

Ordnance Survey

OS VECTORMAP DISTRICT

GETTING STARTED GUIDE

Version 1.0. September 2015

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RESPONSIBILITY FOR THIS DOCUMENT

Ilhan Coskun, GI Consultant, Consultancy and Technical Services is responsible for the content of this document.

CHANGE HISTORY

Version	Date	Summary of change
1.0	September 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.

As a requirement of Ordnance Survey's Equality scheme all of our processes and activities, including all policies, projects and proposals, must be screened to assess any impact with regard to race, disability and gender equality.

Please ensure that this document has been equality screened and include the above statement, only when this has been completed, with the brackets removed. You must notify your Equality Advocate who will ensure that all necessary records are updated. Your Equality Advocate can also help you with the screening process, if required.

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All other trademarks are acknowledged.

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INTRODUCTION

This Getting Started Guide covers both variants of the OS VectorMap District product. It is available as a raster and vector product offering, available for download or on hard media from the OS OpenData™ website.

A high-level view of the product, its features, benefits and sample case studies on its use can be viewed here:

<https://www.os.uk/business-and-government/products/vectormap-district.html>

The data can be downloaded from here:

<https://www.os.uk/opendatadownload/products.html>

OS VECTORMAP DISTRICT RASTER

This section will cover the handling and loading of the raster variant of OS VectorMap® District. The vector variant will be covered later on in this guide.

OBTAINING AND HANDLING THE DATA

The raster data can be downloaded from the OS OpenData website using the link provided above. The user has a choice of selecting either a full colour version or backdrop colour version of the data.

OS VectorMap® District

Great Britain [N/A](#)

National Grid Reference squares [N/A](#)

[1 Mb - 800 Mb]

Data type: Raster

Supply format: **GeoTIFF Full Colour**

Version: 09/2014

Selecting National Grid Reference squares

Using the map on the right, or a [full size version](#), identify which square(s) you want to download. Select or deselect squares by clicking on the map on the right.

To manually select or deselect multiple squares from the two letter reference list, press and hold the **CTRL** key (Windows) or the **Command** key (OS X) while selecting from the list.

				HP	HP	▲
				HT HU	HT	☰
				HW HX HY HZ	HU	☳
				NA NB NC ND	HW	☽
				NF NG NH NJ NK	HX	☿
				NL NM NN NO	HY	♁
				NR NS NT NU	HZ	♃
				NW NX NY NZ OV	NA	♅
				SD SE TA	NB	♇
				SH SJ SK TF TG	NC	♉
				SM SN SO SP TL TM	ND	♋
				SR SS ST SU TQ TR	NF	♍
				SV SW SX SY SZ TV	NG	♏
					NH	♐
					NI	♑

Note

Please note that this is the **raster** format of OS VectorMap District.

The full colour style has stronger colours whilst the backdrop colour is more suited to overlaying your own data. Free sea tiles can also be downloaded from our website for improved display beyond the coast.

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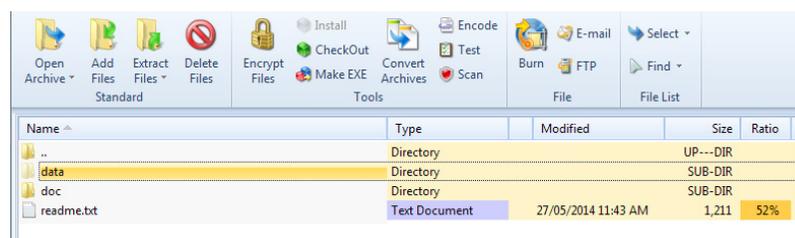
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Below is an illustration of what is contained in a downloaded .ZIP file;



Both versions of the raster offering are available in GeoTIFF format, which means that most modern GI applications will not require any georeferencing files in order to display the data in its correct position geographically. The data is supplied as a complete Great Britain dataset available as a hard media supply or as individual 100km² downloads in a .ZIP file. In the .ZIP file, the data will be found in the sub folder called 'Data'. Once the data is extracted from the downloaded .ZIP file, the user will be provided with all of the 10 x 10 km² tiles within the 100km² tile selected. For example, the tiles will appear as SU30, SU31 within the folder chosen by the user where the data was extracted.

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LOADING OS VECTORMAP DISTRICT (RASTER VERSION)

QGIS

In the examples displayed within this guide, version 2.8.1 (Wien) of QGIS is being used (September 2015). However, all of the functionality illustrated should work with earlier versions of QGIS back to the first version 2 releases.

It is assumed that the user will have already set the default coordinate reference system in QGIS to British National Grid (EPSG 27700). Instructions of how to do this can be found in the QGIS Getting Started Guide:

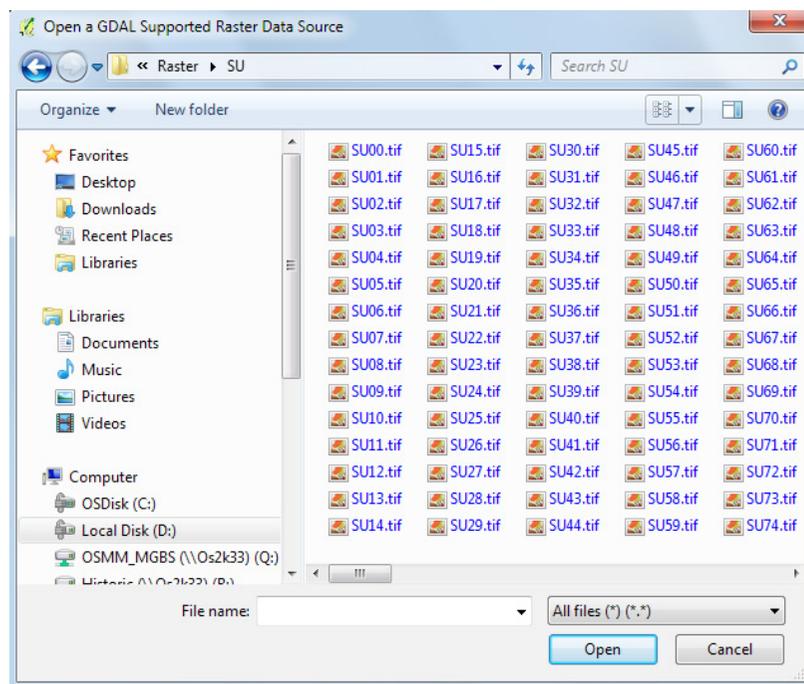
<http://www.os.uk/docs/support/opensource-gis-guide-04-qgis-intro.pdf>

LOADING AND DISPLAYING THE GEOTIFF DATA

In QGIS, select the 'open raster layer' button on the left-hand side of the QGIS window.



Alternatively, from the main menu, select 'Layer' then 'Add Raster Layer' from the sub-menu. In the next window that appears, the user will need to navigate to the folder which contains the data extracted from the .ZIP archive.



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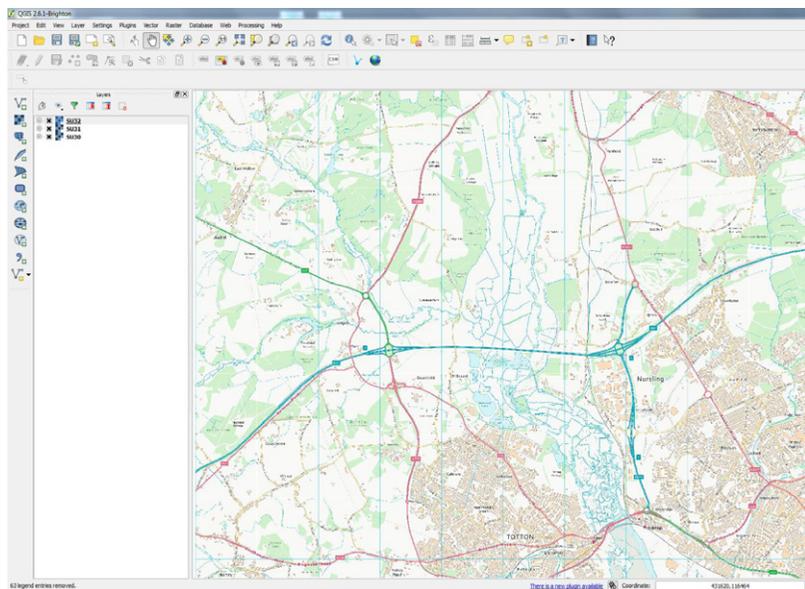
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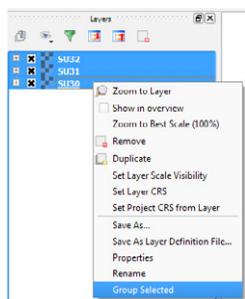


The user can now either select one tile or a group of tiles to be loaded. For the purpose of this guide we will select several tiles in order to demonstrate how the raster data can be manipulated within QGIS. The user may prefer to drag and drop the zip files into QGIS.

The data will now load. Depending upon the number of raster tiles selected, the data will appear similar to what is illustrated in the example below;



It will be noticed that each of the tiles selected appear in the list in the layers window. For small amounts of data, this arrangement is perfectly acceptable. However, if the user is going to load other datasets along with OS VectorMap District raster, it is a good idea to group these tiles into one so that it is easier to manage them along with other loaded datasets. To do this, select all of the tiles to be grouped and right-click the mouse to bring up the context menu.



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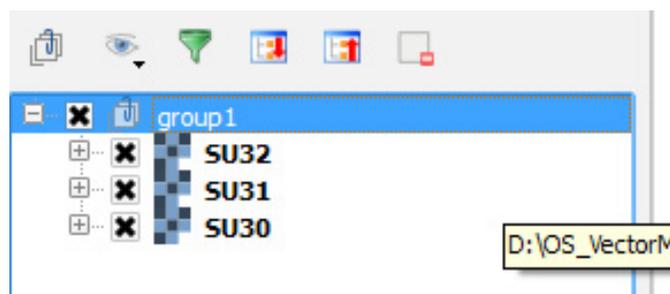
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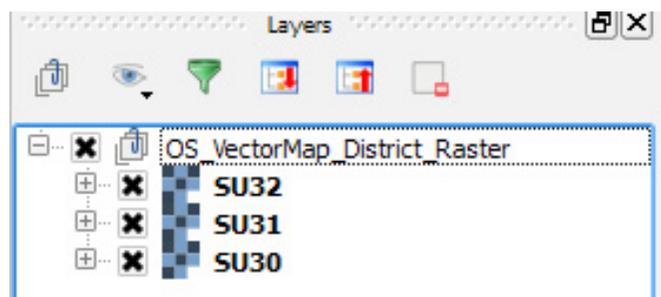
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Select 'Group Selected'. It can now be seen that the raster tiles will appear under a heading in this case, called 'group 1'.



This group can be re-named to the user's choice by right-clicking on 'group 1' and selecting 'rename'. In the example below it can be seen that this group has been renamed to OS VectorMap District Raster.



By creating a group in this manner, it is now possible to collectively display all of the loaded raster tiles in one go simply by unchecking the X mark next to the group. One is also able to shrink the list of tiles loaded by clicking on the minus sign next to the group. This makes it much easier to manage a large number of datasets loaded into QGIS.

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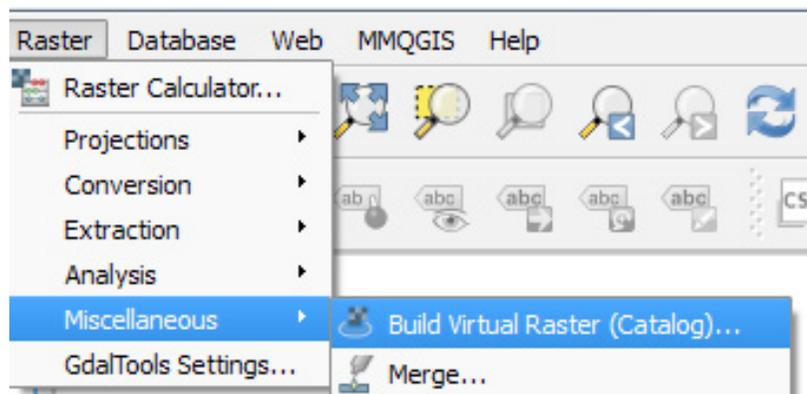
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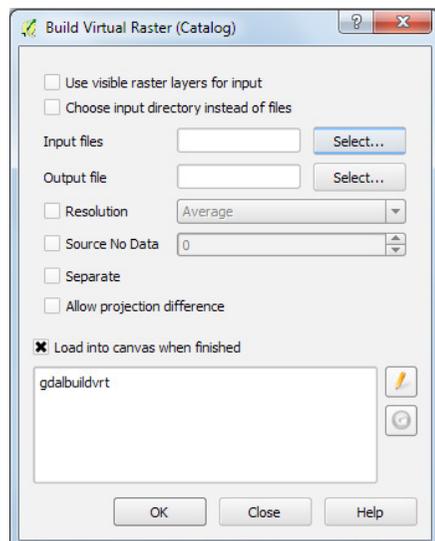


CREATING A VIRTUAL RASTER CATALOG IN QGIS

It is also possible within QGIS to create a virtual raster catalog of data as an alternative means of loading a large number of raster tiles in one operation. In QGIS from the main menu, select 'Raster', 'Miscellaneous', and then 'Build Virtual Raster (Catalog)'.



In the next window, the user will be presented with a number of options, some of which are mandatory.



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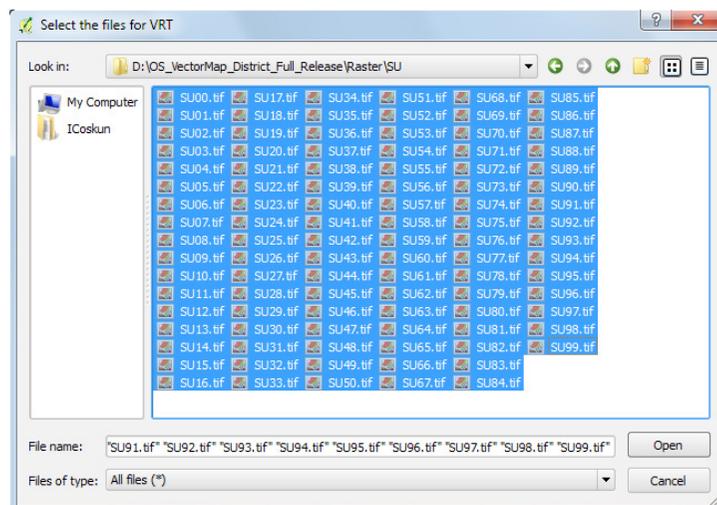
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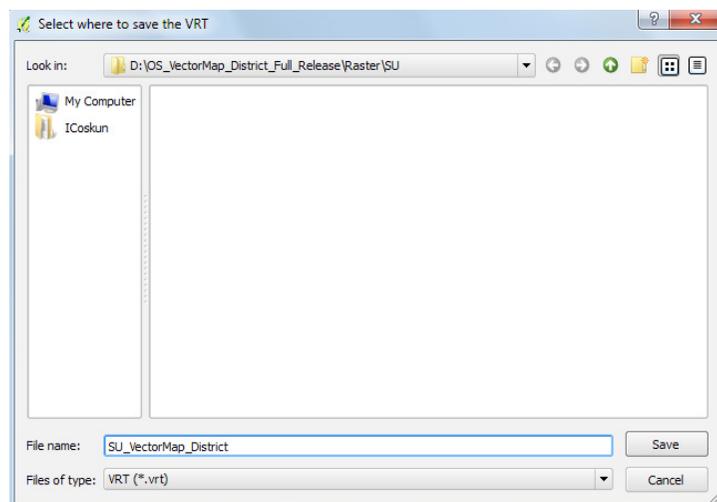


One can choose any raster files which are visible in the current map window, or more normally, select a list of files within a folder to be input. Click on the 'select' button next to the Input Files option.

In this illustration, we are going to select all of the tiles within the folder 'SU'. Click 'open' once selected.



Then click on the 'Output File' select button and give the virtual raster catalog table a name and select a folder in which to store the file.



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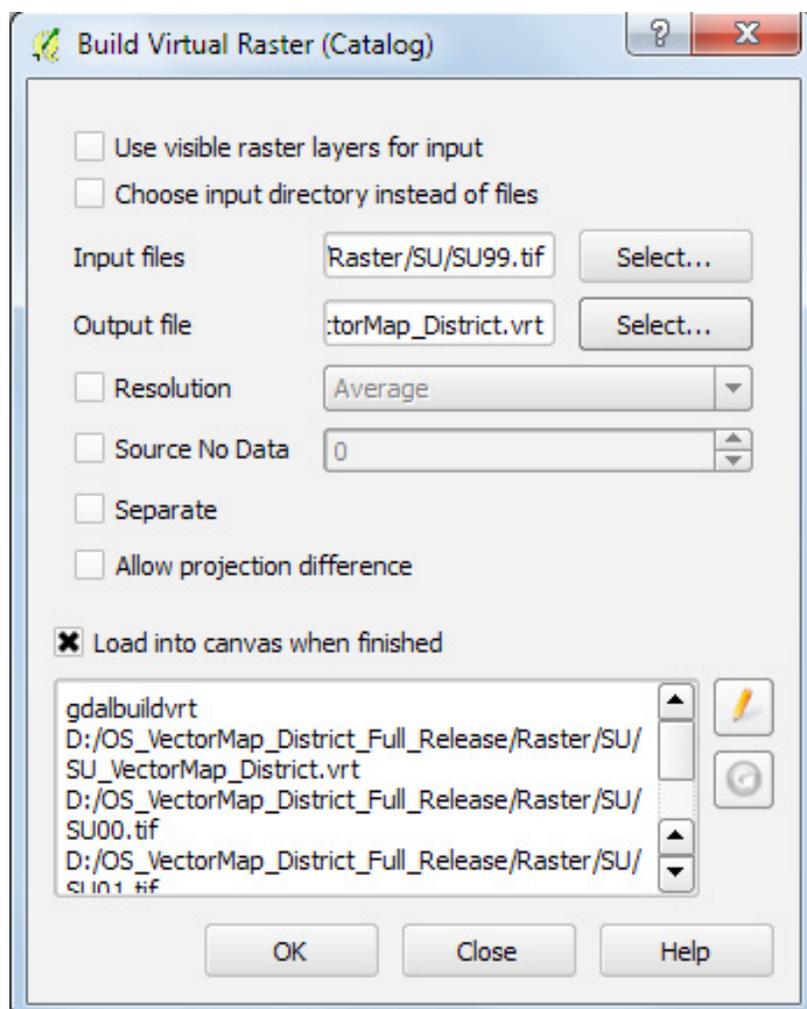
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Once saved, the user can then select whether or not to load the virtual raster table into the canvass by un-checking the box. The file will be saved as a file with a .VRT extension so that the user can find it at a later time.

If the 'Load into canvass when finished' box is checked, upon clicking 'OK' QGIS will build the virtual raster table and then load it into the map window.



Close the dialog box when the process is finished. This is a good way of loading a large number of tiles (in this example the whole of SU).

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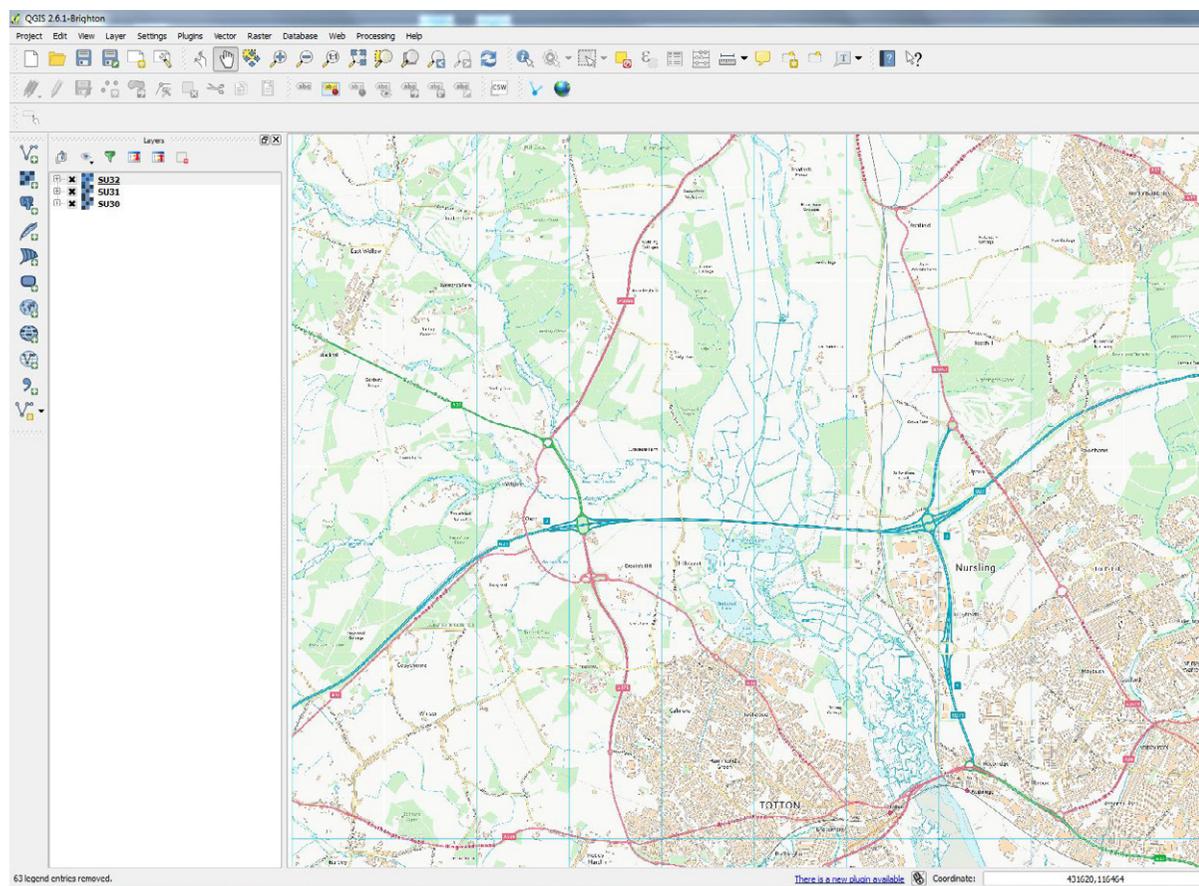
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Depending upon the specification of the PC being used, it is not recommended that a virtual raster catalog comprising of more than one 100km² grid be created at one time due to the amount of data being loaded into each catalog file. More than one .VRT catalog file can be loaded after creation.

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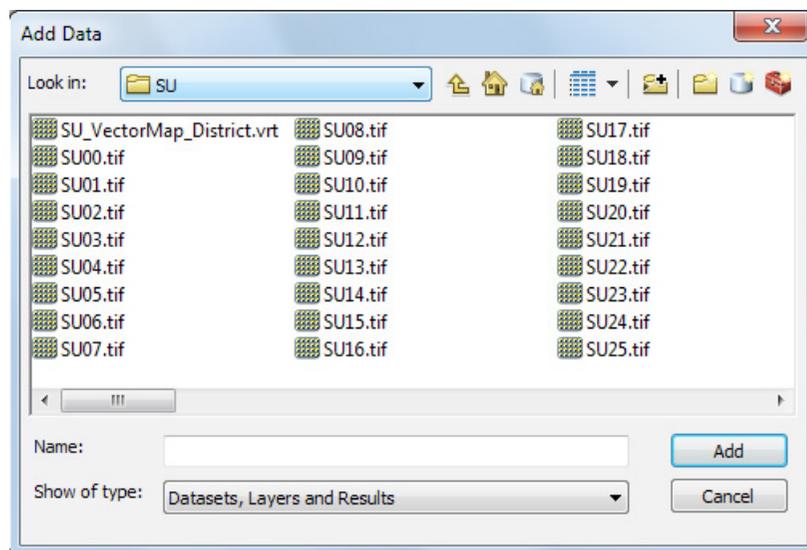
In the examples shown in this guide, version 10.2.2 of ESRI® ArcMap™ and ArcCatalog is being used to manipulate the data. However, the steps illustrated should still apply in earlier versions of ArcMap and Arc Catalog back to the version 9.3 release without much variation.

LOADING AND DISPLAYING THE GEOTIFF DATA



After opening ArcMap, click on the 'Add data' button at the top of the screen.

In the next window, navigate to the folder in which the downloaded data resides after extraction from the .ZIP archive.



Select the files to be opened by highlighting them in the window. ArcMap will then ask if you wish to create pyramids for the raster files to be added. Whilst this can improve performance in ArcMap for large numbers of tiles, the process can change the original GeoTIFF images so that they will not be useable in other applications. In this instance this option will not be selected. This window will re-appear unless the dialog 'do not show in future' is checked.

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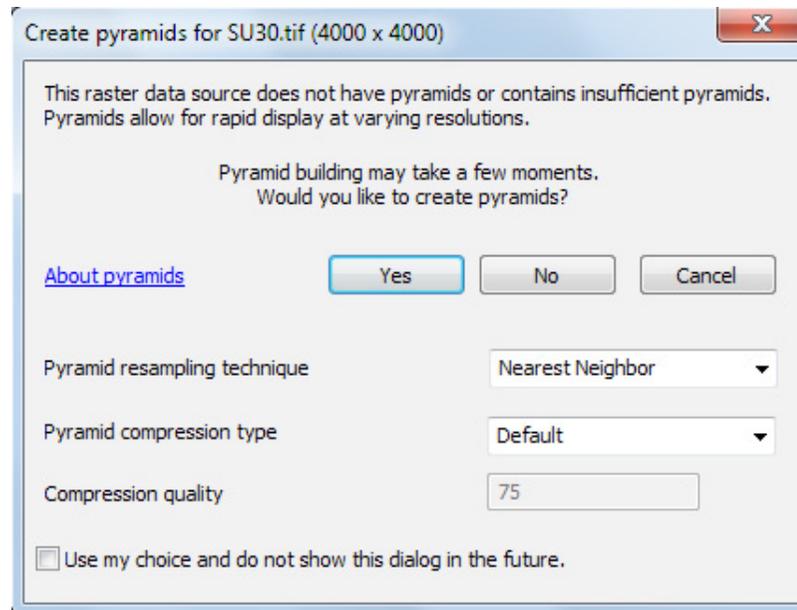
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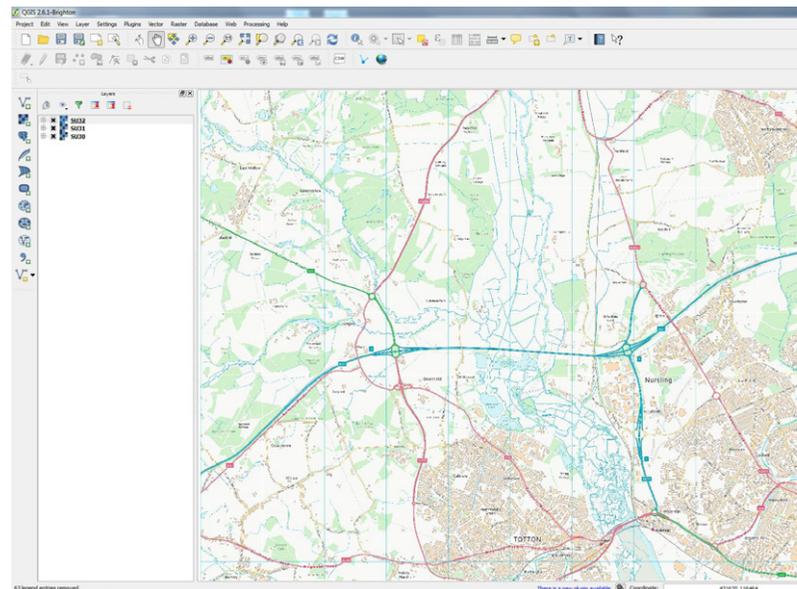
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The data will then load into ArcGIS®. It will be noted that depending upon how many tiles have been selected, a list will appear in the pane on the left-hand side of the map window.



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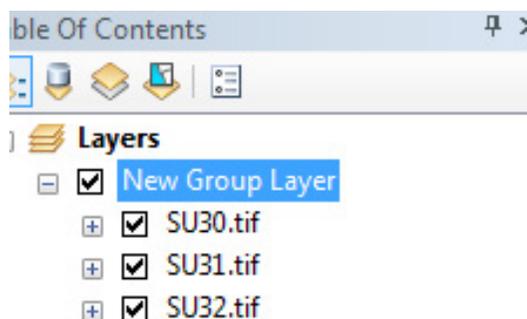
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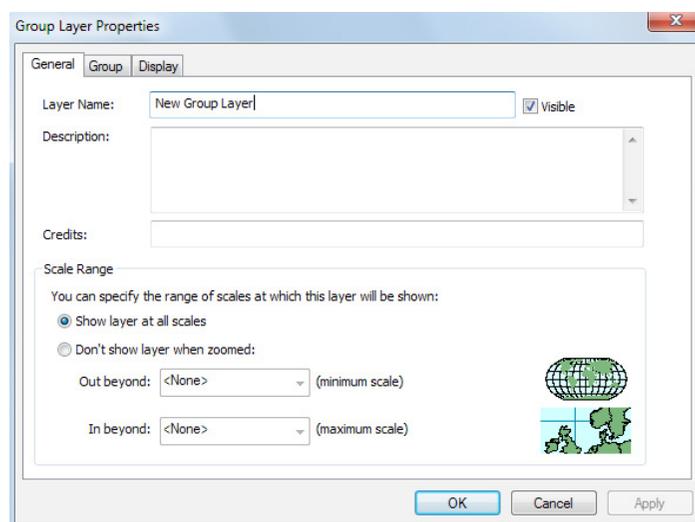
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In order to manage the raster data more efficiently, especially if a large number of tiles are loaded or other datasets are being used with the data, it is possible to group the raster data tiles together. To do this, select all of the tiles to be grouped and then right-click to bring up a context menu. Select 'Group'. A new group is created with all of the selected raster tiles grouped under the main group.



To give the new group layer a more appropriate name, right-click on the group and selecting 'properties'. In the next window, it will then be possible to change the layer name. In this example, we are going to call the new layer 'OS VectorMap Local Raster'. Once this has been renamed, it appears in the layer window. Note that it is possible in ArcMap to add additional raster tiles to this group at a later point in time simply by right-clicking on the group and selecting the 'Add Data' option in the resultant context menu.



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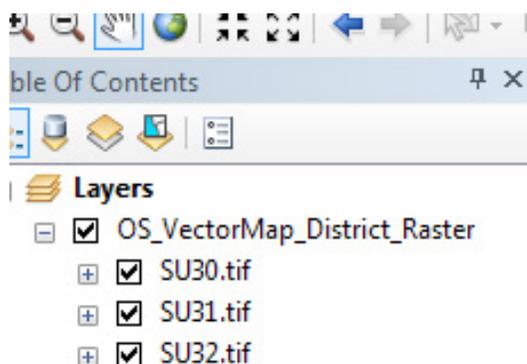
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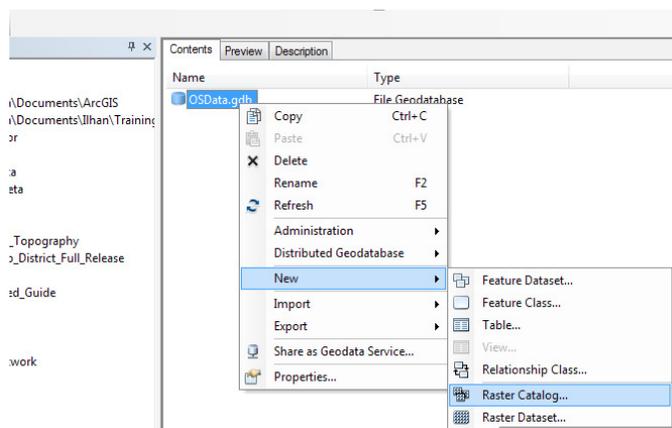
The resulting changes are shown below. As in the case described previously with QGIS, one can now easily manage all of the OS VectorMap District raster tiles turning them on and off altogether by unticking the box next to the group layer entry.



CREATING A RASTER CATALOG IN ESRI ARCMAP

ESRI recommends that all raster and vector data used within ArcMap should be stored in a file or personal geodatabase as this method of handling the data is more efficient, and can store a large amount of both raster and vector data in the same database. Please note that the older personal geodatabase option is limited to a file size of 2GB whereas the file geodatabase has no limit. For large amounts of geographic data it is therefore recommended to use the file geodatabase option. For the purposes of this guide, it is assumed that the user understands how to create a file or personal geodatabase using the ArcCatalog application. This procedure will not be described. In the examples following in this section on creating a raster catalog and later on in this guide when referring to the vector variant of OS VectorMap District using ArcMap, we will use a file geodatabase called 'OSData' in which to hold the raster and vector data.

In ArcCatalog, right-click on the file geodatabase and in the context menu, select 'New' then 'create raster catalog'. In the resulting window, it will be necessary to give the new raster catalog a suitable name.



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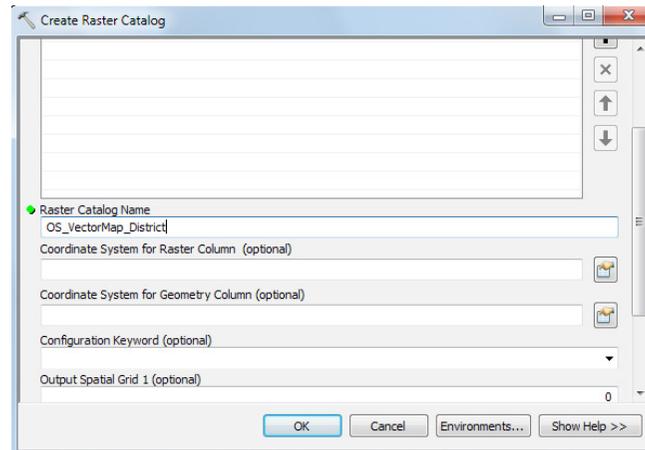
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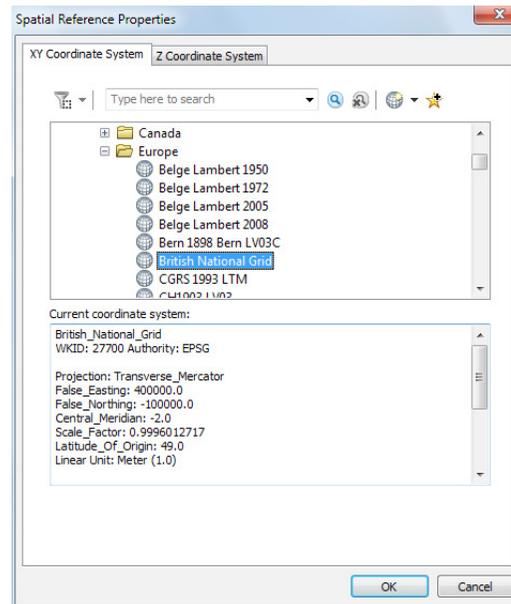
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This created the raster catalog options window below;



At this stage there are some options which the user should consider before creating the catalog. The first one is to select a coordinate reference system for the catalog and also whether or not the catalog will be managed or unmanaged. To select a coordinate reference system, select the box to the right of the coordinate system for raster column box.



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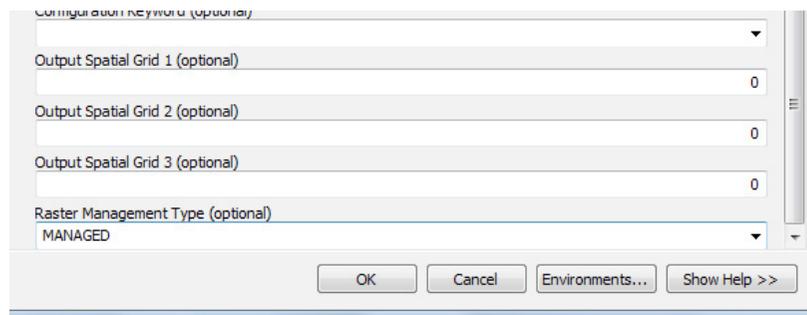
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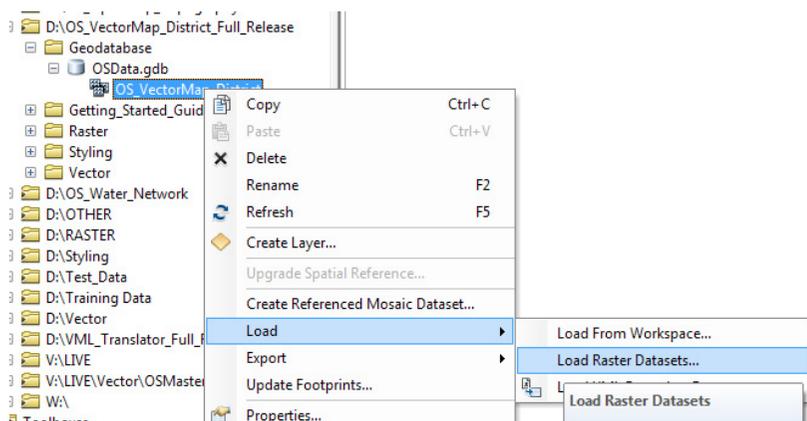


In the next window, select 'projected coordinate systems' followed by 'National Grids' followed by 'Europe' followed by 'British National Grid'. This will ensure that the data will be mapped to the right projection. Click on OK when complete.



Using a managed raster catalog means that a physical copy of the data will be copied into the database, which is useful if the user wants to share the data with another user. If this is not required, select 'unmanaged' as the process in creating this catalog is quicker. Click on OK. ArcCatalog will now create the raster catalog.

The next step is to add the actual raster tiles to the raster catalog. To do this, in ArcCatalog, right-click on the raster catalog just created and from the context menus, select 'Load' and then 'Load Raster datasets'.



In the next window, click the button next to 'Import Rasters' and then navigate to the folder which contains the VMD raster data. Select all of the raster tiles required and click 'OK'. The list of raster tiles selected will appear in the window. Click 'OK' when satisfied all of the data is there. The other boxes in this window can be left as default.

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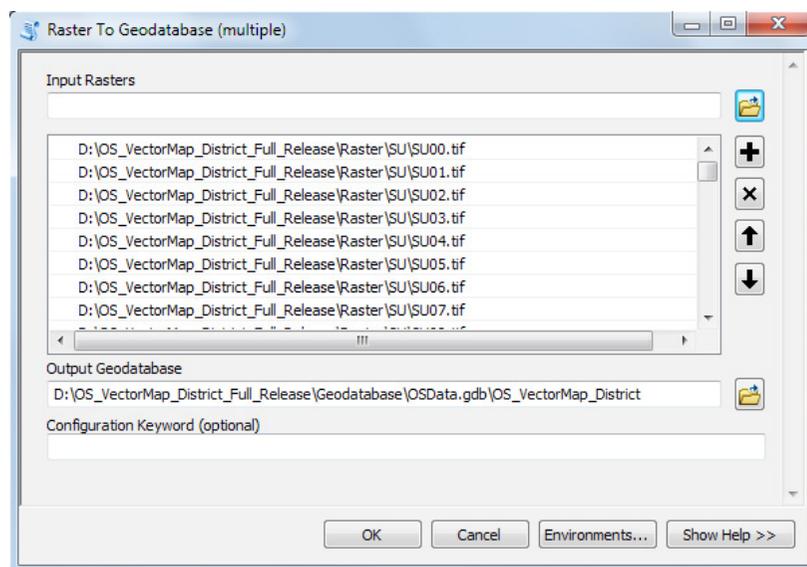
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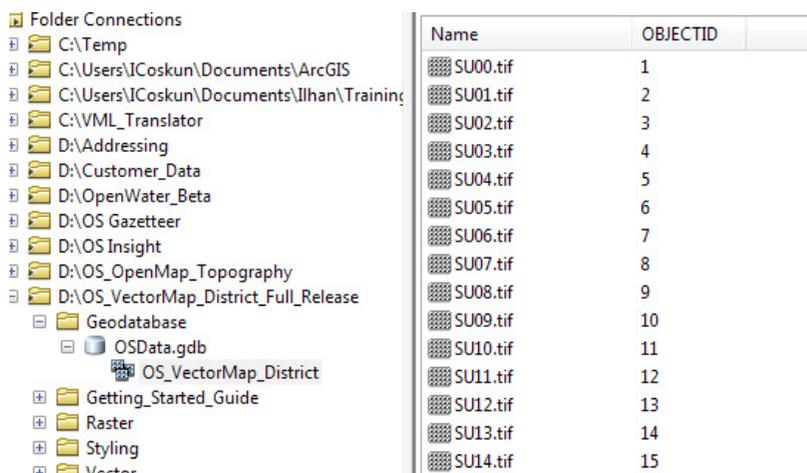
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ArcCatalog will now add all of the raster tiles to the catalog. A message dialog should appear at the lower right of the screen. As stated on page 17, this may take some time if the user is creating a managed catalog with high volume raster data being added to it.

When the loading is complete, the user can check to see that all of the raster tiles have been loaded, by right-clicking on the raster catalog and selecting refresh. The list will then appear in the contents window in ArcCatalog.



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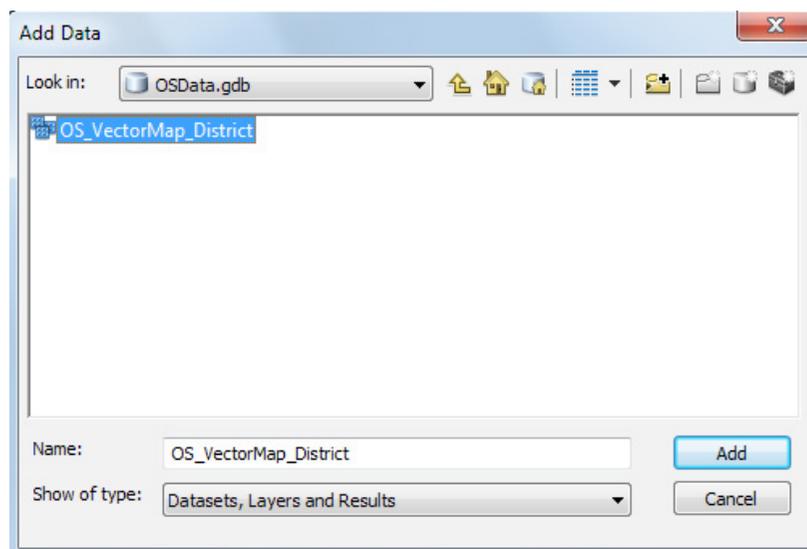
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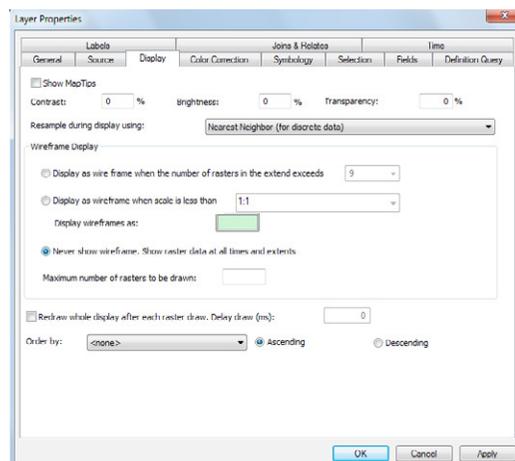
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This data can now be loaded into ArcMap, by clicking the 'Add Data' icon and then navigating to the file geodatabase which contains the raster catalog. In that file geodatabase in OSData.gdb click on the raster catalog OS_VectorMap_District. Click 'Add'.



One of the features in ArcMap which is enabled by default is that it will load a wireframe grid when a raster catalog containing more than a certain number of raster tiles is loaded. This helps to speed up the load. To view the data, right-click on the raster catalog in ArcMap and select 'Properties' in the context menu. In the resultant window, select the 'Display' tab and then select the radial button next to 'never show wireframes'. (see below) Click 'OK' when this is done.



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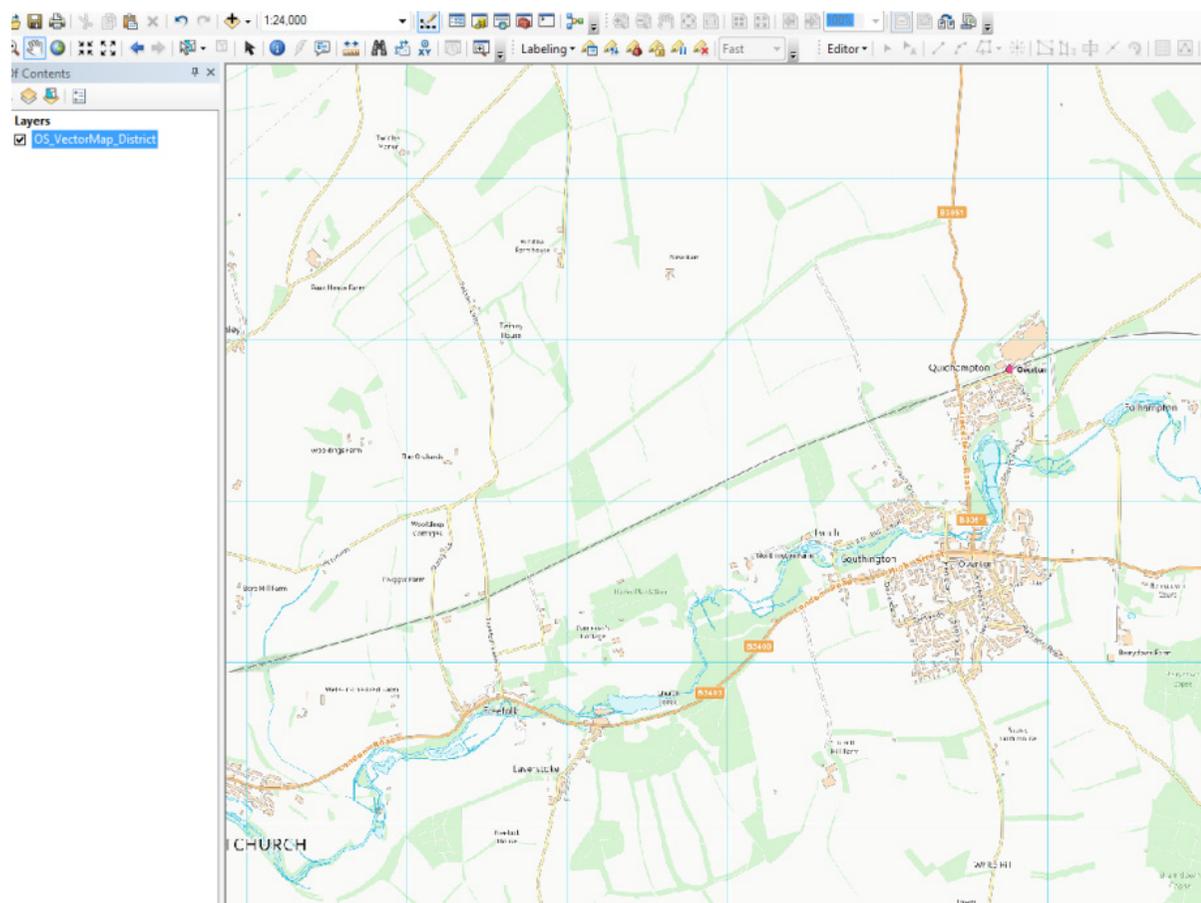
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The raster data should now display correctly in ArcMap and is ready for use.



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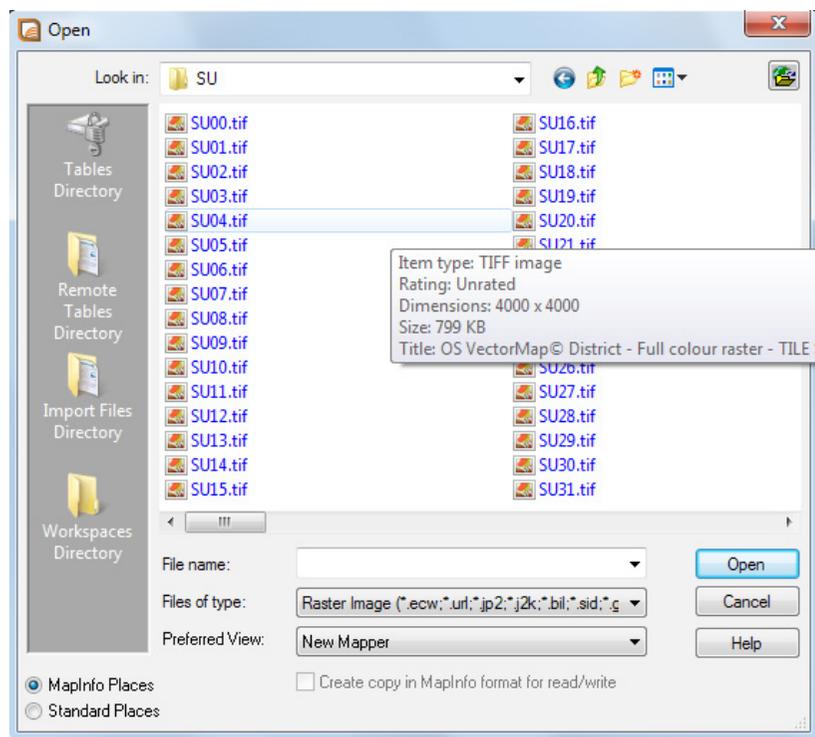


MAPINFO PROFESSIONAL

In the examples shown below, MapInfo Professional® version 12.5.2 32bit is being used to demonstrate the loading and manipulation of the data. However, the procedures outlined here can be used with previous versions of MapInfo back to version 6.0 as the ways in handling raster data have not changed significantly over time.

LOADING AND DISPLAYING THE GEOTIFF DATA

In MapInfo Professional, click the 'open' icon in the top toolbar or from the main menu, click 'File' 'open'. Navigate to the folder in which the OS VectorMap District raster data resides. To load raster GeoTIFF images the files of type drop-down selection needs to be changed to Raster Image. To place this data into a new mapper, select the 'New mapper' option from the Preferred View drop down.



After selecting the tiles to be opened, click 'open'. MapInfo will open the tiles and place in a new map window.

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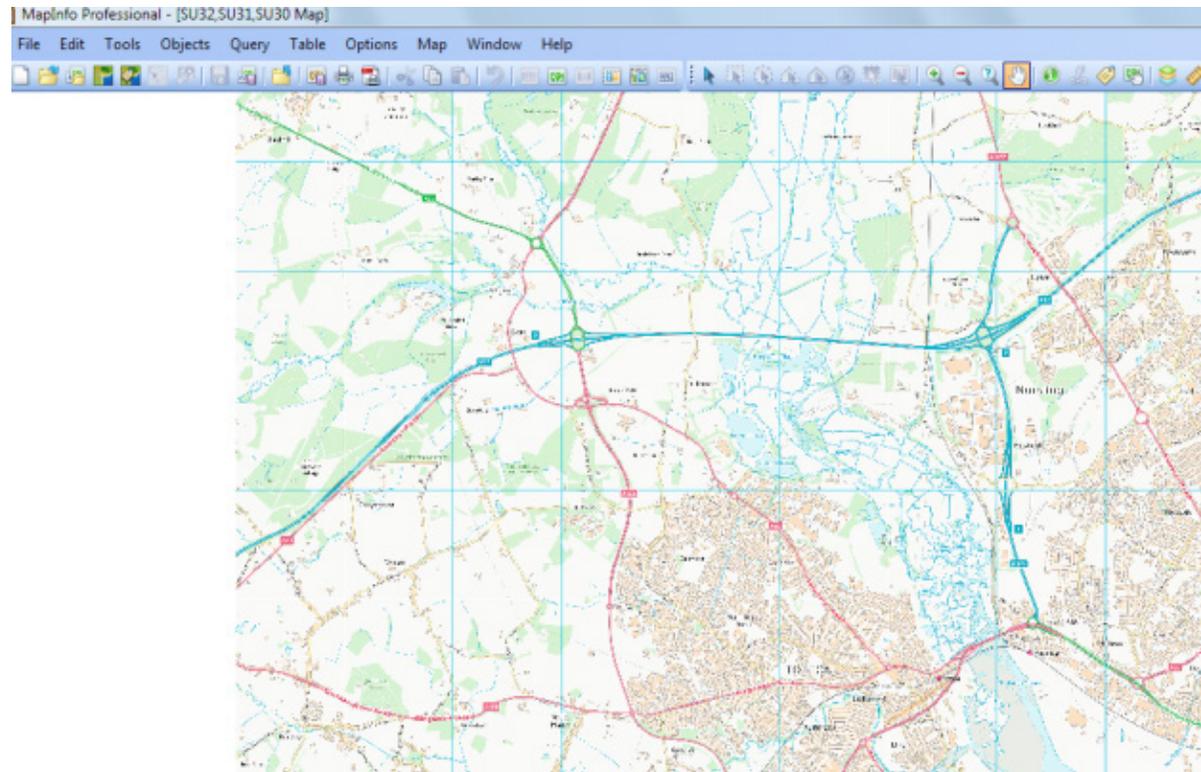
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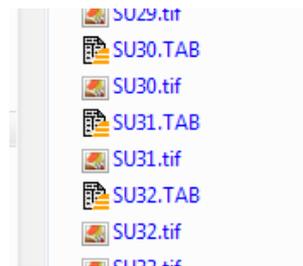
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It will be noted that MapInfo has created new .TAB files for the raster tiles that were selected to be loaded. This does not affect the original raster tiles in any way and is a standard function of MapInfo®.



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CREATING A SEAMLESS TABLE TO MANAGE RASTER DATA IN MAPINFO

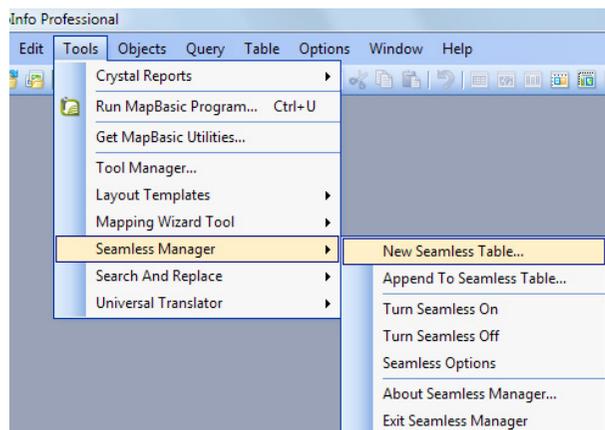
If the user is going to be processing a large amount of raster data within MapInfo, it is better to create a seamless table to handle the data. Seamless data tables are a far more efficient way of manipulating raster data and in the case of OS VectorMap District, one seamless table could be created for a national set of raster data. (This is not recommended on slower machines). However, in most cases, one seamless table for a 100km² grid will be sufficient. It is assumed in this guide that the user is familiar with the creation of seamless tables using the tool manager in MapInfo. If the seamless table manager tool is not activated, it should be turned on using the tool manager in MapInfo.

A limitation of the seamless table feature is that the seamless table manager will only work with .TAB files for the raster data. OS VectorMap District is supplied as GeoTIFF files, which will not, be able to be incorporated into a seamless table. There are two possible ways to overcome this limitation.

- Load all of the raster tiles for the entire grid square as described above into MapInfo. This process will create a .TAB file for each of the raster tiles, which could then be used to create the seamless table.
- Download the georeferencing tiles from the OS website from here;
<https://www.os.uk/business-and-government/help-and-support/products/geo-referencing.html>

The zip file contains a set of .TAB files which match up to the same tile references as found in the OS VectorMap District Raster data. They are not required for georeferencing, but can be used to create a seamless table. They need to be extracted into the same folder as the .TIFF files.

Whichever method is used for creating the .TAB files for the raster data, follow the procedure as illustrated below to create a seamless table for a 100km² grid square. Firstly, open one raster tile from the selection as described in the previous section. This will be the initial raster tile MapInfo will use to include in the seamless table. Alternatively, if using a more powerful system, the user could open the entire selection of raster tables as described above. From the main menu, select 'Tools' 'Seamless Manager' and then 'New Seamless Table'



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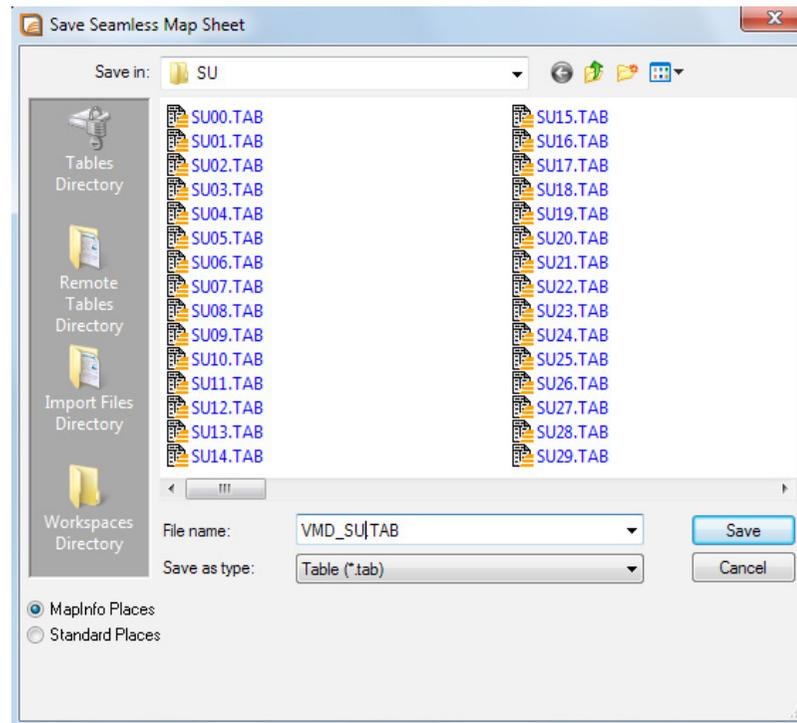
MapInfo Professional

Cadcorp SIS

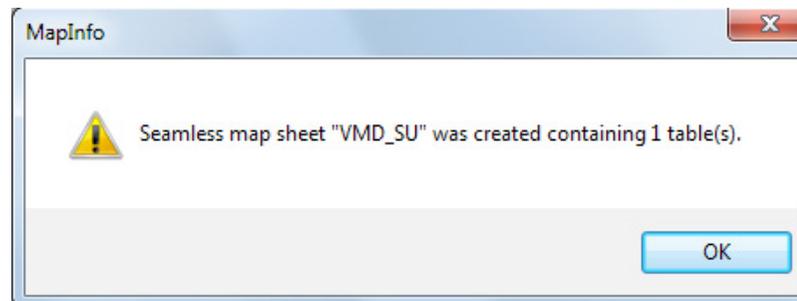
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Give the new seamless table a name and make sure that the seamless table is saved into the same folder as the raster data.



Depending on how many tables were opened in the map window, MapInfo will create a new seamless table containing those tables. In this example, we have placed just one table into the seamless table.



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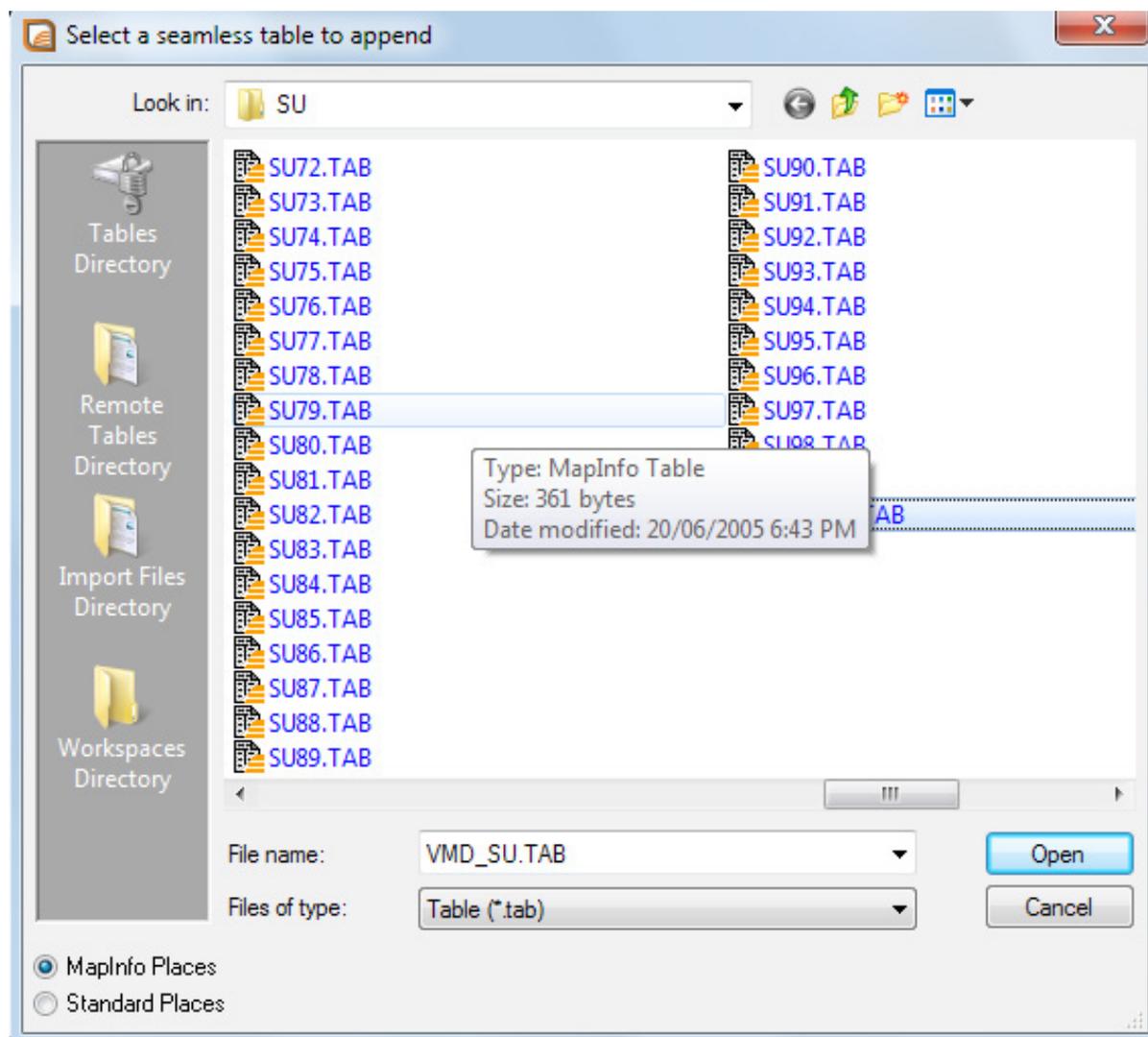
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If subsequently, the user wishes to add additional raster tiles to the seamless table, one can use the 'Append to seamless table' option in the tool manager.



In this example, we have opened all of the remaining raster tables in the grid square 'SU'. Then selected 'Tools', 'Seamless Table', 'Append to Seamless table'. We have selected the original seamless table created called VMD_SU.TAB. Click 'open'.

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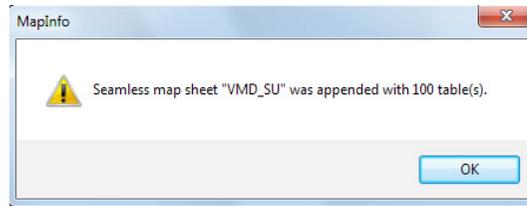
OS VectorMap District Vector

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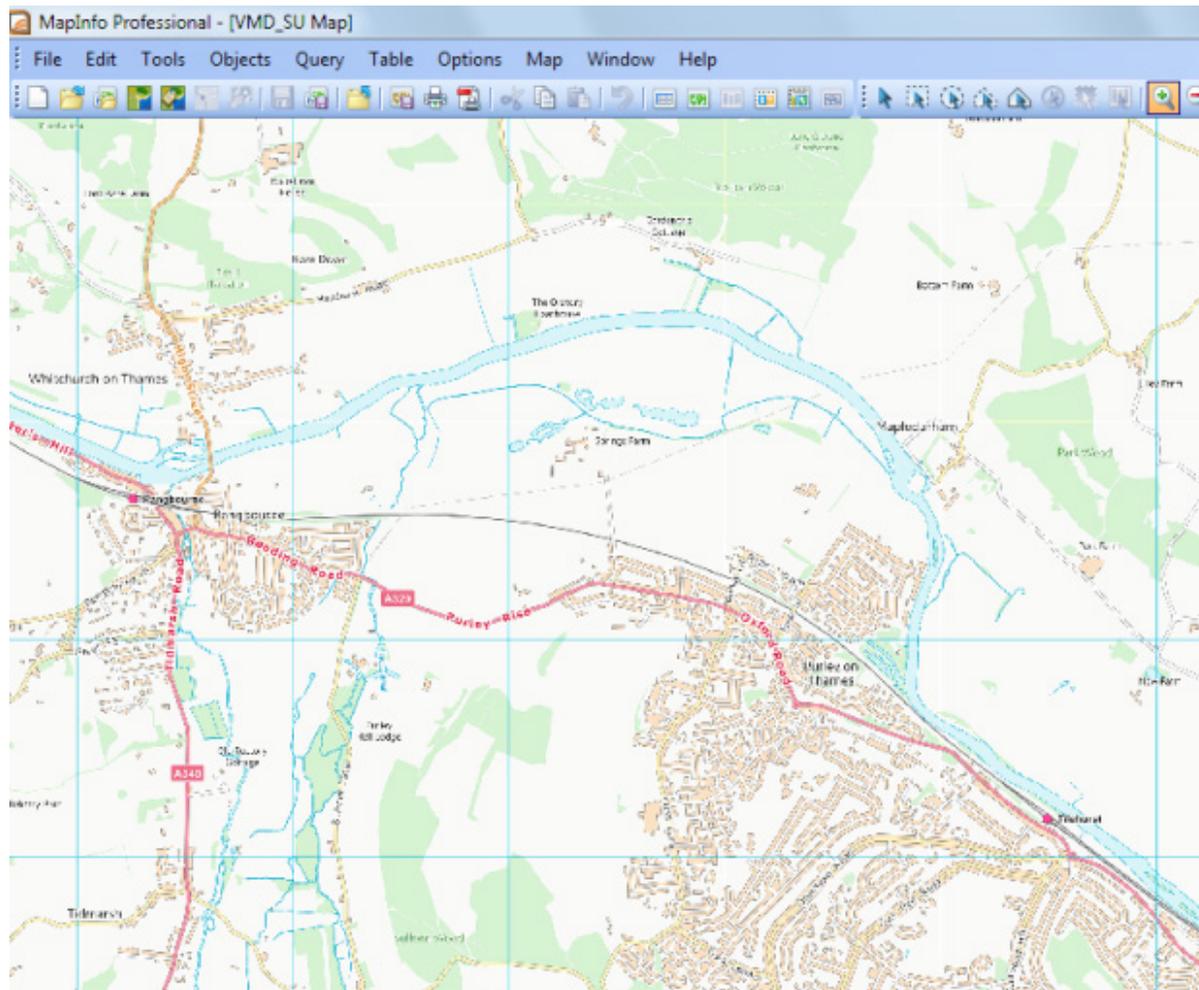
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MapInfo will then append all of the open tables to the seamless table. Using the newly created seamless table, one can load all 100 raster tiles within the 100km² grid collectively.



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CADCORP SIS

In the examples shown below, version 8.0 of Cadcorp SIS® Map Modeller is being used to load and manipulate the OS VectorMap District data.

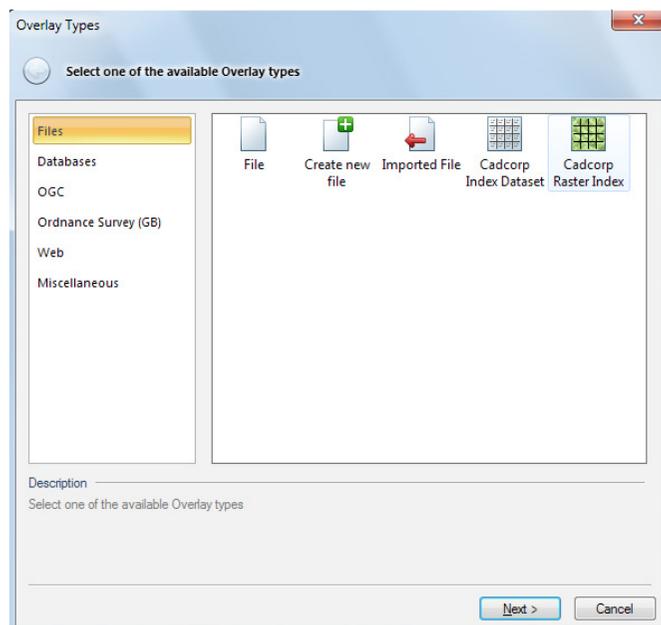
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Cadcorp SIS Map Modeller uses its own referencing system to index the raster data upon loading, so as the OS VectorMap District is supplied as GeoTIFF, no georeferencing tiles are required (as in the cases of the other GI applications illustrated previously).

In Map Modeller, select 'Add Overlay' from the ribbon menu bar



In the next window, double-click on the 'Cadcorp Raster Index' button, another window will open, prompting the user to navigate to the folder, which contains the .TIFF files.



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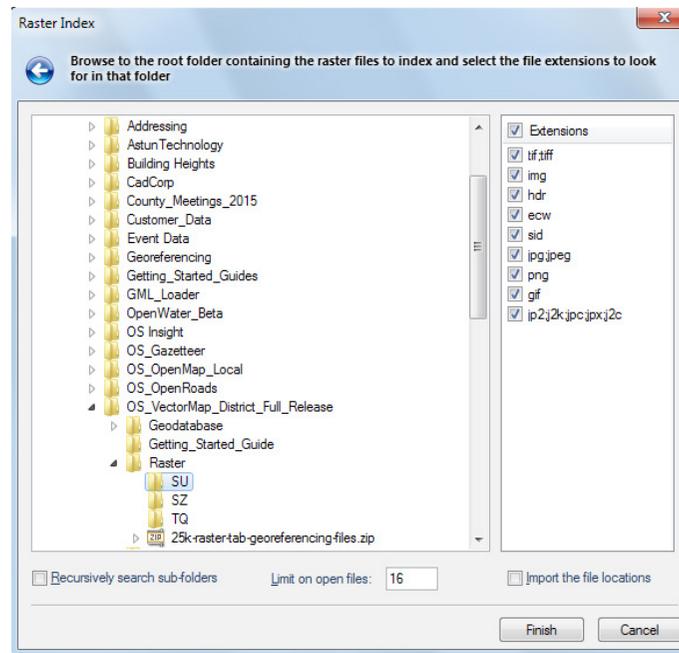
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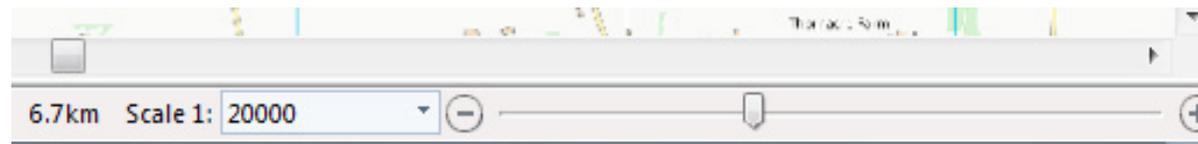
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Navigate to the folder where the OS VectorMap District raster data resides and then click 'Finish'. Please note that a limit on the number of open files is set at the default of 16. This can be increased as required, but it will have an impact upon performance. Map Modeller will load the raster tiles as the user drags the map to the desired location as necessary. Also be aware that the scale should be set to something like 1:2000 by using the scroll bar at the bottom of the map window.



Once loaded, the user can save the viewing location as a Cadcorp Project File (.SWD file) for future use.

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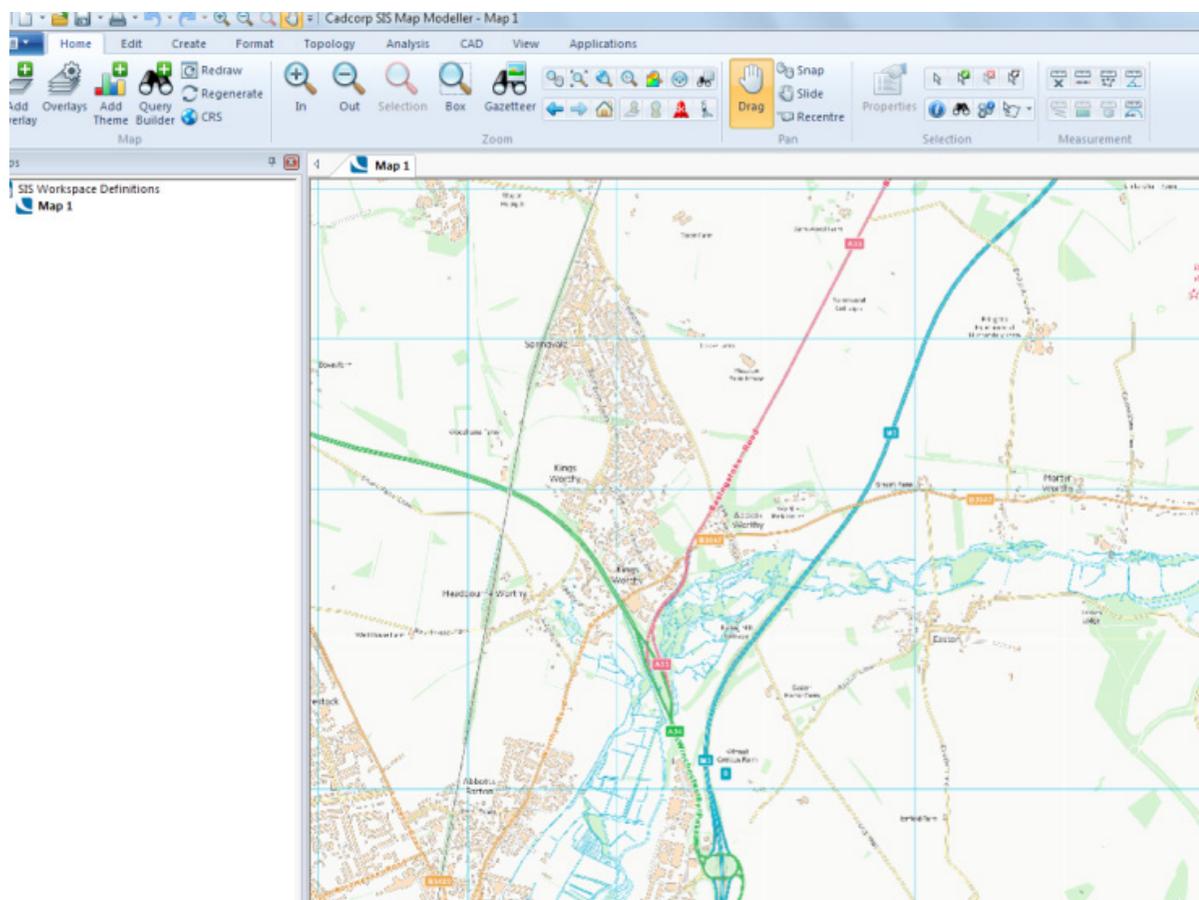
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POSTGRESQL/POSTGIS

There are methods of loading raster data into a PostgreSQL database for use in PostGIS. These methods use the 'raster2pgsql' command in a command line window. However, for using the raster variant of

OS VectorMap District data, nearly all GI applications will load the data as .TIFF image files, and so there is no real requirement to use a database to store the data. This procedure will therefore not be covered in this guide. For more information on loading raster datasets to PostgreSQL and PostGIS, please use the following link:

http://www.postgis.net/docs/RT_FAQ.html

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OS VECTORMAP DISTRICT VECTOR

This section will cover the handling and loading of the vector variant of OS VectorMap District. The raster variant has been covered in the previous section of this guide.

OBTAINING AND HANDLING THE DATA

The vector data can be downloaded from the OS OpenData website using the link provided below. The user has a choice of selecting either ESRI Shapefile or .GML format data for download.

<https://www.os.uk/opendatadownload/products.html>

OS VectorMap™ District

Great Britain

Data type: Vector

Supply format: ESRI Shapefile

Version: 09/2014

Selecting National Grid Reference squares

Using the map on the right, or a full size version, identify which square(s) you want to download. Select or deselect squares by clicking on the map on the right.

To manually select or deselect multiple squares from the two letter reference list, press and hold the CTRL key (Windows) or the Command key (OS X) while selecting from the list.

Note

Please note that this is the vector format of OS VectorMap District.

Cartographic Stylesheets are available for free download.

The data is available as 100km² tiles, which are aligned to the 100km National Grid letters, for example, TQ. The data can also be supplied on hard media as a national set in ESRI shapefile and GML 3.2.1 format.

- ESRI shapefile supply. The data is supplied in a .zip archive containing a parent folder with two sub folders entitled DATA and DOC. All of the component shapefiles are contained within the DATA folder. The data is supplied as 'hairy tiles' in that no feature is broken at the tile edge, but is included across the tile boundary if it extends into an adjacent tile. A data holding comprising of more than one 100km² tile will contain duplicate features, which may need to be removed depending upon the user requirement.
- GML supply. The data is supplied in a .zip archive containing a parent folder with two sub folders entitled DATA and DOC. The data is supplied in the DATA folder as one .GML file covering the whole area. The data is supplied as 'hairy tiles' in that no feature is broken at the tile edge, but is included across the tile boundary if it extends into an adjacent tile. As with the shapefile supply, a data holding comprising of more than one 100km² tile will contain duplicate features which may need to be removed depending upon the user requirement.

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LOADING OS VECTORMAP DISTRICT (VECTOR VERSION)

QGIS

In the examples displayed within this guide, version 2.8.1 (Wien) of QGIS is being used (September 2015). However, all of the functionality illustrated should work with earlier versions of QGIS back to the first version 2 releases.

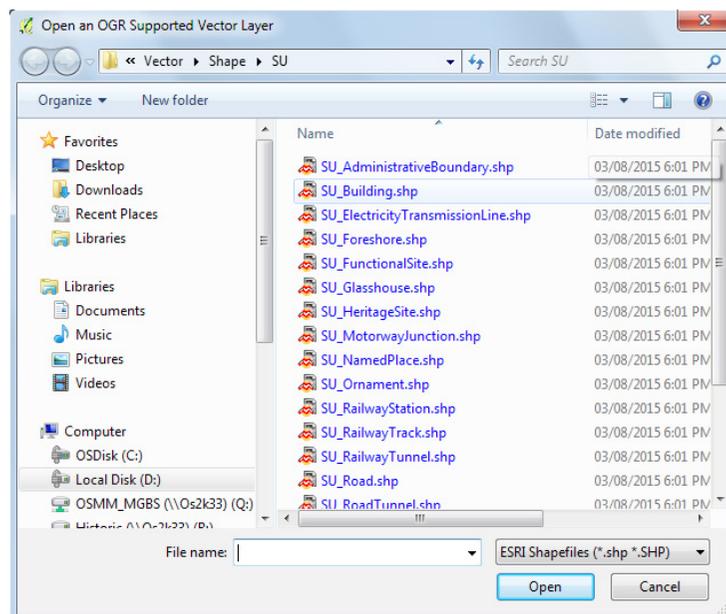
It is assumed that the user will have already set the default coordinate reference system in QGIS to British National Grid (EPSG 27700). Instructions of how to do this can be found in the QGIS Getting Started Guide;

<http://www.os.uk/docs/support/opensource-gis-guide-04-qgis-intro.pdf>

LOADING AND DISPLAYING THE SHAPEFILE DATA

Open QGIS. Select 'open vector layer'  from the left hand toolbar.

In the next window, click 'browse' and navigate to the folder in which the OS VectorMap District shapefiles are located.



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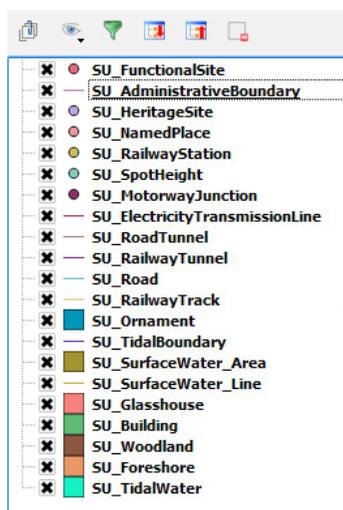
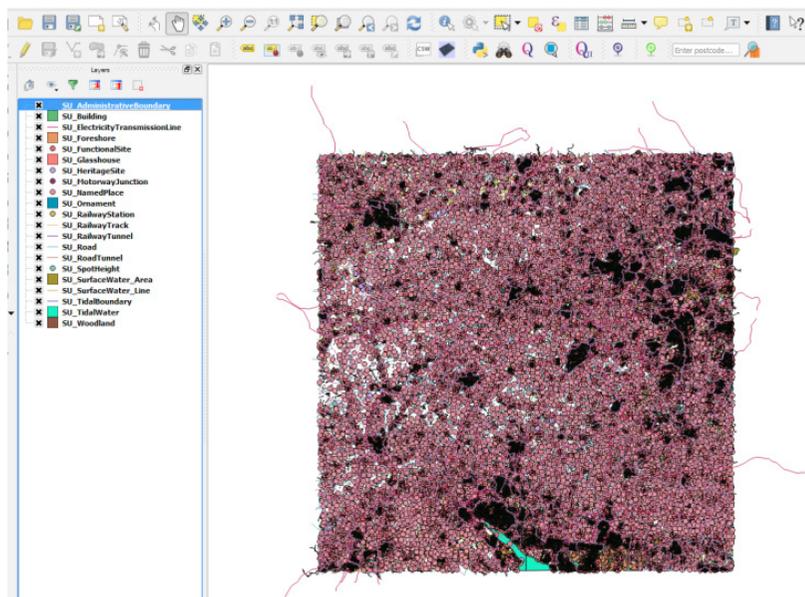
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OS VectorMap District data is comprised of a number of shapefiles containing different elements of the whole dataset. It is up to the user as to which elements are loaded depending upon requirements. In this example, all of the main elements will be loaded into QGIS. After selecting the files required and clicking 'open' twice, the user will be presented with the data loaded. In the example below, the SU 100km grid tile has been loaded.



Some features extend beyond the tile edge. This is indicative of the 'hairy tile' supply. The layers will need to be ordered correctly in order to display correctly, so that the polygon data does not cover the line and point data. A suggested layer order is shown on the left, but the user may wish to change this as per requirements.

Performance will be improved by adding a spatial index to each of the layers. Right click each layer in turn. In the context menu, select 'properties' and then click the 'general' tab. The 'create spatial index' button will be seen just below the coordinate reference system box.

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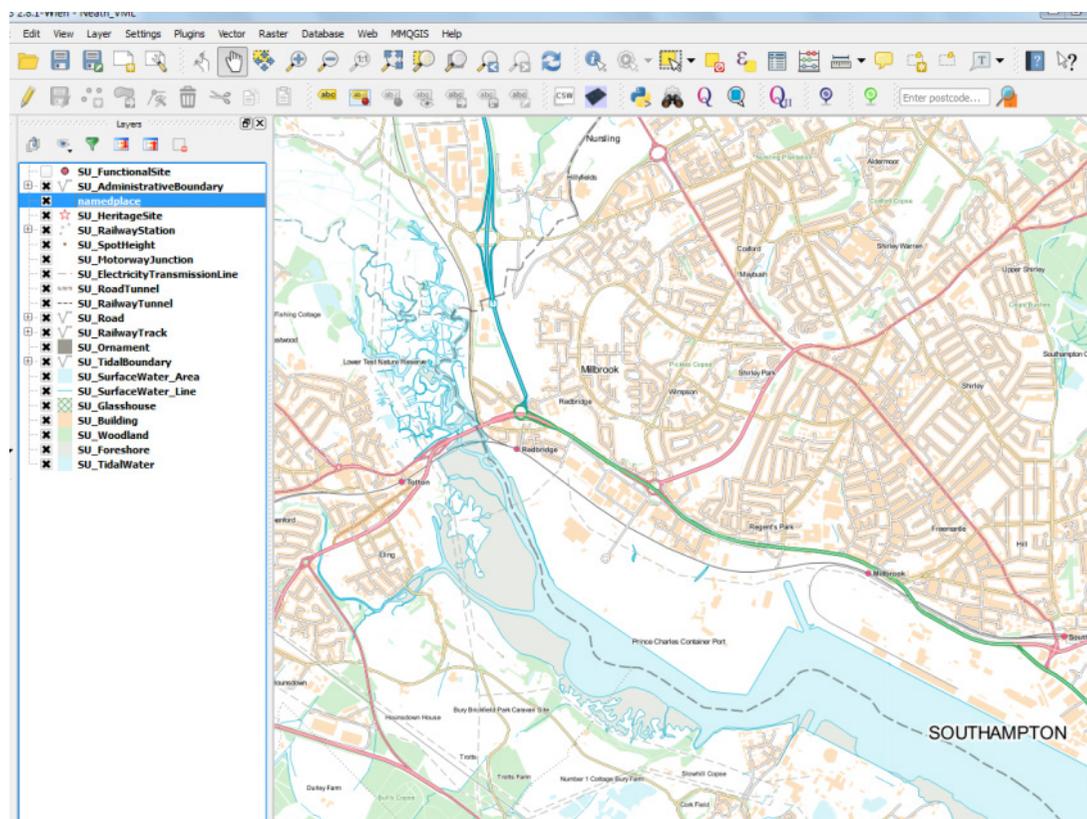
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Each layer can be styled to appear as per user requirements. In QGIS, style files are identified by having the extension .QML. To add a style to a layer, right-click on the layer in the layer window and select 'properties', Click the 'style' tab. The user can now either style the data using the various tools available or by loading a predefined style from a .QML file. For more information, please see the Getting Started with QGIS guide referred to on page 31. Ordnance Survey has released a set of style files for OS VectorMap District for QGIS. These are available on GitHub and can be downloaded from here:

<https://github.com/OrdnanceSurvey/OS-VectorMap-District-stylesheets/tree/master/ESRI%20Shapefile%20stylesheets/QGIS%20stylesheets%20%28QML%29/Full%20Colour%20style>

Instructions for layer ordering and loading of these styles are provided in the Quick Start Guide PDF document which is included with the style files.



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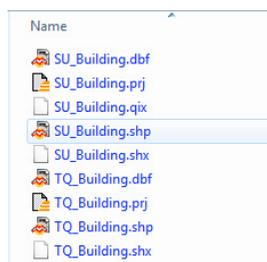
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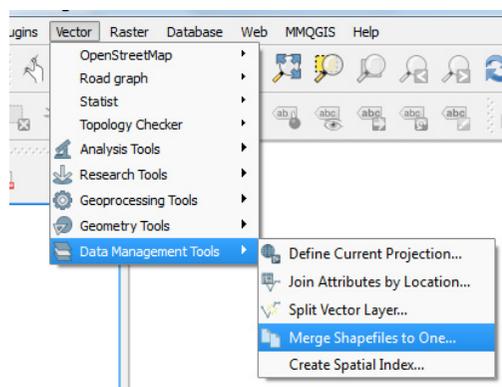
The example above is styled using the published OS VectorMap District style files and layered according to the instructions included in the Quick Start guide available with those files.

MERGING THE SHAPEFILE DATA

The user may wish to load more than one 100km² grid to cover the area that is required. The user will need to extract the relevant shapefiles from each tile into a folder. In the final release of data, the individual shapefiles will be prefixed with their National Grid 100km² grid reference letters as shown below.



Each shapefile element of OS VectorMap District will need to be merged separately in order that the user obtains a shapefile, for example, buildings, covering the whole area of interest. It is recommended that the user copies each of these elements into a new empty folder before merging is carried out. In the case shown above, the buildings shapefiles for SU and TQ have been copied to an empty folder. To merge the shapefiles together in QGIS, from the main menu, select 'vector' then 'data management tools'. The 'merge shapefiles to one' option is towards the bottom of the list of options.



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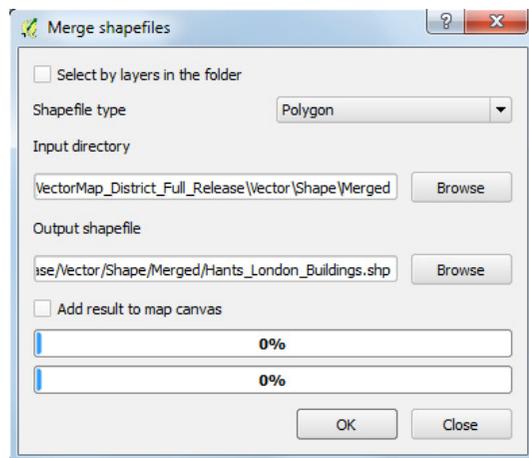
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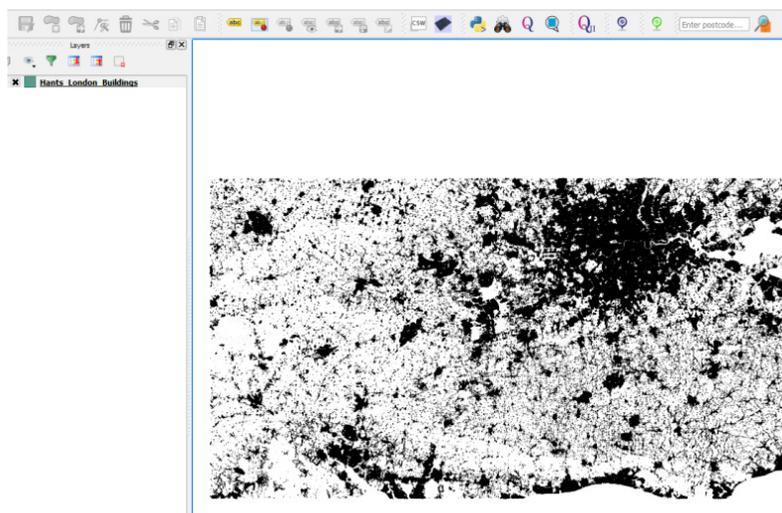
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In the next window, the user will need to define if the shapefiles to be merged are either points lines or polygons, and also the folder where the files to be merged will reside. In this example, all of the files in the folder specified will be merged, which is easier than defining individual files. Finally, an output folder and filename for the merged shapefile needs to be selected. The user can also specify if they want the newly merged file to be automatically added to the map canvass.



Once 'OK' is clicked, QGIS will create a merged shapefile covering the element of the grid tiles required. In this example, the building shapefiles for SU and TQ are being merged. This procedure will need to be repeated for all of the other layer shapefiles for OS VectorMap District which the user requires.



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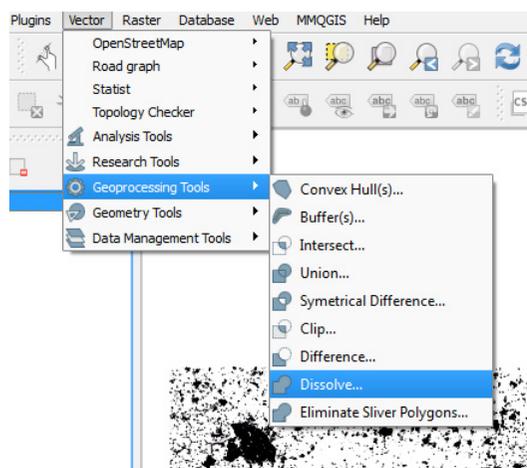
When working with merged shapefiles of any kind, it is highly recommended that a spatial index be applied to each element of the data, particularly if the user is loading national sets of data. The performance improvement in rendering the data will be very noticeable. In the case above, styling can now be applied to the data as described on page 33 in this guide.

REMOVING DUPLICATE FEATURES FROM MERGED DATA

As has already been stated, OS VectorMap District vector data is supplied as 'hairy tiles' with features which cross a 100km² tile edge being supplied in both tiles in which the feature appears. In many instances, the user will simply wish to use the merged data as a contextual backdrop map. In this case, there will be no need to remove duplicate features along the tile edges as the features will display perfectly clearly with one duplicate feature overlying the other.

There may however, be instances where the user wishes to carry out some form of analysis using feature counts contained within the data. In this case, the data will need to have the duplicate features removed. There are several ways within QGIS to achieve this. There are also several plugins for QGIS which can be installed to carry out this function, in particular one called 'MMQGIS'. However, methods using these options are not described here.

The 'Dissolve' function in QGIS which is part of standard functionality will effectively carry out this procedure. In the example described, we are going to de-duplicate the merged SU_TQ Buildings file that we created in the previous section. We have the file loaded into the map window.



From the main menu, select 'vector' then 'geoprocessing tools' followed by 'Dissolve'. Another window will then appear.

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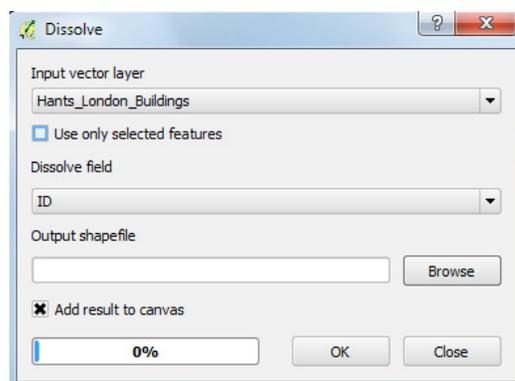
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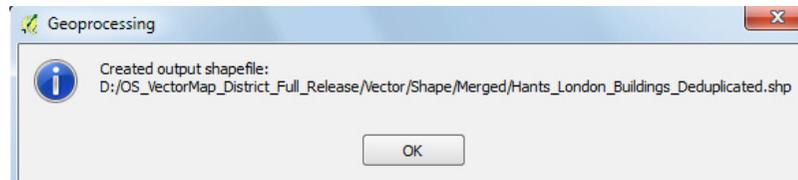
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The user will need to select the input vector layer to be de-duplicated; in this case, the Hants_London Buildings file is already selected. The dissolve field is set to 'ID', which will be the field in the data which will be searched for duplicate features. Finally, the user will need to specify an output folder and filename for the de-duplicated data. Once this is done, the user can specify whether or not the newly created file can be added to the current map canvas. Click 'OK' to start the process.



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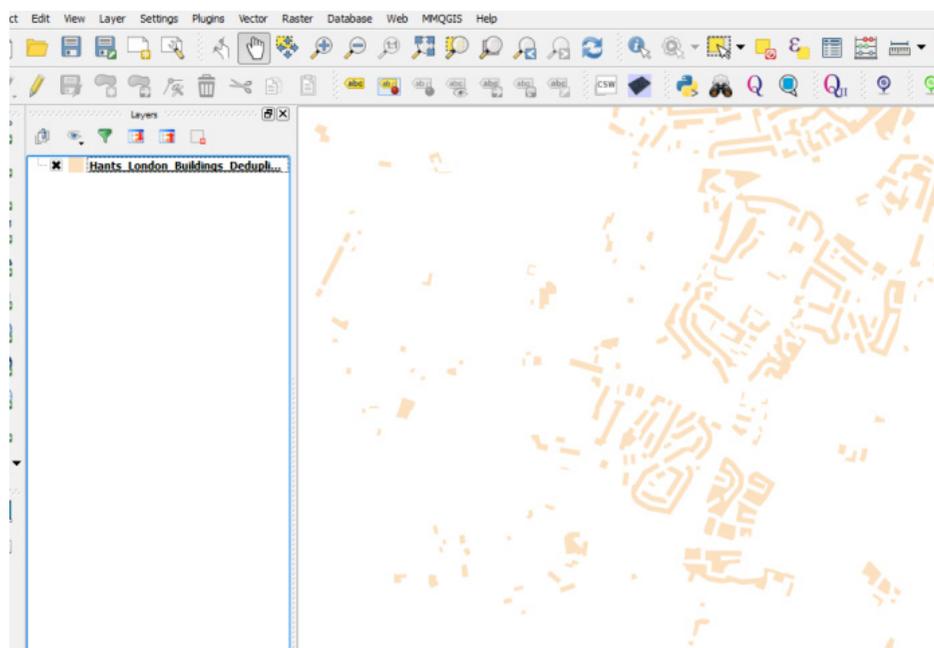


A message appears once the process is complete. The new shapefile containing the de-duplicated data can now be loaded into QGIS. Once again, it is recommended that the de-duplicated file be given a spatial index using the method previously described on page 36 to improve rendering performance. Note that the file size of the de-duplicated shapefile is smaller than the original, as one would expect.

Name	Date modified	Type	Size
 Hants_London_Buildings.shp	17/08/2015 10:10 ...	SHP File	169,715 KB
 Hants_London_Buildings_Deduplicated.s...	17/08/2015 2:28 PM	SHP File	169,584 KB
 SU_Building.shp	03/08/2015 6:01 PM	SHP File	61,576 KB
 TO_Building.shp	03/08/2015 6:01 PM	SHP File	108,140 KB

The data can now be styled with a suitable style as per user requirements using the procedures as described earlier in this guide.

An example is shown on below.



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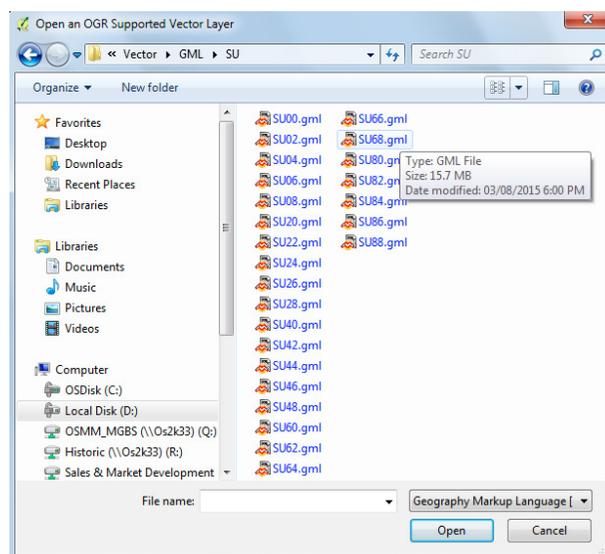
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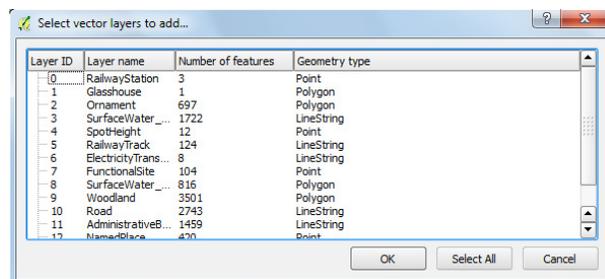


LOADING AND DISPLAYING GML SUPPLY

Open QGIS. Select 'open vector layer'  from the left hand toolbar. In the resulting window, click 'browse' to open the window, which will allow the user to select the .GML file to be loaded.



The user will need to specify that a .GML (geography mark-up language) file needs to be opened from the drop-down menu at the bottom of the window. Please note that for OS VectorMap District, the .GML files are supplied as 20 x 20km² tiles. Select the file and then click 'open' twice. Another window will appear, which will allow the user to select which layers of the data to load. If all of them are required, click 'select all'.



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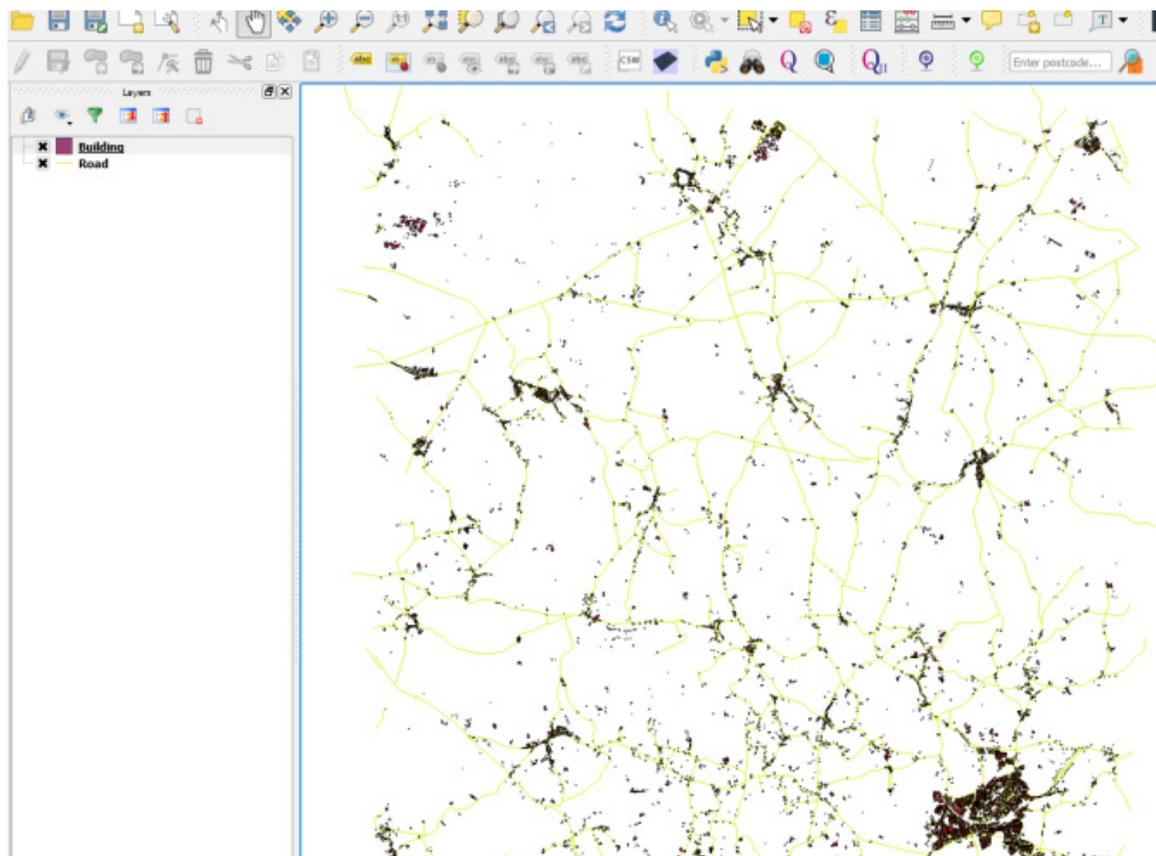
MapInfo Professional

Cadcorp SIS

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The data will now load into the map window. In the example below, just the roads and buildings from the SU22 tile were selected.



The data can now be styled using a predefined style file (.QML file) as described previously or using the tools within QGIS. Please note that style files created for shapefile supply of the data will not work with GML supply without modifications. It is highly recommended that style files created specifically for the GML supply be used.

It should be noted that rendering performance of the data within QGIS will be much poorer than in the case of the shapefile format, as GML data cannot be spatially indexed. Multiple 20km² tiles of OS VectorMap District .GML data cannot easily be merged together as with the shapefile option and as a consequence, rendering performance will also be much slower. In addition, it is not easy to de-duplicate features along tile edges using common spatial geoprocessing tools within QGIS. As a result, the GML data itself will have to be queried using code scripts to highlight and remove duplicate features within a text editor. This is not covered in this guide.

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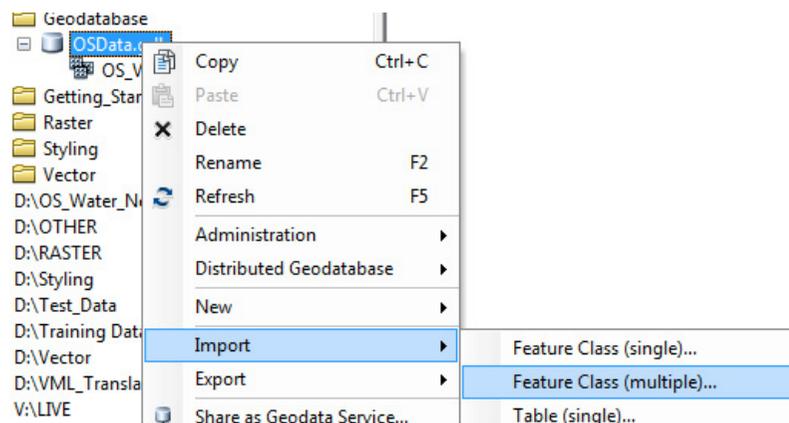
ESRI ARCGIS ARCMAP

In the examples shown in this guide, version 10.2.2 of ESRI ArcMap and ArcCatalog is being used to manipulate the data. However, the steps illustrated should still apply in earlier versions of ArcMap and Arc Catalog back to the version 9.3 release without much variation.

LOADING AND DISPLAYING THE SHAPEFILE DATA

There are two possible ways of loading and displaying the shapefile data in ESRI ArcGIS. The shapefile data can be loaded straight into ArcGIS by clicking 'Add Data' and then browsing to the folder where the data is located and selecting the shapefiles. However, if more than one 100km² tile is being loaded, the rendering performance can become an issue. The recommended way of loading the data is to use a file geodatabase to house the data. For the purposes of this guide, we will use the same file geodatabase that was created to hold the raster version of OS VectorMap District, described earlier in that section.

Right-click on the file geodatabase and select 'import' and then 'feature class (multiple)'.



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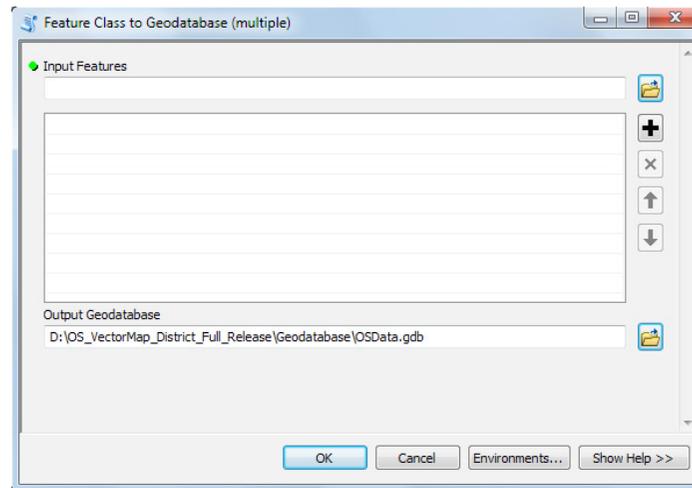
MapInfo Professional

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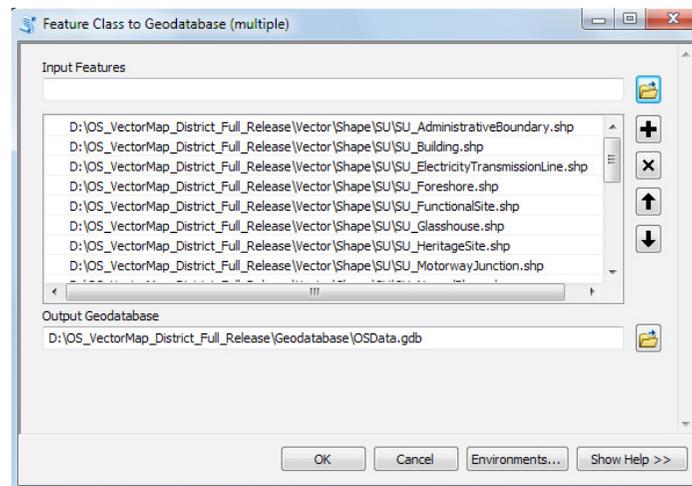
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In the next window, browse to the location where the data resides, which is to be imported, because the individual shape files begin with the 100km prefix. It is possible to import more than one OS VectorMap District 100km² tile into the geodatabase as per user requirements.



Click on the button to the right of the blank window under 'input features' and navigate to the folder where the OS VectorMap District shapefile data resides.



Select all of the shapefiles that are required in the window and click 'add'.

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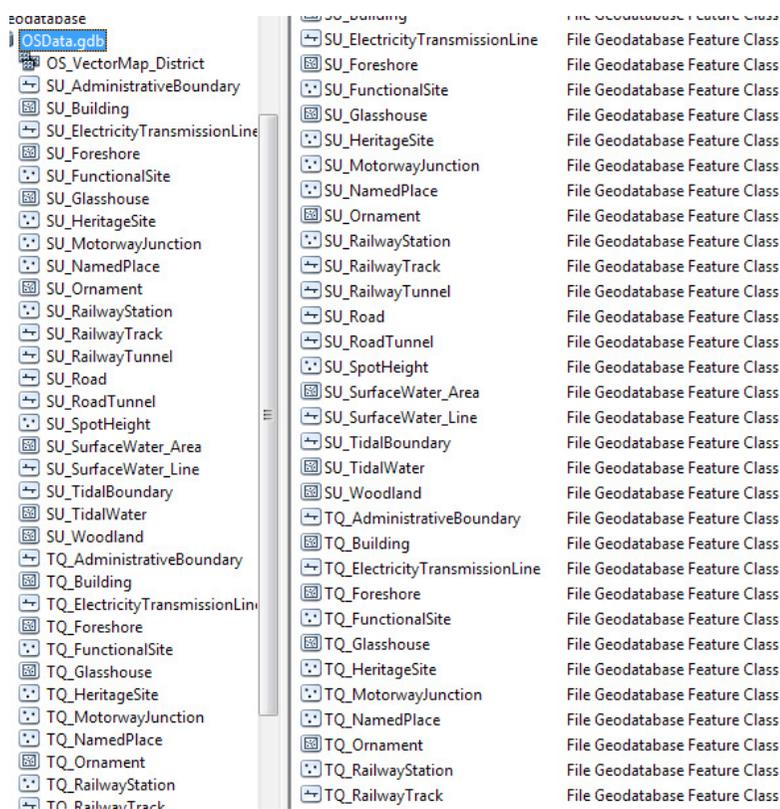
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The shapefiles selected will now appear as a list in the import feature class window. The output file geodatabase should default to the one which has been previously selected. Click 'OK'. The window will close and now ArcCatalog will import the features classes into the file geodatabase. A dialog box will appear when the process is complete. If the file geodatabase is now highlighted, a list of the imported features classes should be visible. In this example, both SU and TQ shapefiles have been imported. You may need to refresh the file geodatabase in order for the list to appear.

A useful point to note is that loading the shapefiles into a file geodatabase will automatically add spatial indexes to the data in the import process. There is therefore no requirement to manually add one once the data has been loaded, which would be the case if shapefiles had been loaded into ArcGIS without using the file geodatabase option. As has been previously mentioned, the addition of a spatial index greatly improves rendering performance.



Start ArcMap. Click on the 'import data'  button in the top toolbar.

In the window that appears, navigate to the location of the file geodatabase just created. Select the feature classes that are required and click 'add'.

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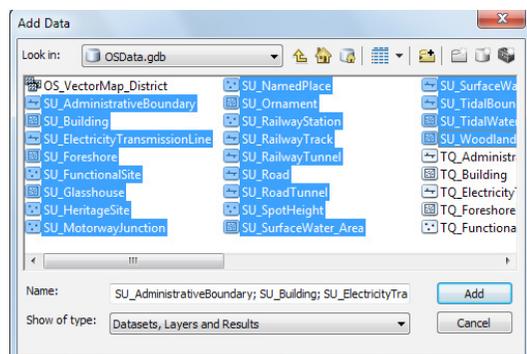
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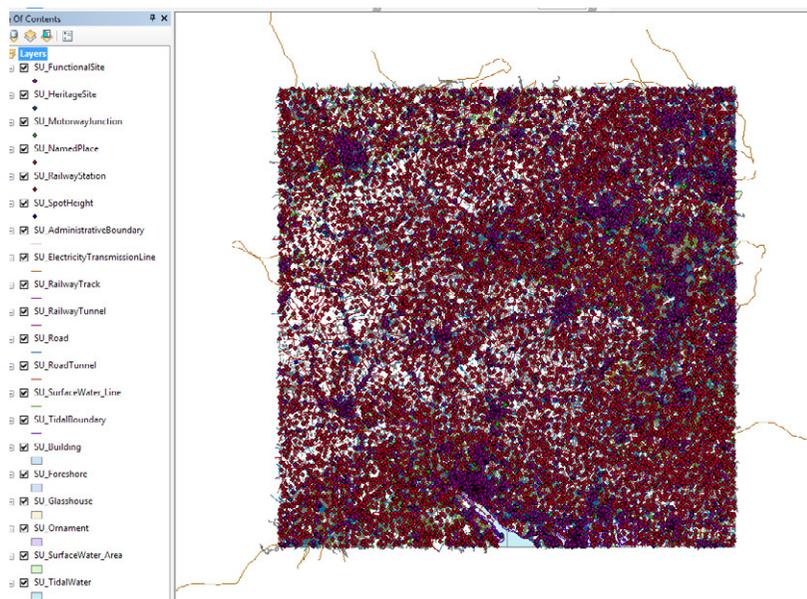
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The data will load into ArcMap. Although ArcMap does put the shapefiles into a more logical sequence, the user can move the layers according to the desired preferences. The data will, of course load in as un-styled data. ArcMap will assign a random style to the data.



The user can manually style each of the layer files by right-clicking on each of the loaded layers, selecting 'properties' and then 'symbology'. ArcMap contains an extensive range of tools to allow the user to apply various styles to each layer of the data and then save the work as an ArcGIS layer file. This procedure is not covered in this guide.

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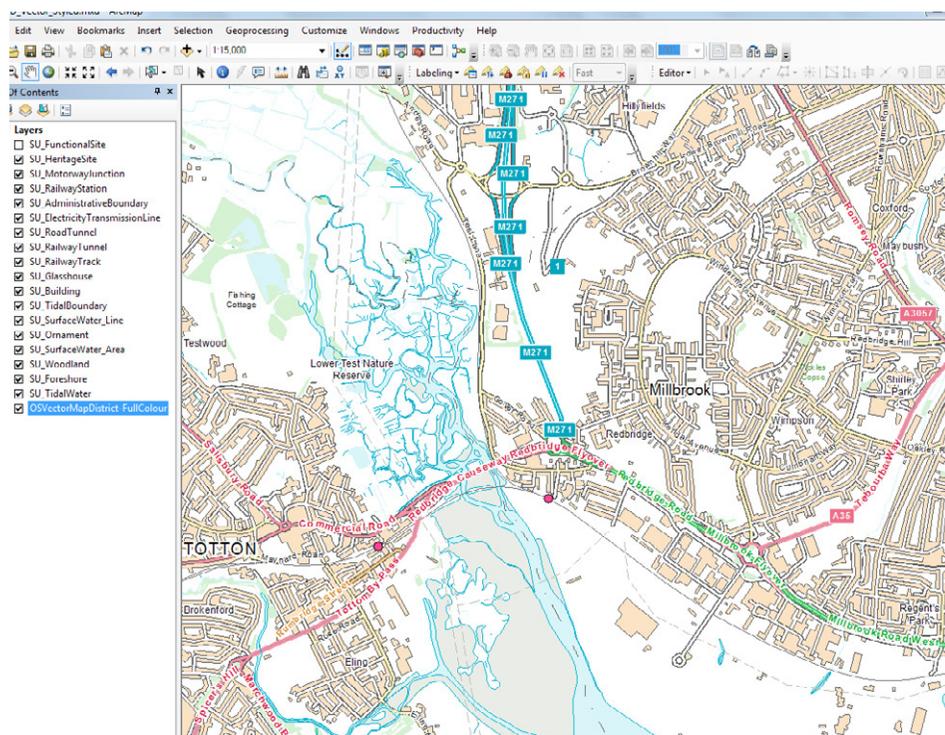
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A set of ESRI layer files for OS VectorMap District is available for download from the GitHub website and can be found here:

<https://github.com/OrdnanceSurvey/OS-VectorMap-District-stylesheets/tree/master/ESRI%20Shapefile%20stylesheets/ESRI%20stylesheets%20%28LYR%29>

Follow the instructions in the Quick Start Guide which accompanies these files to apply the styling to the data. These style files will work with either a direct shapefile load in ArcMap or using the file geodatabase methodology described here.



The user should see something like the screenshot above when the process is complete.

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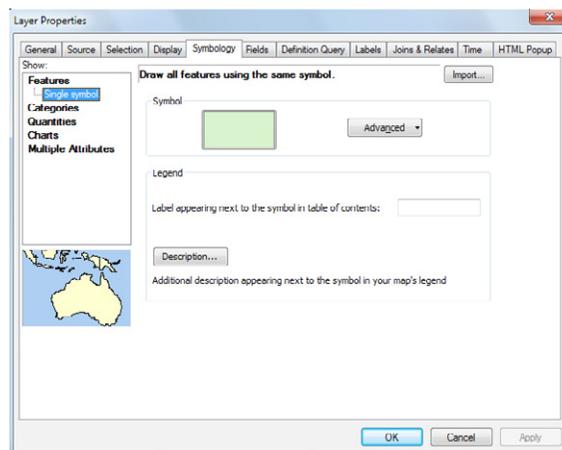
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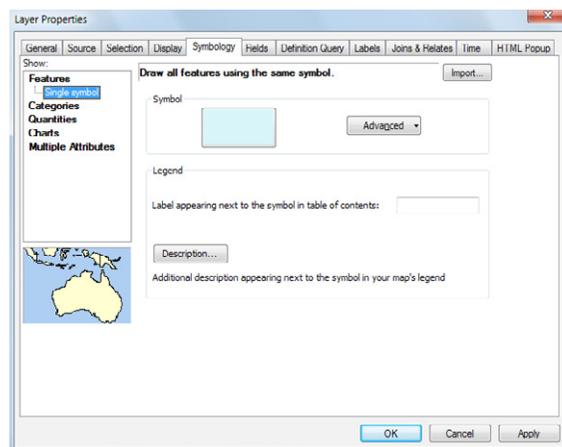
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If using a different set of layer files, the procedure for adding a style in ArcMap is as follows – this method can be used for many other data types. To add a style to a layer, simply right-click on a layer, select properties' and then 'symbology'.



In the layer properties window, select 'import' (the button below the tabs at the top). A list of available styles, drawn from the imported layer file will appear. Simply select the required style and click 'OK'. The symbol in the box will now change to the predefined style.



Click 'OK' again and the style will then be applied in ArcMap. Repeat this procedure for all of the layers until the OS VectorMap District data is styled to requirements. Labels for certain features can also be applied as required.

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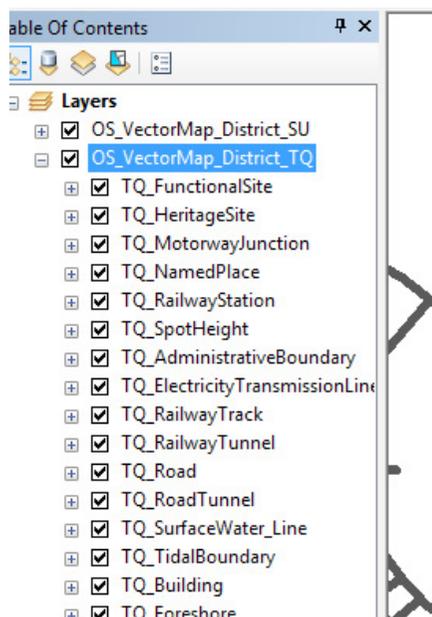
LOADING MULTIPLE SHAPEFILES

If there is a requirement to load a larger area of interest, it is recommended that the user merge the shapefiles together before loading into the file geodatabase. This procedure is described on pages 33 in this guide. Doing this will also mean that the supplied layer files for styling will only need to be applied once to the data and all the styles will work properly.

If however, the user simply wants to load multiple areas using the file geodatabase option, there is no mandatory requirement to merge shapefiles together.

To add another 100km² tile of data in ArcMap previously loaded into the file geodatabase created earlier, simply click 'add data' and repeat the procedure described above for loading the individual layers for the subsequent tile(s). The user may wish to group the layers for each 100km² tile loaded in the table of contents window to avoid confusion.

To do this, select all of the layers within the new 100km² tile added, right-click and then select 'group'. The additional layers can be styled as previously using a predefined layer file or manually as required.



This example shows that all of the layers for SU and TQ have been loaded into ArcMap from within the file geodatabase. The file geodatabase option in ArcGIS is also useful in that if the user wishes to add another tile of data at a later date, the shapefiles can be simply imported into the same file geodatabase using ArcCatalog and then displayed in ArcMap.

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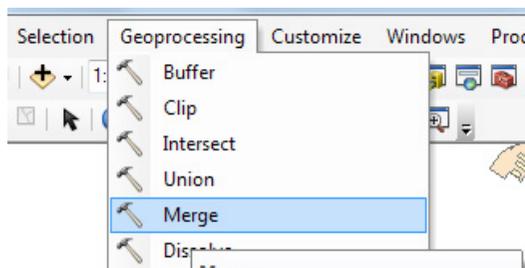
MERGING SHAPEFILES AND REMOVING DUPLICATE FEATURES FROM THE DATA

OS VectorMap District data is supplied as 'hairy tiles' with features which cross a 100km² tile edge being supplied in both tiles in which the feature appears. These duplicate features will occur if more than one 100km² tile is loaded into a file geodatabase. In many instances, the user will simply wish to use the OS VectorMap District data as a contextual backdrop map. In this case, there will be no need to remove duplicate features along the tile edges as the features will display perfectly clearly with one duplicate feature overlying the other.

There may however, be instances where the user wishes to carry out some form of analysis using feature counts contained within the data. In this case, the data will need to have the duplicate features removed.

To remove duplicate features in ArcMap, it is necessary firstly to merge the elements of the tiles together before removing the duplicate features. This procedure can take some time, so the user should consider if this requirement is really needed.

Firstly, the elements of the data need to be merged together to create new features classes within the file geodatabase containing the original data (or to a completely new file geodatabase or shapefile if required).



Using, either ArcMap or ArcCatalog from the main menu, select 'Geoprocessing' followed by 'merge'. In the next window, select the layers to be merged. In this example, the SU_Roads and TQ_Roads are being merged together. All of the attribution is being copied into the new shapefile though the user can specify what attributes need to be copied. The user can also specify the output required. This can be a new feature class within a file geodatabase or a shapefile. In this example, a new shapefile containing the merged data will be created.

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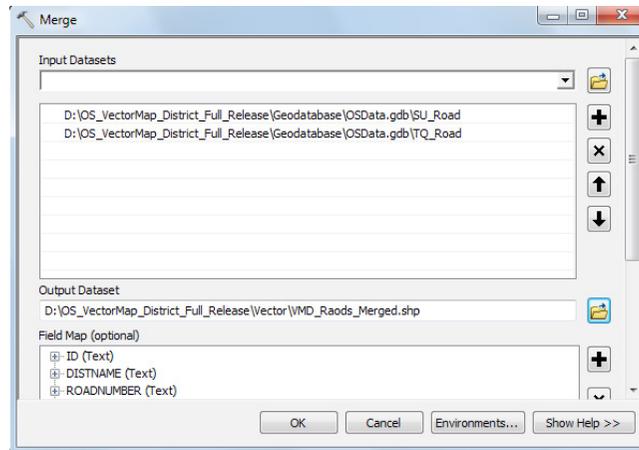
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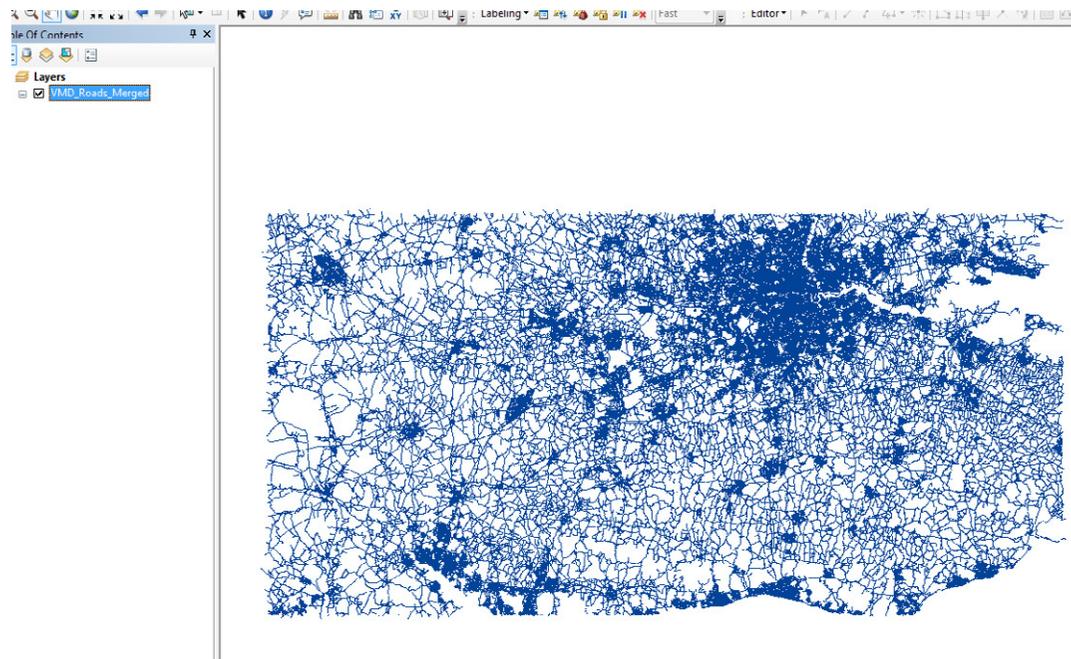
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Click 'OK' when all of the elements to be merged have been selected. It can be seen using this method, the roads element of a number of 100km² tiles could be merged together, although only two are shown above. ArcGIS will then merge the files and load the newly created shapefile into the map window. Depending upon the sizes and number of the data layers being merged, this could take some time. A dialog box will appear when the process is finished.



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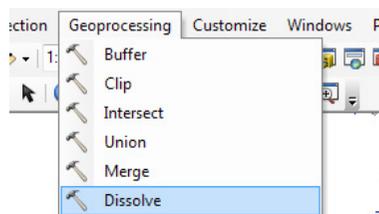
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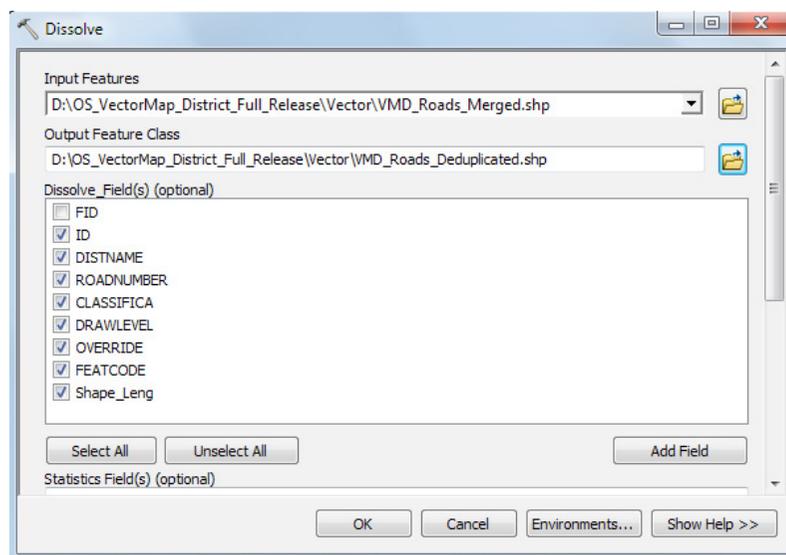
In the example below, a new shapefile has been created called VMD_Roads_Merged, which is a merging of the TQ and SU OS VectorMap District roads data from the file geodatabase which we have used in this guide. A new feature class could also have been created for loading to the geodatabase if required. This shapefile can now be styled using the layer files used previously. Obviously, to obtain a full OS VectorMap District merged dataset covering this area, this process would have to be repeated on all of the component layers.

The 'Dissolve' function in ArcGIS will remove the duplicated features along the tile boundaries. This procedure can be carried out in either ArcCatalog or ArcMap. Firstly select 'Geoprocessing' and then 'Dissolve' from the main menu.



The user will then need to specify which merged file from which duplicate features are to be removed. In this example, we are looking at the VMD_Roads_Merged file.

We are going to save the new feature class as a new shapefile called 'VMD_Roads_Deduplicated'. All of the dissolve fields in the box need to be ticked except the FID field otherwise the attribution will not be carried over to the new dissolved file. Once complete, the dissolved layer will be loaded into ArcMap. This merged file will contain no duplicate features.



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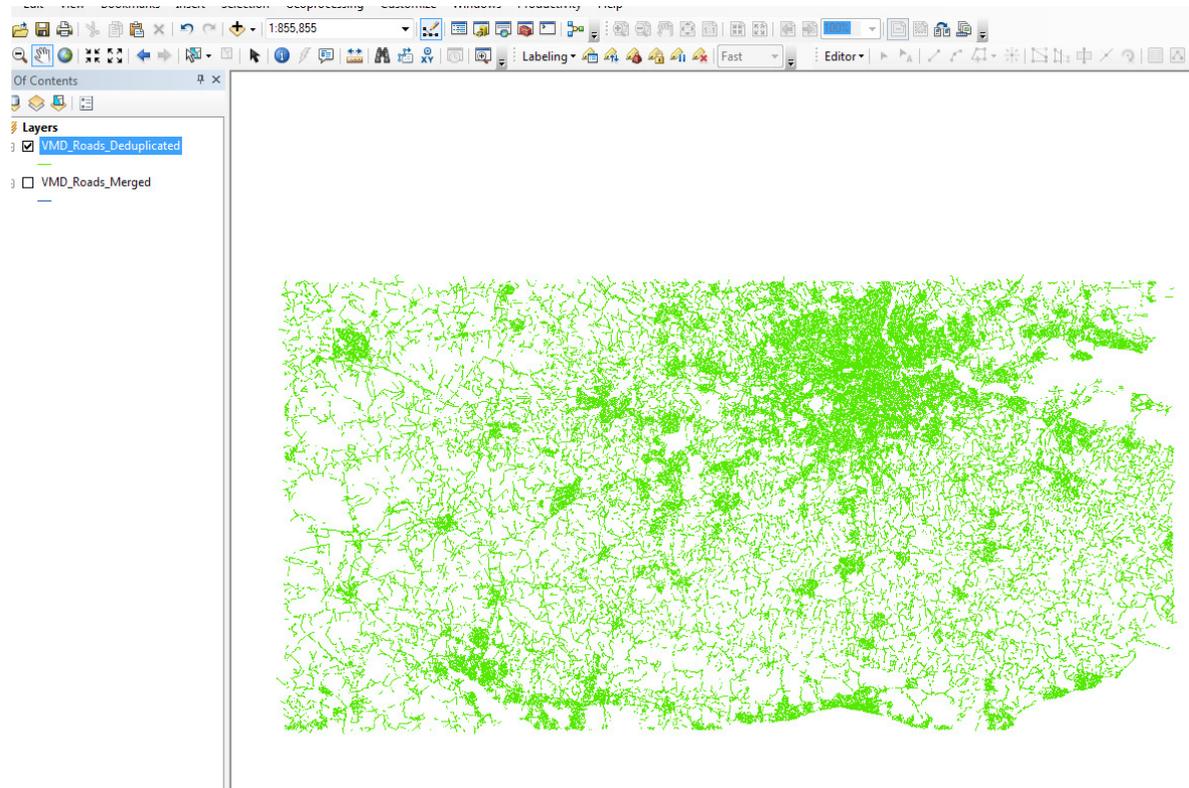
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A count using the attribute table on both the original merged file and the dissolved file will confirm that the dissolved shapefile contains fewer features. Additionally, a look at the sizes of the shapefiles will also give an indication in that the de-duplicated file is smaller than the original merged file.

vmd_roads_deduplicated.sbx	19/08/2015 11:19 ...	SBA File	130 KB
VMD_Roads_Deduplicated.shp	19/08/2015 11:19 ...	SHP File	61,604 KB
VMD_Roads_Deduplicated.shp.ND26560....	19/08/2015 11:19 ...	LOCK File	0 KB
VMD_Roads_Deduplicated.shp.xml	19/08/2015 11:14 ...	XML Document	8 KB
VMD_Roads_Deduplicated.shx	19/08/2015 11:19 ...	SHX File	4,063 KB
VMD_Roads_Merged.cpg	19/08/2015 11:01 ...	CPG File	1 KB
VMD_Roads_Merged.dbf	19/08/2015 11:01 ...	DBF File	93,477 KB
VMD_Roads_Merged.prj	19/08/2015 11:00 ...	Text Document	1 KB
VMD_Roads_Merged.shp	19/08/2015 11:01 ...	SHP File	61,636 KB

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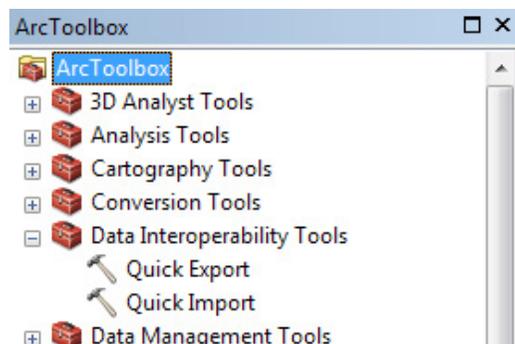
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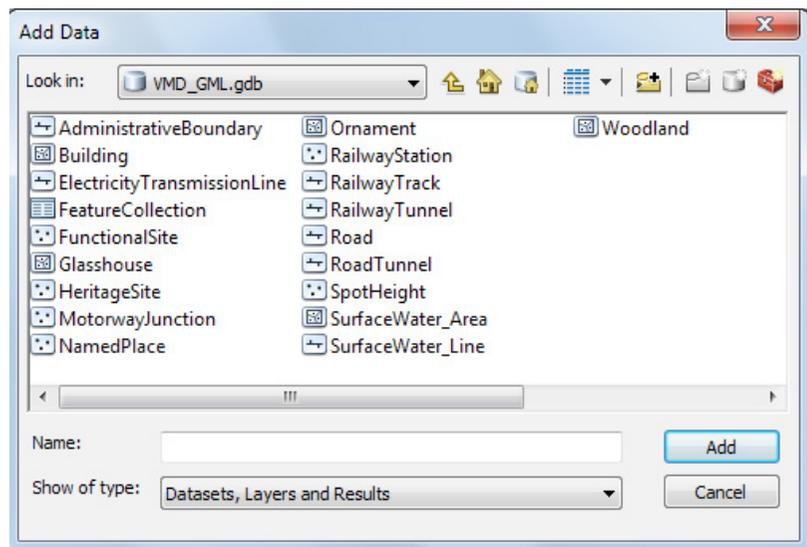


LOADING AND DISPLAYING GML DATA

The GML data can be imported into ArcGIS using the Quick Import function in Arc Toolbox. The data will be imported un-styled. Users should also note that due to the large file sizes of some of the 20km² grid tiles especially within urban areas, this import may take time to process.



The quick import will create a special file geodatabase into which to import the data. Once the quick import function has been completed, the data can be added using the usual 'add data' button in ArcMap and selecting all of the layers from the newly created file geodatabase.



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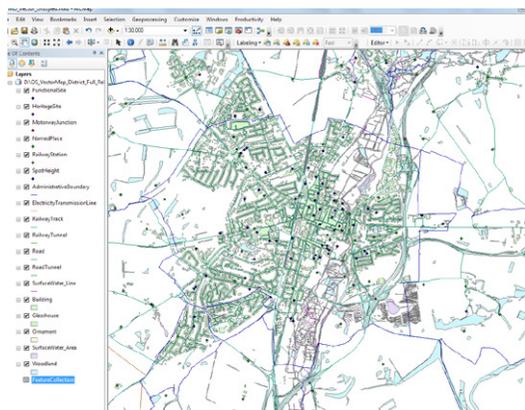
MapInfo Professional

Cadcorp SIS

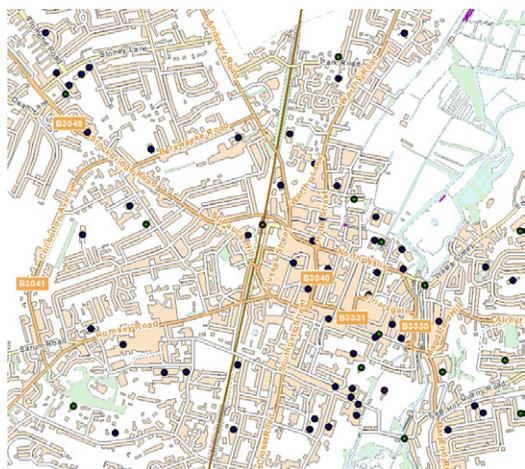
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The resulting imported data will then appear in the ArcMap window and can then be styled according to user requirements.



The data can also be styled with a suitable ArcGIS layer file for OS VectorMap District previously created or styled manually using the styling tools provided.



Screen shot above displays imported .GML data partly styled using the ESRI layer files available on GitHub using the download link.

<https://github.com/OrdnanceSurvey/OS-VectorMap-District-stylesheets/tree/master/ESRI%20Shapefile%20stylesheets/ESRI%20stylesheets%20%28LYR%29>

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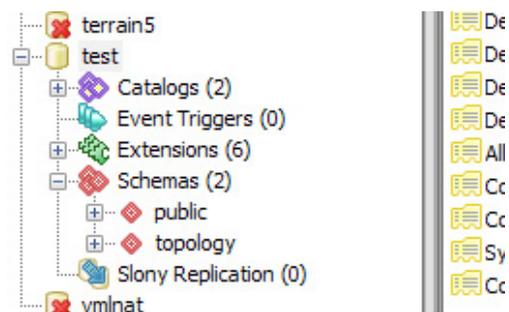
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PostGIS is the geospatial extension to the free open source database application PostgreSQL. The PostGIS extension needs to be installed as part of the PostgreSQL install. Instructions of how to do this can be found on the OS website:

<http://www.os.uk/docs/support/opensource-gis-guide-02-postgres-install.pdf>

LOADING AND DISPLAYING SHAPEFILE SUPPLY

Open 'PG Admin' from the Windows desktop and, using the menu options available, create a new database and a new schema within the database to hold the OS VectorMap District data. It is recommended that the user not use the 'public' schema to hold the data itself.



In the example above, a database called 'test' has been created. A schema in this database called 'vmd' will be created into which the data will be loaded.

As the data to be loaded comes in shapefile format, there is an easy to use PostGIS plugin available within PostgreSQL to load shapefile data.

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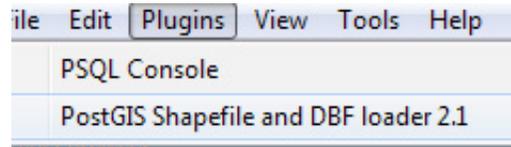
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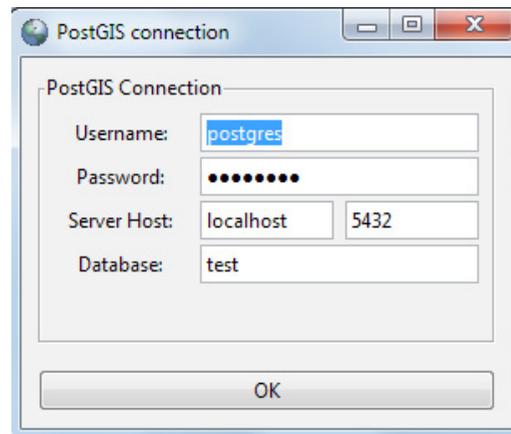
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Select 'plugins' from the main menu, followed by 'PostGIS Shapefile and DBF Loader'.

The next window allows the user, firstly to view connection details and then to add files to the database.

The first thing to do will be to test connection details. Therefore, click on the 'view connection details' button.



The resulting box should contain the username and password already entered along with the host name.

The database being used to contain the data should already be selected. Click 'OK'.

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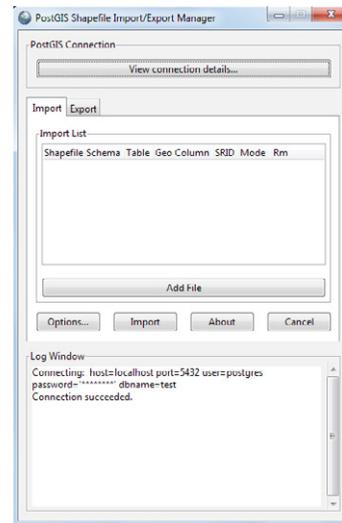
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Cadcorp SIS

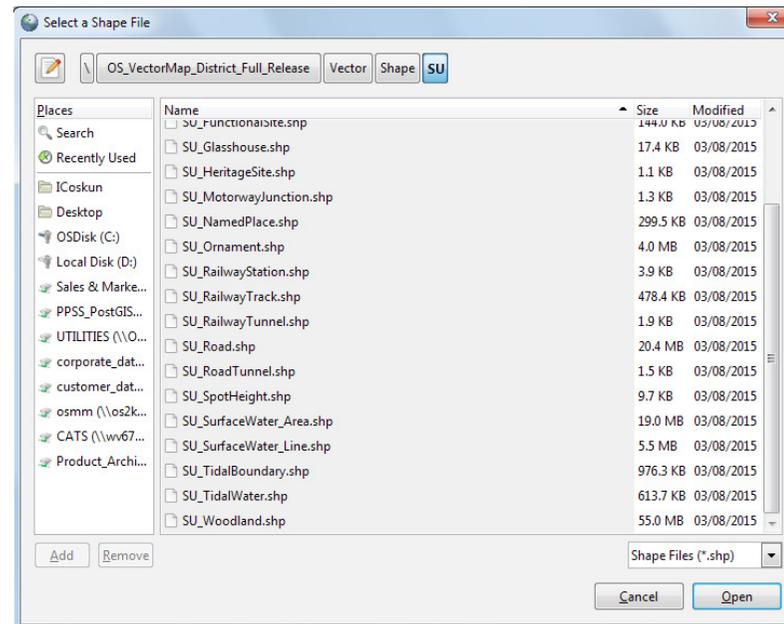
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If everything is working OK, 'connection succeeded' should appear in the Log Window.



Click the 'Add File' button.



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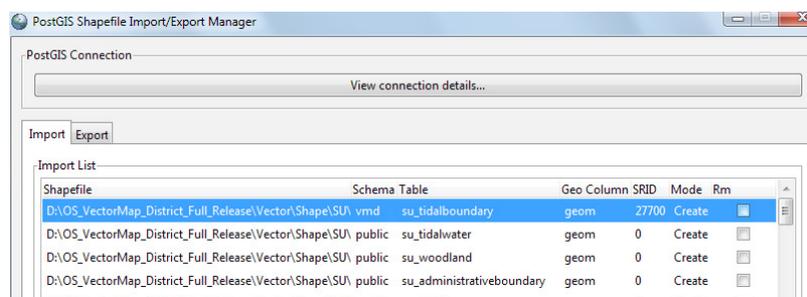
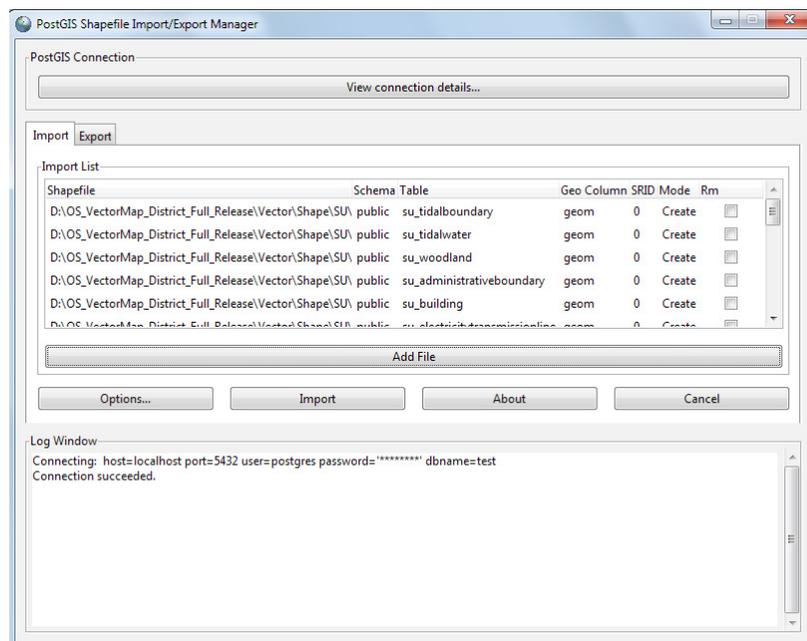
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In the next box, use the file tree in the 'Places' box on the left to navigate to the folder in which the OS VectorMap District data resides. A list of the files will appear in the main window. It is possible to load one or all of the files into the database. In the example below, all of the shapefiles have been selected. Then click 'Open'.



Another window will open listing the selected shapefiles. The Schema and SRID will need to be changed. The schema will need to be changed to the schema in the database into which the data is being loaded (in this case 'vmd'). The SRID (or coordinate reference system) will need to be changed to 27700, which is the code for British National Grid. This will need to be done for all of the shapefiles being loaded. No other element will need to be changed. Once this has been done, click 'Import'.

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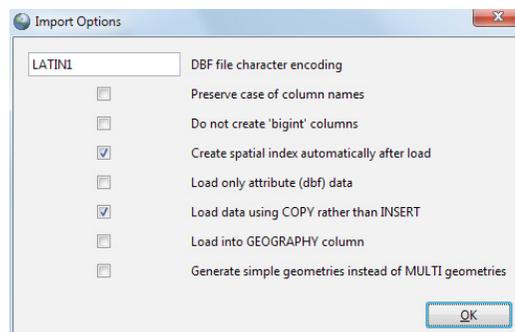
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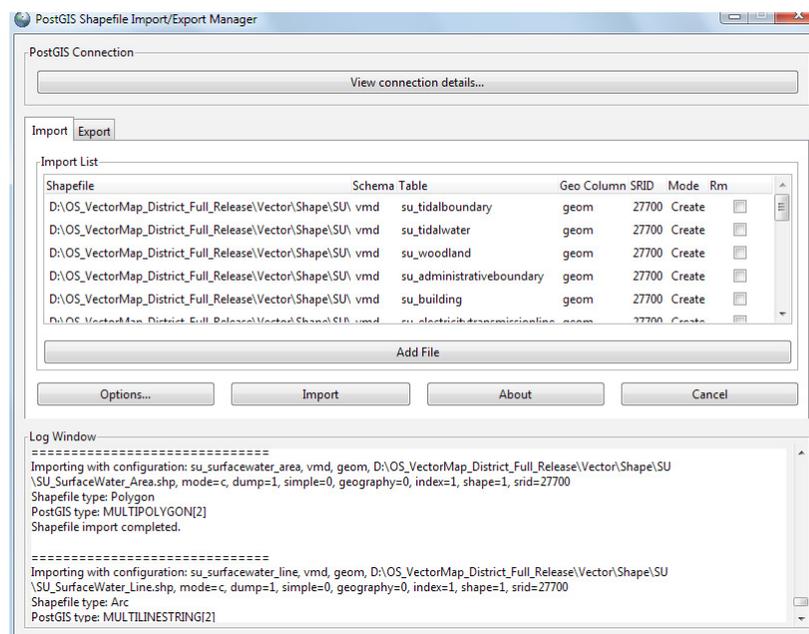
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At the end of the procedure, the log window at the bottom of the PostGIS import/export manager box should indicate that all of the shapefiles have loaded successfully. However, one or two of the shapefiles may fail to load, because the text encoding needs to be changed from UTF-8 to LATIN1. If this is the case, the user will need to close down the plugin and start again, selecting just the shapefiles which failed to load previously. The schema and SRID must be changed again and this time, the character encoding will need to be changed. This can be done by clicking the 'options' button;



Change the DBF character encoding to LATIN1 and click 'OK'.



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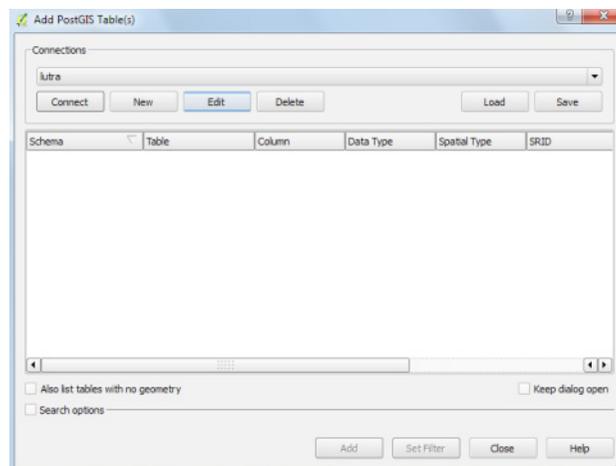
Changing this should allow the import to complete successfully. For information, the shapefiles which are mostly likely to need this change to be made are the 'named place', 'building' and 'functional site' files. This is because these files contain text, which may have accents within them, which are not part of the UTF-8 character set.

Once the import has been completed, the user can check if the data is loaded properly by refreshing the schema in PGAdmin and opening up the 'table' tree. If the data has loaded correctly, there should be 22 tables in the schema. (Although in certain areas of the country, for example in grid squares with no coastline, the amount of tables may be less than this).

The data is now loaded into the PostGIS database and is now ready to be viewed in a GIS application. As QGIS, the open-source GIS, has been developed to work seamlessly with PostGIS, we will open up and view the data using that application. However, any GI application which includes support for PostGIS can be used.

VIEWING THE DATA IN QGIS

In QGIS, click on the 'open PostGIS layer'  button on the left-hand side of the window.



In the next window, a new connection will have to be set up to the newly created database containing the OS Open Map Topography data. Click on 'new'. Another window called 'create PostGIS connection' will appear. Information will be required to be entered into this window to set-up the new connection.

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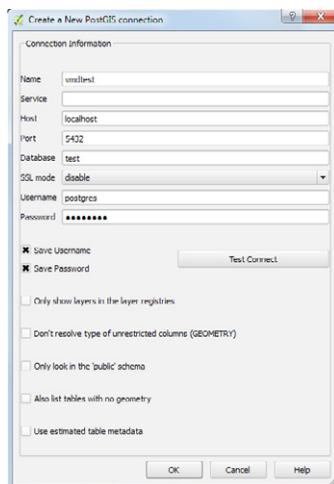
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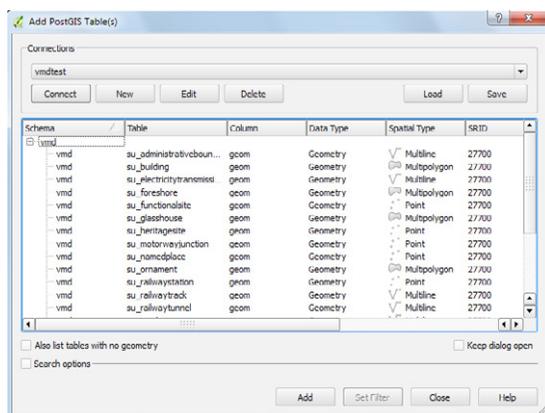
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In this example, the name 'vmdtest' for the connection has been provided along with the name of the database which holds the data. Click on the 'Test Connect' button to ensure that the correct connection is made. Once successful, click 'OK'. If the save username and save password boxes have been clicked, click 'OK' in the subsequent message box.

A new connection will now be available in the list of PostGIS database connections. Ensuring that the correct one is listed, click on 'connect'. The schema containing the OS VectorMap District data can be seen.

Click on the + sign next to the schema to expand the list of tables. Select all of the tables within OS VectorMap District that are required to be loaded to QGIS.



Once all have been selected, click 'Add'.

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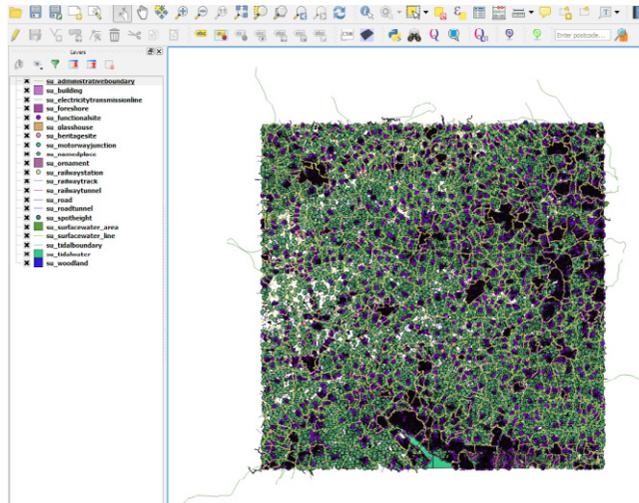
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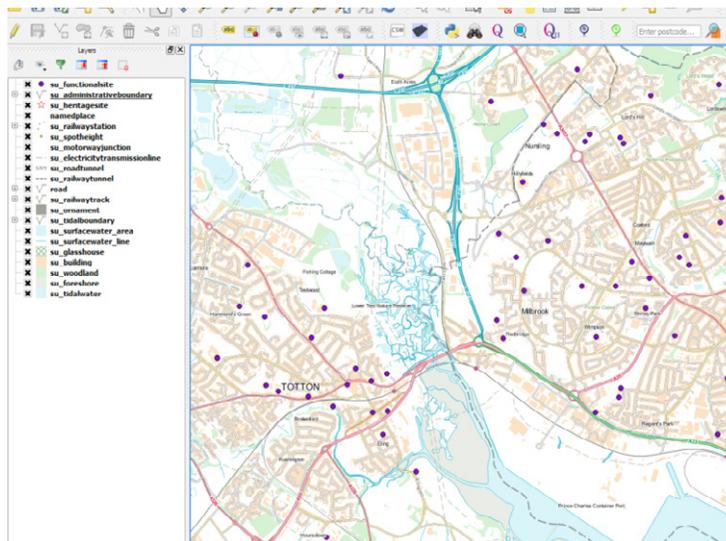
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The OS VectorMap District data will load into QGIS. The data will need to be re-ordered and then styled appropriately using personalised style files or the style files available from GitHub published by Ordnance Survey. If using these published files, please consult the accompanying 'Quick Start Guide' as to their use. It should be noted that there is no requirement to add a spatial index to the data from PostGIS as those indexes were added automatically during the loading of the data into PostgreSQL.



If using the published style files, the output should appear similar to that as shown above.

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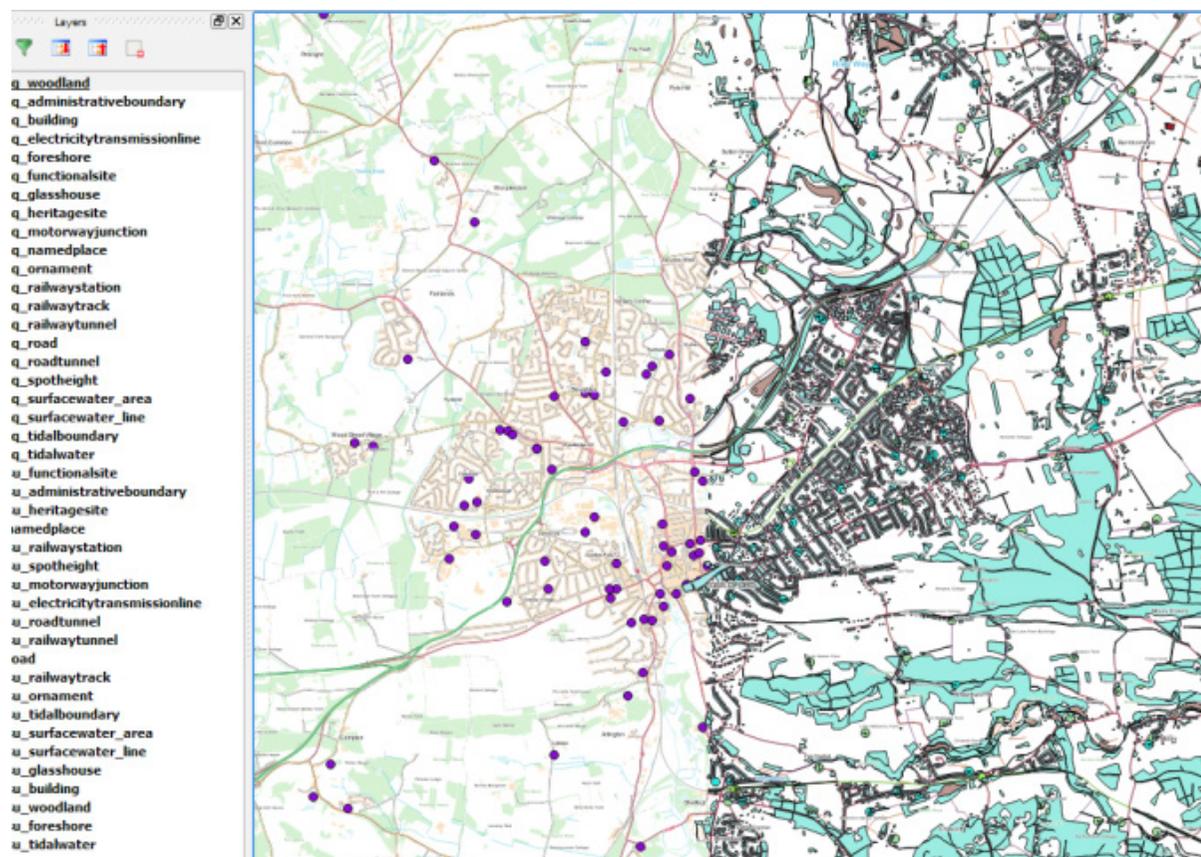
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USING MULTIPLE AREA SHAPEFILES IN POSTGIS

It is possible to load multiple 100km² grid tiles of data into the same schema in PostgreSQL. As the shapefiles have the 100km grid letters as a prefix in the filename, these files will go into separate tables in the schema. It will be possible to view data across tile edges using QGIS or other GI applications which support PostGIS.



The screenshot above shows data from the SU grid tile (styled) and the buildings and roads from the TQ grid tile (un-styled). However, it should be noted that duplicate features will exist across the tile edges as the data is supplied as 'hairy tiles' as previously indicated.

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REMOVING DUPLICATE FEATURES IN POSTGIS

As previously stated, if using multiple tiles of data in PostGIS, loading them as described, some features will be replicated across tile edges loaded in different tables of the same features, for example, in SU_Roads and TQ_Roads. If the data is being used for contextual purposes only, this should not be an issue for the user. However, if the data is being used for any kind of analysis involving counts of features, these duplicates will need to be removed to avoid providing spurious results.

It is possible to remove these features using SQL commands in PostgreSQL itself.

- **Using SQL Commands**

Firstly, create a merged file containing the area required using the merge shapefile feature in QGIS on page 34. In this example, the roads from TQ and SU will be merged. Once created, these merged shapefiles can be loaded into PostgreSQL using the shapefile loader plugin as described above.



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Check to see that the merged file has been loaded. This table will contain duplicate features across the tile edges. Using the SQL window in PostgreSQL, a count of the features within the file can be determined using the following command;

```
SELECT COUNT(id)
FROM vmd. su _ tq _ roads _ merged
;
```

In the case above the command is querying the table `su_tq_roads_merged` in the schema 'vmd' used previously in this guide. The count returned will be as follows in this example;

Data Output	
	count bigint
1	20213

Using the following command, a new table called `vmd_su_tq_roads_dissolved` will be created in the same schema `vmd`;

```
CREATE TABLE vmd.vmd_su_tq_roads_dissolved AS
SELECT id, distname, roadnumber, classifica, featcode, ST_UNION(geom) AS geom
FROM vmd.su_tq_roads_merged
GROUP BY 1,2,3,4,5
;
```

Finally the following command will provide a count of the features in the newly created dissolved table;

```
SELECT COUNT(id)
FROM vmd.vmd_su_tq_roads_dissolved
;
```

Data Output	
	count bigint
1	20010

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It can be seen from running this query that the number of features in the newly created table is less than in the original merged table. This indicates that the duplicate features along the tile edges have been removed. It will now be possible to load the dissolved table into QGIS and carry out the required analysis.

- **Using a graphical method in QGIS**

An alternative way to do what has been described above would be to merge the required shapefiles together and de-duplicate using the QGIS tool as described earlier in this document. The user will then have a set of de-duplicated shapefiles, which can then be loaded into PostgreSQL/PostGIS. This data can then be displayed in QGIS using the methods described previously.

LOADING GML DATA INTO POSTGIS

At this present time there is no Graphical User Interface PostGIS loader for GML data. However, it is possible to load the GML supply data into PostgreSQL using sets of SQL commands. These SQL commands would create the tables, indexes and load the data. As OS VectorMap District data is supplied in shapefile format which can be loaded using the PostGIS shapefile loader plugin, the SQL method of loading the GML data will not be described in this guide.

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MAPINFO PROFESSIONAL

In the examples shown in this guide, version 12.5.2 of MapInfo Professional is being used to manipulate the data. However, the steps illustrated should still apply in earlier versions of MapInfo Professional.

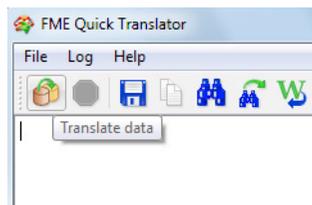
All current commonly used versions of MapInfo Professional are able to open ESRI shapefiles without direct translation. However, for ease of use within MapInfo, it is recommended that users use the universal translator within MapInfo to convert the shapefile supply to MapInfo .TAB files prior to loading the data. This will be described in the procedures for loading the data.

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In MapInfo Professional, start Universal Translator from the 'Tools' menu.



Select the translate button at the top left-hand side of the dialog box.



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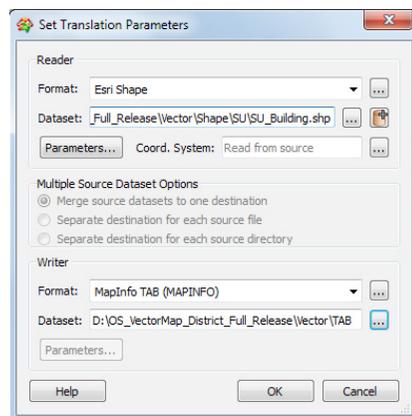
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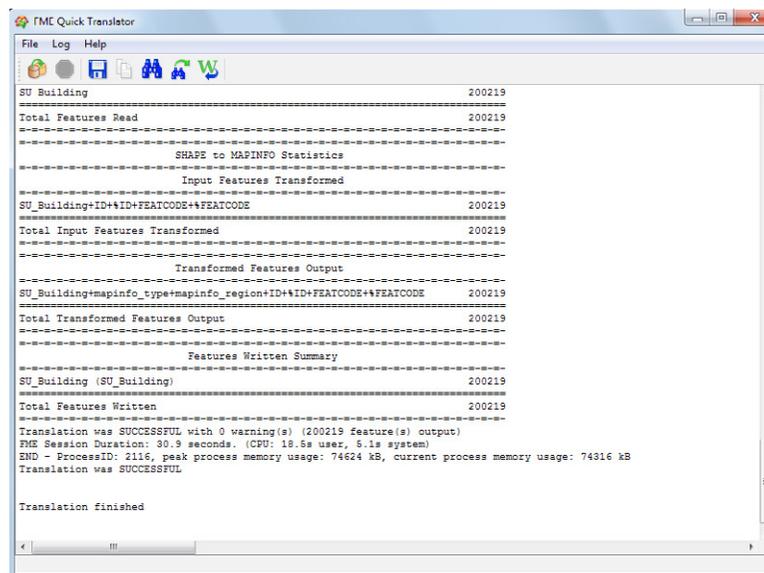
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In the next box, the user will need to select the translation parameters required. These will include the format of the files being translated, the format to which the data is being translated and the location of the data.



Once selected, click 'OK'. The translation will then run.



A message box will appear when the process is complete. The user will now have a MapInfo .TAB file for the selected layer of OS VectorMap District. This procedure will have to be repeated for all of the layers within OS VectorMap District which are required.

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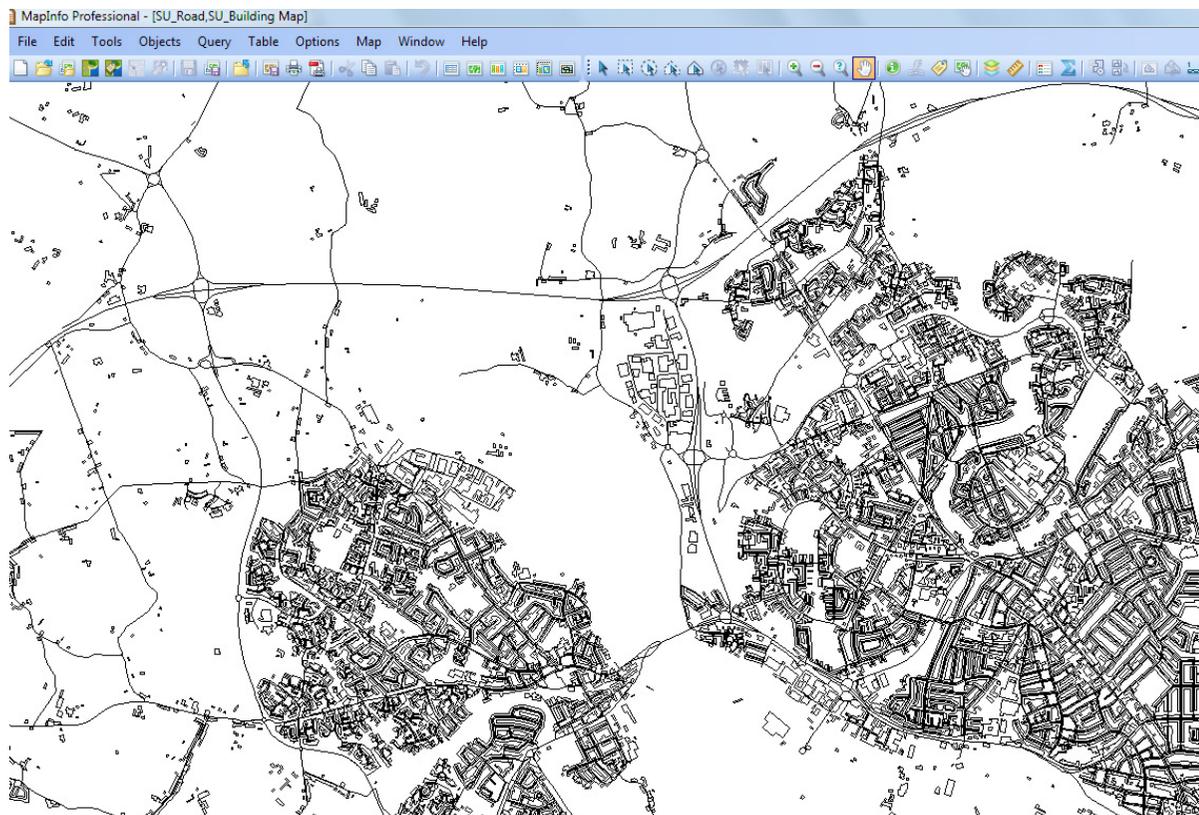
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To load the created MapInfo .TAB files into MapInfo Professional simply click File – Open and navigate to where the files reside. Select the file to be opened. Select ‘new mapper’ from the drop-down menu and click ‘OK’. For successive layers (if loading one layer at a time) select ‘current mapper’ as some of the data is already loaded. A point to note, is that MapInfo Professional will open the data un-styled. The screenshot below shows the SU Buildings and roads layers loaded.



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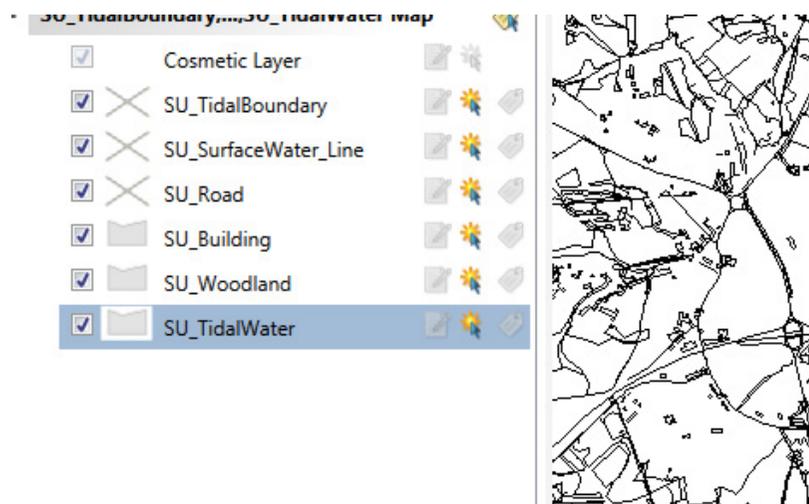
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STYLING THE DATA

MapInfo Professional, unlike many other GI applications, is better styled at translation stage, because the .TAB format used by MapInfo can retain all of the styling information applied in the translation process – it does not use separate styling files to apply a style to the data. OS VectorMap District is currently not supplied in MapInfo .TAB format. Therefore, there is no Ordnance Survey published styling information for use in MapInfo Professional at the present time. It is, however, possible to style the data manually in MapInfo and achieve a pleasing result.

To add a style to a layer which has been loaded, open up the layer control window and then select the style override box;



Click the button and a new region style window will appear. It will then be necessary to select a colour for both the fill and the border for the layer to be styled. When the box containing a number of basic colours appears, select the very south-east box (with the pattern in it) and the next window pops up, which will allow a specific RGB value to be entered.

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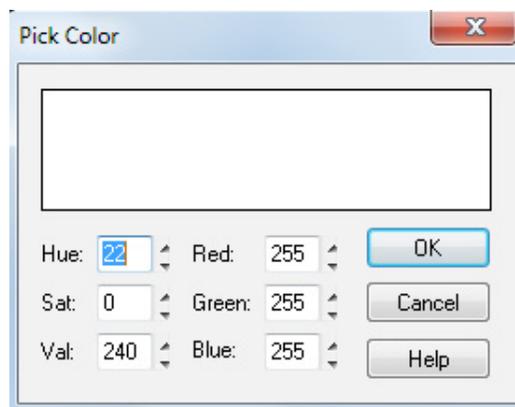
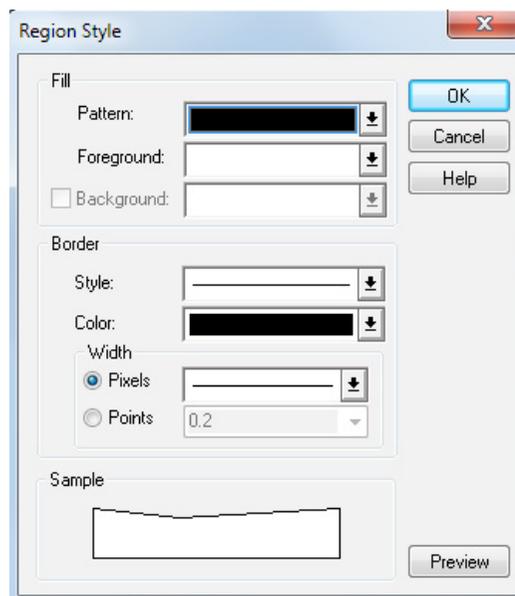
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Select a suitable RGB layer for the foreground and then for the border. The selected style will now appear for the layer. Repeat this procedure for all of the other layers in OS VectorMap District.



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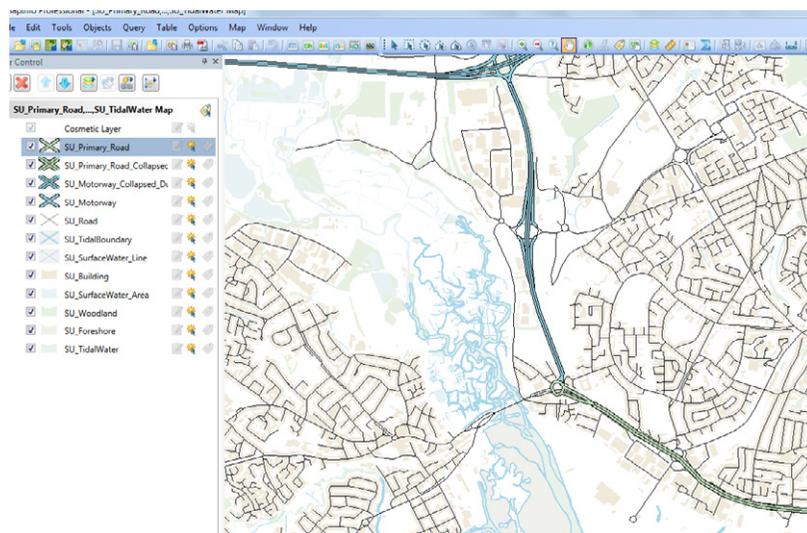
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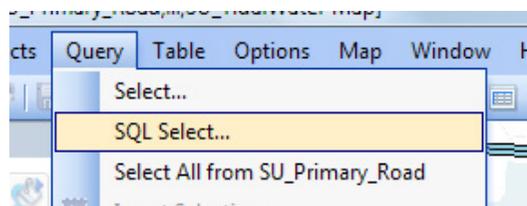
For the layers within OS VectorMap District which require different styles to be applied to different attributes within the layer, it is necessary within MapInfo to select out the different attributes using a query. Once the attribute is selected, it will be possible to style on that attribute, either within the original .TAB file or by creating a new subset .TAB file. This second option will be described here, as it allows the end user to have more flexibility in terms of layer ordering and allows different subsets of OS VectorMap District to be loaded and used for different requirements.

The example below shows a few of the elements of the 'SU_Roads' layer have already been styled;



In the example following, another element of the OS VectorMap District 'SU_Roads' layer will be styled by creating a new .TAB file for the 'A Roads Collapsed Dual Carriageway' element of the SU_Roads layer.

Firstly, from the main menu, select 'Query' and 'SQL Select'.



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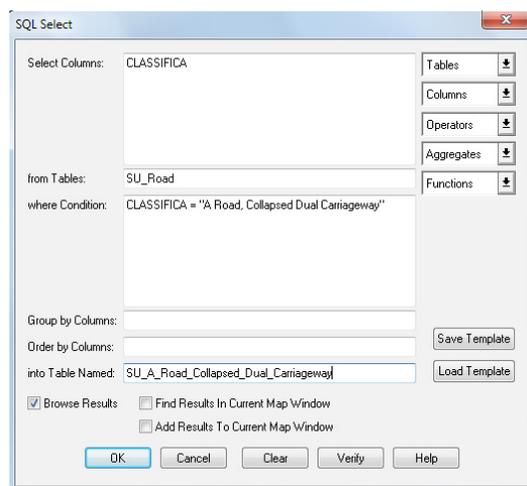
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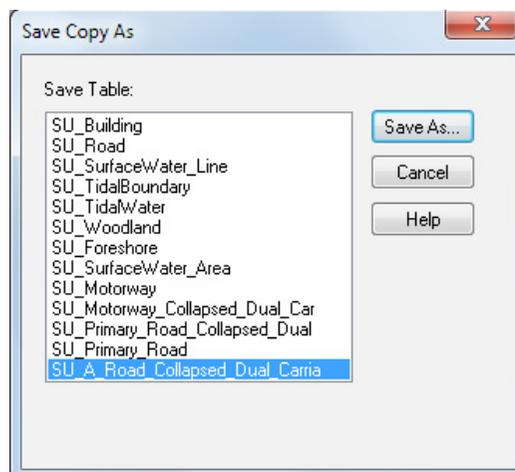
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In the window that follows, enter into the relevant boxes, the information required to pull out the A Roads, Collapsed Dual Carriageway element of the SU_roads layer;



When creating the new table be sure that the table name being assigned does not contain spaces. Click 'OK'. MapInfo will now create a new .TAB file query for that element of the data. To save out this query as a .TAB file select from the main menu, 'File, Save Copy As..' and then select the name of the table. Then click the 'Save As' button.



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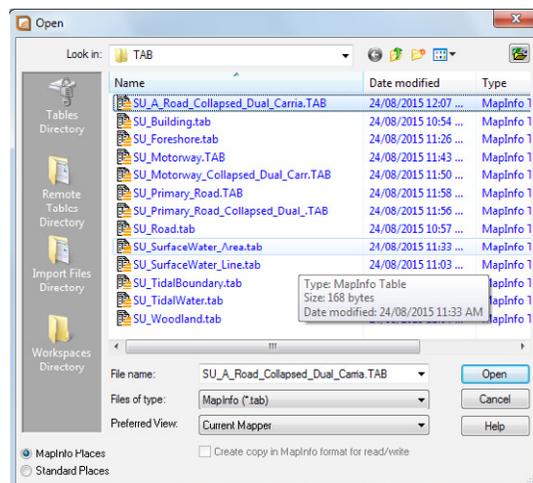
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In the next window, select the location for the .TAB file and then click 'OK'. To load the saved file, click 'File, open' at the main menu and select the newly created table. It will be necessary to close the original selection table created by the SQL query first; otherwise another name will have to be given to the SU_A Roads Collapsed Dual Carriageway table before it will open.



Once selected, click 'OK'. The new table will appear in the layer control window.



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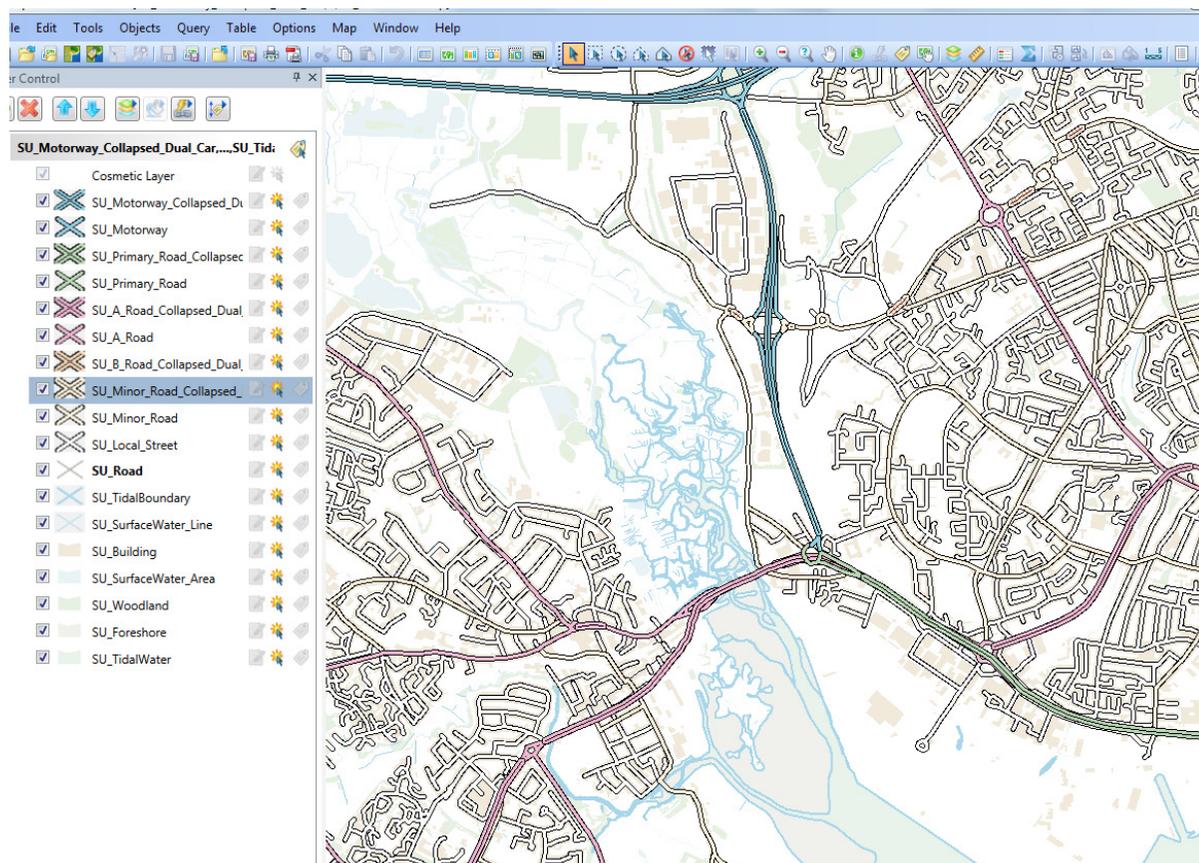
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The user can now style this table with an appropriate style as required. This may look like the following depending upon what style is selected.



This procedure will have to be repeated for other elements of the roads layer as required. In OS VectorMap District, the functional sites, Tidal Boundary, Railway Track, Railway Stations and Roads layers will require this approach. All of the other layer elements can be styled on a simple individual basis. It is entirely up to the user as to what approach is taken. Saving a workspace with the data styled will save the style overrides applied.

If the user is familiar with Map Basic programming or has another translation software package such as FME by Safe Software®, it will be possible to automate the procedure described above. All the user would have to do is to run either a suitably compiled Map Basic .MBX file or run a workbench in FME, which would apply the styling (in the case of FME actually apply a style at translation from ERSI shapefile to MapInfo .TAB format) to the data. These procedures fall outside of the scope of this guide.

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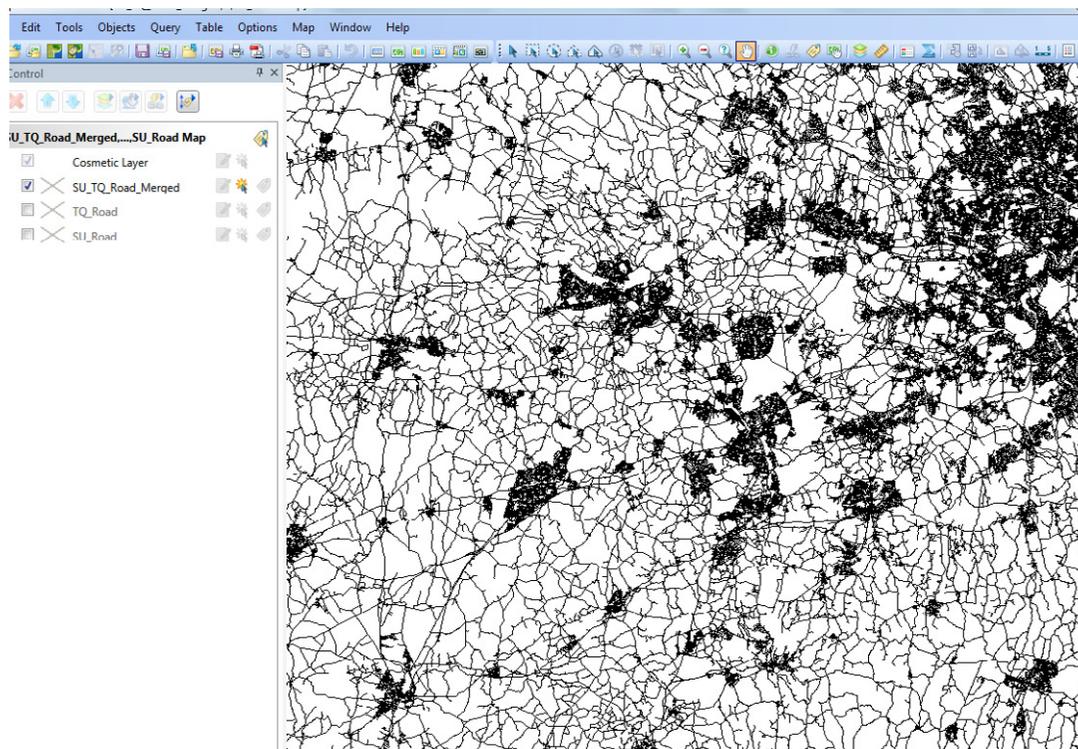
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MERGING MULTIPLE .TAB FILES IN MAPINFO PROFESSIONAL

In MapInfo it is possible to merge the elements of two .TAB files together into one new table using the 'append' function. This only works for data tables of the same type and will only work for two .TAB files at a time. Please note that the file into which the new data is appended will need to be saved as a new table at the end of the process. This append process will have to be repeated for all elements of OS VectorMap District data if the user requires two 100km² grid areas to be merged.

If the user wishes to merge elements of more than two .TAB files together at the same time, for example, if there was a requirement to combine the elements of TQ, SU and TL together; the user would have to use another solution. A number of custom built script files have been written for MapInfo and are available on the Internet . An alternative would be to use the freely available open-source GIS QGIS to merge the shapefiles together before creating the .TAB files in MapInfo. The user should be aware that these merged tables will contain duplicate features.



The example shows the result of appending the SU_Roads element of OS Open Map Topography into the TQ_Roads table. The 'SU_TQ_Roads_Merged' table should be saved as a copy of the TQ_Roads table to keep the merged data.

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DELETING DUPLICATE ENTRIES FROM THE MERGED TABLE

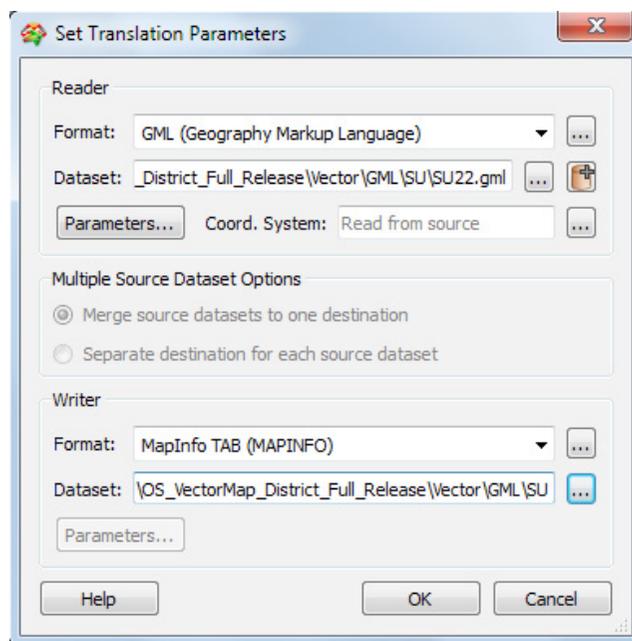
There are several ways of doing this in MapInfo Professional. One of the ways using SQL queries is described in the MapInfo knowledge base article, which can be found here:

http://testdrive.mapinfo.com/techsupp/miproduct.nsf/kbase_byproduct/0E37D7B26ED824168525629900805DD2

LOADING GML DATA INTO MAPINFO PROFESSIONAL

MapInfo version 12.5 onwards is able to use the universal translator which comes with the application to translate OS VectorMap District vector data supplied as .GML version 3.2.1 into MapInfo .TAB format. Under the menu item 'Tools', 'Universal Translator', open up the translate window and select 'GML' from the list of format options in the reader section.

The GML data, unlike the ESRI shapefile format, comes as 20 x 20km² tiles and the user will need to select the tiles required for translation. (More than one can be done at one time). The window below illustrates a typical translation into MapInfo .TAB format.



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At the end of the translation session, the user should see something like the following displayed in the universal translator window;

```
FME Quick Translator
File Log Help
-----
Features Written Summary
-----
AdministrativeBoundary (AdministrativeBoundary) 3877
Building (Building) 16515
ElectricityTransmissionLine (ElectricityTransmissionLine) 60
FeatureCollection (FeatureCollection) 3
Foreshore (Foreshore) 69
FunctionalSite (FunctionalSite) 377
Glasshouse (Glasshouse) 2
HeritageSite (HeritageSite) 1
MotorwayJunction (MotorwayJunction) 4
NamedPlace (NamedPlace) 1346
Ornament (Ornament) 2844
RailwayStation (RailwayStation) 11
RailwayTrack (RailwayTrack) 591
Road (Road) 12547
SpotHeight (SpotHeight) 41
SurfaceWater_Area (SurfaceWater_Area) 1866
SurfaceWater_Line (SurfaceWater_Line) 6980
TidalBoundary (TidalBoundary) 277
TidalWater (TidalWater) 15
Woodland (Woodland) 10986
-----
Total Features Written 58412
-----
Translation was SUCCESSFUL with 0 warning(s) (58412 feature(s) output)
FME Session Duration: 37.1 seconds. (CPU: 33.7s user, 2.0s system)
END - ProcessID: 5328, peak process memory usage: 180820 kB, current process memory usage: 130048 kB
Translation was SUCCESSFUL

Translation finished
```

The translator will convert the 20 x 20km² areas of .GML data into a single set of MapInfo .TAB files covering the area required, which negates the need for combining .TAB files for different areas together as described previously. Loading the .GML supply of data using MapInfo Professional 12.5 and later versions would therefore be a much better alternative than using the shapefile supply if a customised coverage area of data is required.

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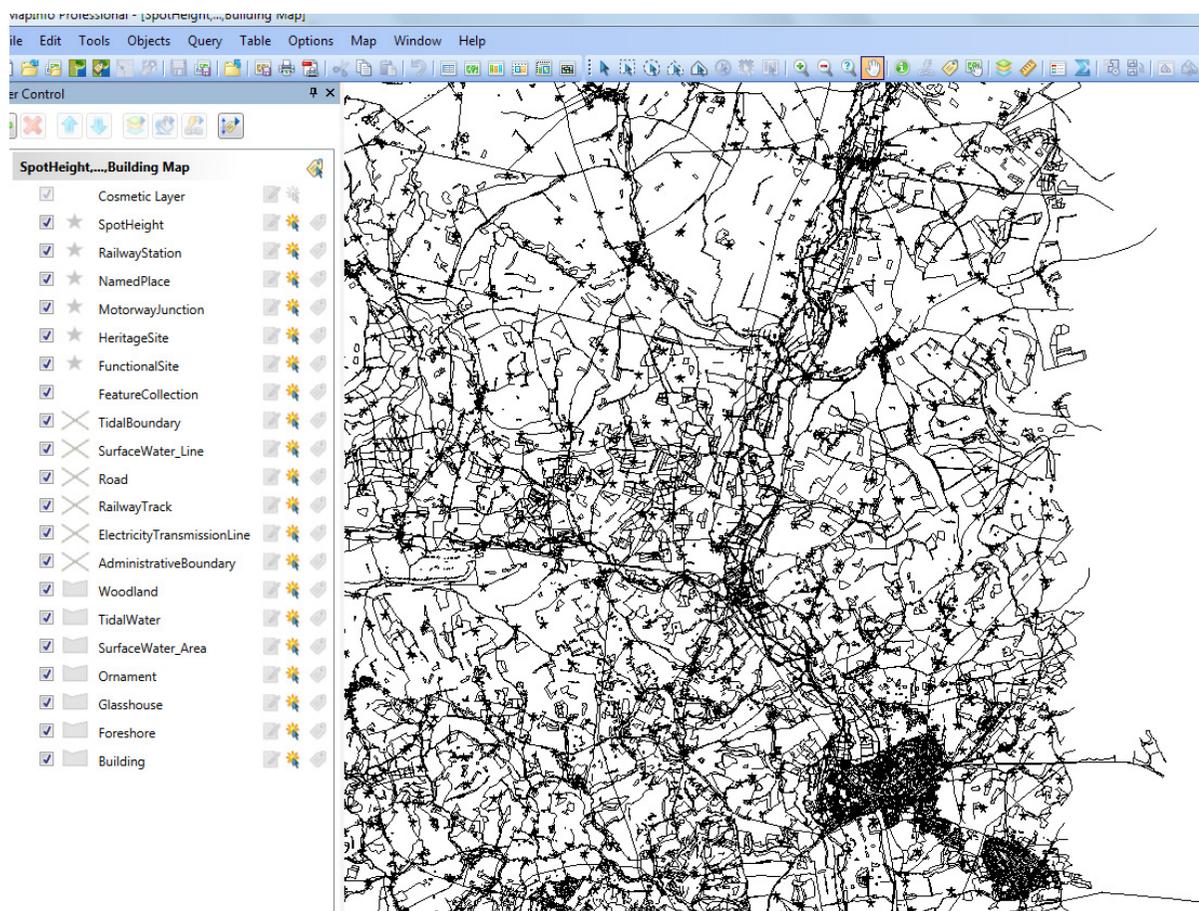
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In the screenshot below, it can be seen that the data is translated un-styled and in 'hairy' format in that whole features are converted, which may extend beyond the area of interest. However, styling can be applied to this data as shown in the previous section, either manually using the style override function or by using a predefined .MBX file to apply the styling if available.



It is important to note that this function is only available in MapInfo Professional version 12.5 or later. Earlier versions of MapInfo will not convert the .GML version 3.2.1 data. If using one of those versions of MapInfo Professional, it is highly recommended that the ESRI shapefile format supply of OS VectorMap District be used.

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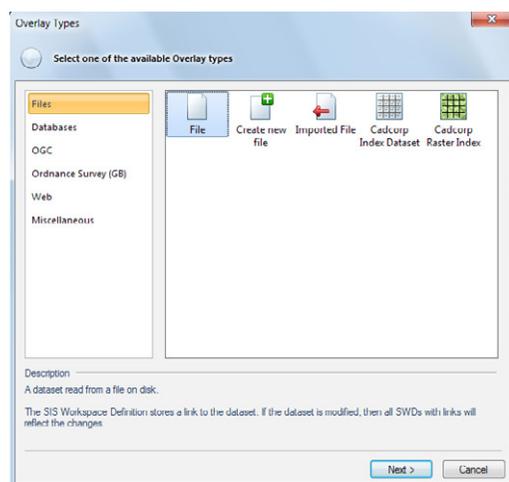
CADCORP SIS

In the examples shown below, version 8.0 of Cadcorp SIS Map Modeller is being used to load and manipulate the OS VectorMap District data.

LOADING AND DISPLAYING THE SHAPEFILE SUPPLY



In Map Modeller, select the 'Add Overlay' button from the ribbon toolbar.



Select Files in the left-hand window and then select 'File' in the overlay type. Click 'Next'. In the next window, navigate to the folder where the shapefile data resides and select the OS VectorMap data files that are required. In the example below, the SU_Buildings shapefile has been selected.

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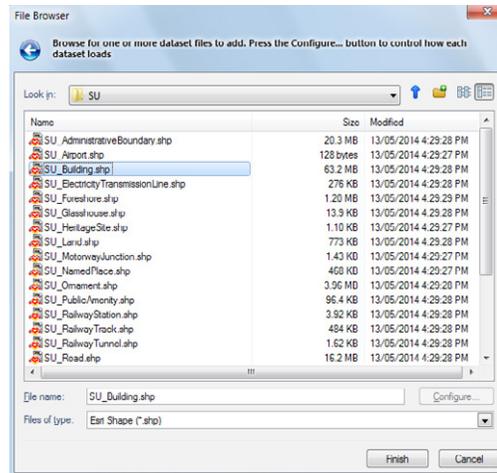
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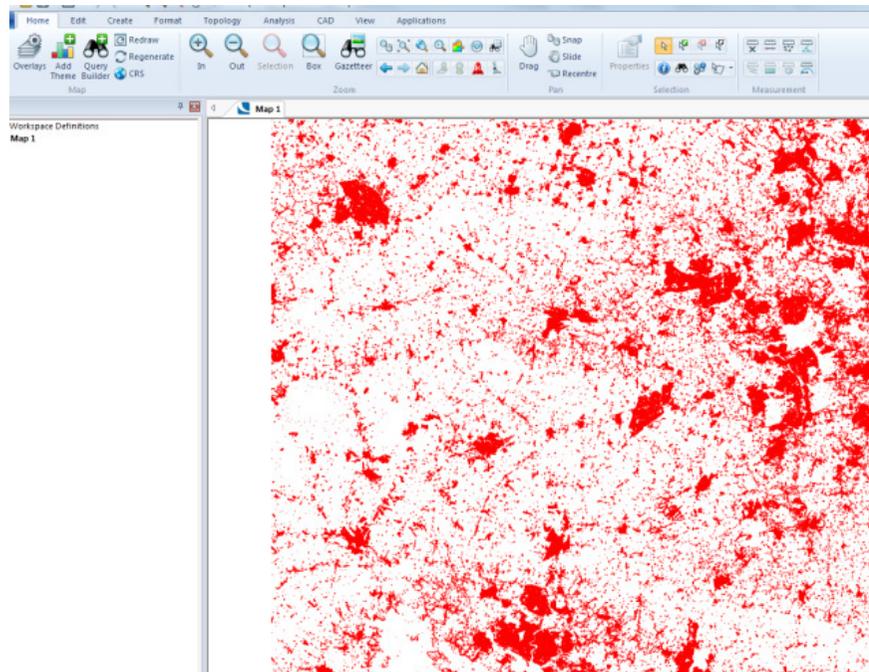
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Once all of the shapefiles have been selected, click 'Finish'. The shapefile data will be loaded un-styled into the map window.



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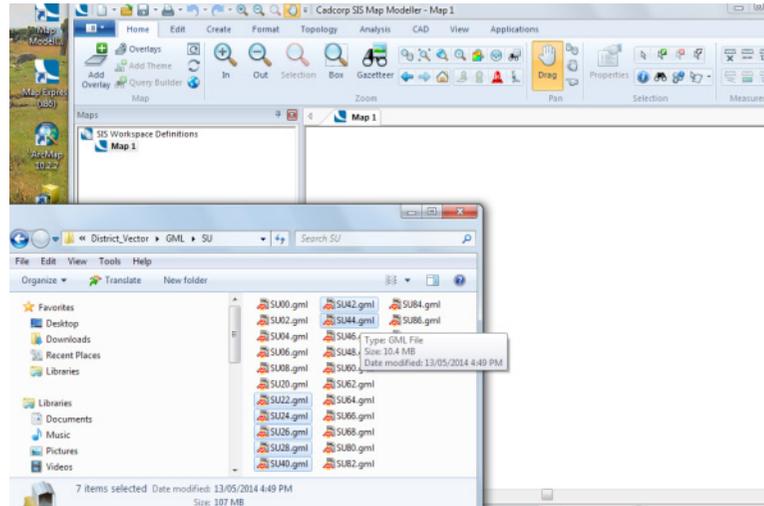
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LOADING AND DISPLAYING THE GML SUPPLY

Cadcorp Map Modeller comes with a set of inbuilt Named Object Library (NOL) style overlays for a number of Ordnance Survey vector datasets. One of these includes a style overlay for the .GML supply of OS VectorMap District data. It is therefore recommended when using Cadcorp Map Modeller, to use the .GML supply of the data, as this makes the loading and styling of data very easy to carry out.

Simply open a Windows Explorer window and browse to the folder which contains the .GML data. Select the 20 x 20 km² areas of GML data which are required and drag and drop them to the Cadcorp Map Modeller window.



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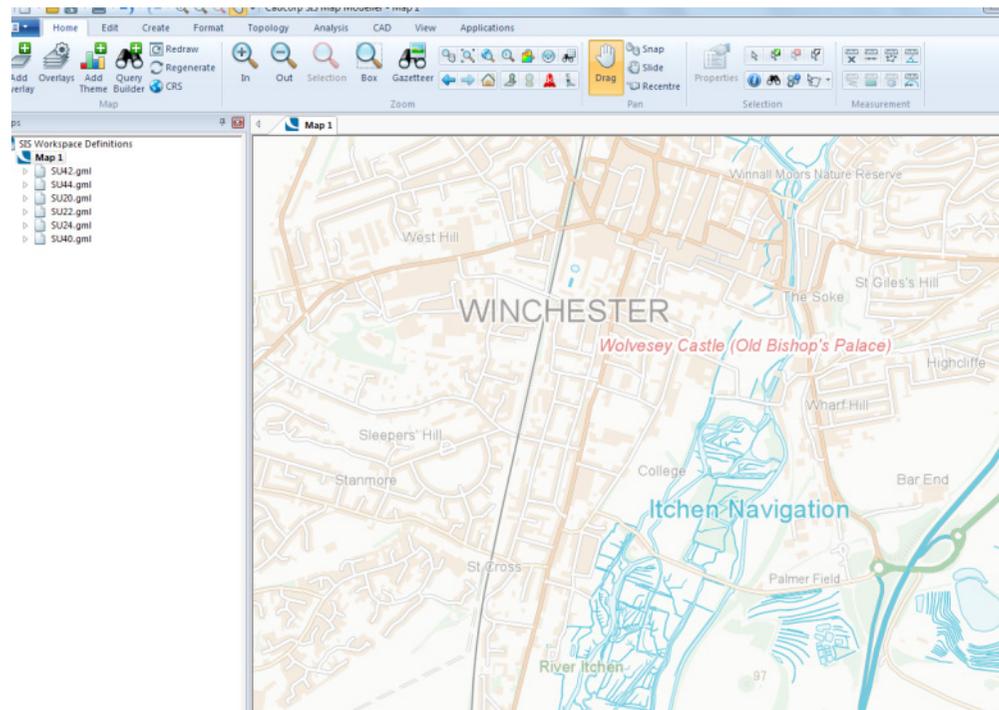
MapInfo Professional

Cadcorp SIS

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The screenshot below illustrates the result of loading 6 .GML areas into Map Modeller. The data is loaded styled and without duplicate features, ready for use.



It is also possible to load the .GML data by selecting add file as previously described for the shapefile supply. However, the styling overlay will have to be added manually if that method is used.

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FURTHER INFORMATION

Further information about the OS VectorMap District can be found on the Ordnance Survey website:

<https://www.os.uk/business-and-government/products/vectormap-district.html>

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