



DIG SAFE™
warn. detect. protect.

**Excavation
Safety**

polyfabrics.com.au



Copperhead 1.6mm high strength tracer wire being installed with 67mm pe gas pipe via HDD for Brookfield. 180km install. No wire breaks. Kerang, Victoria

Excavation Safety and Damage Prevention



DIGSAFE™ was set up by Tapex, because we cannot compromise on excavation safety. DIGSAFE™ has now been incorporated into our infrastructure division, Polyfabrics Australasia (a Tapex Group Company). DIGSAFE™ provides solutions that reduce maintenance costs, unintended pipeline and cable strikes and ultimately aims to save lives.

Third party strikes on buried infrastructure are an increasing issue, accelerated by more utilities going underground and the increased use of trenchless installation technologies. At best pipe or cable strikes are costly and disruptive. At worst, they can cause catastrophic damage and loss of life

The DIGSAFE™ team are the industry experts in excavation safety, with the most comprehensive suite of solutions available in Australasia – to help WARN, DETECT, PROTECT & MANAGE buried infrastructure. Our products are used by the major gas, telecommunications, electricity and water utility providers. The DIGSAFE™ range includes detectable and non-detectable warning tapes & meshes, hard cable cover, HDPE protection plates, marker posts & signage, RFID systems, tracer wires and rock shield. These are all leading solutions in the fields of utility detection and excavation safety. Global brands include Overpipe™ protection plates, the Copperhead® copper clad steel tracer wire system, Wavelay® detectable tapes, Fairwarning® mesh, 3M™ Electronic Marking Systems and Rhino® marker posts.



WARN

Physical warning devices from tapes & meshes to signage



PROTECT

Physical barriers to prevent damage from cable cover to Overpipe™ plates



DETECT

Locate buried infrastructure with detectable tapes, tracer wires & RFID



MANAGE

Location and RFID systems to find, identify and manage infrastructure



The Tapex Group of companies specialise in manufacturing, distribution and supply to the excavation safety, infrastructure, construction and mining sectors.

The Tapex Group has distribution centres throughout Australia and New Zealand. Tapex supports Dial Before You Dig and Before You Dig, the primary referral services for information on the location of underground utilities in Australia & New Zealand.

The integration with Polyfabrics Australasia has enabled the DIGSAFE™ division to broaden its offering to its core Tapex client base. As a Polyfabrics Australasia client, you have access to the complete range of Tapex Group products, from excavation safety to geosynthetics.

For further information please see www.polyfabrics.com.au



The Essential First Step

Warn



DIGSAFE™ MAINS MARKER

DIGSAFE™ Mains Marker Non-Detectable Underground Warning Tapes are coloured polyethylene tapes printed with a warning message to identify underground pipes and cables.

- Made to AS/NZS 2648.1 1995 & AS/NZS 4275 Part 0 1995
- Mains Marker can be manufactured with any text, language, colour or size to your specification
- Soil tolerance from pH 2.5 to pH 11.0 inclusive
- Lead free pigments with virgin grade PE film



DIGSAFE™ FAIRWARNING® MESH

DIGSAFE™ Fairwarning® is a composite PE tape and extruded mesh, designed specifically to mark and warn of buried pipelines and cables.

DIGSAFE™ Fairwarning® is available in non-detectable and detectable versions (incorporating a tracer wire).

- Manufactured from high-strength coloured rot-resistant virgin polyethylene plastic mesh
- Warning message can be customised
- Increased visibility
- Strong, semi-rigid construction
- Can be manufactured up to 300mm wide

When to use non-detectable tape or mesh?

For use over buried power cables, copper or steel gas pipelines and ductile iron water pipes. These utilities can be located without using tracer wires due to their metal content. Quality warning tape, mesh or cable cover should be used as a warning device. The tape or mesh should be buried at least 600mm ABOVE the pipe, providing a visual warning for an excavator of the buried service below.

Non-detectable tape & mesh can also be used with a quality tracer wire system for polyethylene pipes or optic fibre cables, which have no metal content, again providing the visual warning to an excavator.



SAFETY SIGNS & POSTS

Safety signs are crucial to any suite of warning solutions. The primary importance of safety signs is to indicate the presence of buried infrastructure and warn of the possible dangers and penalties from unauthorised excavation of the service.

We supply customisable signs, posts and brackets for large projects. We design our signs to your specifications and the relevant Australian standards.

RHINO TRIVIEW® MARKER POSTS

1. 50% more warning messages than a flat post.

The highly visible Rhino TriView®'s triangular design has three readable warning messages per post, so can be seen from any direction.

2. Proven durability & flexibility

The Rhino TriView® can withstand repeated vehicle impacts of up to 80 KPH as well as temperatures ranging from -40c to 65c.

3. No need to paint

UV stabilised Rhinopoly® post material means the broad range of colours last, making it easy to identify individual services from a distance.

4. Rhino decals

Decals show the type of service, service provider details and Dial Before You Dig information.

5. Easy installation

TriView® works in all soil conditions and may be buried, driven into the ground or slid over a star picket or existing metal post.

6. TriView® PLUS

TriView® PLUS has a fibreglass rod inside, to withstand repeated impact. Ideal for rural areas where stock will bend or destroy conventional metal warning signs.

7. Customisable

A range of standard post colours and decals can be customised to suit your needs.

8. Safe

No sharp metal edges - Triview® bends so you don't break.



TriView® PLUS YouTube

<https://www.youtube.com/watch?v=ihCID8hDz90>
<https://vimeo.com/rhinomarkers>

CASE STUDY: Installation by Torus Networks



TRIVIEW

Custom TriView marker posts were installed by Torus Networks along the 27km route of a new optic fibre network to the Pulse Data Centre in Toowoomba, Queensland. The warning posts were white, with custom decals featuring a “Buried Optic Fibre Below” warning, as well the network contact details, Torus, Pulse and Dial Before You Dig logos.

The Pulse Data Centre opened in April 2018 and is a landmark as the first major Data Centre to operate in regional Australia.

“In addition to the obvious cost advantage of using the TriView post, installation was quick while the UV rated colour and customisable signage make the posts highly visible.” said Matt Van Hecke, CEO of Torus.

The soil anchor footing was used for this installation, which the 1300mm Triview posts clipped into, speeding up installation time. Posts were spaced every 300m along the route, including at pits.

In addition to the customised decals on the three sides, a Pulse logo was permanently adhered to the black cap on the top of the post. This allows the option of writing specific network information at each post location.



Ed George, Polyfabrics & Matt Van Hecke, CEO of Torus Networks at the Pulse Data Centre opening in April 2018

WAVELAY® DETECTABLE TAPE

WAVELAY® Detectable Tracer Tape is an underground warning tape incorporating a 0.7mm tracer wire laid in a sinusoidal wave pattern, laminated between two layers of low density, lead free, virgin grade, rot-resistant polyethylene. The WAVELAY® wire pattern allows enhanced detectability and stretch to over 25% before breaking.

The top print guard layer protects the warning message and locks in the tracer wire.

Standard size rolls are 100mm x 250m.

WAVELAY® can be supplied in custom prints and colours and on cable drums up to 3km long.



TERMITE RESISTANT TRACER WIRE

DIGSAFE™ Termite Resistant Tracer Wire is laid over non-metal pipes to facilitate their detection by standard locating equipment (see page 12). DIGSAFE™ Tracer wire should be laid on the pipe, in conjunction with a warning tape or mesh 300mm below the ground surface.

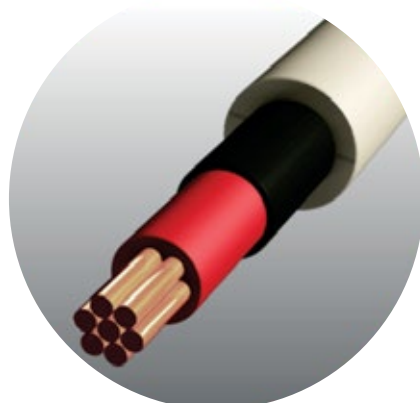
The locator will directly connect onto the wire at an access pit passing an electric current through the wire, enhancing its accurate detection via an inductive location instrument on the surface. The nylon12 termite resistant sheath surrounding the wire, inhibits destruction of the waterproof jacket by termites, prolonging the effective life of the tracer wire.

- 2.5mm² single core PVC insulated
- Termite protection barrier sheath
- Working voltage up to and including 450 / 750V
- Conforms to AS/NZS 5000.2:2006
- Santos approved

Options include: Standard sizes plus custom-made to requirements, for diameter, length and colours.

When to use DIGSAFE™ tracer wire or detectable tape?

Buried plastic conduit, optic fibre, plastic or PVC pipes have NO METAL content. Typically low pressure water & gas pipelines or telecommunications. These services must be buried with detectable warnings tapes or tracer wires with non-detectable warning tape above. Detectable warning tapes combine the function of visually warning an excavator of the buried service below, with a metal trace to help locate the service, ensuring fast, effective location of the pipeline.



Detect

COPPERHEAD® TRACER WIRES

The Copperhead® tracer wire system ensures non-metal pipelines can be accurately located for the LIFE of the pipeline. Copperhead® copper clad steel tracer wire combines the conductivity of copper (for easy detection) with the strength of steel.

The high strength carbon steel core makes the wire ideal for directional drilling applications (as well as trenching), minimising wire breaks. Every wire has a protective insulating sheath to prevent corrosion.

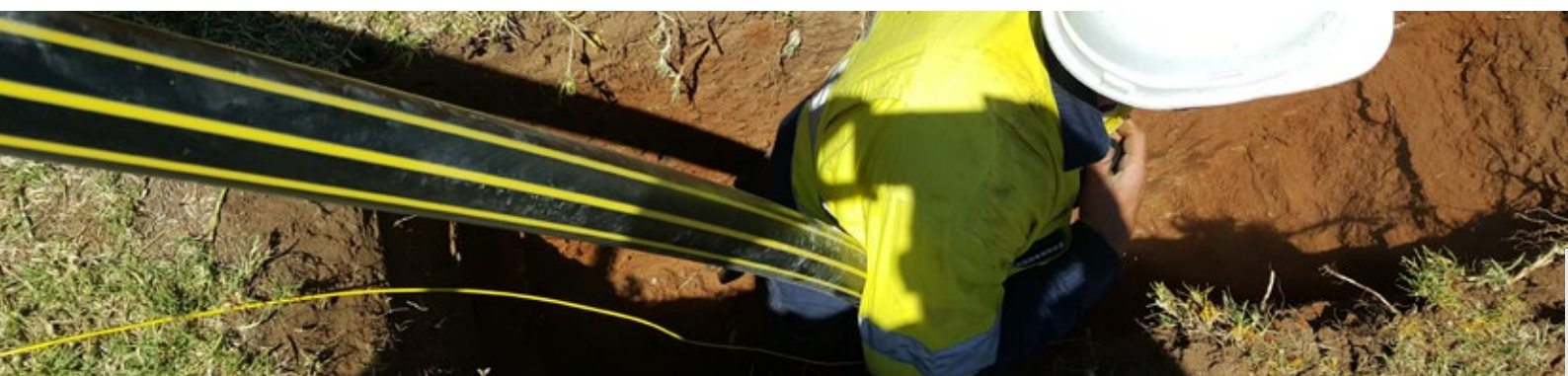
Waterproof connectors join the insulated tracer wire, preventing corrosion and ensuring the system lasts the life of the pipeline. Grounding anodes complete the circuit, greatly improving location accuracy. Snakepit™ test stations enable quick access for connection to the tracer wire system, ensuring fast, effective location of the pipeline.



Features

- ✓ Conductivity of copper
- ✓ Strength of steel
- ✓ Wires for the toughest HDD stress
- ✓ Detectable to 5m depth
- ✓ Complete system, including joiners
- ✓ No scrap value
- ✓ WSAA appraised

Wire Type	Diameter	Usage	Break Strength
High Strength	1mm	Trenching	48kg
High Strength	1.6mm	Trenching & HDD	128kg
High Strength	2mm	HDD	205kg
Soloshot EHS	2mm	HDD	522kg
Soloshot Xtreme	4mm	Pipe Bursting	2130kg





DETECT FEATURES

WATERPROOF CONNECTORS

Waterproof connectors join the insulated tracer wire, preventing corrosion and ensuring the system lasts the life of the pipeline. There are two types of connectors available for standard wires:

Single Lug Connectors

- To join up to 4 cut ends
- Easy to use - strip off 2cm insulation & twist in the joiner head to join wires
- Silicone gel in the head makes the join waterproof

3 Way Connectors

- For joining up to 2 laterals to an existing tracer wire without cutting it
- Strip off 2cm of existing wire and ends of joining wires
- Silicone gel in the head makes it waterproof



TRACER WIRE TEST STATIONS

Copperhead's SnakePit® test stations make locating underground utilities easy! The SnakePit® offers an insulated direct connection point for your locator transmitter that attaches easily to tracer wire. There is no need to unlock the lid to connect to the tracer wire. The SnakePit® sits flush to the ground, pavement or roadway. The heavy duty cast iron lid has relief lettering of the service. The encapsulated magnet system makes finding the access point simple. Anti-corrosion technology and a locking cover will give you peace of mind.

- ✓ Secure it, cover it, don't worry about it
- ✓ Easy installation
- ✓ Direct connect for locator
- ✓ Magnet in lid
- ✓ Built to last



Protect

CABLE COVER

DIGSAFE™ Cable Cover is made from recycled polyethylene to Australian standard AS 4702-2000. Buried at least 600mm above cables or pipelines, it provides a physical protective barrier as well as an early visual warning. Cable Cover made to AS 4702-2000 resists penetration from manual impacts (such as picks) and will last for decades underground without degradation. Standard 5 - 6mm thick cable cover stock comes in planks or rolls for electrical or gas services. Its use is specified as mandatory by most power utilities. All DIGSAFE™ Cable Cover is batch tested for conformity to AS 4702 and certified by globally recognised TUV Rheinland.

MAJOR INFRASTRUCTURE PROJECTS

DIGSAFE™ are a significant supplier of cable cover to major infrastructure projects throughout the southern hemisphere. The ability to manufacture compliant products in 150m roll sizes, saves installation costs and freight. Recent projects supplied include utility scale solar farms, wind farms and gas pipeline infrastructure projects.

CASE STUDY: Emerald Solar Park

In May 2018 Polyfabrics supplied the cable cover requirements of the 68MW Emerald Solar Park in Central Queensland. The 250,000 solar panels covered a 160 hectare site in a \$100 million development. RCR Infrastructure required Polyfabrics to supply a bespoke size cable cover for this project (350mm x 150 metres). Two 350mm wide hard covers were laid side by side to cover a trench width of 700mm. The large 150m contractor size rolls ensured less wastage and faster laying. In total over 28,000m was delivered on site, on time.





OVERPIPE™ PROTECTION PLATES

Overpipe™ was developed in France as an alternative to the 150 – 200mm thick concrete slabs used as an underground protection barrier over high pressure gas pipelines. Overpipe is designed as a penetration barrier, to withstand the attack of excavators and post hole augers - <https://www.youtube.com/watch?v=1Yv-sGoxrPY>

Due to Overpipe™'s effectiveness and the cost savings generated, it is now used by major gas, power, telecom and rail utilities across the globe to protect critical buried infrastructure.

Overpipe™ is a 15mm thick, 1800mm long virgin polyethylene plate, brightly coloured with an embossed warning message. Widths vary to suit different pipe and cable diameters. Thanks to the properties of the material, colour and performance will be unaffected by soil conditions for many decades underground – hence the 50 year warranty.

Unlike concrete, Overpipe™ is light, easily transported, can be cut to size, is flexible and prefabricated. This allows the plates to be removed intact to enable access to the pipe or cable, then re-laid.

Features

- ✓ More economical than concrete
- ✓ Light weight but tough 15mm thick HDPE
- ✓ High VIS yellow, embossed warning
- ✓ Range of widths – 500mm to 1800mm
- ✓ 39 sheets per pallet, low transport cost
- ✓ Overlapping plates with simple joiner
- ✓ Holes for drainage & CP monitoring
- ✓ Easy to install, two man lift
- ✓ Anti-slip surface
- ✓ 50 year warranty
- ✓ Custom sizes and colours



CASE STUDY:

Moomba to Adelaide Pipeline

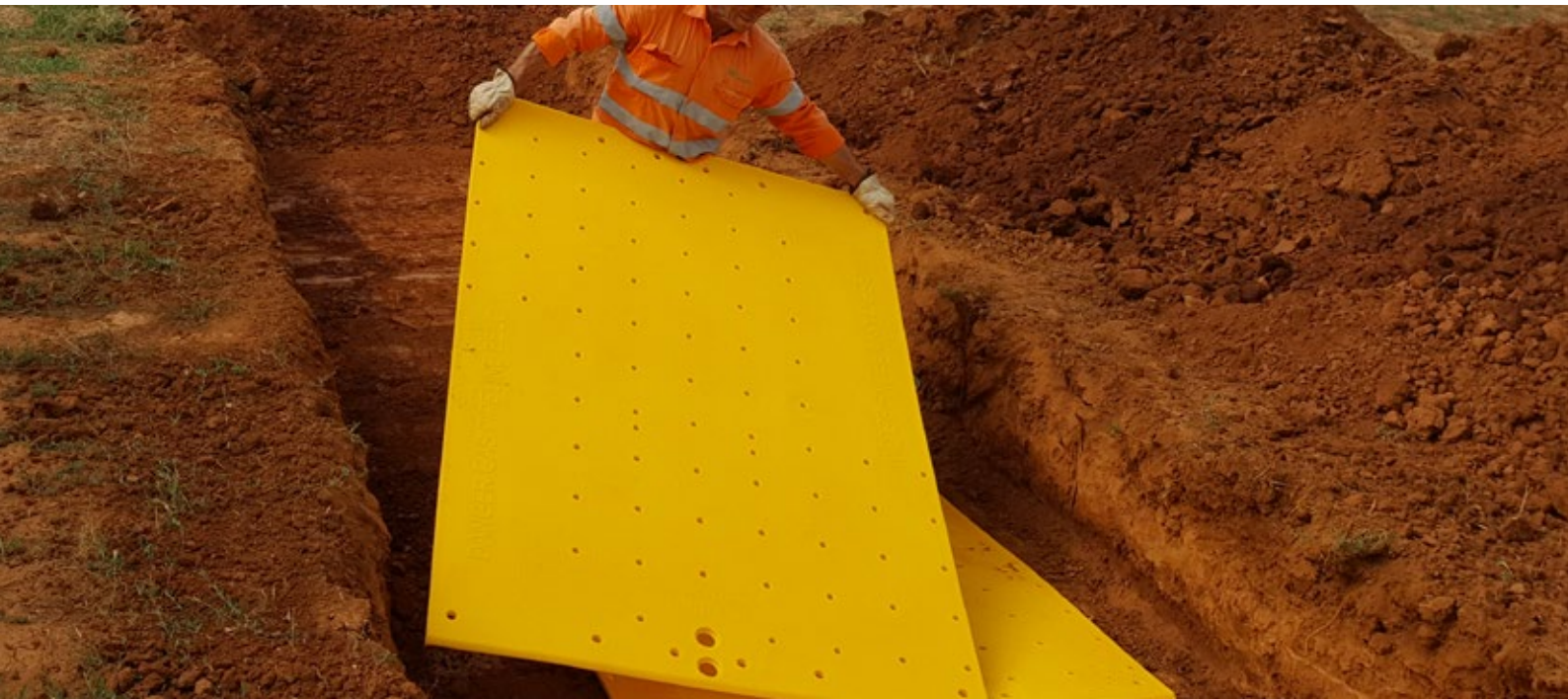
Epic Energy own and operate the Moomba to Adelaide high pressure gas transmission pipeline. Originally built in 1969, the main 22inch (559mm) diameter steel pipeline is 781 km in length, supplying gas to Adelaide and regional areas.

Overpipe™ protection plates were installed over two primary sections of the pipeline near Booborowie and Auburn, north of Adelaide. Epic Energy selected the Overpipe™ OV1 plate for use on the pipeline. At 1250mm wide (1800mm in length) the selected size allowed sufficient overhang of 350mm on either side of the pipeline, preventing side intrusion on the pipe from an excavator bucket. Consecutive plates overlapped and were fastened to the preceding plate with a simple flange & plug connector.

In total 2.2km of Overpipe™ plates were installed to provide mechanical protection over sections of the pipeline, where there were potential encroachment or cover issues (such as deep ripping from farm machinery). The Overpipe plates were buried 300mm below the surface but up to 500mm below in areas of cultivation.

Installation was undertaken by Byrne Civil, who were laying up to 200m a day with a three man crew (including excavator operator). With 39 plates on a double pallet, transport to the remote sites was simple and no lifting gear was required.

The Overpipe™ plates adapted well to varying terrain, including bends, hills and creek crossings.



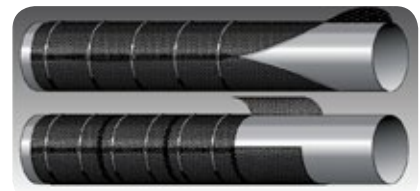
PIPE ARMOUR® ROCK SHIELD

Pipe Armour® rock shield is an extruded plastic mesh used to wrap pipes to prevent rock damage to the cathodic protective coatings during trench backfilling. Pipe Armour® comes in a variety of widths to cover a comprehensive range of pipeline diameters and applications.

Features

- ✓ Prevents damage to protective coatings on pipes
- ✓ Enables the use of rocky backfill, no need to truck in sand or fine sediment
- ✓ Manufactured from high density polyethylene with an optional blowing agent to produce a strong cellular structure for maximum impact protection
- ✓ Chemically inert, cannot rot
- ✓ Open mesh does not inhibit cathodic protection integrity testing
- ✓ Supplied as standard rolls or cut lengths for wrapping or folding
- ✓ Manufactured in widths ranging from 1.0m to 2.0m

Pipe Armour™ can be applied longitudinally or spiral wrapped around the pipe as shown in the diagram. Sections can be joined with a gas torch, or secured with a variety of adhesive and non-adhesive strapping tapes or cable ties.



3M EMS – NEXT GEN MARKING SOLUTIONS

3M™ Dynatel Locating and Marking Systems, comprising of 3M™ Dynatel™ locators, 3M Electronic Marking System and 3M Caution Tape, provide accurate marking, location and management of critical underground assets. Sophisticated systems allow programming of identifying features into intelligent markers, using RFID technology and interfaces with GPS/GIS systems for accurate mapping.

How does RFID work?

3M™ intelligent electronic markers employ Radio Frequency Identification (RFID). RFID uses electromagnetic fields to automatically identify and track tags. The tags can record and electronically store information. The passive tags have no batteries and collect energy from a nearby reader's interrogating radio waves, so stored information can be retrieved and/or added to.

3M™ Point Marking

3M™ iD Markers can be customised to include customer-specific information such as facility data, type of application, material type, size and placement date. Plus, they:

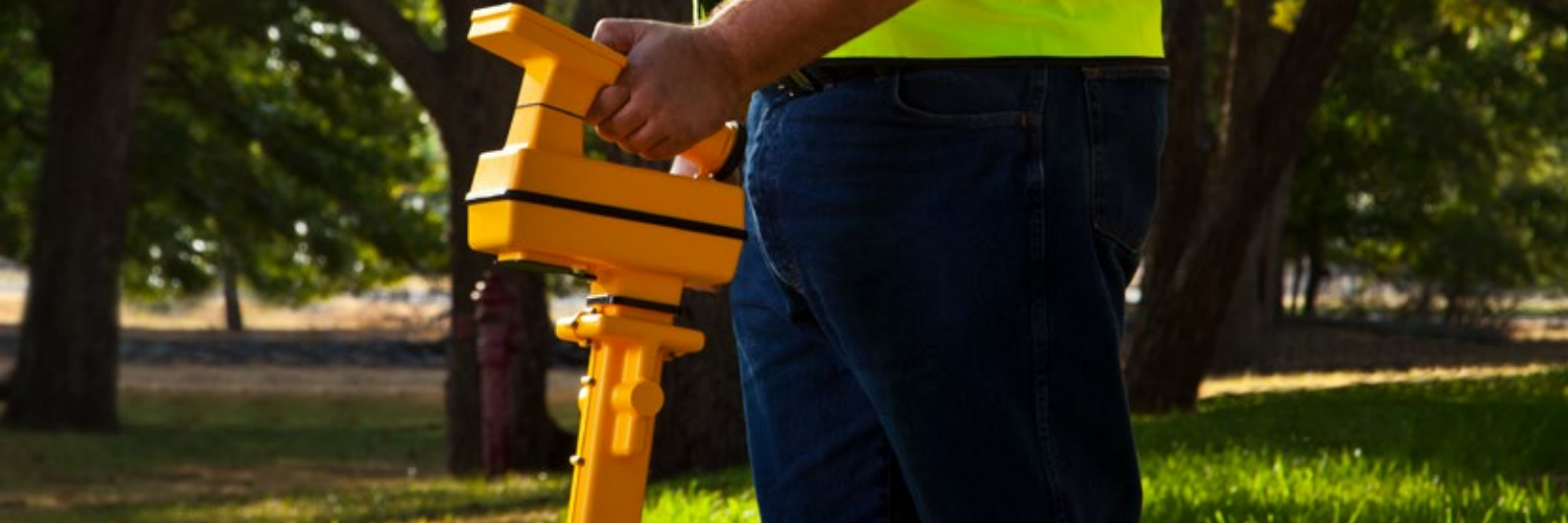
- ✓ Operate in all soil types; under asphalt; cement; and wet or dry soil
- ✓ Minimise signal interference from nearby services
- ✓ Are color-coded to APWA standards
- ✓ Provide easy positive identification, with each utility having its own frequency
- ✓ Point marker devices for 600mm to 2400mm depth detection

3M™ EMS Path Marking

3M™ EMS Path Marking Tape and Rope are embedded with marker tags that are activated using 3M™ Dynatel™ Locators 7000 Series.

- ✓ Installed near or above buried assets, they create a detectable path above ground
- ✓ For use in open trench and HDD (Horizontal Directional Drilling) applications
- ✓ No batteries, external transmitters or access points are required for location
- ✓ Markers work independently, even if a section of path marking tape/rope is cut or removed
- ✓ Five unique frequencies for each utility type of 3M EMS marking tape and rope





3M Dynatel™ 7500 Series Locators

These locators combine advanced digital processing and simple interfaces to quickly locate 3M™ EMS Path Marking Tape/Rope and electronic markers (balls, near-surface, full range, etc.).

The 7500 series provides accurate pipe, cable, or sonde depth measurements, giving a digital readout. All Dynatel locators 7500 series and fault finders are also compatible with select GPS/GIS field mapping instruments for real-time mapping of electronic markers, or pipe and cable facilities. The locators are easy to use, featuring a simple menu-driven interface that lets you select audio sounds and enable or disable receiver frequencies, depending on your needs. They read and write to 3M iD markers.



SPX > Radiodetection

Radio Detection electromagnetic locators are accurate, reliable, robust and easy to use, plus



- ✓ Calibration can be done online for convenience
- ✓ Australian-based service if maintenance is required
- ✓ Free training provided for multi-unit purchases

7100 & 8100

Identifies Power, Radio and several Active Signals. Provides peak and null indication, and a compass plus depth and current when used with TX Transmitter (RD8100 can also provide advanced diagnostics).



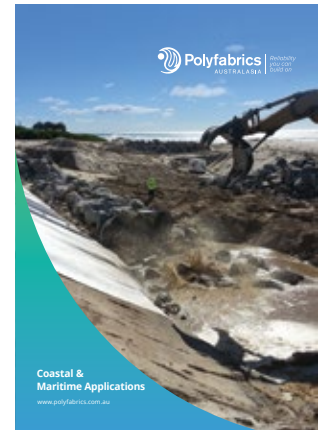
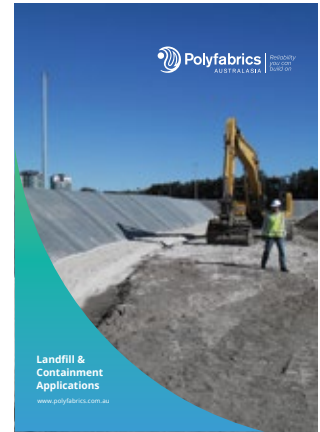
CAT4+ and GENNY4

Cable Avoidance Tool. Entry level product.

Identifies Power, Radio and Active Signals.

Provides a Peak Signal only.

Provides Depth when used with GENNY 33kHz signal (0.1W/1.0W Power).



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