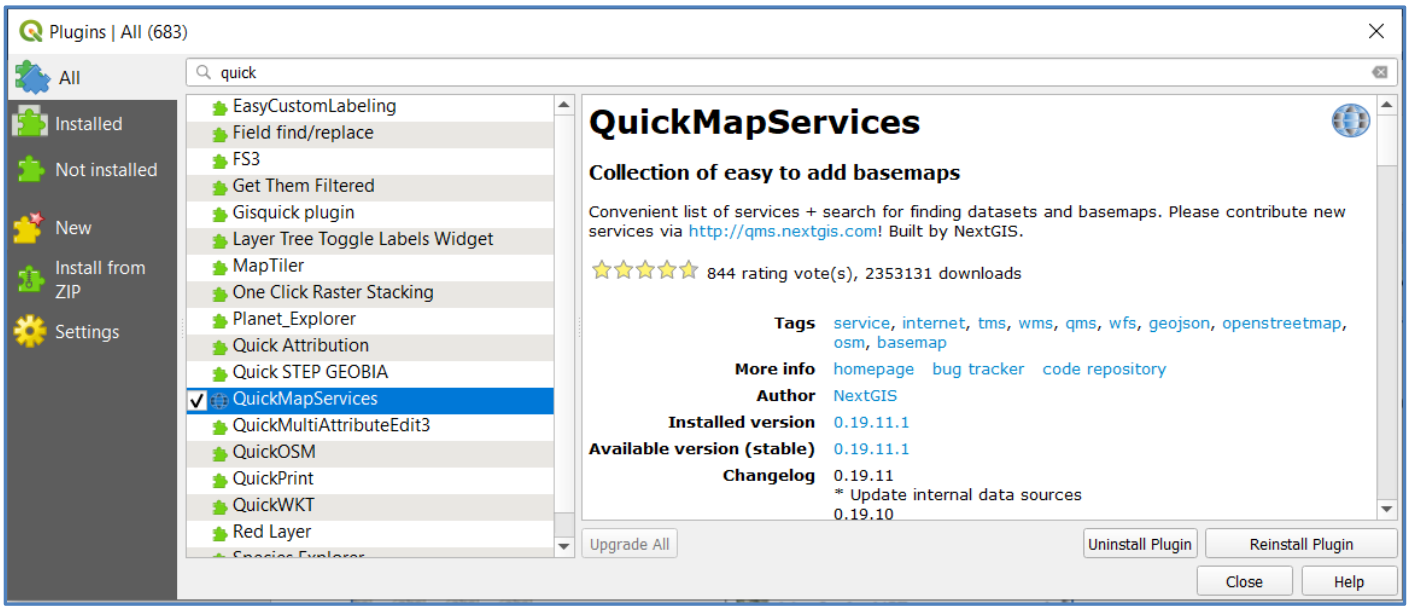
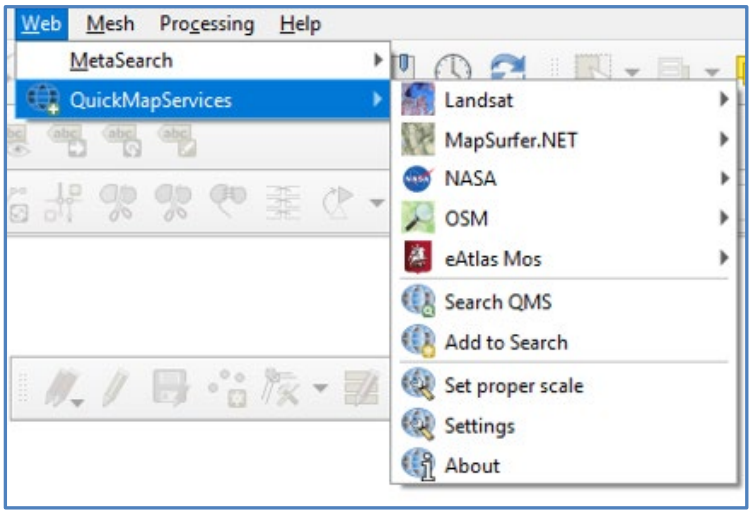
QGIS – Accessing Open Street Map Data

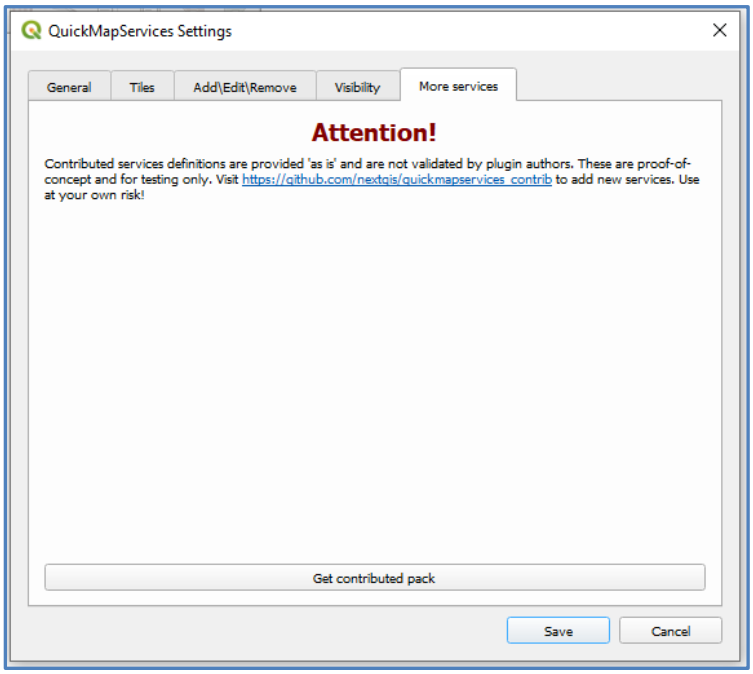
by David Crowther

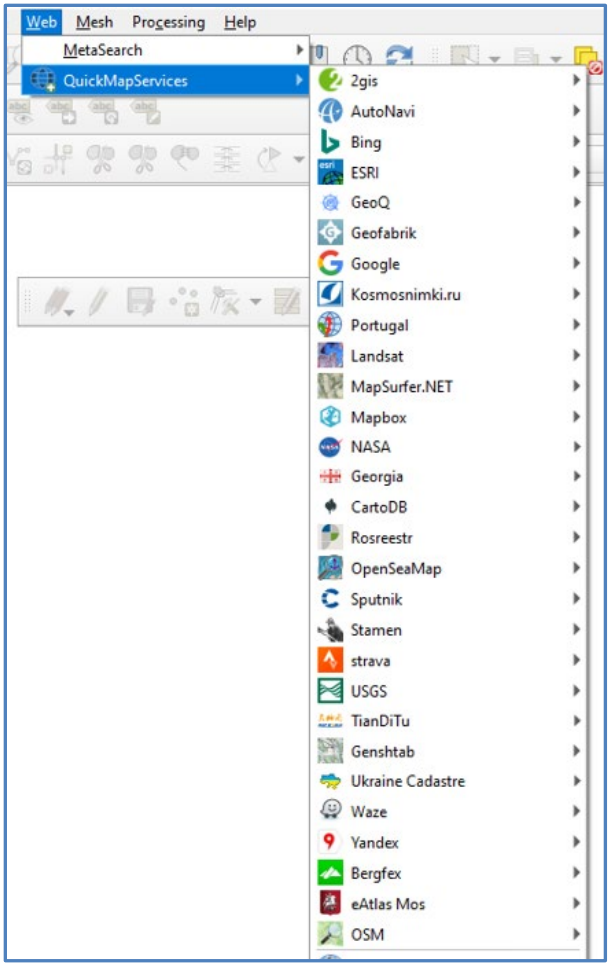
If you are a user of **QGIS** then you are likely very familiar with using the **QuickMapServices** plugin to load various **Raster basemaps.**





In the **Settings** > **More Services** option you can also download more raster basemaps by installing the **Contributor Pack.** When you now access the Quick Map Services the list of basemaps is far longer.

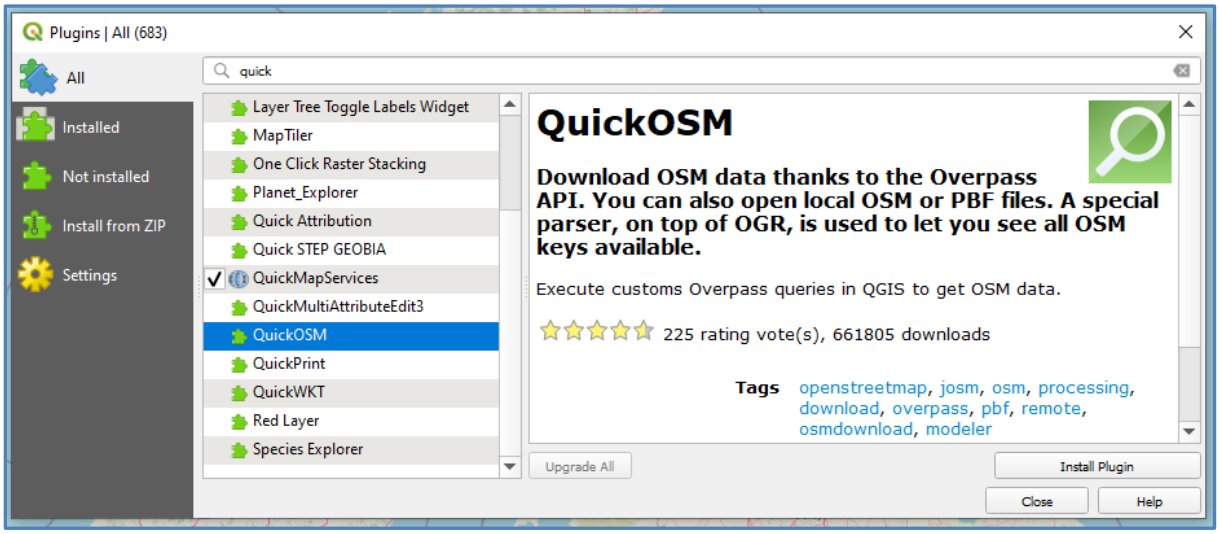




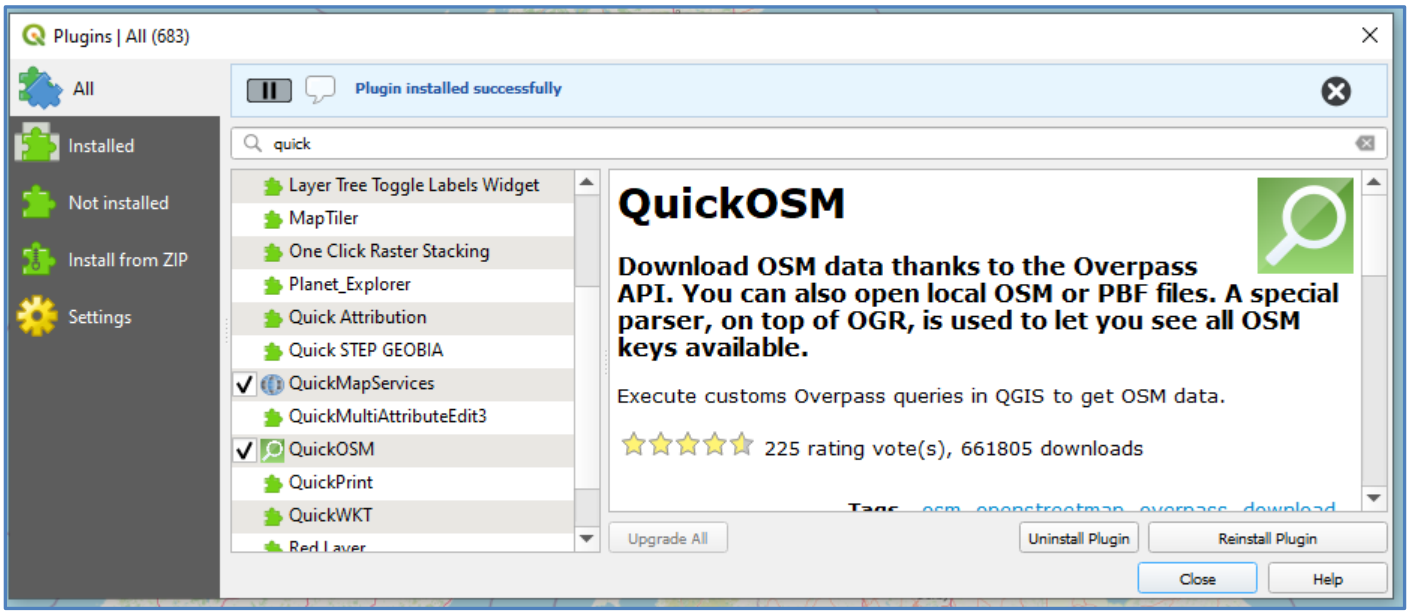
In this blog we will concentrate on data for the **UK**, so I have loaded the **OSM Standard basemap** and zoomed to the UK.

If you are looking for **Open-Source datasets** for your country, then a great place to start is using the QGIS > **QuickOSM Plugin.**

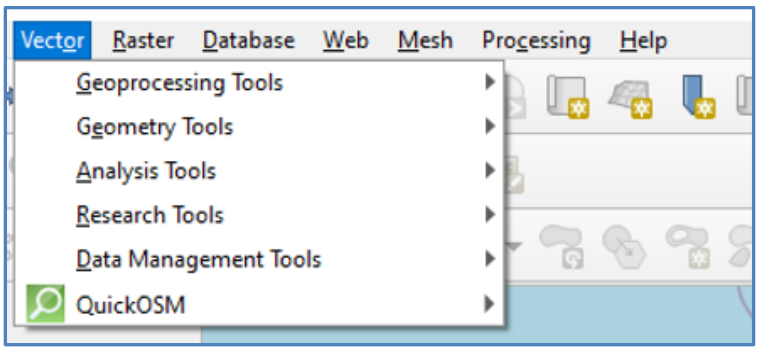
Within QGIS choose the **Plugin > Manage and Install Plugins** menu and a search window will appear for the QGIS plugins. In the search type **'Quick'** and the list of Plugins will be filtered based on your search. Select the **QuickOSM** plugin and choose to **install** it.

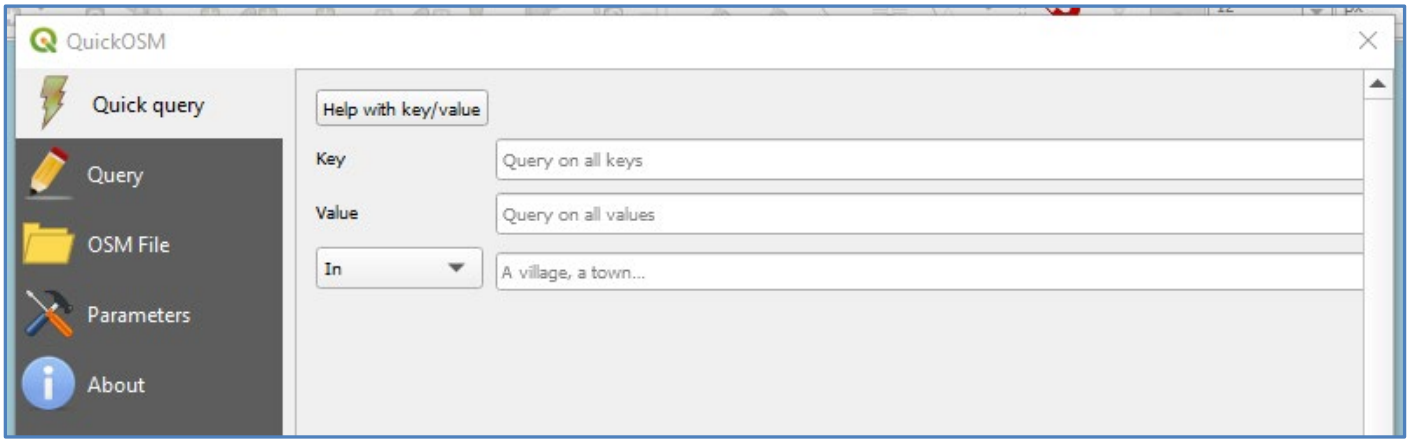


The plugin will then be **installed** to your QGIS.



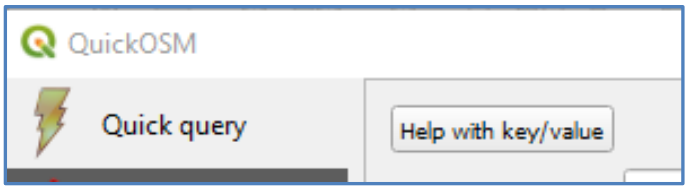
It is now available from the **Vector** menu > **QuickOSM** > **QuickOSM.**



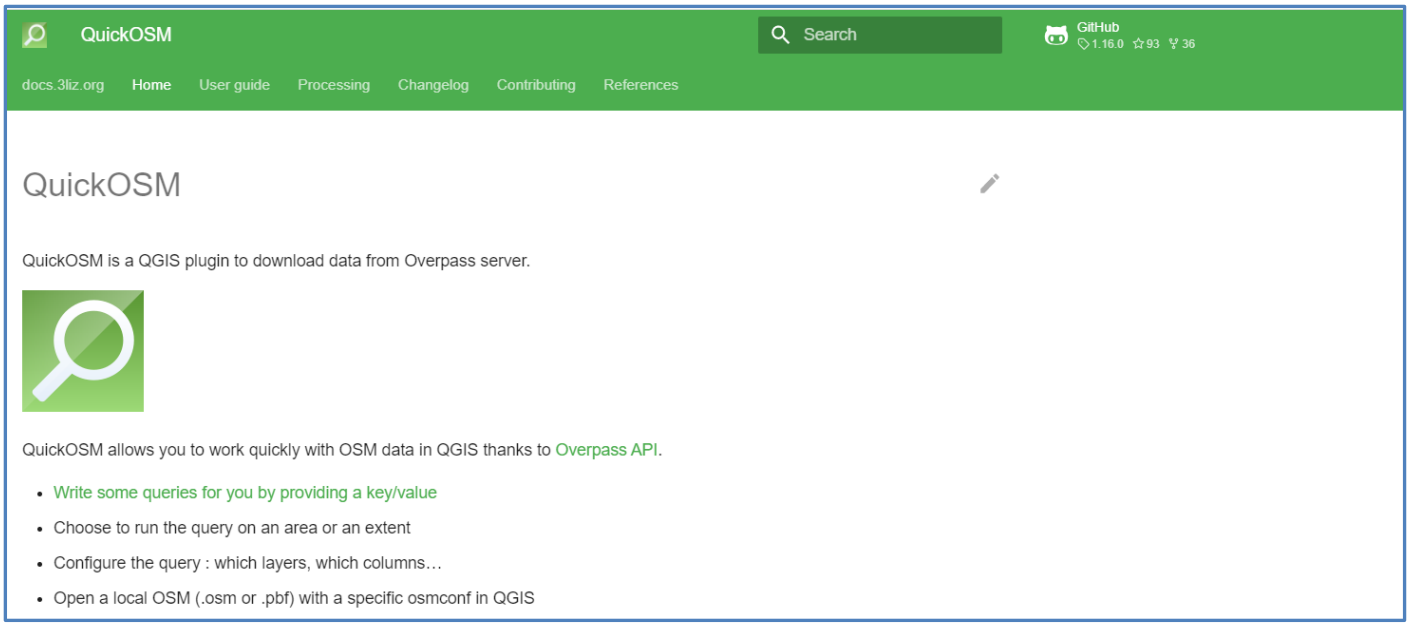


Before we start to access and download **OpenStreetMap (OSM)** data, it is a good idea to view the **online help** documentation as this helps you understand what features are available and how to search for them.

From the **Quick Query** Tab choose the button titled – **Help with Key/Value.**



This will open the QuickOSM online resources - https://docs.3liz.org/QuickOSM/



In addition to this resource there is a **WIKI page** that lists all the **Keys** and **Values** that QuickOSM uses to define the datasets that you can access.

https://wiki.openstreetmap.org/wiki/Map_features

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OpenStreetMap represents physical features on the ground (e.g., roads or buildings) using tags attached to its basic data structures (its nodes, ways, and relations). Each tag describes a geographic attribute of the feature being shown by that specific node, way or relation.

OpenStreetMap's free tagging system allows the map to include an unlimited number of attributes describing each feature. The community agrees on certain key and value combinations for the most commonly used tags, which act as informal standards. However, users can create new tags to improve the style of the map or to support analyses that rely on previously unmapped attributes of the features. Short descriptions of tags that relate to particular topics or interests can be found using the feature pages.

Scrolling down the page provides a table for each **feature type**, with a **photograph** to help you choose the data that you need e.g. Building > Commercial.

building	commercial		A building for non-specific commercial activities, not necessarily an office building. Consider tagging the surrounding area using `landuse=commercial` if there is such use. Use 'retail' if the building consists primarily of shops.	
building	industrial		A building for industrial purposes. Use warehouse if the purpose is known to be primarily for storage/distribution. Consider using `landuse=industrial` for the surrounding area and appropriate tags like `man_made=works` to describe the industrial activity.	
building	kiosk		A small one-room retail building.	
building	office		An office building. Use `office=*` where applicable for the business(es) that use the building. Consider tagging the surrounding area using `landuse=commercial` if it applies. Prefer 'retail' if the building consists primarily of shops.	
building	retail		A building primarily used for selling goods that are sold to the public; use `shop=*` to identify the sort of goods sold or an appropriate `amenity=*` (pub, cafe, restaurant, etc.). Consider use `landuse=retail` for the surrounding area.	

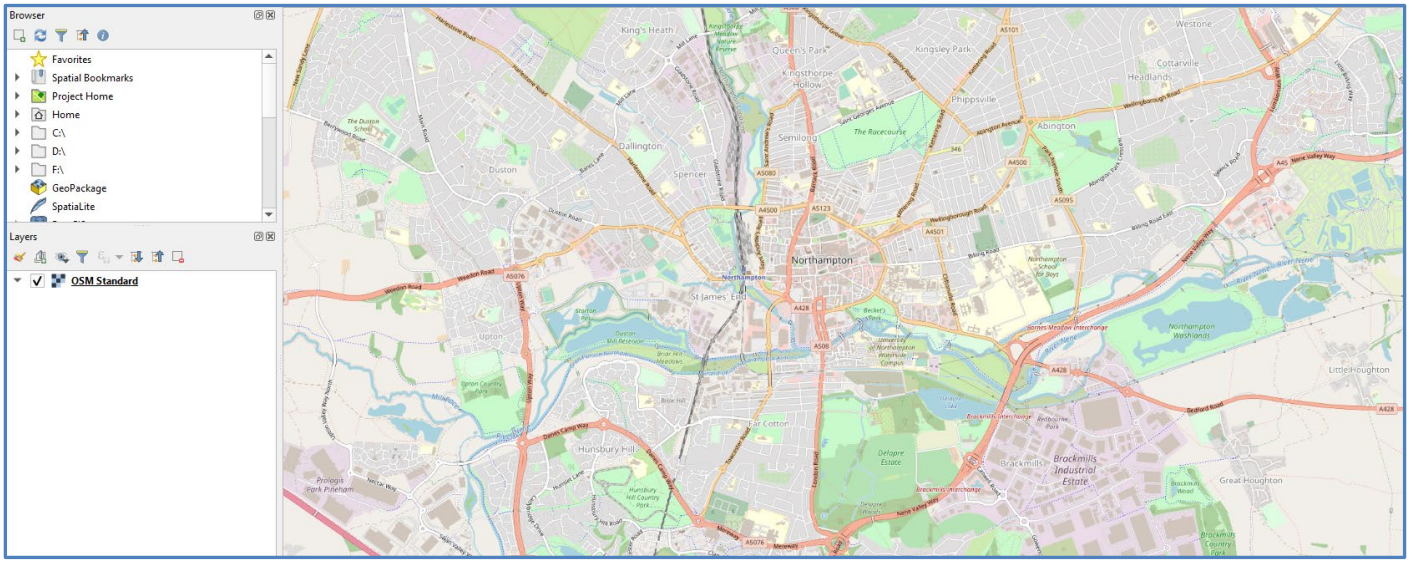
Highway

This is used to describe roads and footpaths. For an introduction on its usage see the page titled **Highways**. See the page titled **Restrictions** for an introduction on access limitations by vehicles type, time, day, load and purpose, etc.

Key	Value	Element	Comment	Rendering carto	Examples
Roads					
These are the principal tags for the road network. They range from the most to least important.					
highway	motorway		A restricted access major divided highway, normally with 2 or more running lanes plus emergency hard shoulder. Equivalent to the Freeway, Autobahn, etc..		
highway	trunk		The most important roads in a country's system that aren't motorways. (Need not necessarily be a divided highway.)		

These **Keys** and **Values** will allow you to choose the correct datasets for your specific task. Having a good understanding of how the OSM data is structured will ensure that you search for and download the correct datasets.

We will choose **Northampton** as the area of interest for the data download. So, in the QGIS map canvas we will first zoom to the extents of Northampton.



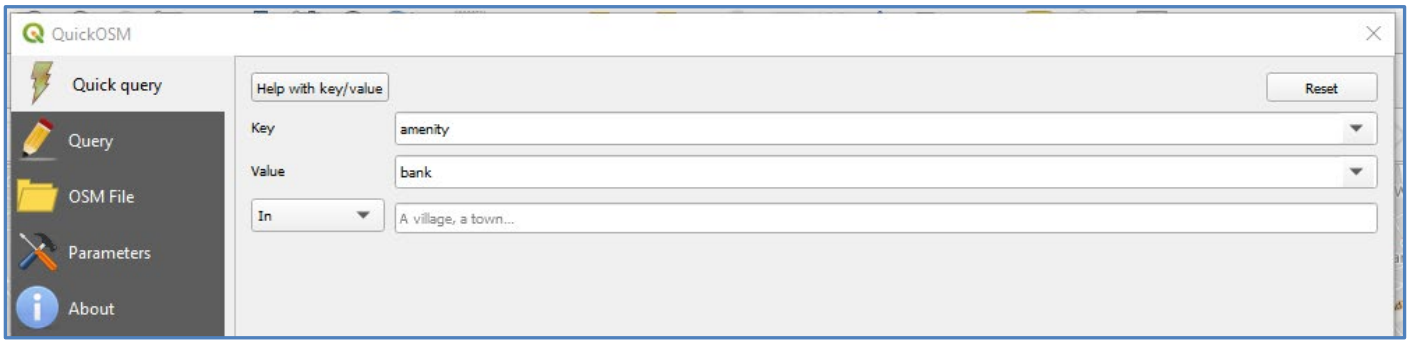
1 – Accessing Point Data

For this area, we will start by adding some **Point data** to the map extents. OSM has multiple datasets relating to Points such as Buildings, Postcodes, Schools etc., but in this example we are going to add the locations of **Banks.**

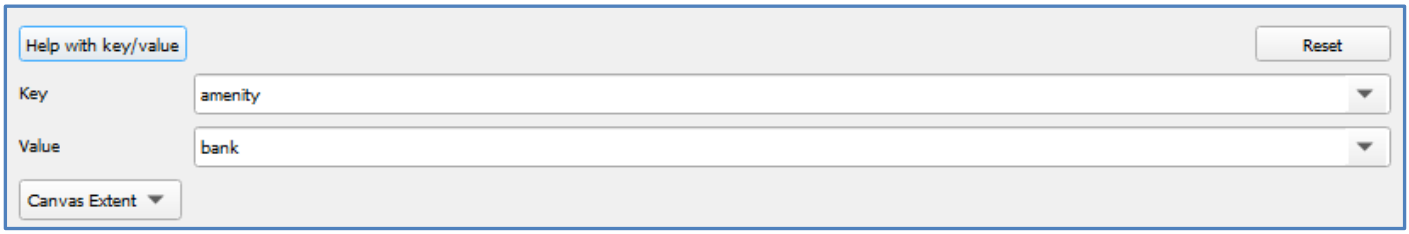
To choose the correct search settings in QuickOSM, you should search in the **OSM Wiki** for the data type you need e.g. **Bank** and then check the **KEY (amenity)** and **VALUE (bank)** associated to that feature type.

amenity	bank		Bank or credit union: a financial establishment where customers can deposit and withdraw money, take loans, make investments and transfer funds.		

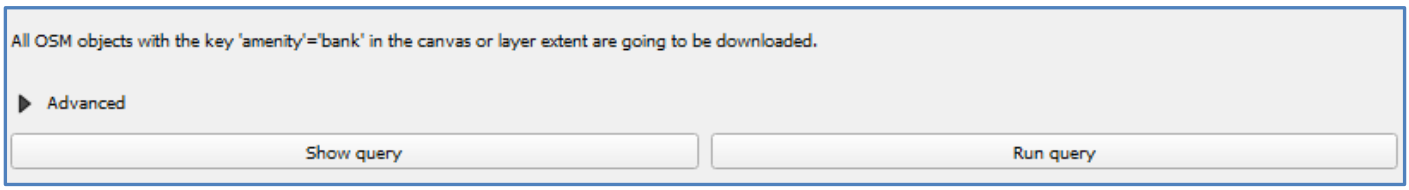
In the QuickOSM plugin, we will now choose these feature types from the **KEY** and **VALUE** lists.



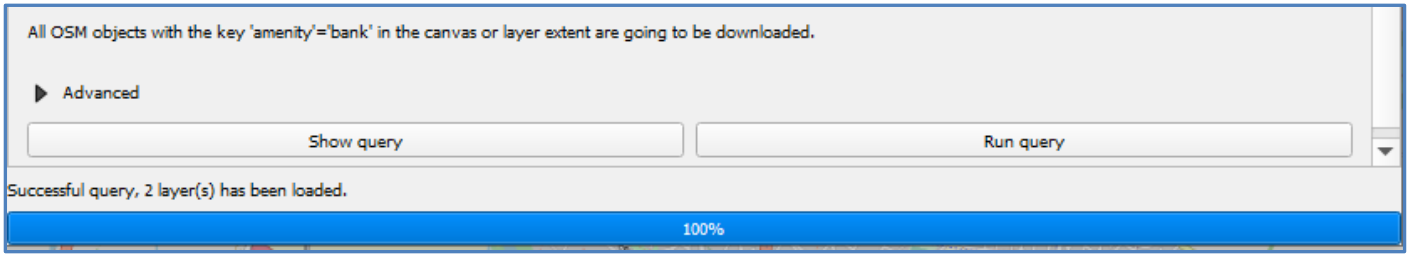
To ensure that you only download the data for our area of interest, in the **IN option** we will choose the **Canvas Extent** option.



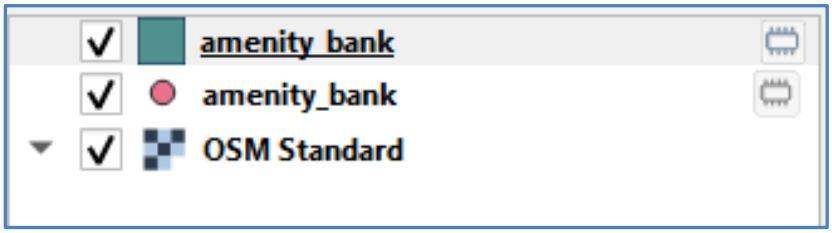
A **summary** of your current Search options is shown at the bottom of the tool and when ready we can choose **Run Query** to find and download the dataset.



Once the query runs, the tool will provide a **success** message and confirm how many layers have been added to your QGIS project.

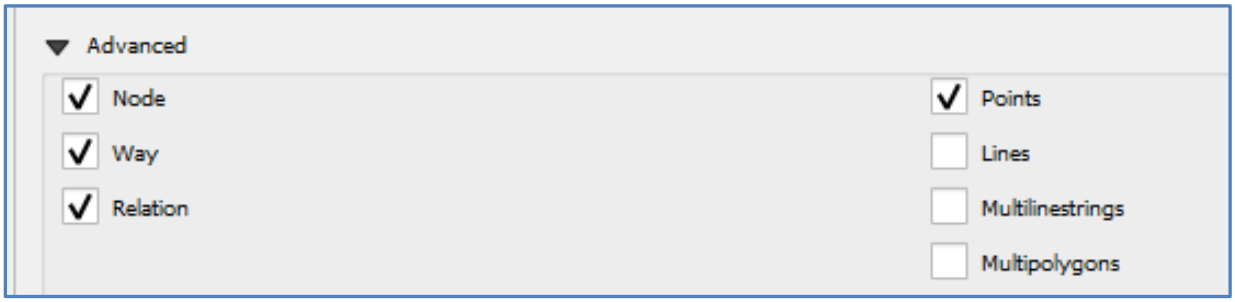


In this case, the OSM search returned **2 layers** for the banks, one as **POINT** data and one as **Polygon** data.



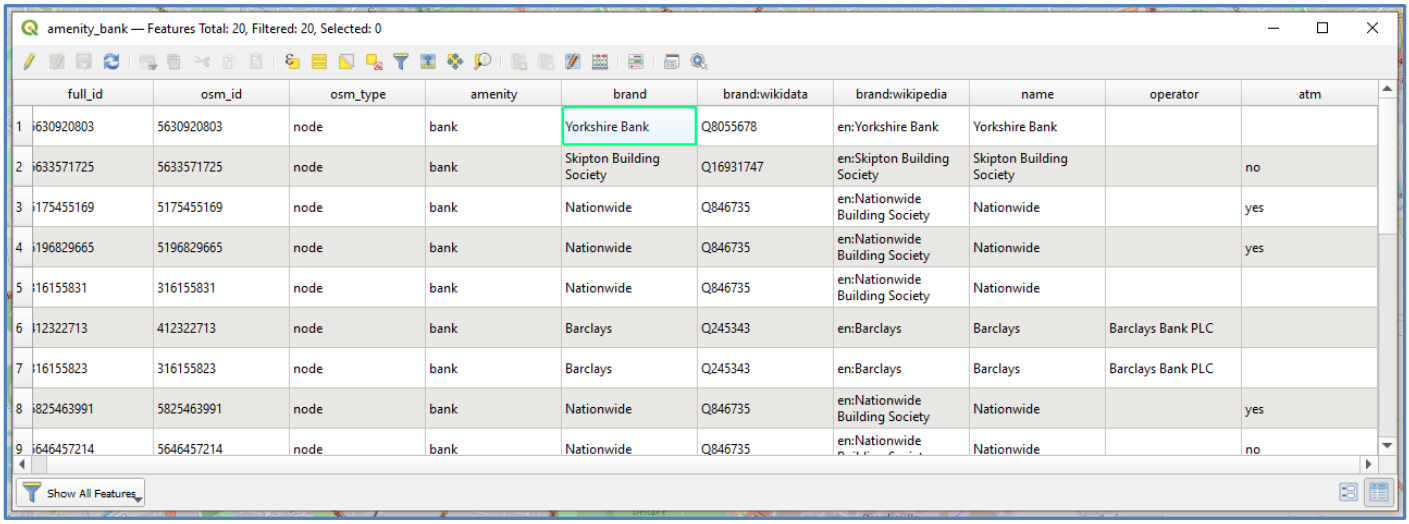
As we are only interested in the Point data, we need to amend the QuickOSM query to only download **POINT data.**

In QuickOSM, choose the **Quick Query** tab again and this time choose the **Advanced** options where you can choose the **geometry types** that you wish to download. Here we will untick all options except **Point data.**



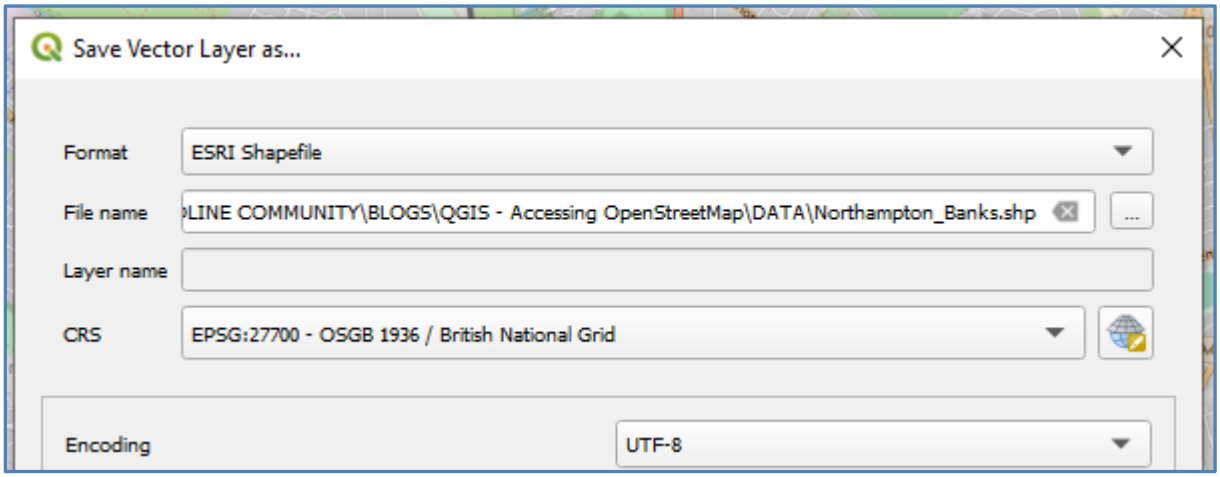
If we now re-run the query, just **one Point layer** is added to the map canvas.

If we **browse** the Table for the layer, we can see that the data downloaded reflects the chosen feature type of **Banks.**

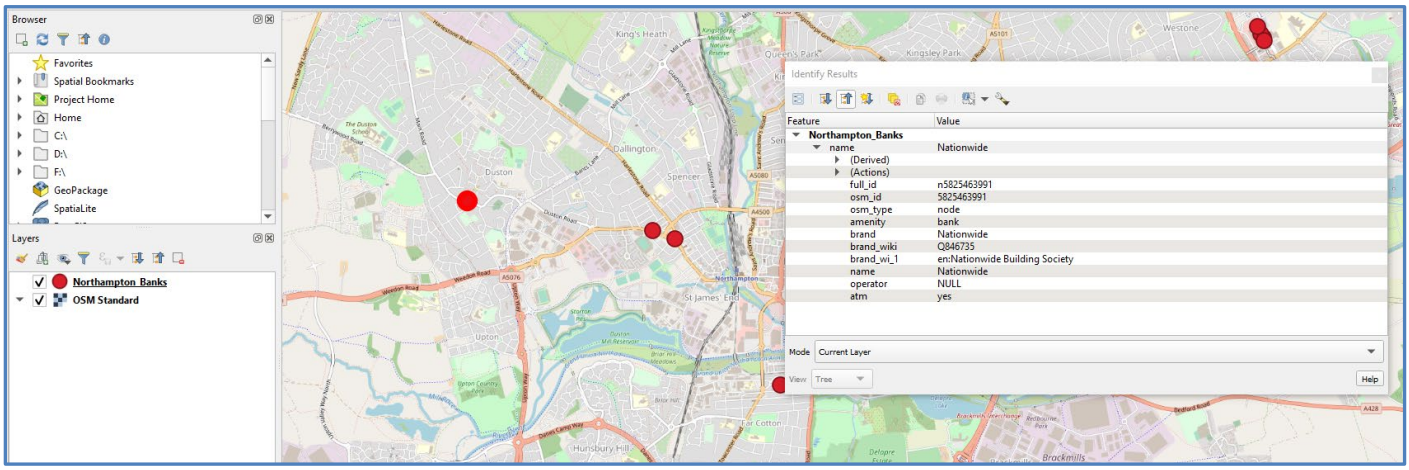


	full_id	osm_id	osm_type	amenity	brand	brand:wikidata	brand:wikipedia	name	operator	atm
1	5630920803	5630920803	node	bank	Yorkshire Bank	Q8055678	en:Yorkshire Bank	Yorkshire Bank		
2	5633571725	5633571725	node	bank	Skipton Building Society	Q16931747	en:Skipton Building Society	Skipton Building Society		no
3	5175455169	5175455169	node	bank	Nationwide	Q846735	en:Nationwide Building Society	Nationwide		yes
4	5196829665	5196829665	node	bank	Nationwide	Q846735	en:Nationwide Building Society	Nationwide		yes
5	316155831	316155831	node	bank	Nationwide	Q846735	en:Nationwide Building Society	Nationwide		
6	412322713	412322713	node	bank	Barclays	Q245343	en:Barclays	Barclays	Barclays Bank PLC	
7	316155823	316155823	node	bank	Barclays	Q245343	en:Barclays	Barclays	Barclays Bank PLC	
8	5825463991	5825463991	node	bank	Nationwide	Q846735	en:Nationwide Building Society	Nationwide		yes
9	5646457214	5646457214	node	bank	Nationwide	Q846735	en:Nationwide	Nationwide		no

Note – the downloaded file will currently be a **temporary (scratch) layer** in your QGIS Projects and will be lost unless you save a copy of it. So, choose the Layer > **right click** and **Export** to a GIS file format of your choice.



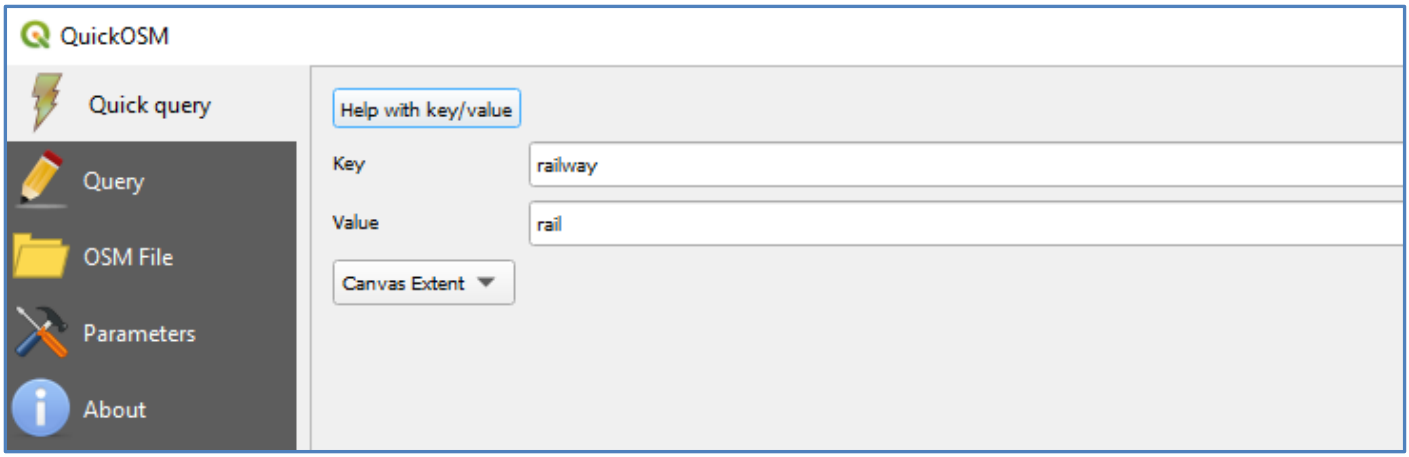
You can now remove the temporary layer from the map canvas and your QGIS project now has the Banks layer available for query and editing.



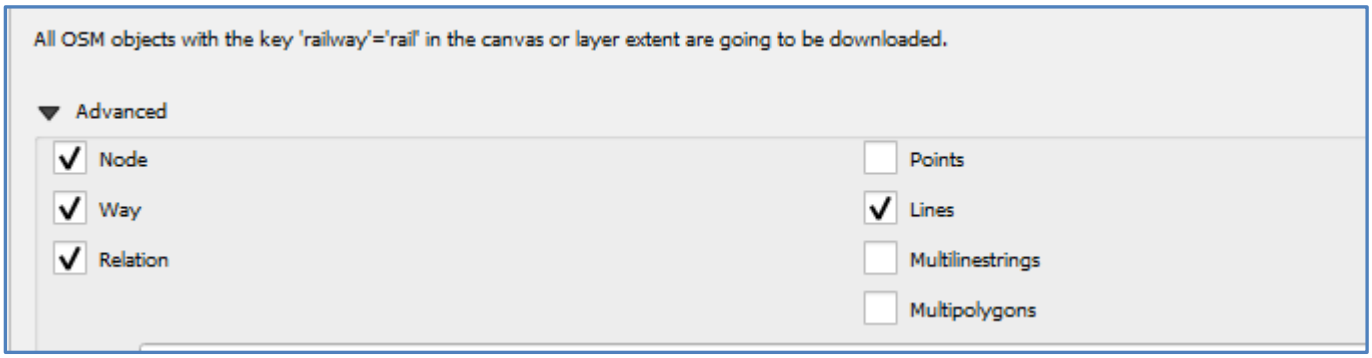
2 – Accessing Line Data

This time we will search for **railway lines**. Using the WIKI, we can see that the **Key is railway** and the **value is rail.**

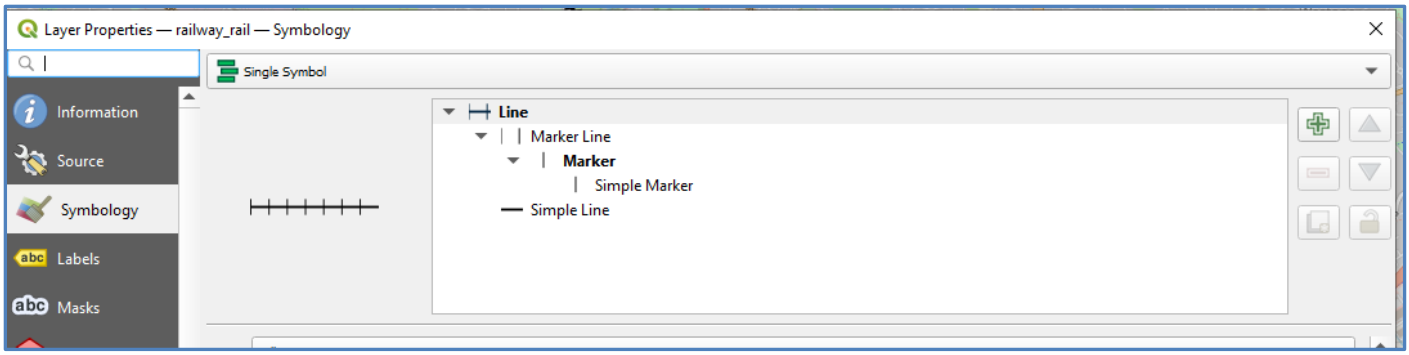
Ensure you choose the Area to be the **Canvas Extent.**



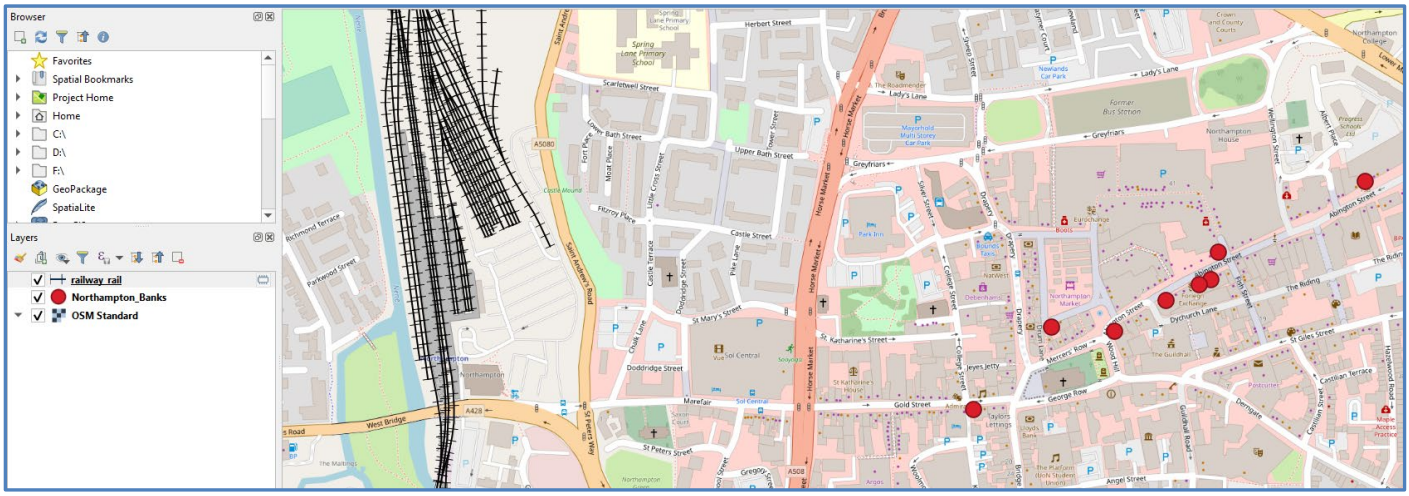
And then in the **Advanced** options we will choose to only download **Lines.**



If we now Run the Query, the **Railway Lines** for the map extent are added to the map. We can choose to edit their **style** to be shown as **railway lines.**



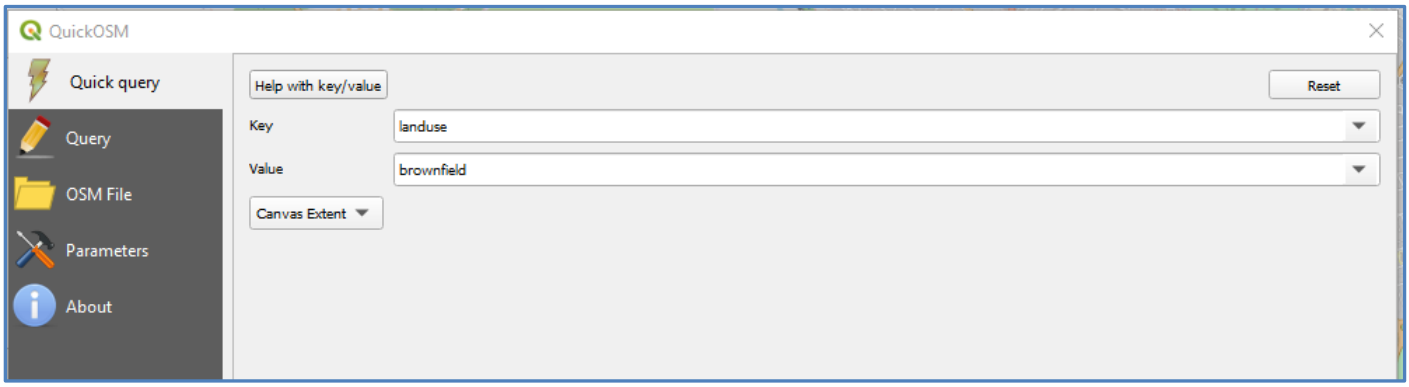
And when applied we can now see the railways lines for our area of interest.



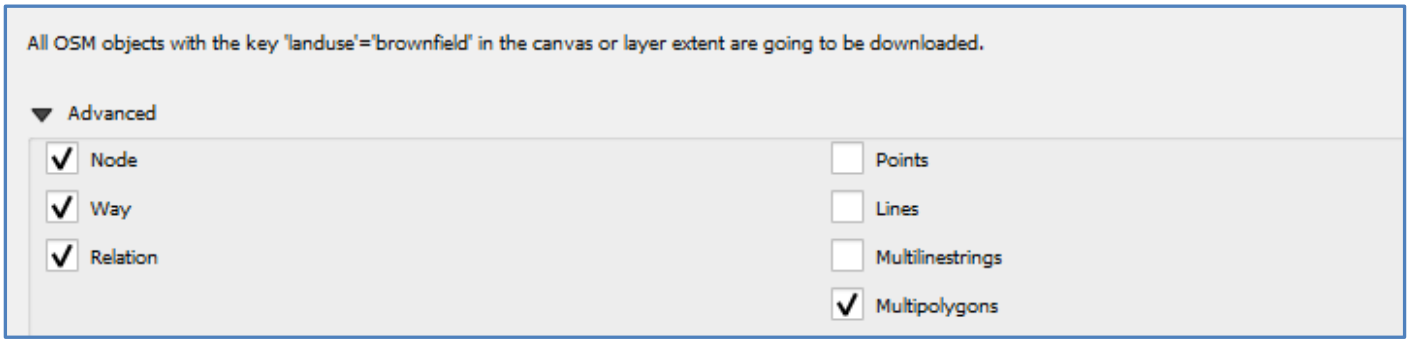
3 – Accessing Polygon Data

Finally, we will search for and add some polygon datasets to the map extents. In this example we will search for **Land use** that is classified as **Brownfield sites.**

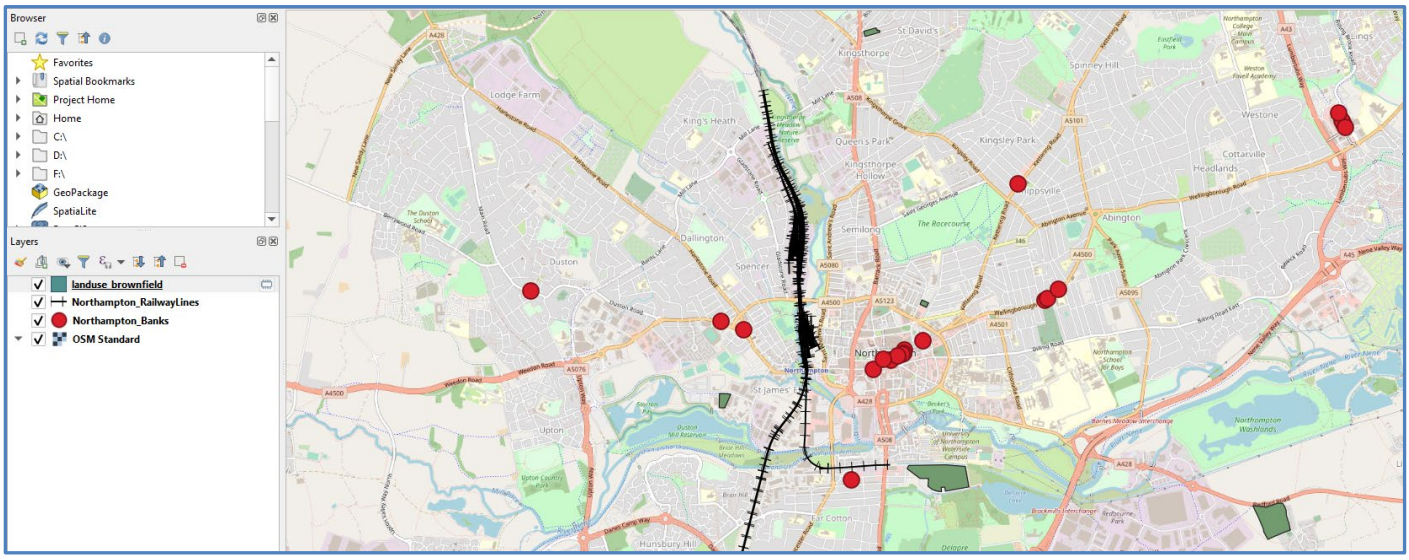
In the QuickOSM plugin, we will specify the **Key to be landuse** and the **Value to be brownfield.** We will also ensure to choose the Area to be the **Canvas Extent.**



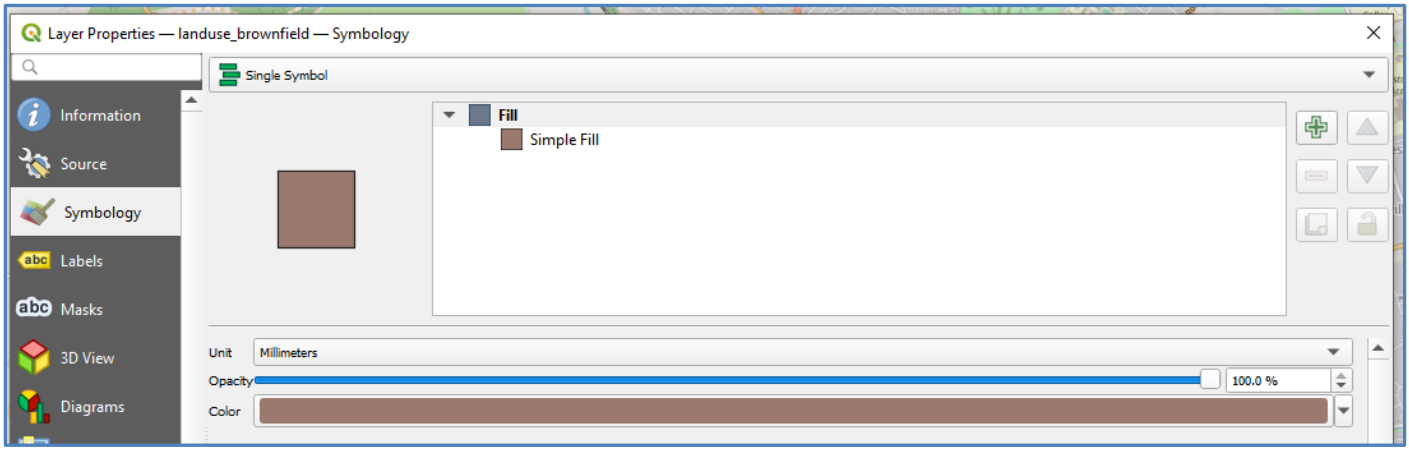
And then in the **Advanced** options we will choose to only download **Polygons**.



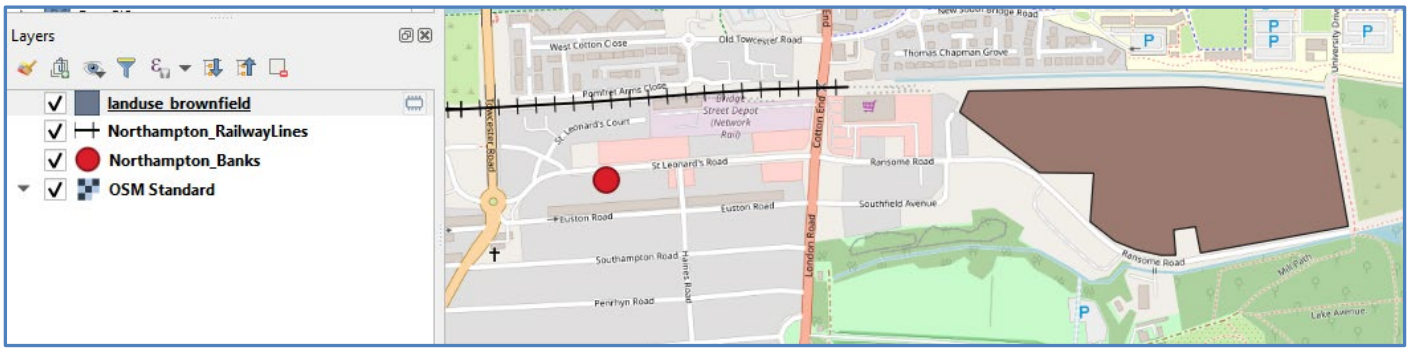
If we now Run the Query, the Landuse – Brownfield sites for the map extent are added to the map.



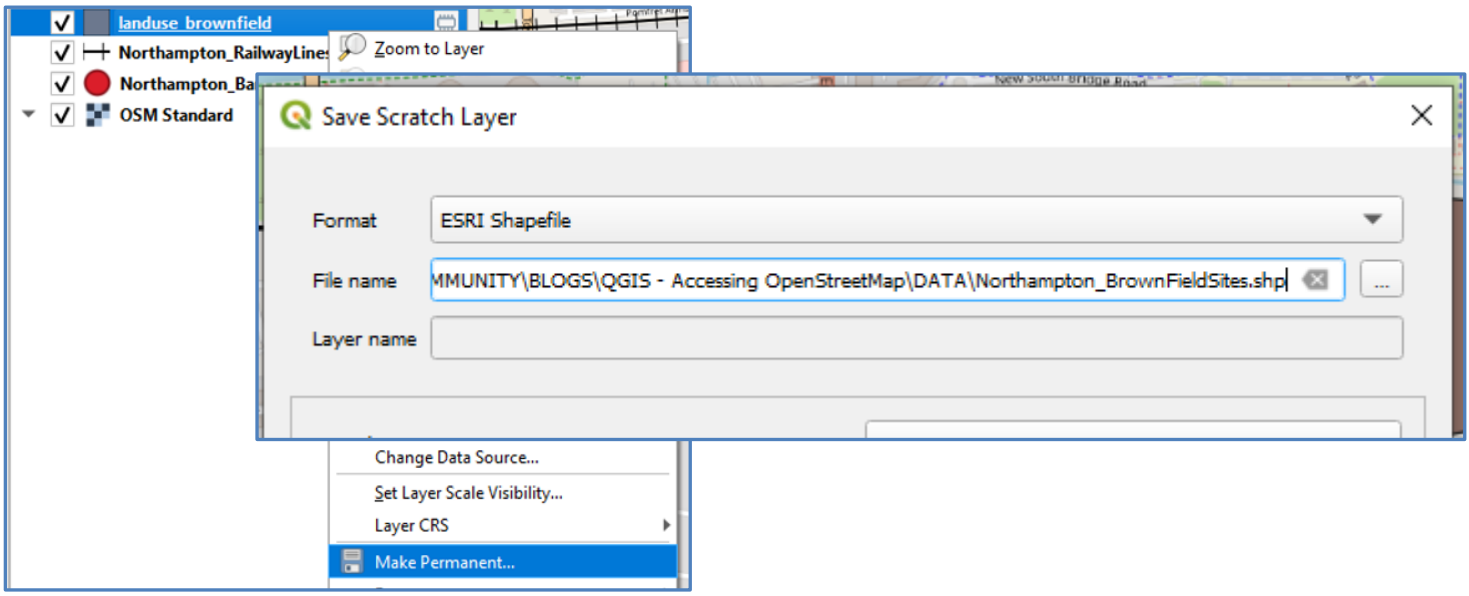
We can choose to edit their **style** to be shown as **brown fill.**



And when applied we can now see the brownfield sites in our map.



Remember to export the **temporary layer** to a permanent GIS file. In addition to right clicking and choosing > **Export** you can also choose > **Make Permanent** as this option allows you to save the scratch layer as a permanent GIS file, while keeping the layer open and using its **current style** settings.



Once saved, we now have **three separate layers** download from **OpenStreetMap** using the **QuickOSM** plugin.