and traffic management plans.

The reversing alarm was not working on the truck.

As the worker was walking across the site they were speaking on their mobile phone and appeared distracted.

ASK:

- Do we have any new or inexperienced workers who need extra support or supervision?
 - Do we have any mobile plant that is not suitable for the task or fit for purpose (in good working order)?
 - Do we know if anything has changed or is likely to change from our original task plans?
-

QUESTION TO ASK WORKERS

WHAT CONTROLS WERE MISSING FROM THIS SITUATION?

ANSWERS INCLUDE

- Fixed and secured barriers that prevent people from accessing “Mobile Plant Only” operational areas should be implemented.
- People and mobile plant were not kept apart. “Pedestrian Only” and “Mobile Plant Only” spaces should be clearly defined.
- If it is not reasonably practical to separate people and mobile plant using fixed and secured barriers, other controls include:
 - Temporary barriers.
 - Markings or other visual indicators that clearly define pedestrian only areas.
 - Using warning devices such as reversing sensors, reversing cameras, mirrors, flashing lights, or audible reversing alarms.
 - Fitting proximity sensors that detect pedestrians and other mobile plant, triggering alarms and/or automatically applying the brakes to prevent collisions.
 - Development of a traffic management plan for the site that covers controls and procedures.
 - Informing, training and instructing workers on the traffic management plan and monitoring to confirm it is being followed.
 - Ensuring workers are wearing high visibility clothing and using other appropriate personal protective equipment.

MANAGING SEGREGATION AND EXCLUSION

ACTIONS (Safety and health above all else)

- ❑ **ESTABLISH** physical exclusion zones around items of operating mobile plant to prevent access to people and other items of mobile plant. Implement a Traffic Management Plan or plant movement plan, including the use of suitable traffic control devices.
- ❑ **EDUCATE** operators and other workers on the site about the traffic management plan established at the site. Include an understanding of the purpose and authority required to enter established exclusion zones.
- ❑ **CONFIRM** plant operator are trained and inducted in safe systems of work and where a spotter is used to help manage blind spots they are trained and competent in the safe practices required for the role.
- ❑ **MAKE** positive communications with a plant operator before approaching.
- ❑ **STAND DOWN** the mobile plant and position it in a safe-to-approach manner prior to a person or other mobile plant entering its exclusion zone.
- ❑ **EXAMINE** whether controls such as approach beacons, sensory detection units, reversing cameras should be fitted to the mobile plant.
- ❑ **APPLY** the hierarchy of controls when selecting suitable controls that manage interactions between plant and people or plant and plant. Ensure the selected controls are maintained, effective and being complied with.
- ❑ **WEAR** high visibility clothing on the worksite.

KNOW YOUR HEAVY METAL BY ASKING:



- Have we ensured our workers are skilled, educated and capable?
- Are mobile plant operators trained and competent?
- What site-specific conditions and environment do we need to consider and manage?
- Have we separated people and plant?
- Are our safe systems of work adequate and clearly communicated to all relevant personnel?
- Is our mobile plant and equipment in good working order and fit for use?
- Are emergency plans in place to manage instances where unwanted events occur?

Information and resources

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