



OS MasterMap[®] Address Layer and Address Layer 2

User guide

OS MasterMap Address Layer and Address Layer 2

User guide

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Preface

This user guide (hereafter referred to as the guide) is designed to provide an overview of OS MasterMap Address Layer and Address Layer 2 (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 B](#) and return it to us.

Contact details

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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 to OS MasterMap products

Introduction

OS MasterMap is a consistent and maintained framework for the referencing of geographical information in Great Britain. It comprises four separate but complementary layers that provide detailed topographic, cartographic, administrative, address, aerial imagery and road network features positioned on the National Grid. The four layers are:

- OS MasterMap Topography Layer
- OS MasterMap Address Layers
- OS MasterMap Integrated Transport Network™ (ITN) Layer
- OS MasterMap Imagery Layer

The key characteristics of the product and why they are of benefit to customers are listed below:

- Individual real-world topographic **features** represented by **points**, **lines** and **polygons**, each with their own unique reference number, called the Topographic Identifier (TOID®).
- A set of **addresses**, both postal and geographic, each with their own unique reference number, with a geographic coordinate and cross-referenced to physical features within OS MasterMap and to other address references.
- A structured network representing the road system and routing information related to it that may affect a driver's choice of route, with each feature having its own unique reference number.
- Seamless **orthorectified** aerial images of Great Britain taken at a resolution of 25 cm, being both geometrically accurate and colour-balanced to create the clearest image possible.
- An online ordering system that allows the customer to order the exact area of interest, with the option for online or media delivery of data.
- Employing a scale of data capture appropriate to the density of features – the higher the number of features within an area, the larger the scale used to survey them – ensuring the detail of individual features can be shown and with coordinates delivered in **British National Grid**. The number of individual features within the OS MasterMap product as a whole (all four layers) is currently over 460 million.
- Developed, managed and maintained by Ordnance Survey within one of the world's largest spatial databases.
- The data are delivered as a seamless, geographically-contiguous area without artificially dividing features between tiles. This means that the customer receives only the area they order without additional, unwanted data as may happen with tile-based products.
- Each feature with a unique reference number also has attributes that record the feature's life cycle. The feature's life cycle is linked to the life cycle of the real-world object it represents. The life cycle records certain types of changes to the feature that occur over time.

Figure 1 (below) shows all four OS MasterMap layers together.

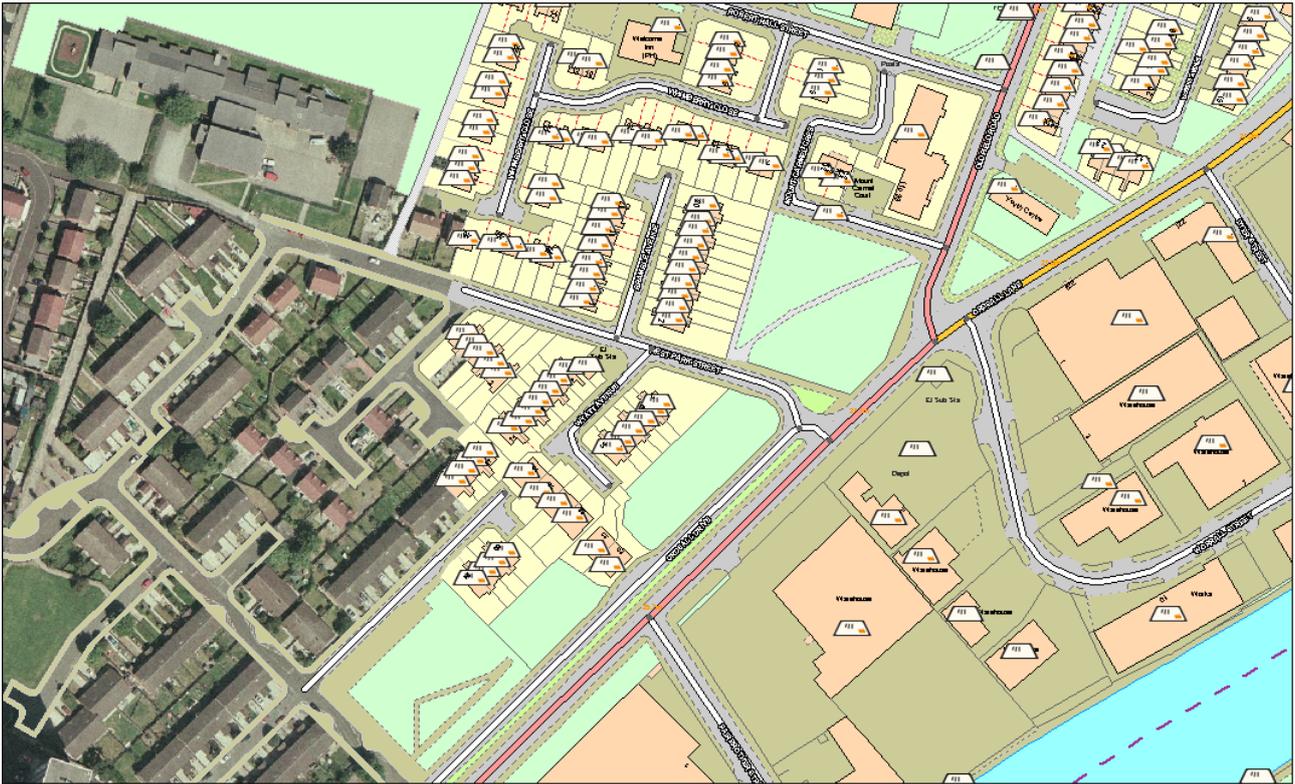


Figure 1: the four OS MasterMap layers

These characteristics mean that customers may use OS MasterMap in a wide variety of ways, including:

- improving the accuracy of a customer's own derived data;
- improving a customer's data capture processes;
- creating consistency and achieving maintainable standards within geographical data holdings;
- establishing a common reference between a customer's own datasets and data they may wish to share with other organisations;
- improving the visual clarity of data and aiding the visual interpretation of data;
- using the products in an integrated manner to derive additional information;
- identifying and managing change in their area of interest;
- creating historical views of their area of interest; and
- enhancing the queries that can be run on their data and so providing better information for decision making.

There are two general concepts that are relevant to understanding the information contained in the rest of this document. The first concept refers to the data models that are used to represent the real world in a digital environment. The second explains the underlying concept for the OS MasterMap product as a whole and how and why effort is being made to integrate the different layers.

The vector and raster data models

There are two common models for holding geographic information within a computer environment. These are the vector and raster models. The OS MasterMap Topography, Address and ITN Layers are vector data. The Imagery Layer is raster data. The vector model holds features as a series of geometric shapes based on coordinates within a file or database (see figure 2 below). Within OS MasterMap Topography Layer, features are captured as a series of coordinates, with each coordinate indicating a vertex or node in the geometry of the feature. Surveyors work in millimetres so there is a tolerance for each point; if it is within a certain distance of another point, it is deemed to be the same coordinate so that it is possible to create a polygon. The relationships between features are implied rather than explicit. Each feature is stored **independently** of any other feature, therefore there is no information contained on a line, for example, to record what lines it joins to or what polygons to which it is adjacent.

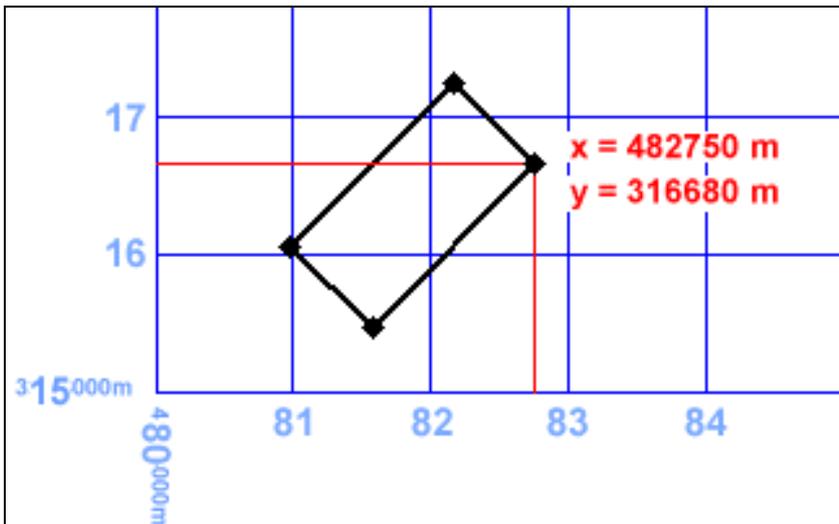


Figure 2: vector data is stored as coordinates

The raster model encodes the features as pixels within a geographically-referenced image. The representation of the feature is made by the colour of the pixel (see figure 3).

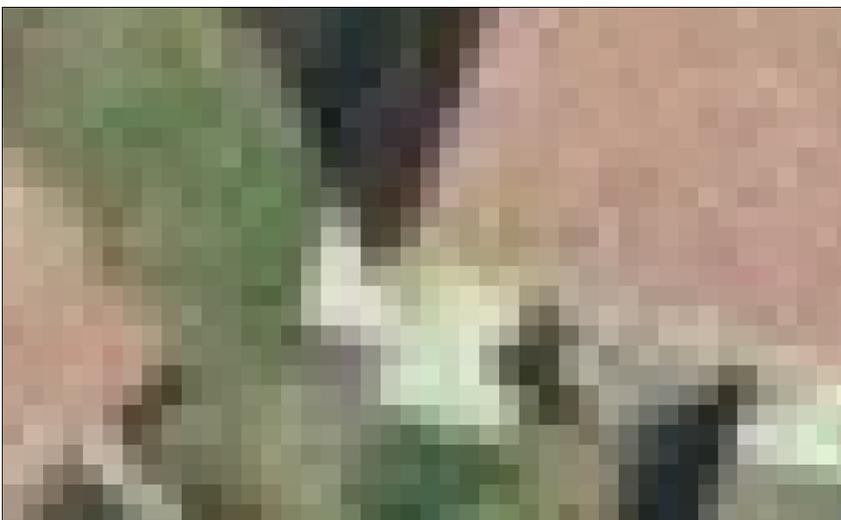


Figure 3: raster data is stored in a grid made up of pixels

These models result in datasets that are very different in terms of how the data can be used. The main difference is that with vector models, multiple attributes can be stored alongside the coordinates that supply the geometry. In raster models, usually only one piece of information can be stored, apart from the colour, against the pixel. Typical examples include a height measurement or a value representing a type of land cover.

OS MasterMap Topography, Address and ITN Layers have much in common with each other in terms of their structure and how they can be used, and much of the information within this general guide can be applied to all vector layers. The Imagery Layer has been geographically referenced to align with the other layers to the greatest extent possible, as shown in figure 1.

The Digital National Framework (DNF)

The OS MasterMap products are different from other Ordnance Survey products. OS MasterMap has been designed to facilitate the adoption of a larger geographic concept called DNF.

DNF is a model for an industry-standard way of integrating and sharing business and geographic information from multiple sources.

Geographic information increasingly needs to underpin mainstream information services, yet it has proved difficult for it to move from a niche or specialised data type. Ordnance Survey has recognised that geographic information needs to move from simple and relatively unintelligent maps and pictures to computer records that mainstream information technologies can recognise and handle logically, reliably and in increasingly automated processes.

The idea behind DNF is to enable better integration of all kinds of information, with location as the common denominator. Within the confines of information technology, the best way of achieving this is to link multiple information sources to a definitive location by having a common reference for each geographic feature by giving them all unique identifiers. Within OS MasterMap Layers, there is a set of unique references for geographic features (TOIDs) that are managed and maintained to a consistent, published standard. Each referenced feature may be viewed as a building block for any geographic information a customer wishes.

Ultimately, this has the potential to evolve into a network of information that, while distributed, when brought together can be used with assurance. Business information can then be shared with the knowledge that all users can have confidence that they are referring to the same location and entity in the real world. This can be critical in many applications. The adoption of the DNF principles by businesses using geographic information can lead to the following benefits:

- using effective techniques for a 'create once, use many times' model that reduces the amount of data duplication and the cost of gathering data;
- delivering data integrity for underpinning critical business decisions by following a definitive maintained reference;
- lowering the costs of handling multi-source data; and
- flexible data holdings that can underpin a wide range of applications without the need for recapturing data.

For more information on DNF, including those organisations taking part in the initiative, case studies of implementations using OS MasterMap and events, please see the [DNF website](#).

System requirements

OS MasterMap data is designed for use as a digital map within geographical information systems (GIS) and database systems.

For details of Ordnance Survey's Licensed Partners, who can incorporate OS MasterMap in their systems, please see the [systems/software page](#) on the Ordnance Survey website.

Ordnance Survey does not recommend either suppliers or software products, as the most appropriate system will depend on many factors, such as the amount of data being taken, resources available within the organisation, the existing and planned information technology infrastructure and last but by no means least, the applications OS MasterMap is to be used for.

However as a minimum, the following elements will be required in any system:

- a means of reading the data, either in its native format, or by translating it into a file format or for storage in a database;
- a means of storing and distributing the data, perhaps in a database or through a web-based service; and
- a way of visualising and querying the data, typically a GIS.

Ordnance Survey has produced a list of questions to ask [system suppliers](#) that may help customers in choosing their system. There is also more information on handling OS MasterMap in [chapter 9](#).

Currently, national cover is available for the Topography, Address and Integrated Transport Network (ITN) Layers. The format for most of the data is [Geography Markup Language](#) (GML). Address Layer 2 is available in GML and in comma-separated variable (CSV) formats. The data is supplied in the zipped format, indicated by the suffix 'GZ' at the end of the file name. Table 1, below, gives the approximate data volumes in the zipped GZ format for national cover. Due to the way different systems may store the unzipped data, it is not possible to provide file sizes for national cover in the unzipped format.

Table 1: OS MasterMap file volumes

Layer	Size
Topography	37 Gb
Address Layer	0.9 Gb
Address Layer 2	2 Gb (GML) 1.4 Gb (CSV)
ITN	515 Mb

Average file sizes for the four imagery formats are:

- TIFF 46 Mb
- JPEG 2.7 Mb
- ECW 2.2 Mb
- MrSID 2.2 Mb

Additional space should be allowed for metadata and registration files.

The minimum system requirements to use the OS MasterMap service are detailed on the [Ordnance Survey website](#).

For further information on the technical implications of implementing OS MasterMap, please see [Information sheet 3 – Technical Implications](#) from the Implementing OS MasterMap series of documents from the Ordnance Survey website.

The data model

OS MasterMap vector products have a hierarchical structure. The highest level of the structure is the [layer](#). Within each layer can be a series of themes. Within each theme, there will be features deemed to belong to that theme. A feature can belong to more than one theme. This model is extensible at all levels. New layers can be added to OS MasterMap. New themes can be added to layers. New features can be added to themes. Each feature will have one or more versions of itself that demonstrate change to that feature over time. New versions of features replace existing features. Features that no longer exist can be deleted. The rest of this chapter discusses the main features of the first level of the model, the layer and introduces the concepts of themes, features and attributes.

Layers

OS MasterMap is currently supplied in four layers. Each layer can be used independently of the others, although they are designed to integrate and complement each other.

Topography Layer

The Topography Layer was the first layer to be produced in November 2001. The features within this layer are mainly features that appear in the landscape, such as buildings, land, water and roads (figure 4). It also includes administrative boundaries. These are not physically present in the landscape but are often important in relation to the physical features that are present in the real world. It is the most detailed layer, containing over 425 million features.

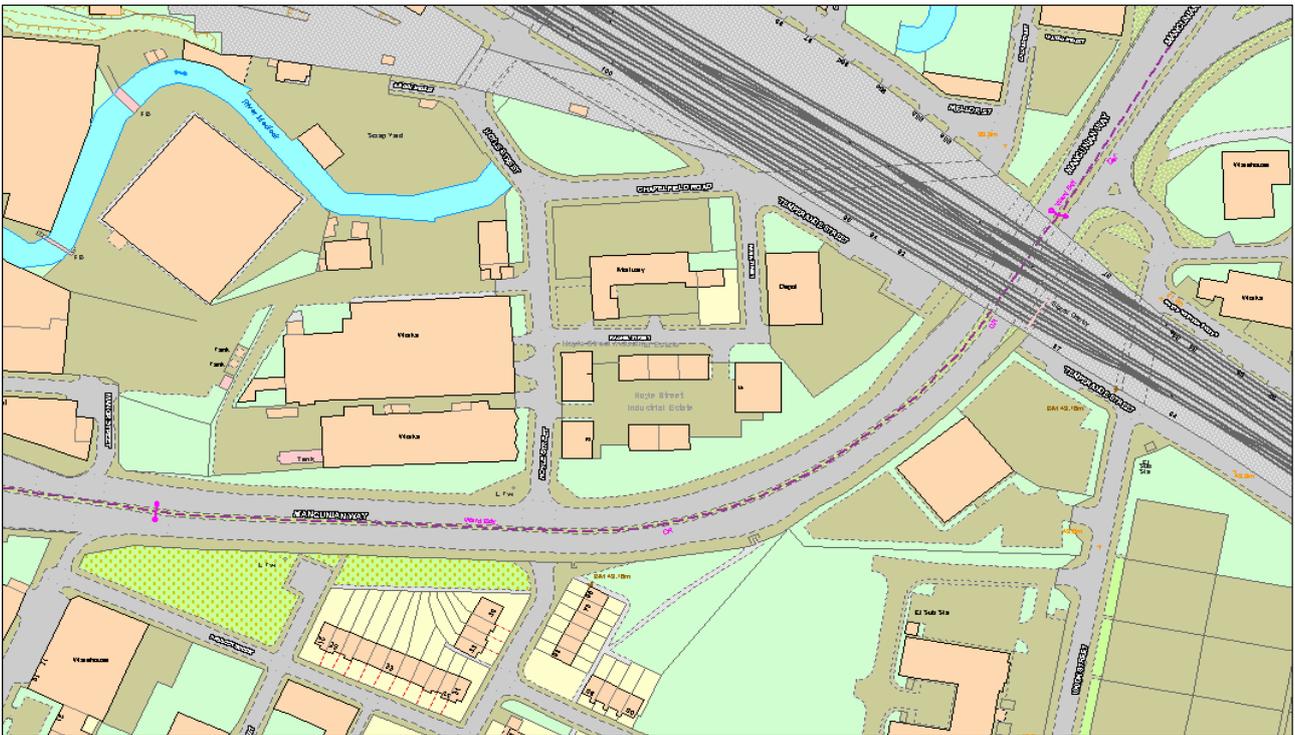


Figure 4: OS MasterMap Topography Layer

Address Layers

OS MasterMap Address Layers contain approximately 29 million geographical features in Great Britain (this includes England, Scotland and Wales, but not the Isle of Man, the Channel Islands or Northern Ireland). Each feature is provided with a unique identifier, a series of cross-reference identifiers to relevant features in other datasets, one or more addresses, a coordinate position on the British National Grid, one or more classifications and information on how and when that feature has changed. Figure 5 shows the addresses symbolised as letters and displayed in geographic relationship to each other.

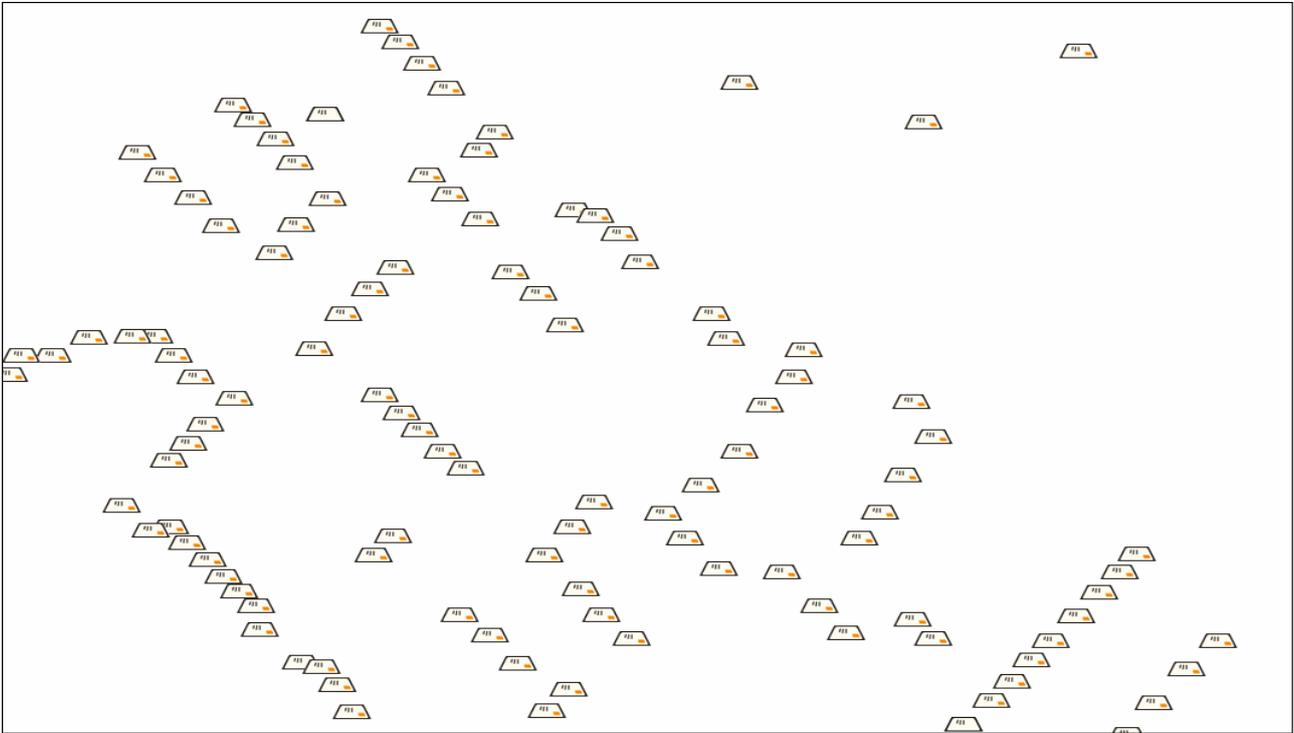


Figure 5: OS MasterMap Address Layers

Integrated Transport Network (ITN) Layer

OS MasterMap includes an ITN Layer that currently contains the Road Network and Road Routing Information (information that may affect a driver's choice of route) for Great Britain. The road network is in geometric sympathy with the underlying topographic features and includes cross-references between network components and the features in the Topography Layer that they intersect. The Road Routing Information is only useable in conjunction with the roads network data, so can only be ordered together with the Road Network theme. The Road Network theme can be ordered on its own. The ITN Layer contains approximately 13 million road features and 1.5 million items of Road Routing Information. Figure 6 shows a selection of the road network. Each colour represents a different classification of road.

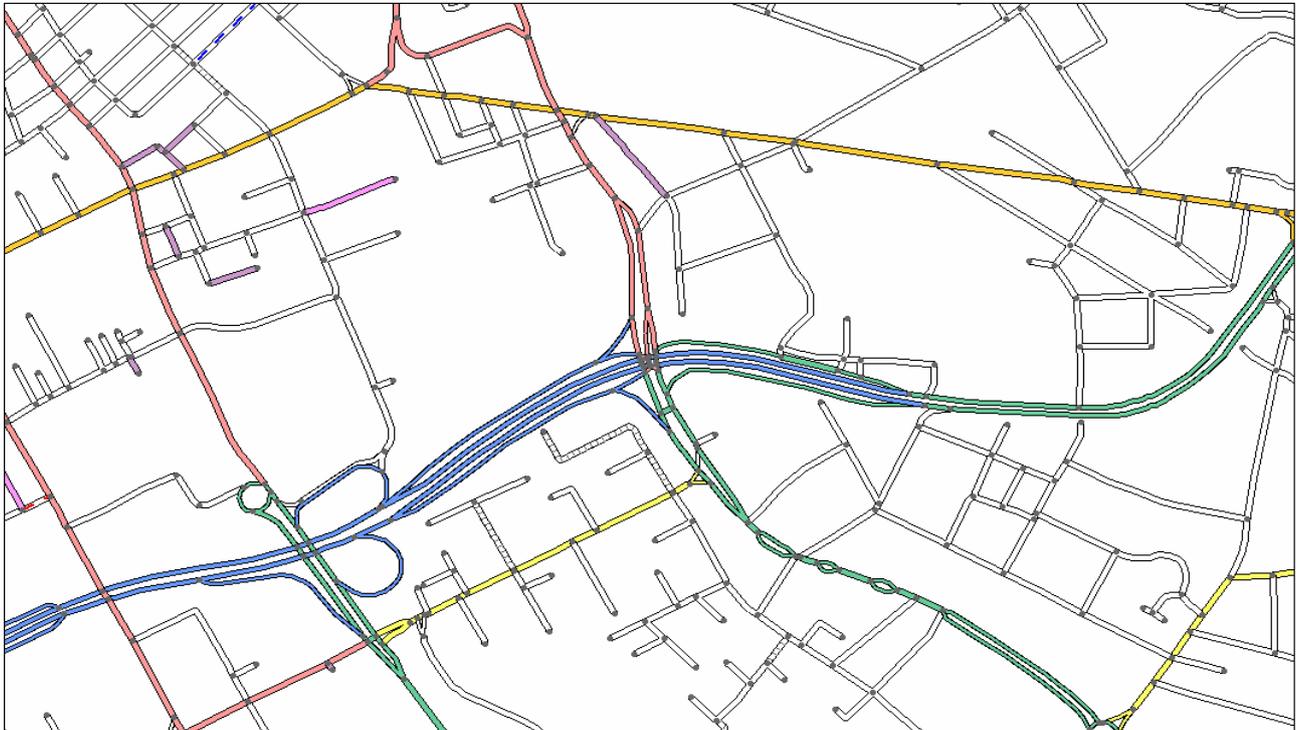


Figure 6: OS MasterMap ITN Layer

Imagery Layer

The Imagery Layer comprises aerial images. An example of the Imagery Layer is shown in figure 7. The images have been orthorectified so that the features in the other layers align well with their counterparts in the image. The aerial images bring context to the features that exist within the vector layers. It also allows interpretation of other features that are not held as features in the vector datasets. The images have been captured under specific weather and time conditions to minimise obscuration by shadows and cloud. Each image is also colour balanced with its adjacent images to minimise differences in the colours of the physical environment. These differences occur largely as a result of flying at different times during the year.



Figure 7: OS MasterMap Imagery Layer

Themes

A theme is a set of features that have been grouped together for the convenience of customers and to provide a high-level means of dividing the data on the layer coherently or logically. A feature can be a member of any number of themes. All features belong to at least one theme.

A theme is created by applying rules based on the attributes of features. A theme rule can depend on the value in more than one feature attribute. A feature is a member of every theme for which it passes the theme rules.

Themes are not part of the classification system of OS MasterMap features. A new theme can be created for the convenience of users, without in any way affecting either the existing themes or the classification of OS MasterMap features.

Features

In this user guide, the term 'real-world object' is used to describe a geographic entity that can be captured and represented in the data. A real-world object is represented by a feature in OS MasterMap data. A complete list of the real-world objects and their feature representations is given in the [OS MasterMap Real-world Object Catalogue](#).

Each feature has one of three geometrical structures – a point, a line or a polygon. A line feature will have a start and end node that reflects the start and end of the real-world object it represents. Where the start and end node is coincident, the feature created is structured as a polygon. Lines and polygons represent both the location and the geometry of the real-world object. Points do not necessarily represent the exact geometry of the real-world object, just the [centroid](#) of its location. Text features are used to provide additional information and context about real-world objects represented by point, line or polygon features. They are represented as a point, which indicates the location where the text should be displayed.

It should be noted that OS MasterMap Imagery Layer is not part of the feature model, as it does not contain individual features but instead provides a seamless source of orthorectified aerial photography that can be visually related to the other layers in OS MasterMap.

Attributes

Each feature comes with an extensive set of attributes that provide information about the feature, for example, its identity, its relationship to other features, geometry and the kind of real-world object it purports to represent. Each type of feature has a different set of attributes.

There are two types of attribute information. Some attributes provide data about the real-world object the feature represents, such as its area or its nature. Other attributes provide additional information about the feature, such as its life cycle and quality. Three of the most important pieces of additional information for the vector layers – the TOID, version and [version date](#) – are discussed in more detail below.

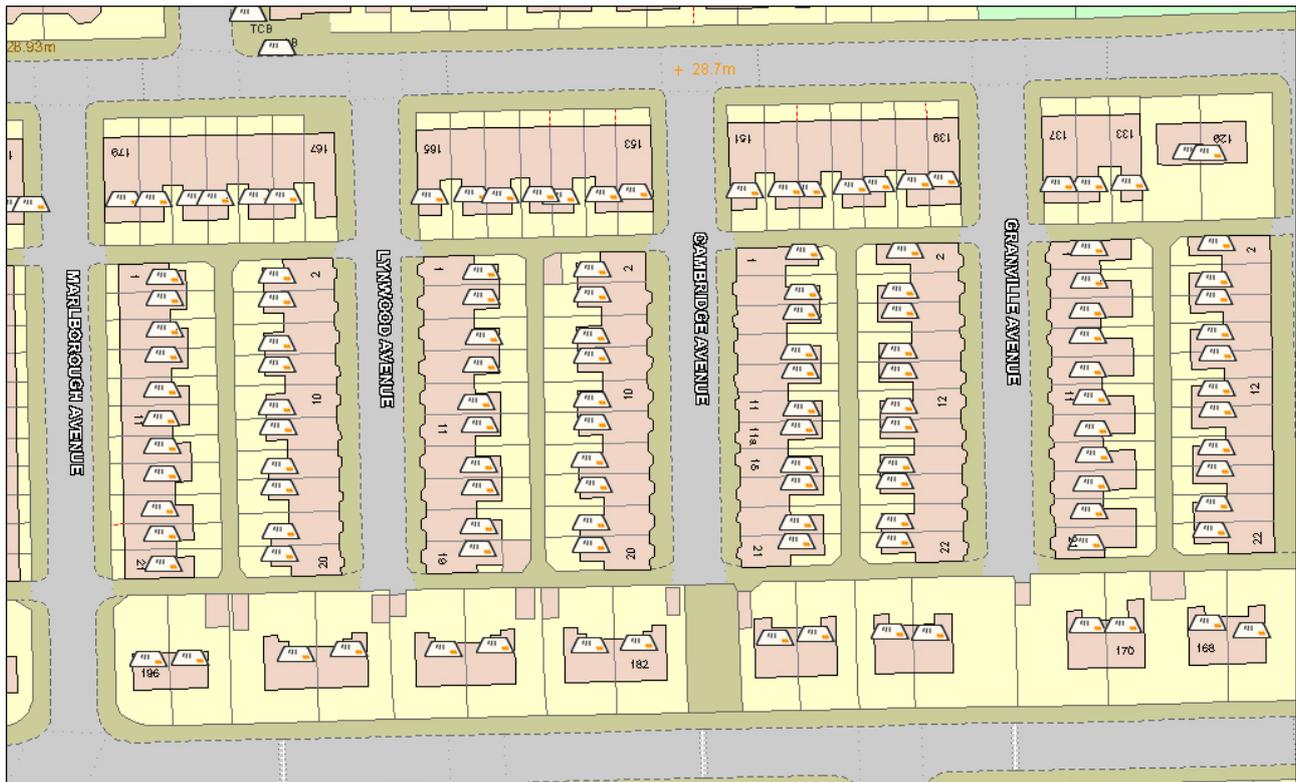
OS MasterMap provides attribution that can be searched for and queried within a GIS. Attribution makes it possible to select, for example, parcels of land that have coniferous tree cover.

This chapter has outlined the main features of the OS MasterMap product and the data models that underpin the layers. It has explained the role the OS MasterMap Address Layers play both within the OS MasterMap family and within the wider vision Ordnance Survey has of providing a framework for customers to create and derive additional value from their geographical information. The following chapter provides a more detailed introduction to OS MasterMap Address Layers.

Chapter 2 Introduction to OS MasterMap Address Layers

Content

An address can be thought of as a series of instructions that allow the identification of a geographical feature's location within the physical environment. OS MasterMap Address Layers provide different types of addresses that can be used to locate and manage geographical features. The addresses included are both postal and geographic in nature. The information has been assembled not only from data collected by Ordnance Survey but also from key organisations involved with the creation of addresses, notably Royal Mail® and Valuation Office Agency. Figure 8, below, shows the OS MasterMap Address Layers, indicated by the letter symbols, over OS MasterMap Topography Layer.



- A multi-occupancy theme, containing approximately 0.2 million residential premises in multi-occupied buildings that Royal Mail knows about but are not included in PAF because the premises' letter boxes are not usually accessible to their delivery person. These are all provided with a postal address and BS 7666 geographical address.

Purpose

OS MasterMap Address Layers have been developed in response to the need for a spatial address dataset that has the following characteristics:

- built from national datasets to ensure consistency in the content and quality of the address information across the whole of Great Britain;
- maintained to agreed currency levels;
- specification levels that are clearly defined, published regularly and improved over time;
- each address uniquely classified and referenced to a national spatial framework that is in the public domain;
- with secure long-term funding for maintenance to ensure that the dataset will be available for the foreseeable future;
- owned by central government, with clear and well-defined property rights; and
- involves key main organisations with responsibility for addressing in the public domain, including Royal Mail and Valuation Office Agency, with the remit and scope to involve others subject to their agreement.

OS MasterMap Address Layers provide all these benefits and establish the link between addresses and all other geographic information, including topography, transport networks, imagery, height, boundaries, land use and any other source of information that has a geospatial context.

One of the most difficult aspects of using addresses to locate and manage geographical features is that they are subject to change from many causes, including property redevelopment, new construction and house or street name changes. OS MasterMap Address Layers provide a means of assisting users to track and manage these changes with respect to the actual buildings on the ground.

Applications

OS MasterMap Address Layers are powerful land and property management tools covering all of Great Britain, coupling the identity, classification, position and address of a well-defined, wide range of premises. From routing and scheduling in traffic management, through to the provision of location-based services, OS MasterMap Address Layers define the relationship between service and customer, and this may be used to save time and money.

Businesses involved in the provision of services to the doorstep – including gas, water, electricity and telecommunications – need to relate a customer/property to their support infrastructures in the street. OS MasterMap Address Layers assist customers in meeting these requirements. Utility providers are able to quickly identify customers affected by interrupted services, through simple routines that correlate the faulty infrastructure with properties supported by those infrastructures.

OS MasterMap Address Layers enable a two-way communication between addresses and other geospatial information. For example, in a GIS, a customer can plot the location of addresses on an aerial image, or can ring-fence an area on the image and identify the addresses in that area in order to communicate with them.

The accuracy of address location is critical in providing efficient public services. Fire, ambulance and police services are able to instantly identify the location of an address to assist in increasing their response times in emergency situations.

Since OS MasterMap Address Layers integrate, and cross-reference with features in other OS MasterMap layers, they are powerful tools in managing insurance risk or in analysing environmental impacts of new engineering developments, such as road-building or the development of waste disposal sites.

Table 2, below, summarises some of the applications that the OS MasterMap Address Layers may be used for.

Table 2: applications

Identifying the locations of incidents for emergency services	Incident analysis for emergency services
Facilities planning for utilities	Site location analysis for retailing
School catchment areas for local government	Address-list cleaning for the purpose of adding spatial references at individual building level
Allocation of central government funding based on number of premises in a given area	Address base for future censuses
Risk analysis for insurance, financial and environmental services	Logistical planning and delivery enabled by precise location of relevant premises

Authorisation of names

In Great Britain, except in the case of certain administrative names, there is no national body responsible for the names and spellings of places appearing on official maps or documents. Each administrative area (that is, district, borough, unitary authority) has a Street Names Authority and a Housing Numbering Authority. The record kept by these authorities, after agreement with Royal Mail, is the authoritative reference supported by an Act of Parliament.

Personal names

There are some occurrences of an occupant's personal name in the data, where this is the only form of address for the property. These are shown as on PAF and will appear contained in brackets.

Data Protection Act 1998

Ordnance Survey is responsible for including OS MasterMap Address Layers in its notification to the Data Protection Commissioner. This advice relates only to the basic OS MasterMap Address Layers data. Customers who link additional data to OS MasterMap Address Layers will need to consider the requirements of the Act. Ordnance Survey strongly advises customers to contact the Commissioner where this is the case.

This chapter has introduced the content of OS MasterMap Address Layers and described the purpose behind creating the product and a variety of applications that the data could be used in. The following chapter discusses the concept of life cycles and how changes to features are managed by Ordnance Survey.

Chapter 3 Feature life cycles and tracking change

The features within OS MasterMap vector layers are viewed as having a life cycle. The life cycle of each feature is matched, where practically possible, to that of the real-world object it represents. For example, a new building will become a new object in the Ordnance Survey main holding of the data and will be treated as the same feature – even if it undergoes change – until the building is demolished. By adopting this approach, Ordnance Survey is emulating real-world behaviour within a digital model and therefore creating a more realistic version of the real world in a computer.

Life cycle rules

Feature life cycles are established and maintained in accordance with a set of published rules. Essentially, these rules indicate when an OS MasterMap feature will be retained and when it will be replaced, for different types of feature and different change scenarios. These rules are not only there to guide Ordnance Survey surveyors collecting and attributing the features, but also to provide customers with a consistent definition of how real-world change is handled by Ordnance Survey.

However, not all changes to the real-world object will be reflected in changes to the feature. For example, the addition of a new porch to a house would usually be considered too minor a change for Ordnance Survey data capture.

Different customers with different applications think of feature life cycles in different ways. For some, any change to the geometry or classification of a feature means that the feature is no longer the same feature for their application. For others, the requirement is for persistence of features – so a feature continues to exist through extensive modification. Customers may wish to consider and create their own definitions of change for comparison with Ordnance Survey definitions. Understanding change is important to understanding the OS MasterMap product and to deriving the optimum value from it.

Life cycle rules adopt the approach of allowing features to persist through changes so far as is reasonable. There is inevitably some degree of subjectivity involved in judging that a real-world object has changed so much it can no longer be considered the same object, and therefore the OS MasterMap feature(s) representing it should be deleted and replaced. The specific rules are detailed later in this chapter. First though, it is important to understand how the attribution records a feature's life cycle.

Unique feature references (TOIDs)

Firstly, every OS MasterMap feature has a unique reference known as a TOID. The TOID is a number with a prefix of 'osgb'. They are never reassigned to a different feature. The TOID is allocated sequentially when a feature is created by Ordnance Survey. The TOID does not contain any intelligence about the feature. One of the key principles of unique referencing is that **the TOID will stay the same throughout the life of a feature**. This gives the feature continuity within its life cycle and makes managing change in a holding of the product easier.

TOIDs are also used to identify one OS MasterMap feature from another. This can reduce the ambiguity when sharing data. A typical example of this is shown in figure 9, where a single building could be recorded in a number of different ways. An organisation could have the property on the corner as 35 Onslow Road in one set of records and as 1–10 Cranbury Towers, Cranbury Place in another. Using OS MasterMap, the organisation could perform two checks to establish identity. Firstly, if the TOID of the building as recorded in OS MasterMap Topography Layer (osgb1000001329143866) was recorded as well, the records could be matched up and the ambiguity removed. Secondly, by querying the OS MasterMap Address Layers, the organisation could establish that only ten addresses are registered at that site (1-10, Cranbury Towers). Therefore, the organisation can establish that 35 Onslow Road is not a postal address and could therefore remove that wording from any records used to generate mail.

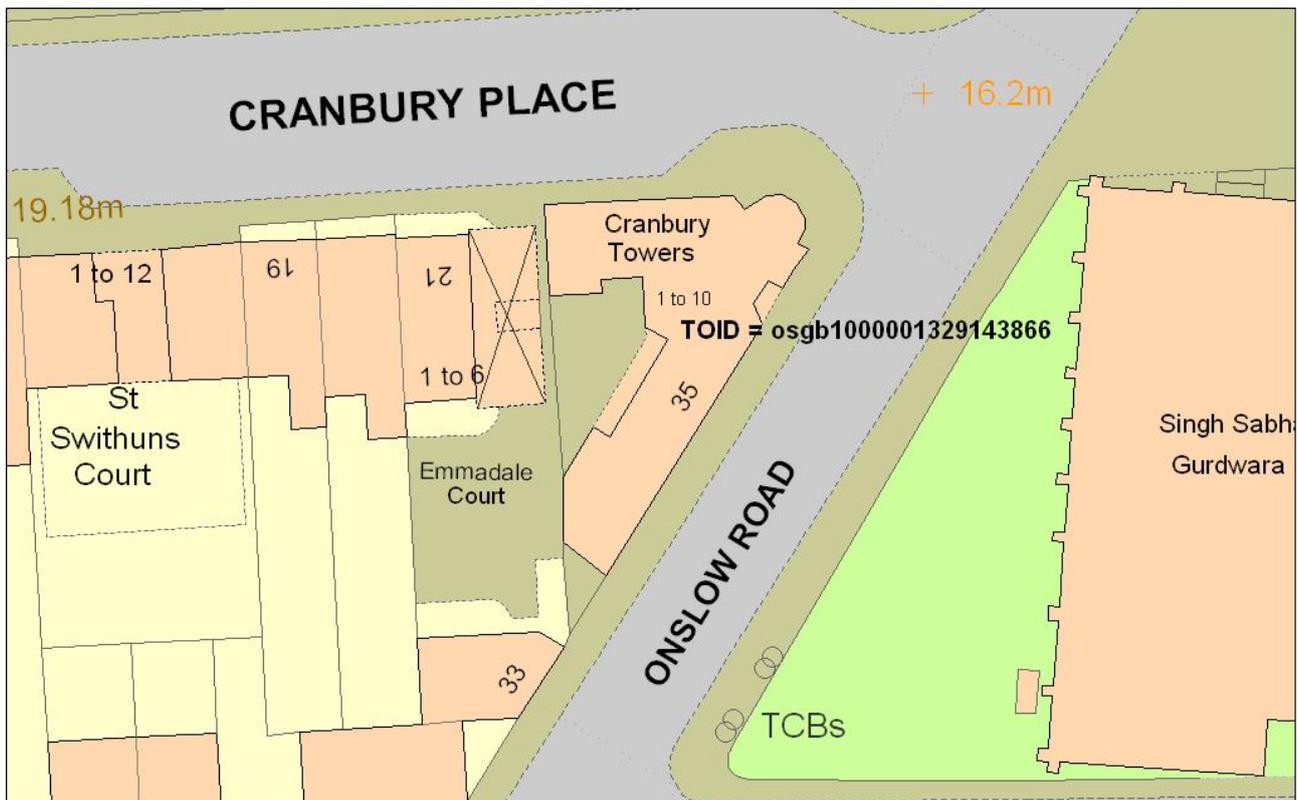


Figure 9: using the TOID to resolve ambiguity in customer records

Customers could consider grouping sets of features together into more complex features representing schools, factories or individual properties comprising the address, the house, its garage and garden by listing the TOIDS.

TOIDs enable explicit, maintained references between features in different layers. OS MasterMap ITN line and point features reference the OS MasterMap Topography polygon features within which they are located. This allows the user to navigate between the network and polygonised view of the same road network. OS MasterMap Address Layer 2 features reference the OS MasterMap ITN network features they are addressed from and the OS MasterMap Topography polygon feature they are located within. This allows the user to navigate to premises from the road network or between the point and polygonised view of premises, respectively.

Feature version numbers

Although a feature might remain essentially the same in terms of its nature, throughout its life it is likely to experience changes in terms of the information that Ordnance Survey collects and supplies in its attributes. Each feature also has a version number that is incremented each time there is change of any kind to the feature via one of its attributes. The change can be due either to real-world change or to processes not connected with real-world change, such as error correction or geometric cleaning and structuring of the data. What constitutes a change leading to a version and what constitutes a change that is deemed to be the end of that feature's life cycle is discussed below.

The previous version is referred to as the **superseded** version, and the new version as the **superseding** version. It should be noted that in a small minority of cases, a new version of a feature can be created without any change apparent to the customer. This is due to change to internal attributes that the OS MasterMap database uses during the maintenance process but which are not included in product data.

Feature version date

The date on which the new version is created is recorded in the feature version date attribute. The date is important for tracking and identifying when change has taken place. Using the TOID, the version number and the version date, it is possible to track a feature's changes over time. It is worth noting that the date the version changed for Ordnance Survey will probably be different from the date on which the feature is loaded into the customer's file or database holding. Many translators will provide an additional column within the holding to record the load date. It is important for the customer to identify these dates in their holdings and to understand the difference between them if they want to be able to track changes.

One of the key differences between OS MasterMap features and other products is that, with the correct data storage model, a data holding can be rolled back and forward to a given point in time. It must be emphasised though that this is the customer's responsibility, since only the current version is available in the product; none of the previous versions are included.

General point feature life cycle rules

The general rules on the life cycle of points are outlined below.

The life cycles of point features are simpler than those of lines or areas, since they cannot change in size or split into multiple features.

Creation of point features

When a new real-world object comes into being, a new point feature is created to represent it. If, however, the object is a replacement for a previous real-world object in the same position the original feature is retained.

Deletion of point features

When a real-world object is no longer present in the real world, the point feature is removed from Ordnance Survey's holding. Ordnance Survey keeps a record to indicate that the feature with this TOID used to exist and notifies the customer at the next date of supply.

Modification of point features due to real-world change

By the nature of the real-world objects represented as point features in OS MasterMap data, it is unlikely that one will be modified without changing its identity. Therefore, any modification to a point feature as a result of real-world change will result in the deletion of the original feature and creation of a new feature, unless there is a clear reason to identify the resultant real-world object with the original. This applies to both geometric change and change of descriptive group or descriptive term.

Modification of point features due to error correction

When a point feature is found to be incorrectly attributed due to an error, or is moved due to the correction of a positional accuracy error, the original feature is retained, appropriately modified and with an incremented version number.

Address feature life cycle rules

The following section explains how the general life cycle rules explained above are applied to address features.

Creation of address features

For the Address theme, Royal Mail creates new addresses within PAF and supplies updates monthly to Ordnance Survey. Following processing into Ordnance Survey systems, a new address feature is created. Such features will be automatically matched to approximate positions based upon the correlation between their postcode and other address features with similar or identical postcodes; in time these matches will be improved by Ordnance Survey to more accurate positions – these would be classified as modifications of existing address features.

For the objects without a postal address (OWPA) theme, Ordnance Survey creates new OS MasterMap Topography Layer features and identifies certain classes of feature requiring addresses, such as community centres and pumping stations. A new address feature is automatically created, the process generating the address geographically and using the centroid of the topography feature as the coordinate position.

For the multi-occupancies without a postal address (MOWPA) theme, Royal Mail creates new addresses within their Multi-Residence (MR) file and supplies updates monthly to Ordnance Survey. Following processing into Ordnance Survey's systems, a new address feature is created and assigned the classification and coordinate position of the *parent delivery point* address feature.

Deletion of address features

For the Address and MOWPA themes, when Royal Mail decides that an address no longer receives mail, it is deleted from PAF or MR, update of which is supplied monthly to Ordnance Survey. Following processing, the corresponding address feature in OS MasterMap is removed from the database. A record is kept in the database to indicate that a feature with this TOID used to exist. This is used to supply departed feature information when the customer orders updates.

For the OWPA theme, when Ordnance Survey finds a real-world object that is demolished, it removes the representative OS MasterMap Topography Layer feature and its related address feature from the database.

Modification of address features due to real-world change

When the Royal Mail changes a PAF or MR address, such as amending some of the address details, this is included in the monthly PAF or MR update received by Ordnance Survey. Ordnance Survey may change a feature by improving the match location or identifying a potential discrepancy. In either of these cases, the address feature is updated and given an incremented version number and the date on which the new version became current is supplied by the version date attribute.

Modification of address features due to error correction

Error corrections are treated in the same way as modifications of features due to real-world change.

Modification of address features due to change in relationship

There is an explicit relationship with features within the OS MasterMap Topography and ITN Layers. It may prove useful to understand the life cycle rules governing Topography and ITN Layer features. These are contained within the existing [OS MasterMap user guides](#), chapter 3.

Modifications to cross-references to other themes, layers or external datasets are treated in the same way as modifications of features due to real-world change.

This chapter has explained the rules governing the way Ordnance Survey manages changes to features generally and point features in particular. The next chapter describes the themes available with OS MasterMap Address Layers.

Chapter 4 OS MasterMap Address Layer model

This chapter explains how the OS MasterMap general model is implemented in OS MasterMap Address Layers.

Themes

OS MasterMap Address Layers comprise three themes, each containing address features. An address, whilst it has no physical presence itself, is always related to a real-world object in the landscape. In OS MasterMap Address Layers each feature is only present in one of the themes.

The first theme is the Address theme. The creation process for Address is the addition of Ordnance Survey identifiers, classification, National Grid coordinates and other metadata to addresses provided in Royal Mail's Postal Addressing File.

PAF contains approximately 27 million postal delivery points for England, Wales and Scotland. These delivery points may be related to objects shown in OS MasterMap Topography Layer, such as buildings, or objects not part of the OS MasterMap Topography Layer specification, such as temporary buildings and houseboats. All valid addresses in PAF, to which coordinates can be allocated, will be in the Address theme. The Address Layer contains only the Address theme and with postal address attributes. Address Layer 2 contains the Address theme with both postal and geographic address attributes and additional classification attributes.

The second theme (in Address Layer 2 only) contains approximately 0.2 million multi-occupancies without a postal address (MOWPAs). These are sourced from the addresses in Royal Mail's new Multi-Residence (MR) file containing residential premises that fall outside Royal Mail's definition of a *delivery point*, that is, mail is addressed to them but the postal delivery person cannot ordinarily attend the letter box. An example of MOWPAs are flats within a converted house that are clearly separate residences but only have one letter box that the postal delivery person can reach (usually the front door of the house).

The third theme (in Address Layer 2 only) contains approximately 1 million objects without a postal address (OWPAs). These are objects that do not have a Royal Mail address, but are still significant enough buildings or structures within the environment that customers may wish to identify. Examples of these include car parks and depots. They are sourced initially from features annotated with cartographic text in OS MasterMap Topography Layer. Figure 10, below, shows examples of all three themes.

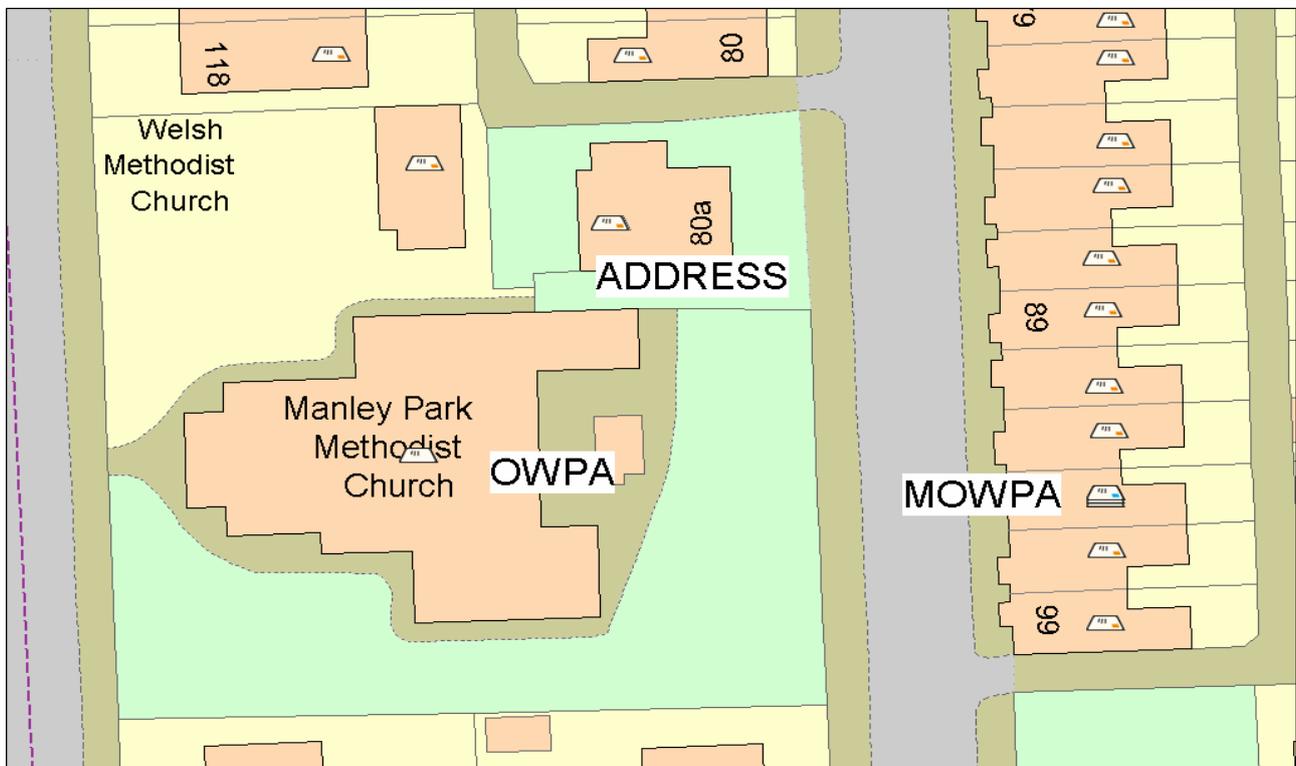


Figure 10: three OS MasterMap Address Layer themes

In addition to the three themes listed above, OS MasterMap Address Layer 2 also includes the ID X-Ref table. This table contains only feature identifiers. The purpose of the table is to provide a means of cross-referencing OS MasterMap Address Layer 2 features with relevant features in other authoritative datasets, for example, Royal Mail PAF delivery points, multi-residences and Valuation Office Agency council tax and non-domestic ratings, as no single, definitive address set currently exists in Great Britain.

The following section introduces the attribute sets of the different themes.

Attribution in the OS MasterMap Address Layers

This section and the following three chapters describe the main attributes for each theme, along with any particular considerations a customer should be aware of when using the data.

The attributes for each theme can be grouped into the following elements:

- Theme
- Primary identifiers
- Reference identifiers
- Lifecycle metadata
- Address
- Address metadata
- Position
- Position metadata
- Classification
- Classification metadata

Table 3, below, groups the individual attributes into their respective elements. Address Layer 2 has all the attributes listed. Address Layer has only the attributes highlighted in grey.

Table 3

Element	Attribute
Theme	Ordnance Survey Theme
Primary Identifiers	Ordnance Survey Address TOID
	Ordnance Survey OSAPR
	Royal Mail UDPRN
	Royal Mail UMRRN
	Royal Mail Address Key
	Royal Mail Organisation Key
	Valuation Office Agency Council Tax UARN
Valuation Office Agency Non-domestic Rates UARN	
Reference Identifiers	Ordnance Survey Reference to Address TOID
	Ordnance Survey Reference to OSAPR
	Ordnance Survey Reference to Topography TOID
	Ordnance Survey Reference to Cartographic Text TOID
	Ordnance Survey Reference to ITN Road Link TOID
	Ordnance Survey Reference to ITN Road TOID
	Royal Mail Reference to UDPRN
	Royal Mail Reference to Address Key
Royal Mail Reference to Organisation Key	
Lifecycle Metadata	Ordnance Survey Address Version
	Ordnance Survey Address Change History
	Ordnance Survey Address Version Date
	Ordnance Survey Topography Version
	Ordnance Survey Cartographic Text Version
	Ordnance Survey ITN Road Link Version
	Ordnance Survey ITN Road Version
	Royal Mail Postal Address Date
Addresses	Ordnance Survey BS7666 Address
	Ordnance Survey Alternative Address
	Royal Mail Delivery Point Address
	Royal Mail Welsh Delivery Point Address
	Royal Mail Alias Delivery Point Address
	Royal Mail True PO Box Address
	Royal Mail Multi-residence Address
Valuation Office Agency Non-domestic Rates Address	
Address Metadata	Ordnance Survey PO Box Flag
	Royal Mail Multiple-occupancy Count
	DCLG Local Authority Code
Position	Ordnance Survey Coordinate
Position Metadata	Ordnance Survey Positional Status Flag
	Ordnance Survey Spatial Referencing System
Classification	Ordnance Survey Base Function
	National Land Use Database Land Use Group
	Valuation Office Agency Non-domestic Rates Primary Description Code
	Valuation Office Agency Non-domestic Rates Special Category Code
Classification Metadata	Ordnance Survey Classification Confidence

Chapter 5 Address/Postal theme attributes

The rule governing whether a feature is a member of the Address/Postal theme is its presence in PAF. PAF contains postal address data for approximately 27 million delivery points in England, Wales and Scotland. These delivery points may be premises that are shown on OS MasterMap Topography Layer, such as buildings, or they may be features that do not form part of the Topography Layer specification, such as PO boxes, caravan parks, buildings under railway arches, temporary buildings and houseboats. All valid addresses in PAF, to which coordinates can be allocated, will be in the Address/Postal theme. The features included within this theme are provided with at least two types of address: a PAF postal address and a BS 7666 geographic address. Some have additional addresses as can be seen from the full list of attributes given below.

Ordnance Survey does not change the content of PAF directly: feedback is sent to Royal Mail where discrepancies occur between PAF and OS MasterMap Topography Layer. These changes may take several months to be reflected in OS MasterMap Address Layers.

Customers should note that after translation or loading into their systems, the names or order in which these attributes appear may be different. There may be additional attributes provided by their system. In case of doubt, customers should refer to their system suppliers for further information.

Each attribute is prefaced by the name of the organisation supplying the information.

Theme

Ordnance Survey theme

This will be *Address* for Address Layer and *Postal* for Address Layer 2. This is to allow both variants of the Address theme to be delivered via the same GML schema.

Primary identifiers

Ordnance Survey Address TOID

The TOID of the Address feature, the primary identifier in this theme.

Ordnance Survey OSAPR

A Postal Address feature also has an OSAPR (Ordnance Survey ADDRESS-POINT[®] Reference) identifier. The OSAPR is the unique reference used in Ordnance Survey's ADDRESS-POINT product. There is usually a one-to-one relationship between the OSAPR and the Address TOID. OSAPRs are included in OS MasterMap Address features so they can continue to be used as the primary identifier of postal addresses in applications based on the Ordnance Survey ADDRESS-POINT product.

Royal Mail UDPRN

This contains Royal Mail's 8-digit Unique Delivery Point Reference Number.

Royal Mail Address Key

This contains Royal Mail's 8-digit unique address identifier.

Royal Mail Organisation Key

This contains Royal Mail's 8-digit unique organisation identifier.

Valuation Office Agency Council Tax UARN

This contains Valuation Office Agency's 11-digit Unique Address Reference Number used to identify premises attracting council tax. This is provided where a match is made with a Royal Mail delivery point. Usually, premises will either be under council tax or non-domestic rates, but sometimes both. This attribute is present in England and Wales only.

Valuation Office Agency Non-domestic Rates UARN

This contains Valuation Office Agency's 11-digit Unique Address Reference Number used to identify premises attracting non-domestic rates. This is provided where a match is made with a Royal Mail delivery point. Usually premises will either be under council tax or non-domestic rates but sometimes both. This attribute is present in England and Wales only.

Reference identifiers

Ordnance Survey Reference To Topography TOID

This is the TOID from the Topography Layer feature within which the Address feature is located. It may refer to any topographic point or polygon feature that represents the object being addressed in Address Layer 2 but will always refer to a building where it is present in Address Layer. Only one Topography Layer feature will be used for the TOID. Where an address has not been matched to a Topography Layer feature, this TOID will not be present, but the record has to be included as it exists in Royal Mail's PAF.

Ordnance Survey Reference To ITN Road Link TOID

The TOID from the nearest section or link from the OS MasterMap ITN Layer to the Address feature, usually the one it is addressed to and accessible from.

Ordnance Survey Reference To ITN Road TOID

The TOID from the road name associated to the Road Link as described above. The Ordnance Survey ITN Road TOID is included for potential future correlation with the National Street Gazetteer Unique Street Reference Number (USRN) (subject to agreement) as most local street gazetteers exist at road (street) level only, rather than at road link (elementary street unit) level. Also, the road (street) is the home of the name, a key ingredient in the correlation exercise.

Life cycle metadata

Ordnance Survey Address Version

Version number for the Address feature's TOID.

Ordnance Survey Address Change History

The reasons, with associated dates, that led to this version. There can be multiple reasons per version.

Ordnance Survey Reason for Change

The reason why a new version (or new feature) has been created or changed. A list of the entries that can be found in this attribute is given in the [OS MasterMap Address Layer 2 technical specification](#).

Ordnance Survey Change Date

The date of the above reason for change.

Ordnance Survey Address Version Date

The date the version of the feature was created by Ordnance Survey within its OS MasterMap master database.

Ordnance Survey Topography Version

The current version number of the referenced Topography Layer feature TOID.

Ordnance Survey ITN Road Link Version

The current version number of the referenced ITN Road Link feature TOID.

Ordnance Survey ITN Road Version

The current version number of the referenced ITN Road feature TOID.

Royal Mail Postal Address Date

This date records when Ordnance Survey was supplied with either a new or updated Royal Mail delivery point address.

Addresses

Ordnance Survey BS 7666 Address

The following attributes provide a geographical alternative address for BS 7666 users, with the thoroughfare and locality elements derived from other Ordnance Survey products as indicated. The following attributes conform to BS 7666.

Ordnance Survey BS 7666 Secondary Addressable Object Name

An addressable object that is addressed by reference to another addressable object. Where present, this is derived from the Department Name and/or Sub-building Name/Number of the Royal Mail Delivery Point Address.

Ordnance Survey BS 7666 Primary Addressable Object Name

An addressable object that can be addressed without reference to another addressable object. This is derived from the Organisation Name and/or Building Name and/or Building Number of the Royal Mail Delivery Point Address.

Ordnance Survey BS 7666 Street

The whole or part of a highway, road, lane, footpath, square, court, alley or passage. This is derived from the nearest road from OS MasterMap ITN Layer.

Ordnance Survey BS 7666 Locality

The neighbourhood, suburb, district, village, estate, settlement, or parish that may form part of a town, or stand in its own right within the context of one or more administrative areas. This is derived from parish and ward names from Ordnance Survey 1991 Boundary-Line™ data. Boundaries from this date were used because they are prior to the most recent major reviews of parishes, notably the abolition of parishes within Scotland, and still reflect the locally-understood names for most localities.

Ordnance Survey BS 7666 Town

A city or town that is not an administrative area, a suburb of an administrative area that does not form part of another town or a London district. This is derived from the Settlement layer within Ordnance Survey's Strategi® product.

Ordnance Survey BS 7666 Administrative Area

A geographic area that may be either a highest level local administrative area, which may be a county or unitary authority, London, or an island or island group. This is derived from the local authority boundaries in Ordnance Survey's most current Boundary-Line product.

Ordnance Survey BS 7666 Postcode

A set of characters identifying a group of postal delivery points, defined by Royal Mail to facilitate the sorting and delivery of mail. This is derived from the Royal Mail Delivery Point Postcode.

Ordnance Survey Alternative Address

This information has been collected by Ordnance Survey and may provide alternatives to both the Royal Mail Delivery Point address and the Royal Mail Alias Delivery Point Address. Equally, some of the information could be the same as either of those two addresses. The definitions are the same as for the equivalent Royal Mail Delivery Point Address attributes from Sub-building Name/Number through to Thoroughfare Name.

All these Royal Mail and Ordnance Survey Alias and Alternative Delivery Point addresses have been provided to aid the processes of address matching and cleaning. Where a customer may have several different lists or databases of addresses containing different variations of address for the same feature, the different addresses in the Address theme can be used to establish a single definitive address or collection of addresses for any given feature that is used across the customer's organisation.

Royal Mail Delivery Point Address

Royal Mail requires that each delivery point must contain the following address information as a minimum:

- postcode;
- post town; and
- organisation name; or
- PO box number; or
- building name or number; or
- sub-building name or number.

Royal Mail Organisation Name

The organisation name is the business name given to a delivery point within a building or small group of buildings. For example:

TOURIST INFORMATION CENTRE, HIGH STREET

This field could also include entries for offices, public houses and libraries.

Royal Mail Department Name

In a few organisations, department name is indicated because mail is received by subdivisions of the main organisation at distinct delivery points. For example:

ABC COMMUNICATIONS	Organisation name
MARKETING DEPARTMENT	Department name
LONDON ROAD	Thoroughfare

Royal Mail Post Office box

A post office (PO) box is a non-geographic address assigned a number by Royal Mail. As these are non-geographic, and cannot be matched to the customer's address, Ordnance Survey will match them to the delivery office from which they are delivered to the addressee.

It should be noted that using PO box postcodes within location-based searches will identify the position of the delivery office, not the addressee.

Royal Mail Sub-building Name/Number

The sub-building name and/or number are identifiers for subdivision of properties. For example:

FLAT 3	Sub-building name
POPLAR COURT	Building name
LONDON ROAD	Thoroughfare

If the above address is styled 3 POPLAR COURT, all the text will be shown in the Building Name field and the Sub-building Name/Number field will be empty. The building number will be shown in this field when it contains a range, decimal or non-numeric characters.

Royal Mail Building Name

The building name is a description applied to a single building or a small group of buildings, such as Highfield House. This also includes those building numbers that contain non-numeric characters, such as 44a.

Some descriptive names, when included with the rest of the address, are sufficient to identify the property uniquely and unambiguously and are included in OS MasterMap Address Layers with no further investigation, for example, *MAGISTRATES COURT*.

Descriptive names in brackets, following a distinctive name, will only be shown in OS MasterMap Address Layers when they are shown in this form in PAF. For example, *RAILWAY TAVERN (PUBLIC HOUSE)* or *THE COURT ROYAL (HOTEL)*.

Descriptive names with or without numbering are captured if included in PAF.

Royal Mail Building Number

The building number, or postal number, is a number given to a single building or a small group of buildings, thus identifying it from its neighbours, for example, *44 HIGH STREET*.

Building numbers that contain a range, decimals or non-numeric characters do not appear in this field but will be found in the *building name* or the *sub-building name* fields.

Royal Mail Dependent Thoroughfare Name

In certain places, for example, town centres, there are named thoroughfares within other named thoroughfares, such as parades of shops on a High Street where different parades have their own identity. For example, *KINGS PARADE, HIGH STREET* and *QUEENS PARADE, HIGH STREET*.

Royal Mail Thoroughfare Name

In OS MasterMap Address Layers, a thoroughfare is fundamentally a road, track or named access route on which there are Royal Mail delivery points, for example, *HIGH STREET*.

Royal Mail Double Dependent Locality

This is used to distinguish between similar or same thoroughfares within a dependant locality. For example, *Millbrook Industrial Estate* and *Cranford Estate* in this situation *BRUNEL WAY, MILLBROOK INDUSTRIAL ESTATE, MILLBROOK, SOUTHAMPTON* and *BRUNEL WAY, CRANFORD ESTATE, MILLBROOK, SOUTHAMPTON*.

Royal Mail Dependent Locality

Dependent locality areas may define an area within a post town. These are only necessary for postal purposes where there are thoroughfares of the same name, to aid differentiation. For example, *SHIRLEY* and *SWAYTHLING* in the situation, *HIGH STREET, SHIRLEY, SOUTHAMPTON* and *HIGH STREET, SWAYTHLING, SOUTHAMPTON*.

Royal Mail Post Town

The post town is the town or city in which is located the Royal Mail sorting office from which mail is delivered to its final recipient. There may be more than one, possibly several, sorting offices in a town or city.

Royal Mail Postcode

A postcode is an abbreviated form of address made up of combinations of between five and seven alphanumeric characters. These are used by Royal Mail to help with the automated sorting of mail. It also provides a short code for a street address. A postcode may cover between 1 and 100 addresses. The average number of addresses per postcode is 15.

There are two main components of a postcode:

- the outward code (also called outcode). The first two to four characters of the postcode constituting the postcode area and the postcode district. It is the part of the postcode that enables mail to be sent from the accepting office to the correct area for delivery; and
- the inward code (also called incode). The last three characters of the postcode constituting the postcode sector and the postcode unit. It is used to sort mail at the local delivery office. For example:

OUTWARD		INWARD	
NW	6	4	DP
			Unit
		Sector	
	District		
Area			

There are five outward codes used by Royal Mail that are not included in OS MasterMap Address Layers. These are:

- BT for Northern Ireland;
- GI for National Giro;
- IM for the Isle of Man;
- JE for Jersey; and
- GY for Guernsey, Alderney and Sark.

Royal Mail Postcode Type

This indicates whether a postcode applies to a single delivery point, which will be indicated with the value *large*, or a number of delivery points, indicated by the value *small*.

Royal Mail Delivery Point Suffix

A two-character code identifying an individual delivery point within a postcode. Also known as a Premises Code.

Royal Mail Welsh Delivery Point Address

In Wales only, Royal Mail has some alternatives approved by Welsh Local Authorities for Dependent Thoroughfare Name through to Post Town of the above Royal Mail Delivery Point Address. These are made available in PAF and are passed on in OS MasterMap Address Layer 2.

Royal Mail Alias Delivery Point Address

Royal Mail has some alias information relevant to the above Royal Mail Delivery Point Address (including the Welsh one). These are made available in PAF (although Royal Mail does not yet provide definitions for them) and are passed on in OS MasterMap Address Layer 2.

Note: only the Alias Building Name is present in the current release.

Royal Mail Alias Also Known As

Royal Mail Alias Building Name

Royal Mail Alias Department Name

Royal Mail Alias Organisation Description

Royal Mail Alias Organisation at a Residential

Royal Mail Alias Trading Name

Royal Mail Alias Welsh Alternative

Royal Mail True PO Box Address

This is the billing address of the person who leases the PO box, if they have consented to its release from Royal Mail.

Note: this address is not present in the current release.

Royal Mail True PO Box Organisation Name

As for the Royal Mail Organisation Name above.

Royal Mail True PO Box Number

As for the Royal Mail Post Office Box above.

Royal Mail True PO Box Geographical Address

Similar to a complete Royal Mail Delivery Point Address, but supplied in a single, comma separated attribute.

Royal Mail True PO Box Postcode

As for the Royal Mail Postcode above.

Valuation Office Agency Non-domestic Rates Address

The address of a property that can be inherited, attracting a non-domestic rate. Only the business name is present in the current release.

Valuation Office Non-domestic Rates Firm Name

This is the business name present in Valuation Office Agency's non-domestic rates file and is provided where a match is made and the Firm Name is present.

Address metadata

Royal Mail Multiple Occupancy Count

This indicates whether a Royal Mail delivery point serves more than one premises, such as flats within a house that the postal delivery person cannot ordinarily access. This will be set to the value of '0' or '1' if there are no known sub-premises and will be a value of greater than one if there are multiple sub-premises. Over time, it should indicate an equivalent number of entries in the MOWPA theme, but even then, there will be occasions when Royal Mail will either be unable to determine exactly how many sub-premises there are or acquire the addresses for them all, so this number should be taken as indicative only.

Ordnance Survey PO Box Flag

This indicates whether the delivery point refers to a PO Box that is located at the relevant sorting office, in which case, the value will be *True*, or not (*False*).

DCLG Local Authority Code

A three- or four-digit code that the Department for Communities and Local Government (DCLG) has for each local authority, for example, '405' for Aylesbury Vale District, '5630' for Kingston upon Thames London borough. The original code has a prefix letter, for example, 'J0405' but this has been stripped out to follow the convention of the NSG/NLPG DTF 6.3 specification.

Position

Ordnance Survey Address Coordinate

Easting

The easting coordinate of the feature.

Northing

The northing coordinate of the feature.

Position metadata

Ordnance Survey Address Status Flag

The importance of checking this group of attributes to establish quality cannot be overemphasised.

The known quality of the data is indicated by a combination of the following five attributes. A clear understanding of these attributes will help customers understand the degree of certainty Ordnance Survey has in the location of the address.

Ordnance Survey Match Status

This indicates the quality of the matching between Ordnance Survey and PAF addresses as either *Matched*, *Unmatched*, *Matched With Discrepancy (Unresolved)* or *Matched With Discrepancy (Referred)*.

Ordnance Survey Physical Status

This indicates the real-world status of the structure to which the delivery point is linked. It will be *Planned*, *Existing*, *Demolished* or *Unknown*.

Ordnance Survey Position Capture Method

This indicates the method by which the provided coordinate position was established, either *Surveyed* or varying degrees of mathematical approximation based on the position of premises with the same or similar postcodes.

Ordnance Survey Position Status

This indicates whether an address location is in its *Final* or *Provisional* position. *Final* means that the address is located either inside the building that defines the addressed premises or in a position that cannot be improved because of the nature of the addressed structure, for example, a houseboat. *Provisional* means the address may be a considerable distance from the addressed structure (usually less than 50 m).

Ordnance Survey Structure Type

This is a simple structural classification of the Topography Layer feature referred to by this address feature. It indicates that the topographic feature referred to is a *Permanent Building*, *Other Structure* or of *Unknown* construction.

Ordnance Survey Spatial Reference System

The spatial referencing system used to calculate the geographic coordinates; this is the British National Grid (BNG).

Classifications

There is no definitive classification for features to describe what the address is actually addressing. OS MasterMap Address Layer 2 contains four classifications to assist customers in identifying the function of the addressed feature. Apart from the Ordnance Survey Base Function, the other three classifications are provided in code form only. However, these classification systems, their interrelationships, and the list of features included in the scope of OS MasterMap Address Layer 2 are available in a separate document on the Ordnance Survey website. Any customers adopting these classification systems should check the website regularly for any changes.

It is important to note that there are some features that may have either a postal or non-postal address – that is, they cannot consistently be said to belong to the one or the other, such as churches. These can therefore be found in either the OWPA theme or the Address theme, depending on whether the Royal Mail has an address for it or not.

Ordnance Survey Base Function

The Base Function classification is a new development and is likely to change over the next few years. Its origin is in cartographic text found in many Ordnance Survey datasets, so the system is very detailed, having some 1500 functions currently. The assignment of a class to a feature is based on associated text from the OS MasterMap Topography Layer. Change to a feature's classification is reported as with any other change.

National Land Use Database (NLUD) Group

The NLUD classification is more general having 41 groups, for example, *Agriculture* and *Manufacturing*. This classification is owned and maintained by DCLG. An initial validation has been undertaken by DCLG between the NLUD Group and the Ordnance Survey Base Functions to resolve discrepancies or contradictions.

Valuation Office Agency Non-domestic Rates Primary Description (PDesc) Code

A general classification system having 8 divisions at the highest level, for example, *Commercial* and *Industrial*, with further subdivisions amounting to 108 codes. It is used by the Valuation Office Agency and local authorities for the purpose of non-domestic rate valuing and billing. No validation has yet been undertaken between this classification and either of the other two classifications.

It is assumed all premises in Valuation Council Tax are residential dwellings, so their representative features will have no PDesc code applied to them.

This attribute is provided for address features in Scotland, but in such cases, has only been inferred, because the Valuation Office Agency does not cover Scotland.

Valuation Office Agency Non-domestic Rates Special Category (SCat) Code

As for the PDesc above, but the SCat system is much more specific, having about 360 categories, for example, *Petrol Filling Stations* and *Cement Works*.

Classification metadata

Ordnance Survey Address Classification Confidence

A measure of the confidence Ordnance Survey has that its Base Function classification is correct as extrapolated from the Royal Mail Organisation Name. For an explanation of the confidence ratings, please see the [OS MasterMap Address Layer 2 technical specification](#).

This chapter has explained the attribution available with the Address Layer and Address Layer 2 postal theme. The following chapter looks at the attribution available in the Address Layer 2 OWPA theme.

Chapter 6 Objects Without a Postal Address (OWPA) theme attributes

This theme is only present in OS MasterMap Address Layer 2.

The rule governing an address feature's membership of the OWPA theme is whether it exists on a list of features extractable from OS MasterMap Topography Layer and owned by Ordnance Survey. This list includes all Ordnance Survey features in scope of the NLUD and Valuation Office Agency classification systems as a minimum, plus a number of others that are believed to be useful. There are some NLUD and Valuation Office Agency classifications that are out of scope of OS MasterMap Topography Layer, such as advertising hoardings and automatic teller machines (ATMs), and for the time being, they are not provided in OS MasterMap Address Layer 2.

An OWPA is referenced to and addressed using many of the features around it that have a high degree of permanency to keep the ambiguity as low as possible. These features include:

- elements with a physical presence in landscape, such as buildings and roads;
- text, such as the road name or cartographic text; and
- standard geographies such as postal and administrative.

Each OWPA is provided with a BS 7666 geographical address.

An OWPA will contain the attributes listed below. The [OS MasterMap Address Layer 2 technical specification](#) contains additional technical details on how they are represented within the delivery formats.

Customers should note that after translation or loading into their systems, the names or order in which these attributes appear may be different. There may be additional attributes provided by their system. In case of doubt, customers should refer to their system suppliers for further information.

Each attribute is prefaced by the name of the organisation supplying the information.

Theme

Ordnance Survey theme

This will be *Non-Postal*.

Primary identifiers

Ordnance Survey Address TOID

The TOID of the OWPA feature, the primary identifier in this theme.

Valuation Office Agency Council Tax UARN

This contains Valuation Office Agency's 11-digit Unique Address Reference Number used to identify premises attracting council tax. This is provided where a match is made with a Royal Mail delivery point. Usually, premises will either be under council tax or non-domestic rates, but sometimes both. This attribute is present in England and Wales only.

Valuation Office Agency Non-domestic Rates UARN

This contains Valuation Office Agency's 11-digit Unique Address Reference Number used to identify premises attracting non-domestic rates. This is provided where a match is made with a Royal Mail delivery point. Usually, premises will either be under council tax or non-domestic rates, but sometimes both. This attribute is present in England and Wales only.

Reference identifiers

Ordnance Survey Reference To Address TOID

The TOID of the nearest neighbouring address feature.

Ordnance Survey Reference To Topography Layer TOID

This is the TOID from the Topography Layer feature within which the OWPA feature is located or anchored to. It may refer to any topographic point or polygon feature that represents the object being addressed. This means that the TOID may not necessarily refer to a building. Letter boxes and masts, for example, are included in the OWPA theme but are represented as points within OS MasterMap Topography Layer. Only one Topography Layer feature will be used for the TOID, for example, in the case of a mast in a field, only the TOID from the Topography Layer point, representing the mast, will be used: the TOID of the polygon representing the field will not be given.

Ordnance Survey Reference To Cartographic Text TOID

The TOID from the item of cartographic text associated with the feature from the Topography Layer that has been provided as an OWPA.

Ordnance Survey Reference To ITN Road Link TOID

The TOID from the nearest section or link from the OS MasterMap ITN Layer to the OWPA feature, usually the one it is addressed to and accessible from.

Ordnance Survey Reference To ITN Road TOID

The TOID from the road name associated to the Road Link as described above. The Ordnance Survey ITN Road TOID is included for potential future correlation with the National Street Gazetteer Unique Street Reference Number (USRN) (subject to agreement), as most Local Street Gazetteers exist at road (street) level only, rather than at road link (elementary street unit) level. Also, the road (street) is the home of the name, a key ingredient in the correlation exercise.

Life cycle metadata

Ordnance Survey Address Version

Version number for the OWPA feature's TOID.

Ordnance Survey Address Change History

The reasons, with associated dates, that led to this version. There can be multiple reasons per version.

Ordnance Survey Reason for Change

The reason why a new version (or new feature) has been created or changed. A list of the entries that can be found in this attribute are given in the [OS MasterMap Address Layer 2 technical specification](#).

Ordnance Survey Change Date

The date of the above reason for change.

Ordnance Survey Address Version Date

The date the version of the feature was created by Ordnance Survey within the OS MasterMap master database.

Ordnance Survey Topography Version

The current version number of the referenced OS MasterMap Topography Layer feature TOID.

Ordnance Survey Cartographic Text Version

The current version number of the referenced OS MasterMap cartographic text TOID.

Ordnance Survey ITN Road Link Version

The current version number of the referenced OS MasterMap ITN Road Link feature TOID.

Ordnance Survey ITN Road Version

The current version number of the referenced OS MasterMap ITN Road feature TOID.

Address

Ordnance Survey BS 7666 Address

This can be considered as the equivalent of the Ordnance Survey BS 7666 Address within the Address theme and is generated from surrounding Ordnance Survey features and standard geographies in a similar way. The main difference is that there is no equivalent for the Secondary Addressable Object Name.

Ordnance Survey BS 7666 Secondary Addressable Object Name

An addressable object that can be addressed without reference to another addressable object. This is a piece of structured text, the construction and decoding rules for which can be found in the [OS MasterMap Address Layer 2 technical specification](#). To summarise, it will include what the feature is from the Ordnance Survey Base Function and, as appropriate, precise details of its relationship to neighbouring features.

Ordnance Survey BS 7666 Street

The whole or part of a highway, road, lane, footpath, square, court, alley or passage. This is derived from the nearest road from OS MasterMap ITN Layer.

Ordnance Survey BS 7666 Locality

The neighbourhood, suburb, district, village, estate, settlement, or parish that may form part of a town, or stand in its own right within the context of one or more administrative areas. This is derived from parish and ward names from Ordnance Survey 1991 Boundary-Line data. Boundaries from this date were used because they are previous to the most recent major reviews of parishes, notably the abolition of parishes within Scotland, and still reflect the locally understood names for most localities.

Ordnance Survey BS 7666 Town

A city or town that is not an administrative area; a suburb of an administrative area that does not form part of another town or a London district. This is derived from the Settlement layer within Ordnance Survey's Strategi product.

Ordnance Survey BS 7666 Administrative Area

A geographic area that may be either a highest level local administrative area, which may be a county or unitary authority, London, or an island or island group. This is derived from the local authority boundaries in Ordnance Survey's most current Boundary-Line product.

Ordnance Survey BS 7666 Postcode

A set of characters identifying a group of postal delivery points, defined by Royal Mail to facilitate the sorting and delivery of mail. While not strictly applicable to an OWPA it is included as part of BS 7666 as a useful geographic indicator. This is derived from Ordnance Survey's Code-Point® with Polygons. Code-Point with Polygons is a derived dataset that uses Thiessen polygons to delimit the postcode areas. This means that the postcode assigned to the OWPA depends on which polygon the feature falls in. Thus the OWPA postcode may differ from the nearest neighbouring Address feature referenced by the OWPA.

Valuation Office Agency Non-domestic Rates Address

The address of a property that can be inherited, attracting a non-domestic rate. Only the business name is present in the current release.

Valuation Office Non-domestic Rates Firm Name

This is the business name present in Valuation Office Agency's non-domestic rates file and is provided where a match is made and the Firm Name is present.

Address metadata

DCLG Local Authority Code

A three- or four-digit code that the Department for Communities and Local Government (DCLG) has for each local authority, for example, '405' for Aylesbury Vale District, '5630' for Kingston upon Thames London borough. The original code has a prefix letter, for example, 'J0405' but this has been stripped out to follow the convention of the NSG/NLPG DTF 6.3 specification.

Position

Ordnance Survey Address Coordinate

This will be derived from either the centroid of the area feature, or the coordinates of the point feature, that the OWPA feature is derived from in the OS MasterMap Topography Layer.

Easting

The easting coordinate of the feature.

Northing

The northing coordinate of the feature.

Position metadata

Ordnance Survey Address Status Flag

The use of this flag differs from the Address and MOWPA themes. Only two attributes are used to indicate to the user whether the coordinate for the centroid of the OWPA has been derived from a single topographic point or polygon feature, or from a representative topographic feature in the case of there being more than one, for example, where the cartographic text 'Works' is associated to several topographic building features. The rules that are used are explained in detail in the [OS MasterMap Address Layer 2 technical specification](#).

Ordnance Survey Position Capture Method

This indicates the method by which the provided coordinate position was established, either *Surveyed* – meaning using a single topographic point or polygon feature - or *Approximate* – meaning using a representative topographic point or polygon feature when there is more than one to choose from.

Ordnance Survey Position Status

This indicates whether an address location is in its *Final* or *Provisional* position. *Final* means that the address is located either coincident with or within single the topographic point or polygon feature, respectively, that defines the addressed premises. *Provisional* means that a representative topographic point or polygon has been selected by software from the two or more available.

Ordnance Survey Spatial Reference System

The spatial referencing system used to calculate the geographic coordinates; this is the British National Grid (BNG).

Classifications

There is no definitive classification for features to describe what the address is actually addressing. OS MasterMap Address Layer 2 contains four classifications to assist customers in identifying the function of the addressed feature. Apart from the Ordnance Survey Base Function, the other three classifications are provided in code form only. Any customers adopting these classification systems should check the [Ordnance Survey website](#) regularly for any changes.

It is important to note that there are some features that may have either a postal or non-postal address – that is, they cannot consistently be said to belong to the one or the other, such as churches. These can therefore be found in either the OWPA theme or the Address theme, depending on whether Royal Mail has an address for it or not.

Ordnance Survey Base Function

The Base Function classification is a new development and is likely to change over the next two years. Its origin is in cartographic text found in many Ordnance Survey datasets, so the system is very detailed having some 1500 functions currently. The assignment of a class to a feature is based on associated text from OS MasterMap Topography Layer. Change to a feature's classification is reported as with any other change.

National Land Use Database (NLUD) Group

The NLUD classification is more general, having about 50 groups, for example, *Agriculture* and *Manufacturing*. This classification is owned and maintained by DCLG. An initial validation has been undertaken by DCLG between the NLUD Group and the Ordnance Survey Base Functions to resolve discrepancies or contradictions.

Valuation Office Agency Non-domestic Rates Primary Description (PDesc) Code

A general classification system having 8 divisions at the highest level, for example, *Commercial* and *Industrial*, with further subdivisions amounting to 108 codes. It is used by the Valuation Office Agency and local authorities for the purpose of non-domestic rate valuing and billing. No validation has yet been undertaken between this classification and either of the other two classifications.

It is assumed that all premises in Valuation Council Tax are residential dwellings so their representative features will have no PDesc code applied to them.

This attribute is provided for address features in Scotland, but in such cases has only been inferred because the Valuation Office Agency does not cover Scotland.

Valuation Office Agency Non-domestic Rates Special Category (SCat) Code

As for the PDesc above, but the SCat system is much more specific, having about 360 categories, for example, *Petrol Filling Stations* and *Cement Works*.

Classification metadata

Ordnance Survey OWPA Classification Confidence

A measure of the confidence Ordnance Survey has that its Base Function classification is correct as extrapolated from OS MasterMap Topography Layer cartographic text. For an explanation of the confidence ratings, please see the [OS MasterMap Address Layer 2 technical specification](#).

This chapter has explained the attribution of the Address Layer 2 OWPA theme. The following chapter looks at the attribution available with the MOWPA theme.

Chapter 7 Multiple Occupancies Without a Postal Address (MOWPA) theme attributes

The rule governing an Address Feature's membership of the MOWPA theme is its presence in Royal Mail's MR file. These addresses are typically for premises within a building that the postal delivery person has mail for but cannot ordinarily directly access. An example would be a block of flats where there is a letter box on the front door but no access for the postal delivery person to visit any individual flats within the block, hence there would be a single delivery point for the whole block only in the Address theme. Royal Mail may be able to determine how many premises receiving post are within the block and this is indicated by the Royal Mail Multi-occupancy Count attribute in the Address theme. (As yet there is no direct link between this count and the number of MR/MOWPA records).

This theme does not indicate all the multiple occupancy in OS MasterMap Address Layer 2 alone. First, it is important that the customer defines what *multiple occupancy* means for them. If, for example, that definition includes *blocks of flats*, then those can be found in both the Address (delivery points sharing the same coordinate and TOID reference to topographic feature) and MOWPA themes depending only on whether or not a postal delivery person can ordinarily access them. Alternatively, the customer could search all the themes on classification if, for example, *halls of residence* or *care homes* were part of their definition of multiple occupancy.

Customers should note that after translation or loading into their systems, the names or order in which these attributes appear may be different. There may be additional attributes provided by their system. In case of doubt, customers should refer to their system suppliers for further information.

Each attribute is prefaced by the name of the organisation supplying the information.

Theme

Ordnance Survey theme

This will be *Multi-occupancy*.

Primary identifiers

Ordnance Survey Address TOID

The TOID of the MOWPA feature, the primary identifier in this theme.

Royal Mail UMRRN

This contains Royal Mail's 8-digit Unique Multi-Residence Reference Number.

Valuation Office Agency Council Tax UARN

This contains Valuation Office Agency's 11-digit Unique Address Reference Number used to identify premises attracting council tax. This is provided where a match is made with a Royal Mail delivery point. Usually, premises will either be under council tax or non-domestic rates, but sometimes both. This attribute is present in England and Wales only.

Valuation Office Agency Non-domestic Rates UARN

This contains Valuation Office Agency's 11-digit Unique Address Reference Number used to identify premises attracting non-domestic rates. This is provided where a match is made with a Royal Mail delivery point. Usually, premises will either be under council tax or non-domestic rates but sometimes both. This attribute is present in England and Wales only.

Reference identifiers

Ordnance Survey Reference To Address TOID

The TOID of the parent Address feature.

Ordnance Survey Reference To OSAPR

The OSAPR of the parent Address feature.

Ordnance Survey Reference To Topography TOID

This is the TOID from the Topography Layer feature within which the MOWPA feature, and its parent Address Feature, is located. It may refer to any topographic point or polygon feature that represents the object being addressed. This means that the TOID may not necessarily refer to a building. Only one OS MasterMap Topography Layer feature will be used for the TOID. Where an address has not been matched to a Topography Layer feature, this TOID will not be present, but the record has to be included as it exists in Royal Mail's MR file.

Ordnance Survey Reference To ITN Road Link TOID

The TOID from the nearest section or link from OS MasterMap ITN Layer to the MOWPA feature, and its parent Address feature, usually the one it is addressed to and accessible from.

Ordnance Survey Reference To ITN Road TOID

The TOID from the road name associated to the Road Link as described above. The OS MasterMap ITN Road TOID is included for potential future correlation with the National Street Gazetteer Unique Street Reference Number (USRN) (subject to agreement) as most Local Street Gazetteers exist at road (street) level only rather than at road link (elementary street unit) level. Also the road (street) is the home of the name, a key ingredient in the correlation exercise.

Royal Mail Reference To UDPRN

This contains Royal Mail's 8-digit Unique Delivery Point Reference Number of the parent delivery point.

Royal Mail Reference To Address Key

This contains Royal Mail's 8-digit unique address identifier of the parent delivery point.

Royal Mail Reference To Organisation Key

This contains Royal Mail's 8-digit unique organisation identifier of the parent delivery point.

Life cycle metadata

Ordnance Survey Address Version

Version number for the MOWPA feature's TOID.

Ordnance Survey Address Change History

The reasons, with associated dates, that led to this version. There can be multiple reasons per version.

Ordnance Survey Reason for Change

The reason why a new version (or new feature) has been created or changed. A list of the entries that can be found in this attribute is given in the [OS MasterMap Address Layer 2 technical specification](#).

Ordnance Survey Change Date

The date of the above reason for change.

Ordnance Survey Address Version Date

The date the version of the feature was created by Ordnance Survey within the OS MasterMap master database.

Ordnance Survey Topography Version

The current version number of the referenced OS MasterMap Topography Layer feature TOID.

Ordnance Survey ITN Road Link Version

The current version number of the referenced OS MasterMap ITN Road Link feature TOID.

Ordnance Survey ITN Road Version

The current version number of the referenced OS MasterMap ITN Road feature TOID.

Addresses

Ordnance Survey BS 7666 Address

Identical to the Ordnance Survey BS 7666 Address provided with features in the [Address theme](#) comprising the following fields:

- Ordnance Survey BS 7666 Secondary Addressable Object Name
- Ordnance Survey BS 7666 Primary Addressable Object Name
- Ordnance Survey BS 7666 Street
- Ordnance Survey BS 7666 Locality
- Ordnance Survey BS 7666 Town
- Ordnance Survey BS 7666 Administrative Area
- Ordnance Survey BS 7666 Postcode

Royal Mail Multiple Residence Address

Identical to the Royal Mail Delivery Point Address provided with features in the Address theme (apart from the absence of the PO Box Number field), comprising the following fields:

- Royal Mail Organisation Name
- Royal Mail Department Name
- Royal Mail Sub-building Name/Number
- Royal Mail Building Name
- Royal Mail Building Number
- Royal Mail Dependent Thoroughfare Name
- Royal Mail Thoroughfare Name
- Royal Mail Double Dependent Locality
- Royal Mail Dependent Locality
- Royal Mail Post Town
- Royal Mail Postcode
- Royal Mail Postcode Type
- Royal Mail Delivery Point Suffix

Position

Ordnance Survey Address Coordinate

The coordinate of the parent Address feature, comprising the following fields:

- Easting
- Northing

Position metadata

Ordnance Survey Address Status Flag

The status flag of the parent Address feature, comprising the following fields:

- Ordnance Survey Match Status
- Ordnance Survey Physical Status
- Ordnance Survey Position Capture Method
- Ordnance Survey Position Status
- Ordnance Survey Structure Type

Ordnance Survey Spatial Reference System

The spatial referencing system used to calculate the geographic coordinates; this is the British National Grid (BNG).

Classifications

The classification of the parent Address feature comprising the following fields:

- Ordnance Survey Base Function
- National Land Use Database Group
- Valuation Office Agency Non-domestic Rates Primary Description Code
- Valuation Office Agency Non-domestic Rates Special Category Code

Classification metadata

The classification confidence level of the parent Address feature comprising the following field:

- Ordnance Survey Address Classification Confidence

This chapter has explained the attribution available within the MOWPA theme of Address Layer 2. The following chapter looks at the contents of the ID X-Ref table.

Chapter 8 ID X-Ref table

There are so many different types of address being used that it has so far proved impossible to come up with a single, definitive specification for *an address* that satisfies all requirements. Until such a definitive address exists, the ID X-Ref will serve as a mechanism to allow the relationships between the different addresses created by organisations to be linked to each other so the equivalent address from a different organisation or set of organisations can be identified. This is one of the mechanisms to help establish the principles of DNF.

In the current release, the ID X-Ref table contains cross-references between OS MasterMap Address Layer 2 features and the following datasets:

- Royal Mail's Postcode Address File (PAF), which provides the postal addressable properties;
- Royal Mail's new Multi-residence (MR) dataset, which provides households within buildings not normally accessible to the postal delivery person;
- The Valuation Office Agency references for properties attracting either council tax or non-domestic rates.

There are three principles to be aware of when using the ID X-Ref Table:

- The Valuation Office Agency UARNs will only be present in England and Wales as the Valuation Office Agency only has jurisdiction for these two countries.
- There will be an element of *work-in-progress*, that is, some objects that have not yet been successfully correlated in each supply.
- There will be some objects that will never be correlated since they are unique to the particular source data provider.

The complete list of attributes contained within the table is as follows:

- Ordnance Survey Address TOID
- Ordnance Survey OSAPR
- Royal Mail UDPRN
- Royal Mail UMRRN
- Royal Mail Address Key
- Royal Mail Organisation Key
- Valuation Office Agency Council Tax UARN
- Valuation Office Agency Non-domestic Rates UARN
- Ordnance Survey Address TOID Version

The ID X-Ref table is re-generated every time the OS MasterMap Layers are refreshed. It is available free via the product pages of the Ordnance Survey website www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/addresslayer2/idxref/index.html, not the OS MasterMap online Service. It is supplied in Great Britain cover only, in CSV format only.

The following chapter explains the supply of OS MasterMap Layers in more detail.

Chapter 9 OS MasterMap supply

An online service has been created to supply OS MasterMap. All OS MasterMap Address and Address Layer 2 orders are supplied from a master copy held in a database by Ordnance Survey. The information the customer submits through the online service to define the area and supply options form the criteria for a database query. This query is run on the database to extract the data the customer requires. It should be noted that themes cannot be bought separately. The main features of the supply system are outlined in this section.

Online ordering

OS MasterMap incorporates a web-based ordering system that allows the customer to order initial data supply and update, obtain price estimates and view details of their holdings on demand.

GML format and schemas

OS MasterMap Address Layers are available in GML format version 2.1.2. GML was developed by the Open Geospatial Consortium (OGC[®]), a global organisation of developers and users that aims to maximise the benefit of geographic information. GML is a spatially-enabled dialect of eXtensible Markup Language (XML) schema.

According to the World Wide Web Consortium (W3C[®]), XML schemas express shared vocabularies and allow machines to carry out rules made by people. They provide a means for defining the structure, content and semantics of XML documents. Following a schema ensures a level of standardisation. Standardisation encourages compatibility between different sources of data.

GML can therefore be considered as a worldwide standard language for the production and distribution of geographical data and this is why Ordnance Survey chose it as the main format for the OS MasterMap Address Layers. More information on the standards and the bodies governing the standard can be found via the following links:

- [Open Geospatial Consortium \(OGC\)](#)
- [World Wide Web Consortium \(W3C\) XML schema specification](#)

Information specific to OS MasterMap can be found using the following links:

- [Schema Repository](#)
- [Schema Changes](#)

It is important to understand the schemas when developing a translator or loader for OS MasterMap. Full details of the schema and the GML can be found in the [OS MasterMap Address Layer 2 technical specifications](#) for Address Layer and Address Layer 2. The majority of users, that access the data after it has been either translated or loaded into their GIS, need not be concerned with the details of the schema.

To speed up the online supply of data and enable areas to be supplied as complete files on CD or DVD, the data will be compressed using the gzip compression method. Most translators accept the zipped files directly so customers do not have to unzip the files prior to processing.

It should be noted that Address Layer 2 is also available in CSV format.

Seamless

OS MasterMap features in the vector layer are a seamless representation of Great Britain. Prior to the introduction of OS MasterMap, both paper, and to a certain extent, digital maps derived at large-scales tended to be divided into tiles. This results in the artificial splitting of features across one or more tiles. OS MasterMap is delivered without dividing features up, as a seamless entity. As there is no map tile or similar data unit, the basic units of OS MasterMap data are features. Therefore customers are advised to manage OS MasterMap data at the feature level, using the TOID to reference and store information on features.

Initial and change-only update supply

Initial supply refers to the first order that a customer takes of OS MasterMap. An initial supply contains all features for all layers selected for the complete area covered by the order. Updates, which contain the latest changes to the features, are not automatically sent out at regular intervals. A customer decides when to place an order for these change-only updates (COU). A COU only contains new features, new versions of features and information about departed features (features that have been deleted or may have moved outside the order area). Any feature within the area covered by the order that has not undergone any of the change will not be supplied.

The advantages of supplying COU rather than a complete re-supply is that, if taken regularly, the amount of data that has to be loaded is much smaller. Users may request updates of the latest changes in their area of interest at any time, using the online change information service.

It is possible to assign a regular date for receipt of COU. These will then be sent automatically on the required media or placed on the File Transfer Protocol (FTP) server for collection. A customer can specify the area of interest to be updated by defining a data selection polygon around the features required. This can be done by selecting predefined areas and by importing tile lists or vector polygons, although some restrictions apply. Customers are advised to contact the [Customer Service Centre](#) for further information on importing vector polygons.

Currently, change comes through on a minimum six-week cycle. Both initial supply and updates are available on CD, DVD and via an FTP server, although the FTP server is limited to an order volume of 400 Mb. For initial supply, it is recommended that customers select CD or DVD (single side, 4.6 Gb) due to the larger volumes of data involved.

This data is designed to be kept up to date via an online COU. Files containing initial supply and COU update supply should never be translated together in the same session nor should more than one COU supply be translated at a time.

For those customers taking other Layers along with the OS MasterMap Address Layers, it is important from the point of synchronising these links that supply of all layers is taken at the same time.

Updating data holdings

The OS MasterMap database is live and undergoes continuous revision. Period licence customers have unlimited access to COU and can order updates or resupplies at any time. When a customer orders COU, a 'change-since' date is specified, and all features that have changed since 00.00 hours on the date specified are supplied. This will normally be the date the data was last extracted from the Ordnance Survey main holding, but could be a previous date. The last extraction date can be found on the label of the CD/DVD containing the data (Order No. Date) or in two 'read me' files accompanying the data (Extraction Date).

To be able to resolve changes to the data holding, the system used to translate or load the data must check the TOID and version of every feature in the update against the current data holding to determine whether it should be loaded, and if so, which existing feature(s) it replaces. This makes it possible to request and load COU with a date preceding the last data supply date, without damaging the data holding. This process can be used to correct a data holding if inconsistencies have occurred due to partially loaded or non-sequential change-only updates, by ordering a single COU with a change-since date that precedes the problem updates.

For a fuller discussion of managing COU and guidance on using the online service, customers are advised to consult the [Ordnance Survey website](#).

Managed Great Britain (GB) Sets

For those customers with full Great Britain coverage contracts of OS MasterMap, there is a Managed GB Sets service. The Managed GB Sets service is available for all vector layers of OS MasterMap.

The Managed GB Sets service is a means of processing identical orders faster, thus improving delivery times, with benefits for GB customers and partners. Subscribers to this service will automatically receive their updates (full supply or change-only updates) on CD or DVD, either quarterly or every six weeks.

With this option, customers and Ordnance Survey Licensed Partners that take Great Britain coverage can benefit from:

- data arriving faster and in a more predictable and timely manner;
- seeing the same version of features as other organisations; and
- easier data management as the data is automatically generated and sent out. It is comparable to setting up a scheduled update except that Ordnance Survey determines when the data is made available.

Further information on the [Managed GB Sets service](#), including the release dates, are available on the Ordnance Survey website.

Supply options

There are a number of options available to customers when ordering data that provide additional metadata or aid data management.

Chunk files

To make the management of large areas easier, data is split into chunks, each of which covers a nominal square area or part of such a square or a nominated file size. Two types of chunks are available; geographic and non-geographic chunks. Chunk boundaries are imposed purely for the purpose of dividing large supply areas into pieces of a manageable size in a geographically-meaningful way. Both full supply and updates (whether COU or full resupply) are chunked.

Geographic chunking option

As OS MasterMap data is seamless, GML files containing large areas could be very large. In order to provide files of a manageable size, data supplies are divided into chunks of a user-specified size, each of which is supplied in a separate GML file. Figure 11 below illustrates how geographic chunks work.

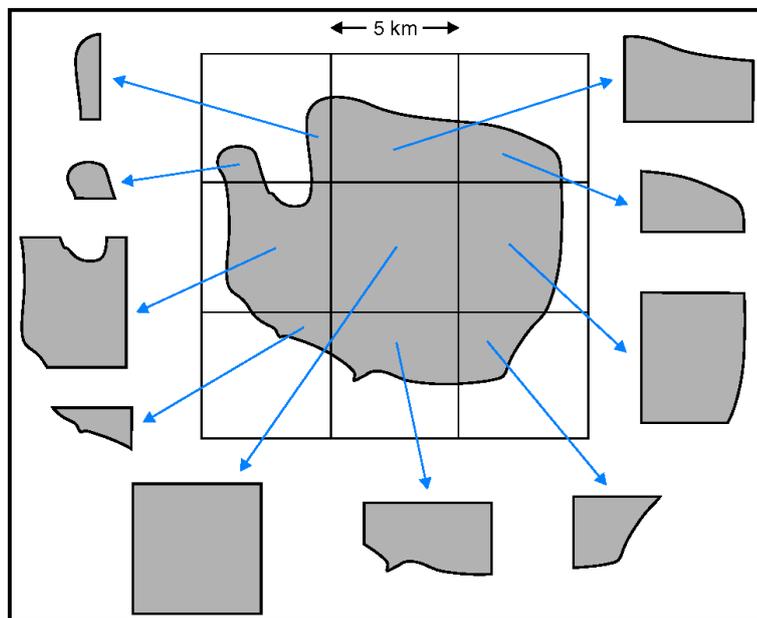


Figure 11: chunking

- 1 The customer submits an area or area of interest and specifies a size for the chunks – 2 km by 2 km, 5 km by 5 km or 10 km by 10 km.
- 2 The online ordering system creates a grid covering the entire area based on the specified size.
- 3 Each square within the grid forms a chunk file.
- 4 Each feature that intersects that square goes into the chunk file.
- 5 National cover of OS MasterMap Address Layers is supplied in 25 km by 25 km chunks.

In this case, ten chunks are created. The central chunk is a complete grid square; the others are partly bounded by the data selection polygon. The upper left square shows the effect when the data selection polygon crosses a grid square twice – two or more separate chunks are created.

System suppliers are able to advise the best chunk rates for their systems.

A consequence of this is that some features are supplied in more than one chunk. Systems reading OS MasterMap data must identify and provide the option to remove these duplicated features.

Empty chunks are not supplied; that is, if a chunk contains no information relating to a customer's selected themes then it would be an empty file, so is not supplied.

Chunks cannot be treated as persistent data management units; as it is a floating grid, the origin of the chunking grid may differ between orders particularly if the contract area changes or if they order a different chunk size.

Supply of address features in chunk files

There are two points specific to taking address features in geographic chunks.

Although address features reference the building topographic area feature (from OS MasterMap Topography Layer) in which the address feature lies, it is possible for the topographic area feature to be supplied in an OS MasterMap GML file without the address feature, assuming both the Building theme from the Topography Layer and Address themes are requested. This happens when the topographic area feature intersects the chunk file boundary, but the address feature is outside it. In this case, the address feature will be found in an adjacent chunk file, unless the chunk in question is on the boundary of the customer's contract area.

Furthermore, the building feature within OS MasterMap Topography layer within which the Address feature resides can also move outside the chunk boundary. Figure 12 below gives an example on how this can happen.

This can occur, for instance, when a Topography Layer feature used to lie partly inside a chunk in question but is now reduced in size so it no longer intersects that chunk, but is wholly within an adjacent chunk. In this case, it is reported as a departed feature in one chunk and as a modified feature (new version) in the adjacent chunk.

The address feature could move from being either on the boundary or wholly within one chunk to being wholly within the adjacent chunk. For more on departed features, see the section below.

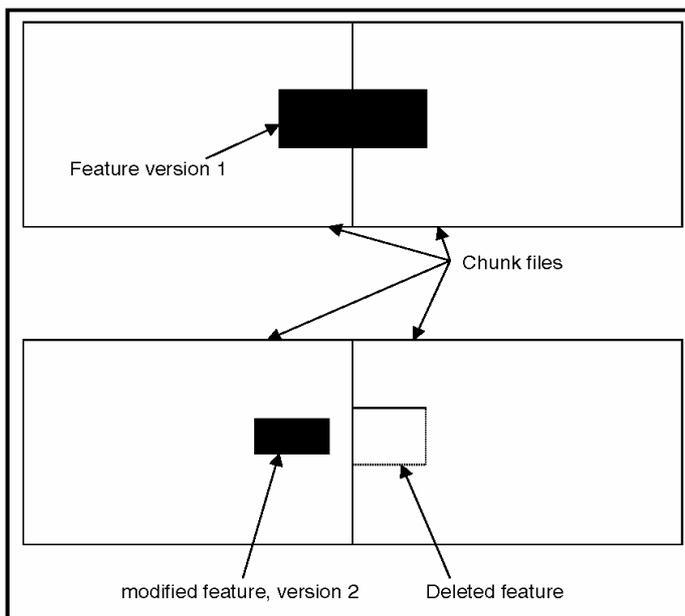


Figure 12 Address features and chunk boundaries

It is possible for OS MasterMap features with point geometry, like all features in the OS MasterMap Address Layers, to be included in multiple adjacent chunk files. This is because the query used to populate a chunk file includes all features that touch its boundary, and this boundary is shared with adjacent chunks.

Therefore, OS MasterMap loading software must be able to identify and remove address features across multiple files in the same way as for features represented by lines and polygon geometries.

Non-geographic chunking option

This supply format delivers OS MasterMap vector layer data for the Topography Layer polygon format, ITN Layer and Address Layers (non-geographic chunks are not available for the Imagery Layer) in files that have a fixed nominal file size, as opposed to a given geographic National Grid area. The customer selects the compressed file size from options of 10 Mb, 30 Mb or 50 Mb via the online data selector.

Each feature appears in only one chunk file. It is possible for features from various geographic locations to appear in one file and for adjacent features to appear in different files. Non-geographic chunk files are designed for use as a set to load spatial databases, but can be used in a file format as long as all chunks are translated or imported into the system at the same time. It is not possible to tell in which file a particular feature will be found before reading the files. With non-geographic chunks, there are no duplicate features lying across chunk edges, which speeds up the translation process.

The features shown in red in figure 13 can end up in the same non-geographic chunk, even though they are not adjacent to each other.

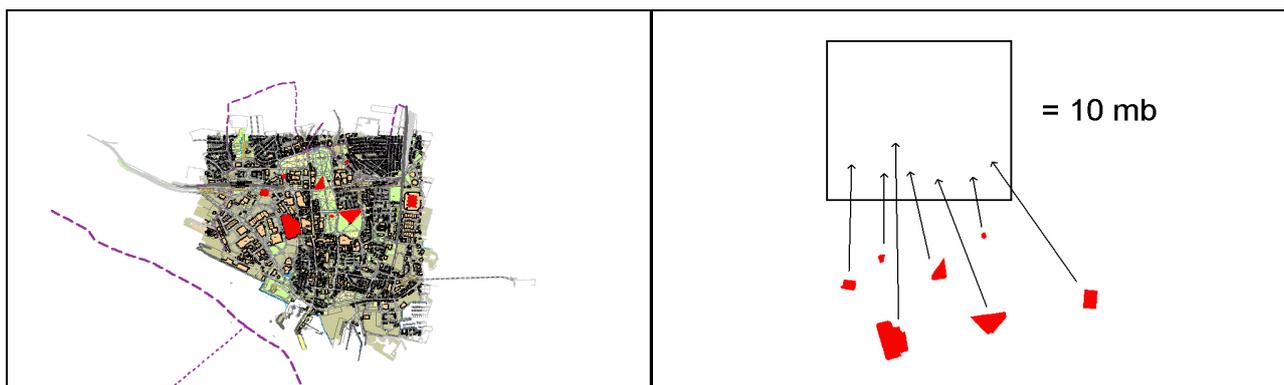


Figure 13: non-geographic chunking

Feature validation dataset (FVDS)

The FVDS is a set of files that can optionally be supplied with either a full supply or a COU OS MasterMap order. The FVDS can be ordered with the Topography, Address and ITN Layers and must be supplied together with an OS MasterMap data order: it cannot be produced on its own. FVDS allows a customer to validate that the data holding contains the correct set of features after loading the data with which it was supplied. It reports on all the data it expects to find in the holding after the application of the supply, **not just what is contained in the supply**. It is intended to be used for periodic checks on data holdings maintained by a COU regime. It is not intended that customers order it with every supply, as processing it will slow down the translating process. It can also be used to check that an initial supply of OS MasterMap data has been correctly loaded. FVDS can be used with both geographic and non-geographic chunk file options. FVDS is itself divided into files on a non-geographic basis, using a 10 Mb nominal file size.

The FVDS is a CSV text file format that gives the TOID, version number and version date of every feature that should exist in the current data holding, based on the polygon extent, themes, polygon format and extraction date of the current order. Each CSV file is compressed to a .gz file using the same compression algorithm as for OS MasterMap GML files.

GML summary file

An order summary file in GML format will be supplied with all OS MasterMap vector data orders, containing the order information specified by the customer. This information includes:

- the order number;
- query extent polygon(s) of the order;
- the order type: 'Full Supply' or 'Change-only Update';
- for change-only update orders, the change-since date;
- themes requested;
- chunk type: 'Non-geographic' or 'Geographic'; and
- chunk size: in Mb for non-geographic chunks, in km² for geographic chunks.

Departed features

As mentioned in the section on life cycles, when a feature reaches the end of its life, it is removed from Ordnance Survey's main holding. When a feature is removed, its status is reported to the customer that is taking COU as a **departed** feature. When a customer orders a COU, a list of departed features is provided so that the loading software can add and subtract the features to the customer's holding accordingly.

Departed features are supplied in change-only update data with respect to a given date. Features that have left the area or themes of the data supply since midnight on this date are included as departed features. This information is supplied to inform user systems that all versions of this feature are no longer current. Some departed features are present in COU for features that have not been previously supplied; this is for a number of reasons, including the creation and removal of features in the specified time period and the limited information stored in the OS MasterMap main holding about previous versions of features. Departed feature information is not given when a particular version of a feature is replaced by a new version with an incremented version number. The existence of the new version in the data supply set indicates that any feature with the same TOID but a lower version number is no longer a current feature.

The list of departed features provides the TOID of the departed features, along with the following attributes that assist the software to manage the change within the customer's holding. It is important to note that the actual geometry of the feature is NOT supplied.

1 Departed feature bounding rectangle

Each departed feature states a bounding rectangle within which the feature lies. This rectangle is not necessarily the minimum rectangle of the last version of the feature. Instead, it is a bounding rectangle of all versions of the feature that have existed within the chunk area (for geographic-chunked orders) or order extent (for non-geographic chunked orders) since the extraction date of the last supply of data and of all versions of the feature with bounding rectangles within the area/extent. This ensures that customers who hold a superseded version of the feature will find this version within the rectangle, even if the feature has subsequently changed shape or location.

2 Departed feature theme(s)

Each departed feature states the theme or themes it has been a member of since the extraction date of the customer last supply of the data. Added themes may or may not be included. Again, this is to ensure that customers that hold a superseded version of the feature will be able to locate it in theme-based or layer-based data holdings.

3 Reason for departure

Departed features report whether they are (a) deleted – the feature no longer exists within OS MasterMap – or (b) vacated – indicates that the feature is no longer within the chunk/order, but still exists in OS MasterMap and therefore could reappear in the chunk/holding in the future. A deleted feature also has a date of deletion, but a date is not applied to a vacated feature. 'Deleted' is the default value, which can be assumed unless 'vacated' is stated.

If a feature has left one geographic chunk but continues to exist in an adjacent chunk, it will continue to be reported as a departed feature in the former chunk. The reason for departure is 'vacated', and the latter chunk will contain a later version of the feature. If the feature has vacated a chunk and subsequently been deleted, the reason for departure is 'deleted'. In other words, each chunk file reports change-only update with respect to the boundary of that chunk, and without knowledge of the other chunks in the customer's order. This is required because the concept of geographic chunks is that they can be used alone or in customer-defined blocks, if required. The same TOID can appear as both a departed feature in one chunk file and as a modified feature in an adjacent chunk.

In non-geographic chunks, there is logically only one set of departed features in the data order. There is no concept of a feature having 'departed from a chunk' since the chunk does not have a geographic boundary. However, vacated features will still exist in data supplied in non-geographic chunks due to features moving outside the data holding boundary, or (unusually) changing theme to a theme that the customer has not taken.

To ensure that departed features are dealt with properly within a holding it is important to load all the COU files all in one go or session.

If a customer processes COU chunk files one-at-a-time, deleting all departed features from the data holding, it is possible that the software might be deleting some features that should still exist, because they are departed from one chunk and modified in another. This problem can be avoided by the loading software making two passes through the set of COU files, the first pass resolving departed features from all chunk files, and the second pass applying new or modified features from all chunk files.

File names

Each OS MasterMap chunk file supplied, except imagery and non-geographic chunks, has the following format:

nnnnnn-llnnnn-nnlnnnn,

for example, *123456-SU1212-2i3*. This example is broken down as follows:

- *123456* is the order number;
- *SU1212* is the 1 km square in which the south-west corner of the chunk falls; and
- *2* is the chunk size, in this case 2 km by 2 km (this will be set to 5 for 5 km by 5 km or 10 for 10 km by 10 km and 25 for Managed GB Sets of Address Layers and ITN Layer)

The 'i' is a flag indicating that the data selection polygon does not completely fill the chunk square, that is, the chunk is 'incomplete'. If it does, this will be shown as a 'c'. If an area selection contains no data then an empty chunk file is supplied. The fact that it is empty will be shown by the letter 'e' in the filename.

The '3' is a counter to provide a unique file name in the case of multiple chunk files within one chunking grid square. This can have a value between 1 and 9999. Figure 14, below, shows what happens in the instance of a selection polygon that falls within a chunk square twice.

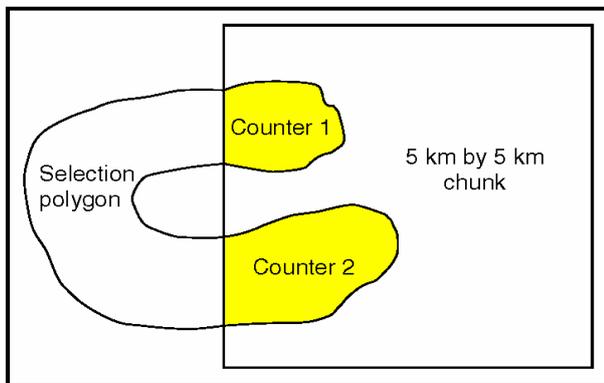


Figure 14: explaining counters in file names

Two files are supplied, each one distinguished by a counter number – 1 and 2.

Other file names

A non-geographic chunk will have the following file name format: *nnnnnn-nnnnnn-nn.gz*

For example, *123456-000012-10.gz*, where the final two numbers indicate the nominated file size in megabytes.

Compressed FVDS files are named as follows: *nnnnnn-llnnnnnn-nn.gz*

For example, *1232456-FV000012-30.gz*, where the two letters FV indicates that it is a FVDS file.

A GML summary file has a name in the form *nnnnnn-summary.gml*

This chapter has described how OS MasterMap Layers are supplied, including descriptions of the online ordering system and data format, the system of chunking required to handle seamless data, the way change is supplied (including the issue of departed features) and how to understand the file names. It has also offered guidance on how to update a customer's data holdings. The following chapter explains the measures used within Ordnance Survey to assess the data.

File supplied with an order

When a customer receives an order, whether on media, the following files will be supplied.

At the top level directory of the media there is a *README.txt* file that provides a summary of the disc's structure and content and an *ORDER_INDEX.txt* file that contains a list of all the data files that should be on the disc.

Within the *DATA* directory are the chunk files and the FVDS files, if ordered.

The *DOC* directory contains both standard and product-specific document files that describe what has been supplied in the order, including:

- the *summary.gml* file;
- *Disc_Contents.txt*, containing details of what is in the order; and
- *Label Information.txt*, which contains information about the order itself, including the extraction date, which is important for placing COUs.

There is also an *EXE* directory in case any program executables need to be supplied with the data. This will be empty for OS MasterMap orders.

With an FTP order, the same information is supplied but the file names will be slightly different, reflecting the FTP order number.

Chapter 10 Change management and data association

This chapter provides an introduction to utilising the referencing and change tracking attributes to identify and manage the impact of change on a customer's data. It discusses the process of applying change and the implications for archiving data. This subject is also discussed in finer detail in a number of topic-specific documents that are available from the following links.

[DNF website](#)

[Implementing OS MasterMap Technical Information Sheet 1](#)

Change management

The feature reference and change tracking attributes provide the opportunity for customers to put in place a change management regime. The system that the customer uses to translate and load OS MasterMap Address Layers should use the TOID and version information to update the local holding when a COU is taken. The software needs to handle three types of situations – features that have been departed, features that are new and features that have changed. The software should resolve departed features first.

Departed features:

- In the COU, there is a list of features that have departed since the last time the customer took data. There are some additional considerations with departed features that are covered in more detail in [chapter 9](#), but in essence, the software would find all the TOIDs and versions on the departed features list in the COU in the main holding and remove those features.
- In the case of superseded and departed features, these could be removed totally from the customer's holding but it may suit the requirements of the customer better to archive them for future reference.

New features:

- With a new feature, the software compares each TOID in the COU against the TOIDs in the existing holding. If the TOID exists in the COU but not in the main holdings, it is a new feature and the software should insert it into the holding.

Changed features:

- If the TOID exists, the software needs to compare the version number in the existing holding against the version number in the COU. The version number in the COU should be higher than the existing holding. In this case, the software needs to take out the existing version of the feature and replace it with the version in the COU. If, on the other hand, the COU version is lower, the COU version should be ignored.

Archiving the OS MasterMap data holding

As OS MasterMap features progress through their life cycles, it is possible to develop snapshots of the features by holding superseded versions in a local data archive. By holding and maintaining a local data archive, customers will be able to interrogate previous views of the world straight from their local data holding.

It will be important to consider carefully how to archive OS MasterMap features and what requirements the applications and users will have to access the older information. Archiving may be done by simply writing older versions of the data off to hard media or a more sophisticated system of keeping historical data live on the system may be adopted. It is important for customers to recognise their unique requirements (be they user, statutory or regulatory requirements), as archiving can become a significant overhead in terms of storage. Before designing or implementing an archive of OS MasterMap Address Layers, it is advisable for a customer to discuss requirements with their system supplier.

Chapter 11 Data measures

Ordnance Survey measures the data in its products in one or more of the ways set out in table 4 below.

Table 4: 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 (lifecycles)
		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.

Currently available measures for OS MasterMap Address Layers can be found on the [OS MasterMap pages](#) of the Ordnance Survey website.

Annexe A 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 OS MasterMap and OS MasterMap-based products.

Where terms refer to other terms within the glossary, they are connected by means of hyperlink to the relevant entries.

addressed premises

A permanent or non-permanent location with an address, being a potential delivery point for Royal Mail. Examples of addressed premises are a house, a flat within a block of flats, a caravan site, a bollard to which several houseboats may be moored or an organisation occupying the whole or part of a building.

area of interest

The spatial extent that a customer has access to for a specific product. This area of interest may include a number of different spatial extents. The area of interest is an integral part of a contract.

associated data

A dataset held by third parties that have been linked to features within OS MasterMap by means of identifiers ([TOIDs](#)).

attribute

Any item of information packaged in an OS MasterMap [feature](#). The [TOID](#) and the geometry of the feature are both attributes of the feature. In [GML](#) and [XML](#) documents and specifications, this term is used in a different way. This usage is noted in the OS MasterMap specification as appropriate.

attribute set

A group of attributes that can legitimately and logically be used together. Each [feature](#) type uses a particular attribute set.

centroid

The term given to the centre of a [polygon](#). In the case of irregularly shaped polygons, the centroid is derived mathematically and is weighted to approximate a sort of 'centre of gravity'.

change-only update (COU)

The ability to supply to a customer only [features](#) that have been created or changed since a specified date. Change-only supply includes a list of the [TOIDs](#) of departed features. In the OS MasterMap context, the selection of changed data will be by [change-since date](#) (that is, all change since 00.00 hours on the specified date). It is not possible to select change since your last update. Therefore, the customer's system must recognise repeatedly-supplied features.

change-since date

The date used when requesting change-only update that indicates the date since which change is required. This will result in the supply of all change in the database, since the beginning (00.00 hours) of that day. It is also known as the extraction date.

chunking

The process of breaking up the area ordered into manageable, physical [unit of supply](#) (files) for the customer.

complex feature

A [feature](#) that is a collection of other features. An example could be a feature representing a river, composed of many area and line features representing parts of the river. Complex features are not currently a part of OS MasterMap.

contract

The agreement that a customer has for access to Ordnance Survey products and services. An OS MasterMap contract will be defined for each layer in terms of an [area of interest](#), a list of [themes](#) (where appropriate), a time period, the number of terminals the data will be used on and a set of terms and conditions.

customer

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

dataset

An identifiable set of data that share common characteristics and that are managed as a subset of the data within a database.

delivery mechanism

The method of supply of data to a customer (for example, offline and online).

departed feature

A [feature](#) supplied as part of a [change-only update \(COU\)](#) supply, which has either been deleted, has changed [theme](#) or has moved outside of the area of order since the specified change date.

descriptive text

Descriptive text is defined within OS MasterMap Address Layers as a generic name given to a [feature](#) where a distinctive name does not apply, for example, *drain*, *boundary post* or *car park*. Where the function or purpose of some features are not clear, it is possible that they will be described with both a distinctive and descriptive name, for example, *Sandy Lane (Track)* or *Old Thatched House (PH)*.

Digital National Framework (DNF)

A nationally-consistent geographic referencing framework for Great Britain, comprising the National Grid and the National Geographic Database, that defines each geographical feature as it exists in the real world with a maintained, unique reference allocated to each [feature](#). The DNF is not a product; it is the framework on which our future products will be based.

distinctive text

Distinctive text is defined within OS MasterMap Address Layers as a name given to a [feature](#) or place to distinguish it from other features or places of a similar nature, for example, *River Avon*, *Hill Lane Surgery*, *Leeds* or *New Forest*.

feature

An abstraction of a [real-world object](#). It is not the real-world object itself. The OS MasterMap product is composed of discrete vector features, each of which has a feature type, geometry, and various feature [attributes](#).

feature type

A high-level grouping of [features](#) that are treated in a similar way, for example *TopographicPoint* features.

FTP

File Transfer Protocol. A protocol that allows a user on one computer to transfer files to and from another computer over a TCP/IP network such as the internet).

generalised

Generalisation is the task of deriving maps or geographic information products at a smaller scale, starting with more detailed existing mapping or source data. It involves exaggerating those aspects that are important for a particular purpose and scale and removing irrelevant detail that would clutter the product and confuse the user.

georectified imagery

The georectification method is a very simple process that uses detail points visible in the image and on the map. The image is then warped to fit the map on those points. There is no information to ensure that the image fits the map elsewhere.

GML

Geography Markup Language. An [XML](#) encoding for the transport and storage of geographic information, including both the geometry and [attributes](#) of geographic features.

GPS

Global Positioning System. A satellite-based navigational system allowing the determination of any point on the Earth's surface with a high degree of accuracy, given a suitable GPS receiver.

history

In the context of geospatial data, the storage of deleted features and superseded versions of features.

identifier

An identifier that is primarily intended to provide unique and unambiguous [feature](#) identification for the purposes of exchanging feature-based information between computer systems, or associating data within a computer system.

independent supply

The supply structure used for OS MasterMap product [feature](#) geometry, in which the data is simplified into area, point and line features with no relationship between them, and with their own explicit geometry. For example, in the independent polygon product, the bounding line between two areas will be represented three times, each with their own description of the geometry; once as a line feature, once as part of the bounding line of the first area feature, and once as part of the bounding line of the second area feature.

layer

A layer is a group of related OS MasterMap [features](#). A layer may consist of one or more [themes](#). For example, the Topography Layer is composed of nine themes, whereas the Address Layers contain three themes.

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.

life cycles

The series of events that occur in the life of a [real-world object](#) or the OS MasterMap [feature\(s\)](#) that represents it. This will always include those events that result in creation and deletion and may also include events that result in amendments or change.

line

The straight line segment between two given points.

line feature

The OS MasterMap abstraction of a linear object such as a wall or riverbank. The geometry of a line feature is a polyline – an ordered string of points. A particular line feature will often represent only part of an object. For example, a line feature may represent a linear entity (for example, part or all of a fence), the boundary of an area (for example, a house) or both (for example, a fence around a field).

local holdings

The situation where a customer has to hold and manage data that is supplied to them.

media supply

See [offline supply](#).

metadata

Graphical or textual information about the content, quality, condition, origins, and characteristics of data.

MOWPA

Multi-occupancies without a postal address.

MR

Royal Mail's Multi-Residence file.

National Geographic Database

The source of data for Ordnance Survey's products.

OS Net[®]

The infrastructure of active and passive [GPS](#) reference stations that allow surveyors to determine precise coordinates in GPS and British National Grid spatial reference systems. OS Net provides the physical definition of the British National Grid, the primary spatial reference system used in OS MasterMap. A central component of the Digital National Framework.

National Grid

A unique referencing system that can be applied to all Ordnance Survey maps of Great Britain at all scales. It provides an unambiguous spatial reference for any place or entity in Great Britain.

object-based data

Data in which one whole [feature](#) or a collection of whole features represents one [real-world object](#), for example, a building or land parcel.

offline supply

The supply of data to a customer on physical media (for example, CD and DVD).

online supply

The supply of data to a customer using Internet technologies.

order

A request from a customer for the supply of data. The scope of an order may be constrained by an agreement for a period-licence service.

Ordnance datum Newlyn

The mean sea level at Newlyn in Cornwall calculated between 1915 and 1921, taken as a reference point for the height data on Ordnance Survey maps.

orthorectified imagery

OS MasterMap Imagery Layer is orthorectified. An ortho-image is achieved through a rigorous mathematical modelling of the camera position/direction and the terrain surface at the moment of image exposure. A software process is then able to move each of the pixels in the image individually into its correct National Grid position. The process eliminates displacements due to image perspective and pointing direction (the aircraft is moving and rolls around all axes) and topographic relief and therefore results in an image having the same geometric properties as a map projection.

OWPA

Objects without a postal address.

PAF

Royal Mail's Postcode Address File.

point

A pair of coordinates.

point feature

A feature representing a [real-world object](#). The geometry of a point feature is a single point (a pair of coordinates) with optional size and orientation.

polygon feature

A polygonised representation of a [real-world object](#). The geometry of a polygon feature consists of an external boundary, and optionally, one or more inner boundaries (holes in the area feature). Each boundary is represented by a [line](#). A polygon feature may be used to represent a building, field, lake, administrative area and so on.

positional accuracy

The accuracy of the [feature](#) geometry relative to the coordinate spatial reference system.

real-world object

The real thing represented by a [feature](#), for example, a building, a section of fence, the boundary of a wood, or a sharp change of gradient. For comparison, an example of a non-real-world object would be the line of an administrative boundary.

seamless database

In the OS MasterMap context, this refers to a geospatial database in which there is no concept of geographically splitting the data for management purposes. All [features](#) are complete, and there is no underlying tile structure.

spatial reference system

The term used in [GML](#) (and hence in OS MasterMap specifications) for the definition that allows each spatial position to be stated as a [tuple](#). The only spatial reference system currently used in OS MasterMap is the British National Grid.

supply format

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

symbolology

The use of symbols.

theme

A collection of [features](#) that form some logical set, for example, buildings, water, land. In the OS MasterMap context, themes are a collection of features that are either similar in nature or are related to specific usage. A single feature may be in one or more themes. They are designed to allow the easy selection of features. They do not form part of the classification of the feature. The theme exists purely to facilitate customer data selection.

tile

A self-contained rectangular subset of digital data, used to subdivide that data into manageable units. OS MasterMap data has no tiles.

TOID

An [identifier](#) that uniquely identifies every [feature](#).

tuple (coordinate tuple)

A set of n coordinates representing a point in n-dimensional space, as defined by a spatial reference system. The British National Grid reference system is 2-D only, so coordinate tuples consist of an easting and a northing coordinate.

unclipped (data supply)

All [features](#) that wholly or partly lie within the query area are supplied and the full geometry of each of these features will be included in the supply. OS MasterMap data is supplied unclipped.

unit of supply

The definition of the way in which the area of order is broken up into manageable, physical units (files) for supply to the customer.

version date

The date the version of the [feature](#) was created by Ordnance Survey within the OS MasterMap master database.

version number

A version number will identify that a [feature](#) has been altered. Version numbers will be allocated sequentially, with version 1 representing the creation of the feature.

XML

Extensible Markup Language. A flexible way to create common information formats and share both the format and the data on the Internet, Intranets and elsewhere. XML is extensible because, unlike HTML, the markup tags are unlimited and self-defining. XML is a simpler and easier to use subset of the Standard Generalised Markup Language (SGML), the standard for how to create a document structure.

Annexe B Product and service performance report form

Ordnance Survey welcomes feedback from its customers about OS MasterMap Address Layer and OS MasterMap Address Layer 2.

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:

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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:

Address Senior Product Manager, Ordnance Survey, Adanac Drive, SOUTHAMPTON, SO16 0AS.

If you wish to return it by fax, please dial +44 (0)8450 990494.

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.