ORDNANCE SURVEY GB

OS OPEN RIVERS™ – OVERVIEW

OFFICIAL
Ver 2.3

Version history

Version	Date	Description
1.0	03/2015	Initial release.
2.0	10/2016	Minor updates.
2.1	07/2019	Minor updates.
2.2	05/2021	Introduction of vector tiles.
2.3	04/2023	GeoPackage format attribute name changes. Formatting and content improvements.

Purpose of this document

This document provides information about and insight into the OS Open Rivers product and its potential applications. For information on the contents and structure of OS Open Rivers, please refer to the Technical Specification.

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Contact details

OS website 'Contact us' page (https://www.ordnancesurvey.co.uk/contact-us).

Contents

1. Introduction

1.1 Overview

OS Open Rivers provides a two-dimensional, topologically-structured link-and-node network of Great Britain's watercourses. A link represents the approximate central alignment of a watercourse. Attribution indicates the flow direction and name of each watercourse.

OS Open Rivers is a generalised product which is automatically derived from Ordnance Survey large-scale data. The nominal usage scale is 1:25 000, with a recommended viewing scale range of 1:15 000 to 1:30 000.

1.2 Key features

The key features of the OS Open Rivers product are as follows:

- Comprehensive coverage of Great Britain's river network.
- A topologically-structured link-and-node network.
- Water flow direction information.
- Classified links which allow you to identify the differences between tidal and inland rivers.
- The ability to relate the OS Open Rivers product to the OS MasterMap Networks Water Layer using the watercourse name.

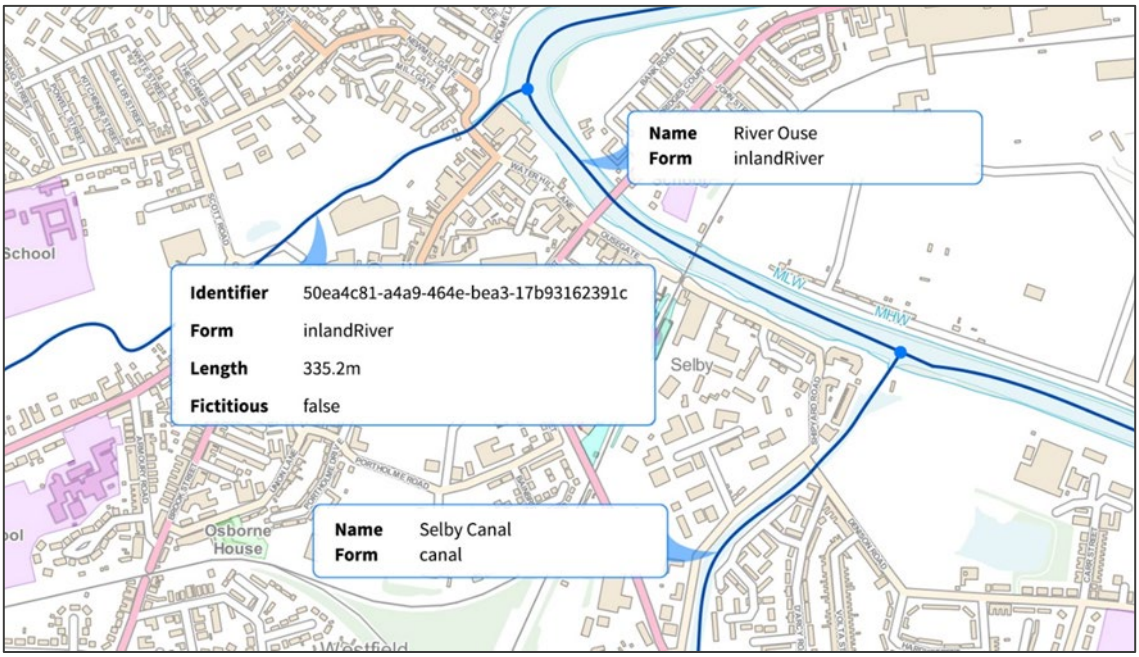

Figure 1: Illustrative image of OS Open Rivers and its associated attribution.

1.3 Applications

OS Open Rivers supports a wide range of applications that use geographic information. The product can be used alone or in combination with other Ordnance Survey products, such as Terrain 50 or VectorMap District. OS Open Rivers has numerous applications, including but not limited to, the following examples:

- Relating information to the river network for both personal and business use.
- Simple analytical queries, for example, the overall lengths of larger rivers in Great Britain.
- Simple planning around main watercourses using the detailed connectivity and flow (from source to mouth) information.
- Regional-level environmental impact assessments, for example, an indication of what towns have rivers passing through them.
- Backdrop mapping.

It is important to note that detailed analysis is not supported in OS Open Rivers; this requires the additional detail and complexity available in OS MasterMap Water Network.

2. OS Open Rivers

2.1 Simplification

The detail within OS Open Rivers is automatically generalised from Ordnance Survey large-scale data. Map simplification is the process of reducing the scale and complexity of data whilst maintaining the important elements and characteristics.

OS Open Rivers simplification comprises the following processes:

- **Selection/omission of rivers** – Features that appear at higher resolutions are removed at lower resolutions, for example, small river channels.
- **Simplification of geometry** – The density of points along a line is reduced using an algorithm that creates a simplified curve. This curve includes sufficient points to retain the shape and connectivity of the original line at the intended usage resolution.

2.2 Feature types

OS Open Rivers features are classified into two feature types.

- **WatercourseLink** – This feature represents the alignment of a watercourse.
- **HydroNode** – This feature explicitly represents the start, end, and junctions of watercourses, and places where related real-world attribution changes have been recorded, for example, the point where a watercourse becomes tidal. The HydroNode is coincident with the ends of related links.

Each feature type has associated attribution, and further detail on this can be found in the OS Open Rivers - Technical Specification.

2.3 Coordinate reference system

The Geography Markup Language (GML), GeoPackage, and shapefile product formats enable the use of the British National Grid (BNG) coordinate reference system. In the GML data, this is represented by reference to its entry in the EPSG registry, as http://www.opengis.net/def/crs/EPSG/0/27700.

The BNG spatial reference system uses the OSGB36 geodetic datum and a single Transverse Mercator projection for the whole of Great Britain. Positions on this projection are described using easting and northing coordinates in units of metres. The BNG is a horizontal spatial reference system only; it does not include a vertical (height) reference system.

The vector tiles format is in the Web Mercator (EPSG:3857) projection. This is a global coordinate reference system.

2.4 Currency

OS Open Rivers is derived from Ordnance Survey large-scale data and is refreshed every six months.

2.5 Completeness

Quality control procedures are undertaken at all stages of production to ensure that data is accurate, complete, and conforms to the specification. Quality control checks include automated data testing against the product specification and visual checks by operators.

3. Product supply

3.1 Supply format

OS Open Rivers is available in the following formats:

- Geography Markup Language (GML): A national vector dataset in GML 3.2.1 Simple Features Profile – level 0.
- Shapefile: A national vector dataset in Esri shapefile (.shp) format.
- GeoPackage: A national vector GeoPackage file (.gpkg).
- Vector tiles: A national vector tiles file in MBTiles format.

All formats are zipped using gzip.

3.2 Supply mechanism

OS Open Rivers is supplied as an online download and is available without registration from the OS Data Hub Open Rivers (https://osdatahub.os.uk/downloads/open/OpenRivers) download page. You can select a data format during the download process.

3.3 Coverage and file sizes

3.3.1 GML

- A zipped file comprising a national dataset.
- The zipped file contains one GML file, which contains two feature types.
- The file size is approximately 40 MB zipped.
- The data is not encrypted.

3.3.2 Esri shapefile

- One zipped file comprising a national dataset.
- The zipped file contains two shapefiles.
- Each shapefile holds a single feature.
- The file size is approximately 40 MB zipped.
- The data is not encrypted.

3.3.3 GeoPackage

- A zipped file comprising a single national GeoPackage file.
- The GeoPackage file contains two individual layers for each feature type, both with national coverage.
- The file size is approximately 60 MB zipped.
- The data is not encrypted.

3.3.4 Vector tiles

- A zipped file comprising a single national MBTiles file.
- The MBTiles file contains a full set of national vector tiles, with options available to split these out into individual tiles as PBF files.
- The file size is approximately 130 MB zipped.
- The data is not encrypted.

Annexure A: Related documentation

Guides

You can find additional information and documentation on the OS Open Rivers support page (https://www.ordnancesurvey.co.uk/business-government/tools-support/open-map-rivers-support) of the OS website.

We recommend you read the following guides:

- *OS Open Rivers – Technical Specification.*
- *Getting Started with GeoPackage.*
- *Getting Started with Vector Tiles.*

Stylesheets

Predefined stylesheets for OS Open Rivers are available for download from the OS-Open-Rivers-stylesheets Github repository (https://github.com/OrdnanceSurvey/OS-Open-Rivers-stylesheets).

To download a zip containing all stylesheets, navigate to *Code* > *Download Zip*.