

INTERFERENCE WITH UNDERGROUND SERVICES WHEN LOCATING OR PLACING SURVEY MARKS

1. Background

Surveyors regularly dig for survey marks and place new survey marks. Often this is done within service corridors where electricity, telecommunications, gas, water and other services exist. Unless proper precautions are taken, this can potentially lead to costly damage/disruption to services and possible injury, death to workers or the general public. It can also lead to heavy financial penalties.

Underground utility services can also exist outside recognisable service corridors and are not always placed in accordance with 'street opening' conventions.

It is strongly recommended that you obtain a utility search from 'Dial Before You Dig' or an equivalent utility searcher before attempting ANY excavation, and that appropriate precautions be taken to expose any services that may be affected. This will assist you to minimise your risk. The services search must be current. Each utility has its own currency period, for example Energy Australia is 28 days while Telstra is 60 days. The disclaimers on such plans should also be noted by the surveyor: drawings may be inaccurate or incomplete. Notwithstanding this, the responsibility still rests with the user.

Advice has also been received that in the event of injury from or damage to underground services, if a current 'Dial Before You Dig' services search has not been done then surveyors may find themselves not covered by their public liability or professional indemnity insurance.

This has significant implications for surveyors, particularly with cadastral surveys as the surveyor may need to dig for survey marks some distance away from the actual land being surveyed.

An article was placed in *Azimuth* magazine warning surveyors of the indemnity issue associated with underground services.

Additionally, the Survey and Mapping Managers Forum (SMMF) has provided the following information to assist surveyors who are undertaking surveys of land that might contain underground services.

2. Issues

2.1 Risks Associated with Underground Services

- Risk of injury or death to workers and the general public
- Risk of damage to services
- Risk of financial penalty by asset owner
- Risk of inconvenience to users of services

- Risk of cutting off emergency services
- Risk of contravening the Occupational Health and Safety Legislation

The greatest risk to workers are electricity cables. Of particular note, Energy Australia has warned that cables are sometimes not in conduits and sometimes do not have any recorded evidence as to the precise location of the cable. Similarly, Telstra cables are not required to be contained within an easement or may not be noted on utility service plans.

2.2 Excavations associated with the Digging/Placement of Survey Marks

- Digging for survey marks involve excavations in most cases less than 150mm, however they can be much deeper (up to 1 metre or more).
- State survey control marks can be 700-950mm deep.
- Feno survey "spikes" and star pickets can be driven 350-1000mm deep
- Survey marks are sometimes placed with the assistance of a mechanical boring machine.

2.3 Occupational Health and Safety Act 2000 and Regulation 2001

One of the main aims of this legislation is to protect people at a place of work against risks to health and safety.

Under clause 9 of the Regulation an employer must take reasonable care to identify any foreseeable hazard that may arise from the conduct of the employer's undertaking and that has the potential to harm the health or safety of:

- Any employee of the employer, or
- Any other person legally at the employer's place of work, or both.

Clause 64 of the Regulation requires that if excavation work is to be carried out at a place of work, all available information concerning the position of underground electrical cables be obtained and disseminated to persons at the place.

Chapter 8 of the Regulation deals with the construction phase of a development. Among the points of relevance to surveyors in this Chapter is Clause 241 (3) which requires employers to have safe systems of work for unplanned contact with underground services

2.4 Underground Services of Greatest Risk

In the case of manual digging or placement of survey marks, the *service of greatest risk to surveyors* is electricity. Although the likelihood of hitting an electricity service is normally low (provided the surveyor takes due care), the consequences can be fatal. Other services such as Telstra, gas and water

are also at risk, and although the physical consequences may not be as severe, the financial consequences of damage to a Telstra cable can be ruination. Telstra services are often located in a corridor 0.45m from the boundary where reference marks are also often located, and accordingly the likelihood of hitting these services is high. Sewerage and drainage services (other than house connections) would normally be unaffected.

In the case of mechanical excavation, any underground services may be at risk.

2.5 Dial Before You Dig

Dial Before You Dig (DBYD) is a voluntary partnership between most of Australia's communications, gas, water and electricity providers to provide a one-stop shop for obtaining underground network plans. However, surveyors should be aware that not all utility providers are members of DBYD and the plans of such providers are not available through this service.

DBYD is a referral service. It refers enquiries, from those who propose to excavate, to underground asset owners who are members of the DBYD service. The asset owners respond by providing advice as to the location of any underground pipes & cables, along with information on how to work safely and carefully whilst excavating in the vicinity of underground plant.

The service takes enquiries from individuals/companies who are proposing to excavate and refers them to member underground asset owners who may have underground plant in the vicinity of the proposed worksite. The asset owners respond either by supplying plans of their underground network along with instructions on how to protect their underground assets during the excavation period or by advising that their plant is not in the vicinity of the proposed worksite. DBYD claims that the plans, which are normally provided free of charge, are supplied within two working days.

The DBYD Service can be accessed from anywhere in Australia on 1100. This is a free call. Alternatively enquiries may be faxed, at any time, to the DBYD service on **1300 652 077**. Services search enquiries can also be made through an on-line enquiry system via the web site <http://www.dialbeforeyoudig.com.au>. This is a map based facility that allows you to identify the worksite. It then identifies what utility agencies are affected, sends the enquiry to those agencies and advises you of the enquiry reference details for each agency.

2.6 Implications with Public Liability or Professional Indemnity Insurance

There is a common law principle that due and reasonable care is required before any action. If proper care is not taken, then the insurer may refuse indemnity.

2.7 General Precautions for Surveyors

- Both workers and employers are responsible for safety under the OHS legislation. Safety risks must be assessed and the associated controls put into place. These must form part of Safe Work Method Statements and risk assessment.
- Field survey staff should be familiar with the contents of the Energy Australia publication “Working Near or Around Underground Cables” published in July 1998. The document can be accessed from the web by typing the publication description into a reputable Web search facility. The document includes the evidence that may indicate the presence of electricity cables.
- Any manual digging must be undertaken with care. Subject to the risk assessment, a current Dial Before You Dig services search may be required. If an auger is used for the digging, then a current Dial Before You Dig services search is advisable.
- No mechanical excavation should be carried out without a current Dial Before You Dig services search, and compliance with the OHS Regulation.
- Field survey staff should be aware of standard service corridors. These are set out in the “Guide to Codes & Practices for Streets Opening” NSW 2002 (ref. www.ipwea.org.au). These should however be regarded as a guide only, as services are often laid outside of these corridors. In addition, roads may have been widened since the date the service was installed, so that the current road boundary may not be the same as the road boundary used to reference the location of the service on the utility location plan.

The methods used to place or uncover survey marks are dependent on factors such as the type and density of the utility services which may be present at that location. According to the circumstances, the following methods, singularly or in combination, may be appropriate:

- Manual digging using fibreglass-handled, wooden-handled or insulated hand tools;
- Use of a good quality metal detector to identify the existence and location of any underground cable prior to and during excavation. However, it should be noted that such equipment does not locate PVC pipes or optical fibre.
- Scanning by a competent operator using radio detection equipment;
- ‘non destructive digging’ techniques using vacuum or high pressure water.

DISCLAIMER

The above mentioned information has been compiled from a variety of sources. Whilst all care has been taken in its preparation, SMMF cannot guarantee that it is either complete or without flaw of any kind. Therefore SMMF expressly disclaims all liability for errors or omissions of any kind whatsoever or from any loss, damage or other consequences which may arise from any person relying on any thing stated. SMMF accepts no legal responsibility for the information provided.

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