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Publishing PSMA Data

by David Crowther

Whilst we know that there are many options for your basemapping within either your web or desktop GIS e.g. Open Street Map, Google etc.. many of our clients still like to maximise their use of the **Public Service Mapping Agreement** (PSMA) to utilise the many and varied basemaps that the Ordnance survey provide to them. These include:-



OS MasterMap Topography Layer ›

OS VectorMap Local >

1:25 000 Scale Colour Raster › 1:50 000 Scale Colour Raster >

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This blog describes one day in the life of a Cadline 'GIS Application Engineer', utilsiing Open Source geospatial applications, such as GeoServer and PostGIS, to publish these datasets into our webGIS (MapThat) and a well-known Open Source desktop GIS (QGIS).

Much of the detailed steps for publishing **OS Mastermap as a Web Map Service (WMS)** are covered in this previous Cadline White Paper:

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

A - Publishing Large Scale Raster Data:

Before I decided to tackle accessing OS MasterMap, I decided to start by looking at the larger scale OS raster datasets such as 1:250K, MiniScale, 1:50K, 1:25K and VectorMap Local.

A1 – Downloading the required Raster Data:

Using your **OS Order** details, it is very simple to find and then download the relevant raster tiles for your Local Authority:









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Or Su	Ordnance Can't see the map? This service currently uses Flash. Get help with enabling Flash. Sorry for Y The inconvenience while we update this service.								
Orders	Home My Partner Contracts	My Products Order History	My Downloads OS OpenData Help						
1 Order type	1 Order type Ordering from Partner holdings number 0040112896 - No Reference Provided								
2 Product	1:50 000 Scale Colour Raster		Polygon Library						
Define a p	olygon on map		<enter search="" text=""> Search</enter>						
3 Options - s	set all to display a price	1	V Colygons	Adur Adur					
Years Not Ap	plicable Terminals Corporate		▶ 🧰 Saved	Allerdale					
Format TIEE 8 h	nit I ZWIM Comp		Orders	Amber Valley					
Delivery Downlo	ad		Holdings	Arun					
Future Not Reg	 nuired		Predetined Polygons	Ashheld					
updates				Ashrord					
		e C abl		Baheroh					
			London Boroughs	Barrow-in-Furness					
			Metropolitan Counties	Basildon					
			Metropolitan Districts	Basingstoke and Deane					
			▶ 🧮 National Coverage	Bassetlaw					
			▶ 🤛 Regions	Blaby					
			Unitary Authorities	Bolsover					
			Scotland	Boston					
			Des 🔁 Wales	Braintree					

Having downloaded the relevant image files for each dataset, I needed to then source the corresponding georeference files (e.g. TFW).... and a quick google search led me here:

https://www.ordnancesurvey.co.uk/business-and-government/help-andsupport/products/georeferencing-files-land-sea-tiles.html

Ordnance Survey	GOVERNMENT & BUSINESS	BUSINESS PRODUCTS	Innovation	Resources
1:250 000 Scale Raster Download the TAB files	r georeferencing - 100km x 100 s Download the TFW files	Dkm		
MiniScale [®] georeferen Download the TAB file	cing - GB view Download the TFW file			







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Having now downloaded the images and the required georeference files, these were then copied to our Application Server ready to be published:

) 🕞 🚹 🖛			VI	ИL				
File Home Share View								
🔄 💿 👻 🕇 퉬 🕨 This PC 🛛	Data Driv	e (F:) ► DynamicMaps ► M	apThatProjects 🕨 DATA 🕨 GeoServerData	► RASTER ►	VML			
🛛 📗 Clients	^	Name	Date modified	Туре	Size			
⊿ GeoServerData		SJ38NE.TFW	30-Nov-06 3:14 PM	TFW File	1 KB			
A DE RASTER		🋃 sj38ne	06-Sep-18 9:24 AM	TIFF image	11,885 KB			
JUK 350K		SJ38NW.TFW	30-Nov-06 3:14 PM	TFW File	1 KB			
		🛃 sj38nw	06-Sep-18 9:24 AM	TIFF image	10,525 KB			
		SJ38SE.TFW	30-Nov-06 3:14 PM	TFW File	1 KB			
		🛃 sj38se	06-Sep-18 9:24 AM	TIFF image	4,034 KB			

A2 – Publish the Raster Data using GeoServer:

Instead of publishing this raster data as individual tiles, which QGIS can happily consume, my aim was to use **GeoServer** to publish them as a **Web Map Service (WMS)**, which meant that multiple tiles were mosaiced together into a tiled service.

Within GeoServer I created several new **Data Stores**. Firstly, a simple single **World Image** Data Store for the **MiniScale** tile.

Stores						
Manage the stores providing data Add new Store Remove selected Stores	a to GeoServer Its 1 to 1 (out of 1 matches from 2	17 items)	minis	ca		
Data Type	Workspace	Store Name	Туре	Enabled?		
	DynamicMaps	TryMapThat_miniscale_mapping	WorldImage	1		
<< < 1 > >> Results 1 to 1 (out of 1 matches from 27 items)						

And then a series of Image Mosaic Data Stores; 250K, 50K, VectorMap Local.

Sto	res							
Manage the stores providing data to GeoServer Image: Add new Store Image: Store selected Store								
<<	< 1 > >> Results 1 to 4	4 (out of 4 matches from 27 items)			🔍 mosaic			
	Data Type	Workspace	Store Name	Туре	Enabled?			
		DynamicMaps	TryMapThat_250K	ImageMosaic	×			
		DynamicMaps	TryMapThat_50K	ImageMosaic	×			
		DynamicMaps	TryMapThat_VML_ALLTILES	ImageMosaic	×			
		DUIC	mosaic	ImageMosaic	1			









Once the Data Stores were created, I published the layers to create the required WMS. The key here was to ensure that the **CRS settings** were correct.

Coordinate Reference Systems	
Native SRS EPSG:27700	EPSG:OSGB 1936 / British National Grid
Declared SRS EPSG:27700	Find EPSG:OSGB 1936 / British National Grid
SRS handling Reproject native to declared	

Any mistakes will mean that the WMS layer will not render correctly, which can be tested by using the GeoServer **Preview Layers** option to view the WMS in **OpenLayers**.



A3 – Create GeoServer Group Layers:

Having published each of the Raster datasets, I now had about 5 separate WMS layers that could be added into my desktop and webGIS. However, I wanted to group those Raster datasets into one WMS feed, where each different Raster dataset would auto display and hide at preset zoom levels.

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To achieve this, I firstly created new **STYLE** files for each of the Raster layers. Using the **Max/Min Scale Denominator XML** to define when that layer would display.

xmins:vgc="http://www.opengis.http/gc" xmins:vlink="http://www.w3.org/1999/xlink"	
xmlns.xsi="http://www.w3.org/2001/XMU.schema-instance"	~
4 xsi:schemaLocation="http://www.opengis.net/sld	
http://schemas.opengis.net/sld/1.0.0/StyledLaverDescriptor.ysd">	
5	
6 <name>raster</name>	
7 <userstyle></userstyle>	
<pre>8 <name>raster</name></pre>	
<pre>9 <title>Raster</title></pre>	
10 <abstract>A sample style for rasters, good for displaying imagery</abstract>	
11 <featuretypestyle></featuretypestyle>	
12 <featuretypename>Feature</featuretypename>	
13 <rule></rule>	
14 <minscaledenominator>25000</minscaledenominator>	
15 (MaxScaleDenominator>100000	
<pre>16 <rastersymbolizer></rastersymbolizer></pre>	
17 <pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>	
18	
19	
20	
21	
22	
23	~

Now that each Raster WMS auto turned on and off at different zoom levels, I could then Group these layers into one **GROUP Layer**.

Layers					0		
 Add Layer Add Layer Group Add Style Group 							
Drawing order	Туре	Layer	Default Style	Style	Remove		
1 🖡	Layer	DynamicMaps:TryMapThat_VML_ALLTILES		TryMapThat_VML	9		
2 🕯 🖡	Layer	DynamicMaps:TryMapThat-Raster50K-SJ48		TryMapThat_50K	9		
3 🕯 🌡	Layer	DynamicMaps:TryMapThat_250K		TryMapThat_250K	9		
4 👔	Layer	DynamicMaps:MiniScale		TryMapThat_Miniscale	9		
<< < 1 > >>	Results 1 to	o 9 (out of 9 items)					

This now meant that I had one WMS layer that would auto turn off each different PSMA Raster layer as I zoomed into and out from the map:









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A4 – Access Raster WMS within desktop GIS and CAD

Within **QGIS**, creating a **WMS connection** to my GeoServer instance then enabled me to select the **PSMA Group Layer** and **Add** it into the map.

Q Data Source Manager WMS/WMTS					? ×
Erowser	Layers Layer Or	der Tilesets Server Search			
V- Vector	TryMapThat				•
Raster	Connect	New Edit Remove		Load Save	Add default servers
	ID	Name	Title	Abstract	^
🤊 Delimited Text	> 43	DynamicMaps:TryMapThat_25K_SJ49	TryMapThat_25K_SJ49		
· +	> 57	DynamicMaps:TryMapThat_lighting27700	TryMapThat_lighting27700		
	> 45	DynamicMaps:TryMapThat_Liverpool_WARDS	TryMapThat_Liverpool_WARDS		
GeoPackage	> 59	DynamicMaps:TryMapThat_liverpoolschools	TryMapThat_liverpoolschools		
4	> 47	DynamicMaps:TryMapThat_PostGIS_LSOA	TryMapThat_PostGIS_LSOA		
🥖 SpatiaLite	> 49	DynamicMaps:TryMapThat_PostGIS_LSOA_Liver	TryMapThat_PostGIS_LSOA_Liverpool		
	4	DynamicMaps:TryMapThat_PSMA_RASTER	TryMapThat_PSMA_RASTER	Layer-Group type layer: DynamicMaps:TryMapThat_PSMA	RASTER
	> 51	DynamicMaps:TryMapThat_Shapefile_LSOA	TryMapThat_Shapefile_LSOA		
+ PostgresQL	> 53	DynamicMaps:TryMapThat_VML_ALLTILES	TryMapThat_VML_ALLTILES		

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This then provided me with one WMS layer that displayed all the PSMA Raster tiles, and auto transitioned through the layers, displaying the correct tiles at each zoom level.





Implementing this within your GIS environment will mean that you can very easily publish all your PSMA Raster layers in one single URL, which your GIS users can access. In addition using the **WMS Data Connection** options in **Autodesk**, your CAD users can also make use of the same Raster datasets.

The image below shows how I used the WMS Connection in **Map3D** to access my PSMA Raster WMS to provide background mapping with my CAD application.











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A5 – Access Raster WMS within webGIS (MapThat)

Having now created one single URL for your PSMA Raster data, you can also publish this within your webGIS as either an alternative to or replacement for any existing external basemaps. This means that you have full control over the basemapping that you present to your users.

I used the MapThat web Admin forms to create a new WMS layer within our **<u>TryMapThat</u>** Instance.











B - Publishing OS MasterMap:

Having now successfully published the Large-Scale Raster mapping, next I explored options for publishing **OS MasterMap** within both a webGIS and desktop GIS.

B1 – Importing the required OS MasterMap Data:

Using your **OS Order** details it is very simple to find and then download the relevant OS MasterMap GZ tiles for your Local Authority:



Once the GZ tiles have downloaded I used the **OS Translator 2** plugin within **QGIS** to import the MasterMap data into the individual tables within my PostGIS Database. The steps to do this and then create the WMS layers via GeoServer are fully described in this previous white paper - <u>https://www.cadlinecommunity.co.uk/hc/en-us/articles/115003309789-Publishing-OS-MasterMap-WMS-Layers</u> - although a summary of these steps are provided below.

The OS Translator tool took about 1 hour to import the 13 tiles for my chosen area.

\mathbf{Q}_n OS Translator II					?	×
Import Tasks	Label	LCC OSMM Sept 2018		Fields		
LCC OSMM Sept 2018	Dataset	OS Mastermap Topography (v9)	Υ.	 TopographicArea CartographicSymbol 		
	Connection	LCC OSMM Localhost	Ŧ	CartographicText Soundard ine		
	Mode	Create or Replace	7	> TopographicLine		
	Schema	Schema public > TopographicPo	> 🗹 TopographicPoint			
	Style	standard				
	Create :	spatial index				
	Remove	duplicates (chunk artefacts)				
	Import b	ooundary features (Ignore FID)				
	Add OS	styling fields				
	Apply de	efault OS style	_			
	Recursiv	vely process a directory				
Delete New	Input	TA\OSMM\2018_09_05\1 tile test	+++			
Processor Cores 4	0			2		
Help About			50%	Loading - grab a snack	OK Ck	ose











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After which I then had the required OS MasterMap tables in my PostGIS database.

		ogc_fid [PK] integer	featurecode integer	version integer	versiondate character varying	theme character varying[]	broken integer	calculatedareavalue double precision	changedate character varying[]
We Domains	1	1	1	1	1970-01-01	{Land}	(null)	1	{1970-01-01}
	2	2	10053	1	2004-03-28	{Land}	[null]	79.938752	{2004-03-25}
Aa FTS Parsers	3	3	10021	2	2001-11-11	{Buildings}	[null]	51.709464	{1992-02-01}
🕮 🔞 FTS Templates	4	4	10053	1	2004-03-28	{Land}	[null]	213.300056	{2004-03-25}
🕮 😁 🚰 Foreign Tables	5	5	10021	2	2001-11-11	{Buildings}	[null]	72.031256	{1992-02-01}
🕮 🌾 🏠 Functions	6	6	10053	2	2004-03-28	{Land}	[null]	112.374232	{2000-10-19,2001-07-0.
🐵 🐻 Materialized Views	7	7	10021	2	2001-11-11	{Buildings}	(null)	62.61	{1992-02-01}
🕀 1.3 Sequences	8	8	10183	2	2004-03-28	{Roads Tracks And Pat		183.78484	{2000-10-19,2001-07-0.
Tables (11)	9	9	10021	2	2001-11-11	(Buildings)	foull	52,991248	{1992-02-01 2001-07-0
Boundaryline	10	10	10021	-	2001-11-11	(Puildings)	foull	40 467752	(1002.02.01)
Cartographicsymbol	10	10	10021	4	2001-11-11	(buildings)	tunij	40.407732	(1992-02-01)
🖳 🖽 cartographictext	11	11	10053	2	2017-03-15	{Land}	[null]	40.08476	{2000-10-19,2001-07-0.
🕀 🚍 iso_metadata	12	12	10021	2	2001-11-11	{Buildings}	[null]	342.386192	{1989-04-12}
🖲 🗄 iso_metadata_reference	13	13	10053	3	2004-03-28	{Land}	[null]	54.089224	{2001-09-08,2004-03-2
⊕- 🛅 layer_styles	14	14	10053	1	2001-11-11	{Land}	[null]	71.882	{2001-09-08}
₽	15	15	10021	2	2001-11-11	{Buildings}	[null]	50.626256	{1992-02-01,2001-07-0.
🖶 🚍 spatial_ref_sys	16	16	10172		2000-07-15	/Roads Tracks And Pat	foull	06 177632	/2001-07-00 2005-00-1
topographicarea		10	10172		2003 07 13	(nodes nocks And Peter	(nun)	50.177052	(2001 07 03,2005-05-11
International In	17	17	10053	1	2001-11-11	{Land}	[null]	103.32352	{2001-09-08}
👜 🖽 topographicpoint	18	18	10053	1	2001-11-11	{Land}	[null]	29.0966	{2001-09-08}

B2 – Accessing the OS MasterMap Data in QGIS and CAD:

Using the **PostGIS connection** options within QGIS, it was very simple to add the OS MasterMap PostGIS tables into my QGIS project, and the styling was auto generated as the style options are stored in the PostGIS database for you.



Using the **PostGIS Data Connection** options in Autodesk, your CAD users can also access the OS MasterMap directly from the same PostGIS database.











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Add Oracle Connection	💮 Edit Coordinate Systems 🛛 🖏 Ref	iresh	
Image: Add PostgreSQL_Connection Image: Add Raster Image or Surface Connection Image: Add SDF Connection	Schema Cartographicsymbol Cartographictext iso_metadata iso_metadata_reference	Coordinate System BritishNatGrid BritishNatGrid < unknown >	
Add SQLite Connection Add WFS Connection Add WMS Connection	 Iayer_styles Cc_bndy topographicarea topographicline topographicpoint public_tmp 	BritishNatGrid BritishNatGrid BritishNatGrid BritishNatGrid	

Once opened the PostGIS tables were added to my map canvas:-



B3 – Publish the OS MasterMap data using GeoServer:

Instead of publishing this MasterMap data directly from PostGIS, I explored how to use GeoServer to publish them as a Web Map Service (WMS), which meant that I could simply publish one WMS instead of the individual tables.

Within GeoServer I created a new Data Store to the PostGIS database, which gave me the connection to the individual tables in the PostGIS database.









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Add layer from Dyn	dd layer from DynamicMaps:TryMapThatPostGIS								
You can create a new On databases you ca Here is a list of resou	ou can create a new feature type by manually configuring the attribute names and types. Create new feature type On databases you can also create a new feature type by configuring a native SQL statement. Configure new SQL view Here is a list of resources contained in the store 'TryMapThatPostGIS'. Click on the layer you wish to configure								
<< 1 2	> >> Results 0 to 0 (out of 0 items)	🔍 Search							
Published	Layer name	Action							
1	cartographicsymbol	Publish again							
×	cartographictext	Publish again							
4	lsoa_extra	Publish again							
×	topographicarea	Publish again							
4	topographicline	Publish again							
v	topographicpoint	Publish again							

Once the Data Store was created, I published the layers to create the required WMS and then tested these layers using the GeoServer **Preview Layers** option to view the WMS in **OpenLayers**.

Layer	Layer Preview							
List of all la	ist of all layers configured in GeoServer and provides previews in various formats for each.							
<< <	1 > >> Results 1 to 5 (out of 5 ma	atches from 44 items)		🔍 lcc				
Туре	Title	Name	Common Formats	All Formats				
•	LCC_cartographicsymbol	DynamicMaps:LCC_cartographicsymbol	OpenLayers KML GML	Select one				
•	LCC_cartographictext	DynamicMaps:LCC_cartographictext	OpenLayers KML GML	Select one				
ш	LCC_topographicarea	DynamicMaps:LCC_topographicarea	OpenLayers KML GML	Select one				
И	LCC_topographicline	DynamicMaps:LCC_topographicline	OpenLayers KML GML	Select one				
•	LCC_topographicpoint	DynamicMaps:LCC_topographicpoint	OpenLayers KML GML	Select one				

TopoPoint -









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CartoArea –



B4 – Create GeoServer Group Layers:

Having published each of the PostGIS MasterMap tables I now had about 5 separate WMS layers that could be added into my desktop and webGIS. However, I wanted to group those datasets into one WMS feed, where each different MasterMap table would be fully styled based on their **Style Codes.**

To achieve this, I firstly created new **STYLE** files for each of the PostGIS tables. Using the **SLD files** that are available from this GitHub link – <u>https://github.com/OrdnanceSurvey/OSMM-Topography-Layer-stylesheets</u>

Now that I had the SLD style files I created new Styles for each of the Mastermap layers, using the **upload SLD** to create the XML needed for each Style.











I then applied the new STYLE to each OS MasterMap layer e.g. CARTO SYMBOL.



Then using the **Open Layers Preview** I could test that the styles were correctly being applied to the layers.



However, when I previewed the TopoArea Layer I noticed that some symbols were missing and being represented as **grey diamonds**.









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The fix for this was quite simple. The issue was due to the fact that the SLD being used was not correctly referencing the **OSMMSYMOLS** library that you should also download from GitHub.

GrdnanceSurvey / OSMM-Topography-Layer	-stylesheets	O Watch	26	\star Star	16	¥Fork 26	
<> Code ① Issues 0 ௺ Pull requests 1 Ⅲ Pr	rojects 0 III Insights						
Branch: master 🕶			Cre	ate new file	Find f	ile History	
OSMM-Topography-Layer-stylesheets / Schema vers	sion 9 / Stylesheets / Geoserver styleshe	ets (SLD) /	osmm	symbols	/		
n charleyglynn New styles added (Outdoor & Light)			Latest	commit da	85f9c ON	Feb 27 2017	
benchMarkSymbol-backdrop.svg	added schema v9 folder					2 years ago	
benchMarkSymbol-light.svg	New styles added (Outdoor & Light)					2 years ago	
benchMarkSymbol-outdoor.svg	New styles added (Outdoor & Light)					2 years ago	
benchMarkSymbol.svg	added schema v9 folder					2 years ago	

This library contains the **SVG files** which QGIS and GeoServer need to reference in order to display the benchmark symbols, woodland fills etc...

So, I re-visited each new **STYLE** file and edited any value which was referencing the **OSMMSYMBOLS** folder so that the link was now correct.

2010.	
10	~
11 Spot neight Point	
12 <reaturerypestyle></reaturerypestyle>	
15 KRUTEZ Crat bright (News)	
14 <name>Spot neight</name>	
<pre>10 < ogc: Property IsAquality > 17</pre>	
1/ <ogc:fropertyname>Style Code</ogc:fropertyname>	
<pre>18 < ogc:llteral>i 10 // argumenteral> 10 // ar</pre>	
19	
20	
21 <minscalebenominator>0 /minscalebenominator> 20 //minscalebenominator>0 //minscalebenominator></minscalebenominator>	
22 <maxscaledenominator>4000</maxscaledenominator>	
<pre>23 <pointsymbolizer uom="http://www.opengeospatial.org/se/units/metre"></pointsymbolizer></pre>	
24 <graphic></graphic>	
25 <externalgraphic></externalgraphic>	
<pre>26 <onlineresource <="" pre="" xlink:type="simple"></onlineresource></pre>	
xlink:href="file:///F:/DynamicMaps/MapThatProjects/DATA/osmmsymbols/spotHeightSymbol.svg"/>	
<pre>2/ <format>image/svg+xml</format></pre>	
28	
29 <slize>3.5</slize>	
30	
31	\sim
32	





Now that each MasterMap WMS had the correct styling I could then **Group** these layers into one **GROUP Layer**.

	Drawing order	Туре	Layer	Default Style	Style	Remove
1	1	Layer	DynamicMaps:LCC_cartographicsymbol		cartographicsymbol-standard	0
2	14	Layer	DynamicMaps:LCC_cartographictext		cartographictext-standard	0
3	î I	Layer	DynamicMaps:LCC_topographicarea		topographicarea-standard	0
4	14	Layer	DynamicMaps:LCC_topographicline		topographicline-standard	0
5	î	Layer	DynamicMaps:LCC_topographicpoint		topographicpoint-standard	0
<	< 1 > >>	Results 1 t	o 5 (out of 5 items)			

This now meant that I had one WMS layer that contained all the pre-styled OS MasterMap layers.







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A5 – Access OS Mastermap WMS within desktop GIS and CAD

Within **QGIS**, using the same **WMS connection** to my GeoServer instance then enabled me to select the new OS Mastermap Group layer and **Add** that to the map.

TryMapThat		▼
Connect	New Edit Remove	Load Save Add default servers
ID	Name	Title Abstract ^
× 0		GeoServer Web A compliant implementation of WMS plus most of the SLD extension (dynamic styling). Can also generate
> 13	DynamicMaps:LCC_cartographicsymbol	LCC_cartographi
> 15	DynamicMaps:LCC_cartographictext	LCC_cartographi
> 17	DynamicMaps:LCC_topographicarea	LCC_topographic
> 19	DynamicMaps:LCC_topographicarea_bw	LCC_topographic
> 21	DynamicMaps:LCC_topographicline	LCC_topographid
> 23	DynamicMaps:LCC_topographicpoint	LCC_topographic
> 25	DynamicMaps:MiniScale	MiniScale
1	DynamicMaps:OSMM_LCC	OSMM_LCC Layer-Group type layer: DynamicMaps:OSMM_LCC

This then provided me with one WMS layer that displayed all the OS MasterMap tables in one layer, pre-styled with the correct colours and line styles.



Tip! – you may find that the rendering of OS MasterMap as a WMS feed may be slow to begin with. However, by increasing the **Max Rendering Memory** within your GeoServer WMS settings you can increase rendering performance in client application. Here I have multiplied the default value x 4.

Max rendering memory (KB)		
262144	×	
Max rendering time (s)		
60		
Max rendering errors (count)		
1000		
Map Buffer Settings		





Having loaded the WMS layer into my GIS, you can also use the **WMS Data Connection** options in Autodesk, so that your CAD users can also make use of the same MasterMap data.

Add Data to Map										
Available sources in this connection.	Available sources in this connection. Select Items to add to the map as layers.									
Schema	Image Format	Server CS Code	Layer CS Code	Style	Background ^					
WMS_Schema										
🖃 📄 🧊 GeoServer Web Map Ser										
SMM_LCC	png	EPSG:27700 ~	BritishNatGrid	<default></default>	Transparent					
🗌 📦 OSMM_LCC_Light	png	EPSG:27700	BritishNatGrid	<default></default>	Transparent					
OSMM_LCC_Out	png	EPSG:4326	LL84	<default></default>	Transparent					
📃 🧊 TryMapThat_PS	png	EPSG:4326	LL84	<default></default>	Transparent					

Once added to the map canvas, I then had OS MasterMap pre-styled and available as a background map within my CAD application. No need to translate GIS data from one format to a CAD compliant format. Instead we now have **One Source of Truth** for that data, which is easily styled through GeoServer and then available for both GIS and CAD users!



A6 – Access OS Mastermap WMS within webGIS (MapThat)

Having now created one single URL for your OS MasterMap data, you can publish this within your webGIS as either an alternative to or replacement for other tiles services.











Using the **MapThat Admin** forms I was able to easily create a new layer in MapThat which used the same URL to access my new OS MasterMap WMS feed.



Finally, I decided to make use of the additional SLD style files that are supplied on the GitHub page to create **Outdoor** and **Light** versions of my OS MasterMap WMS.

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

images	New styles added (Outdoor & Light)	2 years ago
ssmmsymbols	New styles added (Outdoor & Light)	2 years ago
README.md	Note about GeoServer SLDs with data in Oracle	11 months ago
boundaryline-backdrop.sld	Rename boundaryline-backdrop.sld.sld to boundaryline-backdrop.sld	2 years ago
boundaryline-light.sld	New styles added (Outdoor & Light)	2 years ago
boundaryline-outdoor.sld	New styles added (Outdoor & Light)	2 years ago
boundaryline-standard.sld	Rename boundaryline-standard.sld.sld to boundaryline-standard.sld	2 years ago
Cartographicsymbol-backdrop.sld	Rename cartographicsymbol-backdrop.sld.sld to cartographicsymbol-back	2 years ago
cartographicsymbol-light.sld	New styles added (Outdoor & Light)	2 years ago

To do this, I simply created **New STYLE** files to create an Outdoor and Light version of each of the OS MasterMap Layers – CartoText, TopoArea, CartoSymbol etc....











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<<	< 1 > >> Results 1 to 5 (out of 5 matches from 45 items)	🔍 outdoor	×
	Style Name	Workspace	
	cartographicsymbol-outdoor	DynamicMaps	
	cartographictext-outdoor	DynamicMaps	
	topographicarea-outdoor	DynamicMaps	
	topographicline-outdoor	DynamicMaps	
	topographicpoint-outdoor		
<<	< 1 >>> Results 1 to 5 (out of 5 matches from 45 items)		

Then I simply created **2 new GROUPS** for the OS MasterMap layers.

Layer Groups		
Define and manage layer groupings Image: Organization of the second s		
<< < 1 > >> Results 1 to 3 (out of 3 matches from 7 items)	🔍 osmm	×
Layer Group	Workspace	
OSMM_LCC_Light		
OSMM_LCC_Outdoor		
OSMM_LCC	DynamicMaps	
<< < 1 > >>> Results 1 to 3 (out of 3 matches from 7 items)		

And applied the corresponding styles (Outdoor or Light) to each layer in that group.

Drawing order	т Туре	Layer	Default Style	Style	Remove
1 🌡	Layer	DynamicMaps:LCC_topographicarea		topographicarea-outdoor	0
2 🕯 🌡	Layer	DynamicMaps:LCC_cartographicsymbol		cartographicsymbol-outdoor	9
3 🕯 🌡	Layer	DynamicMaps:LCC_cartographictext		cartographictext-outdoor	9
4 î 🌡	Layer	DynamicMaps:LCC_topographicline		topographicline-outdoor	9
5 🕯	Layer	DynamicMaps:LCC_topographicpoint		topographicpoint-outdoor	9
<< < 1 >	>> Results 1	to 5 (out of 5 items)			

I now had **3 different WMS** versions of my OS MasterMap data, which could then easily be added into QGIS, CAD and webGIS.











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OS MasterMap WMS - Standard



OS MasterMap WMS - Outdoor



OS MasterMap WMS – Light







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