

# UTILITY DETECTION & MAPPING

Before undertaking any works in the built environment, it is important to have a complete picture of conditions below ground, and an accurate record of any buried services that are present.

For architects, designers and planners, having accurate asset records at an early stage reduces the risk of costly delays and redesign later.

For engineers, project managers and contractors, accurate asset records help to prevent damage to existing services when carrying out intrusive works and ensure the safety of workers who could be seriously injured if they come in to contact with damaged cables or other services.

## PAS128

PAS128:2014 is a publicly available specification for underground utility detection, verification and location which was produced in collaboration between the BSI and the Institution of Civil Engineers. Prior to PAS128 there was no defined standard for utility detection, leading to a wide range in quality.

PAS128 allows the user to specify the level of accuracy and quality of the information to be recorded and ensures a consistent standard across the industry.

## SURVEY TYPES & QUALITY LEVELS

There are four survey types which can be specified within PAS128 and this depends on the user's requirements.

### QUALITY LEVEL D - DESKTOP RECORDS SEARCH

Level D is the lowest quality level. A desktop statutory undertaker's search is completed, collating the records of all statutory asset owners within the survey area.

The accuracy of historic asset records is highly variable, and results should be regarded as indicative only.

### QUALITY LEVEL C - SITE RECONNAISSANCE

A level D survey is completed but additional verification is undertaken by visiting site and matching asset records with physical features on the ground to improve the level of confidence.

### QUALITY LEVEL B - DETECTION

A level B survey introduces on site mapping and PAS128 specifies that two geophysical techniques are used when detecting utilities usually Electro Magnetic Location (EML) and Ground Penetrating Radar (GPR).

**EML** is performed on site by detecting electromagnetic signals emitted by utilities, either due to the passage of electrical currents or induced onto the service by the surveyor.

**GPR** transmits a signal into the ground which is reflected by variations in the subsurface structure. GPR results can be interpreted on site or post processed later. Post processing is assumed to have a higher quality than on-site detection only.

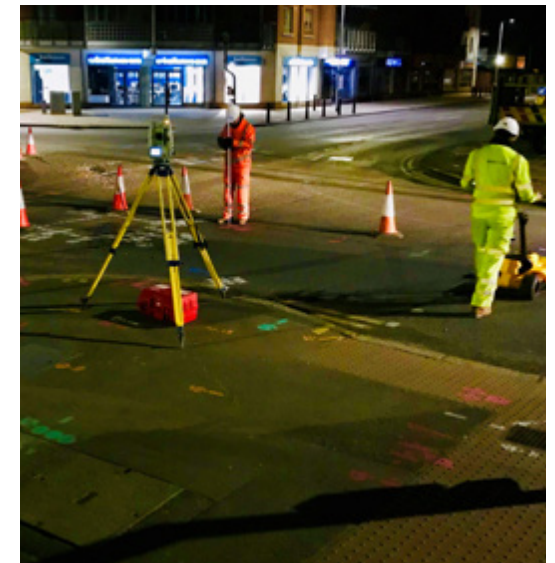
Level B surveys introduce quality levels for horizontal and vertical detection accuracy. There are 4 quality levels available and it is important that when scoping works the appropriate accuracy level is specified. The Carter Jonas measured survey team can advise on specific project requirements.

### QUALITY LEVEL A - VERIFICATION

Quality level A surveys give the highest level of confidence but are also the most labour-intensive. Utilities are verified and positioned by physical identification on site. Although this type of survey gives the highest level of confidence, it requires services to be uncovered using vacuum excavation, hand dug trail pitting or similar to verify their position.

### SPECIFYING THE CORRECT QUALITY LEVEL

Generally, it follows that the higher the quality level specified, the higher the survey costs will be. It is important to balance costs with the requirement to obtain accurate and complete data. Each quality level builds on the previous, so for example a level C survey also requires a level D desktop search to be undertaken. A level A survey is a combination of Level D, C, B and A. For this reason, it may be possible to carry out different levels of survey during the life cycle of the project.



FOR MORE INFORMATION,  
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