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SETTING YOUR DRAWING CRS (COORDINATE REFERENCE SYSTEM)

Since the surface of the earth is curved, for us to utilise GIS data and images in a flat drawing environment, it is necessary to project these images/data from a curved surface to a flat plane. The Coordinate Reference System (CRS) enables the data to be projected. Dependent on location and data type, many forms of projection are possible and available. Choosing the correct projection is key to ensuring accuracy. This guide is designed to provide an introduction to accessing GIS data and for simplicity's sake, we will focus here on 2 distinct coordinate reference systems. For GIS data in the UK;

EPSG:3857 (WGS 84/Pseudo-Mercator) –native mapping for Google & Bing, which provides an excellent projection for seamless mapping of the raster image tiles. However, does not provide linear mapping with regard to dimensions.

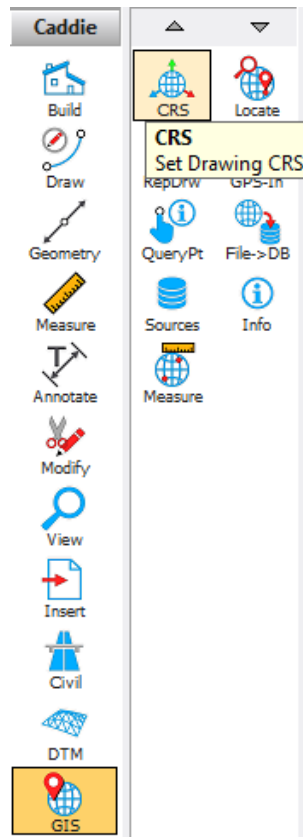
EPSG: 27700 (OSGB 1936/British National Grid) - as utilised by Ordnance Survey, provides a linear mapping type which can be used for preparation of traditional CAD drawings.

HOW TO SET YOUR DRAWING CRS

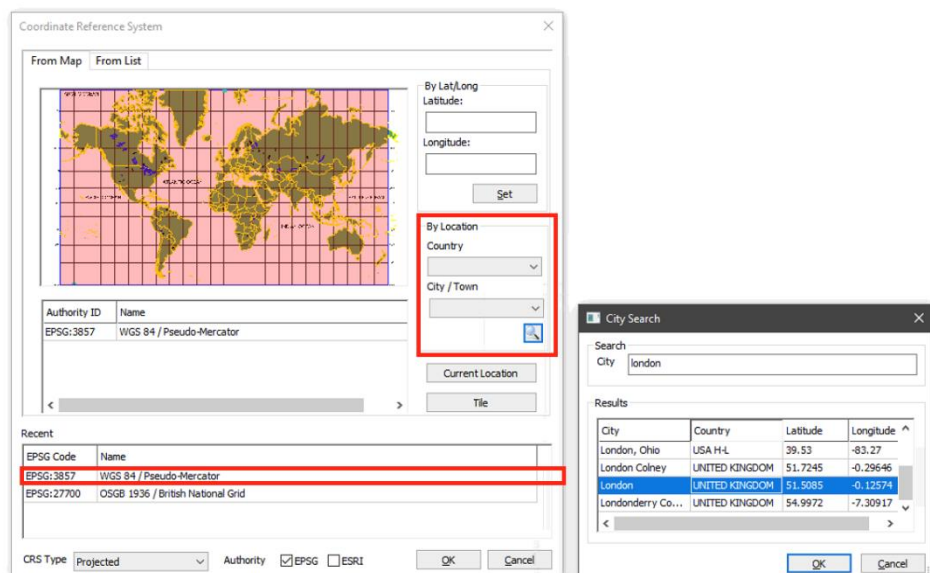
The CRS is done on a per drawing basis as opposed to a system setting.

Included below is an example of how to configure your drawing CRS for London.

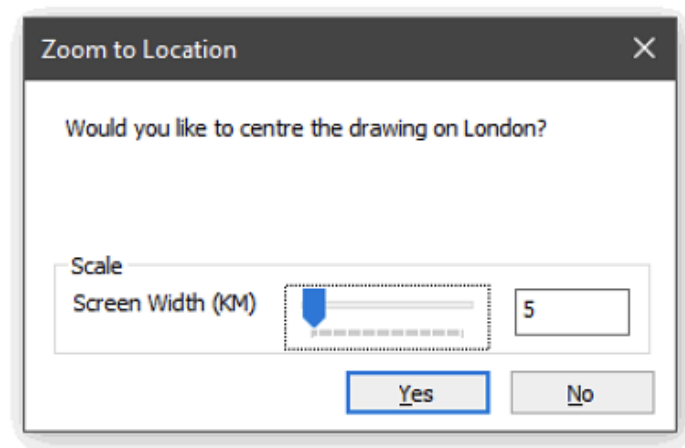
To do this, go to Apps > GIS > Set Drawing CRS.



The CRS dialogue provides a map of the areas catered for by any chosen CRS, location definition & search facility. Beneath the map are presented possible CRS options for any chosen location, and a quick choose recent option for quick and easy configuration of recurring reference systems is located below this. The current location is based is based on the IP address of your machine. The tile option provides satellite imagery of the chosen location for which its possible to zoom and retile.



Here we will search for London in the UK. The country and town/city may be selected from the list but the search facility will very quickly drill down on a chosen location based on the characters typed. Type London into the search box, then select from the results provided below. The zoom to location will center the drawing on your chosen location with a screen width in Km based on the figure entered. Be aware that large amounts of vector data may be required to populate larger screen widths. Tip, start small. Whilst your screen will now be centered on the location, we still need to bring in data from our GIS data sources.



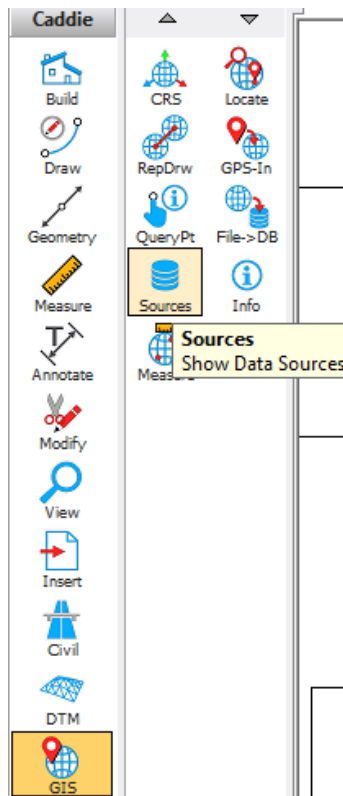
ADDING DATA SOURCES.

When we include GIS information within Caddie drawings, we do so from our configured data sources, which enable us to tap into sources of information, both local and web based.

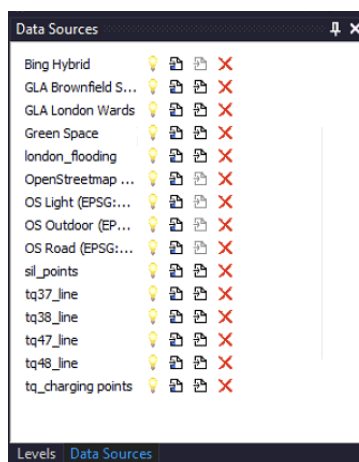
The data source dialogue allows us to configure our data sources.

To access the data sources dialogue, go to GIS > Show Data Sources

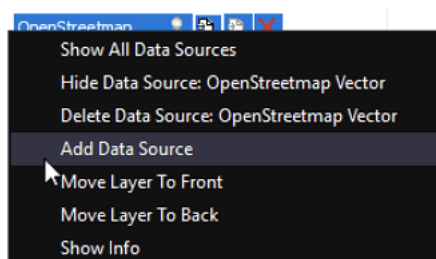
The first thing to do here is show the data sources dialogue. This is a list of all different types of data that can be displayed on your drawing. Data sources can include both raster and vector information, with additional GIS information couple through additional associated GIS data files.



This dialogue displays all of the different types of data.

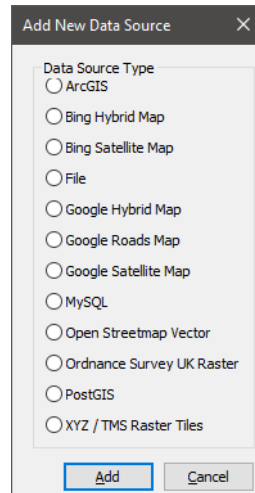


To add a data source, click in the data sources dialogue, then right click to access the data source menu.



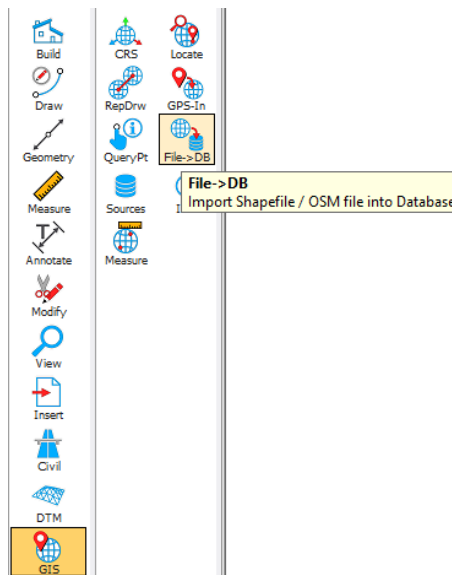
In addition to adding and removing data sources, this menu provides functionality for changing the display order of data sources.

select from the drop-down menu “Add Data Source”. From here we have a list of different data source types including pre-existing sources such as Google & Bing mapping, OpenStreetMap, Ordnance survey mapping, plus access to sources saved on local databases or just as Shapefiles.



ADDING CUSTOM DATA VIA MYSQL

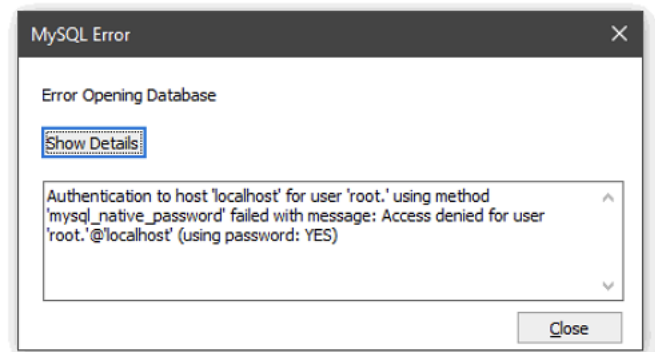
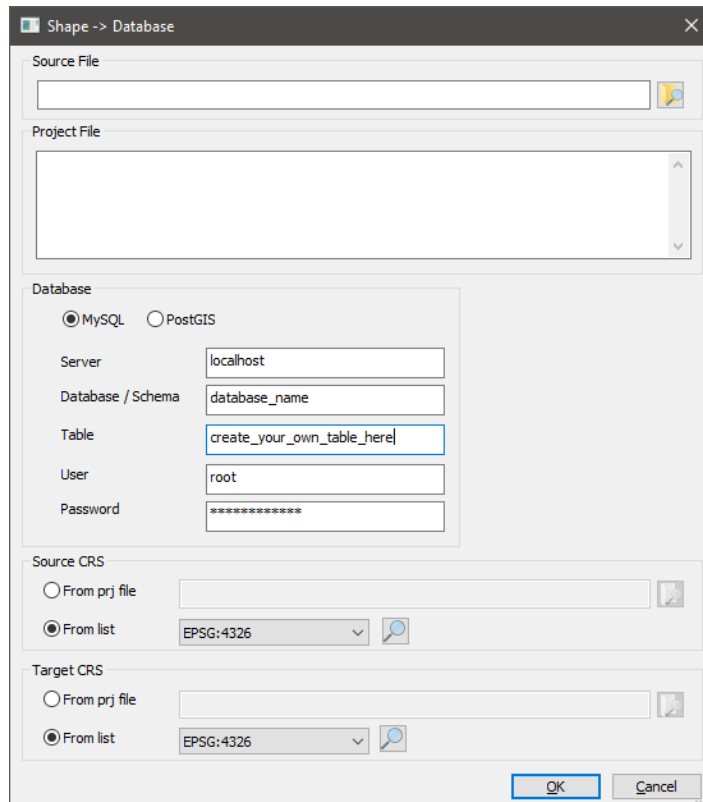
Once you have downloaded your shapefile, you will need to go to Apps > GIS > Shapefile to Database.



Within here, you will need to go and find the shapefile you wish to import.

When downloading shapefiles, you will also get several other files (.prj .dbf, shx), It's crucial that you keep all of the files in the same place as they reference each other when importing data.

Having selected the file, you will now need to enter the database details, these will be where your shapefile is written to. If these are incorrect you will get an error within Caddie stating why the connection was unsuccessful.

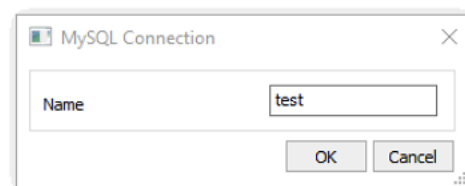
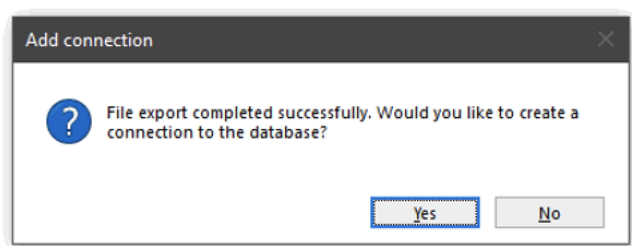


You will now need to choose the source CRS (Coordinate Reference System) this can be taken from the .prj file.

The target CRS for the northern hemisphere is EPSG:4326. So, make sure this is set within this dialogue.

Once this has been done, press ok. You will then have to wait as the Shapefile is added to MySQL. This can take a while depending on internet connection, and the size of the shapefile.

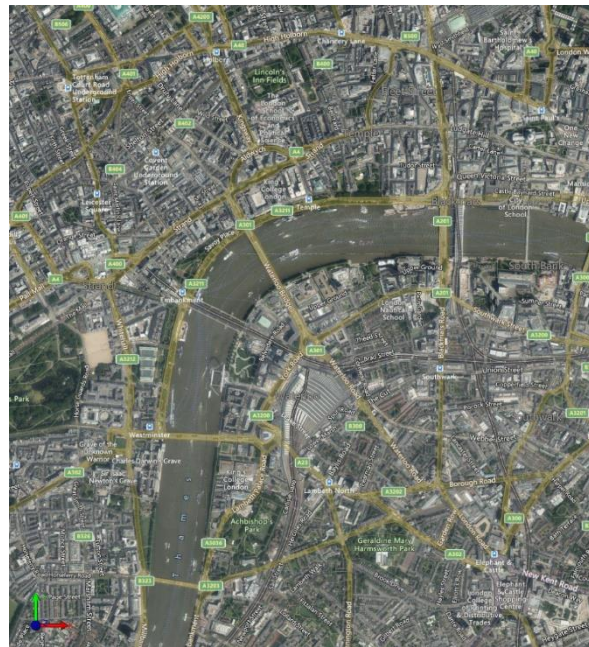
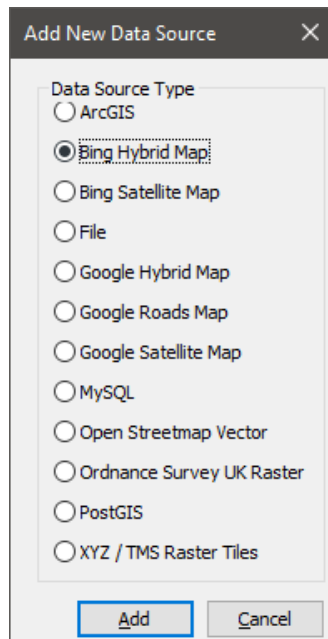
When completed, Caddie will ask you if you want to add this to your data sources straight away. If you press yes, it will prompt you to give the data source a name. if you press no, it will simply end the command.



DIFFERENT DATA SOURCES

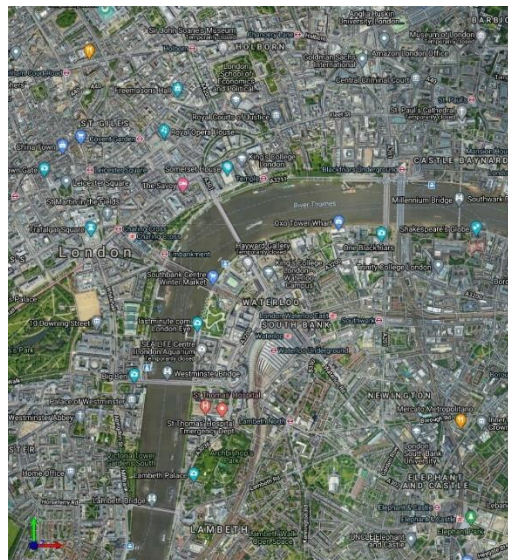
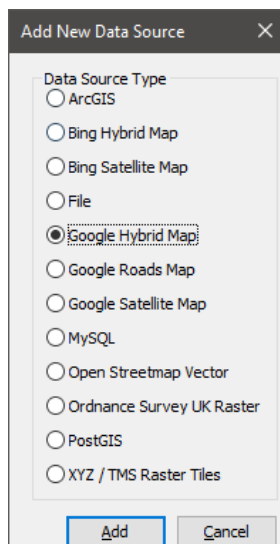
BING MAPPING (HYBRID & SATELLITE)

Simply select the data source and press "Add"



GOOGLE (HYBRID, ROADS, SATELLITE)

Simply select the data source and press "Add"

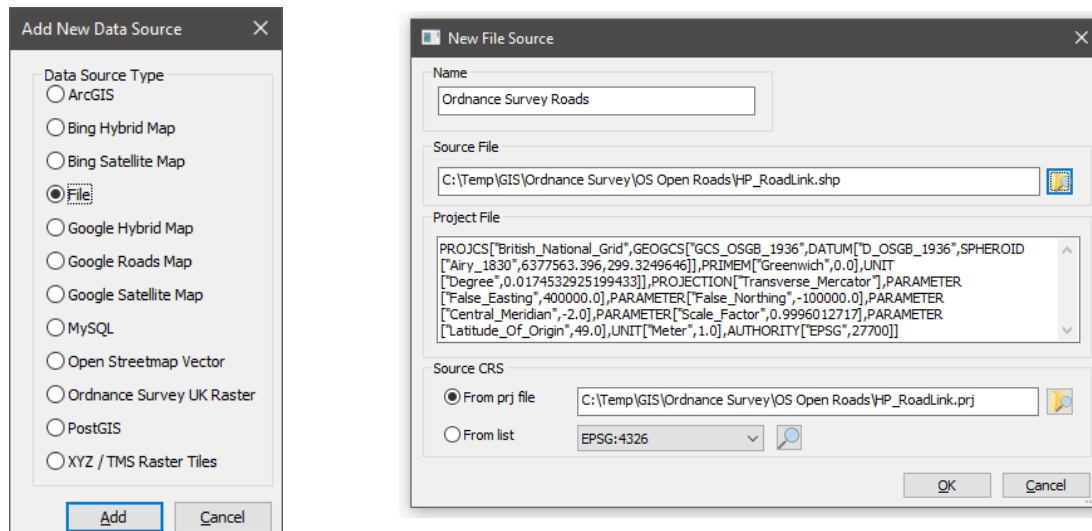


FILE

The file option allows shapefiles to be read an entire shapefile as a data source. Shapefile GIS information may be found on a variety of sources including Ordnance Survey, DEFRA. Natural England ETC.

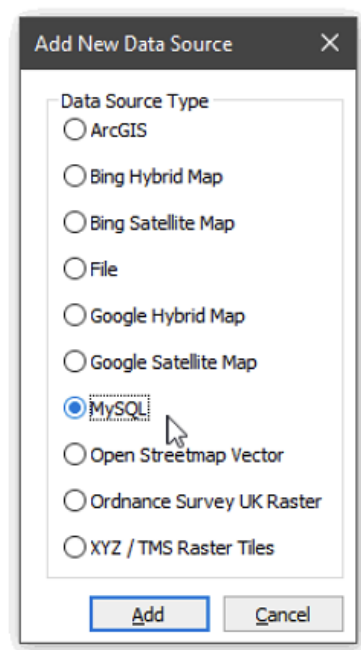
Note: if it is required to read partial data then a more suitable option for producing a data source would be to add it to a database (refer to the MySQL section [here](#))

When accessing shapefile data from web sources, it typically includes additional GIS information which should be saved to the same location in order that Caddie can reference this information for purposes of object interrogation.



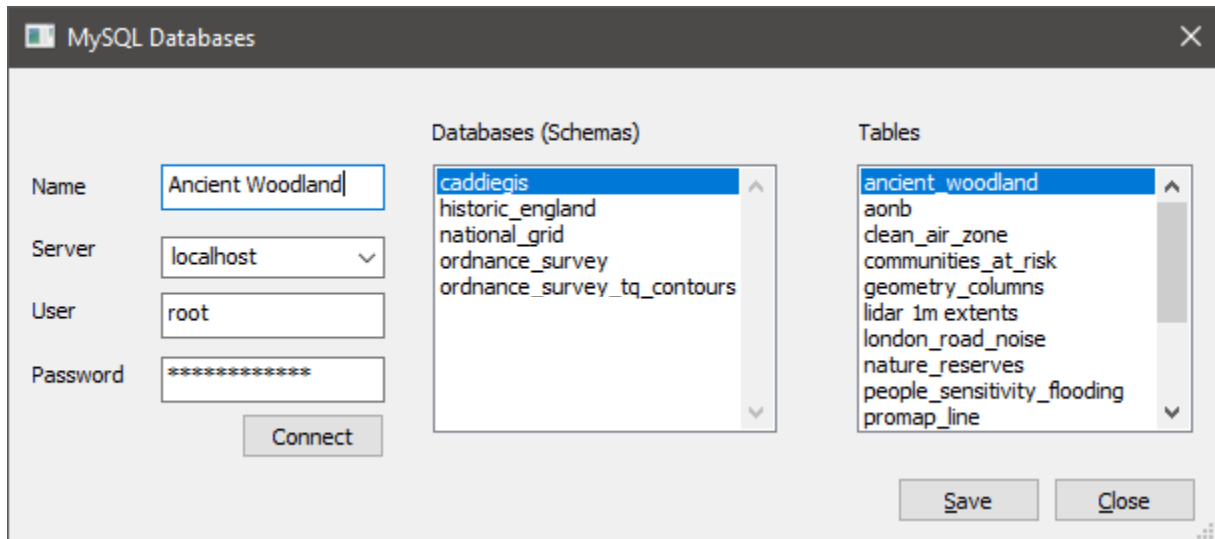
MYSQL

If either you only require either part of an area of a shapefile, or the area required is covering more than 1 shapefile, then adding the data via MySQL will be necessary. To learn how to add shapefiles to the MySQL database refer to [step 3 – adding custom data to MySQL](#)



Having selected MySQL as the data source type, press ok.

This will then bring up a dialogue enabling you to connect to your MySQL database. Once connected, you will be able to see the different databases within your MySQL server, and any associated tables within these.



Select the data table you wish to add to the data sources, give it a name and then press save. This will add your table to the data sources dialogue, enabling you to add it to your drawing.

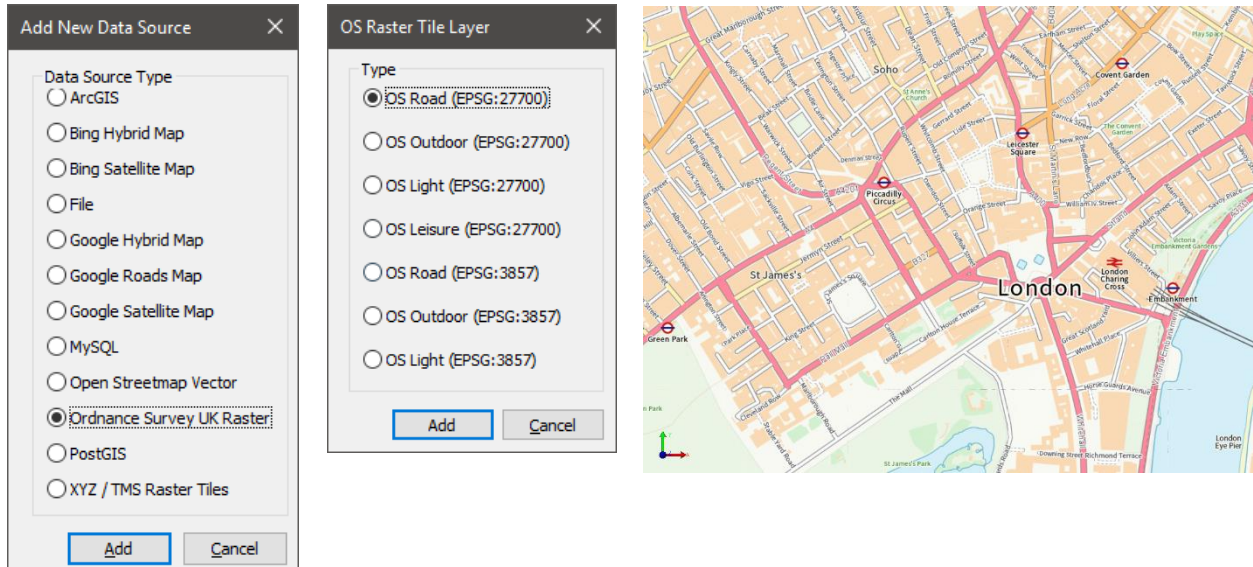
OPENSTREETMAP VECTOR



ORDNANCE SURVEY UK RASTER

When inserting ordnance survey maps, you can pick the type depending on the CRS set.

Enhanced data is available from Ordnance Survey but requires additional licensing.



POPULATING YOUR DRAWING WITH DATA

Once you have added your data source, you can now populate your drawing with data. To do this, go to the data sources dialogue.

Here you will see 4 icons, the first icon switches that specific data source on/off. The second icon will display any data from that source in the visible area. The third icon will display all data from that source, both inside and outside the visible area. The last icon will remove all of the data for this source from the drawing.

1. Show/Hide the layer



2. Refresh the visible area



3. Refresh the whole area



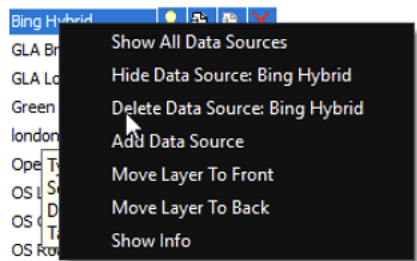
4. Query this layer



5. Delete entire layer



To delete the data source from the list, right click over the specific data source and select "Delete Data Source:"



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