

SCAFFOLDING WORK NEAR OVERHEAD POWERLINES

ADVICE ON MANAGING THE RISKS OF ERECTING AND
DISMANTLING OF SCAFFOLDING NEAR OVERHEAD
POWERLINES AND ASSOCIATED ELECTRICAL
EQUIPMENT UP TO 22,000 VOLTS.

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1. OVERVIEW

This document provides advice on managing the risks of erecting, dismantling and using fixed scaffolding near overhead powerlines and associated electrical equipment with an operating voltage up to and including 22,000 volts. It is based on Safe Work Australia's information sheet, *Scaffolding work near overhead powerlines*.

Where the operating voltage of the overhead powerlines is above 22,000 volts, you must consult Evoenergy and comply with all special conditions imposed by them.

More information is in the:

- Evoenergy Electrical Safety Rules (available on the Evoenergy website)
- AS2550 Safe Use of Mobile Plant
- AS/NZS 4576:2020 Guidelines for Scaffolding.

All costs associated with the management of scaffolding within the vicinity of Evoenergy assets will be the responsibility of the person(s) erecting, dismantling or using the scaffolding.

2. WHAT ARE THE RISKS?

Contact with energised overhead powerlines when erecting, dismantling and using fixed scaffolding can cause death, electric shock or other injury to plant operators and workers — directly or indirectly by electricity as a close approach to line conductors may allow a “flashover” to occur. The risk of flashover increases as line voltage increases.

2.1 Managing the risks

You must manage the risks associated with scaffolding work near energised overhead powerlines and associated electrical equipment by:

- identifying potential hazards
- consulting workers and asset owners', for example, Evoenergy on 132 386, or the person with management or control of the electric line or premises, and
- deciding what work zones and approach distances are required for safe operations. When assessing the risks, you must consider:

When assessing the risks, you must consider:

- the location, height, arrangement and visibility of overhead powerlines and supporting structures, e.g. poles, towers and stay wires
- the voltage of powerlines and exposed energised parts and whether they are insulated or bare
- possible sway or sag of the powerlines
- the scaffold's dimensions and operating characteristics including inherent stability
- conductivity if the scaffolds are earthed
- the minimum clearance distance from the closest part of the scaffold or plant being used to the powerlines
- erecting and dismantling scaffolding
- the type of work activities required and the frequency of work tasks
- the qualifications, competency, skill and experience of people doing the work, and
- safe work practices and procedures, for example, a safety observer and Permit to Work.

2.2 Controlling the risks

The best way to eliminate the risk of a hazard is by preventing people, plant, equipment and materials from coming close enough to energised overhead powerlines for direct contact or “flashover” to occur.

You must consider:

- de-energising the electric line
- isolating and earthing the line for the duration of the work
- re-routing the electric line away from the scaffolding after consultation and agreement of Evoenergy, or
- replacing existing overhead powerlines with underground electric cables.

You should arrange de-energising or moving powerlines with Evoenergy as soon as possible. When elimination is not reasonably practicable, minimise the risks by substituting the hazard or work practice with something safer, for example, by:

- using alternative plant that cannot enter an unsafe zone or
- using non-conductive tools.

Consider isolating the hazard from people by erecting a physical barrier on the scaffold to prevent a person, anything attached to the person or anything held by the person from entering the specified approach distance. Alternatively, use engineering controls such as:

- substituting the scaffold with an insulated elevated work platform or
- using an insulated fibreglass handle on a paint roller instead of a conductive aluminium extension handle when standing on scaffolding.

If a risk remains, use administrative controls such as:

- a safety observer to warn people before they enter the 4m approach distance
- arranging for Evoenergy to identify exposed energised low voltage conductors, up to and including 1000 volts, and fitting them with approved visual indicators
- making hazards more visible by using approved visual indicators, for example, tiger tails.
- installing tiger tails for the full length of the scaffolding plus a minimum distance of 5 metres beyond each end of the scaffolding. A competent person should visually inspect the tiger tails each day before scaffolding operations start. If tiger tails have been moved or damaged, Evoenergy must be contacted so they are replaced or relocated in the correct position. Consultation with Evoenergy will confirm the owner of the electric line and costs associated with the installation and application of tiger tails.

Note: Tiger tails alone do not provide protection against mechanical interference or electrical hazards. Using tiger tails does not allow workers to enter the 4m approach distance.

To further minimise risk, use personal protective equipment (PPE) including:

- electrically tested insulating gloves, rubber soled boots and safety helmets
- rubber insulating mats or equipotential conductive mats for workers to stand on
- dry clothes, especially in wet or humid conditions.

A combination of the above controls can be used if a single control is not enough to minimise the risks.

3. APPROACH DISTANCE

AS/NZS 4576:2020: Guidelines for Scaffolding sets a 4m approach distance for metallic scaffolding used near overhead powerlines.

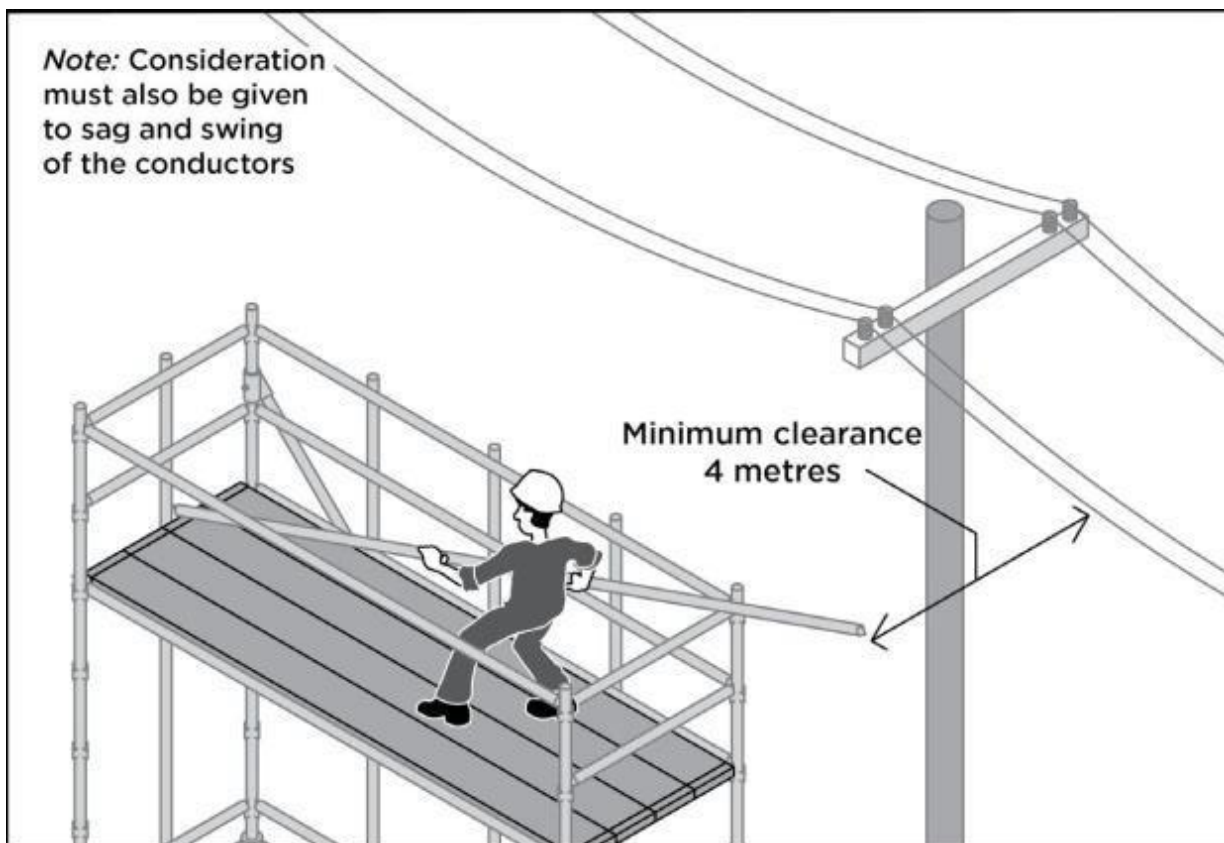
When planning scaffolding work, you should use 4 meters initially and then consider other factors that may require a greater approach distance including:

- the proximity of overhead powerlines
- the proximity and operating radius of vehicles, cranes and other moving plant

- environmental conditions, for example, storm activity, wind strength and direction, heavy rain, ice, hail and lightning, and entry and exit for workers, materials and plant

- the 4m or greater approach distance that applies in any direction where metallic scaffold is erected, used or dismantled near overhead powerlines (refer to Figure 1), or
- if there is a risk the 4m approach distance cannot be maintained, you must contact Evoenergy to determine a safe system of work for the erection, use and dismantling of the scaffolding. -

FIGURE 1. THE 4M APPROACH DISTANCE THAT APPLIES IN ANY DIRECTION WHERE METALLIC SCAFFOLD IS ERECTED, USED OR DISMANTLED NEAR OVERHEAD POWERLINES. SOURCE: SAFE WORK AUSTRALIA



Powerlines must always be treated as energised unless you have:

- an access authority confirming the powerlines have been de-energised, or
- another written document from Evoenergy, such as a Permit to Work which allows authorised people to work within the safe approach distances as determined in Evoenergy's Electrical Safety Rules.

The presence, location, type and operating voltage of all overhead powerlines should be verified by a competent person, for example, an electrical engineer.

4. EXTRA CONTROL MEASURES FOR ELECTRICAL WIRES PASSING THROUGH A SCAFFOLD

Where low voltage electrical wires or equipment pass through a scaffold, they should be:

- de-energised for the duration of the work, or

- fully enclosed to meet Evoenergy requirements (refer to Figures 2 and 3) using a non-conductive material, for example, moisture-resistant flooring grade particleboard, dry timber, dry plywood or similar material or plastic piping approved by Evoenergy.

FIGURE 2. EXAMPLE OF HOARDING IN PLACE TO PROVIDE A BARRIER TO AN ENERGISED OVERHEAD LOW VOLTAGE NETWORK. SOURCE: SAFE WORK AUSTRALIA



FIGURE 3. LOW VOLTAGE ELECTRICAL WIRES PASSING THROUGH A SCAFFOLD. APPROVED VISUAL INDICATORS, SUCH AS TIGER TAILS, RUN ALONG THE FULL LENGTH OF THE SCAFFOLDING PLUS A MINIMUM DISTANCE OF 5 METRES BEYOND EACH END OF THE SCAFFOLDING CAN HELP ISOLATE HAZARDS AND PREVENT DIRECT CONTACT OR “FLASHOVER” WITH ENERGISED OVERHEAD POWERLINES. SOURCE: SAFE WORK AUSTRALIA



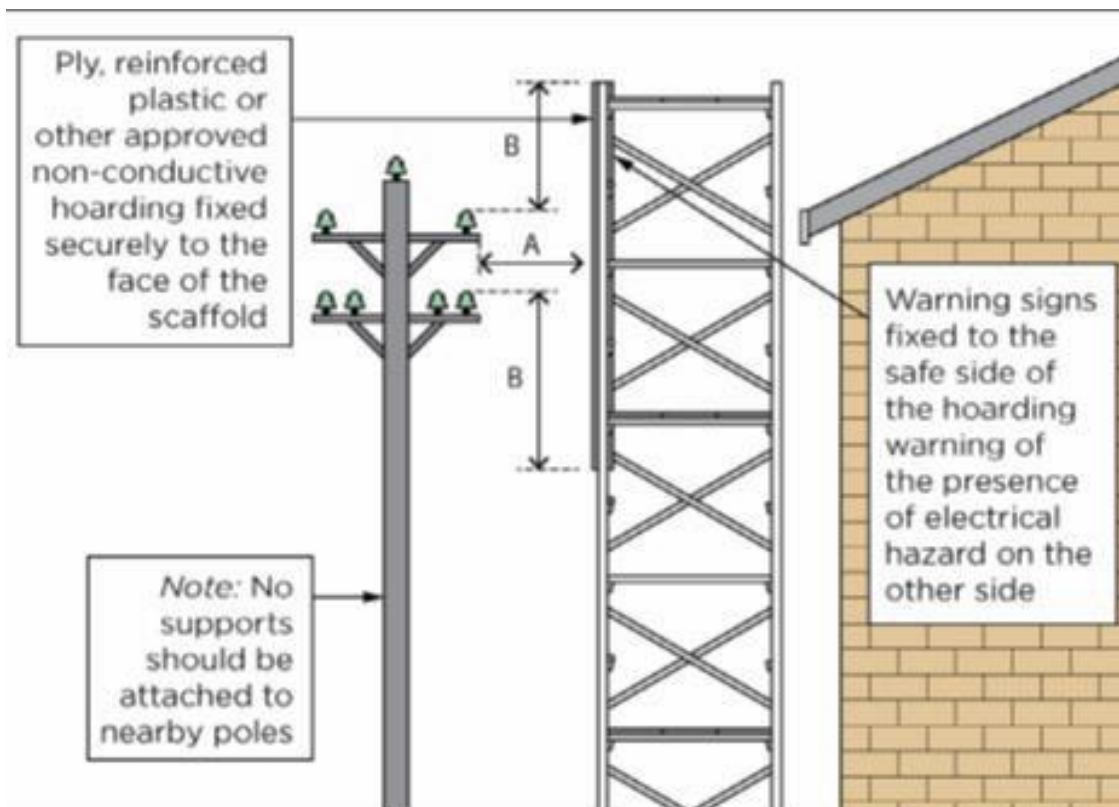
workers and overhead powerlines and associated electrical equipment.

The following hoarding installation conditions apply (refer to Figure 4):

- “A” greater than or equal to distance of 1.5m for low voltage and 2.0m for 11kV -22kV from the nearest conductor, including sag and sway (AS/NZS 4576 and Evoenergy Electrical Safety Rules requirement).*
- “B” greater than or equal to 2.4m from the nearest conductor, including sag and sway.
- If conductors are higher than the top section of the scaffolding, then the scaffolding work area must be covered with the same hoarding on top of the scaffolding to the full length and width of the scaffolding
- gaps between fitted sheets of plywood must not exceed 3mm
- no exposed cut or drilled holes in the sheets of plywood
- the scaffolder must use non-conductive means to attach the plywood to the scaffold and ensure the arrangement can withstand the wind load
- signs must be attached to the safe side of the hoarding warning of the electrical hazard and that the hoarding must not be removed
- Ensure a competent person visually inspects the hoarding and the enclosure daily to ensure they are in a satisfactory condition and remain impenetrable.

*Where the minimum distances and controls listed above cannot be maintained, then scaffolding is not permitted to be used. Alternative controls such as those listed in “Controlling the risks” must be implemented. All costs for such controls are the responsibility of the person/s undertaking the work.

FIGURE 4. : THE HORIZONTAL SAFETY DISTANCES (A) AND VERTICAL MECHANICAL CLEARANCES (B) FROM ELECTRICAL CONDUCTORS REQUIRED BY EVOENERGY. SOURCE: SAFE WORK AUSTRALIA



You must check the clearance distances before erecting any scaffolding near overhead powerlines. An electrical engineer can provide the safety clearance distances used to design the scaffolding and control the risks. Clearance distances must be maintained.

Specific authorisation, training, competencies and access authorities are required for working within the Safe Approach Distances (SAD) of Evoenergy assets.

5. SAFE WORK METHOD STATEMENTS (SWMS)

A SWMS is required for energised electrical work and high-risk construction work carried out on or near energised electrical installations or services. A written SWMS must be based on a risk assessment. The SWMS and risk assessment must be available to workers on site for the duration of the work.

6. CONTACT DETAILS

COMPANY	CONTACT	PHONE	EMAIL
Evoenergy	Faults and emergencies	13 10 93	faultscallcentre@evoenergy.com.au
Evoenergy	Planned outages	13 23 86	network.connectionapplication@evoenergy.com.au

VERSION CONTROL

VERSION	DETAILS	APPROVED
1.0	Initial Document	Wayne Cleland – 2018 Manager Electrical Works Practices

DOCUMENT CONTROL

DOCUMENT OWNER	PUBLISH DATE	REVIEW DATE
Wayne Cleland	19/10/2020	19/10/2022