

The detection and mapping of underground services using electromagnetic technique

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The objective of this exercise is to detect as accurately as possible, all existing underground utilities and to produce accurate coordinated maps of these utilities. This information also can be incorporated into a **Geographical Information System** or be used to facilitate efficient construction design, costing of utility diversion and to maintenance and avoid damage to existing utilities during construction.

This aim is not only to pin point the location of these utility lines but also to determine attributes such as depth, type, size, material, etc.

A suitable technique has to be used to obtain the information from underground and a number of techniques are available:

1. **Sonic surveying**

Injection of sound or ultra-sonic waves into the ground or along a line is a technique for tracing plastic water pipes but is not suitable for locating other buried services.

2. **Dowsing**

Certainly the oldest technique. Although the hazel twig and all its variants continue to be used with varying effects by practitioners of this obscure but interesting art, ease of handling is the only one of its features which can be claimed with any certainty.

3. **Ground Penetrating Radar**

Much research and development is being applied to this technique, because it is theoretically capable of 'seeing' non-metallic as well as metallic pipes. Unfortunately the size, cost and complexity of the equipment needed to interpret the results puts this technique currently outside the range of usefulness for everyday work

4. **Electromagnetic location**

This method of locating buried pipes, cables and sewers has become almost universal. Its main shortcoming is that it will not locate non-metallic lines such as plastic pipes.

However, utility companies taking the small amount of trouble to lay tracer wires with non-metallic pipes are not affected by this shortcoming.

The technology has a large number of advantages and this leads to prevalent development and utilization.
