

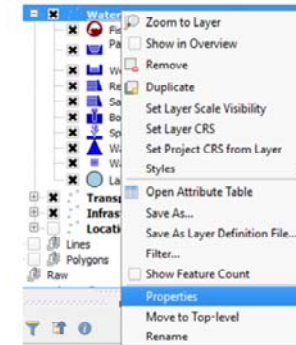
Using QGIS – Topics

- Layer Properties
 - Thematic Mapping
 - Labelling
 - Actions
- Project files
- Project Properties



Accessing Layer Properties

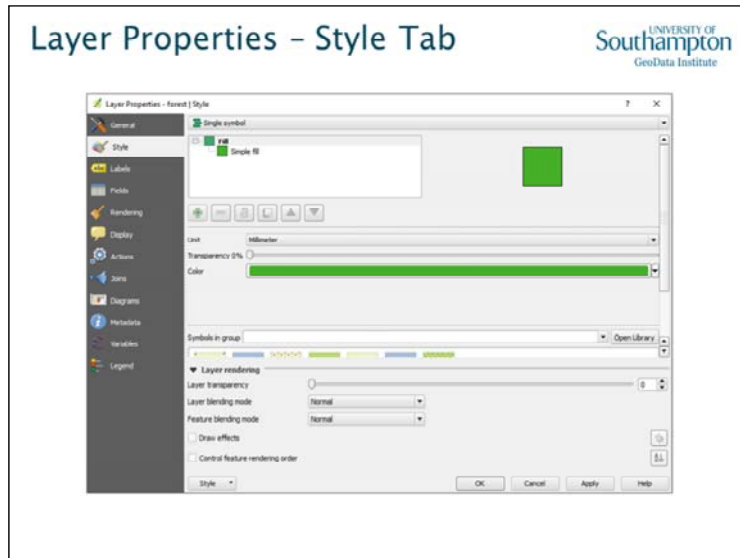
- Layer Properties and Attributes are available via the *right-click* context menu in the Layer List



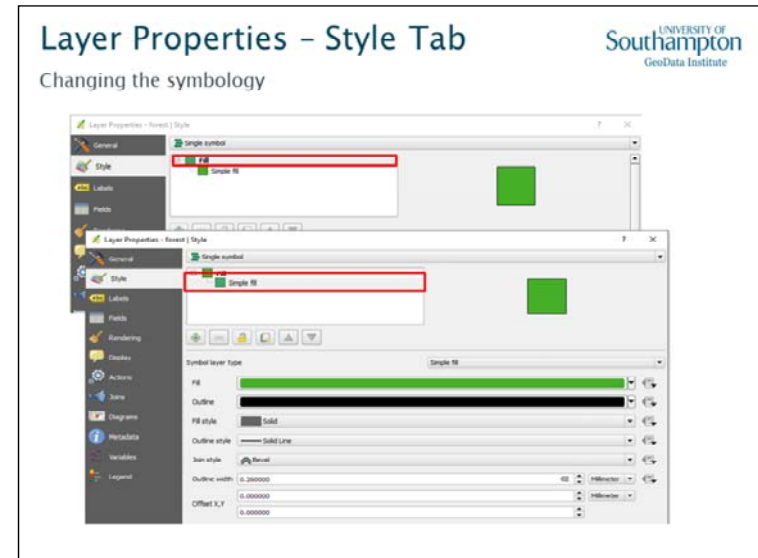
In order to access the Layer properties or attribute table at any time, right-click with mouse when your cursor is hovering over the layer name in the QGIS Layer List.

You can also *double left click* on the layer name to launch just the layer properties menu.





The first Layer Properties tab is the Style Tab. This allows you to alter the symbology of the layer.



In the Style tab, you can click on the Change button to edit the symbology currently assigned to the layer.

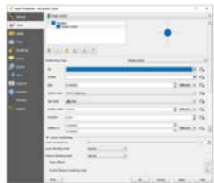
Fill colour, Border colour, fill style and border style are all editable.

Layer Properties – Style Tab


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The symbol selector will look different depending on whether your layer is a point layer, a polyline layer or a polygon layer.

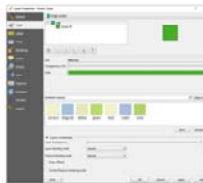
Points

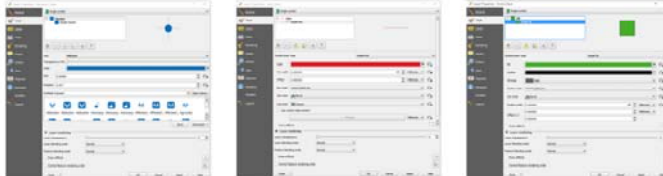


lines



Polygons





You can save a style by clicking the 'Save as Style' button – this will cause it to be listed in the Saved Styles area of the Style Tab. The saved styles are stored at the user level, so will be available for other datasets.

Thematic Mapping

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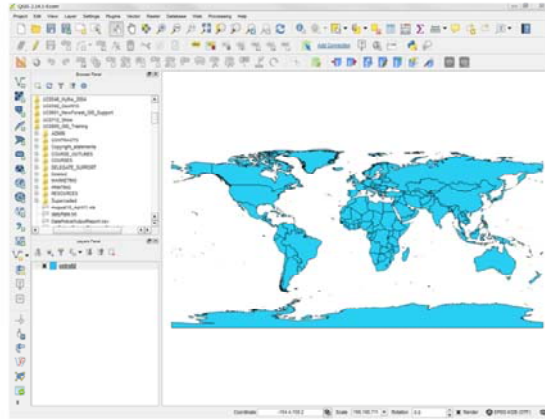
- A thematic map is a way of visually displaying some information about your data
- Use different colours or styles to categorise the data
- QGIS creates thematic maps by assigning these colours, patterns or symbols to data values in your table
- Customisable templates are available to easily create a thematic map
- Access from the [Layer Properties](#)

A thematic map displays the features in a layer based on attribute data stored about the features. This is useful for showing trends and patterns which would be impossible to detect from a list of data. It is also useful for showing on a map where particular features of the same type have different attribute values.

The graphical objects in a table are coloured or shaded depending on the value held in a particular field of the table (the theme of the map).

Thematic Mapping

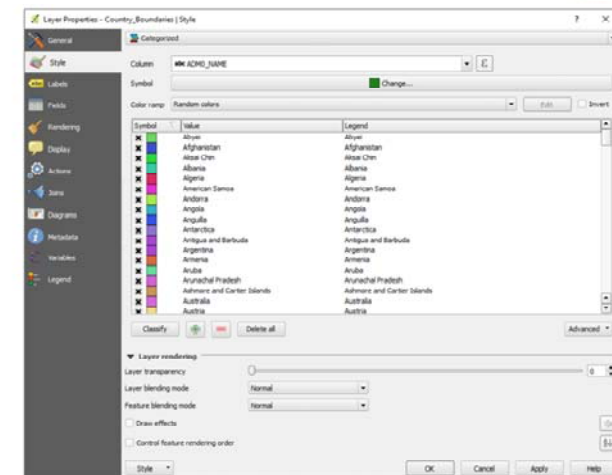
When you add a new layer into QGIS, the software assigns a default symbology to the layer.



This is the default setting - all map objects are drawn with the same colour and style.

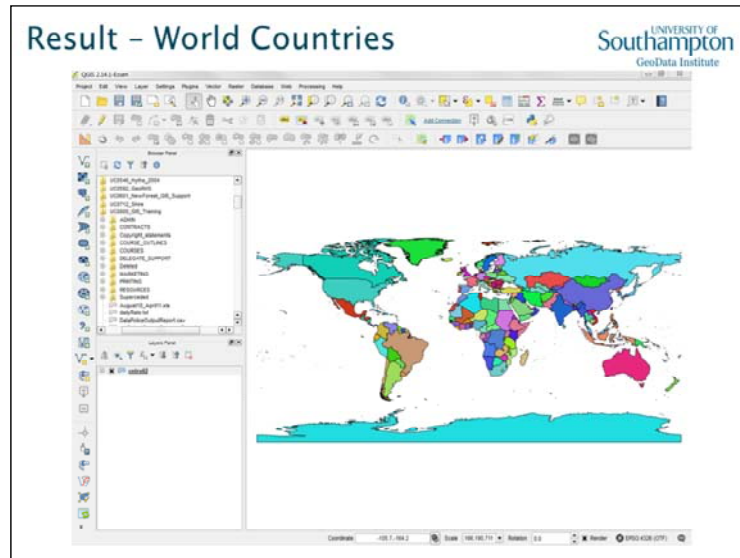
This is useful when you want to show the location of all the data in your theme, but do not need to classify the features by their attributes. It also makes the layer draw quicker.

Symbology Types – Unique Values

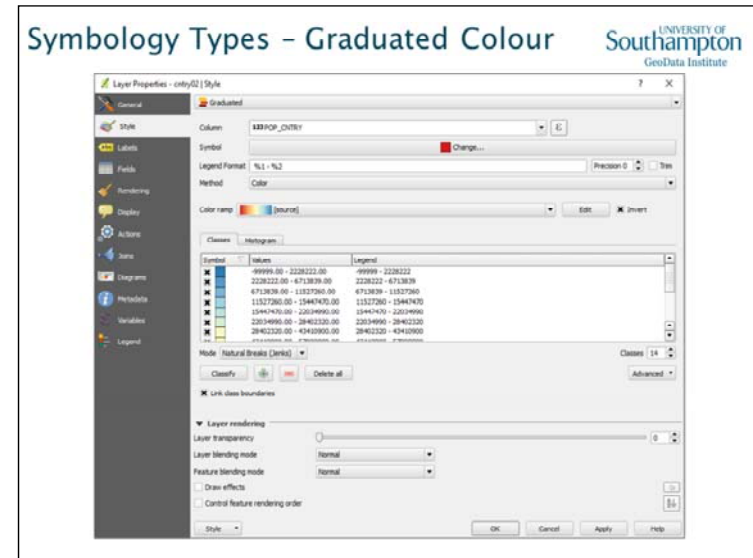


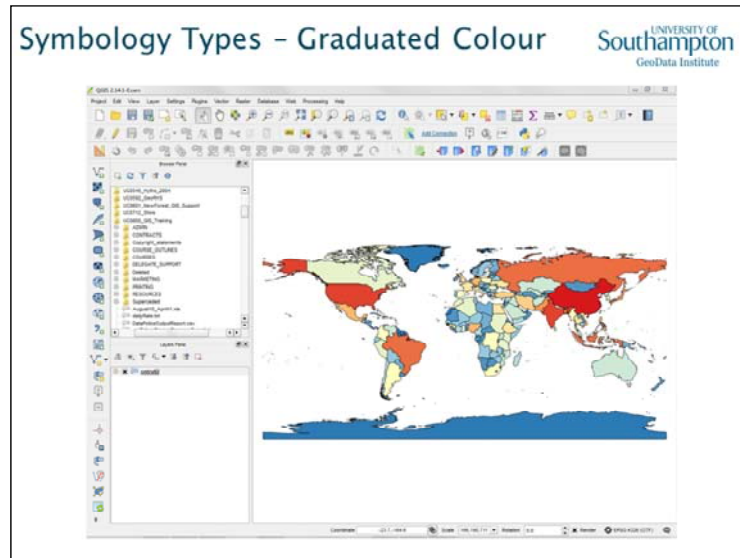
For a given attribute field, each unique value present is given a unique style.

This is useful for displaying categorical (discrete) data such as land use, counties or vegetation types

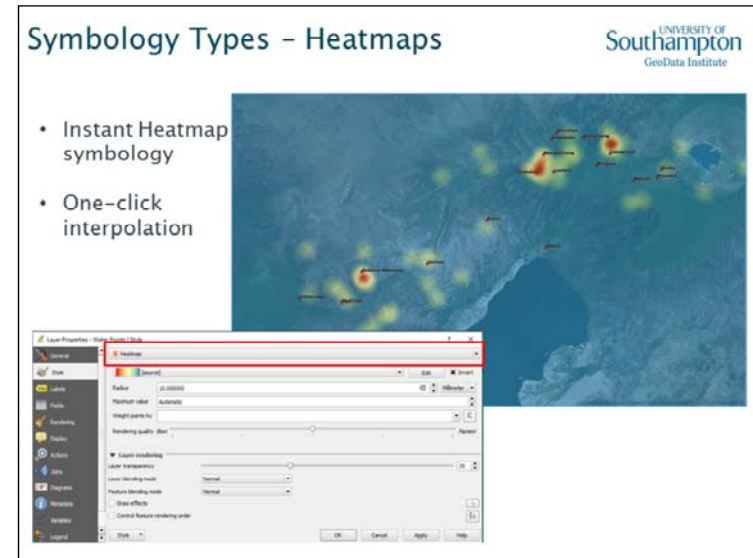


This example shows a polygon layer classified country names. The different colours represent the different countries.

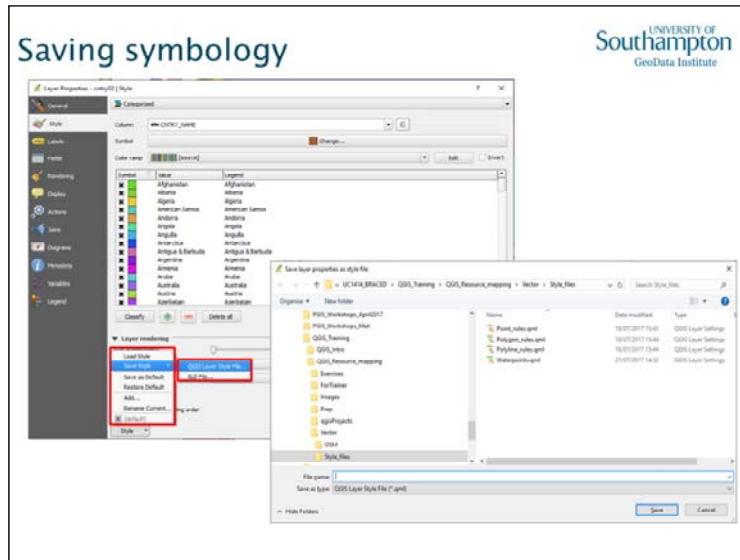




The **Symbology** tab in the Layer Properties dialog allows you to edit the display style for any layer.



Interpolative heatmap symbology for point data can be generated on the fly using the Symbology tab – an excellent way of rapidly presenting variable data attributes within datasets – In the example above, the points represent population centre locations and the symbology represents the density of mapped water source points. More complex Heatmapping/interpolation operations can be performed using tools found in the Processing toolbox.

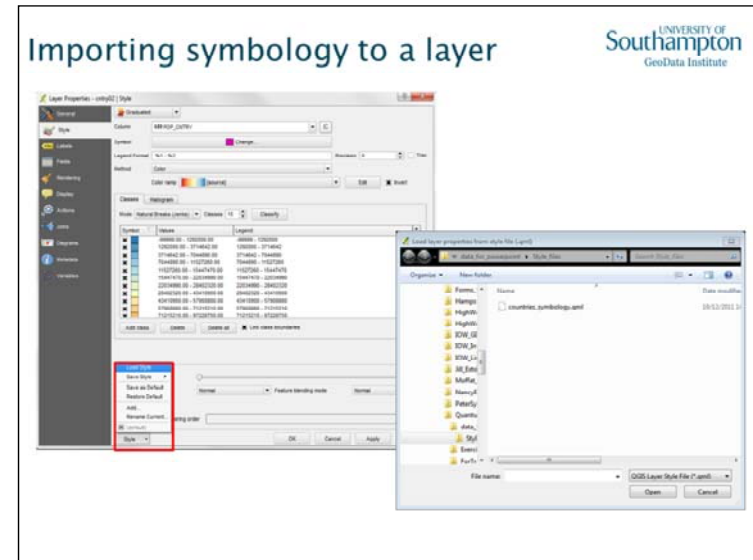


The symbology for a layer can be saved as a QGIS Layer Style File (.qml). The advantage is that next time you or someone else loads up the dataset (or a dataset with the same fields), rather than symbolise the dataset manually, you can just import the saved QGIS Layer Style File.

The option to 'Save As Default' also saves a qml file, but with the same name and location as the dataset. If this is present when a dataset is opened then it will be automatically loaded and applied.

Layer Definition Files

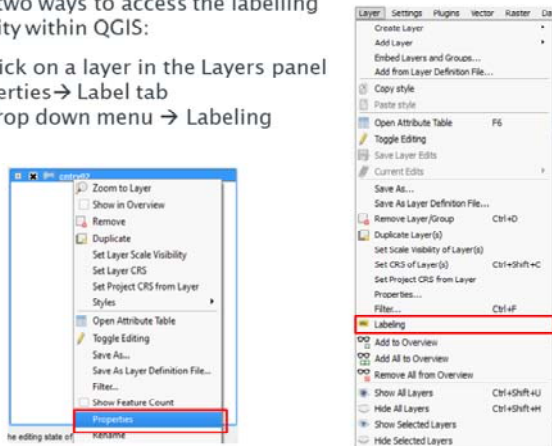
On the same theme, 'Layer Definition Files' (.qlr) will save the symbology and other customisations of a dataset to a .qlr file which can then be loaded directly into a map window. To save a .qlr file, right-click on the dataset in your *Layers* panel > *Save as Layer Definition File...* To load a .qlr into a QGIS project, go to *Layer* drop-down menu > *Add from Layer Definition File*



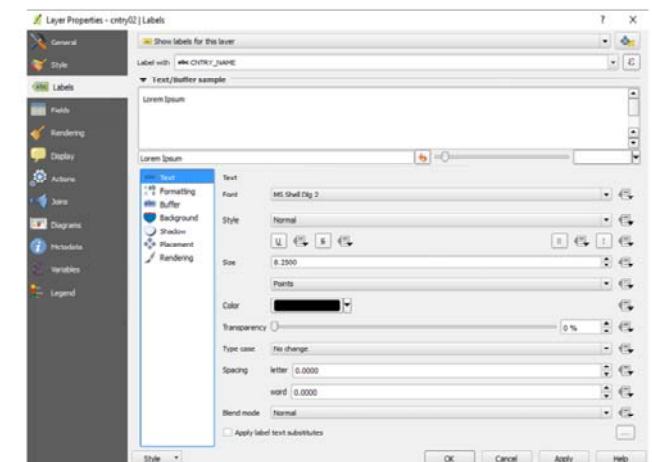
Labelling

There are two ways to access the labelling functionality within QGIS:

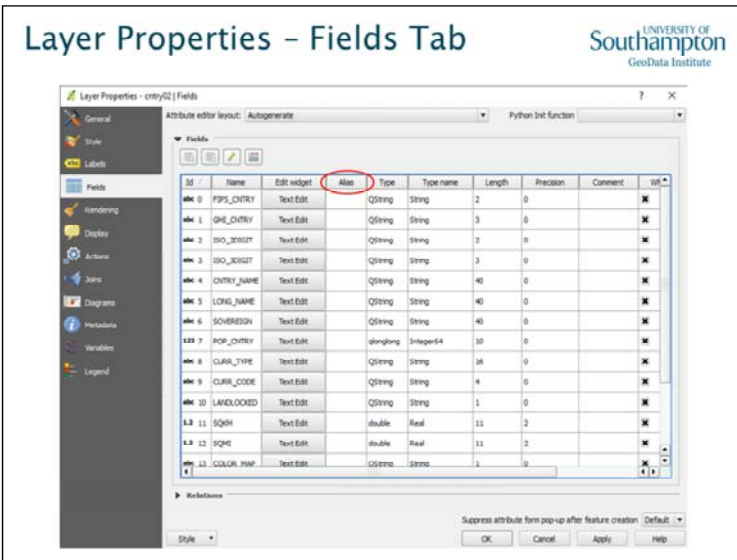
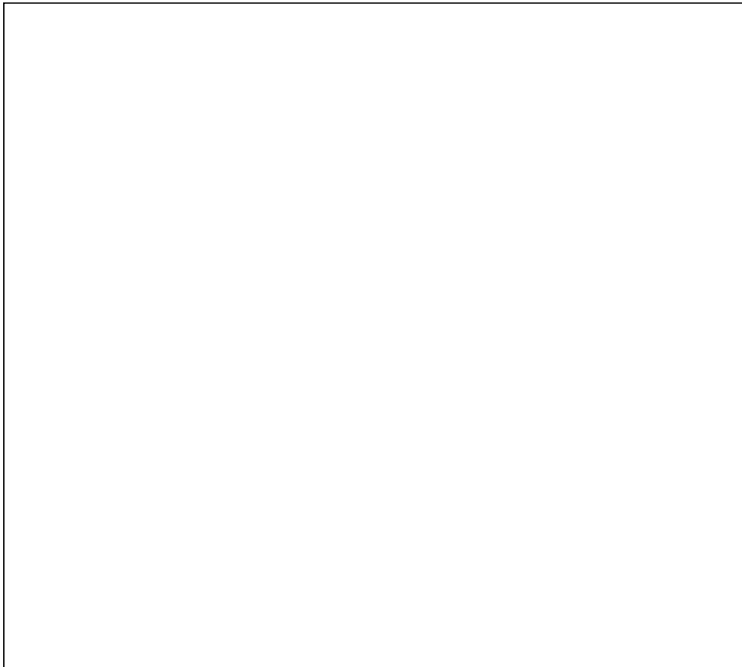
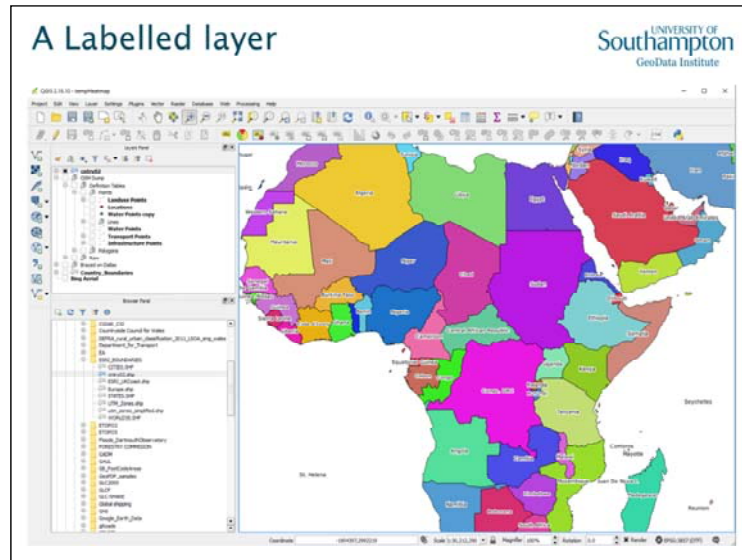
- 1) Right click on a layer in the Layers panel → Properties → Label tab
- 2) Layer drop down menu → Labeling



Labelling



The Label settings tab allows you to select the font style and size of the labels, apply a buffer to the labels and select a scale range for the labels.



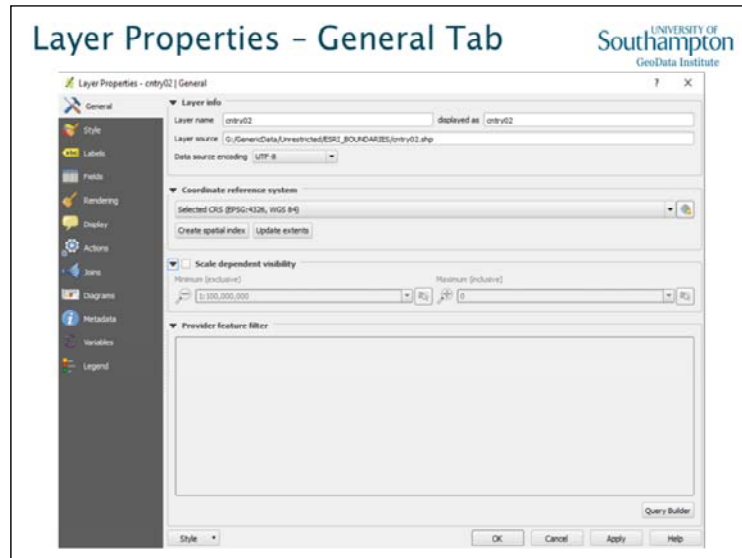
The Fields Tab allows you to view the properties for each field, such as Field Type, Field Length and Field Precision.

You can also add an Alias to a field from the dialogue by typing into the Alias cell for the desired field. The Alias will replace the column header name for that field in the attribute table.

The Line edit function allows you to modify the data entry option for the fields when you are capturing data. This ranges from a simple text input fields, to unique value fields and drop down values.

From the Fields Tab you are also able to add and remove fields, field calculate the values in fields, and save and load styles (the same as in the style menu).

We will look at the field calculator in more detail later on in the course.



Layer Properties - General Tab

Coordinate reference system

Selected CRS (EPSG:4326, WGS 84)

Create spatial index Update extents

- Change the display name.
- Change the field which is visible when Map Tips are used.
- Change or assign a projection to the dataset.
- The Create Spatial Index option will considerably speed up drawing the data, especially for large datasets.

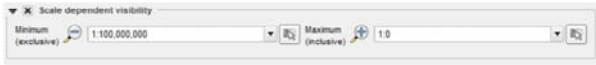
Spatial Indexes can make a massive difference to the display performance of datasets. Shapefiles in particular will benefit from this action.



Layer Properties – General Tab

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Setting a scale threshold



Define the minimum and maximum scale for each dataset

You may want a layer to only display at certain scales. For example if you had a detailed layer of roads and streets for a large area, you would not want to view the features when looking at a view at a scale of 1:500000; the roads would be so dense on the screen that it would not be possible to distinguish between individual features and would take a long time to display. However, when zooming into a small area, you would want the roads to be displayed.

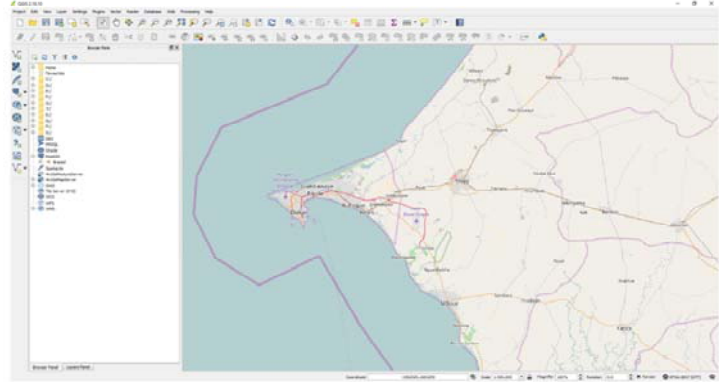
Setting minimum and maximum values allows you to decide the appropriate display scales and have QGIS automatically show or hide the layer at these scale.

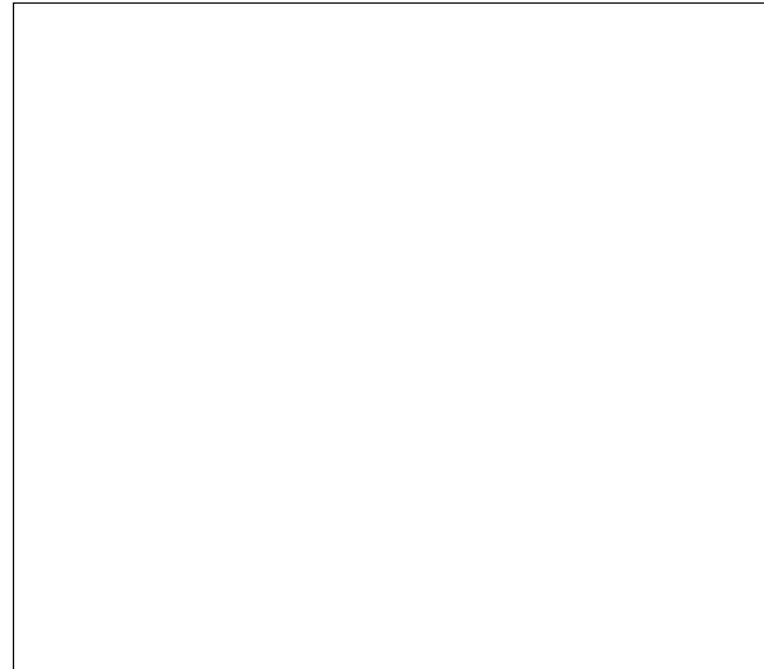
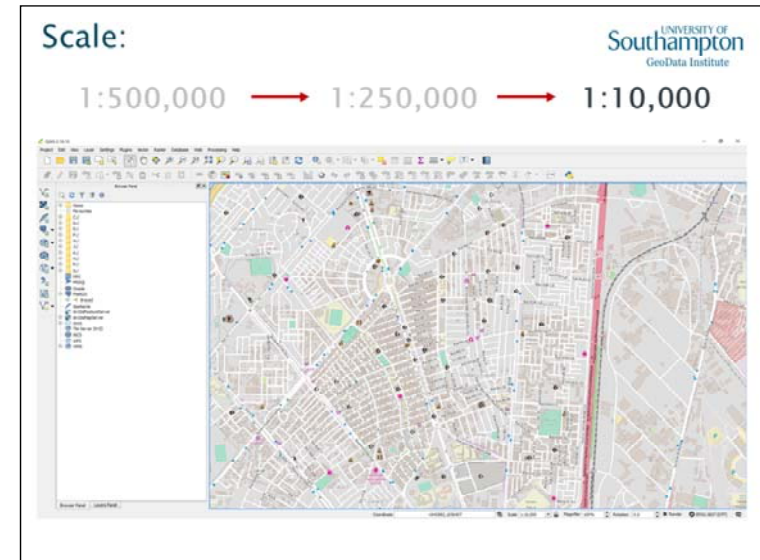
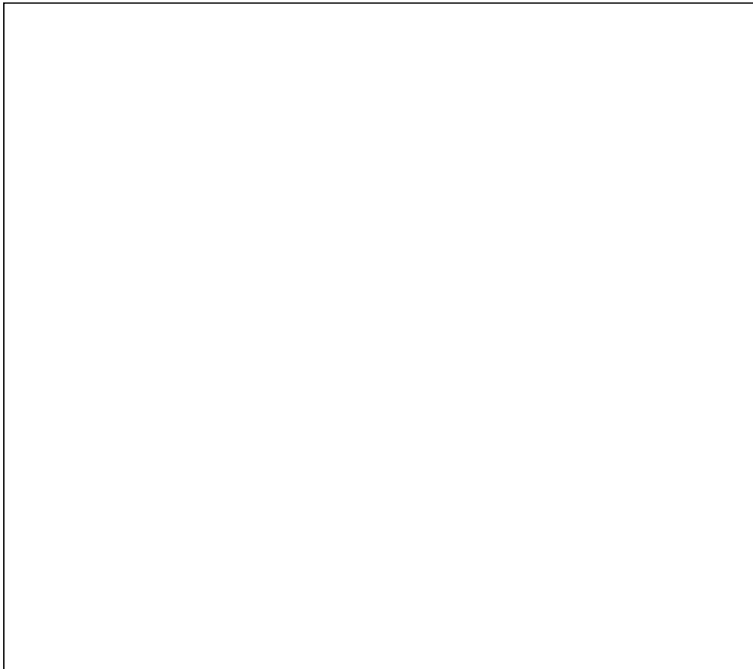
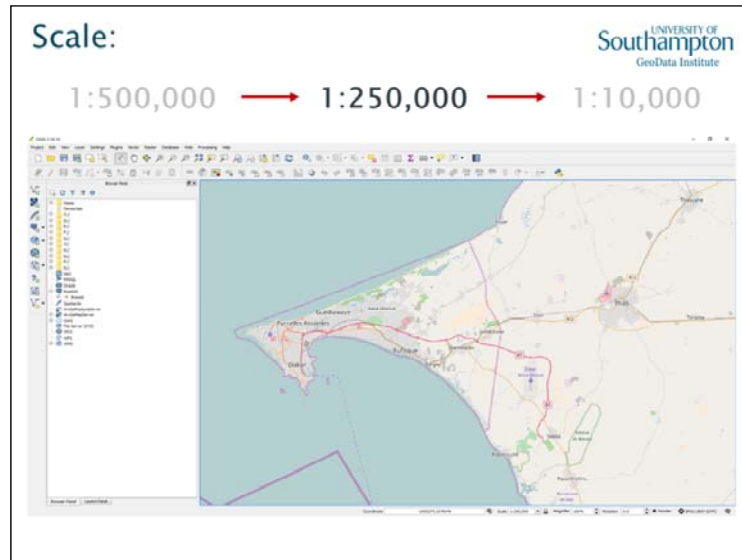
As you zoom in and out on the display, QGIS checks the scale threshold for each layer and decides which layers to draw. The display check box is checked, but it is greyed out when the layer is invisible. The layer will only become visible when the scale threshold values are passed.

Scale:

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1:500,000 → 1:250,000 → 1:10,000



Map Tips

- Like Windows 'Tool Tips'
- When you select the tool and hover over a feature on the map one of the feature attributes will pop up.
- You can customise which attribute you want to display when you use the Map Tips tool through the Layer Properties window under the General Tab.

If you don't want to permanently label all the features in the map to avoid it being too cluttered, you can use Map Tips to display features labels as you hover over them with your mouse cursor.

A temporary label appears on the map, which then disappears when you continue to move over the map with the mouse. This is the same principle that Windows uses to display 'Tool tips' about what various buttons and menus do.

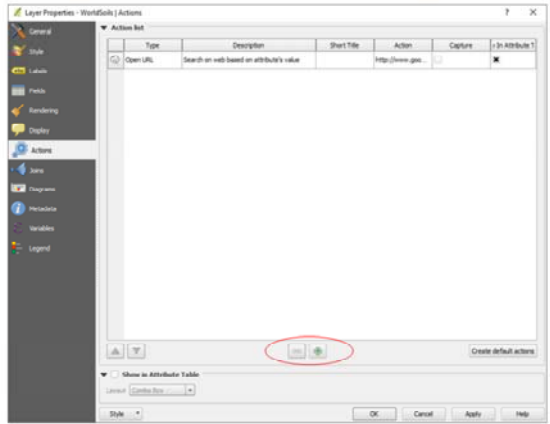
Simply choose which field in the table you want to use to display the Map Tip by Opening the Layer properties window for the Layer, going to the General tab and selecting the field you want to display using the "Display field" dropdown.

Layer Properties - Metadata tab

The Metadata tab shows the file path to the dataset and the dataset projection. It also shows the geometry type of the dataset (Point, Polyline or polygon) and the number of features in the dataset.

Layer Properties - Actions

Allows map features to be linked to documents (images, *.doc, *.pdf, etc...), web locations and searches (URLs) and macros.




Type	Description	Short Title	Action	Capture	In Attribute 1
Open URL	Search on web based on attribute's value		http://www.gov...		

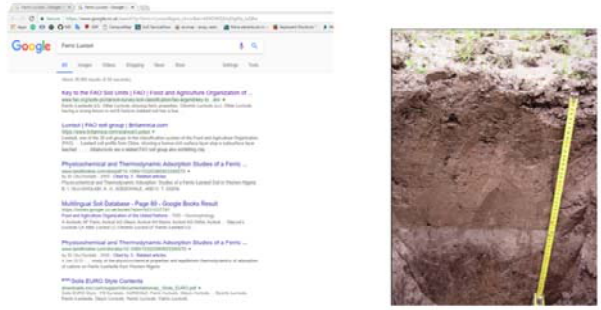
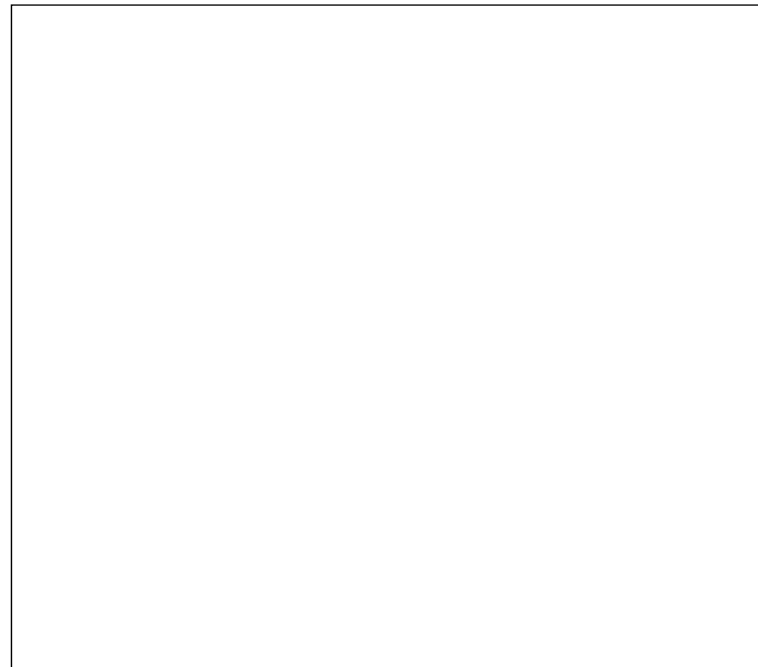
In addition to the standard Identify command which returns attributes when you click on a feature within the map, QGIS also supports Actions which provide a link to documents (such as Word, PDF and image, movie files), web locations and macros.

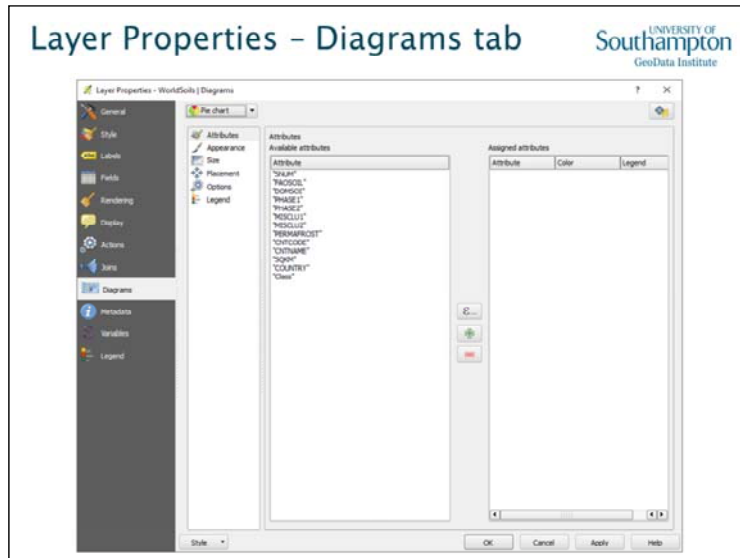
This can be a very effective way of presenting site information. For example, if you are browsing the map of survey locations and want to know more about the feature, you could use an action to display a photo, the survey data etc.

Activating Actions

- Use the  Run Feature Action tool button

Simply click on the Run Feature Action tool button and then click onto the feature to run the Action



The Diagrams tab allows you to add graphic overlays over your vector layers, such as pie charts and bar charts.

This tab has a twin called Overlays which is actually a plugin that comes with the standard install of QGIS

Saving a Map Project

- Select *Save Project* or *Save Project As...* from the File menu.
- This saves the current session in the map project.
- This DOES NOT save any unsaved edits you have made to any layers.
- The project file DOES NOT contain the data that was open in QGIS when the project was saved.

Saving a map project saves all of your project windows. The map project file (.qgs) is updated to contain the current positions of all windows, feature selections and theme display.

When the document is re-opened, everything will be exactly as you left it.

NOTES:

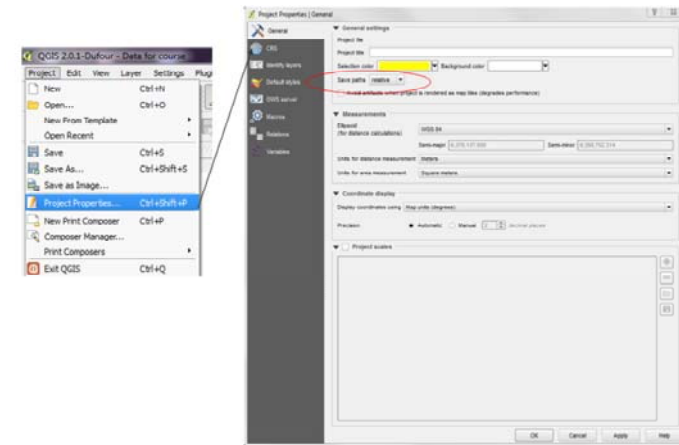
The map document file contains information about where (in your computer) the layer datasets are stored. If you move the layer data file you may find that your Map Document does not open correctly.

Project Document Repair

- If you have moved or deleted data required for the map project, a window will appear when you open the project, listing the datasets that can't be found.
- You can select the dataset in this window and click on *Browse* to point QGIS to the new location where this dataset has been moved.
- Remember to then save your map project!



Setting Project Properties – Relative paths



Project document repair is required if a project that references datasets that have been moved or deleted is opened.

To make your project point to the new location of a dataset click on the layer in list and click the *Browse* button, then find the dataset

Once you have done this, re-save the project file to store the new locations of the data files.

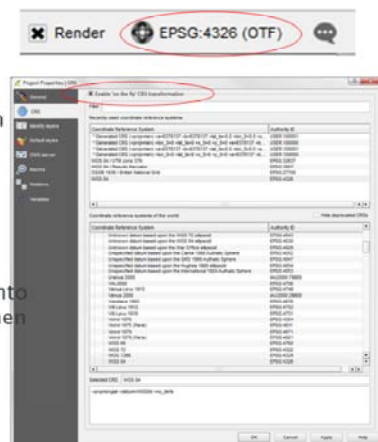
Project document repair is a useful tool, but can be very tedious if you have to find and update many files

Setting QGIS Project Properties

Settings can be edited for the QGIS project such as background project colour, project projection and whether to store file paths as relative or absolute.

Setting the Project Properties – Coordinate Reference System (CRS)

- The project CRS is what is used in the Map window
- The current CRS is shown in the status bar and can be changed in the Project Properties
- 'on the fly' transformation makes Quantum reproject datasets in different CRSs into the selected project CRS when displaying them



The default project (and dataset) CRS can be specified in the CRS tab of *Settings > Options...*

It is recommended to have 'on the fly' reprojection enabled by default.

Common CRS codes are:

WGS84 Lat/Lon – EPSG:4326

This is the CRS used by GPS receivers.

Popular Visualisation CRS / Mercator – EPSG:3857 / EPSG:3785

This is the CRS used by Google Maps and many other web mapping sites.