



# London Fire Brigade aims high

Ray Hooper relates how a corporate desktop and Web GIS is helping the capital's fire and rescue service meet ever tougher targets

The London Fire Brigade (LFB) is run by the London Fire and Emergency Planning Authority as part of a group of organisations operating under the 'umbrella' of the Greater London Authority. It is the third largest fire-fighting organisation in the world, with 111 fire stations (plus one River Thames-based station) from which it operates across the 1,587 square kilometres of Greater London, with its resident population of some 7.4 million. This increases by a further 500,000 each day during working hours.

In the year 2005/06 the London Fire Brigade answered some 268,000 emergency calls and attended nearly 156,000 incidents. The average call response time was four seconds, with the first fire engine arrived at an incident within eight minutes on 92 per cent of occasions, meeting the Brigade's target, and within five minutes on nearly 65 per cent of occasions. When required, a second fire engine was on scene within ten minutes on 93 per cent of occasions, exceeding the target.

However, the fire and rescue service of the 21st century is no longer only about response to incidents, fundamental though that obviously is. Risk planning and management is central to the work of the LFB, as it is to other fire and rescue services in the UK.

To help it continue to meet and exceed its performance targets, which themselves are under constant review, and to manage risk planning, operational planning and resource management, the London Fire Brigade

relies heavily on the latest in IT and Geographic Information Systems (GIS) technology.

## Revisiting GIS

Although no stranger to GIS, it was in 2003 that the LFB formed a dedicated team to revisit the Brigade's existing use and development of the technology. Until then, its use had developed in a piecemeal fashion utilising many different systems and was used primarily for operational purposes. No structured work had been done on unlocking the potential of GIS as a corporate tool to probe, for example, the geographic spread of incidents and resource location.

A strategy document published by the team in 2004 recommended the provision of a desktop and Web-based corporate GIS solution that could be used by staff at all levels. While the desktop solution would provide full GIS functionality to key users, with the emphasis on data analysis, the results would be published on the Web-based solution for all users. However, the Web-based solution would not be just a map and data viewer but should include easy-to-use tools that would allow users to interact with the data.

The strategy document also made it clear that there was no intention, at least in the near term, of replacing existing GIS facilities incorporated into the LFB's operational systems such as command, mobilising and

command planning. Any new, corporate GIS therefore had to be 'open' enough to allow interaction with these other GIS data sources.

### Corporate resource

SIS (Spatial Information System) desktop and GeognoSIS.NET Web-based GIS software from Stevenage-based Cadcorp was selected for the new corporate resource. A major factor in its selection was its ability to inter-operate with some 150 native GIS, CAD, graphics and database formats, without translation.

In late 2005 the desktop solution was deployed to key users in information management, emergency planning, event planning and predetermined attendance while roll-out of the Web-based solution to all other staff was begun in the summer of 2006.

Developed using Cadcorp GeognoSIS.NET, the LFB's Web-based GIS is known as iMapping and is already proving to be a useful tool for both operational and non-operational aspects of the Brigade's activities.

As well as being able to retrieve mapping data and provide the basic GIS functionality expected within Web-mapping software, iMapping allows the user to, for example, filter data, create and save user-drawn graphics, print using LFB-specific templates and search either by address or fire station location.

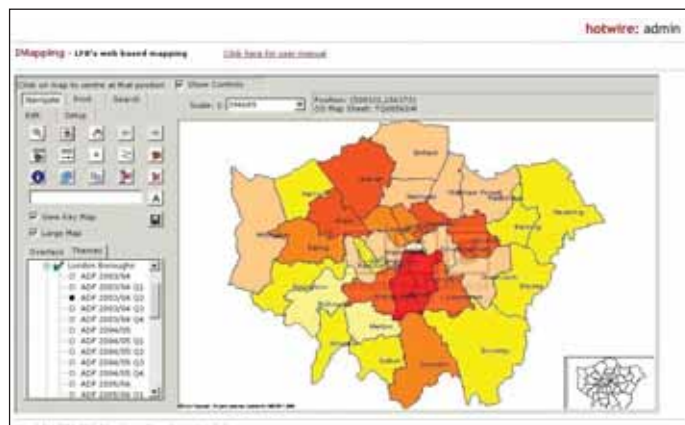
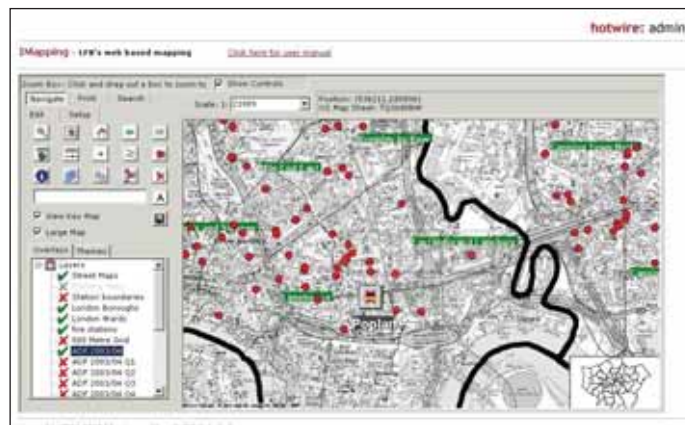
### Going 'live'

The first series of maps that went live displayed different incident types, such as dwelling fires or the location of malicious calls, over a three year period for all London boroughs. As well as showing the location of incidents and their associated attribute data, the data has also been thematically mapped using different geographies, such as London wards. This has already proved invaluable to borough commanders as an aid, for example, to planning community fire station initiatives within their particular areas.

The next stage for iMapping is to integrate it with systems that hold live data, such as the incident recording system and for it to be linked to the Brigade's own Incident Risk Analysis Toolkit (IRAT) in order for it also to be useful in providing risk management information. In addition to incident mapping, iMapping will also be used to publish maps on event plans, such as the location of resources at major sporting events and to publish site maps under the Control of Major Accident Hazards (COMAH) regulations.

### Versatile desktop

Meanwhile, the desktop GIS solution is being used to generate the map-



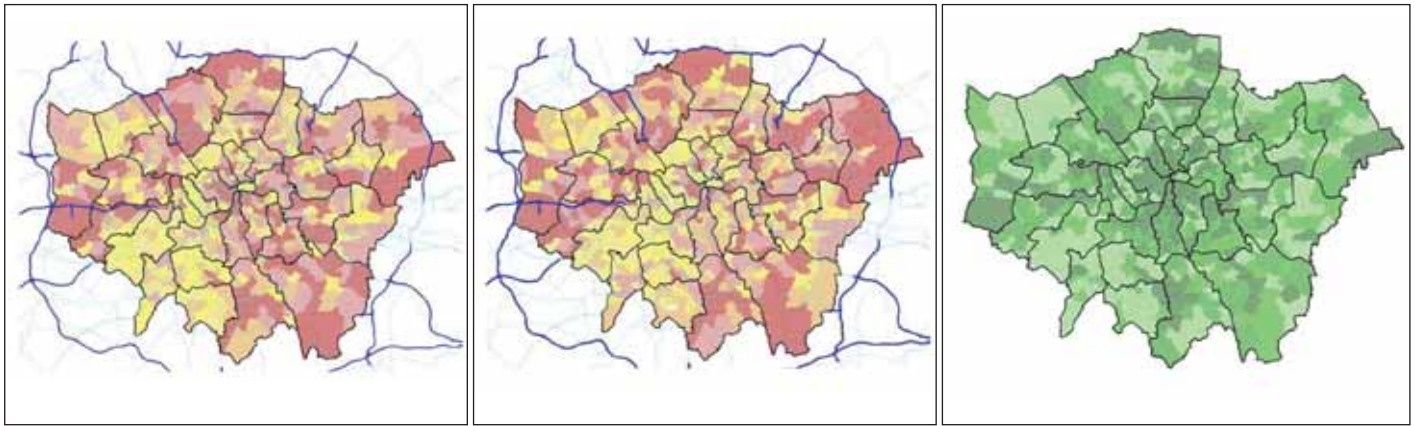
Accidental fires in residential properties account for a growing proportion of all fires in the metropolis as number of households increases by around 22,400 a year. Here, iMapping plots them as individual incidents on street mapping (top) and as a thematic map according to severity (above). Correlating incidents against factors such as low incomes, living in rented accommodation, being in a single parent family, etc., has helped LFB decide where to target its prevention work

based information that is published for use in various corporate-level activities, including emergency planning and risk management as well as for the presentation of performance statistics.

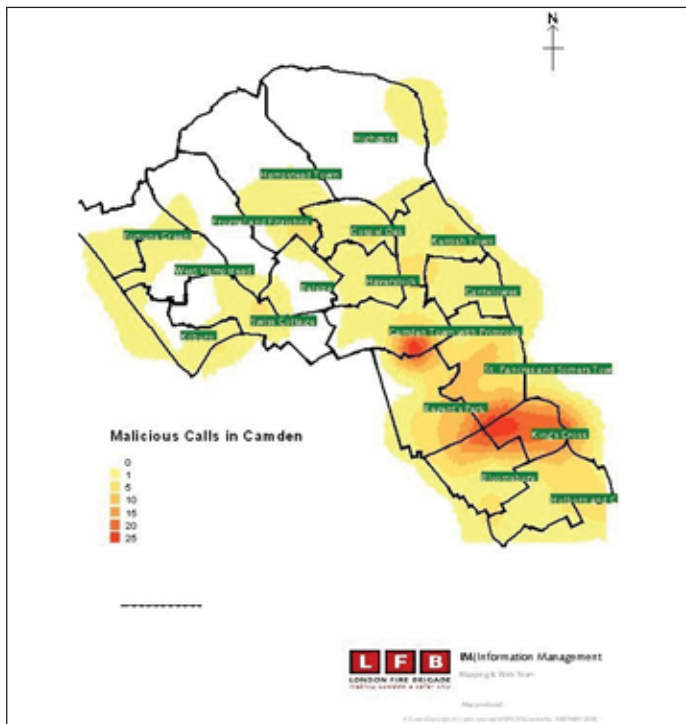
For example, the emergency planning department makes effective use of it as an aid to decision-making, with one of the main uses here being the production of maps for each COMAH site for inclusion in the overall COMAH plan. These maps include information on emergency service vehicle rendezvous points, sensitive sites of population, potential incident



courtesy London Fire Brigade



Above: More examples of thematic mapping that help target resources to best effect. Above left: Road Traffic Accidents (RTAs) attended by LFB over a five-year period. Above centre: Casualties arising from RTAs over the same period. Above right: RTAs attended by the London Ambulance Service over a one-year period.  
Below: Although the LFB has achieved an overall 20 per cent reduction in hoax calls, hot spot mapping highlights clusters that pose a continuing challenge



zones and sites of special scientific interest (SSSIs) in the vicinity of a COMAH site.

In risk management, patterns of fire and other incidents have been mapped throughout London to provide a clear picture of who is most at risk and where, with the information then being used to develop the London Safety Plan. Mapping and understanding these risk patterns is the responsibility of the LFB's risk management team, which is currently involved in working with the national Fire Services Emergency Cover (FSEC) toolkit as well as developing the LFB's own complementary, localised risk measurement and management model, IRAT.

### Performance indicators

The preparation and presentation of performance information is another key area for the use of the LFB's new corporate GIS. For example, quarterly reports on the distribution of incidents that help target resources now contain themed maps. Based on incident information derived from various sources, the data are manipulated in the GIS to create themed incident maps by geography, such as borough, ward and fire station boundary and using various time-frames as well as 'hot-spot' maps to show significant clusters of incidents.

Snapshot graphic representation of key performance indicators (KPIs), such as how well Home Office-set incident attendance times are met and the results of community fire safety initiatives, are also created with the corporate GIS.

Although it is still early days in terms of the development and deployment of the new corporate GIS, it is already clear that the balance in the use of GIS technology at the London Fire Brigade has shifted from a purely operational tool to much more of a corporate resource - to the benefit of everyone.



Ray Hooper is the GIS manager for the London Fire and Emergency Planning Authority ([www.london-fire.gov.uk](http://www.london-fire.gov.uk)). His AGI 2007 conference paper on the subject of this article received a 'Highly Commended' status, being an example of a real world GIS application with clear benefits to the public

