ORDNANCE SURVEY GB

OS OPEN GREENSPACE™ – TECHNICAL SPECIFICATION

OFFICIAL
Ver 1.3

Ordnance Survey

Version history

Version	Date	Description
1.0	03/2017	Initial release.
1.1	01/2019	Introduction of GeoPackage format to the product.
1.2	04/2021	Introduction of vector tiles format to the product.
1.3	04/2023	GeoPackage format attribute name changes. Formatting and content improvements. Addition of a new annex containing links to product support resources.

Purpose of this document

This document provides information about and insight into the OS Open Greenspace product and its potential applications. For information on the contents and structure of OS Open Greenspace, please refer to the Overview and Getting Started Guide.

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

Contents

1. Introduction to the product

OS Open Greenspace depicts the location and extent of greenspaces, such as parks and sports facilities, which are likely to be accessible to the public. Where appropriate, it also includes access points to show how to get into these sites. Its primary purpose is to enable members of the public to find and access greenspaces near them for exercise and recreation.

OS Open Greenspace is an OpenData product. It is part of the OS OpenData portfolio, which currently consists of a range of datasets, such as OS VectorMap District, OS Open Map – Local, OS Terrain 50, and OS Open Roads. For more information on the OpenData portfolio, see the 'OS OpenData Downloads' page of the OS Data Hub (https://osdatahub.os.uk/downloads/open).

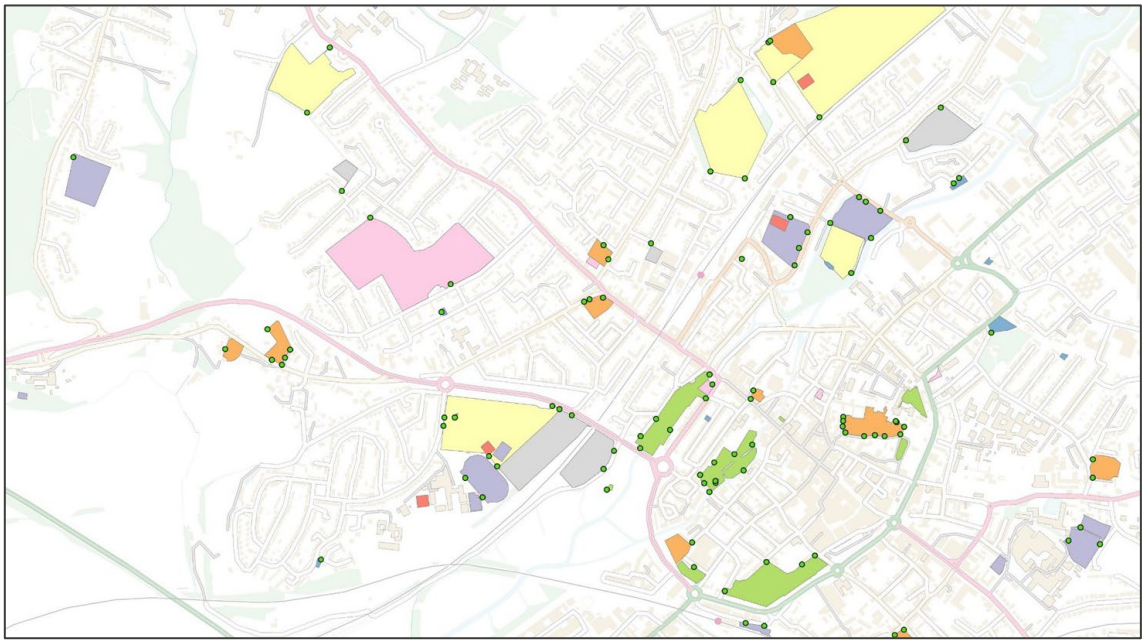

Figure 1: OS Open Greenspace polygons and Access Points overlaid on an OS OpenMap – Local basemap.

2. Data structure

The data structure of OS Open Greenspace in Geography Markup Language (GML) format is described by a Unified Modelling Language (UML) class diagram and accompanying tables containing text.

2.1 Precision

OS Open Greenspace geometry is published with a precision of two decimal places.

2.2 Classification scheme

OS Open Greenspace consists of the following classifications:

- Public parks or gardens
- Play spaces
- Golf courses
- Sports areas or playing fields
- Churchyards or burial grounds
- Allotments or community growing spaces

A full table of these classifications and associated Ordnance Survey real-world terms and their definitions is included in the Function Value Code List in Section 2.5.1.

2.3 Model overview

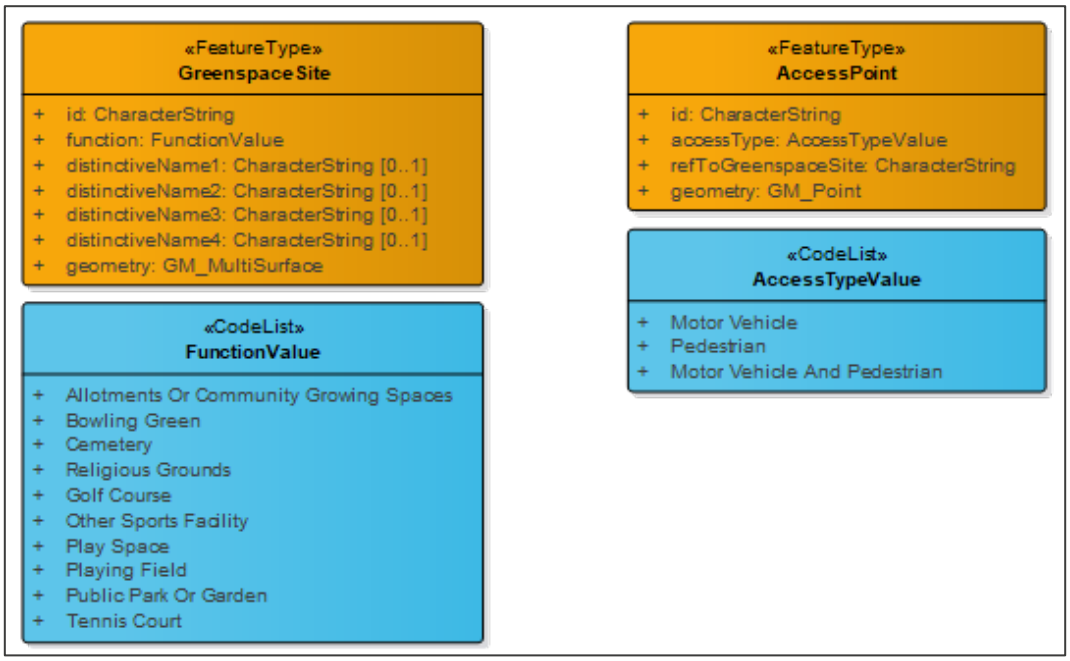

Figure 2: UML class diagram for the Greenspace Site and Access Point Feature Types, and the Function Value and Access Type Value Code Lists.

2.4 Feature types

This sub-section describes the two feature types (Greenspace Site and Access Point) available in the OS Open Greenspace product, giving the following information about each attribute:

Name and definition: The name of the attribute and what it is describing.

Attribute type: The nature of the attribute, for example, a numeric value or a code list value.

Length: The length of the field.

Multiplicity: Describes how many times this element is expected to be populated in the data. An attribute may be optional or mandatory within the product, and the values may be used in combination.

- '1' = Mandatory: There must be a value.
- '0..1' = Optional: If populated, a maximum of one attribute will be returned.

2.4.1 Greenspace Site

Greenspace Site features are polygons that depict the outer limits of the feature which may or may not have a physical boundary. These can be single or multi-part polygons.

«FeatureType» GreenspaceSite		
Definition: A spatial area object describing the geometry, extent, and function of a real-world feature. This does not imply a physical boundary.		
Attribute: id		
Definition: Unique identifier of the site.		
Type: CharacterString	Length: 38	Multiplicity: [1]
Attribute: function		
Definition: Description of the function of the site.		
Type: FunctionValue	Length: 40	Multiplicity: [1]
Attribute: distinctiveName1		
Definition: The name of the site.		
Type: CharacterString	Length: 254	Multiplicity: [0..1]
Attribute: distinctiveName2		
Definition: The name of the site.		
Type: CharacterString	Length: 254	Multiplicity: [0..1]
Attribute: distinctiveName3		
Definition: The name of the site.		
Type: CharacterString	Length: 254	Multiplicity: [0..1]

«FeatureType» GreenspaceSite		
Attribute: distinctiveName4		
Definition: The name of the site		
Type: CharacterString	Length: 254	Multiplicity: [0..1]
Attribute: geometry		
Definition: The geometry of the greenspace area.		
Type: GM_MultiSurface	Length: 20 000	Multiplicity: [1]

2.4.2 Access Point

Access Point features are point geometries that depict either vehicular or pedestrian access into a Greenspace Site.

«FeatureType» AccessPoint		
Definition: The spatial object type defining a point feature which would normally lie on the boundary of a site extent where there is access into or out of the site.		
Attribute: id		
Definition: The unique identifier of the Access Point.		
Type: CharacterString	Length: 38	Multiplicity: [1]
Attribute: accessType		
Definition: Describes the nature of the access permitted at the Access Point.		
Type: AccessTypeValue	Length: 40	Multiplicity: [1]
Attribute: refToGreenspaceSite		
Definition: The unique identifier of the Greenspace Site to which the Access Point relates.		
Type: CharacterString	Length: 38	Multiplicity: [1]
Attribute: geometry		
Definition: Location of the point.		
Type: GM_Point	Length: 50	Multiplicity: [1]

2.5 Code lists

A code list is a controlled set of allowable labels or codes represented as an alphanumeric attribute. This sub-section identifies the code lists used within OS Open Greenspace and describes their values.

2.5.1 Function Value

The Greenspace Site feature is attributed with a function with a data type of FunctionValue. The following table lists the codes which are used to populate this field and gives a description for each code:

Code List: FunctionValue http://www.os.uk/xml/codelists/OpenFunctionValue.xml Value defining the function of the greenspace	
Value	**Description**
Allotments or Community Growing Spaces	Areas of land for growing fruit, vegetables and other plants, either in individual allotments or as a community activity. Produce is for the grower's own consumption and not primarily for commercial activity.
Bowling Green	A specially prepared area intended for playing bowls.
Cemetery	Areas of land associated with burial areas.
Religious Grounds	Areas of land associated with churches and other places of worship. Only included where there are significant areas of greenspace (over 500m^2 of natural space – identified as surfaces that are not manmade, such as grass, woodland and bare earth).
Golf Course	A specially prepared area intended for playing golf.
Other Sports Facility	Land used for sports not specifically described by other categories. Includes those facilities where participation in sport is the primary use of the area.
Play Space	A specially prepared area intended for children's play, usually linked to housing areas or parks, and containing purpose-built equipment. Not captured if within schools or paid-for tourist attractions.
Playing Field	Large, flat areas of grass or specially designed surfaces, generally with marked pitches, used primarily for outdoor sports, i.e. football, rugby, or cricket.
Public Park or Garden	Areas of land designed, constructed, managed, and maintained as a public park or garden. These normally have a defined perimeter and free public access, and generally sit within or close to urban areas. Access is granted for a wide range of uses and not usually restricted to paths or tracks within the area. May include areas with managed facilities, such as benches and flowerbeds, and more natural areas.
Tennis Court	A specially prepared area intended for playing tennis.

2.5.2 Access Type Value

The Access Point feature is attributed with an accessType with a data type of AccessTypeValue. The following table lists the codes which are used to populate this field and gives a description for each code:

Code List: AccessTypeValue http://www.os.uk/xml/codelists/AccessTypeValue.xml Value describing the type of access indicated by the Access Point	
Value	**Description**
Motor Vehicle	Access Point permits access to motor vehicles.
Motor Vehicle and Pedestrian	Access Point permits access to motor vehicles and pedestrians.
Pedestrian	Access Point permits access to pedestrians.

3. Formats

OS Open Greenspace is available in the following formats:

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

3.1 Attribute mapping

The UML class diagram and accompanying feature type attribute tables used to describe the data structure in Section 2 are provided in GML format.

The naming of attributes between the formats varies due to the differing naming conventions associated with each format (for example, presence of underscores, character limitations and capitalisation). For example, Esri shapefile attribute names are limited to 10 characters, whereas GML has no character limit. The following tables map the attribute names for each feature type across the formats.

Note: A couple of attributes are not mapped to all formats; the absence of an attribute field is represented by 'N/A' in the table. The fid attribute is only available in GeoPackage format (this is a procedurally generated, non-persistent number required for some GIS applications to be able to read the data). GML and GeoPackage contain the geometry attribute which describes the geometry of the feature; this attribute is not applicable for the Esri shapefile or vector tiles formats as they apply their geometry visually.

3.1.1 Greenspace Site

Table 1: OS Open Greenspace attribute naming differences between GML, Esri Shapefile, GeoPackage and vector tiles for the Greenspace Site Feature Type.

GML	Esri shapefile	GeoPackage	Vector tiles
N/A	N/A	fid	N/A
id	id	id	id
function	function	function	function
distinctiveName1	distinctiveName1	distinctive_name_1	distinctive_name_1
distinctiveName2	distinctiveName2	distinctive_name_2	distinctive_name_2
distinctiveName3	distinctiveName3	distinctive_name_3	distinctive_name_3
distinctiveName4	distinctiveName4	distinctive_name_4	distinctive_name_4
geometry	N/A	geometry	N/A

3.1.2 Access Point

Table 2: OS Open Greenspace attribute naming differences between GML, Esri Shapefile, GeoPackage and vector tiles for the Access Point Feature Type.

GML	Esri shapefile	GeoPackage	Vector tiles
N/A	N/A	fid	N/A
id	id	id	id
accessType	accessType	access_type	access_type
refToGreenspaceSite	refToGSite	ref_to_greenspace_site	N/A
geometry	N/A	geometry	N/A

3.2 GML

The product is supplied in GML version 3.2.1. This sub-section describes how OS Open Greenspace is defined in GML. An understanding of XML (eXtensible Mark-up Language) and XML schemas is required.

GML is an XML grammar for expressing geographic features. GML serves as a modelling language for geographic systems, as well as an open interchange format for geographic transactions on the Internet. More information can be found on the 'Geography Markup Language' page of the Open Geospatial Consortium (OGC) website (http://www.opengeospatial.org/standards/gml).

The XML specifications that GML is based on are available from the World Wide Web Consortium (W3C) website (http://www.w3.org).

Information about Unicode and UTF-8 (the character encoding we use) is available on the Unicode Consortium website (http://www.unicode.org).

3.2.1 Use of examples

The examples in this section that mention specific data content are for demonstration purposes only and not intended for use.

3.2.2 Schema overview and location

XML schemas are used to define and validate the format and content of the GML. The GML version 3.2.1 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 to define the data content.

The Ordnance Survey application schema, *OSOpenGreenspace.xsd*, which is referenced by the data, is available on the 'OS Open' page (https://www.ordnancesurvey.co.uk/xml/open/index.html) of the 'XML file resources' section of our website.

3.2.3 Code list dictionaries

The product's two code lists are available at the following links:

- Function Value Code List: http://www.os.uk/xml/codelists/OpenFunctionValue.xml
- Access Type Value Code List: http://www.os.uk/xml/codelists/AccessTypeValue.xml

3.2.4 Example records

Greenspace Site

```
<os:featureMember>
  <ogsp:GreenspaceSite gml:id="id45CEA121-A4AA-51CD-E053-2362A00A34C0">
    <ogsp:function codeSpace="http://www.os.uk/xml/codelists/OpenFunctionValue">Playing Field
    </ogsp:function>
    <ogsp:distinctiveName1>Northfield Playing Field</ogsp:distinctiveName1>
    <ogsp:geometry>
      <gml:MultiSurface gml:id="id45CEA121-A4AA-51CD-E053-2362A00A34C0-0" srsName=
      "urn:ogc:def:crs:EPSG::27700" srsDimension="2">
        <gml:surfaceMember>
          <gml:Surface gml:id="id45CEA121-A4AA-51CD-E053-2362A00A34C0-1">
            <gml:patches>
              <gml:PolygonPatch>
                <gml:exterior>
                  <gml:LinearRing>
                    <gml:posList>391043.16 807998.57 391057.2 808010.9 391074.25 808015.9 391052
                    808085.2 391065.3 808092.15 391044.3 808164.2 390937.15 808226.55 390926.25
                    808254.55 390928.74 808288.15 390793.65 808280.8 390788.65 808305.8 390782.15
                    808316.1 390754.55 808328.6 390739.05 808327.05 390684 808228.65 390728.45
                    808181.85 390753.38 808138.18 390889.44 808144.4 390893.2 808096.18 390893.24
                    808095.64 390893.26 808095.52 390895.05 808072.4 390902.79 807954.2 390907.39
                    807954.45 390916.95 807961.9 391023.85 807965.95 391027.5 807985.05 391043.16
                    807998.57</gml:posList>
                  </gml:LinearRing>
                </gml:exterior>
              </gml:PolygonPatch>
            </gml:patches>
          </gml:Surface>
        </gml:surfaceMember>
      </gml:MultiSurface>
    </ogsp:geometry>
  </ogsp:GreenspaceSite>
</os:featureMember>
```

Figure 3: GML example record of a Greenspace Site feature.

Access Point

```
<os:featureMember>
  <ogsp:AccessPoint gml:id="id8DE0ED21-B0F6-4F69-8008-CD2AD0B537CD">
    <ogsp:accessType codeSpace=
    "http://www.os.uk/xml/codelists/AccessTypeValue">Motor Vehicle And
    Pedestrian</ogsp:accessType>
    <ogsp:refToGreenspaceSite>45CEA121-D8B7-51CD-E053-2362A00A34C0
    </ogsp:refToGreenspaceSite>
    <ogsp:geometry>
      <gml:Point gml:id="id8DE0ED21-B0F6-4F69-8008-CD2AD0B537CD-0"
      srsName="urn:ogc:def:crs:EPSG::27700" srsDimension="2">
        <gml:pos>394186.08 809827.7</gml:pos>
      </gml:Point>
    </ogsp:geometry>
  </ogsp:AccessPoint>
</os:featureMember>
```

Figure 4: GML example record of an Access Point feature.

3.3 Esri shapefile

OS Open Greenspace is supplied as an Esri shapefile. Shapefile is an open specification file format to store geometry and attribute information about spatial features. It is developed and regulated by Esri for data interoperability among Esri and other geographic information systems (GIS) software products.

3.3.1 Example records

Greenspace Site

id	function	distName1	distName2	distName3	distName4
7367CB29-EDCE-4A5F-E053-A03BA40AD968	Cemetery				
7367CB01-3F18-4A5F-E053-A03BA40AD968	Cemetery				
7367CB01-3CBC-4A5F-E053-A03BA40AD968	Cemetery				
7367CB01-3B02-4A5F-E053-A03BA40AD968	Religious Grounds	St John's Kirk			

Figure 5: Esri shapefile example records of Greenspace Site features.

Access Point

id	accessType	refToGSite
002488DD-BB2E-4127-B26C-5DF2B2BC7ADE	Pedestrian	7367CB29-EDC0-4A5F-E053-A03BA40AD968
028E1421-8643-4A09-98D5-F020D3D0BB0B	Pedestrian	7367CB29-EDD5-4A5F-E053-A03BA40AD968
149B39CB-B512-4EA0-8510-3708CDDB76CE	Pedestrian	7367CB01-3A96-4A5F-E053-A03BA40AD968
2507B2B4-50DF-4CE8-A20E-12491C261AB3	Motor Vehicle And Pedestrian	7367CB29-EDBC-4A5F-E053-A03BA40AD968

Figure 6: Esri shapefile example records of Access Point features.

3.4 GeoPackage

The Open Geospatial Consortium (OGC) defines GeoPackage (*.gpkg) as an open, non-proprietary, platform-independent, standards-based data format for geographic information systems (GIS). It is designed to be a lightweight format that can contain large amounts of varied and complex data in a single, easy-to-distribute and ready-to-use file. GeoPackage is natively supported by numerous software applications.

GeoPackage offer users the following benefits:

- The single file is easy to transfer and offers a rich end-user experience.
- Attribute names are not limited in length, making the format user friendly.
- The file size limit is large at 140 TB.

  Note: A file size limit could be imposed by the file system to which the file is written.
- It supports raster, vector, and database formats, making it a highly versatile solution.
- It is an OGC standard.
- In most cases, it is a plug-and-play format.

For information on how to open, use and understand a GeoPackage dataset, please refer to our *Getting Started with GeoPackage* guide. For further information on GeoPackage, please see the GeoPackage website (https://www.geopackage.org/).

3.4.1 GeoPackage format changes

We've recently updated some of our products available in GeoPackage format to align with OGC standards and we've also fixed various formatting inconsistencies. For OS Open Greenspace, the updates are as follows:

- **GeoPackage attribution:** The following attribute names have been changed from title case to snake case:

Table 3: GeoPackage attribute name changes in April 2023.

GeoPackage attribute name prior to April 2023	GeoPackage attribute name after April 2023
fid	fid
id	id
function	function
distinctiveName1	distinctive_name_1
distinctiveName2	distinctive_name_2
distinctiveName3	distinctive_name_3
distinctiveName4	distinctive_name_4
geom	geometry
accessType	access_type
refToGreenspaceSite	ref_to_greenspace_site

- **Layer names:** The following layer names have been changed from title case to snake case:
  - **AccessPoint** to **access_point**
  - **GreenspaceSite** to **greenspace_site**
- **Constraints**: The following constraints have been changed from title case to snake case:
  - **AccessPoint_pkey** to **access_point_pkey**
  - **GreenspaceSite_pkey** to **greenspace_site_pkey**

3.4.2 Example records

Greenspace Site

fid	id	function	distinctive_name_1	distinctive_name_2	distinctive_name_3	distinctive_name_4
1	B9FB5B93-0F92-5E80-...	Play Space	*NULL*	*NULL*	*NULL*	*NULL*
2	B9FB5B92-5C9A-5E80...	Religious Grounds	St Cyrus Parish Church	*NULL*	*NULL*	*NULL*
3	B9FB5BA1-3215-5E80...	Other Sports Facility	*NULL*	*NULL*	*NULL*	*NULL*
4	B9FB5B93-0D83-5E80...	Allotments Or Commu...	*NULL*	*NULL*	*NULL*	*NULL*

Figure 7: GeoPackage example records for Greenspace Site features.

Access Point

fid	id	access_type	ref_to_greenspace_site
1	9A0B680E-AF31-41AC-95...	Pedestrian	B9FB5B92-F5AD-5E80-E053-A...
2	7AA79404-6493-41AA-92...	Motor Vehicle And Pedestrian	B9FB5BA7-8CD9-5E80-E053-A...
3	D5BABD6F-8116-4B3D-A...	Pedestrian	B9FB5B91-93C2-5E80-E053-A...
4	E162DCDD-2285-4140-A2...	Pedestrian	B9FB5B92-E8D4-5E80-E053-A...

Figure 8: GeoPackage example records for Access Point features.

3.5 Vector tiles

OS Open Greenspace is provided in MBTiles, which is an open specification tileset format used for vector tiles. The format is designed to be simple, high resolution, customisable and efficient to load as a single file. The data is supplied in Web Mercator projection (ESPG:3857).

3.5.1 Vector tiles schema

The vector tiles schema, as well as the zoom level for each attribute, is detailed in the following table:

Note: In the Zoom levels columns, 'N' (no) indicates that the specified layer and attribute does not display within that zoom level, whereas 'Y' (yes) indicates that the specified layer and attribute does display within that zoom level.

			Zoom levels						
Layers	**Feature types**	**Attributes**	**0 to 8**	**9**	**10**	**11**	**12**	**13**	**14**
greenspace_site	Allotments Or Community Growing Spaces	id function distinctive_name_1 distinctive_name_2 distinctive_name_3 distinctive_name_4	N	Y	Y	Y	Y	Y	Y
	Bowling Green		N	Y	Y	Y	Y	Y	Y
	Cemetery		N	Y	Y	Y	Y	Y	Y
	Golf Course		N	Y	Y	Y	Y	Y	Y
	Other Sports Facility		N	Y	Y	Y	Y	Y	Y
	Play Space		N	Y	Y	Y	Y	Y	Y
	Playing Field		N	Y	Y	Y	Y	Y	Y
	Public Park Or Garden		N	Y	Y	Y	Y	Y	Y
	Religious Grounds		N	Y	Y	Y	Y	Y	Y
	Tennis Court		N	Y	Y	Y	Y	Y	Y
access_point	Motor Vehicle	id access_type	N	Y	Y	Y	Y	Y	Y
	Motor Vehicle and Pedestrian		N	Y	Y	Y	Y	Y	Y
	Pedestrian		N	Y	Y	Y	Y	Y	Y

Annex A: Product support links

Guides

You can find additional information and documentation about the OS Open Greenspace product on the 'OS Open Greenspace Product Support' page of the OS website (https://www.ordnancesurvey.co.uk/business-government/tools-support/open-map-greenspace-support).

We recommend you read the following guides:

- *OS Open Greenspace – Overview*
- *OS Open Greenspace – Getting Started Guide*
- *Getting Started with GeoPackage*
- *Getting Started with Vector Tiles*

Stylesheets

Predefined stylesheets for OS Open Greenspace are available for download from the Ordnance Survey OS-Open-Greenspace-stylesheets GitHub repository (https://github.com/OrdnanceSurvey/OS-Open-Greenspace-stylesheets).

To download a zip containing all stylesheets, navigate to *Code* > *Download Zip*.