Ordnance Survey

STYLING OS MASTERMAP TOPOGRAPHY LAYER

GETTING STARTED GUIDE

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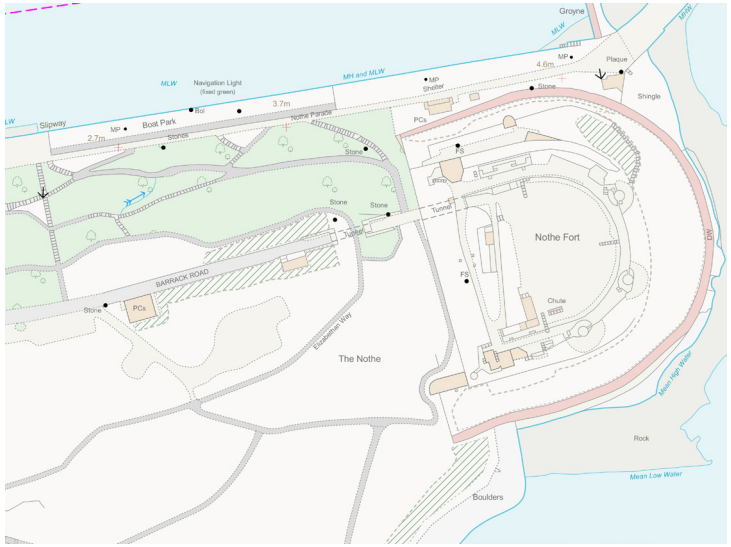
1. INTRODUCTION

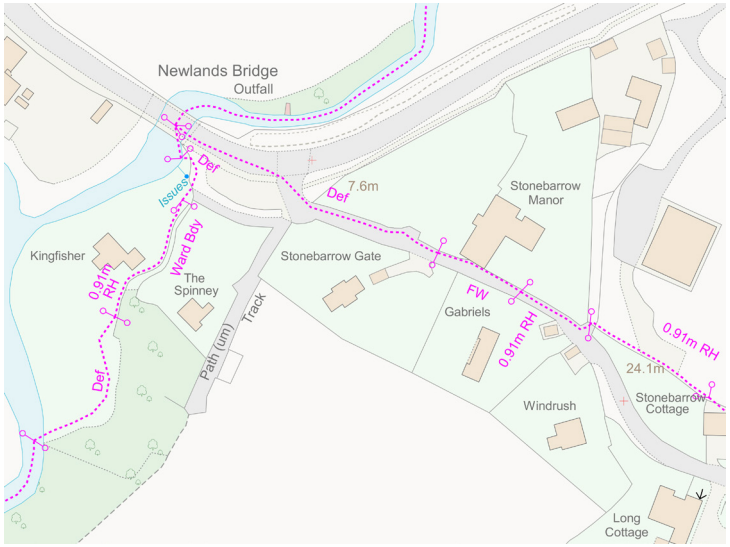
In autumn 2015 OS MasterMap® Topography Layer will be significantly enhanced with over 70 new descriptive term attributes making it easier to identify, query and style individual point features, habitats, foreshore information and land cover. In total there are circa 12 million functionally enriched features that will be made available to all users of Ordnance Survey's definitive topographic data.

In parallel with this and to help to exploit the much richer detail in the data we are releasing stylesheets (QML, LYR and SLD) to help users visualise and identify topographic features at a glance.

We are also releasing scripts for both Oracle, PostGIS and SQL Server and stylesheets in our Backdrop Style in a similar theme as OS VectorMap Local and OS VectorMap District thus improving visual consistency between products. The stylesheets are fully customisable to encourage Topography Layer users to further develop and share their custom versions. This will be released through the open source portal GitHub in July 2015 where it will be supported by version control and release notes.

This guide introduces the styling options available for Topography Layer. In September 2015 we will release additional styling options in preparation for the upgrade at the end of 2015. More information about the upgrade is available on our web pages.(link: https://www.ordnancesurvey.co.uk/business-and-government/help-and-support/products/os-mastermap-topography-layer-upgrade-2015.html).





above are some examples of how the new styling looks when applied.

2. BACKGROUND

At present there are a number of different methods to style OS MasterMap Topography Layer:

1. Style using the featurecode – this is the easiest method however, it provides a limited number of styles and can cause some features to be mis-styled due to the same featurecode being used for multiple feature types.
2. Style using featurecode and make – this makes it possible to distinguish between features that share the same featurecode but have different values for 'make'. A good example of this is Rail:
   a. Featurecode = 10167 AND make = 'Manmade'
   b. Featurecode = 10167 AND make = 'Natural'

   This is the current method used by the open source stylesheets on the UK QGIS Github page.
3. Style using three of the descriptive attributes (Descriptive Group, Descriptive Term and Make) – this method is outlined in the Technical Specification Chapter 10 – Cartographic Styling.
4. Style using four of the descriptive attributes (Descriptive Group, Descriptive Term, Make and Physical Presence) – this will provide access to the richness of data that is in OS MasterMap Topography Layer but, is the most difficult to implement.
5. Style using a custom style attribute – a few of our Partners implemented the creation of a new style attribute during the loading/processing of OS MasterMap Topography Layer. This gives features a discrete attribute to style on which is much more efficient.
6. Style using OS discrete styling attribute 'os_cat' – several years ago we released Style Layer Descriptors (SLDs) for OS MasterMap Topography Layer which used a discrete style attribute we called 'os_cat'. This attribute was a textual description, for example 'buildingFill', and is created by post processing the data.

The multiple methods make it very difficult for guidance to be released for OS MasterMap Topography Layer, because the stylesheets look for a particular attribute field which might not exist in the translated data, for example 'descriptiveGroup' can become 'descgroup' or 'desc_group' or 'DESCRIPTIVEGROUP'.

As a result of these challenges and to get the most out of the more detailed content due in 2015 Ordnance Survey developed a post processing method to create a new discrete style attribute that can be used to style OS MasterMap Topography Layer.

3. WHAT HAVE WE DONE

We have created a key attribute, the 'style_code' which is populated with integers that correspond to a style for a given feature. This code has been based on logic that is similar to the process described in our current styling guide, but we have greatly reduced the amount of unique feature styles. We have also chosen to use an integer rather than text to improve system performance during processing. This will be in addition to a text description to make the new styling easy to understand and apply.

4. WHAT ARE WE RELEASING

To support the wide variety users of OS MasterMap we are releasing the following:

1. Stylesheets – in the following formats SLD, ESRI LYR and QGIS QML in a backdrop style
2. SQL Database Scripts – Oracle, PostgreSQL/PostGIS and SQL Server to post process your database
3. Symbology Fonts – in SVG and True Type Font (depending on the stylesheet requirement)

5. WHERE IS THE CODE RELEASED

The new styling information, SQL scripts and stylesheets are available from the Ordnance Survey GitHub page found here (link: https://github.com/OrdnanceSurvey/OSMM-Topography-Layer-stylesheets)

6. THE METHOD WE USED

Firstly we examined the OS MasterMap Topography Layer database and created a list of discrete features based on the combinations of descriptiveGroup, descriptiveTerm, make and physicalPresence and ordered them by total count of each of these discrete features. See table 1 for an example of the results.

Total Count	Feature Code	Descriptive Group	Descriptive Term	Make	Physical Presence
148127807	10046	General Feature			Obstructing
64612785	10019	Building	Outline	Manmade	Obstructing
29515251	10046	General Feature			Edge / Limit

Table 1: Shows the results of the distinct query ordered by total count for Topographic Lines

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Based on these results the Cartographic Design team considered each discrete feature and determined whether it should have its own style rule or should it be styled like a similar feature, table 2 shows the results of this.

Total Count	Feature Code	Descriptive Group	Descriptive Term	Make	Physical Presence	Description
148127807	10046	General Feature			Obstructing	Default Line
64612785	10019	Building	Outline	Manmade	Obstructing	Building Outline Line
29515251	10046	General Feature			Edge / Limit	Edge Line

Table 2: Query results with the addition of the feature description.

Based on the previous user feedback of those who had used the 'os_cat' styling method before, we have decided to add a numerical styling code as well as the styling description. This is an important addition as a stylesheet that is looking to match 'Building Outline Line' with the data will be significantly slower to match than using an integer value '3'.

Total Count	Feature Code	Descriptive Group	Descriptive Term	Make	Physical Presence	Description	Code
148127807	10046	General Feature			Obstructing	Default Line	1
64612785	10019	Building	Outline	Manmade	Obstructing	Building Outline Line	2
29515251	10046	General Feature			Edge / Limit	Edge Line	3

Table 3: Shows the addition of the code value to improve styling performance.

Having created the list of discrete features and the new styling attributes we subsequently wrote an SQL database script which post-processed the database tables to add the new styling attributes and stylesheets that look for the new style code attribute.

Appendix A contains a table for each of the OS MasterMap Topography Layer types and the attributes that were used to create the new style rules.

7. INTRODUCTION TO THE SQL SCRIPTS

Prior to using any of the SQL scripts it is important to understand how your OS MasterMap Topography Layer loading software has handled the descriptiveGroup and descriptiveTerm attributes, as these attributes often contain multiple values. Some loaders use a simple VARCHAR(254) data type and load in the data as a comma separated list of values or they load the data in as an array. For example when using FME to load OS MasterMap Topography Layer data the descriptiveTerm, when there are multiple values, looks like:

Rough Grassland,Scrub,Heath

If you were to use the GDAL/OGR2OGR library the result would be:

{“Rough Grassland”,Scrub,Heath}

This is an important distinction as this determines what SQL queries you can use to find the different descriptiveGroup and descriptiveTerm values. If you are unsure on which method your loader uses then take a look at the data in your database or look at what “CREATE TABLE” SQL was used as it will tell you what data type each attribute field is. In PostgreSQL/PostGIS using OGR2OGR to load the data the descriptiveterm field was created as “descriptiveterm character varying[]” which is an ARRAY. Knowing this you can then use the correct SQL query script.

Another consideration is that your schema and table names may be different from the ones in our SQL queries so these may need to be changed before running them against your data. You could changes these by using Find and Replace in a text editor to tweak the SQL queries to match your database configuration.

7.1 POSTGRESQL/POSTGIS

As mentioned in the first part of Chapter 6, the structure of your database and your data is dependent on how you loaded the data and you need to use the correct SQL query that matches whether your data is loaded as a string or an array. The reason for this is we can use different operators to find the attribute values.

In PostGIS we can use the ‘~’ operator to help find a value within the string of values, for example:

WHEN descriptivegroup ~ ‘Building’ AND descriptiveterm IS NULL THEN ‘Building Fill’

Or if our data has been loaded into an array we can use @> (which means contains) array operator, for example:

WHEN descriptivegroup @> ‘{Building}’ AND descriptiveterm IS NULL THEN ‘Building Fill’

For both types of SQL query, the query creates a new table using a CASE statement which is more efficient than using UPDATE SET statements, because of the PostgreSQL MVCC model, which creates a new row for each row affected by the UPDATE. This means the original rows then need to be deleted. During tests the CASE statement method takes seven hours for a GB OS MasterMap Topography Layer set, whilst it takes several days using the UPDATE method. As you will be creating essentially duplicate tables you must make sure you have enough server hard drive space before running the queries.

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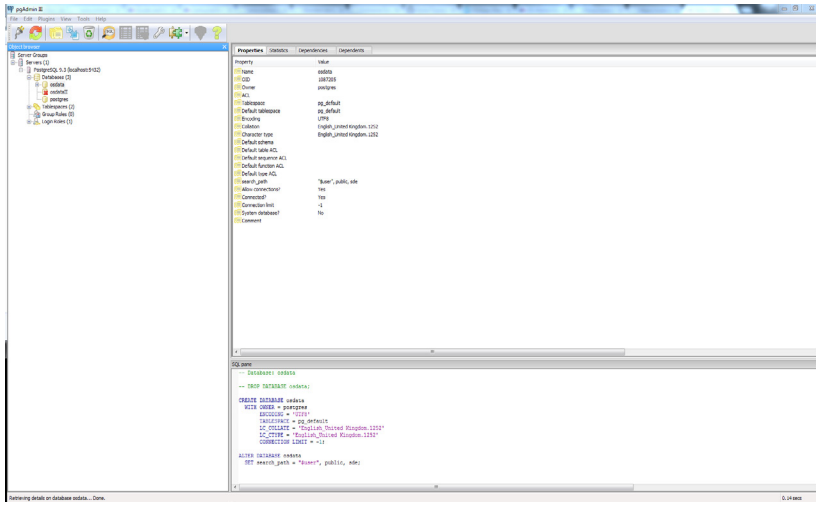
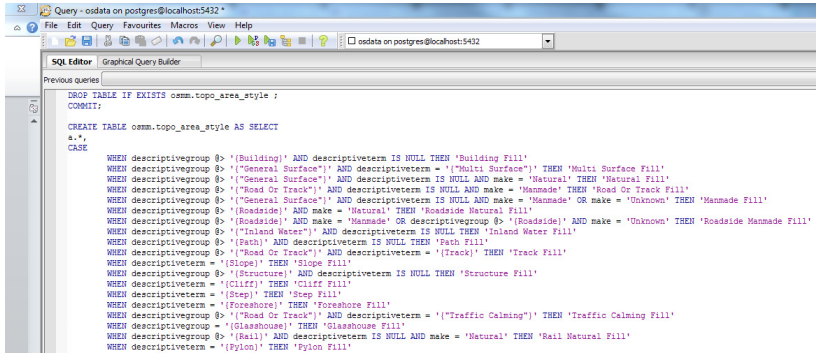
To use either SQL query do the following steps:

1. Open PGAdminIII



2. Click the 'Execute SQL Queries' button on the toolbar

3. Copy the SQL code from the correct PostGIS SQL files provided that matches your data, and paste into the PostGIS SQL Query window.



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To run this SQL script, click the green 'Execute Query' button from the toolbar.

At Ordnance Survey we simultaneously run each of the SQL scripts for the feature types at the same time, however, please do check that your PostgreSQL configuration is set to handle such an approach as it may consume a lot of server resource.

Depending on the amount of OS MasterMap Topography Layer data you have loaded and your configuration settings this post processing may take several hours.

After the SQL query has run you will now have your original database table, for example "osmm.topo"."topographicarea" and the new table ("osmm_topo"."topographicarea_styled") which has the additional styling attributes. You now have two choices on how manage these tables:

1. DROP/DELETE the original table and rename the new styled table to the name of the original table – the benefit of this will be an existing connections to that database table will remain working

2. DROP/DELETE the original table and leave the new styled table as is – any existing database connections looking for your original table will fail and you will need to now connect to the new styled database table

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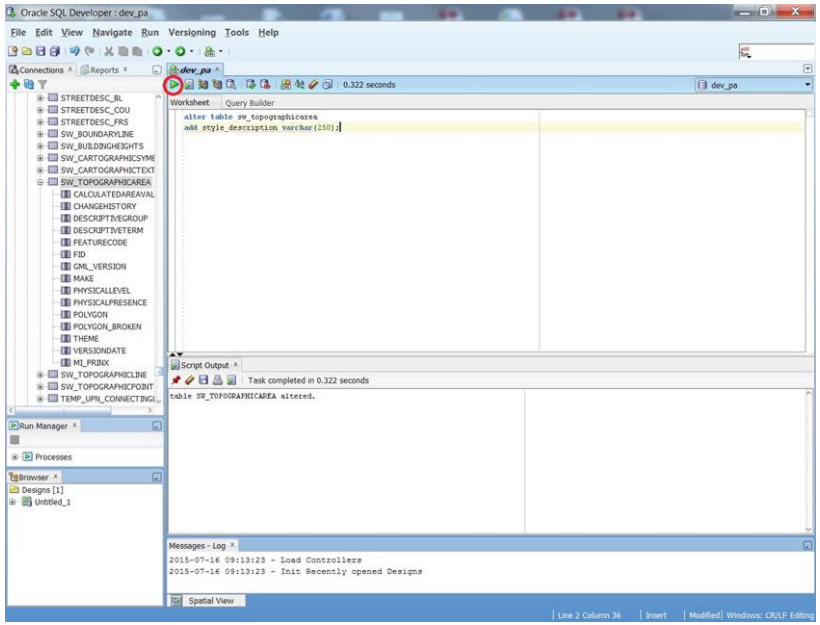
7.2 ORACLE

The SQL scripts we have written for Oracle are to work with descriptiveGroup and descriptiveTerm attributes that are strings and use the INSTR function to find attribute values within the string. We chose to use INSTR rather than LIKE because in our tests the INSTR SQL queries ran quicker. The Oracle scripts UPDATE and SET the new style_description and style_code attributes so before running the SQL scripts you will need to add these extra columns to your database tables.

Below is an example of adding the style_description attribute to the topographicarea table. Here we have used SQL Developer to run the SQL. So open SQL Developer and navigate to the database where you have your OS MasterMap Topography Layer stored. In this example we have a table called sw_topographicarea we need to update. We can now run the following SQL

ALTER TABLE sw_topographicarea ADD (style_description varchar(250), style_code number);



To run the SQL please click the green 'Run' button.

If the SQL has run successfully you will see the message 'table SW_TOPOGRAPHICAREA altered.' in the Script Output pane below the Worksheet. You will notice that the columns names in the left hand Connections pane does not list the style_description/style_code columns yet, to make this new column visible click the refresh button circled in red below and navigate again to sw_topographic area. You will now see that the column has been created and a new window will open that will show the revised data structure of the sw_topographicarea table.

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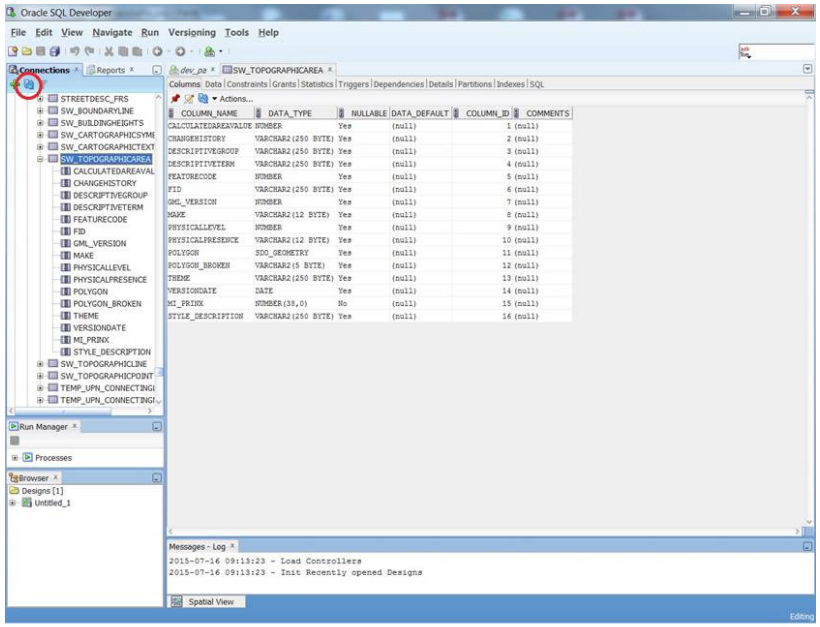

You will need to repeat this for the other OS MasterMap Topography Layer database tables.

CartographicText requires some further attributes to be added before running the SQL:

ALTER TABLE osmm_topo.cartographictext ADD (font_code number, colour_code number, rotation number, geo_x number, geo_y number, anchor varchar(2));

Now that the new extra attribute columns have been added you can now run the styling SQL scripts using the same technique as above.

Once all this is done you can now go ahead and use the new stylesheets with the data.

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7.3 SQL SERVER

The SQL scripts we have written for SQL Server are to work with descriptiveGroup and descriptiveTerm attributes that are strings and use the CHARINDEX function to find attribute values within the string. The SQL Server scripts UPDATE and SET the new style_description and style_code attributes so before running the SQL scripts you will need to add these extra columns to your database tables.

To run the SQL Server styling SQL scripts you need to open SQL Server Management Studio and connect to your OS MasterMap Topography Layer database. Once connected open the Query Editor and run the following SQL. This will add the style_description and style_code to a database table called 'sw_topographicarea':

ALTER TABLE sw_topographicarea ADD (style_description varchar(250), style_code number);

You will need to repeat this for the other OS MasterMap Topography Layer database tables.

CartographicText requires some further attributes to be added before running the SQL:

ALTER TABLE sw_cartographictext ADD (font_code int, colour_code int, rotation float, geo_x int, geo_y int, anchor varchar(2));

Now that the new extra attribute columns have been added you can now run the styling SQL scripts using the same technique as above.

Once all this is done you can now go ahead and use the new stylesheets with the data.

7.4 FURTHER INFORMATION ON SQL RULES

The SQL queries have been written to create the new style attributes as efficiently as possible by implementing the following key principles:

1. The rules have been ordered based on the descending total count of a discrete feature -

   This means that as each feature is assessed fewer rules need to be parsed to get to a matching rule for that feature. The exception to this is in the Topographic Area SQL queries where the rules for built environment features have been blocked together above the rules for the natural environment features.

2. The rules try to examine as few attributes as possible – Consider the following rules

   WHEN descriptivegroup ~ 'Building' THEN 'Building Fill'

   WHEN descriptivegroup ~ 'Building' AND descriptiveterm = 'Archway'THEN 'Archway Fill'

   The second rule would never to be used as every feature with Building in the descriptiveGroup would match the first rule and therefore be styled as 'Building Fill'. So instead we need to amend the first rule to take into consideration the descriptiveTerm.

   WHEN descriptivegroup ~ 'Building' AND descriptiveterm IS NULL THEN 'Building Fill'

   WHEN descriptivegroup ~ 'Building' AND descriptiveterm = 'Archway'THEN 'Archway Fill'

   This change will allow Archway features to pass through the first rule and therefore get styled. However, this means that the first rule will need to examine both the descriptiveGroup and descriptiveTerm attributes which will be fractionally slower than the original rule. We have tried to keep the number of attributes that need to be checked to as few as possible.

3. Minimal number of rules – more rules means more time taken to process all the features. As a result we have used different database operators to make finding certain attribute values easier than writing many rules. Take a look at the following descriptiveTerms:

   Nonconiferous Trees (Scattered),Rough Grassland

   Scrub,Nonconiferous Trees

   Nonconiferous Trees,Rough Grassland,Scrub

   All of these we would like to be styled as 'Nonconiferous Tree Fill'. One solution would be to write three rules:

   a. WHEN descriptiveterm = 'Nonconiferous Trees (Scattered),Rough Grassland' THEN 'Nonconiferous Tree Fill'

   b. WHEN descriptiveterm = 'Scrub,Nonconiferous Trees' THEN 'Nonconiferous Tree Fill'

   c. WHEN descriptiveterm = 'Nonconiferous Trees,Rough Grassland,Scrub' THEN 'Nonconiferous Tree Fill'

Or we could write one rule that looked for 'Nonconiferous Tree' or 'Nonconiferous Tree (Scattered)' at any position of the descriptiveTerm.

WHEN descriptiveterm ~ 'Nonconiferous Trees' OR descriptiveterm ~ 'Nonconiferous Trees (Scattered)' THEN 'Nonconiferous Tree Fill'

All of these features would have a style_description of 'Nonconiferous Tree Fill' as it does not matter at which position the Nonconiferous Tree is it will always be styled as 'Nonconiferous Tree Fill'

Using these key principles we have written two flavours of PostGIS SQL scripts, one for string data and one for array data, and one set of Oracle and SQLServer scripts which both look for string data.

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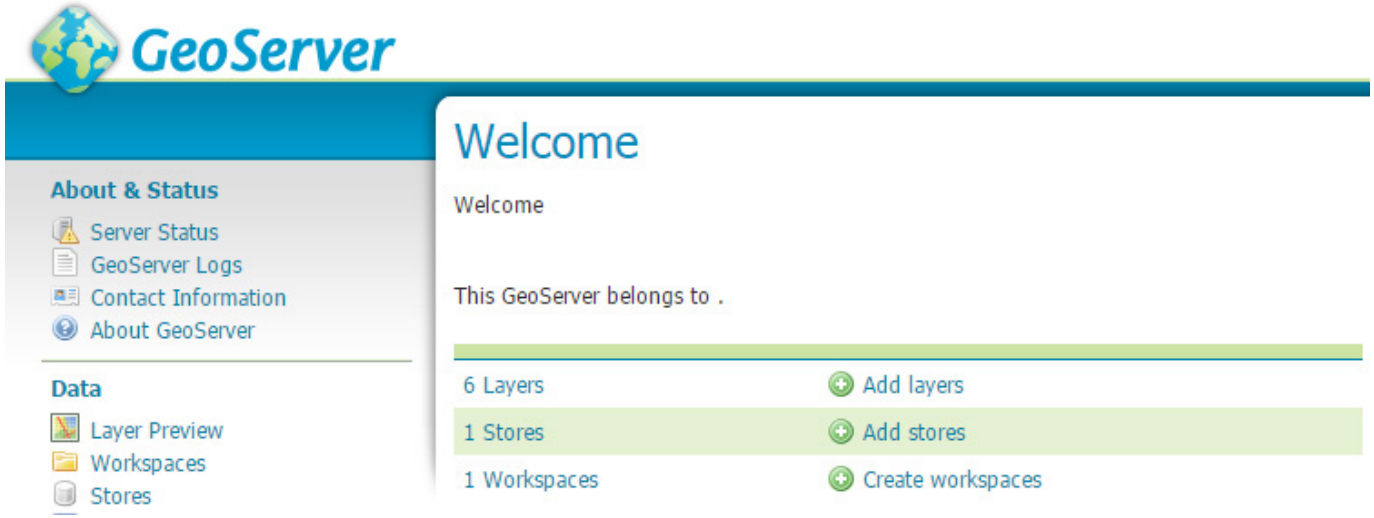
8 HOW TO USE THE STYLESHEETS

Ordnance Survey has released three different types of stylesheets to help users apply the styles in as many applications as possible.

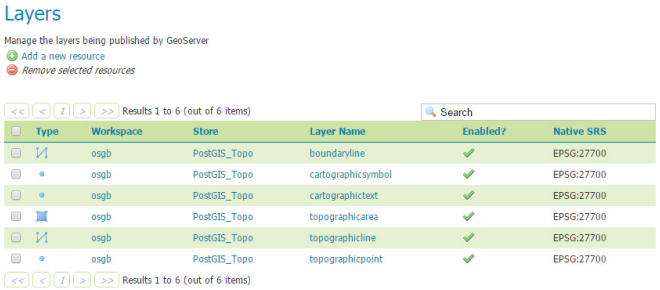
8.1 HOW TO USE THE STYLE LAYER DESCRIPTORS

Style Layer Descriptors (SLDs) are an OGC standard and are used by a number of desktop and geographic servers for styling both vector and raster data. The SLDs we are releasing have been written and tested within GeoServer so may need to be adapted to work. The following steps will guide you through how to load the SLDs to GeoServer and associate them with OS MasterMap Topography Layer.

1. Login to the GeoServer admin panel



2. I have already setup a Workspace and Store and added the OS MasterMap Topography Layer data.



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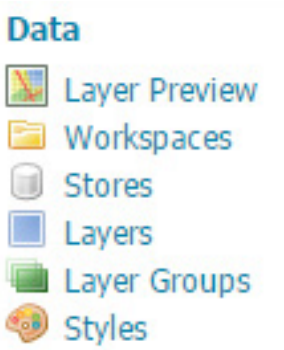
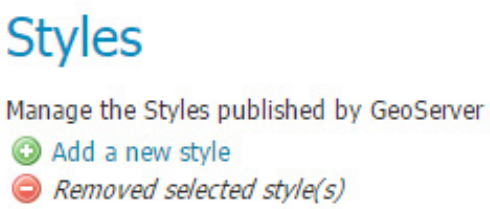
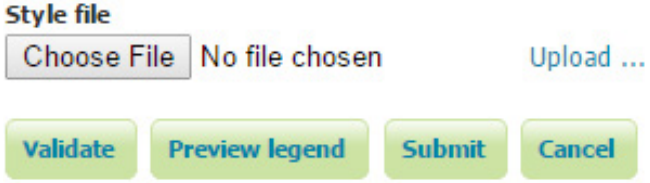
3. Click ‘Styles’ on the left hand side of the panel underneath the Data header



4. Click ‘Add a new style’



5. Scroll to the bottom of the page and click ‘Choose File’



And browse to the folder containing the SLDs and select one of the files

6. Then click ‘Upload…’

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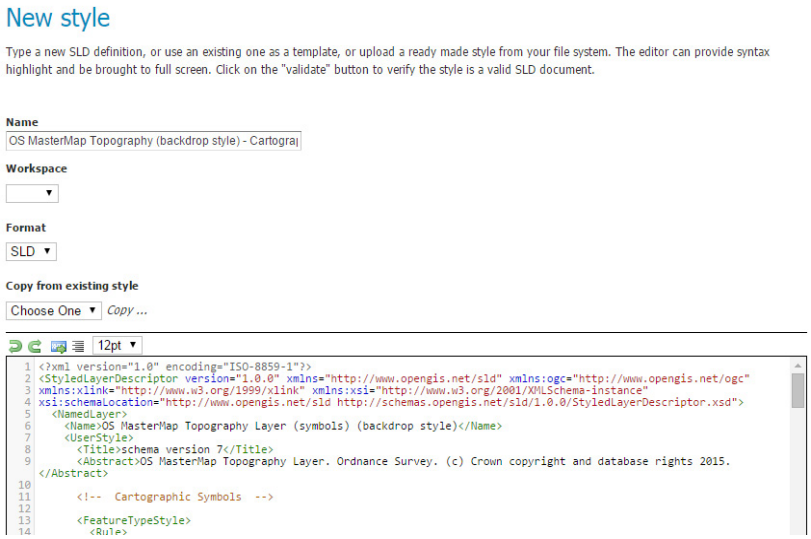
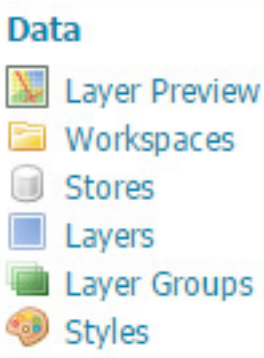
7. The page will refresh and you should see the SLD is uploaded



8. Click 'Submit'
9. Repeat the above process for the other SLD files
10. Once you have uploaded the SLD files we can now associate each of these with its respective data layer
11. Click 'Layer's on the left hand side of the panel



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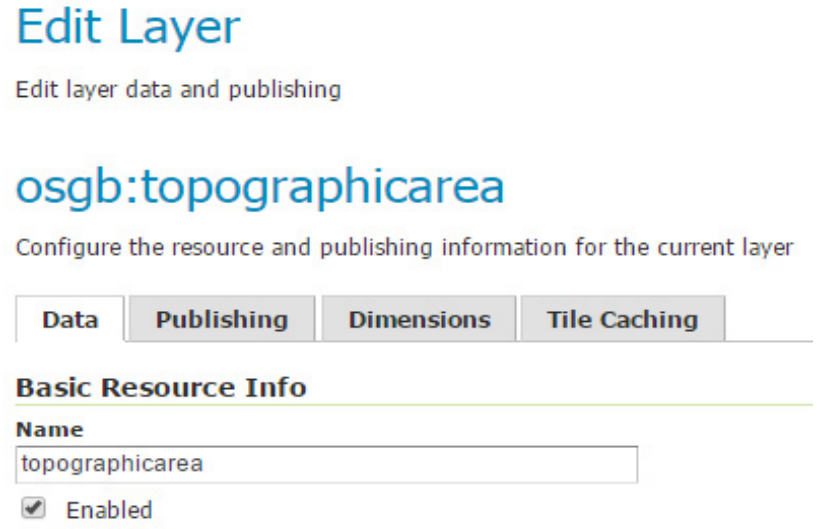
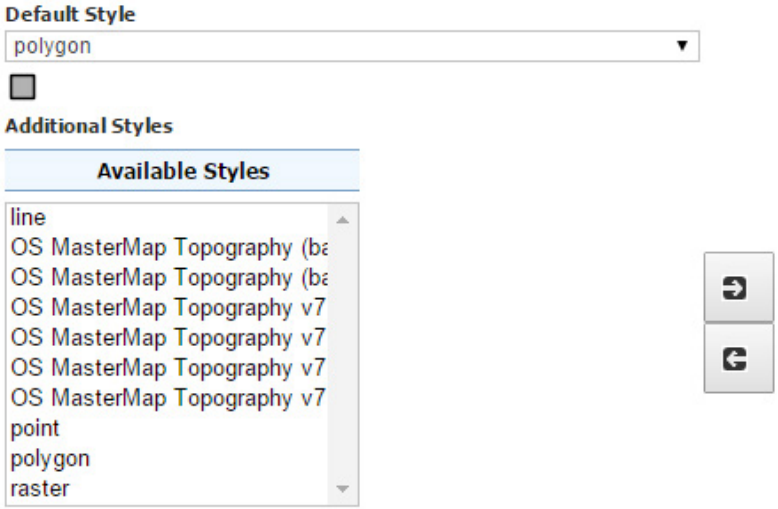
12. Click on one of the layers and you should see the 'Edit Layer' page.



13. From the tabs click on 'Publishing' and scroll down the page till you see the Default Style section



14. Using the 'Default Style' drop down list click the newly uploaded SLD that matches the data

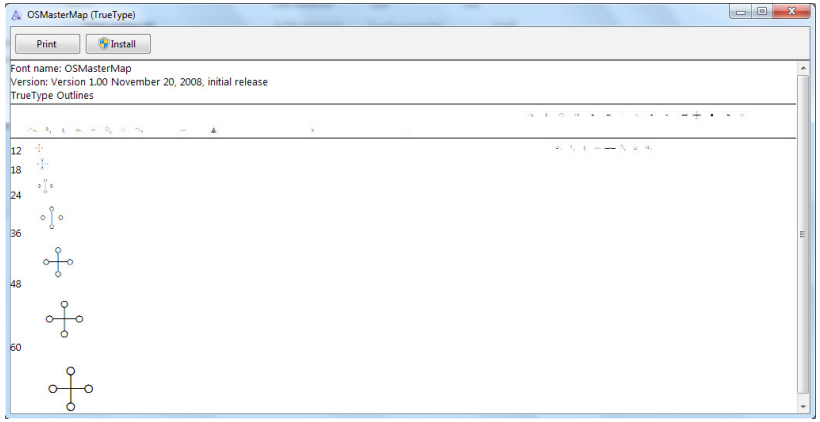
15. Repeat this process for the other layers
16. Once all the SLDs are associated with layers you can then view the data.

    The SLDs have a minimum viewing scale of 1:4000.

    We also recommend adding a background colour of R:228,G:244,B:247 to your application.

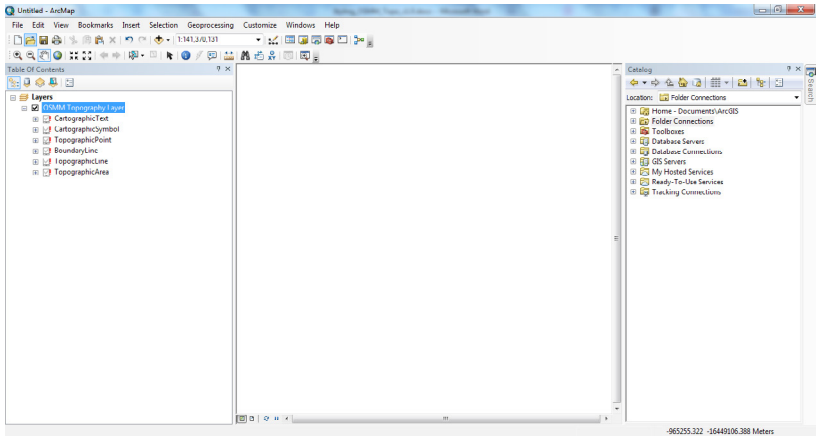
8.2 HOW TO USE THE ESRI LAYER (LYR) FILES

1. Either fork the stylesheets from GitHub or download them from the Ordnance Survey website. Unzip the folder and navigate to the Stylesheets/LYR directory.
2. Install the OSMasterMap font (this will give you the OS MasterMap symbology) by double clicking the OSMasterMap.ttf file and a new dialogue window will appear.



Click Install (this may require Administrator privileges).

3. Open a new, blank map in ArcMap
4. Use ArcCatalog to navigate to the OSMM-Topography-Layer-v7.lyr and load it into your project



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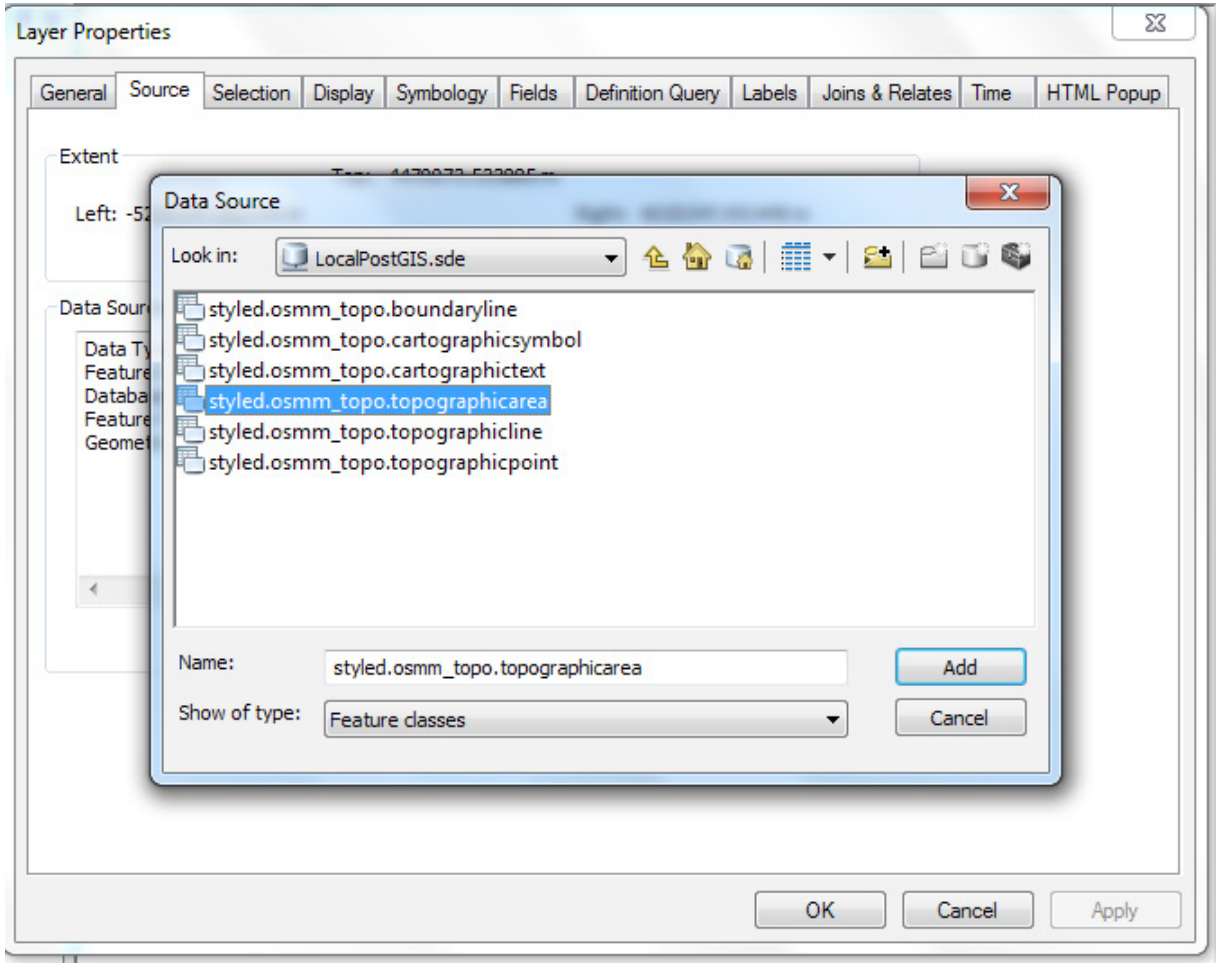
5. The red exclamation marks next to the layers means you need to repair the data source
6. So double click the layer, click the 'Source' tab and then click 'Set Data Source'
7. A browser window will open and you can use that to navigate to your database containing OS MasterMap Topography Layer where you select the matching data layer.



8. Repeat the above routine for the other data layers

   We recommend setting a reference scale of 1:2000 and viewing the map between 1:500 and 1:4000 for maximum legibility and we have set the minimum viewing scale at 1:4000.

   We also recommend adding a background colour of R:228,G:244,B:247 to your application.

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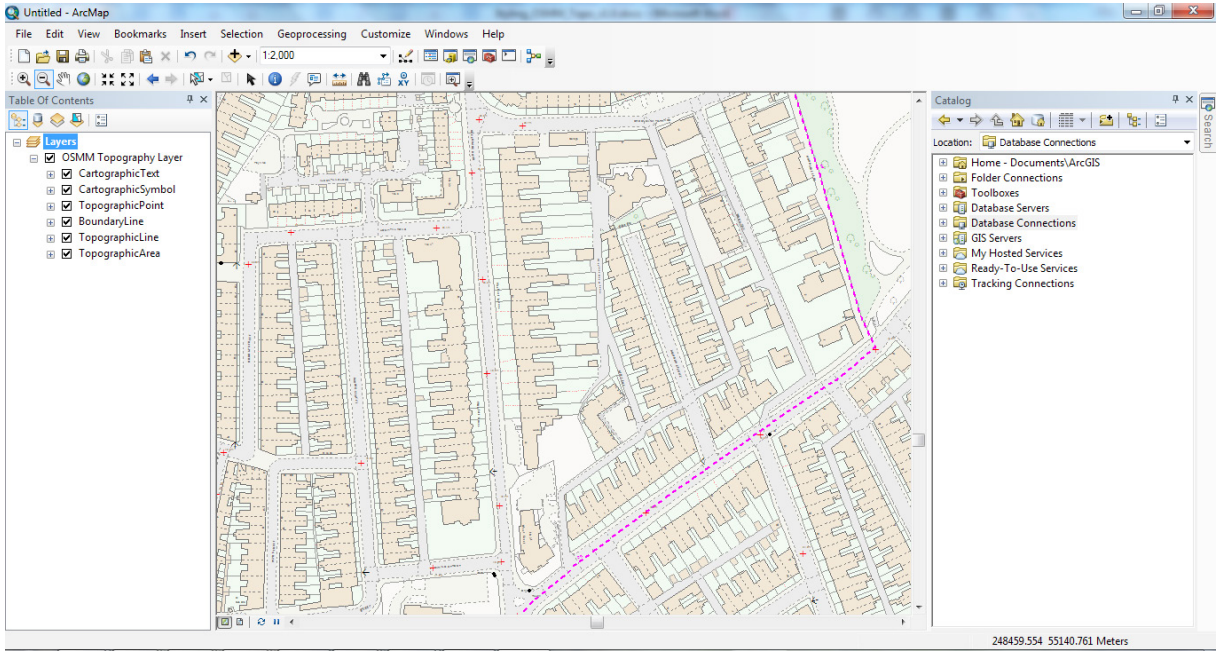
Your map should now look similar to this:



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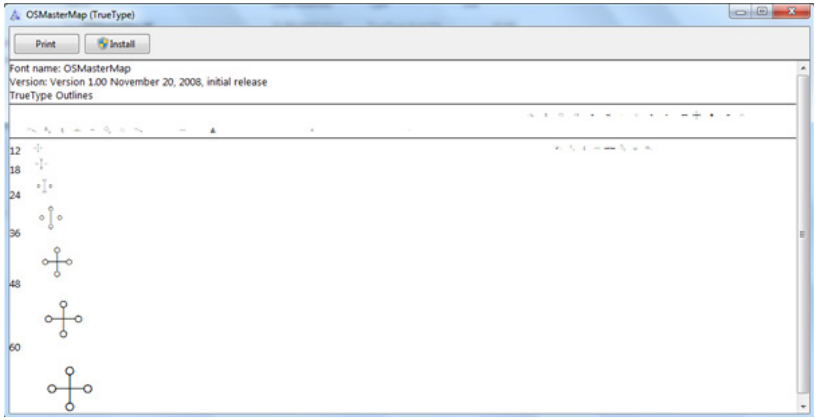
8.3 HOW TO USE THE QGIS QML FILES

1. Either fork the stylesheets from GitHub or download them from the Ordnance Survey website. Unzip the folder and navigate to the Stylesheets/QML directory.
2. Install the OSMasterMap font (this will give you the OS MasterMap symbology) by double clicking the OSMasterMap.ttf file and a new dialogue window will appear.



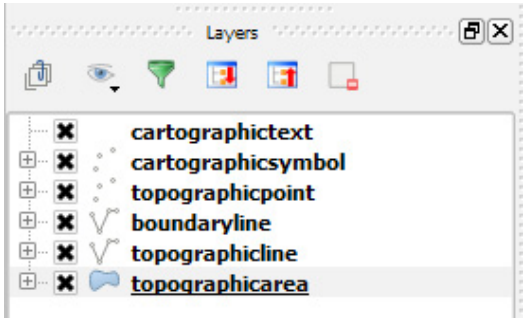
Click Install (this may require Administrator privileges)

3. Copy the folder 'osmmsymbols' into the QGIS SVG directory (a typical Windows file path is C:\Program Files\QGIS xxxx\apps\qgis\svg, where xxxx represents whatever version of QGIS you are running.

   You may need to re-open QGIS if you had it open during the above step.
4. Load in the OS MasterMap Topography Layer data from your database
5. Double click on a layer to access the 'Layer Properties' window> click on 'Load Style..' > navigate to the directory containing the QML files (those ending .qml) > select the QML file that corresponds to that layer > click 'Open' > click 'Ok'

   Repeat the above step for the other OS MasterMap Topography Layer layers.

   We recommend the following layer order and visibility:



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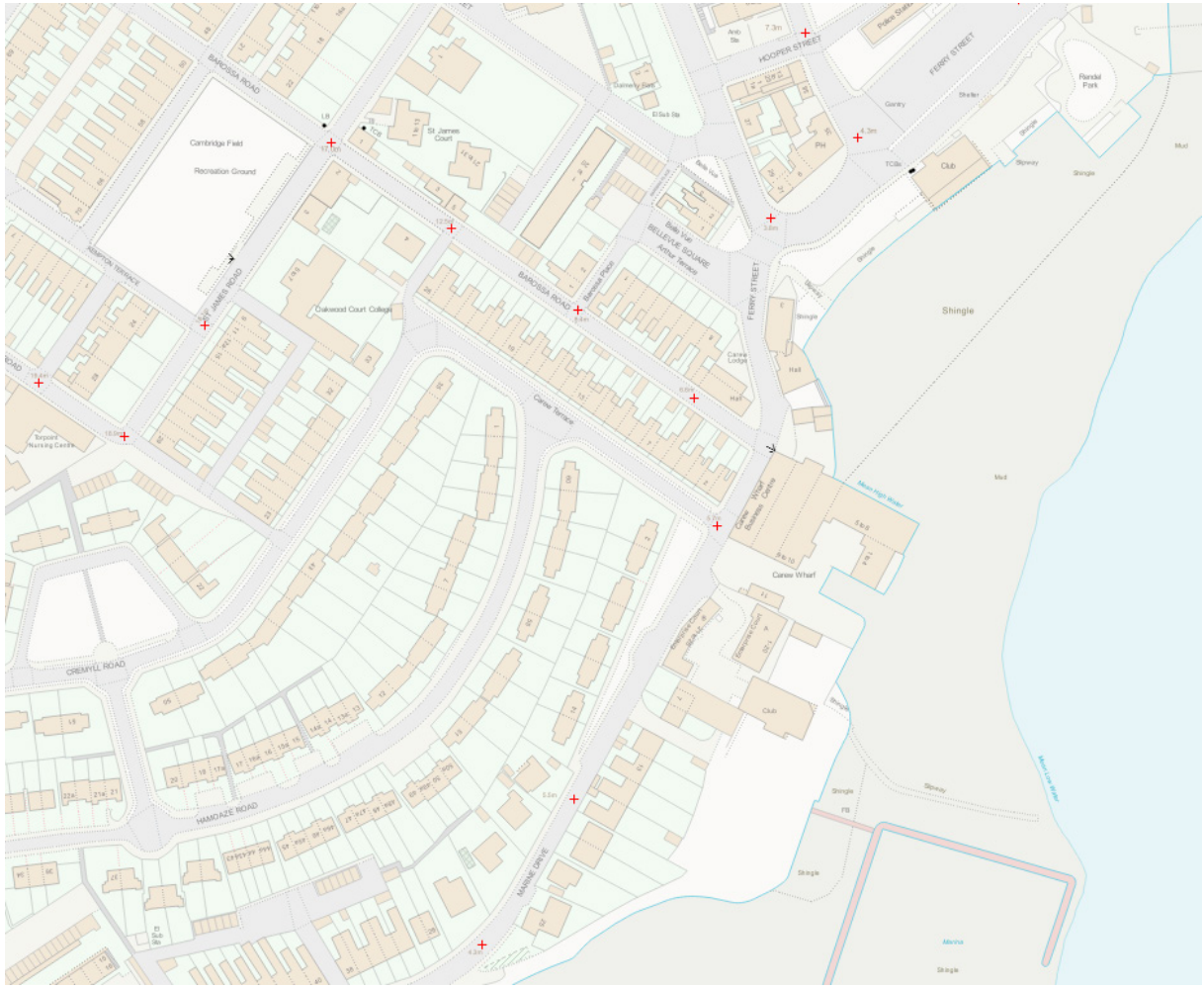
We recommend viewing the map between 1:500 and 1:4000 for maximum legibility and we have set the minimum viewing scale at 1:4000

We also recommend adding a background colour of R:228,G:244,B:247

Your map should now look similar to this:



SUMMARY

We have released a number of SQL scripts, stylesheets and symbology sets to aid customers in styling OS MasterMap Topography Layer.

USEFUL LINKS

1. Oracle INSTR Function -
   https://docs.oracle.com/cd/B28359_01/olap.111/b28126/dml_functions_1103.htm#OLADM564
2. PostgreSQL MVCC -
   http://www.postgresql.org/docs/current/static/mvcc-intro.html
3. PostgreSQL Pattern Matching -
   http://www.postgresql.org/docs/9.4/static/functions-matching.html
4. PostgreSQL Array Operators -
   http://www.postgresql.org/docs/9.4/static/functions-array.html
5. OGC Style Layer Descriptor -
   http://www.opengeospatial.org/standards/sld

APPENDIX A

The following tables show the attributes used to create the new style rules.

BOUNDARYLINE

Feature Code	Style Description	Style Code
10136	Parish Boundary	1
10131	District Boundary	2
10128	Electoral Boundary	3
10127	County Boundary	4
10135	Parliamentary Boundary	5

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CARTOGRAPHIC SYMBOL

Feature Code	Style Description	Style Code
10091	Culvert Symbol	1
10082	Direction Of Flow Symbol	2
10130	Boundary Half Mereing Symbol	3
10066 or 10170	Bench Mark Symbol	4
10165	Railway Switch Symbol	5
10177	Road Related Flow Symbol	6

search

CARTOGRPAHIC TEXT

We have added two extra lookups to help styling:
- this is the font required, 1 = Arial, 2 = Arial Italic, 3 = Times New Roman Italic
- this is a colour for the text, 1 = Black, 2 = Blue, 3 = Orange, 4 = Brown, 5 = Purple

Descriptive Group	Descriptive Term	Make	Style Description	Style Code	Font Code	Colour Code
Contains 'Buildings Or Structure'	-	-	Building Text	1	1	1
Contains 'Inland Water'	-	-	Water Text	2	2	2
Contains 'Road Or Track'	-	-	Road Text	3	1	1
Terrain and Height	-	-	Height Text	4	1	3
Contains 'Roadside'	-	-	Roadside Text	5	1	1
Contains 'Structure'	-	-	Structure Text	6	2	1
Political Or Administrative	-	-	Administrative Text	7	1	5
General Surface	-	Natural	General Surface Natural Text	8	1	1
General Surface	-	Manmade or IS NULL	General Surface Manmade Text	9	1	1
Landform	-	Natural	Landform Natural Text	10	1	4
-	Foreshore	-	Foreshore Text	11	1	4
Contains Tidal Water	-	-	Tidal Water Text	12	2	2
Built Environment	-	-	Built Environment Text	13	1	1
Contains 'Historic Interest'	-	-	Historic Text	14	3	1
Rail	-	-	Rail Text	15	1	1
Contains 'General Feature'	-	-	General Feature Text	16	1	1
Landform	-	Manmade	Landform Manmade Text	17	1	4
-	-	-	Unclassified	99	1	1

TOPOGRAPHIC AREA

The following table shows the key attributes and style rules for Built Environment features.

Descriptive Group	Descriptive Term	Make	Style Description	Style Code
Contains 'Buildings'	-	-	Building Text	1
	-	-	Water Text	2
	Is NULL	Manmade	Building Fill	1
Contains 'General Surface'	Multi Surface	Multiple	Multi Surface Fill	2
Contains 'General Surface'	Is NULL	Natural	Natural Fill	3
Contains 'Road Or Track'	Is NULL	Manmade	Road Or Track Fill	4
Contains 'General Surface'	Is NULL	Manmade or Unknown	Manmade Fill	5
Contains 'Roadside'	-	Natural	Roadside Natural Fill	6
Contains 'Roadside'	-	Manmade or Unknown	Roadside Manmade Fill	7
Contains 'Inland Water'	Is NULL	-	Inland Water Fill	8
Contains 'Path'	-	-	Path Fill	9
Contains 'Road Or Track'	Track	-	Track Fill	10
-	Slope	-	Slope Fill	11
Contains 'Structure'	Is NULL OR Upper Level Of Communication OR Overhead Construction	-	Structure Fill	12
-	Cliff	-	Cliff Fill	13
-	Step	-	Step Fill	14
-	Foreshore	-	Foreshore Fill	15
-	Traffic Calming	-	Traffic Calming	16
Glasshouse	-	-	Glasshouse Fill	17

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Contains 'Rail'	Is NULL	Natural	Rail Natural Fill	18
-	Pylon	-	Pylon Fill	19
Contains 'Building'	Archway	-	Archway Fill	20
Contains 'Landform'	-	Natural	Landform Natural Fill	21
Contains 'Tidal Water'	Is NULL	-	Tidal Water Fill	22
Contains 'Landform'	-	Manmade	Landform Manmade Fill	23
Rail	Is NULL	Manmade or Unknown	Rail Manmade Fill	24

The following table shows the key attributes and style rules for the Natural Environment

Descriptive Group	Descriptive Term	Make	Style Description	Style Code
-	-	-	Building Text	1
	-	-	Water Text	2
	Contains a form of Nonconiferous Trees OR/ AND a form of Coniferous Trees	-	Mixed Woodland Fill	25
-	Contains a form of Nonconiferous Trees	-	Nonconiferous Tree Fill	26
-	Contains a form of Coniferous Trees	-	Coniferous Tree Fill	27
-	Contains Orchard	-	Orchard Fill	28
-	Contains Coppice Or Osiers	-	Coppice Or Osiers Fill	29
-	Contains Scrub	-	Scrub Fill	30
-	Contains Boulders	-	Boulders Fill	31
-	Contains Rock	-	Rock Fill	32

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-	Contains Scree	-	Scree Fill	33
-	Contains Rough Grassland	-	Rough Grassland Fill	34
-	Contains Heath	-	Heath Fill	35
-	Contains Marsh	-	Marsh Fill	36
			Unclassified	99

TOPOGRAPHIC LINE

Descriptive Group	Descriptive Term	Make	Physical Presence	Style Description	Style Code
Contains 'General Feature'	Is NULL	-	Obstructing	Default Line	1
Contains 'Building'	Outline	Manmade	Obstructing	Building Outline Line	2
Contains 'General Feature'	Is NULL	-	Edge / Limit	Edge Line	3
Contains 'Road Or Track'	Public	Manmade	Edge / Limit	Road Or Track Line	4
Contains 'Building'	Division	Manmade	Obstructing	Building Division Line	5
-	Polygon Closing Link	-	-	Polygon Closing Line	6
Contains 'Inland Water'	Is NULL	-	Edge / Limit	Inland Water Line	7
-	Inferred Property Closing Link	-	-	Property Closing Line	8
Contains 'General Surface'	Is NULL	Natural	Edge / Limit	General Surface Natural Line	9
Contains 'Building'	Outline	Manmade	Overhead	Building Overhead Line	10
-	Bottom Of Slope			Bottom Of Slope Line	11
-	Top Of Slope	-	-	Top Of Slope Line	12

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-	Step	-	-	Step Line	13
-	Unmade Path Alignment	-	-	Path Line	14
-	Mean High Water (Springs)	-	-	Mean High Water Line	15
-	Traffic Calming	-	-	Traffic Calming Line	16
-	Standard Gauge Track	-	-	Standard Gauge Track Line	17
-	Bottom Of Cliff	-	-	Bottom Of Cliff Line	18
-	Top Of Cliff	-	-	Top Of Cliff Line	19
-	Mean Low Water (Springs)	-	-	Mean Low Water Line	20
-	Overhead Construction	-	-	Overhead Construction Line	21
-	Culvert	-	-	Culvert Line	22
-	Pylon	-	-	Pylon Line	23
Landform	-	Natural	-	Landform Natural Line	24
Unclassified	-	-	-	Unclassified Line	99
-	Ridge Or Rock Line	-	-	Ridge Or Rock Line	25
Historic Interest	-	-	-	Historic interest Line	26
-	Narrow Gauge	-	-	Narrow Gauge Line	27
-	Buffer	-	-	Railway Buffer Line	28
-	Tunnel Edge	-	-	Tunnel Edge Line	29
Landform	-	Manmade	-	Landform Manmade Line	30
				Unclassified	99

TOPOGRAPHIC POINT

Feature Code	Descriptive Term	Style Description	Style Code
10197	-	Spot Height Point	1
10085	-	Culvert Point	2
10048	-	Positioned Nonconiferous Tree Point	3
10088	-	Inland Water Point	4
10186	Is NULL	Structure Point	5
10179	-	Roadside Point	6
10186	Overhead Construction	Overhead Construction Point	7
10158	-	Rail Point	8
10050	-	Positioned Coniferous Tree Point	9
10094	-	Landform Point	10
10080	-	Historic Point	11
10129	-	Boundary Post Point	12
10186	Triangulation Point Or Pillar	Triangulation Point Or Pillar Point	13
10191	-	Structure Point	5
10072	-	Site Of Heritage Point	14
10051	-	Positioned Boulder Point	15
10209	-	Tidal Water Point	16
10100	-	Disused Feature Point	17
10159	Switch	Rail Switch Point	18
10132	-	Positioned Nonconiferous Tree Point	3

10080	-	Positioned Nonconiferous Tree Point	3
10120	-	Inland Water Point	4
10176	-	Inland Water Point	4
10159	-	Inland Water Point	4
		Unclassified	99

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Responsibility for this document

Tim Martin, Senior GI Consultant, Ordnance Survey is responsible for the content of this document.

Change of history

Version	Date	Summary of change
0.2	July 2015	First issue

[The impacts of the process described in this document have been assessed and where appropriate, changed, in accordance with the requirements set out in Ordnance Survey's Equality Scheme.]

Trademarks