



# OS MasterMap<sup>®</sup>

User guide

Reference section

## Preface

This user guide is divided into two parts.

[Part 1 \(product specification\)](#) contains the information you need to make effective use of the OS MasterMap® product and service and is designed to help you understand the information contained in the data.

Part 2 (reference section) contains detailed technical information and data format specification.

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## Chapter 2.1 Introduction

### Using the user guide

This documentation is supplied in Portable Document Format (PDF) only. Free Adobe® Acrobat Reader® software, which displays the user guide, allows you to navigate and also incorporates search and zoom facilities. Navigation can also be carried out by clicking on the blue hyperlinks and the table of contents. Hyperlinks are used to navigate between associated parts of the user guide and to relevant Internet resources.

This chapter of the user guide contains the full OS MasterMap technical specification.

- Chapter 2.1 describes the contents of this part of the OS MasterMap user guide.
- [Chapter 2.2](#) describes how OS MasterMap features are classified and the information associated with each feature.
- [Chapter 2.3](#) describes the geometry and topology of OS MasterMap features.
- [Chapter 2.4](#) describes how OS MasterMap is represented in GML format.
- [Chapter 2.5](#) defines the default styles recommended to visually represent the data.
- [Chapter 2.6](#) is a guide on how to apply the styles of chapter 2.5 to features.
- [Chapter 2.7](#) describes how the themes are formed.
- [Appendix A](#) is a glossary with links to and from the relevant parts of the user guide.
- [Appendix B](#) is a product and service performance report form for you to submit any comments on OS MasterMap.

## Chapter 2.2 Classification and attributes of OS MasterMap features

### Classification of OS MasterMap features

OS MasterMap classifies features using feature type and feature description attributes. Feature codes are also generated for topographic features only to provide a basic classification. This section is an overview of the function of each of these and the relationships between them.

*Note: Themes are **not** part of the OS MasterMap feature classification. Themes exist to allow users to easily select a group of features that are often requested and used as a group. New themes can be created to facilitate data selection by particular groups of users. (See [product specification section](#), [OS MasterMap user guide](#).)*

#### Feature type

There are 20 types of OS MasterMap feature. For each feature type, a set of feature attributes is defined. The feature types are:

##### Topography Layer

TopographicArea	Area features representing topographic information.
TopographicLine	Line features representing topographic information and inferred TopographicArea boundaries such as polygon closing links.
BoundaryLine	Line features representing the boundaries of administrative areas.
TopographicPoint	Point features representing topographic detail, bench marks and spot heights.
CartographicSymbol	Point features that store information about the location and type of symbology used when rendering OS MasterMap graphically.
CartographicText	Point features that define the content and placement of text when rendering OS MasterMap graphically.

##### Address Layer

AddressPoint	Point features representing a location with a specified address.
--------------	--

## Integrated Transport Network™ ITN™ (Roads) Layer

Road	A compound feature that represents a road with a name or number. This may be a Department for Transport (DfT) classified road, such as the A38 or a named road such as Romsey Road. The feature consists of a set of references to RoadLink features that provide the network topology of the road.
RoadLink	A feature representing the general alignment of the road carriageway where the only option for a vehicle is to travel along the link or leave the road network for example onto a petrol station forecourt or onto private land. A RoadNode is referenced at each end of the RoadLink.
RoadNode	A location representing either the intersection or crossing of carriageways, where a road name or number changes or ceases to apply, or the end of a carriageway. This is referenced by at least one RoadLink.
InformationPoint	A point feature not attached to the network that represents a motorway junction with a number.
FerryLink	A logical connection between two FerryNode features.
FerryNode	A location representing where a ferry terminates or where FerryLinks converge and diverge. This is referenced by at least one FerryLink.
FerryTerminal	A feature representing a complex where passengers and vehicles embark and disembark from ferries.
RoadNodeInformation	Routing information that applies solely to a RoadNode.
RoadLinkInformation	Routing information that applies to the entirety of a single link, or a location along a link where the direction of traffic flow is irrelevant.
RoadRouteInformation	Routing information that applies to one or more links when travelling in a particular direction.
RoadPartialLinkInformation.	Routing information that applies to a portion of a RoadLink feature in any direction of travel.
RoadPartialRouteInformation	Routing information that applies to a portion of a RoadLink feature in a specified direction of travel.

## All layers

**DepartedFeature** Features that indicate that a feature in a previous supply may no longer be relevant, for example, it may have been deleted or moved. This is used in change-only update data supply only.

The attribute sets of each feature type are specified in [Attribute sets](#) later in this chapter.

The topographic attribute sets are used to represent not only physically apparent real-world objects but also information such as spot heights and inferred area feature boundaries.

## Feature description attributes

### OS MasterMap topographic features

These have up to five attributes that make up the description of the feature: `descriptiveGroup`, `descriptiveTerm`, `physicalLevel`, `physicalPresence`, and `make`. The information conveyed by each of these attributes is as follows. Full details are given in [attribute data types](#) later in this chapter.

#### **descriptiveGroup**

This is the primary classification attribute of a feature. It assigns a feature to one or more of 21 groups, most of which are categories of real-world topographic objects such as path, building or natural environment; others are categories of supportive or administrative features such as network or polygon closing geometry and political or administrative.

In general, values of this attribute are not specific to particular feature types – features of any type can have any `descriptiveGroup` value. Due to limitations in the source data from which OS MasterMap was created, there are some exceptions to this principle. For instance, the `descriptiveGroup` buildings or structure contains text describing or naming buildings and structures, while the topographic features have the `descriptiveGroup` values of building, glasshouse or structures.

#### **descriptiveTerm**

This attribute, if present, gives further classification information about the feature.

A feature may have multiple `descriptiveTerm` attributes, but this is little used at present. Most features have zero or one `descriptiveTerm` attributes. A situation where multiple `descriptiveTerm` attributes are used is where area features have a `descriptiveGroup` with the value of Natural Environment. These features can have one or more `descriptiveTerm` attributes specifying the natural land cover types present in the area.

**physicalLevel**

This attribute states whether the feature is underground, obscured below normal level, at normal level, or overhead.

**physicalPresence**

This attribute indicates the real-world presence of the object represented by the feature. For example, a value of obstructing indicates that the feature prevents pedestrian access, whereas a value of edge/limit means that the feature represents a change of surface type and does not generally impede access.

**make**

Indicates whether the feature is man-made or natural, if this is known.

**Feature code**

Topographic features have a numerical feature code (a five-digit integer) assigned to each feature. This feature code is wholly determined by the feature type (see [Feature type](#) earlier in this chapter), the descriptive group(s) and the descriptive term(s). The feature code does not add any information to that contained in these attributes. The physicalLevel, physicalPresence and make attributes do not affect the feature code.

The feature code itself is arbitrarily assigned, and is therefore not informative without the look-up table that gives the feature type and attribute values corresponding to each feature code. This table is in the section [Attribute values: featureCode](#) later in this chapter.

**OS MasterMap address features****structureType**

If known, this attribute indicates whether the address has been associated to a permanent building or another structure.

**physicalStatus**

This indicates the existence of the building/structure that this address is associated to.



### postalAddress

This attribute includes metadata to indicate whether or not this address is a geographic address, that is, whether it defines a location or is a PO box.

### multipleOccupancyCount

This indicates whether an address serves more than one household.

## **OS MasterMap ITN features**

### descriptiveGroup

This is the primary classification attribute of a feature. This provides a high-level classification of the feature such as the classification of a road, (motorway, A road and so on) type of information (Road Routing Information) or the name of the network (Road topology, Ferry connection).

### descriptiveTerm

This attribute provides further classification of a feature if present. On RoadLink features this is information like alley or private road – restricted access, while on Road Features it indicates that the feature represents a trunk road or primary route.

### natureOfRoad

This attribute on RoadLink features defines the type of carriageway such as dual carriageway or slip road.

## Attribute sets

This section defines the attribute set associated with each OS MasterMap feature type.

### Address Layer features

#### AddressPoint

Attribute	Cardinality	Optional
TOID®	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
addressStatus	Single	No
multipleOccupancyCount	Single	Yes
OSAPR	Single	No
point	Single	No
postalAddress	Single	No
postalAddressDate	Single	No
referenceToTopographicArea	Single	Yes

*Note: A PO box that is fully matched will have the coordinates and building TOID of the relevant sorting office in the referenceToTopographicArea attribute.*

## Topography Layer features

TopographicArea

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
featureCode	Single	No
calculatedAreaValue	Single	No
changeHistory	Multiple	No
descriptiveGroup	Multiple	No
descriptiveTerm	Multiple	Yes
make	Single	Yes
physicalLevel	Single	No
physicalPresence	Single	Yes
polygon	Single	No

## TopographicLine

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
featureCode	Single	No
accuracyOfPosition	Single	No
changeHistory	Multiple	No
descriptiveGroup	Multiple	No
descriptiveTerm	Multiple	Yes
heightAboveDatum	Single	Yes
heightAboveGroundLevel	Single	Yes
make	Single	Yes
physicalLevel	Single	No
physicalPresence	Single	Yes
polyline	Single	No
referenceToFeature	Single	Yes

## BoundaryLine

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
featureCode	Single	No
accuracyOfPosition	Single	No
changeHistory	Multiple	No
descriptiveGroup	Multiple	No
descriptiveTerm	Multiple	Yes
physicalLevel	Single	No
physicalPresence	Single	Yes
polyline	Single	No

## TopographicPoint

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
featureCode	Single	No
accuracyOfPosition	Single	No
changeHistory	Multiple	No
descriptiveGroup	Multiple	No
descriptiveTerm	Multiple	Yes
heightAboveDatum	Single	Yes
heightAboveGroundLevel	Single	Yes
make	Single	Yes
physicalLevel	Single	No
physicalPresence	Single	Yes
point	Single	No
referenceToFeature	Single	Yes

## CartographicSymbol

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
featureCode	Single	No
changeHistory	Multiple	No
descriptiveGroup	Multiple	Yes
descriptiveTerm	Multiple	Yes
orientation	single	No
physicalLevel	Single	No
physicalPresence	Single	Yes
point	Single	No
referenceToFeature	Multiple	Yes

## CartographicText

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
featureCode	Single	No
anchorPoint	Single	No
changeHistory	Multiple	No
descriptiveGroup	Multiple	Yes
descriptiveTerm	Multiple	Yes
make	Single	Yes
physicalLevel	Single	No
physicalPresence	Single	Yes
textRendering	Single	No
textString	Single	No



## ITN (Roads) Layer features

Compound features

### Road

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Single	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
descriptiveTerm	Single	Yes
roadName	Single	No
networkMember	Multiple	No
boundedBy	Single	No

## Network features

### RoadLink

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
descriptiveTerm	Single	No
natureOfRoad	Single	No
length	Single	No
polyline	Single	No
directedNode	Double*	No
referenceToTopographicArea	Multiple	No

\* one directedNode has a positive orientation, the other a negative orientation.

### **RoadNode**

<b>Attribute</b>	<b>Cardinality</b>	<b>Optional</b>
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
point	Single	No
referenceToTopographicArea	Multiple	No

### **FerryLink**

<b>Attribute</b>	<b>Cardinality</b>	<b>Optional</b>
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
directedNode	Double*	No

\* one directedNode has a positive orientation, the other a negative orientation.

**FerryNode**

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
point	Single	No

**FerryTerminal**

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
descriptiveTerm	Multiple	No
referenceToNetwork	Multiple	No

## Information features

### InformationPoint

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
point	Single	No
junctionName	Single	No

### RoadNodeInformation

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
referenceToRoadNode	Single	No
dateTimeQualifier	Multiple	Yes
vehicleQualifier	Multiple	Yes
environmentQualifier	Multiple	Yes

### RoadLinkInformation

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
referenceToRoadLink	Single	No
dateTimeQualifier	Multiple	Yes
vehicleQualifier	Multiple	Yes
environmentQualifier	Multiple	Yes
distanceFromStart	Single	Yes*
point	Single	Yes*

\* distanceFromStart and point are either both supplied or neither is supplied.

### RoadRouteInformation

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
directedLink	Multiple	No
dateTimeQualifier	Multiple	Yes
vehicleQualifier	Multiple	Yes
environmentQualifier	Multiple	Yes
distanceFromStart	Single	Yes*
point	Single	Yes*

\* distanceFromStart and point are either both supplied or neither is supplied.

**RoadPartialLinkInformation**

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
referenceToRoadLink	Single	No
dateTimeQualifier	Multiple	Yes
vehicleQualifier	Multiple	Yes
environmentQualifier	Multiple	Yes
subsectionDistance	Multiple	No
subsectionPoint	Multiple	No



**RoadPartialRouteInformation**

Attribute	Cardinality	Optional
TOID	Single	No
version	Single	No
versionDate	Single	No
theme	Multiple	No
changeHistory	Multiple	No
descriptiveGroup	Single	No
directedLink	Single	No
dateTimeQualifier	Multiple	Yes
vehicleQualifier	Multiple	Yes
environmentQualifier	Multiple	Yes
subsectionDistance	Multiple	No
subsectionPoint	Multiple	No

## All layers

### DepartedFeature

Attribute	Cardinality	Optional
TOID	Single	No

*Note: DepartedFeatures 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 00:00 hours on this date are included as departed features. The only attribute of a departed feature is its TOID. This information is supplied to inform user systems that all versions of this feature are no longer current. Some departed features are present in change-only update for features that have not been previously supplied; this is for a number of reasons, including the creation and deletion of features in the specified time period and the limited information stored in the OS MasterMap database about previous versions of features.*

DepartedFeature 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.

## Attribute data types

### Simple attributes

A simple attribute is one that contains a single piece of information that may be qualified by associated information such as its units of measure. Geometric attributes are considered to be simple. The following simple attributes occur in OS MasterMap features. Each of these attributes is described in [Attribute descriptions](#) later in this section.

Simple attribute name	Type	Simple attribute name	Type
accuracyOfPosition	String	physicalPresence	String
anchorPoint	Point	point	Point
boundedBy	Rectangle	polygon	Polygon
calculatedAreaValue	Real	polyline	Polyline/MultiLine
dateTimeQualifier	String	postalAddressDate	Date
descriptiveGroup	String	referenceTo	TOID
descriptiveTerm	String	referenceToFeature	TOID
directedLink	TOID	referenceToNetwork	TOID
directedNode	TOID	referenceToRoadLink	TOID
distanceFromStart	Real	referenceToRoadNode	TOID
featureCode	Integer	referenceToTopographicArea	TOID
junctionName	String	roadName	Text
length	Real	subsectionDistance	Real
make	String	subsectionPoint	Point
multipleOccupancyCount	Integer	textString	String
natureOfRoad	String	theme	String
networkMember	String	TOID	TOID
orientation	Integer	version	Integer
OSAPR	String	versionDate	Date
physicalLevel	Integer		

## Complex attributes

A complex attribute is one that consists of multiple pieces of information. Each of the component attributes is described in [Attribute descriptions](#) later in this section.

### addressStatus

Attribute	Type
matchStatus	String
physicalStatus	String
positionalQuality	String
structureType	String

### changeHistory

Attribute	Type
reasonForChange	String
changeDate	Date

### environmentQualifier

Attribute	Type
instruction	String
classification	String

### heightAboveGroundLevel

Attribute	Type
heightAboveGroundLevel	Real
accuracyOfHeightAboveGroundLevel	String

### heightAboveDatum

Attribute	Type
heightAboveDatum	Real
accuracyOfHeightAboveDatum	String

### postalAddress

Attribute	Type
organisation	String
department	String
POBox	String
subBuildingName	String
buildingName	String
buildingNumber	String
dependentThoroughfare	String
thoroughfare	String
doubleDependentLocality	String
dependentLocality	String
postTown	String
postCode	String
deliveryPointSuffix	String

## textRendering

Attribute	Type
font	Integer
height	Integer
orientation	Integer
anchorPosition	Integer

## dateTimeQualifier

Attribute	Type
* namedPeriod	String
* specifiedPeriod	SpecifiedPeriodType

\* These are mutually exclusive. A timeQualifier contains either a namedPeriod or a specifiedPeriod.

## SpecifiedPeriodType

Attribute	Type
* namedDate	String
* specifiedDate	SpecifiedDateType
day	String
# namedTime	String
# specifiedTime	SpecifiedTimeType

\* These are mutually exclusive. If a specifiedPeriod contains date information it is either a namedDate or a specifiedDate.

# These are mutually exclusive. If a specifiedPeriod contains time information it is either a namedTime or a specifiedTime.

### SpecifiedDateType

Attribute	Type
startDate	Date
* endDate	Date

\* endDate is not provided if it is the same as the startDate.

### SpecifiedTimeType

Attribute	Type
startTime	Time
endTime	Time

### vehicleQualifier

Attribute	Type
maxHeight	Real
maxCompositeHeight	CompositeMeasureType
load	String
type	String
use	String

### CompositeMeasureType

Attribute	Type
feet	Integer
inches	Integer

## Attribute metadata

A few attributes have associated metadata that provides extra information about some aspect of the attribute. These attributes are as follows:

Metadata	Values	Description	Attributes
accuracy	See <a href="#">Attribute values:accuracy</a>	Specifies the capture method of the position given to an address.	positionalQuality
broken	true,false	Indicates that there is a problem with the geometry. See <a href="#">chapter 2.3, OS MasterMap geometry and topology</a> for details.	polyline, polygon
exceptFor	true,false	Set to true on the components of a vehicleQualifier to indicate that given information doesn't apply to the specified vehicles. Defaults to <i>false</i> to indicate that information applies to the identified vehicles.	type, use, load
gradeSeparation	+ve integer	Used to indicate where a link crosses another in a network without any interaction. See <a href="#">Topological data types</a>	directedNode and referenceToRoadNode
nonGeographic	true,false	Specifies whether a postalAddress refers to a geographic location or a PO box.	postalAddress
orientation	+, -	Adds an orientation to a topological reference.	ringMember, directedLink and directedNode
srsName	osgb:BNG	Specifies that reference system of the geometry types (British National Grid).	point, polyline and polygon
type	Small, Large	Indicates whether a postcode uses the small or large postcode format.	postCode
uom	See <a href="#">Attribute values:uom</a>	Identifies the units of measure that apply to a given value.	maxHeight, feet and inches



## Data types

Each simple attribute has one of the following data types. Each item of information in a complex attribute has one of the following data types.

Type name	Description
Boolean	true/false.
Character	Any single character permitted in Unicode.
Date	Specifies a point in time.
Integer	Any positive or negative whole number or zero.
MultiLine	A set of Polyline geometries. See <a href="#">chapter 2.3, OS MasterMap geometry and topology</a> for details.
Point	A pair of easting and northing coordinates in metres, defining a horizontal location in the British National Grid spatial reference system. See <a href="#">chapter 2.3, OS MasterMap geometry and topology</a> for details.
Polygon	A closed area defined by one outer boundary and zero or more inner boundaries. In topological polygon data each boundary is an ordered set of directed polylines forming a closed ring, each polyline being specified by TOID reference to a line feature. In independent polygon data each boundary is a closed ring of coordinate pairs, interpolated as for a polyline. See <a href="#">chapter 2.3, OS MasterMap geometry and topology</a> for details.
Polyline	An ordered set of points that are connected with a straight line between each pair. See <a href="#">chapter 2.3, OS MasterMap geometry and topology</a> for details.
Real	A floating point number.
Rectangle	A four-sided polygon with vertices that run either north–south or east–west.
String	An ordered set of characters.
Time	A formatted string indicating a localised time using a 24-hour clock. The string is formatted as hh:mm:ss and may be right truncated.
TOID	An integer which is a unique OS MasterMap feature. In some formats, the TOID may be part of a non-integer field. For instance, in GML output TOIDs are prefixed with osgb to comply with XML specifications.

## Attribute descriptions

Attribute	Description
accuracyOfHeightAboveDatum	The accuracy of a height above datum in metres at the 95% confidence level. Attribute format as for accuracyOfPosition with Unknown as a valid value.
accuracyOfHeightAboveGroundLevel	The accuracy of a height above ground level in metres at the 95% confidence level. Attribute format as for accuracyOfPosition with Unknown as a valid value.
accuracyOfPosition	The accuracy of a horizontal position in metres at the 95% confidence level. See <a href="#">Attribute values:Accuracyofposition</a> .
addressStatus	The known quality of the data indicated by a combination of the contained attributes:structureType, positionalQuality, physicalStatus and matchStatus.
anchorPoint	The coordinate position that a piece of text is bound to. Measured in metres in the British National Grid spatial reference system.
anchorPosition	A number between 0 and 8 that specifies which part of the text is bound to the anchorPoint. See <a href="#">Attribute values:anchorPosition</a> .
boundedBy	A minimum bounding rectangle of the RoadLink features referenced by a road feature.
buildingName	The building name is a description applied to a single building or a small group of buildings. For example: ROSE COTTAGE, HIGH STREET. This includes building numbers that contain non-numeric characters such as NUMBER 44. Descriptive names in brackets, following a distinctive name, are sometimes present, for example, RAILWAY TAVERN (PUBLIC HOUSE) or THE COURT ROYAL (HOTEL).
buildingNumber	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. Building numbers that contain a range, decimals or non-numeric characters do not appear in this attribute but will be found in the buildingName or the subBuildingName attribute.
calculatedAreaValue	The calculated area of an area feature polygon in square metres.

Attribute	Description
changeDate	The date attribute associated with a reasonForChange attribute in the feature change history.
changeHistory	Information about the dates of feature updates and reasons for update.
classification	A description of the part of the environment that is the reason for the information presented. For example, 'Bridge Over Road'. See <a href="#">Attribute values:classification</a> .
dateTimeQualifier	Information specifying the date and/or time period that routing information applies to. This may be through known named dates/times or specified dates/times.
day	A textual name for a defined day. For example, Monday, bank holidays and so on. See <a href="#">Attribute values:day</a> .
deliveryPointSuffix	A two-character code identifying an individual delivery point within a postcode. Also known as a Premise Code.
department	In a few organisations, department name is indicated because mail is received by subdivisions of the main organisation at distinct delivery points. For example: Organisation     ABC COMMUNICATIONS Department     MARKETING DEPARTMENT Thoroughfare     LONDON ROAD
dependentLocality	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, MILLBROOK and SWAYTHLING in the situation, HIGH STREET, MILLBROOK, SOUTHAMPTON and HIGH STREET, SWAYTHLING, SOUTHAMPTON.
dependentThoroughfare	These 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.
descriptiveGroup	The primary classification of the feature. See <a href="#">descriptiveGroup</a> .
descriptiveTerm	Secondary classification of the feature. See <a href="#">descriptiveTerm</a> .

Attribute	Description
directedLink	A reference by TOID to a RoadLink feature that includes an orientation. A positive orientation (+) means that the reference applies to the link in its natural state, that is, from the start to the end; a negative orientation (-) means that the reference applies to the RoadLink in its reversed direction, that is, from the last coordinate to the first. See <a href="#">orientation</a> .
directedNode	A reference by TOID to the RoadNode at the start or end of a RoadLink. If the node is at the start of the RoadLink, then it has a negative orientation (-). If the node is at the end of the RoadLink, then it has a positive orientation (+). This reference may include a grade separation to indicate where one part of the network crosses another part of the same network without intersecting. See <a href="#">gradeSeparation</a> .
distanceFromStart	The distance from the start of a RoadLink that a feature occurs, measured in units of metres.
doubleDependentLocality	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.
endDate	A date defining the last day on which information is applicable.
endTime	The time after which information is no longer relevant.
environmentQualifier	Information on environmental conditions useful for routing such as mandatory turns and traffic calming. See <a href="#">instruction</a> and <a href="#">classification</a> for more details.
featureCode	A five-digit integer. See <a href="#">featureCode</a> .
feet	A value that uses the imperial unit of feet.
font	The font to be used to display the text string. See <a href="#">chapter 2.5, Style definitions – fonts</a> .
height	The height of CartographicText. The height is expressed as the distance on the ground covered by the text, in metres.

Attribute	Description
heightAboveDatum	The simple attribute contains the height of the feature above the Ordnance Datum Newlyn (ODN) vertical datum, in metres. The complex attribute contains the simple attribute of the same name with some additional accuracy information. This information is only provided for spot heights, bench marks and tidal limit lines.
heightAboveGroundLevel	The simple attribute contains the height of the feature above ground level, in metres. The complex attribute contains the simple attribute of the same name with some additional accuracy information. This information is only provided for bench marks.
inches	A value that uses the imperial unit of inches.
instruction	An instruction relating to the environment applicable to those navigating through a network, for example, mandatory turn. See <a href="#">Attribute values:instruction</a> .
junctionName	The distinctive name applied to a road junction and the classified roads not included in the junction number that intersect with the motorway. For example, 'M4 J16/A38'.
length	The length of the RoadLink in metres calculated from the planimetric coordinates making up the RoadLink.
load	A textual string describing what is being transported by a vehicle using a network. See <a href="#">Attribute values:load</a> . Has associated with it the metadata property exceptFor. See <a href="#">Attribute metadata</a> .
make	See <a href="#">Attribute values:make</a> .
matchStatus	See <a href="#">Attribute values:matchStatus</a> .
maxCompositeHeight	A maximum height restriction for vehicles provided in units of feet and inches. See <a href="#">feet</a> , <a href="#">inches</a> and <a href="#">uom</a> .
maxHeight	A maximum height restriction for vehicles provided in units of metres. See <a href="#">uom</a> .
multipleOccupancyCount	A count of the number of households served by one Royal Mail® address. This attribute is only provided where the number of households is greater than one.

Attribute	Description
namedDate	A textual string describing a date range, for example January and summer. This field is used when the text requires further qualification such as weekdays in January or 7:00 am to 6:00 pm in summer. See <a href="#">Attribute values:namedDate</a> .
namedPeriod	A textual string describing a period of time that requires no further qualification, for example, school holidays. See <a href="#">Attribute values:namedPeriod</a> .
namedTime	A named part of the daily cycle, for example dusk till dawn and noon. See <a href="#">Attribute values:namedTime</a> .
natureOfRoad	Defines the type of carriageway, for example, dual carriageway or slip road. See <a href="#">Attribute values:natureOfRoad</a> .
networkMember	A collection of RoadLink features that make up this distinct road. This collection is an unordered set of features referenced by TOID.
organisation	The organisation name is the business name within a building or small group of buildings, for example: TOURIST INFORMATION CENTRE This attribute could also include entries for churches, public houses and libraries.
orientation	The orientation of text or symbol features for cartographic placement. Measured in tenths of a degree anticlockwise from due east (0–3599).
OSAPR	Ordnance Survey ADDRESS-POINT® Reference. A unique 18-character alphanumeric string that starts with AP and only contains characters in the range of 0–9 and A–Z, for example, AP1563GFV80077ZZXQ.
physicalLevel	Indicates the physical level of a feature with reference to the normal cartographic surface level. Only four values are used at present. <ul style="list-style-type: none"> <li>• -1 = Underground detail</li> <li>• 49 = Obscured detail below the normal cartographic level</li> <li>• 50 = Detail at the normal cartographic level</li> <li>• 51 = Overhead detail above normal cartographic level</li> </ul>

Attribute	Description
physicalPresence	See <a href="#">Attribute values:physicalPresence</a> .
physicalStatus	See <a href="#">Attribute values:physicalStatus</a> .
POBox	PO box addresses, these are located at the Royal Mail delivery office at which they are based.
point	A pair of easting and northing coordinates in metres, defining a horizontal location in the British National Grid spatial reference system.
polygon	Specifies a polygon bounding an area feature. See <a href="#">polygon data type</a> above, and see <a href="#">chapter 2.3, OS MasterMap geometry and topology</a> for details.
polyline	This may contain either a polyline or a multiline geometry. In TopographicLine attribute sets this will only be a multiline if there is a problem with the geometry that is indicated by the broken metadata flag. See <a href="#">chapter 2.3, OS MasterMap geometry and topology</a> for details.
positionalQuality	This indicates whether an address location is in its final or provisional position. This attribute also has associated metadata that indicates the survey method used to capture the address positions. See <a href="#">Attribute metadata</a> ; also <a href="#">Attribute values:positionalQuality</a> and <a href="#">Attribute values:accuracy</a> .
postalAddress	A series of instructions used by Royal Mail to sort and distribute mail to a delivery office, for delivery to the intended recipient. It contains only those address elements that are necessary to identify one delivery point from another to assist Royal Mail in the delivery of mail.
postalAddressDate	The date the address was created or updated by Royal Mail.
postCode	Postcodes are an abbreviated form of address referring to one or more addresses that conform to a specification set by Royal Mail. A postcode will uniquely identify an average of 15 addresses, the maximum number of addresses is 100. Where a customer receives a substantial amount of mail the postcode may pertain to just that one address (a large-user postcode). See <a href="#">postCode</a> , see also <a href="#">Attribute metadata</a> .

Attribute	Description
postTown	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.
reasonForChange	The reason for a change made to a feature. Part of the feature change history. See <a href="#">Attribute values:reasonForChange</a> .
referenceToFeature	A reference by TOID to a related feature. In topographic features this is used to point from a heightened feature to an unheighted feature. In cartographic symbol features, it is used to point from the symbol feature to the topographic feature to which it refers.
referenceToNetwork	A reference by TOID to a related feature. This is where a network connection such as a FerryTerminal references nodes and links in the road and ferry networks.
referenceToRoadLink	A reference to a RoadLink feature via its TOID.
referenceToRoadNode	A reference to a RoadNode feature via its TOID.
referenceToTopographicArea	A reference by TOID to a topographic polygon feature. In the ITN (Roads) Layer the unique identifiers of the topographic road area polygons that intersect with a RoadLink or RoadNode.
roadName	<p>The distinctive name or DfT number applied to the Road, for example, 'Romsey Road', 'M25' 'A43 and B336'.</p> <p>Where Ordnance Survey has names in more than one language the cardinality of this property is &gt; 1 with each name represented.</p>
specifiedDate	This is used to define a date range by means of a startDate and endDate.
specifiedPeriod	<p>This specifies a period in time by using a date, day and time constraint.</p> <p>See <a href="#">namedDate</a>, <a href="#">specifiedDate</a>, <a href="#">day</a>, <a href="#">namedTime</a> and <a href="#">specifiedTime</a>.</p>
specifiedTime	This specifies a period in time by means of a startTime and endTime.
startDate	The date that defines the start of a date range. See <a href="#">specifiedDate</a> .
startTime	The time that defines the start of a time range. See <a href="#">specifiedTime</a> .



Attribute	Description
subsectionDistance	The distance from the start of a link that a road routing feature begins and ends, when the information is available and applicable, for example, a no entry part way along a RoadLink.
subsectionPoint	The National Grid eastings and northings of the start and end points of a routing feature when the information is available and applicable, for example, a no entry part way along a RoadLink. These are coincident with vertices on the underlying RoadLink.
structureType	This is a simple structural classification of the TopographicArea referred to by this AddressPoint. It indicates that the topographic polygon referred to is a permanent building, other structure or of unknown construction.
subBuildingName	<p>The sub-building name and/or number are identifiers for subdivision of properties, for example:</p> <p>subBuildingName: FLAT 3 Sub building name  buildingName: POPLAR COURT Building name  thoroughfare: LONDON ROAD Thoroughfare</p> <p><i>Note: If the above address is styled 3 POPLAR COURT, all the text will be shown in the buildingName attribute and the subBuildingName will be empty. The building number will be shown in this field when it contains a range, decimal or non-numeric character (see <a href="#">buildingNumber</a>).</i></p>
subsectionDistance	The distance from the start of a link in metres that a road routing feature begins and ends, when the information is available and applicable, for example, a no entry part way along a RoadLink.
subsectionPoint	The National Grid eastings and northings of the start and end points of a routing feature when the information is available and applicable, for example, a no entry part way along a RoadLink. These are coincident with vertices on the underlying RoadLink.
textRendering	The required information to graphically display a text string in harmony with the underlying map detail, for example, font height and orientation.
textString	CartographicText, which can be rendered using the textRendering attribute.

Attribute	Description
theme	A theme that the feature belongs to. See <a href="#">product specification section, OS MasterMap user guide</a> .
thoroughfare	A thoroughfare is a road, track or named access route on which there are Royal Mail delivery points, for example, ROMSEY ROAD.
type	A classification of the nature of a vehicle. See <a href="#">Attribute values:type</a> . Has associated with it the metadata property exceptFor. See <a href="#">Attribute metadata</a> .
TOID	The unique reference number of a feature. If leading zeroes are omitted, the number may appear as less than 16 digits.
uom	A qualifier for a given value that references the units of measure used for the value from a units of measure dictionary. See <a href="#">Attribute values:uom</a>
use	A classification of the predominant use of a vehicle. See <a href="#">Attribute value:use</a> . Has associated with it the metadata property exceptFor. See <a href="#">Attribute metadata</a> .
vehicleQualifier	A vehicle qualifier identifies the vehicles that the information applies to by specifying the defining attributes of a vehicle such as its use, size, weight and contents.
version	The <a href="#">version number</a> of the feature, in the range 1 to 65535.
versionDate	The date on which this version of the feature became the current version. This is the date on which the feature was changed in the database, and is not the date of any associated real-world change.

## Attribute values

### accuracy

Value	Description
Approximate	Approximate position, usually within 50 m, but may exceed 100 m where the addresses relate to temporary or other structure types (for example, caravan sites or under construction) or within an industrial estate.
Estimate	Where no addresses have been accurately located within a postcode unit, an estimated position, if available, is allocated. The accuracy of this reference will vary. In England and Wales the reference given has a resolution of 100 m; in Scotland the reference given is to 10 m.
Postcode sector mean	Where no addresses have been accurately located within a postcode unit and no approximate reference is available, the address is allocated a mean position within the postcode sector. This is derived from those addresses within the sector that have been accurately positioned. <i>Note: Postcode sector mean coordinates can be several kilometres away from the true address location in rural areas.</i>
Postcode unit mean	This indicates that the address has been allocated a mean position within the postcode unit. This mean position is derived from those addresses within the unit that have been accurately located.
Surveyed	Always within the building that defines the addressed premise or close to the addressed structure where the structure is not a permanent building.

## accuracyOfPosition

Value	Description
1.0 m	Urban data capture standards (1:1250 scale). This is the nominal accuracy of a point position at the 99% confidence level.
2.5 m	Rural data capture standards (1:2500 scale). This is the nominal accuracy of a point position at the 99% confidence level.
6.0 m	Rural overhaul data capture standards. This is the nominal accuracy of a point position at the 99% confidence level. This is the accuracy to be expected in areas of original 1:2500 scale overhaul mapping that have not been subject to positional accuracy improvement.
8.0 m	Mountain and moorland data capture standards (1:10 000 scale). This is the nominal accuracy of a point position at the 99% confidence level.
Unknown	The expected positional accuracy is unknown.

*NOTE: These values differ by a small amount from the actual values; see [Absolute accuracy](#) for more details.*

## classification

The values expressed in the following table are the environmental conditions that either impose a restriction on vehicle navigation or provide information that may influence a vehicle's choice of route. This list contains the known values at the time of publication; occurrences of values that are not in this table may be present in the data.

Value	Value
Barrier	Mini Roundabout
Bridge Over Road	Rising Bollards
Bridge Under Road	Severe Turn
Firing Range	Through Route
Ford	Toll Indicator
Gate	Traffic Calming
Level Crossing	

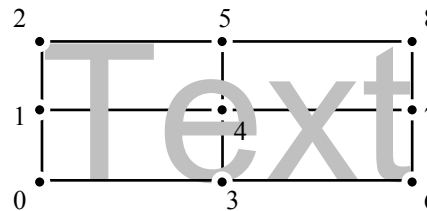
## day

The values in the following table are named days that are expressed on road signs. This list contains the known values at the time of publication; occurrences of values that are not in this table may be present in the data.

Value	Value
Bank Holidays	Thursday
Friday	Tuesday
Monday	Wednesday
Saturday	Weekdays
Sunday	Weekends

## anchorPosition

Each text string that is captured with cartographic information has a location in the text string, known as its anchorPosition, which is bound to the digitised coordinate. There are nine defined locations, identified by the numbers 0-8, which are shown in the diagram below.



## descriptiveGroup

Value	Description
A Road	Features representing roads with the same DfT A road number.
B Road	Features representing roads with the same DfT B road number.
Building	Features representing buildings (not including glasshouses).
Buildings Or Structure	Text features describing or naming buildings and structures.
Built Environment	Geographic areas and extents of man-made environments, terrain and communication links.
Ferry Connection	Features representing vehicular ferry routes.
General Feature	General topographic features and minor detail.
General Surface	Features representing, describing or limiting areas of land not covered by buildings or structures.
Glasshouse	Features representing glasshouses.
Height Control	Features with height information.
Historic Interest	Features of heritage value.
Information Point	Features representing numbered motorway junctions.
Inland Water	Features representing, describing or limiting areas of water that are not tidal.
Landform	Features representing, describing or limiting areas of landform, for example, slopes or cliffs.
Motorway	Features representing roads with the same DfT motorway number.
Named Road	Features representing roads with the same name.
Natural Environment	Features representing geographic areas and extents of natural environments and terrain.
Network Connection	Features used to connect different networks.
Network Or Polygon Closing Geometry	Features used to close polygons.

Value	Description
Path	Features representing and limiting the extent of pathways.
Political Or Administrative	Features representing political or electoral boundaries.
Rail	Features representing, describing or limiting the extents of railways.
Road Or Track	Features representing, describing or limiting the extents of roadways and tracks.
Road Routing Information	Features that may affect a driver's choice of route.
Road Topology	Features representing the general alignment and interconnections of the road network.
Roadside	Features representing, describing or limiting the extents of roadside detail.
Structure	Features representing, describing or limiting structures other than buildings or glasshouses.
Terrain And Height	Features giving information about the altitude at a location or changes of level of the ground surface.
Tidal Water	Features representing, describing or limiting areas of water that are tidal.
Unclassified	Topographic features that have not been given a description yet.

## descriptiveTerm

Most features have one descriptiveTerm attribute. In some cases multiple descriptive terms are given. The following table clarifies the usage of selected descriptive terms.

descriptiveTerm value	Description
Air Height	A photogrammetrically supplied spot height.
Archway	A covered passageway through a building or structure that vehicles can be driven through.
Compound	Indicates that the feature covers a geographical area and encompasses a mixture of other features.
Course Of Heritage	The alignment of a heritage or antiquity feature, for example, the course of a Roman road.
Ferry	Indicates that a network connection represents the potential to transfer from a network onto the ferry network.
Inferred Property Closing Link	The feature has been inferred from the surrounding topographic features in order to divide large polygons.
Overhead Construction	A structure clear of the ground to allow access beneath it, for example, electricity transmission lines, cable car cables.
Primary Route	Indicates that the Road feature represents the parts of a classified road that are classified by the DfT as being Primary Route
Road	Indicates that a network connection represents the potential to transfer from a network onto the road network.
Trunk Road	Indicates that the Road feature represents the parts of a classified road that are classified by the DfT as being Trunk Road.
Upper Level Of Communication	Upper level of through public communication, for example, in multilevel shopping centres.



## Valid descriptiveTerms values

### descriptiveTerm

A Road  
Air Height  
Alley  
Archway  
B Road  
Bench Mark  
Bottom Of Cliff  
Bottom Of Slope  
Boulders  
Boulders (Scattered)  
Boundary Half Mereing  
Boundary Post Or Stone  
Buffer  
Cliff  
Compound  
Coniferous Trees  
Coniferous Trees (Scattered)  
Coppice Or Osiers  
County  
Course Of Heritage  
Culvert  
Direction Of Flow  
District  
Disused Feature  
Division  
Electoral  
Ferry  
Foreshore

### descriptiveTerm

Heath  
Inferred Property Closing Link  
Land Use Change Polygon Closing Link  
Local Street  
Marsh Reeds Or Saltmarsh  
Mean High Water (Springs)  
Mean Low Water (Springs)  
Minor Road  
Motorway  
Multi Surface  
Narrow Gauge  
Network Closing Link  
Nonconiferous Trees  
Nonconiferous Trees (Scattered)  
Orchard  
Outline  
Overhead Construction  
Parish  
Parliamentary  
Pedestrianised Street  
Polygon Closing Link  
Positioned Boulder  
Positioned Coniferous Tree  
Positioned Nonconiferous Tree  
Primary Route  
Private Road - Publicly Accessible  
Private Road - Restricted Access

### descriptiveTerm

Public  
Pylon  
Ridge Or Rock Line  
Road  
Road Name Or Classification  
Road Related Flow  
Rock  
Rock (Scattered)  
Rough Grassland  
Scree  
Scrub  
Site Of Heritage  
Slope  
Spot Height  
Standard Gauge Track  
Step  
Structure  
Switch  
Top Of Cliff  
Top Of Slope  
Track  
Traffic Calming  
Triangulation Point Or Pillar  
Trunk Road  
Tunnel Edge  
Unmade Path Alignment  
Upper Level Of Communication

## featureCode

The table below gives descriptions for each feature code value. The feature code itself is arbitrarily assigned and so carries no information without this table.

Where features have multiple descriptive groups and/or descriptive terms, a single feature code is allocated. If the feature has multiple descriptive groups, the highest priority descriptive group is used to assign the feature code. The priority order of descriptive groups is indicated by the order of descriptive groups in the following table (from highest to lowest).

In the descriptive term column of the following table, a blank box means multiple, other or none. This code is used for features with multiple descriptive terms, with no descriptive term, or with one descriptive term that does not have its own feature code.

The column feature type in the following table has been abbreviated by omitting the words topographic, boundary and cartographic from the feature type names. Where line appears in this column it includes both TopographicLine and BoundaryLine feature types.

Feature code	Descriptive group	Feature type	Descriptive term
10021	Building	Area	
10017	Building	Line	
10022	Building	Point	
10016	Building	Symbol	
10020	Building	Text	
10018	Building	Line	Division
10019	Building	Line	Outline
10062	Glasshouse	Area	
10064	Glasshouse	Line	
10063	Glasshouse	Point	
10061	Glasshouse	Symbol	
10060	Glasshouse	Text	
10185	Structure	Area	

Feature code	Descriptive group	Feature type	Descriptive term
10195	Structure	Line	
10186	Structure	Point	
10194	Structure	Symbol	
10184	Structure	Text	
10190	Structure	Area	Archway
10188	Structure	Line	Network Closing Link
10193	Structure	Area	Pylon
10189	Structure	Line	Pylon
10192	Structure	Point	
10191	Structure	Point	Structure
10187	Structure	Area	Upper Level Of Communication
10025	Buildings Or Structure	Area	
10023	Buildings Or Structure	Line	
10024	Buildings Or Structure	Point	
10027	Buildings Or Structure	Symbol	
10026	Buildings Or Structure	Text	
10028	Buildings Or Structure	Text	Compound
10172	Road Or Track	Area	
10175	Road Or Track	Line	
10176	Road Or Track	Point	
10170	Road Or Track	Symbol	
10171	Road Or Track	Text	
10168	Road Or Track	Line	Public
10169	Road Or Track	Text	Road Name Or Classification
10177	Road Or Track	Symbol	Road Related Flow
10173	Road Or Track	Line	Tunnel Edge
10167	Rail	Area	

Feature code	Descriptive group	Feature type	Descriptive term
10155	Rail	Line	
10159	Rail	Point	
10161	Rail	Symbol	
10166	Rail	Text	
10160	Rail	Line	Buffer
10156	Rail	Text	Compound
10164	Rail	Line	Narrow Gauge
10162	Rail	Line	Standard Gauge
10163	Rail	Line	Standard Gauge Track
10158	Rail	Point	Structure
10165	Rail	Symbol	Switch
10157	Rail	Line	Tunnel Edge
10123	Path	Area	
10124	Path	Line	
10120	Path	Point	
10121	Path	Symbol	
10122	Path	Text	
10119	Path	Area	Step
10125	Path	Line	Tunnel Edge
10183	Roadside	Area	
10180	Roadside	Line	
10182	Roadside	Point	
10181	Roadside	Symbol	
10178	Roadside	Text	
10179	Roadside	Point	Structure
10093	Landform	Area	
10095	Landform	Line	

Feature code	Descriptive group	Feature type	Descriptive term
10094	Landform	Point	
10106	Landform	Symbol	
10102	Landform	Text	
10103	Landform	Line	Bottom Of Cliff
10097	Landform	Line	Bottom Of Slope
10099	Landform	Area	Cliff
10105	Landform	Text	Compound
10100	Landform	Point	Disused Feature
10101	Landform	Line	Ridge Or Rock Line
10096	Landform	Area	Slope
10104	Landform	Line	Top Of Cliff
10098	Landform	Line	Top Of Slope
10089	Inland Water	Area	
10087	Inland Water	Line	
10088	Inland Water	Point	
10084	Inland Water	Symbol	
10090	Inland Water	Text	
10086	Inland Water	Text	Compound
10092	Inland Water	Line	Culvert
10085	Inland Water	Point	Culvert
10091	Inland Water	Symbol	Culvert
10082	Inland Water	Symbol	Direction Of Flow
10083	Inland Water	Line	Tunnel Edge
10210	Tidal Water	Area	
10208	Tidal Water	Line	
10209	Tidal Water	Point	
10206	Tidal Water	Symbol	

Feature code	Descriptive group	Feature type	Descriptive term
10204	Tidal Water	Text	
10207	Tidal Water	Text	Compound
10203	Tidal Water	Area	Foreshore
10205	Tidal Water	Text	Foreshore
10211	Tidal Water	Line	Mean High Water (Springs)
10212	Tidal Water	Line	Mean Low Water (Springs)
10126	Political Or Administrative	Area	
10137	Political Or Administrative	Line	
10132	Political Or Administrative	Point	
10134	Political Or Administrative	Symbol	
10133	Political Or Administrative	Text	
10130	Political Or Administrative	Symbol	Boundary Half Mereing
10129	Political Or Administrative	Point	Boundary Post Or Stone
10127	Political Or Administrative	Line	County
10131	Political Or Administrative	Line	District
10128	Political Or Administrative	Line	Electoral
10136	Political Or Administrative	Line	Parish
10135	Political Or Administrative	Line	Parliamentary
10031	Built Environment	Area	
10032	Built Environment	Line	
10029	Built Environment	Point	
10030	Built Environment	Symbol	
10034	Built Environment	Text	
10033	Built Environment	Text	Compound
10111	Natural Environment	Area	
10110	Natural Environment	Line	
10109	Natural Environment	Point	

Feature code	Descriptive group	Feature type	Descriptive term
10108	Natural Environment	Symbol	
10107	Natural Environment	Text	
10076	Historic Interest	Area	
10075	Historic Interest	Line	
10080	Historic Interest	Point	
10073	Historic Interest	Symbol	
10074	Historic Interest	Text	
10077	Historic Interest	Text	Compound
10072	Historic Interest	Point	Site Of Heritage
10199	Terrain And Height	Area	
10201	Terrain And Height	Line	
10200	Terrain And Height	Point	
10196	Terrain And Height	Symbol	
10198	Terrain And Height	Text	
10202	Terrain And Height	Point	Air Height
10197	Terrain And Height	Point	Spot Height
10056	General Surface	Area	
10052	General Surface	Line	
10057	General Surface	Point	
10055	General Surface	Symbol	
10059	General Surface	Text	
10053	General Surface	Area	Multi Surface
10054	General Surface	Area	Step
10058	General Surface	Line	Step
10044	General Feature	Area	
10046	General Feature	Line	
10045	General Feature	Point	

Feature code	Descriptive group	Feature type	Descriptive term
10042	General Feature	Symbol	
10043	General Feature	Text	
10051	General Feature	Point	Positioned Boulder
10050	General Feature	Point	Positioned Coniferous Tree
10048	General Feature	Point	Positioned Nonconiferous Tree
10041	General Feature	Line	Tunnel Edge
10065	Height Control	Area	
10071	Height Control	Line	
10068	Height Control	Point	
10070	Height Control	Symbol	
10069	Height Control	Text	
10067	Height Control	Point	Benchmark
10066	Height Control	Symbol	Benchmark
10116	Network Or Polygon Closing Geometry	Area	
10115	Network Or Polygon Closing Geometry	Line	
10118	Network Or Polygon Closing Geometry	Point	
10117	Network Or Polygon Closing Geometry	Symbol	
10112	Network Or Polygon Closing Geometry	Text	
10114	Network Or Polygon Closing Geometry	Line	Inferred Property Closing Link
10113	Network Or Polygon Closing Geometry	Line	Polygon closing link
10217	Unclassified	Area	
10216	Unclassified	Line	
10215	Unclassified	Point	
10214	Unclassified	Symbol	
10213	Unclassified	Text	



## instruction

The values in the following table are instructions that are expressed by road signs.

### Value

Access Limited To  
Access Prohibited To  
Mandatory Turn  
No Entry  
No Turn  
One Way

## load

The values in the following table are vehicle load descriptions that are expressed on road signs. For accurate definitions of their meaning it is advised that you consult the Department for Transport website (<http://www.dft.gov.uk>). This list contains the known values at the time of publication; occurrences of values that are not in this table may be present in the data.

### Value

Abnormal Loads  
Dangerous Goods  
Explosives  
Wide Loads

## make

Value	Description
Manmade	Features that have been constructed, for example, areas of tarmac or concrete.
Multiple	Features that are a mixture of makes but are not depicted separately within the data, for example, the area around a dwelling may be a mixture of made and unmade surfaces.
Natural	Features that are not man-made but possibly man altered, for example, cliffs, areas of water and uncultivated/cultivated vegetation.
Unclassified	Features that have not had a Make allocated.
Unknown	Features the Make of which is not known.

## matchStatus

Value	Description
Unmatched	Address is not yet matched to OS MasterMap data.
Matched	Address is matched to an OS MasterMap polygon.
Matched With Discrepancy (Referred)	Address is matched to an OS MasterMap polygon but has been referred to the Royal Mail to resolve a known discrepancy with OS MasterMap.
Matched With Discrepancy (Unresolved)	Address is matched to an OS MasterMap polygon but with a discrepancy between the Royal Mail and OS MasterMap information that is awaiting investigation.

Where the matchStatus attribute is Matched With Discrepancies (Unresolved) or Matched With Discrepancy (Referred), the address field containing the discrepancy is not indicated in the address data.

## namedDate

The following table provides a set of named date ranges that are expressed on road signs. This list contains the known values at the time of publication; occurrences of values that are not in this table may be present in the data.

Value	Value
January	October
February	November
March	December
April	Spring
May	Summer
June	Autumn
July	Winter
August	Holidays
September	Bank Holidays

## namedPeriod

The following table provides a set of named periods that are expressed on road signs. This list contains the known values at the time of publication; occurrences of values that are not in this table may be present in the data.

Value
School Hours
Bank Holidays
School Holidays
Under Construction
Term Time

## namedTime

The following table provides a set of named time periods that are expressed on road signs. This list contains the known values at the time of publication; occurrences of values that are not in this table may be present in the data.

Value	Value
Dusk Till Dawn	Local Times Apply
Dawn Till Dusk	Morning Rush Hour
Day	Night
Evening Rush Hour	School Arrival And Departure

## natureOfRoad

Value	Description
Single Carriageway	Default link type. A road consisting of a single carriageway with traffic in one or both directions. There may be more than one lane in any particular direction.
Dual Carriageway	A road consisting of two separate carriageways with separate flow directions. The carriageways are partitioned by physical features such as a barrier and/or verge.
Slip Road	An exit or entry point to and from the major road network including motorways.
Roundabout	A method of controlling traffic flow by allowing vehicles from a particular direction priority.
Enclosed Traffic Area Link	Car parks and similar areas through which traffic passes but are not generally considered to be a road. Only the entrances and exits of car parks will be captured.
Traffic Island Link At Junction	Where an island that is over 8 m <sup>2</sup> exists in the middle of a road on the approaches to a junction, the RoadLink is split around it. The split links will carry this attribute value.
Traffic Island Link	Where an island that is over 8 m <sup>2</sup> exists in the middle of a road, the RoadLink is split around it. The split links will carry this attribute value.

## physicalPresence

### Value

Boundary

Closing

Edge / limit

Extent

Indicator

Minor Detail

Moveable

Network

Obstructing

Overhead

### Description

Indicates that the feature is a political or administrative boundary, for example, European region, county, ward, civil parish and so on.

Feature not physically present. This may have been surveyed or inferred to close a polygon for reasons of classification or identity.

The feature is a physical definition of the edge of an area but does not obstruct pedestrian access.

The feature identifies a geographical area with unknown or poorly defined limits.

The feature is a symbolic representation of the characteristics of physical features, for example, direction of river flow or traffic direction.

Indicates that the object can move within the extent of the feature, for example, a moveable crane.

Indicates that feature is normally more than 0.3 m high and forms an obstruction to passage on foot.

This value indicates that the alignment of a feature is defined by something that is above the physical level of the feature. For example, this value is used if part of a building is on stilts. In that case, the PhysicalLevel attribute would be 50 (normal cartographic level).

## physicalStatus

### Value

Demolished

Existing

Planned

Unknown

### Description

Previously in existence but now destroyed.

Built and in existence.

Planned but not built.

Unable to ascertain the physical status due to the positional quality.

## positionalQuality

Value	Description
Final	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 house boat.
Provisional	The address may be a considerable distance from the addressed structure.

## postCode

The postcode is represented in OS MasterMap as a string with a maximum length of eight characters. The following is a list of the valid formats of a postcode. An A indicates an alphabetic character, an N indicates a numeric character and the incode and outcode are separated by a single space character.

Outcode format	Incode format	postCode example
AN	NAA	M2 5BQ
ANN	NAA	M34 3AB
AAN	NAA	DN5 7XY
AANN	NAA	DN16 9AA
ANA	NAA	W1A 4WW
AANA	NAA	EC1A 1HQ

The incode and outcode components are made up of alphanumeric codes representing areas, districts, sectors and units of which there are approximately 120, 2 800, 9 500 and 1.7 million identified in the UK respectively.

OS MasterMap does not include Royal Mail postcodes that start with GI for National Giro; BT for Northern Ireland; IM for the Isle of Man; JE for Jersey; and GY for Guernsey, Alderney and Sark.

## reasonForChange

Value	Description
New	This is a new feature in the database.
Position	Feature has changed geometry and/or position due to an improvement in its absolute accuracy, that is, its relationship to the National Grid (positional accuracy improvement). This type of feature change is not associated with real-world change.
Modified	The feature has been edited by an operator. Used in the following cases: 1 The geometry of a topographic feature is changed following real-world change. 2 The geometry of a non-topographic feature, for example, inferred link or BoundaryLine feature is changed. 3 A cartographic symbol feature is repositioned. 4 A CartographicText feature is repositioned.
Software	Feature has been adjusted by an automatic software process. Includes geometric adjustment, cleaning, squaring, paralleling (text and lines) and reversing direction of digitising.
Reclassified	The descriptive attributes of a feature have changed. The feature code may have changed.
TextChange	Text string of text feature has changed. Applied to text features where the text string has been: 1 Modified for a minor change in spelling, due to original error or name change, where text string is a distinctive name. 2 Modified for changes to a descriptive name due to original error or change of specification. 3 Modified by the addition or removal of an accent.
Restructured	New line feature(s) have been created from parts of existing feature(s). Applied to line features where: 1 The feature is split into two or more features. 2 Two or more features are joined together.
Attributes	Applied to features that have had only non-geometric attributes changed, except those covered by TextChange and Reclassified values.
Incomplete	The feature is incomplete. Identifies an incomplete line feature or an area that relates to the incomplete feature returning from a revision process. Incomplete line features are not used to construct polygons.

## structureType

Value	Description
Other Structure	Address has been matched to a structure that is not a permanent building.
Permanent Building	Address has been matched to a permanent building.
Unknown	The nature of the structure that this address relates to is unknown.

## type

The following table is a list of vehicle types expressed on roads signs. This list contains the known values at the time of publication; occurrences of values that are not in this table may be present in the data.

Value	Value	Value
All Vehicles	Cycles	Motor Cycles
Buses	HGVs	Motor Vehicles
Car Transporters	LGVs	Towed Caravans
Coaches	Mopeds	Tracked Vehicles

## uom

A reference to the units of measure for a given value in a units of measure dictionary. The units of measure dictionary is available from <http://www.ordnancesurvey.co.uk/xml/resource>. The current set of valid references is:

<http://www.ordnancesurvey.co.uk/xml/resource/units.xml#metres>

<http://www.ordnancesurvey.co.uk/xml/resource/units.xml#millimetres>

<http://www.ordnancesurvey.co.uk/xml/resource/units.xml#MegaBytes>

<http://www.ordnancesurvey.co.uk/xml/resource/units.xml#feet>

<http://www.ordnancesurvey.co.uk/xml/resource/units.xml#inches>



## use

The following table is a list of vehicle uses expressed on roads signs. This list contains the known values at the time of publication; occurrences of values that are not in this table may be present in the data.

Value	Value	Value
Access	Local Buses	Residents
Authorised Vehicles	Official Business	Residents And Guests
Disabled	Patrons	School Buses
Emergency Access	Pedestrians	Service Vehicles
Emergency Vehicles	Permit Holders	Taxis
Escorted Traffic	Petrol Tankers	Works Traffic
Loading And Unloading	Public Transport	

## Chapter 2.3 OS MasterMap geometry and topology

### Introduction

This chapter defines the geometric and topological data types used by the attributes of OS MasterMap features. The differences between topological polygon data and independent polygon data are described, and the treatment of features on the boundaries of data supply areas is specified. An overview of the ITN (Roads) theme data model is included.

Unified Modelling Language (UML) diagrams are used to support the data type descriptions.

### Features and spatial data types

The following table details the geometric attributes of OS MasterMap features. Each feature type has a geometric attribute shown in the second column. The data type of this attribute is given in the third column of the table. For full details of the feature types and their attribute sets, see [chapter 2.2, Classification and attributes of OS MasterMap features](#).

Feature type	Spatial attribute	Data type of attribute
AddressPoint	point	Point
TopographicArea	polygon	Polygon
TopographicLine	polyline	Polyline/Multiline
BoundaryLine	polyline	Polyline/Multiline
TopographicPoint	point	Point
CartographicSymbol	point	Point
CartographicText	anchorPoint	Point
Road	boundedBy	Rectangle
RoadLink	polyline	Polyline
RoadNode	point	Point
InformationPoint	point	Point
FerryNode	point	Point
RoadLinkInformation	point(optional attribute)	Point
RoadRouteInformation	point(optional attribute)	Point
RoadPartialLinkInformation.	subsectionPoint	Point
RoadPartialRouteInformation	subsectionPoint	Point

The following sections give more information on these data types.

## Coordinate reference systems

The GML specification provides for the use of a variety of coordinate reference systems. At present only the British National Grid (BNG) is used in OS MasterMap.

### British National Grid (BNG)

The BNG spatial reference system 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.

The BNG is a horizontal spatial reference system only; it does not include a vertical (height) reference system. In OS MasterMap data, heights are given by real valued feature attributes that are separate from the geometric feature attributes such as point, polyline, and polygon. The geometric attributes therefore contain horizontal geometry only. Several orthometric height datums are used in OS MasterMap data to define vertical spatial reference systems. The most common of these is Ordnance Datum Newlyn (ODN), which is used throughout mainland Britain. Height attributes in OS MasterMap features do not specify which vertical reference system is used.

Introductory material on the BNG and ODN and the full definition of the BNG (OSGB36 National Grid) is available on the National GPS Network web site:

- <http://www.gps.gov.uk/info.asp>
- <http://www.gps.gov.uk/natgrid/introduction.asp>

## Geometric data types

### Point

A point is used to specify a single horizontal location by a coordinate pair in a given spatial reference system.

#### Example

A point defined in the BNG reference system has easting and northing coordinates in units of metres, where the easting is in the range 0 to 700000 and the northing is in the range 0 to 1300000.

✕ (BNG: 176554.456 , 87654.545)

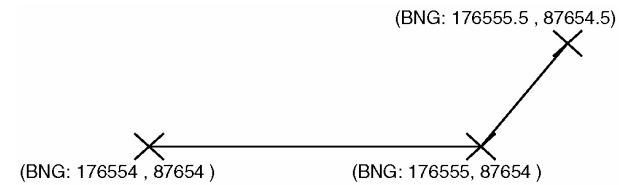
#### Example class model

Point (from BNG)
- easting : float64
- northing : float64

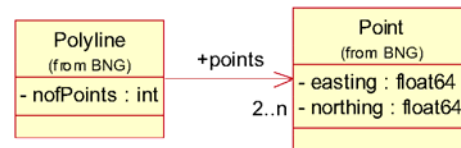
## Polyline

A polyline is an ordered set of points that are connected with a straight line between each pair. A polyline may not intersect itself or contain repeated points.

### Example



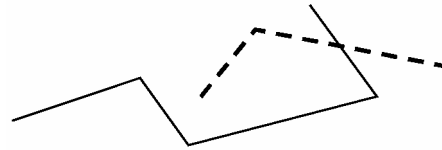
### Example class model



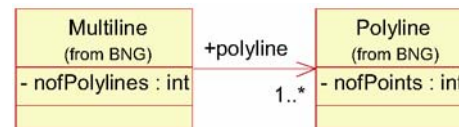
## Multiline

A Multiline is a collection of polyline geometries. There are no specific semantics or rules applied to the collection.

### Example



### Example class model



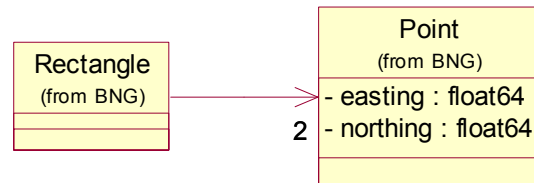
## Rectangle

A rectangle is a pair of points that are used to define a rectangular area that is aligned to the National Grid. One point defines the minimum easting and northing of the rectangle, the other defines the maximum easting and northing.

### Example



### Example class model

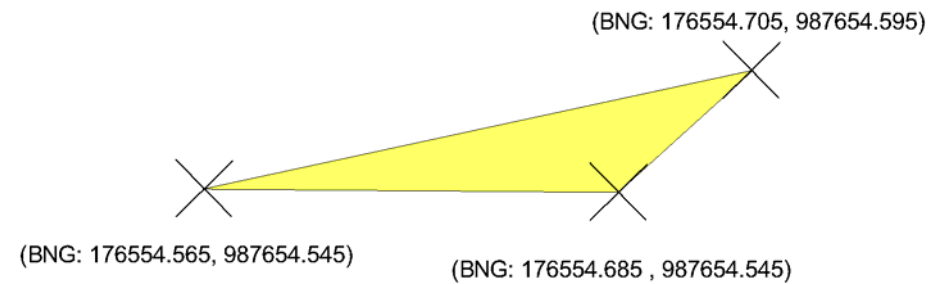


## Ring

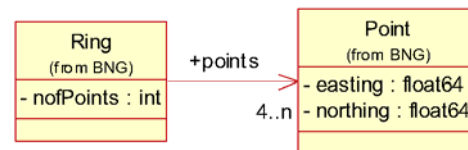
### Geometric ring

A geometric ring is an ordered set of four or more points that are interpolated linearly, where the first point is the same as the last point. A ring is not permitted to intersect itself or contain other repeated points.

### Example



### Example class model

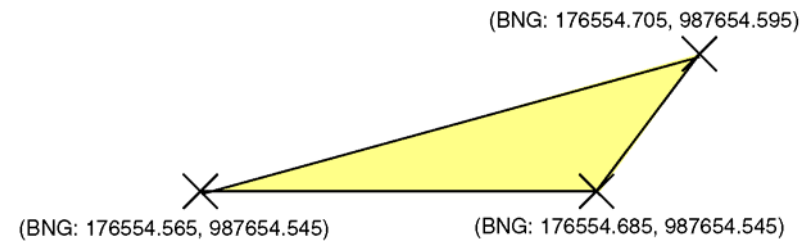




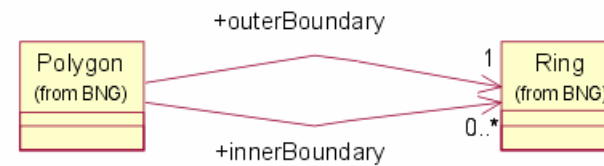
## Polygon

A polygon is a single closed region on the spatial reference system projection plane, defined by a set of rings that represent the boundaries. A polygon has one outer boundary and zero or more inner boundaries (holes in the polygon). The inner boundaries must not cross each other or contain other inner boundaries. Coordinates in outer boundaries are oriented in an anticlockwise direction: coordinates in inner boundaries appear clockwise.

### Example



### Example class model

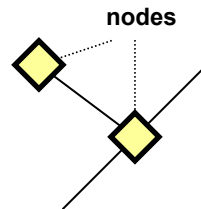


## Topological data types

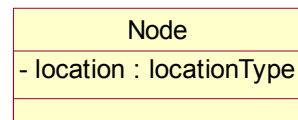
### Node

A location where links connect or terminate. The location could be realised in a number of ways, one of which may be a geometric point. In topographic data nodes are not explicitly expressed but are implied by the end locations of links.

#### Example



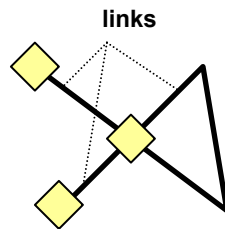
#### Example class model



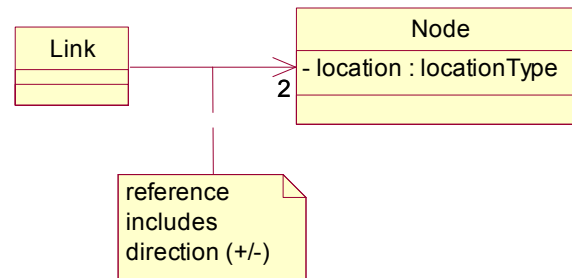
## Link

A direct path between any two not necessarily distinct locations. Links are analogous to geometric polylines but could be realized using a number of geometries. Links only interact by meeting at a common node. Links are inherently directed but this direction does not indicate direction of flow if part of a network. In networks the start and end nodes of a link are identified by a direction that is maintained on the node relationships, but in topographic data the start and end of the link are identified by the first and last coordinates of the links geometric representation.

### Example



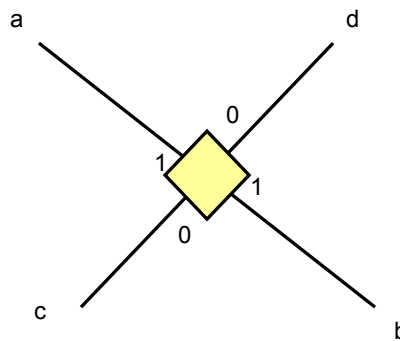
### Example class model



Since most networks are two-dimensional representations of the world, the notion of grade separation is introduced to cater for links that cross without interaction. If links cross geometrically then a node is introduced and the links are split to clarify that no interaction occurs. The grade separation is an integer value that acts like a *z order*, it indicates the relative level at which a given node and link interact. This grade separation is maintained on the relationship between a link and a node. Links that relate to a common node with the same grade separation are considered to interact.

### Example

Consider a road that crosses another road via a bridge; this would be represented as:

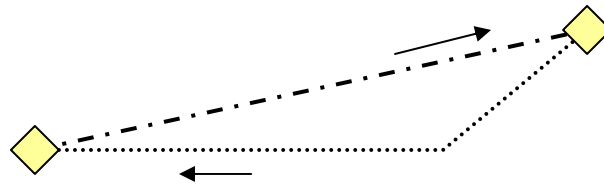


Links a and b connect and links c and d connect because they share a common node with a matching grade separation. Similarly links a and c do not connect because even though they share a common node, they do not have matching grade separations on the node relationships.

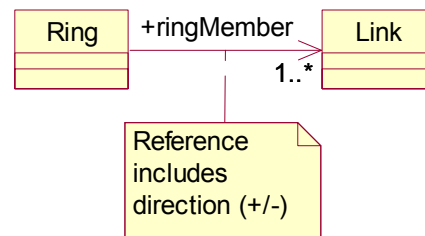
## Ring

A topological ring is an ordered set of links that connect to form a continuous loop. Each link is incorporated using a directed reference so that the node at the end of one link is the node at the start of the next link in the set.

### Example



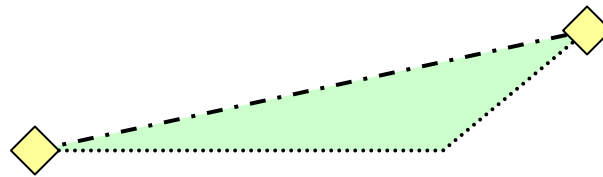
### Example class model



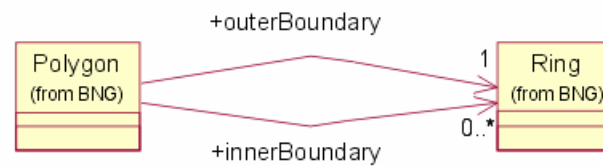
## Polygon

A topological polygon is a single closed region on the spatial reference system projection plane, defined by a set of topological rings that represent the boundaries. A polygon has one outer boundary and zero or more inner boundaries (holes in the polygon). The inner boundaries must not cross each other or contain other inner boundaries. Links in outer boundaries are directed so that the ring is naturally in an anticlockwise direction; links in inner boundaries are naturally in a clockwise direction.

### Example



### Example class model



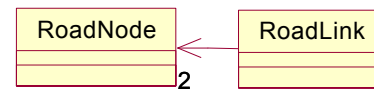
## Network connection

A network connection is a relationship between two or more networks where a user of a network has the potential to change the network that they are using. Examples of such network connections may be railway stations, ferry terminals or car parks. Network connections may refer to any part of a network and do not create nodes in the networks that they refer to; for example, a connection may refer to a particular location along a link. In this way all networks may be considered as independent topological complexes or as integrated components.

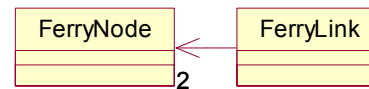
## Topological complex

All topological types are considered to be part of a named complex. Each complex contains topological primitives that are related or interact. Topological types only interact with other topological types that are part of the same topological complex. Each topological complex represents a different abstraction of the world.

Road Network



Ferry Network



There are a number of topological complexes in OS MasterMap. These are at present defined by the following rules:

Structuring layer	Rule
Topography	Attribute Set = 'TopographicLine' or 'TopographicArea' descriptiveGroup not equal to 'Landform' physicalLevel = '50' physicalPresence = 'Closing', 'Edge / Limit', 'Obstructing' or 'Overhead'
Landform	Attribute Set = 'TopographicLine' or 'TopographicArea' descriptiveGroup = 'Landform' physicalPresence = 'Closing', 'Edge / Limit', 'Obstructing' or 'Overhead'
Pylons	Attribute Set = 'TopographicLine' or 'TopographicArea' physicalLevel = '51' physicalPresence = 'Closing', 'Edge / Limit', 'Obstructing' or 'Overhead'
Road network	descriptiveGroup = 'Road Topology'
Ferry network	Attribute Set = 'FerryNode' or 'FerryLink'



## Independent/topological polygon supply

The OS MasterMap Topography Layer is available in two forms: independent polygon data and topological polygon data. These differ only in the form of the rings that specify the boundaries of each polygon; see the [geometric](#) and [topological](#) definitions of a ring.

In independent polygon data; each ring is a geometric ring, that is, the geometry is given explicitly as a list of coordinates within the polygon attribute of an area feature.

In topological polygon data; each ring is a topological ring, that is, the polygon is defined by a set of references to line features (links). The geometry of the ring must be constructed from the polyline attributes of the line features, which are referred to by TOID.

The main characteristics of these are as follows:

### Independent polygon data

The polygon belonging to each area feature is independent of other features, in the sense that an explicit geometry is provided.

Coordinate geometry that is shared between features is duplicated in data supply. Where a line feature is the boundary between two area features, that geometry appears three times.

### Topological polygon data

The polygon belonging to an area feature must be assembled from the polylines of the line features referenced in each ring. No coordinate geometry is contained in the polygon itself.

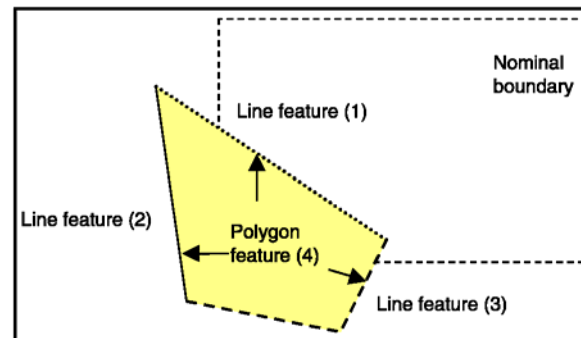
Coordinate geometry that is shared between area features is included only once in data supply. The geometry is in the polyline attribute of the line feature, which is referenced by the adjacent area features.

## Unclipped data supply

A principle of OS MasterMap is that data is seamless, that is, there are no fixed units of data supply. The nominal boundary of each packet of OS MasterMap data is defined by the user's data selection polygon, and by the data chunking method applied to break the supply into manageable units (if used).

With respect to the nominal boundary, data is supplied unclipped. This means that all features whose geometry overlaps the nominal boundary are supplied in their entirety.

Additionally, for topological polygon data only, all line features referred to by supplied area features are also supplied. If this were not the case, some supplied area features would refer to line features not supplied because they lie outside the nominal boundary; hence the geometry of that area feature would be incomplete. For example: all line features (1, 2 and 3) in the example below are supplied, even though line feature (2) lies outside the nominal boundary. Line feature (2) is returned because it is referred to in the outer boundary of area feature (4).



This leads to a small difference in the information supplied on the boundaries of independent polygon and topological polygon data supplies. In topological polygon data the full attributes of lines that lie outside the nominal boundary (feature 2 in the example above) are supplied, because the line feature itself is supplied. In independent polygon data only the geometry of this line is supplied (in the explicit ring geometry of feature 4), but the line feature itself is not supplied, so the descriptive attributes of the line feature are not available to the user.

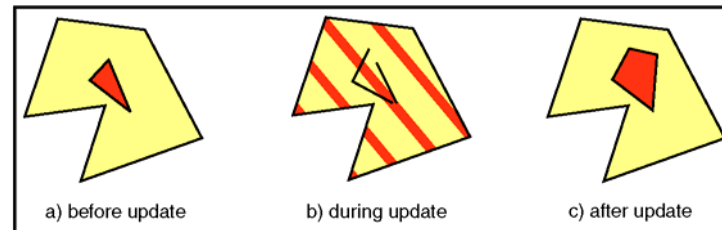
## Inconsistent features

There are occasions when the current tiled update will temporarily leave a feature in an inconsistent state. This occurs when neighbouring tiles are updated and the edits applied to the seamless database at different times. According to the type of feature the following results may be realised:

### Polygon boundary duplication

A break in a polygon boundary on the edge of an update tile will cause neighbouring features to take on identical geometric properties and the broken line work to be removed from all polygon structuring. Once the update is completed the polygons will resume their respective boundaries.

#### Example



### Disappearing polygon features

Where a polygon boundary is broken and there is no neighbouring polygon, the feature will be temporarily removed from supply. A query on this area between updates will not return the broken feature. A change-only query will return a departed feature to indicate that this feature has been removed from supply. Once the complete edit has been applied to the database the feature will be supplied with its original identity and history.

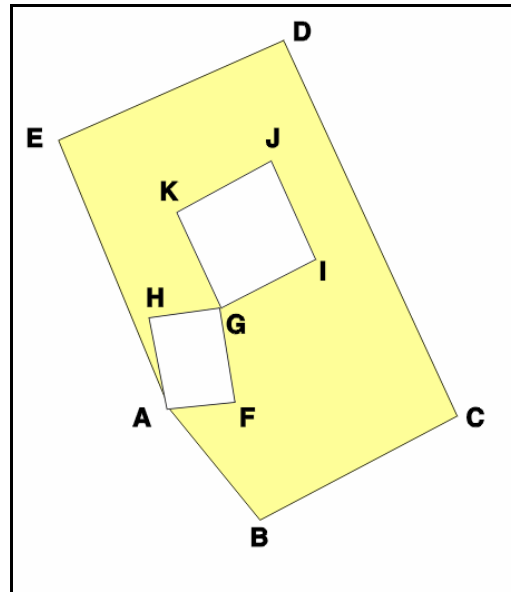
### Broken lines

A polyline that crosses an updated tile boundary may occasionally be broken by a partial update. Where this occurs the line is flagged as broken and the component parts output separately in a multiline geometry.

## Intersecting polygon boundaries

Some polygons have inner boundaries that have a common point with each other or with the outer boundary. In this case each loop formed where the boundary returns to the common point is treated as a separate boundary.

Example



This polygon has an outer boundary (ABCDEA) and two inner boundaries (AHGFA and GKJIG).

## Chapter 2.4 OS MasterMap data in GML

### Introduction

This chapter defines how OS MasterMap data is represented in version 2.1.2 of the GML. This chapter is primarily for system developers who are writing software to read OS MasterMap data.

An understanding of XML and XML schema is required.

### Related information

The following chapters contain the definitions of the data content in the GML format:

[Chapter 2.2 Classification and attributes of OS MasterMap features](#)

[Chapter 2.3 OS MasterMap geometry and topology](#)

The following Open GIS Consortium (OGC) document is required to use this chapter:

[Geography Markup Language v2.1.2](#)

The XML specifications that GML is based on are available from the World Wide Web Consortium (W3C) web site:

<http://www.w3.org>

Information about Unicode and UTF-8, the character encoding we have chosen, is available on the Unicode Consortium web site (<http://www.unicode.org/>).

### Use of GML

This chapter describes the Ordnance Survey application schema based on the OGC GML specification. Explanations of how we manage complex properties and polygon-based topological relationships in our application schema are provided in the relevant sections of this document.

## Use of examples

Any examples in this chapter that mention specific data content are to be taken as examples only. All data content is defined separately in the [product specification section](#) of the OS MasterMap user guide and the examples are not necessarily in harmony with the data specification.

## Clarification of terms used in this chapter

### Feature attribute

Attribute as defined in [appendix A, OS MasterMap glossary](#), is called a feature attribute.

### XML attribute

Attribute as used in an XML context is referred to as an XML attribute.

### Property

Most feature attributes are encoded as GML properties – property means a GML property.

### Query

Each GML output provided by Ordnance Survey is in response to a request for data from a data user. The original request from the data user may have been split into multiple requests based on supply requirements, for example, chunks. In this chapter each part of the data request is called a query.

### Extent

As part of a request for data, the user can specify a polygon or rectangle that delimits the area of data required, which is called the query extent in this chapter. If the query has been broken down into parts(chunks) for reasons of supply, then the query extent will be the geometry of the partial query.

## Format description

### XML declaration

The XML declaration to all query results shall be:

```
<?xml version="1.0" encoding="UTF-8"?>
```

## Document type

All information returned from a query shall be provided in an `osgb:FeatureCollection`. If no features lie inside a query then an empty collection shall be returned with its required collection properties.

The document will define the XML namespaces:

osgb    <http://www.ordnancesurvey.co.uk/xml/namespaces/osgb>  
gml    <http://www.opengis.net/gml>  
xsi    <http://www.w3.org/2001/XMLSchema-instance>  
xlink   <http://www.w3.org/1999/xlink>

It shall define the location of the schema as:

<http://www.ordnancesurvey.co.uk/xml/namespaces/osgb>  
<http://www.ordnancesurvey.co.uk/xml/schema/v3/OSDNFFeatures.xsd>

The fid shall be set to the Ordnance Survey identifier given to the query.

For example:

```
<osgb:FeatureCollection
xmlns:osgb='http://www.ordnancesurvey.co.uk/xml/namespaces/osgb'
xmlns:gml='http://www.opengis.net/gml'
xmlns:xlink='http://www.w3.org/1999/xlink'
xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:schemaLocation='http://www.ordnancesurvey.co.uk/xml/namespaces/osgb
http://www.ordnancesurvey.co.uk/xml/schema/v3/OSDNFFeatures.xsd'
fid='queryId'>
...
</osgb:FeatureCollection>
```

## Query result properties

The gml:description element shall be the first property of the feature collection; this contains a copyright statement and the date of the query.

The gml:boundedBy element shall be the next property of the feature collection; this shall contain a gml:null element with the value of unknown.

The start time of the query shall be specified at GMT as a feature property. The name of the property shall be queryTime.

The following optional properties shall be provided for the osgb:FeatureCollection if they were provided as part of the query. The ordering of these properties is according to the order they appear in the table:

Name	Type	Format	Description
queryExtent	Geometric property	gml:Polygon or osgb:Rectangle (see <a href="#">geometric properties</a> in Geometry).	The query extent provided as part of a spatial query.
queryChangeSinceDate	Date	CCYY-MM-DD	The date that was given as part of a change-only query.

If there are features in the collection the last element in the feature collection shall be an osgb:boundedBy element. This will be a gml:Box defining the minimum bounding rectangle of all items in the collection, including the query extent. If the collection is empty, no osgb:boundedBy element shall be provided.



For example:

```
<osgb:FeatureCollection
xmlns:osgb="http://www.ordnancesurvey.co.uk/xml/namespaces/osgb"
xmlns:gml="http://www.opengis.net/gml"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xlink="http://www.w3.org/1999/xlink"
xsi:schemaLocation="http://www.ordnancesurvey.co.uk/xml/namespaces/osgb
http://www.ordnancesurvey.co.uk/xml/schema/v3/OSDNFFeatures.xsd"
fid="queryId">
  <gml:description>
    OrdnanceSurvey, (C) CrownCopyright. All rights reserved, 2002-05-16
  </gml:description>
  <gml:boundedBy><gml:null>unknown</gml:null></gml:boundedBy>
  <osgb:queryTime>2001-03-28T14:31:54</osgb:queryTime>
  <osgb:queryExtent">
    <osgb:Rectangle srsName="osgb:BNG">
      <gml:coordinates>4000000,3094763 4000010,3094820</gml:coordinates>
    </osgb:Rectangle>
  </osgb:queryExtent>
  <osgb:queryChangeSinceDate>2001-01-31</osgb:queryChangeSinceDate>
  <!--features go here-->
  <osgb:boundedBy>
    <gml:Box srsName="osgb:BNG">
      <gml:coordinates>3999350,3089542 4005602,3095673</gml:coordinates>
    </gml:Box>
  </osgb:boundedBy>
</osgb:FeatureCollection>
```

## Features

Each feature within the osgb:FeatureCollection shall be encapsulated in one of the following member elements according to its attribute set:

Member element	Attribute set
addressPointMember	AddressPoint
boundaryMember	BoundaryLine
cartographicMember	CartographicText, CartographicSymbol
networkMember	RoadLink, RoadNode, FerryLink, FerryNode, FerryTerminal
roadMember	Road
roadInformationMember	RoadLinkInformation, RoadNodeInformation, RoadRouteInformation, RoadPartialLinkInformation, RoadPartialRouteInformation, InformationPoint
topographicMember	TopographicPoint, TopographicLine, TopographicArea

Each member element shall contain a single feature element that has the name of the attribute set, for example, TopographicPoint, TopographicLine and so on.

The TOID of the feature shall be provided in the XML attribute fid of the osgb:Feature element. A TOID has a maximum of 16 digits and is prefixed with osgb. The osgb prefix is required to form a valid XML ID type; this should be removed when presenting a TOID to a user in an application.

A feature element shall not contain a name, description or boundedBy element.

For example:

```
<osgb:topographicMember>
  <osgb:TopographicPoint fid="osgb15789329786">
    . . .
  </osgb:TopographicPoint>
</osgb:topographicMember>
```

## Properties

Our application schema defines four main types of properties that are present inside a feature element. These are simple, complex, geometric, and topological properties. The ordering of properties within a feature element is important as XML validation is reliant on elements being in a specified order. The order of properties is specified within the XML schema.

Each type of property may additionally have associated metadata encoded using an XML attribute. This metadata provides some qualification of the status or accuracy of the content provided in the attribute. To see what metadata is currently encoded in this way see [Attribute metadata](#) in chapter 2.2, Classification and attributes of OS MasterMap features.

### Simple

A simple property is one that contains a single piece of non-geometric information. These properties correspond to the simple feature attributes defined (see [chapter 2.2, Classification and attributes of OS MasterMap features](#)). The value of each feature attribute is enclosed in an element that takes its name from the feature attribute.

A feature association is a special type of simple property that defines a relationship between one feature and another. The feature association is defined by the XML attribute `xlink:href`. This shall refer to a feature as if it was locally available even though this is not guaranteed to be the case, that is, it shall be set to the character `#` followed by osgb and then the TOID of the feature being referenced.

For example:

```
<osgb:descriptiveGroup>Rail</osgb:descriptiveGroup>
<osgb:calculatedAreaValue>13254</osgb:calculatedAreaValue>
<osgb:referenceToFeature xlink:href="#osgb5798572675343543" />
```

### Geometry

A geometric property is one that describes a specific geometry. All geometric properties are encoded according to the GML specification. We have extended the GML v2.1.2 specification to include a rectangle that is defined by two points. The first point defines the minimum coordinate whilst the second point defines the maximum coordinate.

All geometric properties are encoded by placing the GML geometry elements inside an element that takes its name from the feature attribute.

The XML attribute `srsName` shall be set to `osgb:BNG` (BNG stands for British National Grid) which uses eastings and northings specified in metres.

If a line is broken or a polygon has bled into another because of a partial update (see [chapter 2.3, OS MasterMap geometry and topology](#)) then the XML attribute broken shall be set to true. A line that is broken will be encoded as a gml:MultiLineString.

All polygon outer boundaries have an anticlockwise orientation and all inner boundaries have a clockwise orientation.

For example:

```
<osgb:anchorPoint>
  <gml:Point srsName="osgb:BNG">
    <gml:coordinates>12365.563,8975.676</gml:coordinates>
  </gml:Point>
</osgb:anchorPoint>
<osgb:queryExtent>
  <osgb:Rectangle srsName="osgb:BNG">
    <gml:coordinates>0,0 700000,1300000</gml:coordinates>
  </osgb:Rectangle>
</osgb:queryExtent>
<osgb:polyline broken="true">
  <gml:MultiLineString srsName="osgb:BNG">
    <gml:lineStringMember>
      <gml:LineString>
        <gml:coordinates>
          01289.2,970344.5 301300.0,970352.6
        </gml:coordinates>
      </gml:LineString>
    </gml:lineStringMember>
    <gml:lineStringMember>
      <gml:LineString>
        <gml:coordinates>
          301300.0,970354.1 301304.6,970369.8
        </gml:coordinates>
      </gml:LineString>
    </gml:lineStringMember>
  </gml:MultiLineString>
</osgb:polyline>
```

## Topology

This document seeks only to describe the XML encoding of topology. For details on how this is used to represent OS MasterMap features, see [chapter 2.3, OS MasterMap geometry and topology](#).

Most topological relationships are expressed as simple reference properties. These may be qualified with additional orientation information provided by an XML attribute.

Each feature attribute that is a polygon shall be represented by an element that has the same name as the feature attribute.

This element shall contain a single `osgb:outerBoundaryIs` element and zero or more `osgb:innerBoundaryIs` elements.

A boundary element (`innerBoundaryIs` or `outerBoundaryIs`) shall contain a single `osgb:Ring`.

All polygon outer boundaries shall have an anticlockwise orientation and all inner boundaries shall have a clockwise orientation.

An `osgb:Ring` element shall have an XML attribute `orientation`, set to `clockwise` or `anticlockwise`, describing which way the ring is encoded.

An `osgb:Ring` shall contain one or more `osgb:ringMember` elements.

Each `osgb:ringMember` element shall use the XML attribute `xlink:href` to define a relationship to a linear feature. The URL to the feature shall be given as `#osgb` followed by the TOID of the feature.

If the feature referenced by the `osgb:ringMember` is traversed forwards in the ring then the XML attribute `orientation` is not required, otherwise the XML attribute `'orientation'` shall be set to `'-'`.

For example:

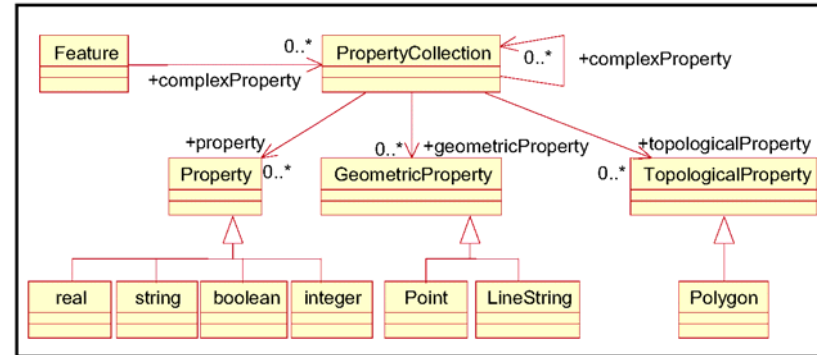
```
<osgb:topographicMember>
  <osgb:TopographicArea fid="osgb123456789012345">
    ...
    <osgb:polygon>
      <osgb:outerBoundaryIs>
        <osgb:Ring orientation="anticlockwise">
          <!-- 'orientation' defaults to '+' -->
          <osgb:ringMember xlink:href="#osgb123456789012346"/>
        </osgb:Ring>
      </osgb:outerBoundaryIs>
      <osgb:innerBoundaryIs>
        <osgb:Ring orientation="clockwise">
          <osgb:ringMember xlink:href="#osgb123456789012347"/>
          <osgb:ringMember orientation="-" xlink:href="#osgb123456789012348"/>
        </osgb:Ring>
      </osgb:innerBoundaryIs>
    </osgb:polygon>
  </osgb:TopographicArea>
</osgb:topographicMember>
```

## Complex

A complex property is one that contains more than one piece of information. These properties correspond to the [complex feature attributes](#) defined in chapter 2.2, Classification and attributes of OS MasterMap features.

### Class model

The definition of a complex property here is recursive so complex properties may be nested. Currently within OS MasterMap this recursion is not used.



### XML mapping

The complex property element takes its name from the complex feature attribute. Each part of a complex property shall be encoded as a simple, complex, geometry or topology property, as appropriate inside the complex property element.

For example:

```
<osgb:textRendering>
  <osgb:anchorPosition>4</osgb:anchorPosition>
  <osgb:font>2</osgb:font>
  <osgb:height>24</osgb:height>
  <osgb:orientation>3476</osgb:orientation>
</osgb:textRendering>
<osgb:heightAboveDatum>
  <osgb:heightAboveDatum>3456</osgb:heightAboveDatum>
  <osgb:accuracyOfPosition>2.0m</osgb:accuracyOfPosition>
</osgb:heightAboveDatum>
```

## Change-only update

Change-only update requires that information be provided for features that were present in a spatial query but no longer meet the query criteria. Such features may have changed theme so that they are no longer in any of the themes being requested, had their geometry modified between queries so that they no longer meet the spatial criteria, or been deleted. These features are represented as departed.

A departed feature returned in a change query shall be represented in the output as an osgb:DepartedFeature inside an osgb:departedMember element.

The XML attribute fid shall be set to the TOID of the feature prefixed with osgb.

A departed feature has no other properties.

For example:

```
<osgb:departedMember><osgb:DepartedFeature fid="osgb329786" /></osgb:departedMember>
```

## XML schema

### Schema overview and Internet location

XML schemas are used to validate the format and content of the GML. The GML 2.1.2 specification provides a set of schemas that define the GML feature constructs and geometric types. These are designed to be used as a basis for building-application-specific schemas, which define the data content.

The Ordnance Survey application schemas, which are referenced by the data, are available from our web site at <http://www.ordnancesurvey.co.uk/xml/schema>.

These schemas make use of schemas and DTDs produced by the W3C which are available from the W3C web site at <http://www.w3.org/XML/1998/namespace.html>.



## Schema descriptions

The W3C-provided schemas and DTDs are :

**xml.xsd** – to allow the use of the xml:lang attribute for language qualification.

**XMLSchema.dtd** – required by xml.xsd.

**datatypes.dtd** – required by XMLSchema.dtd.

The OGC-provided schemas are:

**feature.xsd** – the feature and property constructs.

**geometry.xsd** – the geometric constructs such as polygon and point.

**xlinks.xsd** – a schema based on the W3C XLINK recommendation provided by the OGC to make use of the XLINK constructs.

The Ordnance Survey application schemas are:

**OSDNFFeatures.xsd** – The definition of the Ordnance Survey features and their properties.

**OSComplexTypes.xsd** – The complex property types, including changeHistoryType.

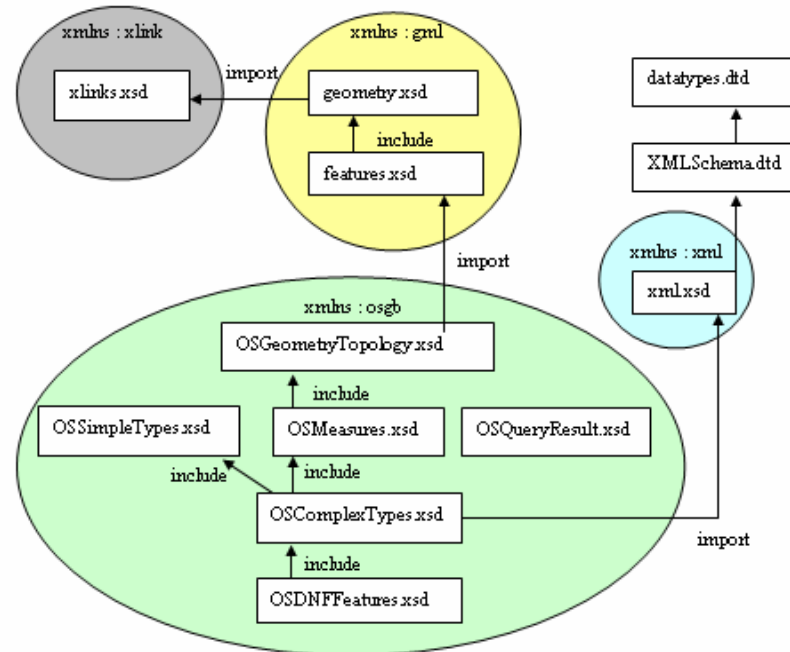
**OSSimpleTypes.xsd** – The basic property types, including descriptiveGroupType and accuracyOfPositionType.

**OSMeasures.xsd** – The definition of measure qualified types used in OS MasterMap data.

**OSQueryresult.xsd** – The definition of a query result with its properties.

**OSGeometryTopology.xsd** – Geometry and topology extensions to the GML 2.1.2 specification required by Ordnance Survey, including rectangles and polygon topology.

## Schema structure



### XML namespaces

xlink – <http://www.w3.org/1999/xlink>

gml – <http://www.opengis.net/gml>

osgb – <http://www.ordnancesurvey.co.uk/xml/namespaces/osgb>

xml – <http://www.w3.org/XML/1998/namespace>

## Chapter 2.5 Style definitions

### Purpose

This chapter defines the default styles for the presentation of data within OS MasterMap. This specifies the colours, fonts, symbols and line styles used for visual display and printing of OS MasterMap. The styles are defined using the SVG (Scalable Vector Graphics) syntax.

Associated with this chapter is a SVG encoding of the styles for display in an SVG viewer, which is available from the [style and XML examples](#) section of our web site.

See <http://www.w3c.org> for information on SVG. The SVG provided has only been tested with the browser plug-in provided by [Adobe](#). [Chapter 2.6, Mapping styles to features](#), provides the required information to apply the styles of this chapter to features.

### Scope

This chapter covers data supplied to customers as part of OS MasterMap by Ordnance Survey.

The SVG document associated with this chapter is intended only as an aid to developers writing software to meet this specification.

A style is not provided for all of the information in OS MasterMap due to limitations of generic styling and cartographic information available for specific attribute sets.

RRI has not been given a style because the information does not contain any maintained cartographic position or orientation, which is required in order to symbolise it efficiently. Similarly InformationPoint features have not been given a style.

### Use of coordinates, stroke-widths and text sizes

All coordinates in this chapter are specified in eastings and northings in units of metres in the British National Grid. See [chapter 2.3, OS MasterMap geometry and topology](#), for further information.

Stroke-widths and text sizes are also specified in units of metres on the ground.

## Colour palette

Ordnance Survey has chosen to use colours that are consistent in the Internet environment. The particular colours used are defined with both their RGB and hexadecimal values in colour palette.

## Text

The fonts selected by Ordnance Survey to display text are those that are commonly used with web browsers. The font sets are specified in [Fonts](#).

## Symbols

There are two different uses of symbols as defined in the following sections. A base symbol set is defined in [Symbols](#); these may be aggregated to form compound symbols as defined in [Compound symbols](#). Patterns formed from repeating symbols on a predefined grid are specified in [Pattern definitions](#).

### Point symbols

[Point symbols](#) are used to represent the position of particular features within the data, such as a telephone call box or bollard. The symbol represents the location and type of feature.

Point symbols are applied to the visual representation by translating them to the location of the feature they are representing and rotating them, if the orientation attribute is present, by a given amount.

### Fill symbols

[Fill symbols](#) are used to represent some attribution of a polygon feature and are distributed as a pattern fill across the polygon. For example, the symbol may represent information about the topographic surface such as the vegetation type.

Because of the overheads of applying pattern fills in many current software systems, it is noted that pattern fills are optional according to the user requirements and system capabilities. For example, if a user does not require each mixed vegetation type to be identified graphically it is envisaged that the multiVegetationPattern, as defined in [Pattern definitions](#), may be used to represent all mixed vegetation features.

## Line styles

Line styles are used to allow a user to distinguish between different types of linear feature, for example, distinctions may be made to emphasise:

- Obstructing detail.
- Non-obstructing detail.
- Underground detail.
- Overhead detail.
- Building outlines.
- Water limits and linear features.
- Landform detail.
- Narrow-gauge railways.
- Statutory boundaries.
- Polygon-closing features.

Some lines, particularly those representing the road network, are drawn twice using first a background style and then an overlay to achieve a multicoloured result. Styles have been defined in this way to produce effects like lines with outlines. This chapter defines the two components as separate styles. For example, a minor road is first drawn as a black background (carriagewayOutline) that is then overlain with a yellow foreground (minorRoadLine) as below:



The line styles are defined in [Line styles](#).

## Colour palette

	Hex (r,g,b)	Style name
	000000 (0,0,0)	
	333333 (51,51,51)	
	0000CC(0,0,204)	
	FF0000 (255,0,0)	
	009966 (0, 153, 102)	
	666666 (102,102,102)	
	669966 (102, 153, 102)	
	FF0099 (255, 0, 153)	
	FF9900 (255,153,0)	
	0099FF (0,153,255)	
	00CCFF (0, 204, 255)	
	999999 (153, 153, 153)	
	CC9966 (204, 153, 102)	heritageFill, structureFill
	66CCCC (102, 204, 204)	
	FFFF00 (255, 255, 0)	
	FF00FF (255,0,255)	
	CCCC99 (204,204,153)	madeSurfaceFill, stepFill
	CCCCCC (204,204,204)	pathFill, railFill, roadFill
	FFCC99 (255,204,153)	buildingFill, glasshouseFill
	CCFFCC (204,255,204)	naturalEnvironmentFill, naturalSurfaceFill
	99FFFF (153,255,255)	inlandWaterFill, tidalWaterFill
	FFFFCC (255,255,204)	multipleSurfaceFill
	FFFFFF (255,255,255)	unclassifiedFill

## Fonts

Arial®:

AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz

0123456789

## Shared symbol geometry

### boulderGeometry

```
<polyline points='-0.154,0.236 -0.111,0.365 -0.116,0.501 -0.165,0.616  
0.170,0.627 -0.264,0.724 -0.490,0.826 -0.682,0.889 -0.885,0.900  
1.083,0.858 -1.264,0.767 -1.415,0.631 -1.521,0.466 -1.558,0.199 1.538, 0.071 -  
1.462,-0.329 -1.333,-0.566 -1.156,-0.771'/>  
<polyline points='1.755,-0.819 1.534,-0.804 0.832,-0.857 0.129,-0.824 0.450,-  
0.769 -1.032,-0.767 -1.612,-0.819'/>  
<polyline points='1.640,-0.804 1.620,-0.589 1.392,-0.388 1.122, 0.248'/>  
<polyline points='0.311,-0.526 0.520,-0.573 0.732,-0.554 0.930,-0.472 1.093,  
0.335 1.097,-0.329 1.101,-0.323 1.105,-0.317 1.108,-0.311 1.111,-  
0.304 1.113,-0.298 1.115,-0.291 1.117,-0.284 1.118,-0.277 1.118,-0.270 1.119,  
0.263 1.118,-0.256 1.118,-0.249 1.117,-0.242 1.115,-0.235  
1.113,-0.229 1.111,-0.222 1.108,-0.216 1.105,-0.209 1.101,-0.203 1.097,-0.198  
1.093, 0.192 1.088,-0.187 1.083,-0.182 1.078,-0.177 1.073,-  
0.173 1.067,-0.169 1.061,-0.165 1.054,-0.162 0.637,0.198 0.393,0.388  
0.118,0.530 -0.165,0.616 0.178,0.619'/>
```



### circleFillGeometry

```
<circle r='0.05' cx='0' cy='0.0'/>
```



## circleGeometry

```
<circle r='0.375' cx='0' cy='0'/>
```



## coniferousTreeGeometry

### Arc geometry:

```
<polyline points='0,1.45 0,-1.55'/>  
<path d='M-1.3,-0.95a2 2 0 0 1 1.3 1.05a2 2 0 0 1 1.3 -1.05'/>  
<path d='M-0.9,0.3a2 2 0 0 1 0.9 0.85a2 2 0 0 1 0.9 -0.85'/>
```



### Linear geometry:

```
<polyline points='0.000,1.45 0.000,-1.55'/>  
<polyline points='-1.303,-0.970 -1.168,-0.927 -1.037,-0.874 -0.909,-0.814 0.785,  
0.746 -0.666,-0.670 -0.552,-0.586 -  
0.444,-0.496 -0.342,-0.398 0.246,-0.295 -0.156, -0.185 -0.074,-0.070 0.000,0.050  
0.074,-0.070 0.156, 0.185 0.246,-  
0.295 0.342, 0.398 0.444,-0.496 0.552,-0.586 0.666,-0.670 0.785,-0.746 0.909,-  
0.814 1.037, 0.874 1.168,-0.927  
1.303,-0.970'/>  
<polyline points='-0.890,0.296 -0.769,0.364 -0.652,0.440 -0.541,0.523  
0.435,0.613 0.335,0.709 -0.241,0.811 -  
0.154,0.919 -0.073,1.032 0.000,1.150 0.072,1.034 0.151,0.923 0.236,0.816  
0.328,0.715 0.427,0.620 0.530,0.531  
0.639,0.449 0.753,0.374 0.871,0.306'/>
```



## crossGeometry

```
<polyline points='0.000,-0.775 0.000,0.775'/>  
<polyline points='-0.775,0.000 0.775,0.000'/>
```



## nonconiferousTreeGeometry

### Arc geometry:

```
<path d="M0,-1.6L-0.2,-0.8a0.6 0.6 0 1 0 -0.8 0.86a0.55 0.55 0 0 0 0.45 0.89a0.56  
0.56 0 0 0 1.1 -0.0a0.55 0.55 0 0 0  
0.45 -0.89a0.6 0.6 0 1 0 -0.8 0.86L0,-1.6z"/>
```

### Linear geometry:

```
<polyline points='-1.074,0.097 -1.210,-0.031 -1.299,-0.194 -1.334,-0.377 1.312,  
0.561 -1.233,-0.730 -1.106,-0.866 -  
0.944,-0.957 -0.761,-0.993 0.576,-0.972 -0.407, -0.894 -0.270,-0.768 -0.269,-0.765  
-0.068,-1.539 0.012,-1.539  
0.193,-0.756 0.193, 0.756 0.329,-0.887 0.499,-0.969 0.685, 0.993 0.870,-0.959  
1.036,-0.869 1.164, 0.731 1.244,-  
0.561 1.267, 0.374 1.230,-0.189 1.138,-0.025 0.999,0.102 1.087,0.259  
1.119,0.436 1.094,0.615 1.012,0.775  
0.883,0.901 0.720,0.979 0.541,1.000 0.541,1.000 0.464,1.184 0.331,1.331  
0.156,1.427 -0.040,1.461 -0.236,1.427  
0.411,1.331 -0.544,1.184 -0.621,1.000 -0.801,0.978 -0.964,0.900 -1.093,0.773  
1.175,0.611 -1.199,0.431 -  
1.164,0.254 -1.074,0.097'/>
```



## Point symbols

### addressSymbol

**Style:**

stroke:#666666;stroke-width:0.087;fill:none

**Geometry:**

```
<path style="fill:white" d="M-1.25,-0.6L-0.8,0.6L0.8,0.6L1.25,-0.6L-1.25,-0.6z"/>
<path style="fill:#ff9900;stroke:none" d="M0.48,-0.4L0.45,-0.1L0.85,-0.1L0.95,-0.4L0.48,-0.4z"/>
<polyline points="0,0.4 0,0"/>
<polyline points="-0.2,0.4 -0.25,0"/>
<polyline points="-0.4,0.4 -0.46,0.1"/>
```



### addressesSymbol

**Style:**

stroke:#666666;stroke-width:0.087;fill:none

**Geometry:**

```
<path style="fill:white" d="M-1.25,-1L-0.8,0.2L0.8,0.2L1.25,-1L-1.25,-1z"/>
<path style="fill:white" d="M-1.25,-0.8L-0.8,0.4L0.8,0.4L1.25,-0.8L-1.25,-0.8z"/>
<path style="fill:white" d="M-1.25,-0.6L-0.8,0.6L0.8,0.6L1.25,-0.6L-1.25,-0.6z"/>
<path style="fill:#ff9900;stroke:none" d="M0.48,-0.4L0.45,-0.1L0.85,-0.1L0.95,-0.4L0.48,-0.4z"/>
<polyline points="0,0.4 0,0"/>
<polyline points="-0.2,0.4 -0.25,0"/>
<polyline points="-0.4,0.4 -0.46,0.1"/>
```



## airHeightSymbol

**Style:**

stroke:#0099ff; fill:none; stroke-width:0.087

**Geometry:**

crossGeometry (see [Shared symbol geometry](#))



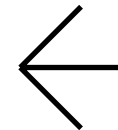
## benchMarkSymbol

**Style:**

stroke:#000000;fill:none;stroke-width:0.087

**Geometry:**

<polyline points='0.707,0.707 0.0,0.0 0.707,-0.707'/>  
<line x1='1.42' y1='0.0' x2='0.0' y2='0.0'/>



## boundaryMereingChangeSymbol

**Style:**

stroke:#ff00ff;fill:none;stroke-width:0.087

**Geometry:**

<circle r='0.625' cx='2.875' cy='0.0'/>  
<line x1='0.0' y1='0.0' x2='2.25' y2='0.0'/>



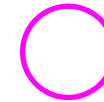
## boundaryPostSymbol

**Style:**

stroke:#ff00ff;fill:none;stroke-width:0.087

**Geometry:**

circleGeometry (see [Shared symbol geometry](#))



## culvertSymbol

**Style:**

stroke:#0099ff;stroke-width:0.087

**Geometry:**

<polyline points='-0.5,0 0.5,0'/>



## flowArrowSymbol

**Style:**

stroke:#0099ff;fill:none;stroke-width:0.087

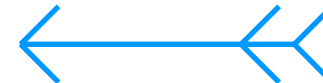
**Geometry:**

<polyline points='0.0,0.0 3.438,0.0'/>

<polyline points='0.5,0.5 0.0,0.0 0.5,-0.5'/>

<polyline points='3.35,0.5 2.85,0.0 3.35,-0.5'/>

<polyline points='3.938,0.5 3.438,0.0 3.938,-0.5'/>



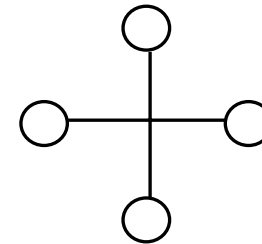
## heritageSiteOfSymbol

### Style:

stroke:#000000;fill:none;stroke-width:0.087

### Geometry:

```
<polyline points='-2.25,0.0 2.25,0'/>  
<polyline points='0.0,-2.25 0.0,2.25'/>  
<circle r='0.625' cx='0' cy='2.875'/>  
<circle r='0.625' cx='0' cy='-2.875'/>  
<circle r='0.625' cx='2.875' cy='0'/>  
<circle r='0.625' cx='-2.875' cy='0'/>
```



## landformDisusedSymbol

### Style:

stroke:#666666;fill:none;stroke-width:0.087

### Geometry:

circleGeometry (see [Shared symbol geometry](#))



## pointSymbol

### Style:

stroke:#000000;fill:#000000;stroke-width:0.087

### Geometry:

circleGeometry (see [Shared symbol geometry](#))



## positionedBoulderSymbol

**Style:**

stroke:#666666;fill:none;stroke-width:0.087

**Geometry:**

boulderGeometry (see [Shared symbol geometry](#))



## positionedConiferousTreeSymbol

**Style:**

stroke:#666666;fill:none;stroke-width:0.087

**Geometry:**

coniferousTreeGeometry (see [Shared symbol geometry](#))



## positionedNonconiferousTreeSymbol

**Style:**

stroke:#666666;fill:none;stroke-width:0.087

**Geometry:**

nonconiferousTreeGeometry (see [Shared symbol geometry](#))



## provisionalAddressSymbol

### Style:

stroke:#666666;stroke-width:0.087;fill:none

### Geometry:

```
<path style="fill:white" d="M-1.25,-0.6L-0.8,0.6L0.8,0.6L1.25,-0.6L-1.25,-0.6z"/>
<path style="fill:#0000cc;stroke:none" d="M0.48,-0.4L0.45,-0.1L0.85,-0.1L0.95,-0.4L0.48,-0.4z"/>
<polyline points="0,0.4 0,0"/>
<polyline points="-0.2,0.4 -0.25,0"/>
<polyline points="-0.4,0.4 -0.46,0.1"/>
```



## provisionalAddressesSymbol

### Style:

stroke:#666666;stroke-width:0.087;fill:none

### Geometry:

```
<path style="fill:white" d="M-1.25,-1L-0.8,0.2L0.8,0.2L1.25,-1L-1.25,-1z"/>
<path style="fill:white" d="M-1.25,-0.8L-0.8,0.4L0.8,0.4L1.25,-0.8L-1.25,-0.8z"/>
<path style="fill:white" d="M-1.25,-0.6L-0.8,0.6L0.8,0.6L1.25,-0.6L-1.25,-0.6z"/>
<path style="fill:#0000cc;stroke:none" d="M0.48,-0.4L0.45,-0.1L0.85,-0.1L0.95,-0.4L0.48,-0.4z"/>
<polyline points="0,0.4 0,0"/>
<polyline points="-0.2,0.4 -0.25,0"/>
<polyline points="-0.4,0.4 -0.46,0.1"/>
```



## railwaySwitchSymbol

### Style:

stroke:#000000;stroke-width:0.087

### Geometry:

<polyline points='-0.72,0 0.72,0'/>



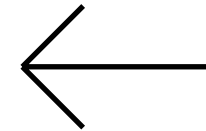
## roadFlowSymbol

### Style:

stroke:#000000;fill:none;stroke-width:0.087

### Geometry:

<polyline points='0.707,0.707 0.0,0.0 0.707,-0.707'/>  
<line x1='2.42' y1='0.0' x2='0.0' y2='0.0'/>



## spotHeightSymbol

### Style:

stroke:#ff0000; fill:none; stroke-width:0.087

### Geometry:

crossGeometry (see [Shared symbol geometry](#))





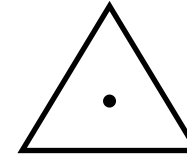
## triangulationStationSymbol

### Style:

stroke:#000000;stroke-width:0.087

### Geometry:

```
<polyline style="fill:none" points='0,-0.794 -1.375,-0.794 0.0,1.588 1.375,-0.794 0,-0.794'/>  
<circle style="fill:#000000" r='0.0875' cx='0' cy='0.0'/>
```



## unmatchedAddressSymbol

### Style:

stroke:#666666;stroke-width:0.087;fill:none

### Geometry:

```
<path style="fill:white" d="M-1.25,-0.6L-0.8,0.6L0.8,0.6L1.25,-0.6L-1.25,-0.6z"/>  
<polyline points="0.7,0.6 -0.1,0 1.15,-0.6"/>
```



## unmatchedAddressesSymbol

### Style:

stroke:#666666;stroke-width:0.087;fill:none

### Geometry:

```
<path style="fill:white" d="M-1.25,-1L-0.8,0.2L0.8,0.2L1.25,-1L-1.25,-1z"/>  
<path style="fill:white" d="M-1.25,-0.8L-0.8,0.4L0.8,0.4L1.25,-0.8L-1.25,-0.8z"/>  
<path style="fill:white" d="M-1.25,-0.6L-0.8,0.6L0.8,0.6L1.25,-0.6L-1.25,-0.6z"/>  
<polyline points="0.7,0.6 -0.1,0 1.15,-0.6"/>
```



## waterPointSymbol

### Style:

stroke:#0099ff;fill:#0099ff;stroke-width:0.087

### Geometry:

circleGeometry (see [Shared symbol geometry](#))



## Fill symbols

## boulderFillSymbol

### Style:

stroke:#666666;fill:none;stroke-width:0.087

### Geometry:

boulderGeometry (see [Shared symbol geometry](#))



## bushFillSymbol

### Style:

stroke:#669966;fill:none;stroke-width:0.087

### Geometry:

```
<polyline points='1,-1.493 -0.076,-1.493 0.452,-0.893 0.584,-0.683 0.666, 0.449  
0.693,-0.202 0.668,-0.088  
0.596,0.005 0.491,0.058 0.284,0.082 0.078,0.046 -0.109, 0.046 -0.396,-0.268 -  
0.151,-0.027 0.055,0.248 0.218,0.55  
0.335,0.873 0.35,1.027 0.311,1.176 0.224,1.303 0.016,1.447 -0.23,1.503 -  
0.391,1.485 -0.54,1.421 0.663,1.316 -  
0.866,1.029 -1.004,0.704 1.07,0.358 -1.061,0.006 -0.982,-0.383 0.849,-0.758 -  
0.666,-1.111 -0.435, 1.434 -0.396,-  
1.5'/>
```



## coniferousTreeFillSymbol

### Style:

stroke:#669966;fill:none;stroke-width:0.087

### Geometry:

coniferousTreeGeometry (see [Shared symbol geometry](#))



## coppiceFillSymbol

### Style:

stroke:#669966;fill:none;stroke-width:0.087

### Geometry:

```
<polyline points='0.000,-1.219 0.000,1.819'/>
<polyline points='-0.567,1.330 -0.556,1.035 -0.492,0.746 -0.377,0.473
0.214,0.226 0.010,0.012'/>
<polyline points='-0.547,-1.248 -0.567,-0.817 -0.639,-0.392 -0.762,0.022'/>
<polyline points='0.010,0.627 0.207,0.736 0.372,0.890 0.494,1.078 0.567,1.292
0.586,1.516'/>
<polyline points='0.489,-0.291 0.364,-0.768 0.313,-1.258'/>
<polyline points='0.752,-0.789 0.653,-1.009 0.616,-1.248'/>
```



## foreshoreFillSymbol

### Style:

stroke:#0099ff;fill:#0099ff;stroke-width:0.087

### Geometry:

circleFillGeometry (see [Shared symbol geometry](#))



## heathFillSymbol

### Style:

stroke:#669966;fill:none;stroke-width:0.087

### Geometry:

```
<polyline points='-1.487,-0.75 -1.601,-0.208'/>  
<polyline points='-0.996,-0.613 -1.121,0.405'/>  
<polyline points='-0.499,-0.545 -0.55,0.695'/>  
<polyline points='0,-0.536 0,0.732'/>  
<polyline points='0.499,-0.545 0.55,0.695'/>  
<polyline points='0.996,-0.613 1.121,0.405'/>  
<polyline points='1.487,-0.75 1.601,-0.208'/>
```



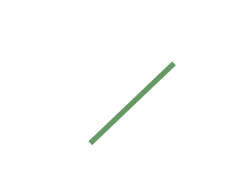
## manmadeLandformFillSymbol

### Style:

stroke:#669966;fill:none;stroke-width:0.087

### Geometry:

```
<polyline points='-1,-1 25,25'/>
```



## marshFillSymbol

### Style:

fill:none;stroke-width:0.087



### Geometry:

```
<g style="stroke:#0099ff">
<polyline style="stroke:#0099ff" points='4.258,0.000 0.452,0.000'/>
<polyline style="stroke:#0099ff" points='-4.250,0.000 -0.444,0.000'/>
<polyline style="stroke:#0099ff" points='-1.318,-0.517 1.317, 0.517'/>
</g>
<g style="stroke:#669966">
<polyline points='-0.444,0.000 -0.534,1.0'/>
<polyline points='0.452,0.000 0.541,1.0'/>
<polyline points='-0.001,0.013 -0.001,1.177'/>
<polyline points='0.880,0.000 1.118,0.675'/>
<polyline points='-0.873,0.000 -1.110,0.675'/>
<polyline points='-1.318,0.000 -1.440,0.269'/>
<polyline points='1.326,0.000 1.447,0.269'/>
</g>
```

## multiVegetationFillSymbol

### Style:

stroke:#669966;fill:669966;stroke-width:0.087



### Geometry:

circleFillGeometry (see [Shared symbol geometry](#))

## naturalLandformFillSymbol

### Style:

stroke:#666666;fill:none;stroke-width:0.087

### Geometry:

<polyline points="0,25 25,0"/>



## nonconiferousTreeFillSymbol

### Style:

stroke:#669966;fill:none;stroke-width:0.087

### Geometry:

nonconiferousTreeGeometry (see [Shared symbol geometry](#))



## orchardFillSymbol

### Style:

stroke:#669966;fill:none;stroke-width:0.087

### Arc Geometry:

```
<path d="M0,0a0.7 0.7 0 1 0 -0.6 1.1a0.7 0.7 0 1 0 1.2,0.0a0.7 0.7 0 1 0 -0.6 -1.1z"/>
```

```
<polyline points="0,-0.88 0,0"/>
```

### Linear Geometry:

```
<polyline points='0.804,0.471 0.869,0.666 0.875,0.872 0.822,1.071 0.714,1.247 0.560,1.383 0.373,1.470 0.169,1.500 -0.034,1.470 -0.221,1.382 0.374,1.245 0.482,1.069 -0.535,0.870 -0.528,0.664 -0.462,0.469'/>
```

```
<polyline points='-0.462,0.469 -0.665,0.428 -0.847,0.332 -0.994,0.186 -1.092,0.005 1.135,-0.197 -1.117,-0.403 -1.041,-0.594 -0.913,-0.756 -0.744, 0.875 -0.548,-0.939 0.342,-0.945 -0.143,-0.891 0.033,-0.781 0.169,-0.626'/>
```

```
<polyline points='0.169,-0.626 0.169,-0.626 0.305,-0.780 0.480,-0.889 0.679, -0.943 0.885,-0.937 1.080,-0.873 1.249,-0.755 1.377,-0.594 1.453,-0.402 1.472,-0.197 1.430,0.004 1.332,0.186 1.187,0.331 1.006,0.429 0.804,0.471'/>
```

```
<polyline points='0.171,-0.629 0.171,-1.497'/>
```



## rockFillSymbol

### Style:

stroke:#666666;fill:none;stroke-width:0.087

### Geometry:

```
<polyline points='-1.85,-0.834 -0.812,-0.834 -0.588,-0.766 -0.4, 0.508'/>
<polyline points='1.824,-0.834 1.272,-0.78 0.908,-0.666 0.888,-0.658 0.866, 0.65
0.846,-0.644 0.824,-0.64 0.802,-0.636 0.78,-0.634 0.758,
0.632 0.736, 0.632 0.714,-0.634 0.692,-0.636 0.67,-0.64 0.662, 0.642 0.648,-0.646
0.628, -0.654 0.438,-0.786 0.622,-0.66 0.662, 0.642 1.126,-
0.438 1.48,-0.298 1.494,-0.292 1.510,-0.284 1.524, 0.276 1.536,-0.268 1.550,-0.258
1.562, 0.248 1.574,-0.236 1.586, 0.224 1.596,-0.212
1.606,-0.198 1.614,-0.186 1.622,-0.170 1.628, 0.156 1.636,-0.142 1.640,-0.126 1.644,-
0.110 1.648, 0.094 1.650, 0.078 1.650,-0.062 1.652,-
0.046 1.650,-0.012 1.646,0.022 1.64,0.054 1.634,0.086 1.624,0.118 1.612,0.15
1.6,0.18 1.584,0.21 1.568,0.24 1.55,0.268 1.368,0.488 1.356,0.5
1.344,0.512 1.33,0.522 1.316,0.532 1.302,0.54 1.286,0.548 1.27,0.554 1.254,0.56
1.238,0.566 1.222,0.568 1.206,0.572 1.188,0.574 1.172,0.574
1.154,0.574 1.138,0.572 1.12,0.57 1.104,0.566 1.088,0.562 1.072,0.556 1.056,0.55
0.4,0.298 0.014,0.136 0.218,0.236 0.582,0.398 0.594,0.404
0.604,0.410 0.616,0.418 0.626,0.424 0.636,0.432 0.644,0.442 0.654,0.452 0.662,0.46
0.668,0.472 0.676,0.482 0.682,0.494 0.688,0.504
0.692,0.516 0.696,0.528 0.698,0.552 0.702,0.554 0.704,0.566 0.704,0.58 0.704,0.592
0.704,0.604 0.702,0.618 0.7,0.63 0.696,0.642 0.692,0.654
0.688,0.666 0.682,0.678 0.676,0.69 0.67,0.7 0.662,0.71 0.552,0.842 0.546,0.848
0.54,0.854 0.532,0.858 0.526,0.864 0.518,0.868 0.512,0.872
0.504,0.874 0.496,0.878 0.488,0.88 0.48,0.882 0.472,0.884 0.464,0.886 0.454,0.886
0.446,0.886 0.438,0.886 0.43,0.884 0.422,0.882 0.414,0.88
0.406,0.878 0.398,0.876 0.39,0.872 0.198,0.812 -0.378,0.6 -0.794,0.408 -1.046,0.316 -
1.058,0.31 1.07,0.302 1.082,0.292 -1.094,0.282 -
1.104,0.272 -1.114,0.262 1.122,0.25 -1.13,0.238 1.138,0.226 -1.144,0.212 -1.15,0.2
1.156,0.186 -1.16,0.172 -1.164,0.158 1.166,0.142 -
1.168,0.128 1.168,0.114 -1.168,0.098 -1.166,0.084 1.164,0.07 -1.16,0.056 1.158,0.042
-1.152,0.028 -1.146,0.014 -1.134,-0.014 -1.118,-0.04
1.102,-0.066 -1.084,-0.09 -1.066,-0.114 -1.046,-0.138 -1.028, 0.156 1.01,-0.172 -0.99,-
0.188 -0.968,-0.202 -0.946,-0.216 -0.924,-0.228'/>
```





## roughGrassFillSymbol

### Style:

stroke:#669966;fill:none;stroke-width:0.087

### Geometry:

```
<polyline points='0.000,-0.349 0.000,0.349'/>  
<polyline points='-0.416,-0.422 -0.444,0.261'/>  
<polyline points='0.416,-0.422 0.444,0.261'/>  
<polyline points='0.883,-0.436 0.935,0.199'/>  
<polyline points='-0.883,-0.436 -0.935,0.199'/>  
<polyline points='-1.342,-0.459 -1.412,0.096'/>  
<polyline points='1.342,-0.459 1.412,0.096'/>  
<polyline points='-1.769,-0.492 -1.843,-0.049'/>  
<polyline points='1.769,-0.492 1.843,-0.049'/>  
<polyline points='-2.187,-0.633 -2.249,-0.334'/>  
<polyline points='2.187,-0.633 2.249,-0.334'/>
```



## screeFillSymbol

### Style:

stroke:#666666;fill:none;stroke-width:0.087

### Geometry:

```
<polyline points='1.449,-1.302 1.777,-0.894 1.582,-0.574 1.445,-0.628 1.170,
0.400 0.895,-0.608 0.803,-0.734 0.924,-1.075 1.449,-1.302' />
<polyline points='-1.033,-1.217 -0.841,-0.786 -1.085,-0.544 -1.195,-0.625 1.497,
0.488 -1.741,-0.865 -1.545,-1.136 -1.033,-1.217' />
<polyline points='0.273,-1.429 0.834,-1.207 0.690,-0.817 0.460,-0.673 0.022, -
0.867 0.158,-1.005 0.104,-1.235 0.273,-1.429' />
<polyline points='-0.208,-1.302 -0.039,-0.986 -0.235,-0.768 -0.636,-0.831 0.844,
1.108 -0.864,-1.296 -0.555,-1.374 -0.392,-1.255 -0.207,-1.302' />
>
<polyline points='-0.009,-0.716 0.228,-0.562 0.315,-0.122 -0.050,0.053 0.266,
0.147 -0.199,-0.244 -0.323,-0.492 -0.009,-0.716' />
<polyline points='0.665,-0.616 0.960,-0.387 1.008,-0.077 0.949,0.078 0.652,0.002
0.579,-0.161 0.408,-0.206 0.421,-0.529 0.667,-0.614 ' />
<polyline points='-1.254,-0.316 -1.173,-0.016 -0.809,0.123 -0.634,0.010 0.665,
0.154 -0.814,-0.145 -1.006,-0.470 -1.254,-0.316' />
<polyline points='-0.690,-0.763 -0.762,-0.731 -0.853,-0.531 -0.697,-0.271 0.402,
0.341 -0.433,-0.632 -0.690,-0.763' />
<polyline points='-0.428,-0.069 -0.136,0.125 -0.266,0.331 -0.408,0.381
0.643,0.214 -0.541,0.151 -0.546,0.017 -0.428,-0.069' />
<polyline points='-0.147,0.459 0.049,0.547 0.122,0.457 0.245,0.451 0.365,0.290
0.280,0.213 0.079,0.159 -0.135,0.283 -0.147,0.459' />
<polyline points='0.658,0.150 0.953,0.220 0.877,0.387 0.758,0.419 0.714,0.518
0.505,0.477 0.480,0.308 0.658,0.150' />
<polyline points='-0.224,0.698 -0.210,0.940 0.047,0.990 0.191,0.892 0.137,0.671
0.029,0.683 -0.063,0.624 -0.224,0.698' />
<polyline points='0.336,0.825 0.392,0.881 0.376,1.152 0.131,1.317 0.099,1.161
0.336,0.825' />
<polyline points='-0.521,0.432 -0.320,0.480 -0.304,0.705 -0.463,0.796
0.596,0.619 -0.521,0.432 ' />
```



```

<polyline points='0.345,0.487 0.570,0.575 0.426,0.791 0.243,0.712 0.306,0.653
0.275,0.561 0.345,0.487'/>
<polyline points='-0.012,1.409 -0.021,1.589 0.049,1.624 0.007,1.696 0.084,1.696
0.187,1.542 -0.151,1.405 -0.012,1.405'/>
<polyline points='-0.203,1.021 -0.054,1.084 -0.011,1.292 -0.145,1.292
0.271,1.226 -0.304,1.086 -0.203,1.021'/>
<polyline points='0.370,-0.090 0.546,-0.048 0.550,0.132 0.426,0.220 0.311,0.067
0.370,-0.090'/>
<polyline points='-0.350,0.850 -0.304,0.956 -0.363,1.016 -0.467,1.028
0.525,0.938 -0.480,0.866 -0.350,0.850'/>
<polyline points='0.041,1.759 0.097,1.853 0.198,1.835 0.259,1.777 0.212,1.669
0.085,1.691 0.041,1.759'/>
<polyline points='-0.742,0.247 -0.650,0.283 -0.614,0.371 -0.622,0.410
0.704,0.414 -0.783,0.369 -0.805,0.288 -0.740,0.247'/>
<polyline points='0.103,1.400 0.198,1.457 0.164,1.569 0.068,1.585 0.031,1.477
0.103,1.4'/>
<polyline points='1.102,-0.328 1.206,-0.301 1.211,-0.186 1.127,-0.141 1.059,
0.228 1.102,-0.328'/>
<polyline points='0.239,1.339 0.246,1.411 0.408,1.386 0.444,1.321 0.316,1.278
0.239,1.339'/>
<polyline points='0.032,1.923 -0.009,2.025 0.050,2.109 0.147,2.063
0.139,1.950'/>
<polyline points='0.032,1.919 0.139,1.948'/>

```

## smallBoulderFillSymbol

### Style:

stroke:#666666;fill:none;stroke-width:0.087



### Geometry:

```
<polyline points='-0.077,0.118 -0.055,0.183 -0.058,0.25 -0.082,0.308 0.085,0.313  
-0.131,0.362 -0.245,0.413 -0.341,0.445 -0.443,0.45  
0.542,0.429 0.632,0.384 -0.708,0.316 -0.760,0.233 -0.779,0.1 -0.769, -0.036 -  
0.731,-0.170 -0.667,-0.283 -0.578,-0.386'/>  
<polyline points='0.876,-0.41 0.767,-0.402 0.417,-0.429 0.065,-0.412 0.225, 0.385  
-0.516,-0.384 -0.806,-0.41'/>  
<polyline points='0.82,-0.402 0.81,-0.295 0.696,-0.194 0.561,-0.124'/>  
<polyline points='0.155,-0.263 0.26,-0.286 0.366,-0.277 0.465,-0.236 0.546, 0.167  
0.548,-0.165 0.55,-0.162 0.553,-0.158 0.554,-0.155 0.555,-  
0.152 0.556, -0.149 0.557,-0.146 0.558,-0.142 0.559,-0.139 0.559,-0.135 0.559,-  
0.132 0.559,-0.128 0.559,-0.125 0.559,-0.121 0.557,-0.117  
0.557,-0.115 0.555, 0.111 0.554,-0.108 0.553,-0.105 0.550,-0.102 0.548,-0.099  
0.547,-0.096 0.544,-0.094 0.542,-0.091 0.539,-0.089 0.535,-  
0.086 0.534,-0.085 0.530, 0.083 0.527,-0.081 0.318,0.099 0.196,0.194  
0.059,0.265 -0.083,0.308 0.089,0.309'/>
```

## smallBushFillSymbol

### Style:

stroke:#669966;fill:none;stroke-width:0.087



### Geometry:

```
<polyline style=' points='0.5,-0.746 -0.038,-0.746 0.226,-0.446 0.292,-0.341 0.333,
0.224 0.346,-0.101 0.334,-0.044
0.298,0.002 0.245,0.029 0.142,0.041 0.039,0.023 0.054,-0.023 -0.198,-0.134 -
0.075,-0.013 0.027,0.124 0.109,0.275
0.167,0.436 0.175,0.513 0.155,0.588 0.112,0.651 0.008,0.723 0.115,0.751 -
0.195,0.742 0.27,0.71 -0.331,0.658 -
0.433,0.514 -0.502,0.352 -0.535,0.179 -0.53,0.003 -0.491, 0.191 -0.424,-0.379 -
0.333,-0.555 -0.217, 0.717 -0.198,-
0.75'/>
```

## smallConiferousTreeFillSymbol

### Style:

stroke:#669966;fill:none;stroke-width:0.087



### Arc Geometry:

```
<polyline points="0,0.725 0,-0.775"/>
```

```
<path d="M-0.65,-0.475a1 1 0 0 1 0.65 0.502a1 1 0 0 1 0.65 -0.502"/>
```

```
<path d="M-0.45,0.15a1 1 0 0 1 0.45 0.425a1 1 0 0 1 0.45 -0.425"/>
```

### Linear Geometry:

```
<polyline points='0.0,0.725 0.0,-0.775'/>
```

```
<polyline points='-0.651,-0.485 -0.584,-0.463 -0.517,-0.437 -0.454,-0.407 0.392,0.373 -0.333,-0.335 -0.276,-0.293 -
```

```
0.222,-0.248 -0.171,-0.199 0.123,-0.147 -0.078, -0.092 -0.037,-0.035 0.0,0.025
```

```
0.037,-0.035 0.078, 0.097 0.123,-
```

```
0.147 0.171,-0.199 0.222,-0.248 0.276,-0.293 0.333,-0.335 0.392,-0.373 0.454,-0.407 0.517,-0.437 0.584,-0.463
```

```
0.651,-0.485'/>
```

```
<polyline points='-0.445,0.148 -0.384,0.182 -0.316,0.22 -0.27,0.261 0.217,0.306 0.167,0.354 -0.120,0.405 -
```

```
0.077,0.459 -0.036,0.516 0.0,0.575 0.036,0.516 0.077,0.459 0.120,0.405
```

```
0.167,0.354 0.217,0.306 0.27,0.261
```

```
0.316,0.22 0.384,0.182 0.445,0.148'/>
```

## smallNonconiferousTreeFillSymbol

### Style:

stroke:#669966;fill:none;stroke-width:0.087



### Arc geometry:

```
<path d="M0,-0.8L-0.1,-0.4a0.3 0.3 0 1 0 -0.4 0.43a0.275 0.275 0 0 0 0.225  
0.445a0.28 0.28 0 0 0 0.55 -0.0a0.275  
0.275 0 0 0 0.225 -0.445a0.3 0.3 0 1 0 -0.4 0.43L0,-0.8z"/>
```

### Linear geometry:

```
<polyline points='-0.537,0.087 -0.552,0.076 -0.566,0.064 -0.580,0.052  
0.592,0.038 0.604,0.024 -0.615,0.008 -  
0.625,-0.007 -0.634,-0.024 -0.642, 0.041 -0.649,-0.058 0.655,-0.076 -0.660,-0.094  
-0.663,-0.112 -0.665,-0.131 -  
0.667,-0.149 -0.667,-0.168 0.666,-0.187 -0.663,-0.205 -0.660,-0.224 -0.655, -0.242  
-0.650,-0.259 -0.643,-0.277  
0.635,-0.294 -0.626,-0.310 -0.616,-0.326 -0.605,-0.341 -0.593,-0.356 -0.581,-0.369  
0.567,-0.382 -0.553,-0.394  
0.538,-0.405 -0.522,-0.415 -0.506,-0.424 -0.489,-0.433 0.471,-0.440 -0.454, -0.445  
-0.436,-0.450 -0.417,-0.454 -  
0.399,-0.456 -0.380,-0.458 0.362,-0.458 -0.343,-0.457 -0.324,-0.455 -0.306,-0.451  
-0.288,-0.447 -0.270,-0.441  
0.253,-0.435 -0.236,-0.427 -0.219,-0.418 -0.203,-0.408 -0.188,-0.397 0.173,-0.386  
0.160,-0.373 -0.147,-0.359 -  
0.135,-0.345 -0.134,-0.344 -0.033, -0.731 -0.006,-0.731 0.097,-0.339 0.097,-0.339  
0.195,-0.423 0.320,-0.457 0.447,-  
0.436 0.553,-0.364 0.619,-0.253 0.632,-0.124 0.590,-0.003 0.500,0.090  
0.554,0.203 0.552,0.329 0.495,0.441  
0.395,0.516 0.271,0.539 0.213,0.658 0.109,0.740 -0.019,0.769 0.148,0.740 -  
0.252,0.658 -0.310,0.539 -0.434,0.516 -  
0.535,0.440 -0.592,0.327 0.592,0.201 -0.537,0.087'/>
```

## smallRockFillSymbol

### Style:

stroke:#666666;fill:none;stroke-width:0.087



### Geometry:

```
<polyline points='-0.925,-0.417 -0.406,-0.417 -0.294,-0.383 -0.200, 0.254'/>
<polyline points='0.912,-0.417 0.636,-0.390 0.454,-0.333 0.444,-0.329 0.433,-0.325 0.423,-
0.322 0.412,-0.320 0.401,-0.318 0.390,-0.317 0.379,
0.316 0.368,-0.316 0.357,-0.317 0.346,-0.318
0.335,-0.320 0.331,-0.321 0.324,-0.323 0.314,-0.327 0.219,-0.393 0.311, 0.330 0.331,-0.321
0.563,-0.219 0.740,-0.149 0.747,-0.146 0.755,-
0.142 0.762,-0.138 0.768,-0.134 0.775,-0.129 0.781,-0.124
0.787,-0.118 0.793,-0.112 0.798,-0.106 0.803,-0.099 0.807,-0.093 0.811, 0.085 0.814,-0.078
0.818,-0.071 0.820,-0.063 0.822,-0.055 0.824,-
0.047 0.825,-0.039 0.825,-0.031 0.826,-0.023 0.825,-0.006
0.823,0.011 0.820,0.027 0.817,0.043 0.812,0.059 0.806,0.075 0.800,0.090 0.792,0.105
0.784,0.120 0.775,0.134 0.684,0.244 0.678,0.250
0.672,0.256 0.665,0.261 0.658,0.266 0.651,0.270 0.643,0.274 0.635,0.277 0.627,0.280
0.619,0.283 0.611,0.284 0.603,0.286 0.594,0.287
0.586,0.287 0.577,0.287 0.569,0.286 0.560,0.285 0.552,0.283 0.544,0.281 0.536,0.278
0.528,0.275 0.200,0.149 -0.007,0.068 0.109,0.118
0.291,0.199 0.297,0.202 0.302,0.205 0.308,0.209 0.313,0.212 0.318,0.216 0.322,0.221
0.327,0.226 0.331,0.230 0.334,0.236 0.338,0.241
0.341,0.247 0.344,0.252 0.346,0.258 0.348,0.264 0.349,0.271 0.351,0.277 0.352,0.283
0.352,0.290 0.352,0.296 0.352,0.302 0.351,0.309
0.350,0.315 0.348,0.321 0.346,0.327 0.344,0.333 0.341,0.339 0.338,0.345 0.335,0.350
0.331,0.355 0.276,0.421 0.276,0.421 0.273,0.424
0.270,0.427 0.266,0.429 0.263,0.432 0.259,0.434 0.256,0.436 0.252,0.437 0.248,0.439
0.244,0.440 0.240,0.441 0.236,0.442 0.232,0.443
0.227,0.443 0.223,0.443 0.219,0.443 0.215,0.442 0.211,0.441 0.207,0.440 0.203,0.439
0.199,0.438 0.195,0.436 0.099,0.406 -0.189,0.300 -
0.397,0.204 -0.523,0.158 0.529,0.155 -0.535,0.151 -0.541,0.146 -0.547,0.141 -0.552,0.136
0.557,0.131 -0.561,0.125 -0.565,0.119 -0.569,0.113
-0.572,0.106 0.575,0.100 -0.578,0.093 -0.580,0.086 -0.582,0.079 -0.583,0.071 0.584,0.064 -
0.584,0.057 -0.584,0.049 -0.583,0.042 -0.582,0.035
0.580,0.028 -0.579,0.021 -0.576,0.014 -0.573,0.007 -0.567,-0.007 0.559, 0.020 -0.551,-0.033
-0.542,-0.045 -0.533,-0.057 -0.523,-0.069 -0.514,-
0.078 -0.505,-0.086 -0.495,-0.094 -0.484,-0.101 -0.473,-0.108 -0.462,-0.114'/>
```



## Compound symbols

### Introduction

The symbols defined in the section [Fill symbols](#) may be combined to form aggregated symbols. In order to do this the coordinates of the original symbols are translated by a specified offset. Compound symbols may be used as components to make up other compound symbols.

For example:

To define a scrub fill symbol we combine the bushFillSymbol and smallBushFillSymbol. The translations used to do this are:

- bushFillSymbol: translate(-0.8 1)
- smallBushFillSymbol: translate(1.2 -1.2)

The combined result, a scrubFillSymbol, is then drawn as:



To define the mixed vegetation type of scrub and rough grass the scrubFillSymbol produced above is used in conjunction with the roughGrassFillSymbol:

- roughGrassFillSymbol: translate(-1 -1)
- scrubFillSymbol: translate(1 1)

To produce a roughGrassAndScrubFillSymbol:



## Definitions

Transformation 1

Symbol 1 – translate(-1 0.3)

Symbol 2 – translate(1.75 -1)

Name: bouldersFillSymbol

Symbol 1: boulderFillSymbol

Symbol 2: smallBoulderFillSymbol



Name: rocksFillSymbol

Symbol 1: rockFillSymbol

Symbol 2: smallRockFillSymbol



## Transformation 2

Symbol 1 – translate(-0.8 1)

Symbol 2 – translate(1.2 -1.2)

Name: coniferousTreesFillSymbol

Symbol 1: coniferousTreeFillSymbol

Symbol 2: smallConiferousTreeFillSymbol



Name: nonconiferousTreesFillSymbol

Symbol 1: nonconiferousTreeFillSymbol

Symbol 2: smallNonconiferousTreeFillSymbol



Name: scrubFillSymbol

Symbol 1: bushFillSymbol

Symbol 2: smallBushFillSymbol



### Transformation 3

Symbol 1 – translate(-1 -1)

Symbol 2 – translate(1 1)

Name: coniferousTreesAndScrubFillSymbol

Symbol 1: coniferousTreesFillSymbol

Symbol 2: scrubFillSymbol



Name: heathAndScrubFillSymbol

Symbol 1: heathFillSymbol

Symbol 2: scrubFillSymbol



Name: heathAndScatteredRocksFillSymbol

Symbol 1: heathFillSymbol

Symbol 2: smallRockFillSymbol



Name: nonconiferousTreesAndConiferousTreesFillSymbol

Symbol 1: nonconiferousTreesFillSymbol

Symbol 2: coniferousTreesFillSymbol



Name: nonconiferousTreesAndCoppiceFillSymbol

Symbol 1: nonconiferousTreesFillSymbol

Symbol 2: coppiceFillSymbol



Name: nonconiferousTreesAndScrubFillSymbol

Symbol 1: nonconiferousTreesFillSymbol

Symbol 2: scrubFillSymbol



Name: coniferousTreesAndScatteredRocksFillSymbol

Symbol 1: coniferousTreesFillSymbol

Symbol 2: smallRockFillSymbol



Name: roughGrassAndBouldersFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: bouldersFillSymbol



Name: roughGrassAndConiferousTreesFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: coniferousTreesFillSymbol



Name: roughGrassAndHeathFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: heathFillSymbol



Name: roughGrassAndMarshFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: marshFillSymbol



Name: roughGrassAndNonconiferousTreesFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: nonconiferousTreesFillSymbol



Name: roughGrassAndRocksFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: rocksFillSymbol



Name: roughGrassAndScatteredBouldersFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: smallBouldersFillSymbol



Name: roughGrassAndScatteredNonconiferousTreesFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: smallNonconiferousTreeFillSymbol



Name: roughGrassAndScatteredRocksFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: smallRockFillSymbol



Name: roughGrassAndScrubFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: scrubFillSymbol



Name: scatteredNonconiferousTreesAndScatteredConiferousTreesFillSymbol

Symbol 1: smallNonconiferousTreeFillSymbol

Symbol 2: smallConiferousTreeFillSymbol



Name: scrubAndScatteredNonconiferousTreesFillSymbol

Symbol 1: scrubFillSymbol

Symbol 2: smallNonconiferousTreeFillSymbol



#### Transformation 4

Symbol 1 – translate(-2 -2)

Symbol 2 – translate(-0.5 0.5)

Symbol 3 – translate(2 2)

Name: rocksRoughGrassAndBouldersFillSymbol

Symbol 1: rocksFillSymbol

Symbol 2: roughGrassFillSymbol

Symbol 3: bouldersFillSymbol



Name: roughGrassNonconiferousTreesAndConiferousTreesFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: nonconiferousTreesFillSymbol

Symbol 3: coniferousTreesFillSymbol



Name: roughGrassNonconiferousTreesAndScrubFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: nonconiferousTreesFillSymbol

Symbol 3: scrubFillSymbol





Name: scrubNonconiferousTreesAndCoppiceFillSymbol

Symbol 1: scrubFillSymbol

Symbol 2: nonconiferousTreesFillSymbol

Symbol 3: coppiceFillSymbol



Name: scrubConiferousTreesAndNonconiferousTreesFillSymbol

Symbol 1: scrubFillSymbol

Symbol 2: coniferousTreesFillSymbol

Symbol 3: nonconiferousTreesFillSymbol



### Transformation 5

Symbol 1 – translate(0 -1)

Symbol 2 – translate(-2 1)

Symbol 3 – translate(2 1)

Name: roughGrassScatteredRocksAndBouldersFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: smallRockFillSymbol

Symbol 3: bouldersFillSymbol



Name: roughGrassScatteredRocksAndHeathFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: smallRockFillSymbol

Symbol 3: heathFillSymbol



Name: roughGrassScatteredRocksAndScatteredBouldersFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: smallRockFillSymbol

Symbol 3: smallBouldersFillSymbol



Name: roughGrassScatteredNonconiferousTreesAndScrubFillSymbol

Symbol 1: roughGrassFillSymbol

Symbol 2: smallNonconiferousTreeFillSymbol

Symbol 3: scrubFillSymbol



Name: scatteredConiferousTreesScatteredNonconiferousTreesAndScrubFillSymbol

Symbol 1: smallConiferousTreeFillSymbol

Symbol 2: smallNonconiferousTreeFillSymbol

Symbol 3: scrubFillSymbol



## Pattern definitions

### Creating a pattern

The symbols defined in [Symbols](#) and [Compound symbols](#) that end with the term FillSymbol are all used for pattern fills. The name of the pattern is taken from the symbol name by replacing FillSymbol with the term Pattern.

To produce a particular pattern, the appropriate fill symbol is distributed on a grid that is repeated to cover the polygon being drawn. Currently the following grids are in use:

#### Landform grid

Size: (25,25)

Suitable Symbols: manmadeLandformFillSymbol, naturalLandformFillSymbol

Symbol coordinates: 0,-21 0,-18 0,-15 0,-12 0,-9 0,-6 0,-3 0,0 0,3 0,6 0,9 0,12 0,15 0,18 0,21

Fill Colour: none

Patterns:       manmadeLandformPattern  
                  naturalLandformPattern

#### Small regular grid

Size: (3,3)

Suitable Symbols: foreshoreFillSymbol, multiVegetationFillSymbol

Symbol coordinates: 2,2

Fill Colour:     for foreshorePattern – ccffff (RGB 204,255,255)  
                  otherwise – ccffcc (RGB 204,255,204)

Patterns:       foreshorePattern  
                  multiVegetationPattern

## Regular grid

Size: (6 6)

Suitable Symbols: orchardFillSymbol

Symbol coordinates: 3,3

Fill Colour: ccffcc (RGB 204,255,204)

Patterns: orchardPattern

## Natural environment grid

Size: (50,50)

Suitable Symbols: All natural vegetation and surface cover symbol types except for orchard.

Symbol coordinates: 5,3 5,25 10,12 10,35 25,45 42,15 37,27 27,14 36,37 42,45 39,3 18,33

Fill Colour: ccffcc (RGB 204,255,204)

### **Patterns:**

roughGrassPattern

heathPattern

marshPattern

scatteredBouldersPattern

scatteredRocksPattern

scatteredConiferousTreePattern

scatteredNonconiferousTreePattern

coppicePattern

### **Patterns, continued**

orchardPattern

bouldersPattern

rocksPattern

screePattern

scrubPattern

coniferousTreesPattern

nonconiferousTreesPattern

coniferousTreesAndScatteredRocksPattern

coniferousTreesAndScrubPattern

heathAndScrubPattern

heathAndScatteredRocksPattern

nonconiferousTreesAndConiferousTreesPattern

nonconiferousTreesAndCoppicePattern

nonconiferousTreesAndScatteredRocksPattern

nonconiferousTreesAndScrubPattern

roughGrassAndBouldersPattern

roughGrassAndConiferousTreesPattern

roughGrassAndHeathPattern

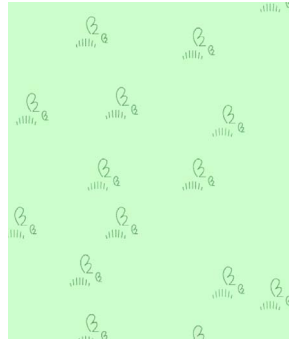
roughGrassAndMarshPattern

### **Patterns, continued**

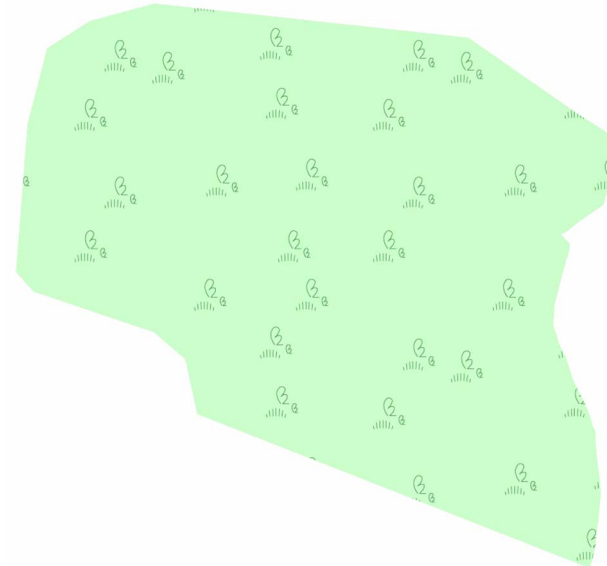
roughGrassAndNonconiferousTreesPattern  
roughGrassAndRocksPattern  
roughGrassAndScatteredBouldersPattern  
roughGrassAndScatteredNonconiferousTreesPattern  
roughGrassAndScatteredRocksPattern  
roughGrassAndScrubPattern  
scatteredNonconiferousTreesAndScatteredConiferousTreesPattern  
scrubAndScatteredNonconiferousTreesPattern  
rocksRoughGrassAndBouldersPattern  
roughGrassNonconiferousTreesAndConiferousTreesPattern  
roughGrassNonconiferousTreesAndScrubPattern  
roughGrassScatteredRocksAndBouldersPattern  
roughGrassScatteredRocksAndHeathPattern  
roughGrassScatteredRocksAndScatteredBouldersPattern  
roughGrassScatteredNonconiferousTreesAndScrubPattern  
scrubConiferousTreesAndNonconiferousTreesPattern  
scrubNonconiferousTreesAndCoppicePattern  
scatteredConiferousTreesScatteredNonconiferousTreesAndScrubPattern

## Example

For example, the heathAndScrubPattern uses the natural environment grid to produce the pattern below:



which is then applied as a polygon fill:



## Line styles

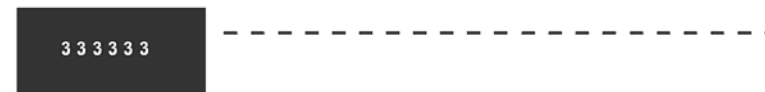
### Default



Name – defaultLine

stroke-width – 0.07

### Default dashed

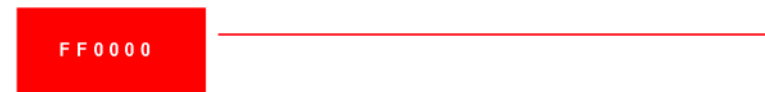


Name – defaultDashedLine

stroke-width – 0.1

stroke-dasharray – 0.5, 0.5

### Building



Name – buildingLine

stroke-width – 0.07



## Building overhead



Name – buildingOverheadLine

stroke-width – 0.1

stroke-dasharray – 0.5, 0.5

## Water bold



Name – waterBoldLine

stroke-width – 0.4

## Water dashed



Name – waterDashedLine

stroke-width – 0.1

stroke-dasharray – 0.5, 0.5

## Water



Name – waterLine

stroke-width – 0.07

## Underground



Name – defaultUndergroundLine

stroke-width – 0.2

stroke-dasharray – 3.0, 1.0

## Structure overhead



Name – structureOverheadLine

stroke-width – 0.2

stroke-dasharray – 2.0, 1.0

## Landform bold



Name – landformBoldLine

stroke-width – 0.3

stroke-dasharray – 0.8, 0.8

## Landform



Name – landformLine

stroke-width – 0.1

stroke-dasharray – 0.8, 0.8

## Narrow-gauge railway alignment

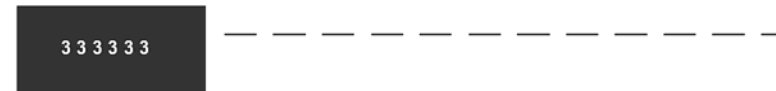


Name – narrowGaugeRailwayAlignmentLine

stroke-width – 0.3

stroke-dasharray – 2.1, 1.0

## Standard-gauge rail



Name – standardGaugeRailLine

stroke-width – 0.07

stroke-dasharray – 2.0, 1.0

## Parish



Name – parishLine

stroke-width – 0.4

stroke-dasharray – 0.4, 0.8

## Electoral



Name – electoralLine

stroke-width – 0.2

stroke-dasharray – 1.5, 0.5

## County



Name – countyLine

stroke-width – 0.4

stroke-dasharray – 2.0, 1.0

## Parliamentary



Name – parliamentaryLine

stroke-width – 0.4

stroke-dasharray – 1.8, 0.5

## District



Name – districtLine

stroke-width – 0.3

stroke-dasharray – 1.5, 0.8

## Closing



Name – closingLine

stroke-width – 0.05

## Motorway dual carriageway



Name – motorwayDualCariagewayLine

stroke-width – 7.0

stroke-linecap - round

## Motorway



Name – motorwayLine

stroke-width – 3.0

stroke-linecap - round

### Primary route – dual carriageway



Name – primaryRouteDualCarriagewayLine

stroke-width – 7.0

stroke-linecap - round

### Primary route



Name – primaryRouteLine

stroke-width – 3.0

stroke-linecap - round

## A Road dual carriageway



Name – aRoadDualCarriagewayLine

stroke-width – 7.0

stroke-linecap - round

## A Road



Name – aRoadLine

stroke-width – 3.0

stroke-linecap - round



## B road dual carriageway



Name – bRoadDualCarriagewayLine

stroke-width – 7.0

stroke-linecap - round

## B road



Name – bRoadLine

stroke-width – 3.0

stroke-linecap - round

## Minor road dual carriageway



Name – minorRoadDualCarriagewayLine

stroke-width – 7.0

stroke-linecap - round

## Minor road



Name – minorRoadLine

stroke-width – 3.0

stroke-linecap - round

## Local street dual carriageway



Name – localStreetDualCarriagewayLine

stroke-width – 7.0

stroke-linecap - round

## Local street



Name – localStreetSingleCarriagewayLine

stroke-width – 3.0

stroke-linecap - round

### Private road public access dual carriageway



Name – privateRoadPublicAccessDualCarriagewayLine

stroke-width – 7.0

stroke-linecap – round

### Private road public access



Name – privateRoadPublicAccessLine

stroke-width – 3.0

stroke-linecap – round

### Private road restricted access dual carriageway



Name – privateRoadRestrictedAccessDualCarriagewayLine

stroke-width – 7.0

stroke-dasharray – 8.0, 8.0

### Private road restricted access



Name – privateRoadRestrictedAccessLine

stroke-width – 3.0

stroke-dasharray – 8.0, 8.0

### Pedestrianised street



Name – pedestrianisedStreetLine

stroke-width – 3.0

stroke-dasharray – 8.0, 8.0

## Alley



Name – alleyLine

stroke-width – 2.0

stroke-dasharray – 4.0, 4.0

## Ferry



Name – ferryLine

stroke-width – 3.0

stroke-dasharray – 80.0, 20.0, 4.0, 20.0

## Alley outline



Name – alleyOutline

stroke-width – 3.0

stroke-dasharray – 4.0, 4.0

### Carriageway outline



Name – defaultOutline

stroke-width – 5.0

stroke-linecap - round

### Dashed carriageway outline



Name – defaultDashedOutline

stroke-width – 5.0

stroke-dasharray – 8.0, 8.0

### Dual carriageway outline



Name – dualCarriagewayOutline

stroke-width – 9.0

stroke-linecap – round

### Dashed dual carriageway outline



Name – dashedDualCarriagewayOutline

stroke-width – 9.0

stroke-dasharray – 8.0, 8.0

### Ferry outline



Name – ferryOutline

stroke-width – 5.0

stroke-dasharray – 80.0, 20.0, 4.0, 20.0



## Chapter 2.6 Mapping styles to features

This chapter provides developers and users with a guide to applying styles defined in [chapter 2.5, Style definitions](#), to the features defined in [chapter 2.2, Classification and attributes of OS MasterMap features](#).

There is not a style provided for every feature so some features are not drawn when the default styling is applied. This may be for one of several reasons, which include:

- Information is already rendered by another feature.
- Information is not easily positioned or styled.
- No styling information is available but would be needed to best represent the information.
- The information if drawn would be cluttered or confusing.
- The information is structural in the data but adds little value for a user.

The following attribute sets have no default style:

- Road
- RoadNode
- FerryNode
- FerryTerminal
- RoadNodeInformation
- RoadLinkInformation
- RoadRouteInformation
- RoadPartialLinkInformation
- RoadPartialRouteInformation
- InformationPoint.

## TopographicArea

### Mapping table (no or single descriptiveTerm)

descriptiveGroup	descriptiveTerm	make	Style name
Building		Manmade	buildingFill
Building	Archway	Manmade	buildingFill
General Surface		Manmade	madeSurfaceFill
General Surface		Multiple	multipleSurfaceFill
General Surface		Natural	naturalSurfaceFill
General Surface		Unknown	madeSurfaceFill
General Surface	Multi Surface	Multiple	multipleSurfaceFill
General Surface	Step	Manmade	stepFill
Glasshouse		Manmade	glasshouseFill
Historic Interest			heritageFill
Inland Water		Natural	inlandWaterFill
Landform		Manmade	manmadeLandformPattern
Landform		Natural	naturalLandformPattern
Landform	Cliff	Natural	naturalLandformPattern
Landform	Slope	Manmade	manmadeLandformPattern
Natural Environment	Boulders	Natural	naturalEnvironmentFill and bouldersPattern
Natural Environment	Boulders (Scattered)	Natural	naturalEnvironmentFill and scatteredBouldersPattern
Natural Environment	Coniferous Trees	Natural	naturalEnvironmentFill and coniferousTreesPattern
Natural Environment	Coniferous Trees (Scattered)	Natural	naturalEnvironmentFill and scatteredConiferousTreesPattern
Natural Environment	Coppice Or Osiers	Natural	naturalEnvironmentFill and coppicePattern
Natural Environment	Heath	Natural	naturalEnvironmentFill and heathPattern
Natural Environment	Marsh Reeds Or Saltmarsh	Natural	naturalEnvironmentFill and marshPattern
Natural Environment	Nonconiferous Trees	Natural	naturalEnvironmentFill and nonconiferousTreesPattern

<b>descriptiveGroup</b>	<b>descriptiveTerm</b>	<b>make</b>	<b>Style name</b>
Natural Environment	Nonconiferous Trees (Scattered)	Natural	naturalEnvironmentFill and scatteredNonconiferousTreesPattern
Natural Environment	Orchard	Natural	naturalEnvironmentFill and orchardPattern
Natural Environment	Rock	Natural	naturalEnvironmentFill and rocksPattern
Natural Environment	Rock (Scattered)	Natural	naturalEnvironmentFill and scatteredRocksPattern
Natural Environment	Rough Grassland	Natural	naturalEnvironmentFill and roughGrassPattern
Natural Environment	Scree	Natural	naturalEnvironmentFill and screePattern
Natural Environment	Scrub	Natural	naturalEnvironmentFill and scrubPattern
Path		Manmade	pathFill
Path	Step	Manmade	stepFill
Provisional Or Unverified	Unclassified		unclassifiedFill
Rail		Manmade	railFill
Rail		Unknown	madeSurfaceFill
Rail		Unmade	naturalSurfaceFill
Road Or Track		Manmade	roadFill
Road Or Track	Traffic Calming	Manmade	roadFill
Roadside		Manmade	madeSurfaceFill
Roadside		Unknown	madeSurfaceFill
Roadside		Unmade	naturalSurfaceFill
Structure			structureFill
Structure		Manmade	structureFill
Structure	Overhead Construction	Manmade	structureFill
Structure	Pylon	Manmade	structureFill
Structure	Upper Level Of Communication	Manmade	structureFill
Tidal Water		Natural	tidalWaterFill
Tidal Water	Foreshore	Natural	tidalWaterFill and foreshorePattern

## Property application logic (no or single descriptiveTerm)

This section defines the overall logic for applying the style. The order of the property in the condition list below is the order that it is applied; once applied the condition loop is exited.

This example below shows the notation for filtering using the descriptiveGroup and descriptiveTerm attributes; features with multiple descriptiveTerm attributes are discussed in the next subsection.

<i>if</i>	<i>descriptiveGroup = "Landform"</i>	<i>and</i>	
	<i>descriptiveTerm = "Pylon"</i>	<i>then apply</i>	
if	descriptiveGroup = "Building"	then apply	buildingFill
or	descriptiveTerm = "Step"	then apply	stepFill
or	descriptiveGroup = "Glasshouse"	then apply	glasshouseFill
or	descriptiveGroup = "Historic Interest"	then apply	heritageFill
or	descriptiveGroup = "Inland Water"	then apply	inlandWaterFill
or	descriptiveGroup = "Natural Environment"	then apply	naturalEnvironmentFill
or	descriptiveGroup = "Path"	then apply	pathFill
or	descriptiveGroup = "Road Or Track"	then apply	roadFill
or	descriptiveGroup = "Structure"	then apply	structureFill
or	descriptiveGroup = "Tidal Water"	then apply	tidalWaterFill
or	descriptiveGroup = "Unclassified"	then apply	unclassifiedFill
or	descriptiveGroup = "Rail" and make = "Manmade"	then apply	railFill
or	make = "Manmade"	then apply	madeSurfaceFill
or	make = "Natural"	then apply	naturalSurfaceFill
or	make = "Unknown"	then apply	madeSurfaceFill
or	make = "Multiple"	then apply	multipleSurfaceFill
else		apply	unclassifiedFill

## Property application logic (multiple descriptiveTerm)

This section deals with the techniques for styling features with a descriptiveGroup value of Natural Environment that have multiple descriptiveTerm attributes. This section only provides a selection of combinations that were prominent in a study of descriptiveTerm occurrences on natural environment features. The patterns and symbols used are all defined in [chapter 2.5, Style definitions](#). The logic to apply is as follows:

<i>if</i>	<i>descriptiveGroup = "Natural Environment"</i>	<i>Then</i>
If	Number of descriptiveTerm attributes = 4	then apply relevant pattern for type combinations (see <a href="#">Pattern definitions</a> )
If	Number of descriptiveTerm attributes = 3	then apply relevant pattern for type combinations (see <a href="#">Pattern definitions</a> )
or	Number of descriptiveTerm attributes = 2	then apply relevant pattern for type combinations (see <a href="#">Pattern definitions</a> )
or	Number of descriptiveTerm attributes = 1	then apply relevant pattern for type
else		apply multiVegetationPattern (see <a href="#">Pattern definitions</a> )

## TopographicLine

### Mapping table

descriptiveGroup	descriptiveTerm	physicalPresence	make	Style name
Building	Outline	Obstructing	Manmade	buildingLine
Building	Outline	Overhead	Manmade	buildingOverheadLine
Building	Division	Obstructing	Manmade	buildingLine
General Feature		Obstructing		defaultLine
General Feature	Overhead Construction			structureOverheadLine
General Feature		Edge / Limit		defaultDashedLine
General Feature		Minor Detail		defaultLine
General Feature	Tunnel Edge	Edge / Limit		defaultUndergroundLine
General Surface		Edge / Limit	Natural	defaultDashedLine
General Surface	Step	Edge / Limit	Manmade	defaultLine
General Surface	Step		Manmade	defaultLine
Historic Interest	Course Of CRT Heritage			defaultUndergroundLine
Historic Interest		Minor Detail		defaultLine
Inland Water	Tunnel Edge	Edge / Limit		defaultUndergroundLine
Inland Water		Minor Detail	Manmade	waterLine
Inland Water	Culvert		Manmade	waterLine
Inland Water		Edge / Limit		waterLine
Landform	Top Of Slope	Edge / Limit	Manmade	landformBoldLine
Landform		Edge / Limit	Natural	landformLine
Landform		Edge / Limit	Manmade	landformLine
Landform	Bottom Of Cliff	Edge / Limit	Natural	landformLine
Landform	Ridge Or Rock Line		Natural	landformLine
Landform	Top Of Cliff	Edge / Limit	Natural	landformBoldLine

descriptiveGroup	descriptiveTerm	physicalPresence	make	Style name
Landform	Bottom Of Slope	Edge / Limit	Manmade	landformLine
Network Or Polygon Closing Geometry	Inferred Property Closing Link	Closing		closingLine
Network Or Polygon Closing Geometry	Polygon Closing Link	Closing		closingLine
Path	Tunnel Edge	Edge / Limit	Manmade	defaultUndergroundLine
Political Or Administrative	District	Boundary		districtLine
Political Or Administrative	Electoral	Boundary		electoralLine
Political Or Administrative	Parliamentary	Boundary		parliamentaryLine
Political Or Administrative	County	Boundary		countyLine
Political Or Administrative	Parish	Boundary		parishLine
Pre-Build				defaultLine
Rail	Narrow Gauge	Network		narrowGaugeRailwayAlignmentLine
Rail	Standard Gauge Track			standardGaugeRailLine
Rail	Buffer		Manmade	defaultLine
Rail		Minor Detail		defaultLine
Rail	Tunnel Edge	Edge / Limit	Manmade	defaultUndergroundLine
Road Or Track	Tunnel Edge	Edge / Limit	Manmade	defaultUndergroundLine
Road Or Track	Public	Edge / Limit	Manmade	defaultDashedLine
Road Or Track	Traffic Calming	Edge / Limit	Manmade	defaultDashedLine
Roadside		Minor Detail		defaultLine
Structure		Minor Detail	Manmade	defaultLine
Structure	Pylon	Edge / Limit	Manmade	defaultLine
Structure	Network Closing Link	Closing		closingLine
Tidal Water	Mean High Water (Springs)	Edge / Limit	Natural	waterBoldLine
Tidal Water	Mean Low Water (Springs)	Edge / Limit	Natural	waterDashedLine

## Property application logic

This section defines the overall logic for applying the style. The order of the property in the condition list below is the order that it is applied; once applied the condition loop is exited.

If	descriptiveGroup = "Building" and physicalPresence = "Overhead"	then apply	buildingOverheadLine
Or	descriptiveTerm = "Overhead Construction"	then apply	structureOverheadLine
Or	descriptiveTerm = "Tunnel Edge"	then apply	defaultUndergroundLine
Or	descriptiveGroup = "Building"	then apply	buildingLine
Or	descriptiveTerm = " Mean High Water (Springs)"	then apply	waterBoldLine
Or	descriptiveTerm = " Mean Low Water (Springs)"	then apply	waterDashedLine
Or	descriptiveGroup = "Inland Water"	then apply	waterLine
Or	descriptiveTerm = "Narrow Gauge"	then apply	narrowGaugeRailwayAlignmentLine
Or	descriptiveTerm = "Standard Gauge Track"	then apply	standardGaugeRailLine
Or	descriptiveGroup = "Landform" and descriptiveTerm = "Top Of Slope"	then apply	landformBoldLine
Or	descriptiveGroup = "Landform" and descriptiveTerm = "Top Of Cliff"	then apply	landformBoldLine
Or	descriptiveGroup = "Landform" and descriptiveTerm = "Bottom Of Slope"	then apply	landformLine
Or	descriptiveGroup = "Landform" and descriptiveTerm = "Bottom Of Cliff"	then apply	landformLine
Or	descriptiveTerm = "Parish"	then apply	parishLine
Or	descriptiveTerm = "Electoral"	then apply	electoralLine
Or	descriptiveTerm = "County"	then apply	countyLine
Or	descriptiveTerm = "Parliamentary"	then apply	parliamentaryLine
Or	descriptiveTerm = "District"	then apply	districtLine
Or	physicalPresence = "Edge / Limit"	then apply	defaultDashedLine
Or	physicalPresence = "Underground"	then apply	defaultUndergroundLine
Or	physicalPresence = "Closing"	then apply	closingLine
Else		apply	defaultLine



## TopographicPoint

descriptiveGroup	descriptiveTerm	make	Style name
General Feature	Positioned Nonconiferous Tree	Natural	positionedNonconiferousTreeSymbol
General Feature	Positioned Coniferous Tree	Natural	positionedConiferousTreeSymbol
General Feature	Positioned Boulder	Natural	positionedBoulderSymbol
Historic Interest	Site Of Heritage		heritageSiteOfSymbol
Historic Interest	CRT Structure		pointSymbol
Inland Water		Manmade	waterPointSymbol
Landform		Manmade	pointSymbol
Landform	Disused Feature	Natural	landformDisusedSymbol
Landform		Natural	pointSymbol
Political Or Administrative	Boundary Post Or Stone		boundaryPostSymbol
Pre-Build			pointSymbol
Provisional Or Unverified	Unclassified		pointSymbol
Rail	Switch		railwaySwitchSymbol
Rail	Structure		pointSymbol
Roadside			pointSymbol
Structure		Manmade	pointSymbol
Structure	Structure	Manmade	pointSymbol
Structure	Triangulation Point Or Pillar	Manmade	triangulationStationSymbol
Terrain And Height	Air Height		airHeightSymbol
Terrain And Height	Spot Height		spotHeightSymbol
Tidal Water			waterPointSymbol

## CartographicText

descriptiveGroup	descriptiveTerm	Style hex value	Font style
Buildings Or Structure	Compound	000000	Normal
Buildings Or Structure		000000	Normal
Built Environment	Compound	000000	Normal
General Feature		000000	Normal
General Surface		000000	Normal
Height Control	Bench Mark	000000	Normal
Historic Interest		000000	<i>Italic</i>
Inland Water		0099FF	Normal
Landform		000000	Normal
Natural Environment		000000	Normal
Political Or Administrative		FF00FF	Normal
Pre-Build		000000	Normal
Rail		000000	Normal
Road Or Track	Road Name Or Classification	000000	Normal
Roadside		000000	Normal
Structure		000000	Normal
Terrain And Height		000000	Normal
Tidal Water	Foreshore	0099FF	Normal
Tidal Water		0099FF	Normal

## CartographicSymbol

descriptiveGroup	descriptiveTerm	Style (from style guide)
Height Control	Bench Mark	benchMarkSymbol
Inland Water	Culvert	culvertSymbol
Inland Water	Direction Of Flow	flowArrowSymbol
Political Or Administrative	Boundary Half Mereing	boundaryMereingChangeSymbol
Road Or Track	Road Related Flow	roadFlowSymbol

## AddressPoint

If only one AddressPoint is situated at a location, then apply the following symbols:

If	matchStatus = "unmatched"	then apply	unmatchedAddressSymbol
Or	positionalQuality = "provisional"	then apply	provisionalAddressSymbol
Or	positionalQuality = "final"	then apply	addressSymbol

If more than one AddressPoint is situated at a location, then apply a plural style using the attributes of one of the addressPoints as follows:

If	matchStatus = "unmatched"	then apply	unmatchedAddressesSymbol
Or	positionalQuality = "provisional"	then apply	provisionalAddressesSymbol
Or	positionalQuality = "final"	then apply	addressesSymbol

## RoadLink

There are some significant complexities that may have to be overcome when styling RoadLink features, particularly when styling the intersections of RoadLink features. The logic outlined below is the simplest logic that will give a reasonable view of the data, but it will not provide a view that gives preference to roads with the highest classification at junctions or represent bridge crossings accurately.

In order to apply RoadLink styles a two pass approach is taken to provide a line style that is outlined. If only one style is applied then the styling will suffer as colours may blend or disappear into the background. These styles have been designed to work on a black, white and naturalEnvironmentFill coloured background and also as an overlay to topographic detail.

The first style to apply is the background style that outlines the road in the final representation. The mapping to the background style is as follows, where a blank entry represents any or no value:

descriptiveGroup	descriptiveTerm	natureOfRoad	Style name
Road Topology	Private Road – Restricted Access	Dual Carriageway	dashedDualCarriagewayOutline
Road Topology		Dual Carriageway	dualCarriagewayOutline
Road Topology	Pedestrianised Street		dashedCarriagewayOutline
Road Topology	Private Road – Restricted Access		dashedCarriagewayOutline
Road Topology	Alley		alleyOutline
Road Topology			carriagewayOutline

The second style needs to be applied after all lines have been rendered using the first style. If practical, the second style can be applied in classification order, starting at the bottom of the table and working through to the top, which will provide better results at road junctions. The mapping to the foreground style is as follows:

descriptiveGroup	descriptiveTerm	natureOfRoad	Style name
Road Topology	Motorway	Dual Carriageway	motorwayDualCarriagewayLine
Road Topology	Motorway		motorwayLine
Road Topology	A Road	Dual Carriageway	aRoadDualCarriagewayLine
Road Topology	A Road		aRoadLine
Road Topology	B Road	Dual Carriageway	bRoadDualCarriagewayLine
Road Topology	B Road		bRoadLine
Road Topology	Minor Road	Dual Carriageway	minorRoadDual CarriagewayLine
Road Topology	Minor Road		minorRoadLine
Road Topology	Local Street	Dual Carriageway	localStreetDual CarriagewayLine
Road Topology	Local Street		localStreetLine
Road Topology	Private Road – Publicly Accessible	Dual Carriageway	privateRoadPublicAccess DualCarriagewayLine
Road Topology	Private Road – Publicly Accessible		privateRoadPublicAccessLine
Road Topology	Private Road – Restricted Access	Dual Carriageway	privateRoadRestrictedAccessDual CarriagewayLine
Road Topology	Private Road – Restricted Access		privateRoadPublic AccessLine
Road Topology	Pedestrianised Street		pedestrianisedStreetLine
Road Topology	Alley		alleyLine

If it can be determined that a link is part of a primary route then the primary route styles can be applied in preference to the styles in the previous table.

*Note: The primary route information is held on descriptiveTerm attribute of the Road features that reference the RoadLink features. This is applied as follows:*

descriptiveGroup	natureOfRoad	Style name
Road Topology	Dual Carriageway	primaryRouteDualCarriagewayLine
Road Topology		primaryRouteLine

## RoadLink application logic

If able to draw outlines then draw all outlines first using the following styles:

If	natureOfRoad = "Dual Carriageway" and descriptiveTerm = "Private Road – Restricted Access"	then apply	dashedDualCarriagewayOutline
Or	natureOfRoad = "Dual Carriageway"	then apply	dualCarriagewayOutline
Or	descriptiveTerm = "Pedestrianised Street"	then apply	dashedCarriagewayOutline
Or	descriptiveTerm = "Private Road – Restricted Access"	then apply	dashedCarriagewayOutline
Or	descriptiveTerm = "Alley"	then apply	alleyOutline
Or	descriptiveGroup = "Road Topology"	then apply	carriagewayOutline

After drawing all outlines redraw the network lines with the following styles. The term primaryRoute indicates that the link can be identified as part of a primary route:

If	descriptiveTerm = "Motorway" and natureOfRoad = "Dual Carriageway"	then apply	motorwayDualCarriagewayLine
Or	descriptiveTerm = "Motorway"	then apply	motorwayLine
Or	primaryRoute and natureOfRoad = "Dual Carriageway"	then apply	primaryRouteDualCarriagewayLine
Or	primaryRoute	then apply	primaryRouteLine
Or	descriptiveTerm = "A Road" and natureOfRoad = "Dual Carriageway"		aRoadDualCarriagewayLine
Or	descriptiveTerm = "A Road"	then apply	aRoadLine
Or	descriptiveTerm = "B Road" and natureOfRoad = "Dual Carriageway"		bRoadDualCarriagewayLine
Or	descriptiveTerm = "B Road"	then apply	bRoadLine
Or	descriptiveTerm = "Minor Road" and natureOfRoad = "Dual Carriageway"	then apply	minorRoadDualCarriagewayLine
Or	descriptiveTerm = "Minor Road"	then apply	minorRoadLine
Or	descriptiveTerm = "Local Street" and natureOfRoad = "Dual Carriageway"	then apply	localStreetDualCarriagewayLine
Or	descriptiveTerm = "Local Street"	then apply	localStreetLine
Or	descriptiveTerm = "Private Road – Publicly Accessible" and natureOfRoad = "Dual Carriageway"	then apply	privateRoadPublicAccessDualCarriagewayLine
Or	descriptiveTerm = "Private Road – Publicly Accessible"	then apply	privateRoadPublicAccessLine
Or	descriptiveTerm = "Private Road – Restricted Access" and natureOfRoad = "Dual Carriageway"	then apply	privateRoadRestrictedAccessDualCarriagewayLine
Or	descriptiveTerm = "Private Road – Restricted Access"	then apply	privateRoadRestrictedAccessLine
Or	descriptiveTerm = "Pedestrianised Street"	then apply	pedestrianisedStreetLine
Or	descriptiveTerm = "Alley"	then apply	alleyLine

## FerryLink

FerryLink features are drawn using the same two-pass method as RoadLink features. For the first pass use the style named 'ferryOutline' and for the second use the style named 'ferryLine'. The geometry for the line is to be based on the positions of the two nodes referenced by the FerryLink feature.

*Note: A FerryLink feature can only be drawn if both FerryNode features referenced by the FerryLink are present in the data.*



## Chapter 2.7 OS MasterMap themes

The themes to which a feature belongs are given as attributes of the feature in OS MasterMap data.

### Theme definitions

#### Address

##### Description

Locations with a known address to which postal mail may be sent.

##### Theme rule

feature type = AddressPoint.

##### Examples

Addressed buildings, PO Boxes, addressed moorings.

#### Administrative boundaries

##### Description

The limits of responsibility and representation defined for electoral and administrative purposes.

##### Theme rule

descriptiveGroup = Political Or Administrative.

##### Examples

Euro, county, district, ward and civil parish boundaries. Boundary stones and boundary mereing symbols.

## Buildings

### Description

Roofed constructions, usually walled. Includes permanent roofed constructions that exceed 8.0 m<sup>2</sup> in area (12.0 m<sup>2</sup> in private gardens). Exceptions are made for smaller buildings in such a detached position that they form relatively important topographic features. Storage tanks may be classified as buildings.

### Theme rule

descriptiveGroup = Building, Glasshouse or Buildings Or Structure.

### Examples

Barns, private houses, factories, schools.

## Heritage and antiquities

### Description

Features and cartography that depict sites or constructions of historic interest.

This theme is currently very limited in content.

### Theme rule

descriptiveGroup = Historic Interest.

### Examples

Text Site of, Hadrian's Wall, and so on.

## Water

### Description

Features that contain, delimit or relate to real-world objects containing water.

### Theme rule

descriptiveGroup = Tidal Water or Inland Water.

### Examples

Streams, lakes, rivers, tide lines and canals.

## Land

### Description

Man-made and natural features that delimit and describe the surface cover other than communication routes and buildings. This also includes all features relating to man-made and natural slope and cliff. All General features are also placed in the land theme.

Features with a descriptive group of landform are not topologically structured with the other features in the theme. This means that landform line features cross other line features without being broken at intersections, and landform area features overlap other area features.

### Theme rule

descriptiveGroup = General Surface, General Feature, Landform, Built Environment, Natural Environment, or Unclassified.

### Examples

Residential land, car parks, agricultural land, slopes, cliffs and quarries.

## Rail

### Description

Features related to travel by railway or tramway. Currently railway tunnels are not classified as railway and so will be present in the structures theme.

### Theme rule

descriptiveGroup = Rail

### Examples

Rail alignments, permanent way and railway land.

## Roads, tracks and paths

### Description

Features related to transport by vehicles, cycles or pedestrians.

This includes features that are road, made paths or text classified as road, track or path related. All tracks and unmade paths are not currently classified as such and so will be available in the land theme. Road tunnels are not classified as related to roads and so will be present in the structures theme.

**Roads:** Metalled communication routes usable by ordinary vehicles, that is, not those especially adapted for cross-country travel. Typical examples of metalling include tarmac, concrete, gravel, cinder and must constitute a specific and systematic improvement to allow the passage of vehicles for features to be described as a road. Both public and non-public roads are captured and identified.

**Tracks:** Non-metalled communications routes, including those utilised by agricultural and other especially adapted vehicles. Exposure of underlying subsurface materials through erosion by vehicular traffic and the intermittent application of metalling to features that are predominantly tracks does not constitute a feature that should be described as a road.

**Paths:** Metalled or non-metalled communication routes for use by cyclists or pedestrians. Unmade paths are those without metalling and are only captured when they are continuous between identifiable points.

Theme rule

descriptiveGroup = Roadside, Road Or Track or Path.

Examples

Road section, roundabouts, central reservations, cycle paths.

## Structures

Description

Man-made constructions that are not buildings. These may or may not obstruct passage at ground level.

Theme rule

descriptiveGroup = Structure.

Examples

Chimneys, pylons, masts, bridges, gantries and tunnels.

## Terrain and height

Description

All current height information included in OS MasterMap defining ground level. This is currently very limited.

Theme rule

Features that have the optional property HeightAboveDatum; or descriptiveGroup = Terrain And Height or Height Control.

Examples

Spot heights, tide lines and bench marks.

## Road Network

### Description

A topologically structured representation of the road network including road names and numbers.

### Theme rule

descriptiveGroup = Named Road, Motorway, A Road , B Road, Road Topology, Information Point, Ferry Connection and Network Connection.

### Examples

Road and ferry network lines and named road features.

## Road Routing Information (RRI)

### Description

A representation of the factors that may affect the choice of route of a driver.

### Theme rule

descriptiveGroup = Road Routing Information.

### Examples

Turn restrictions, height restrictions and one-way streets.

## Appendix 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 hot links to the relevant entries.

### **account**

Every OS MasterMap customer has an account. This is more than just a financial account, but is an overarching term for the agreements, orders, access rights and financial arrangements that a customer has with Ordnance Survey.

### **addressed premise**

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.

### **ancestry**

The ability of a [feature](#) to reference deleted features that have some relationship to it. Ancestry is not currently a feature of OS MasterMap.

### **application service provider(ASP)**

A company that offers individuals or enterprises access over the Internet to application programmes provider (for example, GIS) and related services that would otherwise have to be located in their own personal or enterprise computers.

This may also include access to relevant related data.

### **area feature**

A polygonised representation of a real-world object. Each area bounded by a continuous closed chain of [line features](#) is an area feature.

The geometry of an area feature consists of an external boundary, and optionally one or more inner boundaries (*holes* in the area feature). Each boundary is represented by a [polygon](#).

An area feature may be used to represent a building, field, lake, administrative area and so on.

**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](#).

**area of order**

The spatial extent of data requested by a customer as part of an [order](#). It may comprise a number of different spatial extents, but all of them will fall completely within the customer's area of interest.

**associated data**

[Datasets](#) 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 specifications as appropriate.

**attribute set**

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

**change-only update (COU)**

The ability to supply to a customer only those [features](#) that have been created or changed since a specified date.

Change-only supply includes a list of the [TOIDs](#) of deleted 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 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 (that is, 00:00) of that day.

**chunking**

The process of breaking up the [area of order](#) into manageable, physical [units of supply](#) (that is, files) for supply to the customer.



**comission**

Features are captured that do not conform to the specification. Features representing departed real-world objects remaining in the data.

**commercial service provider**

See [application service provider](#).

**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 in terms of an [area of interest](#), a list of [themes](#), a time period, the number of terminals the data will be used on and a set of terms and conditions.

**coordinate transformation**

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

**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 Options™, 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.

For example, TOPO, ROADS and ADDRESS are Ordnance Survey datasets from which the products Land-Line®, OSCAR® and ADDRESS-POINT are respectively derived.

**deletion**

1 The removal of a [feature](#) from the OS MasterMap database.

2 The inclusion of the TOID of such a feature as a [departed feature](#) in [change-only update](#).

**delivery mechanism**

The method of supply of data to a customer (for example, off-line, online).

**departed feature**

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

**descriptive group**

See [descriptiveGroup](#)

**descriptive term**

See [descriptiveTerm](#)

**digital 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.

**The Digital National Framework™ (DNF®)**

A nationally consistent geographic referencing framework for Great Britain. Comprising the National Grid and the National Topographic 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.

**direct sale**

A direct transaction between Ordnance Survey and a [customer](#).

**direct sale price**

Those prices that are applied where Ordnance Survey sell OS MasterMap-based products and services directly to customers.

**e-delivery**

The delivery of Ordnance Survey digital products and services to customers by electronic means, primarily by use of Internet technology.

**e-ordering**

The ability for customers to request the supply of products and services by the use of Internet technology.

**estimate**

A single price being offered to the OS MasterMap customer, as the cost of a proposed service definition agreement.

**event type**

The type of event that has resulted in a new version of a [feature](#). This could be created, modified or deleted.

**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 attribute**

See [attribute](#).

**feature code**

See [featureCode](#)

**feature topology**

See [topology](#).

**feature type**

A high level grouping of features that are treated in a similar way; for example TopographicPoint or RoadLink 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 (for example, Internet).

**geoid**

An imaginary shape for the Earth defined by mean sea level and its imagined continuation under the continents at the same level of gravitational potential.

**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 Mark-up 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](#).

**independent polygon**

One of the options for OS MasterMap product feature geometry/topology, 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.

This is distinct from the [topological polygon](#) product. The difference only lies in the representation of polygons – there is no difference in point and line geometry types.

**inferred links**

Line features representing inferences about the real world, rather than topographic statements of fact. These sensibly subdivide certain types of [area feature](#) where there is no appropriate topographic detail. They are normally used to:

- divide road sections;
- separate individual garden plots in residential areas where no dividing fence, hedge or wall exists;
- close junctions between roads and car parks or hard standing areas; and
- close fields that have simple breaks in the hedge or wall, rather than gates.

These are automatically created using software.

**layer**

A layer is a group of related OS MasterMap [themes](#). A layer may consist of one or more themes. For instance, the Topography Layer is composed of nine themes, whereas the Address Layer contains only one theme.

**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 represent(s) 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. Not to be confused with [polyline](#) or line segment feature.

**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 (such as part or all of a fence), the boundary of an area (such as a house) or both (such as a fence around a field).

**local holdings**

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

**make**

An attribute indicating whether the land surface is natural or man-made. See [make](#) attribute.

**media supply**

See [off-line supply](#).

**metadata**

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

**National GPS Network**

The infrastructure of active and network passive [GPS](#) reference stations that allow surveyors to determine precise coordinates in GPS and British [National Grid spatial reference systems](#).

The National GPS Network 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 entity (that is, one [feature](#)) represents one [real-world object](#) (for example, a building or land parcel).

**off-line supply**

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

**orthorectified imagery**

The Imagery Layer is orthorectified. An orthoimage 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.

**pay as you go**

See [pay-as-you-use service](#).

**pay-as-you-use service**

A service provided by [Licensed Partners](#) giving access to Ordnance Survey data for business use on a transaction basis as an added-value service.

**PAYU**

Pay As You Use.

**period licence**

A licence to use a data product, or any other value-added service or product derived from detailed datasets, for business use for an agreed period of one or more years. It covers the initial supply of the data, and supply of update.

**period-licence service**

A service provided to customers by Ordnance Survey or [Licensed Partners](#) giving access to Ordnance Survey data for business use, including update maintenance. The service will be for a defined period. These services will be available under a [Period licence](#) agreement.

**physical level**

A [feature attribute](#) giving an ordinal classification applied to vertical relationships between various [features](#) or within feature collections.

In the OS MasterMap context, this is the level at which the feature lies (that is, underground, obscured, ground level, or a level above ground).

**physical presence**

A feature attribute indicating whether a feature represents an obstructing or non-obstructing real-world object. Also includes several other possible values.

**point**

See [Point](#).

**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**

The polygon geometry type is used to specify the outer and inner boundaries of an [area feature](#). In [topological polygon](#) data, a polygon consists of a closed chain of [line](#) features, specified by reference to the [TOIDs](#) of those line features. Each line feature is used either forwards or backwards in the chain. In [independent polygon](#) data, a polygon consists of an ordered list of coordinated points explicitly specifying the polygon geometry.

**polyline**

See [Polyline](#).

**positional accuracy**

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

**property**

See [attribute](#).

In GML documents this term has a formal meaning that is not used elsewhere.

**real time**

An immediate response. The processing of data by a computer as rapidly as the data is input, or within some small upper limit of response time.

This is **not** synonymous with online.

**Real-world object**

The real thing represented by a [feature](#). For instance, a building, a section of fence, the boundary of a wood a sharp change of gradient.

**rectangle**

See [Rectangle](#).

**representative point**

A [point feature](#) used to represent a [real-world object](#) (for example, centroids, seeds, area labels). Representative points are not included in OS MasterMap data.

**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.



**SLA**

Service level agreement.

**spatial reference system**

The term used in [GML](#) (and hence in OS MasterMap specifications) for the definition that allows spatial positions to be stated as coordinate [tuples](#). 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.

**surface make**

See [make](#).

**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, however data is currently updated on a tile basis.

**TOID**

A number that uniquely identifies every feature. No intelligence (for example, its coordinate position) about the feature can be derived from either the allocated number or the process by which it is allocated.

The TOID will remain with the feature throughout its life and will not be reassigned to a new feature when the existing feature is deleted.

**topological polygon**

One of the options for OS MasterMap product feature geometry/topology, in which area features use references to line features to describe their geometry. In topological output, the bounding line between two [area features](#) will only be represented once, as a [line feature](#). The two area features will contain a reference to this line feature as part of their bounding line, rather than explicitly describing the geometry of that line themselves.

This is distinct from the [independent polygon](#) product.

**topology**

A fully structured data model in which [area features](#) reference the [line features](#) that bound them and bounding lines are shared between area features. As such, areas know which areas they are surrounded by and which areas they contain. OS MasterMap data is not supplied in fully topological form.

**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 (that is, files) for supply to the customer.

**version**

See [version](#).

**version date**

See [versionDate](#).

**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 Mark-up 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 mark-up tags are unlimited and self defining. XML is a simpler and easier to use subset of the Standard Generalised Mark-up Language (SGML), the standard for how to create a document structure

## Appendix B Product and service performance report form

Ordnance Survey welcomes feedback from its customers about OS MasterMap.

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: ..... Phone:.....

Organisation: ..... Fax: .....

Address: ..... Email: .....

.....

..... Customer account number: .....

Postcode: ..... Date of submission of form: .....

Please record your comments or feedback in the space below. We will acknowledge receipt of your form within 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:

Customer Contact Centre, Ordnance Survey, Romsey Road, SOUTHAMPTON, SO16 4GU.

Fax: 023 8030 5477