



DNF Reference Objects

Principles for selection and their application to OS MasterMap

Technical report



Responsibility for Content

Les Rackham, Chair of DNF Technical Group is responsible for the content of this document.

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Foreword

The Digital National Framework (DNF) is an industry standard for integrating and sharing business and geographic information from multiple sources. It is being developed for use within the United Kingdom although the concepts and principles could be applied elsewhere. It aims to be: (i) definitive by using a detailed and maintained topographic reference base, (ii) inclusive by being open and adopting industry best practice, (iii) structured and formalised to the extent that data once created can be shared and used many times, (iv) reliable through the delivery of data integrity, (v) cost-effective through reduction in the costs of data from multiple sources and (vi) flexible by enabling information exchange.

The basic principles at the core of DNF are as follows:

- ~ The concept and methods shall be driven by the strategic needs of the wider GI community and the needs of the information industry;
- ~ Data should be collected only once and then re-used;
- ~ Base reference data should be captured at the highest resolution whenever economically possible.
- ~ Information following capture may, where appropriate, be used to meet analysis and multi-resolution publishing requirements.
- ~ DNF will incorporate and adopt existing *de facto* and *de jure* standards, wherever they are proven and robust.

DNF is being developed and promoted by an industry body with membership drawn from data providers, system vendors and integrators and users. Both the commercial and government sectors within Great Britain are represented. All members have a common interest in the integration, sharing and utilisation of geographic information. Direction and strategy comes from an Expert Group. This in turn oversees and approves the work of a Technical Group responsible for the development of all technical documentation including this document.

This document is one of a series of technical documents being developed in support of DNF. Included in the series are data models, technical guides, guidelines, best practice, examples and case studies. Web-based services such as identifier registration are also being developed in support of this documentation.

For more information on the Digital National Framework visit <http://www.dnf.org> .

If you have any comments or suggestions on this document, please e-mail contact@dnf.org , your response will be acknowledged.



1 Introduction

1.1 Purpose of the document

This report sets out principles for establishing a set of recommended DNF Reference Objects derived from existing sources which can be promoted and disseminated by DNF. These principles are then applied to the existing OS MasterMap® objects in the Topography Layer to (i) illustrate how these principles may be used and (ii) form the basis for the publication of an initial set of recommended DNF Reference Objects. A table showing all OS MasterMap topographic objects with recommended DNF Reference Objects is given at Annexe A.

The principles and the selection were the outcome of a workshop held on 25th May attended by a cross-section of members of the DNF Expert Group^{1 2}.

The purpose of this paper is to report formally to the DNF Technical and Expert Groups and disseminate the results to a wider audience pending the production of a Technical Guide and the publication of a feature catalogue on the DNF website.

Note

Contents of this report are interim pending the development of a DNF Technical Guide

2 Scope

The principles set out apply only to reference objects on land; principles relating to marine objects are being developed.

The principles are applied to the OS MasterMap Topography Layer in the first instance but they could be applied more widely, albeit with some amendment, in the future.

¹ Attendees: Peter Hanson, Infotech; Jamie Justham, Dotted Eyes; John Laxton, BGS; Mike Osborne, SeaZone; Peter Parlslow, UKHO; Jonathan Simmons, OS; Les Rackham, Chair of DNF Technical Group.

² The selection has been modified slightly since the Workshop to conform more consistently to the principles and confirmed through feedback from attendees.



3 Definition of terms

3.1 Terms

Where definitions include terms defined elsewhere then these terms are shown in *italics*.

See <http://www.dnf.org/Pages/technical%20guidance/terminology.asp> for a full list of terms used in the Digital National Framework.

Application Reference Object

Geographic Object which is referenced by a *Business Object* in an application. The Application Reference Object can refer to one to many *DNF Reference Objects*

Business Object

Object which is processed by an application and needs to be located relative to a *Geographic Object*

DNF Reference Base

Framework of reference made up of *DNF Reference Objects* which occupy the area of interest and to which *Application Reference Objects* may be related

DNF Reference Object

Geographic object that forms part of the DNF Reference Base which may be referenced by other objects

Geographic Object

Abstraction or application view of a real world object which has a fixed and identifiable location on the Earth's surface

Geometry primitive

Geometric object representing a single, connected part of space e.g. point, line or polygon

Representation

In the context of DNF, the depiction of a *Geographic Object* using *Geometry Primitives* defined by coordinates based on a spatial referencing system using coordinates



3.2 Abbreviations

DNF	Digital National Framework
INSPIRE	INfrastructure for SPatial InfoRmation in Europe
ISO	International Organization for Standardization
OS	Ordnance Survey
OSMM	OS MasterMap

3.3 DNF, ISO and INSPIRE terms

There are some differences between the terms relating to geographic objects used in DNF, ISO and INSPIRE.

A “geographic object” in DNF equates to:

- a “feature” in ISO where a feature is defined as, “an abstraction of a real world phenomena”;
- a “spatial object” in INSPIRE. (Note: “spatial object” in ISO has a different meaning, “object used for representing a spatial characteristic”.)

4 Background

A fundamental concept within DNF is that there exists a reference base to which geographic objects, defined in the context of particular applications, may be related or referenced. In some types of applications business objects may be referenced directly to the reference base.

Figure 1 gives a further illustration of these concepts.

The reference base, referred to as the DNF Reference Base is made up of DNF Reference Objects. Beyond stating that, “Currently, DNF Reference Objects are derived from OS MasterMap Topography but they could be derived from other sources”, no recommendations have been published by DNF on the principles to be adopted in selecting geographic objects as DNF Reference Objects.

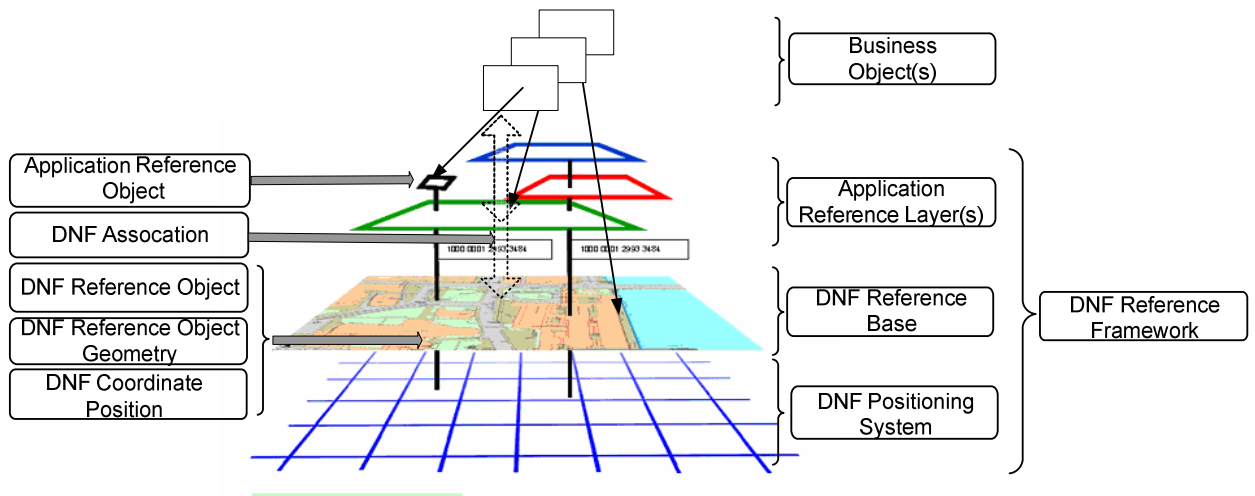


Figure 1: DNF data architecture

Without more rigour in the way that the DNF Reference Base is defined, it is not possible to claim that DNF has an established reference base.

The DNF Feature Cataloguing sub-group has been working on the adoption of feature cataloguing within DNF and promoting this through the development of a cataloguing tool. This tool, based on Microsoft Access, can be used to create catalogues conforming to the International Standard ISO 19110 – Methodology for Feature Cataloguing.

OS has shown how the tool can be applied to the Topography Layer in OSMM. This development created the opportunity to review the objects in OSMM and arrive at a set of recommended DNF Reference Objects.

Members of the Expert Group were invited to a workshop held at Ordnance Survey on 25th May 2007. The aims of the workshop were as follows:

- To determine the principles for establishing a set of candidate or recommended DNF Reference Objects derived from existing sources which can be promoted and disseminated by DNF;

and the objectives:

- Establish clarity and agreement on the nature and purpose of DNF Reference Objects;
- Ensure the principles have wide applicability;
- Test the principles by applying them to the existing OS MasterMap catalogue;
- Agree on actions and steps to be taken after the Workshop.



This document is mainly derived from the results of the Workshop.

5 DNF Reference Object

5.1 Nature of DNF Reference Object

A DNF Reference Object is an abstraction of the real world i.e. it is data and not the physical thing itself. By abstraction is meant the process of selecting only those real world objects and their attributes and behaviours which are relevant to a particular application.

A DNF Reference Object can be represented by, or further abstracted into, a number of geometry types (e.g. points, lines or areas) but in practice a DNF Reference Object is likely to be related to one geometry type if it is to be derived from a particular dataset such as OSMM (in OSMM terms a topographic point, topographic line or topographic area).

5.2 General principles for the selection of DNF Reference Objects

The following are a set of general principles for selection of DNF Reference Objects. They have been framed in the context of land objects but many should be applicable to marine objects also.

Principles need to be applied at two levels:

1. The dataset level;
2. The object class or feature type level.

In selecting a dataset from which DNF Reference Objects are to be selected the following should obtain. The dataset should:

1. Be based on a **published and consistent data specification**.
2. Use a **consistent** approach to the classification of object or feature types;
3. Provide for **complete coverage of the earth's surface** of the area in scope by the objects or their representations³. Object instances may overlap each other e.g. roads under bridges;

³ This is based on a two-dimensional view. It may not be possible to apply this principle absolutely in all cases and certainly not in sea areas



4. Use **vector geometry and a recognised coordinate referencing system to represent objects**;
5. Use **only one geometry type** i.e. point, line or area to represent an object or feature type.
6. Be **maintained** to a published specification.
7. Be **freely available**⁴ to all users.
8. Be **documented using a feature catalogue meeting DNF requirements** (i.e. conforming to ISO 19110).

.Within the dataset a type or class of objects selected should:

1. Have **wide applicability** – i.e. satisfying a wide-range of applications or use cases.
2. Be **discernible** – i.e. generally visible and identified or perceived as geographic objects in the real world i.e. things with a physical presence.
3. Be based on a **clear definition** – i.e. a lack of ambiguity in the definition of the object such that its consistent recognition and representation is assured.
4. Have **fine granularity** - more atomic units should be favoured over the less atomic - the finer the granularity and homogeneity the better.
5. Be **complete** - where an object type is defined as being present in a dataset, then all object instances within scope should be reasonably complete in the dataset.
6. Have a **defined life-cycle** - the life cycle of objects should be documented and maintained.
7. Be **identified and versioned** - object instances should carry an identifier and a version number.

After selection of the objects the subset need to provide as complete coverage as is feasible.

⁴ But not necessarily available free.



6 Principles applied to OS Master Map Topography Layer

6.1 Geographic objects in OSMM

Ordnance Survey (OS) refers to “features” and not objects in OSMM. Further, the OS use of “feature” which is “the basic unit of OS MasterMap Topography Layer” is at odds with ISO usage. The OS “feature” is a topographic point, line or polygon not the geographic object or feature directly abstracted from the real world. Strictly, it is these geometric “features” which are attributed. However, it is possible to infer the geographic object and its classification from the attribution of the “features”.

As a contribution to the development of DNF, Ordnance Survey has derived a feature catalogue conforming to ISO 19110 in which 107 object or feature types have been identified. There has been some rationalisation and filtering of all possible combinations of attributes particularly in relation to vegetation.

The feature catalogue has not been published but this is planned.

6.2 At the dataset level

The OSMM Topography Layer generally meets the principles framed for the dataset level:

1. It is based on a published and consistent data specification which is available. There are some differences between urban, rural and mountain and moorland areas in terms of what objects are captured, their positional accuracy and their representation e.g. rivers, streams and drains.
2. There is a hierarchical classification of objects into themes, descriptive groups and descriptive terms (not always present). Physical level and presence are also indicated.
3. Complete coverage of Great Britain is available.
4. It uses vector geometry and a recognised coordinate referencing system to represent objects i.e. the British National Grid which uses the OSGB36® geodetic datum and a single Transverse Mercator projection for the whole of Great Britain.
5. It uses only one geometry type i.e. point, line or polygon to represent an object or feature type.
6. It is maintained to a published specification.
7. It is available to all users subject to agreeing terms and conditions.



8. Although it has now been documented using a feature catalogue meeting DNF requirements, this has not been published to date.

6.3 At the object level

At the object class or feature type level, the following interpretations of the general principles were made resulting in a number of exclusions.

1. **Applicability** – no objects are excluded on the grounds of applicability
2. **Discernability** – the following exclusions were made:

Lack of physical presence:

- All **Cartographic Text** on the basis that this is not a direct abstraction of a real world object but a cartographic label for an object.
- All **Cartographic Symbols** because (i) they have no physical presence e.g. Boundary Merging Symbol, Road Flow Direction Symbol, Water Flow Direction Arrow, (ii) their physical presence is very minor or ancillary to an object also represented in the data e.g. Culvert Symbol, Railway Switch Symbol or (iii) there is no physical presence on the surface e.g. Site of Heritage.
- **Spot features** i.e. Spot Heights
- **Minor objects represented by points** ie. Bench Marks and Culverts (represented by a point as opposed to a line)
- **“Virtual” objects represented by lines**
 - All Administrative Boundaries
 - Cable Alignment – Overhead (arguably represents a physical presence but strictly only an alignment)
 - Lattice Tower Edge – tower is not virtual but the projection of its outline on the ground is
 - Polygon Closing Line
 - Property Closing Line
 - Step Edge – not strictly virtual but certainly symbolic

3. Clear definition



Ambiguity of meaning – there are a number of objects represented by points that have inexact meaning unless seen in a particular context e.g. Natural Landform Features, Tidal Feature, Unclassified Point and Water Feature.

Ambiguity of spatial definition (and/or incomplete coverage) - i.e.

- Bottom of Cliff – mainly in coastal areas
- Bottom of Slope – not natural slopes unless a boundary is mered to them
- Edge of Artificial Landform
- Edge of Natural Landform
- Top of Cliff – mainly in coastal areas
- Top of Slope – not natural slopes unless a boundary is mered to them
- Artificial Slope
- Cliff – mainly coastal areas
- Manmade Landform Feature
- Working Slopes – active slopes within quarries and other workings.

4. Granularity

No exclusions

5. Completeness

Incomplete coverage – the following exclusions are made:

- Electricity Pole – rural areas only
- Positioned Boulder – boulders selected subjectively
- Positioned Coniferous Tree – trees selected subjectively
- Positioned Non-Coniferous Tree – trees selected subjectively

6. Life-cycle



No exclusions

7. Identified and versioned

No exclusions

A full list of OSMM topographic objects is given in Annexe A together with a recommendation for inclusion or exclusion as a DNF Reference Object.

NB – there is insufficient information in the table in Annexe A to be able to automatically identify the objects. Until the OSMM feature catalogue is published giving the attribution of the objects this will not be possible.

7 Conclusions

The above represents a first attempt at defining a coherent set of DNF Reference Objects for use on land in Great Britain based on the OSMM Topography Layer.

It is based on a set of principles that should be applicable to other datasets.

Further refinement will be needed but it is believed that this represents a useful “first cut” which can be published via the DNF website.

8 References

Publications

- | | | |
|-------|-----------------|---|
| 2005, | ISO, | Geographic information – Methodology for feature cataloguing |
| 2007 | Ordnance Survey | OS MasterMap User Guides |
| | | http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/userguides/index.html |



Annexe A

Table of OS MasterMap topographic objects with recommended DNF Reference Objects

Type Name	Code	Representation	DNF ?
Artificial slope	osgb:artificialSlope	osgb:TopographicArea	NO
Bench Mark	osgb:benchMark	osgb:TopographicPoint	NO
Bench Mark Symbol	osgb:benchMarkSymbol	osgb:CartographicSymbol	NO
Bottom of cliff	osgb:bottomOfCliff	osgb:TopographicLine	NO
Bottom of slope	osgb:bottomOfSlope	osgb:TopographicLine	NO
Boulders	osgb:boulders	osgb:TopographicArea	YES
Boundary Mereing Symbol	osgb:boundaryMereingSymbol	osgb:CartographicSymbol	NO
Boundary post or stone	osgb:boundaryPostOrStone	osgb:TopographicPoint	YES
Building	osgb:building	osgb:TopographicArea	YES
Building Archway	osgb:buildingArchway	osgb:TopographicArea	YES
Building edge - Overhanging	osgb:buildingEdgeOverhanging	osgb:TopographicLine	YES
Building Text	osgb:buildingText	osgb:CartographicText	NO
Building wall - External	osgb:buildingWallExternal	osgb:TopographicLine	YES
Building wall - Internal	osgb:buildingWallInternal	osgb:TopographicLine	YES
Built Environment Text	osgb:builtEnvironmentText	osgb:CartographicText	NO
Cable alignment - Overhead	osgb:cableAlignmentOverhead	osgb:TopographicLine	NO
Cliff	osgb:cliff	osgb:TopographicArea	NO



Type Name	Code	Representation	DNF ?
Coastal slopes	osgb:coastalSlopes	osgb:TopographicArea	NO
Coniferous trees	osgb:coniferousTrees	osgb:TopographicArea	YES
Coppice	osgb:coppice	osgb:TopographicArea	YES
County Boundary	osgb:countyBoundary	osgb:BoundaryLine	NO
Culvert	osgb:culvert	osgb:TopographicPoint	NO
Culvert alignment	osgb:culvertAlignment	osgb:TopographicLine	YES
Culvert Symbol	osgb:culvertSymbol	osgb:CartographicSymbol	NO
Development	osgb:development	osgb:TopographicArea	YES
District Boundary	osgb:districtBoundary	osgb:BoundaryLine	NO
Edge of artificial landform	osgb:edgeOfArtificialLandform	osgb:TopographicLine	NO
Edge of inland water	osgb:edgeOfInlandWater	osgb:TopographicLine	YES
Edge of natural landform	osgb:edgeOfNaturalLandform	osgb:TopographicLine	NO
Edge of road or track	osgb:edgeOfRoadOrTrack	osgb:TopographicLine	YES
Electoral Boundary	osgb:electoralBoundary	osgb:BoundaryLine	NO
Electricity pole	osgb:electricityPole	osgb:TopographicPoint	NO
Footbridge	osgb:footbridge	osgb:TopographicArea	YES
Ford	osgb:ford	osgb:TopographicArea	YES
Foreshore	osgb:foreshore	osgb:TopographicArea	YES
Foreshore Text	osgb:foreshoreText	osgb:CartographicText	NO
Glasshouse	osgb:glasshouse	osgb:TopographicArea	YES
Heath	osgb:heath	osgb:TopographicArea	YES
Historic course	osgb:historicCourse	osgb:TopographicArea	NO



Type Name	Code	Representation	DNF ?
Historic Feature	osgb:historicFeature	osgb:TopographicArea	YES
Historic Feature Text	osgb:historicFeatureText	osgb:CartographicText	NO
Historic structure	osgb:historicStructure	osgb:TopographicPoint	YES
Inland water	osgb:inlandWater	osgb:TopographicArea	YES
Inland Water Text	osgb:inlandWaterText	osgb:CartographicText	NO
Lattice tower	osgb:latticeTower	osgb:TopographicArea	YES
Lattice tower edge	osgb:latticeTowerEdge	osgb:TopographicLine	NO
Level crossing	osgb:levelCrossing	osgb:TopographicArea	YES
Manmade Feature Text	osgb:manmadeFeatureText	osgb:CartographicText	NO
Manmade landform feature	osgb:manmadeLandformFeature	osgb:TopographicArea	NO
Manmade Landform Text	osgb:manmadeLandformText	osgb:CartographicText	NO
Manmade surface	osgb:manmadeSurface	osgb:TopographicArea	YES
Manmade Surface Text	osgb:manmadeSurfaceText	osgb:CartographicText	NO
Marsh	osgb:marsh	osgb:TopographicArea	YES
Mean high water line	osgb:meanHighWaterLine	osgb:TopographicLine	YES
Mean low water line	osgb:meanLowWaterLine	osgb:TopographicLine	YES
Minor detail	osgb:minorDetail	osgb:TopographicLine	YES
Mixed natural	osgb:mixedNatural	osgb:TopographicArea	YES
Mixed vegetation	osgb:mixedVegetation	osgb:TopographicArea	YES
Moveable structure	osgb:moveableStructure	osgb:TopographicArea	YES
Natural landform feature	osgb:naturalLandformFeature	osgb:TopographicPoint	NO
Natural Landform Text	osgb:naturalLandformText	osgb:CartographicText	NO



Type Name	Code	Representation	DNF ?
Natural surface	osgb:naturalSurface	osgb:TopographicArea	YES
Natural Surface Text	osgb:naturalSurfaceText	osgb:CartographicText	NO
Non coniferous trees	osgb:nonConiferousTrees	osgb:TopographicArea	YES
Non obstructing feature	osgb:nonObstructingFeature	osgb:TopographicLine	YES
Obstructing feature	osgb:obstructingFeature	osgb:TopographicLine	YES
Orchard	osgb:orchard	osgb:TopographicArea	YES
Overhead Feature Text	osgb:overheadFeatureText	osgb:CartographicText	NO
Overhead structure	osgb:overheadStructure	osgb:TopographicArea	YES
Parish Boundary	osgb:parishBoundary	osgb:BoundaryLine	NO
Parliamentary Boundary	osgb:parliamentaryBoundary	osgb:BoundaryLine	NO
Path	osgb:path	osgb:TopographicArea	YES
Path alignment - Unmade	osgb:pathAlignmentUnmade	osgb:TopographicLine	YES
Pavement	osgb:pavement	osgb:TopographicArea	YES
Political or Administrative Text	osgb:politicalOrAdministrativeText	osgb:CartographicText	NO
Polygon closing line	osgb:polygonClosingLine	osgb:TopographicLine	NO
Positioned boulder	osgb:positionedBoulder	osgb:TopographicPoint	NO
Positioned coniferous tree	osgb:positionedConiferousTree	osgb:TopographicPoint	NO
Positioned Non coniferous tree	osgb:positionedNonConiferousTree	osgb:TopographicPoint	NO
Private garden	osgb:privateGarden	osgb:TopographicArea	YES
Property closing line	osgb:propertyClosingLine	osgb:TopographicLine	NO
Rail structure	osgb:railStructure	osgb:TopographicPoint	YES
Rail structure extent	osgb:railStructureExtent	osgb:TopographicArea	YES



Type Name	Code	Representation	DNF ?
Railway - Narrow gauge track	osgb:railwayNarrowGaugeTrack	osgb:TopographicLine	YES
Railway - Standard gauge rail	osgb:railwayStandardGaugeRail	osgb:TopographicLine	YES
Railway buffer	osgb:railwayBuffer	osgb:TopographicLine	YES
Railway building	osgb:railwayBuilding	osgb:TopographicArea	YES
Railway land - manmade	osgb:railwayLandMade	osgb:TopographicArea	YES
Railway land - natural	osgb:railwayLandNatural	osgb:TopographicArea	YES
Railway Switch Symbol	osgb:railwaySwitchSymbol	osgb:CartographicSymbol	NO
Railway Text	osgb:railwayText	osgb:CartographicText	NO
Reeds	osgb:reeds	osgb:TopographicArea	YES
Ridge or rock line	osgb:ridgeOrRockLine	osgb:TopographicLine	YES
Road	osgb:road	osgb:TopographicArea	YES
Road Flow Direction Symbol	osgb:roadFlowDirectionSymbol	osgb:CartographicSymbol	NO
Road Text	osgb:roadText	osgb:CartographicText	NO
Roadside building	osgb:roadsideBuilding	osgb:TopographicArea	YES
Roadside structure	osgb:roadsideStructure	osgb:TopographicPoint	YES
Roadside structure extent	osgb:roadsideStructureExtent	osgb:TopographicArea	YES
Roadside Text	osgb:roadsideText	osgb:CartographicText	NO
Rock	osgb:rock	osgb:TopographicArea	YES
Rough grass	osgb:roughGrass	osgb:TopographicArea	YES
Scattered boulders	osgb:scatteredBoulders	osgb:TopographicArea	YES
Scattered coniferous trees	osgb:scatteredConiferousTrees	osgb:TopographicArea	YES



Type Name	Code	Representation	DNF ?
Scattered non-coniferous trees	osgb:scatteredNonConiferousTrees	osgb:TopographicArea	YES
Scattered rock	osgb:scatteredRock	osgb:TopographicArea	YES
Scree	osgb:scree	osgb:TopographicArea	YES
Scrub	osgb:scrub	osgb:TopographicArea	YES
Site of Heritage	osgb:siteOfHeritage	osgb:CartographicSymbol	NO
Spot height	osgb:spotHeight	osgb:TopographicPoint	NO
Step edge	osgb:stepEdge	osgb:TopographicLine	NO
Steps	osgb:steps	osgb:TopographicArea	YES
Steps limit	osgb:stepsLimit	osgb:TopographicLine	YES
Structure	osgb:structure	osgb:TopographicPoint	YES
Structure extent	osgb:structureExtent	osgb:TopographicArea	YES
Structure Text	osgb:structureText	osgb:CartographicText	NO
Terrain and Height Text	osgb:terrainAndHeightText	osgb:CartographicText	NO
Tidal feature	osgb:tidalFeature	osgb:TopographicPoint	NO
Tidal road	osgb:tidalRoad	osgb:TopographicArea	YES
Tidal water	osgb:tidalWater	osgb:TopographicArea	YES
Tidal Water Text	osgb:tidalWaterText	osgb:CartographicText	NO
Top of cliff	osgb:topOfCliff	osgb:TopographicLine	NO
Top of slope	osgb:topOfSlope	osgb:TopographicLine	NO
Track	osgb:track	osgb:TopographicArea	YES
Traffic calming	osgb:trafficCalming	osgb:TopographicArea	YES



Type Name	Code	Representation	DNF ?
Traffic calming edge	osgb:trafficCalmingEdge	osgb:TopographicLine	YES
Triangulation point or pillar	osgb:triangulationPointOrPillar	osgb:TopographicPoint	YES
Tunnel edge	osgb:tunnelEdge	osgb:TopographicLine	YES
Unclassified Point	osgb:unclassifiedPoint	osgb:TopographicPoint	NO
Unclassified Text	osgb:unclassifiedText	osgb:CartographicText	NO
Unknown surface	osgb:unknownSurface	osgb:TopographicArea	YES
Upper level of communication	osgb:UpperLevelOfCommunication	osgb:TopographicArea	YES
Vegetation limit	osgb:vegetationLimit	osgb:TopographicLine	YES
Verge	osgb:verge	osgb:TopographicArea	YES
Water feature	osgb:waterFeature	osgb:TopographicPoint	NO
Water Flow Direction Symbol	osgb:waterFlowDirectionSymbol	osgb:CartographicSymbol	NO
Water structure - manmade	osgb:waterStructureManmade	osgb:TopographicArea	YES
Water structure - natural	osgb:waterStructureNatural	osgb:TopographicArea	YES
Working slopes	osgb:workingSlopes	osgb:TopographicArea	NO

End of document