

be energy safe

Working safely near underground assets

Office of the Technical Regulator



Damage to underground assets such as electric cables, gas, water and sewage pipes caused by excavation work can result in serious or potentially fatal incidents including burns, electric shock and gas releases or explosions as well as disrupting the electricity, gas or water supply.

Injuries can be caused by the explosive effects of arcing current. Hazardous fires or explosions may result when a live cable or gas pipe is cut or crushed an excavator bucket or penetrated by the point of a tool.

Incidents may also arise when damage to these assets is left unreported and unrepaired.

Locate the underground assets

Before starting any excavation work all underground assets (eg. electric cables, gas, water and sewage pipes) must be located. The following will assist with this process:

- Dial Before You Dig
- Site plans
- Cable or pipe detection
- Carefully executed pilot or test holes.

Dial Before You Dig and site plans



Dial Before You Dig is a free national community service that provides information about the location of underground pipes and cables belonging to the various utility companies around Australia such as SA Power Networks, ElectraNet or Envestra.

Be aware that Dial Before You Dig alone may not identify all underground pipes or cables. Some may be part of a private installation and some of Australia's underground asset owners are not members of Dial Before You Dig.

Never assume that the plans you receive from your enquiry contain exact location of the underground assets. Assets still need to be carefully and physically located for confirmation.

Cables are typically buried at between 450mm and 1000mm, but soil may have been inadvertently removed from above the assets or more soil may have been deposited above them. Never assume cables or pipes will be located at a consistent or required depth.

Lodge your application for digging near underground assets with Dial Before You Dig online at www.1100.com.au. You can also call their national call centre on 1100.

Dial Before You Dig will provide you with the contact details of the infrastructure owners on the Enquiry Confirmation Sheet. The owners may provide additional information or instructions on locating and working near their underground assets.



Emergency crew in attendance



Trenching and laying new pipes and cables



Cable at incorrect depth



Cable damaged by an excavator

Check location with cable and pipe detection

One way to take the worry out of locating buried underground assets is to use the services of an accredited underground asset location company.

If you are using your own locating equipment, ensure the operators are trained in its use and are aware of its limitations. In addition, the equipment must be calibrated and capable of detecting all types of cables and pipes as necessary. Some locating equipment may not detect an electric cable unless there is current flowing and may not be able to detect non-metallic pipes or conduits.



Non-metallic gas pipe marker

Note: It is common for gas assets to be laid in polyethylene (PE) pipe (yellow or black with yellow stripes). Generally PE pipe is laid with detectable (foil backed) marker tape or non detectable marker tape and a tracer wire, however this is not always the case.

Check location with a pilot or trial hole

Once the asset location has been determined, use a pilot or trial hole to establish the exact asset location and depth.

Using insulated hand tools is considered a safe method for excavation, but they can also be a common source of accidents and cause damage to the asset if used incorrectly.

Other safe methods of excavating include water jetting and high-velocity air jets incorporating vacuum removal of excavated soil to expose buried assets. Their use may be limited by the ground conditions and soil type. Precautions are also needed to prevent injury from ejected soil. Whichever method is chosen, you need to apply it with care.



Pipe damaged by a star dropper

Before digging or water jetting near a high voltage electrical cable, check with SA Power Networks on 1300 650 014 or ElectraNet on 1800 243 853 if there are any special conditions that apply.

Machinery – dig at a safe distance

Once an asset location has been determined, excavation may proceed. Every effort should be made to excavate alongside the asset rather than directly above it. Extreme care should be taken when digging above or close to the determined asset location.

Marker tape is commonly used as a location indicator for buried pipes and cables. If a marker tape is found, use extreme caution if you continue digging.

Hand-held power tools and mechanical excavators must be used with extreme care when working close to underground assets.

A risk assessment should be used to determine the minimum safe working distance for powered tools and excavators from the underground assets.

Final exposure of the asset by horizontal hand digging is recommended, as the force applied to hand tools can be controlled more effectively.

Insulated tools (e.g. spades and shovels, preferably with curved edges) should be used when hand digging near electric cables. They should not be thrown or spiked into the ground, but eased in with gentle foot pressure.

Electricity network access permits and notification

Where possible the electricity supply to the underground cable should be isolated before digging.

If you need to isolate an SA Power Networks cable you will need to apply for a network access permit from SA Power Networks. The permit will ensure that the powerlines will be turned off until the permit is returned.

To apply for a network access permit in South Australia, contact the SA Power Networks Builders and Contractors line on 1300 650 014 or visit the SA Power Networks website.

Related information

See our 'Building safely near powerlines' brochure for information on safe clearance distances.

See our 'Working safely near overhead powerlines' brochure for information on the many hazards associated with working in proximity to powerlines and how to manage these hazards, including when trimming vegetation.

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Working safely near overhead powerlines

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This information is provided to offer general guidance only on working near underground assets, and does not purport to cover all situations, or any particular situation, or to outline a complete list of procedures that must be followed. It is not to be taken as a statement of law or legal advice, and must not be construed to waive or modify any legal obligation. The Government of South Australia will not be liable for any injury, damage or loss of any kind sustained by any person that arises directly or indirectly from reliance upon any information contained herein or source of information referred to.

For more information

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