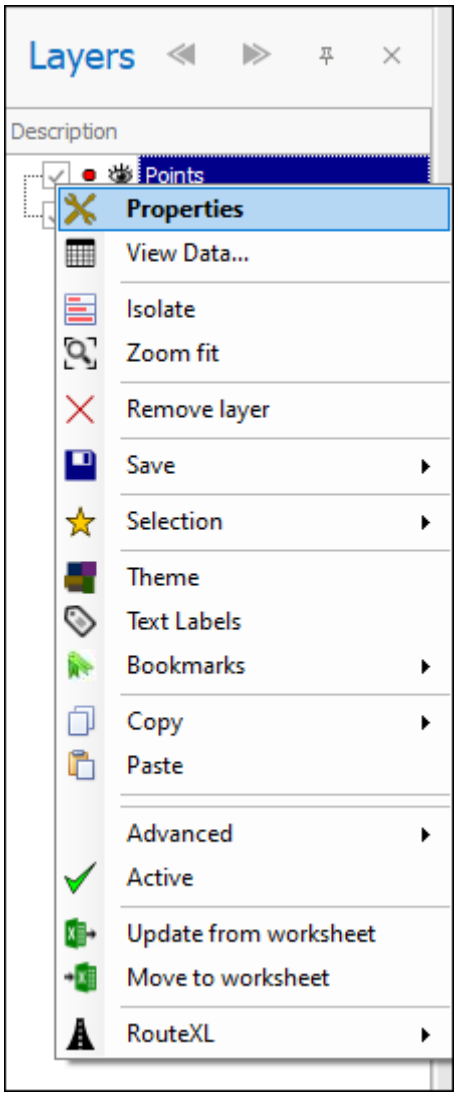
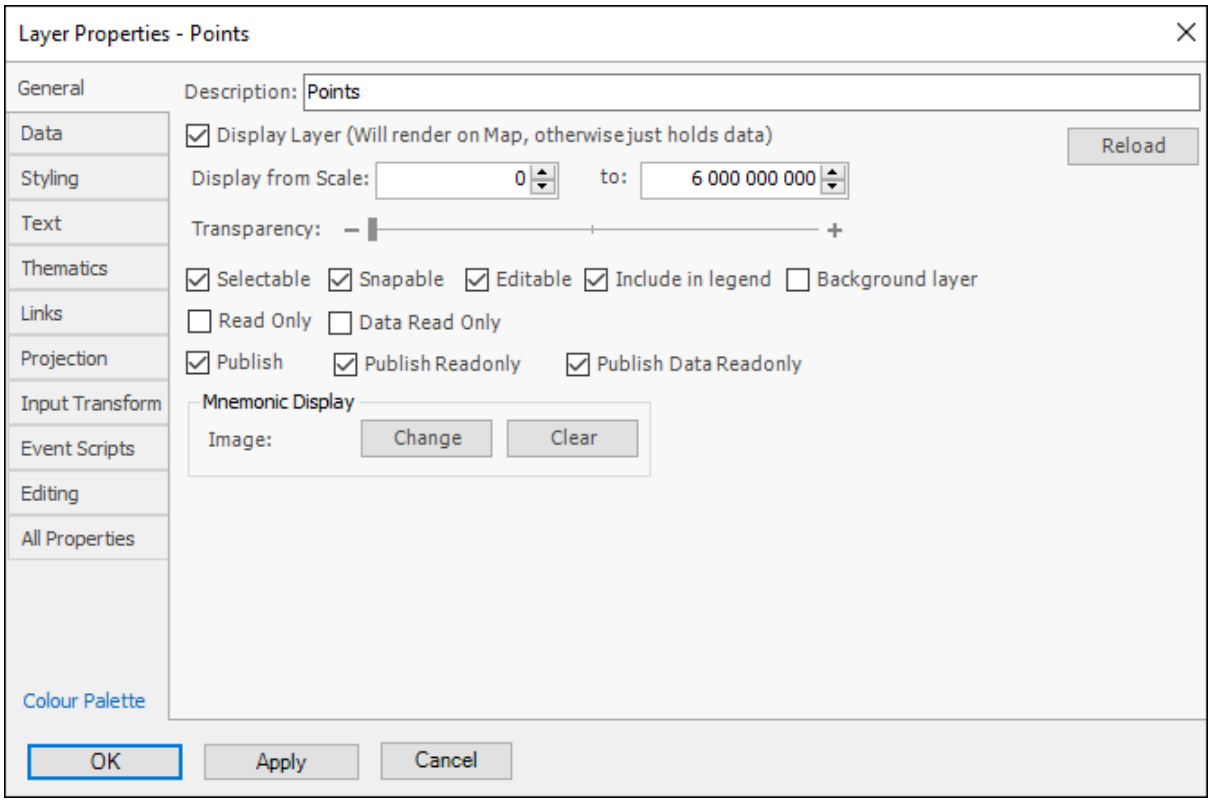
Layer Properties User Guide

Contents

Intro

The **Layer Properties** dialogue is accessed by right clicking on the desired layer in the layer control. It is where you can edit and set various things regarding that specific layer:


Layers
Description
Points
Properties
View Data...
Isolate
Zoom fit
Remove layer
Save
Selection
Theme
Text Labels
Bookmarks
Copy
Paste
Advanced
Active
Update from worksheet
Move to worksheet
RouteXL

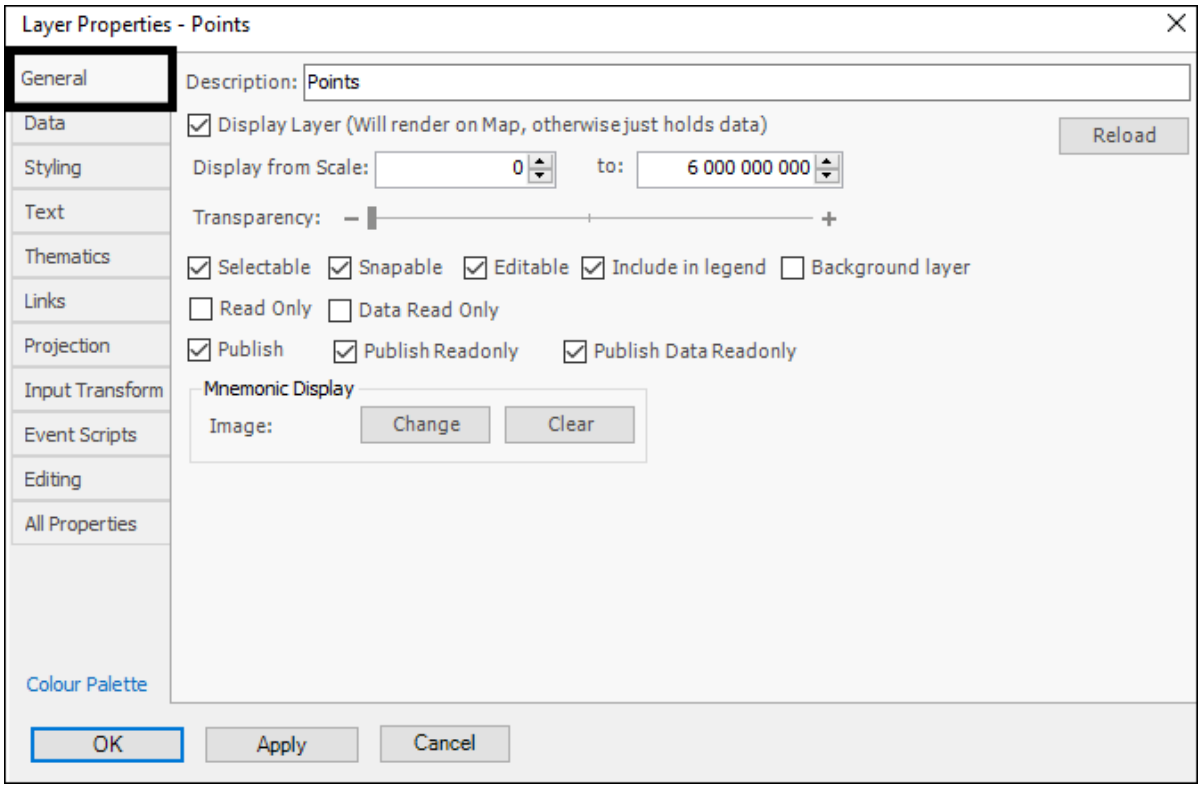


Bottom Buttons

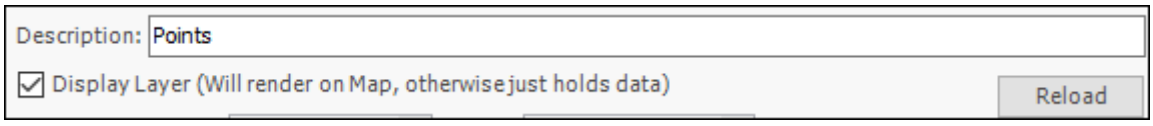
In changing anything in the Layer Properties, clicking **OK** will save the changes and close the dialogue. The **Apply** button however allows you to apply the changes to the layer without closing the dialogue, so you can first see how it looks and then change if necessary or save it. **Cancel** of course will cancel what you were doing and close the dialogue:

We will take up all the different tabs of this dialogue:

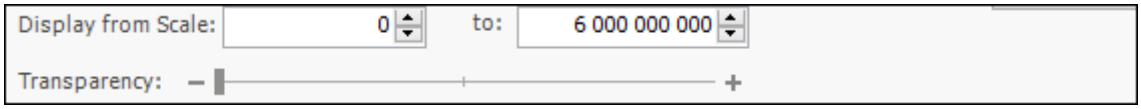
General



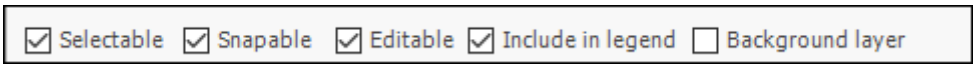
In the **General** tab we can set some general things regarding our layer. First is **Description** which is the name of the layer. Underneath that we can choose to have **Display layer** ticked on or off; as it says, if ticked on it will display on the map otherwise it will just hold data; normally if your layer didn't have any geometries or coordinates then you would have this ticked off. **Reload** will reload the layer for you if this was needed to refresh anything:



Display from Scale is where you can choose from what scale to what scale is the data displayed on the map; when you are out of this scale range on your map, the data will not be displayed. **Transparency** is how transparent the elements in the layer are when they are displayed:

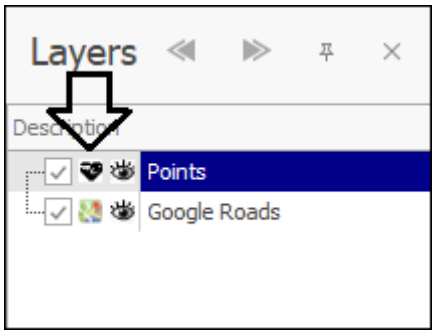


Selectable is whether the elements in the layer can be selected in the scene or not. **Snappable** is whether you can snap to the elements in the scene or not using one of the snap tools. **Editable** is whether graphics in this layer can be edited or not, if this ticked off then you won't be able to add, delete or change anything in the layer. **Include in Legend** is whether to show this layer in the scene legend (if you have the legend turned on). **Background Layer** is whether you want this set as a background layer or not:

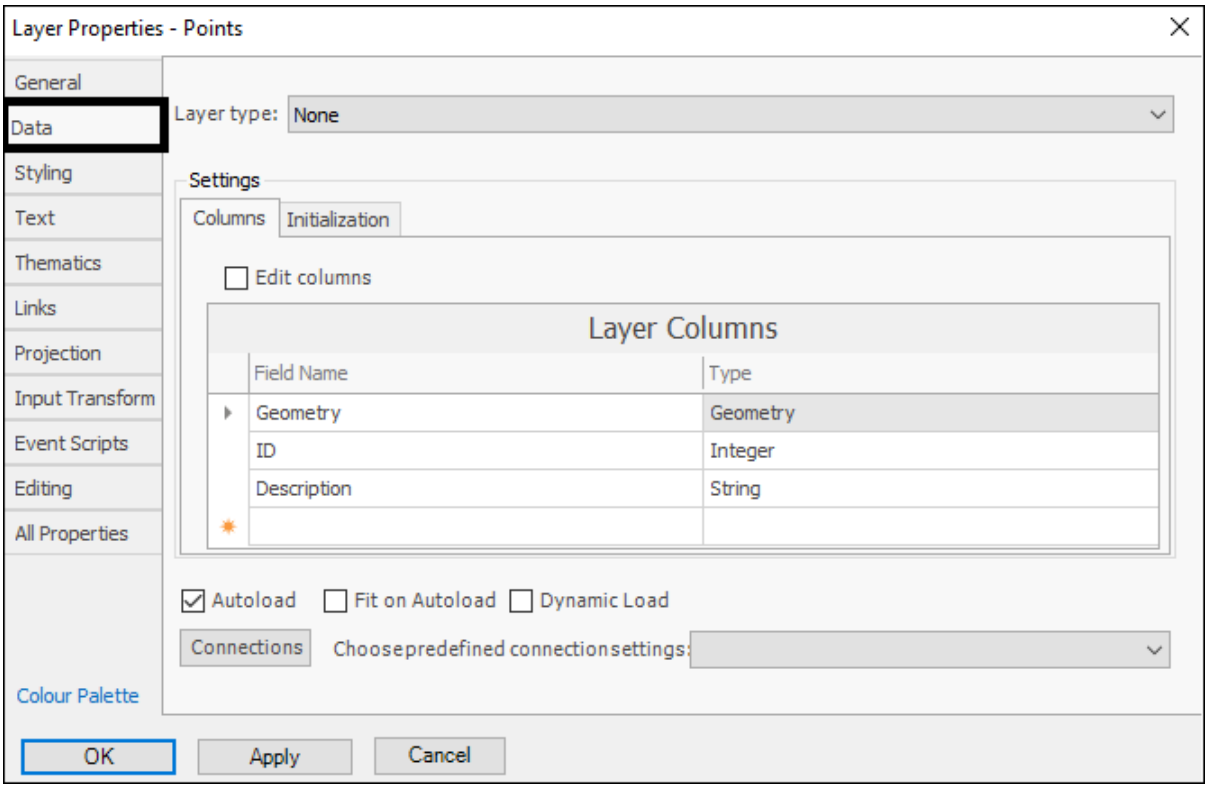


Read Only will make the layer settings read only. **Data Read Only** will make just the data of the layer read only. **Publish** is whether to publish this layer or not when publishing to a Geoscope file. **Publish Readonly** will publish the layer settings read only and **Publish Data Readonly** will publish the data as read only:

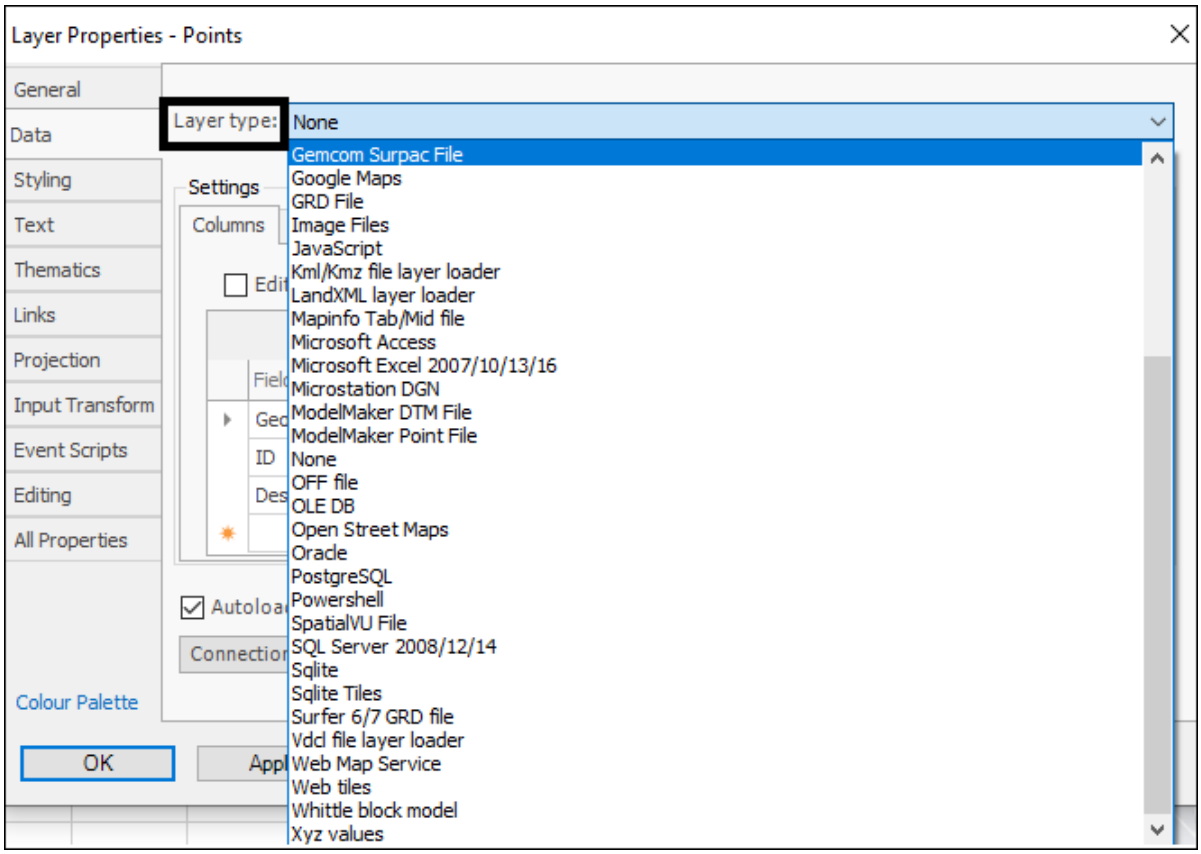
Mnemonic Display allows you to choose a certain image to be displayed next to the layer in the layer control, to do this you click **Change,** to remove the image click **Clear**:



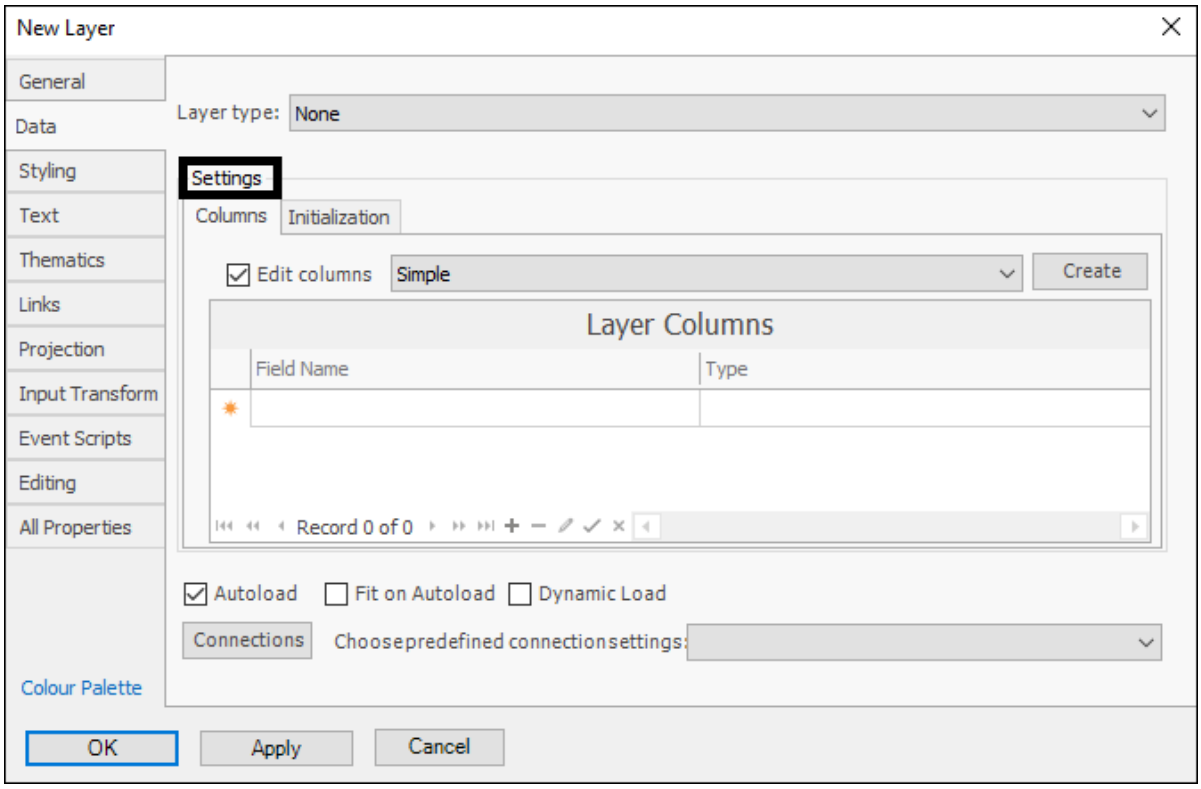
Data



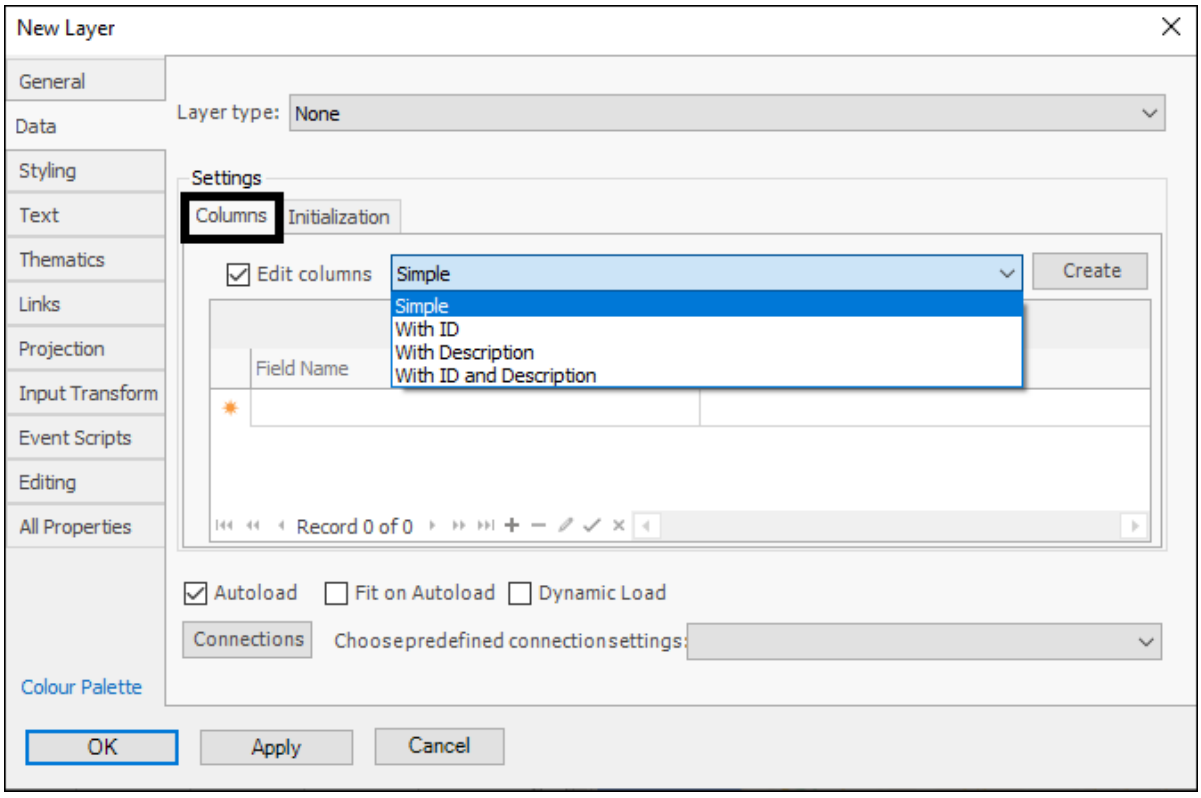
In the **Data** tab you can set various things regarding the data in the layer. You can choose what kind of layer it is by **Layer type**; we support various kinds of layers:

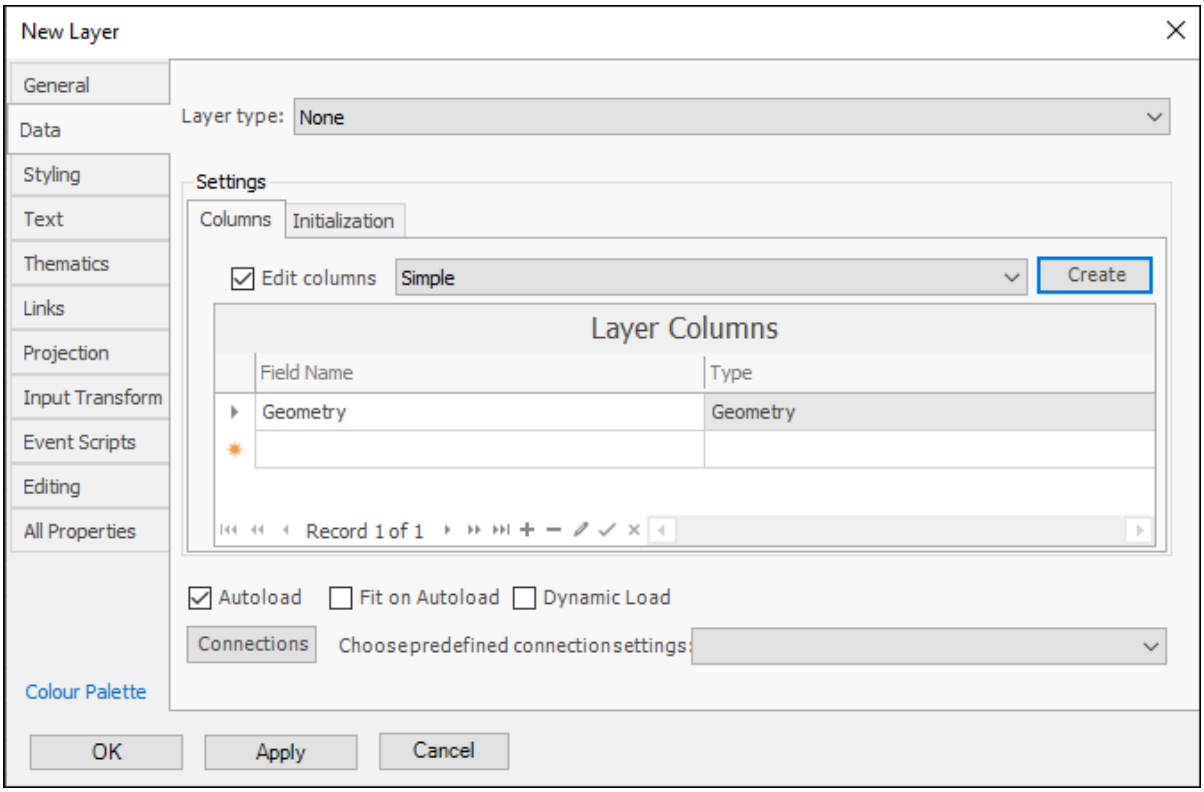


Under **Settings**, different dialogues will exist depending on the layer type, if your layer type is **None**, which is the case if you are adding a new layer, you will have the following dialogue:

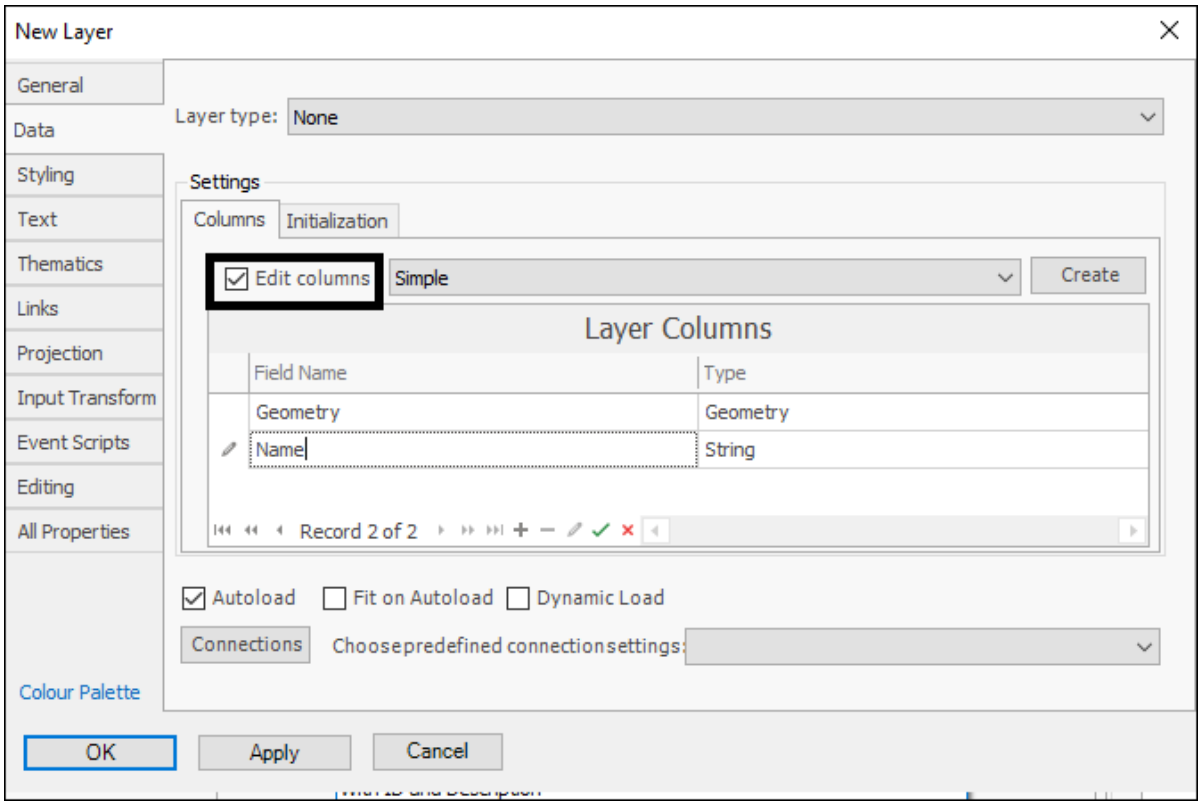


In the **Columns** tab, you can edit and create columns for the layer that will form the layer data grid. To create a predefined data grid, choose one from the dropdown and then click the **Create** button; **Simple** will make just a simple geometry column for the grid and geometries will then be able to be drawn to the layer; **With ID** etc. adds an ID column etc. as well:



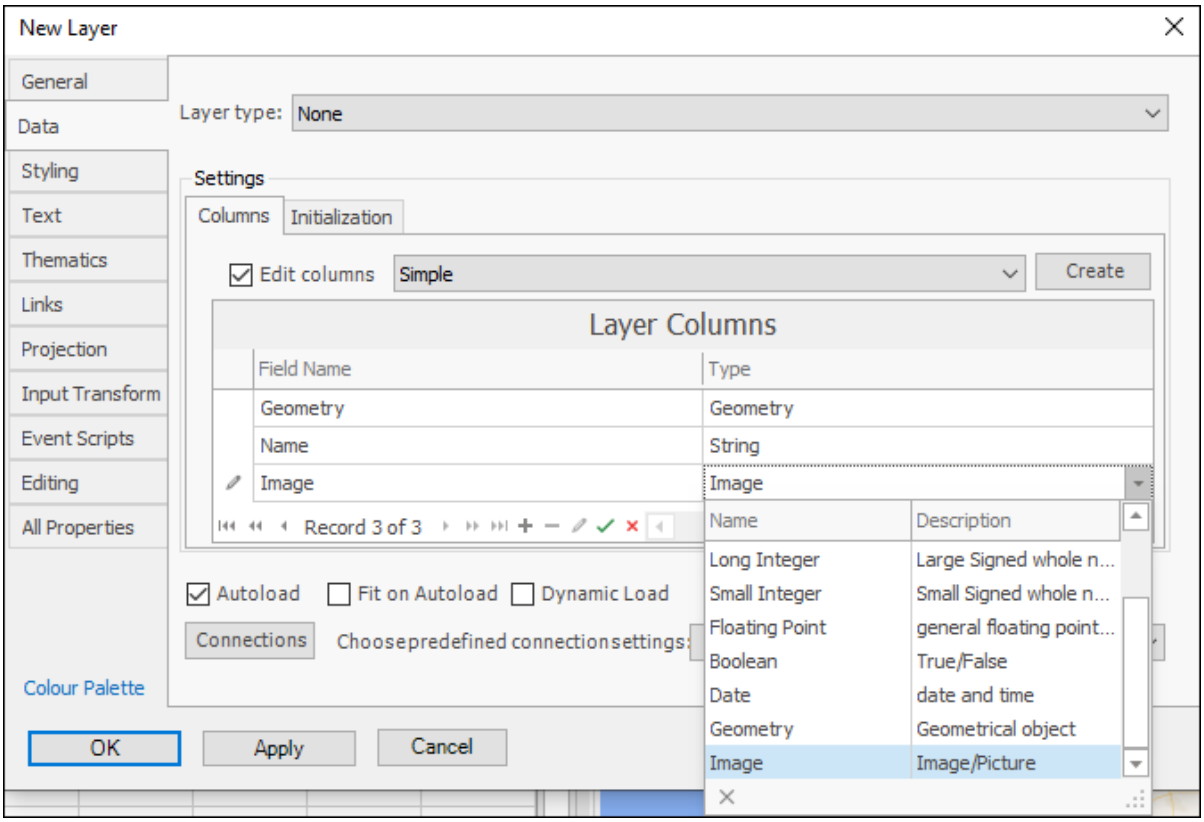


To edit and add columns, simply click in the grid (and make sure **Edit Columns** is ticked on):

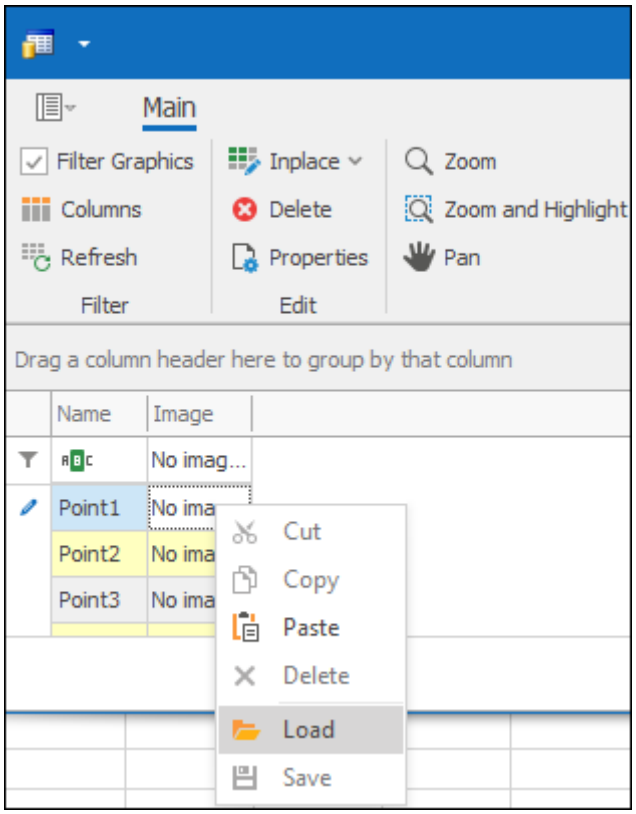


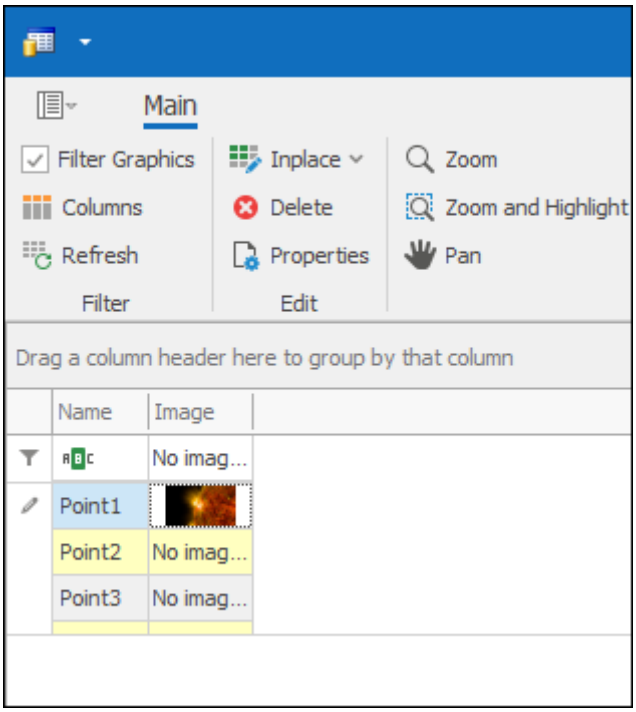
(Note: To edit or add new columns to an existing layer you would usually do this via the layer data grid for the layer and not here, this is normally for when creating a new layer to set up its layer data grid.)

You can also edit the column type, you can even choose to make a column **Image** type which will store images for each record:

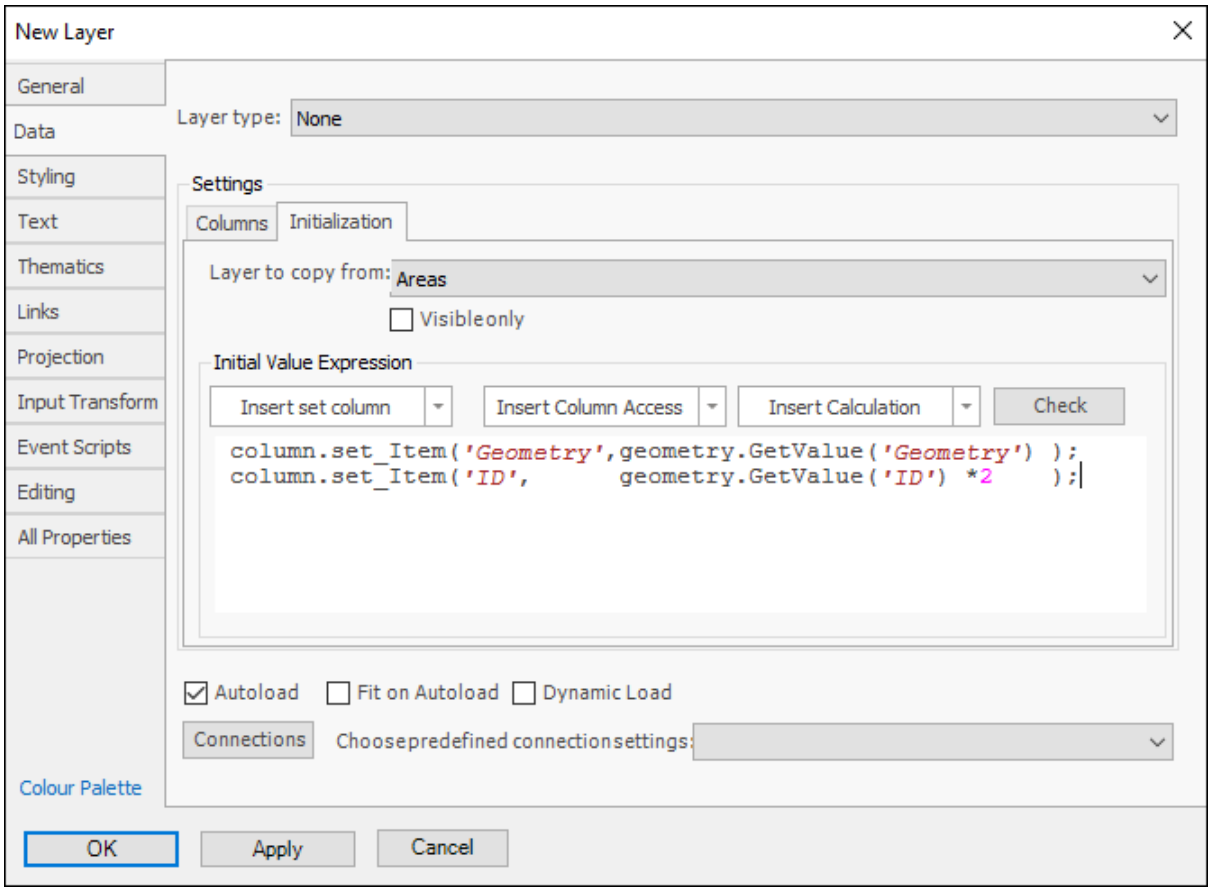


In the layer data grid of this layer, you would then just click on the cell in the column and then right click to load an image:

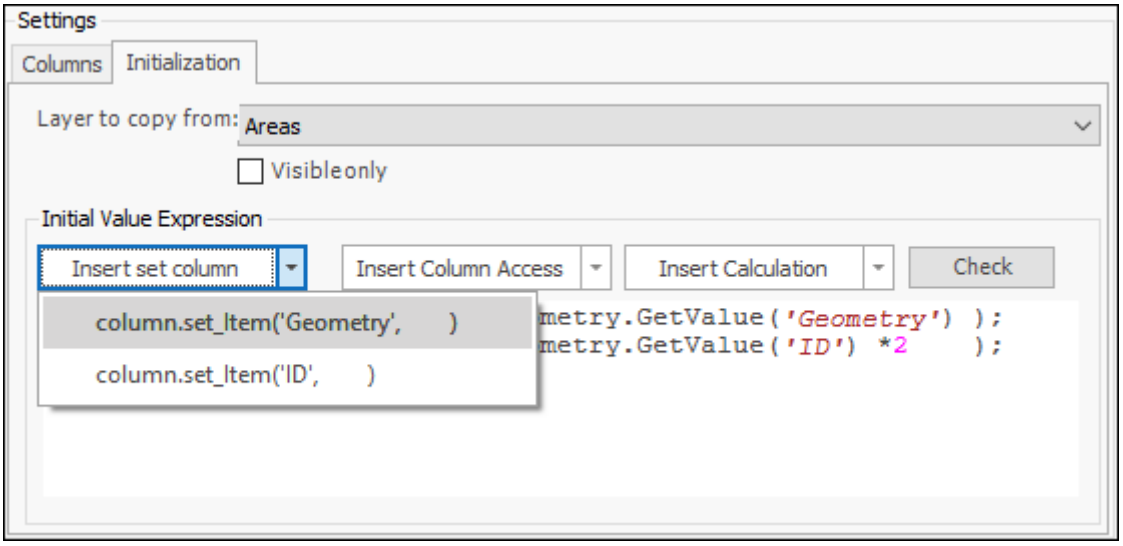


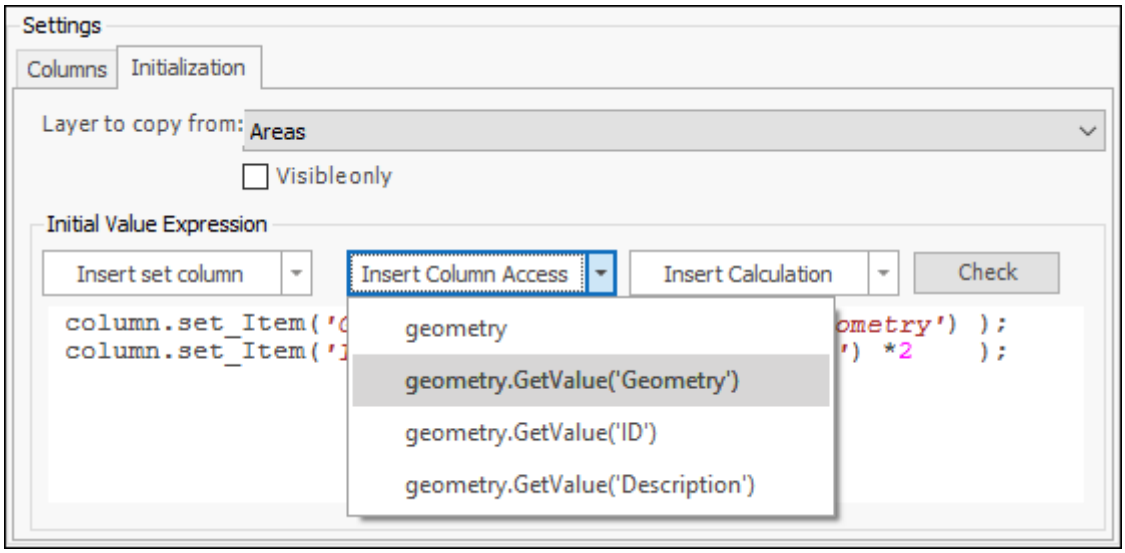


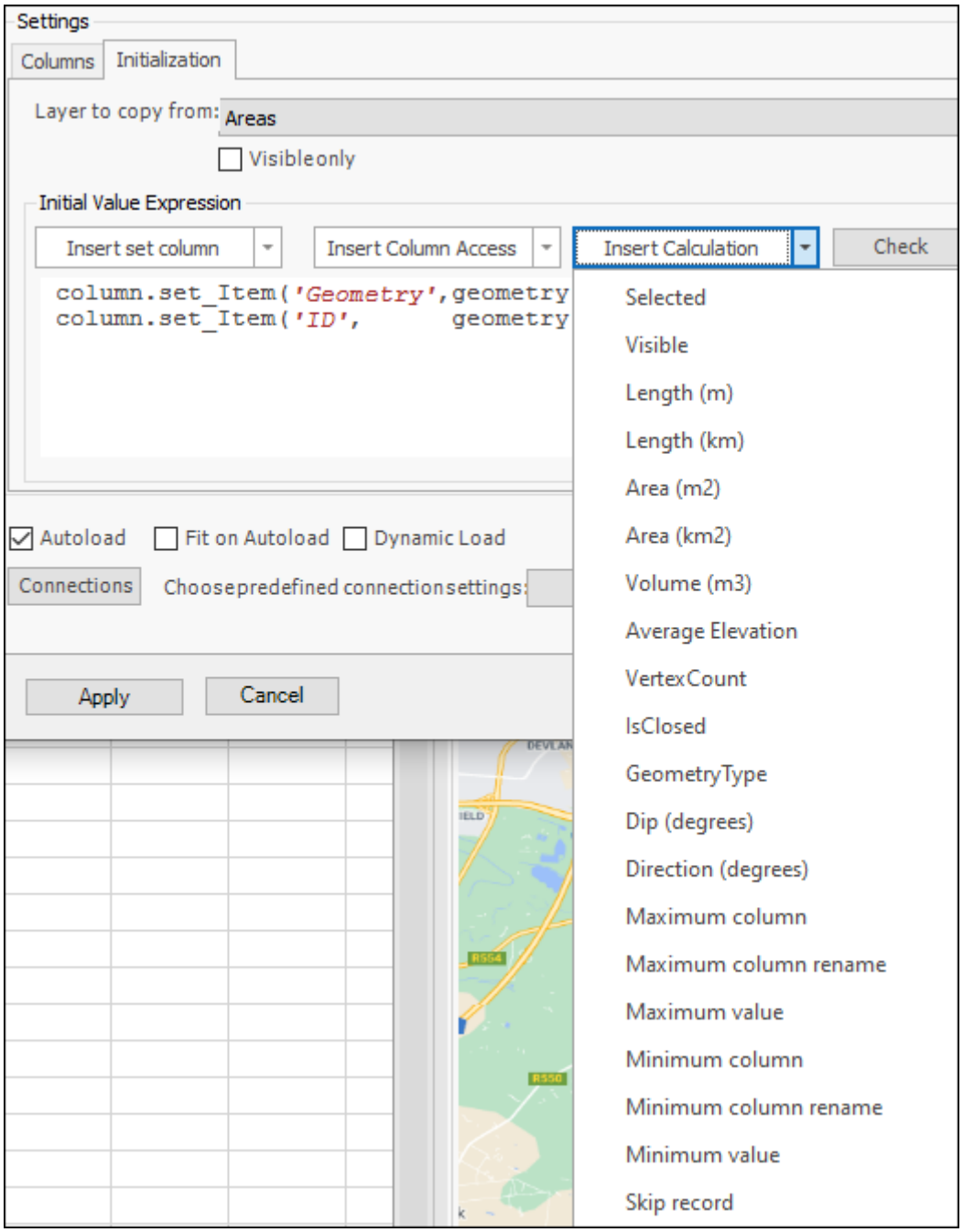
In the **Initialization** tab you can choose a layer to copy from and set up an expression, to initialize values in the new layer you are creating. Here I am initializing values from my **Areas** layer, giving the new layer the same geometries and the ID values of **Areas** layer times two:



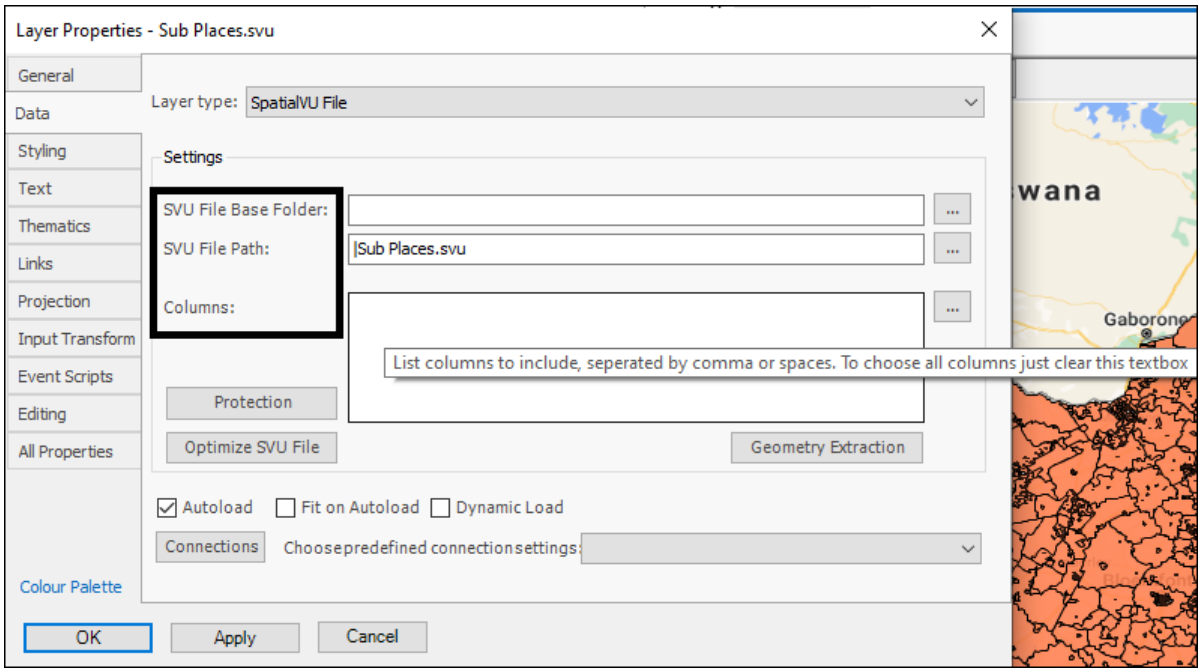
Insert Column inserts a column from the new layer (which you created in the **Columns** tab) so that its value can be set. **Insert Column Access** inserts a column from the layer you are copying from to get its value. **Insert Calculation** will insert any of a range of predefined calculations for you:



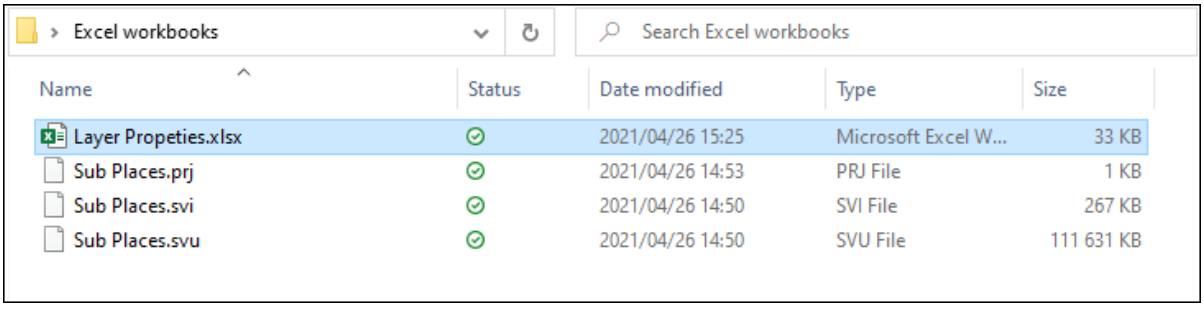

Settings
Columns
Initialization
Layer to copy from:
Areas
Visible only
Initial Value Expression
Insert set column
Insert Column Access
Insert Calculation
Check
geometry
geometry.GetValue('Geometry')
geometry.GetValue('ID')
geometry.GetValue('Description')



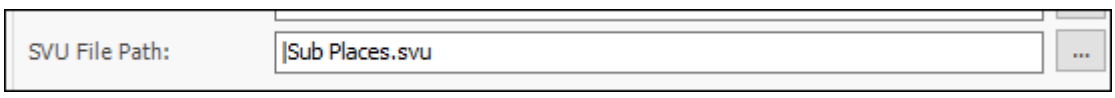
An example of another settings dialogue is for a layer of the SpatialVU type. In this dialogue you can choose the file path for the layer and also what columns you would like to have shown in the layer data grid:



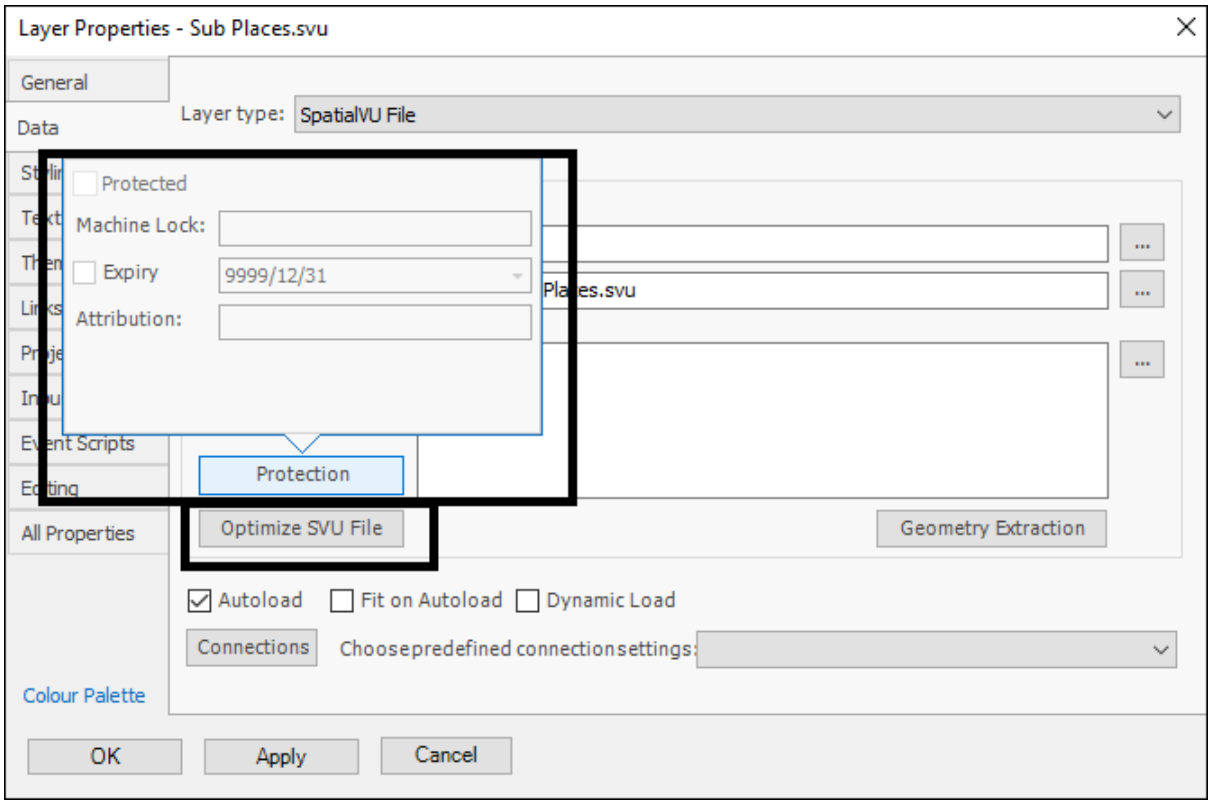
A useful feature of file paths for certain files in SpatialXL is that a relative reference for them can be created. As long as the file is stored together with the Excel workbook in the same location, it doesn't matter if you move this, it will still correctly reference the file. For example:



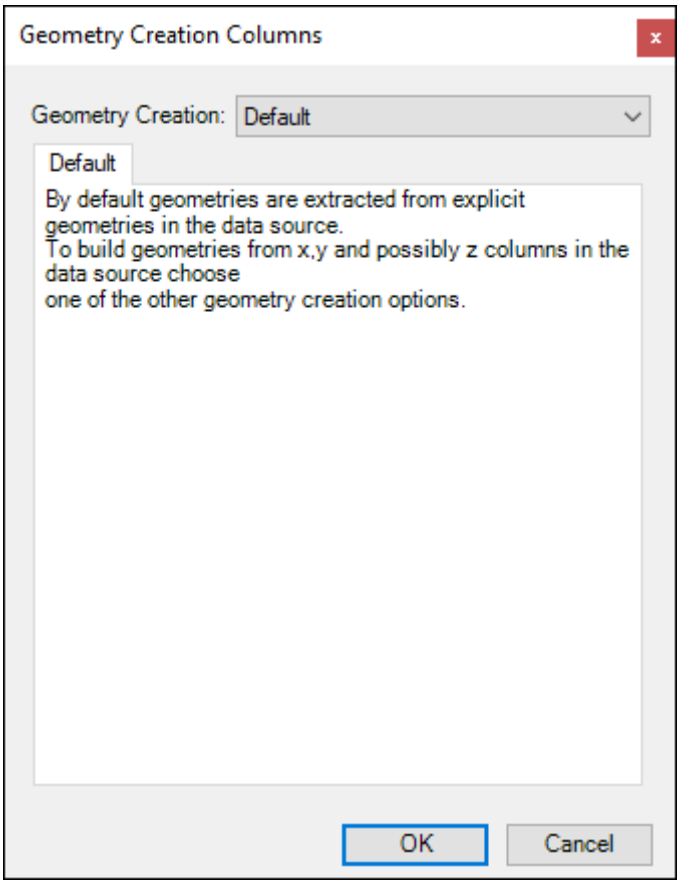
If I move all these files together to the desktop, the Sub Places SVU file will still be correctly referenced when I open the Excel workbook. A relative reference is indicated by the pipe symbol:



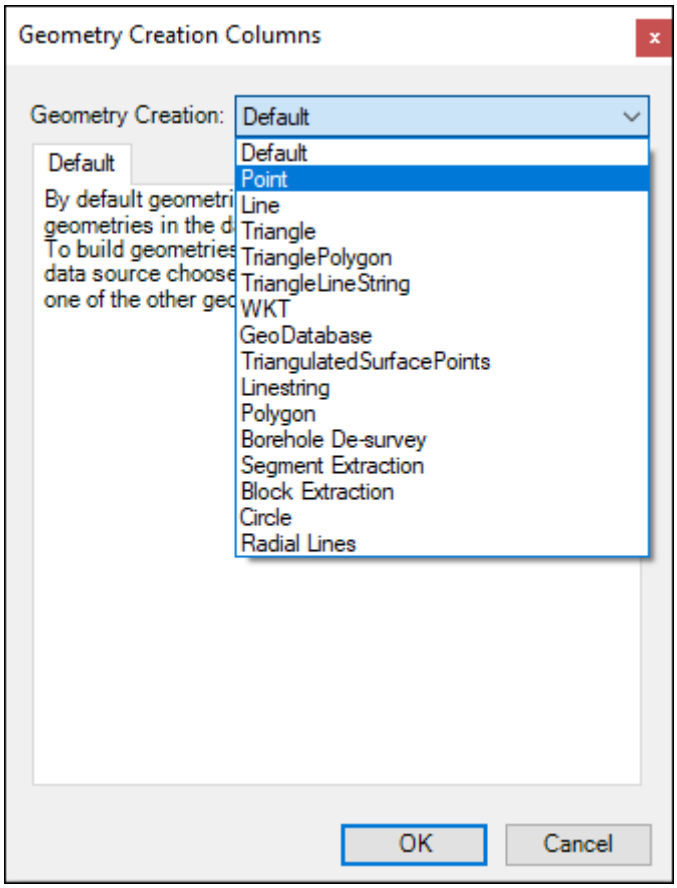
Clicking **Optimize SVU File** will optimize it for viewing. The **Protection** button will show you data about the file if it has been protected (locked to machine/expiry set:

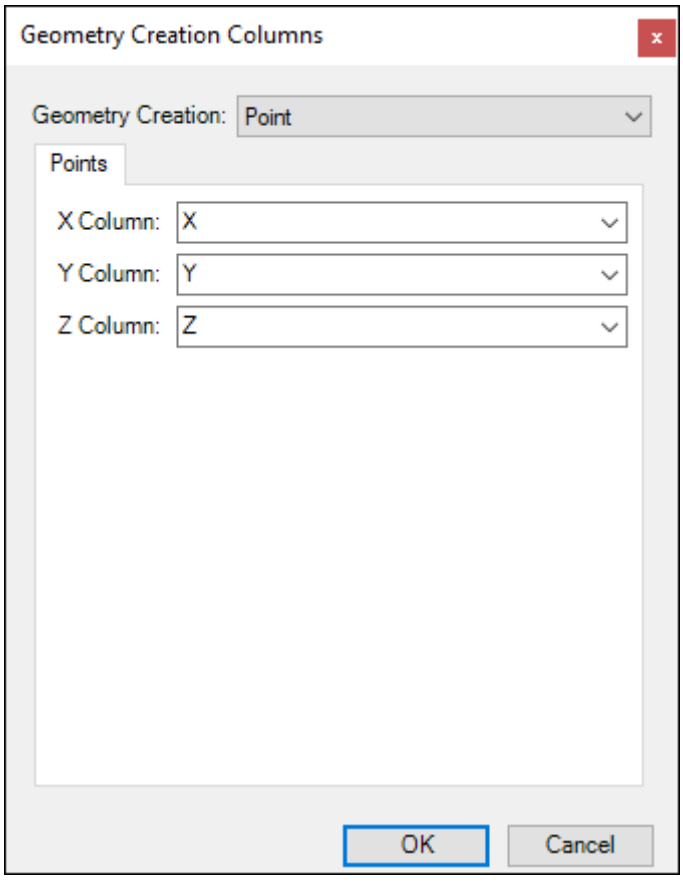


Geometry Extraction will bring up a dialogue where you can specify how you want the geometry extracted from this layer:

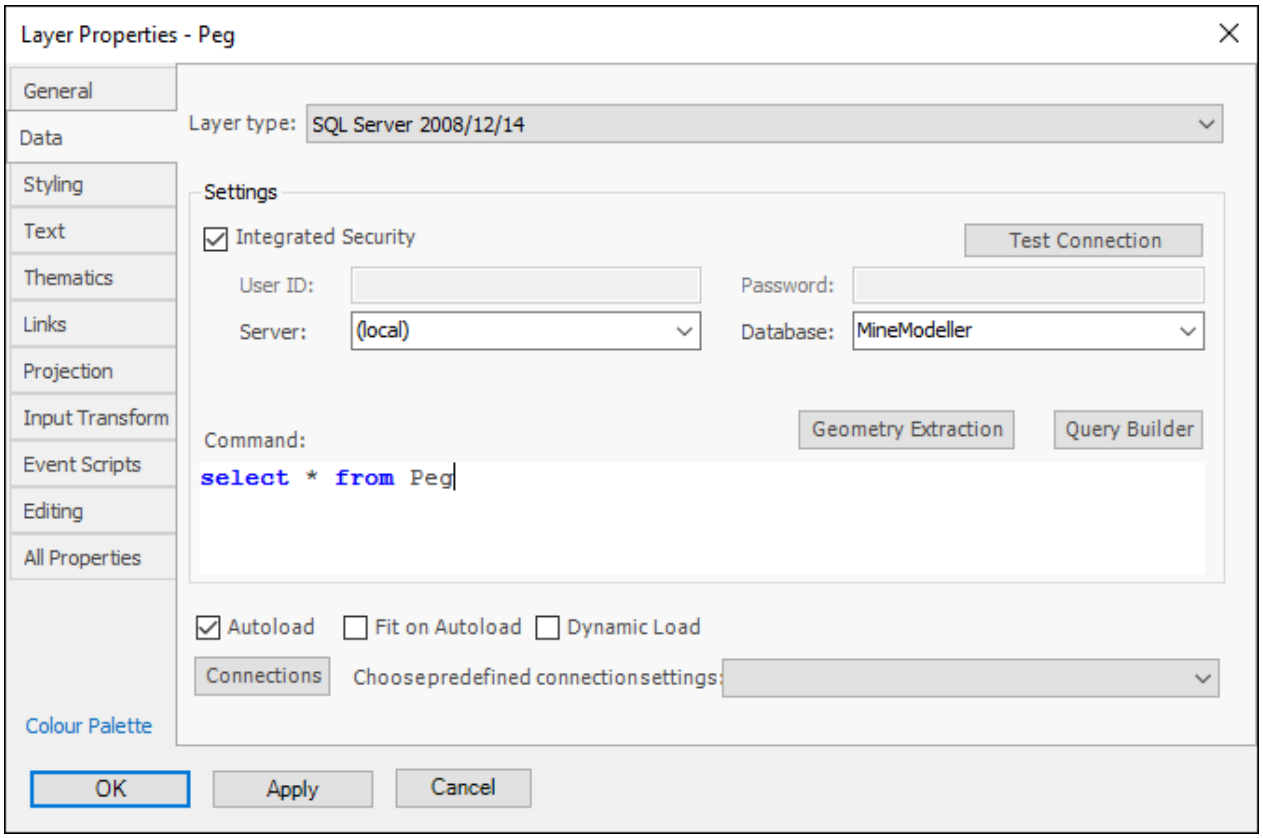


Choose other extraction options from the dropdown:

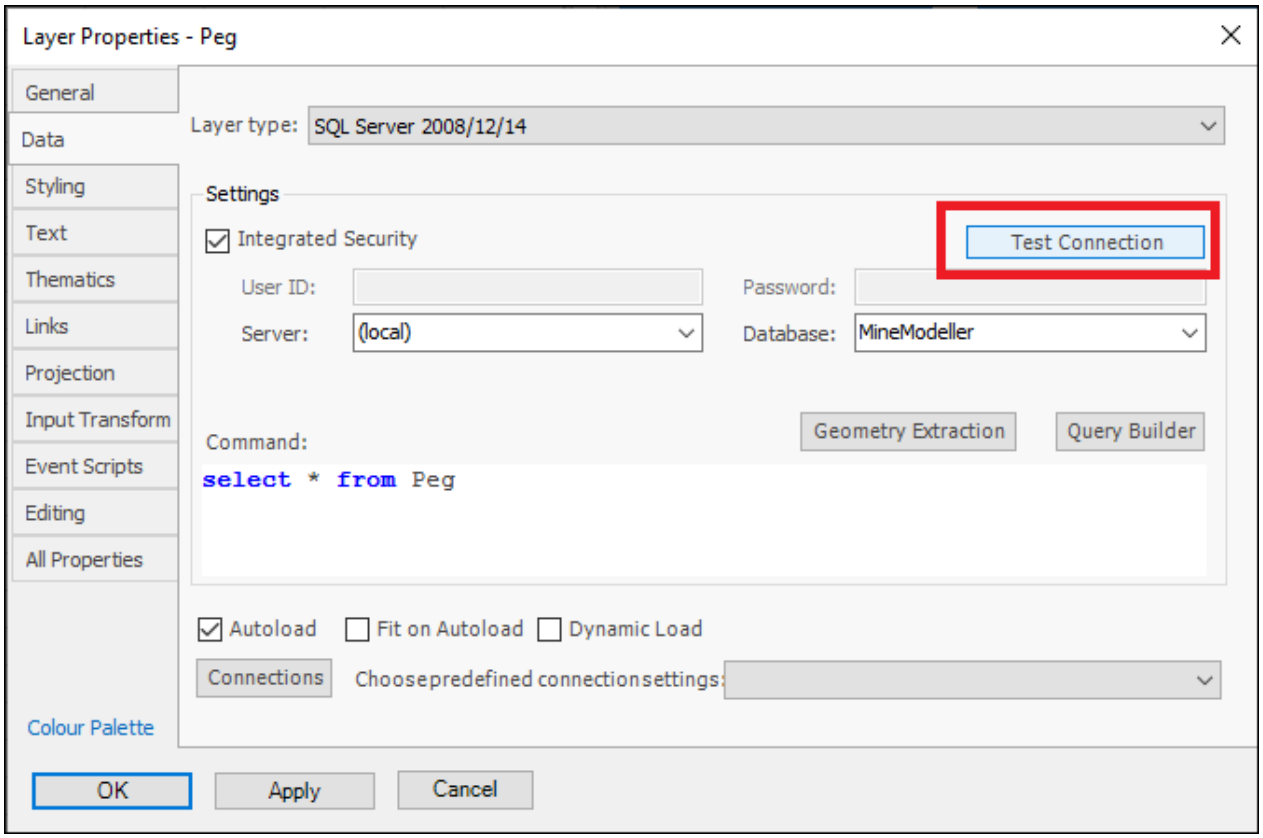

Geometry Creation Columns
Geometry Creation:
Default
Default
Point
Line
Triangle
TrianglePolygon
TriangleLineString
WKT
GeoDatabase
TriangulatedSurfacePoints
Linestring
Polygon
Borehole De-survey
Segment Extraction
Block Extraction
Circle
Radial Lines
Default
By default geometri
geometries in the d
To build geometries
data source choose
one of the other geo
OK
Cancel

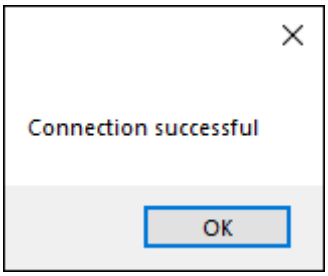

Geometry Creation Columns
Geometry Creation:
Point
Points
X Column:
X
Y Column:
Y
Z Column:
Z
OK
Cancel

The dialogue when creating a layer that uses a SQL Server database looks as follows. You can enter in your credentials or use **Integrated Security** and then choose the **Server** and **Database**. In the **Command** box you can enter in your database query:

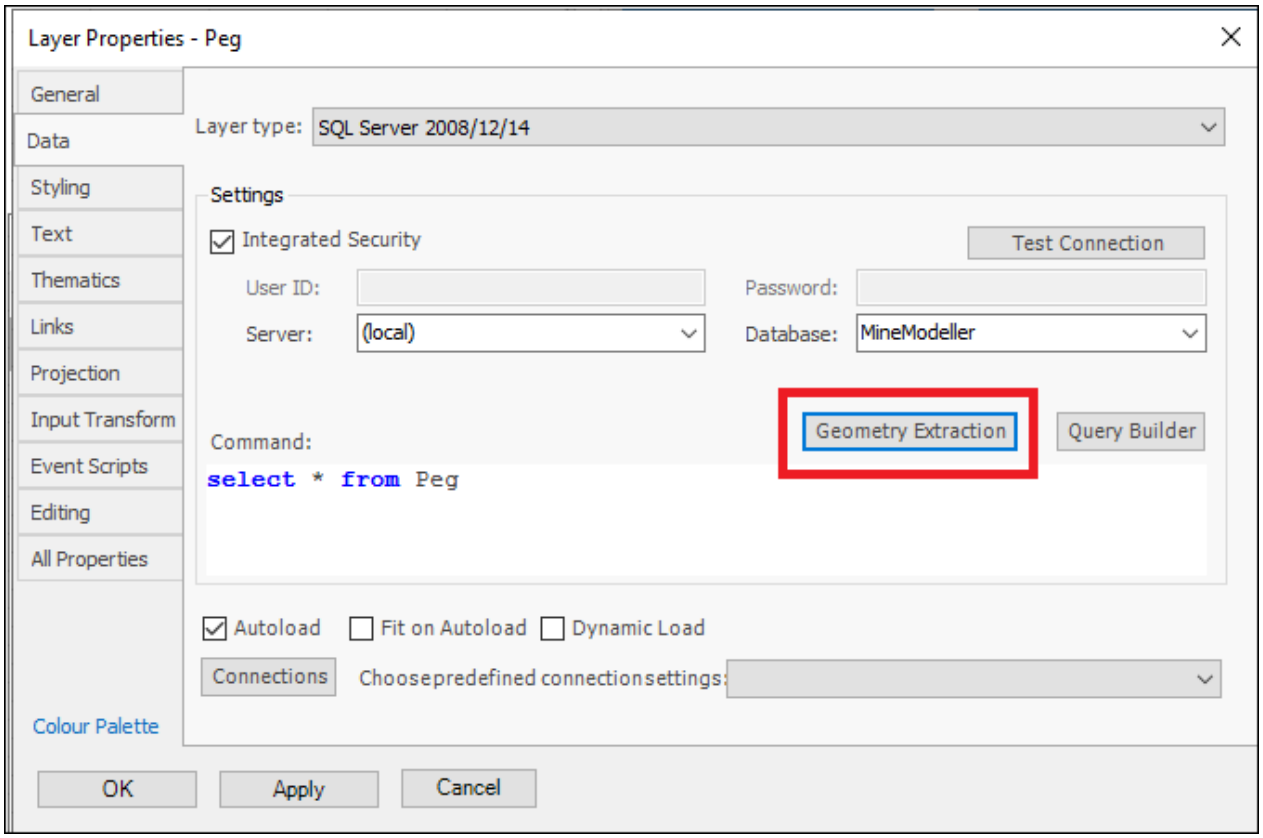


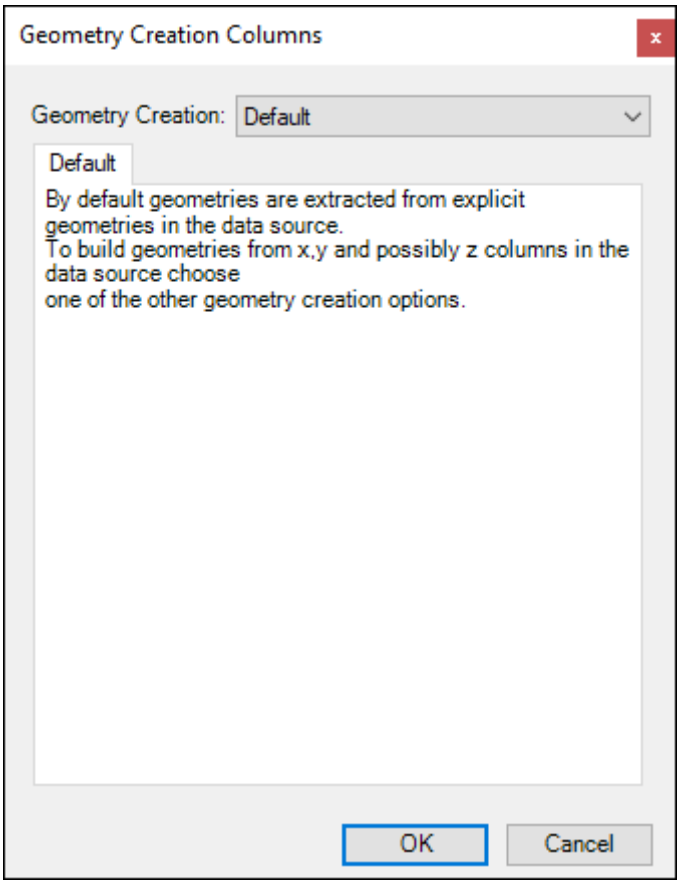
You can test the connection to the database with **Test Connection**:



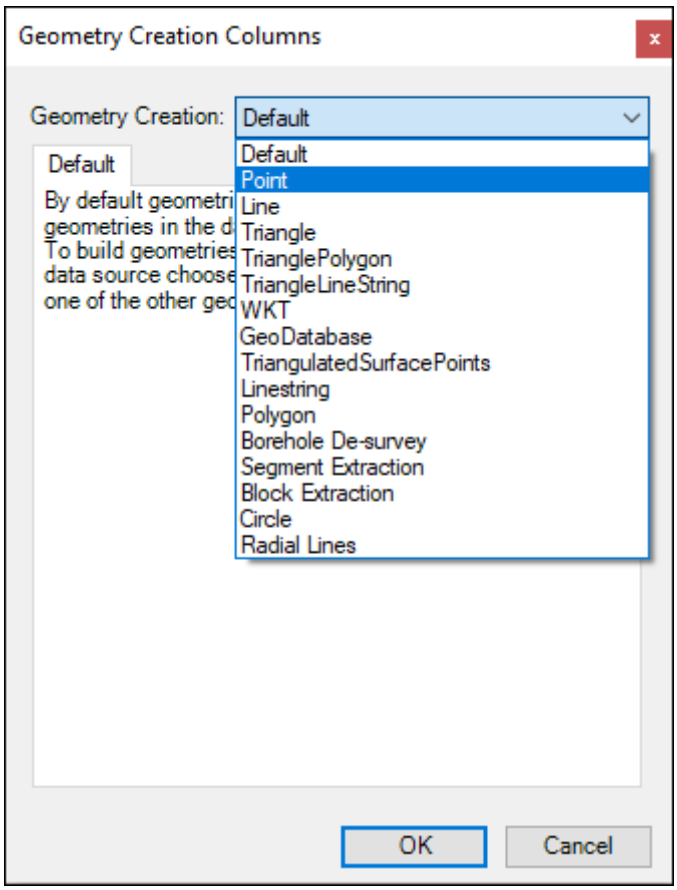


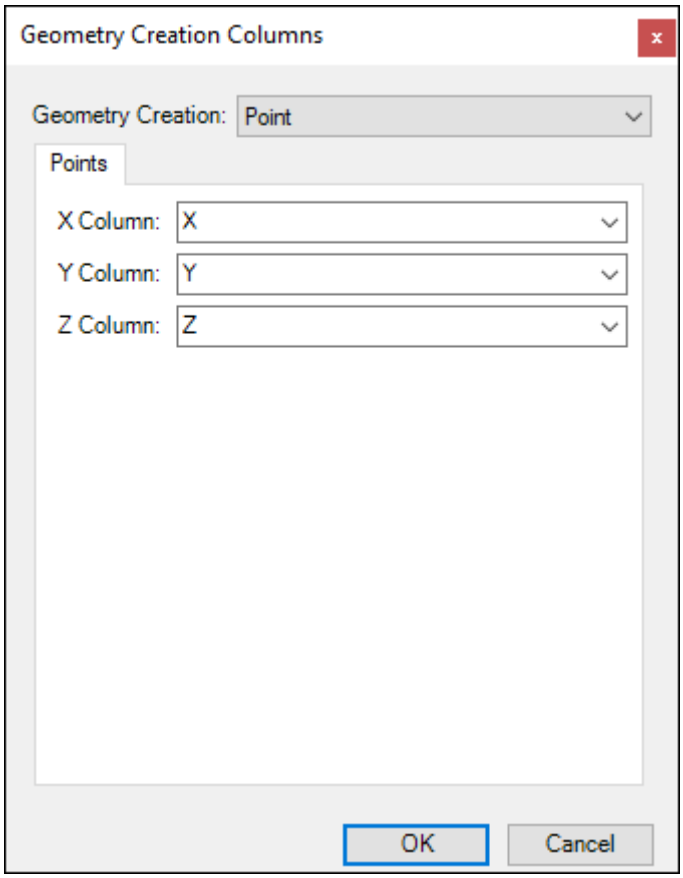
Geometry Extraction will bring up a dialogue where you can specify how you want the geometry extracted from this layer:


Layer Properties - Peg
General
Data
Styling
Text
Thematics
Links
Projection
Input Transform
Event Scripts
Editing
All Properties
Colour Palette
Layer type: SQL Server 2008/12/14
Settings
Integrated Security
Test Connection
User ID:
Password:
Server: (local)
Database: MineModeller
Command:
Geometry Extraction
Query Builder
select * from Peg
Autoload
Fit on Autoload
Dynamic Load
Connections
Choose predefined connection settings:
OK
Apply
Cancel

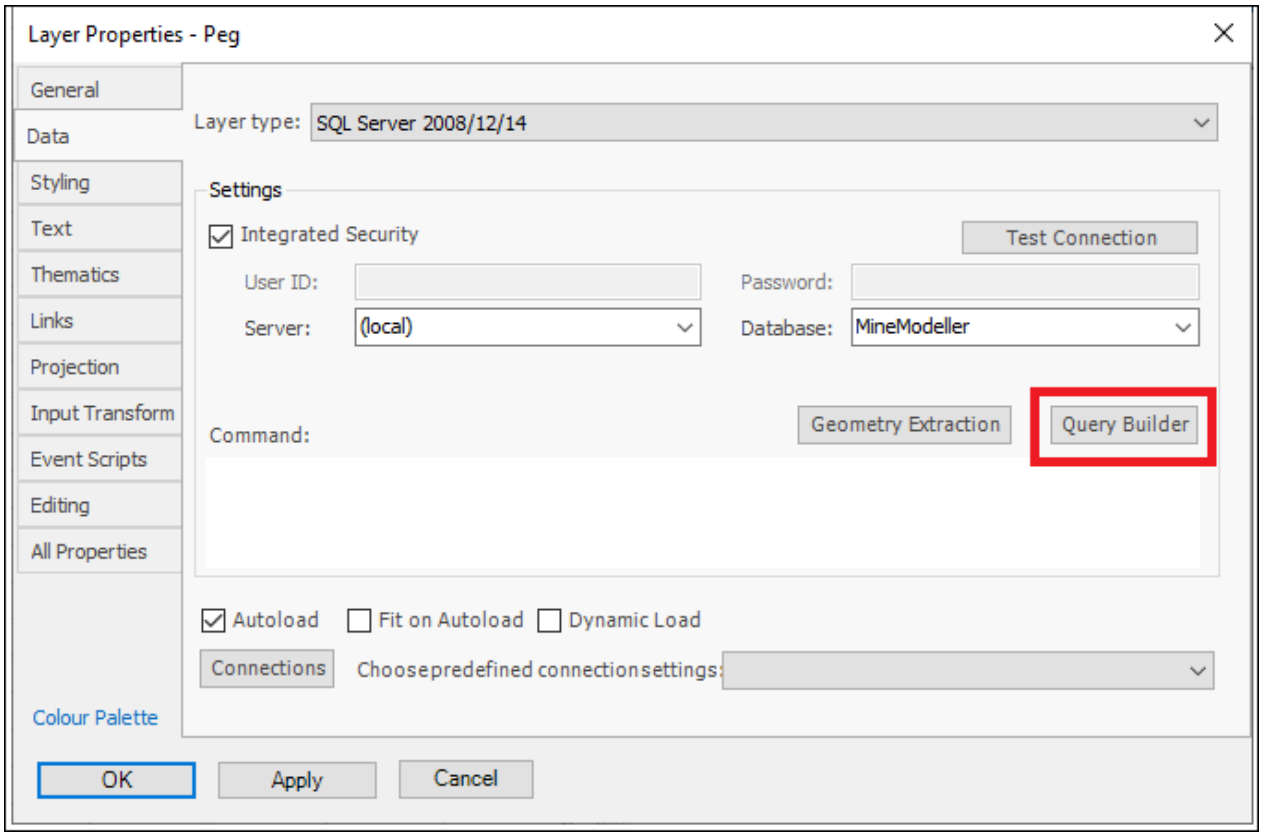

Geometry Creation Columns
Geometry Creation: Default
Default
By default geometries are extracted from explicit geometries in the data source.
To build geometries from x,y and possibly z columns in the data source choose
one of the other geometry creation options.
OK
Cancel

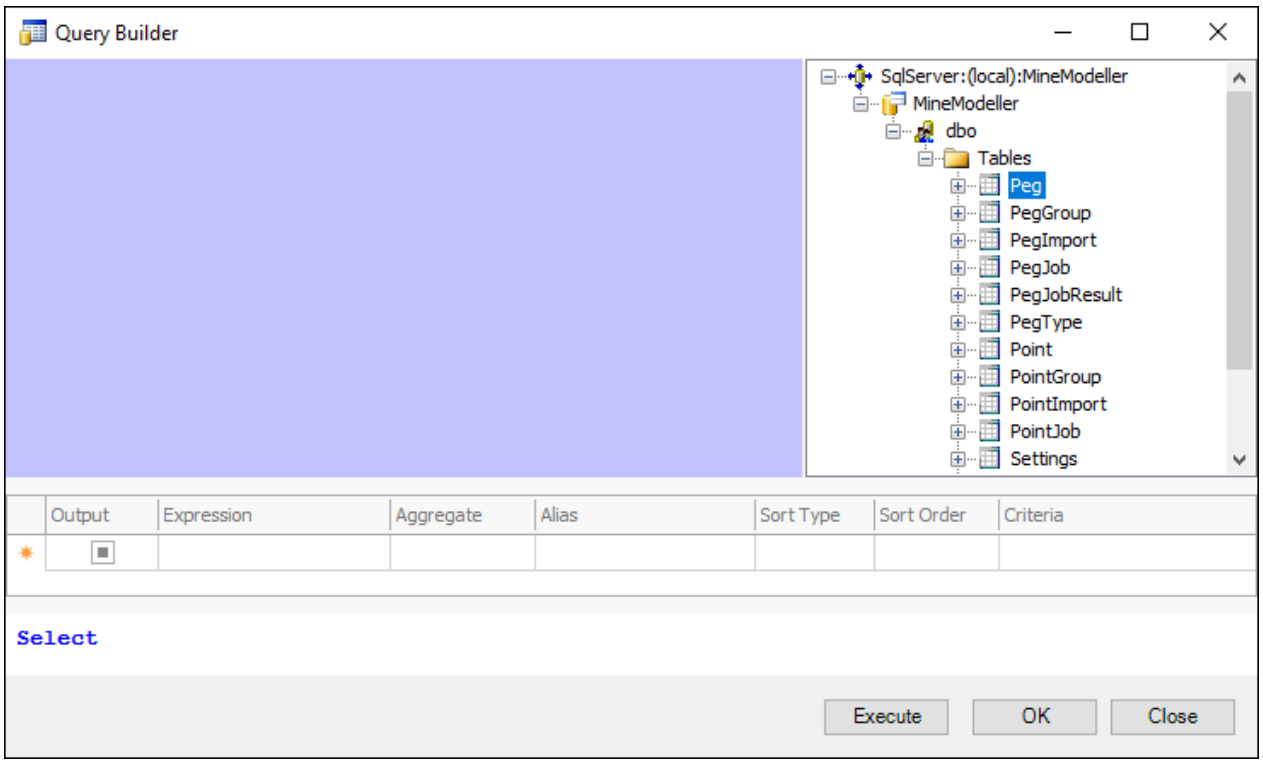
Choose other extraction options from the dropdown:



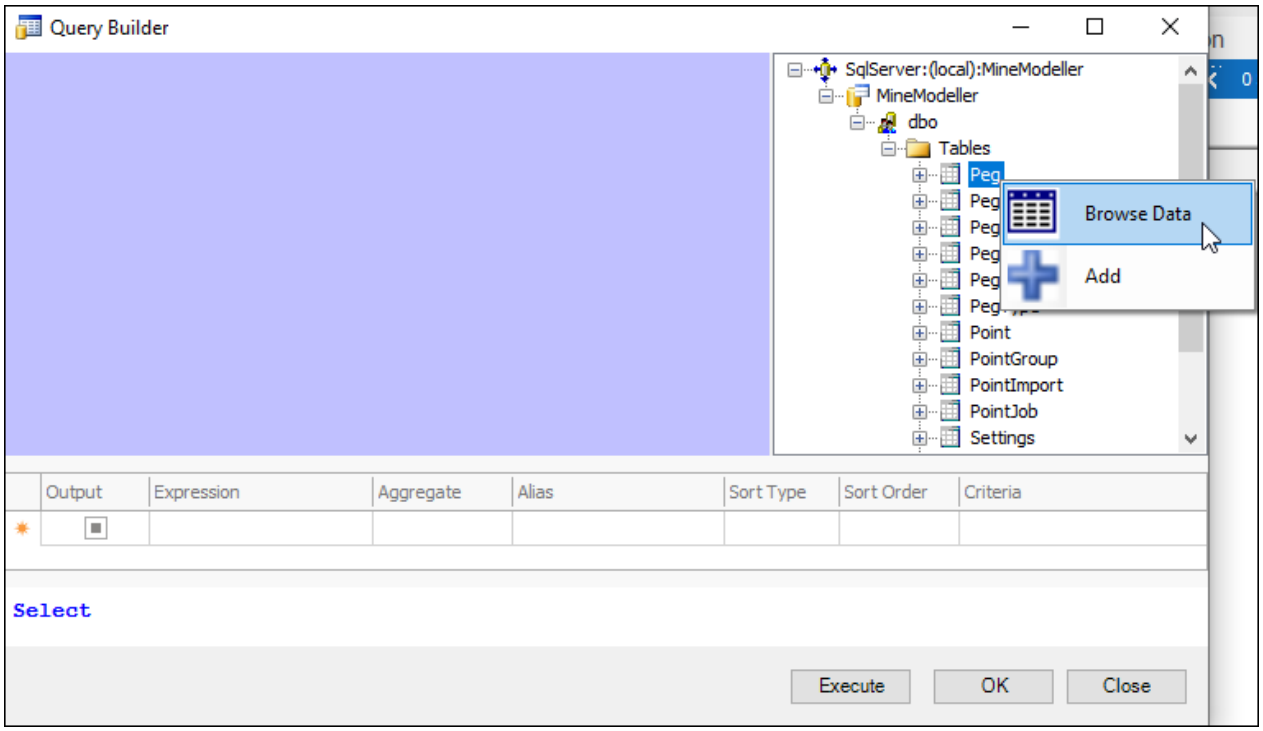


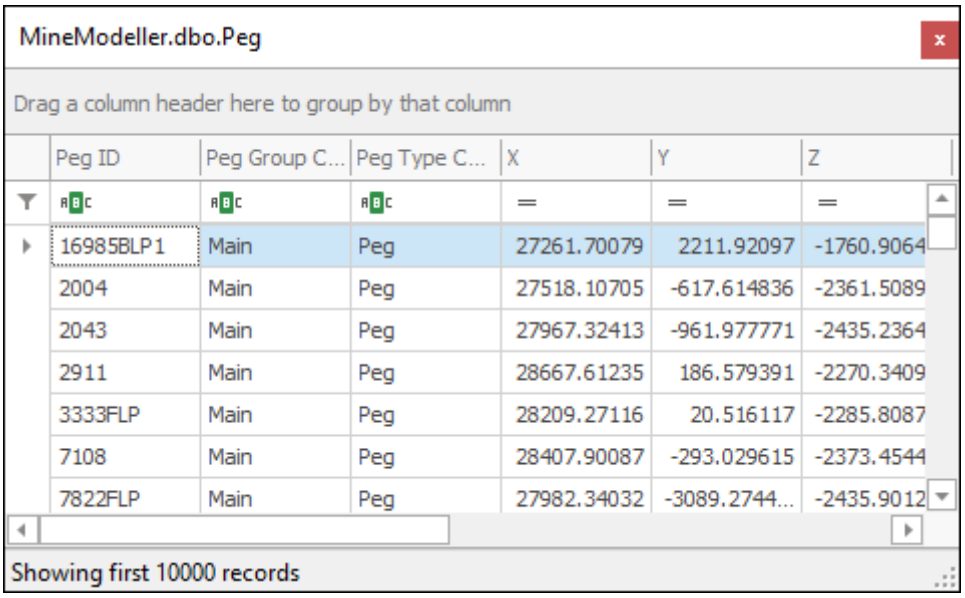
You can also use **Query Builder** to build a query. Clicking on it will bring up the **Query Builder** box:



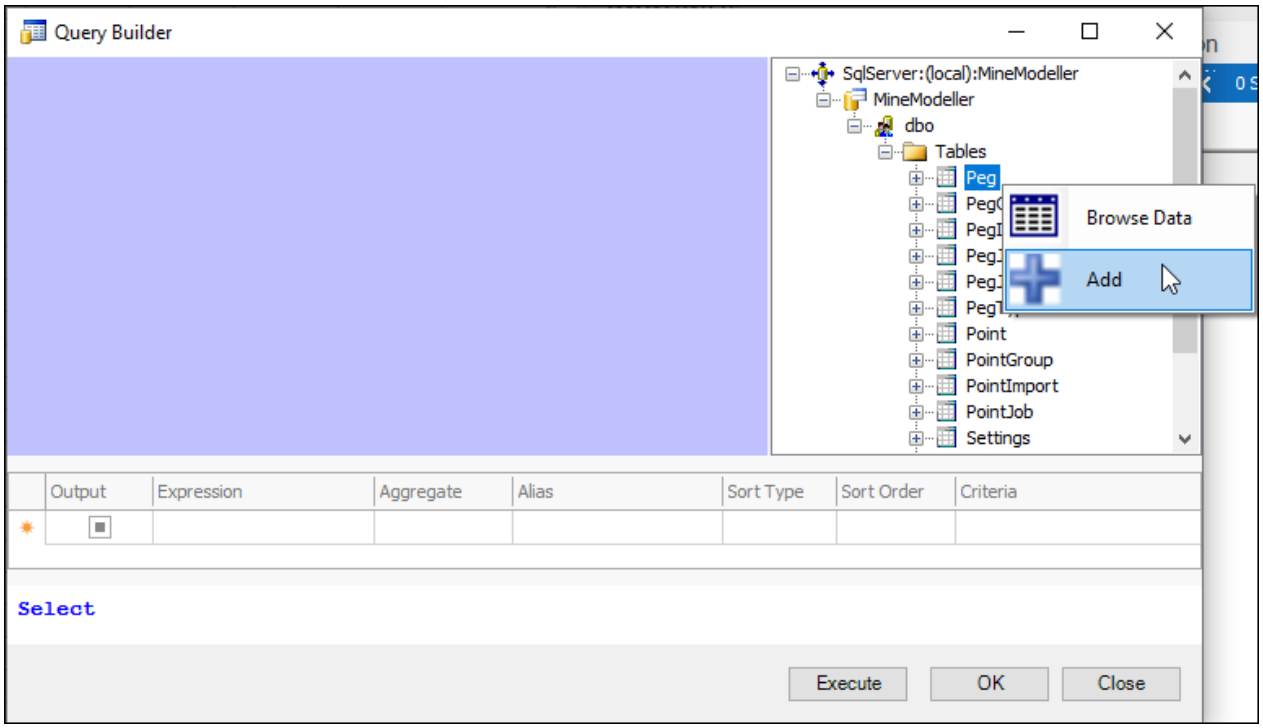


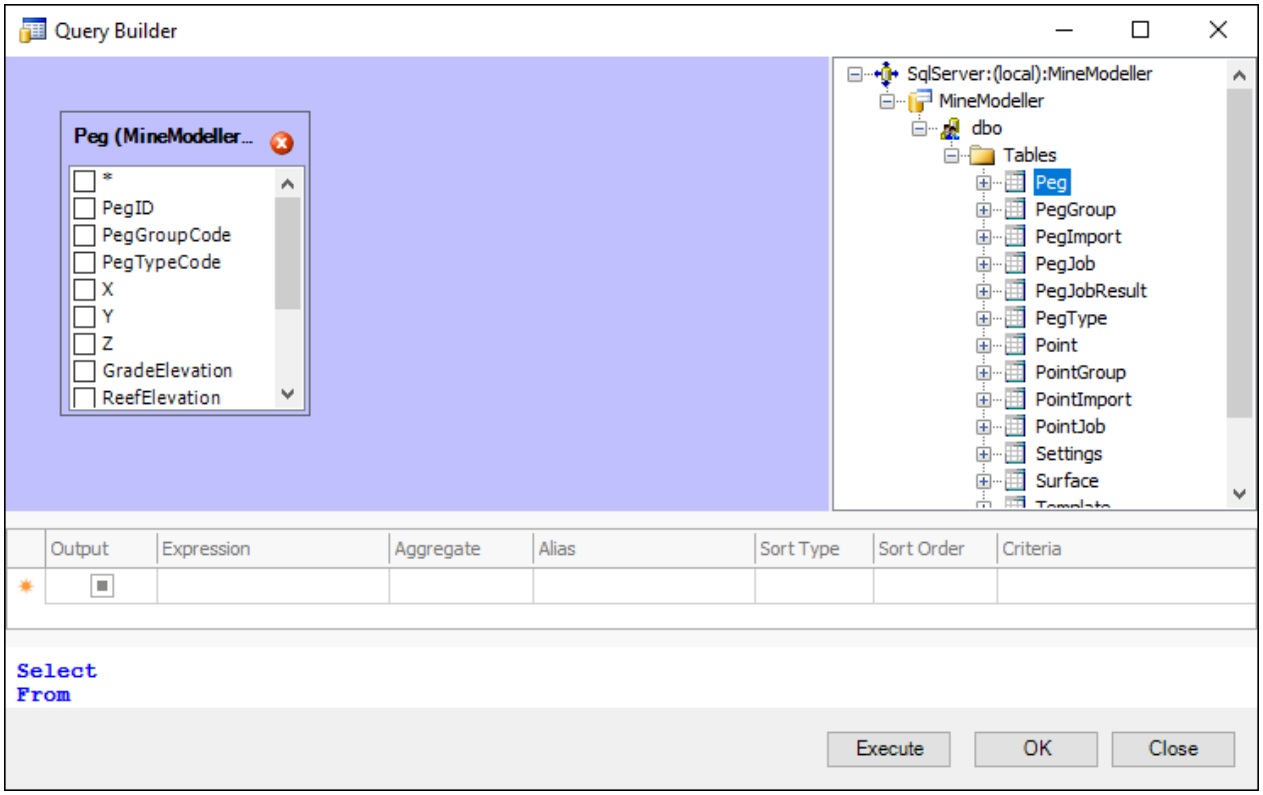
Right clicking on a table, you can choose to browse the data in it with **Browse Data**:



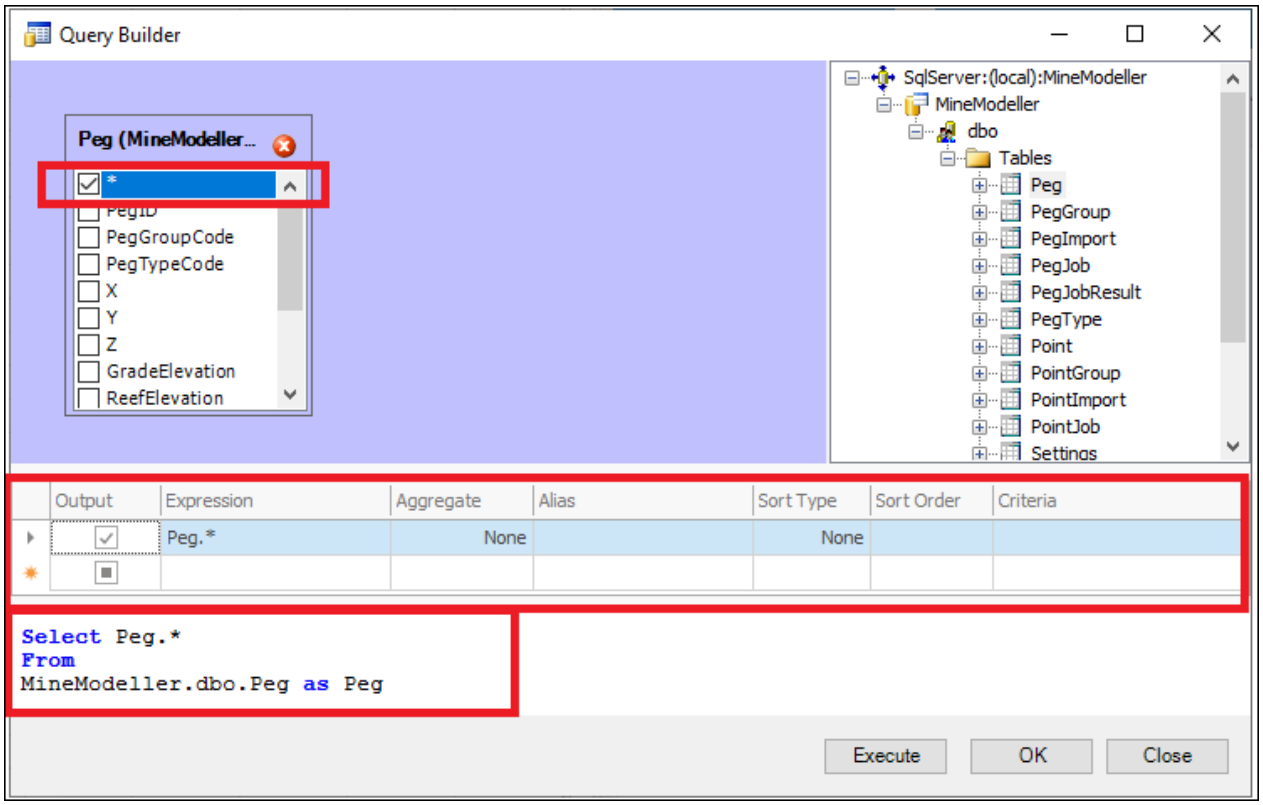


If the table has what you want, you can then click **Add** to add this table to your query; this will bring up a box where you can tick on the columns in this table you would like to query:

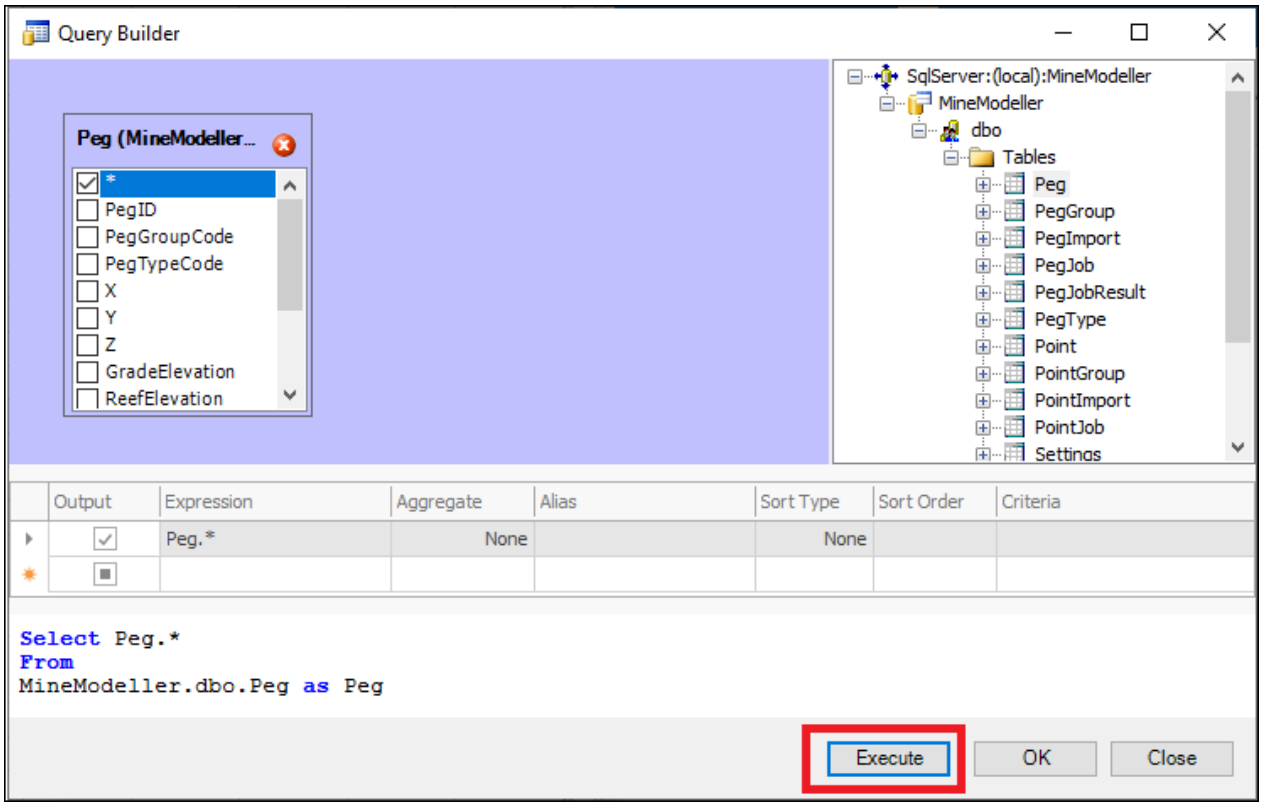


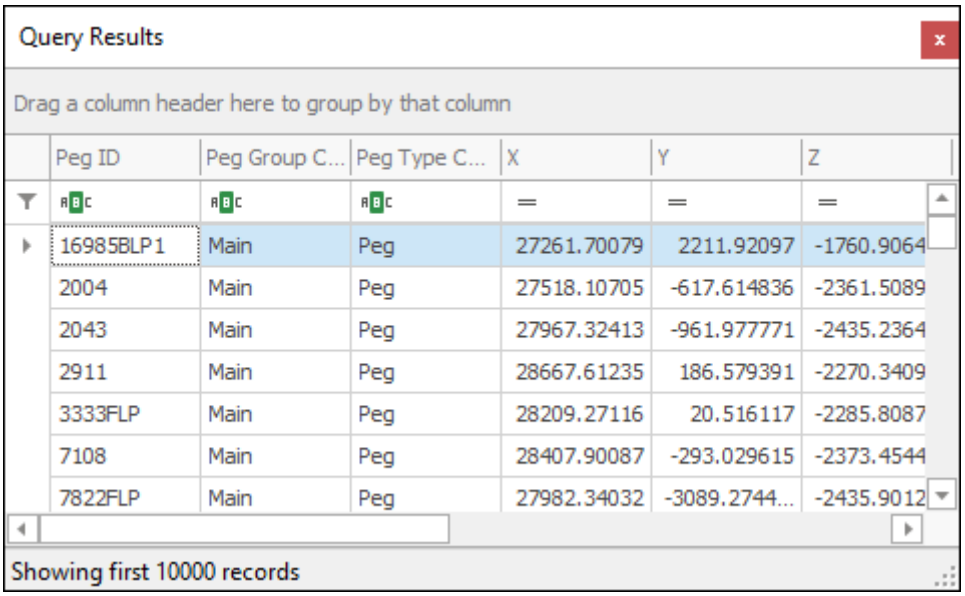


I've chosen to select all from this table. Your query is shown at the bottom as you construct it. You can also choose to do an aggregation on the data, sort it in a certain way etc. in the grid above:

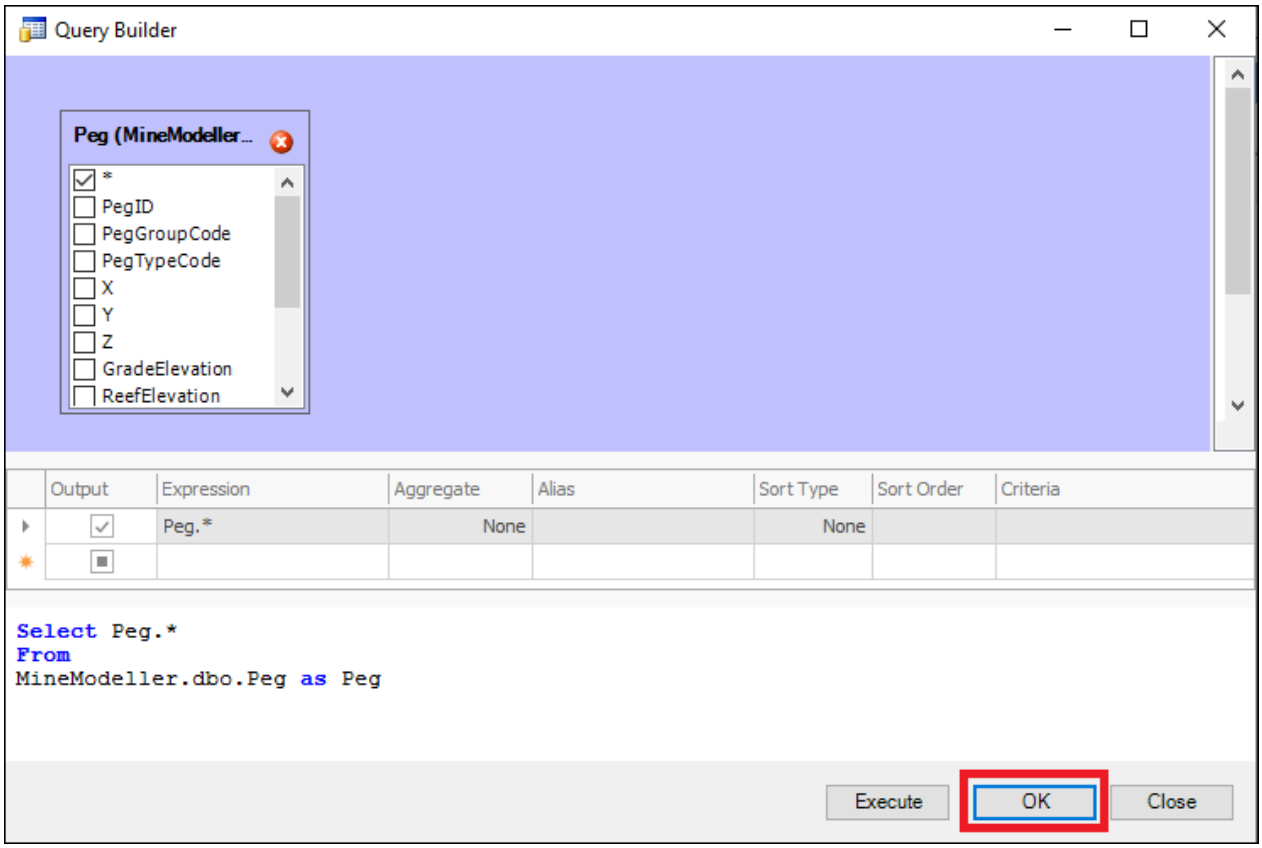


When done you can then click **Execute** to see the results of the query:



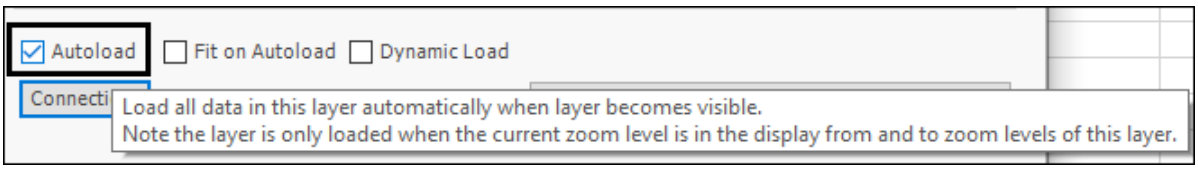


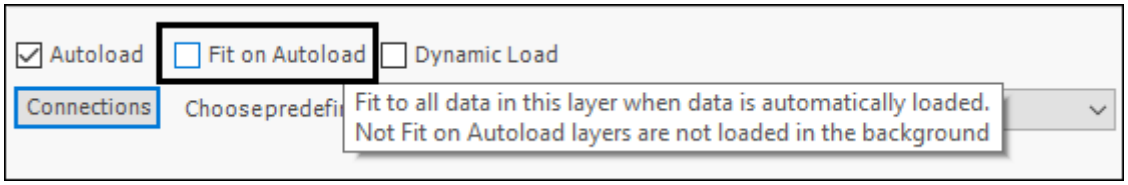
If you are happy with the results, you can then exit the **Query Results** box and then click **OK**:

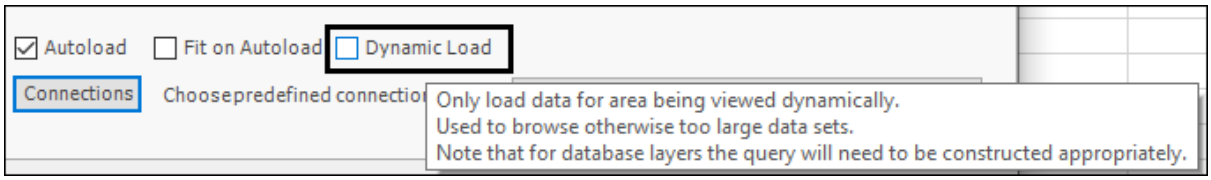


The dialogues for Oracle etc. data base layers look and work similarly.

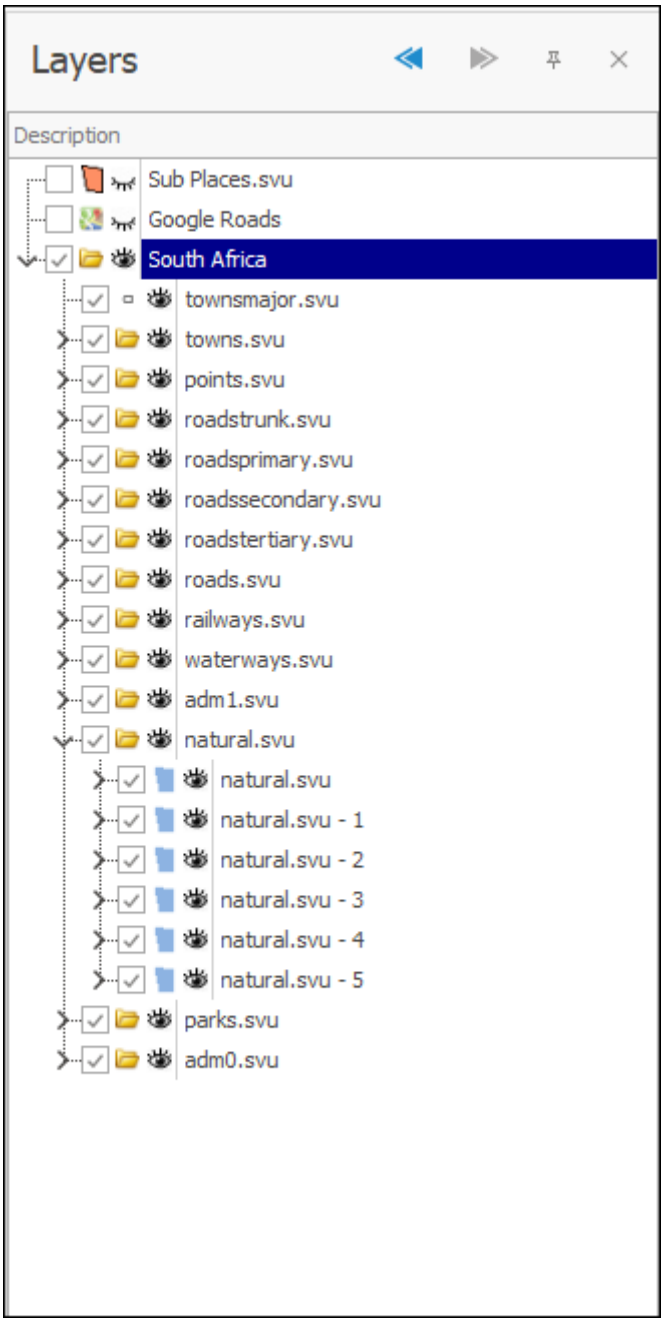
Autoload, **Fit on Autoload** and **Dynamic Load** have the following functions:

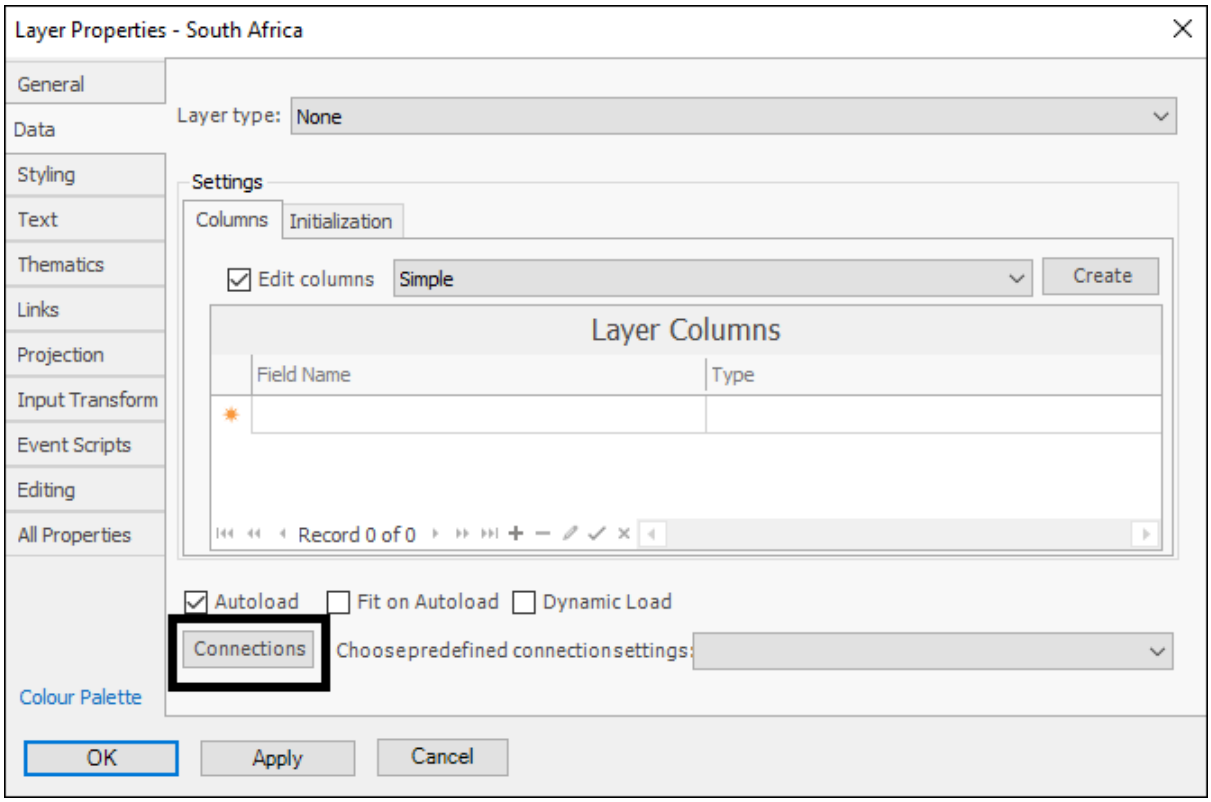


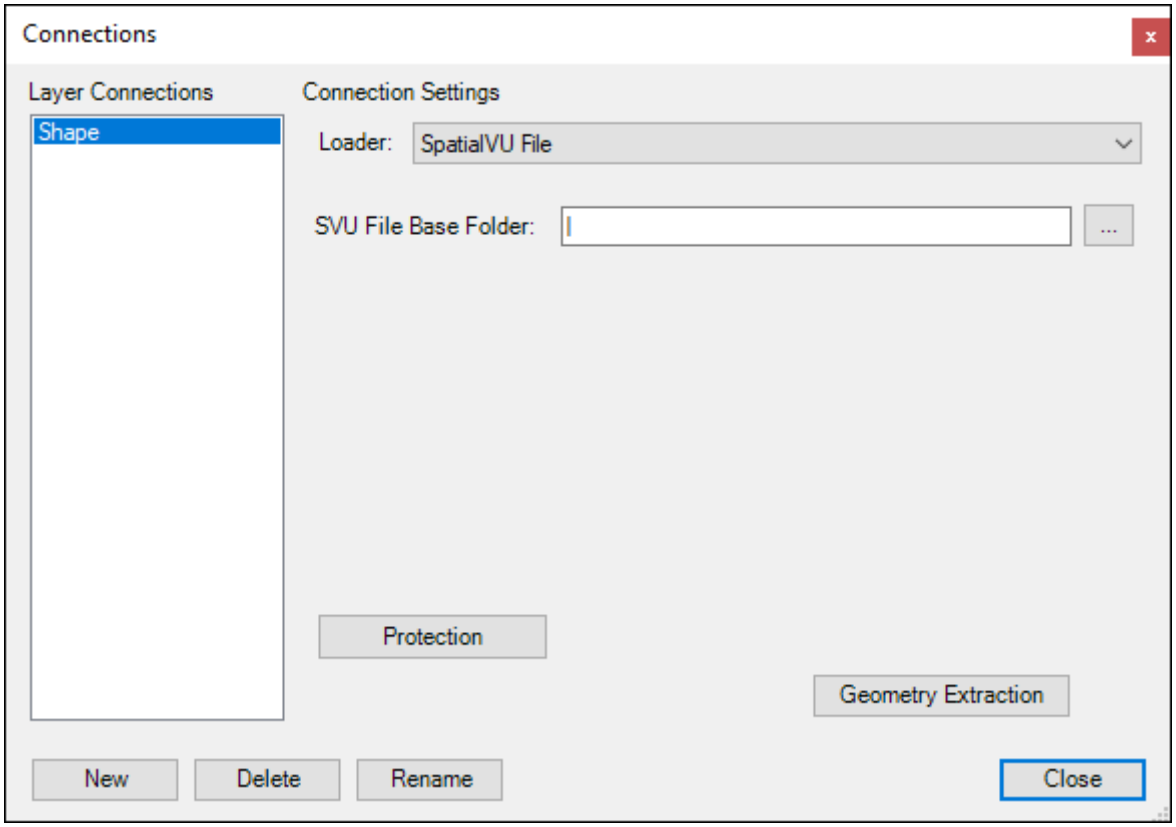




Connections is where you can manage shared connections for sublayers, for example here is a **South Africa** map layer. **South Africa** is the top containing layer and where the connection is created; each of the SVU files(sublayers) contained in this layer use this same predefined connection. This is convenient so that if the layer loader is changed (the connection) for the layer I don't have to change it in each sublayer I can just manage it in one place in the top-level layer:


Layers
Description
Sub Places.svu
Google Roads
South Africa
townsmajor.svu
towns.svu
points.svu
roadstrunk.svu
roadsprimary.svu
roadssecondary.svu
roadstertiary.svu
roads.svu
railways.svu
waterways.svu
adm1.svu
natural.svu
natural.svu
natural.svu - 1
natural.svu - 2
natural.svu - 3
natural.svu - 4
natural.svu - 5
parks.svu
adm0.svu

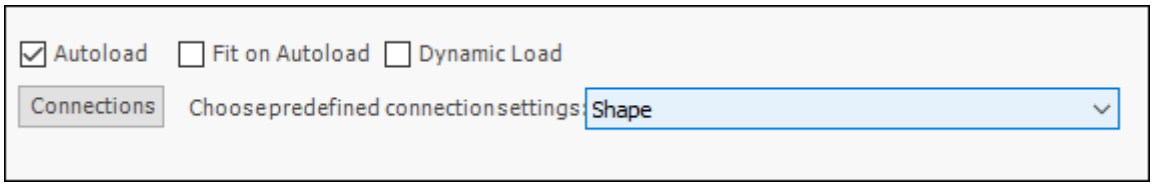

Layer Properties - South Africa
General
Data
Styling
Text
Thematics
Links
Projection
Input Transform
Event Scripts
Editing
All Properties
Colour Palette
Layer type:
None
Settings
Columns
Initialization
Edit columns
Simple
Create
Layer Columns
Field Name
Type
Record 0 of 0
Autoload
Fit on Autoload
Dynamic Load
Connections
Choose predefined connection settings:
OK
Apply
Cancel


Connections
Layer Connections
Shape
Connection Settings
Loader:
SpatialVU File
SVU File Base Folder:
...
Protection
Geometry Extraction
New
Delete
Rename
Close

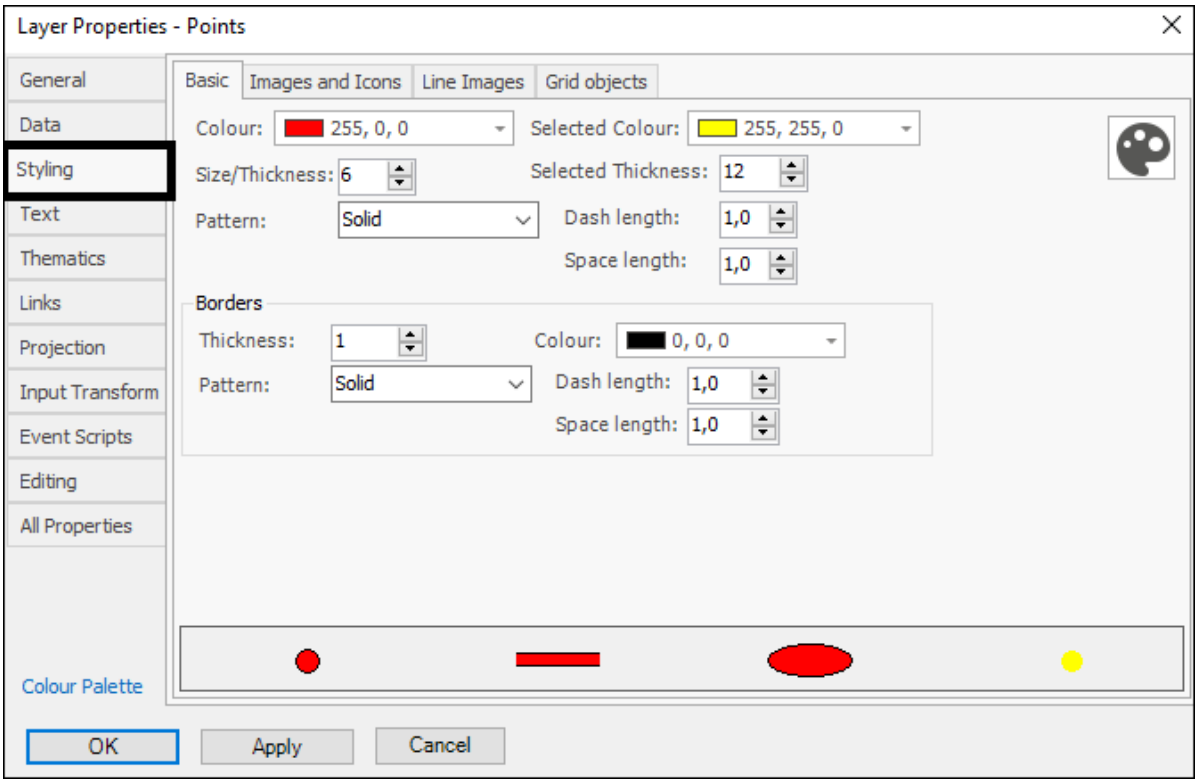
As you can see in the **Connections** dialogue a connection has been set up called **Shape.** The loader for the file and the path of the SVU file base folder is defined.

Protected will show you data on whether the file is protected (locked to machine/expiry date). **Geometry Extraction** allows you to choose a geometry extraction for the SVU file if necessary.

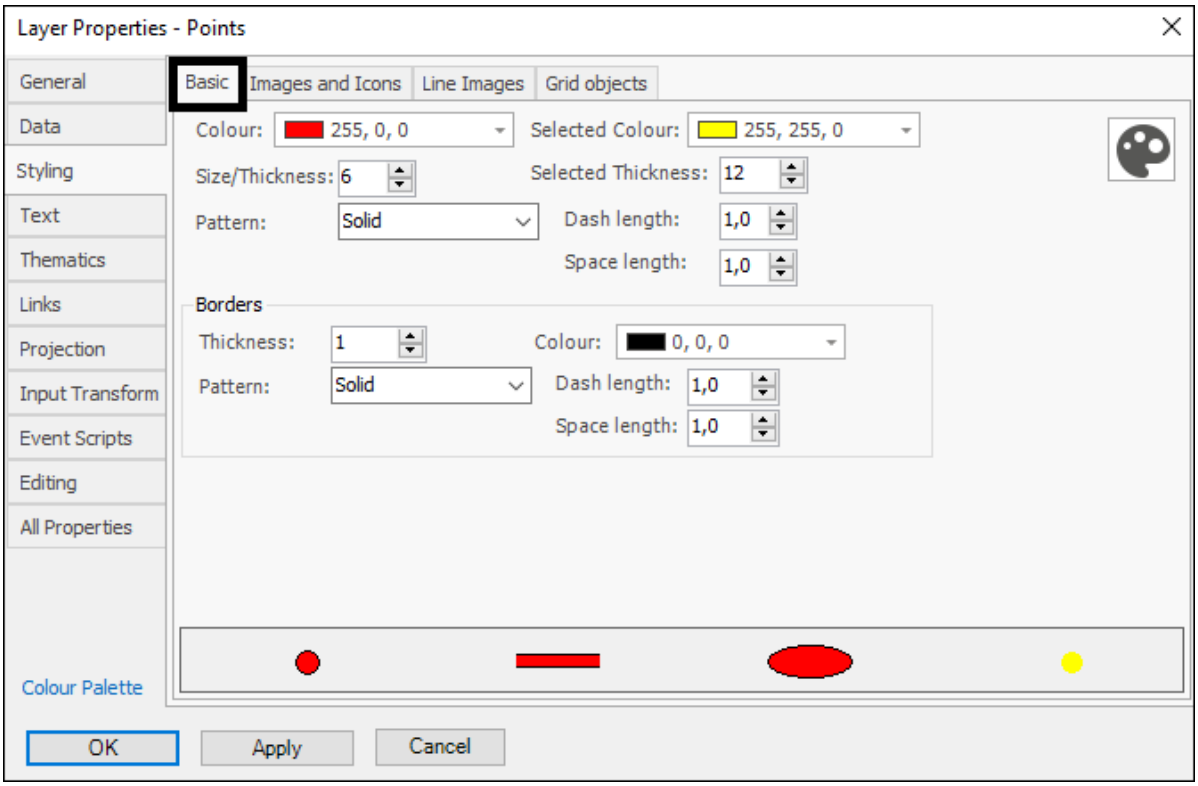
If I go to the Layer Properties of one of the sublayers you will see it is using this predefined connection (called **Shape**):



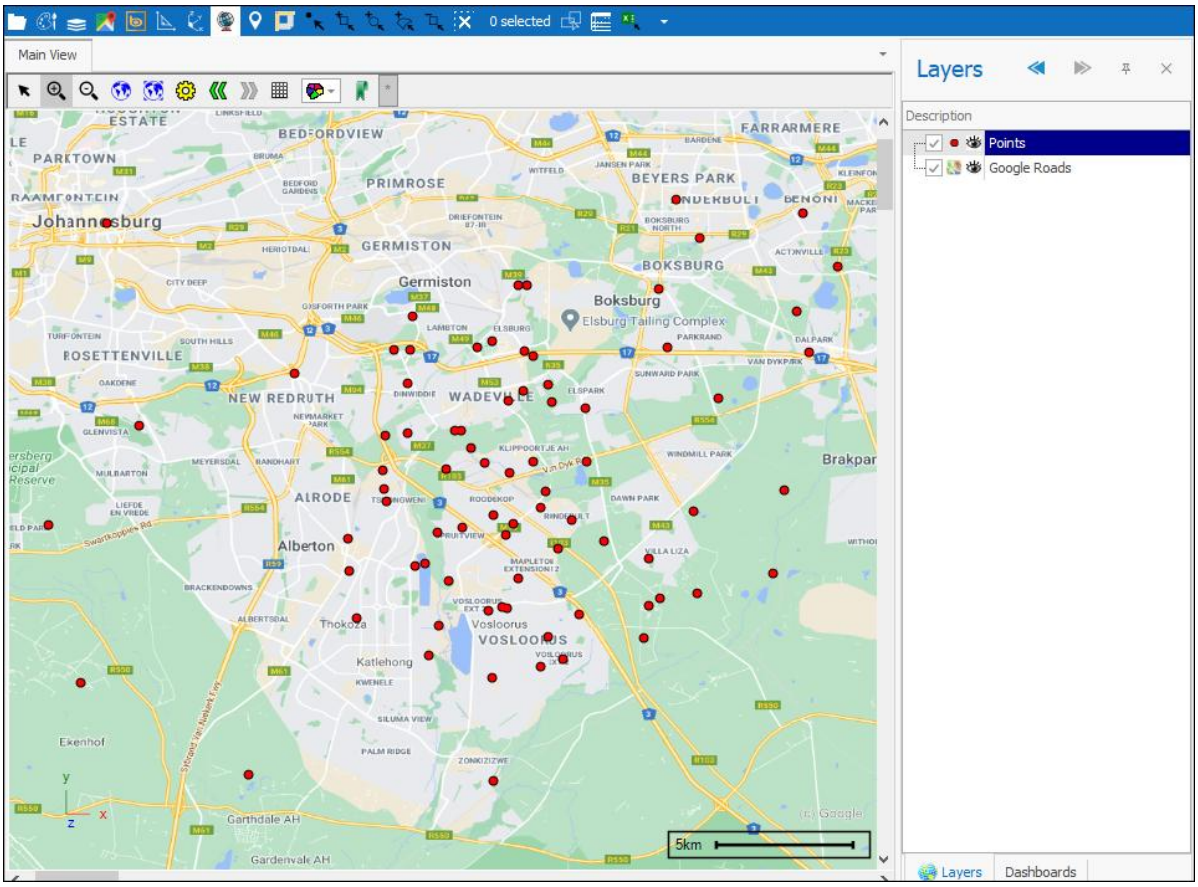
Styling



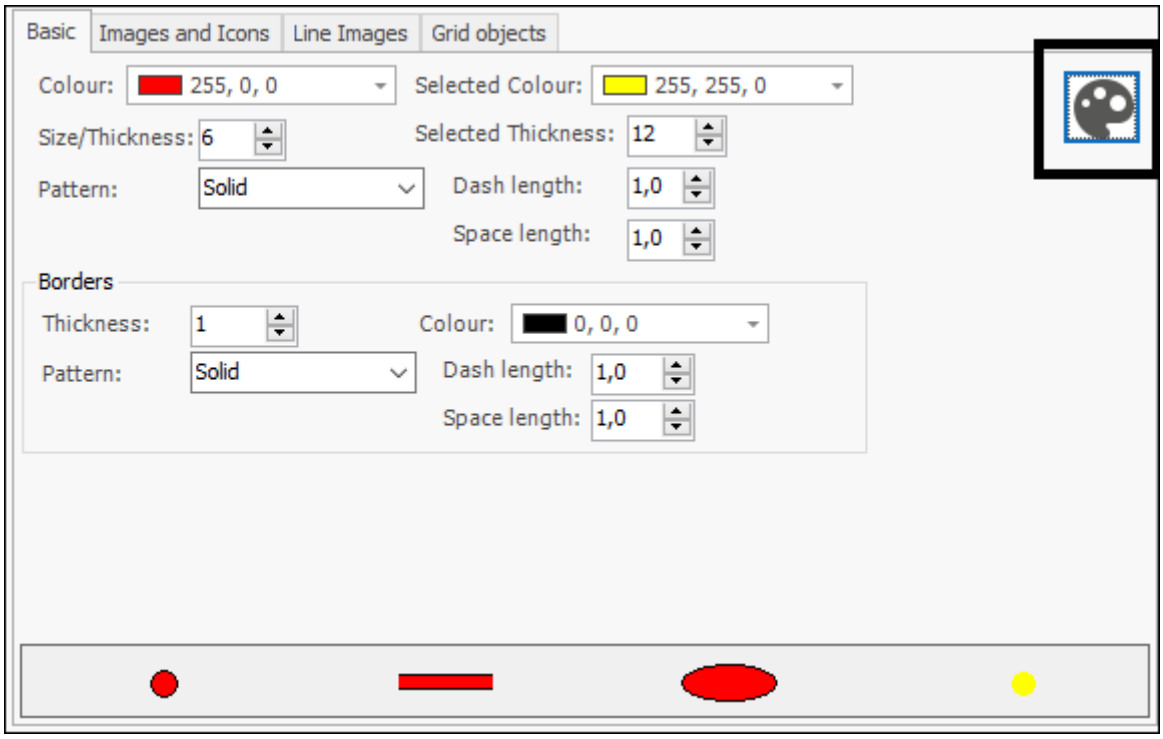
In the **Styling** tab you can set various things relating to the style and appearance of the layer. In the **Basic** tab are the basic things you can set about the layer's appearance such as **Colour**, **Size** etc.:

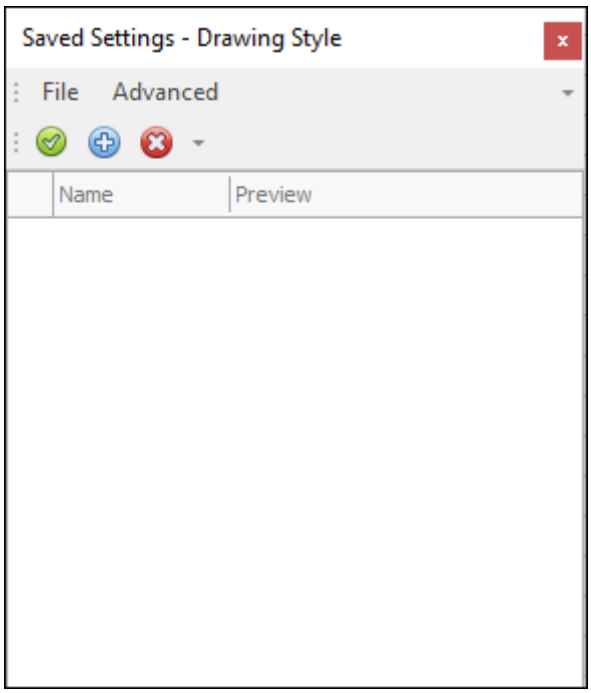


This is how my layer then appears:

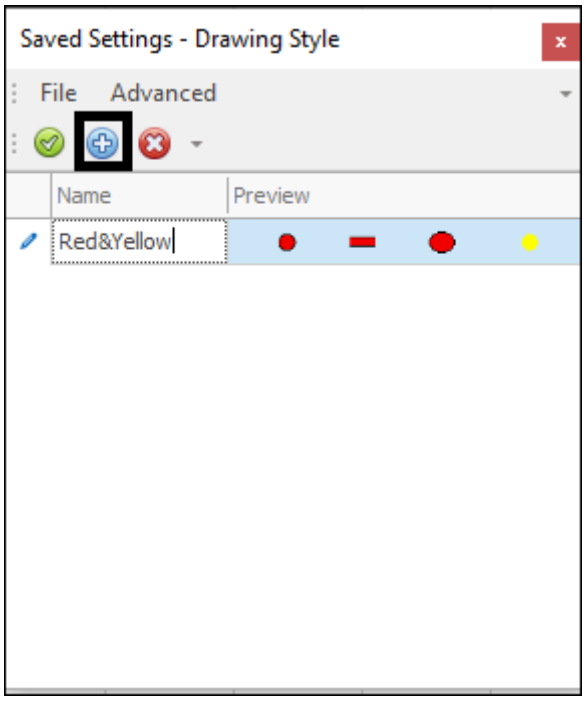


You can also have predefined settings that you set up which you can use at any time again, this is done by clicking the palette icon to the right, which brings up the following dialogue (this feature can be found in the **Thematics** tab and **Text** tab and is used in the same way):

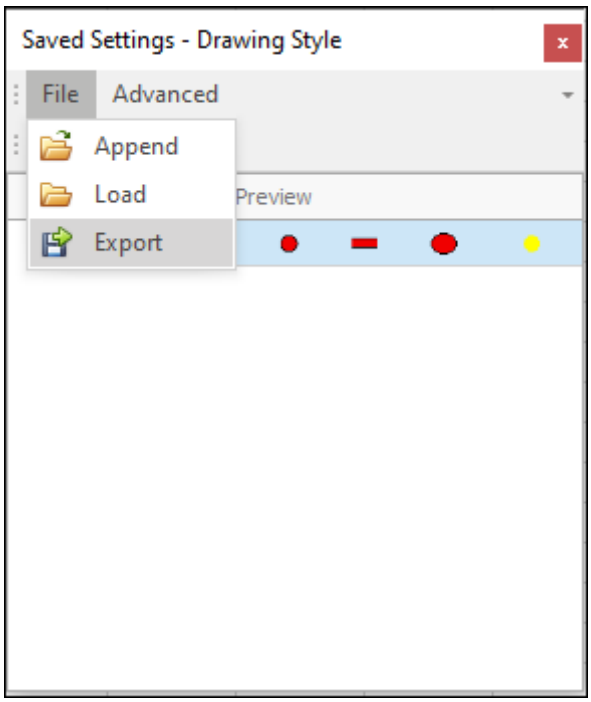




To add the predefined settings, first set it up in the Layer Properties box as you'd like then click the plus icon and name it how you'd like:

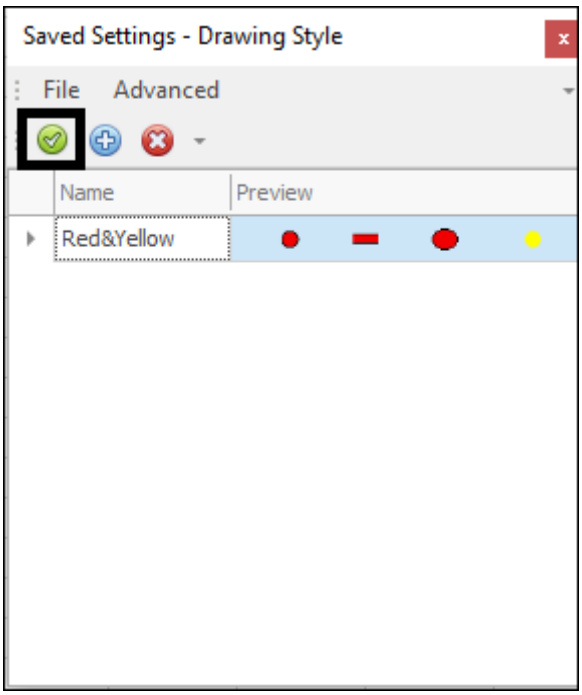


You can then choose to **Export** these settings so they can be loaded at a later time, otherwise they are just saved in this dialogue so you will see it there each time you open it:

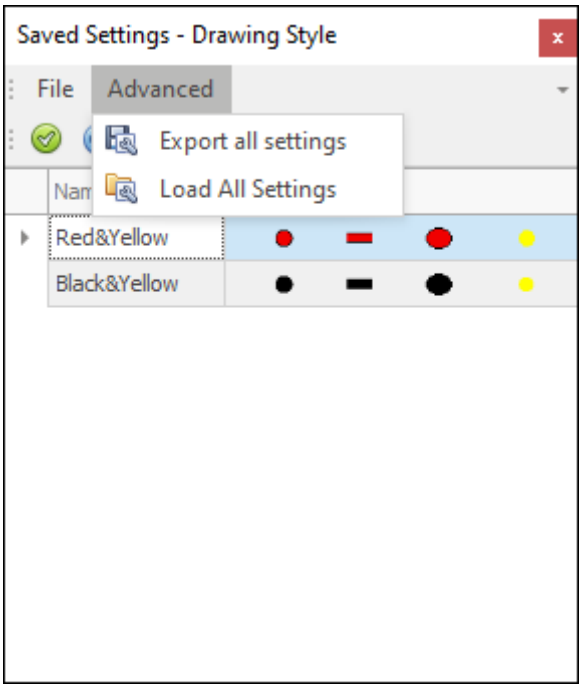


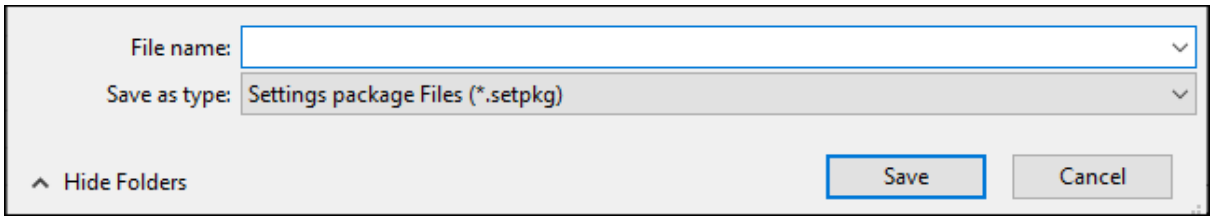
Load will load the exported settings and replace any current predefined settings you have in the dialogue whereas **Append** will add them to the list.

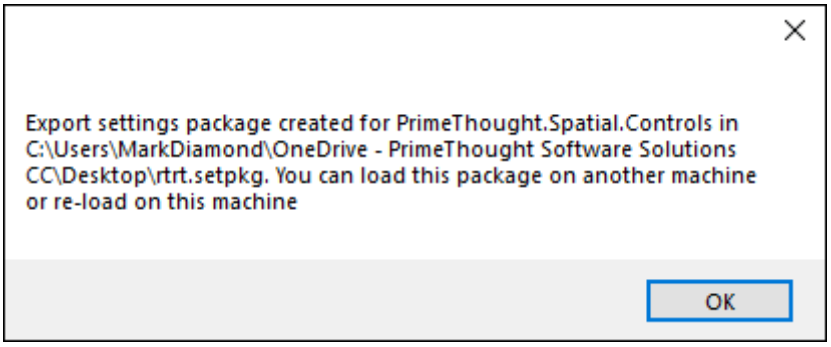
To apply these settings, you click the tick icon:



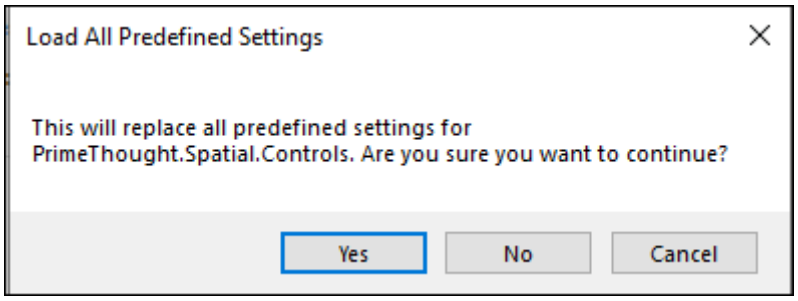
Advanced is where you can save and load all predefined settings for all dialogues, for which predefined settings can be saved such as **Styling** and **Thematics**. It is saved as a settings package and when loaded will overwrite any currently predefined settings in all the **Saved Settings** dialogue boxes:



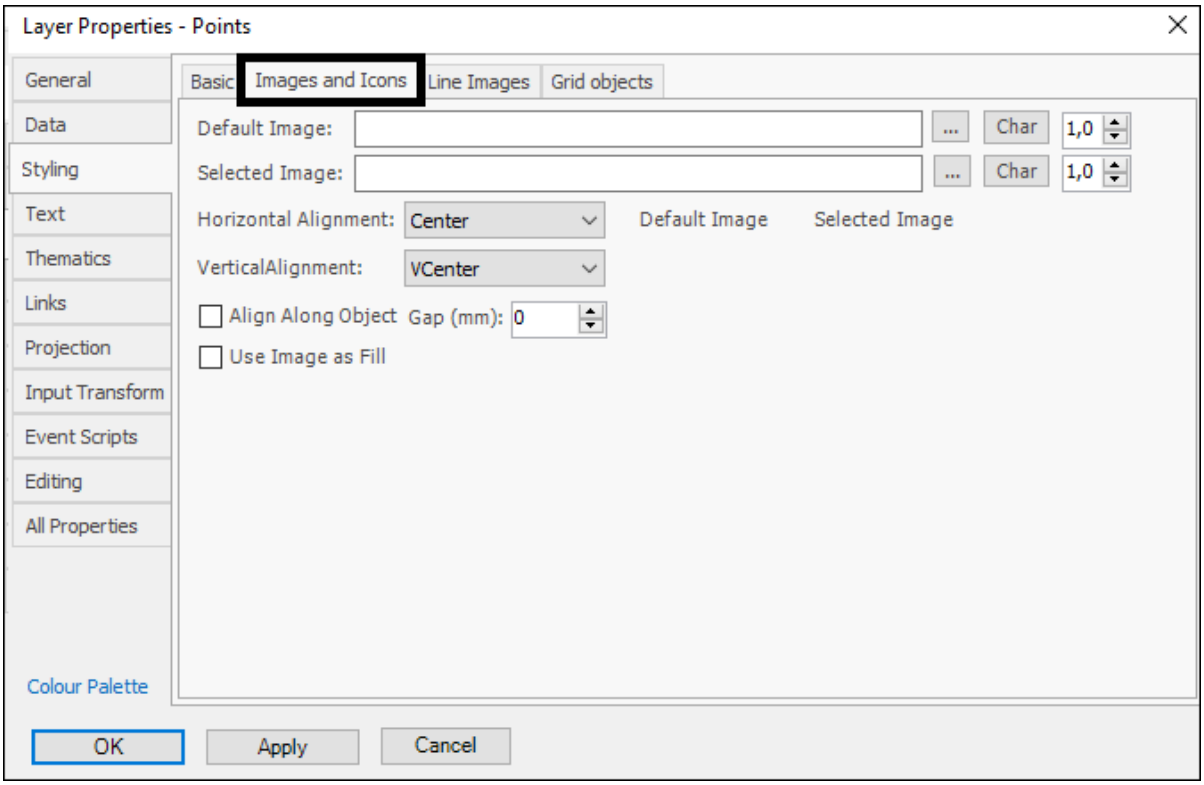




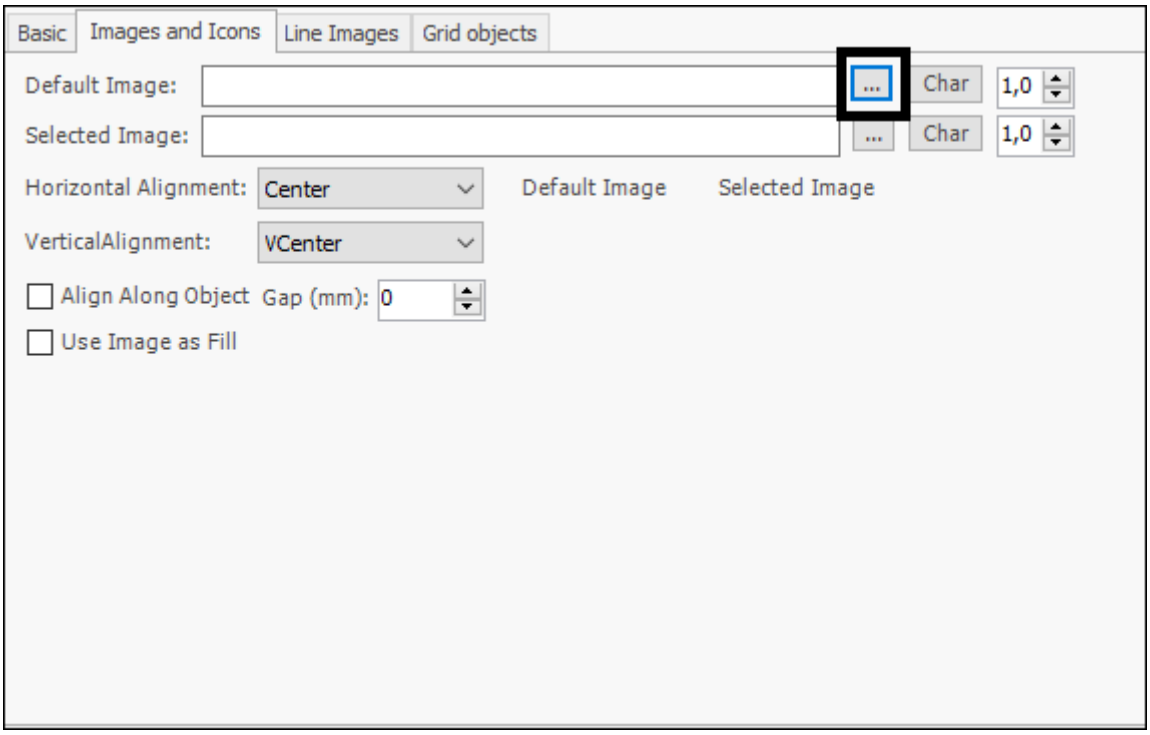
When loading a settings package, you will get the following message:



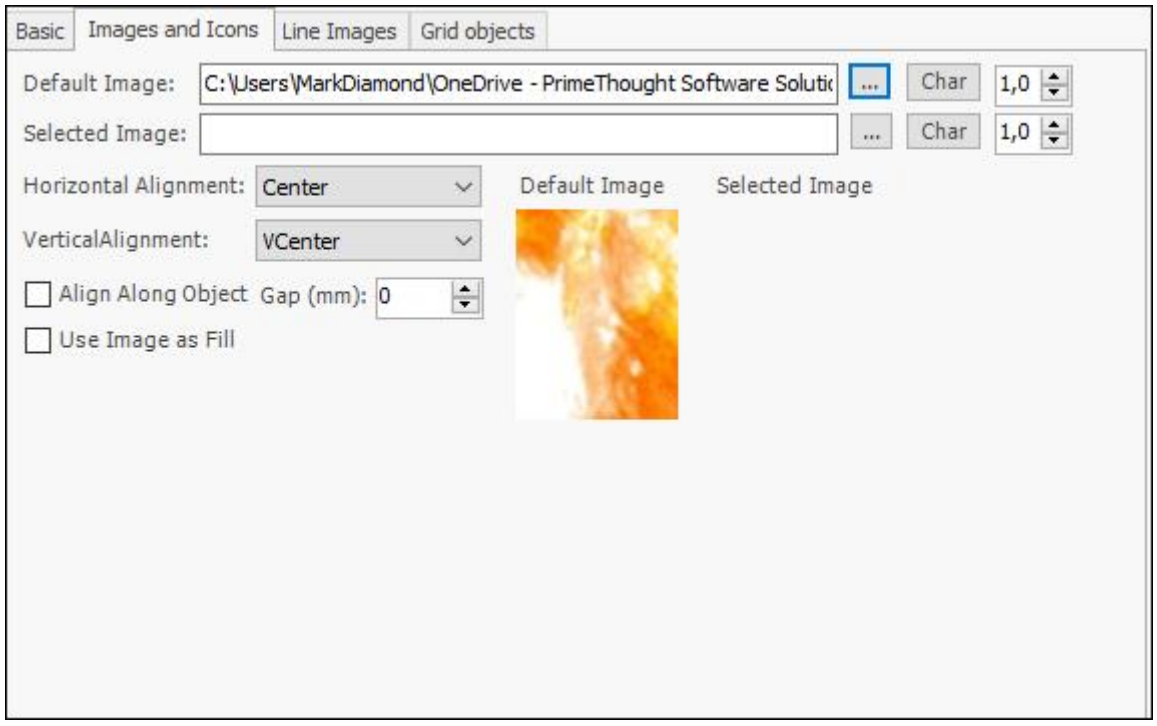
Under **Images and Icons** you can choose to have images displayed for the points in your scene:



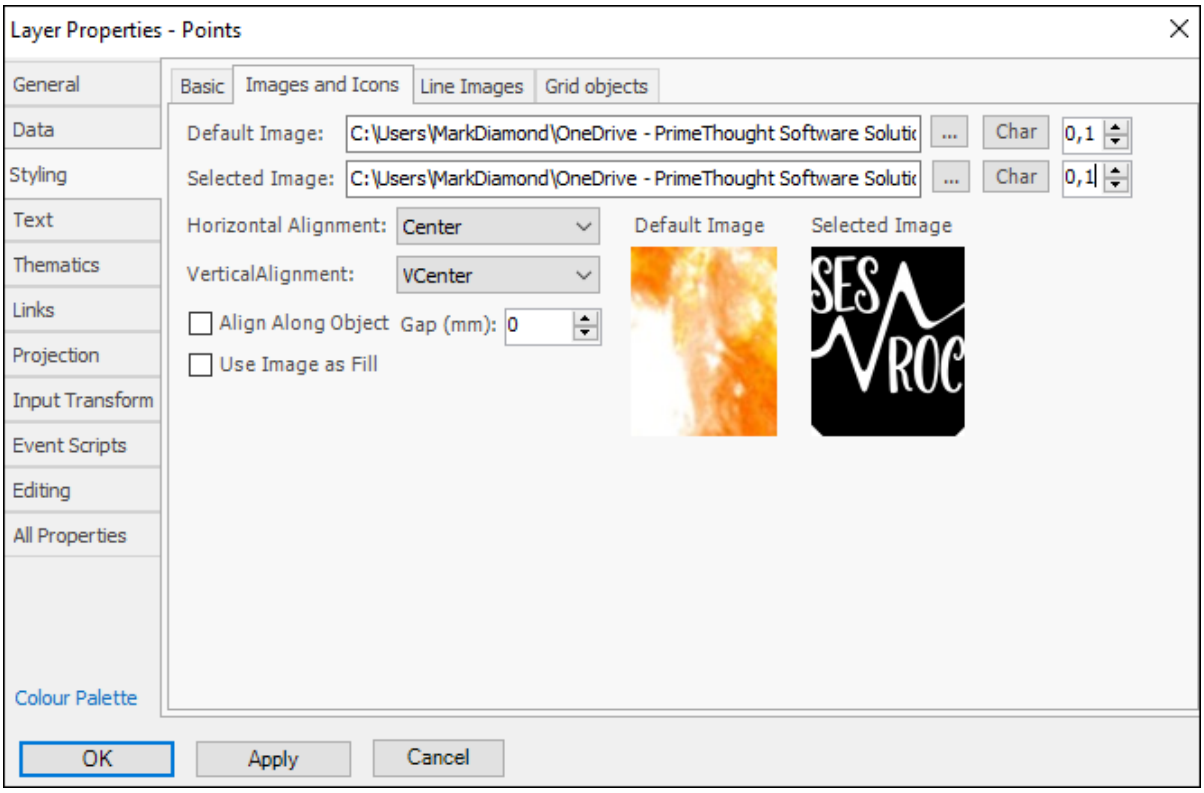
For the **Default Image** I will browse to the image I want:


Basic
Images and Icons
Line Images
Grid objects
Default Image:
Char
1,0
Selected Image:
Char
1,0
Horizontal Alignment:
Center
Default Image
Selected Image
VerticalAlignment:
VCenter
Align Along Object
Gap (mm):
0
Use Image as Fill

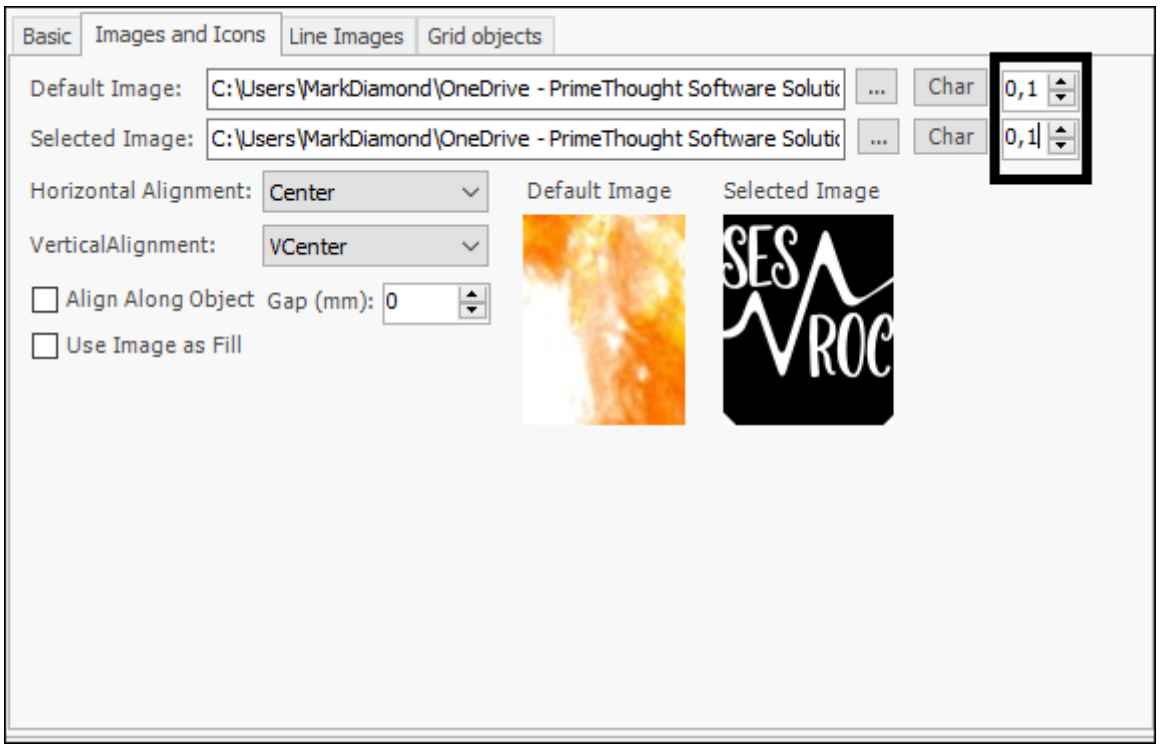

20141105-flare-171-304_1.jpeg
svg.png
File name:
20141105-flare-171-304_1.jpeg
Image files (*.jpg; *.jpeg; *.bmp
Open
Cancel



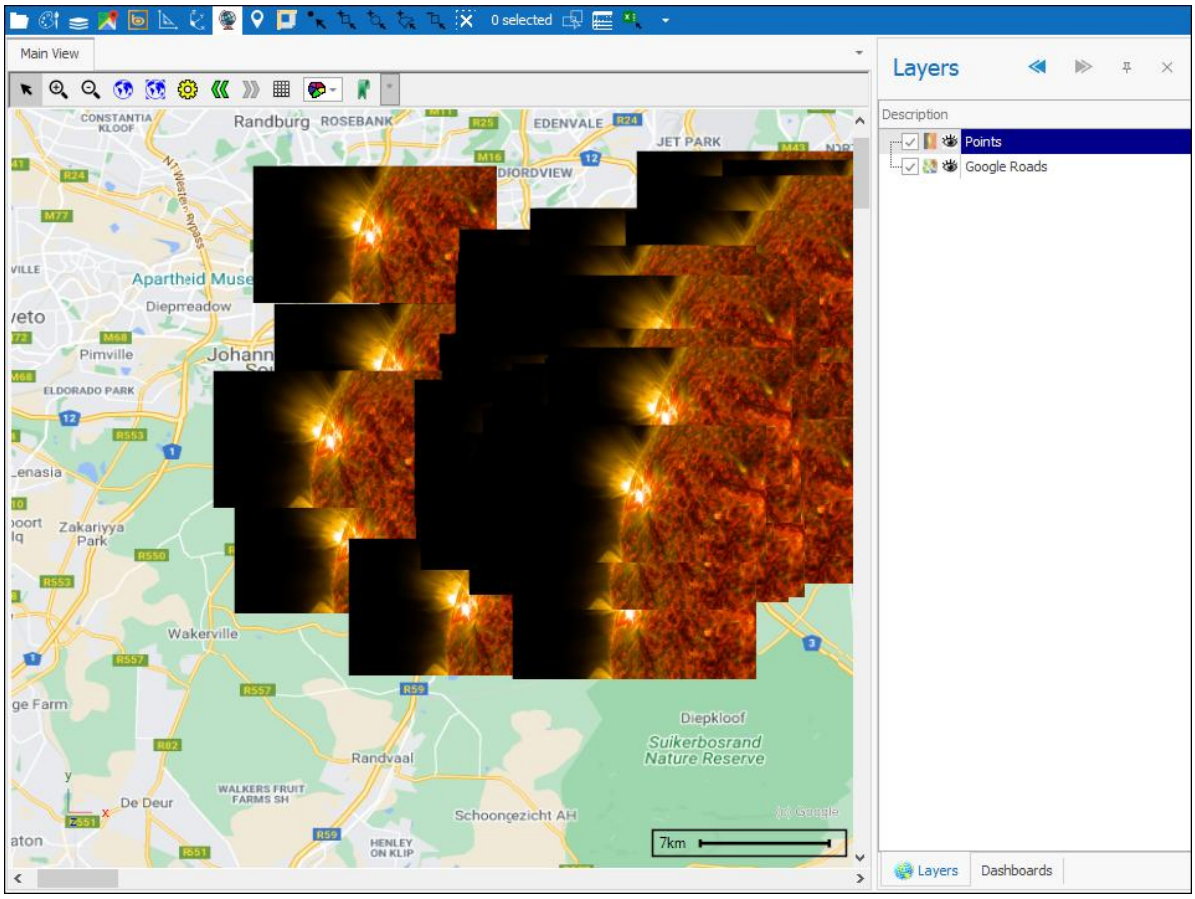
And for **Selected Image** I will do the same; **Selected Image** is the image to be shown when points are selected in the scene:



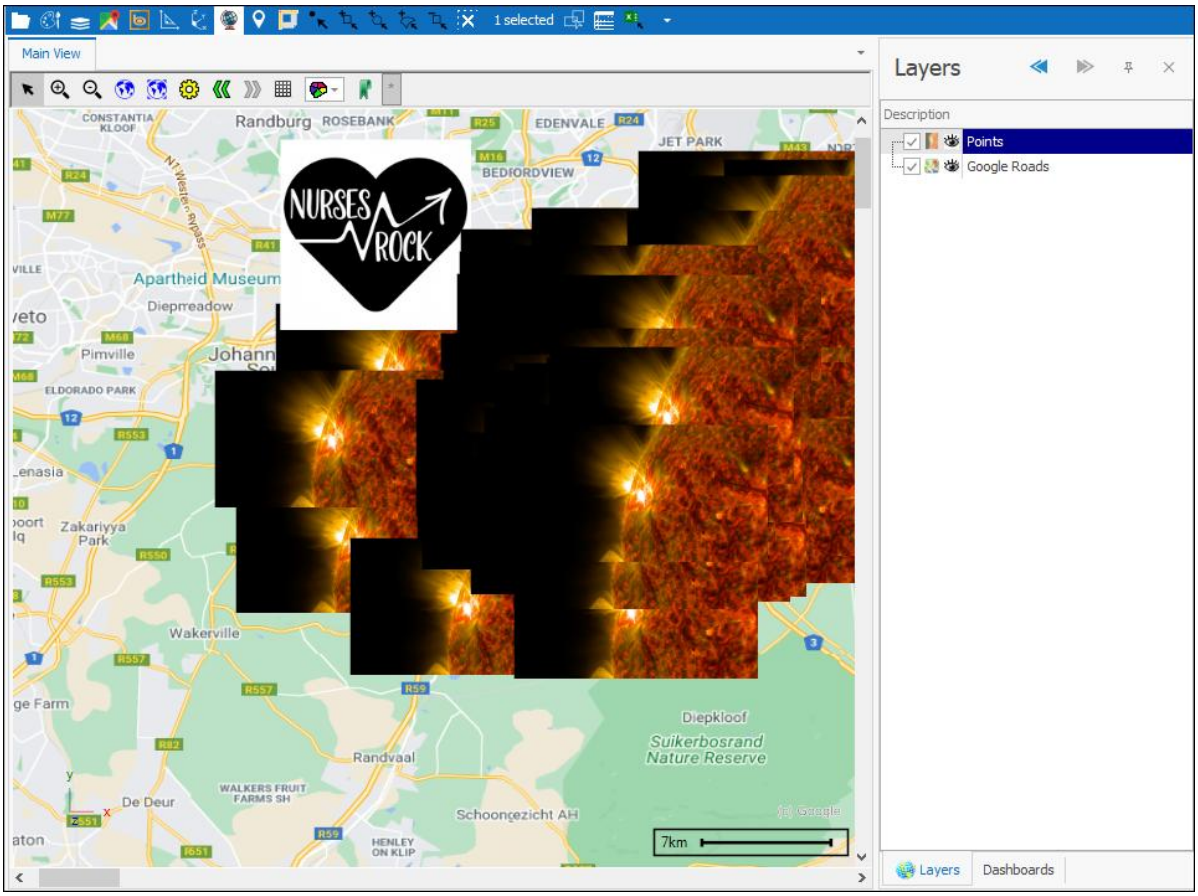
The images can be scaled on the side:



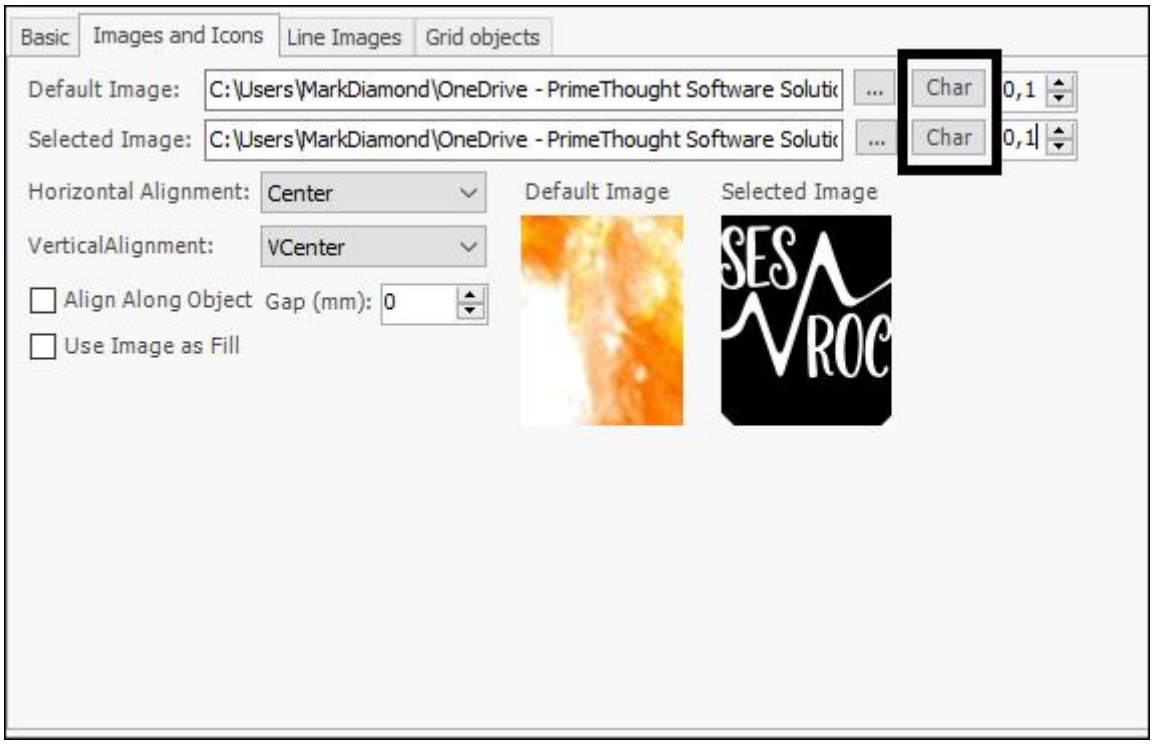
I can then click **OK**, and you will see the images displayed for the points in my scene:

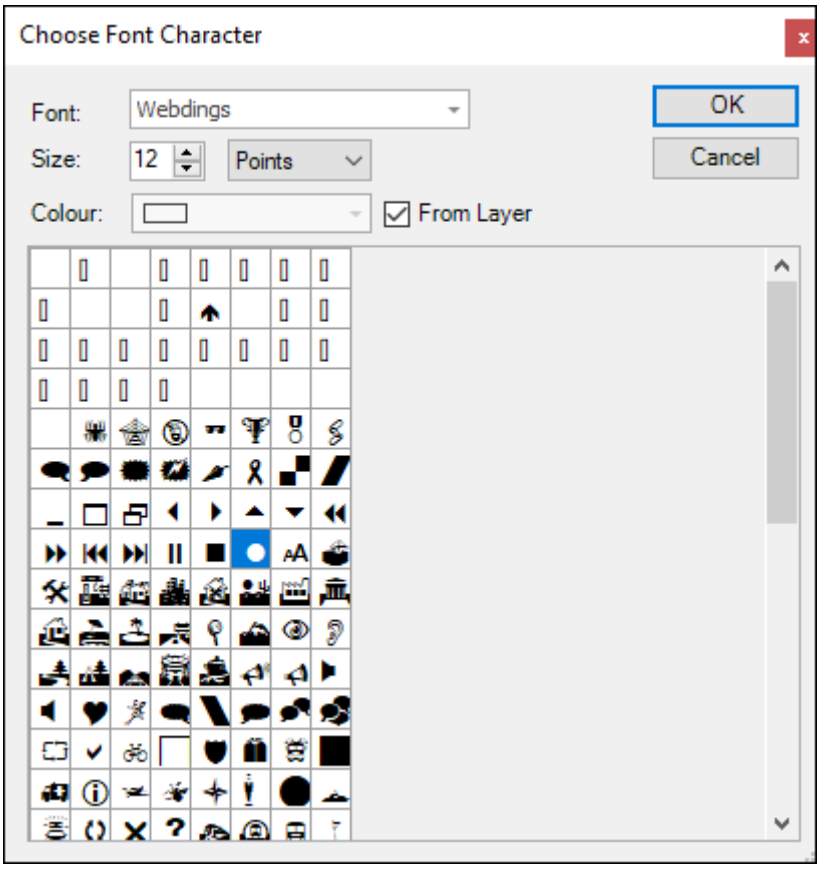


And if I select one of them it will change to the selected image I set:

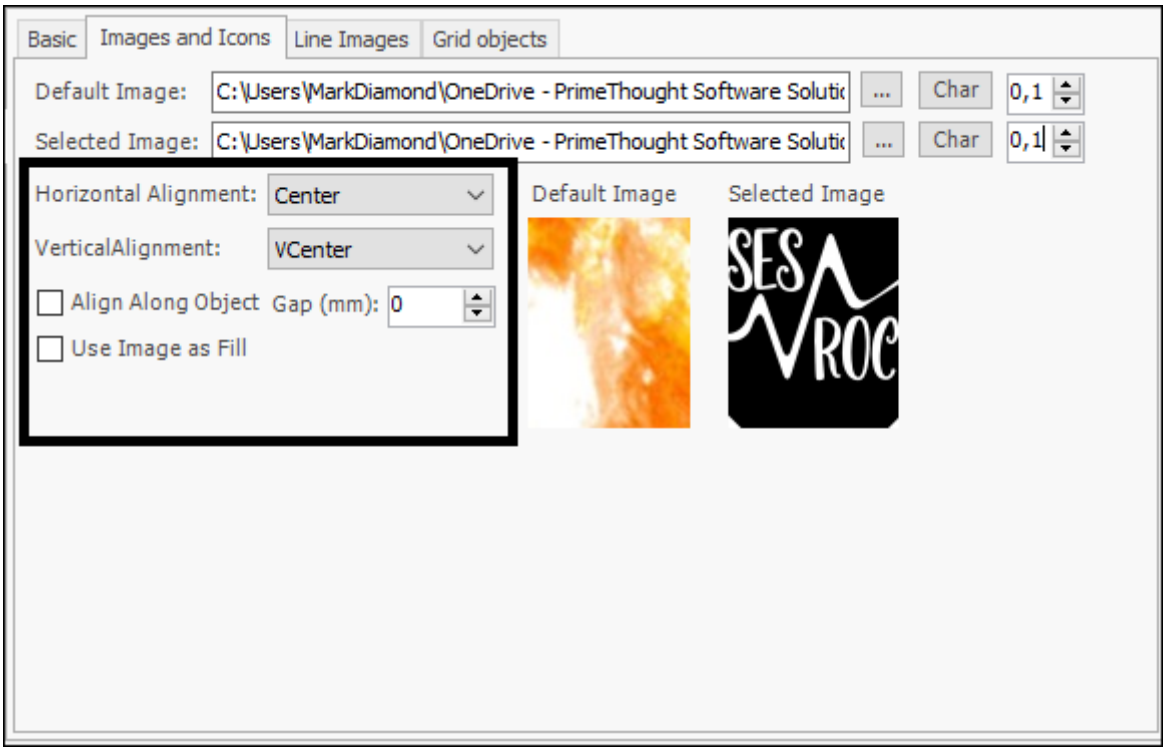


You can also use characters/symbols instead of images by using the **Char** button:

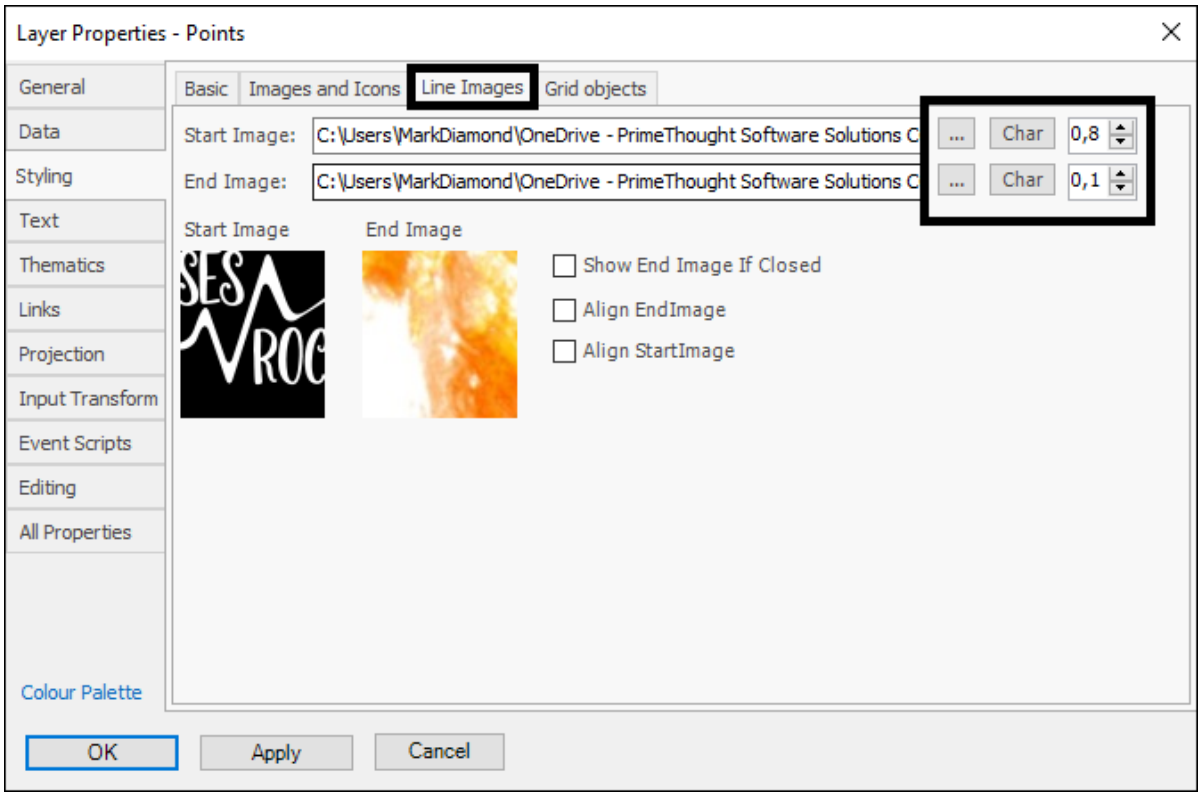


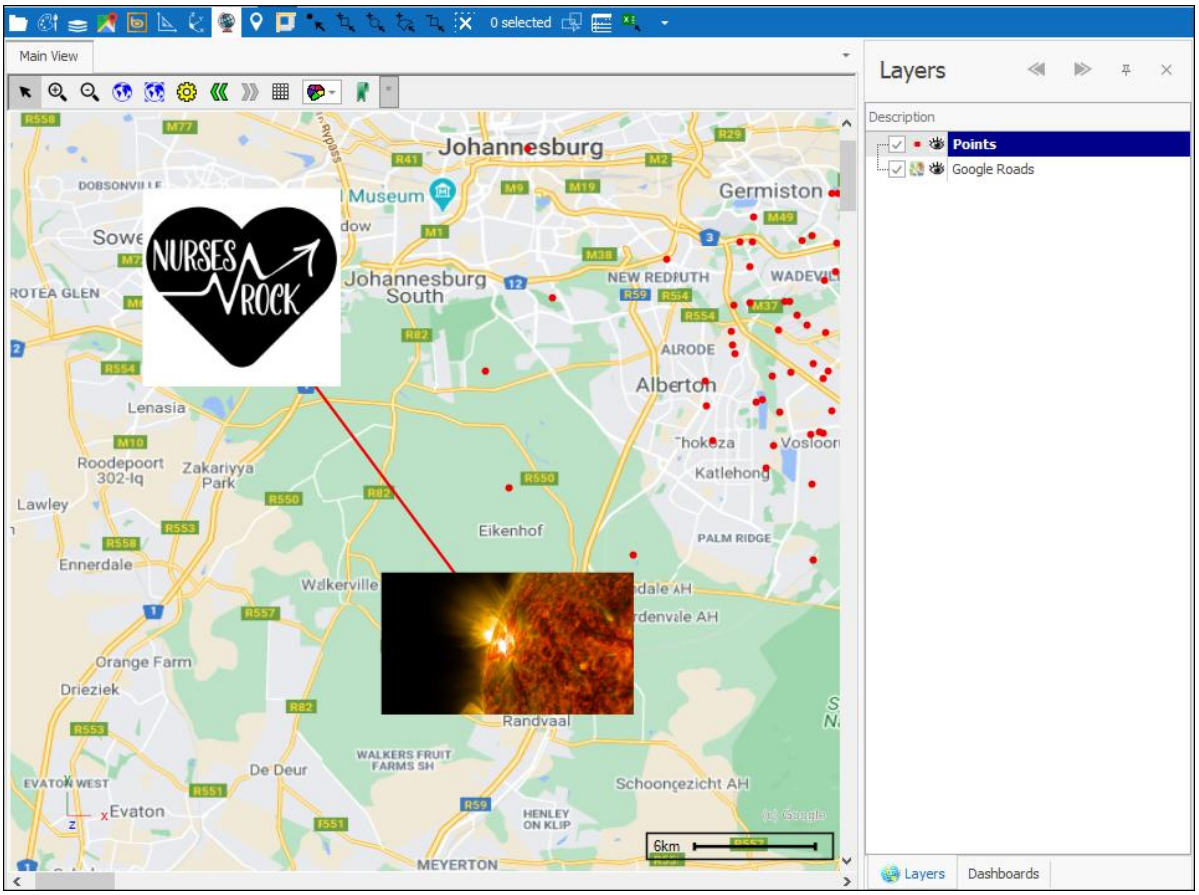


You can align the images etc. using the controls here:

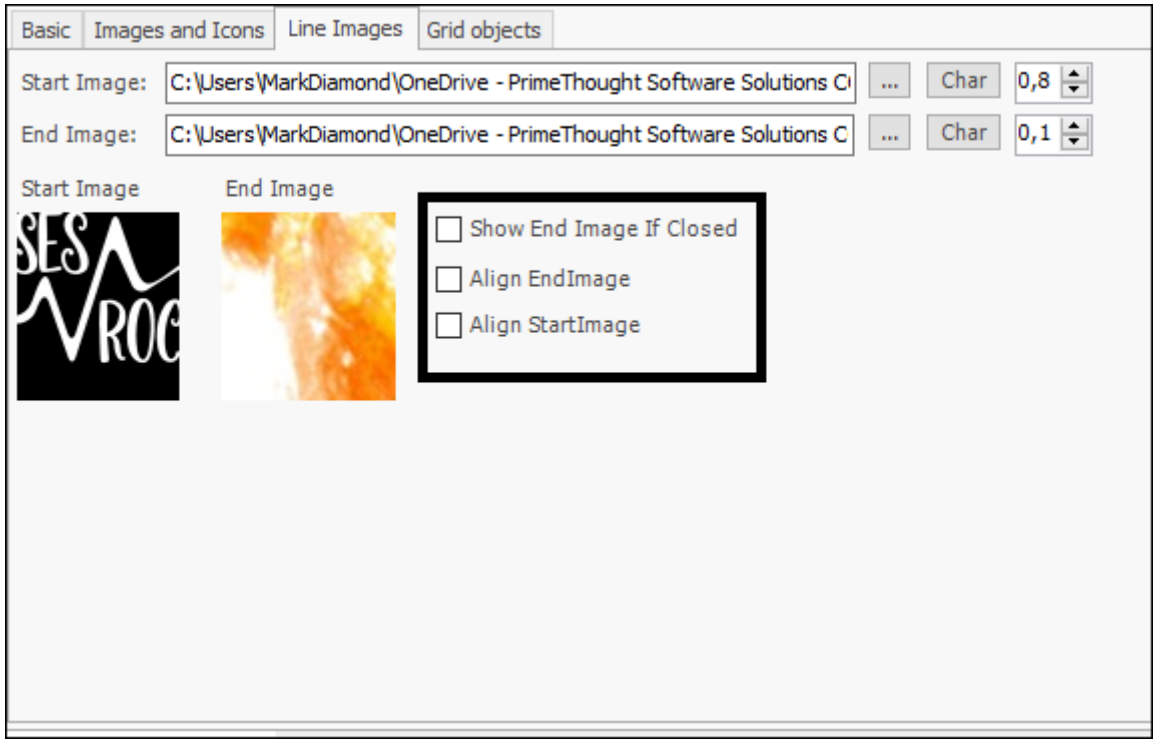


Under **Line Images** you can choose to have images displayed at the beginning or end of linestrings as an indicator of a beginning or end point, you similarly browse to the image or character you want and scale it:

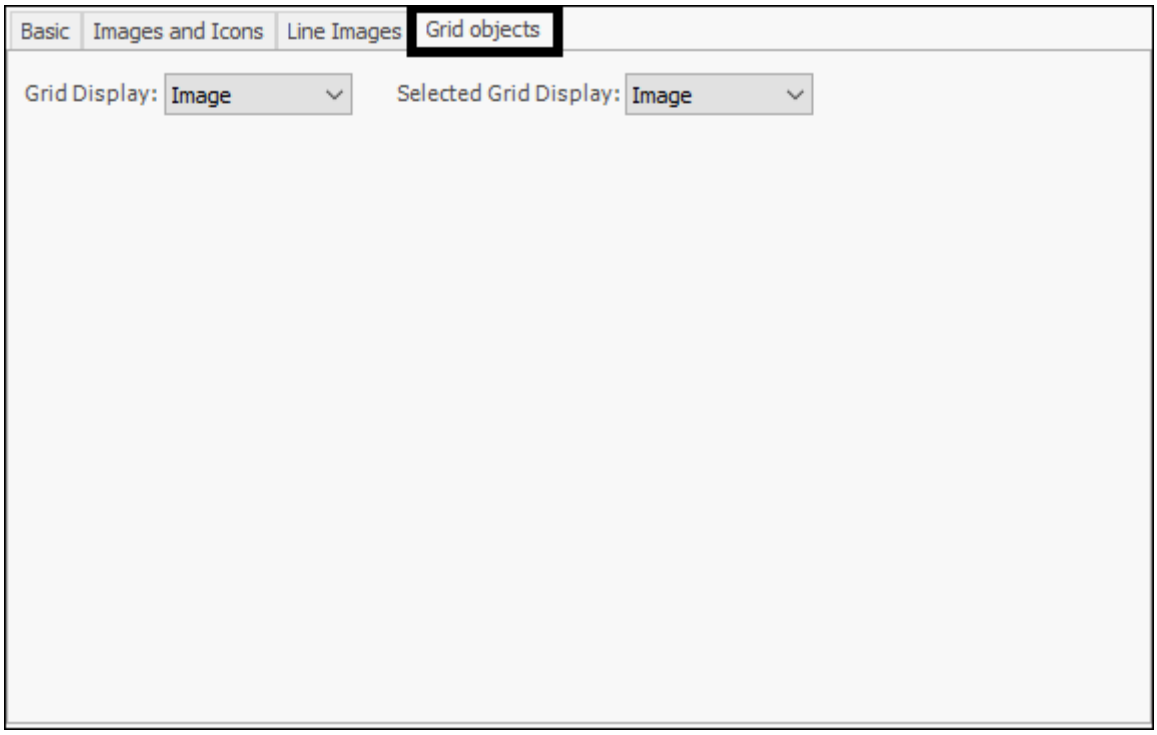

Layer Properties - Points
General
Data
Styling
Text
Thematics
Links
Projection
Input Transform
Event Scripts
Editing
All Properties
Colour Palette
Basic
Images and Icons
Line Images
Grid objects
Start Image:
End Image:
C:\Users\MarkDiamond\OneDrive - PrimeThought Software Solutions C
Char
0,8
0,1
Start Image
End Image
Show End Image If Closed
Align EndImage
Align StartImage
OK
Apply
Cancel


Main View
Layers
Description
Points
Google Roads
Johannesburg
Germiston
Johannesburg South
Alberton
Lenasia
Roodepoort
Zakariyya Park
Lawley
Eikenhof
Ennerdale
Walkerville
Orange Farm
Drieziek
Randvaal
De Deur
Evaton
MEYERTON
Schoonçezicht AH
6km
Layers
Dashboards

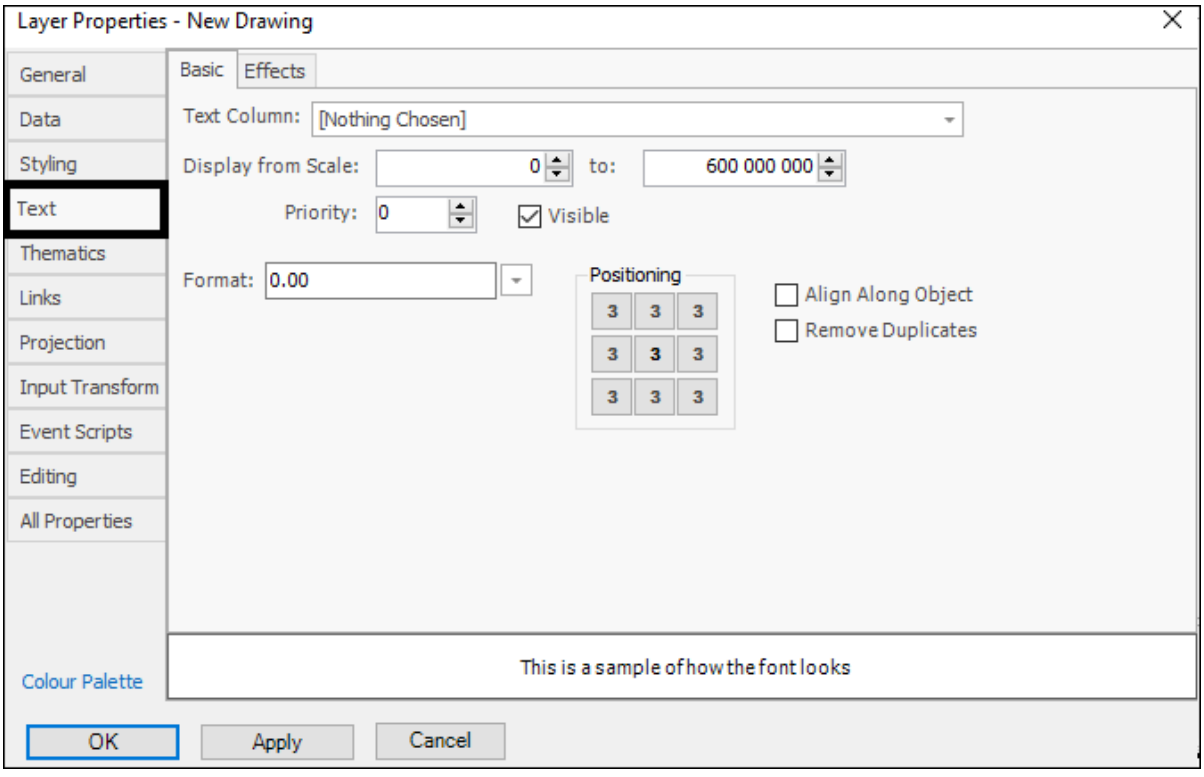
You can align the images with the line or choose to have only end image shown if line closed:



Under **Grid Objects** you can choose the default and selected display style for grid layers:

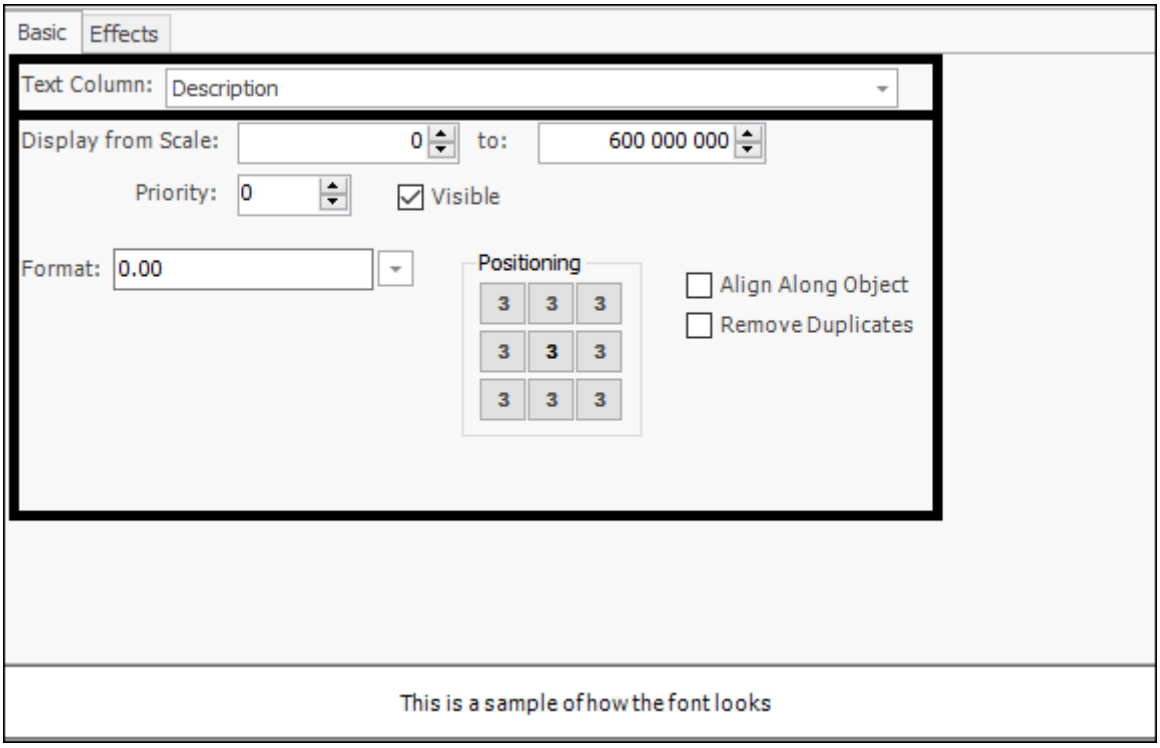


Text

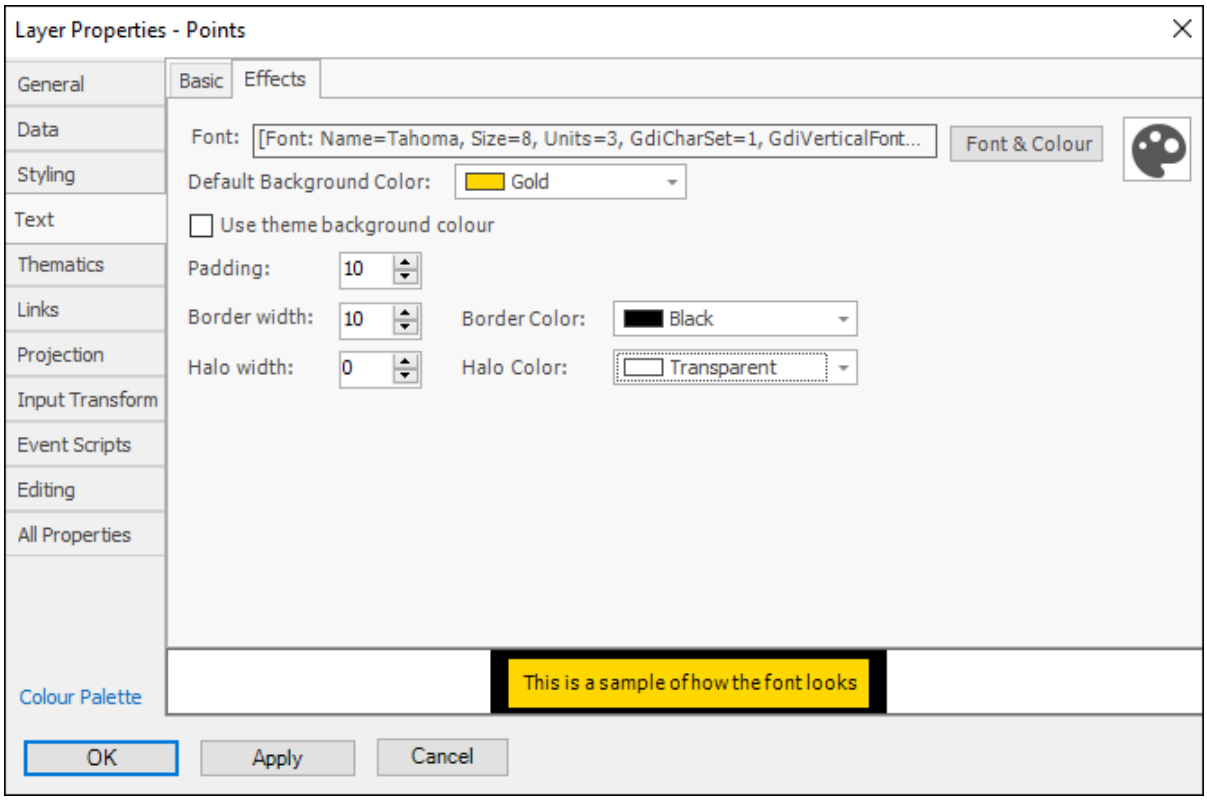


In the **Text** tab you can set various things regarding text labels shown on your scene. In the **Basic** tab you can choose what column in your data you would like

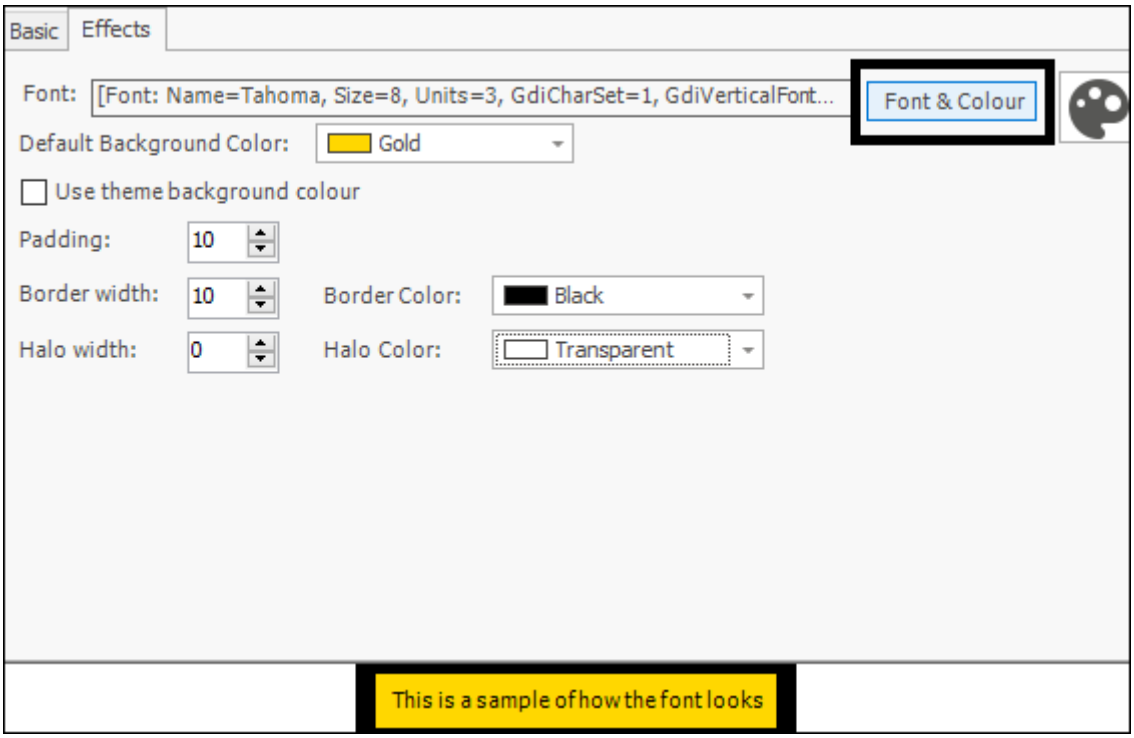
to show text labels for. You can also choose what scale to display it at, positioning etc.:

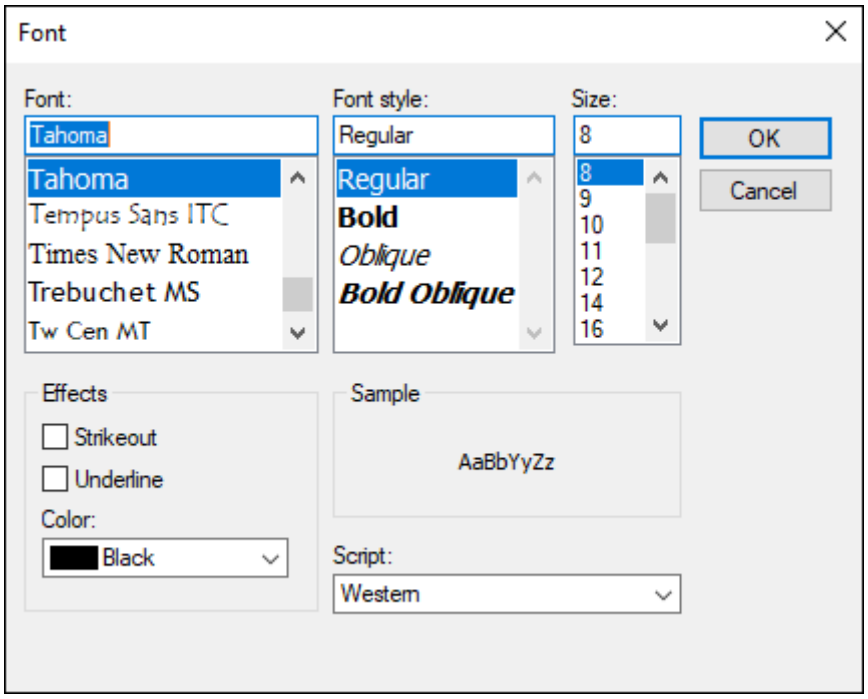


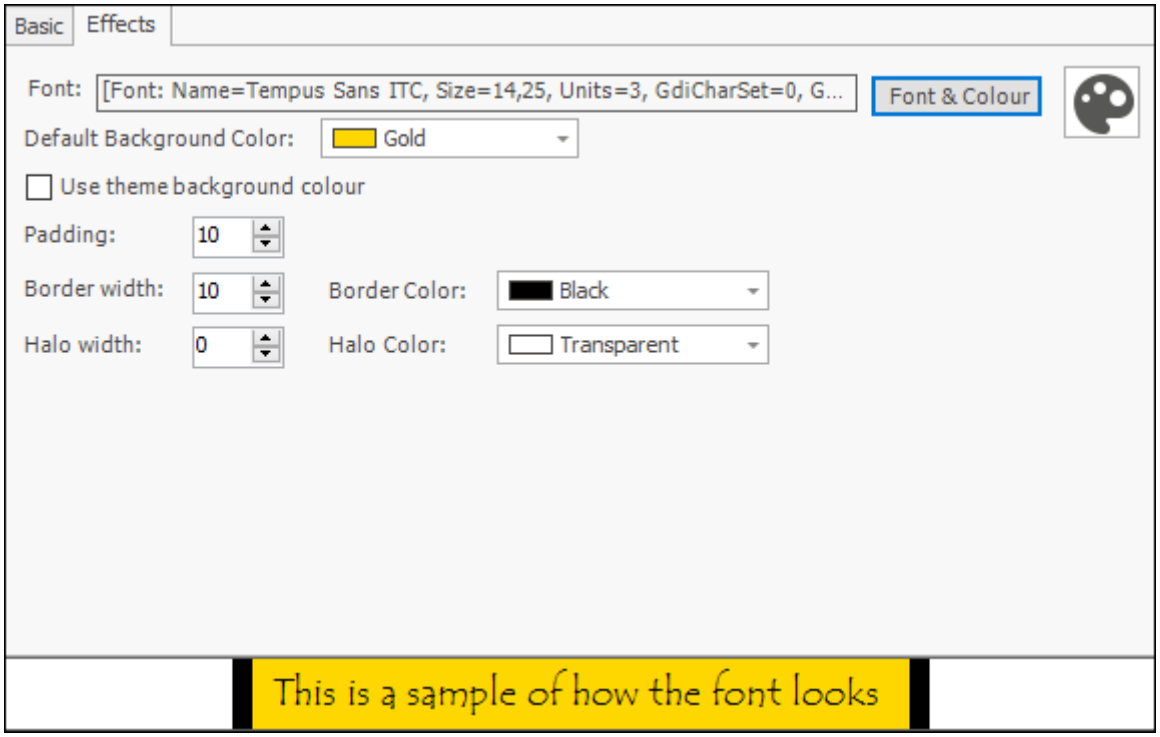
In the **Effects** tab you can set the style, font, size etc. for the text; you can see an example of some settings I set, below is a sample of how the text will look:



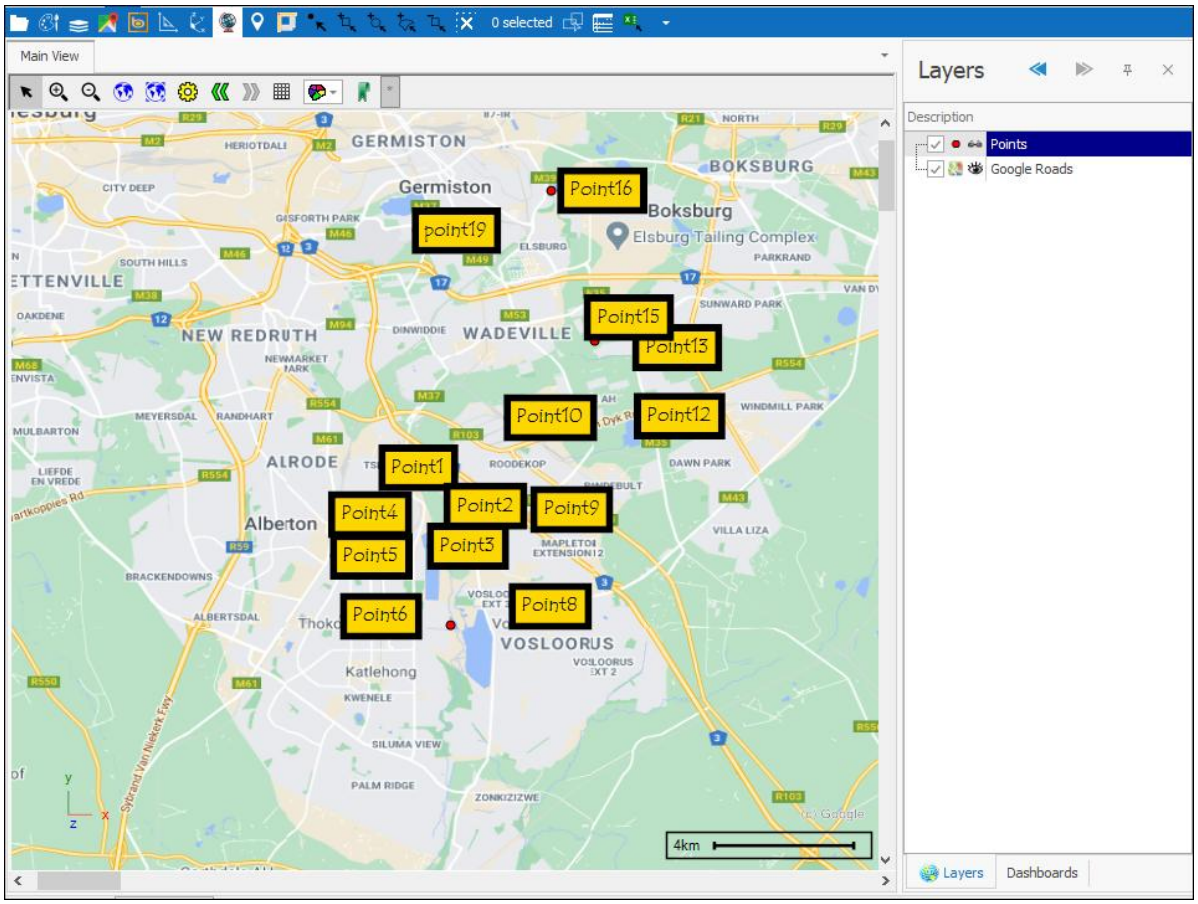
To change the font, colour and size of text click on **Font & Colour** which will bring up a dialogue box:



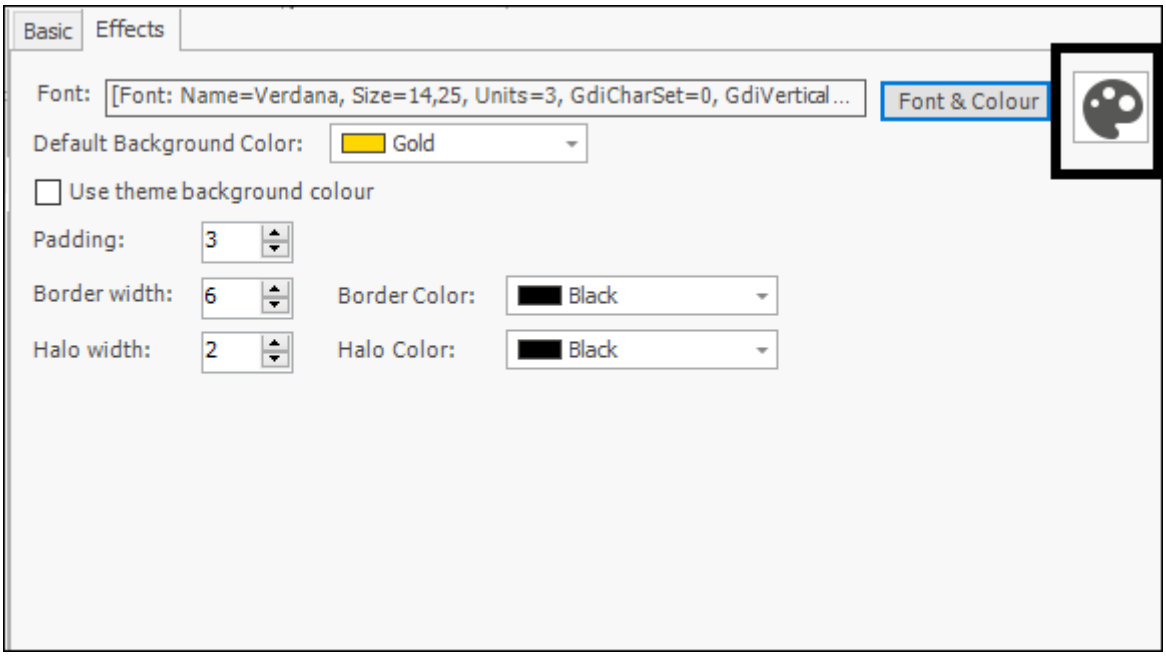




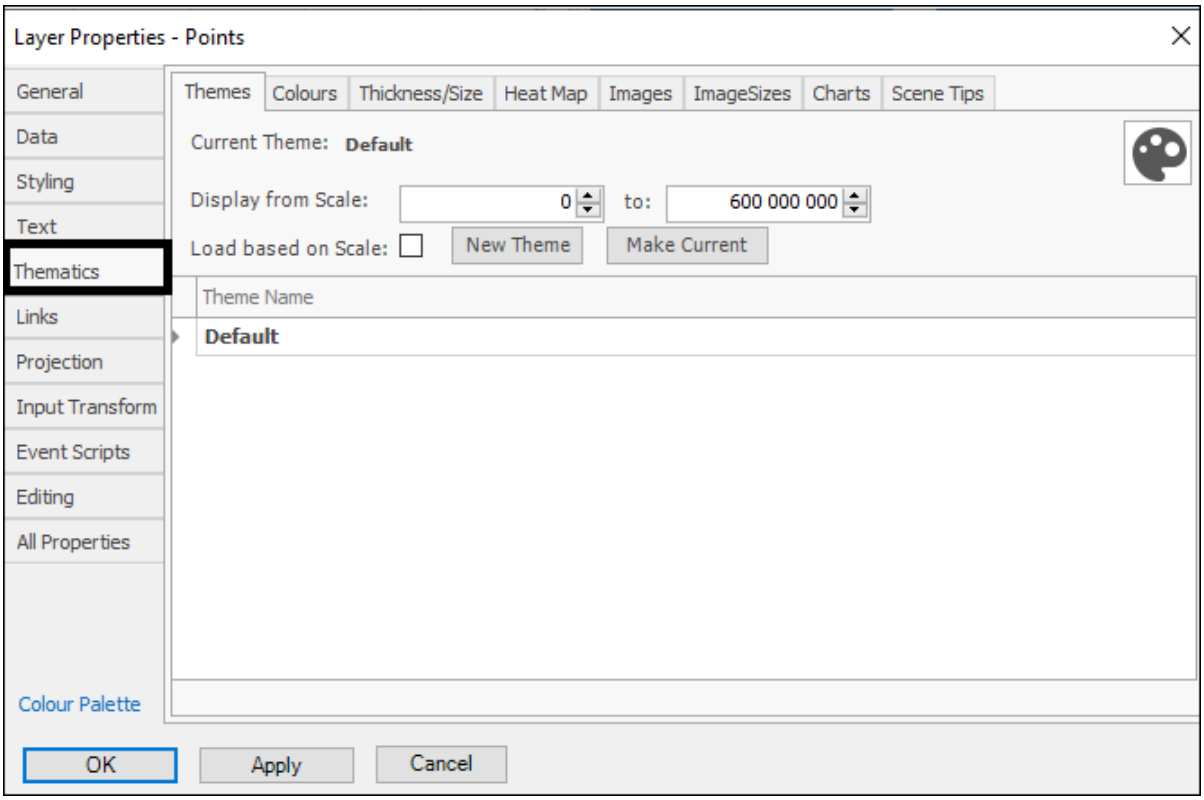
When done setting your text click **OK** and you will see your labels in the scene:



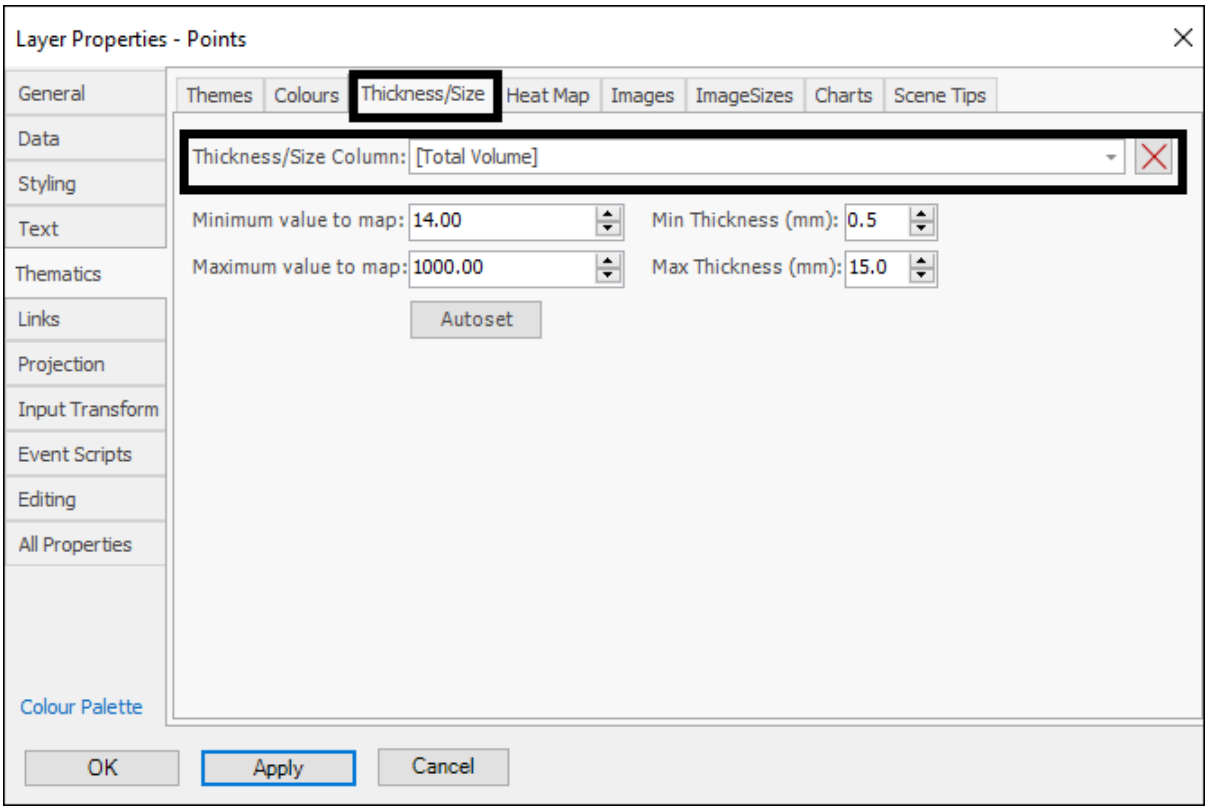
For **Text** you similarly have a predefined settings feature that you can access with the palette icon and works as gone over under **Styling**:



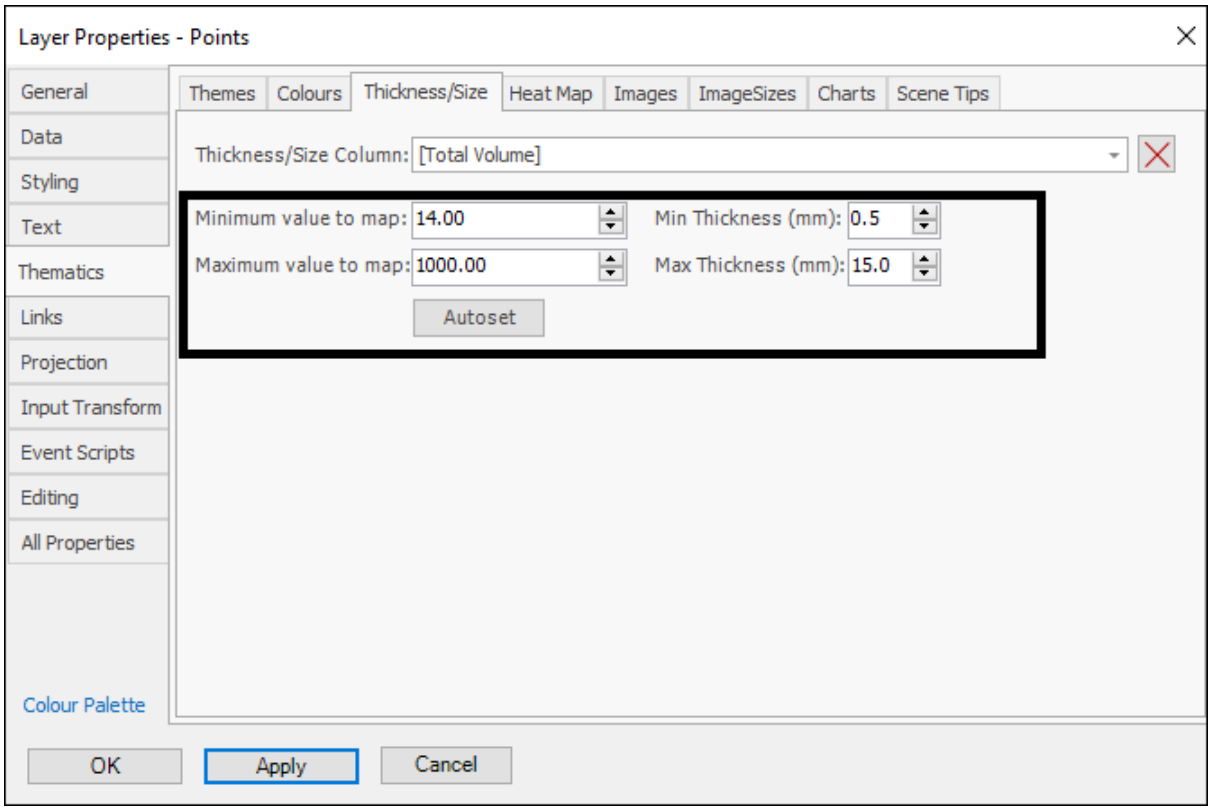
Thematics



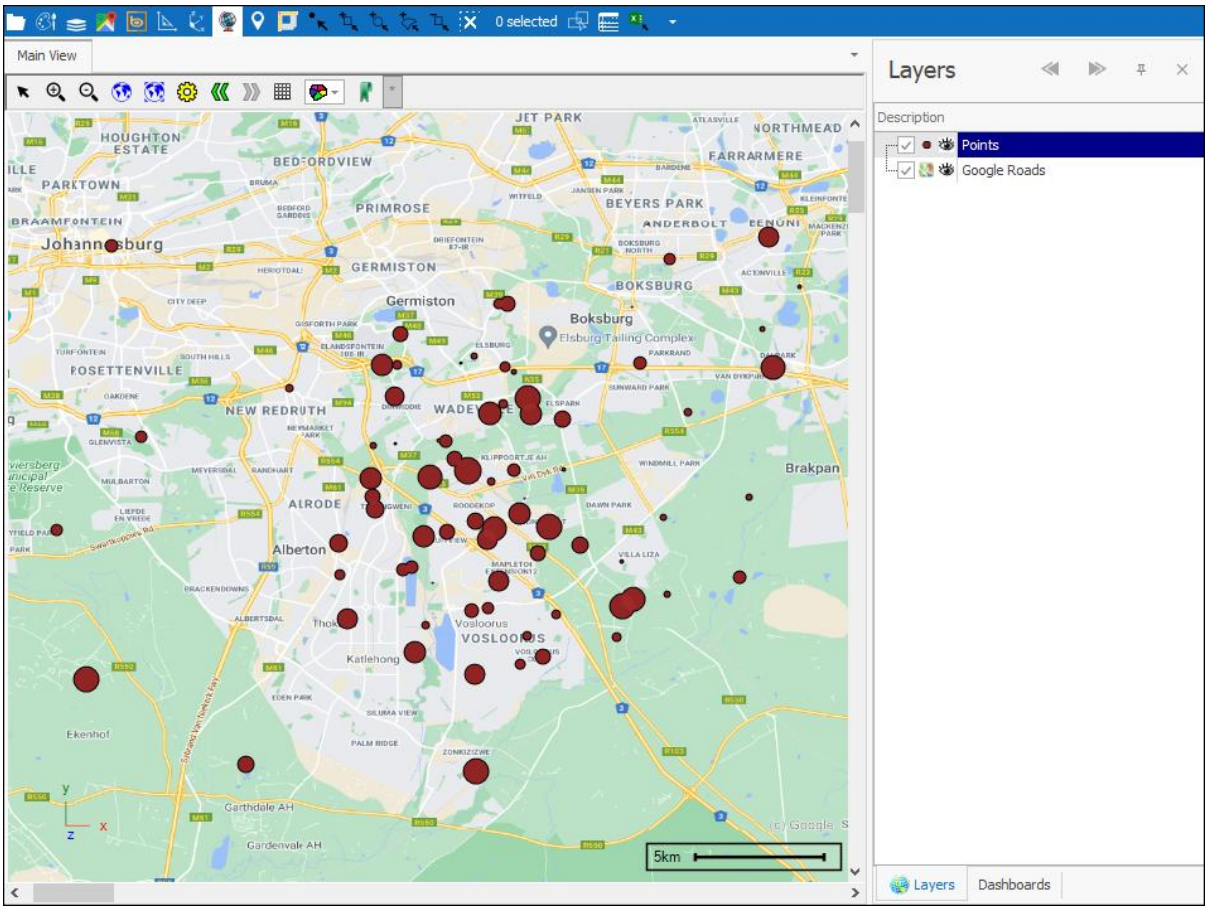
In the **Thematics** tab you can create various themes for your layer. This is gone over in the *SpatialXL Guide*, *Theming* section. Here I will cover ones that weren't touched on, starting with **Thickness/Size**. In this tab you can create a theme that will make the points or elements bigger in the layer depending on their value in some column in the layer data. For example, I will choose the **TOTAL VOLUME** column to do this on:



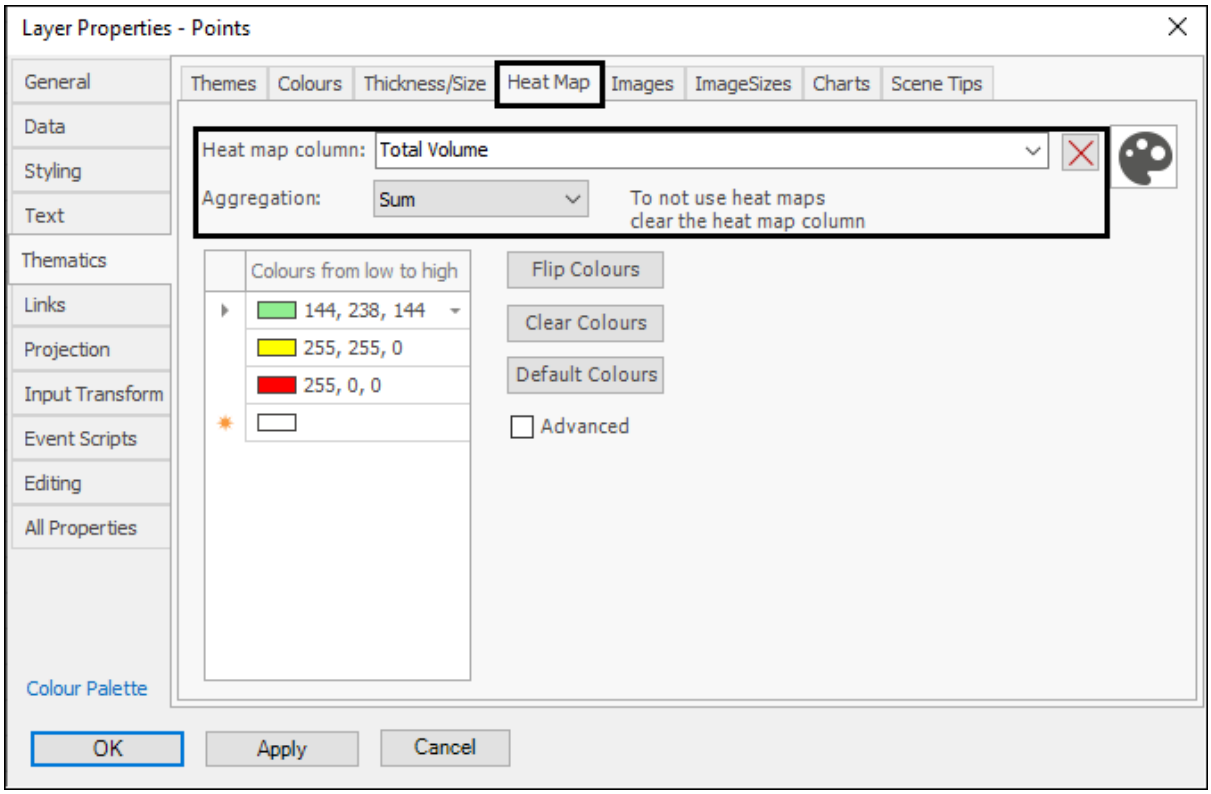
Minimum value to map and **Maximum value to map** can be auto set based on the values in your layer by using the **Autoset** button. You can then set the **Min** and **Max Thickness(mm)** for the elements:



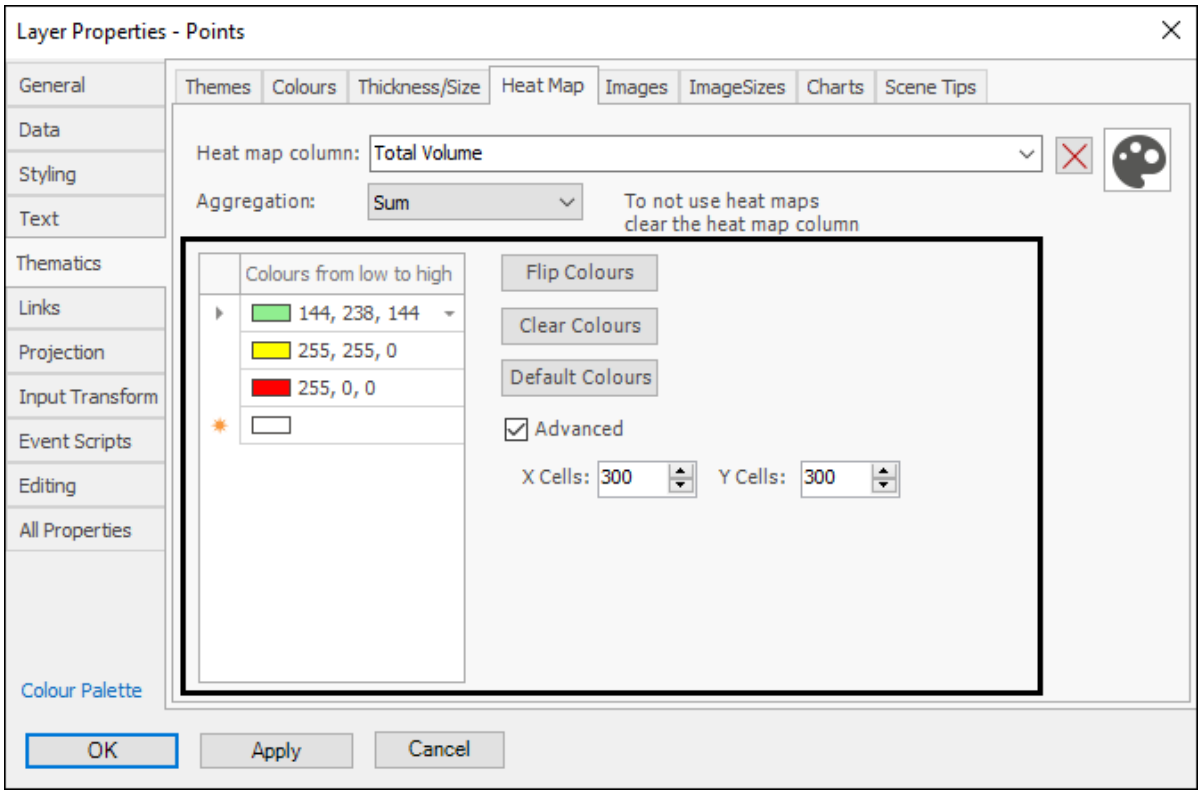
Click **OK** (or **Apply** first to see how it looks) when done and your theme is applied:



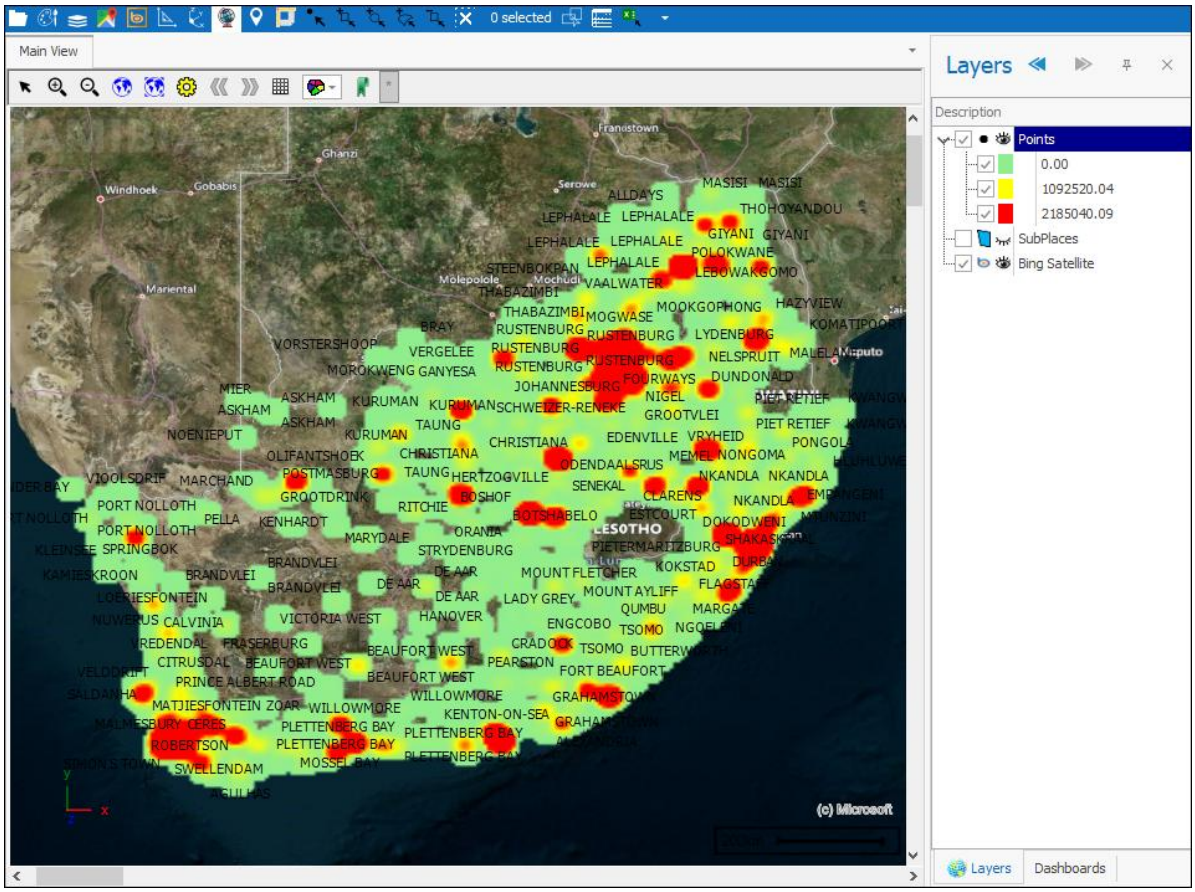
With the **Heat Map** tab you can create a heat map theme. First, choose the column in your data you would like to do this for by **Heat map column**. Then by **Aggregation** choose what type of calculation you would like done in aggregating the values (Note: you can also save predefined settings for this, indicated by the palette icon on the right, as gone over under **Styling**):



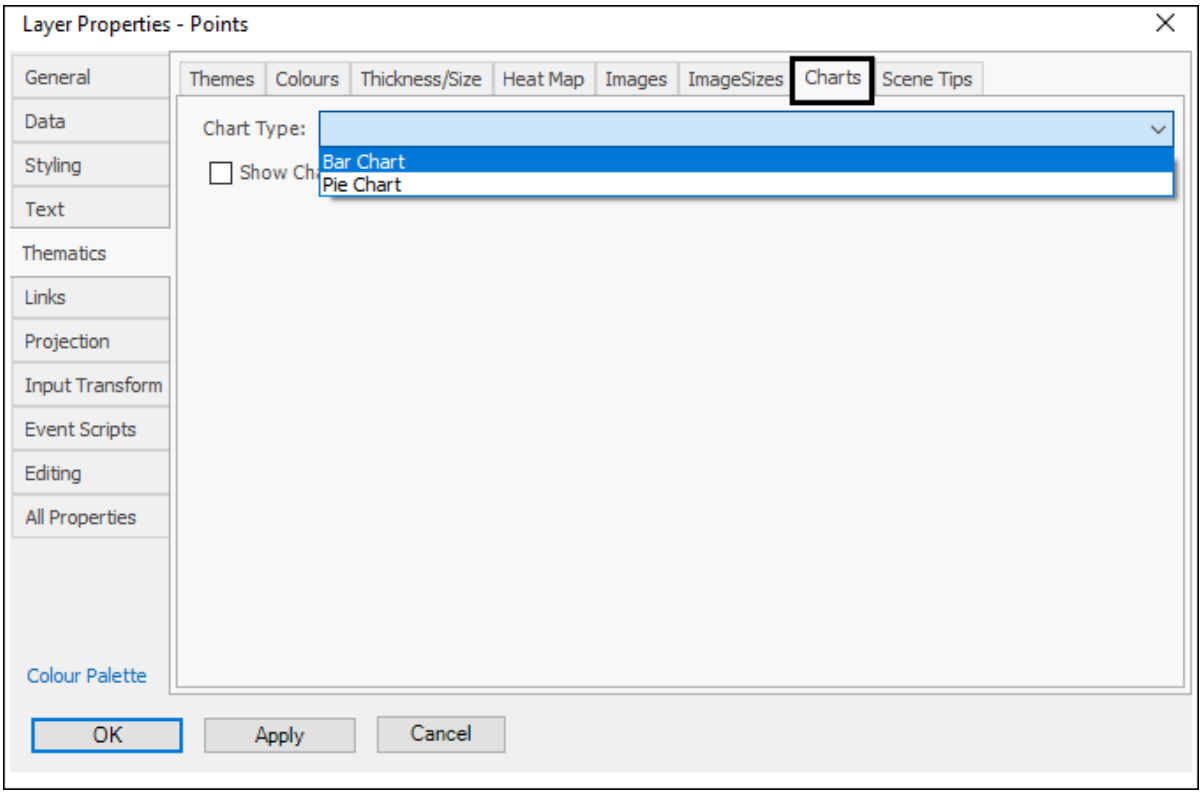
Then you can change the colours for the map if you'd like by clicking on them. **Flip Colours** will change it around so that the highest value colour is the lowest value colour and vice versa. **Clear Colours** will clear the colours from the box and **Default Colours** will set the colours back to the default if changed. If you tick on **Advanced** you can make the heat map more precise by increasing the number of cells it uses:



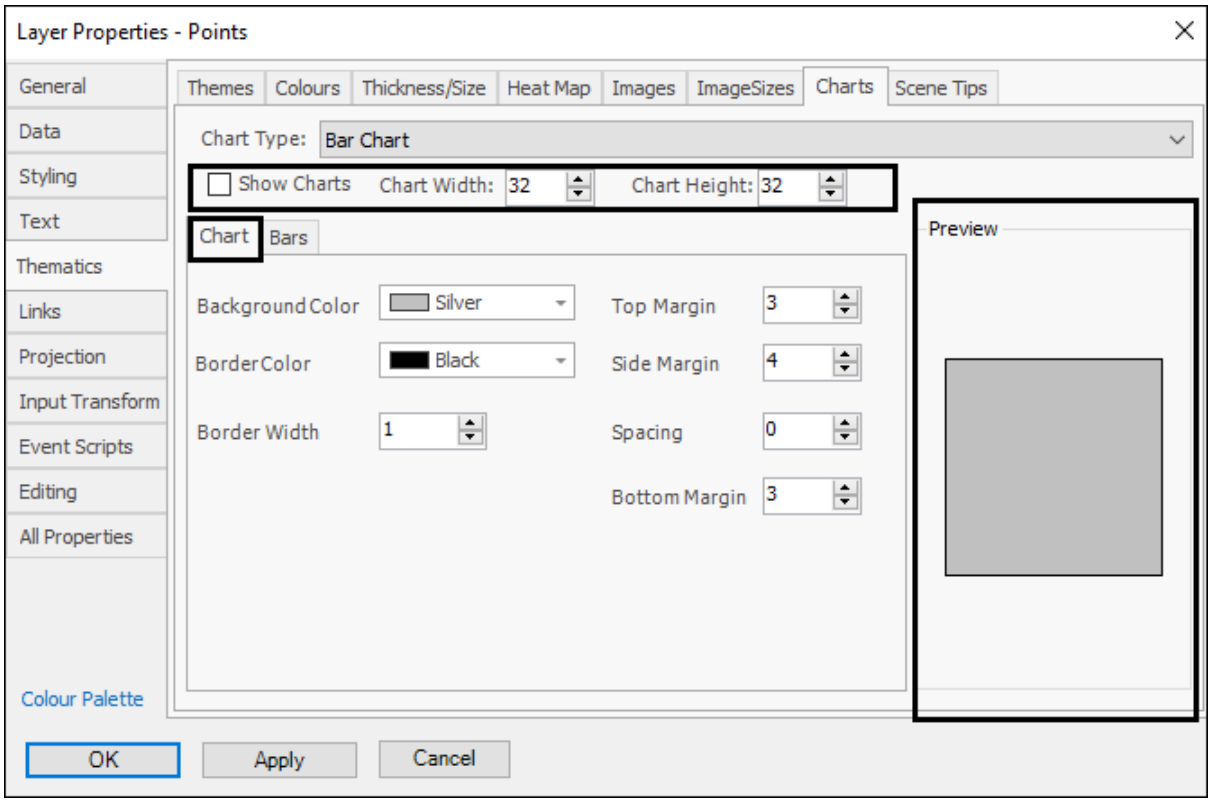
Click **OK** (or **Apply** first to see how it looks) when done and your theme is applied:



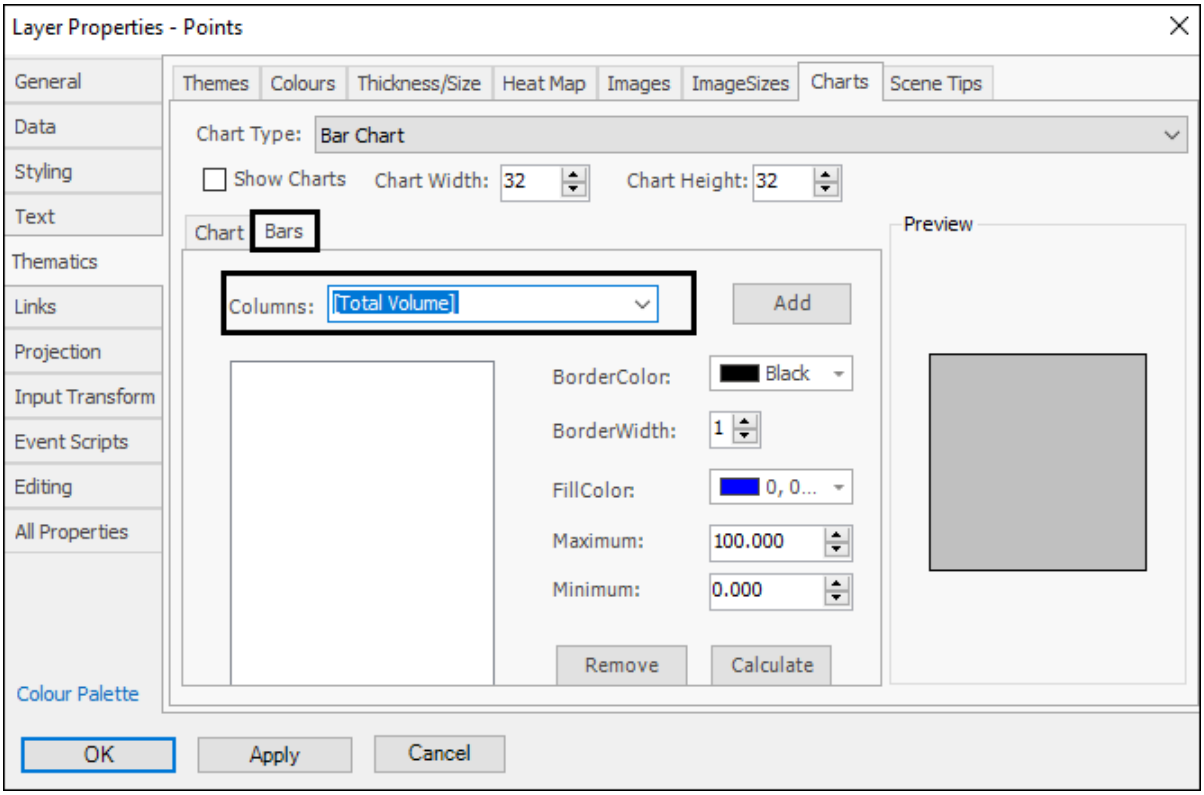
Under **Charts** you can set up a theme that will show charts for the elements in your layer. You can choose between **Bar** and **Pie Chart**:



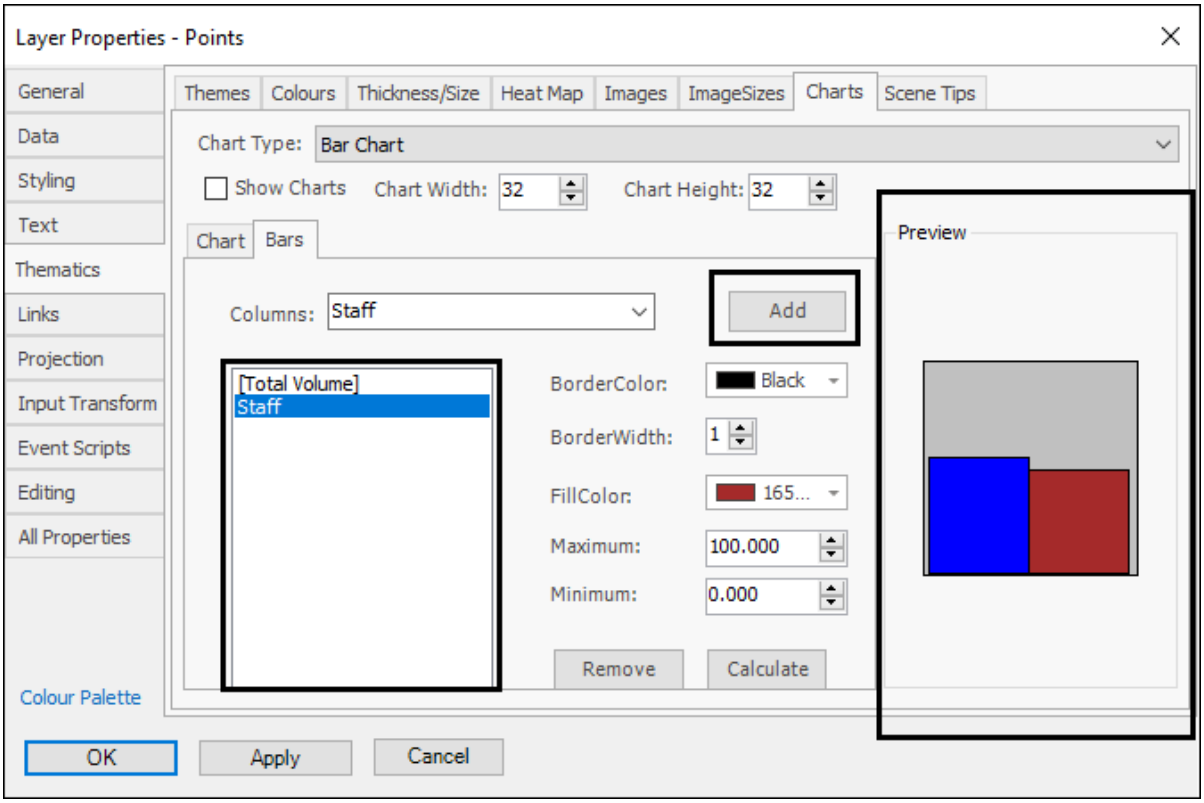
In the case of a **Bar Chart** it has the following dialogue. First, make sure to have **Show Charts** ticked on so that any charts you set will show. Then you can set your desired **Chart Width** and **Chart Height**. In the **Chart** tab you can then set the various properties of the chart, a **Preview** of the chart is shown on the left:



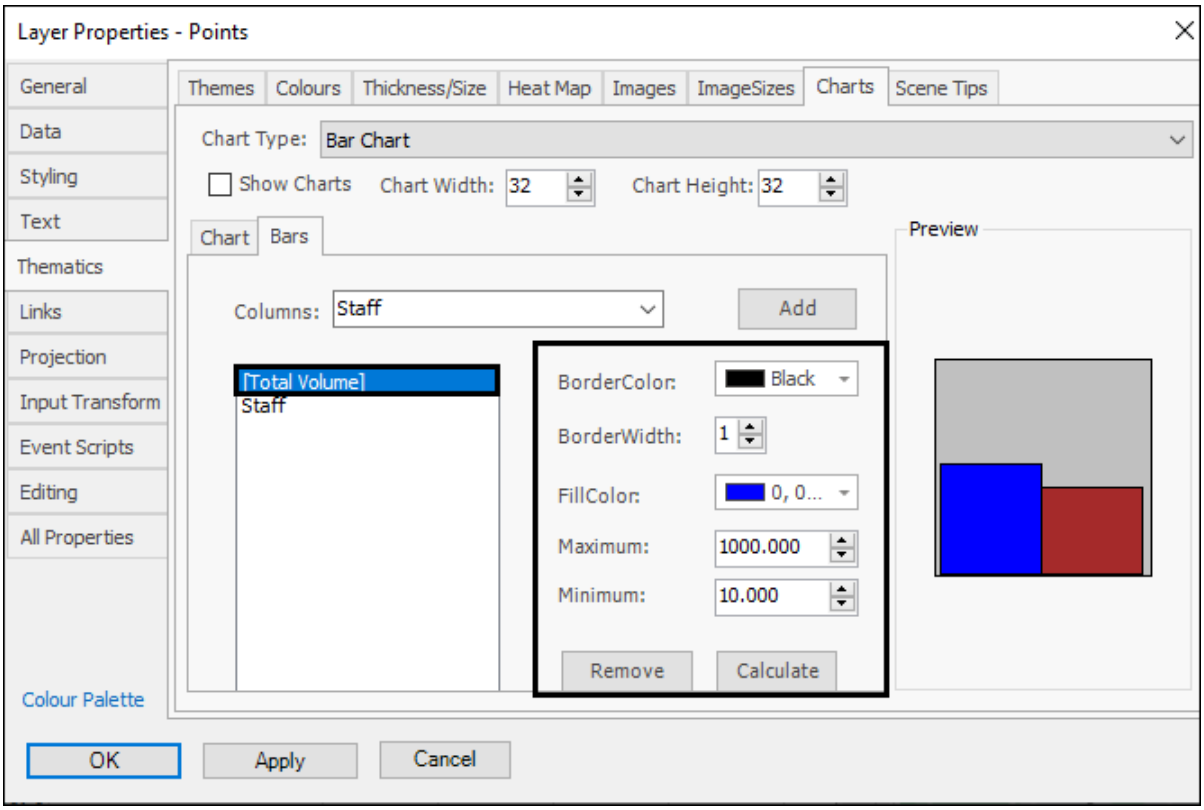
In the **Bars** tab you will choose the columns in your data you would like to use as bars in the chart:



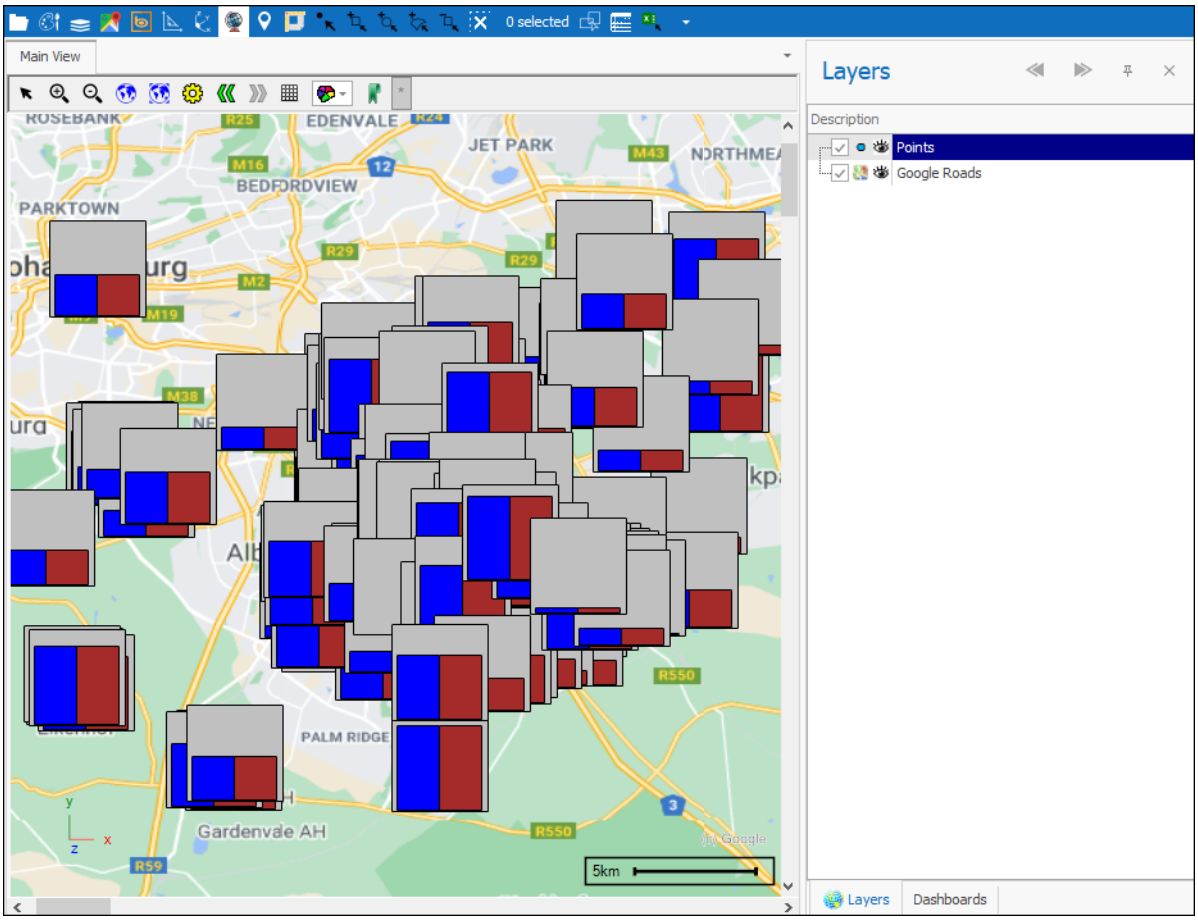
After choosing each column click **Add** to add it as a bar:



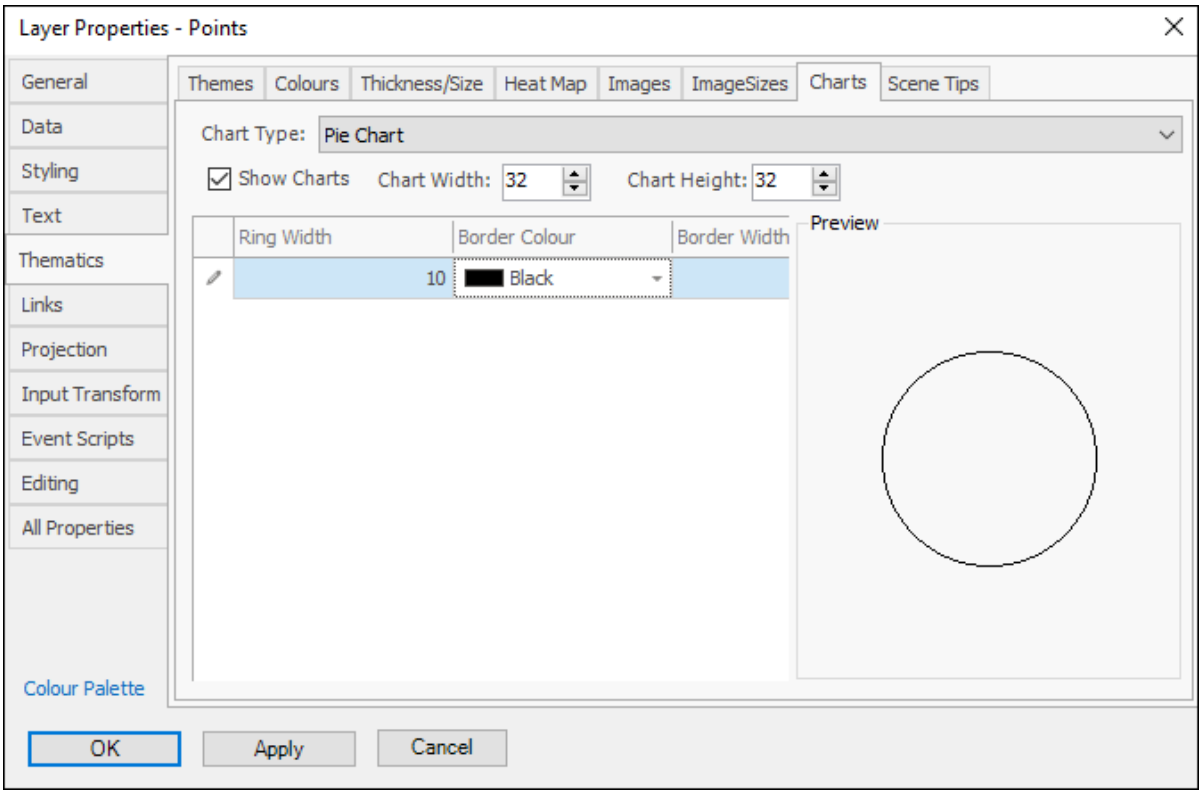
You can then set various properties for each bar (first click on the bar you want to edit in the box). Then calculate the range of the data for the bar by clicking **Calculate**. To remove any bar you can click **Remove**:



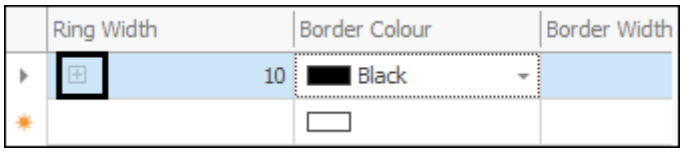
Click **OK** (or **Apply** first to see how it looks) when done and your theme is applied:

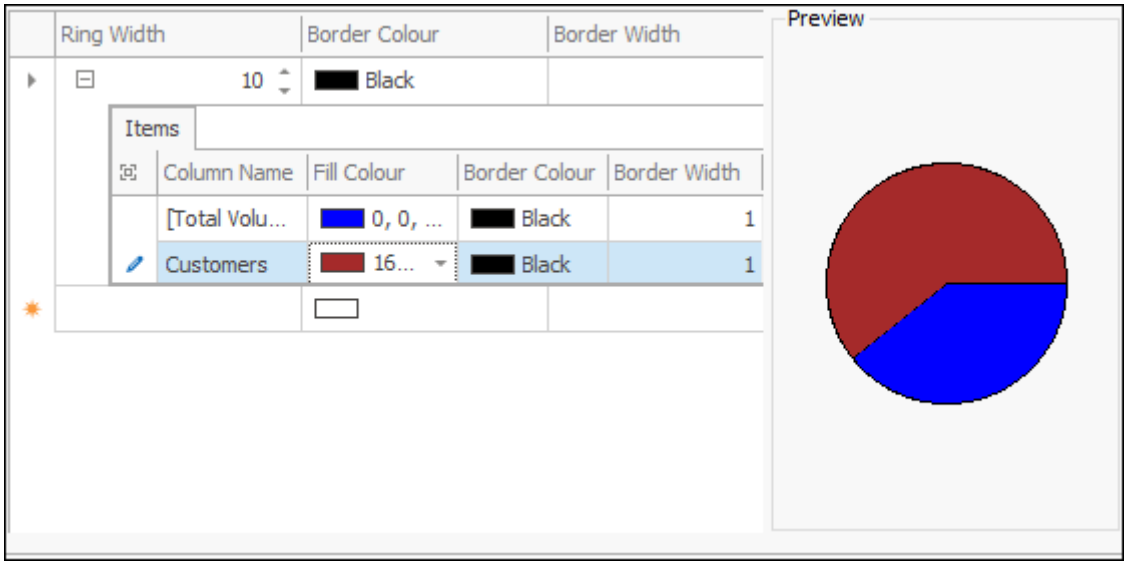


A **Pie Chart** theme is set up as follows. Make sure **Show Charts** is ticked on so the chart will be displayed, then set **Chart Width** and **Chart Height**. Click on the row in the grid area under **Ring Width** and choose the width for the first ring of the chart (you can then choose its **Border Colour** and **Border Width**):

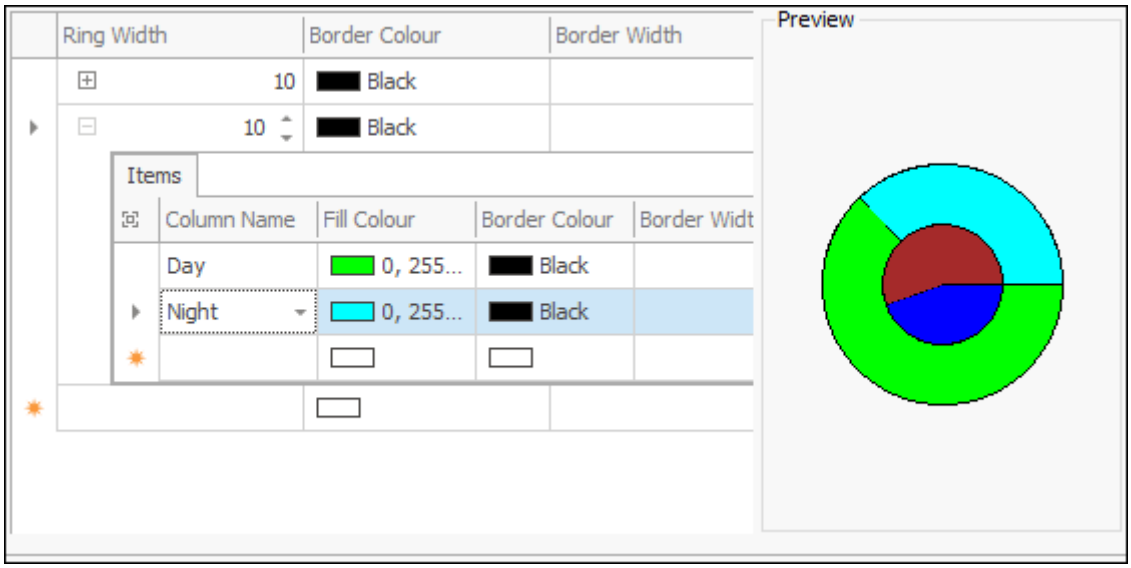


Now click below the row and you will see there is now a plus symbol which you should expand. Choose the column in your data for this part of the chart (you can then choose its **Fill Colour** etc.). In the row below choose the next column to include in your pie chart, as usual you will see a preview of the chart on the left as you create it:

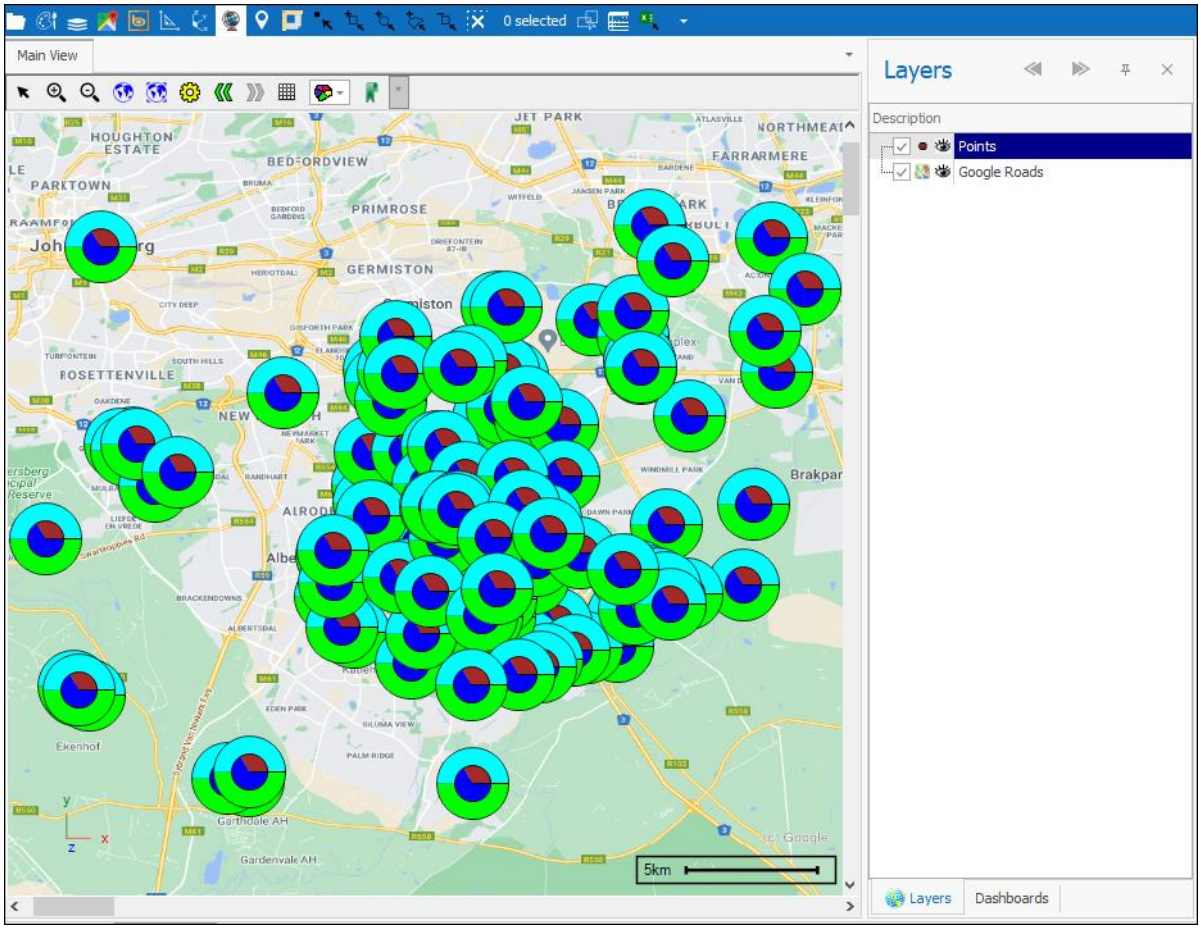




You can then collapse this row and then click in the row below and follow the same steps to add another ring if you'd like:



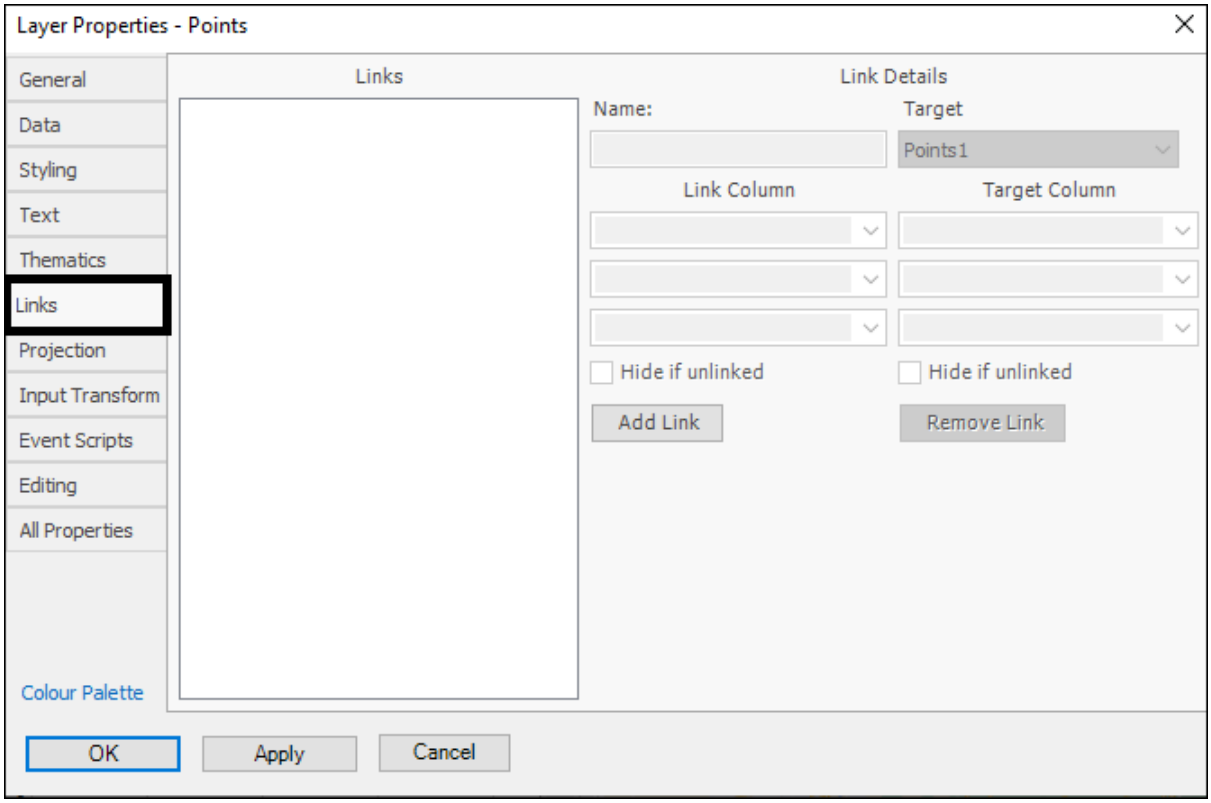
Click **OK** (or **Apply** first to see how it looks) when done and your theme is applied:



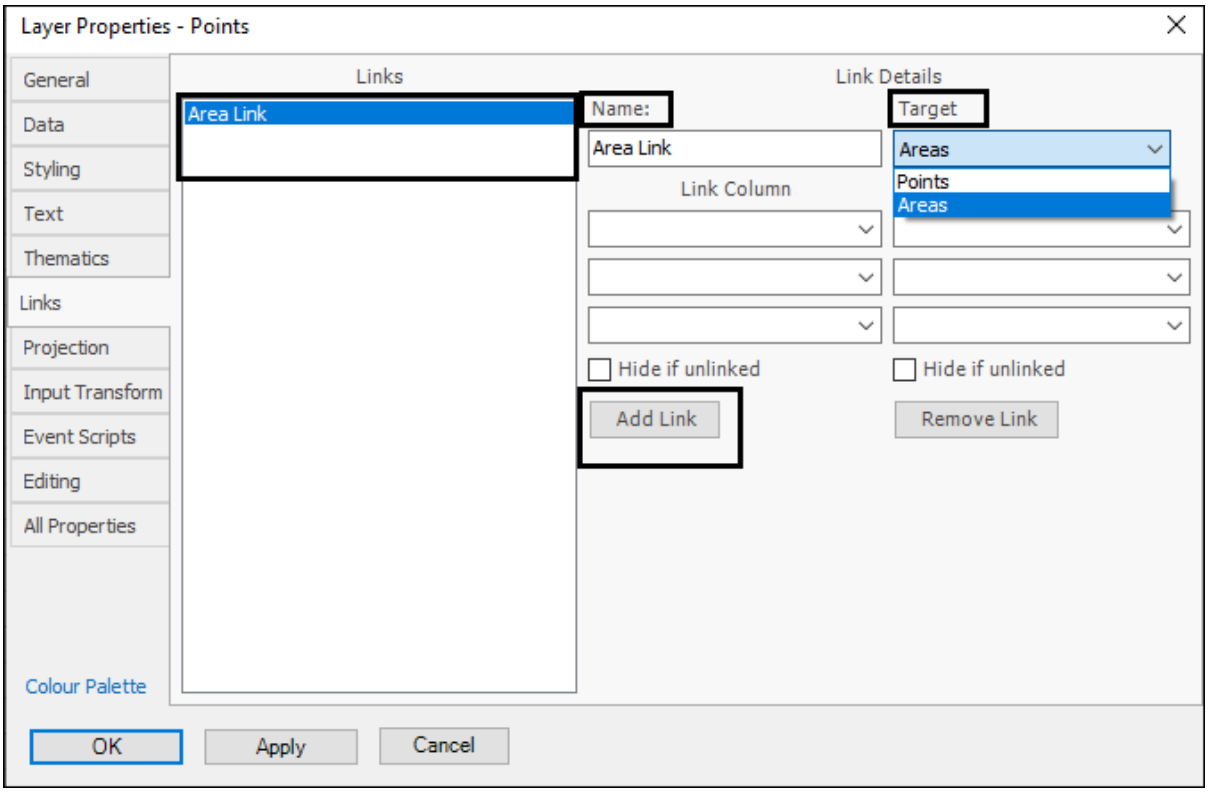
Scene Tips is fully described in the *Scene Tips* manual.

Links

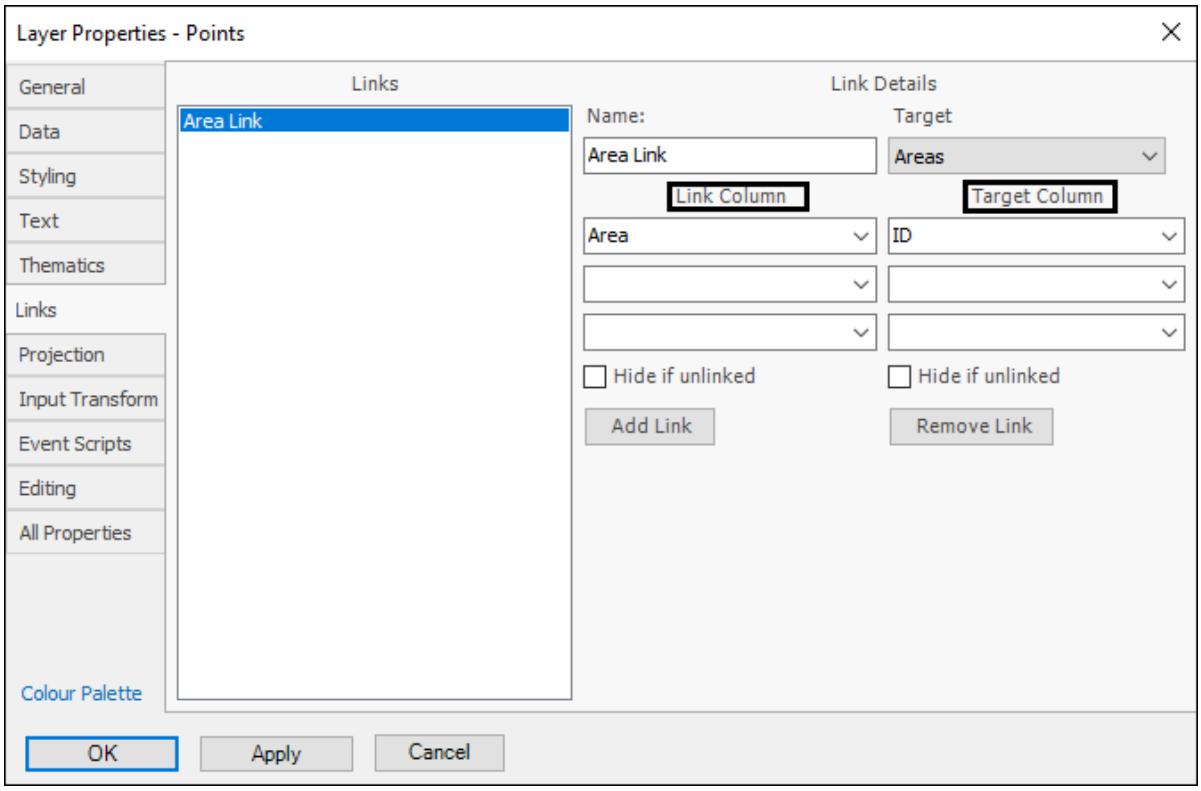
The **Links** tab is where you can set up links between layers. For tighter and more direct links where you want to create a direct relation you would use the **Relations** tool (see *Relations* manual):



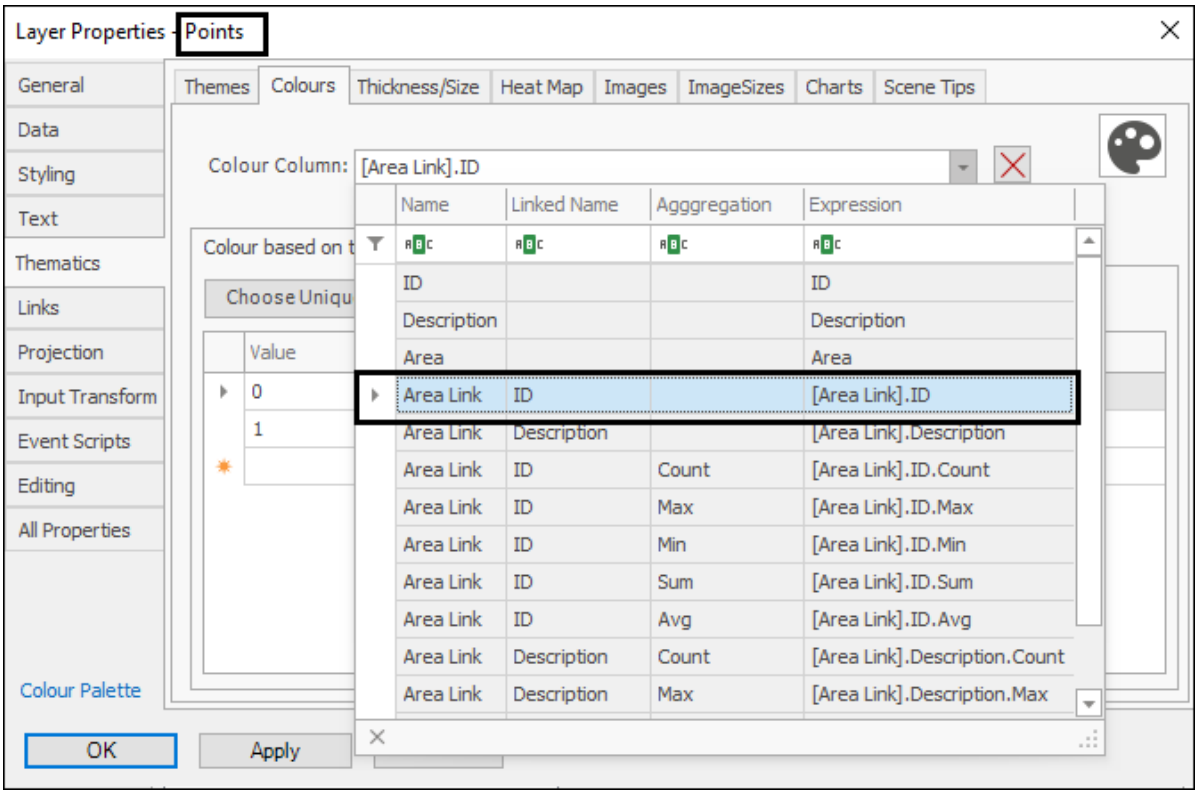
To create a link click **Add Link**. Then **Name** it and choose the **Target** of the link, which is the layer you're linking to. Your links are shown in the box to the left:

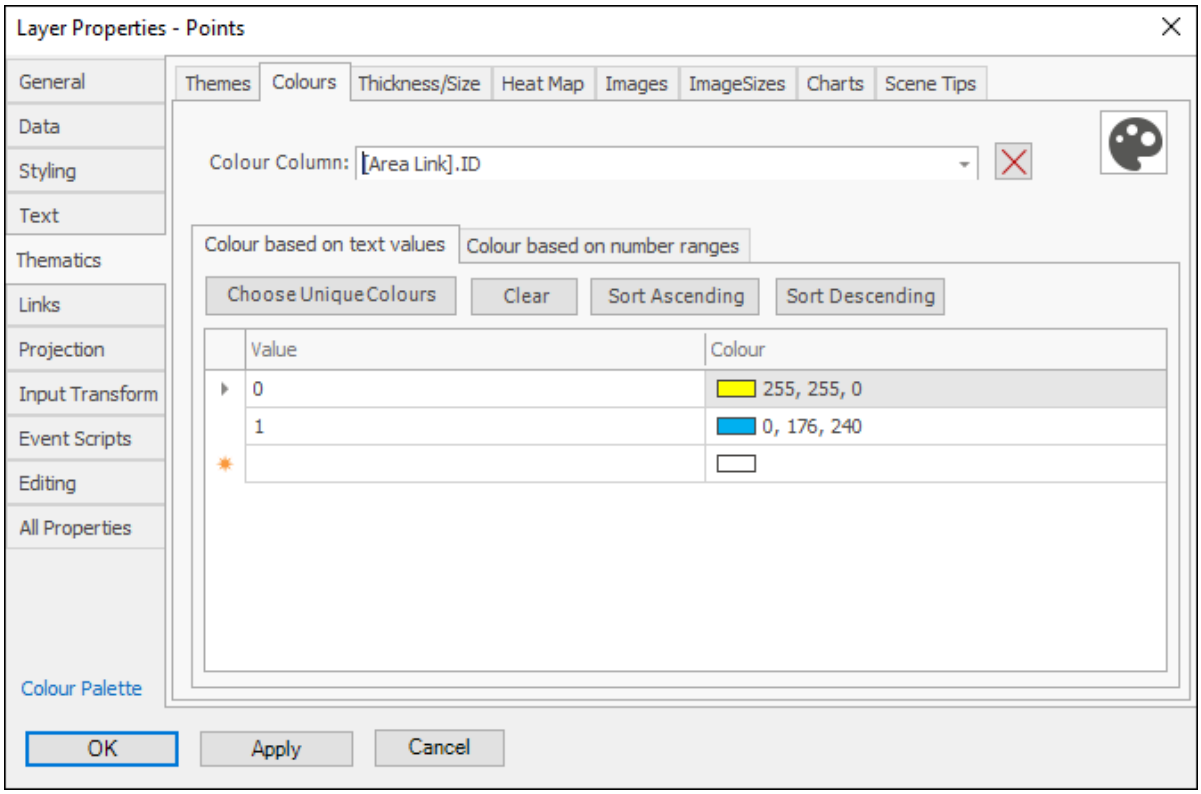


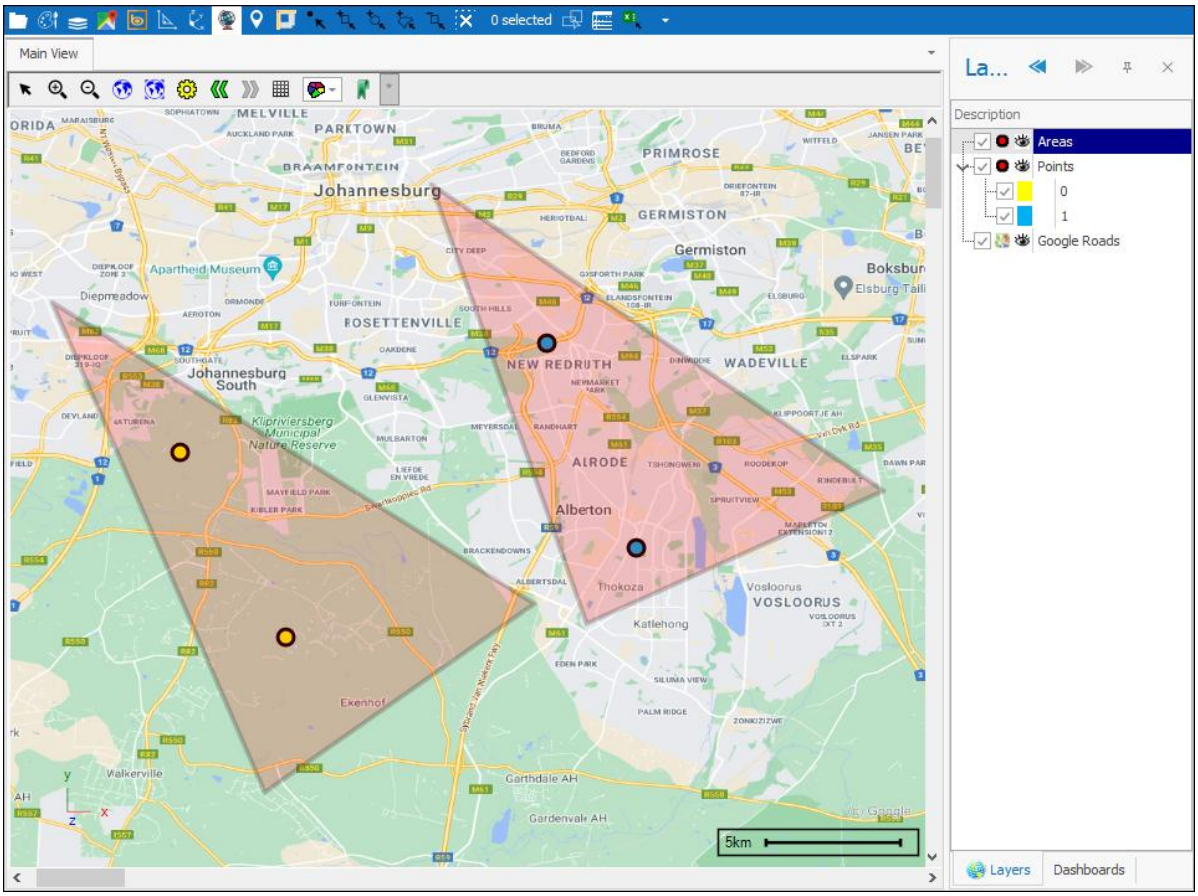
Next choose the column/s in the current layer (**Link Column**) that you will be using to link to the target layer. Then choose the corresponding column/s in the target layer (**Target Column**). Ticking on **Hide if unlinked** will hide graphic data in source or target data that is unlinked, meaning elements that don't share a common value:



You can now click **OK** and your layers are now linked. In this example I linked my **Points** layer to my **Areas** layer, and as an example of using this link I can now theme my Points layer on a column from my Areas layer:

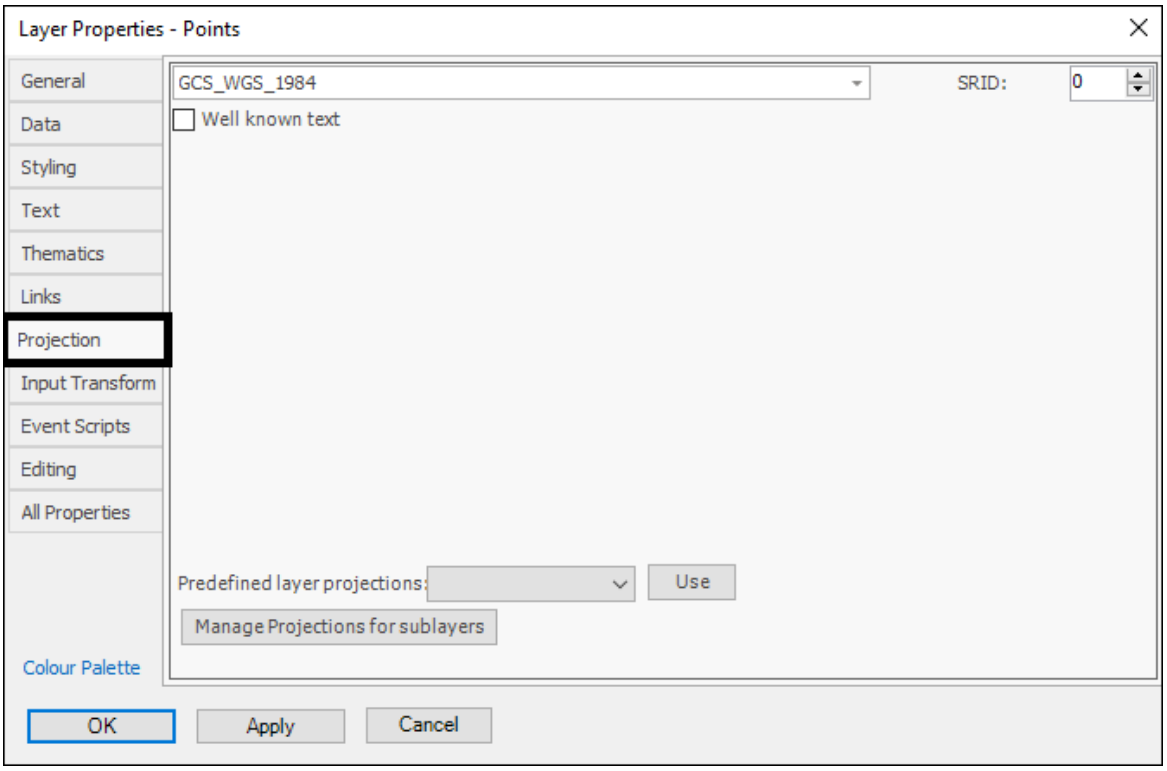

Layer Properties - Points
General
Data
Styling
Text
Thematics
Links
Projection
Input Transform
Event Scripts
Editing
All Properties
Colour Palette
Themes
Colours
Thickness/Size
Heat Map
Images
ImageSizes
Charts
Scene Tips
Colour Column:
[Area Link].ID
Colour based on t
Choose Uniqu
Value
0
1
Name
Linked Name
Agggregation
Expression
ID
ID
Description
Description
Area
Area
Area Link
ID
[Area Link].ID
Area Link
Description
[Area Link].Description
Area Link
ID
Count
[Area Link].ID.Count
Area Link
ID
Max
[Area Link].ID.Max
Area Link
ID
Min
[Area Link].ID.Min
Area Link
ID
Sum
[Area Link].ID.Sum
Area Link
ID
Avg
[Area Link].ID.Avg
Area Link
Description
Count
[Area Link].Description.Count
Area Link
Description
Max
[Area Link].Description.Max
OK
Apply


Layer Properties - Points
General
Data
Styling
Text
Thematics
Links
Projection
Input Transform
Event Scripts
Editing
All Properties
Colour Palette
Themes
Colours
Thickness/Size
Heat Map
Images
ImageSizes
Charts
Scene Tips
Colour Column:
[Area Link].ID
Colour based on text values
Colour based on number ranges
Choose Unique Colours
Clear
Sort Ascending
Sort Descending
Value
Colour
0
255, 255, 0
1
0, 176, 240
OK
Apply
Cancel

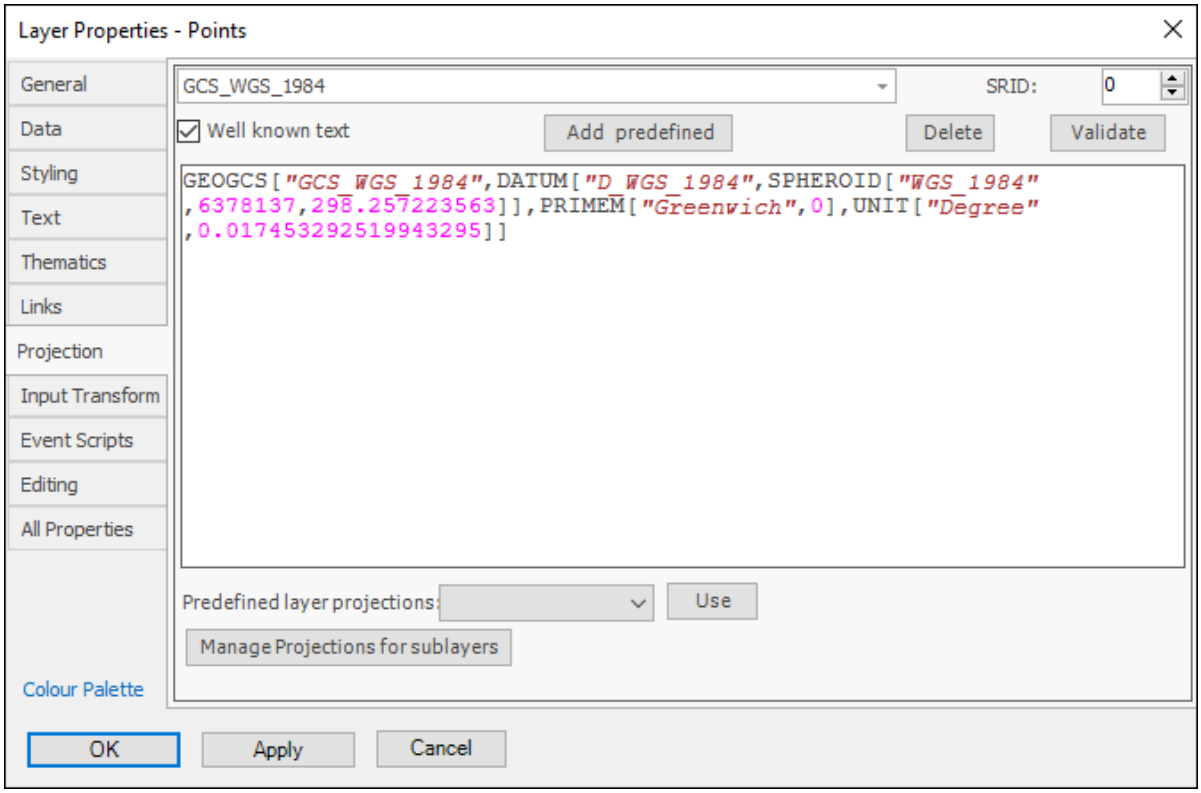


Projection

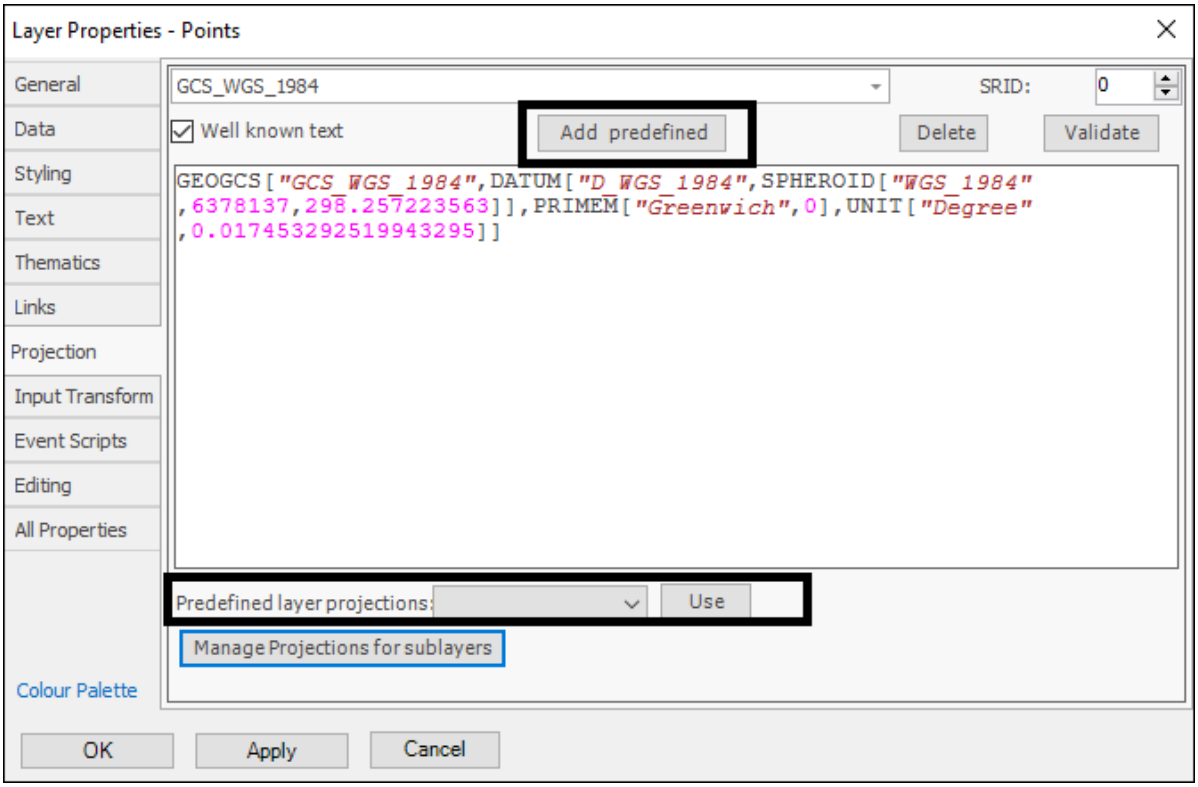
In the **Projection** tab you can choose a layer projection for your layer. **SRID** stands for Spatial Reference Identifier and is a unique identifier associated with a specific coordinate system, tolerance, and resolution. How the SRID is populated or what it represents can vary depending on what database you use to store your data:



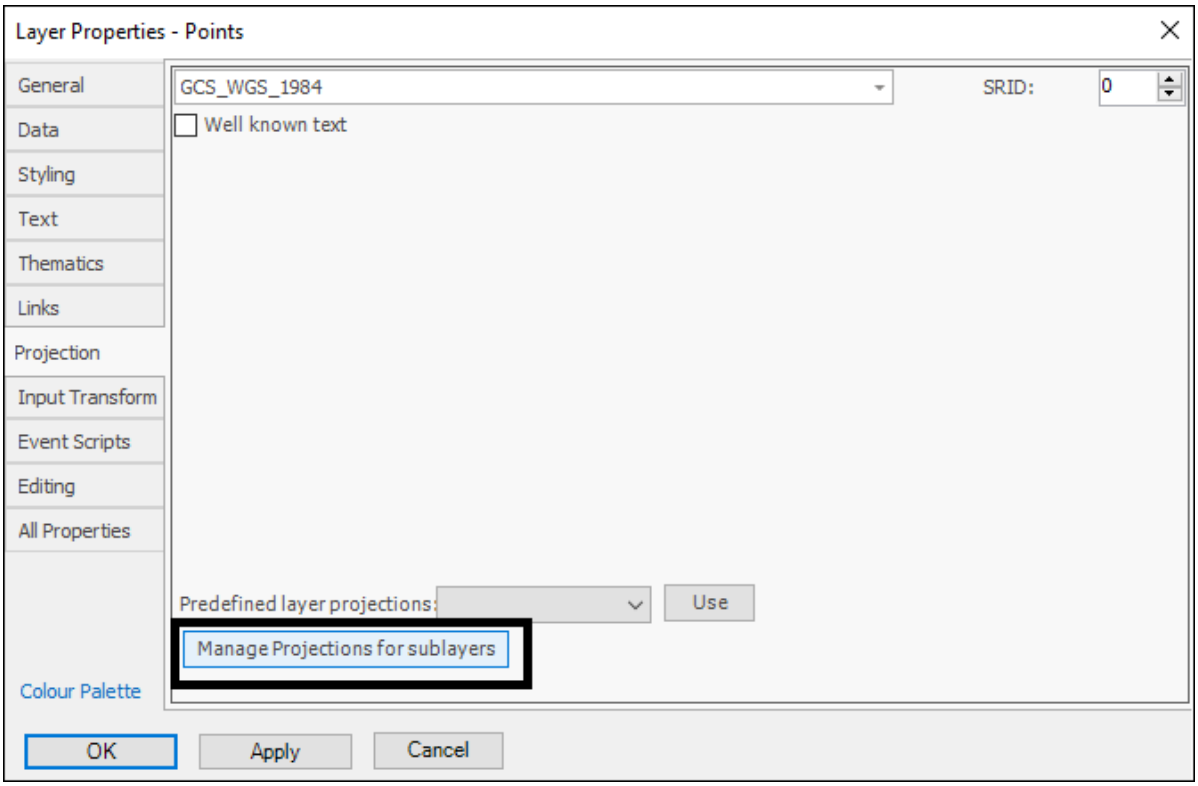
You can tick on **Well known text** to show the well known text of the projection and enable editing of it:

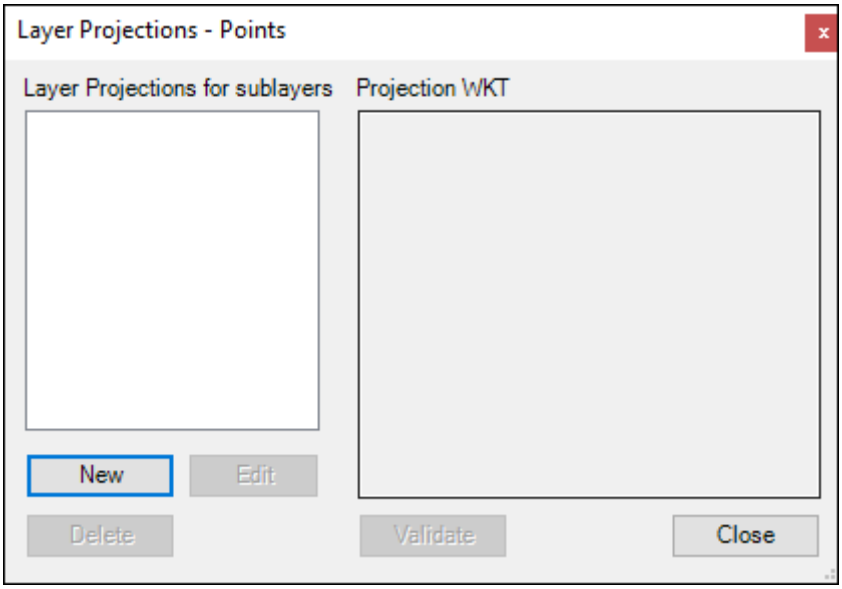


If you have defined your own layer projection while editing the Well known text you can click **Add predefined** and then this will be added to the **Predefined layer projections** list that you can access at the bottom:

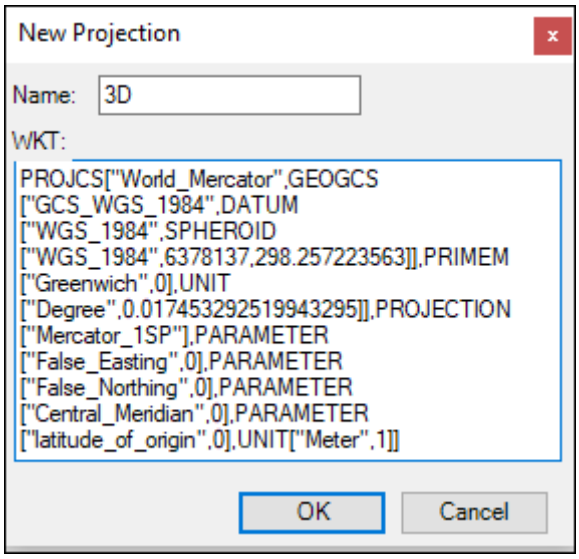


The **Manage Projections for sublayers** button will take you to a dialogue where you can set up projections for sublayers (layers within layers). This provides a central location where projections for all sublayers can be managed:

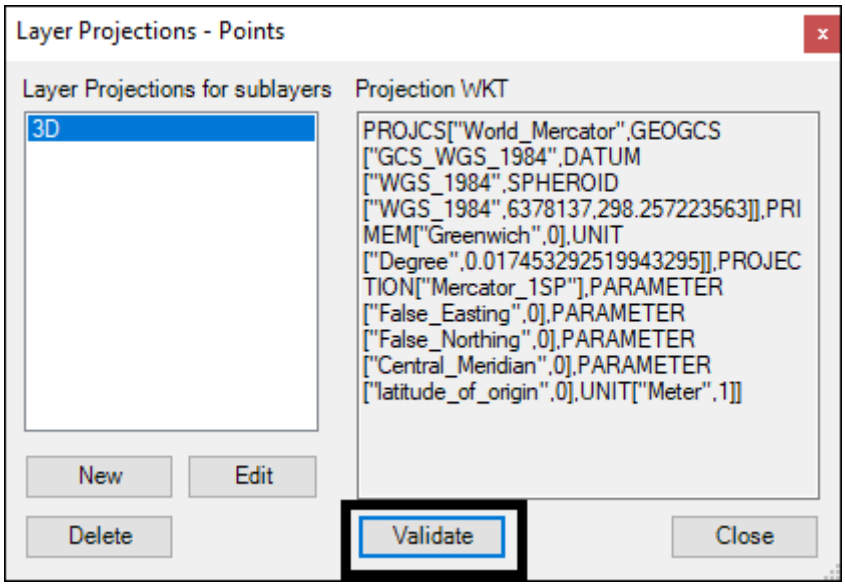


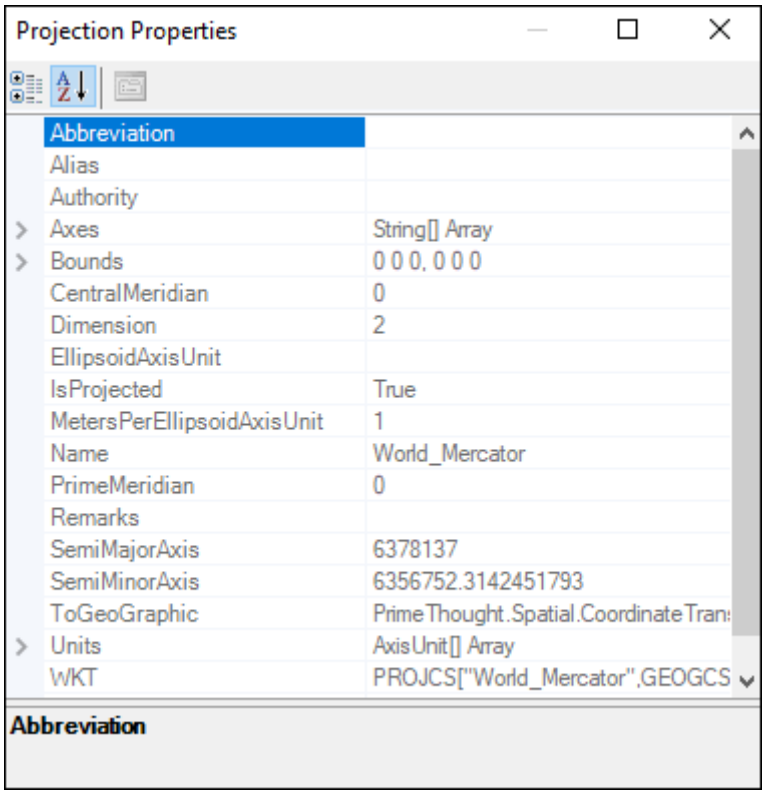


Click **New** to add a projection for sublayers, then in the dialogue that comes up, name it and enter in the Well Known Text for the projection, then click **OK**:

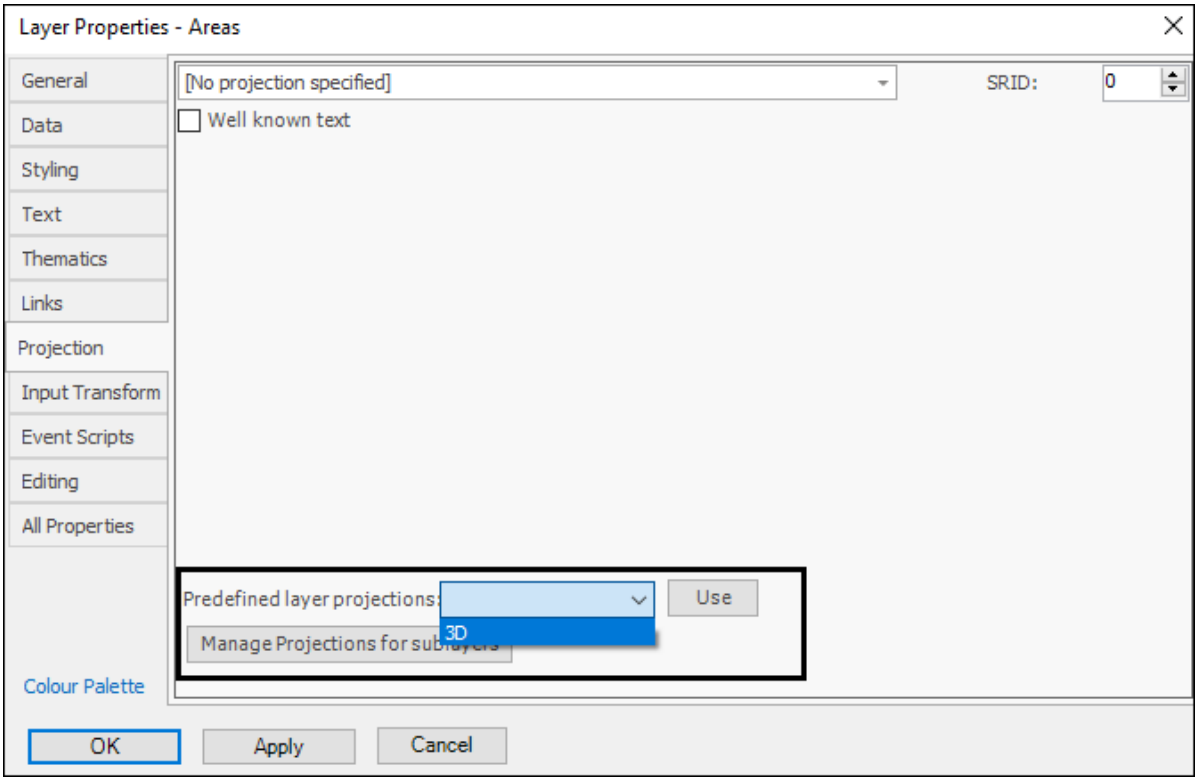


The projection has been added. You can **Validate** it then if you want which will bring up a properties box where you can see if all is good with it:



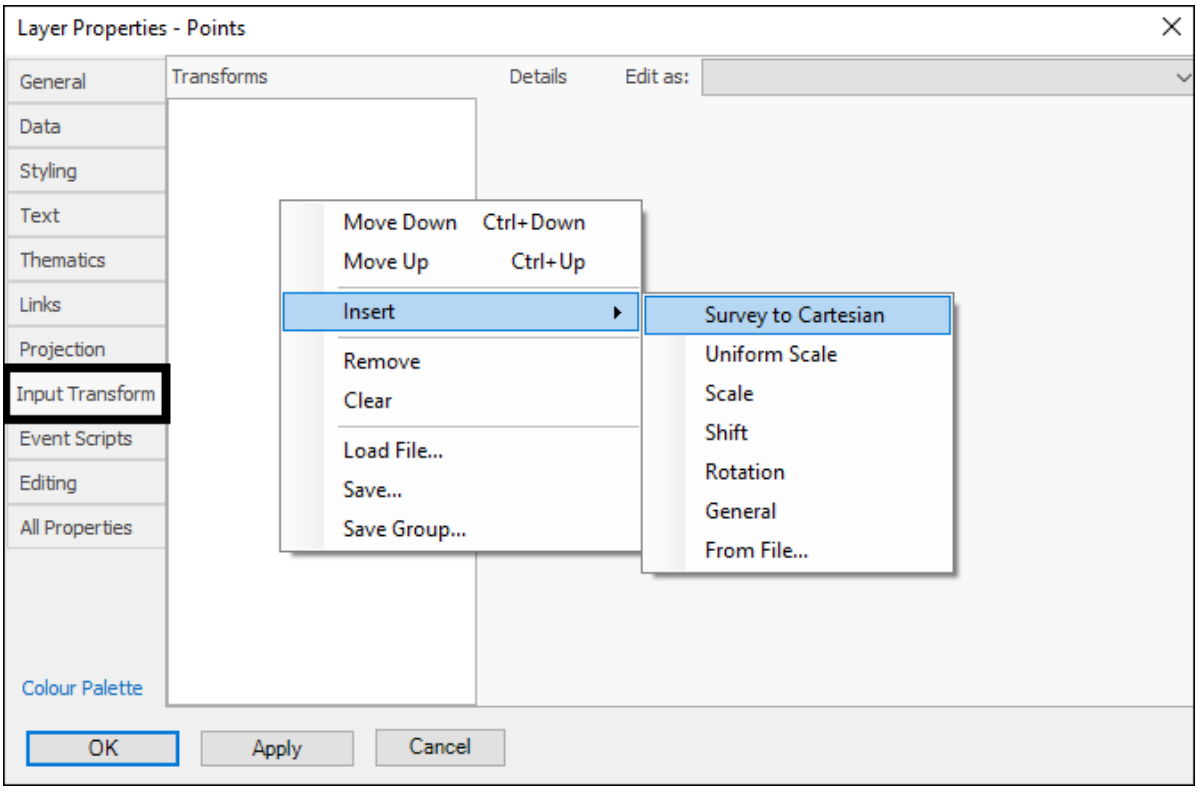


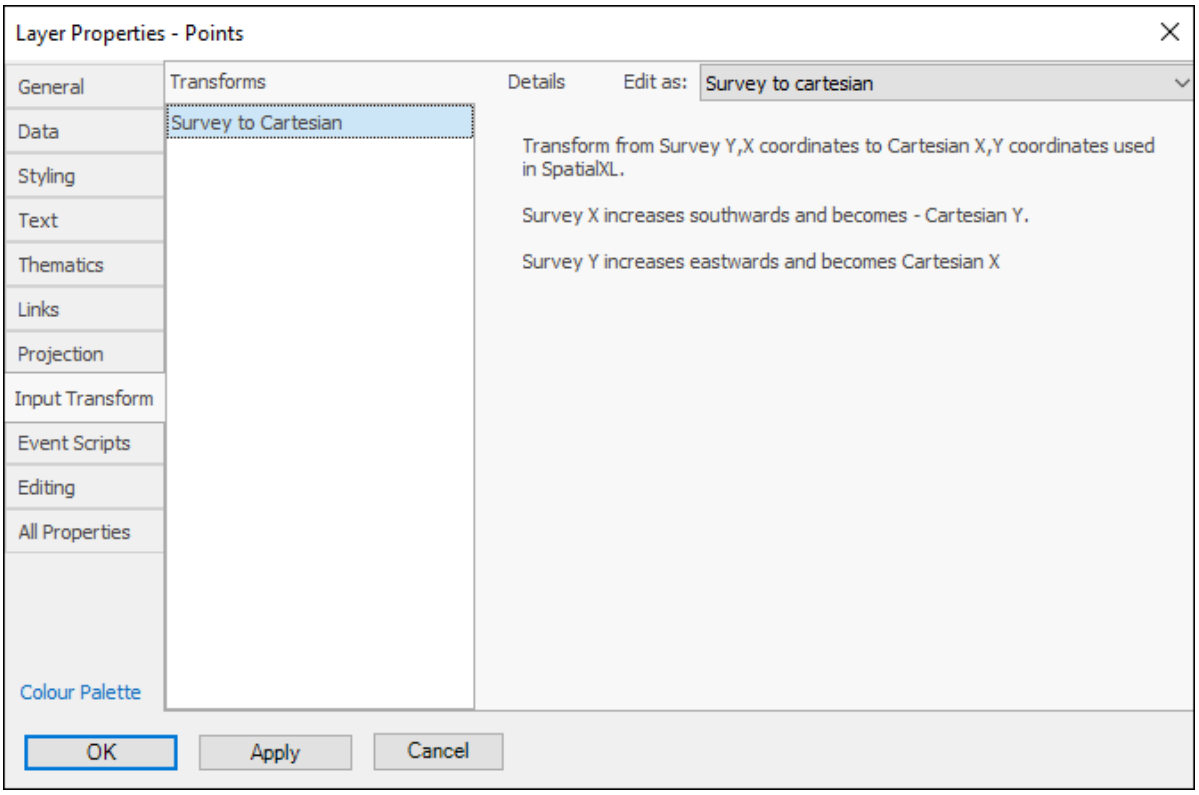
Now, if you go to the Layer Properties of any sublayer you will see you have an option to choose this projection for it in the **Predefined layer projections**:



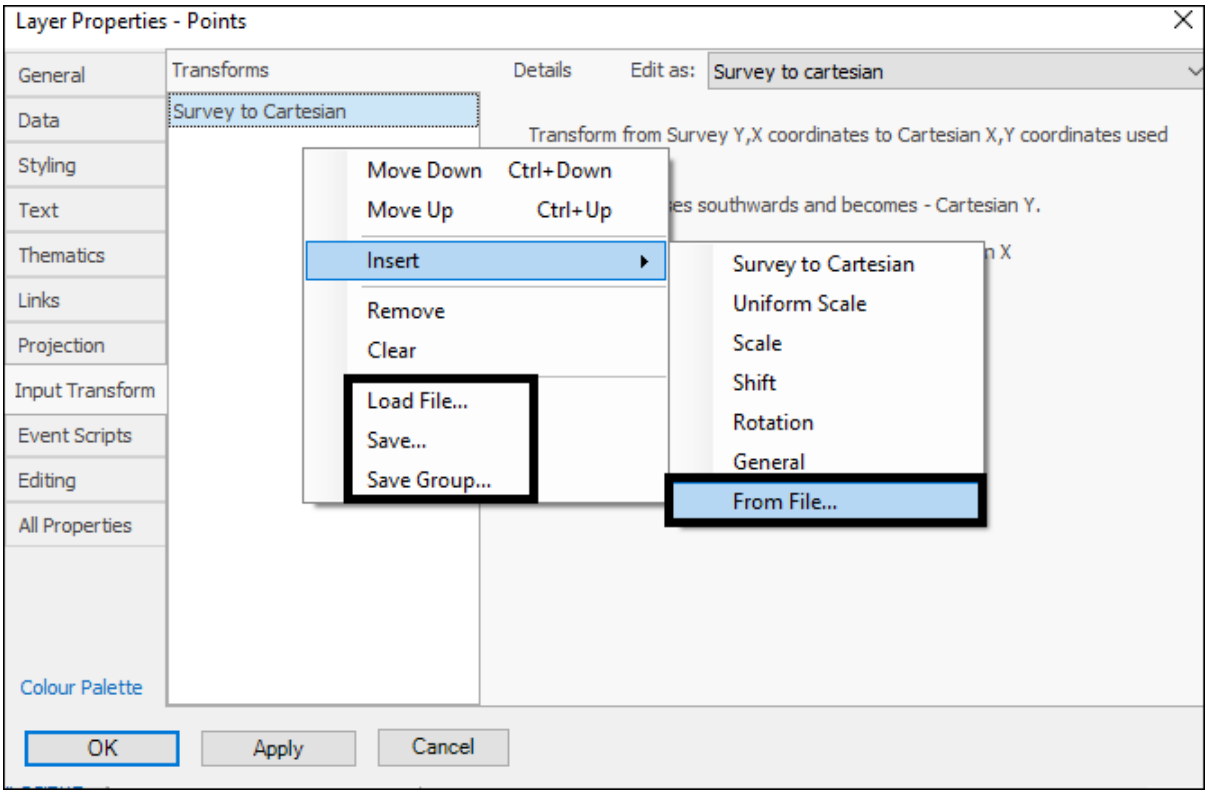
Input Transform

In the **Input Transform** tab you are able to enter a transform to be done on the layer. There are various transforms to choose from. To access these, right click in the **Transforms** box and then **Insert** and then choose the desired transform:

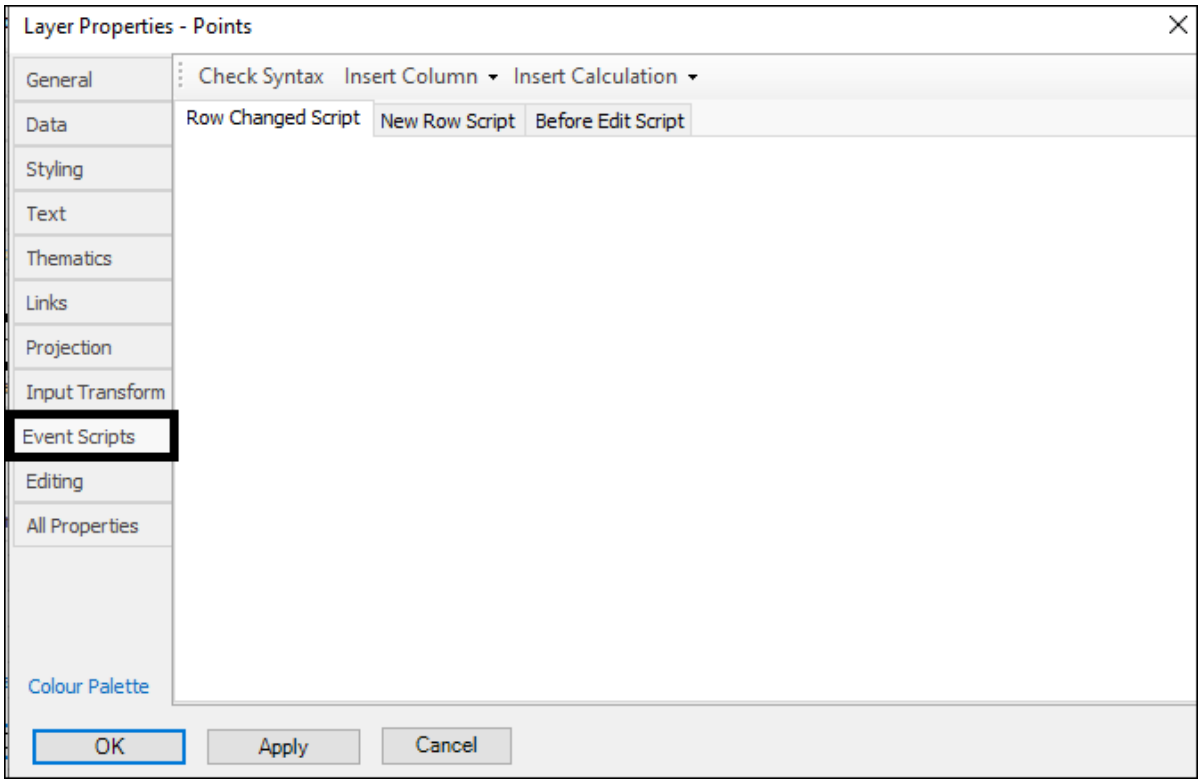




You can save these transforms to file either individually or as a group. **Load File** will load a group of transforms saved, but to load a single saved transform you would use **From File**:



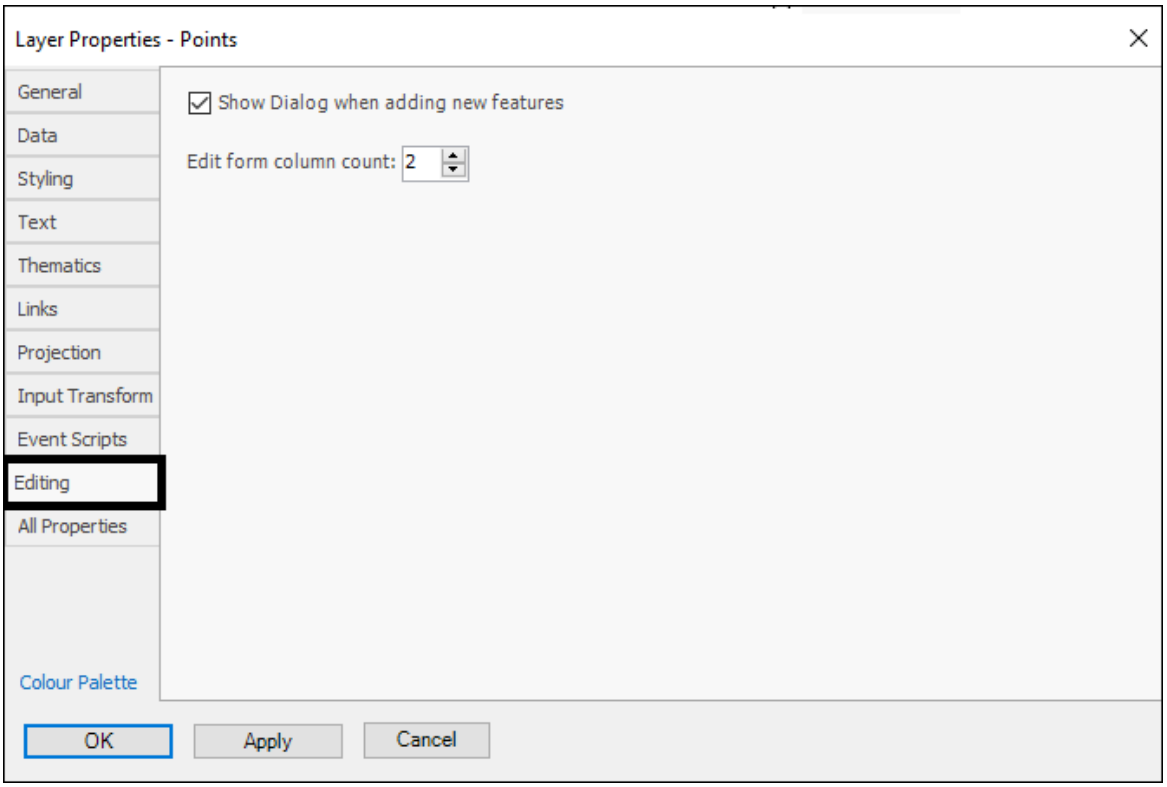
Event Scripts



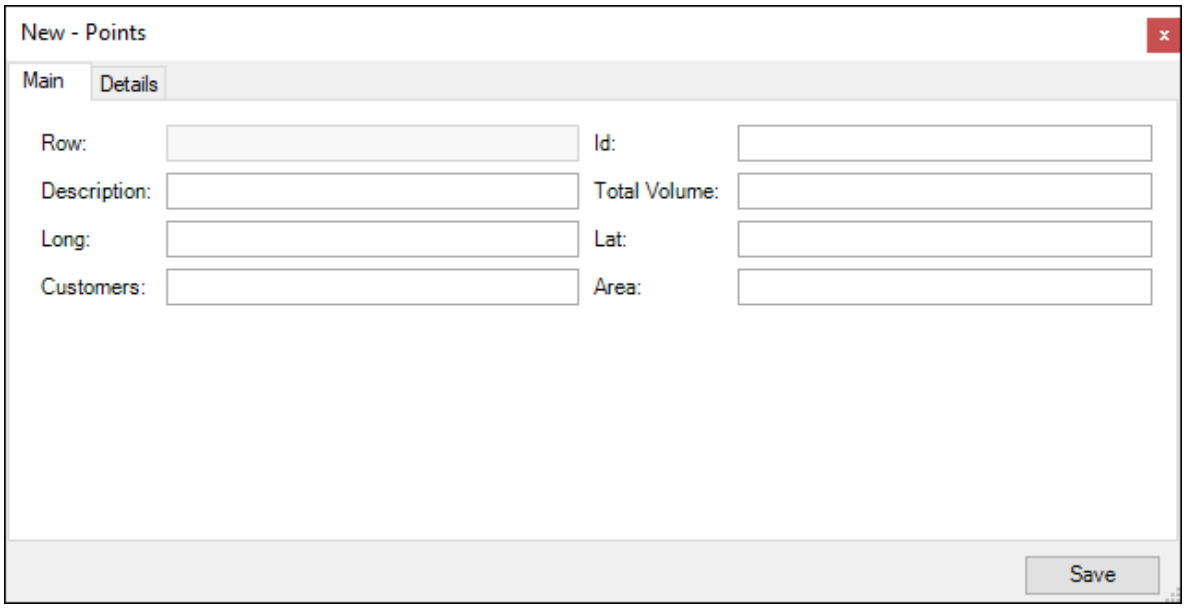
Event Scripts is fully covered in the *Event Scripts* manual.

Editing

In the **Editing** tab you can choose to have the Edit Form dialogue come up when adding new features to the layer, this will allow you to choose the values in the layer data for the new element added. By **Edit form column count** you can choose how many columns you would like to have the columns from your data split into on the form:

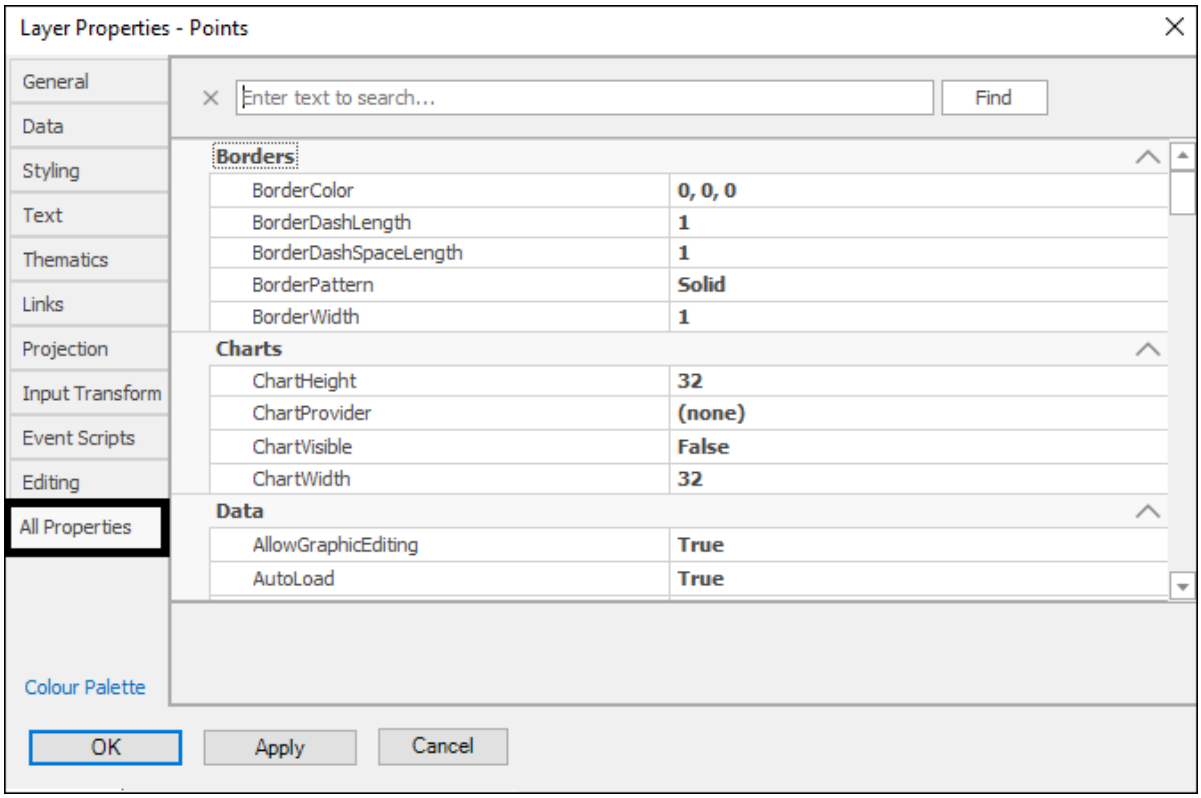


I will draw a new point to this layer to demonstrate. Once I've drawn the point it brings up the Edit Form and here I can enter in the desired values for this new element:



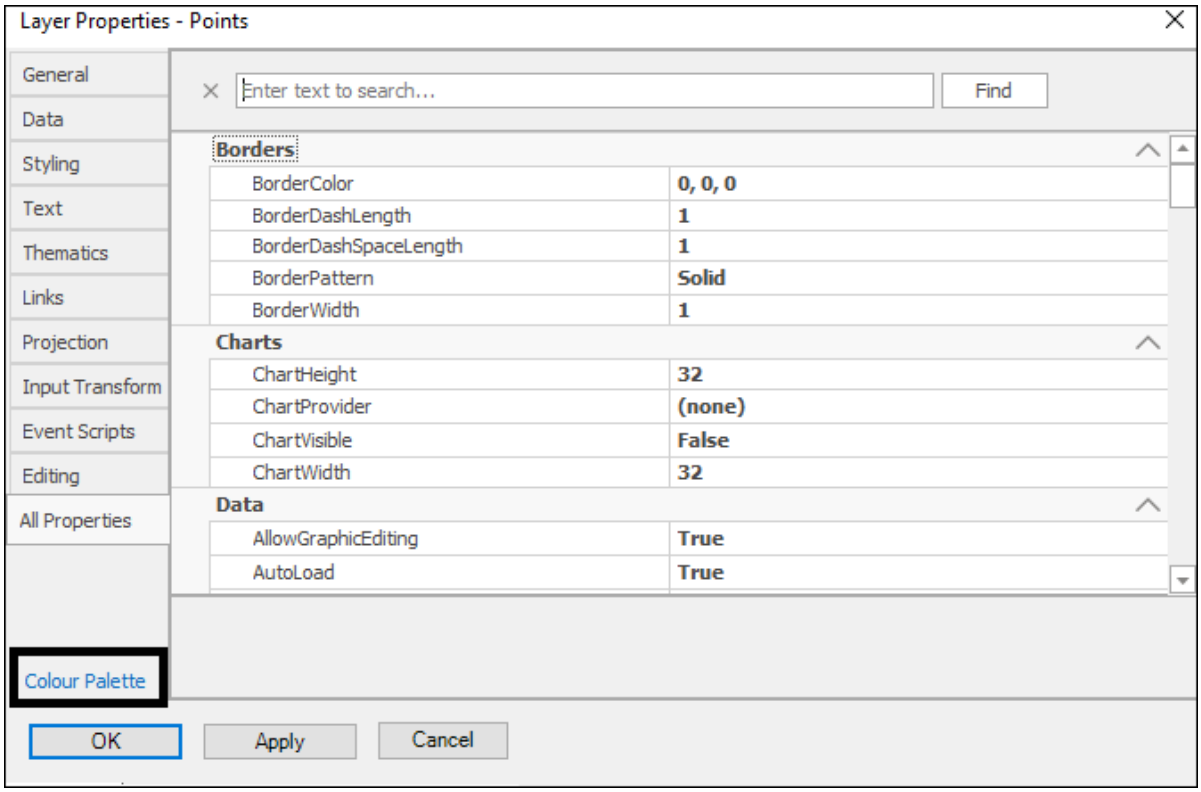
All Properties

In the **All Properties** tab is an easy way to search and edit all properties in one place:



Colour Palette

The **Colour Palette** can be accessed from the Layer Properties box as well (in addition to in the View tab) and how it works is covered fully in the *View Tab Guide Colour Palette* section:



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