ORDNANCE SURVEY GB

1:50 000 SCALE COLOUR RASTER – OVERVIEW

Version history

Version	Date	Description
1.1	08/2019	Minor updates.
1.2	12/2021	Minor formatting changes. Addition of GeoTIFF format to the product. Change in document name from Product Guide to Overview.

Purpose of this document

This document provides information about and insight into the 1:50 000 Scale Colour Raster product and its potential applications. For information on the contents and structure of 1:50 000 Scale Colour Raster, 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 to the product

1:50 000 Scale Colour Raster is a data product similar to the popular OS Landranger Map series, showing a detailed overview of the landscape. It is a mid-scale product that's ideal for navigation. 1:50 000 Scale Colour Raster can be used to contextualise your data or as a map in its own right. It is aimed at recreational as well as businesses users, providing them with an excellent overview of the main features and communication routes across Great Britain.

The 1:50 000 Scale Colour Raster product provides a grid of easy to consume TIFF images. This grid is aligned to the National Grid (EPSG: 27700). The 254 dots per inch resolution has been chosen as it maintains the necessary clarity for text shown on the map.

Screen images can be plotted to produce a high-quality map. An example of the data is shown in Figure 1:
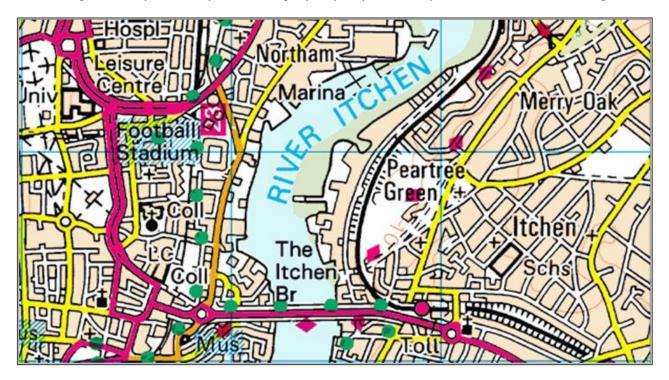

Figure 1: An extract of 1:50 000 Scale Colour Raster over part of Southampton, England.

1.1 Key features of the product

The key features of the product are as follows:

• Regular revision cycles, giving product consistency.

• Highly detailed mapping, showing airports, farms, hills, woodlands and commons, among other places.

• Easy to download and apply TIFF formats.

1.2 Product applications

1:50 000 Scale Colour Raster is aimed at recreational and business users and its graphic specification can help with the following:

- Development and land-use planning

- Environmental impact analysis

- Vehicle routing

- Asset management

- Marketing analysis

- Display and promotion tasks

2.   Product details

2.1   Source and scale of the product

1:50 00 Scale Colour Raster is derived from the source data used to create its graphic counterpart, the OS Landranger Map series. Generalisation is used to emphasise, simplify, select and sometimes omit features to produce a cartographic representation of the landscape at a scale of 1:50 000.

The nominal scale of the product is 1:50 000, but the recommended minimum-to-maximum scale range is 1:15 000 to 1:60 000 scale. It is best viewed between 1:20 000 and 1:50 000 scale.

2.2   Coordinate reference system

1:50 000 Scale Colour Raster is available in National Grid coordinates, which are expressed in metres relative to an origin set to a point west of the Isles of Scilly. These coordinates can easily be spatially related to other surveys, drawings, datasets or Ordnance Survey products. A general introductory guide to the British National Grid (BNG) (https://getoutside.ordnancesurvey.co.uk/guides/beginners-guide-to-grid-references/) is available on the OS website.

2.3   Coverage

Coverage is Great Britain. 1:50 000 Scale Raster is supplied in standard 20 km by 20 km tiles aligned to the National Grid.

2.4   Product revision programme

1:50 000 Scale Colour Raster is updated via a revision programme. The revision programme mirrors that of the OS Landranger Map series, and is determined by assessing the following factors:

•   Known surveyed change

•   Change intelligence gathered from a range of sources

•   How long it's been since an area was last revised

Priority is given to prestige sites categorised as significant items of change, such as major road construction projects. Significant items of surveyed change relevant to the scale are captured during the revision programme.

Where a line feature ends by intersecting the tile edge, it is matched with its corresponding feature on the adjacent tile so that both features end on the same unique coordinate. The representation of detail across the tile edge will be of a cartographically acceptable standard when plotted or displayed at scale.

2.5   Product update schedule

1:50 000 Scale Colour Raster is supplied to customers quarterly in March, June, September and December, incorporating any updates made by the revision programme.

2.6   Features depicted in the product

The following features are depicted in 1:50 000 Scale Colour Raster:

2.6.1   Man-made structures

Buildings are generalised and shown with colour tint and cartographically placed text to indicate settlement name and extent.

Structures are indicated by lines, buildings or symbols and are supplemented with a text description for all distinctive named features. Important buildings are displayed independently from other generic building features.

2.6.2   Transport

Transport features depicted include tracks, public rights of way, cycle networks, paths, roads, railway lines (single and multiple track), railway stations, airports and airstrips, ferry routes and ports, cycle routes, and bus and coach stations.

2.6.3   Natural landscape features

Different types of natural features and vegetation are shown by symbols or colour tint, including woods, rock, scree, boulders, sand, shingle, mud and slope. There is also information relating to the extents of Forestry Commission access land and National Trust land.

2.6.4   Water features

Water features are shown in blue with associated text. A distinction is made between natural (blue) and man-made (black) water features, with the exception of canals (which are shown in blue).

2.6.5   Height

Ground contours, survey heights and air survey heights are depicted.

Surface heights are to the nearest metre above mean sea level. Heights shown close to a triangulation pillar refer to the ground level height at the pillar and not necessarily to the height at the summit.

2.6.6   Heritage and archaeological sites

Depiction includes information supplied by English Heritage®, the Royal Commission on the Ancient and Historical Monuments of Scotland, and the Royal Commission on the Ancient and Historical Monuments of Wales.

2.6.7   Administrative boundaries

National, county, district, unitary authority, civil parish and constituency boundaries are all depicted.

2.6.8   Annotation

Descriptive and distinctive names are depicted as text:

- Tourist Information Centres

- Camping / caravan sites

- Gardens

- Golf courses

- Nature reserves

- Car parks

- Picnic sites

- Viewpoints

- Youth hostels

2.7   Georeferencing

Note: Georeferencing is not required when using the GeoTIFF file format as the tiles have already been embedded with georeferencing information.

To be able to view each TIFF tile in correct geographic relation to the National Grid and to other tiles, the tiles must be georeferenced. Geographic information systems (GIS) typically provide georeferencing as part of their functionality, but for each set of tiles, it is necessary to provide the information on how the tiles should be ordered.

Ordnance Survey provides this information in a set of georeferencing files, also known as world files. A complete set of georeferencing files for 1:50 000 Scale Colour Raster is available to download free of charge from the 'Georeferencing files and land and sea tiles' page of the OS website (https://www.ordnancesurvey.co.uk/business-government/tools-support/georeferencing).

There are several different types of world file. Prior to downloading one of the sets, customers are advised to check with their system suppliers to find out which type of world file their system supports.

The conventions behind the files' creation can be found in the product's technical specification (https://www.ordnancesurvey.co.uk/documents/product-support/tech-spec/50k-raster-technical-specification.pdf). By using the conventions outlined there, this means that other datasets using the same conventions can be imported into the same GIS to add value to the raster map; for example, overlaying a routing or logistics network over the map or displaying a customer's demographic information.

The georeferencing files should be saved in the same directory as the files of the map tiles themselves.

2.8   Data measures

Ordnance Survey measures the data in its products in one or more of the ways set out in Table 1 below:

Table 1: Definitions of data measures.

Data measure	Definition	Sub-measure	Definition
Completeness	Presence and absence of features against the specified data content*	Omission	Features representing objects that conform to the specified data content but are not present in the data
		Commission	Features representing objects that do not conform to the specified data content but are present in the data
Logical consistency	Degree of adherence to logical rules of data structure, attribution and relationships	Conceptual consistency	How closely the data follows the conceptual rules (or model)
		Domain consistency	How closely the data values in the dataset match the range of values in the dataset specification
		Format consistency	The physical structure (syntax): how closely the data stored and delivered fits the database schema and agreed supply formats
		Topological consistency	The explicit topological references between features (connectivity) – according to specification
Positional accuracy	Accuracy of the position of features	Absolute accuracy	How closely the coordinates of a point in the dataset agree with the coordinates of the same point on the ground (in the British National Grid reference system)
		Relative accuracy	Positional consistency of a data point or feature in relation to other local data points or features within the same or another reference dataset
		Geometric fidelity	The 'trueness' of features to the shapes and alignments of the objects they represent*
Temporal accuracy	Accuracy of temporal attributes and temporal relationships of features	Temporal consistency	How well-ordered events are recorded in the dataset (life cycles)
		Temporal validity (currency)	Validity of data with respect to time: the amount of real-world change that has been incorporated in the dataset that is scheduled for capture under current specifications

Data measure	Definition	Sub-measure	Definition
Thematic accuracy (attribute accuracy)	Classification of features and their attributes	Classification correctness	How accurately the attributes within the dataset record the information about objects*

*When testing the data according to the dataset specification against the 'real world' or reference dataset.

2.9 Metadata

ISO 19115 compliant UK GEMINI discovery level metadata is provided for the data and can be found on the AGI (The Association for Geographic Information) website (https://www.agi.org.uk/uk-gemini/).

The following list gives a detailed description of the metadata elements provided on the AGI website:

* **Title:** The title of the product.

* **Abstract:** The abstract gives a brief description of the product.

* **Currency:** The currency takes the form of date of last update for the feature.

* **Lineage:** The lineage metadata takes the form of product specification name and date of product specification.

* **Spatial extent:** The spatial extent is supplied in the form of geographic identifiers (for example, England, Scotland and Wales) and in the form of geographic coordinates.

* **Spatial reference system:** The spatial reference system for all products takes the form of a British National Grid system, namely OSGB36.

* **Data format:** Data format takes the form of the name of the format or formats the product is supplied in.

* **Frequency of updates:** Frequency of updates takes the form of a stated period of time.

* **Distributor contact details:** Distributor contact details include postal address, phone number, email address and website.

* **Data originator:** Given as the company having primary responsibility for the intellectual content of the data source; in all cases, this will be Ordnance Survey.

Other metadata available includes keywords, start date of data capture, access constraints, use constraints, level of spatial data, supply media and presentation details.

3.   Product supply

3.1   Available formats for the product

1:50 000 Scale Colour Raster comes in Tagged Image File Format (TIFF) LZW compressed and 8-bit uncompressed, GeoTIFF LZW compressed and Windows® BMP uncompressed formats.

- **TIFF LZW** (Lempel Ziv Welch) is a lossless compression (see Section 3.3.1).

- **GeoTIFF LZW** is a TIFF file which has geographic (or cartographic) data embedded as tags within it. The geographic data can then be used to position the image in the correct location and with precise geometry on the screen of a geographic information display.

- **Windows® BMP** is a historic file format for the Windows operating system. A compressed BMP format is also available using Run Length Encoding (RLE). RLE means that the file can be read from start to finish in one pass. A BMP file consists of either three or four parts. The first part is a header that includes the position of the image and the number of colours to be displayed. This is followed by an information section that contains the image width (part 2), height (part 3) and the type of compression (part 4).

TIFF

TIFF is a file-based format for storing and interchanging raster images, with the most recent version (6.0) published in 1992.

There are two types of architecture for a TIFF. Many mainframe computers use what is known as a big endian (Motorola®) architecture. Most modern computers, including personal computers (PCs), use the little-endian (Intel®) system. 1:50 000 Scale Colour Raster TIFFs are supplied with Intel architecture. Converting between these two systems is possible but, as a general rule, modern software should be expected to handle both of these outputs without operator intervention.

The 1:50 000 Scale Colour Raster conforms to the TIFF 6.0 standard. Customers are recommended to contact their system suppliers to ensure that it can read the Intel / little-endian TIFF architecture.

3.2   Product supply mechanism

The GeoTIFF LZW compressed format is supplied as an online download which is available from the OS Data Hub (https://osdatahub.os.uk/). Other TIFF formats are also available from the OS Data Hub but as area of interest (AOI) downloads only (i.e. not as full supply).

The TIFF LZW compressed, TIFF LZW 8-bit uncompressed and Windows® BMP compressed formats are available for customers to request on DVD / HDD through OS Orders (https://orders.ordnancesurvey.co.uk/sso/login.shtml).

The product is updated quarterly. OS Partners can select a full supply option or a change-only update (COU) option. Public Sector Geospatial Agreement (PSGA) customers are only able to select the COU option. If you select the COU option, then you will only receive tiles that have changed since the previous supply.

3.3   Data compression

The data volumes for each file format are influenced by the level of data compression.

3.3.1   Image compression

When an image is compressed, duplicated data that has no value is removed or saved in a shorter form, reducing a file's size. For example, if large areas of water are the same tone, only the value for one pixel needs to be saved, together with the locations of the other pixels with the same colour. When the image is edited or displayed, the compression process is reversed. When raster data is compressed, not only are the data volumes reduced, but the user can download, display, edit and transfer images more quickly.

There are two forms of compression: lossless and lossy:

*   **Lossless compression:** As its name suggests, lossless compression does not lose information within an image. Lossless compression retains the original quality of an image when it is uncompressed. This process does not provide much compression, so file sizes remain large. Lossless compression is used mainly where detail is important, such as when planning to make large prints.

*   **Lossy compression:** This process degrades images to some degree, meaning that the decompressed image is not quite the same as the original. The more an image is compressed, the more degraded it becomes. In many situations, such as posting images on the Internet or printing small- to medium-sized prints, the image degradation is not so obvious. If a lossy compressed image is over-enlarged, the degradation will become apparent, and therefore, 1:50 000 Scale Colour Raster is not supplied using this form of compression.

3.3.2   TIFF

TIFF is one of the most commonly used lossless image formats. TIFF is primarily designed for raster data interchange and is supported by numerous image-processing applications. This permits much more efficient access to very large files that have been compressed.