



## BSI and Institution of Civil Engineers lead industry collaboration

### PAS 128 builds trust in underground utility detection sector

BSI has worked with the Institution of Civil Engineers (ICE) to publish **PAS 128:2014** – Specification for underground utility detection, verification and location. This PAS is being used to provide accurate utility data and reduce strike rates. When implemented by Heathrow Airport an additional 17,000 Km of underground utilities were mapped, a 25.5% increase in 18 months.

#### Challenge

The utility industry digs an estimated 4 million holes every year to repair and upgrade buried infrastructure in the UK, with many more dug as part of construction projects [1.] According to the Health and Safety Executive (HSE) there are approximately 12 deaths and 600 serious injuries every year from contact with electricity cables alone [2.] as a result of utility strikes.

Prior to the development of PAS 128, there were no formal standards in place for the detection, verification and location of underground utilities, or for the collection and recording of these data. As such, information obtained from surveys was often insufficient and inaccurate, which led to:

- risks to the safety of workers and to the public;
- abortive and unnecessary work;
- damage to third party assets;
- inefficient design solutions.

## Solution

Following discussion with industry, ICE decided to work with BSI to commission a specification which sets out clear and unambiguous provisions for those engaged in the detection, verification and location of active, abandoned, redundant or unknown utilities.

During the development of the PAS, BSI brought together an independent Steering Group of industry representatives from trade associations, major utility asset owners, utility mapping organizations and contractors. The Steering Group included Heathrow Airport Ltd who were keen to collaborate with industry stakeholders to develop a robust and rigorous specification.

ICE chose to work with BSI to develop PAS 128 due to the public recognition of BSI as a trusted brand with a history of building robust, independent, consensus-based standardization tools. Working alongside BSI to develop this PAS also helped place ICE at the forefront of thought-leadership in relation to underground utility detection, location and verification.

## Outcome

PAS 128 sets out good practice and detailed requirements through all levels of utility data collection, from record drawings to detection by geophysical methods and verification by excavation. The PAS provides a detailed approach for utility mapping and surveying practitioners to pursue. Clients understand and specify a survey and methodology type at tender stage, generating transparency from signed agreement to project completion.

PAS 128 helps provide:

- clarity in the service provided and methods employed;
- consistency in the approach to data capture;
- classification of the results and the confidence that can be associated with them;
- standardization of the format deliverables; and
- accountability for the work undertaken.

Andy Rhoades Head of Service Protection, Engineering Operations, Heathrow Airport Ltd has welcomed the PAS as it has had a direct impact on the infrastructure development of Europe's busiest airport.



Having implemented PAS 128, Andy considers the PAS to "reduce the risk of utility strike and avoid project and programme delays and additional costs". In addition between June 2014 and October 2015, with the aid of PAS 128, Heathrow Airport detected and located triple the amount of underground utilities than had previously been mapped within in the same areas despite having excellent information from before.

PAS 128 has helped transform the industry from ICE's perspective and from the view point of utility mapping and surveying practitioners. The transparent, consensus-based approach to PAS development adopted by BSI allowed a forum for open discussion and industry collaboration. The buried services surveying industry now has a common approach to improving industry standards and providing reliable and accurate utility data. As a result of PAS 128 Heathrow Airport Holdings Ltd reported increased confidence in the survey data they received which led to a reduction in survey duplication and associated costs.

## What is PAS?

A PAS (Publicly Available Specification) is a document that standardizes elements of a product, service or process. PASs are usually commissioned by industry leaders – be they individual companies, SMEs, trade associations or government departments. Commissioning a PAS puts you in the driving seat for setting the agenda in your sector, helping you work with regulators, set an agreed level of good practice or quality or establish trust in an innovative product or service.

[bsigroup.com/pas](http://bsigroup.com/pas)

## Who are BSI

BSI is the business standards company that helps organizations all over the world make excellence a habit. As a global leader in helping organizations improve, our clients range from high profile brands to small, local companies in 172 countries worldwide.

## Acknowledgements

The development of this case study has been supported by Andy Rhoades, Head of Service Protection, Engineering Operations, Heathrow Airport Holdings Ltd and John Robinson, Managing Director, Subscan Technology.

*"It has been an honour and pleasure to be involved with BSI and PAS 128. This document is the first dedicated UK specification for the detection of underground utilities and the first to set out accuracy levels to assess the quality criteria of any detected underground utility. The aim of this specification is to raise standards within the utility survey industry, clearly define accuracy and explain to clients the processes involved."*

**John Robinson, Managing Director,  
Subscan Technology LTD**

## References

1. Utility Strike Avoidance Group, HSE endorsement. Available from <http://www.utilitystrikeavoidancegroup.org/press-releases-and-endorsements.html> [Accessed 7 March 2016].
2. HSE (Health and Safety Executive) (2014) HSG47: Avoiding Danger from Underground Services.