



## **Barrow Borough Council**

**Case Study: Implementation of an Open Source solution for  
INSPIRE publishing services**

# Barrow Borough Council – implementation of an Open Source solution for INSPIRE publishing services

## Summary

Public authorities are required under the INSPIRE Regulations to provide metadata, view and download services of geospatial data that they create under statutory duties. Barrow Borough Council has looked at one option to enable compliance through the use of an open source solution. This case study describes the outcomes of implementing one of the proposed technical solutions for publishing INSPIRE datasets within the UK Location Programme<sup>1</sup>.

## Background about INSPIRE and the UK Location Programme

INSPIRE regulation requires public authorities to publish geospatial datasets that relate to the environment according to specific technical standards. Under the legislation local authorities are obliged to publish data that they produce under statute and that are listed under INSPIRE data themes<sup>2</sup>. The Local Government Group has reached agreement with the following national data providers to publish data on behalf of local authorities on the basis that local authorities submit regular updates. This reduces the burden for local authorities to publish the data on an individual basis:

- Addressing and Street Gazetteers through GeoPlace
- Conservation Areas through English Heritage
- Local Nature Reserves through Natural England

Annex III data specification, once issued, will extend the requirements to publish further datasets. Requirements will be reviewed by the LG Group with local authorities. One of the options available to Local Authorities will be to publish their own data using a technical infrastructure currently developed and tested by the UK Location Programme<sup>3</sup>.

The UK Location Information Infrastructure is based on open source software GeoNetwork<sup>4</sup> used for discovering and viewing geospatial data compliant with INSPIRE publishing requirements. UK Location Programme also commissioned Ordnance Survey to develop a metadata editor tool to help to capture metadata according to UK Gemini 2.1 metadata standard compliant with INSPIRE<sup>5</sup>. The tool creates an output of metadata that once published on a local web service can be harvested by data.gov.uk

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<sup>1</sup> UK Location Programme initial guidance for publishing discovery and view services

[http://location.defra.gov.uk/wp-content/uploads/2010/06/Getting-Started\\_Guide-4\\_v1-0.pdf](http://location.defra.gov.uk/wp-content/uploads/2010/06/Getting-Started_Guide-4_v1-0.pdf)

<sup>2</sup> For further information about INSPIRE see <http://www.lga.gov.uk/lga/core/page.do?pageId=1254606>

<sup>3</sup> UK Location programme on <http://location.defra.gov.uk/resources/>

<sup>4</sup> Open Source Software GeoNetwork <http://geonetwork-opensource.org/>

<sup>5</sup> Creating UK Gemini 2.1 metadata on <http://location.defra.gov.uk/resources/discovery-metadata-service/creating-metadata/>

upon registration<sup>6</sup>. Combined with the registration of viewing services, it provides an integrated service for discovering and viewing datasets published anywhere across the UK via data.gov.uk and ultimately across Europe via the INSPIRE GeoPortal.

### **Who was involved and resources?**

The UK Location Programme and the Local Government Group were looking for public authorities to test the feasibility of the technical approach to publishing geospatial data. Barrow Borough Council had already implemented a browser based open source web mapping system using GeoServer<sup>7</sup>, and was therefore interested in extending the use of open source into the provision of metadata. When GeoNetwork was chosen as the basis for the UK Location metadata tool it seemed an obvious companion to the existing software.

### **Skills and resources**

The GIS officer at Barrow Borough Council implemented the GeoNetwork and the UK Location metadata editor. The Council's IT section provided support and assistance with the provision of the infrastructure to enable the implementation.

The estimated time for installing GeoNetwork on an existing web server including installation of metadata editor was one day, with another day for users to familiarize themselves with GeoNetwork and the editor. This assumes a small degree of IT knowledge on the installation of software.

Installation of GeoServer took a similar amount of time to GeoNetwork and the two can sit site by site on the same server and be set up to communicate with each other. GeoServer provides map based functionality to GeoNetwork.

The cost for metadata creation depends on the previous use of metadata standards and standard vocabularies. However data entry times can be reduced through the use of templates within GeoNetwork.

### **The problems and how we tackled them**

The server and infrastructure was already in place for the Council to install and create a local install of GeoNetwork and the UK location metadata editor on the existing web mapping server. Installation instructions for the metadata editor tool provided by UK Location<sup>8</sup> were used with some further guidance and advice from developers at Ordnance Survey.

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<sup>6</sup> UK Location Programme Operational Guidance for discovery metadata service: [http://location.defra.gov.uk/wp-content/uploads/2010/04/Operational-Guide-Discovery-Metadata-Service\\_-v1-0.pdf](http://location.defra.gov.uk/wp-content/uploads/2010/04/Operational-Guide-Discovery-Metadata-Service_-v1-0.pdf)

<sup>7</sup> Open source Web mapping service GeoServer <http://geoserver.org/display/GEOS/Welcome>

<sup>8</sup> UK Location Metadata editor guidance: <http://location.defra.gov.uk/resources/discovery-metadata-service/metadata-editor/>

Once installed GeoNetwork was interfaced with an external database which then allowed for updates to take place without loss of data. The metadata editor will only work with certain versions of GeoNetwork so it is important to check which version is used.

GeoNetwork is using the Catalogue Service for Web (CSW) for cataloging the metadata and publishing it on the Web. Once Barrow Borough Council registered the CSW on data.gov.uk, all data in the local version of GeoNetwork was harvested successfully into the test data.gov.uk service.

However, not all data layers can be viewed through WebMappingServices for free reuse due to license and copyright restrictions. For example, under the Public Sector Mapping Agreement certain data derived from Ordnance Survey can only be shared and used in web mapping services in prescribed circumstances:

- (a) with other public sector bodies
- (b) online for public viewing (in each case, subject to limited conditions)
- (c) under an End User Licence containing a number of terms, including that the data cannot be exploited for commercial use.
- (d) where the data is exempt from licensing restrictions
- (e) Data layers that fall under INSPIRE data themes can now be viewed under a web mapping service license <https://www.ordnancesurvey.co.uk/psma/psma-licence/web-mapping-service-end-user-licencing-guidance.html>

Barrow Borough Council experienced a few issues with the creation of metadata, the use of the metadata editor and the web mapping service license, some of which still require resolution:

- The current Integrated Public Sector Vocabulary (IPSV) used across the public sector to describe public services does not give adequate coverage as a thesaurus for keywords within the metadata catalogue. IPSV will likely need some work on extending its vocabulary. The General Multilingual Environmental Thesaurus (GEMET) may provide an alternative source.
- The metadata requires a unique resource identifier (URI) to describe the authorities for use in linked data. Currently, there is no official list that provides a URI for the entity of a local authority. An alternative is the use of the standard naming and code for statistical geographies by ONS<sup>9</sup> which refers to the boundary of an administrative area which has now also been published in linked data format as URI.
- Data viewed under the Ordnance Survey web mapping service end user license will not be able to show attribute information as the getfeatureinfo function is disabled.

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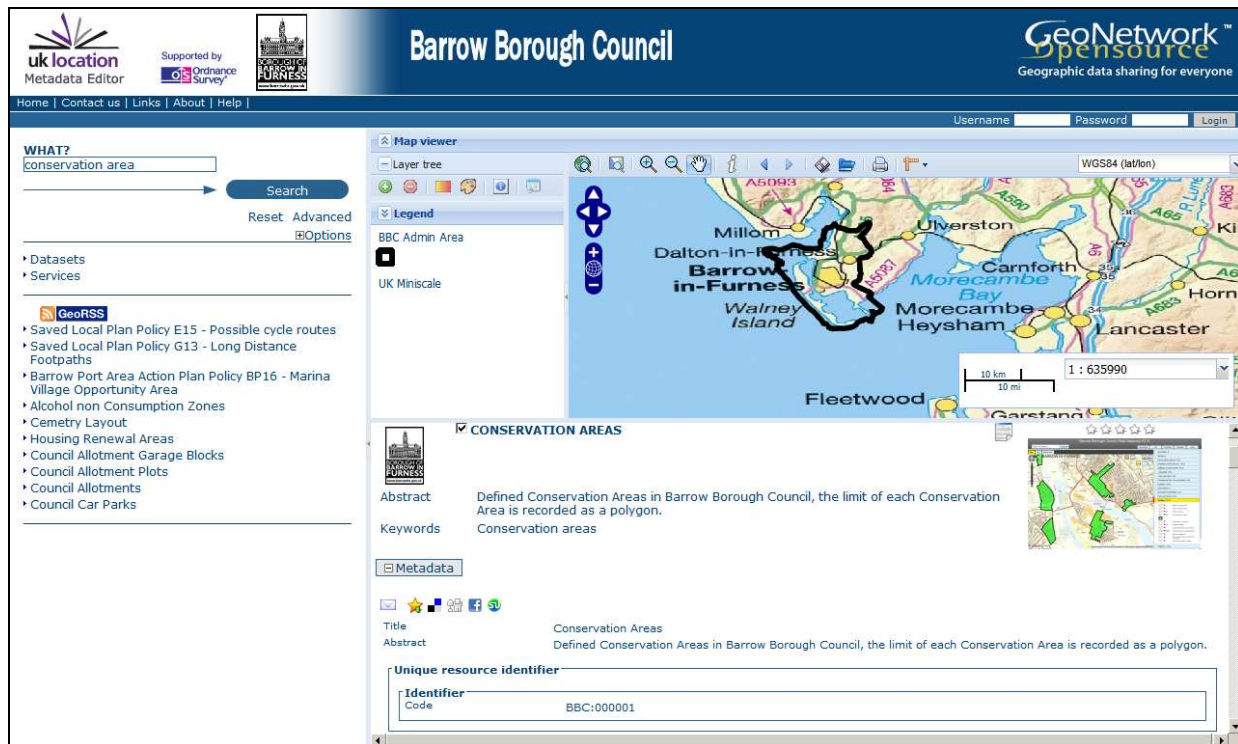
<sup>9</sup> ONS Naming and Coding standards for statistical geography <http://www.ons.gov.uk/about-statistics/geography/policy/coding-and-naming-for-statistical-geographies/index.html>

## Outcomes and impact

Barrow Borough Council now has the ability to create and store metadata to Gemini 2.1 standards through GeoNetwork and the metadata editor. Data.gov.uk test website harvests the data from Barrow so that it is searched from there.

The Council's local installation of GeoNetwork provides discovery services and links into Barrow Borough Council's existing GeoServer for searching and viewing of geospatial datasets within GeoNetwork. Thirty-nine actual meta records of geospatial datasets have been added for testing purposes. Others will be added in time. The metadata currently provides an online resource link to Barrow Borough Council's web mapping service to view the data.

**Figure 1: Maps displayed via GeoServer allowing search geographically**



With the release of Geoserver version 2.1.3 Barrow Borough Council is now fully INSPIRE compliant to serve data in WMS version 1.3 at the required speed and response times for a view service. This will enable data.gov.uk to provide a direct view from the metadata record to the Web Mapping Service (WMS) at Barrow Borough Council.

## Benefits

GeoNetwork and GeoServer are both free open source software to provide web services for cataloguing metadata and viewing data through map services such as WMS. The software replaces existing proprietary software systems. The metadata editor is provided free of charge. Hence, there are no costs associated with software license.

Use of Open source software led to savings of £ 26,000 annually in license and software costs. Sharing the knowledge of how to use open source software as described in this case study may help to save resource time on research and development to other local authorities wishing to install an open source, INSPIRE compliant solution.

Discovering the same metadata through different web discovery services will help in finding relevant data. Making the data available through a standardized web mapping services, enables the seamless display of data from different sources.

## Key insights for other councils

With the current financial constraints on local government, proprietary methods of ensuring compliance with INSPIRE may not be financially viable. However through the use of various widely used open source products and the UK Location metadata editor it is possible to implement a non proprietary system. Some of the lessons learnt are listed below

- Local Government needs to share and pool best practice and information on the creation of metadata to ensure consistency for the use of vocabularies, Unique Resource Identifiers.
- Use of an Open source solution is a viable option for local government
- Open standards work well for sharing data as seen with the testing of harvesting of metadata using Catalogues Service Web (CSW) to data.gov.uk
- Licensing due to third party intellectual property rights is an issue. The Open Government License is not appropriate especially with regards to derived data which for example contains OS intellectual property rights. The Public Sector Mapping Agreement restricts the free use of derived data and services in commercial applications<sup>10</sup>. In this instance, the use of the Ordnance Survey web mapping service end user license is required.
- Meeting INSPIRE compliance for publishing data, does not mean that the data in itself meets compliance. Separate work will be required to meet the data specifications for those data that are required under INSPIRE. Other datasets using the same services can be published without those constraints.

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<sup>10</sup> note that data derived solely from OS OpenData, data categorised as Free to Use Data, or data which has been exempted under the Exemptions process, can be licensed with minimal restrictions

With the implementation of GeoNetwork Barrow Borough Council has shown that Councils are able to publish their own geospatial data meeting INSPIRE compliance. While the software is freely available, special expertise is required to create metadata to given standards and to install GeoNetworks to provide an effective web mapping service. Barrow Borough Council provides a best practice example to some local authority to develop their own service to enable greater interoperability of local government data. However, there is no expectation that all local authorities will be able to follow Barrow's example, it may give an incentive to some to develop their own service to enable greater interoperability of local government data.

## Acknowledgement

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## References and further information

- <http://webgis1.barrowbc.gov.uk/webgis/bingis.html>  
Barrow Borough Councils web GIS service
- Barrow Borough Council INSPIRE webmapping service  
<http://data.gov.uk/dataset/barrow-borough-council-inspire-ogc-wms-service>  
and direct viewing via  
<http://webgis1.barrowbc.gov.uk/inspire/wms?service=WMS&request=GetCapabilities>
- <http://webgis1.barrowbc.gov.uk/GeoNetwork/>  
Barrow Borough Council's GeoNetwork and UK location metadata editor service
- <http://doc.esd.org.uk/IPSV/2.00.html> Integrated Public Sector Vocabulary (IPSV)
- <http://data.gov.uk/> Opening up government
- <http://location.defra.gov.uk/inspire/> UK Location - INSPIRE information
- <http://location.defra.gov.uk/resources/discovery-metadata-service/metadata-editor/> UK Location's metadata editor
- Ordnance Survey web mapping service end user license  
<https://www.ordnancesurvey.co.uk/psma/psma-licence/web-mapping-service-end-user-licencing-guidance.html>

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