Ordnance Survey

OS Open Greenspace

Getting started guide

Responsibility for this document

Rachael Evans, Technical Product Manager, is responsible for the content of this document.

Change history

Version	Date	Summary of change
1.0	Feb 2017	First issue

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

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Contents

OBTAINING OS OPEN GREENSPACE DATA

INTRODUCTION

From May 2017, Ordnance Survey will release a new product, OS Open Greenspace. This product will contain information on greenspace sites and their access points and it will be an open data product. This Getting Started Guide illustrates how to load and style OS Open Greenspace data into several commonly used GI applications. The procedures described here are similar to those for other OS OpenData products outlined in their respective Getting Started Guides.

OS Open Greenspace can be downloaded from the OS OpenData web site from May 2017. It will be available as either ESRI shapefile or GML format. The data will be available in 100x 100km tiles, but features will not be clipped at tile edges, resulting in what is called 'hairy' tiles. In the ESRI Shapefile release, the product will comprise two elements, the greenspace site, and the access points. The GML release will simply contain both elements in one file.

MEDIA

There are currently no plans to make this product available on hard media supply.

LOADING OS OPEN GREENSPACE DATA

QGIS

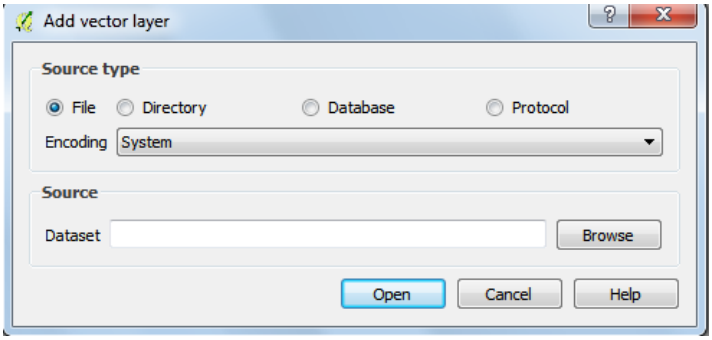
It is assumed that the user will have already set the default co-ordinate reference system in QGIS to British National Grid (EPSG 27700). Instructions on how to do this can be found in the QGIS Getting Started Guide:

http://www.ordnancesurvey.co.uk/docs/support/opensource-gis-guide-04-qgis-intro.pdf

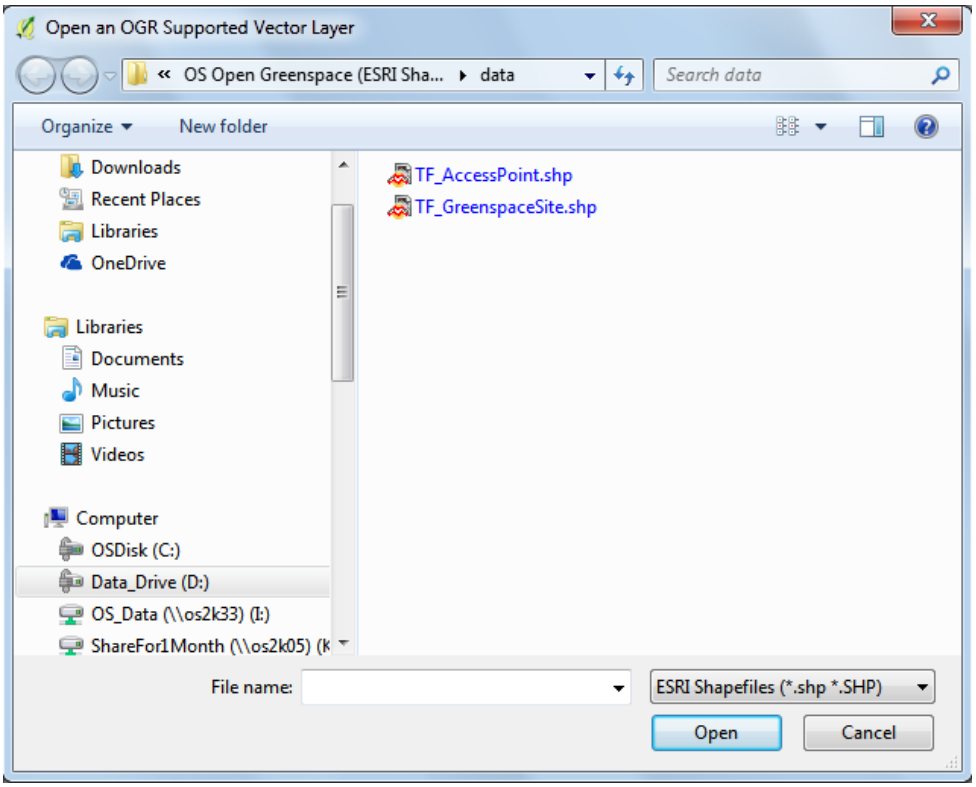
LOADING AND DISPLAYING THE ESRI® SHAPEFILE SUPPLY

Open QGIS. Select 'Add Vector Layer' from the left-hand toolbar.

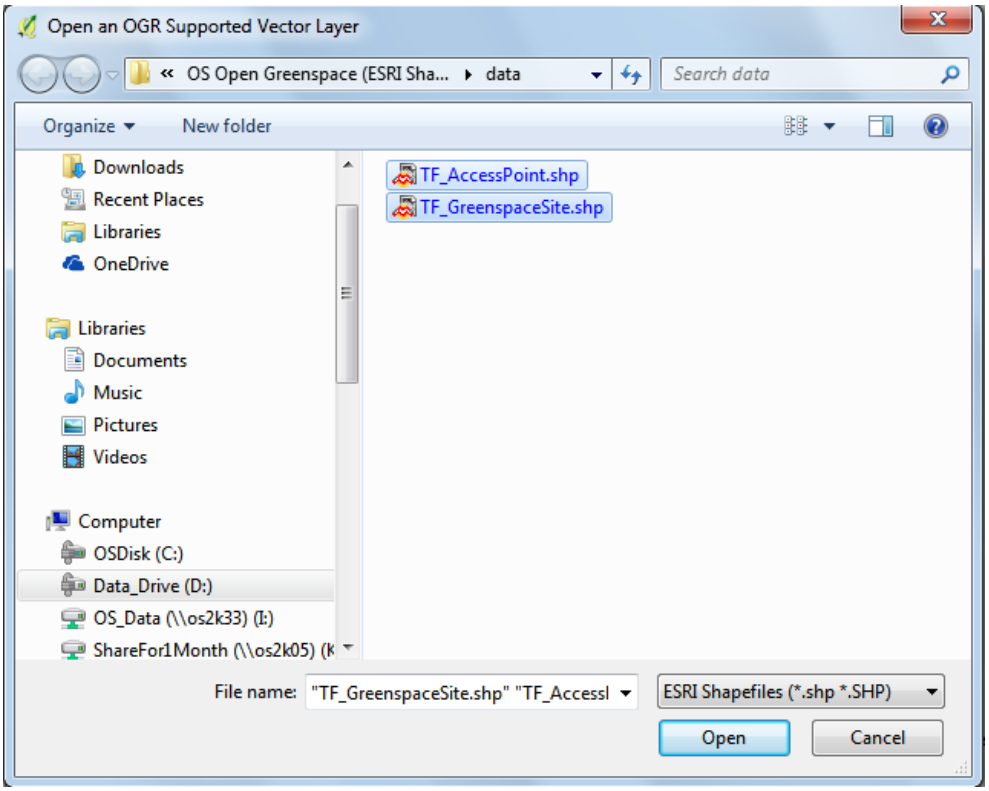
Click on the 'browse' button in the next window.



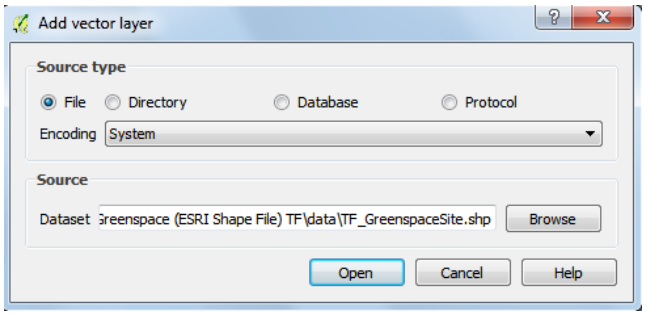
In the next window, navigate to the folder in which the data has been stored following download.



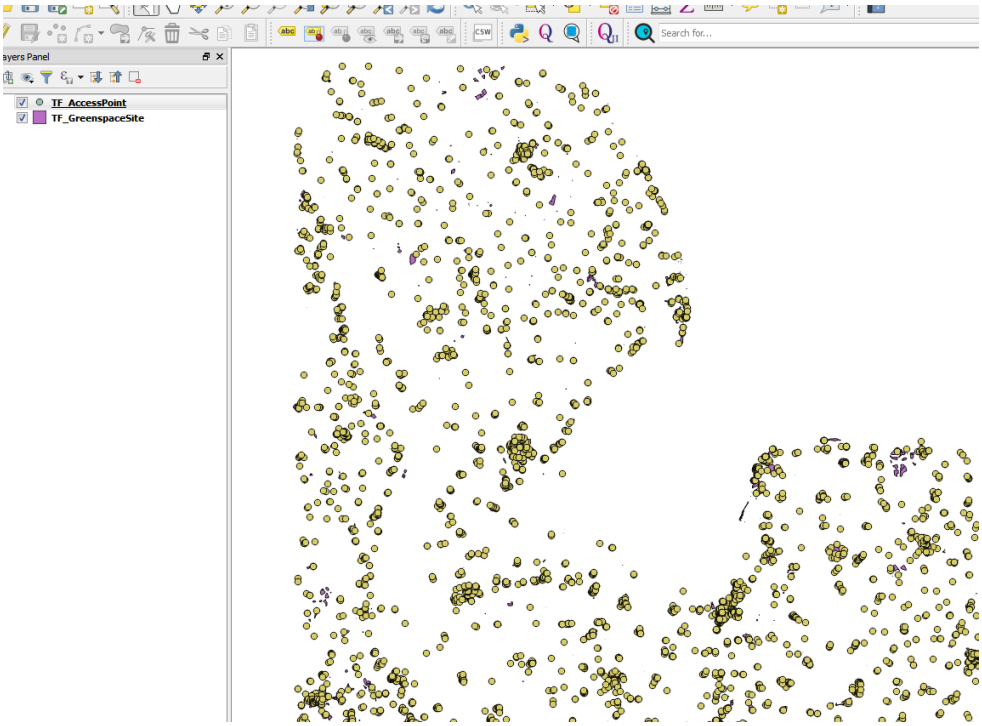
Select the files which need to be loaded and then click ‘open’.



Click ‘open’ again in the following window:



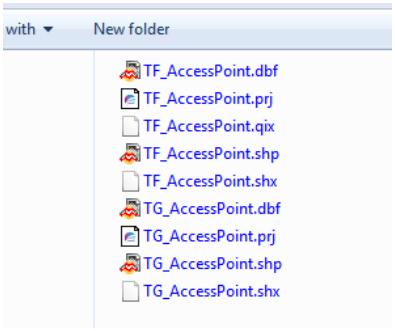
The data will now load into QGIS and will look something like the following:



The data will be loaded un-styled. It will be noted that the data will be loaded by tile reference as shown in the layers panel window of QGIS on the left-hand side of the screen. For small amounts of data, loading in this way will be perfectly acceptable. However, for larger areas, it will be more manageable to merge the data together to load larger areas as one file.

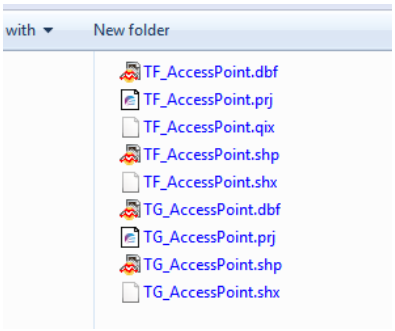
MERGING THE ESRI SHAPEFILE SUPPLY

The user may need to load more than one 10000km^2 grid square to cover the required area. 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 100km grid square reference letters as shown below:

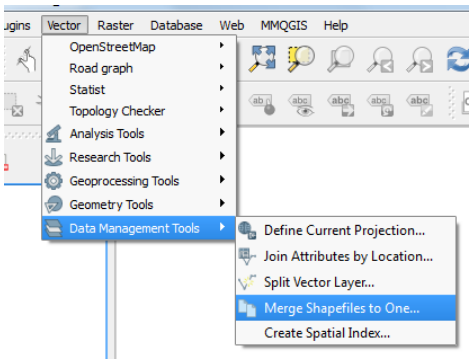


In OS Open Greenspace, there are two elements of the shapefile data, one for the Greenspace sites and one for the access points. These two elements will need to be merged separately from each other, so that the user will obtain a larger shapefile for the sites and one for the access points.

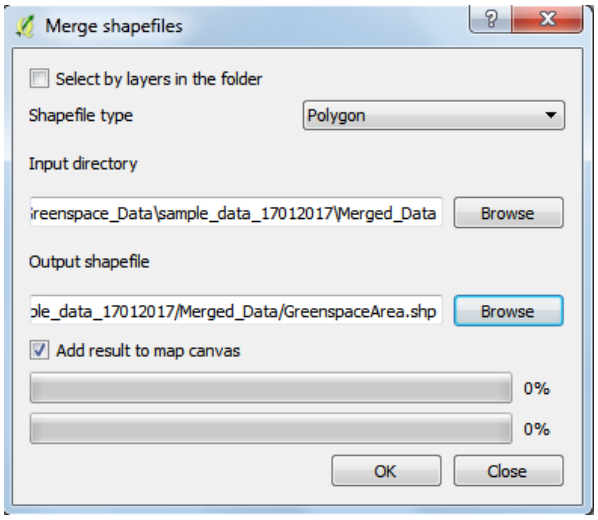
It is recommended that the user copies each of these elements into a new empty folder before merging is carried out. In the example below, the Access Points for two tiles of OS Open Greenspace have been copied into a 'Merged_Data' folder. This will need to be repeated for the Greenspace sites



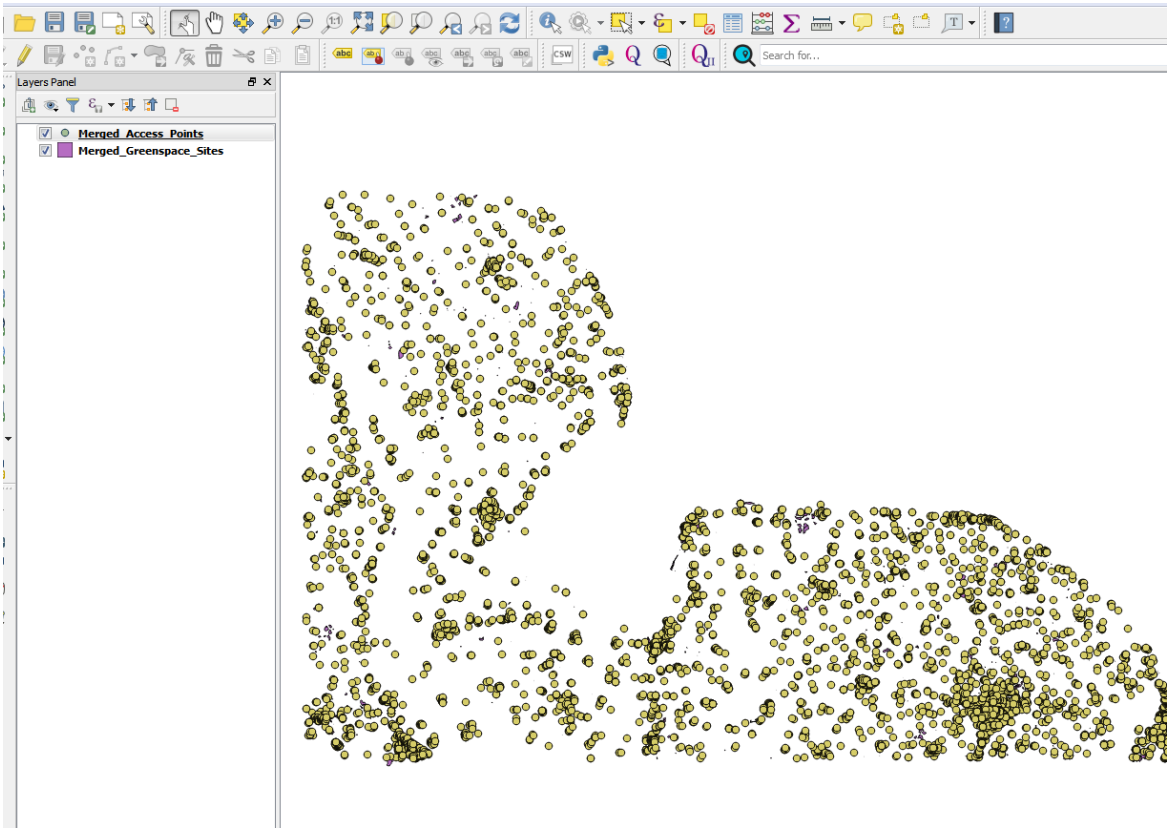
To merge the shapefiles together in QGIS, from the main menu, select 'vector' then 'data management tools'. The 'merge shapefiles to one' option is towards the bottom of the list of options.



In the next window, the user will need to define if the shapefiles to be merged are either points, lines or polygons. OS Open Greenspace contains two layers, the Access Points are point data and the Greenspace Sites layer is a polygon layer. Additionally, the folder where the files to be merged will sit needs to specified. In this example, all the files in the folder specified will be merged, which is easier than defining individual files. Finally, an output folder and file name 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. Click 'OK' when satisfied with the files to be merged and the name and location of the output file has been decided.

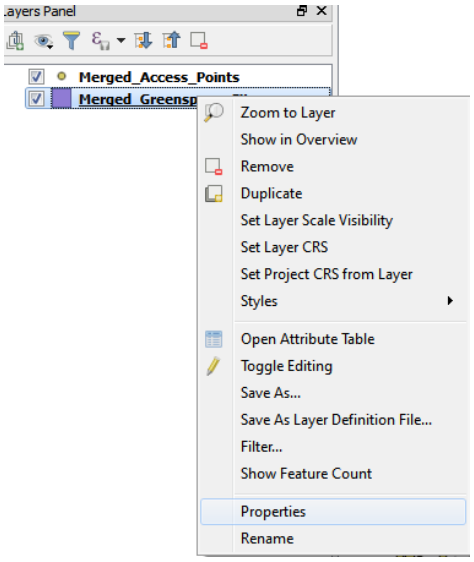


Click 'Close' on this window when the process is completed. If the user selected the 'add result to map canvass' box, the data will appear. In the example below, two tiles of OS Open Greenspace, containing Access Points and Greenspace sites in separate layers, have been merged and loaded.

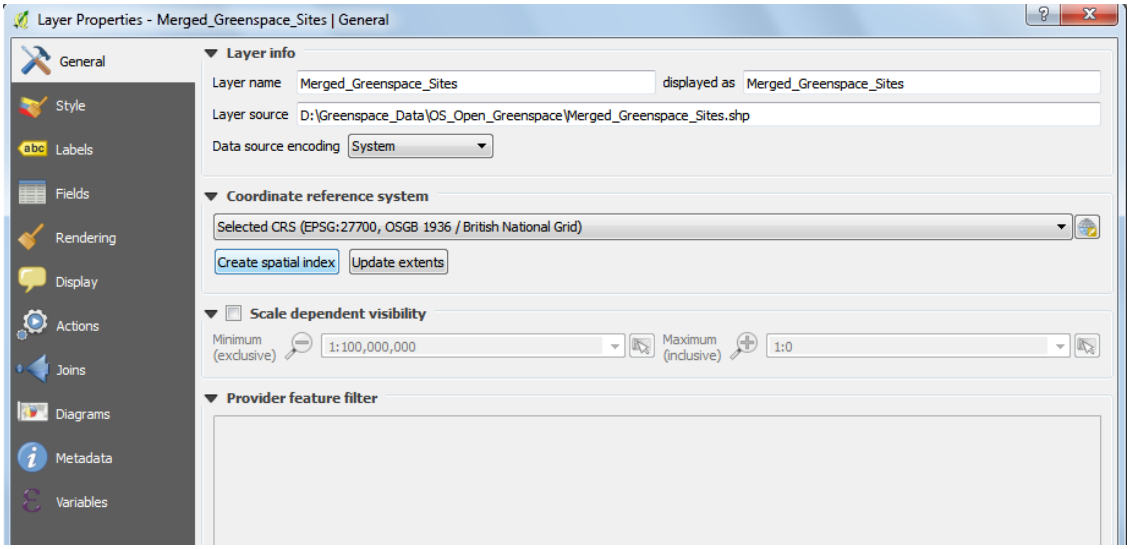


When working with merged shapefiles of any kind, it is highly recommended that a spatial index be applied to each element of the data, particularly if the user is loading national sets of data. The performance improvement in rendering the data will be very noticeable. To do this, carry out the following procedure:

Right-click on the table in the layers pane on the left-hand side of the screen. In the context menu which appears click 'Properties'.



In the next window, select the 'General' tab on the left and then click on the 'Create Spatial Index' button.



Click 'OK' when this is done. If working with larger shapefiles, the user will notice a distinct improvement in performance in rendering and panning the data.

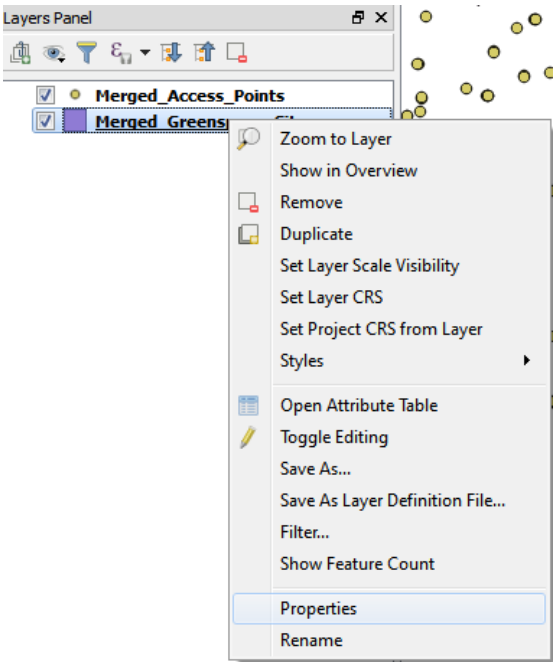
STYLING THE ESRI SHAPEFILE SUPPLY

At the time of writing this Getting Started Guide, the plan is to make available pre-defined style files for Open Greenspace in both ESRI shapefile and GML output. The style files for QGIS are files which have the .qml extension. These will be available to download from the Ordnance Survey Github pages from May 2017.

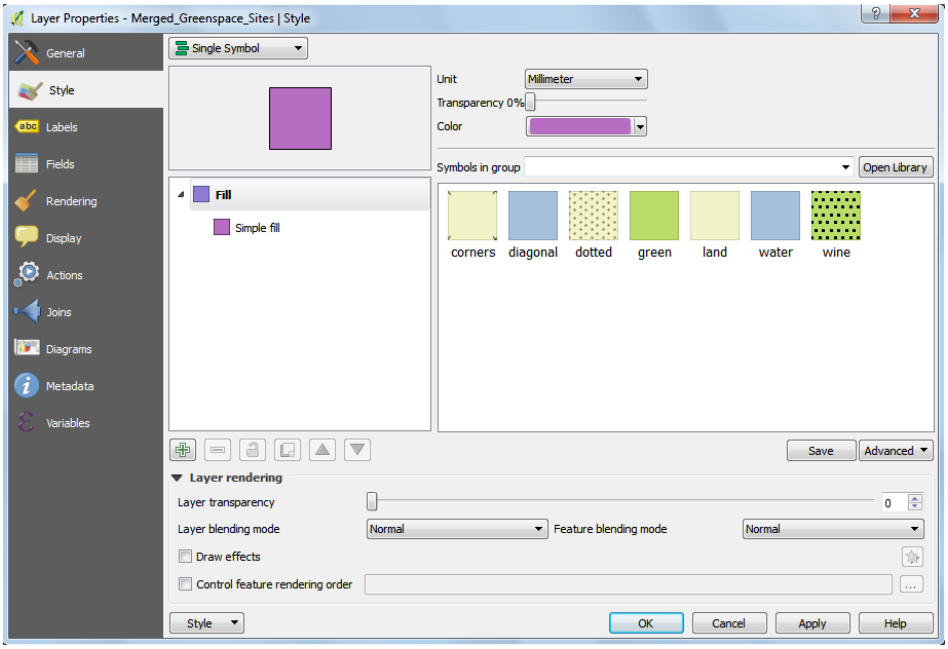
https://github.com/OrdnanceSurvey?page=2

It is also possible to style the Greenspace data manually using the tools available within QGIS to produce an output which suits the data user's needs.

To style an element of the data, right-click on the table in the layers pane and in the context menu, select 'Properties'.

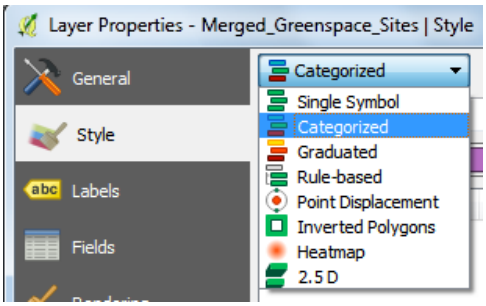


In the next window, select the 'Style' tab on the left-hand side of the window. The user will see something like the following:

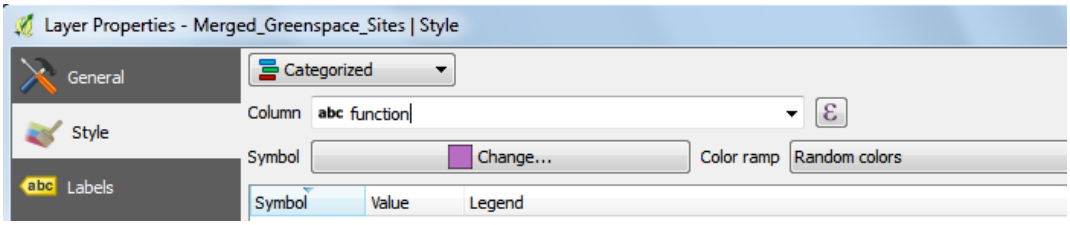


It's now up to the user as to how to style the data. However, for the OS Open Greenspace data, a categorized approach, based upon the attributes within the data, is the logical approach.

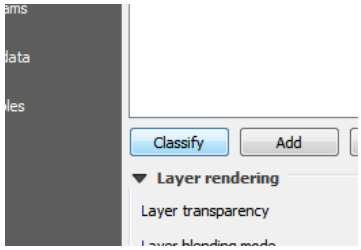
Using the drop-down box in the style window, select 'Categorized' from the list of options.



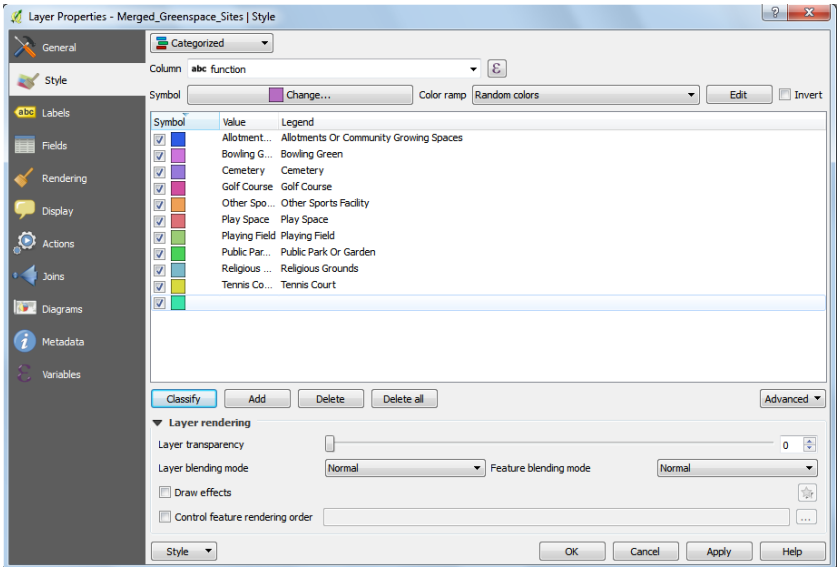
In the next window, the user now needs to select the column within the data which is to be used for defining the categories. For the Greenspace Sites layer it will be 'function'.



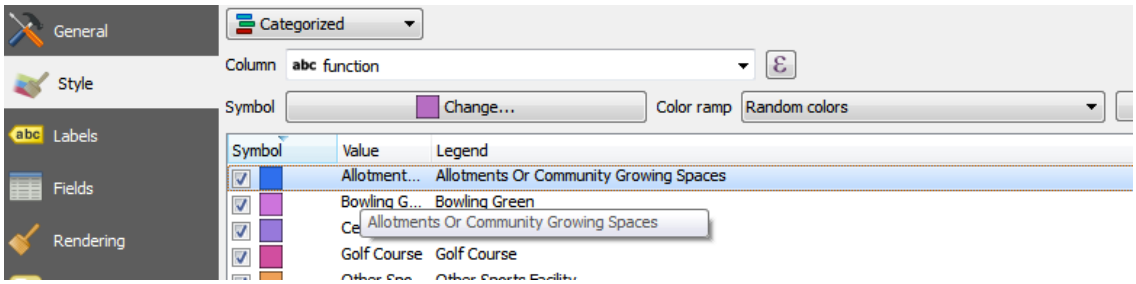
The user will now need to add all the categories which make up the different elements of the data. Click the 'classify' button towards the bottom of the window.



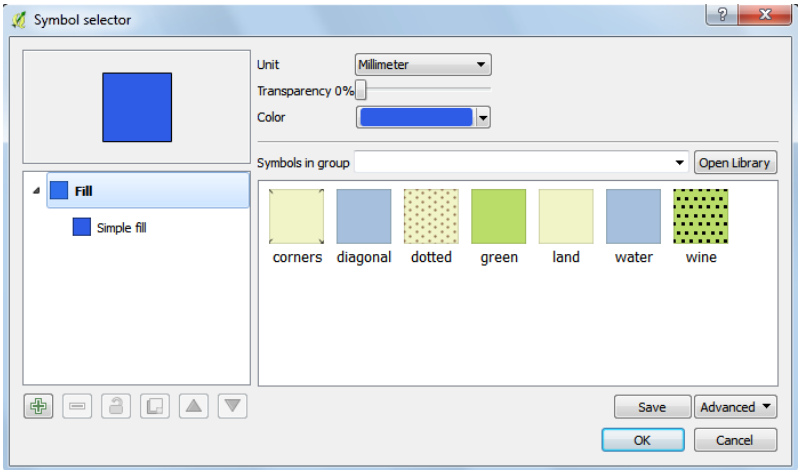
Once this has been done, a list of categories will now appear in the main window.



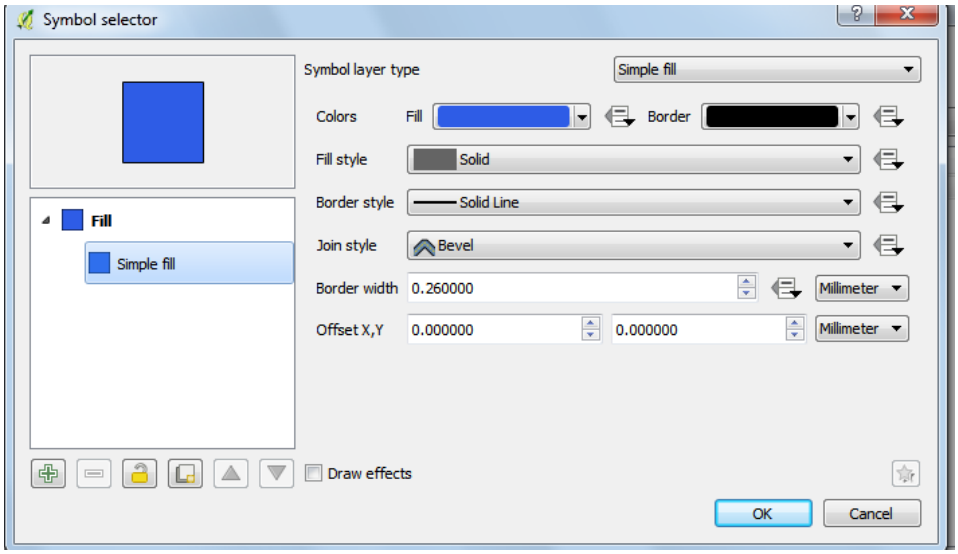
Each of the categories will have been assigned a random style by QGIS. To change these, the user should select each category in turn, and using the tools within QGIS, assign their preferred style.



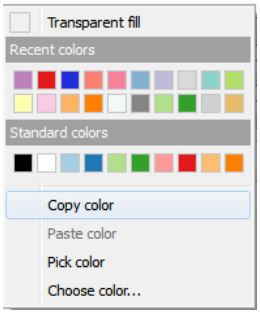
In this example, we are going to style the Allotments or Growing Spaces areas. Double-click on the feature in the list.



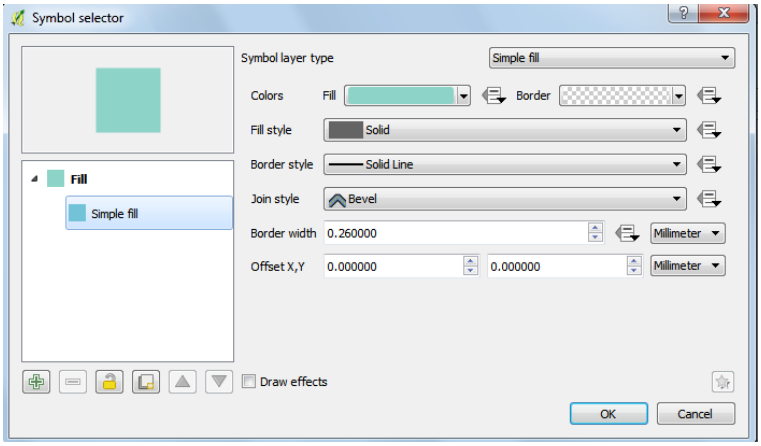
The style assigned by QGIs is a simple fill. We are going to keep this but change the colour to something more appropriate. Click on the 'Simple fill' box beneath the 'Fill' entry.



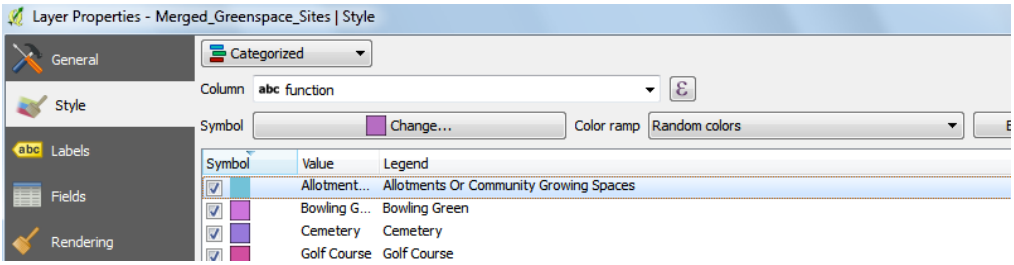
Another set of tools will now open. Select the drop-down next to 'Fill' in Colours



The user has the option to select from a choice of recent colours or copy, pick or choose a colour using the appropriate menu option. In this example, we will choose a recently used colour. We have also selected a transparent border for the feature.



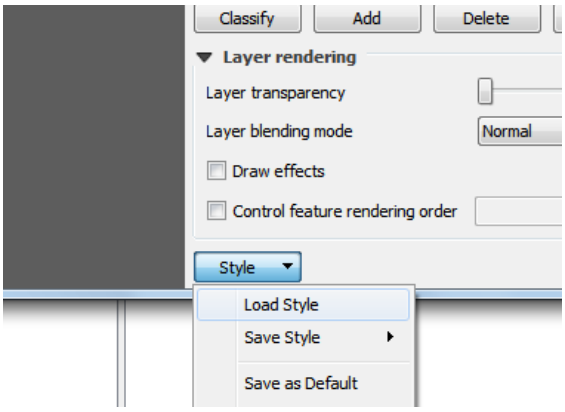
Click 'OK' when finished.



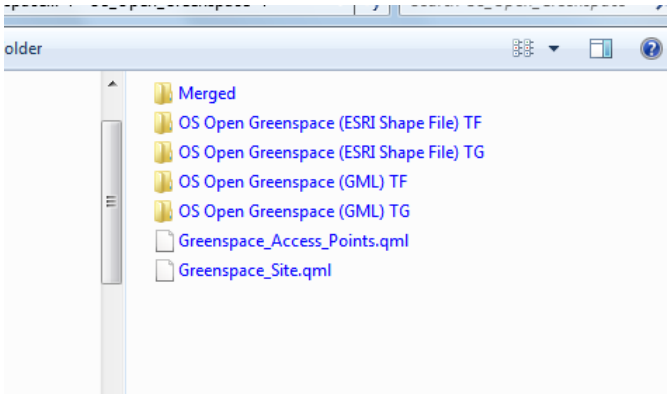
The new colour has been applied to Allotments and Growing Spaces. This will need to be repeated for all the remaining categories, using an appropriate colour for each. When finished, click 'OK' at the bottom of the window.

In the example above, we see that QGIS has applied the style to the Allotments features.

To load a predefined style file for OS Open Greenspace, click on the ‘Style’ button at the bottom of the window. Then click on ‘Load Style’.

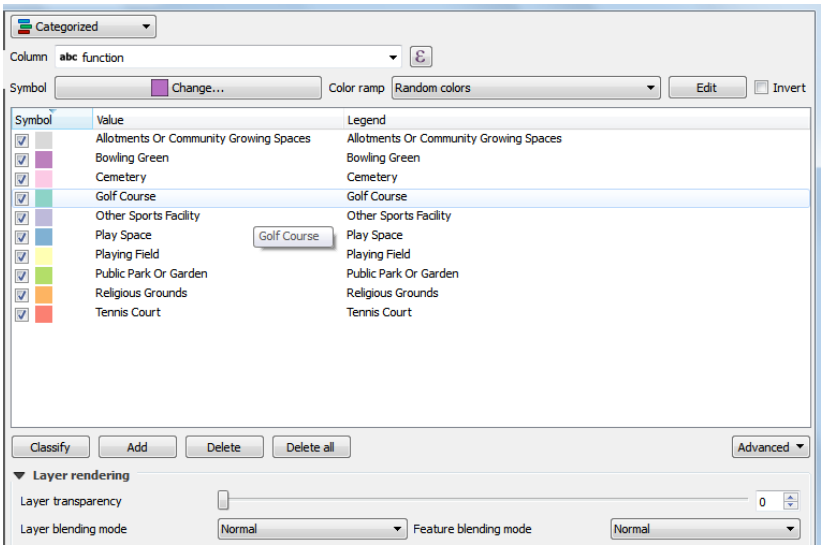


Another window will open to allow the user to browse to the location of the style file (ending in .qml).



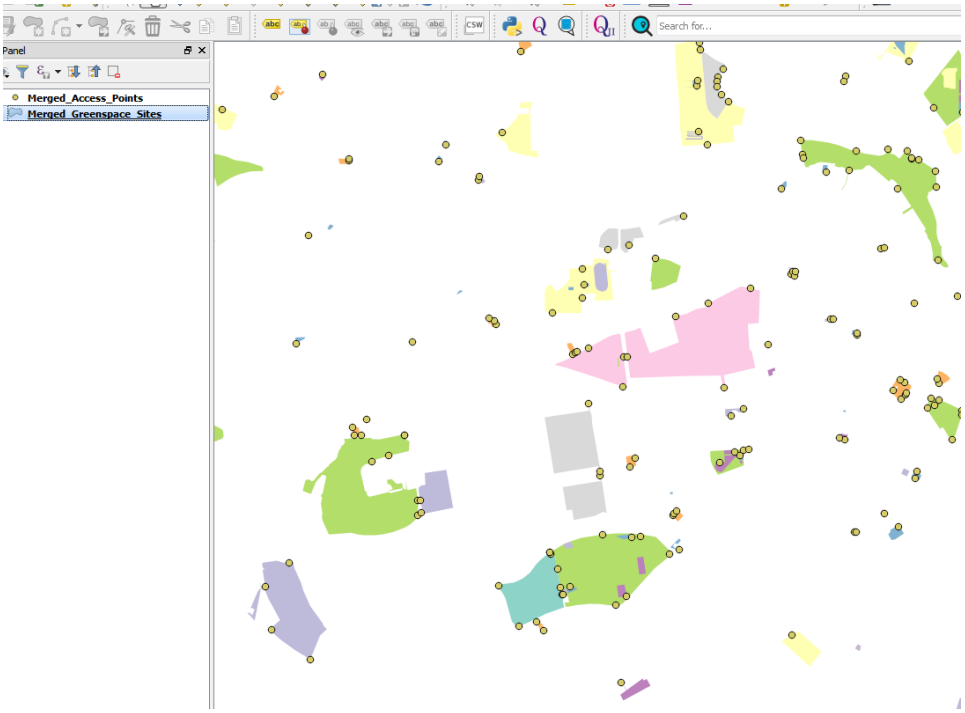
In this example, we will select the Greenspace_Site.qml. Click ‘Open’.

The window will now change to a view of the categories in the predefined style as determined by the style file.

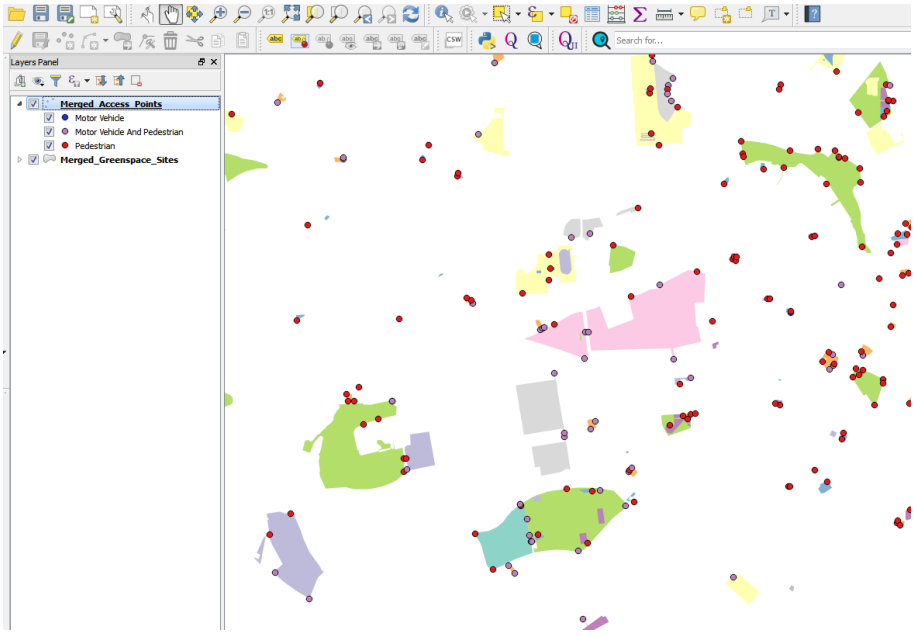


Then, click ‘Apply’ followed by ‘Open’.

The styling will now be applied to the data. In this case, the Greenspace Sites will be styled.



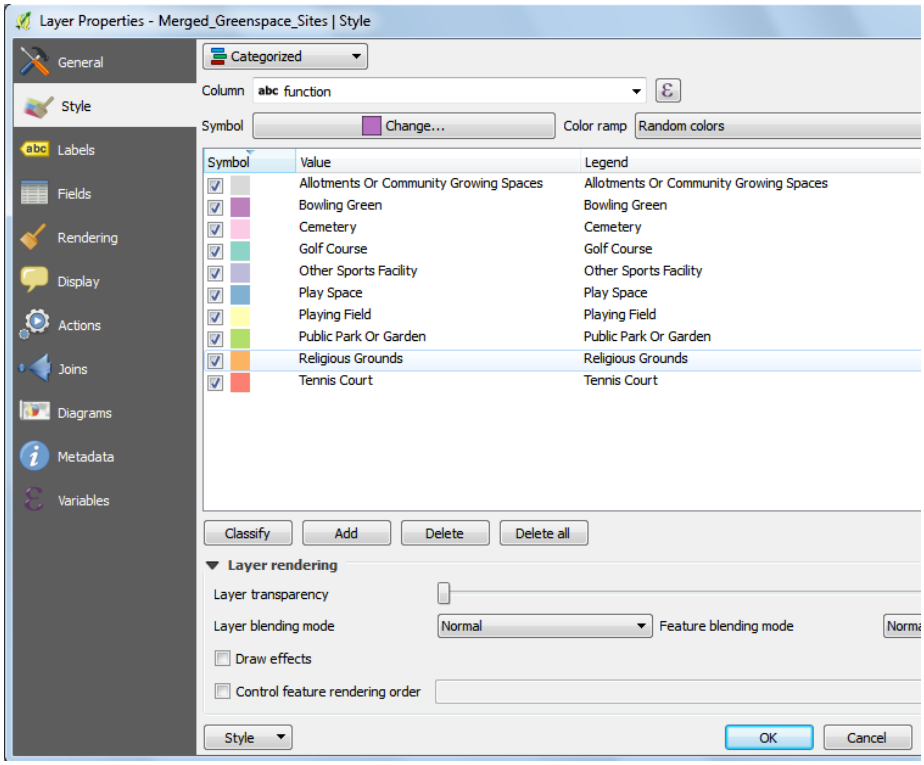
The data will now look something like the above. Styling can also be applied to the Access Points by either styling manually or by adding a predefined style something like the below.



When using the predefined style files available from Github, it is important to consult the quick-start guide with those files for their correct use.

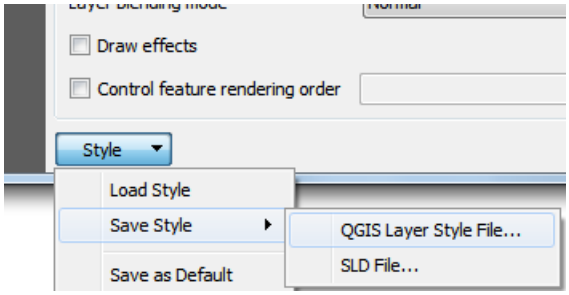
If the user wants to save a style file they have created, they should follow the procedure below:

Click on the layer for which the styling is to be saved. Right-click and select 'Properties' to bring up the properties window. Select the styling tab on the left-hand side of the window as previously.



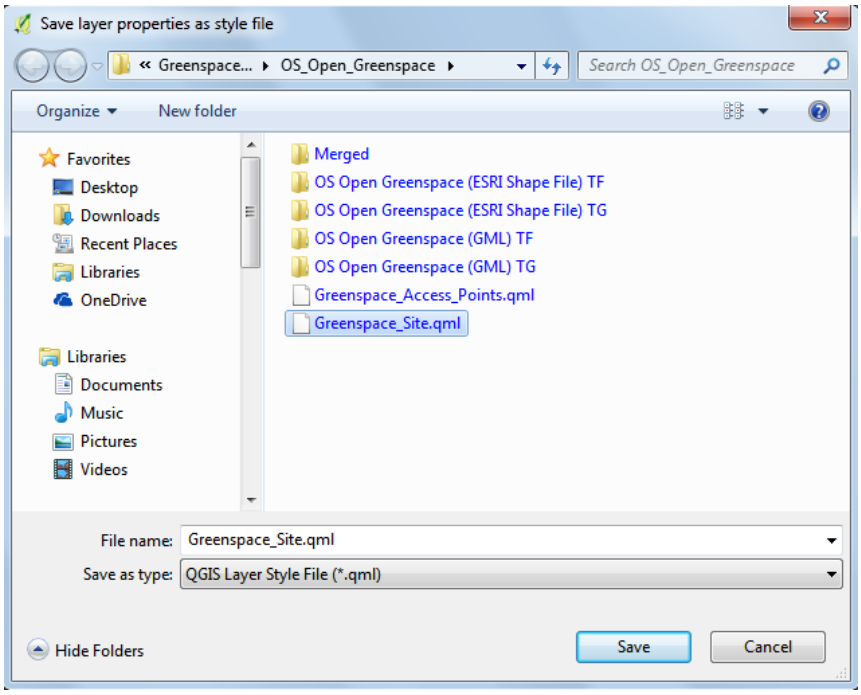
At the bottom, click on 'Style'.

There is now a context menu which allows the user to save the style as a QGIS Layer style file. Select that option.



In the next window, the user will be prompted to give the style a name and save it to a location. It is suggested that the user saves the style in a new empty folder to make managing style files easier.

In the example, we are saving the style file as Greenspace Site.QML.



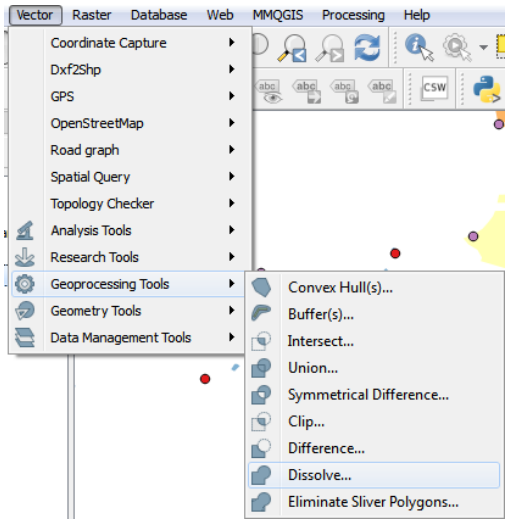
Click 'Save'. The file of type should be a QGIS Layer Style file, as we are not saving the style into a database or as a Styled Layer Descriptor in this instance. The style file is now saved and can be loaded into QGIS in future to style updated OS Open Greenspace data or data from a different location. It should be noted that this process needs to be repeated for the Access Points file in the OS Open Greenspace data as separate style files for the access point and greenspace sites shapefiles will need to be produced.

REMOVING DUPLICATE FEATURES FROM MERGED DATA

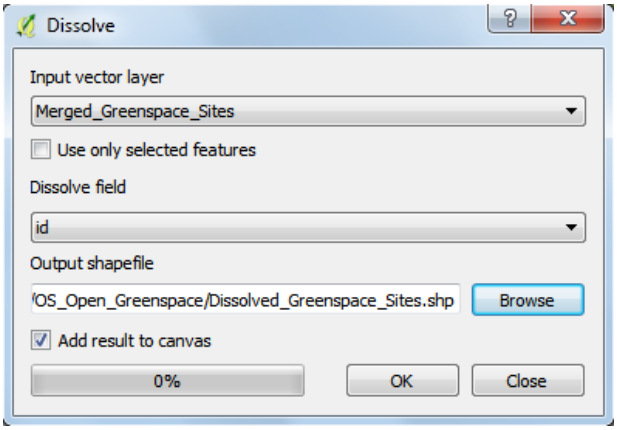
OS Open Greenspace data is supplied as 'hairy tiles' with features which cross a 100km tile edge being supplied in both tiles in which the feature appears. In many instances, the user will simply wish to use the Greenspace data as merged. In this case, there will be no need to remove duplicate features 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.

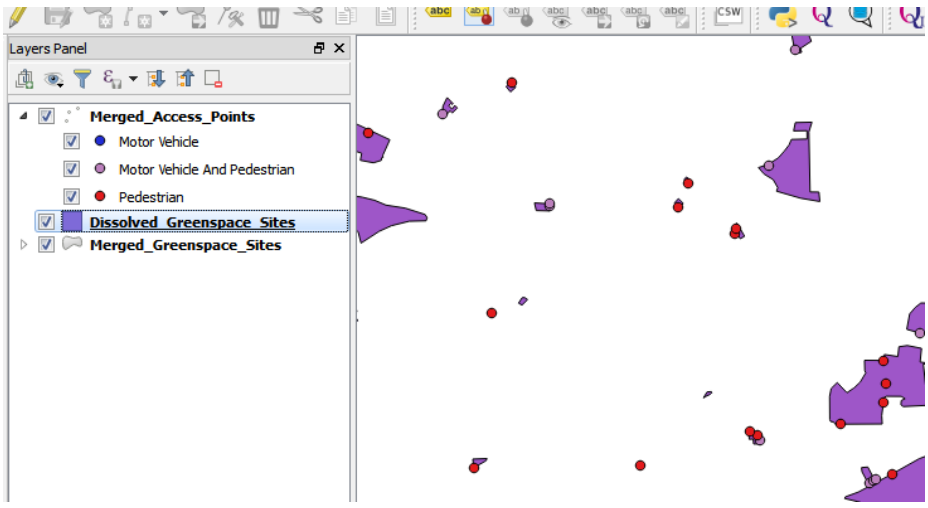
The 'Dissolve' function in QGIS which is part of standard functionality will effectively carry out this procedure. In the example described below, we are going to de-duplicate the merged OS Open Greenspace file that we created in the section on merging shapefiles in this guide. In this example described, 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.

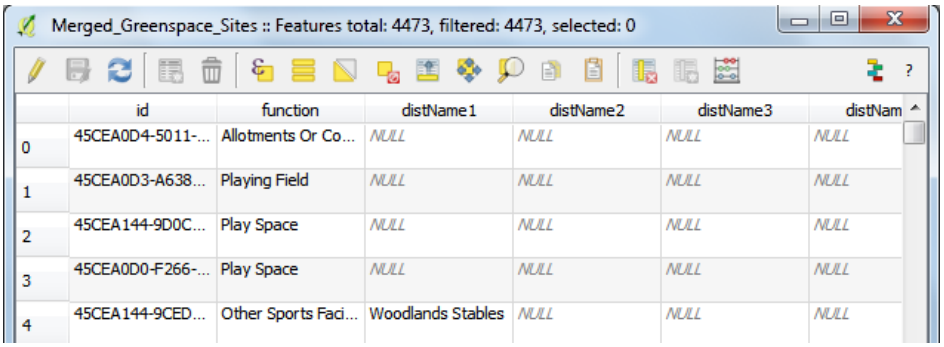


The user will need to select the input vector layer to be de-duplicated; in this case, the Merged_Greenspace_Sites file is already selected. The dissolve field is set to 'id' which will be the field in the data which will be searched for duplicate features. Finally, the user will need to specify an output folder and file name for the de-duplicated data. Once this is done, the user can specify whether the newly created file can be added to the current map canvass. Click 'OK' to start the process.



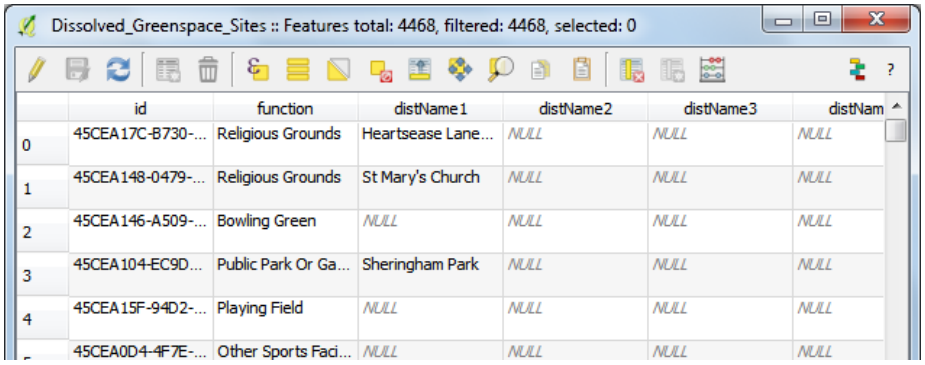
A message appears once the process is complete. In this example, we have asked QGIS to automatically load the dissolved file. Once again, it is highly recommended that the dissolved file be given a spatial index using the method previously described to improve rendering performance.

Compared with the data which contains duplicates, the de-duplicated data should contain fewer features. This can be confirmed by either running a COUNT query in an expression window or by simply opening the attribute table of the data and comparing the number of features.



	id	function	distName1	distName2	distName3	distNam
0	45CEA0D4-5011-...	Allotments Or Co...	NULL	NULL	NULL	NULL
1	45CEA0D3-A638...	Playing Field	NULL	NULL	NULL	NULL
2	45CEA144-9D0C...	Play Space	NULL	NULL	NULL	NULL
3	45CEA0D0-F266-...	Play Space	NULL	NULL	NULL	NULL
4	45CEA144-9CED...	Other Sports Faci...	Woodlands Stables	NULL	NULL	NULL

In the example above, which is the original merged file, there are a total of 4473 features as seen in the attribute table.



	id	function	distName1	distName2	distName3	distNam
0	45CEA17C-B730-...	Religious Grounds	Heartsease Lane...	NULL	NULL	NULL
1	45CEA148-0479-...	Religious Grounds	St Mary's Church	NULL	NULL	NULL
2	45CEA146-A509-...	Bowling Green	NULL	NULL	NULL	NULL
3	45CEA104-EC9D...	Public Park Or Ga...	Sheringham Park	NULL	NULL	NULL
4	45CEA15F-94D2-...	Playing Field	NULL	NULL	NULL	NULL
	45CEA0D4-4F7E-...	Other Sports Faci...	NULL	NULL	NULL	NULL

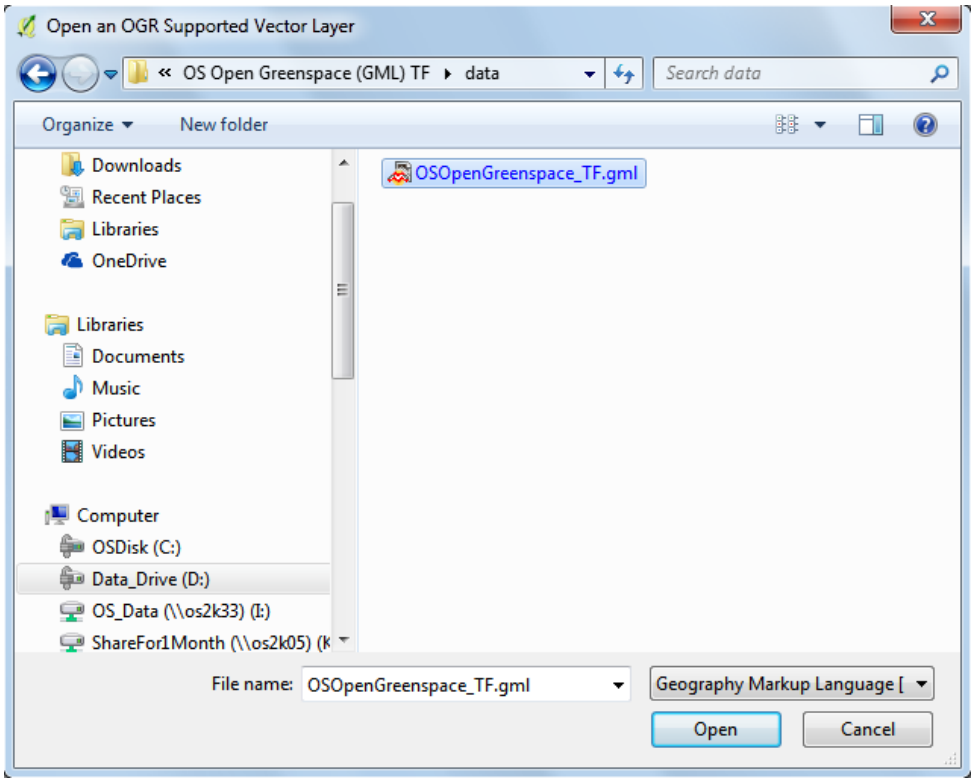
In this example, which is the dissolved file, there are now only 4468 features in the layer, so the duplicate features have been removed.

Styling can now be applied to the dissolved file if required. The same style files created earlier or downloaded from Github should work with the dissolved file because no column headers or other changes have been made to attribution.

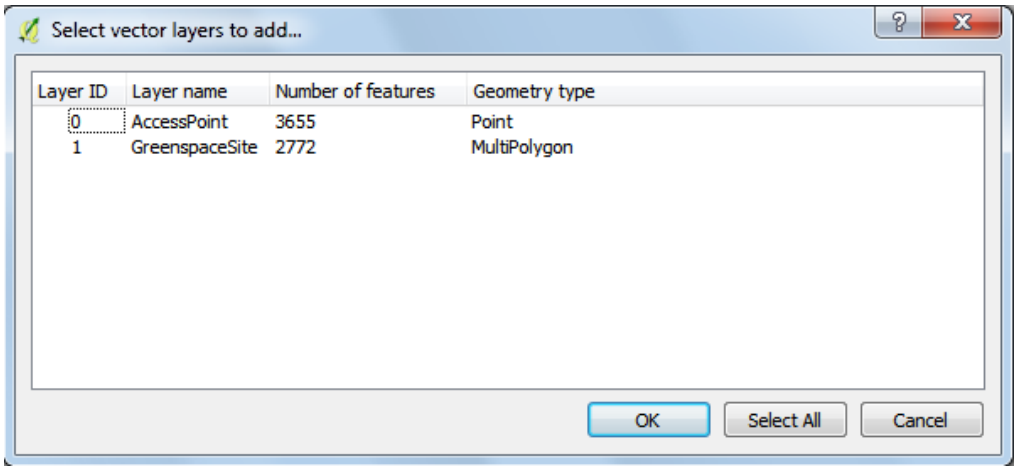
LOADING AND DISPLAYING THE GML SUPPLY

Open QGIS. Select ‘open vector layer’ from the left-hand toolbar.

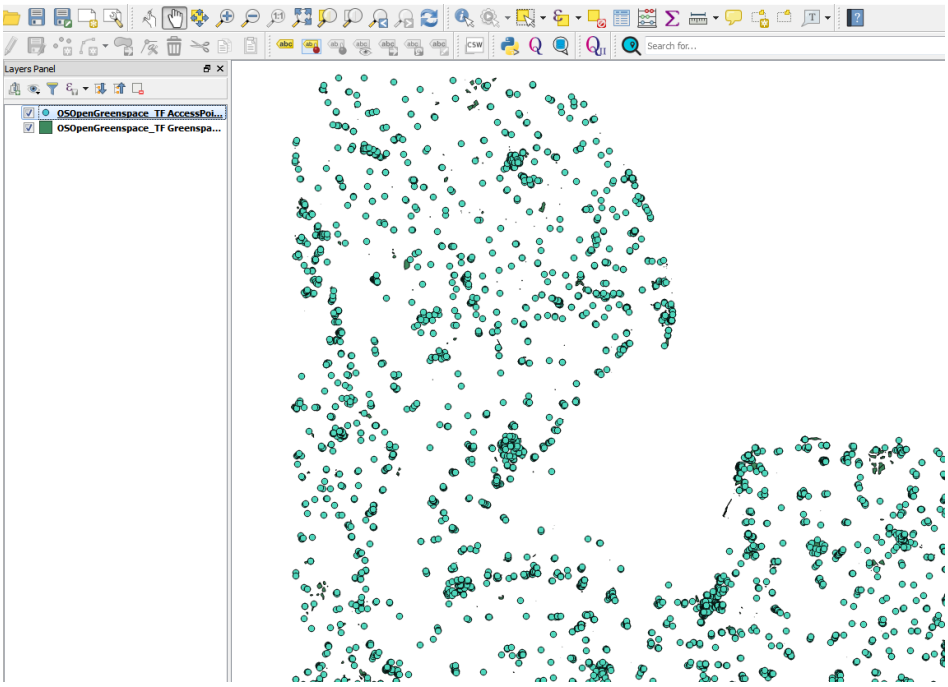
In the resulting window, click ‘browse’ to open the window, which will allow the user to select the .GML files to be loaded. The user will need to specify that a .GML (geography mark-up language) file needs to be opened from the drop-down menu at the bottom of the window.



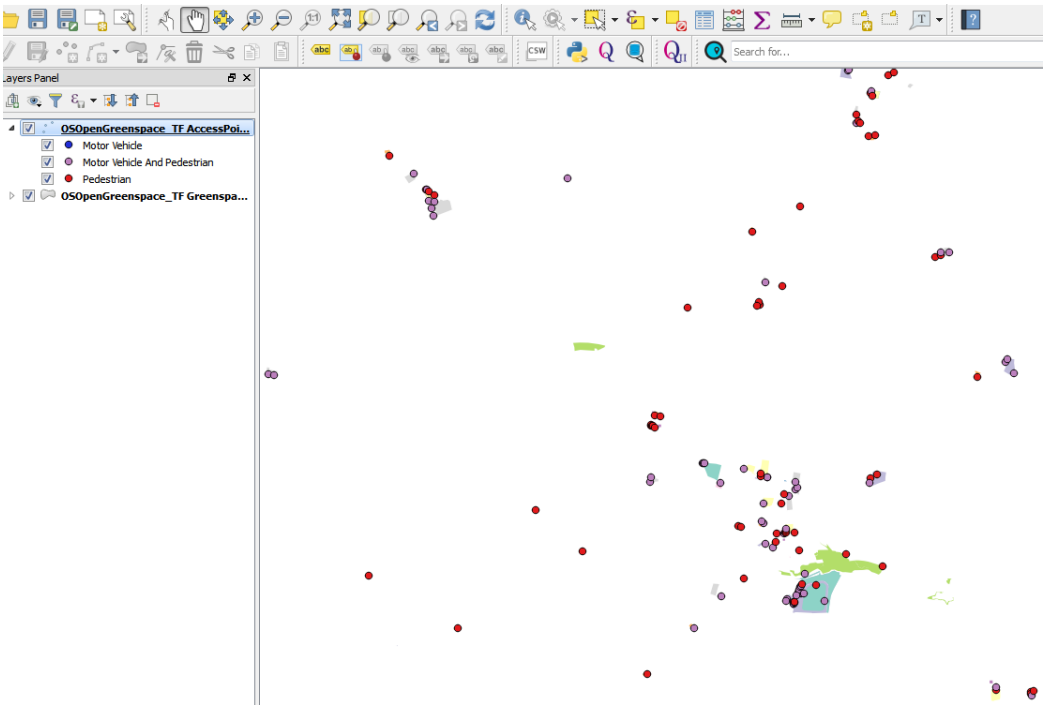
Select the file and then click 'open' twice. The .GML data for the OS Open Greenspace contains two elements which make up the data, namely access points and greenspace sites. After selecting the .GML files to load and clicking 'open', an additional window will appear:



The user should select the elements from the data which are needed and then click 'OK'. If both are selected, the user will see something like the example below (the polygons being the greenspace sites and the points being the access points):



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 the shapefile supply of the data may not work with GML supply without modifications. It is highly recommended that style files created specifically for the GML supply be used. The styled data will appear in similar fashion to that shown below. In this instance the style files created for the ESRI shapefile supply do work for the .GML data without modifications.



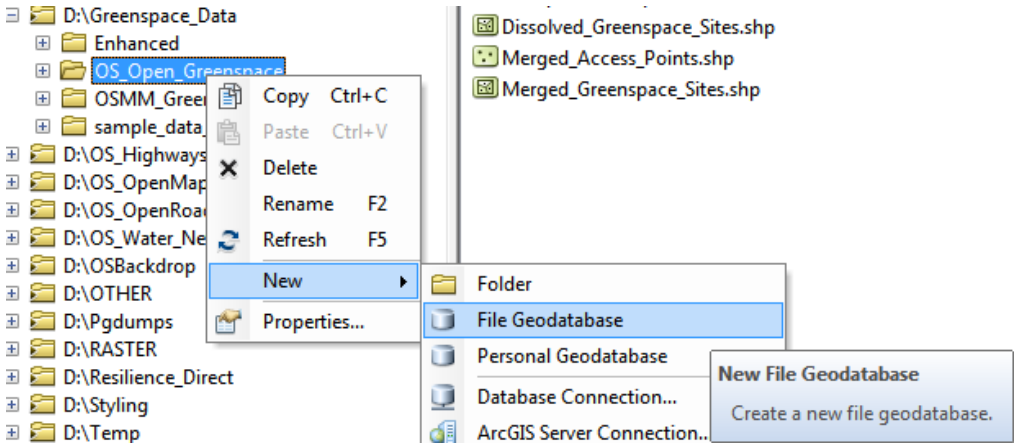
It should be noted that rendering performance of the data within QGIS will be much poorer than in the case of the shapefile format, as GML data cannot be spatially indexed. It should also be noted that multiple 100 x 100km tiles of OS Open Greenspace .GML data cannot easily be merged together, as with the shapefile option. Consequently, 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. The other option would be to use the QGIS facility of saving out the .GML data as shapefiles and then carrying out additional data processing on the shapefiles instead. However, there would be little point in this as one of the OS Open Greenspace supply options is ESRI Shapefile.

ESRI® ARCGIS®

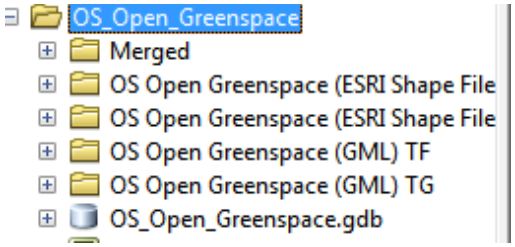
LOADING AND DISPLAYING SHAPEFILE SUPPLY

There are two possible ways of loading and displaying the shapefile data in ESRI ArcGIS. The shapefile data can be loaded straight into ArcGIS. However, if more than one 100 x 100km 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. This is the method which will be described in this guide.

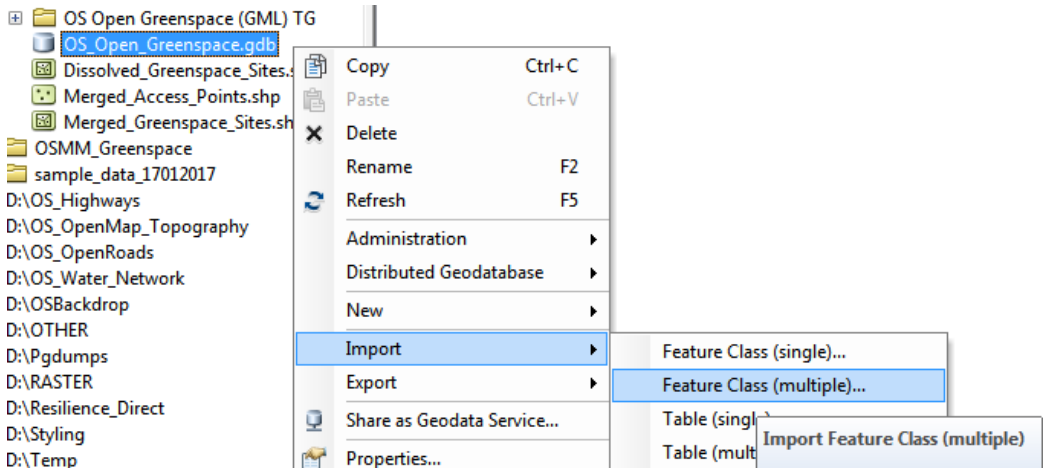
Open ArcCatalog. Choose a folder where the file geodatabase is to be created.



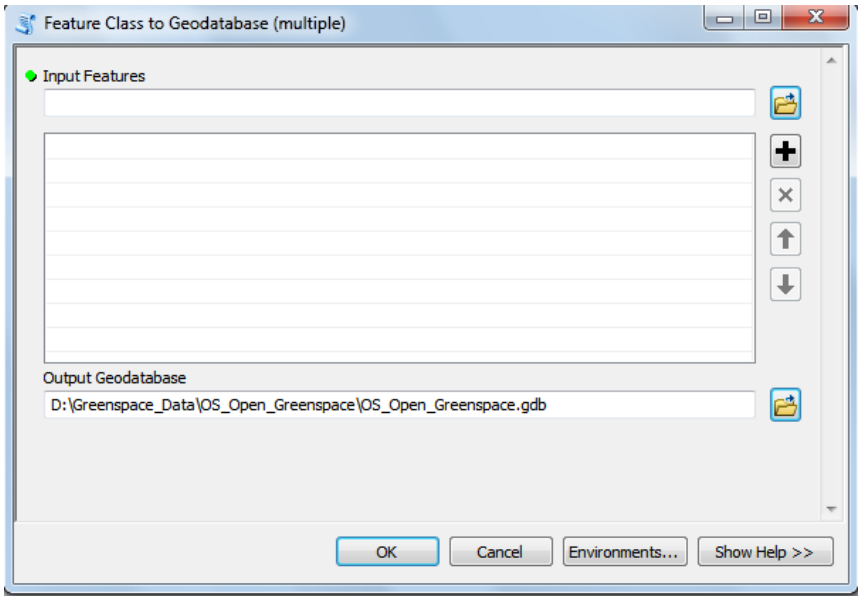
Right click on the folder and in the context menu select ‘new’ and then ‘File Geodatabase’. Give the new file geodatabase a suitable name for ease of reference by highlighting the geodatabase and typing a new name.



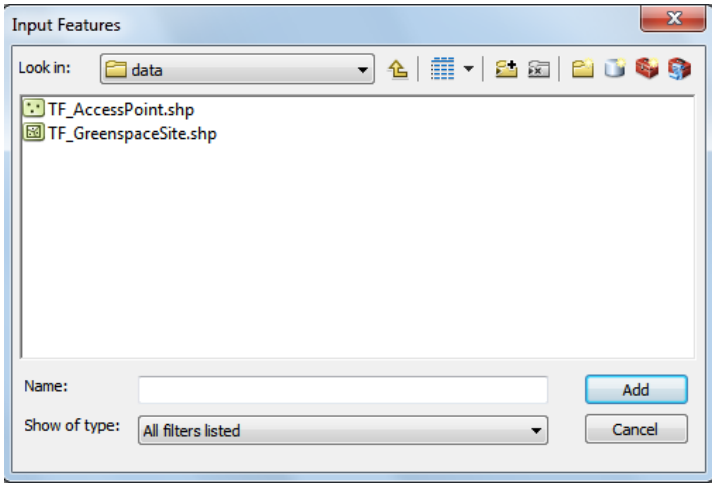
Once created, right click on the file geodatabase, and select ‘import’ and then ‘feature class (multiple)’.



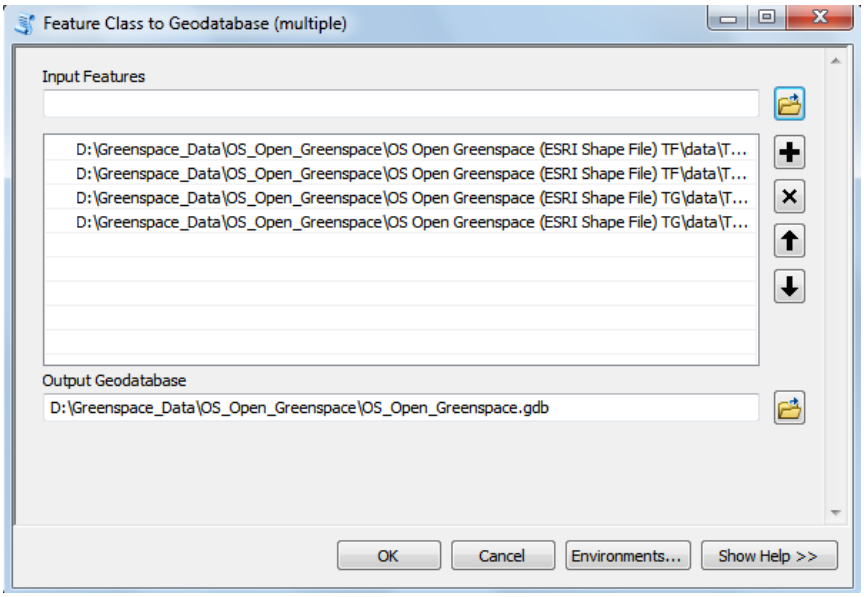
In the next window, browse to the location where the data sits which is to be imported. Because the individual shape files begin with the 100km prefix letters, it is possible to import more than one OS Open Greenspace tile into the geodatabase as per user requirements.



Click on the button to the right of the blank window under 'input features' and navigate to the folder(s) where the OS Open Greenspace shapefile data resides.

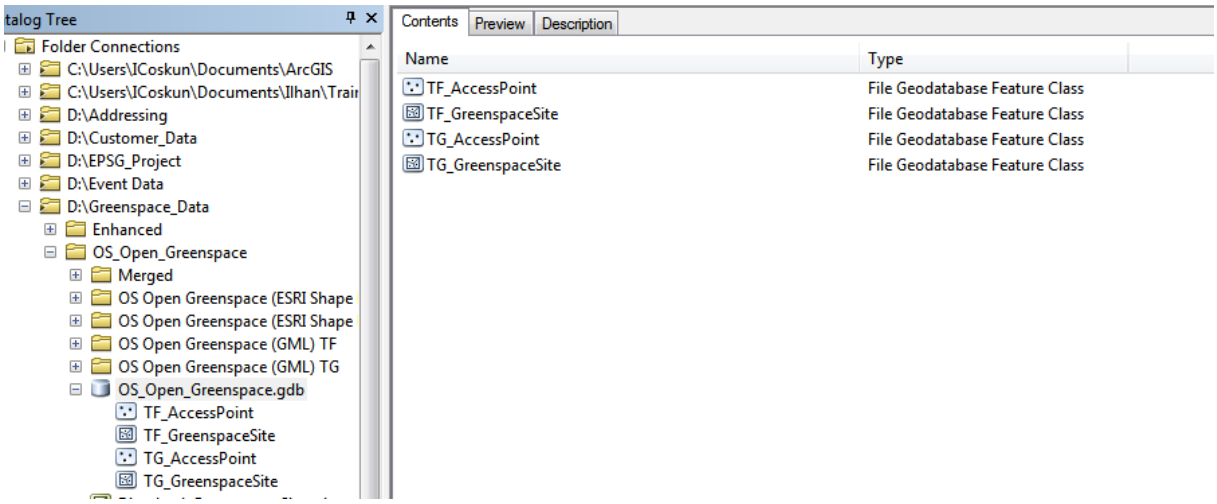


Select all the shapefiles that are required in the window and click ‘add’.



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.

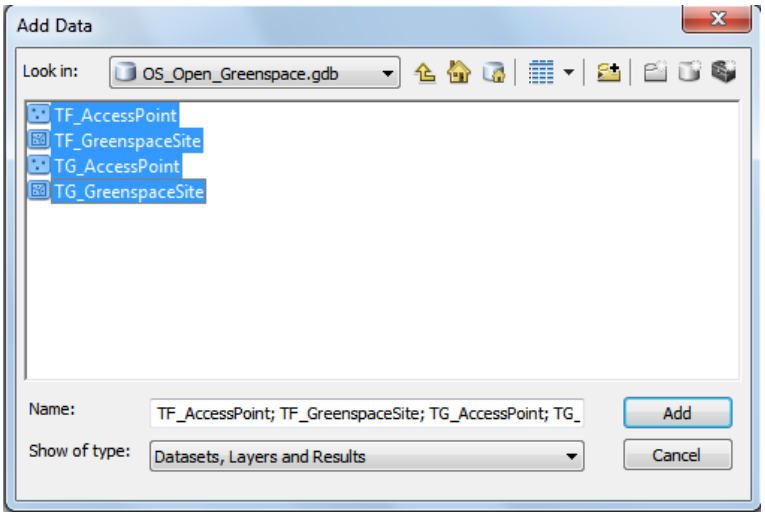
If the file geodatabase is now highlighted, a list of the imported features classes should be visible. In this example, two shapefiles covering the 100km areas TR and TG have been imported. This has created four new feature classes in the file geodatabase - two for access points and two for greenspace sites.



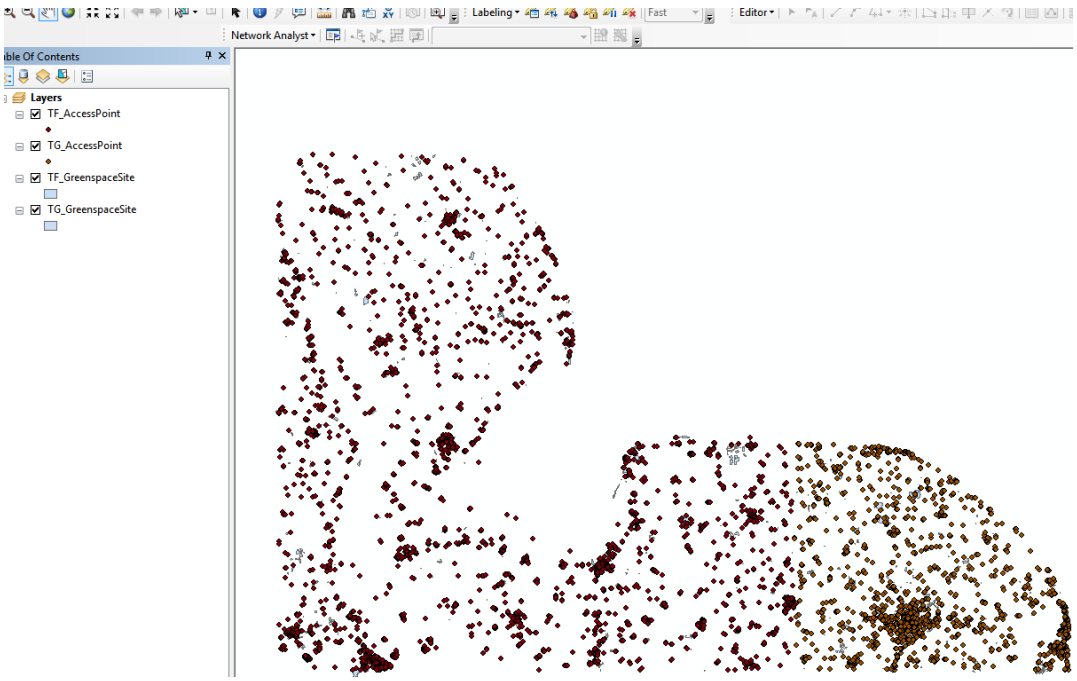
A useful point to note is that loading the shapefiles into a file geodatabase will automatically add spatial indexes to the data in the import process. There is therefore no need to manually add one once the data has been loaded, which would be the case if shapefiles had been loaded into ArcGIS without 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’.

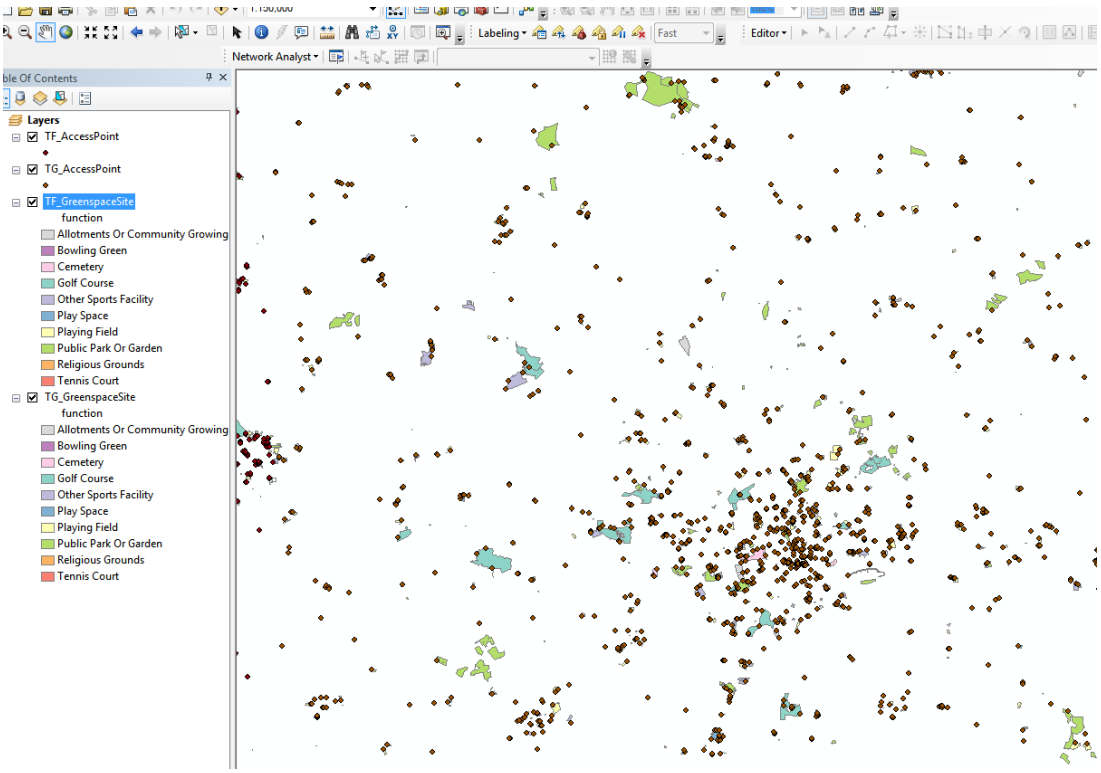


The data will load into ArcMap. Although ArcMap does put the shapefiles into a more logical sequence, the user can move the layers according to the desired preferences. The data will, of course, load in as un-styled data. ArcMap will assign a random style to the data.



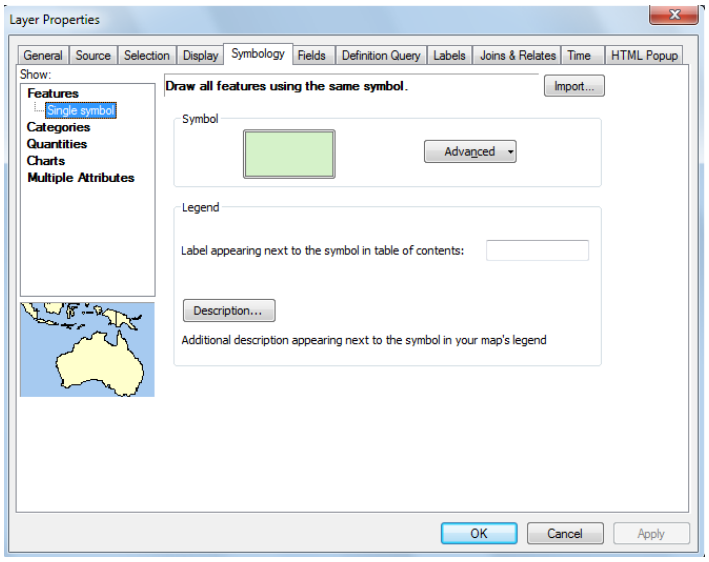
The user can manually style each of the layer files by right-clicking on each of the loaded layers, selecting ‘properties’ and then ‘symbology’. ArcMap contains an extensive range of tools to allow the user to apply various styles to each layer of the data and then save the work as an ArcGIS layer file.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

A set of ESRI layer files for OS Open Greenspace will be available for download from the GitHub web site at product launch. 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.

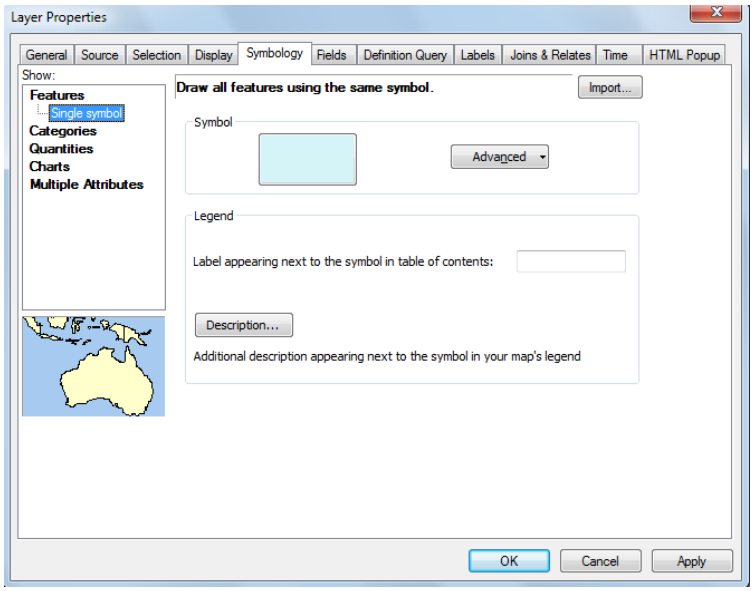


The user should see something like the screenshot above when the process is complete.

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 the layers until the OS Open Greenspace data is styled to requirements. Labels for certain features can also be applied as needed.

LOADING MULTIPLE SHAPEFILES FOR LARGER AREAS OF INTEREST

If the user wants to load a larger area of interest, it is recommended that they merge the shapefiles together before loading into the file geodatabase. This procedure is described later 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.

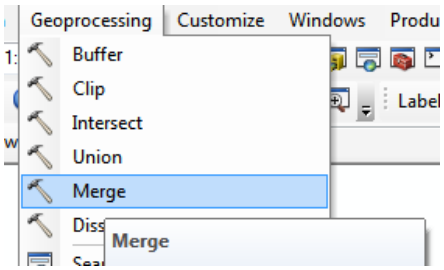
MERGING SHAPEFILES AND REMOVING DUPLICATE FEATURES FROM THE DATA

As has already been stated, OS Open Greenspace is supplied as 'hairy tiles' with features which cross a tile edge being supplied in both tiles in which the feature appears. These duplicate features will occur if more than one 100 x 100km tile is loaded into a file geodatabase. In many instances, the user will not need to remove duplicate features along the tile edges as the features will display perfectly clearly with one duplicate feature overlying the other.

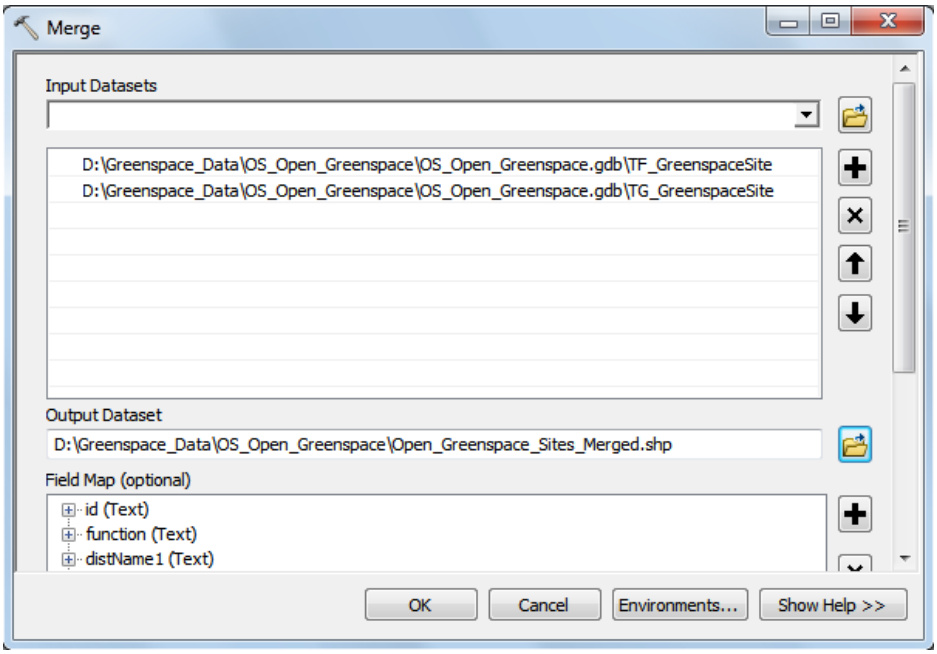
There may, however, be instances where the user wishes to carry out some form of analysis using feature counts contained within the data. In this case, the data will need to have the duplicate features removed.

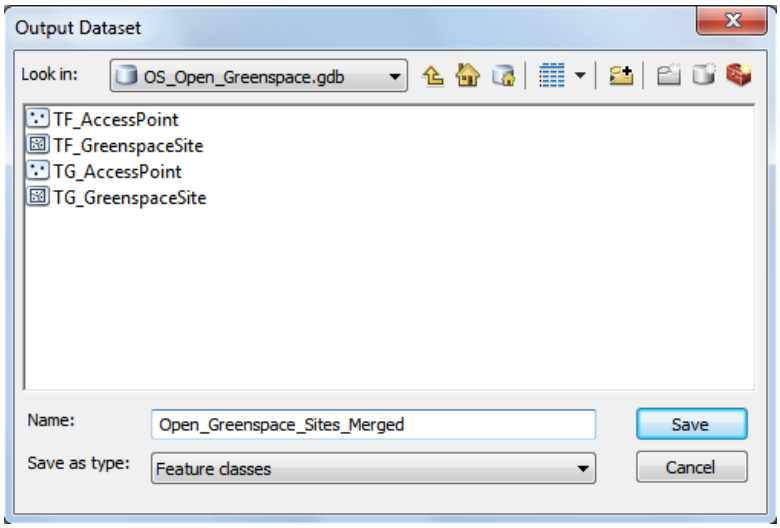
To remove duplicate features in ArcMap, the user needs to merge the tiles together before removing the duplicate features. This procedure can take some time, so the user should consider if this is really needed.

Firstly, the tiles 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).



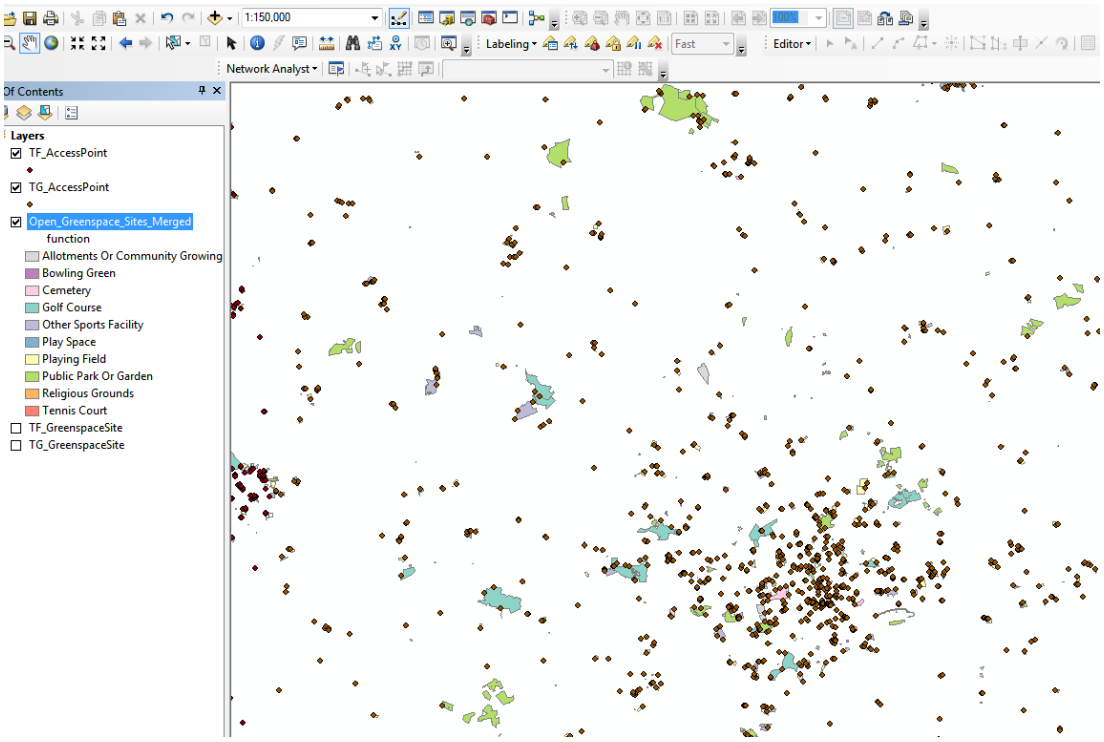
Using either ArcMap or ArcCatalog, from the main menu, select 'Geoprocessing' followed by 'merge'. In the next window, select the layers to be merged. In this example two features classes, the Greenspace Sites layers for TF and TG are being merged together. All the attribution is being copied into the new features class 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 feature class containing the merged data will be created.



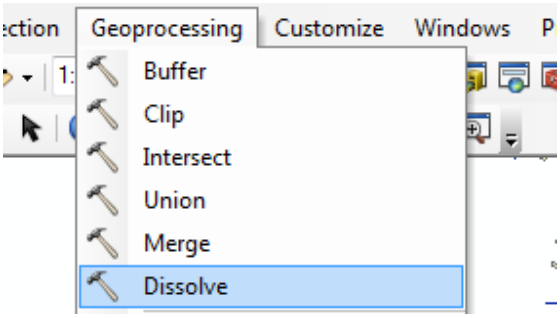


Click ‘OK’ when all the feature classes (or shapefiles) to be merged have been selected. Using this method, a number of OS Open Greenspace tiles can be merged together, although only two are shown in this example. ArcGIS will then merge the files and load the newly-created feature class (or a shapefile if that was being used), into the map window. Depending on the sizes and number of tiles being merged, this could take some time. A dialog box will appear when the process is finished.

In the example shown below, a new feature class within the original file geodatabase used to hold the data has been created. This new feature class is called ‘Open_Greenspace_Sites_Merged’ and covers the entire area of the two separate feature classes previously loaded into the geodatabase. This new feature class has been styled using the ESRI style file for OS Open Greenspace data which will be available from Github. It’s important to follow the instructions in the Quick Start guide, provided with these files, to get the right result.

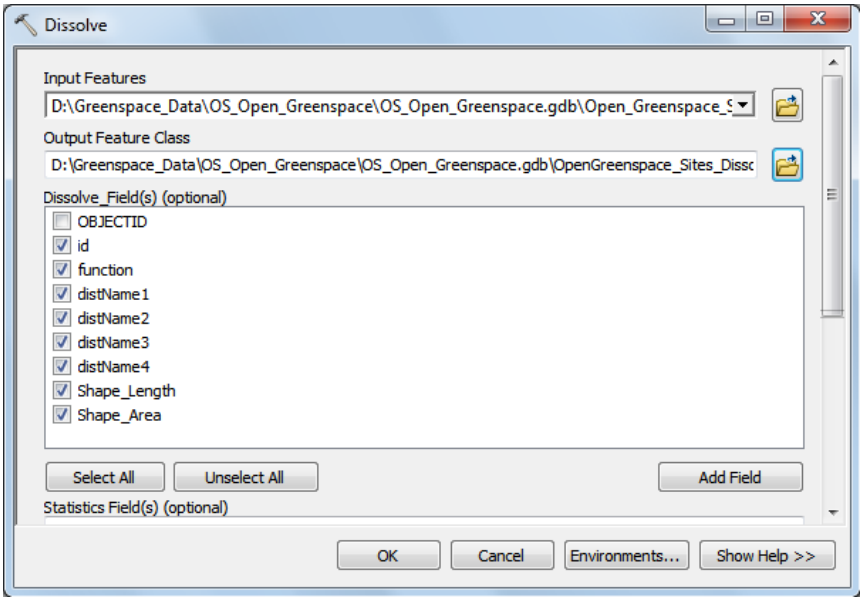


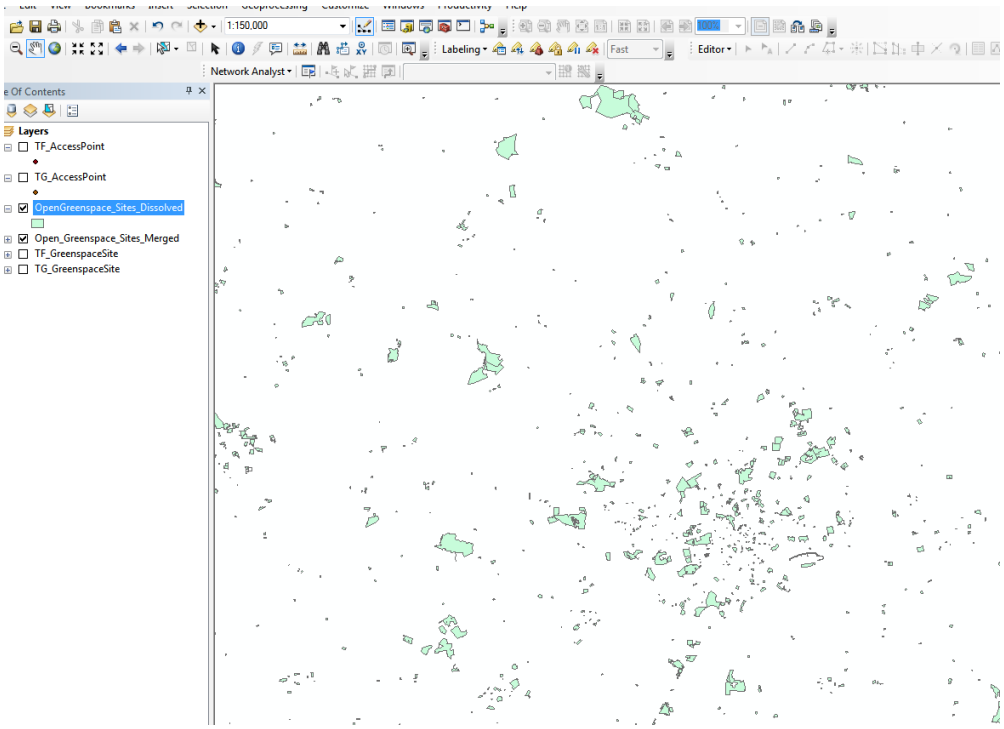
The ‘Dissolve’ function in ArcGIS will remove the duplicated features along the tile boundaries. This procedure can be carried out in either ArcCatalog or ArcMap. Firstly select ‘Geoprocessing’ and then ‘Dissolve’ from the main menu.



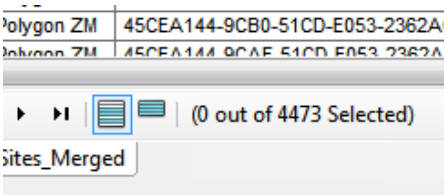
The user will then need to specify which merged file from which duplicate features are to be removed. In this example, we are looking at the Open_Greenspace_Sites_Merged feature class.

We are going to save the de-duplicated data as a feature class within the original file geodatabase called 'OpenGreenspace_Sites_Dissolved'. All the dissolve fields in the box need to be ticked except the ObjectID field as otherwise the attribution will not be carried over to the new dissolved file. Once complete, the new dissolved feature class will be loaded into ArcMap. This new dissolved feature class will contain no duplicate features. This procedure could also be performed using shapefiles simply loaded into ArcMap without using a file geodatabase.

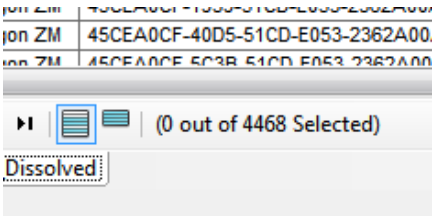




The new feature class can now be styled as previously described. A count using the attribute table on both the original merged file and the dissolved file will confirm that the dissolved shapefile contains fewer features. The count below shows the merged feature class with duplicates contains 4,473 features.

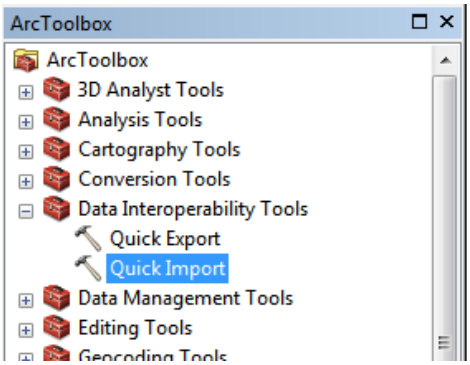


The count below shows that the dissolved feature class contains 4,468 features.

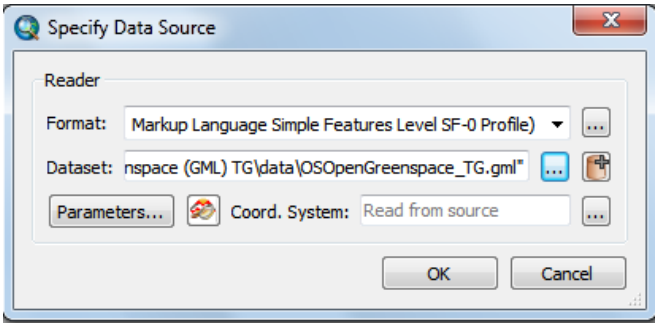


LOADING AND DISPLAYING THE GML SUPPLY

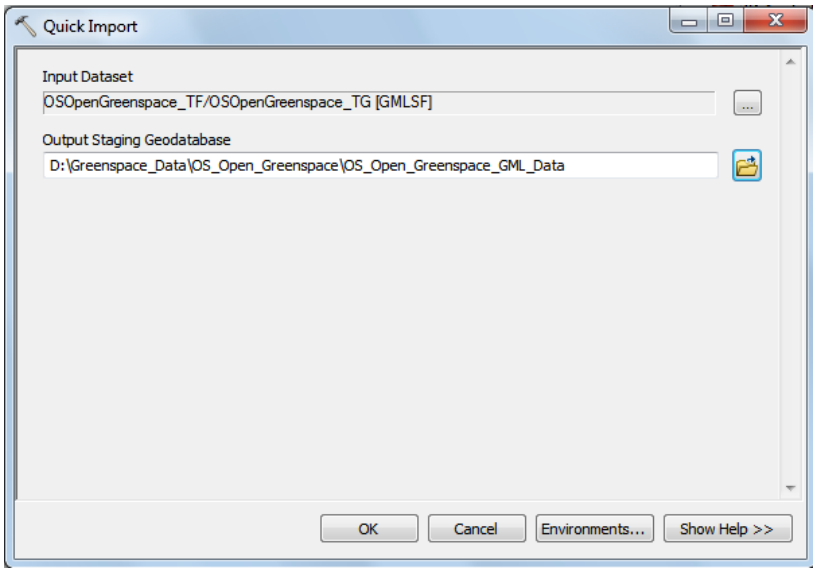
The GML data can be imported into ArcGIS using the Quick Import function in Arc Toolbox. The data will be imported un-styled. Users should also note that due to the large file sizes of some of the 100 x 100km grid tiles especially within larger cities, this import may take time to process.



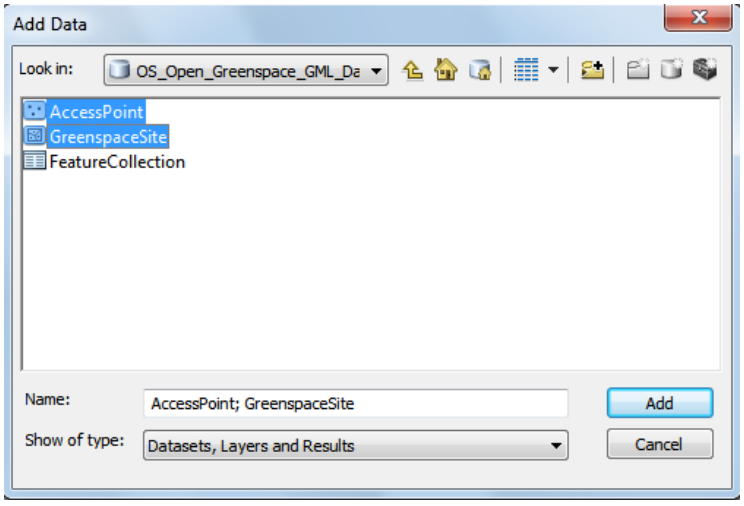
The user will need to specify the type of data being imported (in this case, GML data) and browse to the files where the .GML data is stored.



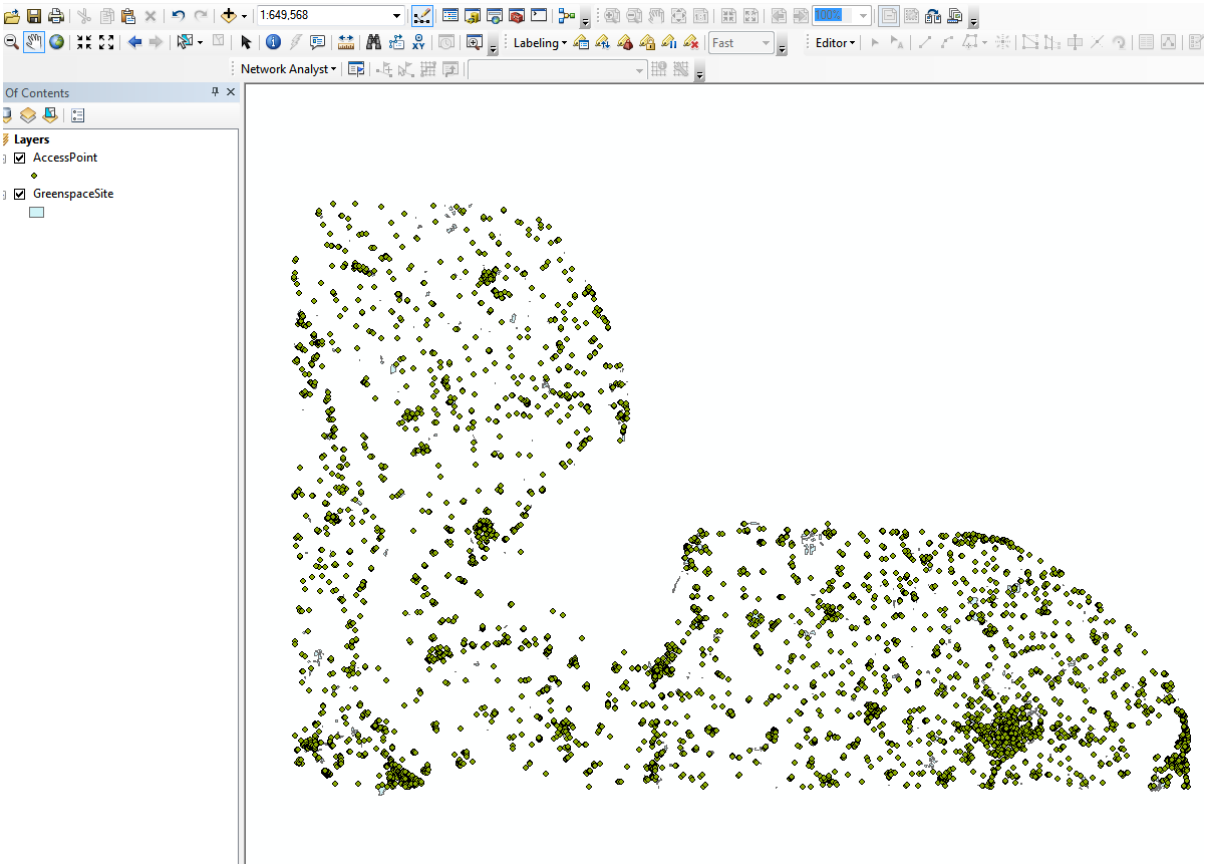
The quick import will create a new file geodatabase into which to import the data. Once the database location and name has been selected click 'OK' in the dialog box as shown below to start the quick import. It is important to note that all the .GML files which are required for import should be in the same folder as each other and not in separate folders as they are downloaded, e.g. one file in a folder called 'TG' and one in a different folder called 'TF'. If this is the case, the quick import process would have to be repeated for each folder. Placing all the .GML files in one folder will allow a multiple import at once as shown in the example below.



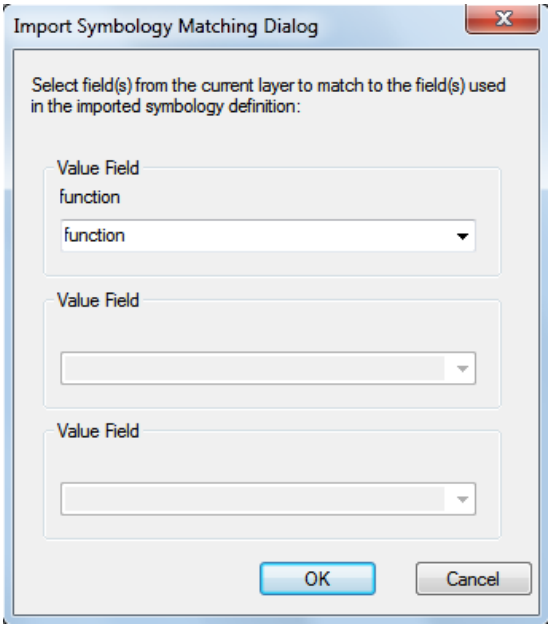
Once the quick import function has been completed, the data can be added using the usual 'add data' button in ArcMap and selecting all the layers from the newly created file geodatabase. The data will be loaded un-styled as shown in the example below.

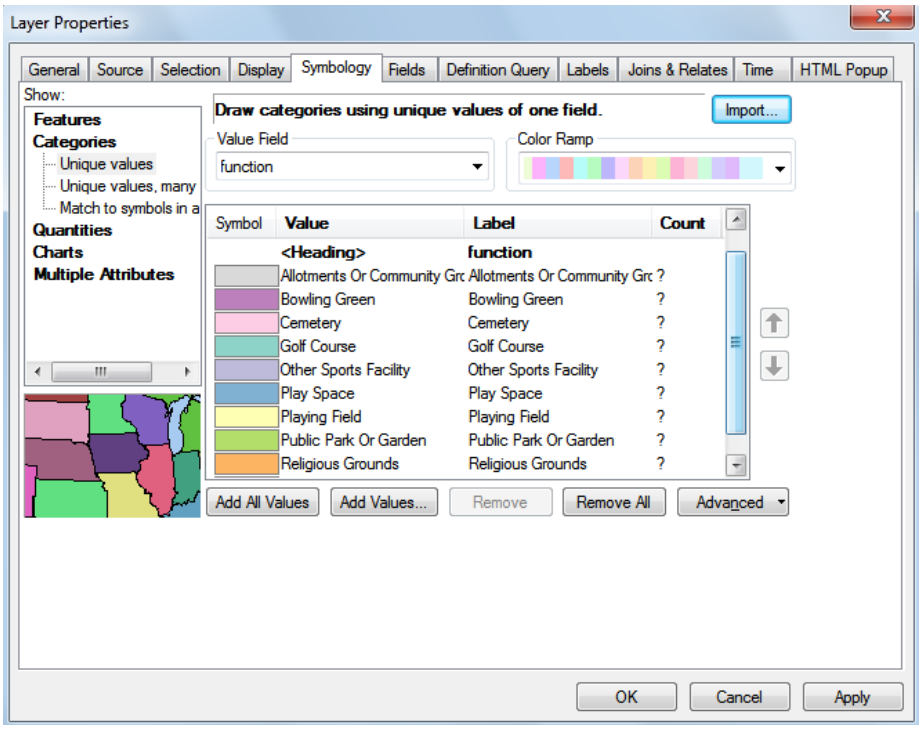


The resulting imported data will then appear in the ArcMap window and can then be styled to suit requirements. In the case of other .GML datasets, the user may have to manually select the column header of the appropriate table within the data on which to base the styling. This because in the GML imported data, the column header information is not shortened, as with the shapefile data. Shapefile data is limited to eight characters within the column header. GML imported data is not limited in this fashion. In the case of OS Open Greenspace data, this manual selection of column header is not required.

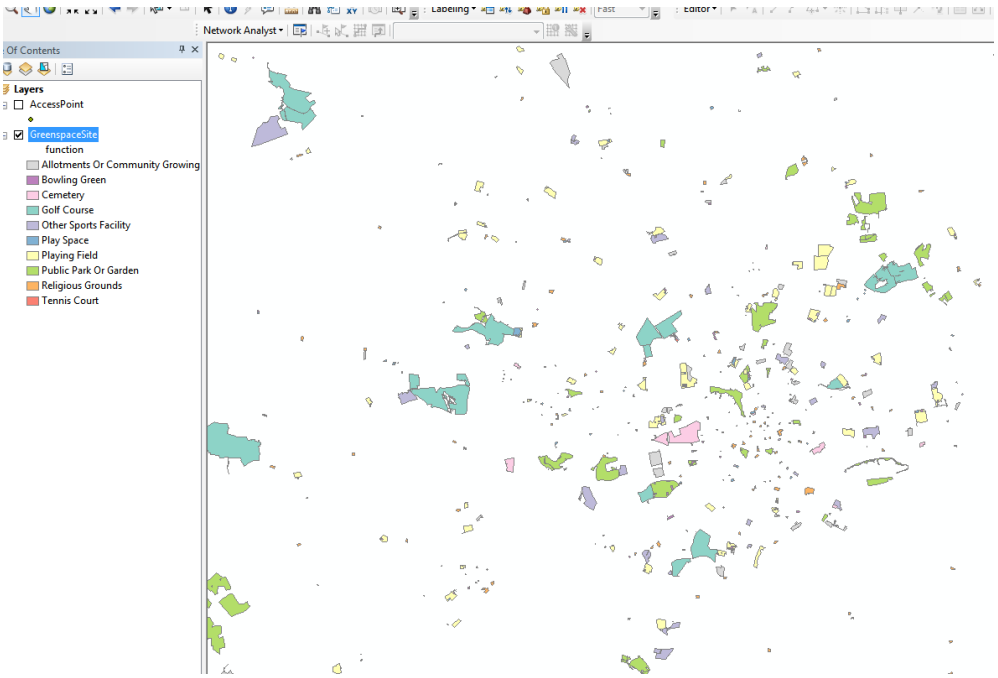


In the example below, we are matching the column 'function' in the ESRI .lyr file with the function column header in the imported GML data.





In this example, the supplied ESRI .lyr file has successfully styled the information from the imported .GML data according to information in the function column within the data. When 'OK' is clicked, the data appears as shown below:



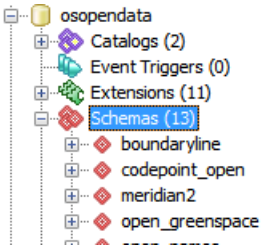
POSTGIS

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 Web Site:

http://www.ordnancesurvey.co.uk/docs/support/opensource-gis-guide-02-postgres-install.pdf

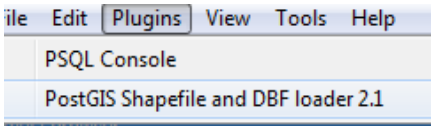
LOADING AND DISPLAYING THE ESRI® SHAPEFILE SUPPLY

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 Open Greenspace data. It is recommended that the user not use the 'public' schema to hold the data itself.



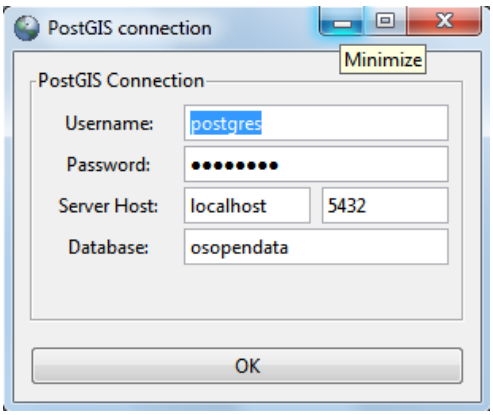
In the example above, a database called 'osopendata' has been created along with a schema called 'open_greenspace' into which the data will be loaded.

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.

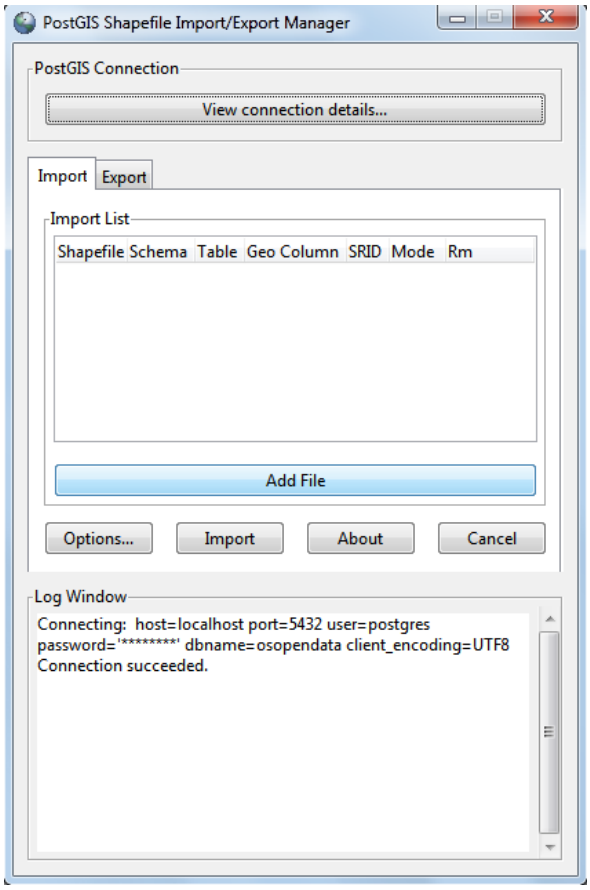


Select 'plugins' from the main menu followed by 'PostGIS Shapefile and DBF Loader'

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. Click on the 'view connection details' button.

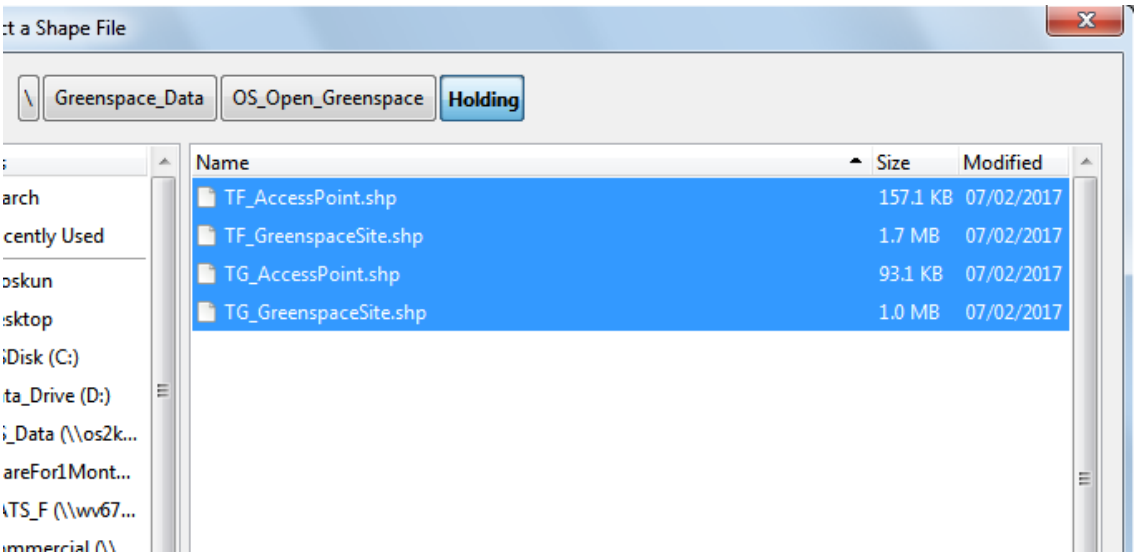


The resulting box should contain the username and password already entered along with the host name. The database being used to contain the data should already be selected. Click ‘OK’

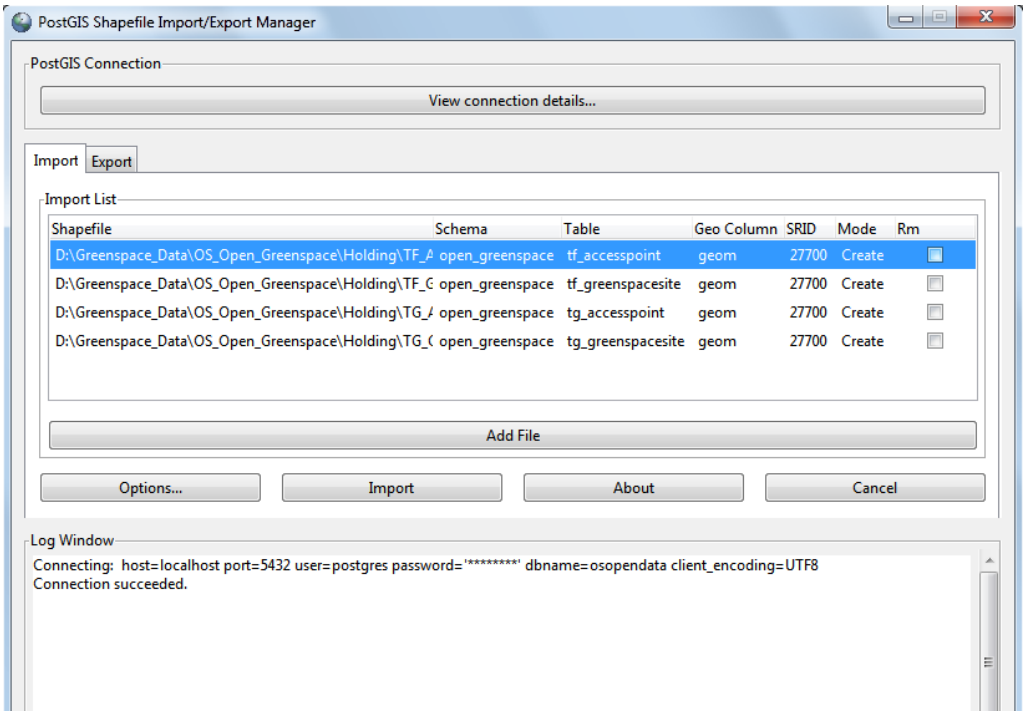


If everything is working OK, ‘connection succeeded’ should appear in the Log Window.

Click the ‘Add File’ button.

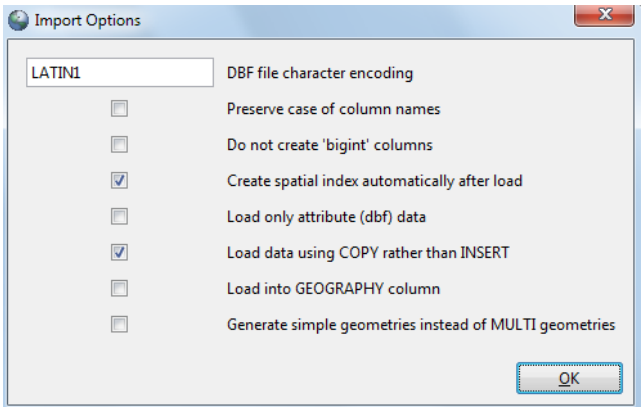


In the next window, which appears, use the file tree in the 'Places' box on the left-hand side to navigate to the folder in which the OS Open Greenspace shapefiles data sit. A list of the files will appear in the main window. The user can load one or all the files into the database. In the example above, all the shapefiles have been selected. Then, click 'Open'. If opening files from multiple 100 x 100km grid tiles, it is better to place the original shapefiles into a single folder.



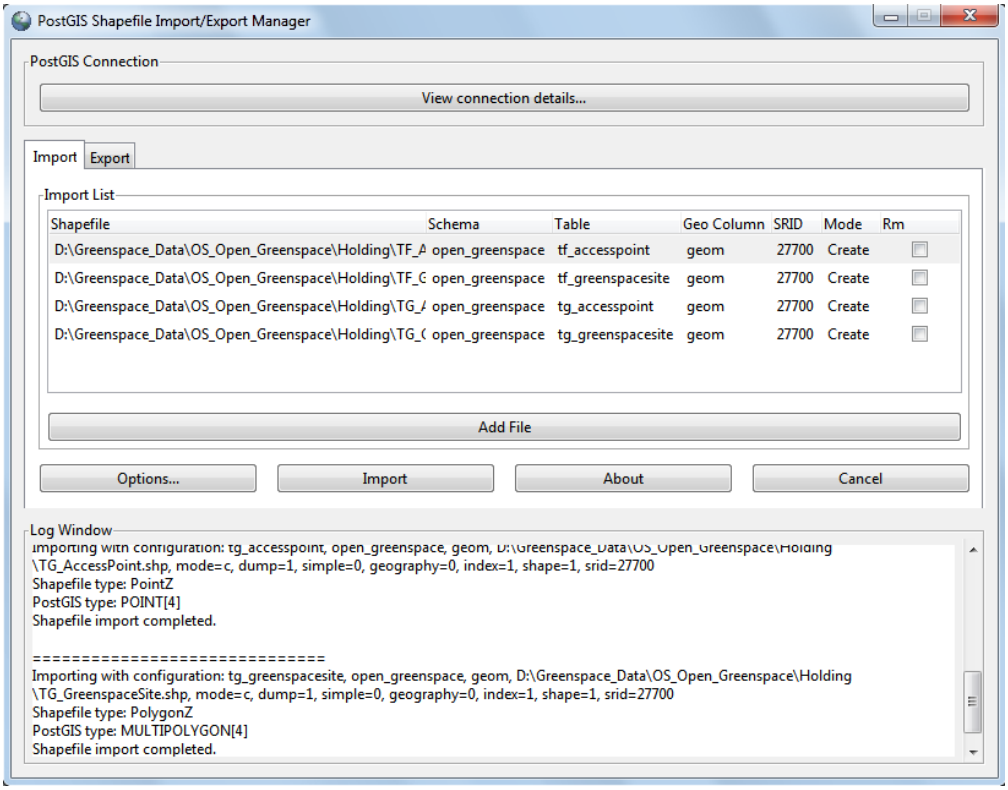
Another window will open listing the selected shapefiles. The Schema and SRID will need to be changed. The schema will need to be changed to the schema in the database into which the data is being loaded (in this case 'open_greenspace'). The SRID (or co-ordinate reference system) will need to be changed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

At the end of the procedure, the log window at the bottom of the PostGIS import/export manager box should indicate that all the shapefiles have loaded successfully. However, one or two of the shapefiles (depending on the area of the country being loaded) 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 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;

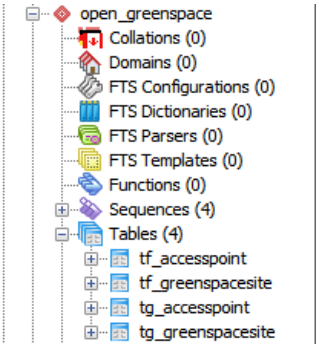


Change the DBF character encoding to LATIN1 and click ‘OK’.

Changing this should allow the import to complete successfully. For information, the shapefiles which are most likely to need this change to be made are either in Wales or Scotland. This is because files in these areas may 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 the ‘table’ tree. If the data has loaded correctly, there should be the same number of OS Open Greenspace data tables in the schema as the number of shapefiles opened.

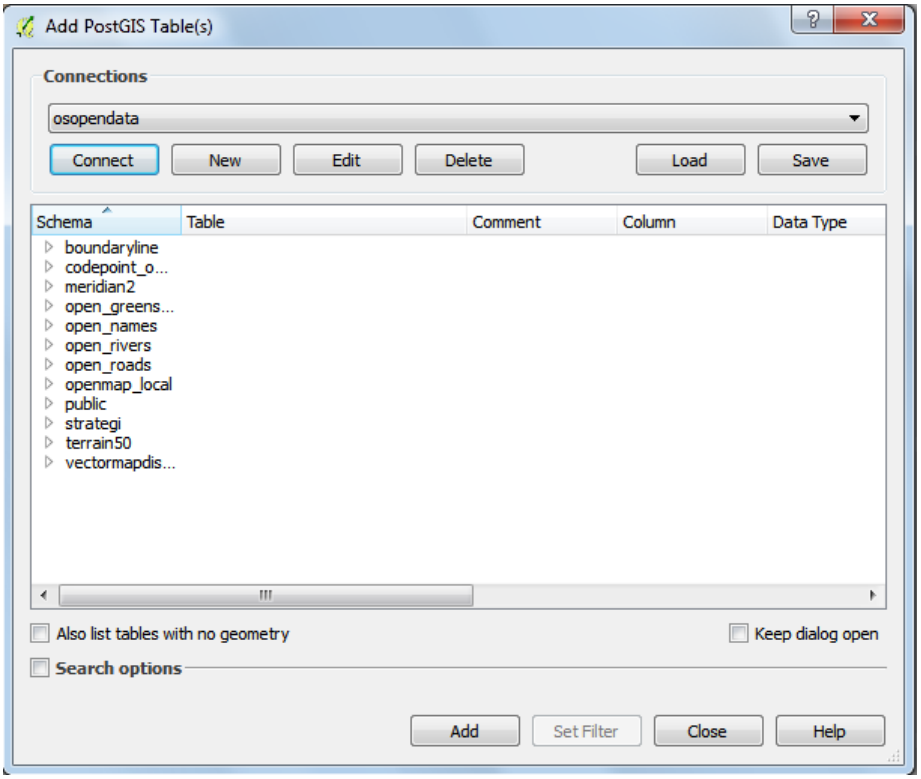


The data is now loaded into the PostGIS database and is now ready to be viewed in a GIS application. As QGIS, the open-source GIS, has been developed to work seamlessly with PostGIS, we will open and view the data using that application. However, any GI application which includes support for PostGIS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

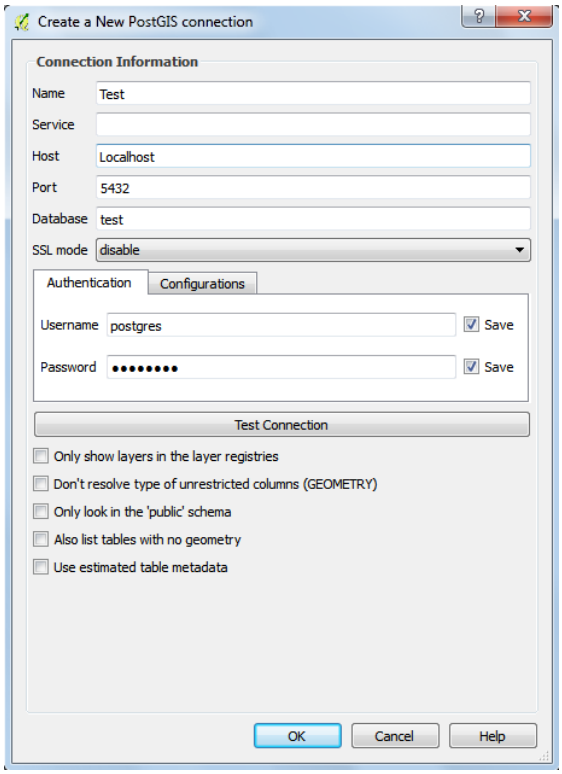
VIEWING THE DATA IN QGIS

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

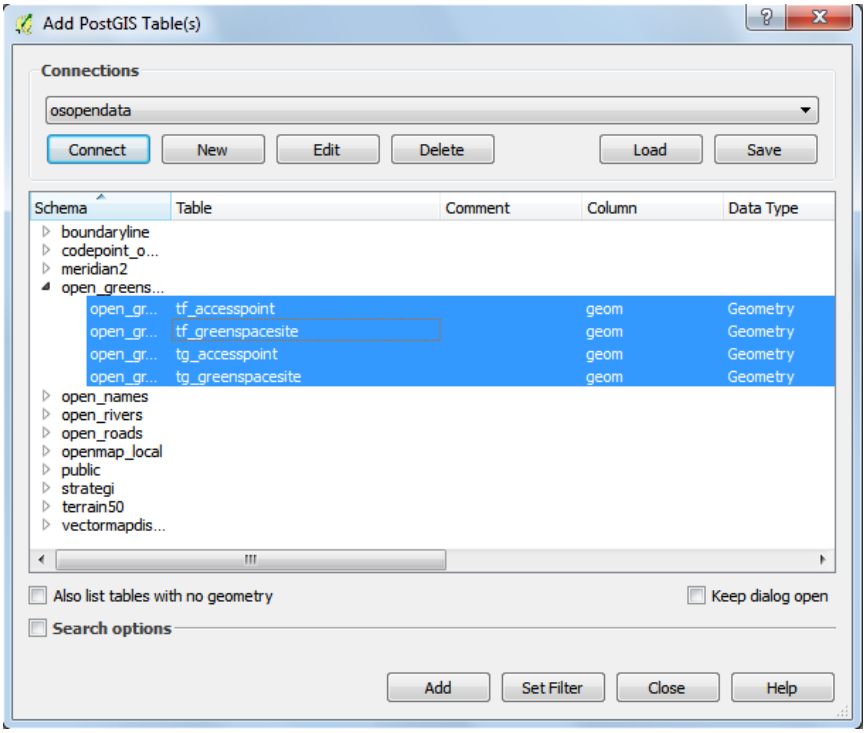
If the OS Open Greenspace data has been placed into an existing database, as in the example below, the user will simply need to open the connection to that database within QGIS. The open_greenspace schema should appear in the list of available schemas within that database.



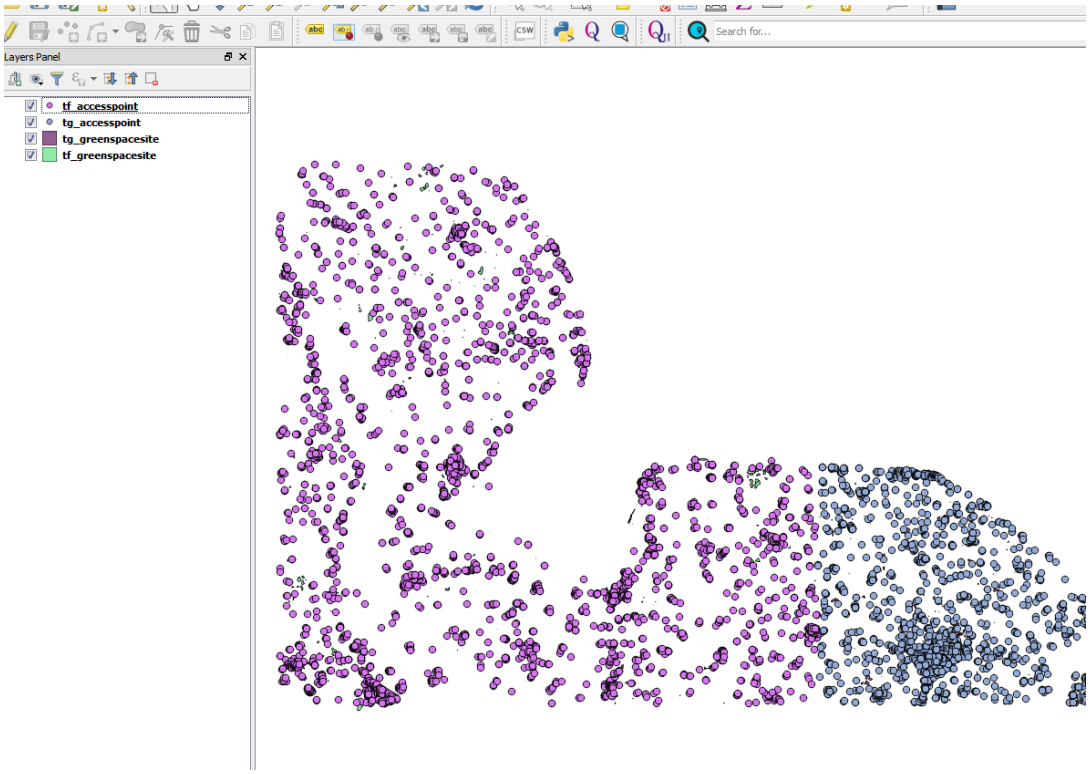
If the database in which the OS Open Greenspace data sits is new, create a new database connection to the database by clicking the 'new' button. The following window appears and the information relating to the new database will need to be entered within the appropriate boxes:



One the connection has been made, click on the + sign next to the schema to expand the list of tables. Select all the tables within OS Open Greenspace that need to be loaded to QGIS.



Once all have been selected, click ‘Add’.



The OS Open Greenspace data will load into QGIS. The data will need to be 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'. It should be noted that there is no need to add a spatial index to the data from PostGIS as those indexes were added automatically during the loading of the data into PostgreSQL.

USING MULTIPLE SHAPEFILES IN POSTGIS

It is possible to load multiple 100 x 100km 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 then be possible to view data across tile edges using QGIS or other GI applications which support PostGIS.

The screenshot above shows the access points and greenspace sites for two tiles, TG and TF loaded into QGIS from the greenspace schema. It should be noted that duplicate features will exist across the tile edges as the data is supplied as 'hairy tiles' as previously indicated.

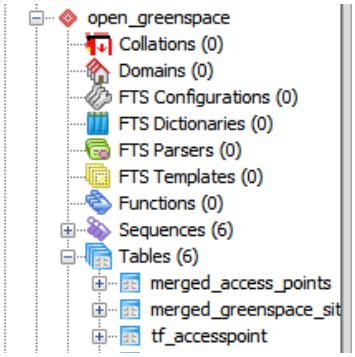
REMOVING DUPLICATE FEATURES IN POSTGIS

As stated in the point above, 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, e.g. in the case of TF and TG. 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 skewed 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 documented earlier. In this example, we are going to use the merged shapefile for TF and TG that was made previously and then load it into PostgreSQL using the shapefile loader plugin.

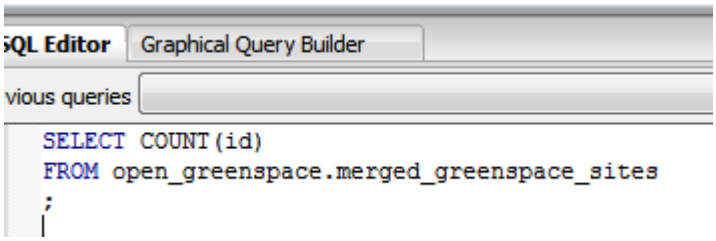


In the example above, two additional tables, merged_greenspace_sites and merged_access_points, have been added to the open_greenspace schema in PostgreSQL. Open the SQL window in PostgreSQL and type in the following command:

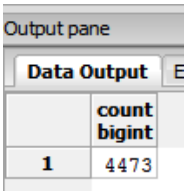
SELECT COUNT(id)

FROM open_greenspace.merged_greenspace_sites;

;



The command returns the following result:



This shows that the number of features detected is 4,473, in this example.

The following command should now be typed into the SQL window;

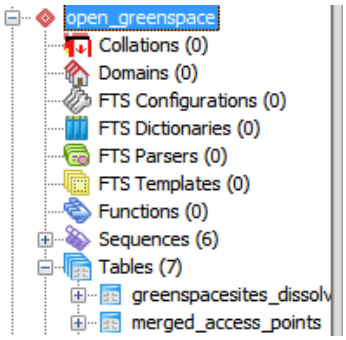
CREATE TABLE open_greenspace.greenspacesites_dissolved AS

SELECT id, function, distname1, distname2, distname3, distname4, ST_UNION(geom) AS geom

FROM open_greenspace.merged_greenspace_sites

GROUP BY 1,2,3,4,5,6

;

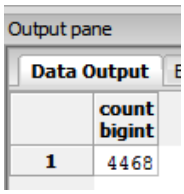


The above command creates a new table called greenspacesites_dissolved in the schema with all the duplicate features removed. This can be verified by typing in the following command;

SELECT COUNT(id)

FROM open_greenspace.greenspacesites_dissolved

;



It can be seen from running this query that the number of features in the newly created table is less that 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. This procedure will need to be repeated, using modified SQL commands pointing at the access points table, to remove duplicates in the access points elements of the OS Open Greenspace data.

- **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 QGIS 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 and displayed in QGIS using the methods described previously.

LOADING GML DATA INTO POSTGIS

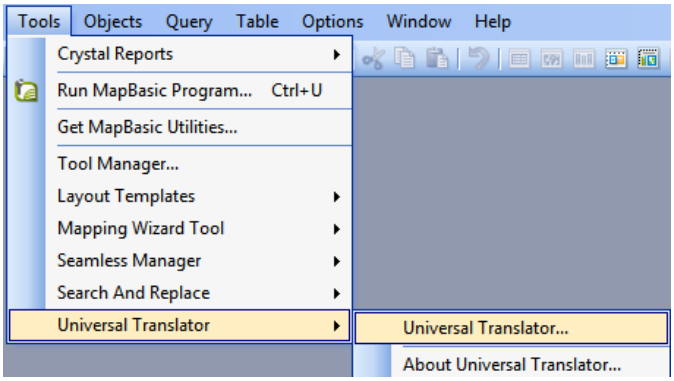
It is possible to load the GML supply data into PostgreSQL using sets of SQL commands, as there is no GUI PostGIS loader for GML data. These SQL commands would create the tables, indexes and load the data. As this data is supplied in shapefile format which can be loaded using the PostGIS shapefile loader plugin, the SQL method of loading the GML data will not be described in this guide.

MAPINFO PROFESSIONAL®

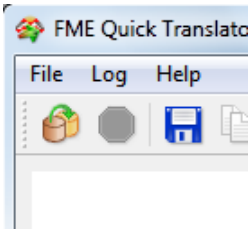
All current commonly used versions of MapInfo Professional can open ESRI shapefiles without direct translation. However, for ease of use within MapInfo, it is recommended that users use the universal translator within MapInfo to convert the shapefile supply to MapInfo .TAB files prior to loading the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

LOADING AND DISPLAYING THE SHAPEFILE SUPPLY

In MapInfo Professional, start universal translator from the 'Tools' menu.

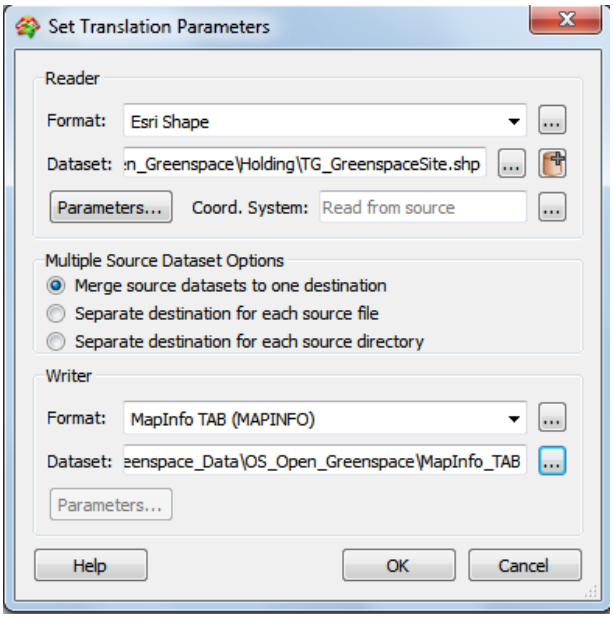


Select the translate button at the top left hand side of the dialog box.

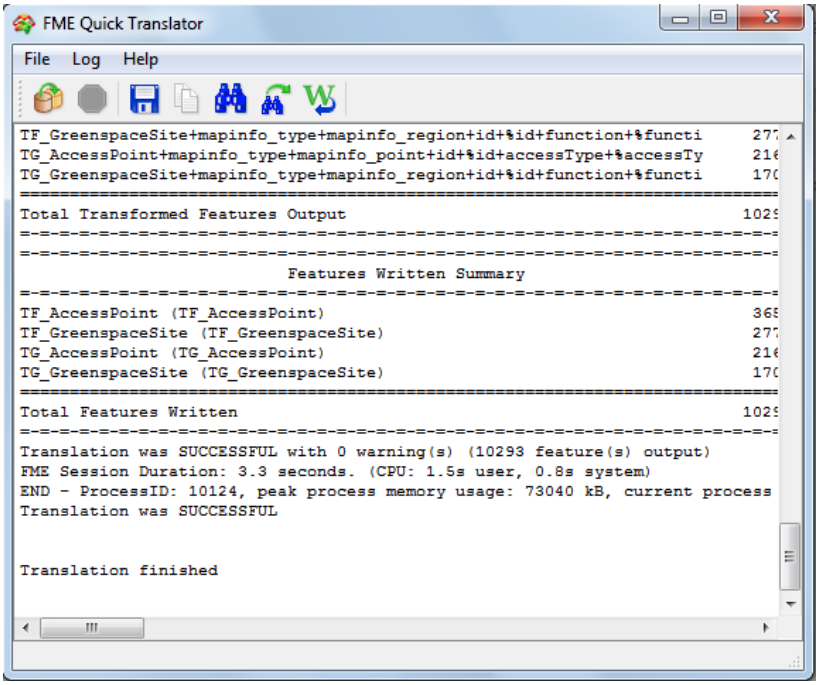


In the next box, the user will need to select the translation parameters required. These will include the format of the files being translated, the format to which the data is being translated and the location of the data.

In the example below, the greenspace sites and access points shapefiles from OS Open Greenspace data, in 100 x 100kms TF and TG have been selected and the MapInfo .TAB data will be stored in a separate folder from the source data to allow easier data management.

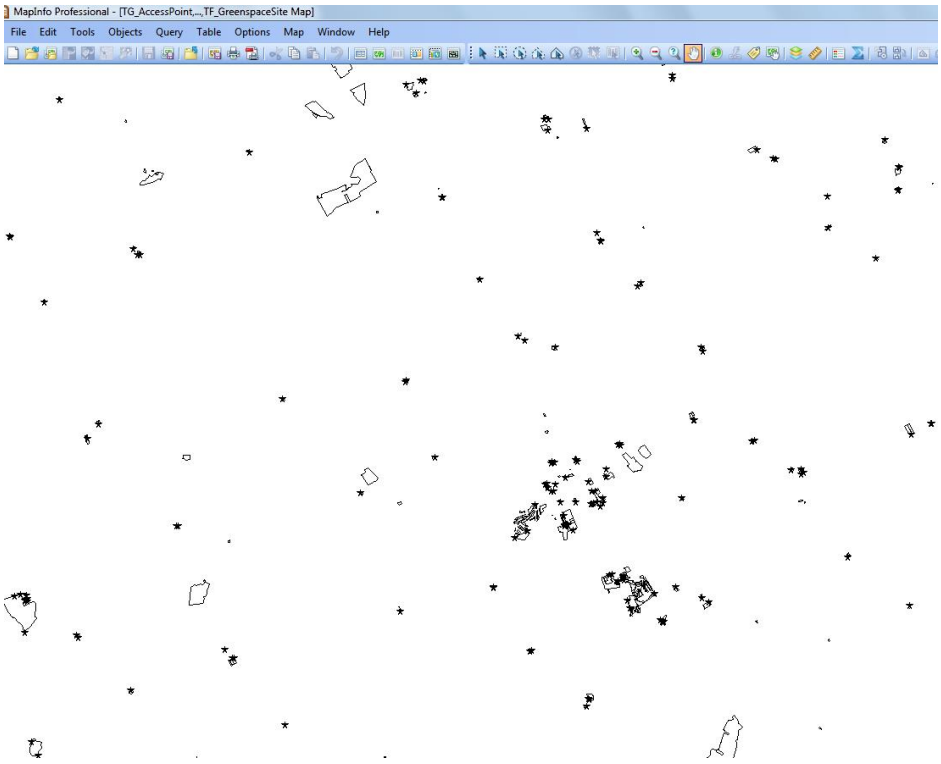


Once selected, click 'OK'. The translation will then run.



A message box will appear when the process is complete. The user will now have MapInfo .TAB files for the greenspace sites and access points within OS Open Greenspace data. This procedure should be repeated for any extra 100 x 100km tiles of OS Open Greenspace which are needed.

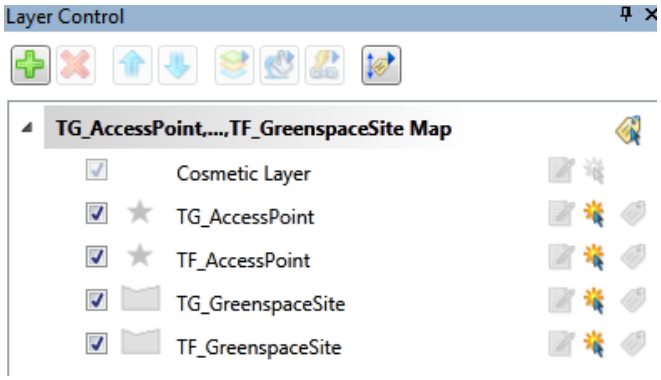
To load the created MapInfo .TAB files into MapInfo Professional simply click 'File – Open' and navigate to where the files sit. Select the file to be opened. Select 'new mapper' from the drop-down menu and click 'OK'. The data will contain two sets of tables, one for Greenspace Sites and one for access points. It should be noted that MapInfo will open the data un-styled as shown in the screenshot below:



STYLING THE DATA

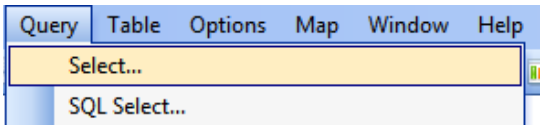
Data loaded into MapInfo Professional, unlike many other GI applications, is better styled at translation stage because the .TAB format used by MapInfo can retain all the styling information applied in the translation process – it does not use separate styling files to apply a style to the data. OS Open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

OS Open Greenspace data tables contain all the elements of the data within two MapInfo tables, as can be seen from the layers listing.

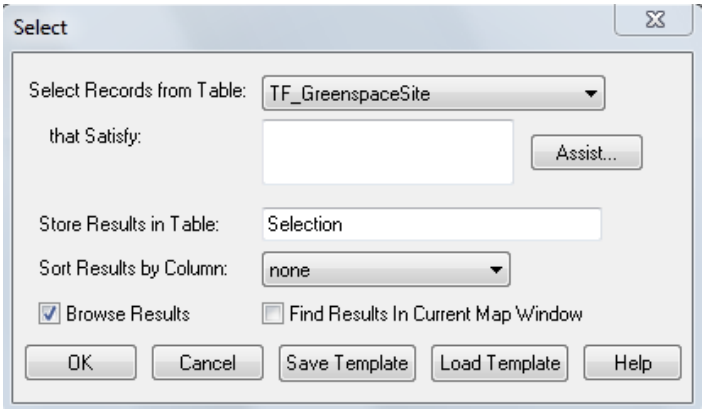


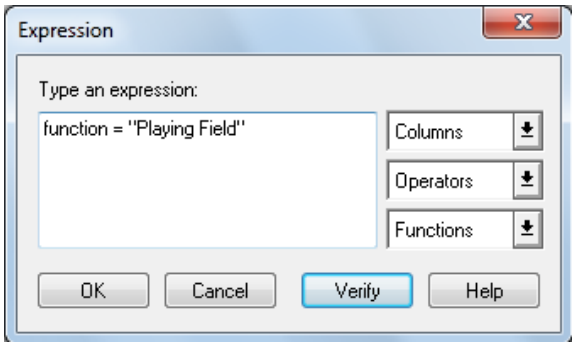
Therefore, to style an element of the OS Open Greenspace data, SQL commands will need to be used to query the original .TAB data, pick out the specific element to style and create a new .TAB file for that element. This procedure will take some time to carry out for the whole dataset. An example is provided here for guidance, but a better option would be to use a more specialised translation software application to convert and style the data in one procedure.

From the toolbar menu, click ‘Query – Select’

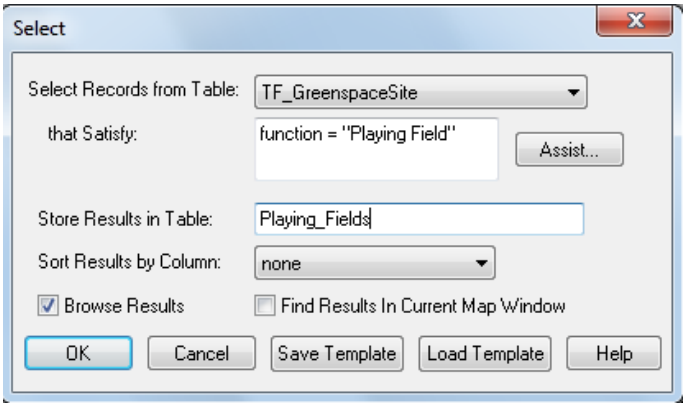


In the next window, the user will need to type in the parameters to query the data. In this example, we are going to set up a query to select all the playing fields from the TF Greenspace Sites table that we have loaded. Click on the ‘Assist’ button and another window appears.





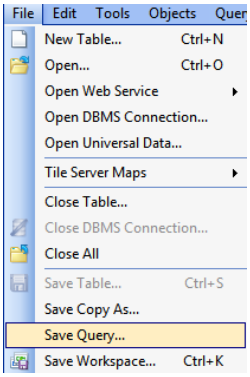
The expression above is one which will extract the playing fields from the original .TAB file. Click on ‘Verify’ to check if the expression is correct. MapInfo will allow us to save the results in a new table which we can give a name, we will call this Plyaing_Fields. Note also the Browse results box is ticked, so that once the query has been performed, we can browse the results in a table view.



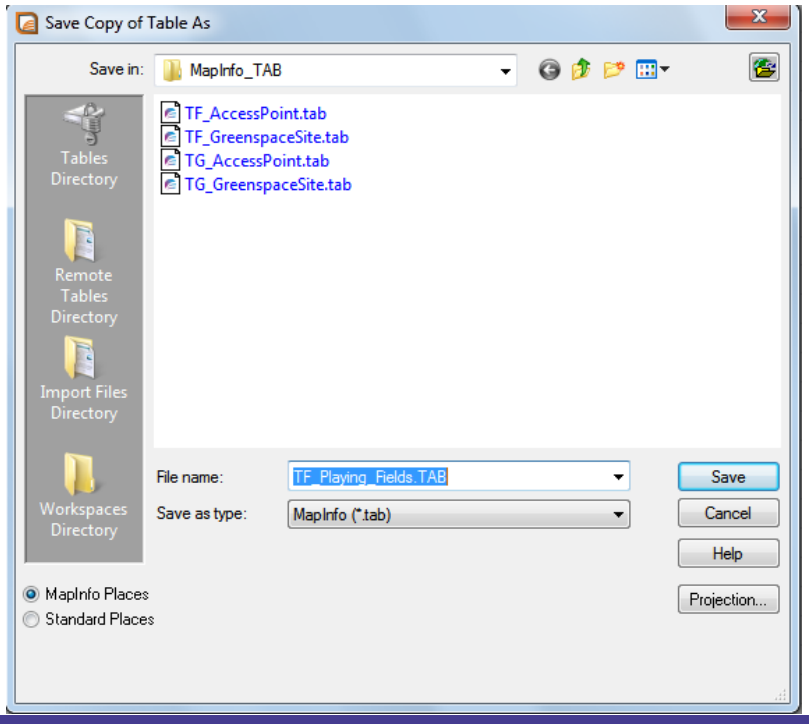
Once satisfied, click ‘OK’. Then click ‘OK’ in the next window and the query will run. The user should see something like the following:

id	function	distName1	distName2	distName3	distName4
45CEA0D3-A638-51CD-E053-2362A00A34C0	Playing Field				
45CEA144-971B-51CD-E053-2362A00A34C0	Playing Field				
45CEA144-97C1-51CD-E053-2362A00A34C0	Playing Field				
45CEA144-9A7F-51CD-E053-2362A00A34C0	Playing Field				
45CEA0D7-C7EE-51CD-E053-2362A00A34C0	Playing Field				
45CEA145-7E68-51CD-E053-2362A00A34C0	Playing Field				
45CEA250-86C6-51CD-E053-2362A00A34C0	Playing Field				
45CEA145-7851-51CD-E053-2362A00A34C0	Playing Field				
45CEA145-90DB-51CD-E053-2362A00A34C0	Playing Field				
45CEA145-7471-51CD-E053-2362A00A34C0	Playing Field				
45CEA145-6B0F-51CD-E053-2362A00A34C0	Playing Field				
45CEA145-6837-51CD-E053-2362A00A34C0	Playing Field				
45CEA0D6-6F9D-51CD-E053-2362A00A34C0	Playing Field				
45CEA145-4D36-51CD-E053-2362A00A34C0	Playing Field				
45CEA145-4CD4-51CD-E053-2362A00A34C0	Playing Field				
45CEA0D5-852F-51CD-E053-2362A00A34C0	Playing Field				
45CEA250-0701-51CD-E053-2362A00A34C0	Playing Field				
45CEA145-8F60-51CD-E053-2362A00A34C0	Playing Field				

This query will now need to be saved into a new table. Select 'File – Save Query'

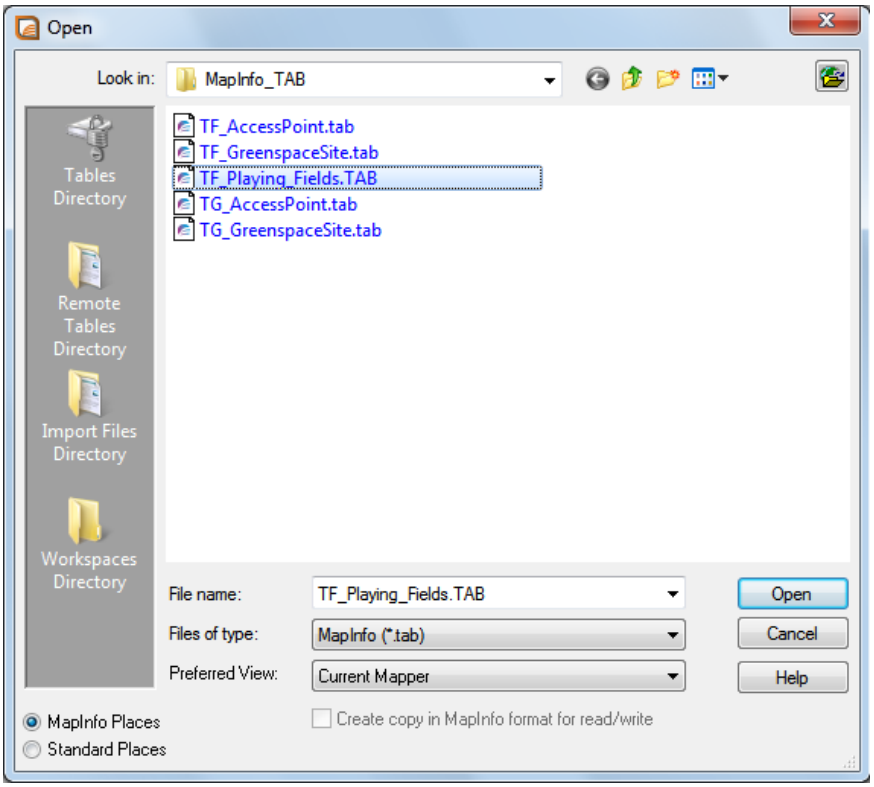


In the next window give the query a name.

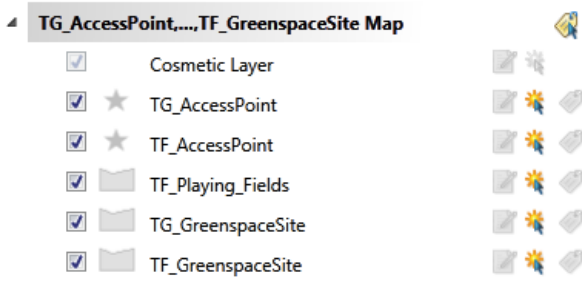


We are going to call this TF_Playing_Fields.

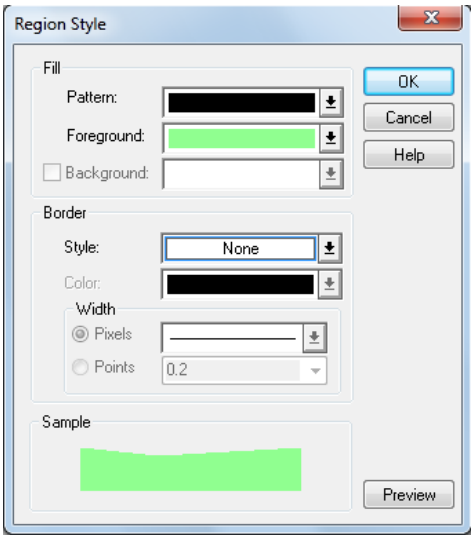
Click ‘Save’ and then close the query browser window. The user may need to close the query and any other playing field table open firstly by clicking ‘File – Close’ and selecting the open query table. Then, click on ‘File -Open’ and select the new TF_Playing_Fields .TAB file just created. The user can open the table in a new mapper or add it to the one that is already open. For this example, it will be added to the one already open in MapInfo.



The data will now be loaded. To check to see if the table has been loaded, click on the layers button in MapInfo to display the loaded layers.



The new table has been loaded. It will now be possible to add a style override to the playing fields table by clicking on the style override button and bringing up the following window:



Several style options can now be applied to the playing fields. Click 'OK' when finished. The style will now be applied to the data.

In this screenshot, the playing fields in grid square TF are now coloured with a green fill. As stated previously, this method is quite laborious, and is not recommended for anything other than styling small areas of data. The best alternative would be to use a specialised software package to translate the data and style it during translation.

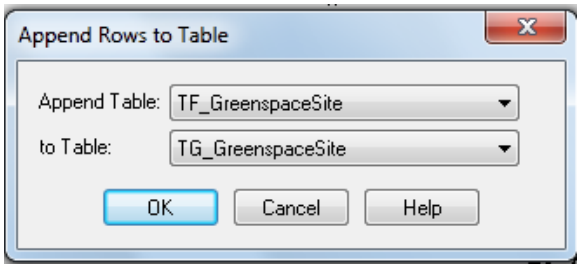
MERGING MULTIPLE .TAB FILES IN MAPINFO PROFESSIONAL

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 should be repeated if more than two .TAB files need to be merged. This will be the case with the OS Open Greenspace product as there are two tables for each 100 x 100km grid square.

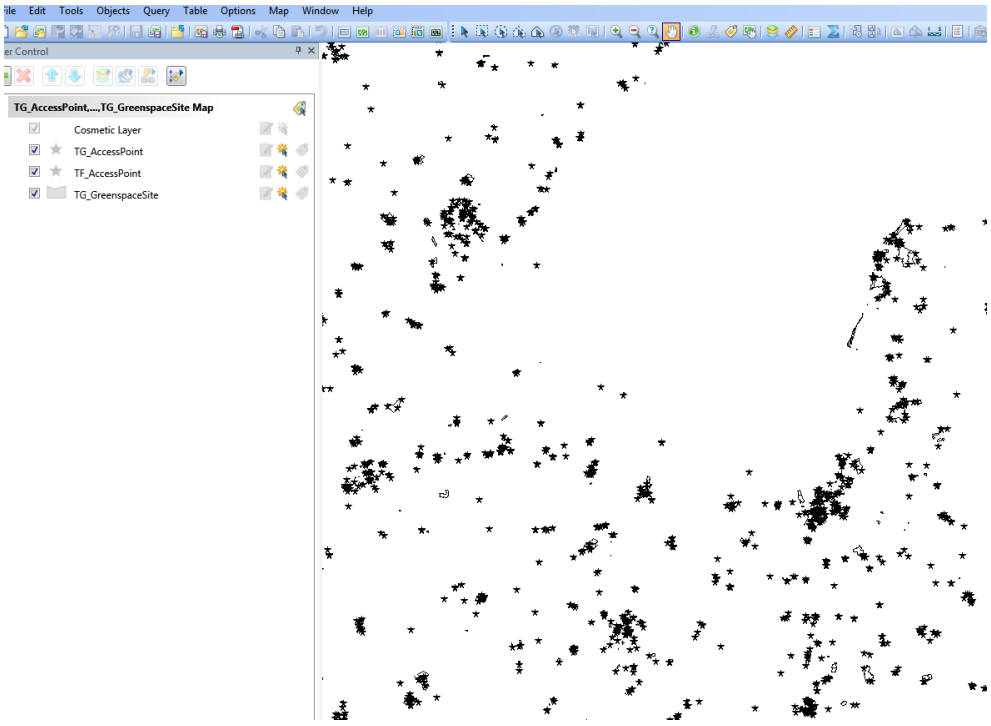
It is HIGHLY RECOMMENDED to back up the original OS Open Greenspace data tables before performing any append function, as the options for carrying out this procedure in MapInfo are limited. If multiple areas are required, it would be better to merge the original shapefiles together before translating the data into .TAB format for use in MapInfo Professional. A free open-source package called 'GeoMerge' can be used to merge shapefiles. This application is available from:

http://www.vdstech.com/geomerge.aspx

To carry out the append function, select 'Table - Append Rows to table' from the main menu.



Select the two tables to append together. Click 'OK'. The data from TF Greenspace Site will now be inserted into the table TG Greenspace Site. The user will need to save the table at the end if the appended data is to be retained. Click 'File – Save table' once the append process has completed. Once the table is saved, TG_GreenspaceSite will now contain the data for the whole area. This is verified if the new table is opened in MapInfo.



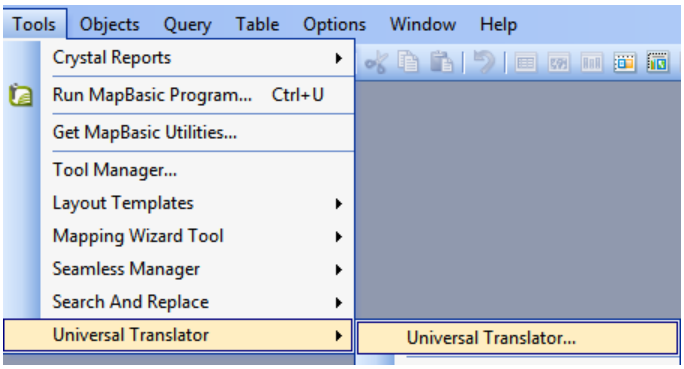
DELETING DUPLICATE ENTRIES FROM THE MERGED TABLE

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:

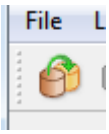
http://testdrive.mapinfo.com/techsupp/miprod.nsf/kbase_by_product/0E37D7B26ED824168525629900805DD2

LOADING GML DATA INTO MAPINFO PROFESSIONAL

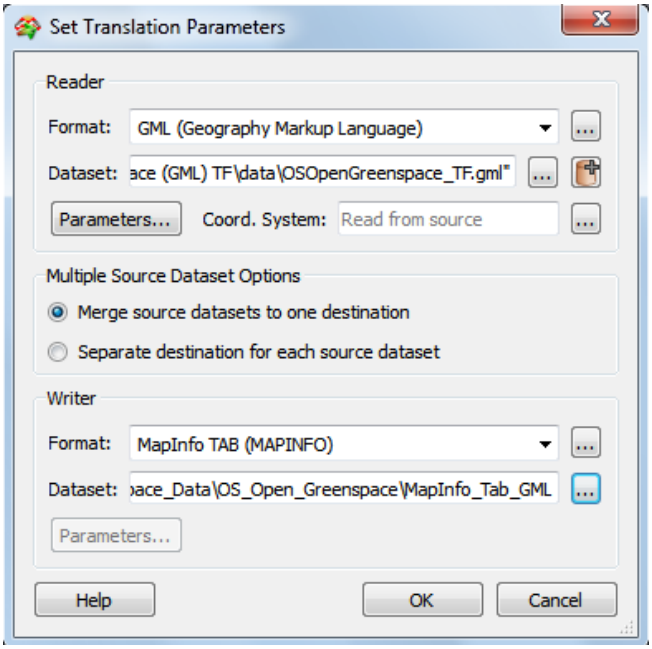
MapInfo Professional will convert OS Open Greenspace data .GML supply into un-styled MapInfo .TAB format, using the Universal Translator tool built into MapInfo Professional version 12.5 onwards. As previously described, select 'Tools – Universal Translator' from the main menu.



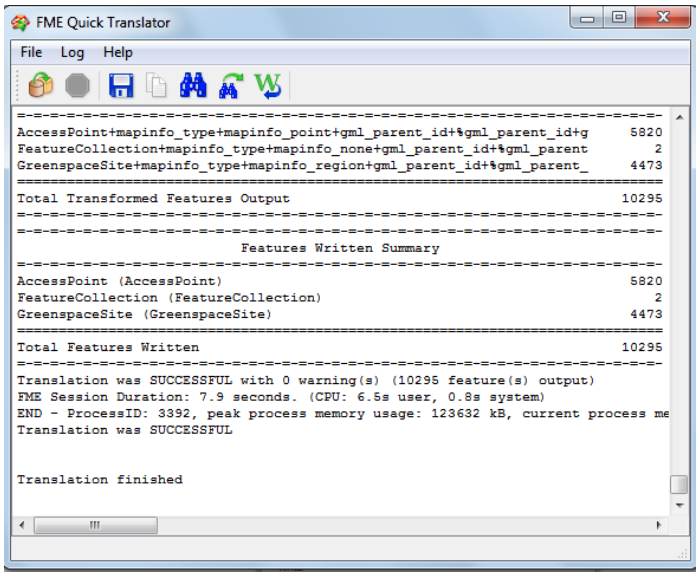
In the next window, click on the 'translate data' button.



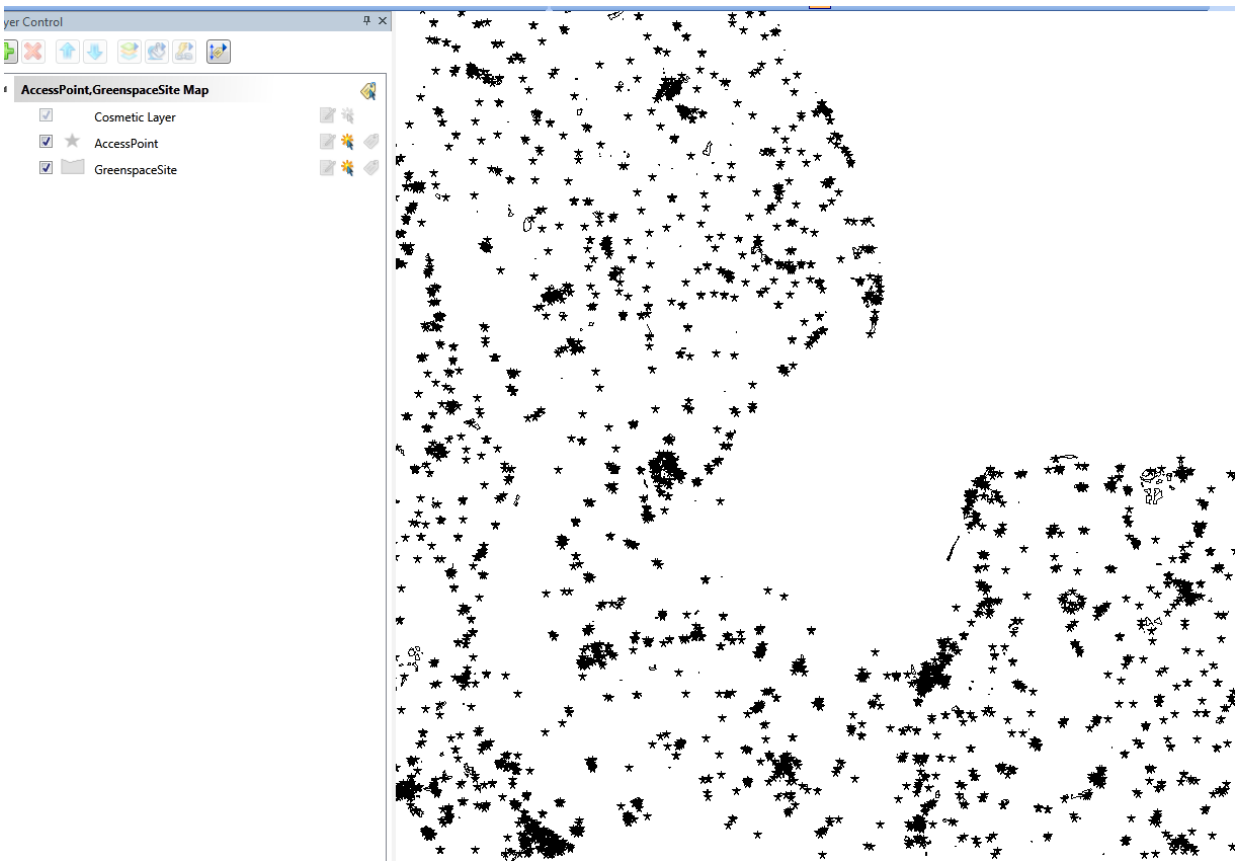
In the next window, select 'Geography Mark-up Language' from the list of options. Then, select the tiles which need to be translated and a destination folder for the data to be stored. Click 'OK' and the translation will begin. A message will appear at the end stating that the translation was successful if all the input parameters have been set correctly.



Once the translation has completed, the user should see something like the following:



The data can now be loaded into MapInfo Professional as .TAB format in the normal way. A point to note is that the translation from .GML to .TAB can produce a single set of OS Open Greenspace tables covering the whole area, avoiding the need for appending files.



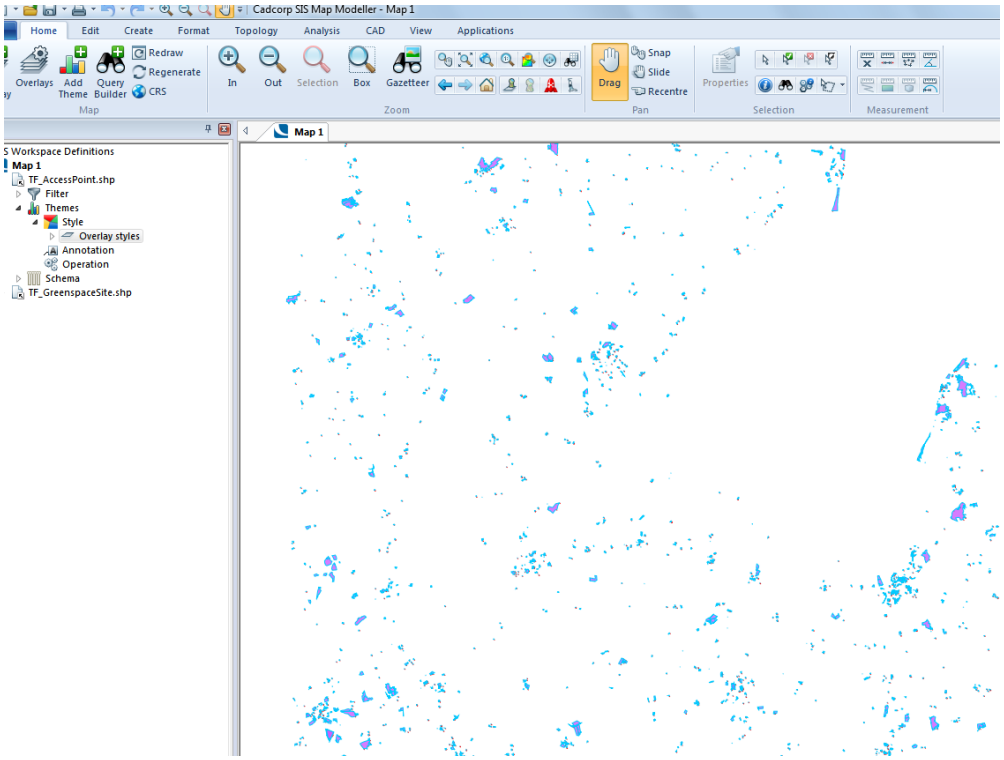
The data is loaded un-styled. Styling would have to be applied manually as previously described, or another specialist translation application used to apply the styling during translation of the data.

CADCORP MAP MODELLER

CadCorp Map Modeller is a commercial GI application which can load a wide variety of data formats. It also comes with a free software viewer application called CadCorp Map Express.

LOADING ESRI SHAPEFILE SUPPLY

To load the ESRI shapefile data, open a file explorer window in Windows and simply drag and drop the .shp files into the Map Modeller window.



CadCorp applies a random style to the data as it is loaded. The styles are applied to the borders and fills of the points and polygons within OS Open Greenspace data. Currently, there are no named object library (.NOL) files for OS Open Greenspace to style the data in CadCorp Map modeller appropriately. However, once the SLD files become available from Ordnance Survey on Github, CadCorp will be able to produce these which will allow the data to be dragged and dropped into Map Modeller and styled immediately.

LOADING GML SUPPLY

Although CadCorp Map Modeller will load GML files natively without translation, currently, Map Modeller does not contain the GML schema file within it to be able to interpret the OS Open Greenspace data correctly. It is, however, anticipated that this support will follow from CadCorp soon after the OS Open Greenspace data is released.

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