

# OS 1:25 000 Scale Colour Raster

Technical Specification

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## Preface

This user guide (hereafter referred to as the guide) is designed to provide an overview of 1:25 000 Scale Colour Raster (hereafter referred to as the product) and it gives guidelines and advice on how a customer might derive the maximum benefit from the product. It assumes a general knowledge of geographic information. If you find an error or omission in this guide, or otherwise wish to make a comment or suggestion as to how we can improve the guide, please contact us at the address shown below under contact details or complete the product and service performance report form at [annexe C](#) and return it to us.

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# Specification

The following chapters include information about 1:25 000 Scale Colour Raster, file compression, symbology, georeferencing and formats.

## 1:25 000 Scale Colour Raster

Specification	1:25 000 Scale Colour Raster
Number of tiles in Great Britain	2 859 (edgematched)
	England 1 508
	Scotland 1 130
	Wales 289
Tile size	10 km by 10 km
Availability	National coverage
Resolution	254 dots per inch
Data structure	Raster
Transfer format	TIFF PackBits compressed. TIFF palette 8-bit (256 colours) with LZW* compression
Storage volumes per tile	1.5–3.0 Mb compressed
Update frequency	Quarterly – March, June, September and December (change-only updates)

\* If LZW compressed formats are used then registration may be required. Information is available on the Unisys® website at [www.unisys.com](http://www.unisys.com).

## Legend

A maintained version of the 1:25 000 Colour Raster legends can be found in the following links;

### English

<https://www.ordnancesurvey.co.uk/docs/legends/25k-raster-legend.pdf>

### Welsh

<https://www.ordnancesurvey.co.uk/docs/legends/25k-raster-legend-welsh.pdf>

## Common abbreviations

Term	Description
Acad	Academy
Allot Gdns	Allotment gardens
Amb Sta	Ambulance station
Bdy	Boundary
BP	Boundary post or plate
BS	Boundary stone
Burial Gd	Burial ground
Car Pk	Car park
Cath	Cathedral
Cemy	Cemetery
CG	Cattle grid
Cts	Courts
CH	Clubhouse
Chy	Chimney
CP	Civil Parish
Coll	College
Comm Ctr	Community centre
Conv Home	Convalescent home
Crem	Crematorium
Cvt	Convent
Dis	Disused
Dismtd Rly	Dismantled railway
ELDR	European Long Distance Route
El Gen Sta	Electricity generating station
El Sub Sta	Electricity substation
Ex	Telephone Exchange
Fall	Waterfall
FB	Footbridge
Ferry P	Ferry, passenger
Ferry V	Ferry, vehicular
F Sta	Fire station

Term	Description
	Gardens
Govt	Government (offices)
Hospl	Hospital
PO	Head Post Office®
HQ	Headquarters
H Ram	Hydraulic ram
Ind Est	Industrial estate
Infmy	Infirmary
IRB Sta	Inshore rescue boat station
Inst	Institute
Instn	Institution
Km	Kilometres
LB	London borough
LB Ho	Lifeboat house
LB Sta	Lifeboat station
LC	Level crossing
Liby	Library
Look Sta	Coastguard station
LRS	Light Rail System
M	Metres
Meml	Memorial
Met Sta	Meteorological station
MHW	Mean high water
MHWS	Mean high water springs
Mkt	Market
MLW	Mean low water
MLWS	Mean low water springs
Mon	Monument
MP	Milepost
MS	Milestone

Term	Description
Multi Car	Multi-storey car park
Munl	Municipal
Mus	Museum
NTL	Normal tidal limit
P	Post (on 1:25 000)
P	Post Office (on 1:50 000)
	Public convenience
	Public house
PL	Pipeline
PO	Post Office
Pol Sta	Police station
Pol HQ	Police Headquarters
Pol Ho	Police House
Pp	Pump
Pp Ho	Pump house
Ppg Sta	Pumping station
Presby	Presbytery
R	River
Rec	Rectory
Recn Gd	Recreation ground
Rems of	Remains of
Resr	Reservoir

Term	Description
Rly	Railway
S	Stone
Sch	School
Sl	Sluice
Spr	Spring
Sprs	Springs
St	Saint
Sta	Station
AR Centre	Territorial Army
Tech Coll	Technical college
Tel Ex	Telephone exchange
TH	Town hall
Tk	Track
Toll	Toll bridge or gate
TV Sta	Television station
Twr	Tower
Univ	University
UA	Unitary Authority
Vic	Vicarage
W	Well
War Meml	War memorial
Wks	Works
Wr Twr	Water tower
Wr Wks	Water works
WT Sta	Wireless transmitting station

## Georeferencing

A definition for registering raster images within a geographic framework is the process of assigning map coordinates to the raster image data and resampling the pixels of the image to conform to the map projection grid. This allows tiles of map data to be located in their correct geographic position relative to the map projection and also to themselves.

Great Britain is surveyed and mapped using the Transverse Mercator (or Gauss-Kruger) projection, so all raster tiles will be mapped to this projection as it applies to Ordnance Survey National Grid if using world or TAB files supplied by Ordnance Survey.

Within the MIF record header, the following information will be found under COORDSYS:

CoordSys Earth Projection 8, 79, "m", -2, 49, 0.9996012717, 400000, -100000 Bounds(4.17232513428e-011, 7.7486038208e-011) (700000, 1300000)

This information relates to the Transverse Mercator projection, its position relative to the rest of the world and also an individual tile's position relative to the projection. The record header is constructed as (not all fields have to be used):

CoordSys Earth Projection 8	The 8 relates to a MapInfo® identifier, in this case the Transverse Mercator projection.
79	A MapInfo identifier, in this case, this relates to Ordnance Survey of Great Britain 1936, Airy ellipsoid.
"m"	Relates to the unit of measurement, in this case, metres.
-2	This is the origin of the projection in respect of longitude.
49	This is the origin of the projection in respect of latitude.
0.9996012717	Indicates the distortion of the tile at the central meridian. A value of 1.0 would indicate no distortion at all. However, distortion within this projection is minimal, even at the far western or eastern limits.
400000, -100000	These figures indicate the false origin of the British National Grid. They represent the south-west corner of the Transverse Mercator projection which overlays Great Britain, so all coordinates for any tile, no matter what scale, will always be positive.
Bounds: (4.17232513428e-011, 7.7486038208e-011)	These values represent the minimum bounding X and Y coordinates for the tile.
(700000, 1300000)	These values represent the maximum bounding X and Y coordinates for the tile.



## Image file directory (TIFF)

The image file directory for TIFF will contain a selection of the following entries:

### File Byte Order

OS defaults to the use of MM= Motorola Byte Order, order in which the data is interpreted.

### Tag 256 (ImageWidth)

The number of columns in the image, the number of pixels per row, for example, value = 4000

### Tag 257 (ImageLength)

The number of rows of pixels in the image, for example, value = 4000

### Tag 258 (BitsPerSample)

Number of bits per component, for example, value = 8

### Tag 259 (Compression)

Compression scheme used on the image data, for example, value = 5 (LZW)

### Tag 262 (PhotometricInterpretation)

The colour space of the image data, for example, value = 3 (Palette).

### Tag 270 (ImageDescription)

A string that describes the subject of the image, for example, value = 1:25 000 TILE SU41

### Tag 273 (StripOffsets)

For each strip, the byte offset of that strip, for example, 1st 4 values = 5640 19678 35692 51409

### Tag 277 (SamplesPerPixel)

The number of components per pixel.

### Tag 278 (RowsPerStrip)

The number of rows in each strip, for example, value = 8

### Tag 279 (StripByteCounts)

For each strip, the number of bytes in that strip after compression, for example, 1st 4 values = 14038 16014 15717 15442

### Tag 282 (XResolution)

The number of pixels per Resolution Unit in the Image Width, for example, value = 254

**Tag 283 (YResolution)**

The number of pixels per Resolution Unit in the Image Length, for example, value = 254

**Tag 284 (PlanarConfiguration)**

Look-up table, for example, value = 1st 4 values = 22873 31354 39321 59110

**Tag 296 (ResolutionUnit)**

How the components of each pixel are stored. Default value is '2' (inch).

**Tag 306 (DateTime)**

Date and time of image creation, for example, value = 2007:06:30 12:38:41

**Tag 317 (Predictor)**

A mathematical operator that is applied to the image data before an encoding scheme is applied.

**Tag 320 (ColourMap)**

Look-up table, for example, value = 1st 4 values = 22873 31354 39321 59110

**Tag 339 (SampleFormat)**

Specifies how to interpret each data sample in a pixel.

**Tag 33432 (Copyright)**

Copyright notice, for example, value = ORDNANCE SURVEY CROWN COPYRIGHT 2019

*NOTE: The values given above are relevant to 1:25 000 scale TIFF data with LZW compression.*

# Glossary

The purpose of this chapter is to provide a glossary of terms used in the definition of products, services, licensing and other terms and conditions for 1:25 000 Scale Colour Raster.

## American Standard Code for Information Interchange (ASCII)

A standard binary coding system used to represent characters within a computer.

## Binary digit (bit)

The smallest possible unit of data, resulting from a choice between 0 and 1.

## Boundary

A boundary forms the division between two similar real-world objects, for example, property boundary or administrative boundary, and is defined by one or more lines.

## Byte

A unit of computer storage of binary data, usually comprising 8 bits, equivalent to a character.

## Character

A distinctive mark; an inscribed letter; one of a set of writing symbols.

## Character code

The binary representation of a single element of a character set; for example, EBCDIC, ASCII.

## Coordinate pair

A coordinate pair is an easting and a northing.

## Coordinate transformation

A computational process of converting an image or map from one coordinate system to another.

## Compact disc (CD)

Read-only memory (CD-ROM). A data storage medium. A 12-cm disc similar to the audio CD. It is an alloy disc pitted with tiny holes and then coated in plastic. A laser head reads the pattern of the holes and translates them into binary data.

## Copyright

The sole legal right to print or publish a work. Crown Copyright subsists in all Ordnance Survey publications for a 50-year period, from the end of the year in which they were first published, by virtue of the *Copyright Designs and Patents Act 1988*.

## Customer

An organisation or individual that makes use of Ordnance Survey's data supply facilities. This includes both direct sales customers of Ordnance Survey as well as customers of Licensed Partners. It does not include anyone, or any organisation, that has access to Ordnance Survey material without charge.

## Data

A representation of facts, concepts or instructions in a formalised manner suitable for communication, interpretation or processing.

## Database

An organised, integrated collection of geographic data, which may or may not be spatial data. It is stored so that specific applications can access the data by different logical paths. A database is accessed and managed by a database management system (software for managing database information).

## Data format

A specification that defines the order in which data is stored or a description of the way data is held in a file or record.

## Data quality

Attributes of a dataset that define its suitability for a particular purpose, such as completeness, positional accuracy, currency and so on.

## Data structure

The defined logical arrangement of data as used by a system for data management; a representation of a data model in computer form.

**Data transfer medium**

This is the means by which computer files are transferred from one computer to another. Transfer media may be subdivided into communications media and physical media.

**Dataset**

Data as supplied in a particular format to customers, whether internal or external to Ordnance Survey.

**Density**

A measure of the number of units of data held on a stated length of storage surface. For example, some magnetic tapes may be recorded at a density of 1 600 bits per inch (bpi). Often referred to as packing density.

**Delivery mechanism**

The method of supply of data to a customer (such as offline and online).

**Descriptive name**

A name describing a real-world object or feature (for example, *School*) as shown on the 1:25 000 Scale Colour Raster map.

**Definitive name**

The name as shown on the 1:25 000 Scale Colour Raster map.

**Digital**

Data that is expressed as numbers (digits) in computer-readable form.

**Digital update**

The supply of revised digital data to a customer at a predetermined interval of time.

**Direct sale**

A direct transaction between Ordnance Survey and a customer.

**Distinctive name**

A text feature which forms a name that distinguishes it from other text features of the same type, for example, *Millbrook School*.

**Dots per inch (dpi)**

The resolution, or fineness, of a raster image.

**Digital Versatile Disc (DVD)**

A data storage medium.

**Eastings**

See [rectangular coordinates](#).

**JPEG**

An image named after the Joint Photographic Experts Group, it uses a lossy compression format. It is designed for compressing full colour or greyscale images of natural, real-world scenes and works well on photographs. It is the de facto standard for photographs on the web.

**Encoding**

The process of converting information to a computer-readable form, for example, digitising maps.

**Feature**

A geographic entity such as a building or stream, either taken from a map or surveyed directly from the real world. Can be a point/symbol, text or line.

**Format**

The specified arrangement of data, for example, the layout of a printed document, the arrangement of the parts of a computer instruction, the arrangement of data in a record.

**Generalisation**

The cartographic process of simplifying the depiction of features to fit the output scale. For example, road widening is necessary at smaller scales to enhance their visibility.

**Geocode**

Assigning a geographic location to data, for example, adding coordinates to an address.

**Geographic coordinates**

Coordinates, usually expressed as latitudes and longitudes, that define position on the Earth's surface.

**Georef**

A definition for registering raster images within a geographic framework is the process of assigning map coordinates to the raster image data and resampling the pixels of the image to conform to the map projection grid.

**Gigabyte (Gb)**

1 073 741 824 bytes, a measure of data storage capacity (see [megabyte](#)).

**Kilobyte (Kb)**

1 024 bytes, a measure of data storage capacity.

**Licensed Partner**

Any organisation that has entered into a formal licence agreement with Ordnance Survey to market map information or to incorporate map data with their application or service.

**Linear feature**

Map feature in the form of a line (for example, river, and boundary) that may or may not represent a real-world (existent) feature.

**Local origin**

The local origin of rectangular coordinates is the south-west corner of the 1 km by 1 km National Grid square they identify.

**Map scale**

The ratio between the extent of a feature on the map and its extent on the ground, normally expressed as a representative fraction, for example, 1:1250, 1:50 000 and so on.

**Megabyte (Mb)**

1 048 576 bytes, a measure of data storage capacity (see [gigabyte](#)).

**MIF**

MapInfo format.

**National Grid**

The metric grid on the Transverse Mercator projection used by Ordnance Survey on all post-Second World War mapping to provide an unambiguous spatial reference in Great Britain for any place or entity, whatever the map scale.

**Northings**

See [rectangular coordinates](#).

**Origin**

The zero point in a system of [rectangular coordinates](#).

**Pixel**

In the 1:25 000 scale product a pixel is a single point represented by a square.

**Points**

A pair of coordinates.

**Raster data**

Attribute data expressed as an array of pixels, with spatial position implicit in the ordering of the pixels.

**Real-world object**

The real-world feature represented by a feature, for example, a building, a fence, a wood.

**Rectangular coordinates**

Also known as x-y coordinates and as eastings and northings. These are two-dimensional coordinates that measure the position of any point relative to an arbitrary origin on a plane surface (for example, a map projection, a digitising table or a VDU screen).

**Stipple**

Used to produce light or dark shading (for example, building/water fill); this is dependent on spacing of the dots – the denser the dots, the darker the effect.

**String**

A set of items that can be arranged into a sequence according to a rule.

**Supply format**

The file format in which the data is supplied to the customer.

**TAB**

MapInfo format.

**Tag**

Tags are unique numbers that are used for identifying specific information in TIFF files, for example, image width, image length, bits per sample, photo interpretation and resolution.

**Terminator**

Character, or character string, or field, or record used to signal the end of a record, or section, or volume or database.

**Tile**

A unit of map used to divide large areas into regular and more manageable sizes.

**TIFF**

TIFF is a tagged image file format-based file format for storing and interchanging raster images with the most recent version – 6.0 published in 1992.

**Transfer format**

The format used to transfer data between computer systems. In general usage, this can refer not only to the organisation of data but also to the associated information, such as attribute codes, which are required in order to successfully complete the transfer.

**Transfer medium**

The physical medium on which digital data is transferred from one computer system to another. For example, compact disc.

**UNIX®**

An operating system that supports multitasking and is used by many workstations and minicomputers.

**Update**

The process of adding to and revising existing digital map data to take account of change.

**Volume**

A physical unit of the transfer medium that is a single disk, or a single DVD.