

## Case Study:

# MappingGM

**Type:** Website

**Organisation(s):** GMCA, Salford City Council

**Tags:** open data, process, metadata, standards

[MappingGM](#) aims to be the home of geospatial data in Greater Manchester. It is a website that visualises and analyses geospatial information about the city region.

Information is viewed on a series of thematic maps, which are open to the public or limited to certain users dependent on the aim and data available on each map.

MappingGM is built on open-source elements – data is held on a [PostgreSQL](#) database with a [PostGIS plugin](#); [Geoserver](#) serves up the data in accessible formats; and the online maps are built using [Leaflet](#). The website currently hosts nearly 400 datasets covering thematic areas such as demographics, health, planning, housing, environment and ecology, low carbon, cycling and walking, transport, flooding, infrastructure and air quality.



## Background

In 2013, [the GM Local Enterprise Partnership](#) initiated a plan to bring together a range of public and private data into a single website. The aim of the work was to visualise this information, to support the pre-planning process, and aid quicker decision making about the viability of individual sites.

The website was developed in 2014/15 with £330,000 of funding provided by the Cabinet Office. Salford City Council successfully applied to build, manage and host the website. The website was built in 4 months from December 2014 to March 2015.

Since the creation of the first map (known as the [GM Open Data Infrastructure map, or GMODIN](#)), the use of the website has grown considerably. The following year, the website was used to create a 'Call for Sites' for the Greater Manchester Spatial Framework, adding a new [GMSF map](#) to allow users to submit information about sites that could be developed in Greater Manchester. A series of secure maps were also created to allow local planning officers to view and analyse the submissions.

In 2018, working in partnership with Transport for Greater Manchester, the website was used to gather hyperlocal information about the quality of cycling and walking routes in Greater Manchester, as well as to consult the public about proposed new routes. Over 4,000 comments were received in just 3 months. This information was used to plan the next stage of the proposed [Bee Network](#) – GM's cycling and walking infrastructure proposal.

The website has expanded to host 21 maps – each with a thematic focus – and 387 datasets about Greater Manchester. Six of these datasets are open to the public and the rest require a login to access. The public datasets include the GMODIN, GMSF and Bee Network maps discussed above, as well as the [People and Communities](#), [Your City, Your Views](#), and [Green City Region](#) maps.

## Important considerations

### Commercialisation

The website has not been commercialised, nor has the data contained within. However, the aim for the data collection on one website was to reduce down asymmetry of information and enable commercial decisions.

The data collection aspects of MappingGM have focused on providing information for research, rather than supporting this information to be shared externally. However, the data that have been collected via the website have also been made openly visible on the maps. The shapefiles and attribute data have not always been shared.

Early on, MappingGM had a clear aim of using open source and sustainable options. This meant that the development work for the maps is code where the intellectual property is held by the public sector. This has not been released, as some datasets are sensitive.

Not all datasets on MappingGM are open data. Some datasets are politically, commercially or security sensitive. As a result, not all datasets are visible to the public, and several maps have logins to restrict usage.

### Content and quality

Content varies dependent on the map. Some maps relate to a specific project, with limited datasets; whereas others have much larger ranges of datasets available. The use of each map also varies dependent on promotion and links to strategic developments. For example, the [Bee Network](#) consultation map has shown spikes in usage when the site has been actively promoted. The highest level of usage was for the [Clean Air GM map](#), which showed only one dataset, but which was embedded on a local news website and therefore drove significant traffic to the site.

There are over 370 datasets on the map, of which around 210 are available to the public – either visualised on the map, or with a direct link to the source data.

Generally, MappingGM aims to use as much open data as possible, and provides links in the metadata back to the original dataset. Where possible, direct downloads of the data are also provided. As a result, users have treated MappingGM as a datastore. While certain elements of a datastore – including downloads, links and web services – are provided, the datastore element is secondary to the main aim of visualising data.

The approach of the team and the website to data quality varies. Many datasets are taken 'as is', with different datasets amalgamated to form single data layers. For example, data from multiple local authorities may be available in different data schemas and capture different aspects of information, but are presented as a single dataset. The data comparability between different sources may vary.

Additionally, individual layers are assessed only for the ability to present information, and not for completeness, regularity of data or comparability. Therefore, some data layers exist with little attribute data available; some datasets have no or irregular updates due to their availability; and many datasets suffer from lack of complete metadata.

However, the team has sought to create some data layers with a degree of consistency over time and across boroughs. This particularly includes data around planning and housing. GMCA Research, working with the planning teams of the ten local authorities, has worked to create a series of specific data schemas. Each data schema aims for completeness of datasets – both of the overall dataset and at the record level – while creating a consistent dataset over a number of years.

## **Blockers and challenges**

The website has overcome several challenges and blockers. These include being able to share data that is commercially, security or politically sensitive; making data open; pulling together data from multiple sources; and accessing data sources.

The website has created both open and closed maps. Closed maps include logins, limiting map access to relevant individuals. This means that sensitive datasets can be restricted to individual users.

Many datasets on MappingGM are updated regularly and automatically. However, several are sourced manually, as datasets are held behind logins or not available freely online. These require time and effort, which act as a challenge to ensuring that datasets are accurate and up-to-date.

A further challenge has been the aforementioned issue of matching and linking datasets. Different organisations collecting similar datasets in different ways means that while data are presented as single data layers, there are variances in how they are presented – as points, lines or polygons – and in their attribute information.

## **Data quality**

Data quality has been an issue for local authority data, in terms of both consistency and accuracy of data. The MappingGM team have several strategies to mitigate these issues. Firstly, data is sourced from national data sources wherever possible, as this provides a consistent dataset across the ten local authorities.

Additionally, where national datasets are not available, the MappingGM team often create consistent schema for the Local Authorities to present their data consistently. This has been particularly useful in relation to land supply data.

## **Security considerations**

Security was a big consideration in the early days of MappingGM. For example, a map that shows how key infrastructure links up, such as electricity and gas stations and pipelines, could be potentially dangerous in the hands of terrorists or other bad actors. To mitigate this risk, some of the maps only show data when the map is at smaller scales - the data then disappears when the map is zoomed in to a smaller scale. This means that the data can be effectively used to provide wider overview information, without compromising the security of specific sites.

## **User experience**

The design of MappingGM has been based around simplifying the user experience. The maps are based on similar online mapping tools, such as Google Maps, Bing Maps and others. Similar tools are also provided, as well as additional tools that might be of benefit. The maps are also designed to cover as much screen space as possible, with tools sitting on top of them.

However, there remain issues in accessibility. Not all of the features of the website and maps are explained, even those that might appear intuitive. Additionally, as an interactive map, the website is not fully covered by accessibility regulations, meaning it is not suitable for all users.

User feedback has been positive, though there has not been a systematic review of the website as a whole, including the datasets and user experience.

## Ownership

Ownership of the datasets is complex, given that data has often come from the ten different local authorities, as well as other public and private actors). A lack of clear ownership can, at times, lead to a reluctance in decision making between different teams and projects.

## Benefits

The main benefits of MappingGM are that it allows users to visualise, play and interact with key data, and that it provides information relevant for GM strategy. For example, it is widely used in the [Greater Manchester Spatial Framework](#), which aims to identify and provide the right homes and employment spaces across the city region. Similarly, the [Bee Network](#) map has been used to guide the investment priorities for cycle and walkways across the city.

## What can Greater Manchester take from this?

- Data schemas require coordination, agreement and support. Agreeing these across multiple organisations require longer-term support.
- A datastore can be a well-used resource. However, the value of the site has come from specific use cases and presentation of relevant datasets, rather than in being a datastore in itself.
- The aim of a website will determine the flow of users. For example, in this case from the map to the data, rather than the other way round. In making data open, it is therefore important to consider how the data might be used.
- A consistent metadata process is important. This ensures data are accurate and meaningful. It also pushes the importance of accuracy in the dataset.
- Clear usage instructions for visualising data are important. The website does not always offer this, though for more advanced datasets, some user instructions have been provided.
- Effective public communication strategies can drive up usage, as was the case in the Clean Air map. This also links to the importance of defining uses of data and making sure that open data can be consumed in an appropriate manner.
- Scale can be used as an appropriate mitigation of certain security risks, whereby data are shown at small scales but disappear when zooming in to larger scales. This gives an effective visual overview of regional data but protects specific location details.
- Visualising data enhances its use and understanding, which can be effective in guiding wider policy and strategy. Therefore, opening data alone may not be as effective as opening up analysis and visualisation alongside it.