



*The Essential First Step.*

# *Best Practice Guide for Locating Underground Services*

Dial Before You Dig helps provide excavators with the location of underground assets (pipes, cables etc.).

**Our priorities are:**

- protect underground assets and excavators
- promote safe excavation
- reduce accidents and service disruptions
- encourage builders, contractors, plumbers, developers, landscapers and home owners to use our service
- encourage all of Australia's underground Asset Owners to become Members and maintain accurate plans.

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## *Our service*

Dial Before You Dig is a national community service that connects users involved in all forms of excavation with the infrastructure owners of underground services in that area using a fast and effective referral system.

We encourage all of Australia's underground Asset Owners to become Members and maintain accurate plans.

You can receive plans from our Asset owning members by lodging an enquiry at [www.1100.com.au](http://www.1100.com.au), downloading the iPhone App or calling 1100 during business hours.

If you don't get a response or if the plans are unclear, contact the owner directly using details in the Enquiry Confirmation we send.



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## *As an excavator you have a duty of care to:*

- lodge a Dial Before You Dig enquiry to ensure that Asset Owners know what you are excavating and when your works will occur
- ensure that you or your supervisor has a copy of all the plans and documents of the identified assets on-site and that they are not out of date
- inspect the site yourself. This is because the plans may occasionally be inaccurate due to Asset Owners not informing Dial Before You Dig of new assets or changes made to existing ones
- find out what assets are on site and to Pothole to verify their location if they are in close proximity to your project. Underground asset-locating devices can also be a great help here as they can quickly identify locations of assets and help you avoid damaging them
- find and expose all underground services and assets before you start excavating and adhere to the clearance limits surrounding No Go Zones for dangerous assets like high pressure gas pipes and high-voltage electricity cables

- ensure that workers and the public are always 100% safe and surround all exposed underground assets with free standing safety barriers
- strictly follow any special requirements set by the Asset Owner when you come in contact with their assets
- avoid any potential loss of service as there may be significant repair and replacement costs caused by rupturing pipes and cables
- immediately report any damage to underground assets to the Asset Owner
- replace excavation material with the same type of material when filling in the excavation unless re-specified by the Asset Owner. Compact the dig site and reinstate protective measures like slabs, tapes and filling materials
- keep all your recorded information and notes until construction is completed, and keep a record of all contacts with Asset Owners to demonstrate all efforts were made to fulfil your duty of care in case there's an accident.



You lodge an enquiry via [www.1100.com.au](http://www.1100.com.au), the iPhone App, or by calling 1 100 during business hours.

We send you an Enquiry Confirmation listing the owners of underground assets on your site.

You receive plans within 2 working days detailing all recorded underground assets and their location. You review these and any conditions and contact the owner for any clarification.  
*(Some Asset Owners [e.g. Local Councils] may want you to call or visit their office to collect their Plans).*

Visit the site with your plans to visually check if there are any unrecorded assets or services. If so, contact the owners ASAP.

Record any additional information you receive from any Asset Owner, and create both a digital and hard copy file of the plans for your supervisor.

Before excavating, work out how you'll verify the position of the assets. If there is any significant risk, call an expert locator.

If the risk is great, use a locator then Pothole by hand or use other non-destructive methods to find the asset, then record its location and depth on the supervisor's plans.

If the risk is small, and there's a good chance of finding the asset using the plans Pothole by hand or use non-destructive excavation methods.

If requested by the Asset Owner, tell them when you will be working near their asset.

Immediately report any damage to the Asset Owner.

Replace any material you excavate with the same material and compact as required, particularly on driveways and paths.

Keep a record of any excavation information you received and any notes you made until the construction is done and file these with your construction files. In the case of damage, the Asset Owner may seek damages and your records may be useful in demonstrating your duty of care and compliance with best practice.

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## *As a subcontractor you have a duty of care to:*

- not start excavating until the principal contractor or project owner has informed you of the exact position of all underground services
- always follow the Asset Owners' instructions and restrictions
- enact appropriate control measures specified by the principal contractor or in Industry Codes
- if responsible for identifying and protecting the assets yourself, follow the excavator's duty of care. If in any doubt, contact the Asset Owners as soon as possible to get advice.



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## *Emergency excavations*

Every now and then an emergency arises leaving you unable to wait for the responses from the Asset Owners referred by Dial Before You Dig. Here are a few tips to avoid this being a serious issue:

- immediately lodge an enquiry with Dial Before You Dig. Our Enquiry Confirmation email back to you will list the contact phone numbers of the site's Asset Owners who you can call
  - use the Dial Before You Dig on-line service to look up the relevant emergency contact details for Asset Owners in your area and contact them
- maintain a wide-ranging, out-of-hours contact list of people at relevant authorities
  - employ operators who know the assets and the requirements of each Asset Owner. Some Asset Owners will be able to supply a list of such operators.

## 6 *Using underground asset location devices*

An underground asset-locating device used by a trained and experienced locator will save you a lot of time by determining the location and depth of underground assets. They can also determine where an asset is located outside the planned works, or where to reposition the excavation to avoid damage.

Most of these devices can only find assets that conduct and reflect electro-magnetic signals used by the locating device. For non-conductive assets a radar-based method like ground-penetrating radar is the way to go.

## 7 *When locating and marking underground infrastructure*

**Use a uniform colour code and set of marking symbols to clearly indicate:**

- if the asset is gas, water, telecommunications, sewer etc
- the number and size of pipe work, including orientation if available
- the direction and, where possible, the depth.

## 8 *Working within road reserves*

### **Gaining consent**

Unless specifically exempt, excavations within the road reserve require written consent of the responsible coordinating road authority.

When excavating in and around road reserves, you're obliged to minimise damage to the road and road infrastructure, minimise any traffic disruption and protect significant roadside vegetation. Please note that consent may be withheld unless you can provide evidence that you have lodged an enquiry with Dial Before You Dig.

Contact the relevant state road authorities for more details.

### Reinstatement and restoration of road works

You must satisfy all requirements for backfilling and reinstatement works outlined in the original written consent and restored to a condition as required by the registered Asset Owner.

It's a good idea to file consent history records of works and any reinstatement with your job file. Finally, advise the relevant road authority once all work is finished.

### Roadside safety

You must devise a traffic management plan. Speak to your appropriate state authorities (e.g. road authorities) for further guidance.



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### *Planners and designers*

**Accurate information on the location of underground assets allows planners and designers to:**

- reduce the risk of damage or injury
- eliminate undue delays
- accurately cost the works and plan around existing services.

**When drawing up plans, consider:**

- any health and safety risks associated with the excavation. Most states require a written safety report to the project owner specifying any hazards associated with construction work at the site. This includes the location of underground services
- submitting one detailed Dial Before You Dig enquiry for large projects instead of multiple enquiries. Please note: a fee may be charged for planning and design enquiries as they can be labour intensive
- showing the location of underground assets using different colours for each utility on each of your plans (refer to SUE in Appendix A)
- providing a note on your plans confirming the date of the latest Dial Before You Dig enquiry
- verifying the location of assets using an underground asset location device, hand Potholing or non-destructive excavation methods.

## 10 *Safety on site*

### Before starting:

- use facility records and a visual inspection to gather site information to determine hazards, exposures, and/or other potential safety problems
- identify any site characteristics that may impact safety on the job
- locate potentially dangerous physical obstructions and plan how to work around them
- consider traffic hazards
- identify soil conditions and other factors like trenches, pits, bores, standing water, etc. that could affect safety and plan how to work around them
- work out where are the nearest hospital, fire department, police department, and any other relevant emergency response organisations and how to get there
- develop a safety plan including procedures, employee roles, equipment and time requirements.



### When locating assets

- The owner/operator and locator must identify all hazards and train employees to be aware of them while conforming to federal, state/territory, local Regulations and Industry Codes.

### Worker safety

- You have a duty of care to ensure that:
- employees and subcontractors are trained and briefed all on safety measures like exposure to potentially hazardous conditions, avoiding unnecessary risks, and putting safety first
- workers wear high-visibility clothing and personal protection, and particularly roadside workers
- safety features for ladders, electrical test devices, and other instruments are in working order
- any Confined Space your workers have to enter is safe, controlled and adequately monitored and/or ventilated. Please note: Some Asset Owners have restrictions on entering Confined Spaces and have specific health and safety induction and training requirements.

### When you've finished:

- ensure that all personnel and equipment are accounted for and the site is left safe
- ensure that all safety-related equipment is returned/restored
- conduct a work-safety review of the locating activity and what improvements could be made.

**Asset:** An underground or submerged conductor, pipe or structure.

**Asset Owner:** The person or entity who owns an underground asset.

**Confined Space:** Confined space as defined in Australian Standard AS/NZS 2865:2009 Confined spaces. It is an enclosed or partially enclosed space that is not intended or designed primarily for human occupancy, and may include a vat, tank, pit, pipe, duct, flue, chimney, silo, container, pressure vessel, underground sewer, wet or dry well, shaft, trench or tunnel.

**Damage:** The weakening, partial or complete destruction of an underground facility.

**Damage Reporting:**

1. Immediately report any damage to the asset's owner/operator.
2. Immediately alert occupants of nearby premises of any emergency.
3. Call 000 if warranted.

**Designer:** Architect, engineer and others preparing or issuing a drawing or blueprint for a job that requires excavation or demolition.

**Dial Before You Dig:** The Dial Before You Dig referral service for anyone to make an enquiry for plans and documentation from underground Asset Owners to enable location of all underground services prior to underground excavations.

**Excavate or Excavation:** Moving earth, rock or other material below existing grade. This includes auguring, blasting, boring, digging, ditching, dredging, drilling, driving-in, grading, ploughing-in, pulling-in, ripping, scraping, trenching, and tunnelling.

**Enquiry Confirmation:** A confirmation email sent by Dial Before You Dig to the enquirer as a result of an enquiry to Dial Before You Dig, detailing the job number, Asset Owners and their contact details.

**Excavator:** Anyone proposing to, or engaging in excavation.

**Facility:** An underground or submerged conductor, pipe or structure providing electric or communications service (including, but not limited to, traffic control loops and similar underground or submerged devices), one providing, gas, oil or oil product, sewage, storm drainage, water or other liquid service (including, but not limited to, irrigation systems), and accessories to it.

**Facility Owner/Operator:** Any person, utility, municipality, authority, political subdivision or other person or entity who owns, operates or controls an underground line/facility.

**Ground-penetrating Radar:** A geophysical method that uses radar pulses to image the subsurface. This non-destructive method uses electromagnetic radiation in the microwave band (UHF/VHF frequencies) of the radio spectrum, and detects the reflected signals from subsurface structures.

**Marking Symbols:** How an owner/operator indicates a line or facility.

**No Go Zone:** the specified clearance area surrounding underground or overhead assets, which will vary depending on the type of asset from 300mm to 3000mm. Some Asset Owners require greater clearances that will specify when responding to an asset enquiry.

**Non-conductive Assets:** An asset composed of material that does not conduct electricity or electro-magnetic radiation and does not have a tracer wire affixed or in close proximity to enable the detection by locating equipment. E.g. Plastic pipe, optic fibre cable.

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**Pothole:** Exposure of an asset by careful hand digging to locate the precise horizontal and vertical position of underground infrastructure.

**Project Owner:** The person responsible for a project involving excavation.

**Regulations and Industry Codes:** Work Health and Safety (WHS) Regulations being enacted across Australia to harmonise work health and safety laws, coordinated by SafeWork Australia. Industry Codes (or Codes of Practice) provide practical guidance to Project Owners and people doing excavation and construction work on how to meet legal regulatory requirements.

**Road Reserve:** The road reserve is the land controlled by the local road authority that is located between one property boundary line and the property boundary line on the other side of the road reserve.

**Subsurface Utility Engineering (SUE):** An engineering process for accurately identifying the quality of underground utility information needed for excavation plans and for acquiring and managing that level of information during the development of a project.

**Vacuum Excavation:** Extracting soil using vacuum, water or air-jet devices.

### Dial Before You Dig

- On Line Service Guide
  - Service Guidelines for Victoria
  - The Essential First Step (Brochure & Booklet)
  - Home Owners' Guide (Brochure)
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### NSW

- WorkCover NSW – Work Near Underground Assets: Guide
  - NSW Streets Opening Conference – Guide to Codes and Practices for Streets Opening
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### QLD

- Cooperative Research Centre (CRC) – Guide to best practice for Safer Construction
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### Safe Work Australia (as referred in WHS legislation in all states (except Vic & WA))

- EXCAVATION WORK Code of Practice
  - CONSTRUCTION WORK Code of Practice
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### SafeWork SA

- Construction Site safety 1
  - Trenching and Excavation
  - SA Building and Civil Construction Industry Common Site Safety Induction Course Pocket Book
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### Standards Australia

- Classification of Subsurface Utility Information (SUI) AS 5488-2013
  - Pipelines - Gas and liquid petroleum - General requirements AS 2885.0-2008
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### VicRoads

- The Code of Practice for Worksite Safety - Traffic Management
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### WA

- WA Commerce - Code of Practice Excavation
  - WA Main Roads - Utility Providers Code of Practice for Western Australia (Document and Addendum)
  - WA Occupational Safety and Health Regulations 1996, Reg. 3.21
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### WorkSafe Victoria

- Framework for Undertaking Work near Overhead and Underground Assets
  - Guide for Undertaking Work near Underground Assets
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### Overseas

- TSA (UK) - The Essential Guide to Utility Surveys
- Common Ground Alliance (USA) – Best Practices
- Infrastructure Resources (USA) – Excavation Safety Guide and Directory
- NZ Utilities Advisory Group - National Code of practice for UTILITY OPERATORS' ACCESS to TRANSPORT CORRIDORS (2011)







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