



The Essential First Step.

Best Practice (Technical) Guide for Locating Underground Services

Dial Before You Dig aims to provide a fast and effective referral service enabling excavators to access information on the location of all underground assets at their work site.

Our priorities are:

- To ensure Australia's underground assets are protected
- To assist in the protection of Australia's excavators
- To reduce the number of accidents and disruptions to services
- To ensure our service is used by all involved in any form of excavation – builders, contractors, plumbers, developers, landscapers and home owners
- Along with our members and industry partners, promote safe digging practices to all
- Grow our membership base to ultimately include all Australia's underground Asset Owners

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1

The Dial Before You Dig 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.

Our unique partnership with Australia's owners of underground infrastructure means that we can offer a single point of contact to receive information about underground networks at the planned excavation site so the user does not have to contact the utility organisations individually. Dial Before You Dig is the essential first step in protecting Australia's vital underground infrastructure.



2

General responsibilities and duty of care

Excavators who represent the person or company responsible for any excavation have a duty of care to locate underground services or assets that are in the vicinity of the dig site, and then find and expose them before excavating near or around them.

You have a duty of care to:

- Comply with local State and Territory Work Health & Safety (WHS) legislation and regulations, particularly the regulations that relate to Excavation Work Codes of Practice (refer Appendix B).
- Comply with any legislative requirements regarding the protection of particular Asset Owners' licensed infrastructure such as gas pipelines and transmission infrastructure.
- Protect workers and the public from serious injury due to the rupture of an underground asset such as a natural gas pipe, high voltage electricity cable, petroleum or industrial gas pipe. Any damage to these assets can cause very serious damage to structures and potential injury to many people.
- Minimise the potential for damage and loss of service due to damage or rupture of the same assets. Extensive networks can be closed down for long periods with serious consequences of disruption and may incur penalties to the person causing the damage. The repair and replacement can be very costly.

The Dial Before You Dig service is *the Essential First Step of Safe Excavation* and is the preferred method for obtaining information regarding the location of underground assets. Using the service is referred to in numerous industry publications as best practice. The Dial Before You Dig service itself does not hold plans or detailed information regarding the underground services. We refer enquiries on to our Asset Owning Members, who register and update their Area of Interest, and respond directly to the customer with the appropriate information.

We also do not have information relating to the privately owned assets (e.g. private storm water pipes, or pipes and cables on the customers' side of the meter) that are located on private properties that connect to Asset Owners' infrastructure.

Underground services and assets registered with the Dial Before You Dig service include:

- Any underground service or asset within the road reserve that is from one property boundary line to another.
- Any underground service or asset laid within public owned open space, or rights of way, or easements on public property.
- Any underground service or asset within an easement, and in some cases on private property.

Excavators should always use the Dial Before You Dig service before commencing any excavation activity. They should also investigate the site themselves for evidence of underground assets, because referrals from the Dial Before You Dig service may not take into account:

- The installation of a new main or service belonging to an Asset Owning Member of Dial Before You Dig, that has not yet been included on the Asset Owner's database and registered with the Dial Before You Dig service.
- An existing service or asset that has been altered or modified recently, and has not yet been updated on the Asset Owner's database.
- Construction plans that show the location of underground assets that may have been specified earlier by the project designer, but are no longer applicable.
- The chance that the owner of an asset may not be a Member of Dial Before You Dig, and will therefore not have registered the asset with the Dial Before You Dig service.

It is the excavator's responsibility to contact any organisations that are not registered with the Dial Before You Dig service, that may have underground assets in the intended job site.

You should note the plans you receive only indicate the presence of pipes and cables. When you receive the plans and associated details of any assets relating to your Dial Before You Dig enquiry, the services or assets must be located accurately and exposed *before* any excavation work commences.

To avoid damage, you must first locate the pipes and cables by following the instructions provided by the registered Asset Owners.

There are a number of options to consider when exposing underground assets:

- Commence Potholing from the plans sourced through the Dial Before You Dig service, using either hand digging or preferably non-destructive excavation, such as hydro-excavation.
- Hire an accredited contractor with an underground asset locating device to find and mark the asset locations on your behalf.
- Purchase an underground asset locating device, do the appropriate Locator training and use it to verify the asset location shown on plans sourced through the Dial Before You Dig service before Potholing by hand or non-destructive excavation to expose the asset.

It is important to never assume the depth, location or alignment of pipes and cables. If you have any doubt about the location of the underground assets, contact the Asset Owner listed on the Enquiry Confirmation received from the Dial Before You Dig service.



3

Necessary procedures prior to commencing any excavation work

Before excavation work is carried out, the principal contractor for the construction work must:

- Lodge a Dial Before You Dig enquiry online at www.1100.com.au or via the iPhone App. Alternatively you can contact our call centre on 1100 during business hours.
- Once you have successfully lodged your enquiry, Dial Before You Dig will send you an Enquiry Confirmation sheet.
- The Enquiry Confirmation sheet enables you to verify the details supplied for your planning dig

site location. It also provides you with the contact details of the infrastructure owners, registered with Dial Before You Dig, relating to your enquiry.

- It is important **not** to proceed until you hear from all Asset Owners affected by your project. Should you require further assistance, use the contact details provided on the Enquiry Confirmation sheet to contact the relevant infrastructure owner directly.
- Visit the site and inspect for any other underground or overhead assets that may have not been registered with Dial Before You Dig.
- Look for evidence of underground or overhead services that may be connected to any property but not recorded on the plans received from the Asset Owning member.
- Review the plans and conditions sent by Asset Owners as they are received.
- Ensure that the current plans held are not out of date. If so a new enquiry is to be lodged with Dial Before You Dig in case there are new assets registered since the last enquiry was made.
- Record the information gained from any other Asset Owners or other parties with areas of interest not registered with Dial Before You Dig.
- Establish a digital and/or hard copy file of the Dial Before You Dig plans, documents and other identified assets or areas of interest that can be used on site by the excavator and other affected contractors.

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Process chart

You lodge an enquiry via www.1100.com.au, the iPhone App, or by calling 1100 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 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.

- Plan how the actual position of the asset or area of interest can be verified prior to any actual excavation work commencing. Some examples of different planning solutions are:
 - Where the risks require the accurate location to be proved and recorded by GPS, use a locator to confirm the position, then *Pothole* by hand or use non-destructive excavation methods to find the asset and record its accurate position digitally on the plans for the excavator and other affected contractors.
 - Where the risks are less and chances of finding the asset from Dial Before You Dig information are good, *Pothole* by hand or use non-destructive excavation methods to find the asset at the excavation work site.
- Review the excavation works, and if requested by the Asset Owner, advise them when works are to be undertaken near their asset or Area of Interest.
- Keep all your recorded information and notes until construction is completed.
- File together with the as-built drawings.

A subcontractor must not start excavation work unless the principal contractor has either advised there are no underground services or, if they do exist, has given the appropriate person the prescribed information.

The appropriate person must then consider the information and;

- Follow the Asset Owners conditions and any reasonable restrictions; and
- Implement the appropriate control measures.

Where the principal contractor has an agreement that the subcontractor is responsible for the identification and protection of assets, the subcontractor's delegated person shall follow the necessary procedures prior to commencing any Excavation work.

If any doubt remains, either party should contact the Asset Owner and seek clarification **before** starting excavation work.

5

Special arrangements to undertake emergency work near other networks

If the excavation work to be carried out involves emergency type conditions, or the timing makes it impractical to wait for the Dial Before You Dig service responses, then alternative methods must be available and known to the excavator. These include:

- Lodging an enquiry with the Dial Before You Dig service and use the Confirmation Enquiry email which lists contact numbers of Asset Owners with assets at the work site.
- Using the Dial Before You Dig online service to look up the relevant emergency contact details for Asset Owners in your area and contact them.
- Maintaining a contact list of persons associated with the authorities that can be contacted for locations and advice regarding locations out of hours.
- Employing experienced people and operators who have knowledge and an awareness of the locations of assets and the requirements of each Asset Owner. Some Asset Owners may provide a list of accredited operators called Locators.

Generally it is the employees of an Asset Owner, or their subcontractors that carry out emergency work. These employees or subcontractors must have experience and/or be accredited by the Asset Owner to work on their infrastructure.



6

Duty of care to prevent damage and reduce the risk of injury

The commitment to exercise a duty of care to prevent damage and reduce the risk of injury includes:

- Following any special requirements set by the authority for their own assets when digging around or near the asset.
- Potholing and digging by hand, or using non-destructive excavation where required.
- In particular gas pipeline Asset Owners generally do not allow the use of hydro-excavation over a gas pipeline, unless specifically approved by them.

- Digging safely that protects workers and the general public at all times. This will require carrying out risk analysis and if necessary, the implementation of safe work method-statements where risk levels are significant.
- Isolating the work near underground assets from the public at all times.
- Protecting and supporting exposed infrastructure is the responsibility of the excavator. Always erect safety barriers in areas at risk to protect underground networks (refer to the Dial Before You Dig Four P's of Safe Excavation).
- Reinstatement of any protective measures used by the Asset Owner including slabs, tapes or filling materials.



7

Commitment to use the plans and to seek more information

The Dial Before You Dig service relies on the Asset Owner sending the plans to the customer following an enquiry to Dial Before You Dig. An excavator should be prepared to contact an Asset Owner using the details provided on the Enquiry Confirmation if no contact has been made, if plans are not received, or if the plans cannot be understood.

The customer or excavator must make every effort to find out what assets are within the vicinity of the dig site and to Pothole and prove the location. The use of an underground asset locating device to verify the asset location shown on the plans sourced through the Dial Before You Dig service can save time before Potholing by hand or employing other non-destructive excavation methods.

The customer or excavator should ensure they have original marked-up colour copies (when appropriate) of the Asset Owners' plans on site, and these plans should be kept as part of the file of all contacts with Asset Owners, to demonstrate they have made all reasonable efforts to fulfil their duty of care.

8

Commitment to Pothole prior to full excavation

Potholing or excavating by hand, or using non-destructive excavation methods along the underground asset, is the preferred method and deemed best practice by the Asset Owners and the regulators to prove the existence and location of the asset. Additionally some Asset Owners have made it a mandatory requirement to expose assets by hand digging before commencing any works. Otherwise, the excavator can use an underground asset-locating device to reduce the amount of hand digging needed to find the asset.

Dial Before You Dig endorses the Work Safe No Go Zone guides for underground assets that recommend Potholing by hand, or non-destructive excavation methods to prove the location for all types of underground assets.

9

Commitment to use underground asset location devices and services

Underground asset location devices are constantly being improved and new products or models help reduce the time spent locating assets. Where the worksite includes many assets underground or where there are a large number of sites interfacing with underground assets, the use of an underground asset-locating device will reduce the time spent hand digging. More importantly, using these devices identifies where the location is outside of the planned works, or where the excavation can be shifted slightly so as to not be in conflict with the asset.

It is highly recommended you use the services of industry trained locators to locate underground infrastructure, as they have the requisite skills and appropriate locating equipment.

Some locators will have specific training to meet the requirements of individual Asset Owners, and some Asset Owners only allow the use of their own accredited locators who have had specific training and have access to specialised equipment to work on their infrastructure. Some Asset Owners also provide a list of locators that they recommend you use to locate their underground infrastructure.

Electromagnetic locating

Electromagnetic locating methods are the most frequently employed techniques used to detect underground assets made of, or containing conductive materials e.g. steel, copper. Examples of these assets include water, natural gas, fuel lines, electricity and telephone. In order to detect these assets using electromagnetic techniques, a radio frequency is induced onto the asset. This signal is carried by the conductor along its length and is detected above ground with radio frequency antenna.

When employed correctly, electromagnetic locating is a safe and reliable means of locating most common underground assets. It is used in combination with other techniques, such as ground penetrating radar and vacuum excavation, to identify the location of underground structures.

Radar-based technologies

In cases where non-conductive assets cannot be located using electromagnetic means, radar-based methods such as ground penetrating radar and associated technologies can be used to determine the location(s) of non-conductive underground assets.

Users of any of these technologies should have the knowledge and training required to operate the specialist equipment and interpret the results.

10 *Locating and marking practices*

The Australian Standard Classification of Subsurface Utility Information (SUI) - AS 5488-2013 recommends the utility code and line colour for each subsurface utility type. It is a 'mapping' standard that specifies requirements for recording the details of newly installed utility infrastructure that should be applied during the design and construction phase. It also recommends these standard practices be used for maintaining existing records of subsurface utility assets, networks and infrastructure.

The codes and colours AS5488 recommends will facilitate easier identification of different subsurface utilities on plans, electronic models and in the field. It recommends standard marking symbols and colours be utilised to clearly indicate:

- What the underground infrastructure is (i.e. gas, water, telecoms, and sewer etc.).
- What underground infrastructure is present (number and size of pipe work, including orientation if available).
- The direction of the underground infrastructure.
- The depth of the underground services.

11

Commitment to work within the No Go Zones guides

Guides and information are available from state based authorities and Asset Owners that proclaim minimum clearance limits to the No Go Zone around particular assets. The guides recommend the provision of a Safe Work Method Statement and hand excavation within the No Go Zones.

To be able to satisfy a commitment to the duty of care, excavators should commit their companies and staff to following the No Go Zone restrictions for underground and overhead assets.

12

What to do if an asset is damaged during the locating phase

If any damage occurs to an Asset Owners' infrastructure, you should immediately contact the relevant Asset Owner(s) via the contact numbers provided on the Enquiry Confirmation advice, on the plans from the Asset Owner, or via any other emergency contact details available at the time of the incident. Report any damage to the Asset Owner as soon as the asset is damaged.

Damage to the asset includes damage to tracer wire, marker tape, or pipe coating; pipeline protection such as slabbing and casings; when you mistakenly bury valves; remove signage etc.; and does not just mean rupturing a pipe or cable.



13

Consent requirements for work within Road Reserves

Unless specifically exempt, excavations within the road reserve require the prior written consent of the coordinating road authority responsible for the particular road reserve. Consent may not be provided unless evidence that an enquiry has been made to the Dial Before You Dig service is produced.

The road reserve is defined as the area between property boundary lines.

The excavator is responsible for the excavation works, and must undertake them in a manner that minimises damage to the road and road infrastructure, minimises disruption to road users, and protects any significant roadside vegetation.

Further detail on the requirements which must be followed when proposing to conduct excavations and other related work within the road reserve can be found by contacting the relevant State Authorities (i.e. road authorities).

14

Reinstatement and restoration of the Excavation

All underground assets must be restored to the condition required by the registered Asset Owner. You will generally be required to replace all embedment material with the same material and provide compaction if the embedment material is disturbed.

Please note the bedding and backfill requirements may be different to the construction standards when the asset was originally installed.

Written consents issued by road authorities provide details of the requirements for backfilling and reinstatement of any excavated areas of roadway, pathway or roadside. Excavators and customers of the service must satisfy all these consent requirements.

Records of the consent history of any work undertaken, and the reinstatement completed, should be filed with the job file. The excavator should close out the consent by advising the relevant road authority once the work has been completed.

15 *Worksite safety on roads*

An excavator undertaking works in the road reserve must have in operation a traffic management plan as required by the appropriate State Authorities (i.e. road authorities). The authority should be able to provide guidance in preparing traffic management plans.

16 *Planners and design engineers*

The Dial Before You Dig service is a useful and necessary tool of the planner and design engineer, as underground assets often impact on any construction works that involve excavation. The accurate location and depth is critical in the planning and design process, and accurate information used in the design allows the works to be constructed in accordance with the plans. This reduces the risk of damage or injury and allows the works to be constructed without undue delays.

Accurate location of underground assets allows the planners to cost the works and plan around existing services. Long expensive delays can be caused when existing services are not identified early in the project and have to be relocated.

Planners and Designers have a responsibility to provide as much legitimate and accurate information regarding underground assets as possible on construction plans.

While a further enquiry will be lodged providing more recent information when construction commences, the information provided on the preliminary tender and construction plans is important to those tendering for and planning the work processes, and to others that are required to review and approve the plans.



Planners and design engineers should consider:

- Showing the location of underground assets in different colours on each construction plan. (refer to Section 10 SUI AS 5488 for identification of different subsurface utilities and SUE in Appendix A).
- Providing a note that details the date of the latest Dial Before You Dig enquiry as well as confirmation that the plans show this latest information.
- Providing a statement that these plans have been designed with the latest information received from the Dial Before You Dig service.
- The use of an underground asset location device and Potholing by hand or non-destructive excavation methods to verify the location of assets as part of the design process.
- Submitting a single detailed enquiry for a large project instead of multiple individual enquiries.

Please note the Dial Before You Dig service is used primarily for excavation enquiries, and some Asset Owners may treat planning and design enquiries differently to excavation activities, and charge you a fee for the information they provide to you. This information usually takes longer to compile, and may take up to ten (10) working days to be provided.



17

Commitment to using the service by all excavators, planners and design engineers

All excavators, planners or design engineers have a responsibility to use the Dial Before You Dig service for all jobs involving excavation prior to commencing work. Without the full support of the excavators, planners and design engineers, the service loses its integrity and possibly its benefits to the customer.

The benefits gained by having a free enquiry service that can provide the locations of all the registered underground assets at a worksite, is dependent on getting all the information within the one enquiry.

An effective Dial Before You Dig service depends on all Asset Owners registering their assets, and if an Asset Owner of even the smallest network or infrastructure that has any risk of being damaged is not registered with the Dial Before You Dig service, the customer will have to look elsewhere for the information and may then decide not to use the service for future jobs, resulting in expensive damages or even possible injury to workers or the public.

If excavators don't use the service, and damage or accidents occur, Asset Owners suffer unnecessary costs and inconvenient service interruptions.

Dial Before You Dig places a high priority on raising awareness of the service to excavators as well as Asset Owners, and many Asset Owners and agencies support us and help promote awareness of the service to users as well as other Asset Owners.

18 *Safely locating underground assets*

It is the responsibility of the owner/operator and locator to establish when and how the underground asset will be identified. Excavators have a particular duty of care to protect their workers (and members of the public) from serious injury due to the rupture of underground assets.

Each state and territory has its own WHS legislation and most Australian States have new legislation that specifically refers to the Safe Work Australia Model Code of Practice for the Construction Industry, which provides practical guidance to principal contractors and other persons who carry out construction work (including excavation work).

The SafeWork Australia Code of Practice (and the state WHS Acts and Regulations that reference the Code) refers to Regulation 304 that says excavators should take all reasonable steps to obtain underground services information before commencing any excavation work.

Employers also have a general obligation to provide a safe and healthy workplace for their workers and contractors. This includes providing and maintaining safe systems of work; and making sure workers have adequate information, instruction, training and supervision to work in a safe and healthy manner. Employers must also ensure other people (including members of the general public) are not endangered by the conduct of their business (e.g. providing protection from falling into pits around construction sites, or being injured by exposed underground utilities).

All hazards associated with performing a location need to be identified, and appropriate controls and measures conforming to federal, state/ territory, local and industry standards and WHS legislation should be established.

Pre-work safety considerations:

- **Site background data.** Site information is gathered to determine hazards, exposures, and/or other potential safety problems that might be encountered in connection with on-site location work. This information may be gathered from the asset records and from visual inspection.
- **Site familiarisation.** Site characteristics which could affect location work are analysed. Areas to be considered include:
 - **Obstructions.** The site is analysed to determine if physical obstructions are present on the property, which would make location work unsafe. Means for working around such obstructions are defined.
 - **Traffic.** Vehicular arteries (highways, roadways, railways, etc.) at the work site are identified to determine if such traffic would pose any safety hazard to locating the site. I.e. any requirements for road traffic and pedestrian management controls.
 - **Physical site conditions.** Soil conditions and other factors (such as trenches, pits, bores, standing water, etc.) that could affect the safety of the job site are identified. Methods are developed to identify and safely work around these hazards.
- **External resources.** Information is gathered about safety related resources that might be required in the event of an accident or other problem (such as an employee illness). Information needed includes location and contact information for nearest hospital, police, fire & emergency services. In addition, access routes and travel plans to emergency response facilities are defined.
- **Work plan.** Work plans in which procedures, employee roles, equipment requirements, time requirements, and other factors are considered and developed to define the most efficient means for safely accomplishing required location work.
- **Job briefing.** Information developed in the preceding items is used to conduct a job briefing, prior to commencement of onsite location work. The job briefing focuses on safety aspects of the required work.

Work safety considerations when locating underground assets

- **Road traffic and pedestrian management/control capabilities** are provided to ensure the safety of personnel in cases where location work requires that working individuals disrupt road traffic or pedestrian flow or otherwise occupy hazardous positions. All working individuals wear proper safety attire, such attire provides for adequate visibility of the worker and personal protection against hazards.
- **Equipment.** All equipment used in connection with locating work is suitable for the intended uses. Items such as ladders, electrical test devices, and other instruments and items are inspected from a safety perspective prior to use. Safety features such as locking devices, grounding, insulation, etc., are thoroughly inspected.
- **Exposures.** In cases where location work requires personnel to enter into spaces with potentially unsafe conditions, appropriate training and testing is accomplished prior to entry. During times when such spaces are occupied, adequate monitoring and/or ventilation devices are present and properly operating during occupancy. Some Asset Owners have restrictions in place when working in Confined Spaces require specific training, equipment, and notifications prior to commencing work; and additional supervision at all times.
- **Work activities.** All locating work activities are conducted with safety given first priority. All employees are thoroughly trained and briefed regarding safety measures such as minimising exposures to potentially hazardous conditions, avoiding unnecessary risks, and giving priority to personal safety.

Post work safety considerations

- **Termination of work activities.** After locating work is completed, the site is restored and left in such a condition that no safety hazards associated with the locating work activities remain. All personnel and equipment utilised in connection with the work are accounted for and no unsafe conditions remain at the site. Any safety-related equipment used in connection with the work is returned/restored to pre-work status.
- **Debriefing.** After completions of locate work, a debriefing safety review of work activities should be conducted to review any applicable SWMS (Safe Work Method Statements) and JSA (Job Safety Analysis) reports initiated prior to the start of work. This review is conducted with the objective of looking at the safety aspects of all involved work practices as necessary to see where unnecessary exposures may have occurred and where improvements could be made.

As-built Drawing: A detailed depiction of facilities as installed in the field.

Area of Interest: The geographical area in which an Asset Owning member has underground infrastructure, and registers it with Dial Before You Dig. If an enquirer intends to excavate within this geographical area, a referral will be sent to the Asset Owning member, who in turn contacts the enquirer.

Asset: An underground or submerged conductor, pipe or structure used in providing electric or communications service (including, but not limited to, traffic control loops and similar underground or submerged devices), or an underground or submerged pipe used in carrying, providing, or gathering gas, oil or oil product, sewage, storm drainage, water or other liquid service (including, but not limited to, irrigation systems), and appurtenances thereto.

Asset Owner: Any person, utility, municipality, authority, political subdivision or other person or entity who owns, operates or controls the operation of an underground asset.

Backfill: To fill the void created by excavating.

Compliance: Adherence to the statute and its regulations.

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: Any impact or exposure that results in the need to repair an underground asset due to a weakening or the partial or complete destruction of the asset, including, but not limited to, the protective coating, lateral support, cathodic protection or the housing for the line, device or asset.

Damage Reporting: The immediate reporting to the relevant Asset Owner/operator of any damage made or discovered in the course of excavation work. To alert immediately the occupants of premises as to any emergency that such person may create or discover at or near such premises. If the situation warrants contact 000 emergency ASAP.

Designer: Any architect, engineer or other person who prepares or issues a drawing or blueprint for a construction or other project that requires excavation or demolition work.

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.

Digital Imagery: A computer compatible version of land related information including, for example, topography, physical features, road/street networks and buried asset networks obtained from a variety of sources including, for example, aerial photographs, satellite photographs, road maps, survey plans and buried asset records.

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.

Excavate or Excavation: Any operation using non-mechanical or mechanical equipment or explosives used in the movement of earth, rock or other material below existing grade. This includes, but is not limited to, auguring, blasting, boring, digging, ditching, dredging, drilling, driving-in, grading, ploughing-in, pulling-in, ripping, scraping, trenching, and tunnelling.

Excavator: Any person proposing to or engaging in excavation work for himself or for another person.

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.

Grounding Systems: A system of one or more ground conductors or ground rods providing a low resistance path to earth ground potential, through a mechanical connection to structures, conductors and equipment.

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.

Latitude (Lat): Distance measured north or south of the equator.

Longitude (Long): Distance measured east or west from a reference meridian (Greenwich).

Marking Standards: The methods by which an Asset Owner/operator indicates its line or asset in accordance with their standards.

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 electromagnetic 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.

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 the undertaking of a project that involves 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: Vacuum excavation is defined as a means of soil extraction through vacuum; water or air jet devices are commonly used for breaking the ground.

The references contained here are intended to be supplemental references for existing and/or new practices found within the Best Practices Guide.

Dial Before You Dig

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

NSW

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

QLD

- Cooperative Research Centre (CRC) – Guide to best practice for Safer Construction

Safe Work Australia (as referred in WHS legislation in all states (except Vic & WA))

- EXCAVATION WORK Code of Practice
- CONSTRUCTION WORK Code of Practice

SafeWork SA

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

Standards Australia

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

VicRoads

- The Code of Practice for Worksite Safety - Traffic Management

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

WorkSafe Victoria

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

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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