

ELECTRICAL SAFETY

FOR BUILDING AND CONSTRUCTION WORKERS

WORKPLACE FACT SHEET

KNOW THE DANGERS

Employees and contractors in the building and construction industry may run the risk of receiving an electric shock and causing substantial damage to plant and equipment when operating plant near overhead power lines or when excavating. This fact sheet has been developed to help you understand why you may be at risk and what you can do to work safely.

THINGS YOU SHOULD DO BEFORE STARTING WORK

- Complete a risk assessment. This should identify hazards (including work practices and procedures) and help you implement appropriate control measures.
- Find out the location of underground and overhead power lines and their proximity to your work activities and transit routes before commencing digging or other activities by phoning **131 081**.
- Know the location of underground and overhead power lines and their proximity to your work activities and transit routes before commencing digging or other activities.
- Dial **1100** or visit **www.1100.com.au** when planning underground work.
- Visually inspect points of attachment, at both ends, before commencing work as gutters and metal roofs may become "alive" due to deteriorating insulation on electrical wiring.
- Use a safety switch to reduce the risk of shock from portable tools.
- Before commencing work, install eye level visual markers in any area where overhead power lines are identified.
- Carefully monitor weather conditions – power lines can sway in the wind, sag as temperatures increase and are difficult to see at dawn and dusk.
- Ensure operators are aware of the height and reach of their machinery in their travel, stowed and working positions to ensure that minimum approach distances to power lines are maintained. For more information refer to *Work Near Overhead Power Lines Code of Practice 2006*, WorkCover NSW.
- Determine electricity asset safety clearances and whether an isolation needs to occur by referring to *Where to draw the line on safety clearances from electricity assets*, available at www.endeavourenergy.com.au
- Ask the occupant if they have experienced any minor electrical shocks from plumbing or appliances.

Call 131 081 and put safety first.
www.endeavourenergy.com.au

BEFORE YOU DIG

- Apply for Dial Before You Dig plans for each location where you intend to dig.
- Use cable location services and technologies such as Global Positioning Systems (GPS) and Ground Penetrating Radar (GPR) to accurately identify the location of underground utilities.
- Pothole once you reach the applicable approach distance – for more information on approach distances for underground assets refer to *Work Near Underground Assets Guide 2007*, WorkCover NSW.

SAFE WORK HABITS

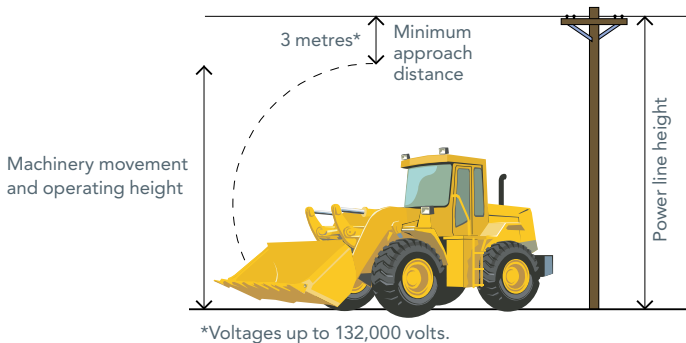
- Look up and locate overhead power lines and maintain at least the minimum approach distance from them.

Minimum safe approach distances when working near power lines

Workers and their equipment should not approach overhead power lines any closer than the following, when machinery is being operated:

Power lines with voltages up to 132,000 volts	e.g. low voltage distribution and subtransmission lines, usually on poles	3 metres
Between 132,000 and 330,000 volts	e.g. subtransmission and transmission lines, usually on either poles or towers	6 metres
More than 330,000 volts	e.g. transmission lines usually on towers	8 metres

The distance that must be assessed prior to work



- Remember that WorkCover requires a minimum approach distance of at least three metres from overhead power lines (up to 132,000 volts).
- Exercise extreme caution when working near the point of attachment of the electrical service line to the house/building.
- Look for cables and the signs of underground assets whenever digging, such as changes in grass, depressions or mounds and pipe work.
- Look out for electrical arcs. If identified, do not commence work and contact Endeavour Energy immediately on **131 003**.
- To eliminate the possibility of making contact with power lines on a job site, plan and communicate safe traffic paths by providing diagrams of plant and vehicle travel paths away from overhead power lines.
- Assign a spotter to each operator of high machinery and excavators to guide movements near overhead power lines and underground cables and ensure that minimum approach distances are maintained.

- Before every relocation, lower all machinery into the transport position.
- Use proximity sensor technologies on plant while you dig.

PERMIT TO WORK SYSTEMS

Using a permit to work (PTW) system can be an effective way to be sure preventative measures have been taken before any digging commences. It acts as a checklist that can only enable digging work to commence (usually with supervisor sign off) once all preventative actions have been taken *first*.

A typical permit to work checklist should ask/specify the following:

- 01 Has Dial Before You Dig been undertaken?
- 02 Have cable location services/technologies been used and their results compared with the DBYD plans?
- 03 Have the plans been marked up to reflect any new information/changes?
- 04 Has the safest plant suitable for the job been selected and ordered?
- 05 Has a spotter been allocated to this job to observe hand, mechanical or powered digging?
- 06 Is potholing included in the safe work procedure?
- 07 Has the job been assessed to use non-destructive digging?
- 08 Have overhead power lines been identified as a risk? If so, has this risk been managed as low as reasonably practicable?
- 09 Have all persons who may face/are affected by the risk of hitting underground utilities been consulted/made aware of the safe work procedures?

SAFETY EXCELLENCE

IN EMERGENCIES CALL 131 003

24 hours a day, 7 days a week

If you have any questions about what you should do to stay safe please call 131 081 or visit us at www.endeavourenergy.com.au

ELECTRICAL SAFETY

FOR PLUMBERS



WORKPLACE FACT SHEET

KNOW THE DANGERS

Plumbers run the risk of receiving an electric shock when cutting metallic water pipes or replacing water meters. This fact sheet has been developed to help you understand why you may be at risk and what you can do to work safely.

THINGS YOU SHOULD DO BEFORE STARTING WORK

- Complete a risk assessment. This will identify hazards (including work practices and procedures) and help you implement appropriate control measures.
- If appropriate, inform the customer and isolate the electrical supply. Locate the main switch/es and turn them off attaching a "Do not operate" tag. Remember, this may not isolate all stray voltage.
- Know the location of underground or overhead power lines and their proximity to your work site before commencing digging or climbing. Dial **1100** or visit **www.1100.com.au** before you begin any digging work.
- Test water pipes with a self-testing voltage indicator for stray voltage.
- If the earth wire needs to be moved or disconnected, or shows signs of being damaged, or where any existing metallic pipe is to be replaced in part or in its entirety by plastic pipe or other non-metallic fittings or couplings, the work must not commence until the earthing requirements have been checked by an electrical contractor and modified, if necessary.

Call 131 081 and put safety first.
www.endeavourenergy.com.au

THINGS YOU SHOULD DO BEFORE STARTING WORK

BRIDGE THE GAP, AVOID THE ZAP!

When cutting a water pipe, disconnecting a water heater or water meter it is important to provide an alternate circuit for electrical current to travel. Otherwise, it may travel through you!



5 STEPS TO SAVING YOUR LIFE

- 01** Test water pipes with an approved testing device to determine if there is any voltage in the pipes. If a voltage reading of 5 volts or above is detected, warn the customer and contact Endeavour Energy immediately as there is a problem with the electrical system.
- 02** Clean water pipe back to the bare metal on either side of the work area that you intend to cut/work on. This assists the bridging conductor to achieve a good connection.
- 03** Attach the bridging conductor to the cleaned pipe and secure it firmly ensuring both ends of it will not come loose during work. Do not work outside of the bridging conductor.
- 04** Complete the job whilst working inside the bridged area.
- 05** Remove the bridging conductor once all work inside the bridge has been completed including all joining work.

WHEN BRIDGING

- Every time, before using one, visually inspect the bridging conductor for any damage.
- Ensure bridging conductors have a current rating of no less than 70 amps.
- Ensure suitable bridging conductors with insulated screw type clamps are fitted for each end of the electrical bridging conductor.
- Ensure PPE is used, especially insulated electrical gloves (minimum 500 volts). Every time, prior to use, ensure gloves are checked for damage such as holes.
- Do not break or remove the bridge until all work on the bridged area is completed and continuity of the metallic service pipe is restored.
- Remember, the removal of a bridging conductor during work may result in electrocution.

OTHER WAYS TO MAKE YOUR WORKSITE "POWER SAFE"

- Find out about any work areas which may be hazardous for other reasons such as gas, water etc.
- Look for obvious signs of underground services such as conduits, pipes, warning tape, bricks or equipment.
- If required, arrange for the isolation of electricity supply or the application of insulating matting onto service and point of attachment by Endeavour Energy.
- If there are power lines near the worksite, install appropriate signage.

SAFETY EXCELLENCE

IN EMERGENCIES CALL 131 003

24 hours a day, 7 days a week

If you have any questions about what you should do to stay safe please call 131 081 or visit us at www.endeavourenergy.com.au

LIVING SAFELY WITH ELECTRICITY

When working outside, whether it's a small job or large job or even something you do every day, you need to be aware of the electrical dangers of working near overhead power lines or underground cables.

Endeavour Energy wants to help protect you from potential electrical dangers on your work site. In turn, this will ensure families, households and businesses can continue to enjoy a safe and reliable electricity supply.

This brochure highlights some of the things you can do to avoid electrical dangers on the job.

Did you know?

Australian households receive communication, gas, water and electrical services via a labyrinth of cables stretching millions of kilometres underground. If just one of these cables is damaged, you could potentially be seriously injured and/or isolate thousands of households from essential services. Such incidents can result in hefty fines.

- 01 Call Emergency Services on **000**.
- 02 Request an ambulance if anyone is injured.
- 03 Report the incident to Endeavour Energy on **131 003** as soon as possible.

SAFETY EXCELLENCE

IN EMERGENCIES CALL 131 003

24 hours a day, 7 days a week

If you have any questions about what you should do to stay safe around damaged power lines and other electrical infrastructure please call 131 081 or visit us at www.endeavourenergy.com.au

SAFETY ON THE JOB



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Call 131 003 and put safety first.
www.endeavourenergy.com.au



BE ALERT AT WORK

Do you know where the underground cables are?

Unfortunately, serious incidents occur when excavators hit underground cables because cables aren't identified before work has commenced. Obtaining information about underground cable locations once involved making numerous calls to many utility providers.

Now there's really no excuse. Information and site maps showing the general location of underground services can be obtained by calling **1100** or visit www.1100.com.au. Remember it's the law.

Check, double check, triple check and reassess

Always check, double check, triple check and reassess for electrical dangers on the job. Remember, earthmoving operations often require material to be relocated to mounds or piles. When this happens under and around power lines it reduces the clearance distances between plant and the electrical infrastructure.

Completed your job?

Stay alert when packing up or removing scaffolding or equipment or when returning plant to its transit position.

Transporting trees?

Remember tall trees and shrubs such as palms can come into contact with power lines. Water is a good conductor of electricity and can therefore conduct through vegetation due to its water content.

Excavating?

Always check the voltage of cables listed on plans so that you can then apply this to *Work Near Underground Assets Guide 2007*, WorkCover NSW, to determine what the clearance and other requirements are to commence excavation. Select the safest plant for the job, e.g. toothless buckets and blunt hand tools. Before using mechanical plant to dig, use a cable location service to check the accuracy of plans. Always pothole by hand with non-conductive, blunt hand tools.



Look up and live

If a tip-truck, scaffolding, pump, ladder, crane or metal platform approaches or comes in contact with overhead power lines, the operator and even people nearby, could be electrocuted. Before starting work always look up and identify the location of any overhead power lines. Plan the job to minimise work near and around power lines.

Compare the height of power lines to the maximum height of your equipment, and ensure the full reach of your equipment will not breach the approach distances outlined in the *Work Near Overhead Power Lines Code of Practice 2006*, WorkCover NSW. For "ordinary persons" WorkCover requires an approach distance of at least three metres from overhead power lines (up to 132,000 volts).

Additional clearances are required when working near power lines carrying higher voltages. It's also a good idea to nominate a co-worker to observe and check that you and your equipment do not go into the approach distance zone.

HOW CAN YOU HELP?

Electricity can jump

You don't have to be touching power lines to get an electric shock because electricity can 'jump' – also known as arcing. A safe 'clearance' distance needs to be maintained to prevent electricity from arcing across to you and your equipment.

Five things to remember

- 01** Check, double check, triple check and reassess – always assess your work site for electrical dangers before you start and stay alert until you've left the site.
- 02** Look up and live – identify the location of overhead power lines and plan your job away from them.
- 03** Dial **1100** or visit www.1100.com.au before you dig – confirm the location of all underground cables before you begin any excavation work.
- 04** Before using mechanical plant to dig, check the accuracy of your plans using a cable location service. Pothole by hand using blunt plant items.
- 05** Always maintain a minimum approach distance from power lines and assign a co-worker as an observer while you operate and move machinery around power lines.

