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Delivering e-Government around a web-based GIS

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Sandwell's Background

Sandwell is one of the seven metropolitan districts in the West Midlands and one of four boroughs, which comprise the Black Country. The population is around 283,000, of which 20 per cent are from minority ethnic communities. It is the most densely populated area in the West Midlands. The borough covers a relatively small area, 8,600 hectares, and incorporates the original 'six towns' that make up the borough. West Bromwich provides the main focus for the area and a plan for revitalising its retail, commercial and cultural heritage has been adopted.

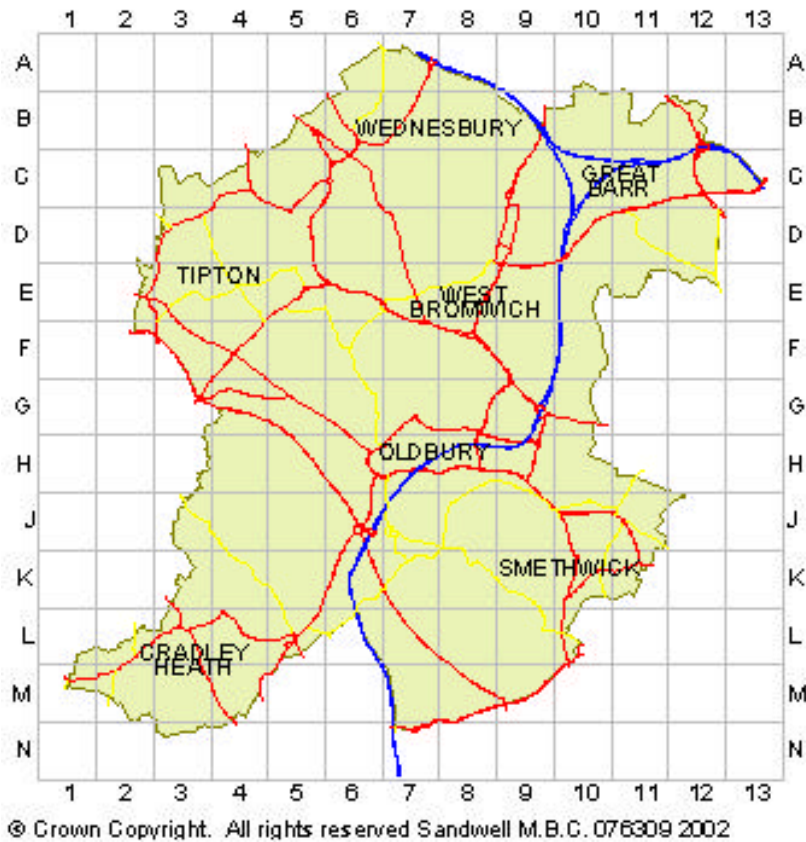


Fig 1: Sandwell Key Map

The major challenges facing Sandwell include:

- A history of low educational attainment within schools;
- Health related problems in local people;
- Significant unfitnes in both the private and public sector housing stock;
- Decline of the traditional industries, which have historically existed within the area.
- An outward migration of the population.

In 2000, Sandwell was ranked the eleventh most deprived borough in England and the Index of Multiple Deprivation, 2000 (by ward) shows that 11 of Sandwell's 24 wards were amongst the worst 10 per cent in England.

Between 1996 and 2000, population fell by 1.3 per cent (particularly in the 25 to 34 age range).

The council's net revenue budget for 2002/03 is approximately £320million. The council is the largest employer in the borough with around 14,000 staff.

GIS in Sandwell - The Story so Far

In common with many Local Authorities, Sandwell has a variety of different GIS representing most of the major vendors. This plethora of systems has grown out of task-specific implementations within a number of individual service areas over a 15 year involvement with GIS technology. Although each demonstrated clear benefits within its own area of application, collectively they presented a major challenge over how to go forward.

The option to standardise on a single GIS package would have been wasteful, needlessly replacing what already existed, and caused antagonism amongst system owners and users alike. It would also have presented a large workload in translating and converting data from the existing systems to a new replacement and a considerable effort in retraining staff. Standardisation would offer no benefits outside the Council when working with partners, over whose systems they have no control.

The main requirement was to get key land information, Ordnance Survey Landline maps, historic mapping in 4 epochs, aerial photographs and departmental application data out of the departmental silos, where only one or two people could use them and make them easily accessible to personnel across the authority and potentially to the users of the Council's web site.

The Solution

Early in 2002 a specification was produced and three companies that had experience in this area and an existing relationship with Sandwell were asked to provide a costed solution for a Web-accessible geospatial infrastructure management solution capable of retrieving data from the many geographic information systems (GISs) and databases operated by various Service Areas and serving that information to all council personnel with access to the Corporate network.

Following the tender process the successful supplier had further meetings with the Project Manager to clarify the objectives and a project plan was quickly developed. The base data that the Council already had was passed over to the supplier, who very quickly got the Sandwell Intranet Mapping Service (SIMS) online within the stated timescale and budget.

Service Areas with existing applications are free to continue building and maintaining their own data, whilst the ICT team focus their efforts and resources on delivering the core requirements of a web-based geospatial service and integrating the other GIS systems with it. A browser plug-in was required to be installed on all networked PCs and this was achieved automatically using the existing software distribution system. (ZenWorks from Novell)

SIMS is able to read data from the other systems in use and display that for all to see without the need for any intervention or translation.

The system needed to be simple to use as the majority of targeted users had little or no experience of using a GIS. The intuitive point-and-click interface allowed the ICT Service to launch the system without any formal training of personnel, although a number of demonstrations were set up to allow interested users to get some hands on experience and act as champions of the system in their own areas.

Use is now widespread across the council as anyone who knows how to use a Web browser can use the system to retrieve information and maps relating to any area of the borough.

What have we got for our money.

For an initial investment of only £30,000, which included server hardware, GIS software, consultation, development and training, Sandwell now has a system which is available to 3,500 employees, giving instant access to information they previously had to request by an email or phone call to co-workers and which was often only available in hard copy format.

The server hardware, procured internally, is an HP4100tc with a single PIII processor, 1gb ram, an extra graphics card with 64mb ram and 3 x 18GB hard disk drives for data storage. It is built on Windows NT4 and uses IIS 4 as the web server.

Reduced costs have come about by making geospatial data and GIS functionality available to all on the intranet. Traditionally, anyone regularly using mapping would have a desktop GIS, which comes with costs (software, training and support). Doing this on the web has saved £10,000 in the first three months of operation as one service area decided to cancel an order for 10 licences of their existing GIS system as SIMS provided the majority of the information and functionality they needed.

The GIS functionality available includes the normal pan and zoom controls and the ability to use online measurement tools, which allows workers to measure distances and areas with a reasonable level of accuracy. This has reduced the need for field visits by personnel and has helped to reduce costs.

The system also provides the ability to navigate either by using national grid references or eastings/northings and also to get a grid reference or eastings/northings readout for any point within the Borough.

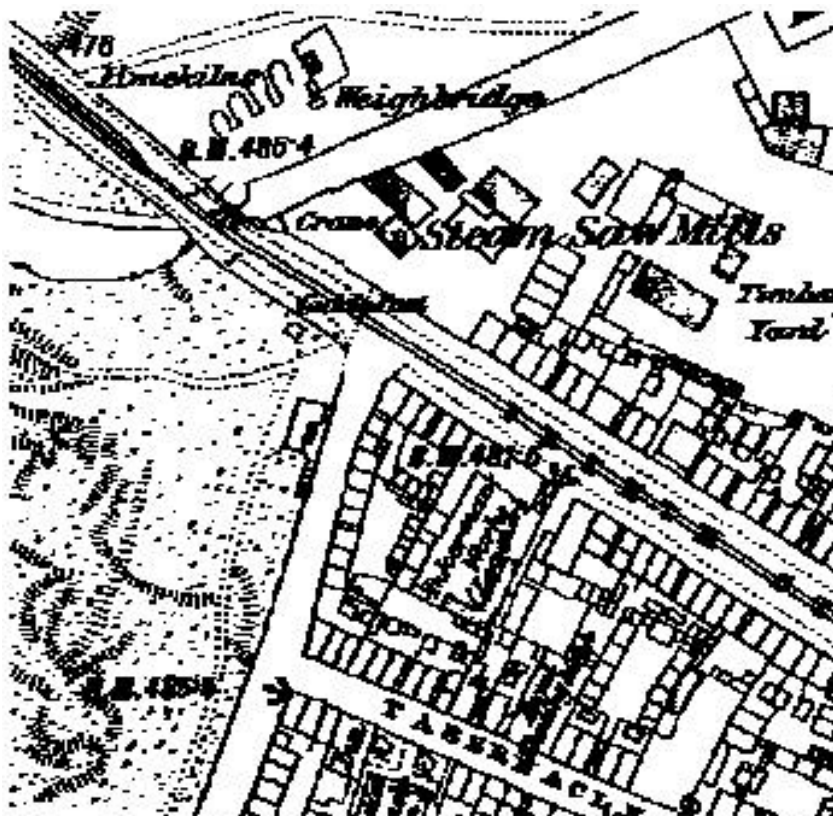
Access to the address gazetteer allows users to enter an address or postcode and select a property and go to a map showing it. The address gazetteer is derived from the Council's Local Land & Property Gazetteer (LLPG), which has been established as part of the national project (NLPG).

Other layers include commonly used boundaries of Wards, Neighbourhood Areas, the six towns of Sandwell, (A prize for anyone who can name them) the Sandwell Unitary Development Plan, locations of Sandwell Offices and facilities such as Leisure and Community Centres and also some information from the Health Sector such as the location of Doctors Surgeries and Health Centres.

However the greatest revelation personally has been in the use of aerial photographs. As a former land surveyor and user of maps for many years, interpreting the OS Landline data has never been a problem for me. For those staff or customers without this sort of background or previous GIS experience many of them did not understand what they were looking at. Once the OS Landline was overlaid with an aerial photograph they instantly recognised what they had in front of them. It proves the old adage that "a picture is worth a thousand words" or in this case vector lines and points.



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Fig 2: An Aerial Photo of Oldbury Town Centre with Sandwell's Offices in the top left corner and part of our office location site in 1885, then used as a steam saw mill and timber yard.

What Next

The next stage of development will be to transfer the functionality and commonly used data to the Internet so that the citizens of Sandwell can use these tools to convey information back to the Council. If the mapping system is used in conjunction with on-line forms, it becomes easy to report the location of abandoned vehicles, fly tipping, dangerous trees, broken street lights or road signs, potholes in roads, lifted paving slabs etc, etc. With an accurate location provided by the complainant, it is easier to provide a quick response to the problem.

Linking the system to wireless networks and hand held devices will enable officers in the field to receive the details of the complaint together with a copy of the map highlighting the location, without having to report back to base.

Establishing hot links from the existing maps to other items such as photographs and floor plans is relatively simple just by clicking on a symbol on the map.

For the citizen of Sandwell the ability to get a map of their house up on screen and do spatial enquiries such as, show all planning applications within a 300m radius, will provide easy on-line access via a map interface to data that would previously have needed a visit to a council office.

The development of a Customer Relationship Management (CRM) solution for Sandwell is an ongoing project and it is the intention to link SIMS to CRM to provide a geographic front end to help link any queries to back office systems via a spatial search.

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