Ordnance Survey®

1:250 000 Scale Colour Raster
User guide and technical specification

1:250 000 Scale Colour Raster

User guide

Contents

Preface

This user guide (hereafter referred to as the guide) is designed to provide an overview of 1:250 000 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.

Contact details

Our Customer Service Centre will be pleased to deal with your enquiries:

Customer Service Centre
Ordnance Survey
Romsey Road
SOUTHAMPTON
SO16 4GU

General enquiries (calls charged at local rate): 08456 05 05 05

Dedicated Welsh Language HelpLine: 08456 05 05 04

Textphone (deaf and hard of hearing users only please): +44 (0) 23 8079 2906

Email: customerservices@ordnancesurvey.co.uk

or visit the Ordnance Survey website at: www.ordnancesurvey.co.uk

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You are advised to copy the supplied data to a backup medium.

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The documentation is supplied in portable document format (PDF) only. Free Adobe® Acrobat Reader® software, which displays the guide, incorporates search and zoom facilities and allows you to navigate within. Hyperlinks are used to navigate between associated parts of the guide and to relevant Internet resources by clicking on the blue hyperlinks and the table of contents.

If you are unfamiliar with any words or terms used and require clarification please refer to the glossary at the end of the document.

Chapter 1   Introduction

Ordnance Survey's 1:250 000 Scale Colour Raster product, available in various formats (see *technical specification*), provides entry-level, small-scale mapping suitable for overlaying with individual business information.

It is derived from road maps production data, resulting in high-quality image and resolution. The 1:250 000 Scale Colour Raster is available as either full national coverage (providing an excellent overview of the country), or as England, Scotland or Wales separately. Figure (1) shows an extract of 1:250 000 Scale Colour Raster for the area around the Severn estuary.
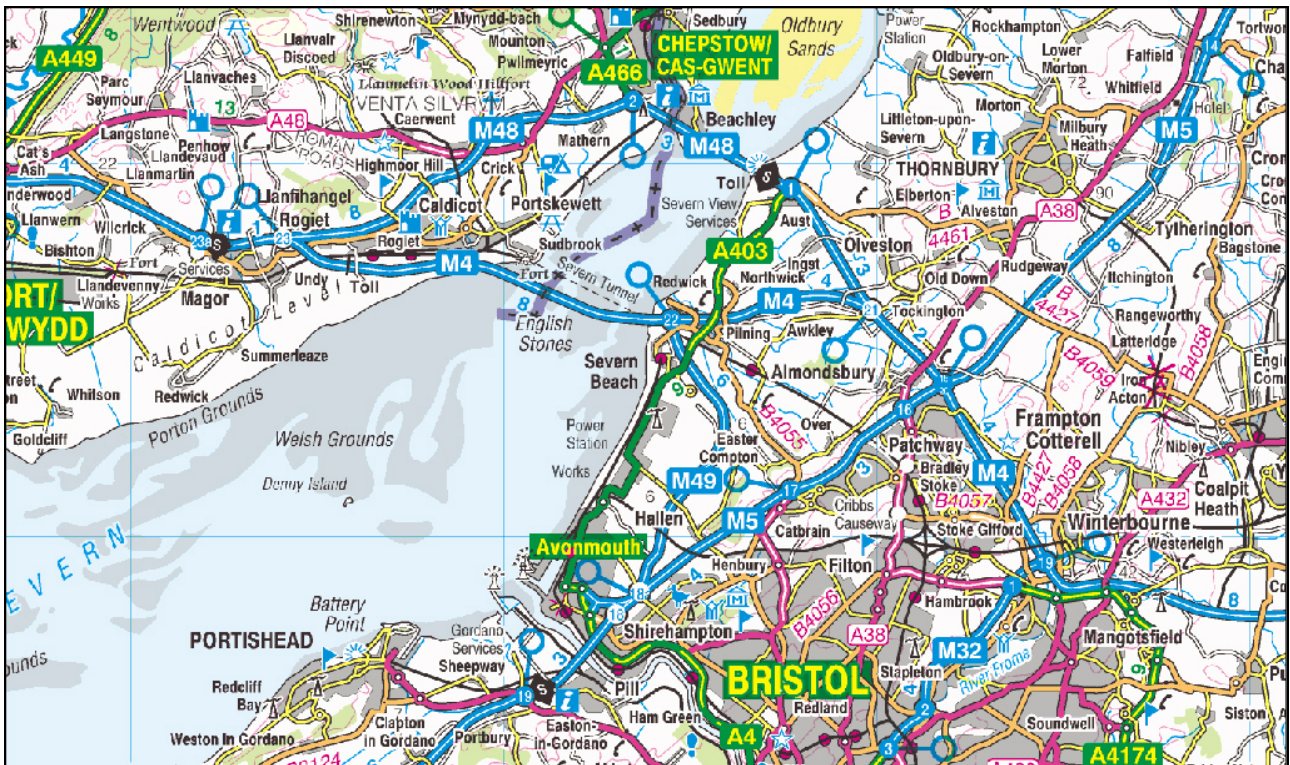
Figure (1): 1:250 000 Scale Colour Raster; Bristol and the Severn Estuary

Applications

1:250 000 Scale Colour Raster combines roads, railways and other key features, providing the ideal geographic context, either to a customer's own geographic/business data overlaid on top or used in applications on its own.

As 1:250 000 Scale Colour Raster is aimed at professional/business markets, its graphic specification can provide assistance with:

- route planning;
- geographic context; and
- enhancing an Intranet or Internet site.

1:250 000 Scale Colour Raster is supplied with a 1:250 000 scale gazetteer, which lists over 25 000 place names and a digital legend (key) providing a useful:

- place name location finder; and
- reference resource tool.

Figure (2) below shows an extract of 1:250 000 Scale Colour Raster for the area around the Salisbury area, with the gazetteer entries shown by inserting the National Grid coordinates supplied in the gazetteer and symbolising them with a 'map pin' symbol.
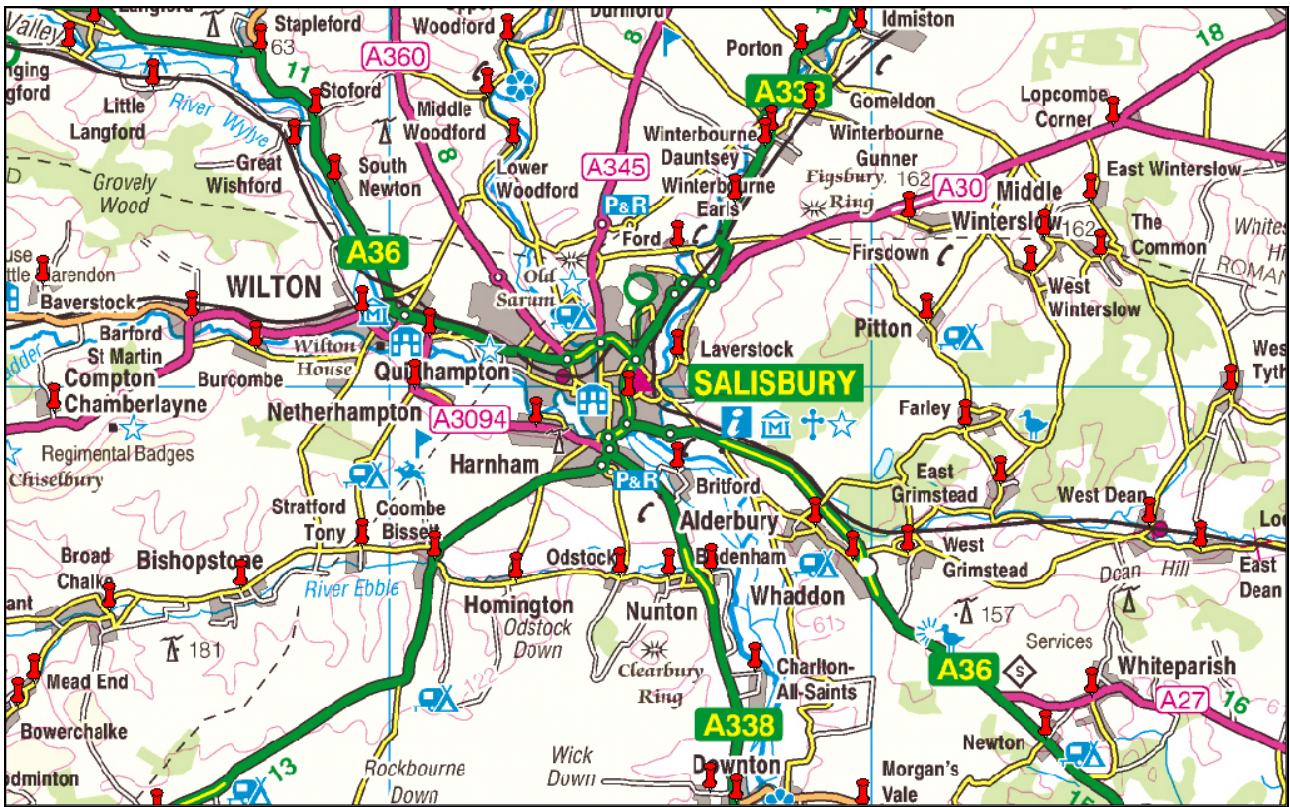
Figure (2): 1:250 000 Scale Colour Raster and gazetteer.

The gazetteer supplies the customer with four categories, or attributes, of information. They are the place name, the administrative area within which it lies and National Grid references. As an example of the contents of the gazetteer, the information for Salisbury is shown in table (1).

Attribute	Value
Name	Salisbury
County	WILTSHIRE
Easting	414,940
Northing	129,700

Table (1)

System requirements

Computer hardware

This product may be used on a wide range of hardware platforms (provided sufficient memory and storage facilities are available), varying from desktop PCs using GIS to mainframe computers with specialised translators and applications.

Computer software

1:250 000 Scale Colour Raster is supplied as inert data and does not include software for data manipulation. To exploit fully the potential of 1:250 000 Scale Colour Raster it is necessary to use appropriate application software.

Supply and formats

The data is supplied on CD and is updated and released annually in June. It is supplied as full national coverage or as England, Scotland or Wales separately.

1:250 000 Scale Colour Raster is supplied in two tagged image file formats (TIFFs);

- TIFF Uncompressed (RGB 256 colours); and
- TIFF with LZW* compression (RGB 256 colours).

If LZW compressed formats are used then registration may be required. Guidance on the Unisys® is available on the Unisys website at www.unisys.com/about__unisys/lzw

Customers are advised to contact their system suppliers to ensure that their software can support this mode of compression before placing an order.

Chapter 2   Key features

Scale

1:250 000 Scale Colour Raster is designed to be nominally viewed at 1:200 000 scale.

Coverage

Great Britain (England, Scotland and Wales)

Source of 1:250 000 Scale Colour Raster

1:250 000 Colour Raster is derived from the 1:250 000 scale topographical digital database.

Features

- Shows all cities, towns and many villages as well as features in the Ordnance Survey Road Map series, including all motorways and A and B roads, enabling simple route planning.
- High resolution for excellent image clarity.
- Supplied with a 1:250 000 scale gazetteer (text file) and digital (PDF) legend (key) to help find place names and locations.

Currency

1:250 000 Scale Colour Raster data is derived from the latest available version of Ordnance Survey's databases. The 1:250 000 Scale Colour Raster dataset is refreshed annually.

Resolution

Each data tile is converted into a raster tile at a resolution of 10 dots per mm (dpmm) – 254 dots per inch (dpi) and a pixel is 25 metres on the ground. This resolution maintains the necessary clarity of text.

Georeferencing

To be able to view each tile in the correct geographic relation to the National Grid and to each other, the tiles must be georeferenced. 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 for 1:250 000 Scale Colour Raster is available to download free of charge from the 1:250 000 Scale Colour Raster product page on the Ordnance Survey website; these are also supplied with the product written to CD.

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

The conventions behind the files' creation can be found in chapter 3 of the technical specification. 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. So, 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.

Data compression

TIFF data volumes are influenced by the level of data compression. The table below shows the various sizes by area supplied.

Storage volumes are approximate:

Great Britain (56 tiles) There are overlaps for England, Scotland and Wales and this accounts for a total number of tiles for all three countries as 62.	England (29 tiles)	Scotland (26 tiles)	Wales (8 tiles)
Uncompressed	448 Mb	416 Mb	128 Mb
Compressed	128 Mb	52 Mb	25 Mb

Image compression

When an image is compressed the data is analysed; duplicated data can be removed or saved in a shorter form as part of the compression process and therefore 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 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. A lossless compression retains the original quality of an image when it is uncompressed. This process doesn't 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 isn't 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 isn't so obvious. If a lossy compressed image is over-enlarged the degradation will become apparent.

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.

Revision

The 1:250 000 Scale Colour Raster master dataset is updated and released annually in June.

Chapter 3   Data measures

Ordnance Survey measures the data in its products in one or more of the ways set out in table 3 below.

Table 3   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
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.

Annexe A   Case studies

Creating the right environment for data management

The Welsh Environmental Data Interface (WENDI)

Agriculture, forestry and woodland account for 90% of Wales' land use. Generating a wealth of insightful statistical information. The National Assembly for Wales uses this data to inform policy, assist decision making and help deliver a wide range of services to rural communities Read more at:
www.ordnancesurvey.co.uk/oswebsite/business/casestudies/pdf/welsh-environment-data-interface.pdf

Transport Direct

Underpinning multi-mode transport services

Transport Direct is the first ever web portal giving instant access to comprehensive journey information by both public and private transport across Great Britain. It includes a journey planner, maps, live travel information and onward links to coach and rail fares and ticketing services from different travel retailers. As it develops, the portal will also incorporate services such as information on hotels, restaurants and other points of interest. Read more at:
www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/casestudies/TransportDirectcasestudy.pdf

Annexe B   Metadata

ISO 19115 compliant UK GEMINI discovery level metadata is provided for the data and can be found on the GIgateway® (www.gigateway.org.uk).

The following is a detailed description of the metadata elements that are provided on the GIgateway:

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 update takes the form of a stated period of time.

Distributor contact details: Distributor contact details include with postal address, phone number, fax 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.

Annexe C   Product and service performance report form

Ordnance Survey welcomes feedback from its customers about 1:250 000 Scale Colour Raster.

If you would like to share your thoughts with us, please print a copy of this form and when completed post or fax it to the address below.

Your name: ....

Organisation: ....

Address: ....

....

....

Postcode: ....

Phone: ....

Fax: ....

Email: ....

Quotation or order reference: ....

Please record your comments or feedback in the space below. We will acknowledge receipt of your form within three (3) working days and provide you with a full reply or a status report within 21 working days.

If you are posting this form, please send it to:

1:250 000 Scale Colour Raster Product Manager, Ordnance Survey, Romsey Road, SOUTHAMPTON, SO16 4GU.

If you wish to return it by fax, please dial 023 8079 2615.

Any personal information that you supply with this report form will be used by Ordnance Survey only in the improvement of its products and services. It will not be made available to third parties.

1:250 000 Scale colour Raster

Technical specification

Contents

v2.2 – 5/2009

Introduction

Purpose of this specification and disclaimer

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Chapter 1   Technical

Ordnance Survey's 1:250 000 Scale Colour Raster product is based on the Road Maps series database. The product is supplied as 100 km by 100 km colour tiles at high resolution for excellent image clarity. It benefits from increased clarity and accuracy of detail, as well a greater degree of currency across the series, which has enabled the production of an edgematched* database. The features include clear detail on all motorways, A and B roads, all cities, towns and many villages.

* Map features that occur at the edge of tiles are adjusted to align with their correspondent part on the adjacent tile. This means when a map area falls over two or more tiles, the map is complete or 'edgematched.' Principal communication features (motorways, 'A' roads, railways, major rivers) are edgematched across tiles.

Place names and locations can be identified using the 1:250 000 scale gazetteer and digital legend supplied with the 1:250 000 Scale Colour Raster.

Tiles

Because digital maps frequently cover very large areas, they are split down into squares known as tiles, each of which covers part of the overall area.

Software/hardware requirements

1:250 000 Scale Colour Raster data is inert and requires software to maximise its full potential. Ordnance Survey does not specify hardware requirements as it is dependent on the software and applications within which the data will be used. Customers should contact their system or software supplier for advice.

Specification

Specification		1:250 000 Scale Colour Raster
Data source		Road Maps production data
Number of tiles		56 (edgematched)
Tile size		100 km by 100 km
Resolution		254 dots per inch or 100 dots per centimetre
Data structure		Raster
Transfer formats		TIFF Palette 8 bit (256 colours) Uncompressed TIFF Palette 8 bit (256 colours) with LZW compression
Storage volumes are approximate Uncompressed (RGB 256 colours)	Great Britain	880 Mb
	England	448 Mb
	Scotland	416 Mb
	Wales	128 Mb
Compressed (RGB 256 colours)	Great Britain	128 Mb
	England	78 Mb
	Scotland	52 Mb
	Wales	25 Mb
Update frequency		Annual June

Specification	1:250 000 scale gazetteer
Data source	1:250 000 scale topographic data
Data structure	ASCII list (table format, four columns: settlements; admin area; eastings and northings, six-figure reference)
Transfer formats	Text file
Storage volumes	1.04 Mb (48 000 names approx)

Chapter 2   Legend

1:250 000 Scale Colour Raster
Legend / Legend / Légende / Legende

Communications / Cysylltiadau / Communications / Verkehrswege

ROADS / FFYRDD / ROUTES / STRASSEN

Not necessarily rights of way / Pas nécessairement de droits de passage / Nicht unbedingt durchfahrtberechtigt

M5 1	Motorway with service area, service area (limited access) and junction with junction number Traffordd gydag ardal wasanaeth (a mynediad cyfyngedig a chyffordd gyda rhif cyffordd Autoroute avec aire de service, aire de service (accès réglementé) et échangeur avec son numéro Autobahn mit servicestation, servicestation (mit begrenztem zugang) und anschlusstelle mit nummer
M48	Motorway junction with limited interchange Cyfford trafford ag ymgyfnewid cyfyngedig Echangeur à possibilités d'intercirculation restreintes Autobahnanschlusstelle mit begrenztem richtungswechsel
Due to open Late 2006	Motorway under construction, proposed, with opening date where known Traffordd yn cael ei hadeiladu, awggrymedig, gyda dyddiad agored os yn adnabyddus Autoroute en construction, en projet, avec date d'ouverture prévue quand connue Autobahn im bau, mit vorgesehenem datum der verkehrsübergabe soweit bekannt
A30 Dual carriageway Ffordd ddeuol	Primary route with service area full and limited opening Prif dramwyfeydd gydag ardal gwasanaeth Itinéraire principal avec aire de services, horaires d'ouverture limités ou 24 heures sur 24 Fernverkehrsstrasse mit raststätte, rund um die uhr und eingeschränkte öffnungszeiten
A30 Chaussées séparées Zweibahnige Strasse	Primary route with roundabout or multiple level junction full and limited interchange Prif dramwyfeydd gyda chylchdro a chyffordd aml-lefel Itinéraire principal avec rond-point ou embranchement à niveaux multiples, échangeur complet et partiel Fernverkehrsstrasse mit kreisel oder mehrstufiger anschlusstelle, komplettes oder eingeschränktes autobahndreieck
	Primary route under construction, proposed Prif dramwyfeydd yn cael ei hadeiladu, awggrymedig Itinéraire principal en construction, en projet Fernstrasse im bau, geplant
Toll A375 Dual carriageway Ffordd ddeuol	Main road with toll and road tunnel Priffordd gyda tholl a thwnel Route principale à péage et tunnel routier Hauptstrasse mit strassentunnel und strassenbenutzungsgebühr
A393 Chaussées séparées Zweibahnige Strasse	Main road with roundabout or multiple level junction Priffordd gyda chylchdro neu gyffordd aml-lefel Route principale avec rond-point, sens giratoire ou échangeur Hauptstrasse mit kreisverkehr oder anschlusstelle
	Main road under construction, proposed Priffordd yn cael ei hadeiladu Route principale en construction, en projet Hauptstrasse im bau, geplant
Dual carriageway Ffordd ddeuol B3266 Chaussées séparées Zweibahnige Strasse	Secondary road with gradient steeper than 1 in 7 or 14% Ffordd eilaidd gyda graddiant 1 mewn 7 neu serthach Route secondaire avec pente supérieure à 1 pour 7 ou 14% Nebenstrasse mit steigung über 14%
A361 B3344	Narrow road with passing places Ffordd gul gyda lleoedd pasio Route étroite avec voies de dépassement Enge strasse mit ausweichstelle
	Road generally more than 4m wide Ffordd sy'n lletach na 4m yn gyffredinol Route généralement de plus de 4m de largeur Strasse, im allg.über 4m breit
	Road generally less than 4m wide Ffordd sy'n gulach na 4m yn gyffredinol Route généralement de moins de 4m de largeur Strasse, im allg.unter 4m breit
	Road, with restricted access Ffordd, gyda mynediad gyfyngedig Route, avec accès limité Strasse, mit beschränktem zugang
8 24 12	Distances in miles between markers Pellteroedd mewn milltiroedd rhwng marcwyr Distances en miles entre les marques Entfernung in meilen zwischen den zeichen

Ordnance Survey®

Communications / Cysylltiadau / Communications / Verkehrswege

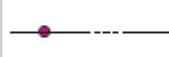## PRIMARY ROUTES / PRIF DRAMWYFEYDD / ROUTES NATIONALES / HAUPTVERKEHRSSTRASSEN
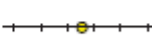
These form a network of recommended through routes which complement the motorway system. Selected places of major traffic importance are known as Primary Route Destinations and are shown on this map thus NEWTOWN / Y DRENEWYDD . Distances and directions to such destinations are repeated on traffic signs which, on primary routes, have a green background or, on motorways, have a blue background. To continue on a primary route through or past a place which has appeared as a destination on previous signs, follow the directions to the next primary destination shown on the green-backed signs.

Celles-ci constituent un réseau d'axes recommandés qui complètent le système d'autoroutes. Des lieux sélectionnés en raison de leur grande importance pour la circulation sont désignés par Destinations de route nationale et sont marqués sur ce plan comme suit NEWTOWN / Y DRENEWYDD / NOUVELLE VILLE . Les distances et les directions vers ces destinations sont répétées sur les panonceaux qui ont un fond vert sur les routes nationales, et un fond bleu sur les autoroutes. Pour poursuivre sur une route nationale en traversant ou en dépassant un lieu qui est apparu comme lieu de destination sur les panonceaux précédents, suivez les directions jusqu'à la prochaine destination importante indiquée sur les panonceaux à fond vert.

Ffurfia'r rhain rwydwaith o dramwyfeydd trwodd a gymeradwyd ac sy'n cyfochri'r gyfundrefn draffyrdd. Adwaenir rhai mannau o bwysigrwydd trafnidiol arbennig fel Cyrchfannau'r Prif Dramwyfeydd, a dangosir hwy ar y map hwn fel hyn NEWTOWN / Y DRENEWYDD . Ailadroddir y pellterau a'r cyfarwyddiadau yngly'n a'r cyfryw gyrchfannau ar arwyddion trafnidiaeth sydd â chefndir gwyrdd iddynt ar brif dramwyfeydd neu gefndir glas ar draffyrdd. I barhau ar y brif dramwyfa drwy le a ymddangosodd fel cyrchfan ar arwydd blaenorol neu heibio i'r lle hwnnw, dilyner y cyfarwyddiadau i'r brif gyrchfan nesaf a ddangosir ar yr arwyddion cefndir gwyrdd.

Diese bilden ein Netzwerk von empfohlenen Durchgangsrouten, die zur Ergänzung des Autobahnnetzes dienen. Ausgewählte Orte mit hoher Verkehrsbedeutung werden als Hauptverkehrszielorte bezeichnet und sind auf dieser Karte wie folgt gekennzeichnet: NEWTOWN / Y DRENEWYDD . Die Entfernungen und Richtungen zu diesen Zielpunkten werden auf Verkehrshinweisschildern in regelmäßigen Entfernungen angezeigt. Auf Hauptverkehrsstraßen sind dies Hinweise auf Schildern mit grünem Hintergrund und auf Autobahnen solche mit blauem Hintergrund. Um einer Hauptverkehrsstraße weiter zu folgen, die durch einen Ort hindurch oder an einem solchen vorbei führt, der bereits auf vorherigen Hinweisschildern als Zielort aufgeführt war, folgen Sie den Hinweisschildern zum nächsten auf den grünen Schildern angezeigten Hauptzielort.

RAILWAYS / RHEILFFYRDD / CHEMIN DE FER / BAHNLINIEN

	Track standard gauge / Rheilffordd safonol / Écartement des rails standard / Bahnlinie mit normaler Spurweite		Road crossing under or over / Ffordd yn croesi danodd neu drosodd / Franchissement routier au-dessous ou au-dessus / Straßenunter-bzw-überführung
	Station, Tunnel / Gorsaf, Twnel / Gare, Tunnel / Haltepunkt, Tunnel		Level crossings / Croesfan wastad / Passages à niveau / niveaugleiche Bahnübergänge
	Track narrow gauge / Rheilffordd gul / Jauge de voie étroite / Bahnlinie mit Schmalspurweite		Track rapid transit with station / System gludo ysgafn gyflym gyda gorsaf / Réseau de voies express avec gare / Schnellbahntrasse mit Haltepunkt

General information / Gwybodaeth cyffredinol / Informations générales / Allgemeine Informationen

LAND FEATURES / ARWEDDION TIR / ÉLÉMENTS GÉOGRAPHIQUES / LANDSCHAFTSZEICHEN

	Buildings / Adeiladau / Batiments / Gebäude	⊕ ⊕	Airport with scheduled flights, with / without custom / Maes awyr gyda gwasanaethau hedfan drefnedig, gyda / heb gyfleusterau tollau tramor / Aéroport avec vols réguliers, avec / sans douane / Flughafen mit regelmäßigem Flugverkehr, mit / ohne Zollabfertigung
	Wood / Coed / Bois / Holz	✈	Airport with non-scheduled flights with customs facilities / Maes awyr heb wasanaethau hedfan drefnedig, gyda chyfleusterau tollau tramor / Aéroport avec vols non réguliers et douane / Flughafen mit unregelmäßigem Flugverkehr und Zollabfertigung
✆	Public telephone / Ffôn cyhoeddus/ Téléphone publique / Allgemeines telefon	Ⓗ	Heliport / Maes hofrenyddion / Héliport / Hubschrauberlandeplatz
✗	Windmill / Melinwynt / Moulin à vent / Windmühle	△ △	Lighthouse (in use and disused) / Goleudy (yn gweithio ac yn segur) / Phare (en service et abandonné) / Leuchtturm (in Betrieb oder stillgelegt)
■	Landmark / Tirnod / Point de repère / Grenzstein		
⊺	Mast / Mast / Antenne / Mast	South West Coast Path	National Trail – Long Distance Route – Long Distance Path / Llwybrau Cenedlaethol – Tramwyfeydd Pell – Llwybrau Pell / Sentier de randonnée national – Itinéraire de grande randonnée – Sentier de grande randonnée / Nationaler Wanderweg – Fernwanderweg – Fernwanderweg
⊦	Wind generator / Generadur gwynt / Éolienne / Windrad		

General information / Gwybodaeth cyffredinol / Informations générales / Allgemeine Informationen

BOUNDARIES / FFINIAU / LIMITES / GRENZEN

·—·—·—·—·—·—	National / Cenedlaethol / National / Staatsgrenze	▆▆▆	National Park / Ffin Parc cenedlaethol / Parc national / Nationalpark

Administrative Boundary maps based on Road Map sheet lines are available from Ordnance Survey. Enquiries should be made to Customer HelpLine. Contact details are in the Customer Information section.

Gellir cael mapiau Ffiniau Gweinyddol sydd yn selliedig ar linellau dalennau y Mapiau Ffyrdd o'r Arolwg Ordnans. Dylid ymholi drwy gysylltu a Llinell Gymorth Cwsmeriaid. Mae'r manylion ar gael yn yr adran Gwybodaeth Cwsmeriaid.

Les cartes des limites administratives basées sur les cartes routières sont disponibles auprès d'Ordnance Survey. Pour tout renseignement, téléphonez à la ligne assistance Clients. Les coordonnées des personnes à joindre sont indiquées à la rubrique Informations Client.

Landkarten mit verzeichneten Verwaltungsgrenzen auf der Grundlage der Straßenkartenzuschnitte sind über Ordnance Survey erhältlich. Ihre Anfragen richten Sie bitte an die Customer HelpLine. Sie finden die nötigen Kontaktangaben im Abschnitt Kundeninformation (Customer Information).

NATIONAL GRID / GRID CENEDLAETHOL / QUADRILLAGE NATIONAL / NATIONALEN RASTERAUSGANGS

The blue letters represents a national grid reference for each 100 km square. The blue grid numbers are at 100 km intervals. For example, the bottom left corner of square SN is 200 km east and 200 km north of the National Grid origin.

Mae'r llythrennauglas yn cynreichioli cyfeirnod grid cenedlaethol ar gyfer bob sowar 100 km. Mae rhifau grid glas bob 100 km. Er engtiraifft, mae cornel gwaelod chwith sowar SN yn 200 km i'r dwyrain a 200 km i'r gogledd o ddechrau Grid Cenedlaethol.

Les lettres bleues représentent un quadrillage de référence national pour chaque 100 km carré. Les numéros de quadrillage bleus sont indiqués à des intervalles de 100 km. Par exemple, le coin en bas à gauche du carré SN se trouve à 200 km à l'est et à 200 km au nord de l'origine du quadrillage national.

Die blauen Buchstaben stellen eine nationale Rasterreferenzbezeichnung pro 100 Quadratkilometer dar. Die blauen Zahlen der Rasterquadrate entsprechen jeweils 100-km-Entfernungen. Beispielsweise befindet sich die untere linke Ecke des Quadrats SN 200 km östlich und 200 km nördlich des nationalen Rasterausgangs.
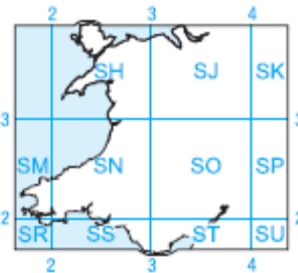
WATER FEATURES / ARWEDDION DŴR / PIÈCES D'EAU / WASSERLANDSCHAFTSZEICHEN
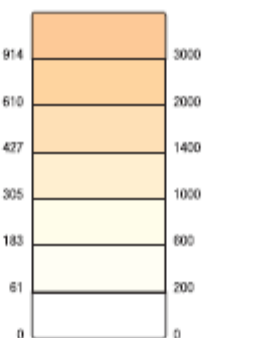
	Ship / Llong / Bateau / Schiff	Catamaran / Catamarán / Catamaran / Katamaran
	Ferry route for vehicles / Llwybrau Ferlau (cerbydau) / Traversée en ferry pour véhicules / KFZ-Fährtransport	
Sand / Tywod / Sable / Sand Foreshore / Blaen traeth / Laisse de mer / Küstenvorland Dunes / Twyni / Dunes / Dünen	High Water Mark / Marc penllanw / Ligne des hautes eaux / Flutmarkierung	
	Marsh / Corsydd / Marais / Sumpfland	
	Lake and river / Llyn a Afon / Lac et rivière / See und Fluss	
	Canal / Camlas / Canal / Kanal	
⏚	Light-vessel / Goleulong / Bateau-phare / Bootsverkehr	

General information / Gwybodaeth cyffredinol / Informations générales / Allgemeine Informationen

ANTIQUITIES / HYNAFIAETHAU / ANTIQUITÉS / HISTORISCHE SEHENSWÜRDIGKEITEN

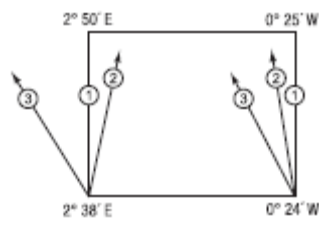|								
✳	Native fortress / Caer frodorol / Forteresse indigène / Urzeitliche Festungsanlage	ROMAN ROAD	Roman antiquity / Hynafiaeth Rufeinig / Antiquité romaine / Historische Bauten aus der Römerzeit	Castle ■	Other antiquities / Hynafiaethau eraill / Autres antiquités / Andere historische Sehenswürdigkeiten	- - - - -	Roman road (course of) / Ffordd Rufeinig (cwrs) / Route romaine (tracé de) / Römerstraße (Verlauf)	✗ 1066	Site of battle (with date) / Safle brwydyr (gyda dyddiad) / Lieu de bataille (avec la date) / Schauplatz historischer Schlachten (mit Datum)

RELIEF / TIRWEDD / RELIEF / HÖHENANGABEN

Metres / Metrau / Mètres / Meter	Feet / Troedfeddi / Pieds / Fuß		Hillshading / Arlliwio llethrau / Ombrage / Reliefschattierungen
914	3000	· 274 Heights in metres above mean sea level / Uchderau mewn metrau uwchlaw lefel môr cymedrig / Hauteur en mètres au-dessus du niveau de la mer / Höhe in Meter über Normalnull	
610	2000		
427	1400	Contour interval approximately 61 metres (or 200 feet) / Mae cyfwng oddeutu 61 (neu 200 troedfedd) rhwng cyfuchliniau / Intervalle entre les contours d'environ 61 mètres (ou 200 pieds) / Höhenlinien-Intervalle ungefähr 61 Meter (bzw. 200 Fuß)	
305	1000		
183	600		
61	200	To convert metres to feet multiply by 3.2808 / I drosi metrau'n droedfeddi llucser gyda 3.2808 / Pour convertir les mètres en pieds, multiplier par 3.2808 / Zur Umrechnung von Metern in Fuß mit dem Faktor 3.2808 multiplizieren	
0	0		

NORTH POINTS / PWYNTIAU'R GOGLEDD / POINTS AU NORD / NORDPUNKTE

Diagrammatic only / Diagramatig yn unig / Graphique seulement / Schematische Darstellung

2° 50′ E 0° 25′ W ③ ① ②	**True North** Difference from grid north at sheet corners is shown left. **Magnetic North** About 2° 19′ W of grid north in July 2007 decreasing by about ½° in three years. Magnetic data supplied by the British Geological Society.	**Gogledd Cywir** Dangosir gwahaniaeth rhwng y gogledd grid ar gomeli'r ddalen i'r chwith. **Gogledd Magnetig** Tua 2° 19′ i'r gorllewin o'r gogledd grid yn Gorffennaf 2007 yn gostwng wrth oddeutu ½° mewn 3 blynedd. Cyfwynid y data magnetig gan y British Geological Survey.	**Nord vrai** La différence d'avec le nord du quadrillage aux coins de la feuille est indiquée à gauche. **Nord magnétique** Environ 2° 19′ Ouest du nord du quadrillage en juillet 2007 diminuant d'environ ½° en trois ans. Données magnétiques fournies par British Geological Society	**Geografisch Nord** Die Differenz zum Gitter-Nordpunkt der Blattecken wie links angezeigt. **Magnetisch Nord** Etwa 2° 19′ W vom Gitter-Nordpunkt im Juli 2007, abnehmend um etwa ½° in drei Jahren. Magnetische Angaben durch die British Geological Society
2° 38′ E 0° 24′ W ③ ① ②				
+	Intersection, latitude & longitude at 30′ intervals (not shown where it can be confused with important detail)	Llinellau rhwyllog yn croesi bob 30′ (ni ddangosir ble byddai yn cael eu camgymryd gyda manylion manwl	Intersection, latitude et longitude à des intervalles de 30′(non indiquées afin d'éviter toute confusion avec des détails importants)	Schnittpunkt, Breitengrad & Längengrad in 30′ -Intervallen (keine Eintragungen an Stellen mit wichtigen Kartenangaben)

Tourist information / Gwybodaeth i dwristiad / Renseignements touristiques / Touristeninformation

Symbol	Description
✝	Abbey, Cathedral, Priory / Abaty, Eglwys, Gadeiriol, Priordy / Abbaye, Cathédrale, Prieuré / Abtei, Kathedrale, Priorei
➔	Aquarium / Acwariwm / Aquarium / Aquarium
⅄	Camp site / Safle gwersyll / Terrain de camping / Campingplatz
⌘	Caravan site / Safle carafanau / Terrain pour caravanes / Wohnwagenplatz
⌘⅄	Camping and caravan site / Safle carafanau a gwersyll / Terrain de camping et terrain pour caravanes / Campingplatz und Wohnwagensite
⛫	Castle / Castell / Château / Schloss, Burg
⛏	Cave / Ogof / Caverne / Höhle

Symbol	Description
⛺	Country park / Parc gwledig / Parc naturel / Landschaftspark
⚒	Craft centre / Canolfan grefft / Centre artisanal / Zentrum für Kunsthandwerk
❃	Garden / Gardd / Jardin / Garten
⚑	Golf course or links / Cwrs neu lain golff / Terrain de golf / Golfplatz
⌂	Historic house / Tŷ hanesyddol / Manoir, Palais / Historisches Gebäude
[i] [i]	Information centre / seasonal / Canolfan gwybodaeth / tymhorol / Office de tourisme / ouvert en saison / Informationsbüro / saisonal
🏁	Motor racing / Rasio moduron / Courses automobiles / Autorennen

Symbol	Description
🏛	Museum / Amgueddfa / Musée / Museum
!	Nature or forest trail / Llwybr natur neu lwybr coedwig / Sentier signalisé pour piétons / Natur-oder Waldlehrpfad
🐾	Nature reserve / Gwarchodfa natur / Réserve naturelle / Naturschutzgebiet
☆	Other tourist feature / Atyniadau eraill i ymwelwyr / Autre site intéressant / Sonstige Sehenswürdigkeit
P&R	Park and Ride / Parcio a chludo / Parking et navette / Park & Ride
⛱	Picnic site / Safle picnic / Emplacement de pique-nique / Picknickplatz
🚂	Preserved railway / Rheilffordd a ddiogelwyd / Chemin de fer touristique / Museumseisenbahn

Symbol	Description
⭢	Racecourse / Maes rasio / Hippodrome / Pferderennbahn
⛷	Skiing / Sgïo / Piste de ski / Skilaufen
⛲	Theme Park / Parc thema / Parc à thèmes / Vergnügungspark
⛰	Viewpoint / Gwylfa / Point de vue / Aussichtspunkt
⛎	Wildlife park / Parc bywyd gwyllt / Parc animalier / Wildpark
▲	Youth hostel / Hostel ieuenctid / Auberge de jeunesse / Jugendherberge
🐾	Zoo / Sŵ / Zoo / Tiergarten

Ordnance Survey®

Chapter 3   Managing 1:250 000 Scale Colour Raster files

Georeferencing

Georeferencing files allow tiles of map data to be located in their correct geographic position when loaded into a geographical information system (GIS). This is achieved by loading in files alongside the data files that contain the National Grid corner coordinates for each 100 km by 100 km tile. This is especially useful if more than one tile of data is being loaded at once, as it allows for a true geographic depiction of the data.

When 1:250 000 Scale Colour Raster is supplied to customers it is not georeferenced in any way. The implications of this are that tiles will not be set up in geographic relationship to each other when loaded into a GIS.

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.

TIFF World Files (TWF) can be downloaded from www.ordnancesurvey.co.uk/productpages/250kraster and used to georeference 1:250 000 Scale Colour Raster in ESRI® ArcView® and ArcInfo®. Also available are the TAB files for use with MapInfo.

Please note there are some World Files available that contain only sea, therefore there is no data available. These World Files have been created to allow customers to complete the coastline.

For LZW compressed formats you may need to acquire a licence for LZW. Unisys® owns the rights to the LZW format and levies a charge for its use in GIS. Some software suppliers license LZW for use in their products, others expect the 'end-user' to license LZW separately by buying a plug-in.

Further information can be obtained from the Unisys website at www.unisys.com/about__unisys/lzw/

File formats   Image file directory (TIFF)

The Image file directory for TIFF will contain the following entries:

Tag 254 (NewSubfileType)

An indication of the kind of data contained in this sub-file, for example, value = 0

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 (Photo.Interpretation)

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

Tag 270 (ImageDescription)

Value = 1:250 000 TILE HY.TIF

Tag 273 (StripOffsets)

For each strip, the byte offset of that strip,

for example, first four values = 2333 4615 6690 8765

Tag 278 (RowsPerStrip)

The number of rows in each strip, for example, value = 65

Tag 279 (StripByteCounts)

For each strip, the number of bytes in that strip after compression,
for example, first four values = 2282 2075 2075 2075

Tag 282 (XResolution)

The number of pixels per resolution unit in the image width, for example, value = 254/1

Tag 283 (YResolution)

The number of pixels per resolution unit in the image length, for example, value = 254/1

Tag 296 (ResolutionUnit)

Units used for resolution, for example, value = 2 (Inch)

Tag 306 (DateTime)

Date and time of image creation, for example, value = 2006:05:15 08:49:41

Tag 320 (ColorMap)

First four values = 15163 15163 14649 15163

Tag 33432 (Copyright)

Copyright notice, for example, value = ORDNANCE SURVEY CROWN COPYRIGHT 2006

NOTE: The values given above are relevant to 1:250 000 Scale Colour Raster data.

TIFF

Colour image directory

	Tag number	TIFF 8-bit uncompressed	TIFF 8-bit LZW compressed
File byte order:		II (Little-endian)	II (Little-endian)
Magic number:		42	42
Number of fields in IFD:		16	16
NewSubfileType	254	0	0
ImageWidth	256	4000	4000
ImageLength	257	4000	4000
BitsPerSample	258	8	8
Compression	259	1 (Uncompressed)	5 (LZW)
Photo.Interpretation	262	3 (RGB Palette)	3 (RGB Palette)
Image description	270	1:250 000 TILE HY.TIF	1:250 000 TILE HY.TIF
XResolution	282	254/1	254/1
YResolution	283	254/1	254/1
ResolutionUnit	296	2 (Inch)	2 (Inch)
DateTime	306	2006:05:15 09:43:20	2006:05:15 08:49:41
Copyright	33432	ORDNANCE SURVEY CROWN COPYRIGHT 2006	ORDNANCE SURVEY CROWN COPYRIGHT 2006

The tag values listed in the above table are relevant to 1:250 000 Scale Colour Raster data.

It should be noted that customers can access tag information from a TIFF raster file by opening an image in Microsoft® Office Document Imaging and by right clicking on the data image and looking at page properties. By doing so, the image parameters are displayed, which relate to the tags in a TIFF file and are reflected in the table above.
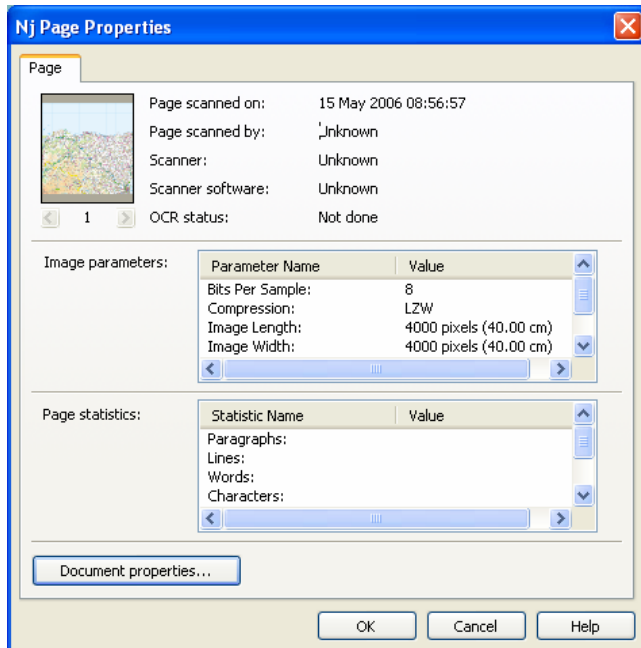
Annexe A   Glossary

accuracy
The closeness of the results of observations, computations or estimates to the true values or the values accepted as being true. Accuracy relates to the exactness of the result, and is the exactness of the operation by which the result is obtained.

boundary
A boundary is the limit of a predefined and established area whose limit is determined by one or more lines, for example, county area boundary and DLUA boundary.

byte
A unit of computer storage of binary data, usually comprising 8 bits, equivalent to a character. Hence megabyte (Mb) and gigabyte (Gb).

CAD
Computer-aided design

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.

compact disc-read only memory (CD-ROM)
A data storage medium. A 12-cm disc similar to an audio CD. Ordnance Survey uses the writable CD, a WORM (write once, read many) device. The digital bits are encoded into a vegetable dye and, once written, cannot be erased by overwriting with subsequent data. A laser reads the disc.

coordinate pair
A coordinate pair is an easting and a northing.

coordinates
Pairs of numbers expressing horizontal distances along original axis. Alternatively, those triplets of numbers measuring horizontal and vertical distances. Row and column numbers of pixels from raw imagery are not considered coordinates for the purpose of the standard.

copyright
Copyright is a legal property right that enables the creator of an original work to protect it from unauthorised use. Through the *Copyright, Designs and Patents Act 1988*, Crown copyright continues to subsist in all Ordnance Survey products until the end of the period of 50 years from the end of the year in which they were published, and in the case of data from the end of the year in which it was extracted from the Ordnance Survey database. Crown copyright is vested in The Controller of Her Majesty's Stationery Office, who has delegated powers to the Director General, Ordnance Survey, for the administration of copyright in publications and data, including the determination of terms and conditions under which permission for their reproduction is given.

currency
An expression of the up-to-dateness of data.

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.

data capture
The encoding of data. In the context of digital mapping, this includes map digitising, direct recording by electronic survey instruments and the encoding of text and attributes by whatever means.

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 model
An abstraction of the real world that incorporates only those properties thought to be relevant to the application or applications at hand. The data model would normally define specific groups of entities and their attributes and the relationship between these entities. A data model is independent of a computer system and its associated data structures. A map is one example of an analogue data model.

database
An organised, integrated collection of data stored so as to be capable of use in relevant applications, with the data being accessed by different logical paths. Theoretically, it is application-independent, but in reality it is rarely so.

dataset
An Ordnance Survey term for a named collection of logically related features arranged in a prescribed manner; for example, all water features. A dataset has more internal structure than a layer and is related to another dataset only by position.

digital
Data that is expressed as numbers (digits) in computer-readable form is said to be digital.

digital map
Any map sold by Ordnance Survey or its agents in any form; that is on computer-readable media or as hard copy on paper and/or film or microfilm – produced mainly, or wholly, using computerised means.

digital map data
The digital data required to represent a map. The data includes not only map detail but also features header data, map header data and management data.

dots per inch (dpi)
The resolution, or fineness, of a raster image.

eastings
See rectangular coordinates.

extent of the realm (EOR)
The external bounding lines of Land-Line$^®$ data is EOR. The Territorial Waters Jurisdiction Act 1878 and the Territorial Waters Order in Council 1964 confirm that EOR of Great Britain as used by Ordnance Survey is properly shown to the limit of mean low water (mean low water springs in Scotland) for the time being (except where extended by Parliament).

feature
An item of detail within a map that can be a point or symbol, a line or text.

file
An organised collection of related records. The records on a file may be related by a specific purpose, format or data source – the records may or may not be arranged in sequence. A file may consist of records, fields, words, bytes, characters or bits.

font
The style of text character used by a printer or plotter.

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 file.

geographical information system (GIS)
A system for capturing, storing, checking, integrating, analysing and displaying data that is spatially referenced to the Earth. This is normally considered to involve a spatially referenced computer and appropriate applications software.

gigabyte (Gb)
The equivalent of 1 073 741 824 bytes; a measure of data storage capacity.

grid
The planimetric frame of reference; for example, the National Grid.

hard copy
A print or plot of output data on paper or some other tangible medium.

kilobyte (Kb)
The equivalent of 1 024 bytes; a measure of data storage capacity.

map
The representation on a flat surface of all or part of the Earth's surface, intended to be communicated for a purpose or purposes, transforming relevant geographic data into an end-product that is visual, digital or tactile.

map generalisation
A reduction in map detail, so that the information remains clear and uncluttered when map scale is reduced. May also involve resampling to larger spacing and/or a reduction in the number of points in a line.

map header
Data at the start of the digital map file describing that data. It may contain information on the source and history of the geometric data within the map and the coordinate system in use as well as holding information essential to the management of Ordnance Survey's digital mapping system.

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 or 1:50 000.

megabyte (Mb)
The equivalent of 1 048 576 bytes; a measure of data storage capacity.

National Grid
A unique referencing system that can be applied to all Ordnance Survey maps of Great Britain (GB) at all scales. It is based on 100 km squares covering the whole of GB based on a Transverse Mercator projection. It is used by Ordnance Survey on all post-war mapping to provide an unambiguous spatial reference in GB for any place or entity whatever the map scale.

northings
See rectangular coordinates.

pixel
In the 1:10 000 scale product a **pixel** is a single point represented by a square.

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

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.

resolution
A measure of the ability to detect quantities. High resolution implies a high degree of discrimination but has no implication as to accuracy. For example, in a collection of data in which the coordinates are rounded to the nearest metre, resolution will be 1 m but the accuracy may be ±5 m or worse.

RGB
Red, green and blue colours and variations of them go to make up the colours represented in the raster data.

source scale
The scale of the source information from which the map was digitised; that is the scale of survey for a basic-scale map or the scale of the source map for a derived map.

spatial data
Data that includes a reference to a two- or three-dimensional position in space as one of its attributes. It is used as a synonym for geometric data.

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.

structured data
Data within which collections of features (of any type) form objects. Topographically structured data also contains topological information defining the relationships between features and objects.

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.

topographic database
A database holding data relating to physical features and boundaries on the Earth's surface.

topography
Topography is the study of the physical features of the Earth. A topographic map's principal purpose is to portray and identify the features of the Earth.

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, CD-ROM.

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

vector
A straight line joining two data points.

vector data
Positional data in the form of coordinates of the ends of line segments, points, text positions and so on.

volume
A physical unit of the transfer medium; that is a single disc.