

What lies beneath

As the buried services working group reports on proposals for a common information framework, **Suzanne Cumberbatch** finds out what this means for councils.

Confusion reigns supreme over what underground services lie where and who exactly owns what. But this could all be about to change. As the maze beneath our pavements continues to expand, a consortium of industry experts has been exploring how a common information framework could at last unravel what really lies beneath our feet.

Buried services are essential to many facets of life in the UK. The advent of such infrastructure has seen the transition from free-flowing effluent along our streets to the underground sewerage system enjoyed today,



joined by a host of other pipes and cables for water, energy and communication.

But over time, as more companies bury their infrastructure, keeping track of different service locations has become difficult. Then, when companies amalgamate – particularly those in the cable and communications industry – the question of who is responsible for what arises repeatedly.

The need for a common information framework was announced in November 2004, following a Geospatial Engineering Board buried services forum. Organised by the Institution of Civil Engineers (ICE) and held in association with national mapping agency, Ordnance Survey (OS), this call led to the establishment of a Geospatial Engineering Board buried services working group (BSWG).

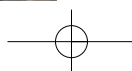
The BSWG's sole objective was to produce a report examining the status of buried services, and the effort which can be taken towards formulating a common framework. The group included members from ICE, the Institution of Civil Engineering Surveyors (ICES), OS, local authorities and UK Water Industry Research. Its report was published in March, marking the end of the BSWG's work. Among its key findings (*see box*) was the need to establish a common framework, with all geospatial data recorded using the digital national framework (DNF) system. Each time highway works are undertaken, or the infrastructure of the transport system is changed, the issue of underground services must be tackled.

So, when Edmund Nuttall was awarded the contract for the construction of infrastructure for the Fastway guided bus in the Crawley, Gatwick and Horley area in May 2002, the challenge of identifying which companies owned what utilities was huge.

Many cable companies' and standard utility companies' buried services were discovered as the roads were dug up. 'The biggest problem we have is that utility companies don't know what they've got where,' David Upchurch from Edmund Nuttall said at the time.

'It's very difficult at times, especially with cable companies. A lot of them have amalgamated or taken over from other companies, so they don't always have records of who has got what where. With the best will in the world, you think you've got everything up, but then the digging starts and you find something else.'

To avoid this problem, the Fastway system faced a number of re-



designs. Flexibility was built into the contract and guideways and busways were, at times, significantly redesigned in order to accommodate and reduce the cost and works inconvenience to the public for diverting these services.

A central information point containing the exact details of where the different utilities lay would have eased the problems the company faced.

As Marc Hobell, strategic development manager at OS, explains: 'At present, there are regulations and codes of practice to guide those seeking and those providing positional information. But they do not necessarily specify how the information should be presented.'

'Although legislation does exist, some utility companies and other interested parties have voiced concerns that there can be confusion when it comes to locating and co-ordinating buried services. One of the objectives of the Traffic Management Act 2004 is to tighten these areas and give greater clarity,' he adds.

The DNF was, according to the OS, the ideal tool to use to record all geospatial data. It is referenced to both national grid-mapping references and the national GPS network, which generates all co-ordinates using the same datum to provide a consistent method of identifying and reusing geographical information.

Hobell says the common encoding standards enable users to reference their own geospatial content to a definitive geographic base. All information can then be recorded within the geographical information system (GIS). This enables buried apparatus to be identified and catalogued – for example, listed as a water main – and referenced to the responsible body with emergency contact details.

Locational data can also be recorded with absolute accuracy. This data then works with related datasets to ensure 'interoperability, consistency and internal integrity'.

OS is confident the DNF will continue to develop with continued collaboration and commitment. The development will continue to be customer-driven to meet a demand where it is needed, and it will be successful where there are proven cost benefits. The BSWG also recommended that all new installations or replacements should be recorded three-dimensionally rather than two-dimensionally, within three years.

Martin Cullen, chairman of the BSWG says: 'The buried services working group was formed with the single objective of providing this report. With the advancements in technology, it would be reasonable to acknowledge that the means and methods of gathering information, and the recording methods, will be constantly changing.'

'Overall, the report was positive. Prior to writing the report, there was an element of reluctance from utility companies to share information. They were not trading ideas and concepts. But when we got them together, it was very encouraging to see they wanted to work together. This report got people talking,' he says.

Cullen reports that the first steps have been made towards a more co-ordinated approach. 'But a continuing effort is needed to carry forward the aim of achieving a common framework for the benefit of everyone.'

The report stresses it would be wrong to assume that the task of creating a common framework is over, stating that 'a continuing effort is required for all concerned'. It adds that perhaps the most important next step is the formation of a group to 'champion' the continuing development of the processes, while maintaining a 'commercial independence'.

'The report highlighted the necessity to record information accurately and a more co-ordinated approach,' Cullen points out. 'We need an independent to champion continuation of this approach. If we're left without, there is the chance this will break up and we'll be back in the same situation.'

So, what does the buried services future hold? Cullen says local councils now need to get on board. 'We need local authorities which have control of the smaller roads included in that link, to ensure the whole picture of the road structure is the best for everyone.'

The next step is to hold a series of meetings across the UK to continue communication in order to create the common base. This base will, essentially, change the face of buried services and the way everyone works with them.

Main findings of the buried services working group:

- All geospatial data will be recorded using the digital national framework (DNF) system;
- Locational data is to be recorded to an absolute accuracy, equivalent to that of the DNF system for the area under consideration;
- Within three years, new installations or replacement works are to be recorded in 3D, rather than the existing 2D;
- Existing buried apparatus should be recorded within the DNF geographical information system (GIS), but with a note that there may be some inaccuracies in the stated position;
- The GIS exchangeable information will identify what has been buried – water main, cable – and the body responsible for the apparatus, including emergency details;
- A specialist, dedicated 'champion' for the continued development of a common framework must be established and maintain independence of any particular group or body;
- All transferable recorded data will identify the top of the item. Any other information required need not be transferred to interested parties;
- A definition is required to establish who is responsible for recording the location of unidentified buried objects (UBOs);
- Commercial confidentiality to be maintained. Security of recorded data will not be compromised by adoption of a common framework based on the DNF, and is likely to be more secure.

