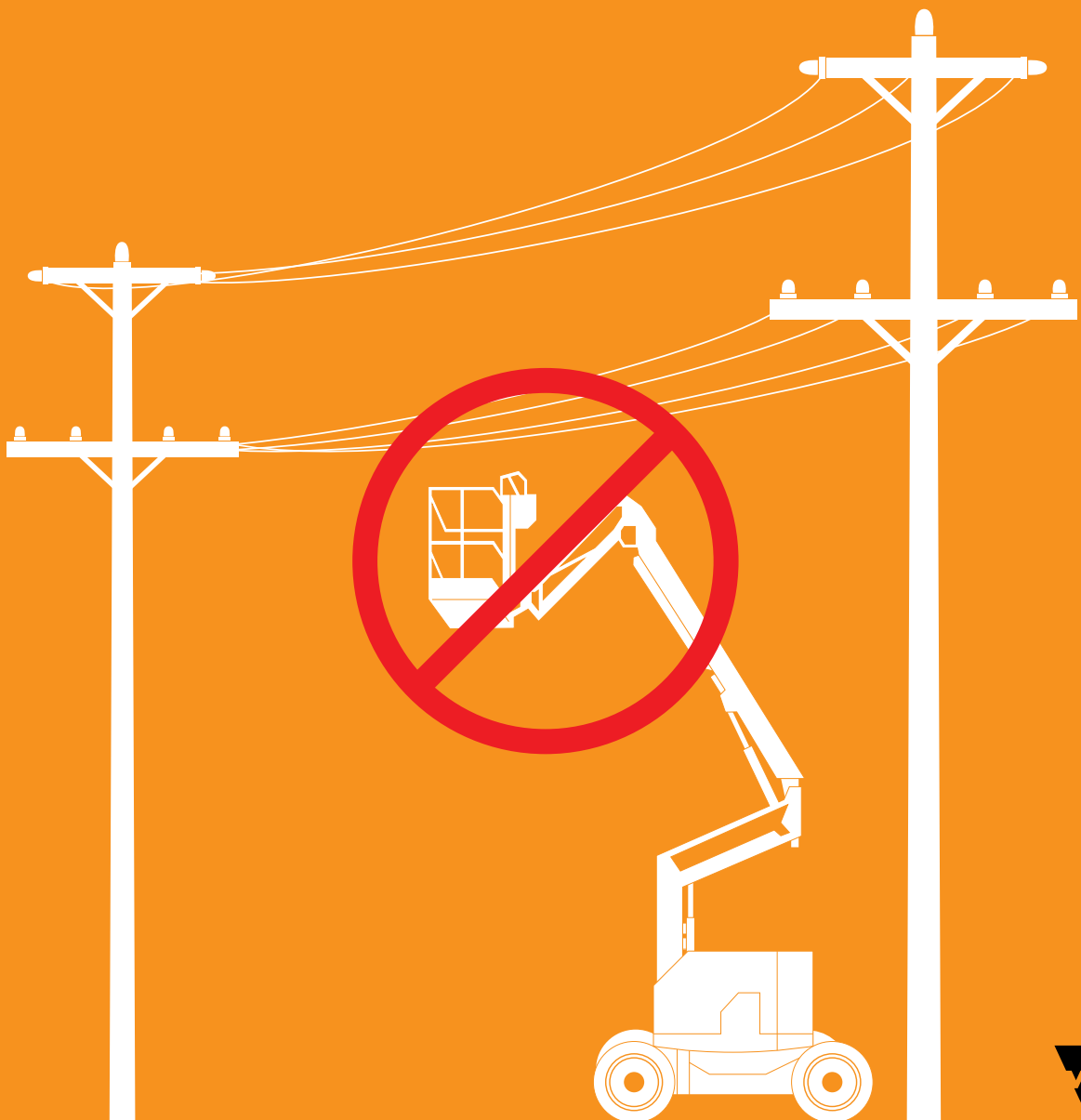


Guidebook

Using powered mobile plant near overhead assets

Edition 1

May 2018



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Part one: scope

Introduction

This document sets out the No Go Zones (NGZ) rules and provides guidance on applying those rules when operating powered mobile plant (mobile plant) near overhead electrical assets in order to:

- protect workers, independent contractors and others from electrocution, electric shock and burns
- reduce the risk of damage to electrical assets and mobile plant
- avoid power failures and associated costs from an incident.

Complying with the NGZ rules may assist duty holders in meeting their obligations under both occupational health and safety (OHS) law and electricity safety (ES) law when working near overhead electrical assets.

For an overview of the process for working near overhead electrical assets see the flowchart on page 5.

Who has legal duties?

Employers, self-employed persons, and persons who have management or control of a workplace have legal duties under the *Occupational Health and Safety Act 2004* (OHS Act) and the *Occupational Health and Safety Regulations 2017* (OHS Regulations). For example:

- An employer must, so far as reasonably practicable, provide and maintain for employees (including independent contractors) a working environment that is safe and without risks to health. This includes eliminating risks to health and safety so far as reasonably practicable. If it is not reasonably practicable to eliminate risks, they must be reduced so far as is reasonably practicable. Employers also have specific duties associated with certain hazards and risks including construction work, falls from above 2m, and plant.

- A self-employed person must ensure, so far as is reasonably practicable, that persons are not exposed to risks to their health or safety arising from the conduct of the undertaking of the self-employed person.
- A person who has, to any extent, the management or control of a workplace must ensure, so far as is reasonably practicable, that the workplace and the means of entering and leaving it are safe and without risks to health.

Duty holders also have specific duties under ES law, including maintaining a safe working distance from overhead powerlines.

The NGZ rules outlined in this document do not apply to the operation of mobile plant in an *open area*. Duty holders in such circumstances must still comply with their obligations under OHS law (for example, duties to provide and maintain a workplace, plant and systems of work that are safe and without risks to health).

Application of NGZ rules

The NGZ rules cover the traversing and operation of mobile plant near overhead electrical assets. The NGZs are described in the 'Definitions' section (page 21) and are depicted in Figures 1 and 2 (see page 6).

The NGZ rules outline two options that may assist duty holders in meeting their obligations:

Option one: direct compliance –

Under this option the duty holder should ensure that:

- where the mobile plant or its load is intended, or likely, to come within the NGZ (red) a permit to work from the asset owner is obtained, and

Part one: scope

- where the work is in the spotter zone and the mobile plant or its load is not intended to enter the NGZ, an Energy Safe Victoria (ESV) registered spotter is used to observe and signal to the operator to stop the mobile plant before it or its load enters the NGZ.

This option may be useful for those who infrequently operate mobile plant near assets, or do not have the knowledge and skills necessary to operate under option two.

Option two: deemed to comply –

Under this option the duty holder may operate mobile plant within the NGZ (up to the exclusion zone) and spotter zone without obtaining a permit to work from the asset owner where the conditions outlined in Part 3 are met.

This is an option for duty holders who operate mobile plant near overhead electrical assets and can develop procedures, processes and controls that form a robust safe system of work.

This option cannot be used for work:

- i. on an electrical easement containing tower-mounted assets, or
- ii. within 8m of pole-mounted assets where assets greater than 66kV are identified.

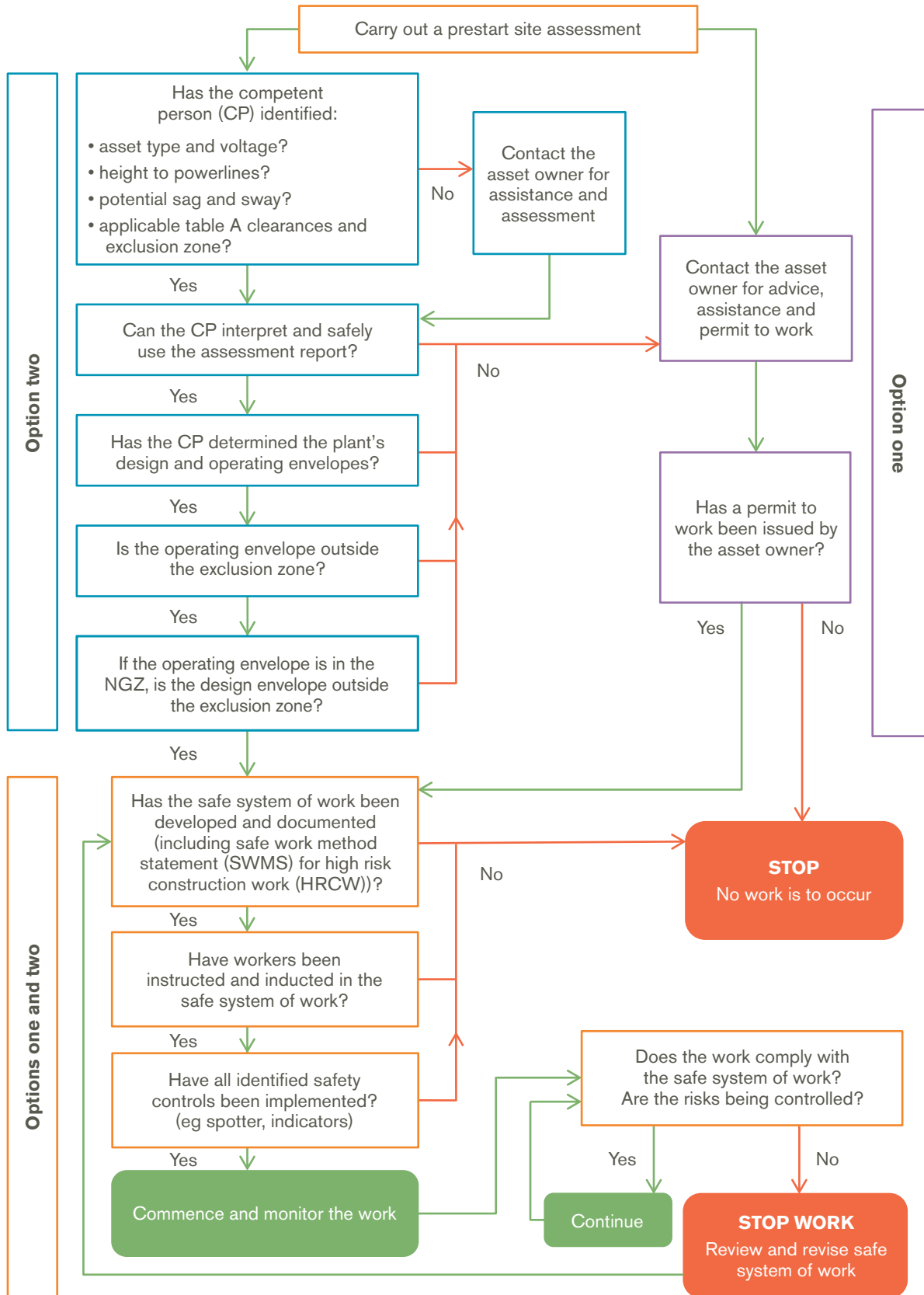
Exclusions

This document does not apply to the following activities:

- work performed by persons working for or under the control of a network operator or high voltage (HV) customer on their electrical asset
- vegetation pruning work near powerlines that is performed by authorised persons under regulations 318 and 319 of the Electricity Safety (Installation) Regulations 2009 and the Electricity Safety (Electric Line Clearance) Regulations 2015
- work performed on transmission easements in accordance with written authority from the network operator
- work undertaken by persons working for or under the control of the owner of a railway or tramway system, and
- emergency works where the network operator manages the electricity safety requirements on site or when assisting emergency services.

Part one: scope

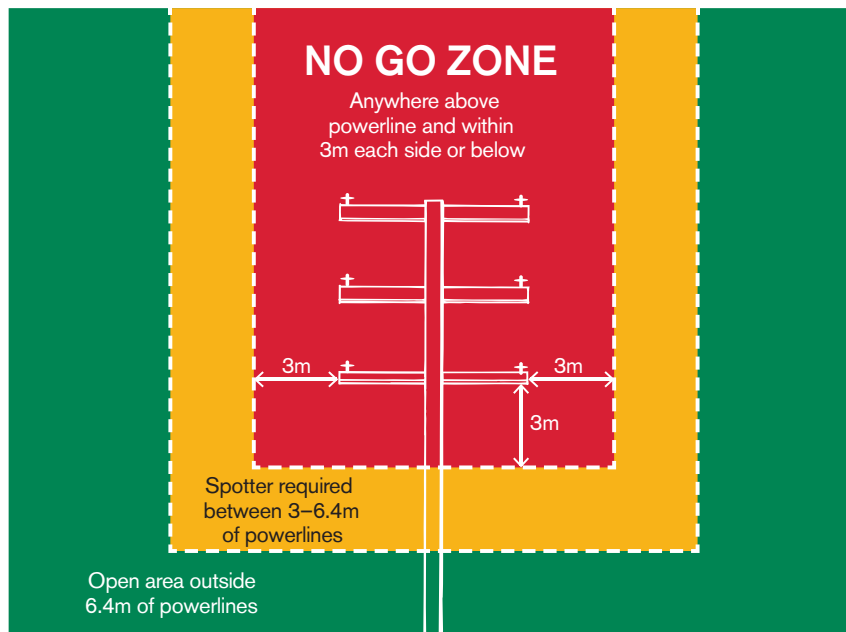
Permit to work flowchart



Part one: scope

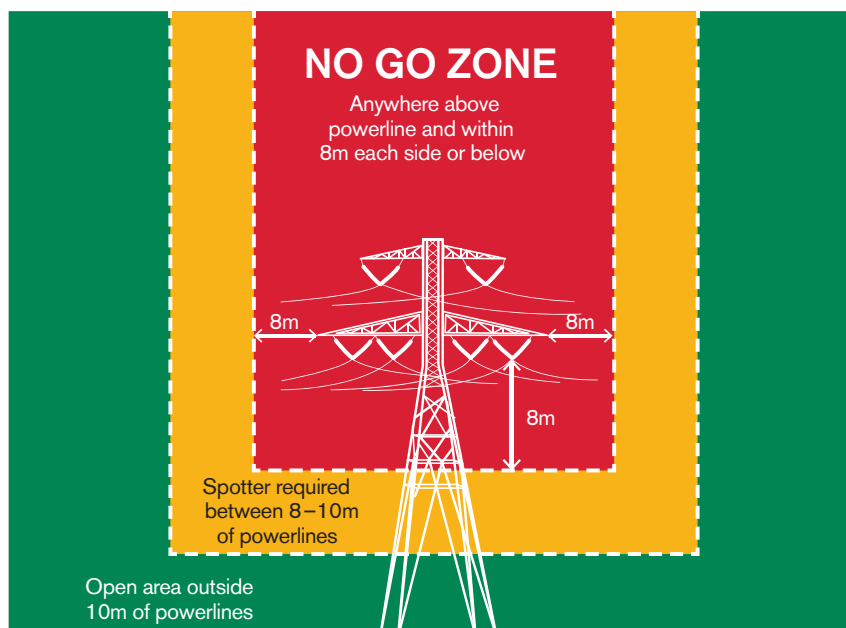
Work near pole-mounted assets

Figure 1 - NGZ poles/distribution
Overhead powerlines on poles



Work near tower-mounted assets

Figure 2 - NGZ towers/transmission
Overhead powerlines on towers



Part two: prestart site assessment

Managing work in NGZ safely

The following guidance will assist persons to develop safe systems of work when operating mobile plant near overhead electrical assets and to comply with either option of the NGZ rules.

1. Site assessment

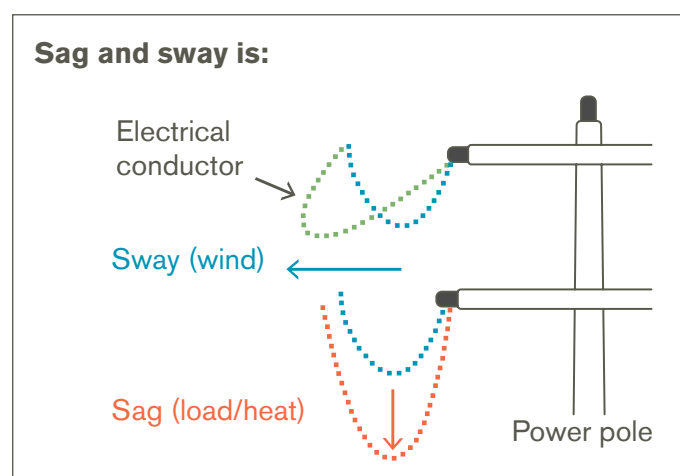
A site assessment should be conducted before work starts, to determine if the scope of work (including the type of work, materials to be used and sequence of work) will be affected by overhead electrical assets and if so, what safety measures are necessary.

The assessment should include the following:

- the intended position of the mobile plant
- what overhead electrical assets are in the proximity of the works, including powerlines that cross or run alongside the workplace, or powerlines that cross or run alongside access routes
- the type of electrical assets and their condition (this may require advice from the asset owner)
- the characteristics of the mobile plant and equipment to be used, including how it may be used, its design and operating envelopes, including any loads to be slung during the work
- minimum safe working distances according to NGZ rules
- maximum height, reach and space required to operate the mobile plant including raised attachments, body work or loads
- whether the mobile plant or its load will enter the NGZ area, and
- whether a site visit by the asset owner is required, to provide advice.

In determining likely clearances of mobile plant, the effect of environmental conditions on the position of conductors should be considered (see figure 3).

Figure 3 – sag and sway of powerlines



Site conditions and activities can change as work progresses and this may increase the risk of contact with overhead electrical assets. To ensure that existing safety measures remain effective ongoing site monitoring may be required.

Eliminate the risk

Where the site assessment finds it is likely the mobile plant or its load will enter the NGZ, the works should be re-designed so the NGZ is not encroached (ie eliminate risks associated with entering the NGZ). Where that is not reasonably practicable, works should only continue in accordance with these guidelines.

Part two: prestart site assessment

Documented safe system of work

A *competent person* should undertake the development of a documented safe system of work where mobile plant will be used near overhead electrical assets.

The document should include the details of:

- mobile plant and equipment to be used
- location of where a mobile plant is working and traversing
- design and operating envelopes of the mobile plant
- the location of the asset and the exclusion zone distances to the asset
- the safety control measures necessary to prevent encroaching into the exclusion zone
- how safety control measures will be implemented, supervised and monitored, including the induction of all workers onto the site
- use of and location of a registered ESV spotter and communication methods between spotter and operator
- the conditions of the permit to work when issued from the asset owner (preferably attached to the safe system of work document)
- any signs, markings and visual warnings to be used to alert persons to the proximity of overhead assets
- earthing mechanisms to be fitted to mobile plant, and
- emergency procedures relevant to the risks, detailing actions to be taken in the event of an emergency.

Where it is not possible to avoid working near assets, site-specific safety measures must be specified in the safe system of work. When making decisions about measures to control risks at a workplace an employer must so far as is reasonably practicable consult with employees (including independent contractors and their employees) who are or are likely to be directly affected. If employees are represented by a health and safety representative (HSR), consultation must involve that representative. Consultation should occur during work planning.

At a minimum, the following site-specific measures should be prepared:

- work instructions explaining the risks, NGZ rules and the safe working distance required
- induction for contractors supplying materials
- procedures to set up mobile plant for transport by lowering, retracting and stowing all booms and implements and other equipment such as tippers and trays
- maps, diagrams and instructions on NGZ distances
- location of the exclusion zones displayed in the cabins of mobile plant/vehicles
- warning signs in the area and on mobile plant (for example, 'look up and live' stickers)
- using a spotter to assist the operator (or driver).

The person who has management or control of the site should contact the owner of the assets about the type of safety measures that are advisable.

Employers must provide such information, instruction, training or supervision to employees to enable them to perform their work in a way that is safe and without risk to health. This includes, ensuring that operators (or drivers) receive instruction on the safety measures so they understand the risks and what is required of them to ensure their safety and the safety of others in the area. They should also be instructed to stop their mobile plant and seek advice if they believe there is a risk, for example, powerlines swaying as result of increased wind.

To indicate they have read and understood it, persons performing and supervising the work should sign and date the documented safe systems of work.

Additional requirements for high risk construction work

Work near overhead electrical assets may be *construction work* for the purpose of the OHS Regulations. Under the OHS Regulations, additional requirements apply to *high risk construction work* (HRCW), which includes any construction work on or near energised electrical installations or services.

Part two: prestart site assessment

Where HRCW is undertaken, the employer must ensure a *safe work method statement* (SWMS) is developed before the work begins and ensure the work is undertaken in accordance with the SWMS. If there are other aspects of the work being undertaken that are also defined as HRCW, a SWMS must also be prepared before such work commences.

A SWMS means a document that:

- identifies work that is HRCW
- states the hazards and risks of that work
- sufficiently describes measures to control those risks
- describes how the risk control measures are to be implemented, and
- is set out and expressed in a way that is readily accessible and comprehensible to the persons using it.

If HRCW is not being performed in accordance with the SWMS, the employer or self-employed person must stop work immediately (or as soon as it is safe to do so) and not resume work until the SWMS is complied with.

The SWMS must be reviewed and, if necessary, revised:

- whenever HRCW changes, or
- if there is an indication that risk control measures are not controlling the risks adequately.

For further information on construction work and SWMS, go to worksafe.vic.gov.au.

Selection of mobile plant

The scope of work may be affected by the type and location of the infrastructure and the type of mobile plant and equipment to be used. Matters that should be taken into account when selecting mobile plant include:

- the type and location of overhead electrical assets near the work area and access routes
- how the use and traversing of mobile plant may affect the overhead electrical assets
- the relevant guidance and manuals that need to be available for the mobile plant and equipment
- any material/equipment that will be installed/removed (eg size, whether material is conductive)

- potential weather conditions (eg wind, temperature, rain)
- the scope of the planned work, its timing and duration, and how the work is to be carried out, and
- the location of designated loading and/or unloading areas.

Using a spotter

If a spotter is required (see options one and two), the spotter must have completed training endorsed by ESV. Trained spotters are registered with ESV to ensure any changes in the NGZ procedures are passed onto the spotter during the refresher training, which is undertaken at the expiry of each three-year registration period.

Whilst operating as a spotter, the spotter should meet the following requirements:

- be dedicated to the spotting task at *all* times when an operator is at the controls of the mobile plant or where the engine/power source is operating
- be positioned to monitor the distance between the mobile plant and any overhead electrical asset
- provide immediate and direct notice/warning to an operator (ie hand signals, whistle, hand held two-way communications as necessary) should the mobile plant or its load breach the prescribed clearance to the overhead electrical asset
- spot for one item of mobile plant at a time
- spot for the mobile plant that they are registered for (endorsement on spotters card).

For more information about spotters go to esv.vic.gov.au.

If the spotter is concerned the mobile plant or its load may enter the area specified as the NGZ under option one or the exclusion zones under option two:

- the work must stop, and
- the duty-holder must re-assess the risks and controls for the work and apply appropriate control measures.

The asset owner may need to be contacted for assistance/advice.

Part two: prestart site assessment

Signage and marking

Signage, markings and visual warnings should be used as warnings of hazards and reminders of safety requirements where work is undertaken near overhead electrical assets. They should not be relied on as the *only* control mechanism to reduce the risk of contact to overhead electrical assets.

Signs should be displayed at all hazardous locations to warn workers of the nature of any risk and how to avoid it.

Communication

Communications systems should be appropriate for the worksite and the type of work being undertaken.

Where the scope of work and the worksite requires communication between a spotter and the mobile plant operator, a voice communication system is preferable. Alternatively, a visual, audible, radio or buzzer system could be used.

The communication system should provide for emergency response. This may be from the site to the necessary response organisations or to a control point able to make the appropriate notification.

2. Monitoring

Employers have a duty under the OHS Act to monitor conditions at workplaces they have management and control over. Site conditions and activities can change as work progresses and this may increase risk. Ongoing site monitoring may be required to ensure existing safety measures remain effective.

3. Instruction, information, training and supervision

Under the OHS Act, employers must provide such instruction, information, training or supervision to employees (including independent contractors) as is necessary to enable them to perform their work in a way that is safe and without risks to health.

Employers must consult employees (including HSRs and independent contractors) on matters that affect,

or are likely to affect, their health and safety. Training should be developed in consultation with employees, independent contractors and the principal contractor (as appropriate).

The employer should verify and document that each employee and contractor has received the required training. This includes, but is not limited to, training on the following:

- emergency procedures and provision of first aid
- electrical hazard identification and risk control
- safe systems of work
- implementation of site specific SWMS
- the role and responsibility of the spotter, and
- effective communication systems.

Mobile plant operators

An employer must ensure that employees and any person supervising employees who are likely to be exposed to any risk associated with plant, or systems of work associated with mobile plant, are trained and provided with information and instruction. For more information, go to worksafe.vic.gov.au.

Employers should ensure that employees (including independent contractors) understand the following when operating mobile plant near overhead electrical assets:

- the NGZ rules
- the design, traversing and operating envelope of the mobile plant, including the associated load
- operator manuals (should be with the mobile plant)
- how to use/manage any limiting devices
- how to manage environmental/site conditions required for safe working of mobile plant, for example:
 - unstable or uneven surfaces
 - access routes
 - excavations.
- emergency procedures in the event of contact with overhead electrical assets.

4. Emergency procedures

If contact is made with an overhead electrical asset or electrical arcing occurs, the emergency plan should be initiated, including the following:

- all work should cease immediately
- operator (or driver) should remain inside the cabin
- operator (or driver) should attempt to break contact only if it is safe to do so
- if it is essential to leave the cab or operator's station due to fire or other life threatening reason:
 - the operator should jump clear (and remain clear after jump) of the equipment
 - **no person should approach or touch the equipment and ground at the same time**
 - when moving away from the equipment, the operator should hop slowly, shuffle or jump away from the mobile plant (with feet together) until at least 10m from the nearest part of the mobile plant item
- warn employees, independent contractors and other persons to keep 10m clear from equipment, this includes ensuring they do not touch any part of the mobile plant or load and do not attempt to approach or enter the vehicle until the relevant authorities have determined the site is safe
- provide first aid treatment and seek medical aid as required, and
- immediately notify the relevant authorities and the asset owner.

Part three: the NGZ rules

Option one: direct compliance

Under this option the duty holder should ensure that:

- where the mobile plant or its load is intended, or likely, to come within the NGZ (red zone in figures 1 and 2) a permit to work from the asset owner is obtained, and
- where the work is in the spotter zone (yellow zone in figures 1 and 2) and the mobile plant or its load is not intended to enter the NGZ, an ESV registered spotter is used to observe and signal to the operator to stop the mobile plant before it or its load enters the NGZ.

Duty holders must provide and maintain systems of work that are safe and without risks to health, this includes preparing a SWMS for any HRCW (see pages 8 to 9).

The SWMS must include the control measures being implemented to eliminate or reduce the risk of making contact with the asset and meet the requirements set out on page 8, and should include:

- the working distance from the overhead electrical asset - this determines the specific control measures in the NGZ rules that need to be implemented to manage the electrical risks, and
- the design and operating envelope of the mobile plant.

Note: Due to the potential of serious consequences, prior to working with mobile plant within a tower easement, the duty-holder should contact the asset owner for advice.

Control measures specified by the asset owner

The asset owner will, when requested, assess the work area and may issue a permit to work for the specific location, taking into consideration:

- the type of assets present
- the type of work to be completed
- the voltage, and
- the potential sag and sway of any powerlines.

If a permit to work is issued, it will specify:

- the minimum distance to the overhead electrical asset that must be complied with by the duty holder at all times. If not specified, the unsafe distance is 3m for pole-mounted assets and 8m for tower-mounted assets, and
- any other electrical safety measures that need to be implemented to allow the duty holder to proceed with the work.

The electrical safety measures that may be set out in a permit to work will depend on the mobile plant and equipment used and the work to be performed.

Examples of controls that may be required include:

- isolation of overhead or underground conductors and cables to eliminate electrical hazards
- installation of warning devices on overhead lines
- relocation of overhead and underground lines
- installation of insulated overhead lines (aerial bundled cables)
- use of spotters
- other specific measures set in the permit to work (as determined by the asset owner).

It is the responsibility of the duty-holder to comply with the specific permit conditions. If the duty-holder cannot fully comply, the work must stop and the asset owner contacted for further advice.

Part three: the NGZ rules

Option two: deemed to comply

Under this option the duty holder may operate mobile plant within the NGZ (up to the exclusion zone) and spotter zone, without obtaining a permit to work from the asset owner under certain circumstances.

The duty-holder should ensure:

- they have the required knowledge, skills and processes to –
 - identify the design and operating envelopes of the mobile plant
 - identify the asset type and voltage - this may require a NGZ inspection report from the asset owner
 - determine the height of the electrical asset
 - determine the exclusion zone of the overhead electrical asset by applying the table A distance plus an allowance for sag and sway of the asset
- systems of work are developed and implemented to enable the work to be performed safely without entering the exclusion zone
- an ESV-registered spotter observes the work where it is determined that a spotter is required (refer to table B), and
- engineering control measures are used, so far as is reasonably practicable, to prevent the mobile plant or load entering the exclusion zone.

An employer or self-employed person must, so far as is reasonably practicable, eliminate any risk associated with working near overhead electrical assets. If it is not reasonably practicable to eliminate a risk, it must be reduced so far as is reasonably practicable, by (in order of decreasing effectiveness):

- substitution
- engineering controls
- administrative controls
- personal protective equipment.

A combination of controls may be required to eliminate or control a risk so far as is reasonably practicable.

The OHS Regulations prescribe specific hierarchies of control for some hazards that must be complied with, including construction work, falls from above 2m and the use of plant. For information about applying specific hierarchies of control, go to [worksafe.vic.gov.au](https://www.worksafe.vic.gov.au).

Use of table A and B for option two

Table A specifies the exclusion zone for specific types of overhead asset, which must not be breached under any circumstances when using this option.

Table B shows what is required for powerlines on poles, depending on the operating and design envelopes of the mobile plant when using option two.

If duty-holders cannot comply with these provisions then work must not be undertaken without a written permit from the asset owner.

Part three: the NGZ rules

Table A: exclusion zones

Type of overhead assets	Exclusion zone
High voltage electricity conductors up to and including 66kv	2000mm
Un-insulated low voltage electricity conductors	1000mm
Un-insulated low voltage traction (trams and trains) conductors	1000mm
Insulated low voltage electricity conductors, greater than 50 V but less than 1000 V	500mm
Communications cabling – broadband and telephony	300mm

Note: Consideration for increasing these distances to allow for sag and sway of conductors should be taken into account.

Table B: option two requirements by operating and design envelope of mobile plant

Overhead electrical assets			Design envelope of mobile plant			
			No Go Zone		Spotter zone	Open area
			Inside exclusion zone (table A)	Outside exclusion zone (table A)		
Operating envelope (set up/working)	No Go Zone	Inside exclusion zone (table A)	Permit to work, spotter and safe systems of work	N/A	N/A	N/A
		Outside exclusion zone (table A)	Permit to work, spotter and safe systems of work	Spotter and safe system of work	N/A	N/A
	Spotter zone		Spotter and safe system of work	Spotter and safe system of work	Spotter and safe system of work	N/A
	Open area		Safe system of work	Safe system of work	Safe system of work	No guideline requirements

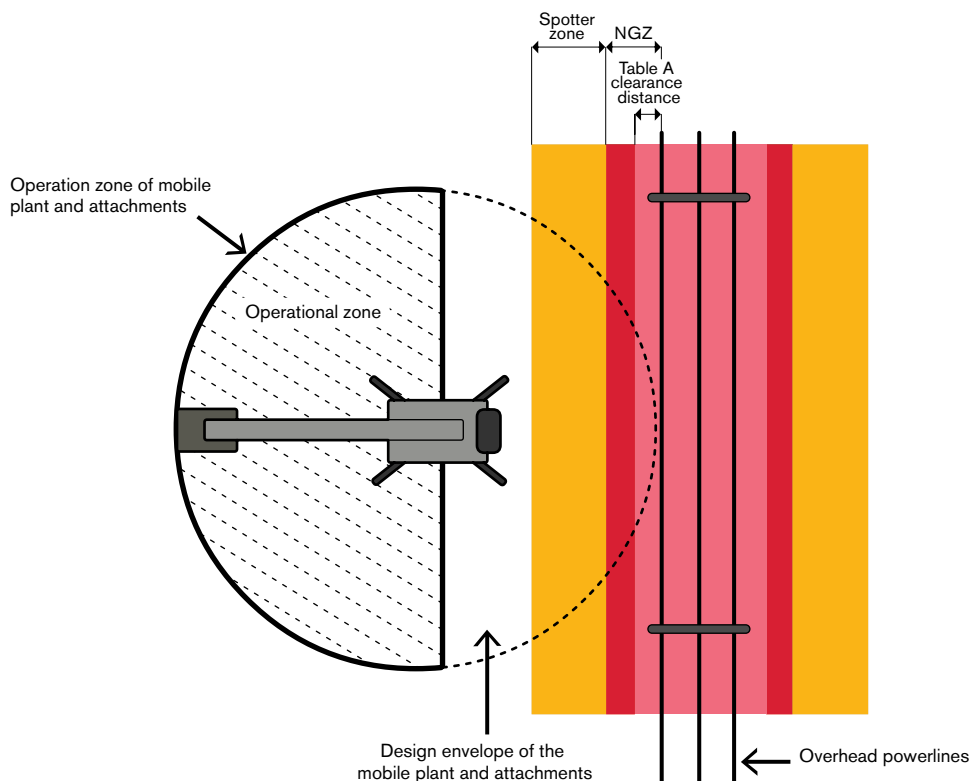
Part three: the NGZ rules

Examples for application of table B

Example one: Mobile plant is operating at greater than 6.4m from overhead electrical assets however the design envelope of the mobile plant, load and attachment can penetrate the NGZ.

A safe system of work is required and the duty holder should ensure the spotter zone is not penetrated.

Overhead electrical assets			Design envelope of mobile plant			
			No Go Zone		Spotter zone	Open area
			Inside exclusion zone (table A)	Outside exclusion zone (table A)		
Operating envelope (set up/working)	No Go Zone	Inside exclusion zone (table A)	Permit to work, spotter and safe systems of work	N/A	N/A	N/A
		Outside exclusion zone (table A)	Permit to work, spotter and safe systems of work	Spotter and safe system of work	N/A	N/A
	Spotter zone		Spotter and safe system of work	Spotter and safe system of work	Spotter and safe system of work	N/A
	Open area		Safe system of work	Safe system of work	Safe system of work	No guideline requirements



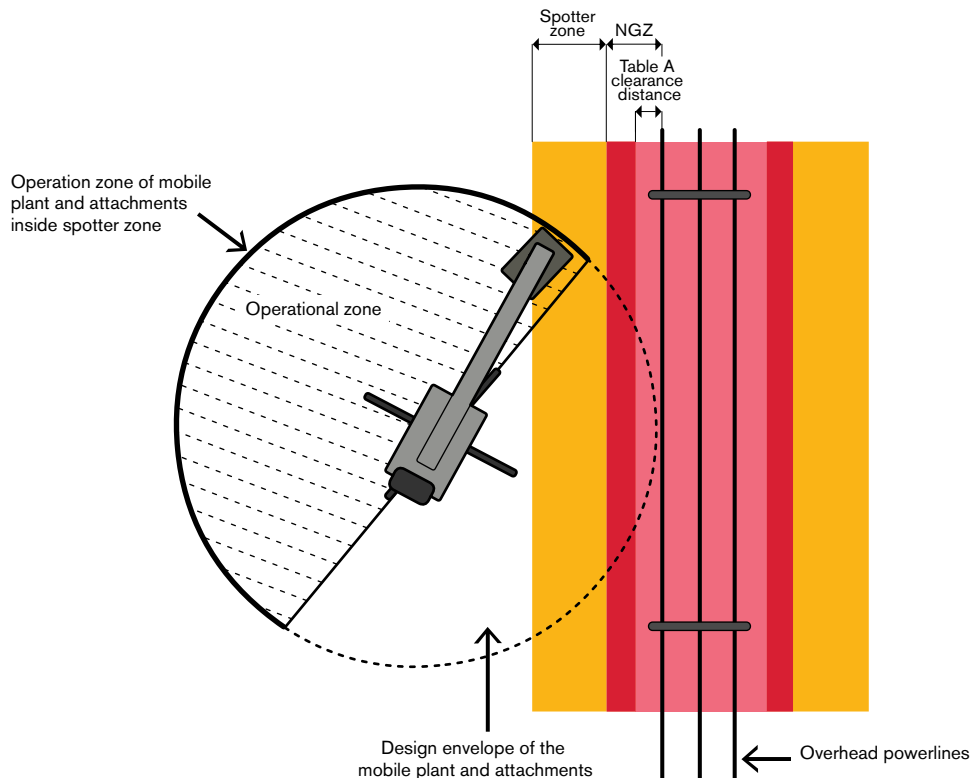
Part three: the NGZ rules

Example two: Mobile plant is operating inside the 3m - 6.4m spotter zone of overhead electrical assets however the design envelope of the mobile plant, load and attachment can penetrate the NGZ (red) and table A clearances.

A safe system of work is required to ensure that operations remain outside the NGZ.

In this example a spotter is required as there is risk for the mobile plant to penetrate the exclusion zone. A permit to work is not required.

Overhead electrical assets		Design envelope of mobile plant				
		No Go Zone		Spotter zone	Open area	
		Inside exclusion zone (table A)	Outside exclusion zone (table A)			
Operating envelope (set up/working)	No Go Zone	Inside exclusion zone (table A)	Permit to work, spotter and safe systems of work	N/A	N/A	N/A
		Outside exclusion zone (table A)	Permit to work, spotter and safe systems of work	Spotter and safe system of work	N/A	N/A
	Spotter zone	Spotter and safe system of work	Spotter and safe system of work	Spotter and safe system of work	N/A	
	Open area	Safe system of work	Safe system of work	Safe system of work	No guideline requirements	



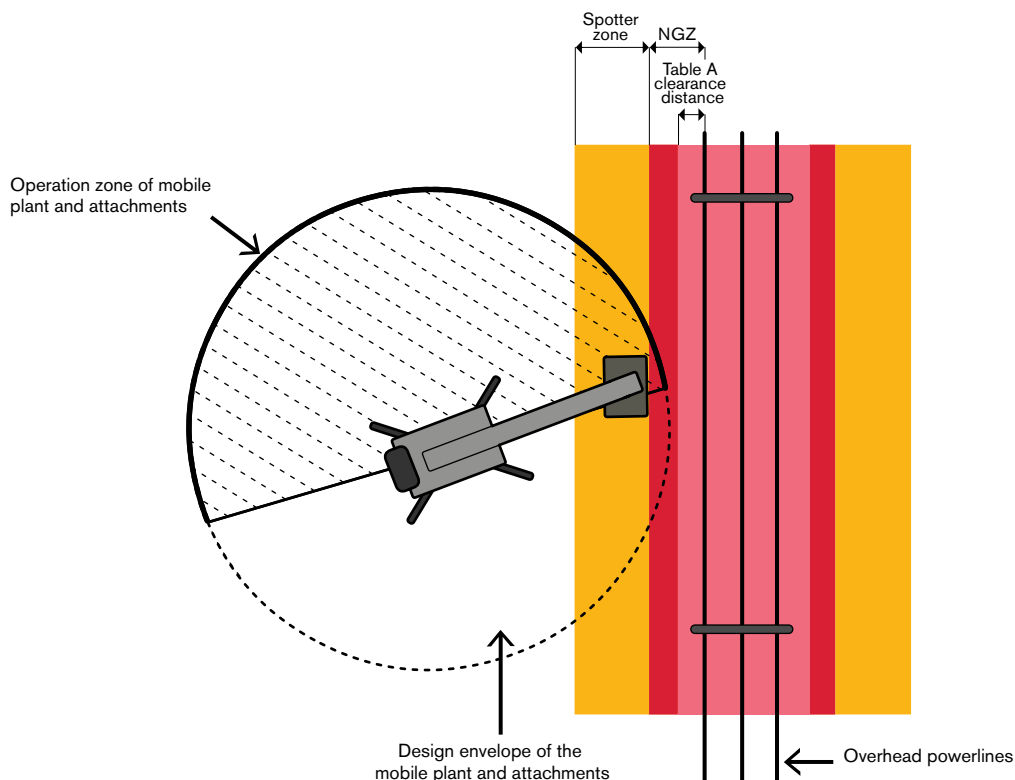
Part three: the NGZ rules

Example three: Mobile plant is operating inside the NGZ of electrical assets however the design envelope of the mobile plant, load and attachment is outside the exclusion zone.

A safe system of work is required to ensure the exclusion zone is not penetrated.

In this example a spotter is required due to mobile plant operating in the NGZ.

Overhead electrical assets		Design envelope of mobile plant				
		No Go Zone		Spotter zone	Open area	
		Inside exclusion zone (table A)	Outside exclusion zone (table A)			
Operating envelope (set up/working)	No Go Zone	Inside exclusion zone (table A)	Permit to work, spotter and safe systems of work	N/A	N/A	N/A
		Outside exclusion zone (table A)	Permit to work, spotter and safe systems of work	Spotter and safe system of work	N/A	N/A
	Spotter zone		Spotter and safe system of work	Spotter and safe system of work	Spotter and safe system of work	N/A
	Open area		Safe system of work	Safe system of work	Safe system of work	No guideline requirements



Part three: the NGZ rules

Example four: Mobile plant is operating inside the 3m NGZ of overhead electrical assets and the operating envelope of the mobile plant, load and attachment is inside the exclusion zone.

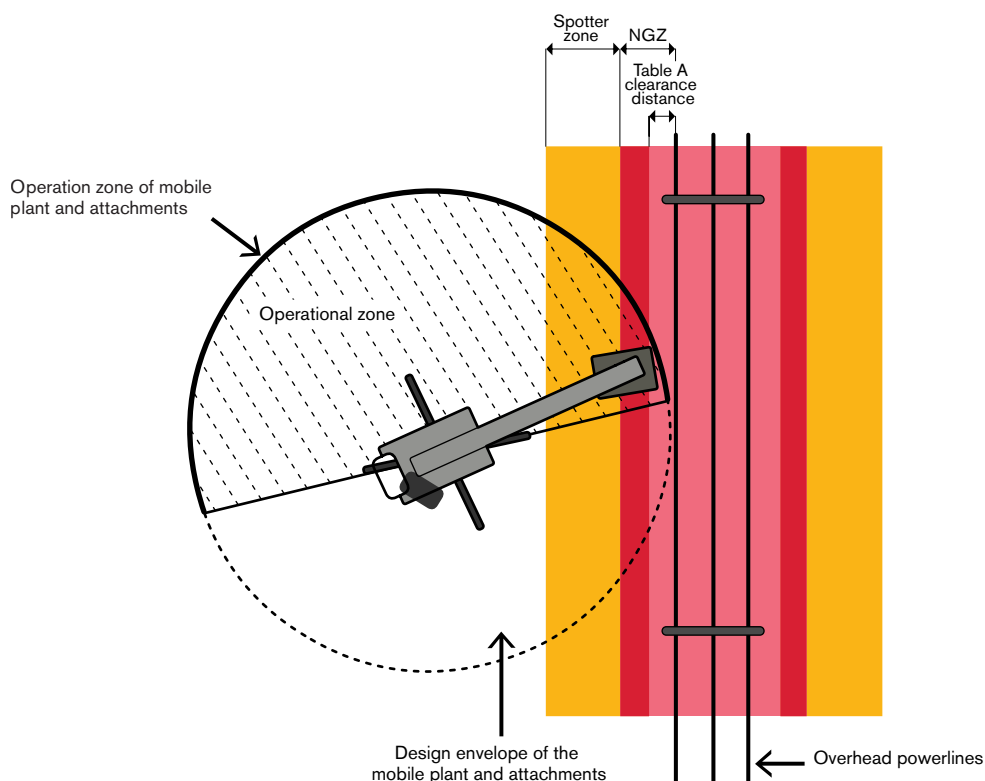
Option two cannot be used as the exclusion zone will be penetrated by the design envelope of the boom.

A permit must be obtained from the asset owner.

A safe system of work is required to ensure that any controls and conditions outlined in the permit are implemented.

In this example a spotter is required due to mobile plant operating in the NGZ.

Overhead electrical assets			Design envelope of mobile plant			
			No Go Zone		Spotter zone	Open area
			Inside exclusion zone (table A)	Outside exclusion zone (table A)		
Operating envelope (set up/working)	No Go Zone	Inside exclusion zone (table A)	Permit to work, spotter and safe systems of work	N/A	N/A	N/A
		Outside exclusion zone (table A)	Permit to work, spotter and safe systems of work	Spotter and safe system of work	N/A	N/A
	Spotter zone		Spotter and safe system of work	Spotter and safe system of work	Spotter and safe system of work	N/A
	Open area		Safe system of work	Safe system of work	Safe system of work	No guideline requirements



Part three: the NGZ rules

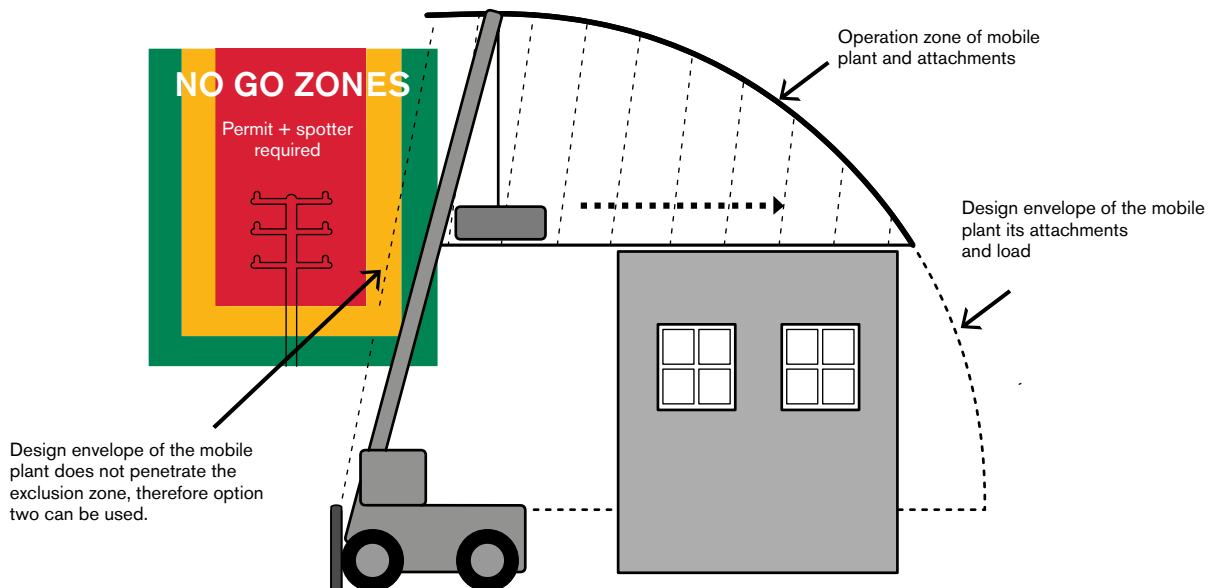
Example five: A non-slewing crane is engaged to lift materials onto the upper level of a building. Overhead electrical assets are located in close proximity to the building. During operation the boom of the crane will penetrate the 3m NGZ of the overhead electrical assets.

Carry out an assessment to determine if option two can be applied to this work. Information required for the assessment includes:

- the type of overhead electrical assets, their voltage, and approximate heights
- the operating envelope of the crane (including any attachments), and
- whether the mobile plant can be positioned so the design envelope will not penetrate the table A clearances when lifting the materials.

As part of the safe system of work for this example, a barrier is positioned behind the crane to restrict its movement towards the overhead electrical assets, ensuring the exclusion zone is not breached.

Overhead electrical assets			Design envelope of mobile plant			
			No Go Zone		Spotter zone	Open area
			Inside exclusion zone (table A)	Outside exclusion zone (table A)		
Operating envelope (set up/working)	No Go Zone	Inside exclusion zone (table A)	Permit to work, spotter and safe systems of work	N/A	N/A	N/A
		Outside exclusion zone (table A)	Permit to work, spotter and safe systems of work	Spotter and safe system of work	N/A	N/A
	Spotter zone		Spotter and safe system of work	Spotter and safe system of work	Spotter and safe system of work	N/A
	Open area		Safe system of work	Safe system of work	Safe system of work	No guideline requirements



Part three: the NGZ rules

Example six: A concrete boom pump is engaged for a slab pour at a construction site. Overhead electrical assets are located in close proximity to the construction site.

After an assessment of the site, it is determined that whilst the boom will operate outside the 6.4m zone of the overhead electrical asset during the pour, the raising and lowering of the boom will result in parts of the boom penetrating the 3m NGZ.

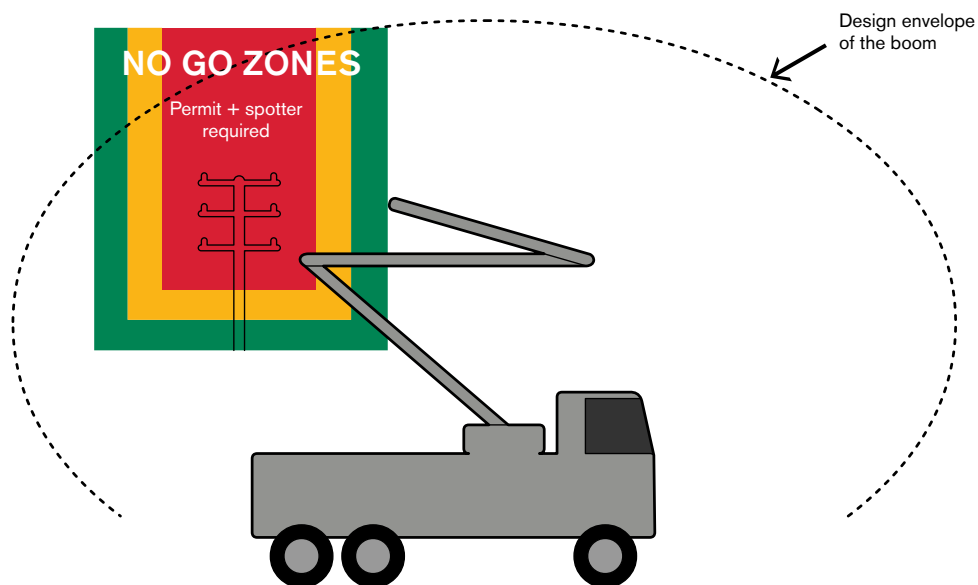
Option two cannot be applied as the exclusion zone will be penetrated by the design envelope of the boom.

A permit must be obtained from the asset owner.

A safe system of work is required to ensure any controls and conditions outlined in the permit are implemented.

In this example a spotter is required due to mobile plant operating in the NGZ.

Overhead electrical assets			Design envelope of mobile plant			
			No Go Zone		Spotter zone	Open area
			Inside exclusion zone (table A)	Outside exclusion zone (table A)		
Operating envelope (set up/working)	No Go Zone	Inside exclusion zone (table A)	Permit to work, spotter and safe systems of work	N/A	N/A	N/A
		Outside exclusion zone (table A)	Permit to work, spotter and safe systems of work	Spotter and safe system of work	N/A	N/A
	Spotter zone		Spotter and safe system of work	Spotter and safe system of work	Spotter and safe system of work	N/A
	Open area		Safe system of work	Safe system of work	Safe system of work	No guideline requirements



Part three: the NGZ rules

Definitions

Asset: an overhead cable network or an underground water/drainage/sewerage, electricity, gas or communications network.

Asset owner: the asset owner of overhead assets is the electrical distribution or transmission company. If you do not know who this is, go to esv.vic.gov.au.

Competent person (for the purposes of developing a safe system of work): a person who has the knowledge and skills to identify the types of overhead conductors and other assets safely, accurately measure the heights involved and apply the guidance outlined in this document. The person should also have an understanding of the operating movements of the powered mobile plant involved.

Construction work: any work performed in connection with the construction, alteration, conversion, fitting out, commissioning, renovation, refurbishment, decommissioning, or demolition of any building or structure, or any similar activity.

Energy Safe Victoria (ESV): the independent technical regulator responsible for electricity, gas and pipeline safety in Victoria.

Envelope: the space encapsulating a plant item, including attachments such as rotating flashing lights or radio aerials and is categorised as:

- **Design envelope:** the space encapsulating all possible movements of the plant and any load attached during operation. The design envelope can be adjusted for any mobile plant by the installation and operation of fail-safe physical guards or controls that cannot be modified or overturned by the operator.
- **Operating envelope:** the area encompassing the movement of plant and any load under controlled and managed circumstances, or encompassing engineering solutions controlling the movement of plant and its load.

Exclusion zone: that part of the NGZ that is unsafe for mobile plant to enter, as defined in table A of this document.

High risk construction work (HRCW): construction work referred to in regulation 322 of the OHS Regulations.

High voltage (HV): a nominal voltage exceeding 1000 volts.

Insulated: separated from adjoining conducting material by a non-conducting material to mitigate the danger of electric shock.

Low voltage (LV): a nominated voltage exceeding 50 volts but not exceeding 1000 volts alternating current (AC) or 1500 volts direct current (DC).

Near (for the purposes of these guidelines):

- any distance up to 6.4m from overhead cables at voltages up to 66kV, and
- any distance up to 10m from overhead cables at voltages greater than 66kV.

No Go Zone (NGZ): the area surrounding overhead electricity cables on poles anywhere above or within:

- 3m to the side and below pole-mounted electrical assets, in the case of powerlines up to and including 66kV, and
- 8m to the side and below tower-mounted electrical assets, in the case of voltages above 66kV (tower lines).

Open area: the area outside the NGZ and spotter zone.

Operator: the individual in control of a piece of plant or equipment.

Permit or permit to work (PTW): an authority/permission issued by an electricity asset owner, which allows work in the NGZ.

Plant: includes –

- any machinery, equipment, appliance, implement and tool
- any component of any of those things, and
- anything fitted, connected or related to any of those things.

Plant operator: see *Operator*.

Powered mobile plant: plant that is provided with some form of self-propulsion that is ordinarily under the direct control of an operator.

Part three: the NGZ rules

Safe systems of work: work practices in which the health and safety risks to employees have been controlled so far as is reasonably practicable.

Safe work method statement (SWMS): A document that must be prepared and followed for high risk construction work, that –

- a) identifies work that is high risk construction work
- b) states the hazards and risks to health or safety of that work
- c) sufficiently describes measures to control those risks
- d) describes how the risk control measures are to be implemented, and
- e) is set out and expressed in a way that is readily accessible and comprehensible to the persons who use it.

Special provisions: means any approval from the asset owner which could be a PTW or the details followed as written on the NGZ inspection report.

Spotter: a competent and trained person who observes and warns against unsafe approach to overhead assets. A spotter for overhead assets must have successfully completed an endorsed training course and be registered with Energy Safe Victoria.

Spotter zone:

- for pole-mounted electrical assets – the distance between 3.0m and 6.4m from below and to the side of the asset
- for tower-mounted electrical assets – the distance between 8m and 10m from below and to the side of the asset.

WorkSafe: the regulator responsible for workplace safety in Victoria.

More information

Go to worksafe.vic.gov.au and esv.vic.gov.au for further guidance, including:

- *Scaffolding guidelines* (ESV)
- *Working near underground assets* (WorkSafe)
- *Using earthmoving equipment near overhead electrical assets* (WorkSafe).

Australian Standards

AS 2550 - *Cranes and the various sub codes*

AS/NZS 2978 - *Insulating mats for electrical purposes*

AS 1319 - *Safety signs for the occupational environment*

AS 1742.3 - *Traffic control devices for works on roads*

Legislation

Electricity Safety Act 1998

Electricity Safety (Installations) Regulations 2009

Occupational Health and Safety Act 2004

Occupational Health and Safety Regulations 2017

Gas Safety Act 1997

Telecommunications Act 1997 (Commonwealth)

The information presented in this guideline is intended for general use only. It should not be viewed as a definitive guide to the law, and should be read in conjunction with the Occupational Health and Safety Act 2004 (Vic). Whilst every effort has been made to ensure the accuracy and completeness of this guideline, the advice contained herein may not apply in every circumstance. Accordingly, WorkSafe cannot be held responsible, and extends no warranties as to the suitability of the information for your specific circumstances; or actions taken by third parties as a result of information contained in this guideline.



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