



Fatal Risk Procedure

Overhead and Underground Assets

(HSE)

Document Number: A4045516



Excellence



Honesty



Accountability



Courage



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1. Objective

This procedure documents the requirements for the management of risks associated with Overhead and Underground Assets and activities at Goulburn-Murray Waters (GMW) controlled work sites.

2. Scope

This procedure applies to all GMW employees, contractors and labour hire that undertake activities (such as excavation, trenching and pot holing) on GMW controlled worksite, in the vicinity of Overhead and Underground services.

3. Procedure

This Procedure documents the requirements for the management of risks associated with overhead and underground assets such as but not limited to electrical, gas, communication lines, water and sewerage pipes, at Goulburn-Murray Waters (GMW) controlled work sites. In particular it:

- Sets out the requirements and procedures for the protection of people and assets whilst undertaking works in the vicinity of underground and overhead assets.

3.1 Asset Owners Permit

When working on, near or around major asset exclusion zones, a permit must be obtained from the Asset owner prior to the works commencing.

EG:

- Overhead high voltage power lines
- Underground gas services
- Underground / Overhead telecommunication services

3.2 Electrical Spotter

When working on, near or around electrical services, clearance zones and envelopes an electrical spotter is required.

3.3 Safety Observers

When working on, near or around any assets other than electrical, a Safety Observer must be present to maintain exclusion zones, clearances and envelopes.

E.g.: Underground telecommunication lines, Underground Gas Lines, Water and Sewerage



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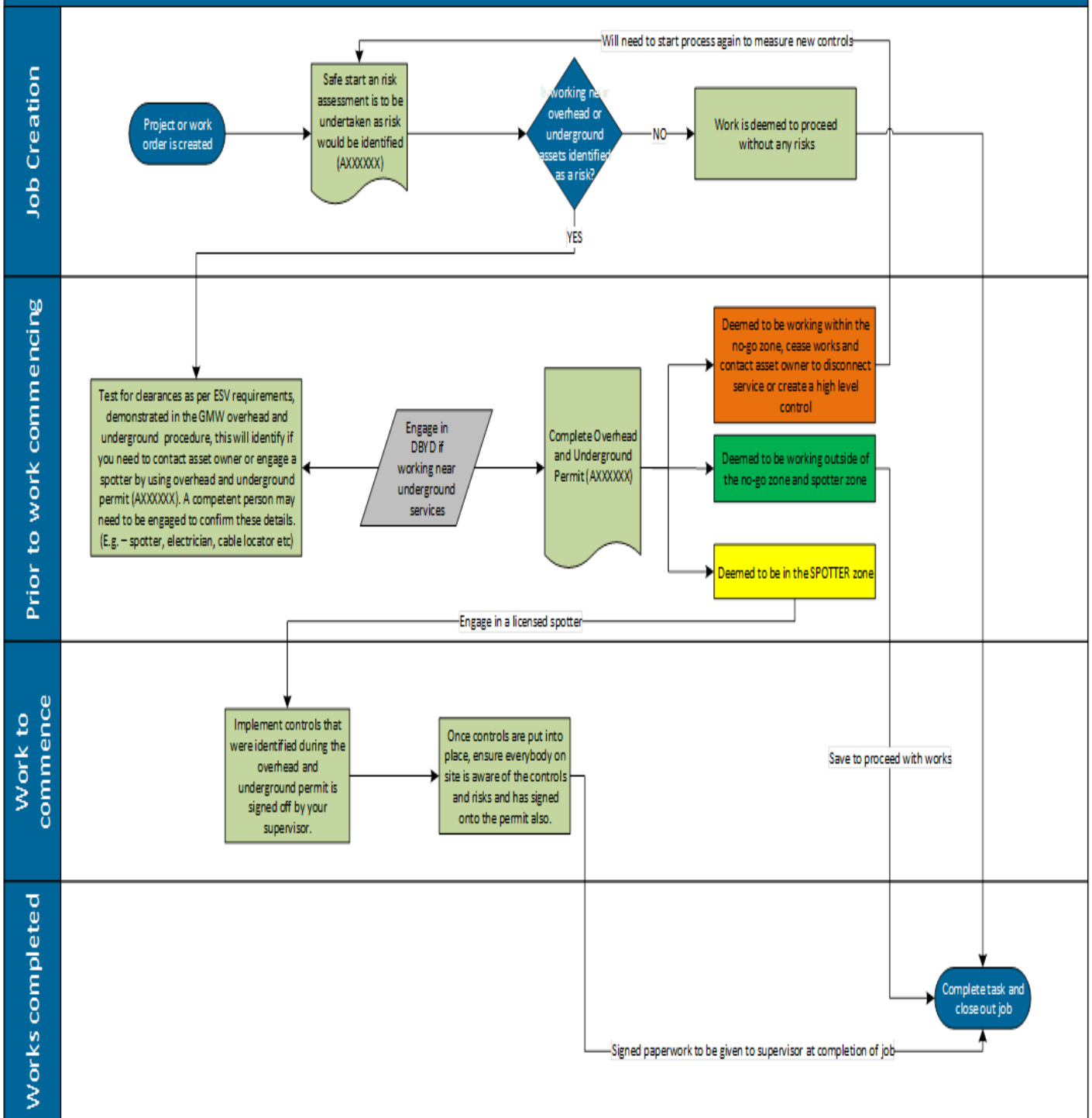
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3.4 Workflow

GMW Working near Underground and Overhead Process



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3.5 Overhead Assets

3.5.1 Risk Assessment

A risk 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 documented risk assessment should include but not limited to 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 WorkSafe / Energy Safe
- 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 No Go Zone area
- whether a site visit by the asset owner is required, to provide advice
- traffic management to be considered and implemented if required

3.5.2 Before Starting Work

Before any work on GMW controlled worksites begins, the below must be planned and documented in a workpack. For example go to A2499532.

- What is the Scope of Works
- Is the work being undertaken near overhead and/or underground services
- Is the work going to or is likely to encroach into the No Go Zone clearances surrounding these services
- Completion of Overhead Services Form (A4066279)
- Completion of a Safe Start (for an example go to A2204862) before work commences
- Ensure that Safe Work Method Statements are completed and that all staff are trained and competent
- Provide identification and management of the risks associated with possible damage to the surrounding environment or other services and reduce the risk to the public.

3.5.3 Secondary Indicators

Secondary indicators are systems which when set in place both remind and or control plant access into a power line/ asset zone. Some secondary indicators are:

- Warning signage (beside track or adjacent to asset)
- Traffic control signage (on track)
- Hurdles (over track)

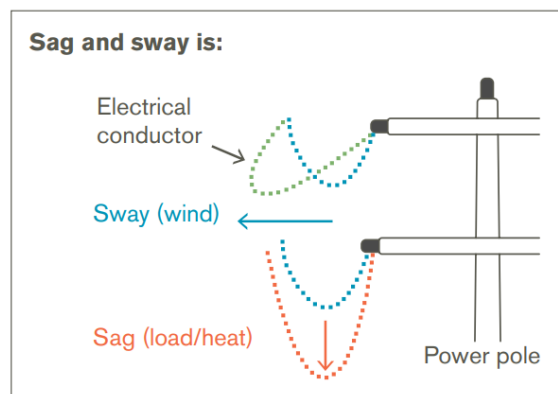


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The Design envelope may be obtained from plant manuals, or may need to be measured at maximum reach. Refer to Appendix B - Examples of Overhead Operating and Design Envelope Exclusion Zones

The design envelope and the transit envelope of plant (including contractor's plant) must be prominently displayed (including look up and live stickers) on forward or side window: it must be legible at all times and expressed in metres.

Note: The height of overhead power lines can **sag and sway** and that can vary depending on weather conditions as noted with the diagram below.



3.5.4 Single Wire Earth Return (SWER- one line) electrical systems

This type of line typically supplies 10-50 farms or houses spread over 20km. The voltage between the wire and the ground below is about 12,700 volts. The most common wire used is three strands of galvanized steel strung across a long distance (500m-1000m). SWER lines run from point to point i.e. in a straight line across farmland to the load, which maybe a house, or milking shed or pumping shed.

No excavation work shall be undertaken within a 10 metre radius of a pole with a SWER transformer mounted on it. For further information regarding work near SWER systems contact the asset owner.



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3.5.5 No Go Zones

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 power lines up to and including 66kV
- 8m to the side and below tower-mounted electrical assets, in the case of voltages above 66kV

An Electrical Spotter will be required for anything between 3 – 6.4 meters of pole mounted power lines or 8 - 10 meters for tower mounted. Spotters are a competent and trained person/s who observes and warn against unsafe approach to overhead assets.

A spotter for assets must have successfully completed an endorsed training course and be registered with Energy Safe Victoria.

3.5.5.1 Work Near Pole-Mounted Assets

Encroaching within 3 meter of a pole mounted asset will require:

- a permit from the Electrical supplier / Asset Owner
- an approved and a dedicated spotter
- safe system of work, safe work method before work commences



See Appendix B - Examples of Overhead Operating and Design Envelope Exclusion Zones



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3.5.5.2 Work Near Tower-Mounted Assets

Encroaching within 8 meters of a tower asset is considered a no go zone.

- any work near towers requires approval from the Senior Manager
- a permit from the Electrical supplier / Asset Owner
- an approved and a dedicated spotter
- safe system of work, safe work method before work commences

Overhead powerlines on towers



3.5.6 Using an Electrical Spotter

While operating as an electrical 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 (i.e. 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 any one time, be deemed competent or hold a WorkSafe High Risk License for the item of plant
- only spot for the mobile plant that they are registered for (or endorsed on spotter's card).

Note: Electrical spotters are to be licensed and registered with Energy Safe Victoria, and the license is to be within date and current.



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3.6 Underground Assets

Dial before you dig and a GMW Underground Assets Form is to be completed prior to work commencing and any works being undertaken. If high risk services are identified then consultation with the Asset Owner may be required.

Where DBYD advice is greater than 28 calendar days, new DBYD advice is to be received prior to either commencing or recommencing work. Where there is evidence of underground works from other agencies has occurred in the area a new DBYD MUST be conducted

All underground services MUST be positively identified prior to commencing any ground disturbance work

For further requirements concerning ground disturbance activities please refer to GMW Ground Disturbance Procedure.

Pot-holing (or equivalent asset location techniques) must be used to locate existing underground services to ensure adequate clearances are maintained between services and to locate other service crossings. Pot-holing at each service crossing and at regular spacing along services is recommended.

There are a number of different types of assets installed underground in Victoria. These include but not limited to:

- all electricity cables up to and including 66kV
- all electricity cables greater than 66kV
- telecommunications cables
- assets listed under the Pipelines Act-1998
- all gas pipelines other than those listed above
- water, drainage and sewerage pipelines.

When working near underground assets, No Go Zones must be observed – see below image. Relevant records must be inspected e.g. Dial before you dig, landowner records etc. before works begin.



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3.6.1 Types of Assets and Limits of Approach

The below table will give some guidance on underground asset types and the suggested controls to be considered for the risk assessment.

ASSETS	CLEARANCES	CONTROLS
<p>Types of underground assets</p> <p>[Note: The owners of assets registered with the Dial Before You Dig service and covered by this guide require an enquiry through this free service and the compliance with any directive issued with information regarding the asset].</p>	<p>Minimum approach distance for individuals (A), and the working envelope of plant and equipment (B) for the guideline provisions.</p>	<p>Safety Controls required for the Deemed to Comply guideline provisions to take effect unless specifically undertaking careful excavation to locate underground assets or where specific permission has been granted.</p>
6. Assets listed under the Pipelines Act.	3000 mm	Must contact the Asset Owner for specific conditions.
7. All electricity conductors greater than 66kV.	3000 mm	Must contact the Asset Owner for specific conditions.
8. All electricity conductors up to and including 66kV.	300 mm (A), 500 mm (B)	See specific requirements in the underground guidelines.
9. Telecommunications Cables.	300 mm (A), 500 mm (B)	Must contact the Asset Owner for specific conditions.
10. All Gas pipelines other than 6 above.	300 mm (A), 500 mm (B)	See specific requirements in the underground guidelines.
11. Water, Drainage & Sewerage pipelines.	300 mm (A), 500 mm (B)	Must contact the Asset Owner for specific conditions.



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3.7 GMW Minimum Requirements

To meet the GMW minimum requirements, the following must be undertaken:

- Conduct a risk assessment to determine the hazards and controls to be put in place
- Determine if you have Overhead or Underground Assets near the worksite
- Ensure that SWMS are completed and that all staff are trained and competent, in the equipment, task and/or items of plant they are using
- Provide identification and management of the risks associated with possible damage to the surrounding environment or other services and reduce the risk to the public. This may include barriers and signage to alert the public to the hazards and risks if they were to stumble onto site
- Underground Assets Form as appropriate
- Overhead Assets Form as appropriate

Note: *If excavating to a depth of 1.5m or greater where a service is being laid or personnel will be entering the excavation, the excavation must be notified to WorkSafe. A Notice of Intention to Excavate must be completed and submitted to WorkSafe prior to excavation commencing.*

3.8 Contact with Overhead or Underground Assets

3.8.1 Contact with or damage to electrical assets

Take the following action if contact is made with an overhead or underground asset or arcing occurs between a cable and an item of plant or employee:

- Stop all work immediately and contact the Asset Owner's emergency number to have the power turned off
- Operator (or driver) should remain inside the cab. If it is essential to leave the cab due to fire or other life threatening reasons, jump clear of the equipment.
- Do not touch the plant or vehicle and ground at the same time.
- When moving away from the equipment or vehicle, the operator should hop slowly, shuffle or jump away from it with feet together until at least 10m from the nearest part of the plant or vehicle.
- **Do not run.**
- If you fall to the ground, roll clear, do not try to get up by pushing off with your hands as electricity may pass through your arms and legs and you may receive an electric shock.
- Warn other employees and the public to keep at least 10 meters clear of the plant or vehicle. Do not touch any part of it, its load, or a casualty and do not attempt to approach or re-enter the plant or vehicle until the relevant asset owner has determined the site is safe.
- Call for emergency assistance on 000 at the earliest opportunity, advise them of the situation and wait for help.
- Provide first aid treatment without placing yourself in danger and seek medical aid as required.
- Await verification by the power company that the power has been turned off.
- Initiate the emergency management plan.



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3.8.2 Contact with or damage to gas assets

Take the following action in an incident involving gas assets:

- Stop all work immediately and contact the gas distributor’s emergency number.
- Operator must shut down the plant, equipment or vehicle UNLESS this process may provide an ignition source for escaping gas.
- Do not attempt to use anything that could provide an ignition source near a gas escape. This includes mobile phones, two way radios, matches, lighters, grinding or welding tools etc.
- Do not attempt to approach or re-enter the vehicle until the relevant asset owner has determined the site is safe.
- It is essential to leave the cab or operator station, trench or enclosure and maintain an exclusion perimeter due to the risk of explosion or fire.
- Warn other personnel and the public to keep clear of the worksite and equipment.
- Provide first aid treatment without placing yourself in danger and seek medical aid as required.
- Advise the HSE Team and request they immediately notify the relevant authorities (including the gas distributor).
- Initiate the emergency management plan.

4. Responsibilities

Responsibility	Who
Approval	General Manager, People Culture and Safety
Ownership and implementation	Manager, Safety, Wellbeing and Environment

Outlined below are responsibilities specific to work undertaken around overhead and underground asset requirements at all GMW workplaces and controlled sites.

4.1 GMW Executive Leadership Team (ELT)

GMW Executive (ELT) are responsible for overseeing and ensuring the implementation of the requirements of this procedure and related procedures within their respective functional areas. This includes ensuring all work undertaken around overhead and underground assets are suitably risk assessed and that appropriate controls are implemented to minimise the risk of injury or harm to workers.

4.2 Senior Leadership Team (SLT)

Managers in all operational areas and GMW worksites are responsible for ensuring the review and management of risks associated work undertaken around overhead and underground assets. This includes:

- Ensuring adequate resources are available to enable the effective implementation of systems to control and manage risks;
- Review and manage risks associated with work undertaken around overhead and underground assets;



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- Ensuring all applicable employees are aware of this Overhead and Underground Assets procedure;
- Providing resources for Overhead and Underground Assets program works; and

4.3 Coordinators, Supervisors and Field Team Leaders

Supervisors and Team Leaders in all operational areas and GMW worksites are responsible for ensuring that risks associated with work undertaken around overhead and underground asset are managed by ensuring workers are made aware of and comply with this procedure and Goulburn Murray Water's requirements. This includes:

- Ensuring underground services near proposed work have been identified by Dial Before You Dig (DBYD) and located as required
- Ensure WorkSafe is notified as required prior to work being undertaken
- Ensure the all Safe Work Method Statement (SWMS) are complied with
- Addressing the risks associated with work undertaken around overhead and underground assets in site inductions
- Ensuring all workers are familiarised with the relevant parts of this procedure
- Documenting and retaining safety records
- Ensuring only appropriately trained and competent people undertake work around overhead and underground asset activities or operators of plant

4.4 Workers

All workers shall ensure that they:

- Follow the requirements detailed in this procedure and associated documents
- Report any hazards/incidents/injuries immediately to their supervisor in accordance with GMW OHS Incident Reporting and Investigation Procedure

4.5 Electrical Spotter / Safety Observer (Administrative Control)

A Spotter must at all times:

- Be aware of the need to use appropriate PPE during the work they are required for;
- Inspect adjoining compartments, if any condition changes are possible;
- Not allow excavation/penetration work to proceed outside the area specified
- Immediately stop the work, if a hazardous condition is observed;
- Assemble appropriate safety rescue equipment close to work as outlined in the emergency rescue plan;
- Be alert for any collapse or hazard;
- Take immediate action as per the emergency plan if any unexpected changes occur, including the use of rescue equipment;
- Not leave the job unless properly relieved by an authorised and competent person.

4.6 Unsupervised or Principal Contractors

Contractors that meet the requirements under the OHS Act and OHS Regulations, and have documented safe systems of work approved by their organization, will be deemed as meeting the minimum standards required to conduct work around overhead and underground assets for or on behalf of GMW.



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5. Definitions

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

Asset Owner: the owner of an asset or the provider of a utility service.

Aerial Service Line: the final span or section of an overhead electrical service running from a power pole to the point of supply for a customer.

Cable/s: a wire, conductor or form of material designed for carrying electric current or communications signals.

Competent: a suitably trained individual with sufficient experience to safely perform, with minimal supervision, work outlined in this guidance material.

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

- Design
The space encapsulating all possible movements of the plant and any load attached under maximum reach.
- Operating
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.
- Transit
The area encompassing the normal height and width of a vehicle or plant when travelling to or from a worksite.

Electrical Spotter: a competent person who undertakes the task of observing and warning against unsafe approach to overhead and underground assets. A spotter for overhead electrical cables shall have successfully completed an endorsed training course and registered with ESV.

Excavating: the movement or placement of soil or other surface materials by removing, boring or forcing objects into the ground or earth surface.

High Voltage or 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 or LV: a nominal voltage exceeding 50 volts but not exceeding 1000 volts



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Safety Observer – a person who has been appointed to maintain and control exclusion zones and safety envelopes when conducting overhead and underground activities where a permit is required from an asset owner or identified in the risk assessment – **this does not include electrical spotter activities.**

Spotter / Observer Zone: means the area adjacent to overhead assets (power lines) on poles anywhere within 3 to 6.4m to each side, and 8 to 10m on Tower Lines, and at or within 500 mm of an underground asset (mechanical plant) or 3m of an asset registered under the Pipelines Act.

Step potential: means the potential electrical difference between any two (2) points, typically on the ground, which can be touched simultaneously by a person.

Works: Emergency: any urgent works where there has not been a reasonable opportunity to follow normal planning processes prior to work commencing.

Works: Planned or programmed: any work, which has followed the normal planning process prior to work commencing, i.e. where the worksite has been physically inspected and assessed in advance of the work crew arriving on site.

6. Document history

Doc #	Date approved	Approved by	Approval #
A4045516	18 October 2021	Glenda Smith, General Manager People, Culture & Safety	A4161424

7. Associated documents

Document name	#
WorkSafe Victoria: Guide for Undertaking Work Near Underground Assets	www.worksafe.vic.gov.au
WorkSafe Victoria: Guidebook Using Powered Mobile Plant near Overhead Assets	www.worksafe.vic.gov.au
Energy Safe Victoria: The Blue Book	esv.vic.gov.au
Underground Assets Form	A4066281
Overhead Assets Form	A4066279
Ground Disturbance Procedure	A3824889
Workpack (Example of)	A2499532
Safe Start (Example of)	A2204862



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8. Appendices

Appendix A - Procedural Overview / Toolbox

This Appendix is designed to provide an overview of the requirements of this procedure – it is to be used as an aid/refresher to the procedure, and is not to be used in isolation without prior training of the procedure. Section 4 – Responsibilities has not been included within this Appendix (Please see Procedure for respective details)

This Procedure documents the requirements for the management of risks associated with overhead and underground assets

Sect.	Requirement
3.1 Asset Owners Permit	<ul style="list-style-type: none"> When working on, near or around major asset exclusion zones, a permit must be obtained from the Asset owner prior to the works commencing
3.2 Electrical Spotter	<ul style="list-style-type: none"> When working on, near or around electrical services, clearance zones and envelopes an electrical spotter is required
3.3 Safety Observers	<ul style="list-style-type: none"> When working on, near or around any assets other than electrical, a Safety Observer must be present to maintain exclusion zones, clearances and envelopes
3.5 Overhead Assets	<ul style="list-style-type: none"> 3.5.1 Risk Assessment <ul style="list-style-type: none"> A risk 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 3.5.2 Before Starting Work <ul style="list-style-type: none"> Before any work on GMW controlled worksites begins, the below must be planned and documented in a work pack GMW Overhead Assets Form must be completed 3.5.3 Secondary Indicators <ul style="list-style-type: none"> Secondary indicators are systems which when set in place both remind and or control plant access into a power line/ asset zone The design envelope and the transit envelope of plant (including contractor's plant) must be prominently displayed (including look up and live stickers) on forward or side window <ul style="list-style-type: none"> it must be legible at all times and expressed in metres The height of overhead power lines can sag and sway and that can vary depending on weather conditions 3.5.4 Single Wire Earth Return (SWER- one line) electrical systems <ul style="list-style-type: none"> This type of line typically supplies 10-50 farms or houses spread over 20km. SWER lines run from point to point i.e. in a straight line across farmland to the load, which maybe a house, or milking shed or pumping shed No excavation work shall be undertaken within a 10 metre radius of a pole with a SWER transformer mounted on it For further information regarding work near SWER systems contact the asset owner



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Sect.	Requirement
3.5 Overhead Assets cont.	<ul style="list-style-type: none"> • 3.5.5 No Go Zones <ul style="list-style-type: none"> - No Go Zone (NGZ): the area surrounding overhead electricity cables on poles anywhere above or within: <ul style="list-style-type: none"> ▪ 3m to the side and below pole-mounted electrical assets, in the case of power lines up to and including 66kV <ul style="list-style-type: none"> ○ See 3.5.5.1 Work Near Pole-Mounted Assets ▪ 8m to the side and below tower-mounted electrical assets, in the case of voltages above 66kV <ul style="list-style-type: none"> ○ See 3.5.5.2 Work Near Tower-Mounted Assets - An Electrical Spotter will be required for anything between 3 – 6.4 meters of pole mounted power lines or 8 - 10 meters for tower mounted - A spotter for assets must have successfully completed an endorsed training course and be registered with Energy Safe Victoria <ul style="list-style-type: none"> ▪ See 3.5.6 Using an Electrical Spotter
3.6 Underground Assets	<ul style="list-style-type: none"> • Dial before you dig and a GMW Underground Assets Form is to be completed prior to work commencing and any works being undertaken <ul style="list-style-type: none"> - If high risk services are identified then consultation with the Asset Owner may be required - Where DBYD advice is greater than 28 calendar days, new DBYD advice is to be received prior to either commencing or recommencing work - Where there is evidence of underground works from other agencies has occurred in the area a new DBYD MUST be conducted • All underground services MUST be positively identified prior to commencing any ground disturbance work • For further requirements concerning ground disturbance activities please refer to GMW Ground Disturbance Procedure • Pot-holing (or equivalent asset location techniques) must be used to locate existing underground services to ensure adequate clearances are maintained between services and to locate other service crossings • When working near underground assets, No Go Zones must be observed <ul style="list-style-type: none"> - See 3.6.1 Types of Assets and Limits of Approach
3.7 GMW Minimum Requirements	<ul style="list-style-type: none"> • To meet the GMW minimum requirements, the following must be undertaken: <ul style="list-style-type: none"> - Conduct a risk assessment to determine the hazards and controls to be put in place - Determine if you have Overhead or Underground Assets near the worksite - Ensure that SWMS are completed and that all staff are trained and competent, in the equipment, task and/or items of plant they are using - Provide identification and management of the risks associated with possible damage to the surrounding environment or other services and reduce the risk to the public. This may include barriers and signage to alert the public to the hazards and risks if they were to stumble onto site - Underground Assets Form as appropriate - Overhead Assets Form as appropriate • Note: If excavating to a depth of 1.5m or greater where a service is being laid or personnel will be entering the excavation, the excavation must be notified to WorkSafe
3.8 Contact with Overhead or Underground Assets	<ul style="list-style-type: none"> • Information on actions to be taken for contact with certain assets can be located within <ul style="list-style-type: none"> - 3.8.1 Contact with or damage to electrical assets - 3.8.2 Contact with or damage to gas assets



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Appendix B – Examples of Overhead Operating and Design Envelope Exclusion Zones

NOTE: GMW has determined that when accessing high voltage conductors up to and including 66kv up to 3000 mm.

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



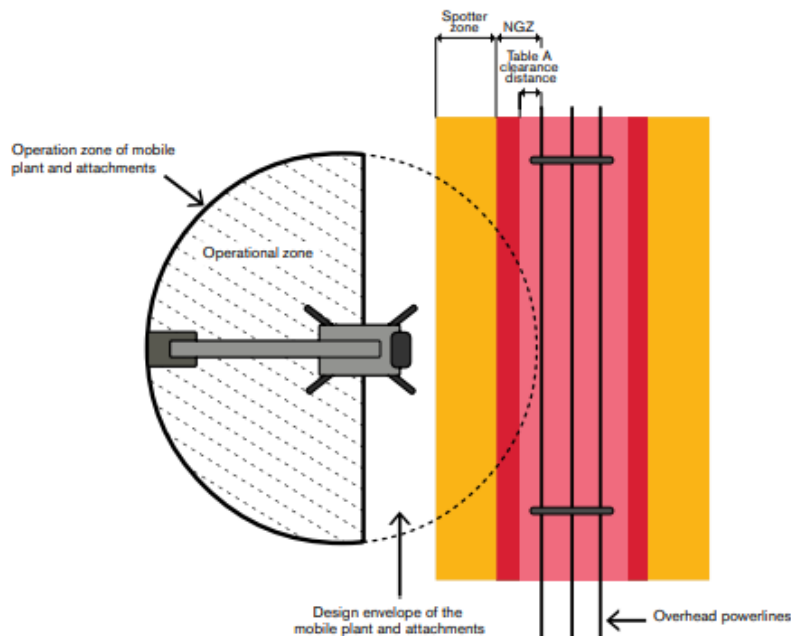
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Examples for application of table B

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	



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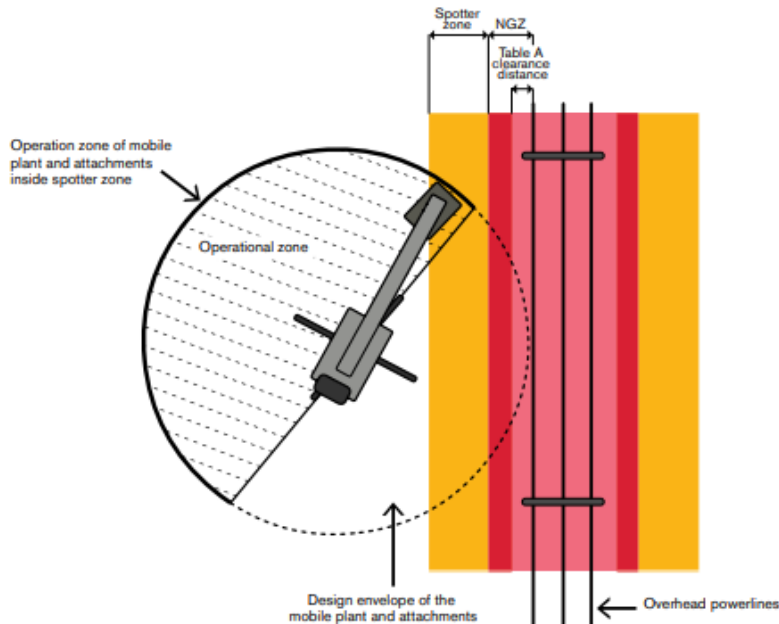
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Example two: Mobile plant is operating inside the 3m - 6.4m spotter zone of overhead electrical assets however the design envelope of the mobile plant, load and attachment can penetrate the NGZ (red) and table A clearances.

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



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Overhead and Underground Assets Procedure

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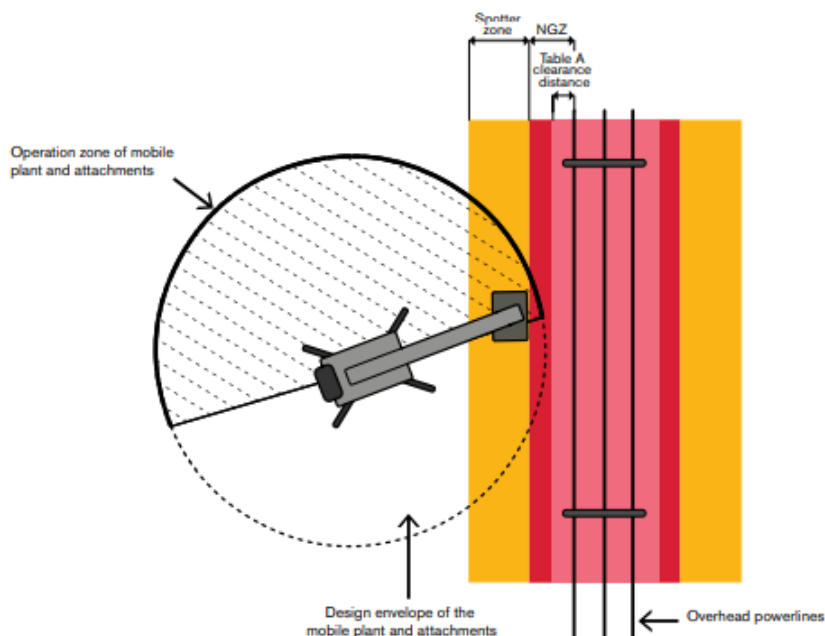
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Example three: Mobile plant is operating inside the NGZ of electrical assets however the design envelope of the mobile plant, load and attachment is outside the exclusion zone.

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	



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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.

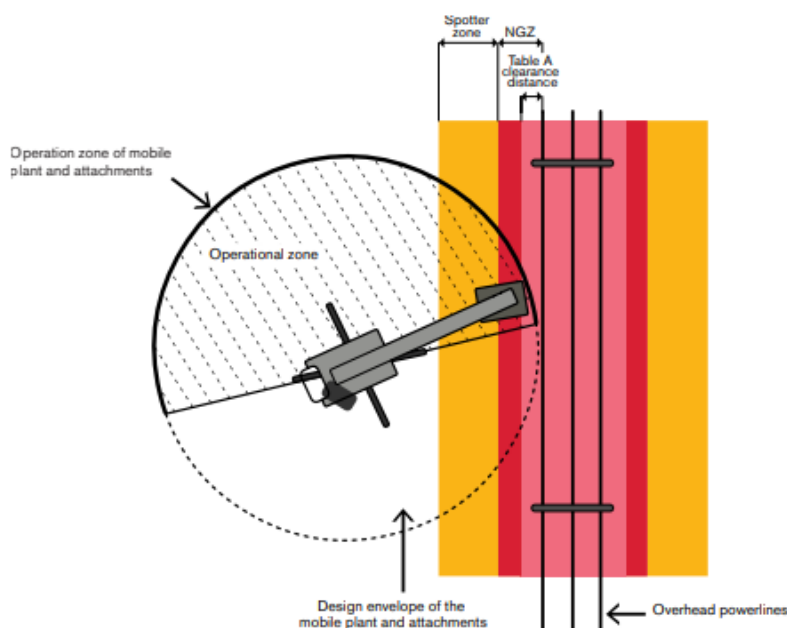
Option two cannot be used as the exclusion zone will be penetrated by the design envelope of the boom.

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
Operating envelope (set up/working)	No Go Zone	Inside exclusion zone (table A)	Outside exclusion zone (table A)			
		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	



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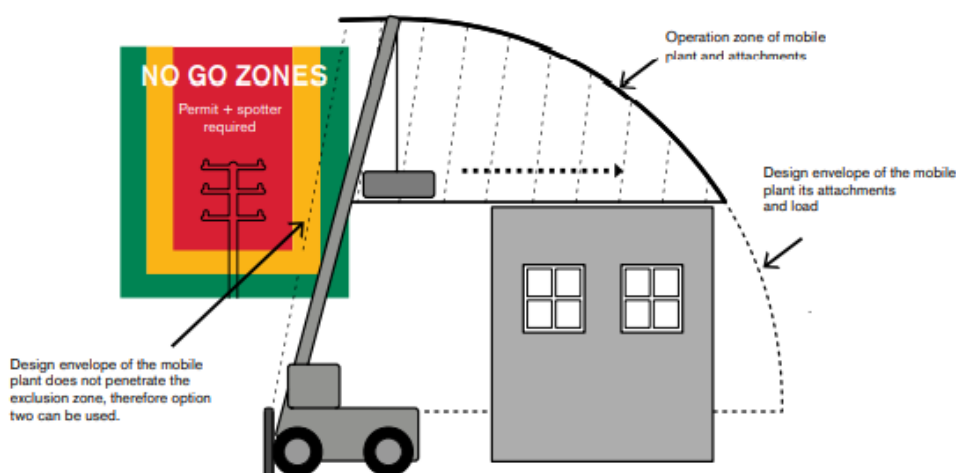
Example five: A non-slewing crane is engaged to lift materials onto the upper level of a building. Overhead electrical assets are located in close proximity to the building. During operation the boom of the crane will penetrate the 3m NGZ of the overhead electrical assets.

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



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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

