# Section 7: Ordnance Survey Data Products

## Introduction

This section just provides an overview of Ordnance Survey data products and concentrates on the business sector rather than leisure products and services. Much of this information is from the Ordnance Survey website[1], which is an excellent source for further details or updating the information here.

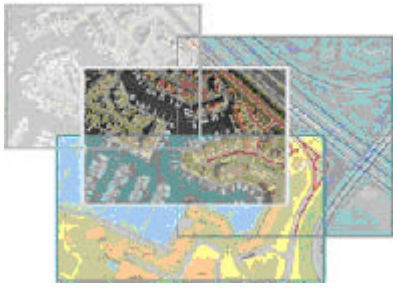
## OS MasterMap®

OS MasterMap is an intelligent digital map designed by Ordnance Survey for use with geographical information systems (GIS) and databases. The product is a development of the current Land-Line® product - OS MasterMap is the next generation of digital map data. It is a very different dataset from any previously available product as it is seamless and feature based; it has topological structure; it is rich in attribution (including unique identifiers for each feature); it is delivered in Geography Markup language (GML) and updates to the dataset are supplied on-line as part of the Ordnance Survey Internet Change-only service. Put simply, large-scale OS MasterMap data is 'smart' Land-Line[2].

Land-Line data has been created from digitised data which goes back to the early 1970's. In those days there were no GIS to speak of, and the real driver for creating digital mapping was a requirement for automated map production. Consequently, the data models used were based on cartographic needs rather than GIS needs. The difference is subtle but very significant. To produce a paper map by automated methods doesn't require any real "intelligence" in the data – in other words the data just has to be able to re-produce lines, points and polygons, with different colours, line styles, symbols etc. When used in a GIS this type of data is known as "spaghetti" data – lines just create a map picture, a single line depicting the side of a building could, for example, also be the side of a road, or the bank of a river, but if the building was removed there would be a hole in the river. Likewise there would be no way of extracting the entire length of the river as one object.

Based on user feedback Ordnance Survey has re-engineered its large scales data into over 400 million map features which now relate to real world objects. This makes spatial analysis much more feasible. Created on the National Grid, OS MasterMap includes topographic information on every landscape feature– buildings, roads, phone boxes, postboxes, landmarks etc.

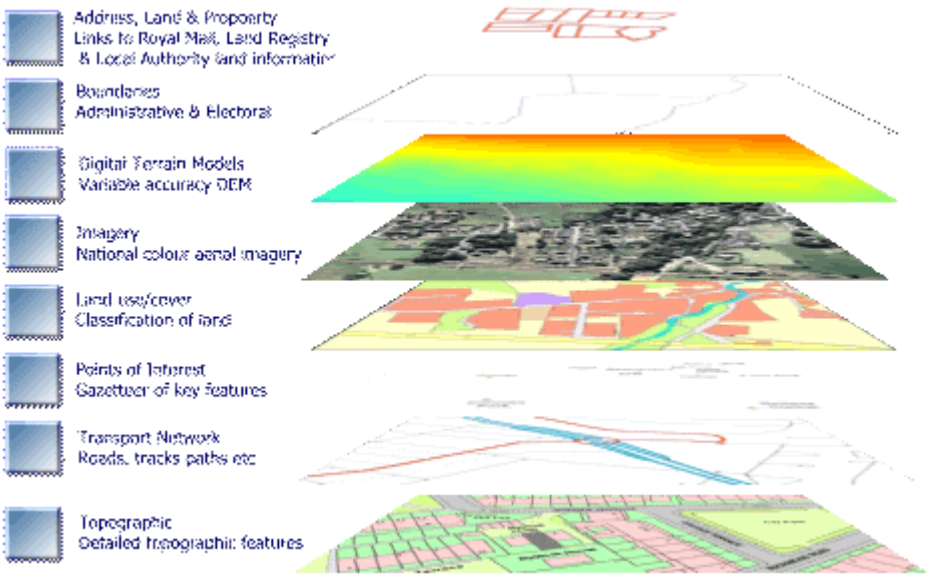
[1] http://www.ordnancesurvey.co.uk/oswebsite/
[2] Description from ESRI Ireland….http://www.esri-ireland.ie/products/OS_MasterMap.asp



OS MasterMap depicts the real-world digitally and presents this comprehensive, advanced information as themes in a series of layers, each layer carrying millions of features which appear as "objects".[3] Each feature has its own unique TOpographic IDendifier or TOID® – a 16–digit reference number that can be shared with other users across different applications and systems.

This allows easy data association (linking users own data to the Ordnance Survey map) and greater accuracy, focusing on real–world objects on the map.

By being able to associate their own data with OS MasterMap features, users can analyse a richer database and search and query their own data fields as well as OS MasterMap attributes. As can be seen by the diagrams in the Graphic Survey section of the Reference Guide, OS MasterMap's unique polygons can be coloured, improving interpretation of what is actually on the ground.




[3] Objects are data in which one topographic feature in the database represents one or part of one real-world object, for example a building, part of a road or land parcel

Part of the concept behind OS MasterMap is that all Ordnance Survey large scale data will be inter-related, created from the same master database, rather than a series of separate databases. Within the overall structure of the National Digital Framework (DNF)[4] the topographic layer of OS MasterMap forms a base, or template, upon which other layers are built, and all these layers share common co-ordinates and so are "in sympathy" with each other. For example the imagery layer will fit if used in conjunction with the road centre-lines from the Integrated Transport Network layer.

The layers envisaged for OS MasterMap are:

| Layer | Features | Available |
|---|---|---|
| Topographic | Addresses<br>Administrative Boundaries<br>Buildings<br>Heritage<br>Water<br>Land<br>Rail<br>Roads, Tracks, Paths<br>Structures<br>Terrain and Height<br>Road Network | All Now |
| Integrated Transport Network | Roads<br>Tracks<br>Paths<br>Hydrology | Now<br>Now<br>Now<br>Spring 2004 |
| Imagery | | Now – not all GB yet |
| Address | | Now |
| Land & Property | | No date available |
| Pre-Build | | No date available |
| Points of Interest | | No date available |
| Height | | No date available |

Points of Interest is available now but not as an integrated part of OS MasterMap. It is a database of over 3.5 million entries. These include places that people might want to visit, including tourist and leisure attractions, businesses, public buildings, retail outlets and landscape features. They can be split into features that have an address - such as shops, hotels and dentists - and those that are non-addressable, such as golf courses, lakes and hilltops.

[4] Ordnance Survey uses this term to describe a framework within Great Britain which includes reference systems, reference data, quality standards, metadata, and methods for sharing data.

The Points of Interest database is structured to provide easy access to over 750 classes and the data content includes places to eat, drink and stay; sport and entertainment attractions; public infrastructure and transport; manufacturing; and wholesale and commercial retail outlets.

Key OS MasterMap elements are:

- area features - the building blocks of the data, many of which represent individual real world features;
- maintained TOIDs on all features;
- seamless data - no tiles;
- availability of specific data themes; and
- a new system of feature classification, including feature attributes containing cumulative change history and positional accuracy statistics.

## ADDRESS-POINT®

ADDRESS-POINT is the Ordnance Survey's national address database. It is a dataset that uniquely defines and locates residential, business and public postal addresses in Great Britain. It is created by matching information from Ordnance Survey digital map databases with more than 26 million addresses recorded in the Royal Mail Postcode Address File (PAF®). PAF is used by the Royal Mail to sort and deliver mail. Each address has a unique Ordnance Survey ADDRESS-POINT reference (OSAPR).

The OSAPR is a unique 18-character reference that, when matched to National Grid coordinates – normally the building seed point in Land-Line – can be used to identify/find a property/address on the map. In addition, ADDRESS-POINT carries a status flag to define the quality and accuracy of each address, as well as indicators for change and source currency. MBM are responsible for importing ADDRESS-POINT data on to the DMS, which is updated every three months. Any examples of discrepancies in the gazetteer (not the map) should be referred to the Business Excellence Team using the P104 form.

*Differences between ADDRESS-POINT data and Land-Line building detail*

Most differences between ADDRESS-POINT and Land-line can be attributed to one of the following reasons:

- There are new buildings for which Royal Mail have not yet created an address file;
- Genuine errors and omissions, some of which may have been identified and are awaiting correction either by Ordnance Survey or Royal Mail;
- The PAF reference is in a temporary position until our surveyors can match it to the correct property;
- The address is unmatchable, for example: temporary buildings; non-permanent addresses such as houseboats; non-permanent and temporary building not shown on Land-line.

*Currency*
Monthly updates from the Royal Mail PAF and improvements derived from Ordnance Survey field activity are included at the three-monthly product updates. A realistic view has to be taken regarding the time taken between a new address being notified and a ground survey being completed, especially for small numbers of buildings in more rural locations.

*Accuracy*
Each address is coordinated on the National Grid, with eastings and northings normally quoted to a resolution of 0.1 metres. The accuracy of each geo-reference is classified within the status flag in which is indicated whether the coordinates are due to be improved (PQ1) or as good as they can be (PQ3).

**How does RoS use ADDRESS-POINT ?**
All applications for registration in the Land Register must be identifiable on the Ordnance Survey map. The majority of applications (80%) are identified using a comparison of the stated address on the application form with the ADDRESS-POINT (OSAP) gazetteer. This is known as Auto Provisional "Ident". The address is entered into a set of fields and a comparison completed. If a match is found then a note is added to the map which confirms that an application has been received for that property. The OSAP therefore plays a fundamental role within Land Registration. If no match is found then the application must be Manually Idented using location maps and the national grid if possible.

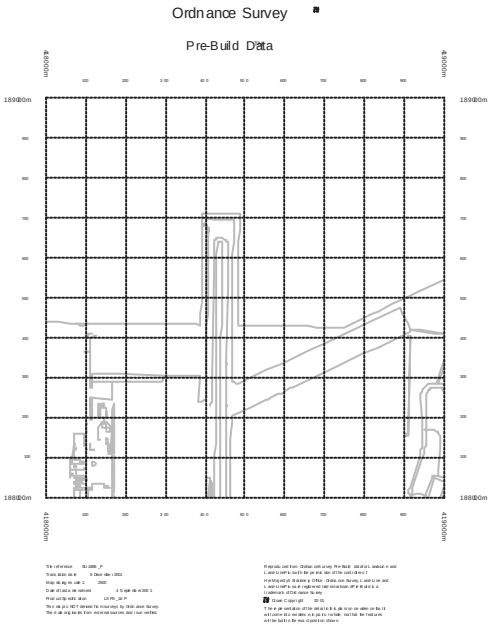
The Agency maintains a gazetteer of 2.6 million addresses for which there are currently 1 million titles. RoS is actively involved in the Quality Assurance of ADDRESS-POINT - feeding back over 100 enquiries to Ordnance Survey per

month. The establishment of an address standard is something that RoS is keen to pursue along with Ordnance Survey and the Post Office5.

Comprehensive Indexing Guidelines are available on the Intranet for staff using ADDRESS-POINT.

## Other Large Scales Products

**Land-Line**® is a large scales dataset, familiar to Ros caseworkers, depicting man-made and natural features ranging from houses, factories, roads and rivers to marshland and administrative boundaries. There are almost 229,000 Land-Line tiles covering Great Britain, surveyed and digitised at three different scales according to location – urban, rural and mountain.




**Pre-Build data** is NOT derived from surveys carried out by Ordnance Survey. It data is derived from plans of sites under development that are supplied to Ordnance Survey by external sources such as architects and construction engineers. Ordnance Survey pays for this data, which can then be incorporated into the national topographic database. Once the plans, which have already been approved by the local authority planning office, are received OS can be reasonably confident that the data represents what the developers will actually build, usually within the next three months.

Once the data is received, it is edited, changed to National Grid position and amended to Land-Line specification.

The Pre-Build data originates from external sources and is unverified so the representation of detail in the data is no guarantee that it will come into existence, in part or in whole, or in the exact position indicated in the plan. The Pre-Build data is

[5] RoS and Ordnance Survey have been members of the ACACIA project which has studied the possibilities of a common address standard – see the full details in the final report at: http://www.voa.gov.uk/publications/acacia/acacia_pilot_full_report.pdf

not a national dataset and so the data available will vary from site to site, according to the agreements in existence between Ordnance Survey and the data providers.

**Superplan**® is Land-Line mapping supplied in DXF format so that it can be used with most CAD systems. It is supplied through a network of agents in either data form or as plots, rather than direct from Ordnance Survey.

Superplan data or plots can be ordered by postcode, National Grid plan number or coordinate reference and are typically used for planning applications, conveyancing etc.

Ordnance Survey revises 30 000 maps a year using **Aerial Photography**. As a result, a comprehensive collection of vertical monochrome photographs is available for purchase. These aerial photographs are an integral part of the map revision system, used to plot ground surface features and heights. This is a separate product to the OS MasterMap imagery layer.

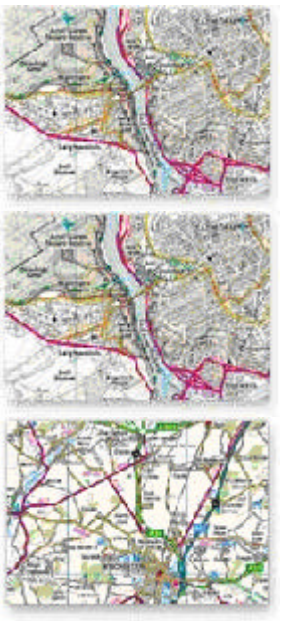
**Medium scales products**

**Landplan**® maps are medium scale paper or film plots (not data) created from the three Ordnance Survey large scales datasets. Plots can be produced with or without contours, in colour or black and white, and at scales of 1:5000 or 1:10 000. As an aside, the product represents a highly sophisticated development in terms of automatic data generalisation.

OS Street View™ is street-level backdrop map data that is specifically designed for online applications, as it can be downloaded quickly from both the Internet and Intranet. It provides a scanned image of street-level mapping that can be combined with other data in a GIS.

**1:10 000 Scale Raster** map data is the most detailed product in the Ordnance Survey raster portfolio, providing large-scale background mapping upon which to add or overlay information. It provides a scanned image of 1:10 000 scale mapping. Its level of feature detail makes this particularly useful for analysing data within urban areas.

The fence-level detail and depiction of contours makes **1:25 000 Scale Colour Raster** particularly useful for

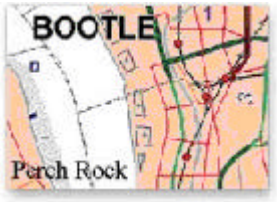


## Small scales Products


**Meridian 2**® is marketed by Ordnance Survey as an entry level vector data product and is the *only* mid-scale vector product currently available from them. It is supplied in two separate themes - communication and topographic - or as a combined set, and is updated annually, incorporating upgraded source data and some additional minor enhancements.

Meridian 2 is a derived dataset compiled from several different scaled data sources, ranging from 1:1250 to 1:250 000 scales. Meridian 2 is generally viewed at a 1:50 000 scale.

Derived from 1:250 000 scale mapping, **Strategi**® is also a vector data product, providing digital mapping for applications requiring a regional overview. The range of feature types included includes railways, airports, ferries, water features, ceremonial boundaries, cities, towns and other settlements, woods and land use, and geographic names.





**MiniScale**® is a raster product, designed for use in desktop graphic applications to provide backdrop mapping covering the whole of GB. It is supplied on one CD-ROM as a single data file in a variety of industry standard formats, including in the latest release Adobe®

Illustrator® 10. The data is held in layers with styled objects for easy customisation of images which can be easily converted to web images.

## Thematic Products

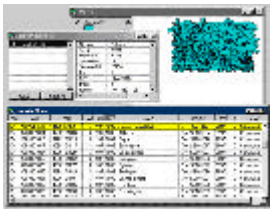
**Code-Point**® is linked to the ADDRESS-POINT product and provides a precise geographical location for each postcode unit in Great Britain. There are approximately 1.6 million postcode units in England, Scotland, Wales and Northern Ireland. Each postcode unit, such as KY12 8UP or PO14 2RS, contains an average of fifteen adjoining addresses.

Code-Point is a Gridlink® product. Gridlink is an initiative involving a number of Government agencies that have cooperated to improve the consistency and quality of spatially referenced, postcode-based data.

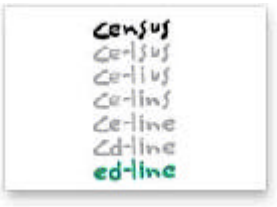


**Boundary-Line**® is a specialist vector dataset of voting and administrative boundaries. Upgraded twice a year, in May and OctoberIt provides a full hierarchy of boundaries from district, wards and civil parishes (or communities) up to parliamentary, assembly and European constituencies.

Boundary-Line data is derived mainly from 1:10 000 scale Boundary Record mapping. By including Census Agency codes (where available) with the data users are able to link Boundary-Line polygons with census statistics.



The **SABE**® (Seamless Administrative Boundaries of Europe) dataset is a pan-European vector dataset depicting administrative units that has been compiled from source data provided by 32 National Mapping Organisations. Initially created for 1991 (to allow links to census statistics) it has since been revised in 1995 and 1997, and 2001.




**ED-LINE** census boundaries depict all enumeration district boundaries (output areas in Scotland) and have been derived from the official Census boundary maps. There are approximately 150 000 EDs in GB. EDs nest into wards (OAs into postcode sectors in Scotland), which in turn nest into local authority districts (LAs), and thence

into counties (regions in Scotland).

The **OSCAR**® (Ordnance Survey Centre Alignment Of Roads) product family is derived from the Ordnance Survey Roads database, which is continually revised. Roads and associated information are modelled into a vector network. There are two levels available, Traffic Manager and the more detailed Asset-Manager.

**Land-Form PROFILE**® provides detailed height data defining the physical shape of the landscape of Great Britain. The 1:10 000 scale digital height dataset is available as either Contours or a Digital Terrain Model (DTM at 10m grid interval) and provides a consistent foundation for 3D modelling applications.

Ordnance Survey has one of the largest collections of **Historical Mapping** in the United Kingdom. Amongst the products offered to customers are paper copies of the original one–inch maps. The map series was surveyed from the late 1800s and published in the early years of the 1900s. The maps, which can be ordered on-line, show contours, latitude and longitude, boundaries, railways, roads, waterways and woods.


As a result of a joint venture between OS and Landmark Information Group®, the archive of historical mapping has been scanned to create **Historical Map Data**. National cover is available dating back to the mid 19th century and derived from 1:10 560 or 1:10 000 and 1:2500 scale County Series, post-War National Grid, and superseded mapping which includes 1:1250 and 1:500 scale Town maps.

**Points of Interest** is a location based database of over 3.5 million entries designed for the requirements of businesses delivering location-based services. It can be used in a wide variety of civic and commercial applications, such as driver routing, navigation, spatial

analysis, logistics and map publishing.

**Key Points from this section:**

- There is a very wide range of Ordnance Survey data products aimed at business users. The data is sometimes complex – see OS website for up to date information on changes and new products;
- Raster data is mainly used as a backdrop to give context to users own data; large scales data is vector data. The large scales data in the national topographic database is used to create both Land-Line and OS MasterMap products;
- OS MasterMap is the latest object based data which represents real world objects and is more suitable for GIS than the Land-Line product which has its roots in cartography.

**References – contact details**

For up to date information on Ordnance Survey's business and other data products see the Ordnance Survey website at:

http://www.ordnancesurvey.co.uk/oswebsite/