

In a recent Cadline White Paper I documented the steps to style OS Mastermap (OSMM) using **SLD files within GeoServer**. In that document we styled OSMM data which was stored within a PostGIS Database, having used the QGIS Plugin - OS Translator Tool - to upload the data.

<https://www.cadlinecommunity.co.uk/hc/en-us/articles/115003309789-Publishing-OS-MasterMap-WMS-Layers>

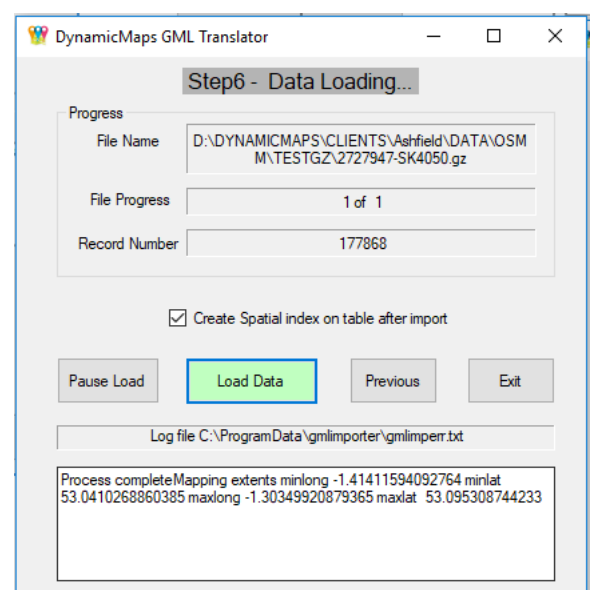
In this White Paper we will explore how to style OSMM (stored within a **SQL Server Database**) using **QML files** within QGIS. This will enable you to extend your options, allowing you to store your Mastermap repository in SQL Server, yet still ensure that you can successfully style the layers within QGIS.

Objectives

- Upload OSMM data into SQL
- Configure the SQL Tables
- Connect QGIS to your SQL Database
- Apply OS Styling using QML Files

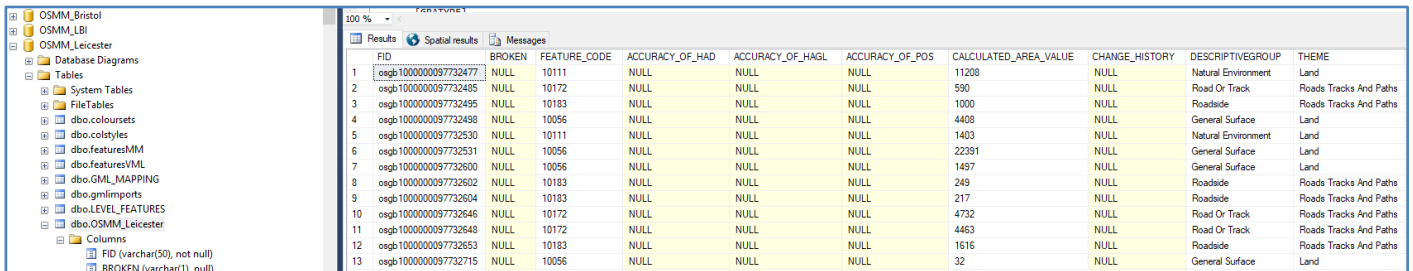
Upload OSMM data into SQL

You have many options to upload OS data into SQL, however in this document we have used the **DynamicMaps GML Translator tool**. This tool converts OSMM Gzip file/s from source directly into your chosen SQL Server Database. Creating a database table which contains a record for each OSMM object and auto calculates the spatial extents for the area loaded.



Configure the OSMM SQL Table

Once the OSMM GZ files have been loaded a new SQL Table will be imported into your SQL Database.



FID	BROKEN	FEATURE_CODE	ACCURACY_OF_HAD	ACCURACY_OF_HAGL	ACCURACY_OF_POS	CALCULATED_AREA_VALUE	CHANGE_HISTORY	DESCRIPTIVEGROUP	THEME
1	osgb1000000097732477	NULL	10111	NULL	NULL	11208	NULL	Natural Environment	Land
2	osgb1000000097732485	NULL	10172	NULL	NULL	590	NULL	Road Or Track	Roads Tracks And Paths
3	osgb1000000097732495	NULL	10183	NULL	NULL	1000	NULL	Roadside	Roads Tracks And Paths
4	osgb1000000097732498	NULL	10056	NULL	NULL	4408	NULL	General Surface	Land
5	osgb1000000097732530	NULL	10111	NULL	NULL	1403	NULL	Natural Environment	Land
6	osgb1000000097732531	NULL	10056	NULL	NULL	22391	NULL	General Surface	Land
7	osgb1000000097732600	NULL	10056	NULL	NULL	1497	NULL	General Surface	Land
8	osgb1000000097732602	NULL	10183	NULL	NULL	249	NULL	Roadside	Roads Tracks And Paths
9	osgb1000000097732604	NULL	10183	NULL	NULL	217	NULL	Roadside	Roads Tracks And Paths
10	osgb1000000097732646	NULL	10172	NULL	NULL	4732	NULL	Road Or Track	Roads Tracks And Paths
11	osgb1000000097732648	NULL	10172	NULL	NULL	4463	NULL	Road Or Track	Roads Tracks And Paths
12	osgb1000000097732653	NULL	10183	NULL	NULL	1616	NULL	Roadside	Roads Tracks And Paths
13	osgb1000000097732715	NULL	10056	NULL	NULL	32	NULL	General Surface	Land

This SQL table will store the OSMM feature types within fields named **descriptivegroup** and **descriptiveterm**. However, the current QGIS QML styling files require the feature code/information to be stored in a field called – **Style_Code**.

To create the **Style_Code** field and update it with the relevant values, you will firstly need to create two new fields:

- **Style_Description** (Varchar 250)
- **Style_Code** (Numeric)

Next you will need to update these fields with the values that the QGIS Stylesheets are expecting for each individual feature code. Using the details provided below, **copy and paste** the SQL Update Statement into your SQL Database in a **New Query window** and run the update statement. Note, that this may take several minutes depending on the size of the OS Mastermap table.

```
UPDATE OSMM_Leicester SET style_description =
CASE
WHEN CHARINDEX('Building', descriptivegroup) > 0 AND descriptiveterm IS NULL THEN 'Building Fill'
WHEN CHARINDEX('General Surface', descriptivegroup) > 0 AND descriptiveterm = 'Multi Surface' THEN 'Multi Surface Fill'
WHEN CHARINDEX('General Surface', descriptivegroup) > 0 AND descriptiveterm IS NULL AND make = 'Natural' THEN 'Natural Fill'
WHEN CHARINDEX('Road Or Track', descriptivegroup) > 0 AND descriptiveterm IS NULL AND make = 'Manmade' THEN 'Road Or Track Fill'
WHEN CHARINDEX('General Surface', descriptivegroup) > 0 AND descriptiveterm IS NULL AND (make = 'Manmade' OR make = 'Unknown') THEN 'Manmade Fill'
WHEN CHARINDEX('Roadside', descriptivegroup) > 0 AND make = 'Natural' THEN 'Roadside Natural Fill'
WHEN CHARINDEX('Roadside', descriptivegroup) > 0 AND make = 'Manmade' THEN 'Roadside Manmade Fill'
```

(588956 row(s) affected)

```

UPDATE OSMM_Leicester SET style_description =
CASE
  WHEN CHARINDEX('Building', descriptivegroup) > 0 AND descriptiveterm IS NULL THEN 'Building Fill'
  WHEN CHARINDEX('General Surface', descriptivegroup) > 0 AND descriptiveterm = 'Multi Surface' THEN 'Multi Surface Fill'
  WHEN CHARINDEX('General Surface', descriptivegroup) > 0 AND descriptiveterm IS NULL AND make = 'Natural' THEN 'Natural Fill'
  WHEN CHARINDEX('Road Or Track', descriptivegroup) > 0 AND descriptiveterm IS NULL AND make = 'Manmade' THEN 'Road Or Track Fill'
  WHEN CHARINDEX('General Surface', descriptivegroup) > 0 AND descriptiveterm IS NULL AND (make = 'Manmade' OR make = 'Unknown') THEN 'Manmade Fill'
  WHEN CHARINDEX('Roadside', descriptivegroup) > 0 AND make = 'Natural' THEN 'Roadside Natural Fill'
  WHEN CHARINDEX('Roadside', descriptivegroup) > 0 AND make = 'Manmade' THEN 'Roadside Manmade Fill'
  WHEN CHARINDEX('Inland Water', descriptivegroup) > 0 AND descriptiveterm IS NULL THEN 'Inland Water Fill'
  WHEN CHARINDEX('Path', descriptivegroup) > 0 AND descriptiveterm IS NULL THEN 'Path Fill'
  WHEN CHARINDEX('Road Or Track', descriptivegroup) > 0 AND descriptiveterm = 'Track' THEN 'Track Fill'
  WHEN descriptiveterm = 'Slope' THEN 'Slope Fill'
  WHEN CHARINDEX('Structure', descriptivegroup) > 0 AND (descriptiveterm IS NULL OR descriptiveterm = 'Upper Level Of Communication' OR
descriptiveterm = 'Overhead Construction') THEN 'Structure Fill'
  WHEN descriptiveterm = 'Cliff' THEN 'Cliff Fill'
  WHEN descriptiveterm = 'Step' THEN 'Step Fill'
  WHEN descriptiveterm = 'Foreshore' THEN 'Foreshore Fill'
  WHEN descriptiveterm = 'Traffic Calming' THEN 'Traffic Calming Fill'
  WHEN descriptiveterm = 'Glasshouse' THEN 'Glasshouse Fill'
  WHEN CHARINDEX('Rail', descriptivegroup) > 0 AND descriptiveterm IS NULL AND make = 'Natural' THEN 'Rail Natural Fill'
  WHEN descriptiveterm = 'Pylon' THEN 'Pylon Fill'
  WHEN CHARINDEX('Building', descriptivegroup) > 0 AND descriptiveterm = 'Archway' THEN 'Archway Fill'
  WHEN CHARINDEX('Landform', descriptivegroup) > 0 AND make = 'Natural' THEN 'Landform Natural Fill'
  WHEN CHARINDEX('Tidal Water', descriptivegroup) > 0 AND descriptiveterm IS NULL THEN 'Tidal Water Fill'
  WHEN CHARINDEX('Landform', descriptivegroup) > 0 AND make = 'Manmade' THEN 'Landform Manmade Fill'
  WHEN descriptiveterm = 'Rail' AND (make = 'Manmade' OR make = 'Unknown') THEN 'Rail Manmade Fill'
  WHEN (CHARINDEX('Nonconiferous Trees', descriptiveterm) > 0 OR CHARINDEX('Nonconiferous Trees (Scattered)', descriptiveterm) > 0) AND
(CHARINDEX('Coniferous Trees', descriptivegroup) > 0 OR CHARINDEX('Coniferous Trees (Scattered)', descriptivegroup) > 0) THEN 'Mixed Woodland Fill'
  WHEN CHARINDEX('Nonconiferous Trees', descriptiveterm) > 0 OR CHARINDEX('Nonconiferous Trees (Scattered)', descriptiveterm) > 0 THEN 'Nonconiferous
Tree Fill'
  WHEN CHARINDEX('Coniferous Trees', descriptiveterm) > 0 OR CHARINDEX('Coniferous Trees (Scattered)', descriptiveterm) > 0 THEN 'Coniferous Tree
Fill'
  WHEN CHARINDEX('Orchard', descriptiveterm) > 0 THEN 'Orchard Fill'
  WHEN CHARINDEX('Coppice Or Osiers', descriptiveterm) > 0 THEN 'Coppice Or Osiers Fill'
  WHEN CHARINDEX('Scrub', descriptiveterm) > 0 THEN 'Scrub Fill'
  WHEN CHARINDEX('Boulders', descriptiveterm) > 0 OR CHARINDEX(descriptiveterm, 'Boulders (Scattered)') > 0 THEN 'Boulders Fill'
  WHEN CHARINDEX('Rock', descriptiveterm) > 0 OR CHARINDEX(descriptiveterm, 'Rock (Scattered)') > 0 THEN 'Rock Fill'
  WHEN CHARINDEX('Scree', descriptiveterm) > 0 THEN 'Scree Fill'
  WHEN CHARINDEX('Rough Grassland', descriptiveterm) > 0 THEN 'Rough Grassland Fill'
  WHEN CHARINDEX('Heath', descriptiveterm) > 0 THEN 'Heath Fill'
  WHEN CHARINDEX('Marsh Reeds Or Saltmarsh', descriptiveterm) > 0 THEN 'Marsh Fill'
  ELSE 'Unclassified'
END,
style_code =
CASE
  WHEN CHARINDEX('Building', descriptivegroup) > 0 AND descriptiveterm IS NULL THEN 1
  WHEN CHARINDEX('General Surface', descriptivegroup) > 0 AND descriptiveterm = 'Multi Surface' THEN 2
  WHEN CHARINDEX('General Surface', descriptivegroup) > 0 AND descriptiveterm IS NULL AND make = 'Natural' THEN 3
  WHEN CHARINDEX('Road Or Track', descriptivegroup) > 0 AND descriptiveterm IS NULL AND make = 'Manmade' THEN 4
  WHEN CHARINDEX('General Surface', descriptivegroup) > 0 AND descriptiveterm IS NULL AND (make = 'Manmade' OR make = 'Unknown') THEN 5
  WHEN CHARINDEX('Roadside', descriptivegroup) > 0 AND make = 'Natural' THEN 6
  WHEN CHARINDEX('Roadside', descriptivegroup) > 0 AND make = 'Manmade' THEN 7
  WHEN CHARINDEX('Inland Water', descriptivegroup) > 0 AND descriptiveterm IS NULL THEN 8
  WHEN CHARINDEX('Path', descriptivegroup) > 0 AND descriptiveterm IS NULL THEN 9
  WHEN CHARINDEX('Road Or Track', descriptivegroup) > 0 AND descriptiveterm = 'Track' THEN 10
  WHEN descriptiveterm = 'Slope' THEN 11
  WHEN CHARINDEX('Structure', descriptivegroup) > 0 AND (descriptiveterm IS NULL OR descriptiveterm = 'Upper Level Of Communication' OR
descriptiveterm = 'Overhead Construction') THEN 12
  WHEN descriptiveterm = 'Cliff' THEN 13
  WHEN descriptiveterm = 'Step' THEN 14
  WHEN descriptiveterm = 'Foreshore' THEN 15
  WHEN descriptiveterm = 'Traffic Calming' THEN 16
  WHEN descriptiveterm = 'Glasshouse' THEN 17
  WHEN CHARINDEX('Rail', descriptivegroup) > 0 AND descriptiveterm IS NULL AND make = 'Natural' THEN 18
  WHEN descriptiveterm = 'Pylon' THEN 19
  WHEN CHARINDEX('Building', descriptivegroup) > 0 AND descriptiveterm = 'Archway' THEN 20
  WHEN CHARINDEX('Landform', descriptivegroup) > 0 AND make = 'Natural' THEN 21
  WHEN CHARINDEX('Tidal Water', descriptivegroup) > 0 AND descriptiveterm IS NULL THEN 22
  WHEN CHARINDEX('Landform', descriptivegroup) > 0 AND make = 'Manmade' THEN 23
  WHEN descriptiveterm = 'Rail' AND (make = 'Manmade' OR make = 'Unknown') THEN 24
  WHEN (CHARINDEX('Nonconiferous Trees', descriptiveterm) > 0 OR CHARINDEX('Nonconiferous Trees (Scattered)', descriptiveterm) > 0) AND
(CHARINDEX('Coniferous Trees', descriptivegroup) > 0 OR CHARINDEX('Coniferous Trees (Scattered)', descriptivegroup) > 0) THEN 25
  WHEN CHARINDEX('Nonconiferous Trees', descriptiveterm) > 0 OR CHARINDEX('Nonconiferous Trees (Scattered)', descriptiveterm) > 0 THEN 26
  WHEN CHARINDEX('Coniferous Trees', descriptivegroup) > 0 OR CHARINDEX('Coniferous Trees (Scattered)', descriptiveterm) > 0 THEN 27
  WHEN CHARINDEX('Orchard', descriptiveterm) > 0 THEN 28
  WHEN CHARINDEX('Coppice Or Osiers', descriptiveterm) > 0 THEN 29
  WHEN CHARINDEX('Scrub', descriptiveterm) > 0 THEN 30
  WHEN CHARINDEX('Boulders', descriptiveterm) > 0 OR CHARINDEX(descriptiveterm, 'Boulders (Scattered)') > 0 THEN 31
  WHEN CHARINDEX('Rock', descriptiveterm) > 0 OR CHARINDEX(descriptiveterm, 'Rock (Scattered)') > 0 THEN 32
  WHEN CHARINDEX('Scree', descriptiveterm) > 0 THEN 33
  WHEN CHARINDEX('Rough Grassland', descriptiveterm) > 0 THEN 34
  WHEN CHARINDEX('Heath', descriptiveterm) > 0 THEN 35
  WHEN CHARINDEX('Marsh Reeds Or Saltmarsh', descriptiveterm) > 0 THEN 36
  ELSE 99
END;

```

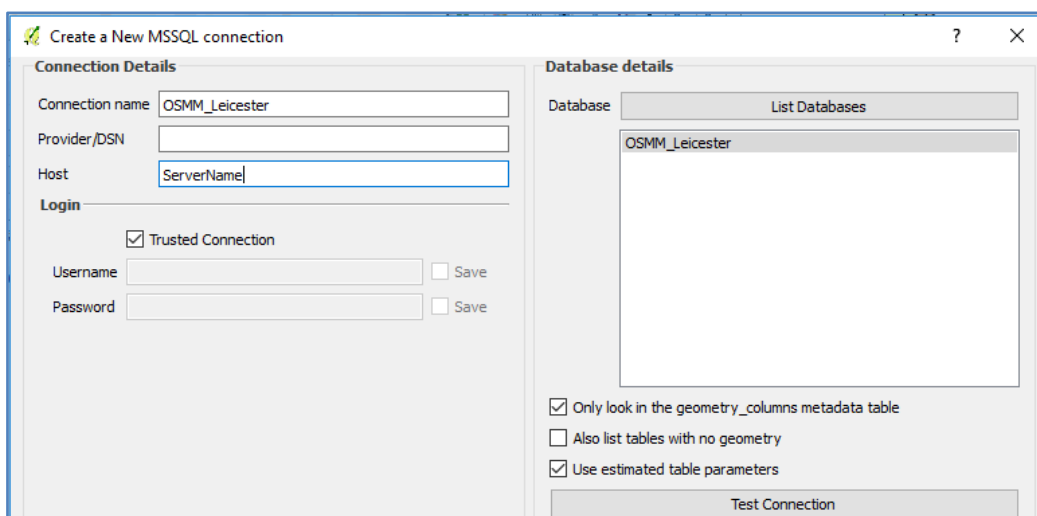
Having ran the update statement, the SQL Table will now have the **correct values** in the two new fields:

ACTION	MI_PRINX	MI_STYLE	DRAWORDER	GEOMETRY	STYLE_DESCRIPTION	STYLE_CODE
	1	NULL	1	0x346C00000104D200000066666666A9C01B4152B81E85955B...	Mixed Woodland Fill	25
	2	NULL	1	0x346C0000010456000000295C8FC209C51B415C8FC2F52A61...	Road Or Track Fill	4
	3	NULL	1	0x346C00000104A200000052B81E8591C91B41E17A14AE006...	Roadside Manmade Fill	7
	4	NULL	1	0x346C000001042F010000CDCCCCCF6C41B41666666667C6...	Manmade Fill	5
	5	NULL	1	0x346C000001042B000000D7A3703DF3C41B4166666666C66...	Scrub Fill	30
	6	NULL	1	0x346C00000104AA0500008FC2F52830C71B4185EB51B86E7...	Manmade Fill	5
	7	NULL	1	0x346C00000104560000000000000056C51B4133333333C35F...	Manmade Fill	5
	8	NULL	1	0x346C0000010461000000295C8FC209C51B415C8FC2F52A61...	Roadside Manmade Fill	7
	9	NULL	1	0x346C000001044C000000000000008BC51B41CDCCCCC7F6...	Roadside Manmade Fill	7
	10	NULL	1	0x346C0000010441000000295C8FC2F7C41B417B14AE47DA6...	Road Or Track Fill	4

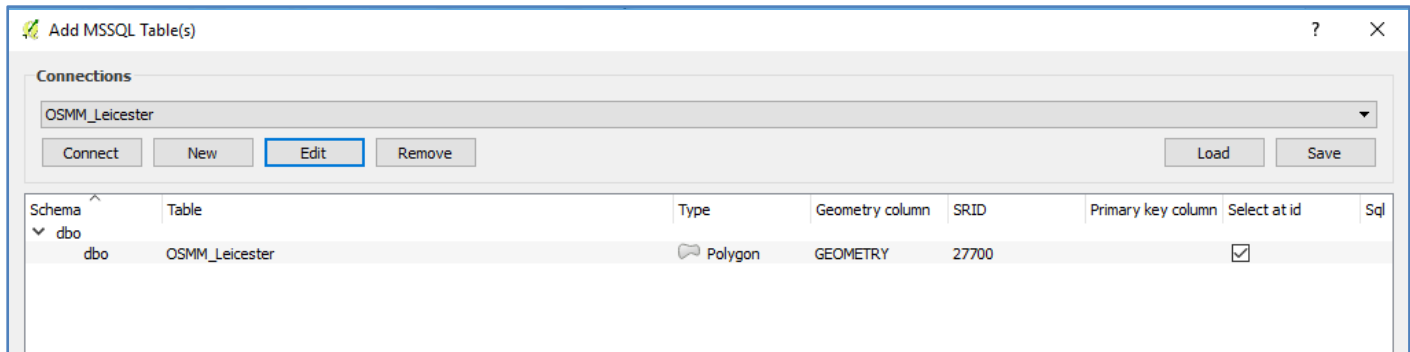
Connect QGIS to SQL Server

To connect to your SQL Table via QGIS, choose Layer > Add Layer > **Add MSSQL Layer** > and in the Data Source Manager choose to create a **New Connection** and enter the details for your SQL Database. You will need;

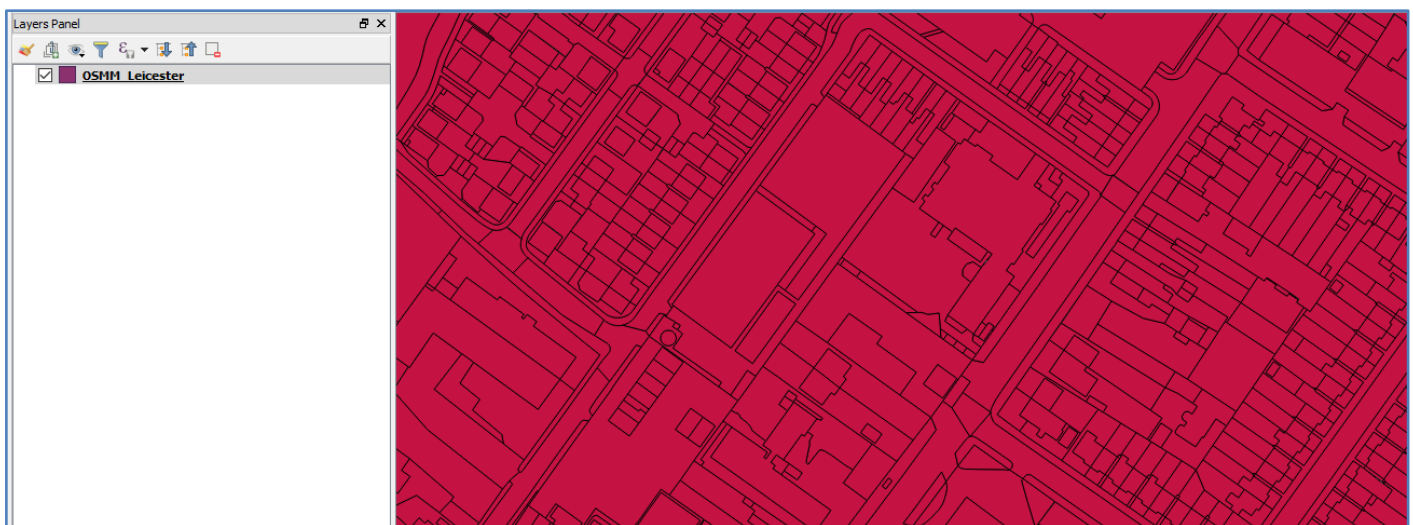
- a name for the connection (**Connection Name**) and this can be anything
- the location of the server (**Host**) which will be the servers name or IP address
- the **username** and **password** to access that SQL Instance



Now having made a connection to your SQL Database, a list of available tables will be shown:



Select the Table you wish to load, in this case the OS Mastermap Table, and press **Add**. The SQL table will then be loaded into your QGIS project; however, it will not be styled:



Apply OS MasterMap Styling

The following web pages provide download links to access the **OS Mastermap Style Files** for QGIS:

<https://github.com/OrdnanceSurvey/OSMM-Topography-Layer-stylesheets>

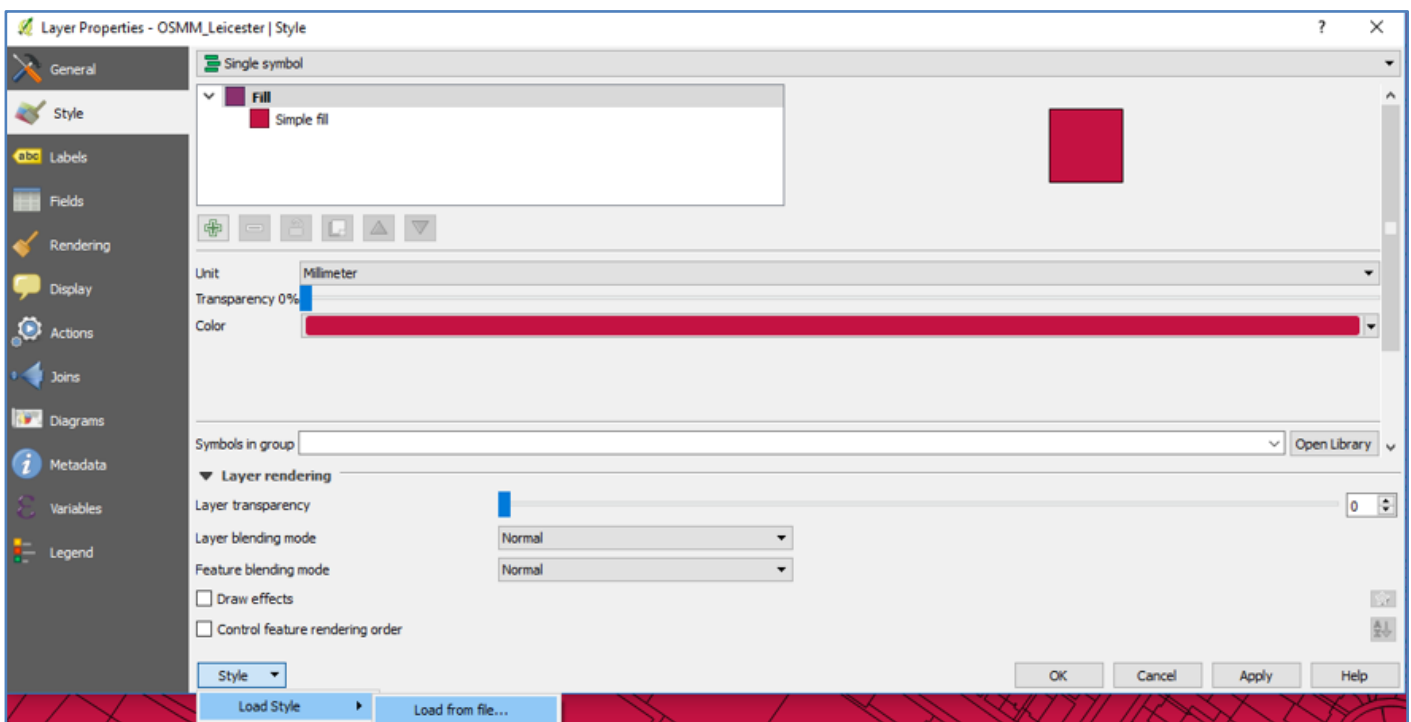
You can download Style Sheets for Schema **Version 7 or 9**. The links will provide access to download the style files in a number of formats, including SLDs and QML.

ESRI stylesheets (LYR)	Minor updates to READMEs
Geoserver stylesheets (SLD)	Note about GeoServer SLDs with data in Oracle
QGIS stylesheets (QML)	Update README.md
README.md	added schema v9 folder

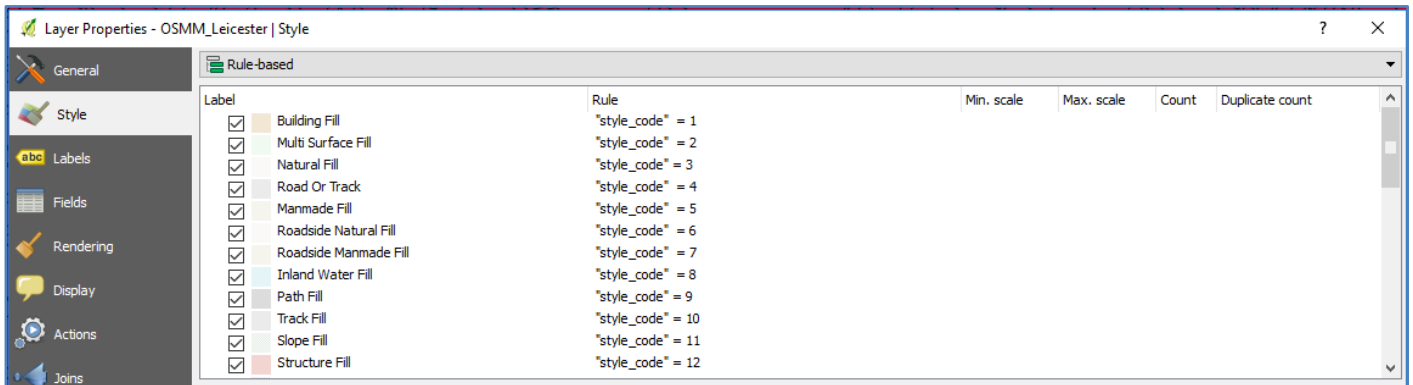
The **SLD files** can be used within GeoServer for styling OS Mastermap via WMS, and the **QML files** can be used directly within QGIS.

OSMM Topo - Boundary Line.qml	28/10/2017 11:24	QML File	18 KB
OSMM Topo - Cartographic Symbol.qml	28/10/2017 11:24	QML File	18 KB
OSMM Topo - Cartographic Text.qml	28/10/2017 11:24	QML File	17 KB
OSMM Topo - Topographic Area.qml	28/10/2017 11:24	QML File	64 KB
OSMM Topo - Topographic Line.qml	28/10/2017 11:24	QML File	43 KB
OSMM Topo - Topographic Point.qml	28/10/2017 11:24	QML File	30 KB

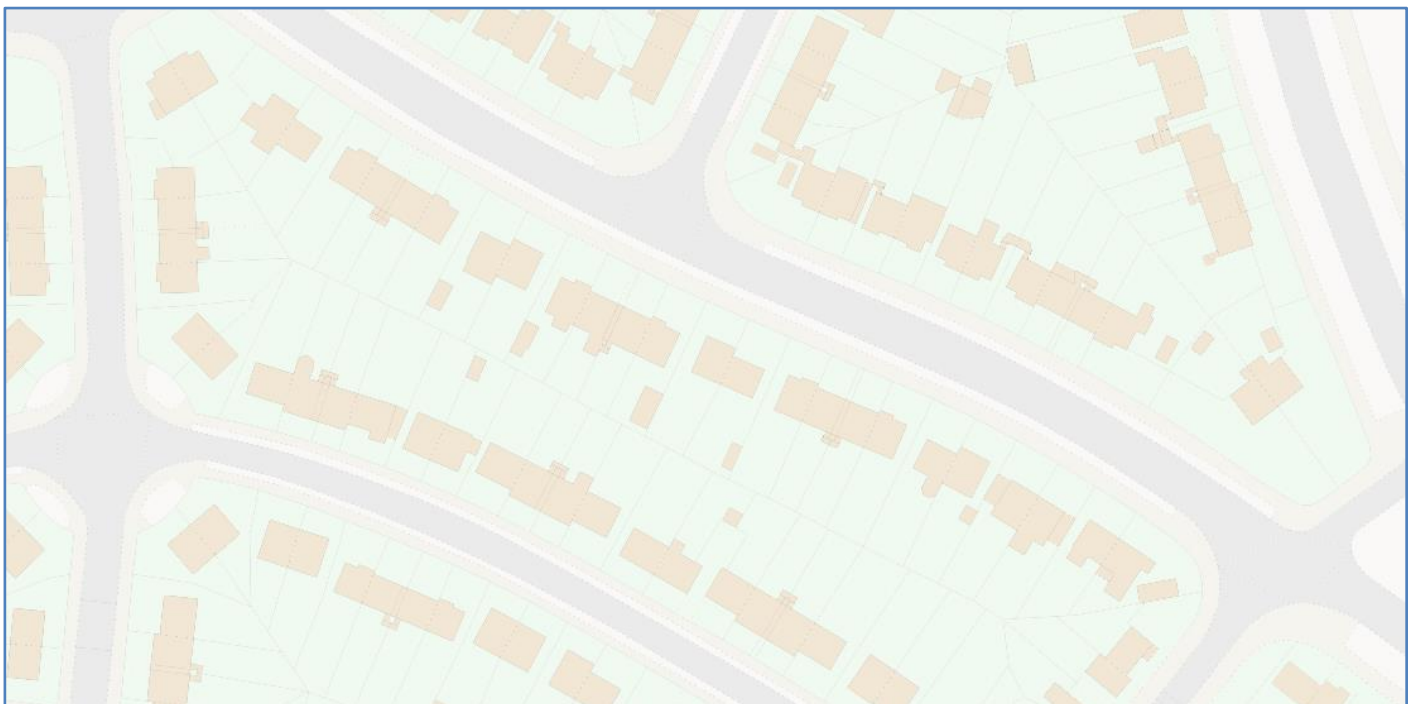
Having downloaded the QGIS (QML) Style files for the Schema of OS Mastermap that you have, within QGIS choose your OSMM layer and select the **Properties** Tab. In the **STYLE** tab choose Style > **Load Style** > **Load from File**.



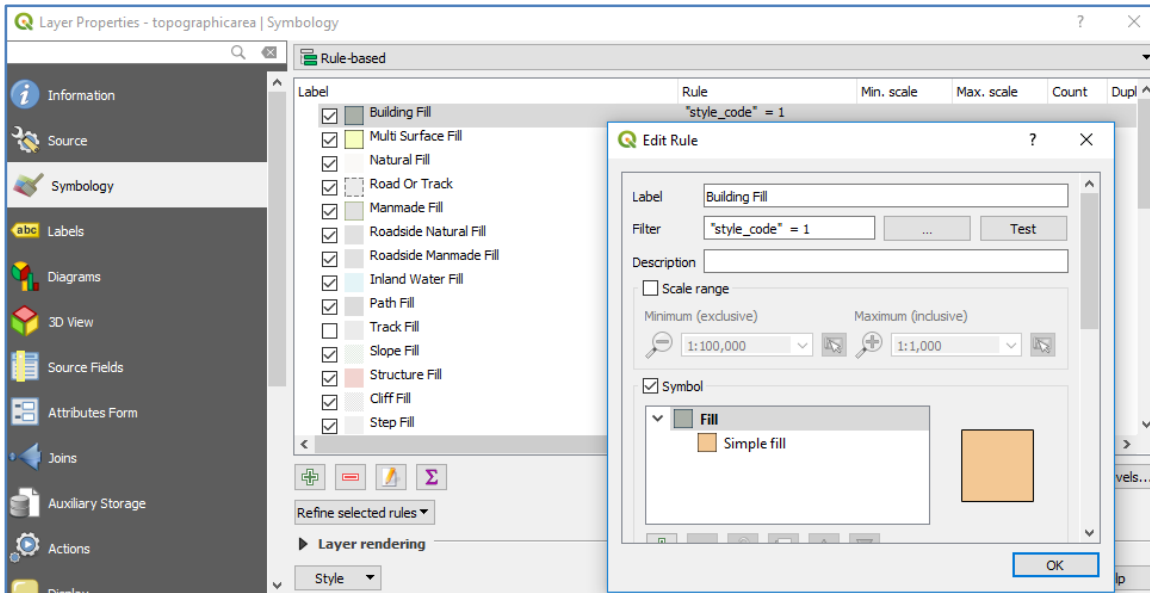
Navigate to the location that you saved your Style Files into and select the relevant Stylesheet. In this case we will apply the **TopographicArea.qml**. Once you have loaded the QML, notice how QGIS auto classifies your OS Mastermap data into each **Feature Type** using the new **Style_Code** value.



Once you press **Apply** or **OK**, your OS Mastermap data will now be styled based on the **Style_Codes** for each feature.



Once you have applied the default style you can then use the **STYLE options** to edit the stroke, fill and border styles to reflect your own corporate styling per feature type.



For example, with a few style changes here is an alternate OSMM style for the same area:

