ORDNANCE SURVEY GB

OS MASTERMAP SITES LAYER™ – OVERVIEW

OFFICIAL
Ver 2.1

Ordnance Survey

Version history

Version	Date	Description
1.3	10/2020	Minor updates.
2.0	04/2022	Document name change from User Guide to Overview. Introduction of GeoPackage and vector tiles formats to the product. Minor formatting updates to the document.
2.1	07/2023	Note was added to Product details, informing users that due to Decision points being added to OS networks data, the Site routing point features are to be removed from the OS MasterMap Sites Layer product.

Purpose of this document

This document provides information about and insight into the OS MasterMap Sites Layer product and its potential applications. For information on the contents and structure of OS MasterMap Sites Layer, please refer to the Technical Specification and Getting Started Guide.

The terms and conditions on which OS MasterMap Sites Layer is made available to you and your organisation are contained in that Ordnance Survey customer contract. Please ensure your organisation has signed a valid current customer contract to be able to use OS MasterMap Sites Layer.

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OS website 'Contact us' page (https://www.ordnancesurvey.co.uk/contact-us).

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1. Introduction to OS MasterMap Sites Layer

OS MasterMap Sites Layer provides a nationally maintained view of the detailed extents of important locations such as airports, schools, hospitals, utility and infrastructure sites, and more. The points of access and routing points, to navigate in and out of the sites, are also provided.

All the source data that is used in the creation of OS MasterMap Topography Layer has information about its function or purpose, and the Sites Layer is intended to enhance analytical use of this information. OS MasterMap Sites Layer features are a representation of what people see in the real world, where the common view of something (such as a school) is not the address, the main building or the playing fields, but is the site as a whole.

The features are derived from Ordnance Survey's detailed data content; therefore, the classification and grouping of features is dependent upon the source data capture specification.

1.1 Purpose

Many customers want to be able to answer a simple question, for example, 'How close is this school to something?', 'What would be affected in the event of an emergency?' or 'How much of this hospital would flood?'

OS MasterMap Sites Layer creates a way for customers to easily answer these questions. It helps customers start using Ordnance Survey's large-scale data in a more analytical manner.

The provision of 'form and function' information in OS MasterMap Sites Layer for risk modelling, business analysis and informed decision-making enables the use of intelligence sourced from OS MasterMap Topography Layer for applications such as data analytics. The product will help customers start the journey to a more analytical use of OS MasterMap Topography Layer and would provide closer integration with OS MasterMap Highways Network and AddressBase product families.

It is important to note that the OS MasterMap Sites Layer product does not indicate the definitive or legal extent, but rather the extent of usage or function.

1.2 Product applications

The following table outlines the potential benefits of OS MasterMap Sites Layer for different customer groups:

Customer sector	Benefit of using OS MasterMap Sites Layer	Outcome for customer
Energy and Infrastructure	Improved risk management of key assets and better risk planning. Intelligence on which access point is impacted whilst dealing with a call-out.	More accurate risk analysis. Reduction in costs of maintenance planning and responding to call-outs. A better understanding of the wider geographic perspective; for example, how assets are interacting with specific types of sites (for example, schools).
Insurance	More intelligent risk models. Better identification of areas where an insurer is exposed to accumulated risk or risk to their client's assets.	More effective identification and modelling, using the extents of real-world features in understanding their vulnerability to natural hazards. Accurate premiums reflecting true risk.
Central and local government	Ability to identify and manage public assets holistically, breaking down the administrative or ownership barriers to achieve more efficient use of publicly owned assets and to provide better services to citizens. Improved understanding of the extent and function of a site and the contribution it may make to social, economic or environmental health of the area.	Reduced costs of capture and maintenance, improved efficiency in decision-making and the ability to effectively implement and monitor government policy. Nationally consistent view of sites, providing core reference geographies, thus enabling data sharing between government departments.
Emergency services	Ability to respond more efficiently or deploy resources more effectively to emergencies. Identification of the more appropriate access point into that site, and the best route to navigate to them. Provision of a common operational picture, thus improving inter-agency communication.	Better information to feed into risk assessments, contingency planning, incident prevention and first response.

2. Product details

2.1 Feature types

The product contains three feature types:

- Functional site polygons (FunctionalSite)
- Functional site access points (AccessPoint)
- Functional site routing points (RoutingPoint)

2.1.1 Functional sites

A functional site is a polygon representing the area, or extent, of certain types of function or activity, with appropriate attribution. It gives information surrounding the functional theme of the site (for example, education), specific site function (for example, primary education), site name, site size, primary site Unique Property Reference Number (UPRN) and additional supporting attribution (for example, version date).

Functional site themes are discussed in more detail further into this section.

2.1.2 Access points

An access point is a point feature type that refers to the accepted/maintained locations where pedestrians and/or vehicles can enter or leave a site. It gives information associated with access type (for example, pedestrian), contains attribution that allows interoperability with other feature types (for example, reference to routing point) and additional supporting attribution (for example, version date).

2.1.3 Routing points*

A routing point is a point feature type that refers to a position on the OS MasterMap Highways 'road link' feature that is close to a functional site access point. It can be used to aid vehicle navigation to the access point of the functional site via the OS MasterMap Highways Network. It also gives additional supporting attribution such as 'version date' and 'start distance'.

**To meet customer needs a fully routable modal network is being created. A key element of this is to provide more usable data about the access to destinations. As a result, we are now directly splitting our road, track and path data where Access Links connect to the network. This will allow users to more easily route into sites using OS network data.*

As nodes have now been created within the networks data, where Access Link features connect, there is now no requirement for Decision Node features and they are being removed from the Sites products.

This section describes the themes that are included in OS MasterMap Sites Layer and lists examples of functional sites that are represented within these.

2.2 Theme definitions

2.2.1 Air transport

This theme includes sites associated with the movement of passengers and goods by air, or where aircraft take off and land.

Examples: airfield, airport, heliport.

2.2.2 Education

This theme includes a very broad group of sites with a common high-level primary function of providing education (either state-funded or by fees).

Examples: non-state primary education, special needs education and higher or university education.

2.2.3 Medical care

This theme includes sites that focus on the provision of secondary medical care services.

Examples: hospice, hospital and medical care accommodation.

2.2.4 Rail transport

This theme includes sites associated with the movement of passengers and goods by rail.

Examples: railway stations, vehicular rail terminals and tram stations.

2.2.5 Road transport

This theme includes sites associated with the movement of passengers and goods by road.

Examples: bus stations, coach stations and road user services.

2.2.6 Water transport

This theme includes sites involved in the transfer of passengers or goods onto vessels for transport across water.

Examples: vehicular ferry terminal and passenger ferry terminal.

2.2.7 Utility or industrial

This theme includes sites where the following activities take place:

- The principles of chemistry are applied to materials to create different materials on a large scale
- Energy (that is, electricity, gas or oil) is produced, refined, distributed or stored

Examples: chemical works, oil terminal and gas distribution or storage.

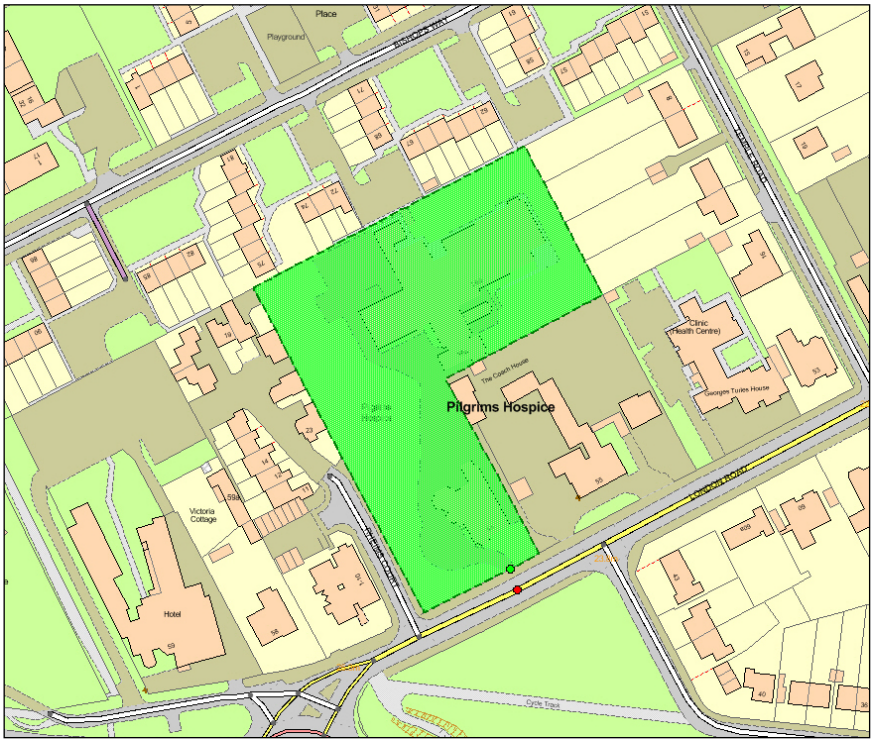

Figure 1: Example of a functional site extent.

2.3 Styling

A sample style for the graphical depiction of the functional site extents, access and routing points has been designed to aid customers with illustrating this product. Ordnance Survey has created Style Layer Descriptors (SLD); these can be found on GitHub (https://github.com/OrdnanceSurvey/OSMM-Sites-stylesheets).

2.4 Coordinate reference systems

The Geography Markup Language (GML) and GeoPackage formats use the British National Grid (BNG) spatial reference system. BNG uses the OSGB36 geodetic datum and a single Transverse Mercator projection for the whole of Great Britain. Positions on this projection are described using easting and northing coordinates in units of metres.

Vector tile format is supplied in Web Mercator projection (EPSG:3857). Web Mercator projection uses WGS84 geodetic datum to render the vector tiles.

A guide to coordinate systems in Great Britain is available at:
http://www.ordnancesurvey.co.uk/oswebsite/gps/docs/A_Guide_to_Coordinate_Systems_in_Great_Britain.pdf

A general introductory guide to BNG is provided at:
http://www.ordnancesurvey.co.uk/oswebsite/gi/nationalgrid/nghelp1.html

2.5 Product update schedule

The product data is maintained alongside other Ordnance Survey large scale-content in an integrated edit environment. This will ensure that any relevant real-world change is updated in all relevant OS MasterMap Layers at the same time.

The product is updated every six months (April and October) as a full supply only.

3. Product supply

3.1 Available formats

OS MasterMap Sites Layer is supplied in three different formats:

- Geography Markup Language (GML) 3.2.1
- GeoPackage
- Vector tiles (MBTiles)

3.2 Product supply mechanism

OS MasterMap Sites Layer incorporates a web-based ordering system that allows customers to order their initial data supply and any updates, obtain price estimates and view details of their holdings on demand. The product is supplied as an online download. You can download data in various formats from the OS Data Hub (https://osdatahub.os.uk/).

3.3 Coverage and file sizes

For GML, OS MasterMap Sites Layer is a national dataset and is maintained and supplied as 5km² tiles of data via Area of Interest (AOI) supply or as Great Britain (GB) supply. File size estimates can vary from about 2KB compressed to about 162KB (compressed) for tile supply. A full GB supply will be approximately 43MB compressed. Compression rates vary and are dependent on the size and content of a tile.

For GeoPackage and vector tiles, the coverage will be GB supply only. The file size is approximately 90MB zipped for GeoPackage, and 160MB zipped for vector tiles.

3.4 Change-only updates

Change-only updates (COU) are not available for OS MasterMap Sites Layer.

Annex A: Glossary

Glossary term	Definition
Address, 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.
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.
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 shares common characteristics and that is managed as a subset of the data within a database.
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 geographic 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.
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.
GML	Geography Markup Language. An XML encoding for the transport and storage of geographic information, including both the geometry and attributes of geographic features.
INSPIRE	The INSPIRE directive aims to create a European Union (EU) spatial data infrastructure. This will enable the sharing of environmental spatial information among public sector organisations and better facilitate public access to spatial information across Europe.
Layer	A layer is a group of related OS MasterMap themes. A layer may consist of one or more themes. For example, the Sites Layer is currently composed of seven themes, whereas the Topography Layer contains seven themes.

Glossary term	Definition
Life cycle	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.
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.
Obscured level	Where more than one level of detail exists, all detail that meets the specification for capture positioned below cartographic surface level and either at or above ground surface level is captured as obscured detail. For example, detail under bridges is obscured whilst the bridge itself is at normal cartographic level.
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.
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	Polygons are representations of areas. A polygon is defined as a closed line or perimeter that completely encloses a contiguous space and is made up of one or more lines.
Polygon feature	A polygonised representation of a real-world object. A polygon feature may be used to represent a building, field, lake, functional site extent 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 instance, 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.
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.
Theme	A collection of features that form some logical set, for example, buildings, water, land. In the OS MasterMap context,

Glossary term	Definition
	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.
TOID	An identifier that uniquely identifies every feature.
Version date	The date the version of the feature was created by Ordnance Survey within its master database of OS MasterMap.
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.