Map Intelligence Client

User Manual for Microsoft® Excel

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CONTENTS

INTRODUCTION

PURPOSE

This manual provides information about the Map Intelligence Client - Excel (**MI Client**). It explains the MI Client features and options and contains the concepts, processes, procedures and examples that you need to use this software.

AUDIENCE

The effective use of Map Intelligence involves a number of separate processes which can be performed by different user groups. The user groups involved are described below.

LAYER DESIGNERS

Layer Designers are responsible for creating the templates that result from configuring Map Intelligence layers that are displayed on the MI Viewer. This user group should have a firm understanding of the spatial analysis required.

Layer Designers are advised to read the following sections of this manual:

- Introduction
- Concepts
- Map Intelligence Client Excel - Overview
- MI Client Configuration
- Selection
- Publishing Sessions
- Creating Applications
- Using Filters
- Advanced Topics

END USERS

End Users are users who want to view the configured layers on a map. Their roles include launching the MI Viewer to generate spatial representations of the data.

End Users are advised to read the following sections of this manual and ***MI Viewer User Manual*** (see Appendix D: Map Intelligence Manuals and Guides on page 137).

- Introduction
- Concepts
- Map Intelligence Client Excel - Overview
- Publishing Sessions
- Using Excel Filters
- Selection

Some End Users may have the Map Intelligence Excel Client Viewer installed. See The Map Intelligence Client.

SERVER ADMINISTRATORS

Another type of user exists that is responsible for the installation and management of the Map Intelligence Server. These users should be familiar with the organization's mapping server (hereinafter referred to as GIS Provider). Server Administrators are advised to read the separate *Server Tools & Administration Guide* (see Appendix D: Map Intelligence Manuals and Guides on page 137).

CONVENTIONS

The following table shows the conventions that are used in this document.

Item	Meaning
	An arrow indicates the beginning of procedures consisting of sequential steps or one-step procedures.
< >	In examples, < > indicate that the enclosed elements are optional or they are instances of code to be replaced by the user with applicable information.
Bold	Bold in procedural steps highlights user interface elements on which the user must perform actions.
`Example text`	Courier font indicates that the example test is code or syntax.
`Courier italics`	Courier italic text indicates a variable field in command syntax. Substitute a value in place of the variable shown in Courier italics.
`n,x`	Italic *n stands for a variable number; italic x can stand for a variable number or a letter.*
Mouse Orientation	This document provides examples and procedures using a right-handed mouse. If you use a left-handed mouse, adjust the procedures accordingly.
	The Note icon indicates additional information relating to the topic.
	The Tip icon suggests an alternative or shortcut procedure.

CONCEPTS

WHAT IS MAP INTELLIGENCE?

Map Intelligence extends the "no programming" paradigm into mapping and merges location and spatial analytics into enterprise decision support and Business Intelligence applications.

Map Intelligence enables bi-directional analysis between data visualized on maps and other more traditional representations such as tables of data, charts and reports. In this environment a user can easily discover previously hidden information and data relationships.

Map Intelligence reduces the time needed to develop the applications from weeks and months to days and hours. In many cases organizations have given up before solving the technical challenges that Map Intelligence solves.

Map Intelligence has two principal components:

THE MAP INTELLIGENCE CLIENT

The *Map Intelligence Client* (MI Client) includes a number of configuration screens that enable you to design your mapping application. Using the Client you select the underlying map you want to use, specify the 'look and feel' and build the different Map Intelligence layers to be used in your analysis. Once this has been done, your application is finished and in operation the Client sends a request to the Map Intelligence Server to display your application in a web browser.

THE MAP INTELLIGENCE EXCEL CLIENT VIEWER

Some End Users may only wish to view maps and layers designed by others. The Map Intelligence Excel Client Viewer is a streamlined version of the standard client and only allows users to load predefined templates and view maps. The MI Excel Client Viewer does not allow any configuration of Map Intelligence.

THE MAP INTELLIGENCE SERVER AND MI VIEWER

The Map Intelligence Server is the powerhouse behind the mapping application you designed using the Client. It processes all the information sent from the Client to produce your application which you view and interact with in the browser MI Viewer. The Map Intelligence Server is supplied with a number of administration tools that include license administration, global default settings for the 'look and feel' and customization of various applications features.

For further information on the Map Intelligence MI Viewer, refer to the ***MI Viewer User Manual*** (see Appendix D: Map Intelligence Manuals and Guides on page 137).

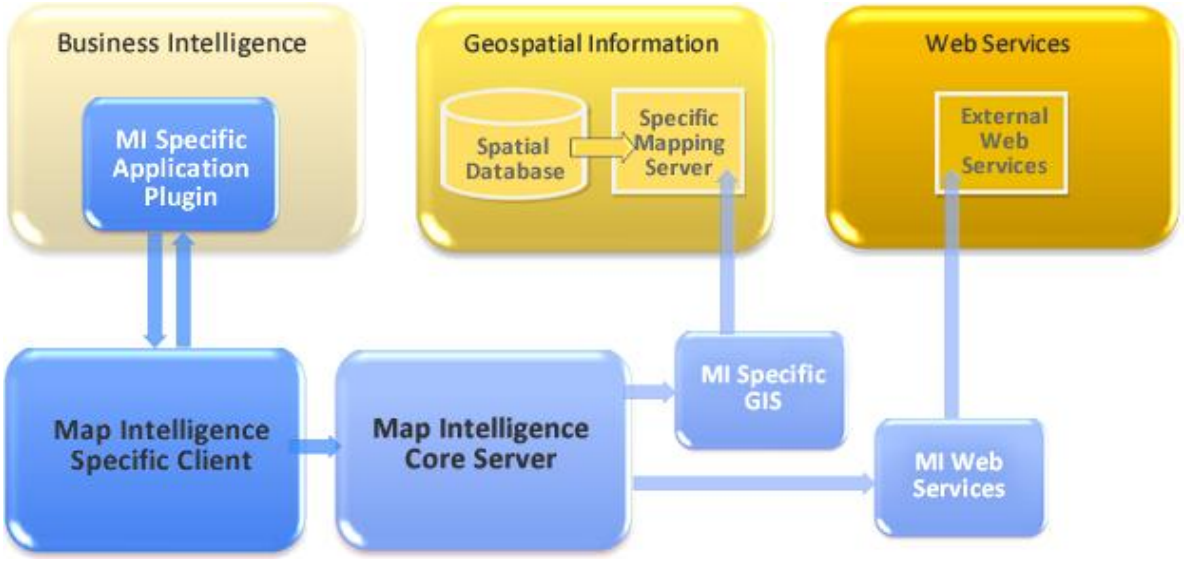


Figure 1. The Map Intelligence Platform.

WHAT IS A LAYER?

Maps are built with layers. Each layer holds characteristics that may be of interest to end-users. Layers contain features of the map such as streets, parks, postal districts, cities, radio towers, rivers and so on. Each map layer sits on top of another layer, e.g. a country layer may sit all the way at the bottom with street layers sitting right at the top.

Layers can also be created dynamically from data found in external sources. Map Intelligence is capable of generating a variety of layer types to aid analysis.

In this manual, layers that reside as part of the mapping environment are referred to as ***built-in layers***. Layers created dynamically from external data sources are known as ***Map Intelligence layers*.**

LAYER TYPES

The following layers can be created and configured using Map Intelligence:

POINT LAYERS

Point Layers are map layers where data is represented on the map as discrete point images or symbols. For example: a particular layer might represent the location of stores as push-pin icons and another layer could represent accidents as colored dots, where the color (theme) represents the severity of the accident. Typically, the rows in a table of data belong to a business concept such as people or address details, where each column is an attribute of that concept. Thus each row in your business data can be represented as an individual point in a point layer. In Map Intelligence, point layers form the foundation for relationship layers.

Figure 2: The MI Viewer displaying a Point layer. The points, represented by colored circles, indicate the location of fast food outlets in the Sydney area.

RELATIONSHIP LAYERS

Radius relationship layers are circular regions with themes around certain points of interest that show information about other points which fall within that circular region. These layers are generated by Map Intelligence. They are based on calculations made by Map Intelligence on the specified data values as defined by the Layer Designer. For example: different colored circles indicate the average house price within half a kilometer of a proposed waste plant. Another example is where different colored circles indicate the number of burglaries that have occurred within a five-mile distance of houses belonging to known burglars. In the current version of Map Intelligence, the circle center points (e.g. houses belonging to known burglars) and the data being analyzed (burglaries), must be point layers.

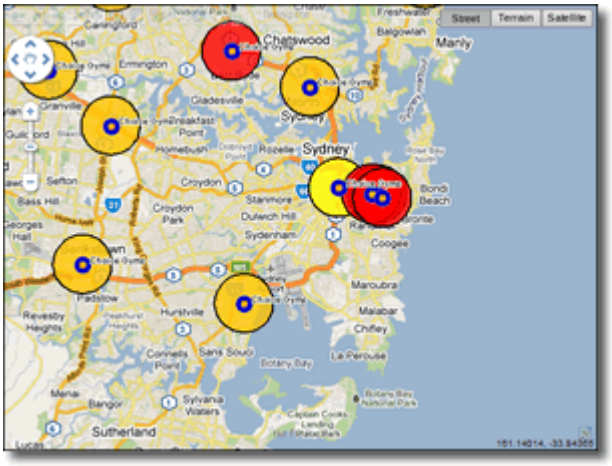


Figure 3: The MI Viewer displaying a Radius Relationship layer. The small blue circles represent gyms. Around each gym is a 2km radius colored according to the number of fast food outlets offering a low fat menu. Yellow Circles indicate there are more than 5 outlets, orange circles between 1 and 5 and red circles indicate there are no outlets.

A **Region Relationship** layer corresponds to a map area of any shape that is solely geographical in its definition, and is not generated by Map Intelligence. Examples would be suburbs, zip / postal codes, local government areas, or police precincts. Region Relationship layers can be given themes according to specified data rules associated with the points that fall within that region. An example of such a theme could be color-coding precincts according to the number of crimes that have taken place within their boundaries, or applying different hatches to suburbs based on the total value of house sales that have occurred in each one. Map Intelligence works out in which region a point (e.g. a sale or an accident) physically belongs to by doing a spatial calculation.

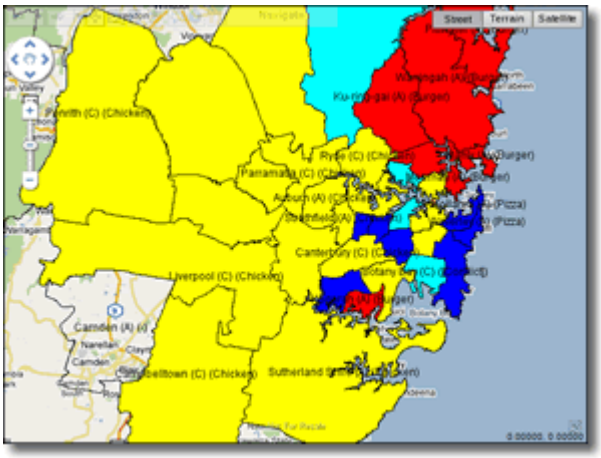


Figure 4: The MI Viewer displaying a Region Relationship layer. Local Government Areas of Sydney are color-coded according to the most common type of fast food outlets in each area. Yellow areas show chicken outlets are the most common, red areas burger and blue areas pizza.

AREA GROUP LAYER

Area Group layers also correspond to existing areas on a map. As for Region Relationship layers, the displayed theme is based on data attribute values, but in this case no spatial calculation is required. Instead, a column in your business data is designated to have values that match a column in the map data. For example, an existing map layer of suburbs may correspond to a data column for suburbs where the values are the suburb names. Then, for transaction data that represents customer complaints and that also contains a suburb column, it is possible to make a cross-reference between the transaction and the map area using the suburb name. An example that would use this correlation is displaying a theme on a suburb's area on the map that reflects the most common complaint type received from that suburb.

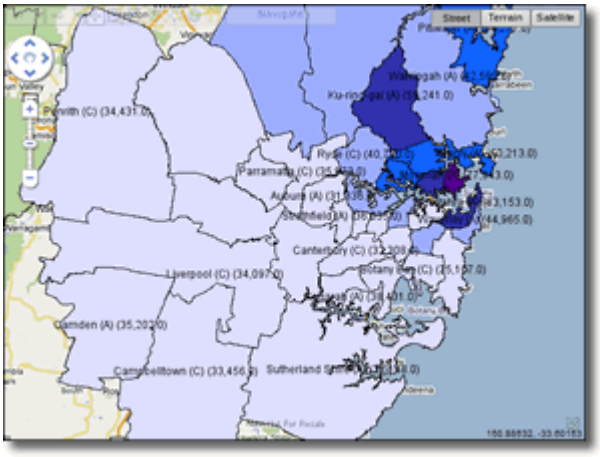


Figure 5: The MI Viewer displaying an Area Group layer. The Local Government Areas of Sydney have been color-coded according to the average household income. The darker the area the higher the income.

Like built-in map layers, Map Intelligence layers also have a specific order in which they are placed on the map. ***Point layers*** are placed on top of ***Radius Relationship layers***, which in turn sit on top of the built-in map layers. ***Region Relationship*** and ***Area Group layers*** shade existing built-in layers.

WHAT IS THE MI VIEWER?

The MI Viewer displays the configured Map Intelligence layers overlaid on a specified map. The MI Viewer also provides a number of controls and features that allow you to navigate around the map or to change the theme displayed on the map. A number of tools are also available from the MI Viewer that allow you to perform high-level analysis.

Note Mapping Viewer examples used in this manual show the default MI "Modern" Viewer. For information relating to the MI MING Viewer refer to the *MI Viewer: MING – Quick Guide* - Appendix D: Map Intelligence Manuals and Guides on page 137).

Note The MI Viewer may have been configured to display in an embedded browser in a separate worksheet in your Excel Workbook.

MAP INTELLIGENCE CLIENT EXCEL - OVERVIEW

OVERVIEW

The *Map Intelligence Client Excel* **(MI Client)** allows you to open a Microsoft Excel worksheet or comma separated variable (csv) file and configure parameters to display data from multiple sheets in a spatial application. Multiple representations of the data can be made and the set of spatial views saved as a template which can be loaded to display the layers for the same or similar spreadsheet files.

PREREQUISITES

When using Map Intelligence with Microsoft Excel, there are 4 major parts to the system. In order to configure the MI Client, the following components must be installed:

The MI Client – This appears as a drop-down menu on the Excel menu bar, which interacts with Microsoft Excel to manipulate your data and sends mapping requests to the Map Intelligence server.

For instructions on how to install the MI Client – Excel refer to the ***Map Intelligence Excel Client Installation Guide*** (see Appendix D: Map Intelligence Manuals and Guides).

After installation, ensure the **Map Intelligence.xla** file is listed in the Excel Add-Ins list. Click the **Office** button > **Excel Options** > **Add-Ins**

If the Map Intelligence.xla file does not appear in the list then from the **Manage:** drop-down list ensure **Excel Add-ins** is selected, then click the **Go…** button.

The Add-Ins dialog window will open, click the **Browse…** button and navigate to the MI Client installation directory, select the Map Intelligence.xla file click **OK**, then click **OK** to close the Add-Ins dialog box.

The Map Intelligence Server –This is a web application that exists somewhere on the network and waits for map requests from the MI Client and dynamically builds spatial applications as a result of these map requests.

Ensure the Map Intelligence Server is available on the network (For instructions on how to install and configure the Map Server refer to the *Map Intelligence Server Installation Guide* (see Appendix D: Map Intelligence Manuals and Guides on page 137).

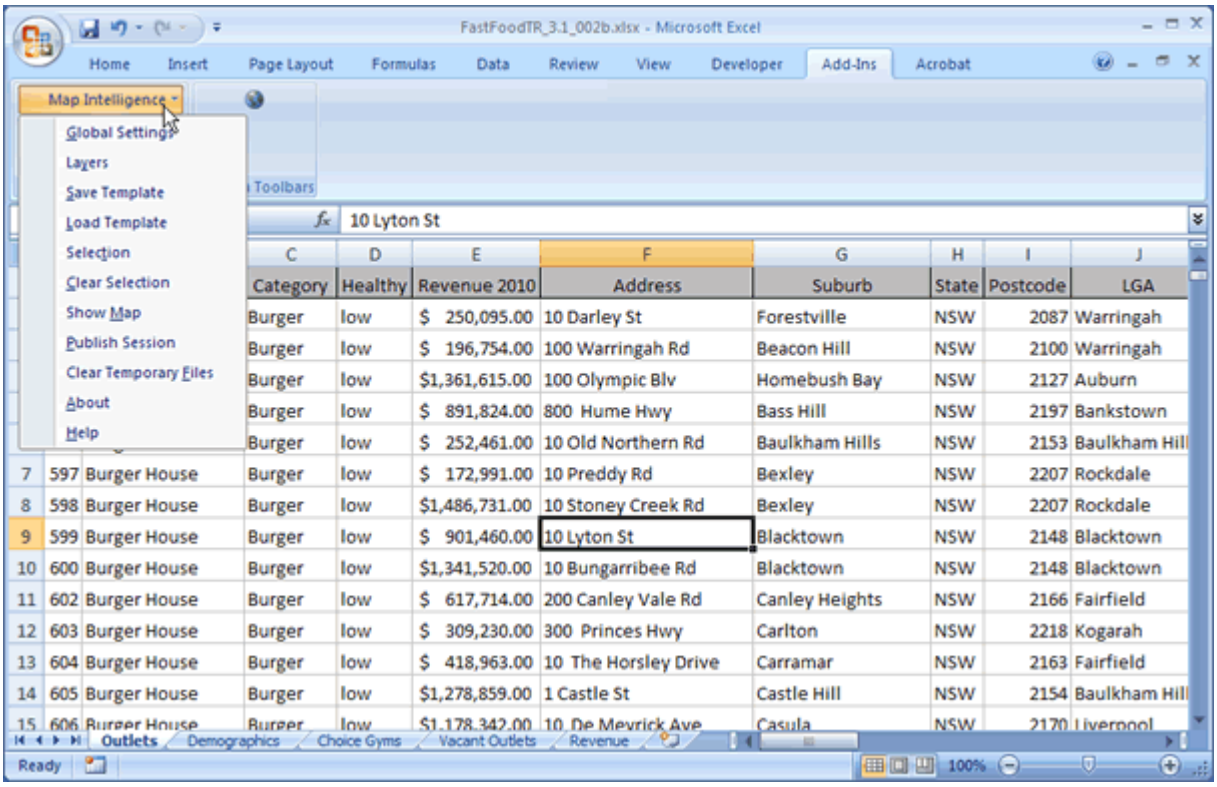
The Map Provider Server – This is the server that produces the displayed map images. The map provider server is invisible to the end user. The installation of the map provider server is beyond the scope of this manual.

Microsoft Excel needs to be installed on the machine that will be used in configuring and viewing analysis layers. The installation of Microsoft Excel is beyond the scope of this manual.

- The Map Intelligence Excel Client will not work if it does not have access to a machine which has Microsoft Excel installed on it.
- For best results when displaying the MI Viewer, it is recommended that you have Microsoft Internet Explorer Version 8.0 or 9.0 installed.

STARTING THE MI CLIENT

Once the MI Client has been installed and the Map Intelligence.xla file has been added to the Excel Add-Ins, each time you open Excel, the MI Client will appear as a drop-down menu on the Excel Add-Ins Tab.



	A	B	C	D	E	F	G	H	I	J
			Category	Healthy	Revenue 2010	Address	Suburb	State	Postcode	LGA
			Burger	low	$ 250,095.00	10 Darley St	Forestville	NSW	2087	Warringah
			Burger	low	$ 196,754.00	100 Warringah Rd	Beacon Hill	NSW	2100	Warringah
			Burger	low	$1,361,615.00	100 Olympic Blv	Homebush Bay	NSW	2127	Auburn
			Burger	low	$ 891,824.00	800 Hume Hwy	Bass Hill	NSW	2197	Bankstown
			Burger	low	$ 252,461.00	10 Old Northern Rd	Baulkham Hills	NSW	2153	Baulkham Hill
7	597	Burger House	Burger	low	$ 172,991.00	10 Preddy Rd	Bexley	NSW	2207	Rockdale
8	598	Burger House	Burger	low	$1,486,731.00	10 Stoney Creek Rd	Bexley	NSW	2207	Rockdale
9	599	Burger House	Burger	low	$ 901,460.00	10 Lyton St	Blacktown	NSW	2148	Blacktown
10	600	Burger House	Burger	low	$1,341,520.00	10 Bungarribee Rd	Blacktown	NSW	2148	Blacktown
11	602	Burger House	Burger	low	$ 617,714.00	200 Canley Vale Rd	Canley Heights	NSW	2166	Fairfield
12	603	Burger House	Burger	low	$ 309,230.00	300 Princes Hwy	Carlton	NSW	2218	Kogarah
13	604	Burger House	Burger	low	$ 418,963.00	10 The Horsley Drive	Carramar	NSW	2163	Fairfield
14	605	Burger House	Burger	low	$1,278,859.00	1 Castle St	Castle Hill	NSW	2154	Baulkham Hill
15	606	Burger House	Burger	low	$1,178,342.00	10 De Mevrick Ave	Casula	NSW	2170	Liverpool

Figure 6 Excel worksheet showing the MI Client drop-down menu.

Each worksheet can form the data for one or more Map Intelligence layers. The current version of the MI Client requires that all Map Intelligence layers must come from the same Workbook (.xls / .xlsx) file. If your data is in multiple Workbooks you will need to combine these into multiple worksheets in a single Workbook.

Note **Important**: Each column must have a column heading.

MAP INTELLIGENCE CLIENT HELP

The MI Client Help can be found by selecting **Help** from the Map Intelligence drop-down menu.

LOADING A TEMPLATE

The MI Client allows Layer Designers to save configuration settings and layer definitions as a template file (*.tem).

Note Layer Designers should see Creating Applications.
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Loading a template into the MI Client allows both Layer Designers and End Users with access to the Excel Workbook, or a similar one containing the same worksheets and columns, to display the map and layer definitions immediately. Templates can be loaded locally or from a remote server.

LOADING A LOCAL TEMPLATE

To load a local template

1. From the **Map Intelligence** drop-down menu, Select **Load Template**, the *Load Template* screen will open.
2. Click the **Load locally** radio button, then click the **Browse** button.

   A file browser window will open.
3. Browse to where the template is located, select the file, then click **Open.**

   The file name and location will appear in the **Path name** field.
4. Click the **OK** button to load the template**.**

   Note If any worksheets were renamed after the saving of the template, you will be prompted to enter the new worksheet name.

LOADING A TEMPLATE FROM A REMOTE SERVER

To load a template from a remote server

1. From the **Map Intelligence** drop-down menu, Select **Load Template**, the **Load Template** dialog box will open.
2. Click the **Load from remote server** radio button.
3. In the **Server Address** field enter the server address where the template is located.
4. Click the **Refresh List** button.

   Note If prompted, enter your User Name and Password.

   A list of templates will appear in the window. The list shows the name of the template followed by a description of the template.

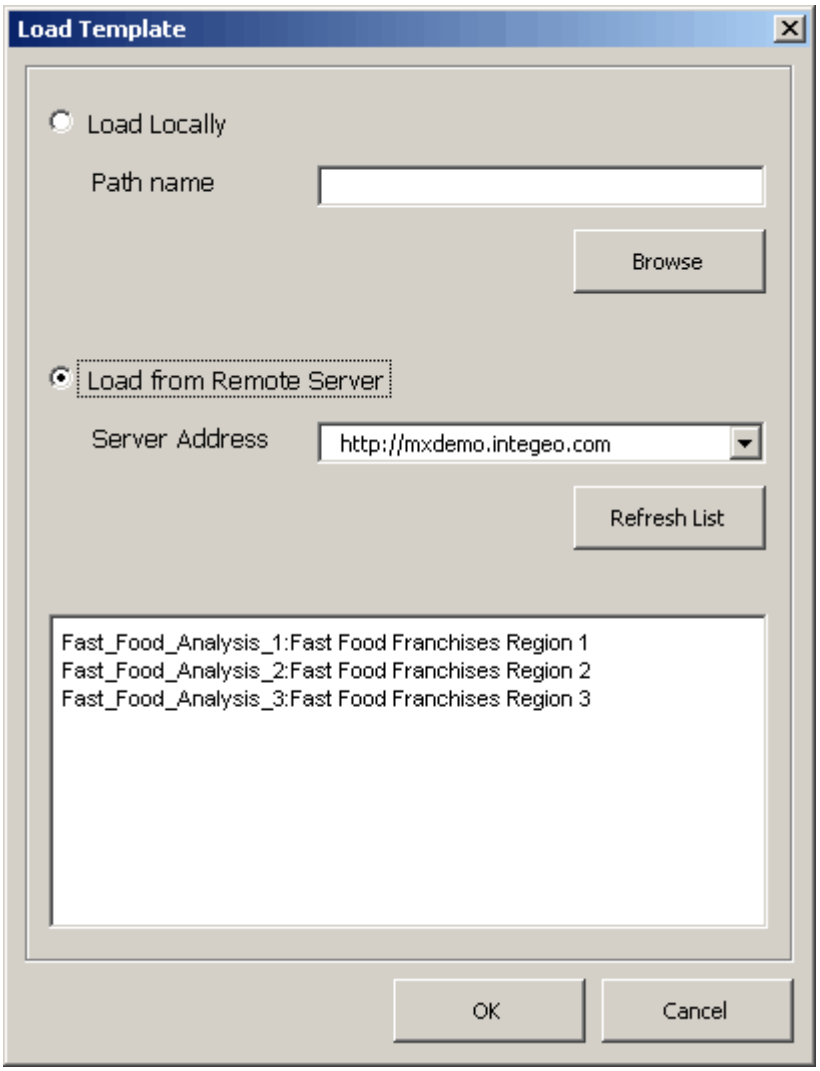


Figure 7 Load Template dialog box.

5. Select the template to be loaded and click the **OK** button.

Note

- If any worksheets were renamed after the saving of the template, you will be prompted to enter the new worksheet name.
- The templates listed in the Load Template dialog box are based on criteria set by the Layer Designer who saved the template. For example this list shows all available templates that are associated with Excel Workbooks that contain the word “food” in the file name. If no templates match the criteria the dialog box will be empty. Not all templates shown will necessarily be associated with the Excel Workbook you are using. You should consult the Layer Designer who saved the template if you are unsure of which template to use. For further information on template matching criteria. See Creating Applications, Completing the Workbook File Names to Match.

ACCESSING THE MI VIEWER

The MI Client launches a MI Viewer that displays points and relationships on a map based on layers configured by the designer. When viewing the map, you can analyze your data using the controls available from the MI Viewer.

SELECTING YOUR PREFERRED BROWSER

The Map Intelligence Client allows End Users to select their preferred browser.

To select your preferred browser

1. From the **Map Intelligence** drop-down menu, select **Global Settings**. The *Global Settings* configuration screen will appear.

2. From the **Preferences, Browser** section, click a radio button to select your system's default browser.

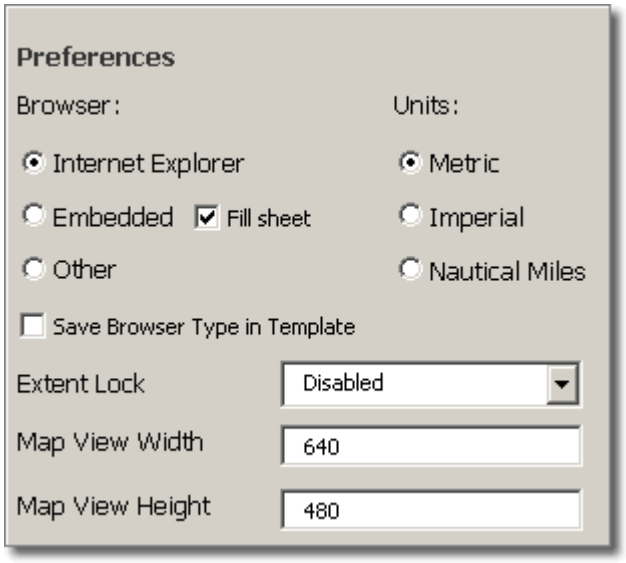


Figure 8 Preferences Section.

Note

- Selecting **Embedded** will display the MI Viewer in an embedded browser in a new worksheet in your Excel Workbook.
- If you wish the MI Viewer to fill the visible area of your Excel worksheet click the **Fill sheet** checkbox.
- End Users only have to select their preferred browser once, Map Intelligence will then remember this setting for all future sessions.

LAUNCHING THE MI VIEWER

To open the MI Viewer

1. To view the map, from the **Map Intelligence** drop-down menu, select **Show Map** or click the **Show Map** button on the Integeo / Custom toolbar.

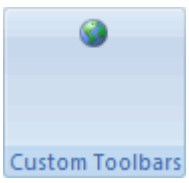


Figure 9: Show Map button

Note The MI Viewer will appear either in a browser or in an embedded browser in a separate worksheet in your Excel

Workbook.

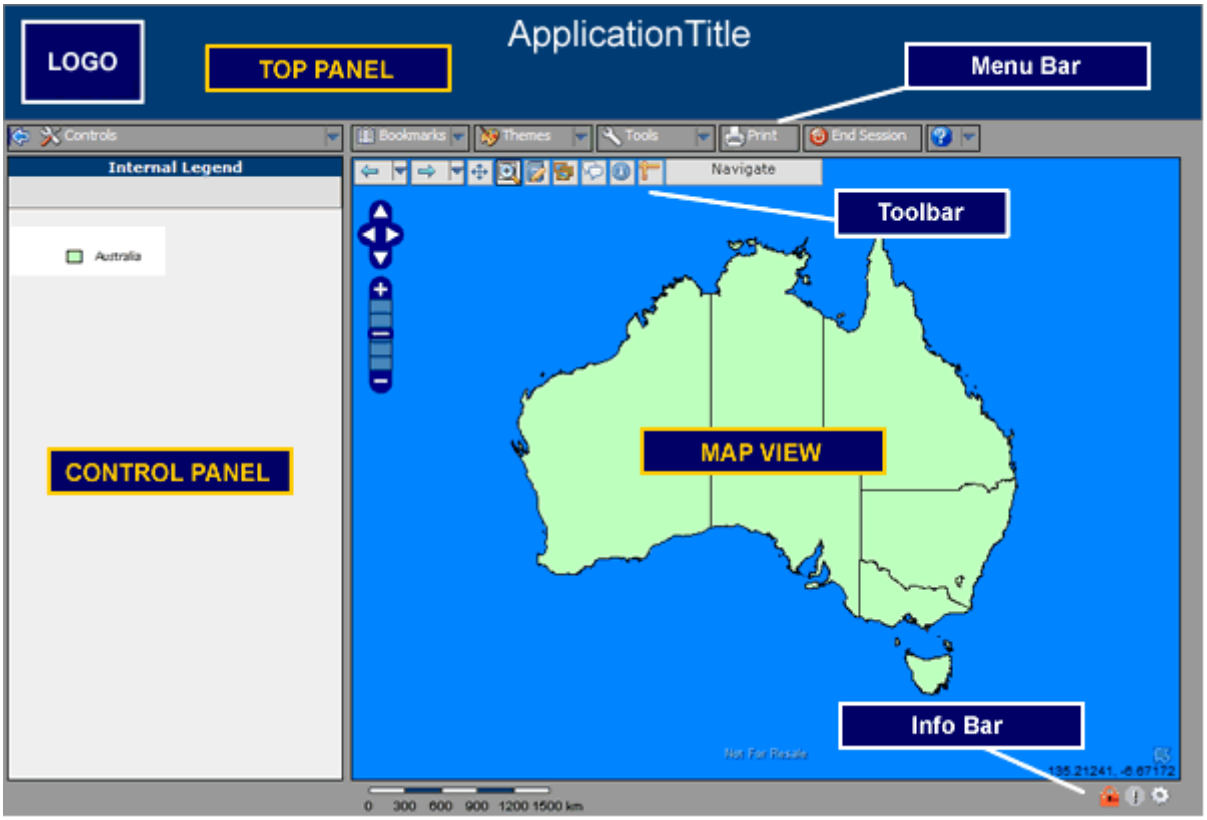


Figure 10 The Default MI Viewer

Note

Map Intelligence does not verify that the layer properties set in the MI Client are valid when a new request is made. Instead, it will report errors as it finds them. E.g. if an invalid built-in layer has been specified for an Area Group Layer, and the layer has not been made visible, the MI Viewer will not report the error when you click the Map Intelligence button. The problem will only be reported when the map is made visible.

CLOSING THE MI VIEWER

To close the MI Viewer

1. Click the  in the upper right hand corner of the browser window, or from the **File** menu, click **Close**.

Note

The *MI Viewer User Manual*, contains further information on the Analytical Tools and features of the MI Viewer, alternatively the MI Viewer Help can be accessed by clicking on the Help button  on the Top Panel of the MI Viewer and selecting Help from the drop-down list.

MI CLIENT CONFIGURATION

GLOBAL SETTINGS

The Global Settings configuration screen allows you to configure the settings for your Map Intelligence Server as well as the properties of the underlying map to be used for your analysis.

To open the Global Settings screen

1. From the **Map Intelligence** drop-down menu, select **Global Settings**. The *Global Settings* configuration screen will appear.

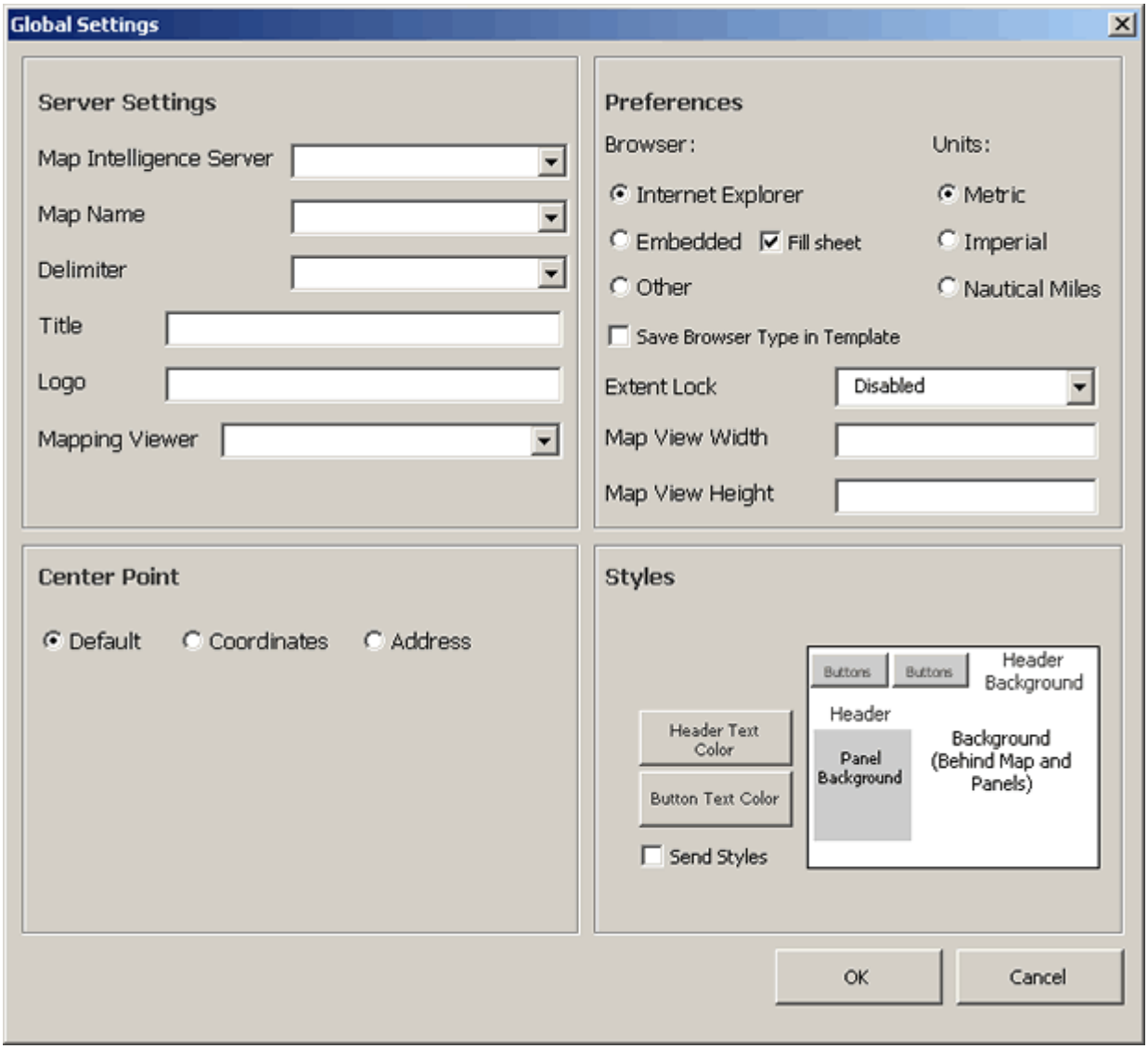


Figure 11 Global Settings configuration screen.

SERVER SETTINGS

To configure the Server Settings section

1. In the **Map Intelligence Server** field, enter the Map Intelligence server and port that you wish to use. Previously entered servers are available from the drop-down list.

2. From the **Map Name** drop-down list, select the map that you want to use to display your analysis layers on.

   Note: The *Map Name* drop-down list contains all the maps that have been added during the Map Intelligence server configuration. Consult your Map Intelligence Server Administrator if the map you wish to use is not available in the drop-down list.

3. From the **Delimiter** drop-down list, select a character to act as a separator for your data as it is sent to the Map Intelligence Server.

   Note: The delimiter character act as a separators for your data as they are sent to the Map Intelligence Server. You must select a character that does not exist within your data to avoid errors. The default character is ÿ.

4. In the **Title** field, enter the title that you want to appear on the Top Panel of the MI Viewer (Figure 12). This field is optional.

5. In the **Logo** field, enter the file name of the image that you want to appear on the Top Panel of the MI Viewer (Figure 12). This field is optional.

   Note:
   - The specified image file must be located in the Images folder of the Map Intelligence directory on the server machine.
   - The recommended size for the image is 70 x 70 pixels. Larger images may cover some elements or change the format of the MI Viewer.

Figure 12. An example MI Viewer Top Panel showing the Title "Fast Food Franchise Analysis" and Integeo/Burger Logo.

As of Map Intelligence Server Version 3.2.2, Map Intelligence allows organizations to create custom MI Viewer User Interfaces that can be used instead of the standard Map Intelligence MI Viewer. Examples of this could be to use Google Maps, Open Layers or even map layers from Excel over the existing in-house spatial applications being used by organizations. If more than one viewer is registered with your Map Intelligence server, then you can choose which viewer to use for this Excel Workbook from the ***Mapping Viewer*** drop down.

6. From the **Mapping Viewer** drop-down list, select the name of the Custom MI Viewer to be used.

   Note: **IMPORTANT NOTE:** This feature is only available when using a Map Intelligence Server version 3.2.2 or above.

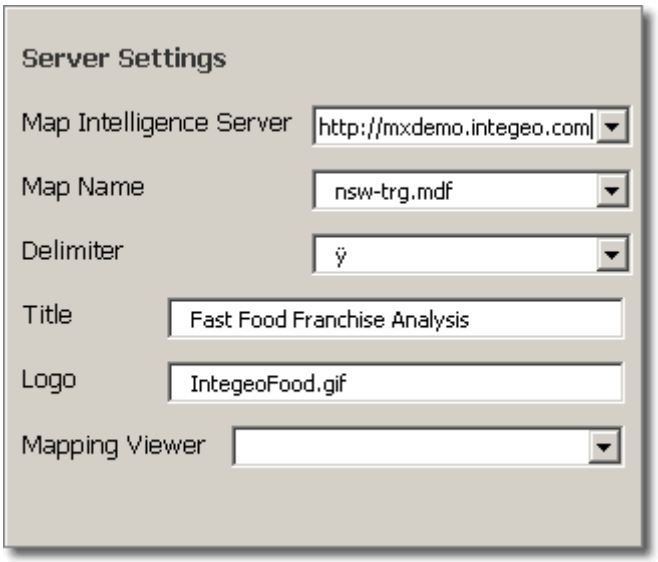


Figure 13 Server Settings section.

PREFERENCES

To configure the Preferences section

1. Click a radio button to select your system's default browser.

Note

- Selecting **Embedded** will display the MI Viewer in an embedded browser in a new worksheet in your Excel Workbook.
- If you wish the MI Viewer to fill the visible area of your Excel worksheet click the **Fill sheet** checkbox.
- You can specify a browser type within a template by selecting the **Save Browser Type in Template** checkbox.

2. Select a radio button to select the unit of measurement that you would like to use for your analysis.

- Metric units (kilometers, meters)
- Imperial units (miles, feet)
- Nautical Miles

3. From the **Extent** Lock drop-down list, select an extent lock option.

The Extent Lock determines the map extent to be used when a user makes a new map request from the client. The lock extent options are listed below:

- **Most Recent**: The last viewed extent will be used.
- **No Lock**: The extent will be calculated on a bounding box around the visible data.
- **Disabled**: The extent lock will be based on the Extent Lock setting selected by the user in the MI Viewer.

Note

- If a center point is specified in the Center Point Section, the view of the map adheres to this center point. Subsequent requests in the session adhere to the lock specified by the client.
- If an extent lock is not set in the client then a zoom and centre set in a client are honored in the initial client request on a user session, but for any subsequent requests the zoom and centre are calculated based on the data from the request if there is no extent lock set in the map viewer.

  If the extent lock is not under client control and the extent lock in the mapping viewer is set

to snapshot then it honors the snapshot setting for all subsequent client requests on that user's session.

4. In the **Map View Width** field enter in pixels the width of the Map View.

5. In the **Map View Height** field enter in pixels the height of the Map View.

Note The Map View Width and Height settings override the default settings set by the Server Administrator.

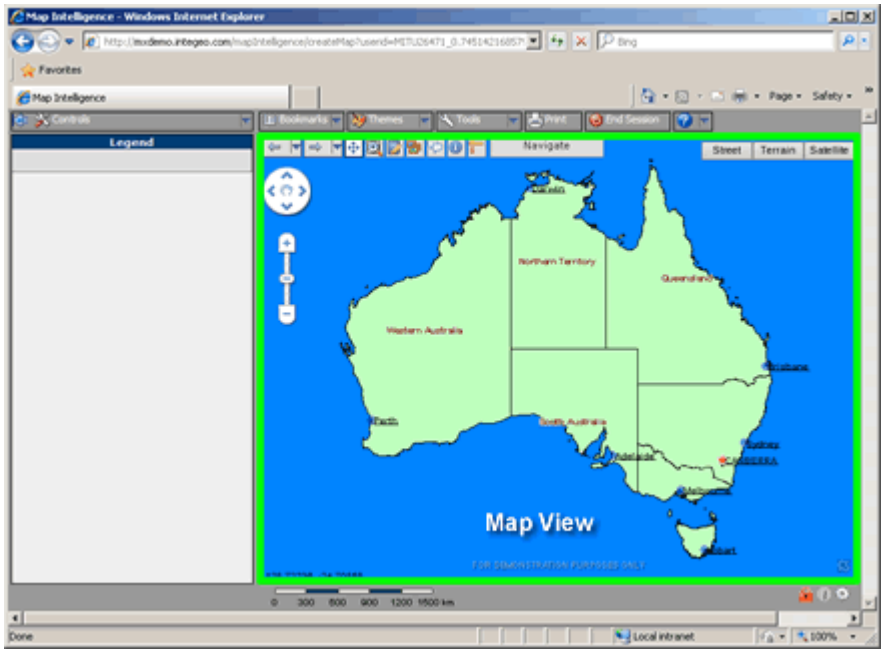


Figure 14. MI Viewer showing the Map View highlighted in green.

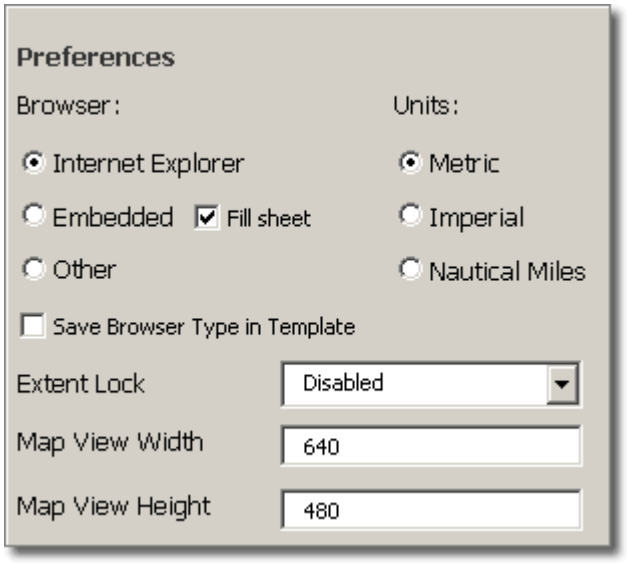


Figure 15 Preferences section.

CENTER POINT SECTION

Setting the Center Point controls the way your map is initially displayed on opening.

- **Default** – selects a center point by plotting all the points specified by the visible point layers and takes the center point of all points. If no point layers are set as visible, the Center point is taken from visible Region layers (i.e. Relationship or Area Group Layers).
- **Coordinates** – allows you to specify a coordinate to set as the center point for the map. If you select this option, you will need to specify the latitude and longitude values for your center point. You must specify a map width or the default center point will be used.
- **Street Address** – allows you to specify a valid street address to set as the center point for the map. If you select this option, you will need to specify the street/address, suburb/city, state post code/zip code and country values for your center point. You must specify a map width or the default center point will be used. The Street Address option requires a Geocoder to be installed.

To set the Center Point using Coordinates

1. Click on the **Coordinates** radio button.

2. In the **Map Width** field, type in the width of the map to be initially displayed.

   Note: This value is in kilometers or miles depending on the unit of measurement selected in Units section (see Preferences above). This field is optional. If you do not specify a map width, Map Intelligence will apply a default width that will display all your points. In this case, it is recommended that you select Default as your center point option.

3. In the **X (Longitude)** and **Y (Latitude)** fields enter the co-ordinates for the center point at which you wish the map to be initially displayed.

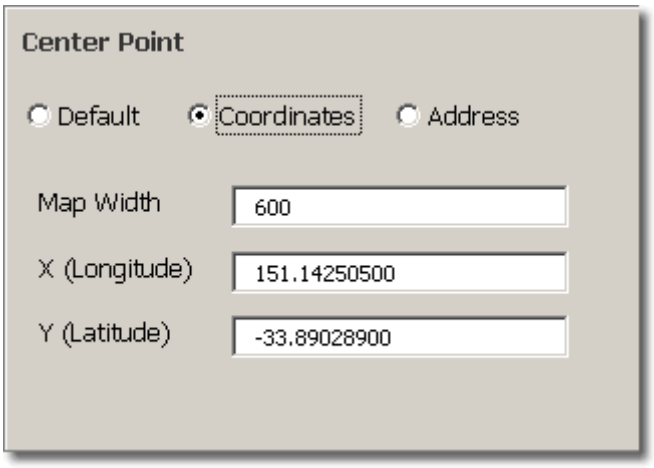


Figure 16. Center Point and Display section showing Coordinates radio button selected.

Note:
- For maps with projected coordinate systems, when setting Center Point properties, the Y coordinate (or Northing) is set in the latitude field and the X coordinate (or Easting) in the longitude field. These settings are in the units of the underlying map, usually meters rather than degrees.
- For maps with projected coordinate systems the longitude is set to the column of the X coordinate and the latitude is set to the column of the Y coordinate in Point layers.

To set the Center Point using an address

1. Click on the **Street Address** radio button.

2. In the **Map Width** field, type in the width of the map to be initially displayed.

This value is in kilometers or miles depending on the unit of measurement selected in Units section (see Preferences above). This field is optional. If you do not specify a map width, Map Intelligence will apply a default width that will display all your points. In this case, it is recommended that you select Default as your center point option.

3. In the **Street**, **City State**, **Post / ZIP** and **Country** fields, enter the address details for the center point at which you wish the map to be initially displayed.

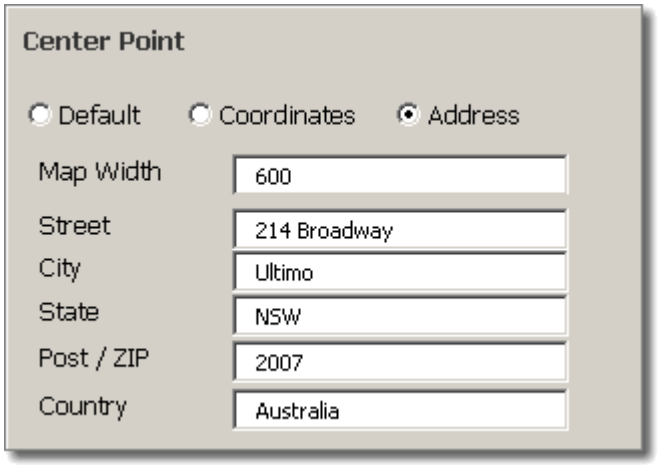


Figure 17. Center Point and Display section showing Street Address radio button selected.

STYLES SECTION

The Styles section allows you to configure the look and feel of the MI Viewer. The color of the following elements can be changed:

- Background
- Buttons
- Header Background
- Panel Background
- Header Text
- Button Text

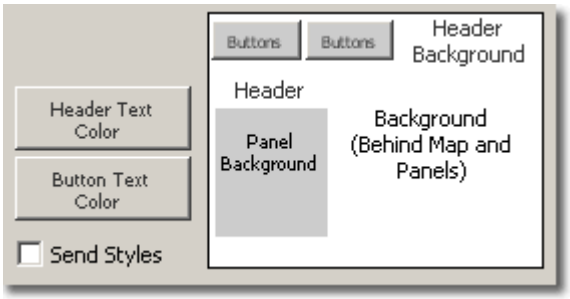


Figure 18. Default Display / Styles section.

To change the color of each element

Note In the examples below the color red was selected for each element.

1. To change the **Background** color (i.e. the area behind the maps and panels), click on the area highlighted in yellow in Figure 19, a color picker will appear, select the new color, the Style Preview will change showing the new color (Figure 20).

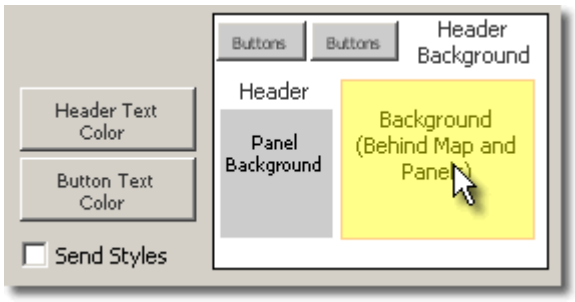


Figure 19. Selecting the Background color.

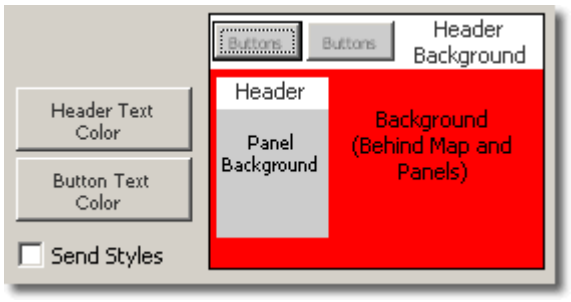


Figure 20. After selecting red as the Background color.

2. To change the **Buttons** color, click on the area highlighted in yellow in Figure 21, a color picker will appear, select the new color, the Style Preview will change showing the new color (Figure 22).

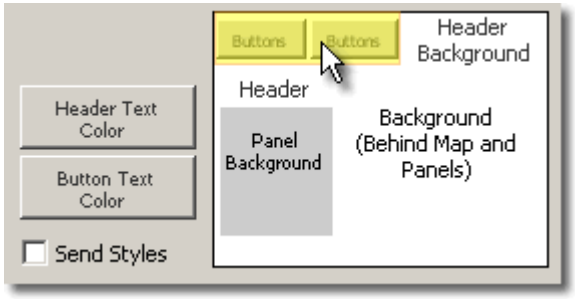


Figure 21. Selecting the Buttons color.

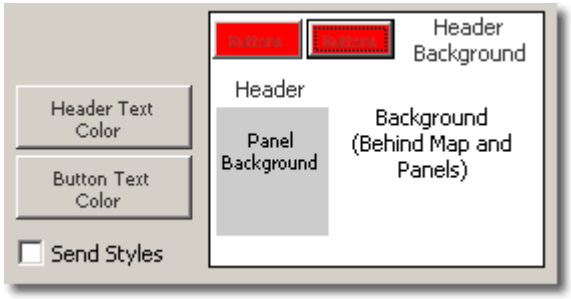


Figure 22. After selecting red as the Buttons color.

3. To change the **Header Background** color, click on the area highlighted in yellow in Figure 23, a color picker will appear, select the new color, the Style Preview will change showing the new color (Figure 24).

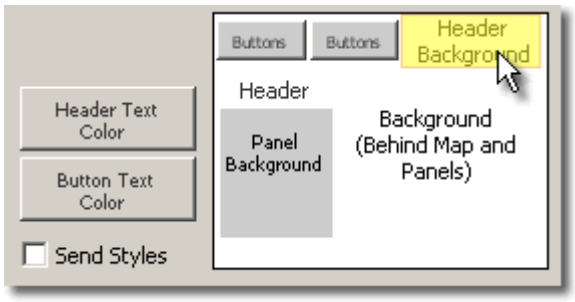


Figure 23. Selecting the Header Background color.

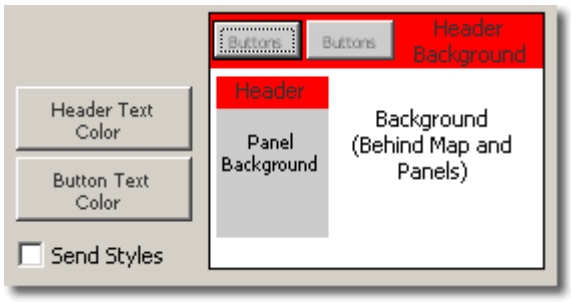


Figure 24. After selecting red as the Header Background color.

4. To change the **Panel Background** color, click on the area highlighted in yellow in Figure 25, a color picker will appear, select the new color, the Style Preview will change showing the new color (Figure 26).

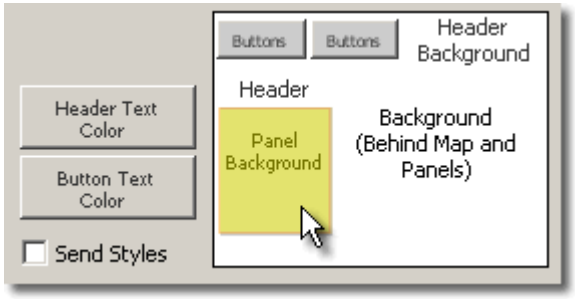


Figure 25. Selecting the Panel Background color.

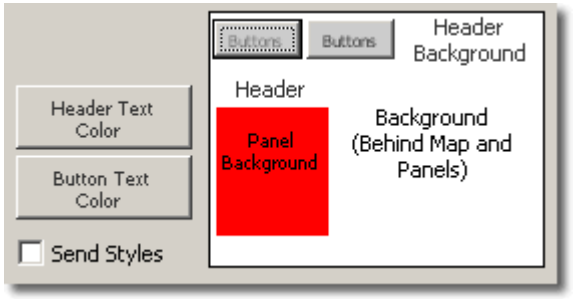


Figure 26. After selecting red as the Panel Background color.

5. To change the **Header Text** color, click on the **Header Text Color** button, highlighted in yellow in Figure 27, a color picker will appear, select the new color, the Style Preview will change showing the new color (Figure 28).

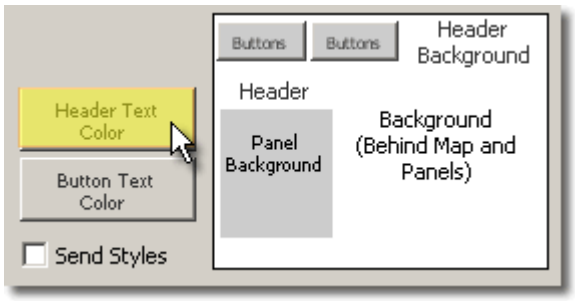


Figure 27. Selecting the Header Text color.

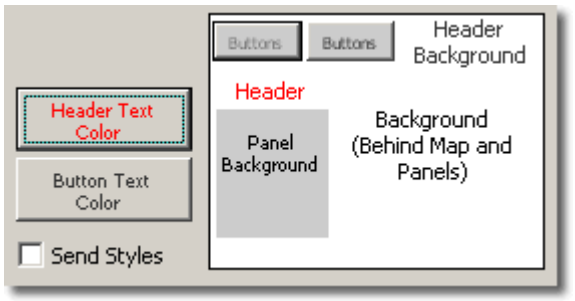


Figure 28. After selecting red as the Header Text color.

6. To change the **Button Text** color, click on the **Button Text Color** button, highlighted in yellow in Figure 29, a color picker will appear, select the new color, the Style Preview will change showing the new color (Figure 30).

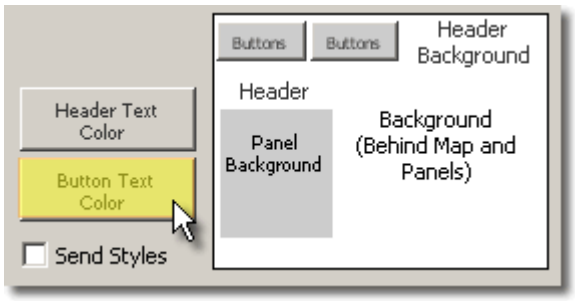


Figure 29. Selecting the Button Text color.

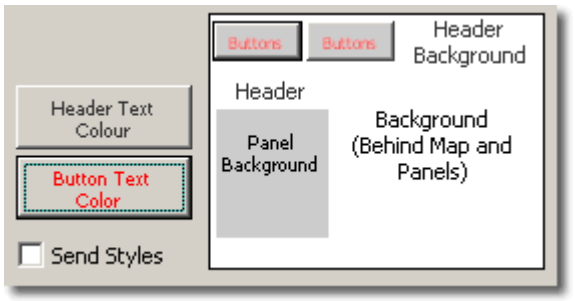


Figure 30. After selecting red as the Button Text color.

7. Click on the **Send Styles** checkbox ☑.

Note If the Send Styles checkbox is unchecked the MI Viewer will use the *Default Look and Feel* settings configured on the Map Intelligence Server.

SAVING THE SETTINGS

To save the Global Settings

1. Click the **OK** button, to save the settings and return to the worksheet.

MAP INTELLIGENCE LAYERS

OVERVIEW

Maps are made up of layers. Map features such as roads, parks or traffic lights are held on different layers. Each map is composed of one or more layers that are superimposed to give the final map *look and feel*.

Layers that reside as part of the mapping environment are referred to as **built-in layers**. Layers created dynamically from external data sources are known as **Map Intelligence layers.**

There are currently four Map Intelligence layer types:

- Point Layers
- Radius Relationship Layers
- Region Relationship Layers
- Area Group Layers

If your data is in a pivot form you can create multiple Area Group Layers using the Pivot Layer Configuration Screen – see Configure Pivot Layers on page 104.

See Layer Types for a full description of Map Intelligence layers. The MI Client comes with configuration screens that allow you to create your Map Intelligence layers.

These configuration frames are not accessible from the MI Client Viewer version.

CONFIGURE POINT LAYERS

Note

- For a description of Point layers, see Layer Types, Point Layers.
- Example Screenshots. The Example screenshots show points representing the location of Fast Food outlets in Sydney.

To open the Point Layer Configuration screen

1. From the **Map Intelligence** drop-down menu, select **Layers**, the *Layers* screen will open.

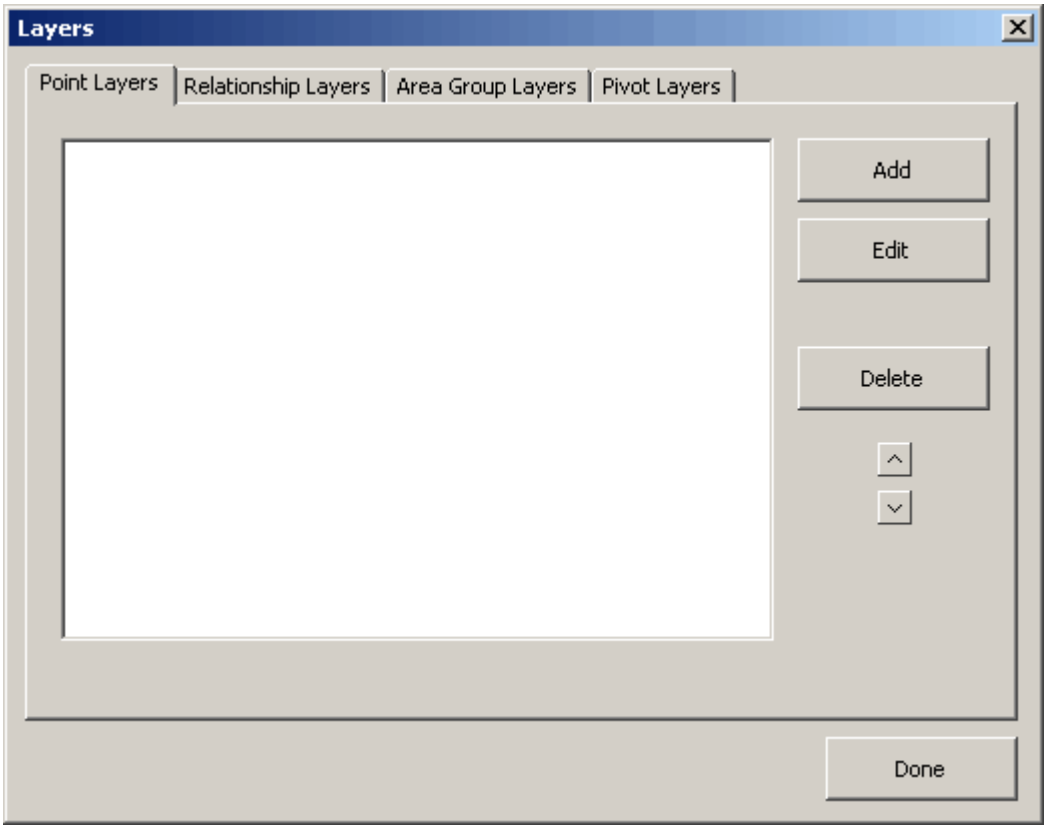


Figure 31 The Layers screen.

2. Select the **Point Layers** tab.
3. Click the **Add** button.

   The *Point Layer configuration screen* will open.

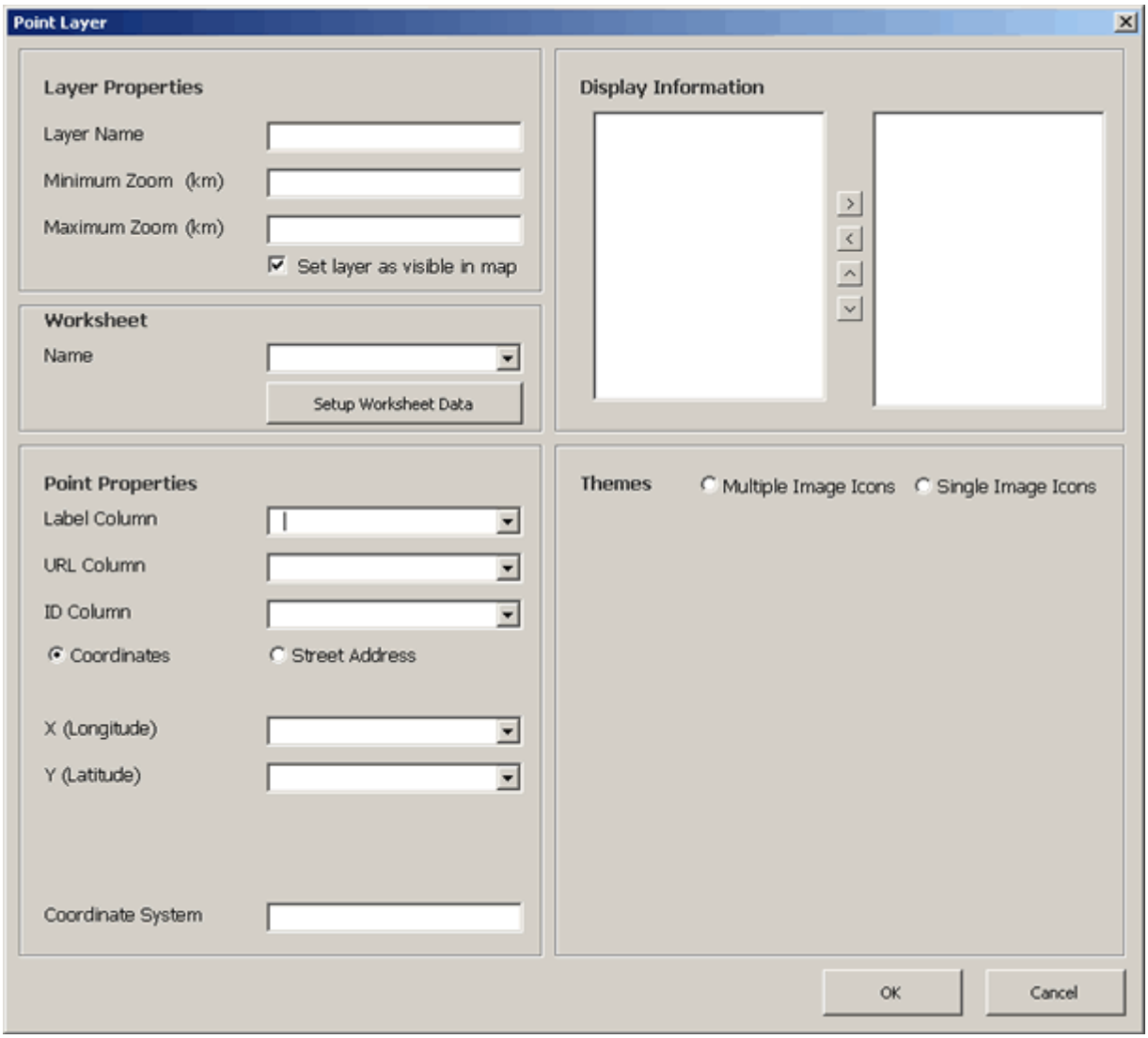


Figure 32 Point Layer configuration Screen

LAYER PROPERTIES SECTION

To configure the Layer Properties section

1. In the **Layer Name** field, enter a title for the layer.

   Note: Spaces can be used, but must not be used at the beginning or end of the layer name. For Map Intelligence Servers 3.1 or below, only letters, numbers and spaces may be used.

2. You can specify a range in which the layer will be visible on the map by entering a **Minimum Zoom and Maximum Zoom** value. The layer will only be visible if the current map width is within the specified minimum and maximum zoom values.

3. Select the **Set layer as visible in map** checkbox if you wish this particular layer to be visible when you initially view the map.

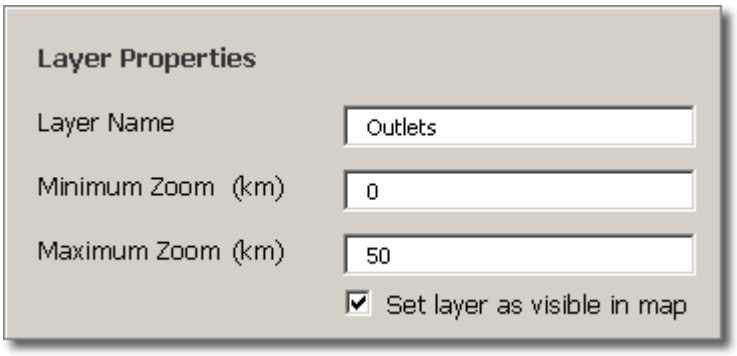


Figure 33 Layer Properties Section of the Point Layer configuration screen.

WORKSHEET

To configure the Worksheet section

1. From the **Name** drop-down list, select the worksheet which contains the data to be used as points for this layer.

   Note All worksheets within the Workbook will appear in the drop-down list.

2. Click on the **Setup Worksheet Data** button. The *Setup Worksheet Data* dialog box will appear.

   Note This step is only necessary if you wish to change the standard default setting.

   This dialog box allows you to tell the MI Client which cells on the worksheet constitute data and which are headers. There are two ways of configuring the worksheet, *by Worksheet Location* or *by Data in the Worksheet*.

   #### WORKSHEET LOCATION OPTION

   a. Select the **Worksheet Location** radio button.

   b. In the **Headings Row** field, enter the number of the worksheet row containing your headings.

   c. In the **Data Row** field, enter the number of the first worksheet row containing your data.

   d. In the **First Column** field, enter the first worksheet column containing your data.

   e. Click **OK**, to return to the Point Layer configuration screen.

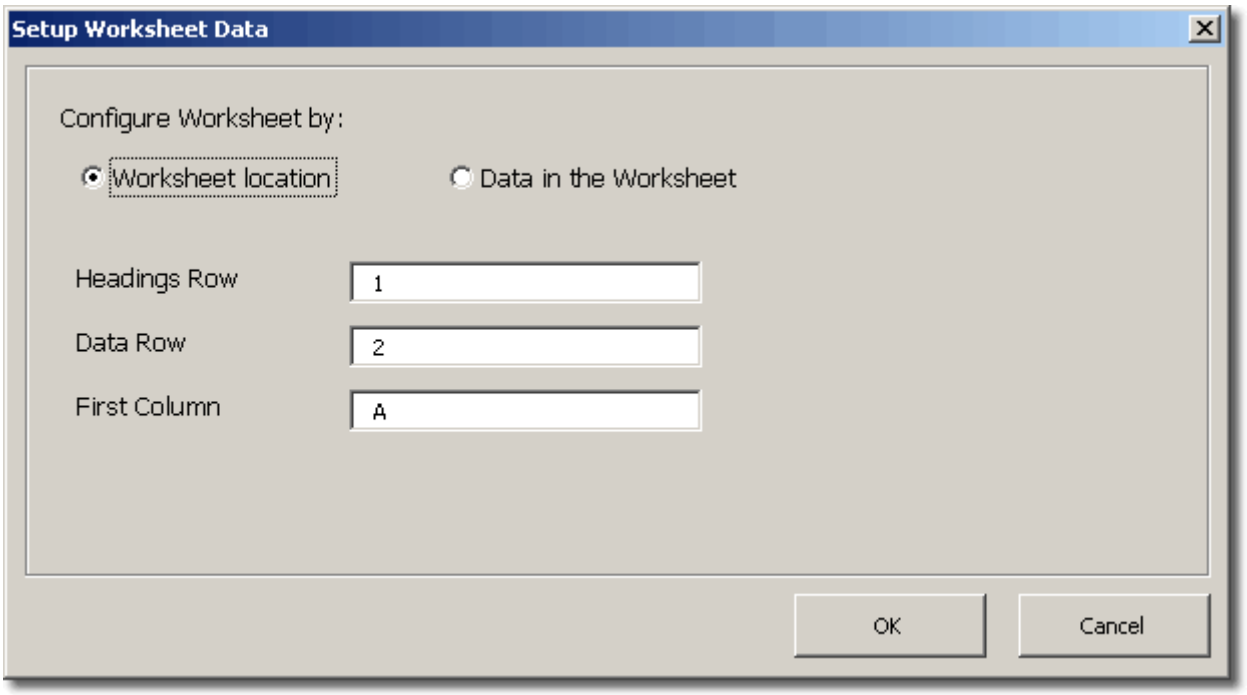


Figure 34. Setup Worksheet Data - Worksheet location.

The example above shows the default settings, the first row contains the headings, the second and subsequent rows contain data. The first column to contain data is Column A.

DATA IN THE WORKSHEET LOCATION OPTION

a. Select the **Data in the Worksheet** radio button.

b. In the **First Column** field, enter the first worksheet column containing your data.

c. From the **Worksheet** drop-down list, select the worksheet containing your data.

Note If a different worksheet is selected to the one you selected previously for the *Worksheet Name* field, the *Worksheet Name* field will automatically be updated with your new choice.

d. From the **Headings Row** drop-down list, select your heading row.

e. From the **Data Row** drop-down list, select the first row of the worksheet containing your data.

f. Click **OK**, to return to the Point Layer configuration screen.

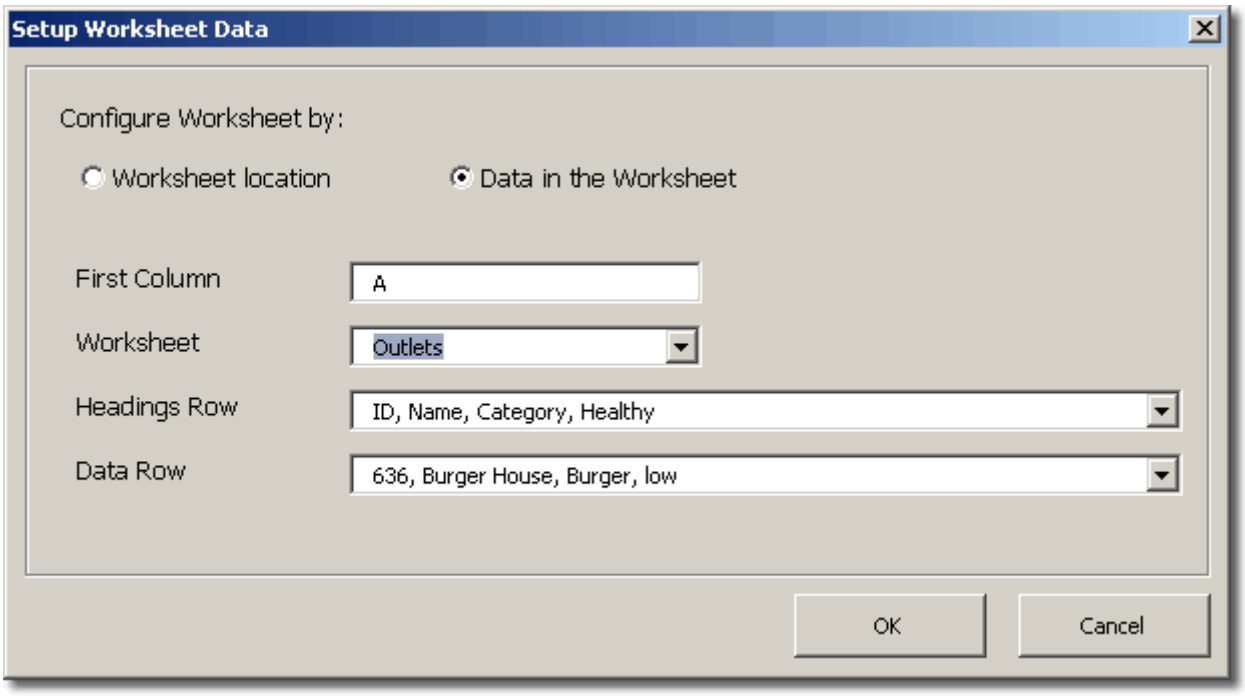


Figure 35. Setup Worksheet Data - Data in the Worksheet.

Tip If you intend to use Advanced Filtering, select the *Data in the Worksheet Location* option when configuring the ***Setup Worksheet Data,*** this option does not require any adjustment to the location settings if Advanced Filtering is used.

POINT PROPERTIES SECTION

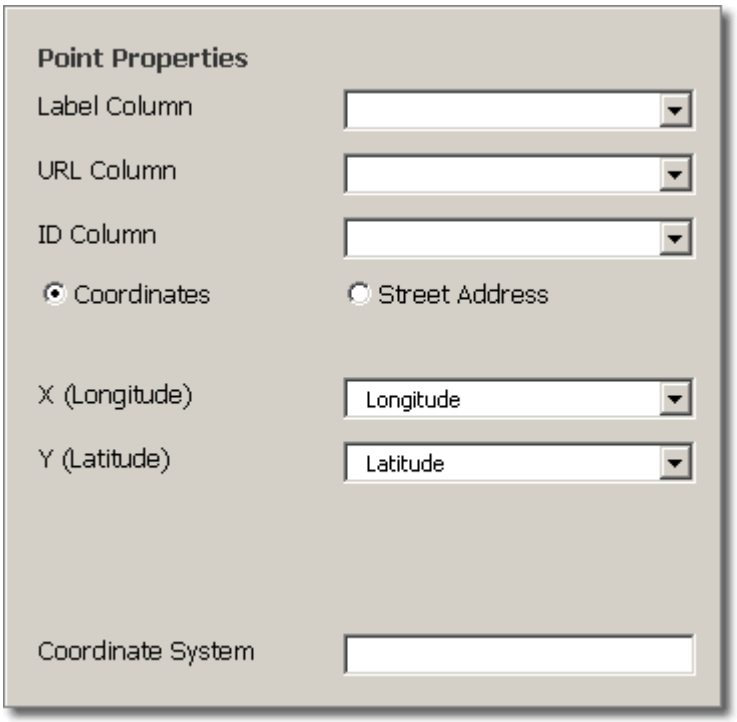


Figure 36 Point Properties Section of the Point Layer configuration screen.

To configure the Point Properties section

1. From the **Label Column** drop-down list, select a column that contains the values to appear on the labels for each point in the layer.

   Note Applying a label for each point in the layer is optional.

2. From the **URL Column** drop-down, select a column that contains URLs associated with the points in the layer.

   Note Multiple URLs can be assigned to a point using semi-colons to separate names and values.

   In the worksheet URL column; enter the name and the URL in the following format

   <Name>;<Url>;(space)<Name>;<Url>

   For example:

   "Pitney Bowes Web Site;http://www.pb.com; Report;report.pdf"

   From MI Viewer, the **Active Points** tool can be used for points that have been assigned to a single URL. If a point has been assigned to multiple URLs, the active links can be viewed from the **Information Panel**. For further information on the Active Points and Information sections refer to the *MI Viewer User Manual*.

   Applying a URL for points in the layer is optional.

3. From the **ID Column** drop-down list, select a column that contains unique values to be used to identify individual points when using the Selection Tool. See the Selection section of this manual and the *Foreground Tools*, *Selection* section of the ***MI Viewer User Manual*** (see Appendix D: Map Intelligence Manuals and Guides).

Figure 37 Label, URL and ID Column section.

The *Point Properties* section also allows you to select the method for plotting the points on the map. Points can be mapped using latitude and longitude coordinates or valid street addresses.

1. Select either the **Coordinates** or **Street Address** radio button.

   If you select the **Coordinates** radio button, you must specify the columns in the worksheet that contain the latitude and longitude values. You can also specify the Coordinate System to use for the layer if you do not intend to use the inherent coordinate system of the selected map.

   Note
   - A coordinate system provides a frame of reference for measuring locations on the surface of the earth. A full list of acceptable coordinate systems is available in the *Coordinate Systems* document (see Appendix D: Map Intelligence Manuals and Guides).
   - For maps with projected coordinate systems, when setting Center Point properties, the Y

coordinate (or Northing) is set in the latitude field and the X coordinate (or Easting) in the longitude field. These settings are in the units of the underlying map, usually meters rather than degrees.

- For maps with projected coordinate systems the longitude is set to the column of the X coordinate and the latitude is set to the column of the Y coordinate in Point layers.

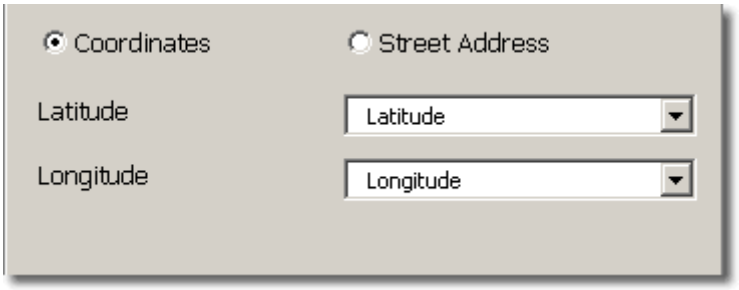


Figure 38 Coordinates option.

If you select the **Street Address** radio button, you must specify the columns in your worksheet that contain the **Street/Address**, **City**, **State**, **Post / Zip Code** and **Country** values for each point.

Note The Street Address option will only work if a geocoder has been installed, or a geocoded map layer is available.

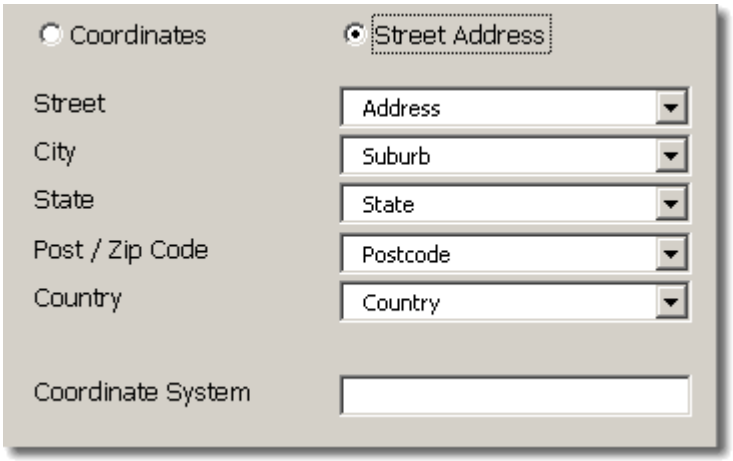


Figure 39 Street Address option.

DISPLAY INFORMATION SECTION

Data columns can be sent to the MI Viewer to provide more information about each point. The values contained in these columns will appear in a popup window when you move your cursor over a point on the map (see Figure 41). You are also able to set themes for the data columns selected (see Themes Section, Creating a Multiple Image Icon theme)

To configure the Display Information section

1. Select the data columns that you want to display from the left hand list box and click the > button. The selected data columns will appear in the list box on the right.

2. To deselect a data column, select the column in the right hand list box and click the < button. The column will return to the left hand list box.

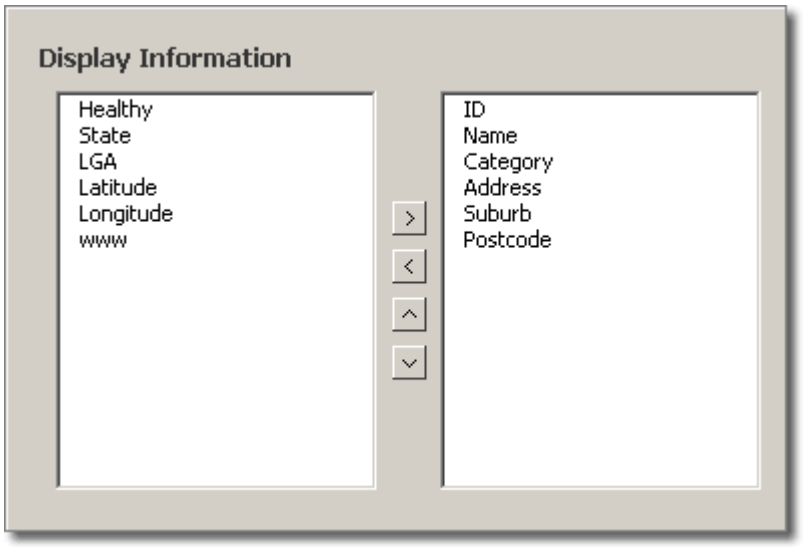


Figure 40 Display Information section.

3. To reorder the columns use the up and down buttons. This will change the order the columns are listed in the Information popup.

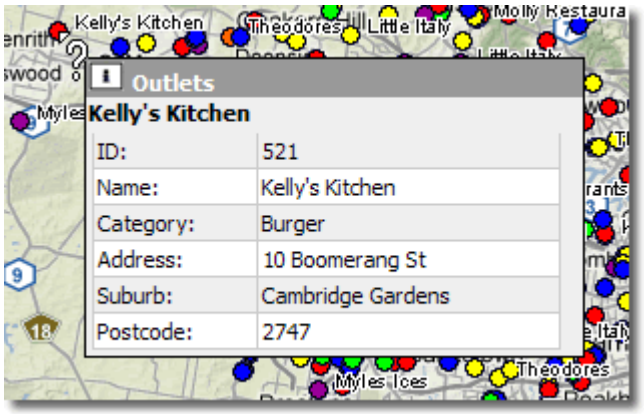


Figure 41 . Example of how the columns selected in "Display Information" appear in a popup window, when you place your cursor over a particular point.

THEMES SECTION

The **Themes** section allows you to select the method for applying a theme for your layer. Setting a theme involves assigning images to points in the layer.

The following theme types are available:

- **Multiple Image Icon**

  This option allows you to select a different image for each column value.

- **Single Image Icon**

  This option allows you to specify a single image to represent all the points in the layer.

Creating a Multiple Image Icon Theme

This option allows you to specify an image for values in columns available from the specified column from the worksheet. Map Intelligence allows you to configure themes for multiple columns.

1. Click on the **Multiple Image Icon** radio button.
2. The **Column** drop-down list contains all selected data columns. Select a column to configure from the drop-down list.

   The top left list box displays a list of all values from the selected column. The list box underneath this displays a list of available images that can be associated with a column value.

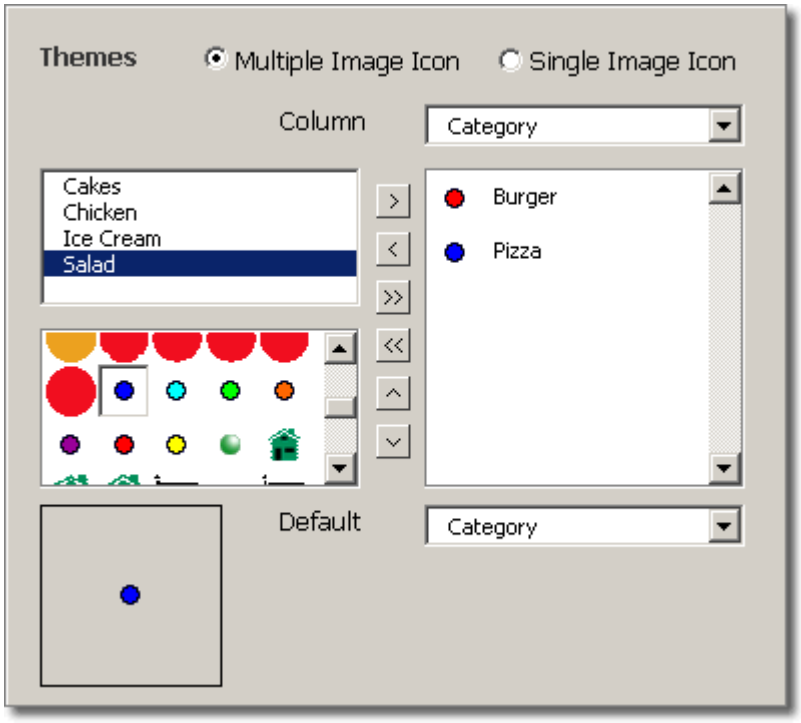


Figure 42. Multiple Image Icon theme option

3. Select a column value and an image and click the button.

   Placing your cursor over an image will display the actual image size in the Preview box, below the image list box.

   The specified theme condition will be displayed in the right hand side list box.

4. Configure all other desired values.

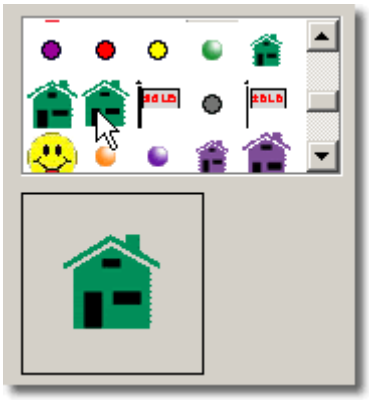


Figure 43. Image Preview box, showing actual size of image selected.

Note

- You can remove a theme condition by selecting the condition from the list box and clicking the button.
- To select all the data columns, select an image and click the button. The image selected will be assigned to the first value and following image to the second value, etc.
- To remove all selections click the button.
- To reorder the list use the up and down arrows.
- You do not need to assign an icon for every single column value. Map Intelligence will automatically assign a default icon for all values that have not been configured.

5. Repeat the steps above if you want to assign themes to other columns.

6. From the **Default** drop-down list, select the theme that you want to be displayed when the MI Viewer is accessed for the first time.

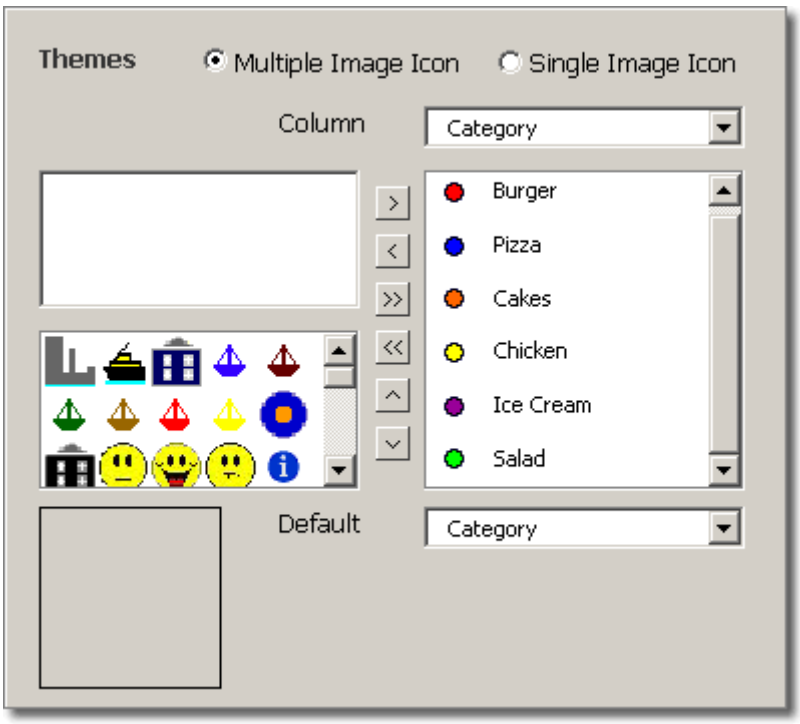


Figure 44. Completed Multiple Image Icon theme configuration.

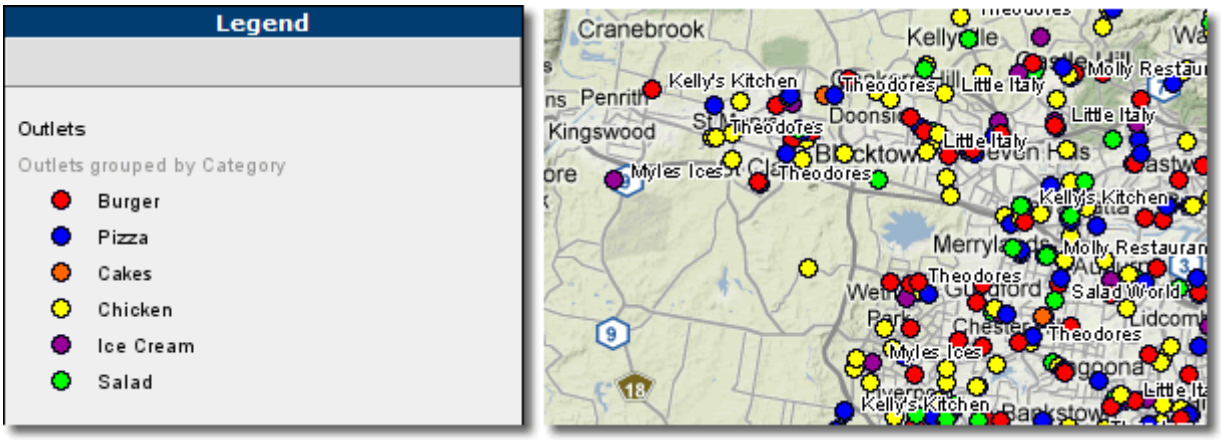


Figure 45 Point Layer showing Map and Legend for Multiple Image Icon theme. We can see each fast food franchise is represented by a colored circle, color-coded by food type category, for example red circles for Burger outlets, blue for Pizza outlets. Each point is labeled according to the Name of the franchise.

Creating a Single Image Icon theme

This option allows you to specify a single image to represent all the points in the layer.

1. Click the **Single Image Icon** radio button.

2. Select an image from either the **Image** drop-down list or by selecting an image from the **Image list box**. The selected image will be displayed in the top right box.

Tip Placing your cursor over an image will display the actual image size in the Preview box.

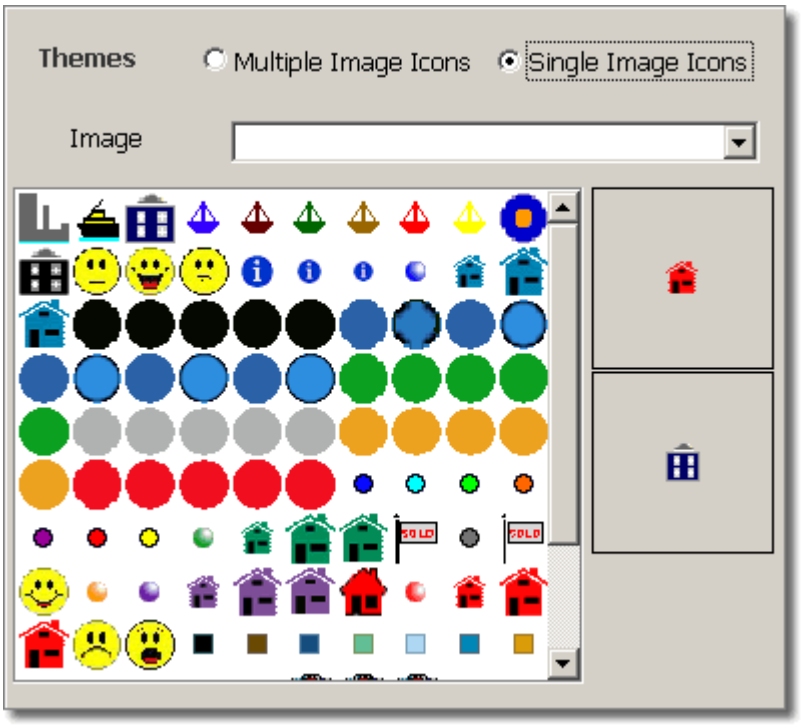


Figure 46 Single Image Icon theme.

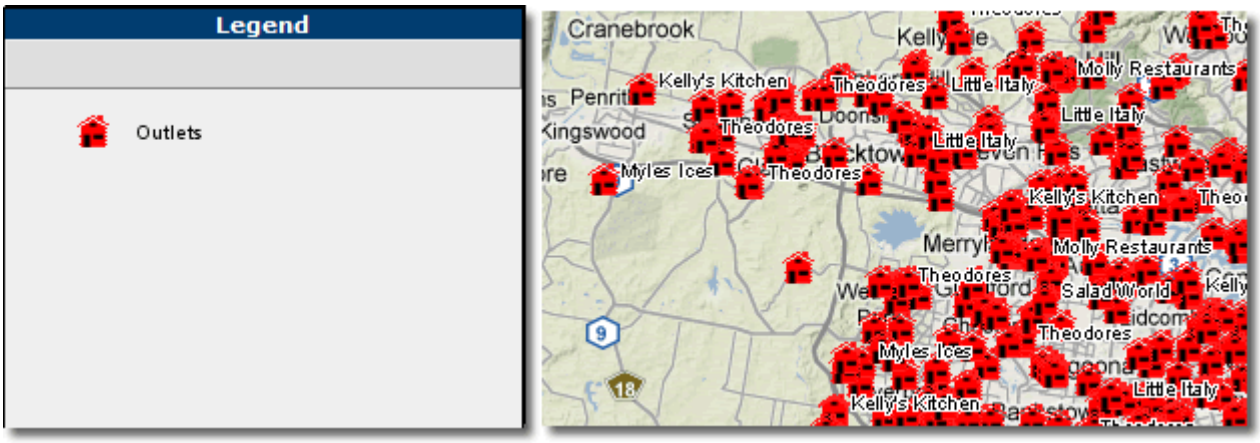


Figure 47 Point Layer showing Map and Legend for a Single Image Icon theme. In this example the location of Fast Food Outlets are displayed as red houses.

POINT LAYER ORDER

The order the point layers appear in the legend and on the map can be arranged using the Up and Down arrow buttons on the Point Layer tab. The first layer listed will be the first point layer on the legend and sit in front of the point layers listed below. Ordering the point layers is useful if large point icons are obscuring smaller ones below.

SAVING A LAYER

➢ ***To save the Point Layer configuration***

1. Click the **OK** button on the **Point Layer** configuration screen.

   The Point Layer name is listed on the Point Layer tab.

2. Click the **Done** button on the **Layers** window to return to the worksheet.

EDITING A LAYER

To edit a Point Layer configuration

1. From the **Map Intelligence** drop-down menu, select **Layers**, the *Layers* window will open
2. Select the **Point Layers** tab.
3. Click on the layer you want to edit and click the **Edit** button. The configured *Point Layer* configuration screen will open for editing.
4. After making your edits, click **OK** to save your changes.
5. Click the **Done** button on the **Layers** window.

Note If you change the layer name, a copy of the layer will be created with the new layer name.

DELETING A LAYER

To delete a Point layer configuration

1. From the **Map Intelligence** drop-down menu select **Layers**, the *Layers* window will open.
2. Select the **Point Layers** tab.
3. Click on the layer you want to delete and click the **Delete** button.
4. A message box will open asking you to confirm you wish to delete the layer. Click the **Yes** button.

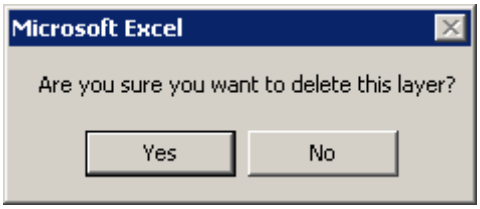


Figure 48 Delete layer confirmation message box

Note Map Intelligence will not allow the deletion of a point layer if the point layer is used by a relationship layer.

5. After deleting the layer, click the **Done** button on the **Layers** window.

CONFIGURE RELATIONSHIP LAYERS

Note

- For a description of Relationship layers, see Layer Types, Relationship Layers
- You will need to create at least one Point Layer before you can create a Relationship Layer.

To open the Relationship Layer configuration screen

1. From the **Map Intelligence** drop-down menu, select **Layers**, the *Layers* window will open.
2. Select the **Relationship Layer** tab.
3. Click the **Add** button.

The *Relationship Layer* configuration screen will appear.

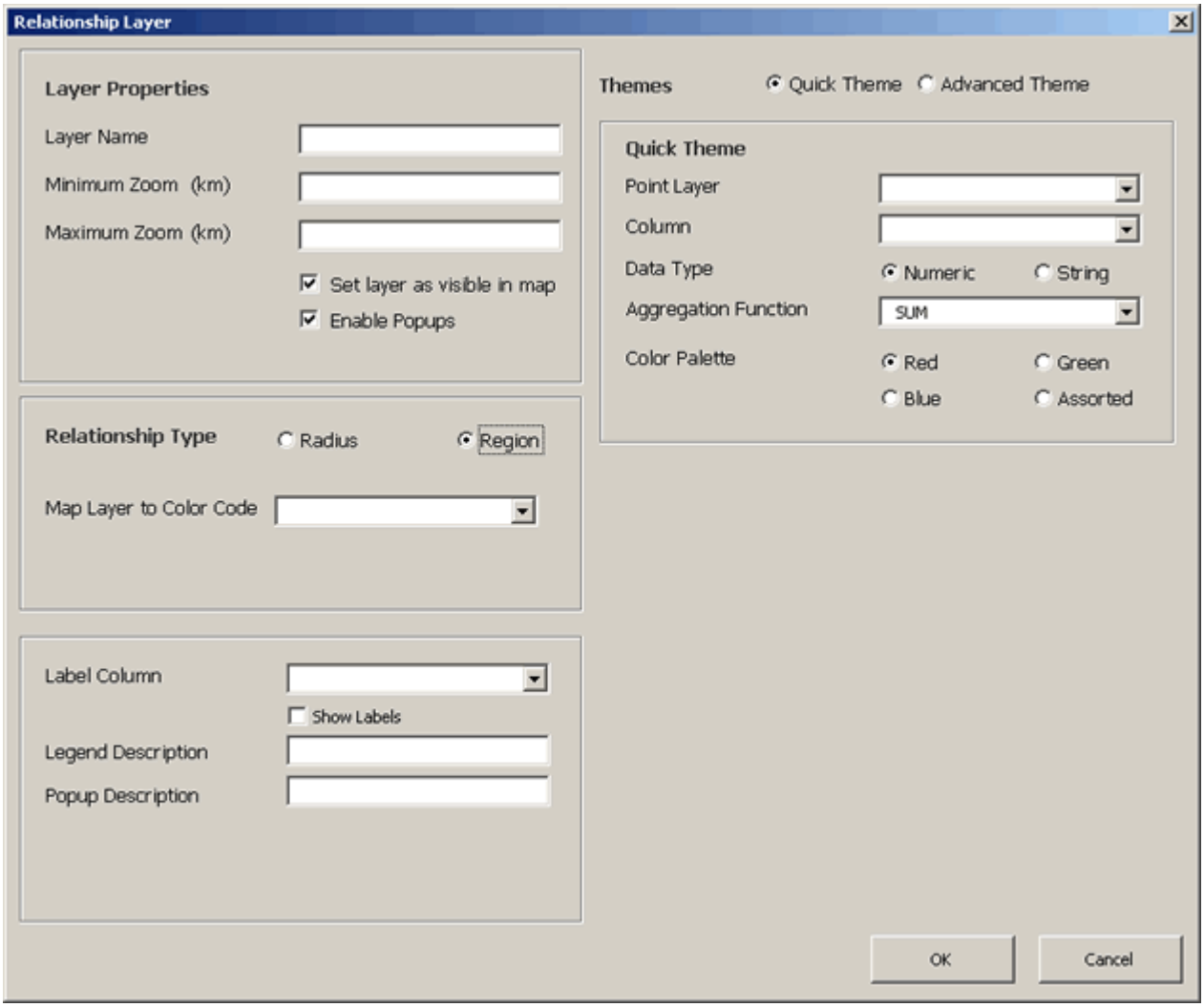


Figure 49 Relationship Layer configuration screen.

LAYER PROPERTIES SECTION

To configure the Layer Properties section

1. In the **Layer Name** text box, enter a title for the layer.

Note Spaces can be used, but must not be used at the beginning or end of the layer name. For Map Intelligence Servers 3.1 or below, only letters, numbers and spaces may be used.

2. You can specify a range in which the layer will be visible on the map by entering a **Minimum Zoom and Maximum Zoom** value. The layer will only be visible if the current map width is within the specified minimum and maximum zoom values.

3. Select the **Set layer as visible in map** checkbox if you wish this particular layer to be visible when you initially view the map.

4. Select the **Enable Popups** checkbox if you wish information popups to be enabled for the layer when you initially access the MI Viewer.

Note Information popup boxes provide further information about a region when you move your mouse over the region on the map.

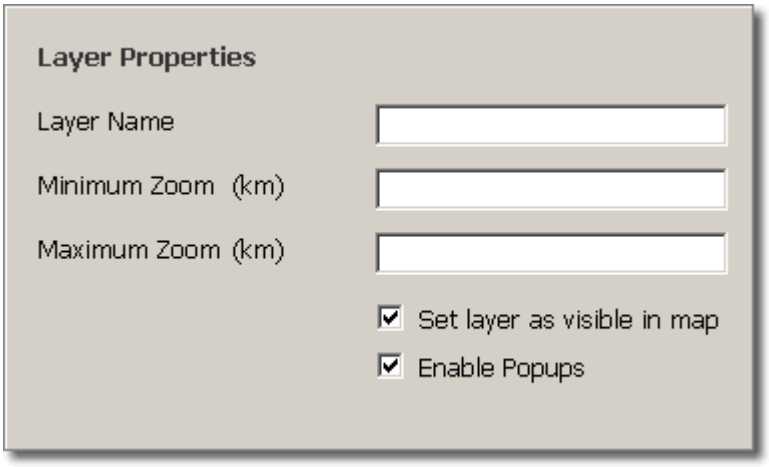


Figure 50 Layer Properties section of the Relationship Layer configuration screen.

RELATIONSHIP TYPE SECTION

The **Relationship Type** section allows you to specify the type of relationship to display on the map.

- The **Radius** option displays the relationship between two Point layers as color-coded or hatched circles around a particular point (see Relationship Layers – Radius Relationship Layers on page 9).
- The **Region** option displays the relationship between a Point layer and a built-in map layer as color-coded or hatched regions on the map layer (See Relationship Layers – Region Relationship Layers on page 9).

Selecting the Radius Option

1. Select the **Radius** radio button.

2. From the **Reference Point Layer** drop-down list, select the **Point Layer** you want to base the relationship on. Points in this layer become the center point of the shaded circles.

3. In the **Radius Around Point** field, enter the radius of the circle that you want to display on the map.

Note The unit of measurement will be the unit of measurement selected in the *Preferences* section of the *Global Settings* configuration screen.

4. In the **Legend Description** field, enter a description to use in the legend for this layer. If this field is left blank a description will be generated by Map Intelligence.

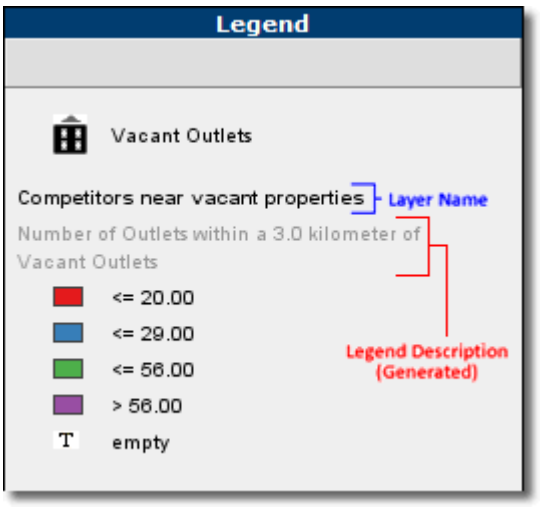


Figure 51. Legend showing a Map Intelligence generated description.

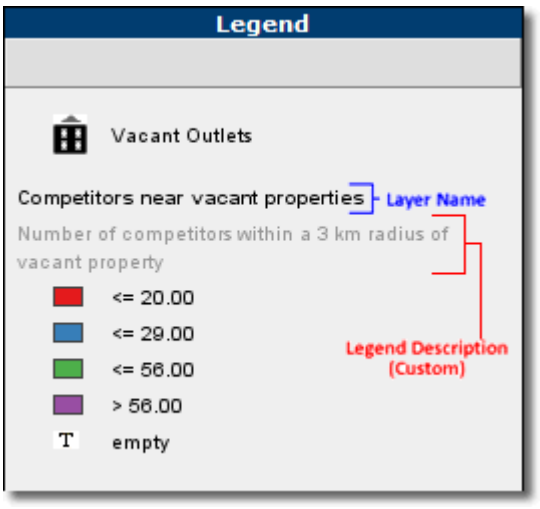


Figure 52. Legend showing a customized description.

5. In the **Popup Description** field, enter a description to use for Information Popups for this layer. The Popup Description describes each region of the layer and may contain any of the following parameters:

${label}	Will be replaced with the label for the region.
${value}	Will be replaced with the value for the region determined by the column selected in the theme (see Creating Themes for Relationship Layers).
Example	${value} items in ${label}

If this field is left blank a description will be generated by Map Intelligence.

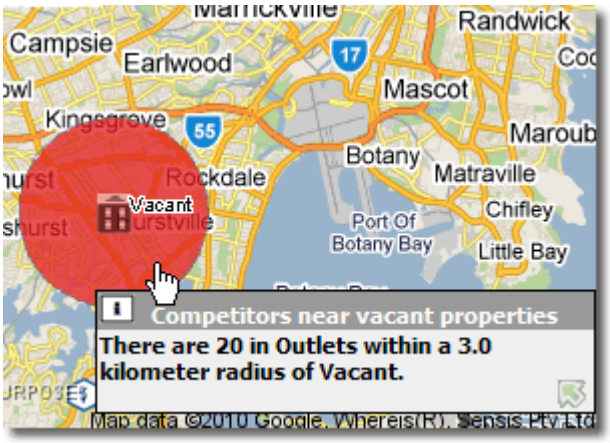


Figure 53. Information popup displaying a Map Intelligence generated Popup description.

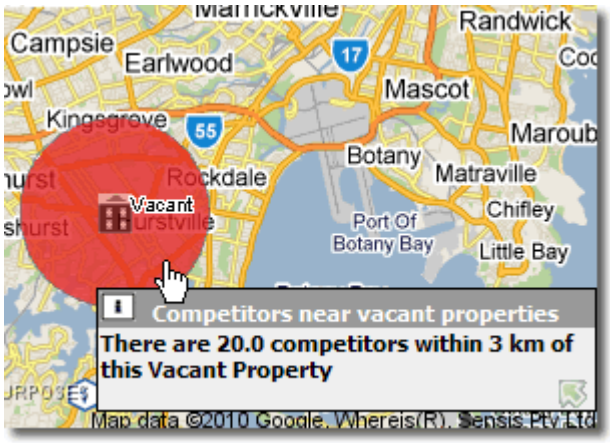


Figure 54. Customized Popup description. In this example the following description was entered into the Popup Description text box.

There are ${value} competitors within 3 km of this ${label} Property

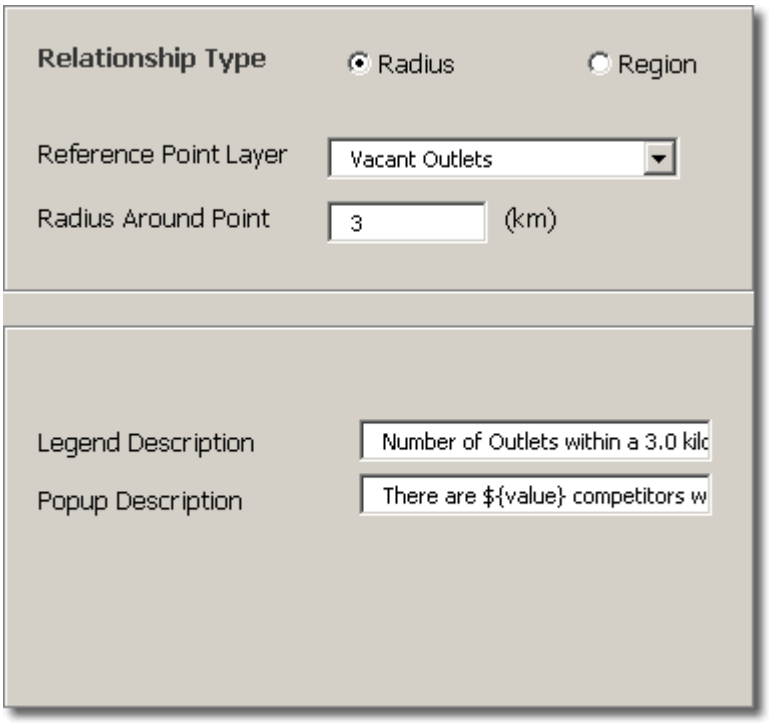


Figure 55 Relationship Type configuration for Radius option.

Selecting the Region Option

1. From the **Map Layer to Color Code** drop-down list, select the built-in map layer that you want to shade.

Note

- Only layers containing regions can be used as reference layers.
- Built-in layers are arranged in a particular order on the map. When selecting a built-in layer to shade, all map layers that sit under the selected layer will be covered by the selected color or hatch.

2. From the **Label Column** drop-down list, select the column in the map layer that contains the values to be used as labels for the region. If you wish the labels to be visible when you initially view the map, select the **Show Labels** checkbox.

Note If the Show Labels checkbox is not selected, End Users can display the labels by selecting the *Labels* checkbox in the *Show/Hide Layers* control panel in the *MI Viewer*.

3. In the **Legend Description** field, enter a description to use in the legend for this layer. If this field is left blank a description will be generated by Map Intelligence.

Figure 56. Legend showing a Map Intelligence generated description.

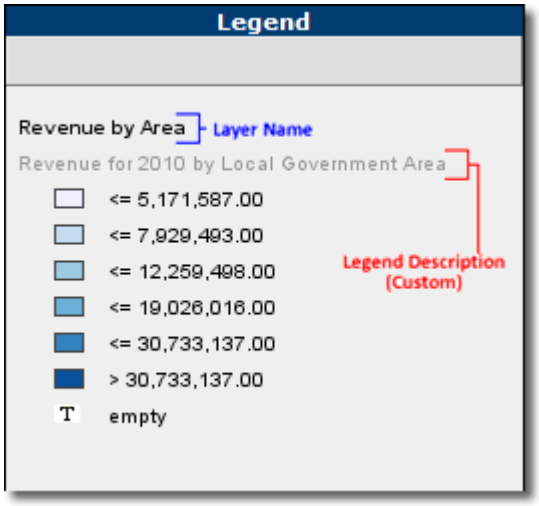


Figure 57. Legend showing a customized description

4. In the **Popup Description** field, enter a description to use for Information Popups for this layer. The Popup Description describes each region of the layer and may contain any of the following parameters:

${label}	Will be replaced with the label for the region.
${value}	Will be replaced with the value for the region determined by the column selected in the theme (see Creating Themes for Relationship Layers).
Example	${value} items in ${label}

If this field is left blank a description will be generated by Map Intelligence.

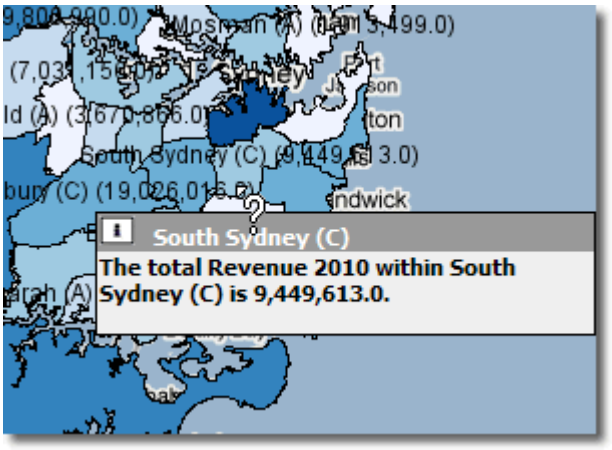


Figure 58. Information popup displaying a Map Intelligence generated Popup description.

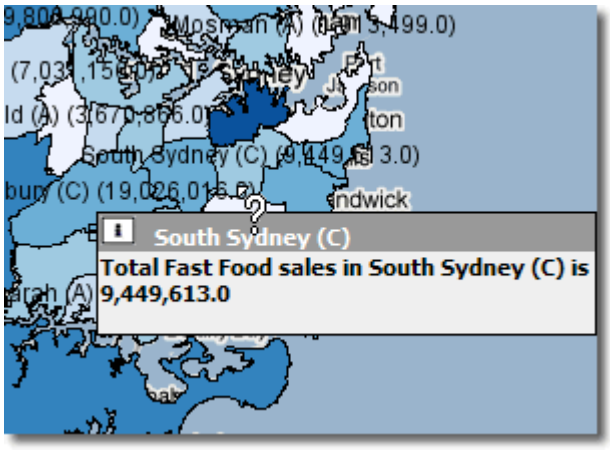


Figure 59. Customized Popup description. In this example the following description was entered into the Popup Description text box.

Total Fast Food sales in ${label} is ${value}

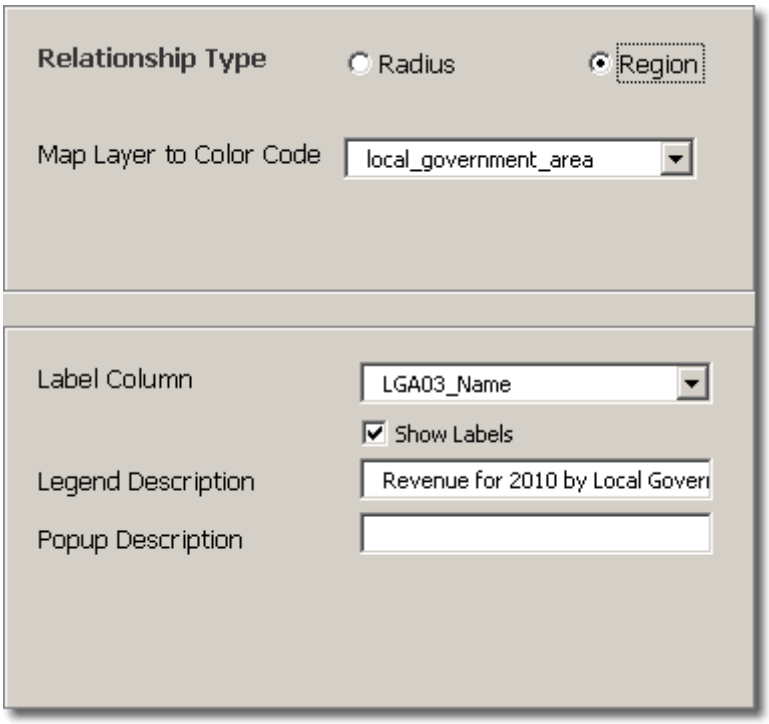


Figure 60 Relationship Type configuration for Region option.

CREATING THEMES FOR RELATIONSHIP LAYERS

Creating themes for Relationship Layers requires you to specify threshold conditions based on a Numeric or String aggregation using the **Themes** section on the Relationship Layer configuration screen.

NUMERIC AGGREGATION

Map Intelligence allows you to perform a function on values from a specified column. The specified built-in map layer or a circle around a point will then be shaded according to the resulting values. The numeric functions available include: Count, Sum, Min, Max, Mean and Median.

There are two options for creating themes:

- **Quick Theme**: This option allows you to quickly create a theme using basic color palettes.
- **Advanced Theme**: This advanced option allows you to create sophisticated themes, including using ColorBrewer palettes and hatches.

Note: Clicking the *Advanced Theme* radio button will permanently disable the *Quick Theme* option for this layer.

Creating a Quick Theme based on a numeric aggregation

1. Select the **Quick Theme** radio button. The *Quick Theme* panel will be displayed.
2. From the **Point Layer** drop down list, select the Point Layer containing the points that you want to geographically relate to the reference layer.

   Note: When related to a built-in region layer the points will be grouped according to which regions they are contained in. When related to another Point Layer, the points will be grouped according to which points in the reference layer they all within the given radius of.

3. From the **Column** drop down list, select the column to use to color the regions. The data for this column will be extracted from the points and aggregated according to the geographical group of the points.
4. For **Data Type**, select the **Numeric** radio button.
5. From the **Aggregation Function** drop-down list, select the function to use for the layer. The numeric functions available are: Count, Sum, Min, Max, Mean and Median.
6. For **Color Palette**, Select either the **Red**, **Green**, **Blue** or **Assorted** radio button.

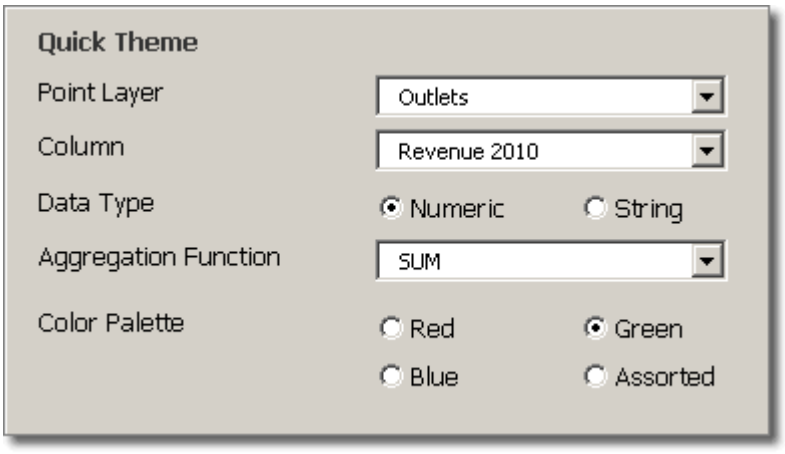


Figure 61. Quick Theme panel.

Note Clicking the *Advanced Theme* radio button will permanently disable the *Quick Theme* option for this layer.

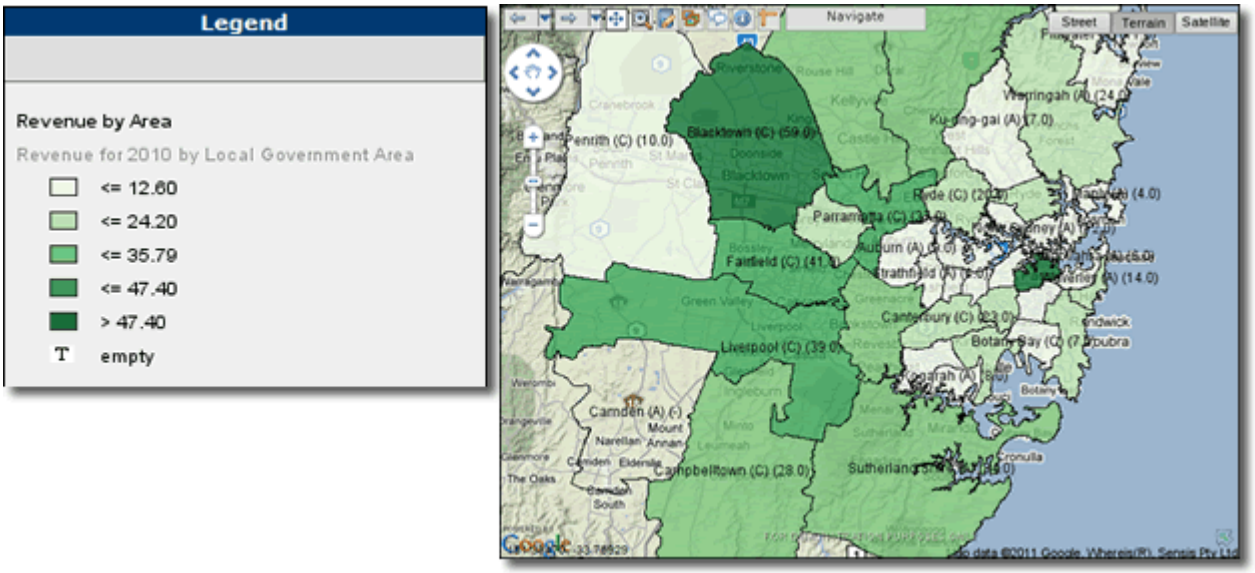


Figure 62. Region Relationship Layer – Example Map View and Legend showing Quick Theme (Green option).

Creating an Advanced Theme based on a numeric aggregation

1. Select the **Advanced Theme** radio button. The *Advanced Theme* panel will be displayed.
2. Click the **Theme Type** tab.
3. From the **Point Layer** drop down list, select the Point Layer containing the points that you want to geographically relate to the map layer.

   Note When related to a built-in region layer the points will be grouped according to which regions they are contained in. When related to another Point Layer, the points will be grouped according to which points in the reference layer they all within the given radius of.

4. From the **Column** drop down list, select the column to use to color the regions. The data for this column will be extracted from the points and aggregated according to the geographical group of the points.
5. For **Data Type**, select the **Numeric** radio button.

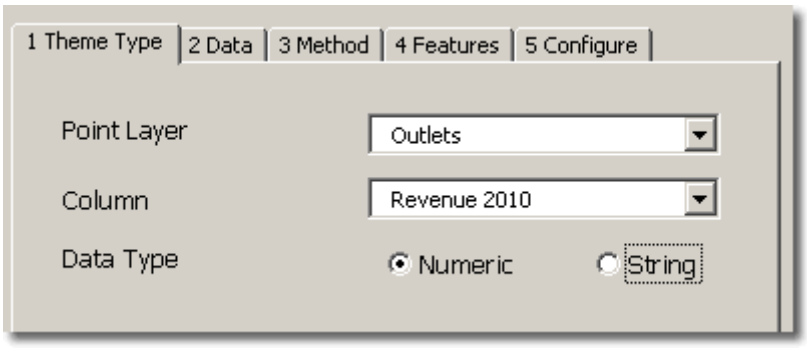


Figure 63. Theme Type Tab (Numeric).

6. Click the **Data** tab.
7. From the **Aggregation Function** drop-down list, select the function to use for the layer. The numeric functions available include: Count, Sum, Min, Max, Mean and Median.

8. For **Calculation**, click either the **By Value** or **By Percentage** radio button.

   The aggregates can be used as the raw aggregate value or as a percentage of the total aggregate over the Point Layer.

   Note that only one color and one hatch layer can be displayed simultaneously for a particular built-in-layer. If you have multiple layers that use the same built-in layer, you can switch between these using the *Themes* option from the MI Viewer (refer to the ***Map Intelligence MI Viewer User Manual*** – see Appendix D: Map Intelligence Manuals and Guides on page 137.)

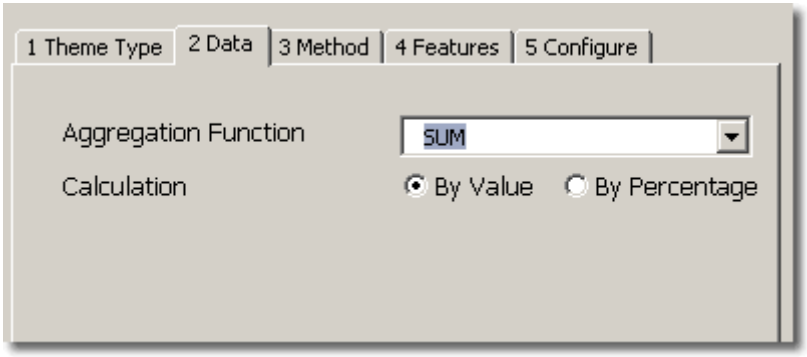


Figure 64. Data Tab (Numeric).

9. Click the **Method** tab.

   There are two methods for applying advanced themes:

   - Automatic Method
   - Manual Method

AUTOMATIC METHOD

1. For **Theme Method**, click the **Automatic** radio button.

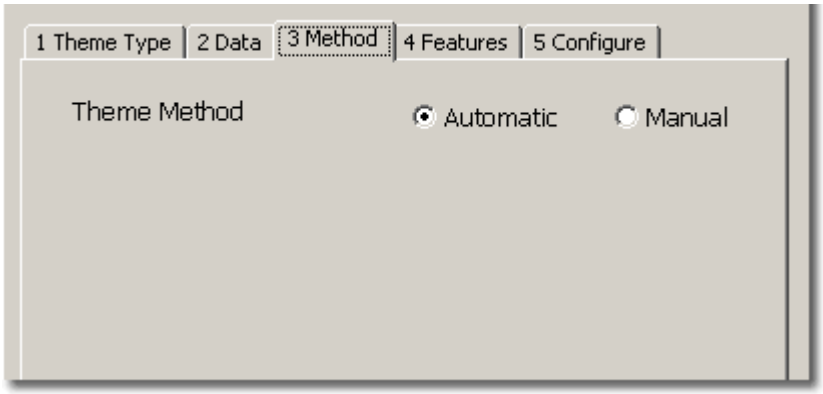


Figure 65. Method Tab (Numeric- Automatic).

2. Click the **Features** tab.

3. From the **Scheme** drop-down list, select a classification scheme.

   You can use a standard classification scheme to group similar values to look for patterns in the data. You can choose from three schemes for grouping data values into classes based on how the data values are distributed.

- **Equal Interval**: The difference between the high and low values is the same for every class. So, the classification of the data will be based on a set of equal splits. For example, if the lowest value is 0 and the highest value is 10 in the data, and 5 classes are requested, the range of each class will be 0 to 2, 2 to 4, 4 to 6, 6 to 8, 8 to 10.
- **Quantile**: Each class contains an equal number of features. In this case, the points are sorted in ascending order (for the chosen data field) and each class is filled with (total number of points)/(number of classes) points starting from the lowest value to the highest.
- **Standard Deviation**: Features are placed in classes based on how much their values vary from the mean. First the mean and standard deviation of the data values are calculated. The class breaks are found by successively adding or subtracting multiples of the standard deviation from the mean.

4. If **Equal Interval** was selected for **Scheme**, for **Scale**, click either the **Linear** or **Logarithmic** radio button.

5. If **Standard Deviation** was selected for **Scheme**, for **Multiplier** enter the multiplying factor.

6. From the **Number of Legend Classes** drop-down list, select the number of colors to appear in your shading range.

   There are three options for selecting the **Shading Option**:

   - **Specific Colors:** Allows you to specify a ColorBrewer palette or select individual colors.
   - **Color Range:** Allows you to choose a pre-defined color set or a specific start and end color.
   - **Hatch Patterns:** Allows you to specify a particular hatch for each class.

Selecting Specific Colors

1. Click the **Specific Colors** radio button.

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.

- **Region border attributes:** If the *Use Map Border Attributes* option in the *Settings* section of the *MI* Server *Map Intelligence Tools* page, is set to *Yes* (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

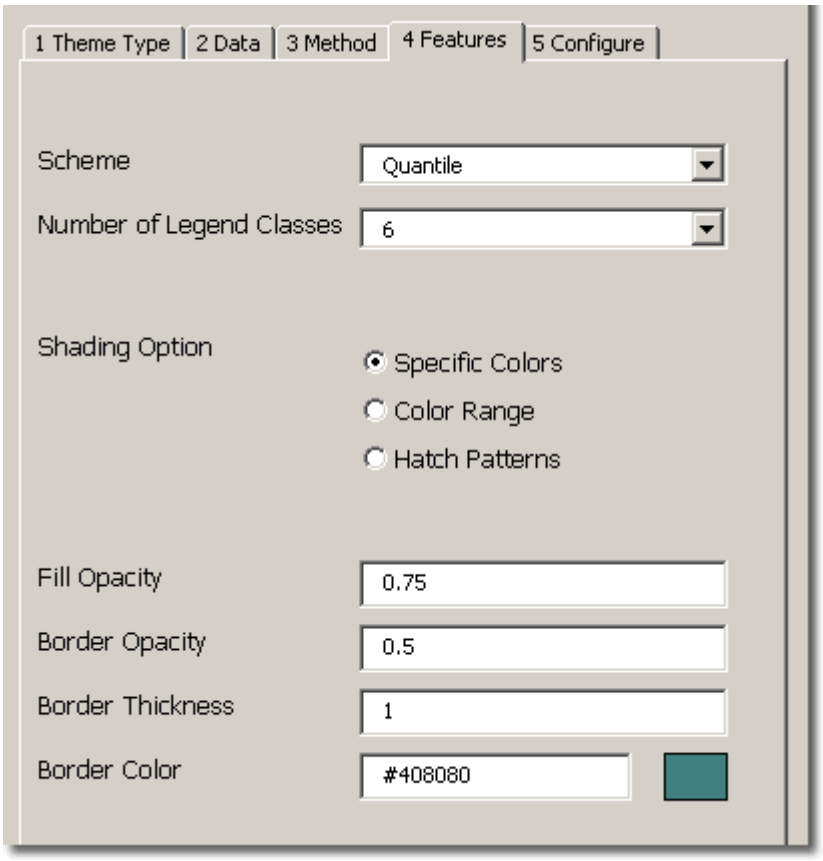


Figure 66. Features Tab (Numeric- Automatic – Specific Colors).

6. Click the **Configure** tab.

   Specific Colors allows you to specify a *ColorBrewer* palette or select individual colors for each class from a color picker. The default color palette is the first palette in the Sequential palette series (see Color Brewer Palettes below).

   ### USING COLORBREWER PALETTES

   These palettes have been created using the ColorBrewer, a tool designed to create good color schemes for maps. There are three types of palettes:

   - **Sequential palettes** are suited to ordered data that progress from low to high. Lightness steps dominate the look of these schemes, with light colors for low data values to dark colors for high data values (Figure 68).
   - **Diverging palettes** put equal emphasis on mid-range critical values and extremes at both ends of the data range. The critical class or break in the middle of the legend is emphasized with light colors and low and high extremes are emphasized with dark colors that have contrasting hues (Figure 69).
   - **Qualitative palettes** do not imply magnitude differences between legend classes, and hues are used to create the primary visual differences between classes. Qualitative schemes are best suited to representing nominal or categorical data (Figure 70).

   The number of colors available in each palette is determined by the *Number of Classes* selected on the *Features* Tab.

7. From the **ColorBrewer Palette** drop down list, select a Palette Type (**Sequential**, **Diverging** or **Qualitative**). The available palettes will appear below in the Preview list box.

The availability of ColorBrewer Palettes depends on the number of Legend Classes selected on the Features tab.

- **Less than 2 Legend Classes:** No palettes available.
- **Between 3 and 9 Legend Classes:** All palettes available.
- **For 10 Legend Classes:** Only Diverging and Qualitative palettes available.
- **For more than 10 Legend Classes:** Only Qualitative palettes available.

To see the color palette in reverse, click the **Display palette colors in reverse** checkbox, below the Palette Preview list box.

8. Click on a palette in the preview box to select it. The colored rectangles next to each class will update.

9. You can change any of the colors assigned to a particular Class by clicking on the colored rectangle and selecting a different color from the color picker. By right clicking on a colored rectangle you are able to select from the context menu the **Transparent** or **Unshaded** color options.

   By default any region that does not contain any values are set to be transparent. If you wish to assign a particular color for an empty region.

10. Click the **Empty Color** colored rectangle and select a **color** from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu.

For further information on using the Transparent and Unshaded color options see Appendix B: Using the Unshaded and Transparent Color Options on page 132.

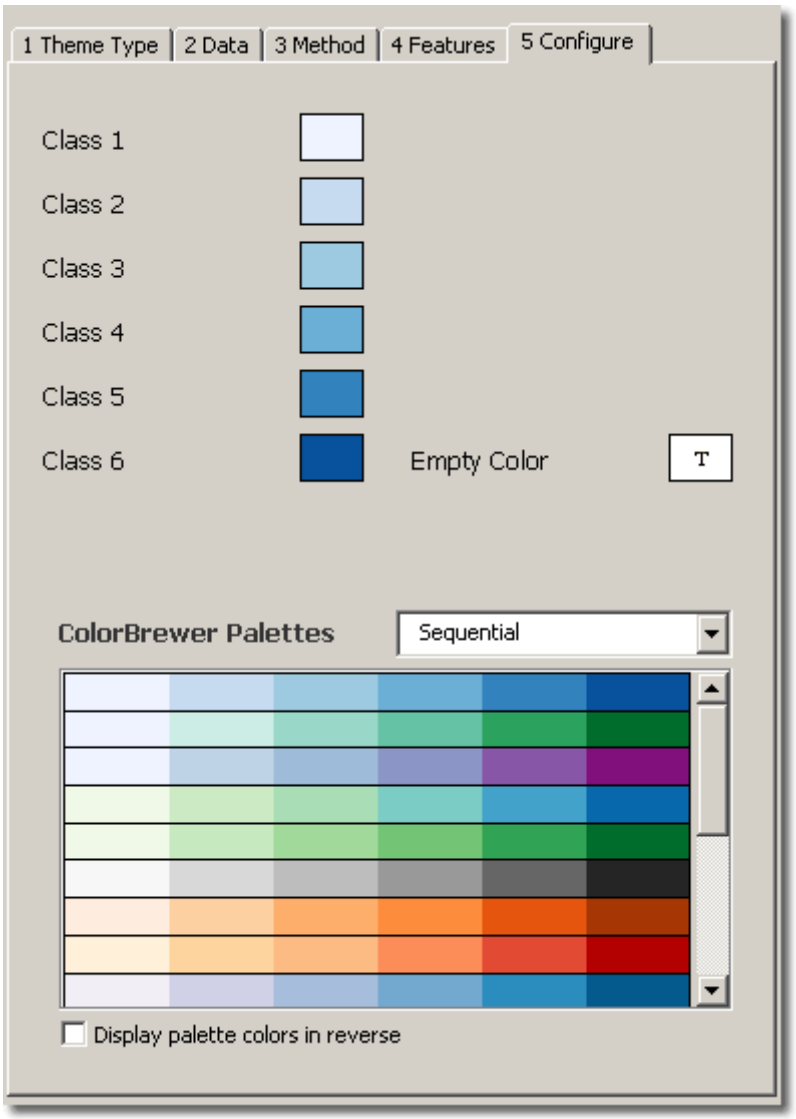


Figure 67. Configure Tab (Numeric- Automatic – Specific Colors).

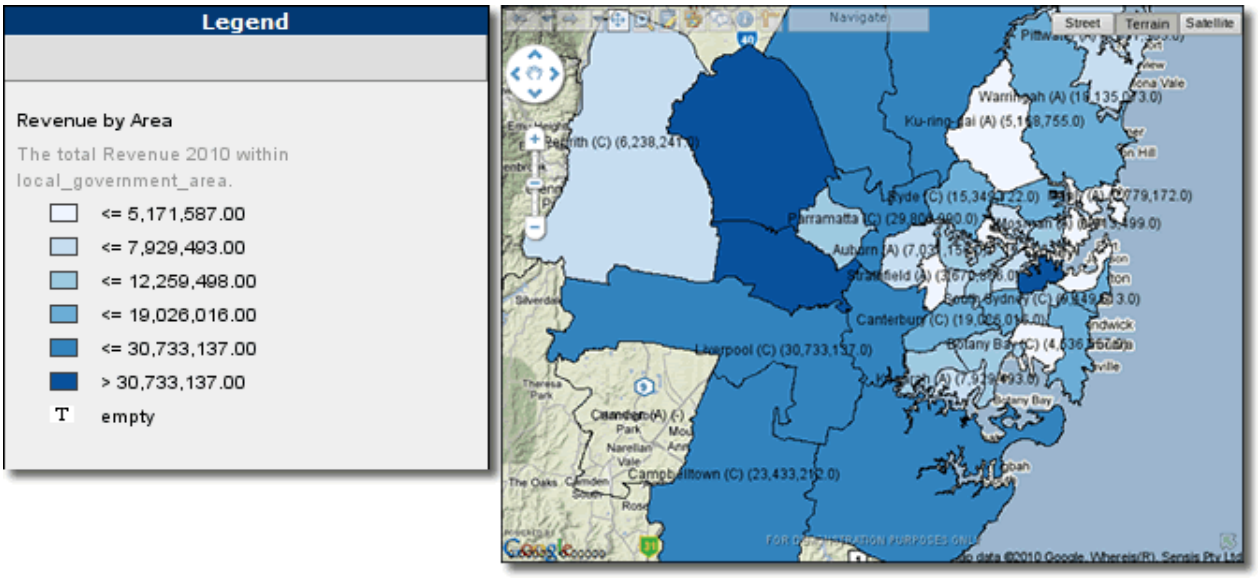


Figure 68. Region Relationship Layer – Example Map View and Legend showing Specific Color Theme (ColorBrewer Palette: Sequential).

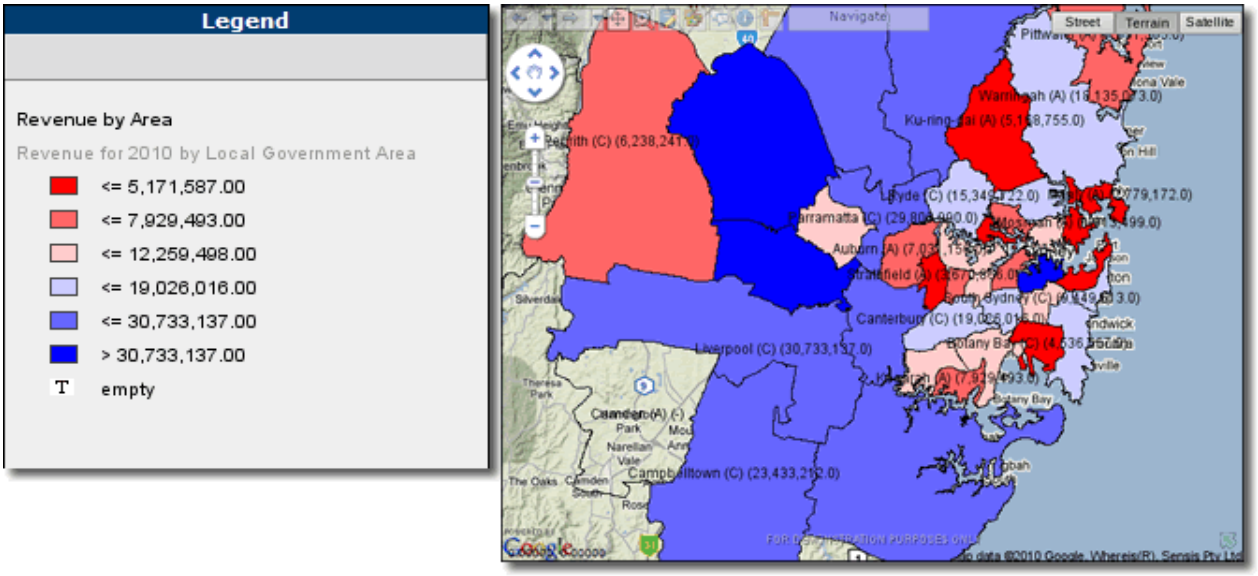


Figure 69. Region Relationship Layer – Example Map View and Legend showing Specific Color Theme (ColorBrewer Palette: Diverging).

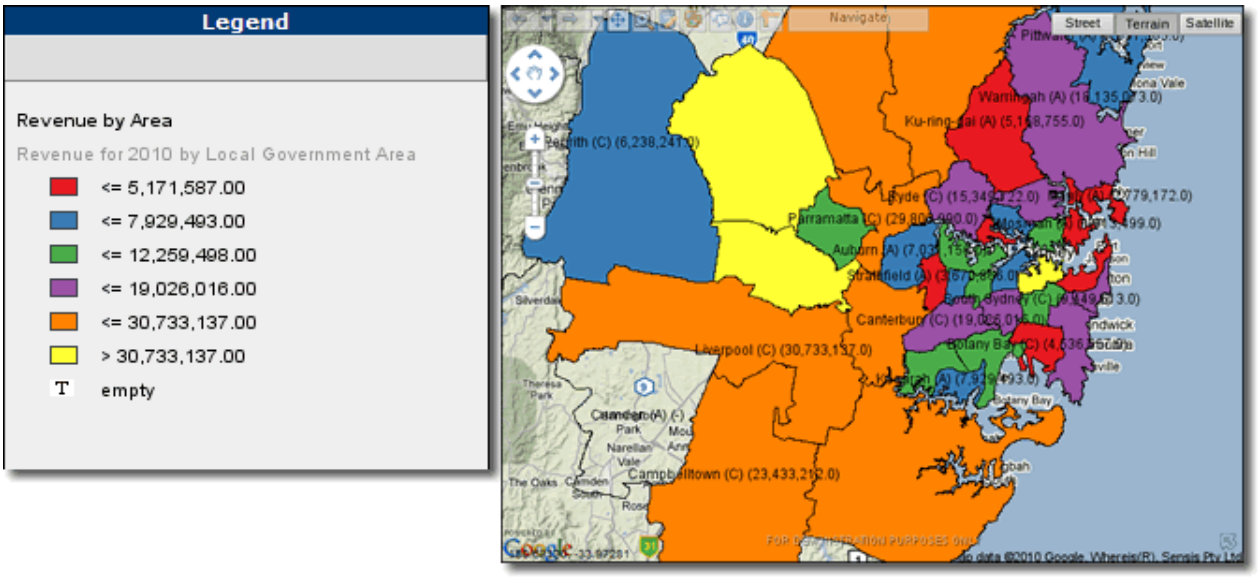


Figure 70. Region Relationship Layer – Example Map View and Legend showing Specific Color Theme (ColorBrewer Palette: Qualitative).

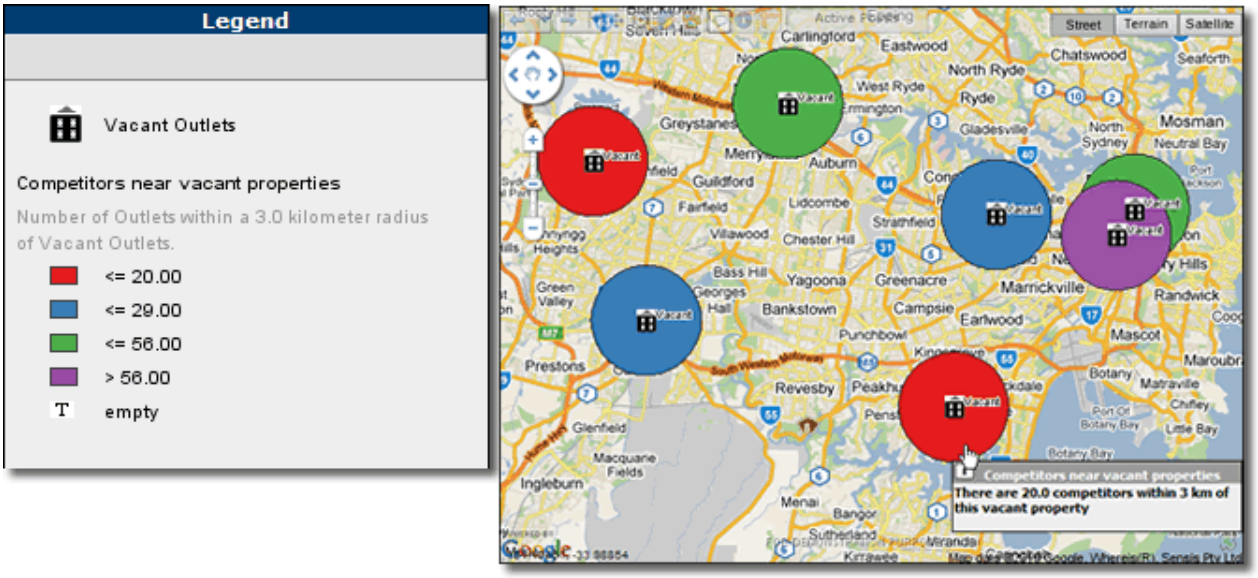


Figure 71. Radius Relationship Layer Map View and Legend showing Specific Color Theme (ColorBrewer Palette: Qualitative). In this example potential new sites for Fast Food outlets "Vacant Outlets" are shown as black buildings, around each 'vacant outlet' is a 3 km radius color coded according to the number of competitor outlets operating within the 3 km radius. Red circles indicate 20 or less competitors, purple circles more than 56 competitors.

Selecting Color Range

1. Click the **Color Range** radio button.

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

Note

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.
- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

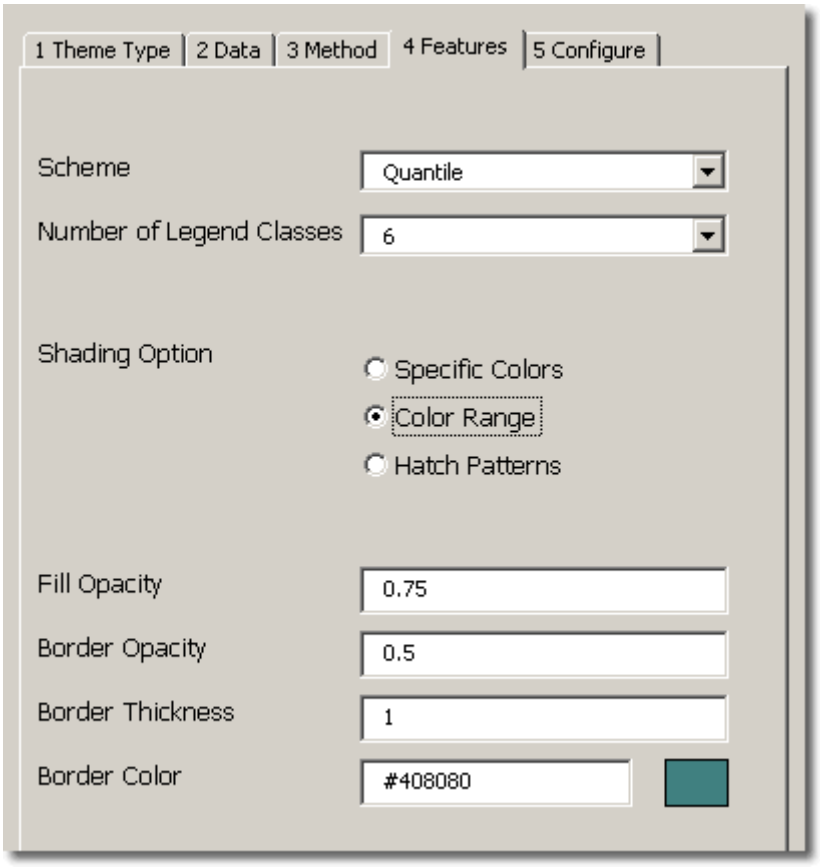


Figure 72. Features Tab (Numeric- Automatic – Color Range).

6. Click the **Configure** tab.

There are two options for color range, **Pre-defined Color Set** or **Custom Colors**. Pre-defined Colors shades according to color schemes built into Map Intelligence. Custom Colors allows you to choose a start color and end color and have a spectrum of colors between these two.

Selecting Pre-defined Colors

1. Click the **Pre-defined Color Set** radio button.
2. From the **Shade Color** drop-down list, select a pre-defined color scheme.

Note When using a pre-defined color scheme, Empty regions are always transparent.

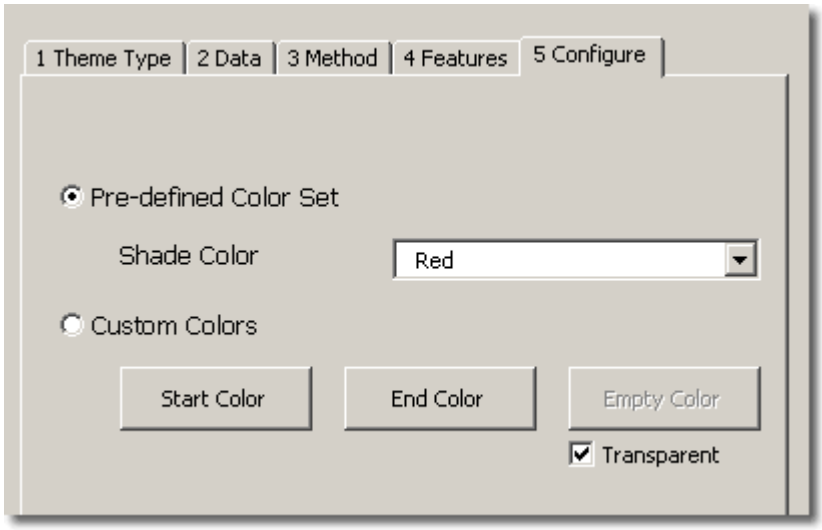


Figure 73. Configure Tab (Numeric- Automatic –Color Range – Pre-defined Color Set).

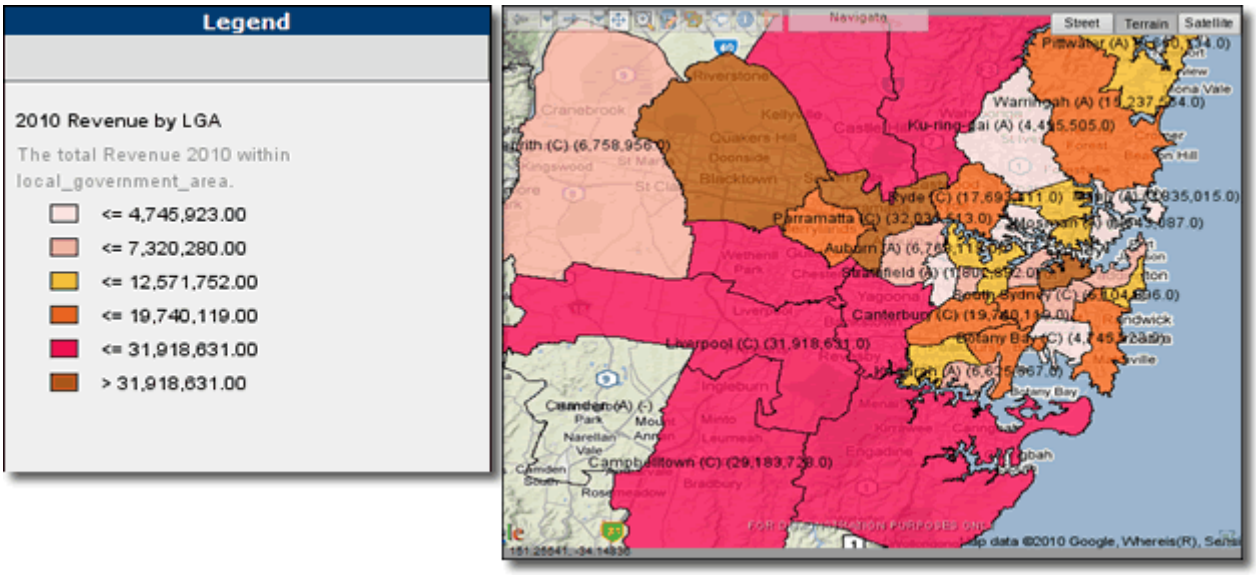


Figure 74. Region Relationship Layer – Example Map View and Legend showing Color Range - Pre-defined Color set (Red).

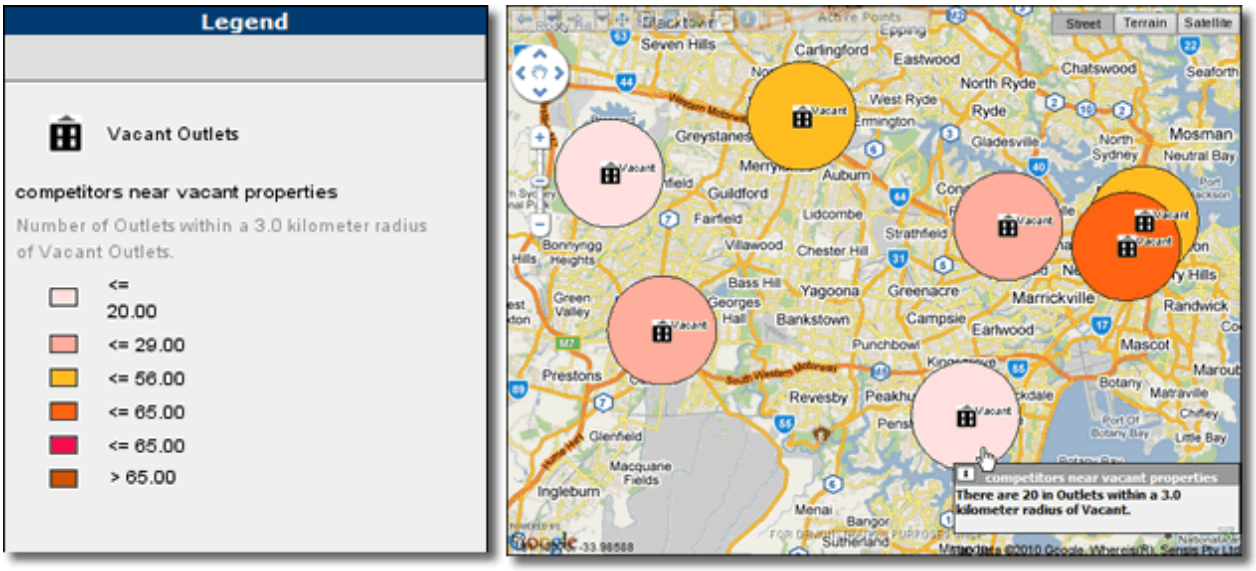


Figure 75. Radius Relationship Layer – Example Map View and Legend showing Color Range - Pre-defined Color set (Red).

Selecting Custom Colors

1. Click the **Custom Colors** radio button.
2. Click the **Start Color** button.
3. Select the start color from the color picker and click **OK.**
4. Click the **End Color** button.
5. Select the end color from the color picker and click **OK.**

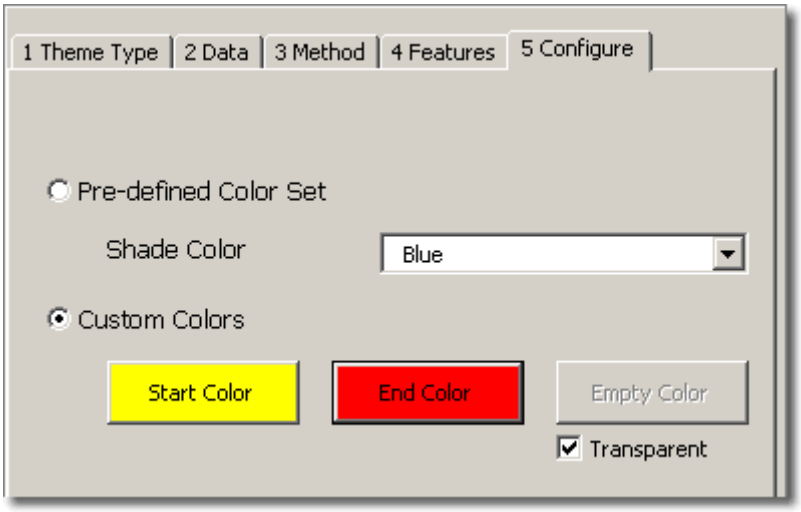


Figure 76. Configure Tab (Numeric- Automatic –Color Range – Color Colors).

By default any region that does not contain any values are set to be transparent. If you wish to assign a particular color for an empty region

6. Uncheck the **Transparent** checkbox.
7. Click the **Empty Color** button.
8. From the color picker, select a color for any region that does not contain any values and click the **OK**.

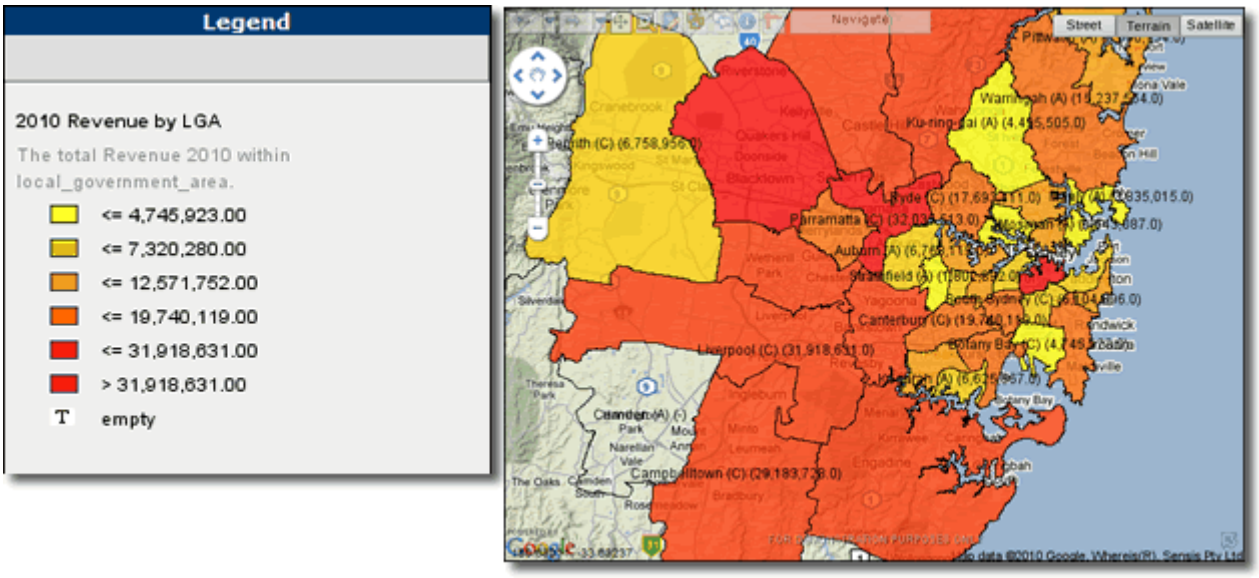


Figure 77. Region Relationship Layer – Example Map View and Legend showing Color Range – Custom Colors (Yellow to Red).

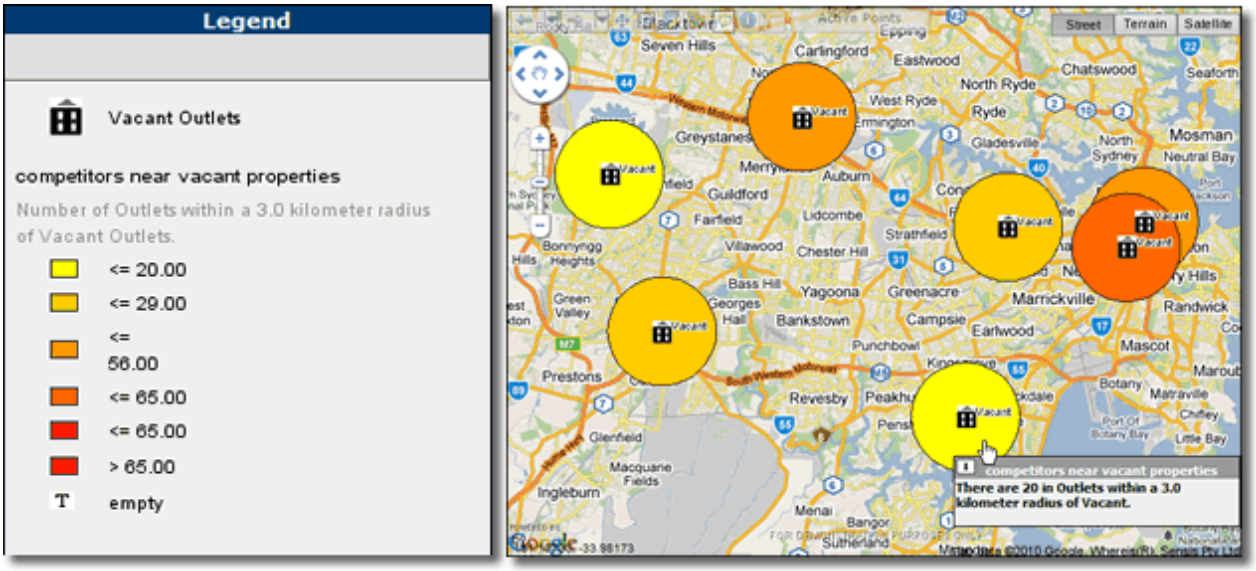


Figure 78. Radius Relationship Layer – Example Map View and Legend showing Color Range – Custom Colors (Yellow to Red).

Selecting Hatch Patterns

1. Click the **Hatch Patterns** radio button.

Features Rendering Attributes

2. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

6. In the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color.

Note

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.

- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

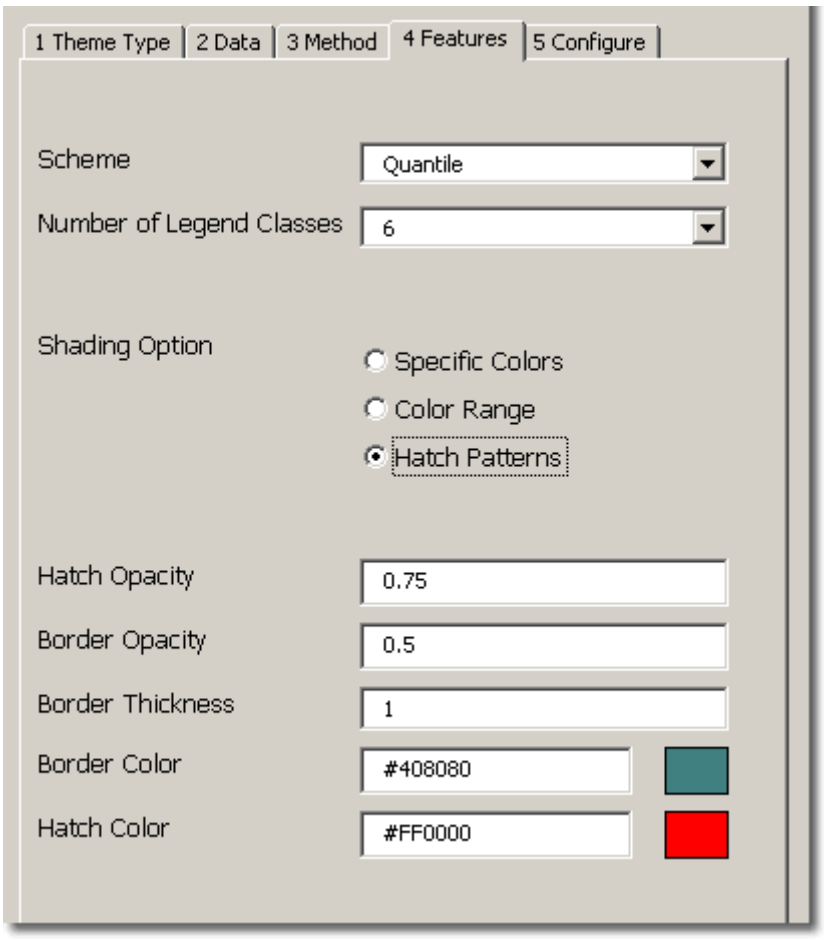


Figure 79. Features Tab (Numeric- Automatic – Hatch Patterns).

7. Click the **Configure** tab.

Hatch Patterns allows you to specify a particular hatch for each class.

8. Click the **Class 1** hatch rectangle.

9. Select a hatch from the hatch picker.

10. Repeat Steps the above steps for each class listed.

    By default any region that does not contain any values are set to be transparent. If you wish to assign a particular hatch for an empty region.

11. Click the **Empty Hatch** rectangle.

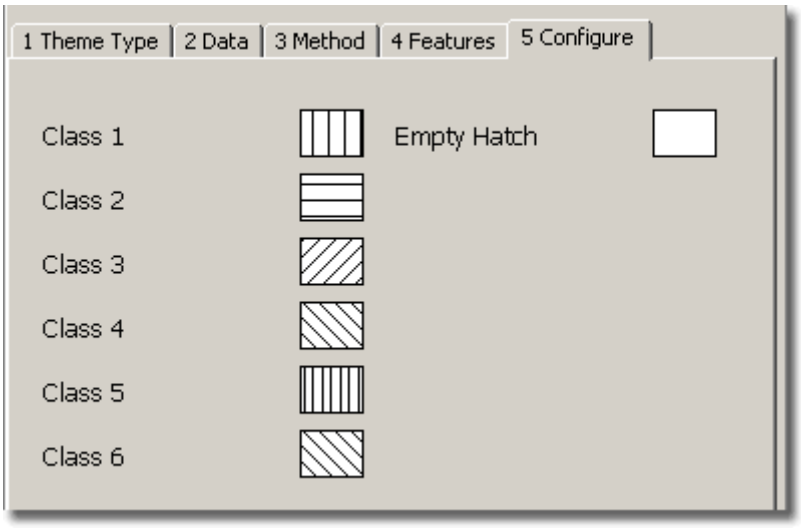


Figure 80. Configure Tab (Numeric- Automatic – Hatch).

12. Select a hatch for any region that does not contain any values.

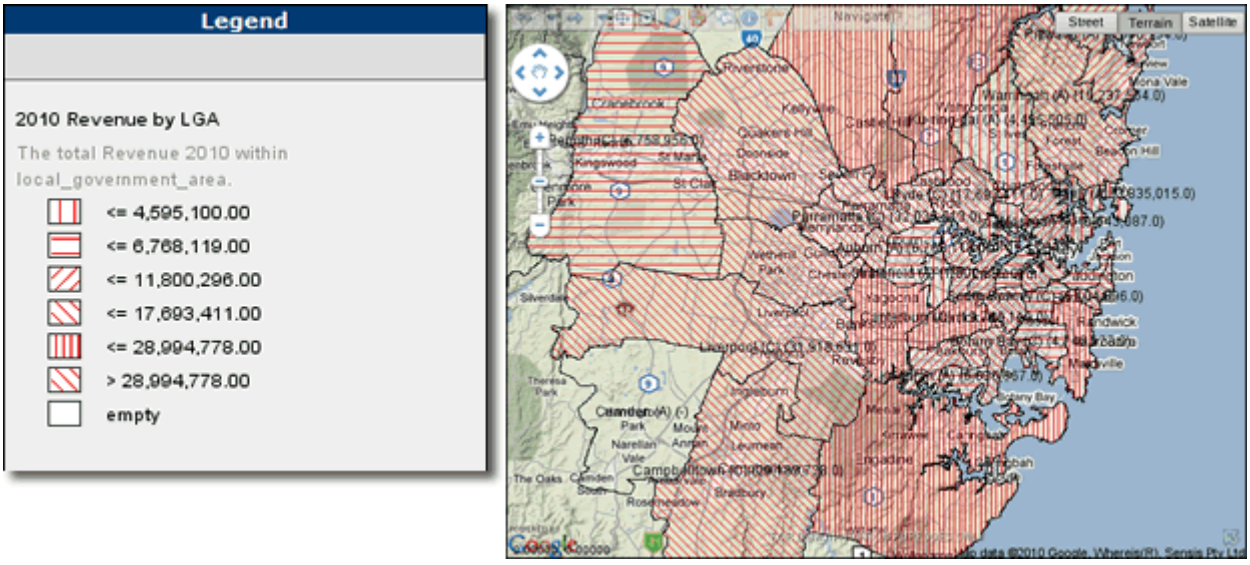


Figure 81. Region Relationship Layer – Example Map View and Legend showing Hatch Patterns (Red).

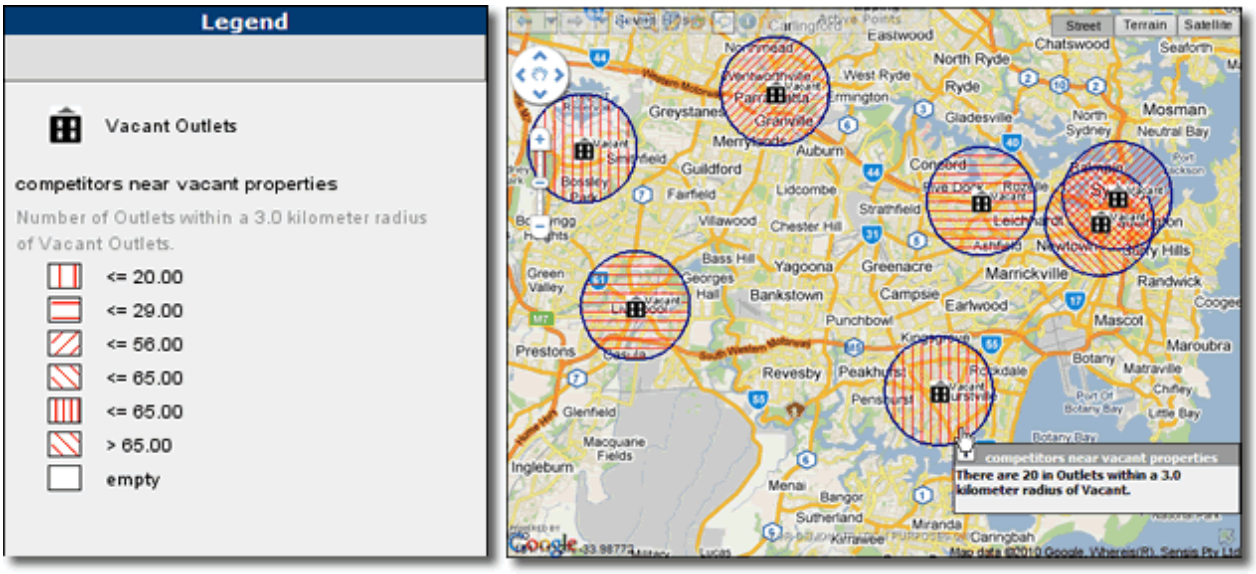


Figure 82. Radius Relationship Layer – Example Map View and Legend showing Hatch Patterns (Red).

MANUAL METHOD

1. From the **Method** tab, click the **Manual** radio button.

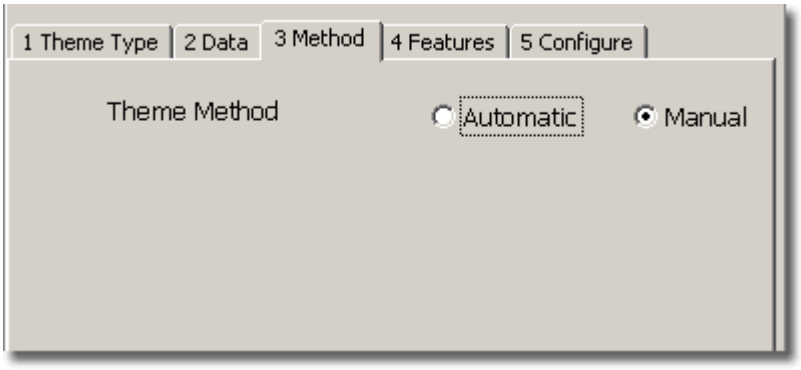


Figure 83. Theme: Method Tab (Numeric- Manual).

2. Click the **Features** tab.

   There are two options for selecting the **Shading Option:**

   - Colors
   - Hatch Patterns

Selecting Colors

1. For **Shading Option**, click the **Colors** radio button.

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.

- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

6. Click the **Configure** tab.

7. In the **Number of Legend Classes** field, enter the number of colors to appear in your shading range.

   The list box below will update to display the default Red color palette and associated fields to enter threshold values.

8. Enter a value in each **Threshold** field.

Important Note: Threshold values must be sorted in order from lowest to highest value. i.e. the lowest threshold value should be the first threshold value in the list; the next lowest threshold value, the second threshold in the list, etc; to the final threshold in the list being the highest value.

To reorder the list use the up and down arrows next to each Threshold value.

9. To change the default the Red color palette, from the **Color Palette** section, click on either the **Green**, **Blue** or **Assorted** radio buttons.

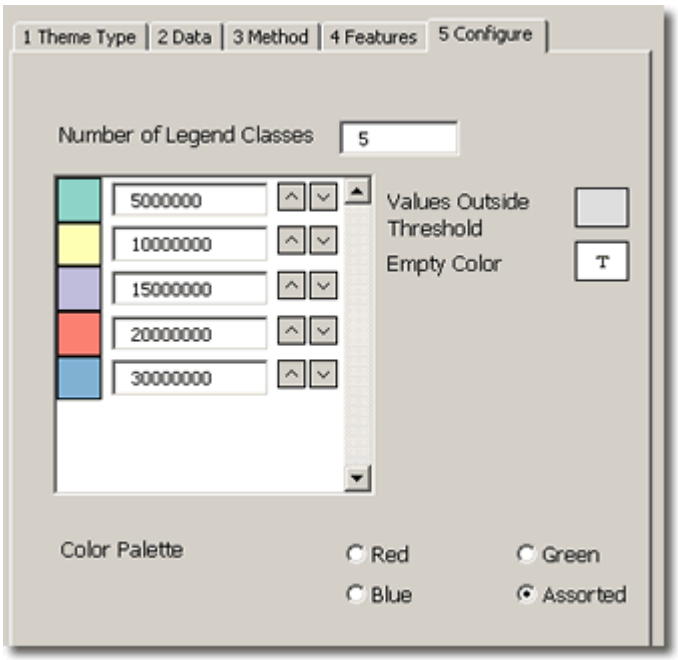
You can change individual colors within a selected color palette by clicking on a particular colored rectangle and selecting a color from the color picker. By right clicking on a colored rectangle you are able to select from the context menu the **Transparent** or **Unshaded** color options.

10. Click the **Values Outside Threshold** colored rectangle and select a **color** from the color picker or right click and select **Transparent** or **Unshaded** from the context menu, to represent any values that may be outside the specified threshold values.

    By default any region that does not contain any values are set to be transparent. If you wish to assign a particular color for an empty region.

11. Click the **Empty Color** colored rectangle and select a color from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu.

For further information on using the Transparent and Unshaded color options see Appendix B: Using the Unshaded and Transparent Color Options on page 132.



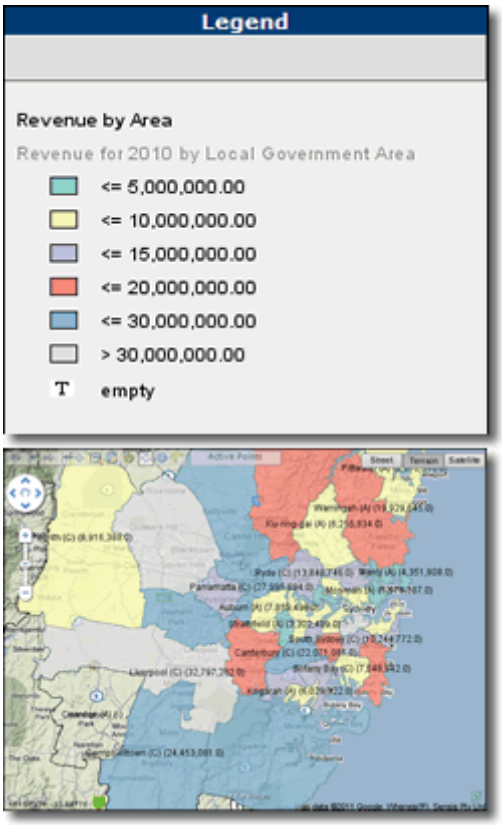
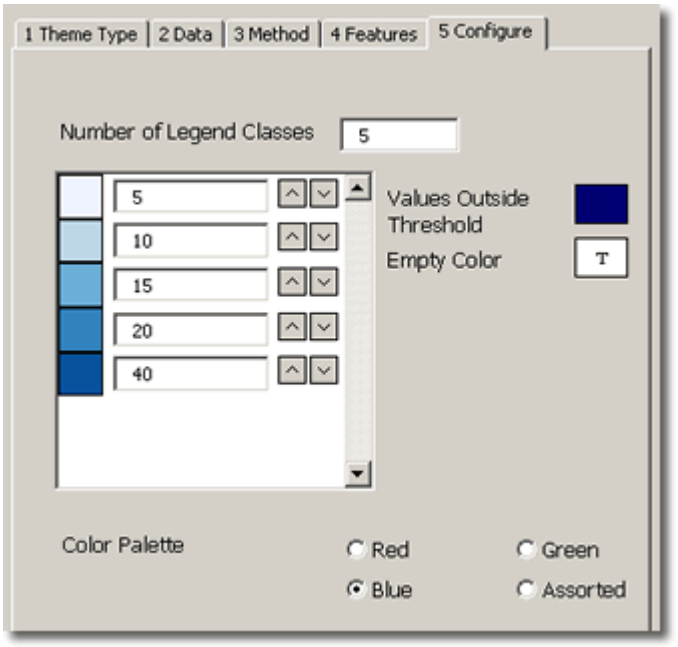


Figure 84 Region Relationship layer: Example of using Manual Colors option and the results in the MI Viewer/Legend.



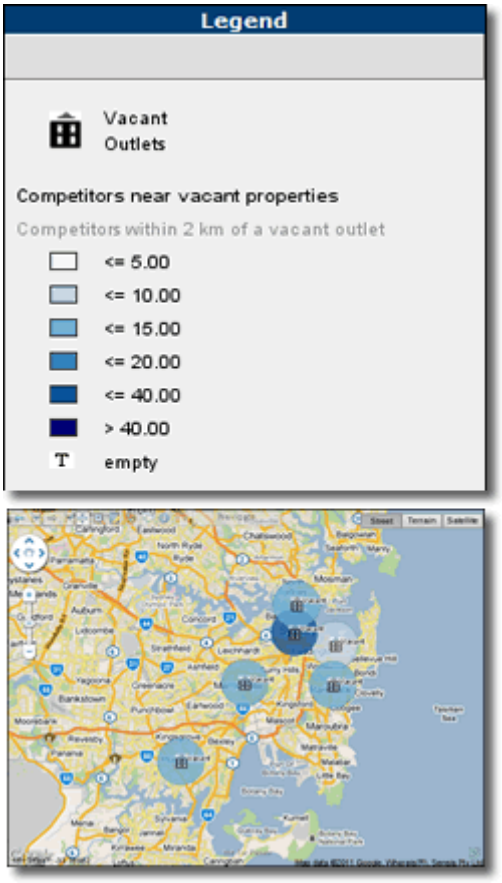


Figure 85 Radius Relationship layer: Example of using Manual Color option and the results in the MI Viewer/Legend.

Selecting Hatch Patterns

1. For **Shading Option**, click the **Hatch Patterns** radio button.

   Note Hatch Patterns for Radius Relationship layers are not available for the current version of Map Intelligence IMS.

Features Rendering Attributes

2. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.
3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in a layer.
4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.
5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.
6. In the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color.

   Note
   - Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.
   - **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

7. Click the **Configure** tab.
8. In the **Number of Legend Classes** field, enter the number of hatches to appear in your shading range.

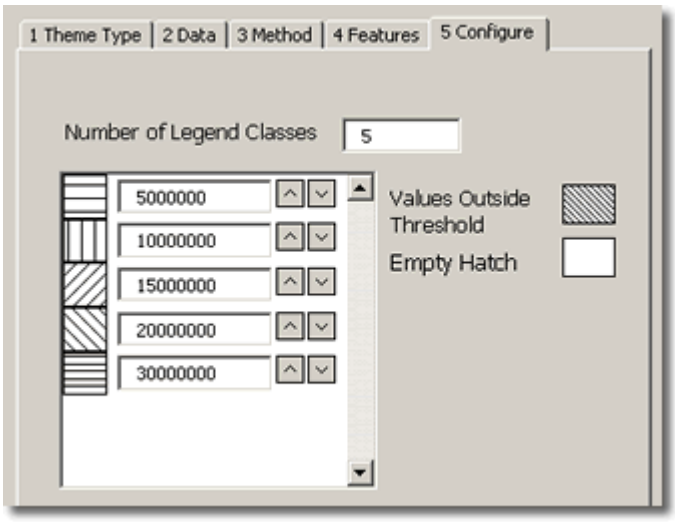
   The list box below will update to display the hatches and associated fields to enter threshold values.

9. Enter a value in each **Threshold** field.

   Note **Important Note:** Threshold values must be sorted in order from lowest to highest value. i.e. the lowest threshold value should be the first threshold value in the list; the next lowest threshold value, the second threshold in the list, etc; to the final threshold in the list being the highest value.

   Tip To reorder the list use the up and down arrows next to each Threshold value.

10. To change individual threshold hatch patterns click on the hatched rectangle next to the threshold and select a new hatch from the picker.
11. Click the **Values Outside Threshold** rectangle and select a hatch from the picker to represent any values that may be outside the specified threshold values.
12. Click the **Empty Hatch** rectangle and select a hatch from the picker.



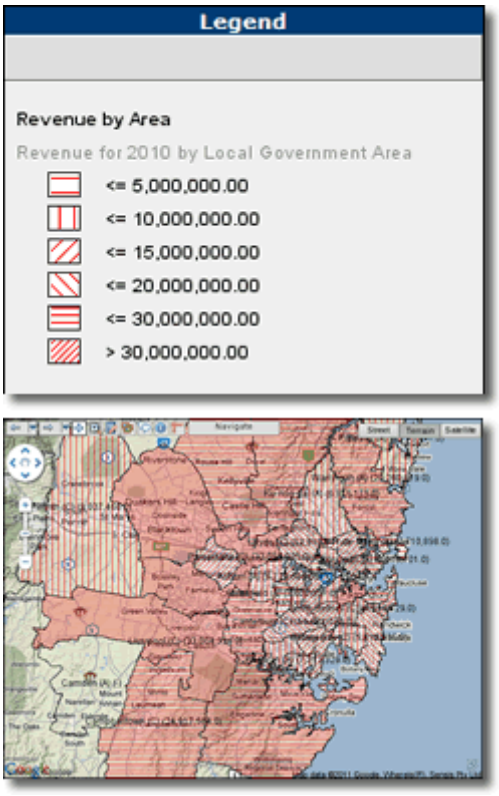


Figure 86 Region Relationship layer: Example of using Manual Hatch option and the results in the MI Viewer/Legend.

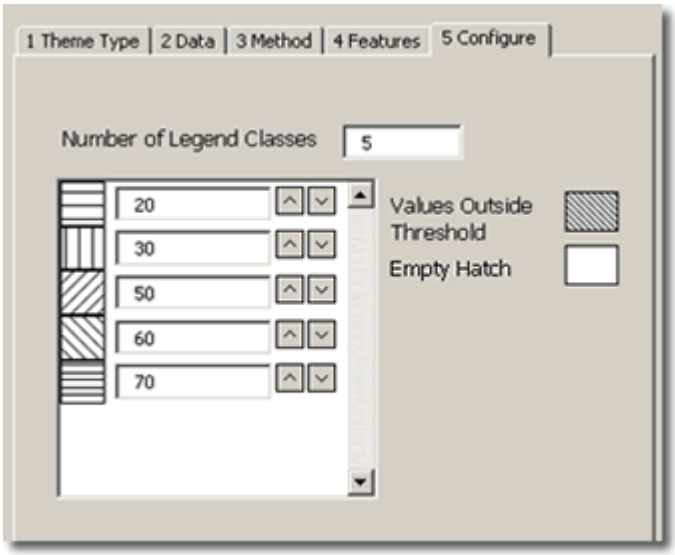


Figure 87 Radius Relationship layer: Example of using Manual Hatch option and the results in the MI Viewer/Legend.

Note

Null values are ignored on aggregations so an empty area may contain points or rows with null values.

STRING AGGREGATION

Map Intelligence allows you to perform a function on string values from a specified fact column. String aggregations require you to specify a color/hatch condition for a specific value instead of a threshold. The string functions available include:

- **Most Common** – this function applies the condition if the nominated value is the most common value in the region.
- **Uniform** – this function applies the condition if the nominated value is the only value from the specified column in the region.
- **Majority** – this function applies the condition if the nominated value makes up more than half of the values in the region.

Creating a Quick Theme based on a string aggregation

1. Select the **Quick Theme** radio button. The *Quick Theme* panel will be displayed.
2. From the **Point Layer** drop down list, select the Point Layer containing the points that you want to geographically relate to the reference layer.

   Note When related to a built-in region layer the points will be grouped according to which regions they are contained in. When related to another Point Layer, the points will be grouped according to which points in the reference layer they all within the given radius of.

3. From the **Column** drop down list, select the column to use to color the regions. The data for this column will be extracted from the points and aggregated according to the geographical group of the points.
4. For **Data Type**, select the **String** radio button.
5. From the **Aggregation Function** drop-down list, select the function to use for the layer. The string functions available are: MOST COMMON, UNIFORM and MAJORITY.
6. For **Color Palette**, select either the **Red**, **Green**, **Blue** or **Assorted** radio button.

Creating an Advanced Theme based on a String Aggregation

1. Click the **Theme Type** tab.
2. From the **Point Layer** drop down list, select the Point Layer containing the points that you want to geographically relate to the reference layer.

   Note When related to a built-in region layer the points will be grouped according to which regions they are contained in. When related to another Point Layer, the points will be grouped according to which points in the reference layer they all within the give radius of.

3. From the **Column** drop down list, select the column to use to color the regions. The data for this column will be extracted from the points and aggregated according to the geographical group of the points.
4. Select the **String** radio button.

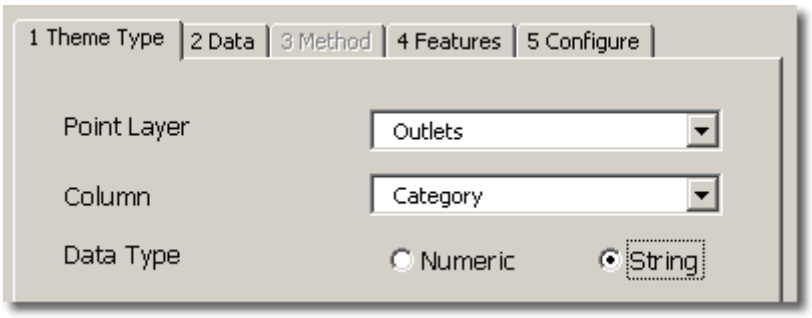


Figure 88. Theme Type Tab (String).

5. Click the **Data** tab.

6. From the **Aggregation Function** drop-down list, select the function to use for the layer. The string functions available include: Most Common, Uniform and Majority.

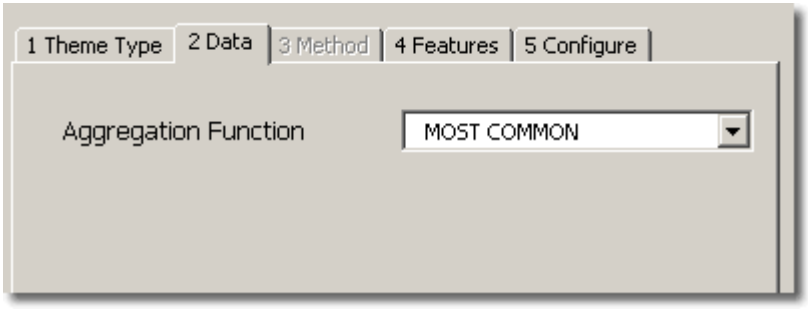


Figure 89. Theme: Data Tab (String).

7. Click the **Features** tab.

   There are two options for selecting the **Shading Option:**

   - Colors
   - Hatch Patterns

Selecting Colors

1. For **Shading Option**, click the **Colors** radio button.

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

Note

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.

- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of

the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

6. Click the **Configure** tab. The *Configure* tab displays a list of values and an associated color.

   The standard default palette used is *Assorted*.

7. To select a different standard palette, from the **Color Palette** section, click either the **Red**, **Green** or **Blue** radio buttons.

8. To change a particular value color, click the colored rectangle next to the value and select a new **color** from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu.

9. To reorder the list use the up and down arrows next to each value.

10. To remove a value from the list, uncheck the value checkbox.

    Any conditions not associated with a color will automatically be colored with the color selected for 'Other' (see below).

11. Click the **Other Values** rectangle and select a **color** from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu, to represent any values that have not been assigned with a specific color.

12. Click the **Conflict Values** rectangle and select a **color** from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu, to represent any region or circle that does not meet any specified condition. E.g. A Conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region.

13. Click the **Empty Values** rectangle and select a **color** from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu, to represent any region or circle that does not contain any values.

    For further information on using the Transparent and Unshaded color options see Appendix B: Using the Unshaded and Transparent Color Options on page 132.

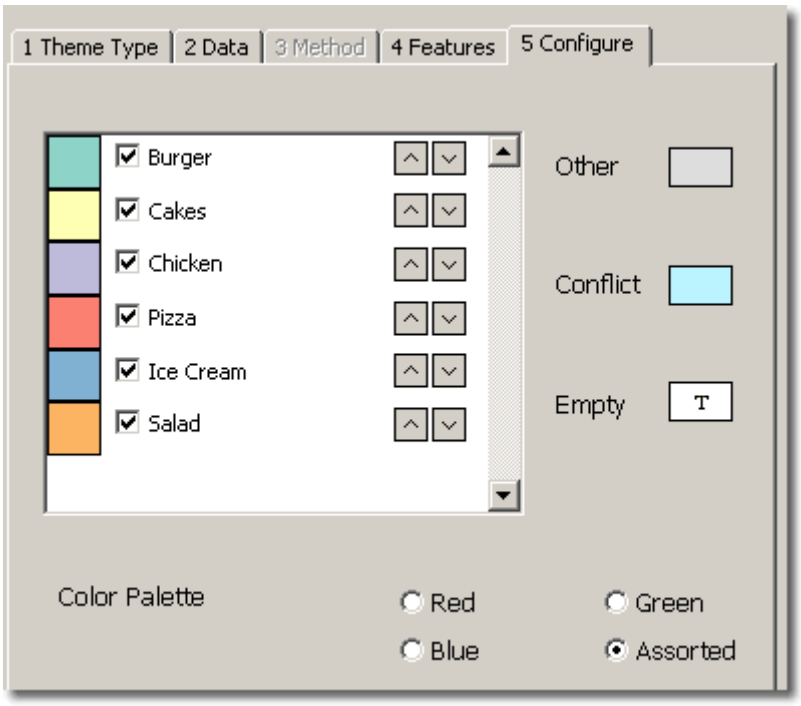


Figure 90. Theme: Configure Tab (String - Colors).

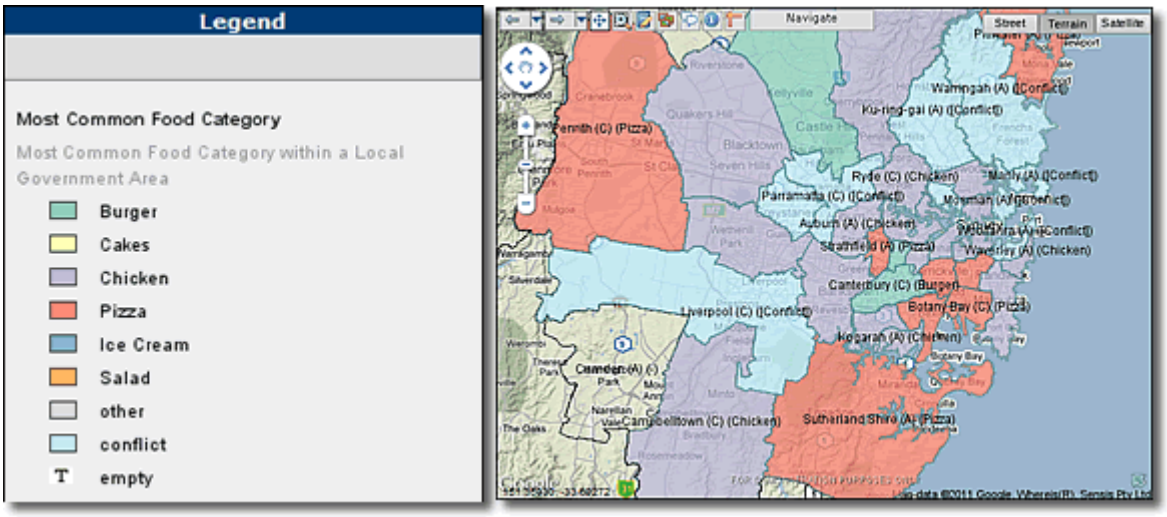


Figure 91. Region Relationship layer: Example of results in the MI Viewer/Legend, using the String – Colors.

Note Null values are ignored on aggregations so an empty area may contain points or rows with null values.

Selecting Hatch Patterns

1. For **Shading Option**, click the **Hatch Patterns** radio button.

   Note Hatch Patterns for Radius Relationship layers are not available for the current version of Map Intelligence IMS.

   Features Rendering Attributes

2. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

6. In the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color.

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.

- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

7. Click the **Configure** tab.

   The *Configure* tab displays a list of values and an associated hatch.

8. To change a particular value hatch, click the hatch rectangle next to the value and select a new hatch from the hatch picker.

9. To reorder the list use the up and down arrows next to each value.

10. To remove a value from the list, uncheck the value checkbox.

Any conditions not associated with a hatch will automatically be hatched with the hatched selected for 'Other' (see below).

11. Click the **Other** hatch rectangle and select a hatch to represent any values that have not been assigned with a specific condition.

12. Click the **Conflict** rectangle and select a hatch to represent any region or circle that does not meet any specified condition. E.g. A Conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region.

13. Click the **Empty** rectangle and select a hatch to represent any region or circle that does not contain any values.

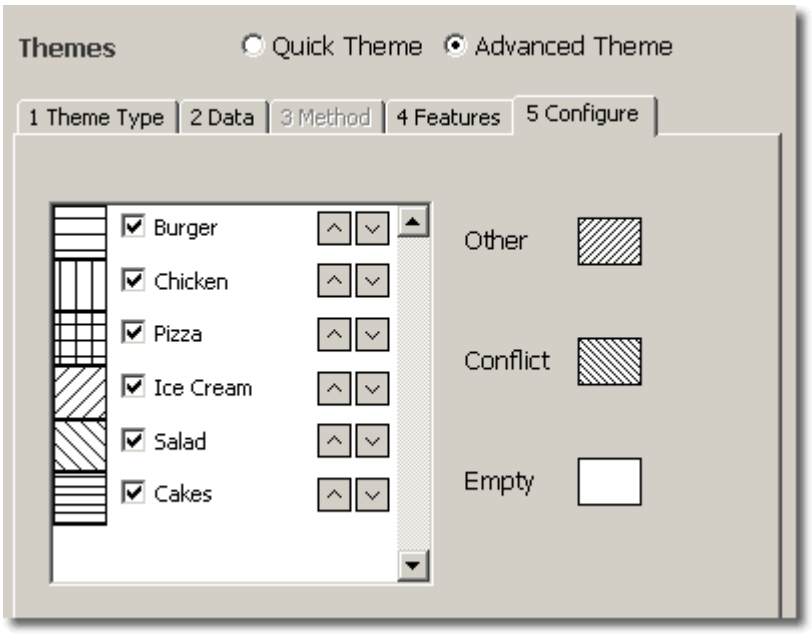


Figure 92. Theme: Configure Tab (String – Hatch Patterns).

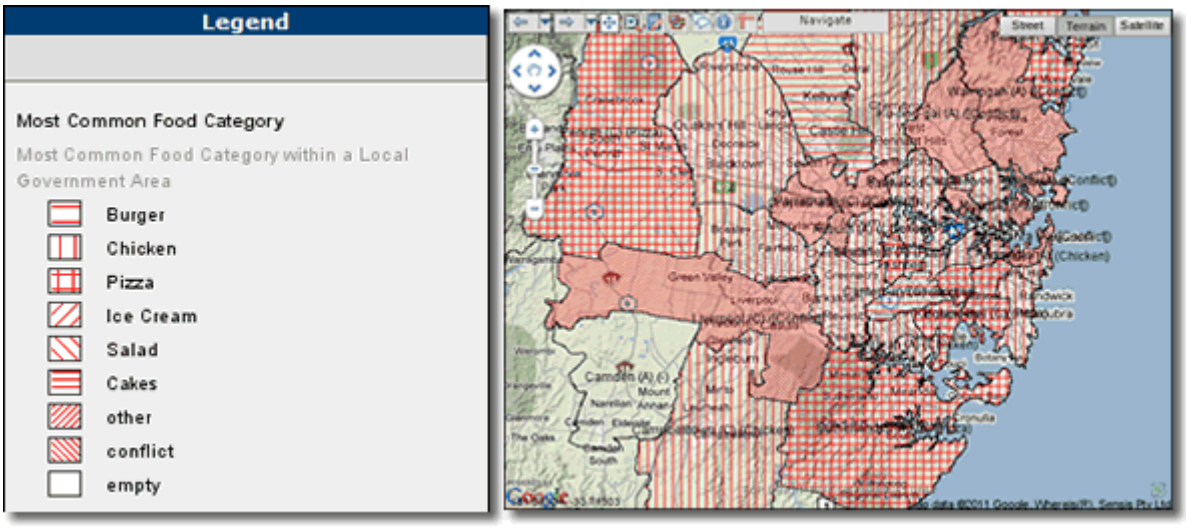


Figure 93. Region Relationship layer: Example of results in the MI Viewer/Legend, using the String – Hatch Patterns.

SAVING A LAYER

To save the Relationship layer configuration

1. Click the **OK** button on the **Relationship Layer** configuration screen.

   The Relationship Layer name is listed on the Relationship Layer tab.

2. Click the **Done** button on the Layers window to return to the worksheet.

EDITING A LAYER

To edit a Relationship Layer configuration

1. From the **Map Intelligence** drop-down menu, select **Layers**, the **Layers** window will open.

2. Select the **Relationship Layers** tab.

3. Click on the layer you want to edit and click the **Edit** button.

   The configured **Relationship Layer** configuration screen will open for editing.

4. After making your edits, click **OK** to save your changes.

5. Click the **Done** button on the **Layers** window.

   Note If you change the layer name, a copy of the layer will be created with the new layer name.

DELETING A LAYER

To delete a Relationship layer configuration

1. From the **Map Intelligence** drop-down menu, select **Layers**, the **Layers** window will open.

2. Select the **Relationship Layers** tab.

3. Click on the layer you want to delete and click the **Delete** button.

4. A message box will open asking you to confirm you wish to delete the layer. Click the **Yes** button.

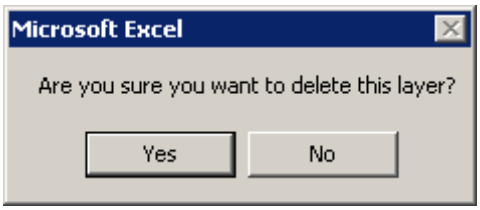


Figure 94 Delete layer confirmation message box.

5. After deleting the layer, click the **Done** button on the **Layers** window.

CONFIGURE AREA GROUP LAYER

Note For a description of Area Group layers, see Layer Types, Area Group Layer.

To open the Area Group Layer configuration screen

1. From the **Map Intelligence** drop-down menu, select **Layers**, the *Layers* window will open.
2. Select the **Area Group Layer** tab.
3. Click the **Add** button.

The *Area Group Layer* configuration screen will appear.

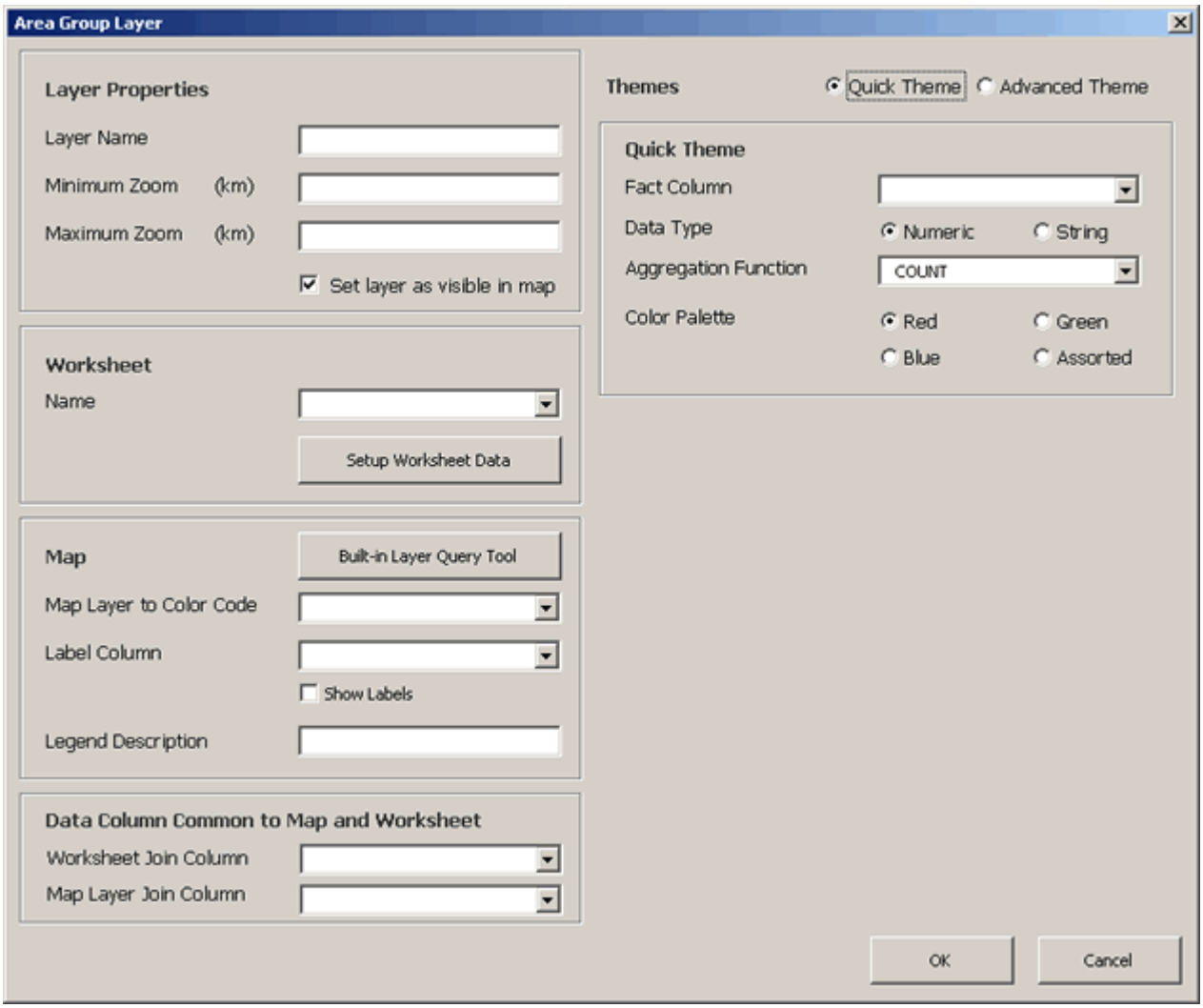


Figure 95 Area Group configuration screen

LAYER PROPERTIES SECTION

To configure the Layer Properties section

1. In the **Layer Name** text box, enter a title for the layer.

2. You can specify a range in which the layer will be visible on the map by entering a **Minimum Zoom and Maximum Zoom** value. The layer will only be visible if the current map width is within the specified minimum and maximum zoom values.

3. Select the **Set layer as visible in map** checkbox if you wish this particular layer to be visible when you first access the MI Viewer.

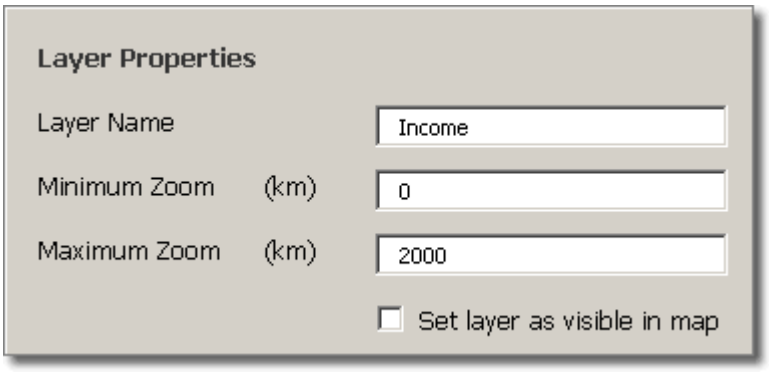


Figure 96. Layer Properties Section of the Area Group Layer configuration screen.

WORKSHEET

To configure the Worksheet section

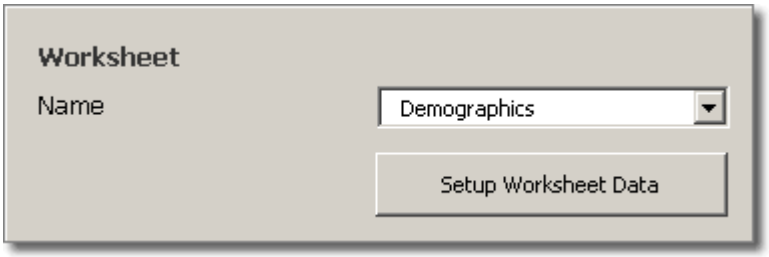


Figure 97 . Worksheet Section of the Area Group Layer Configuration Screen.

1. From the **Name** drop-down list, select the worksheet which contains the data to be used as points for this layer.

Note All worksheets within the Workbook will appear in the drop-down list.

2. Click on the **Setup Worksheet Data** button. The *Setup Worksheet Data* dialog box will appear.

Note This step is only necessary if you wish to change the standard default setting.

This dialog box allows you to tell the MI Client which cells on the worksheet constitute data and which are headers. There are two ways of configuring the worksheet, *by Worksheet Location* or *by Data in the Worksheet*.

WORKSHEET LOCATION OPTION

a. Select the **Worksheet Location** radio button.

b. In the **Headings Row** field, enter the number of the worksheet row containing your headings.

c. In the **Data Row** field, enter the number of the first worksheet row containing your data.

d. In the **First Column** field, enter the first worksheet column containing your data.

e. Click **OK**, to return to the Area Group Layer configuration screen.

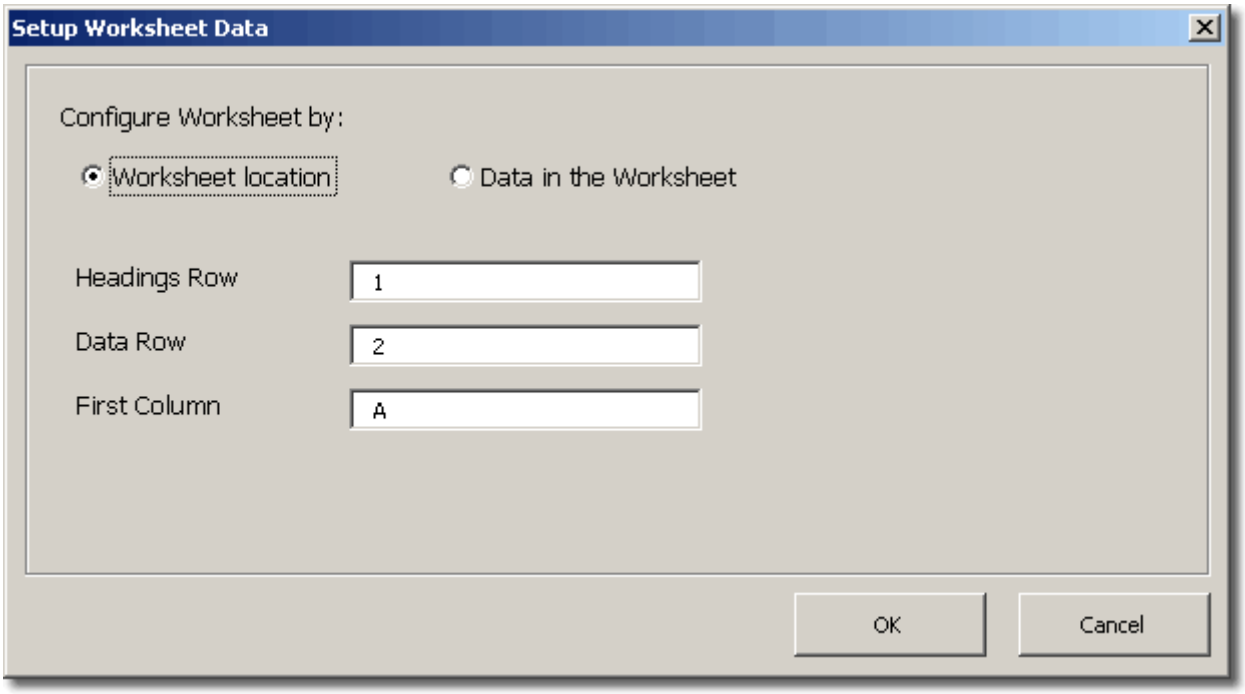


Figure 98. Setup Worksheet Data - Worksheet location.

The example above shows the default settings, the first row contains the headings, the second and subsequent rows contain data. The first column to contain data is Column A.

DATA IN THE WORKSHEET LOCATION OPTION

a. Select the **Data in the Worksheet** radio button.

b. In the **First Column** field, enter the first worksheet column containing your data.

c. From the **Worksheet** drop-down list, select the worksheet containing your data.

Note If a different worksheet is selected to the one you selected previously for the *Worksheet Name* field, the *Worksheet Name* field will automatically be updated with your new choice.

d. From the **Headings Row** drop-down list, select your heading row.

e. From the **Data Row** drop-down list, select the first row of the worksheet containing your data.

f. Click **OK**, to return to the Area Group Layer configuration screen.

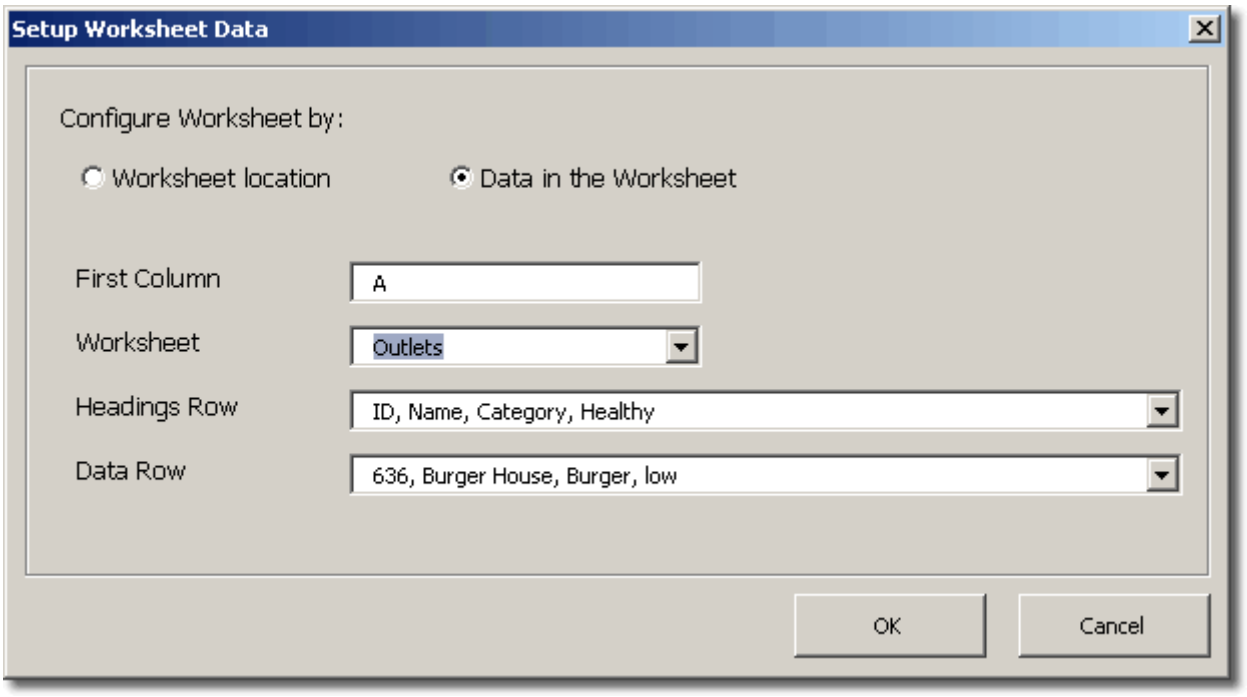


Figure 99. Setup Worksheet Data - Data in the Worksheet.

Tip If you intend to use Advanced Filtering, select the *Data in the Worksheet Location* option when configuring the *Setup Worksheet Data,* this option does not require any adjustment to the location settings if Advanced Filtering is used.

MAP SECTION

The *Map* section allows you to configure the necessary map settings for the layer.

To configure the Map section

1. From the **Map Layer to Color Code** field, enter the built-in map layer that you want to shade or apply a color to.

Note
- Only layers containing regions can be used as reference layers.
- Built-in layers are arranged in a particular order on the map. When selecting a built-in layer to shade, all map layers that sit under the selected layer will be covered by the selected color or hatch.

Tip
- If you wish to find out more information about the built-in layers available, click the **Built-in Layer Query Tool** button - see Appendix C: Map Intelligence Query Tool page 136 for further details.

2. From the **Label Column** drop-down, select the column in the map layer that contains the values to be used as labels for the regions. If you wish the labels to be visible when you initially view the map, select the **Show Labels** checkbox.

Note If the Show Labels checkbox is not selected, End Users can display the labels by selecting the *Labels* checkbox in the *Show/Hide Layers* control panel in the *MI Viewer*.

3. In the **Legend Description** field, enter a description to use in the legend for this layer. If this field is left blank a description will be generated by Map Intelligence.

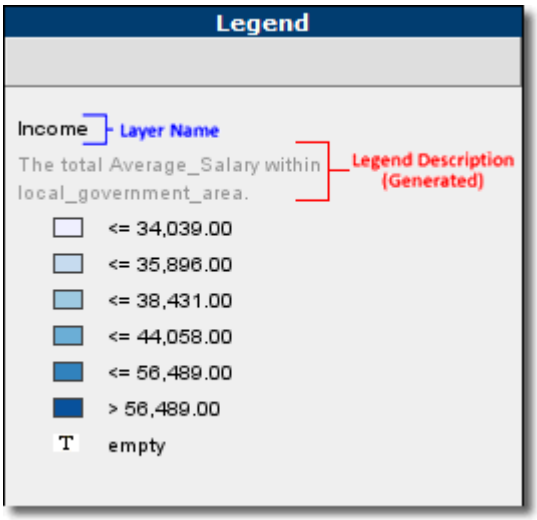


Figure 100. Legend showing a Map Intelligence generated description.

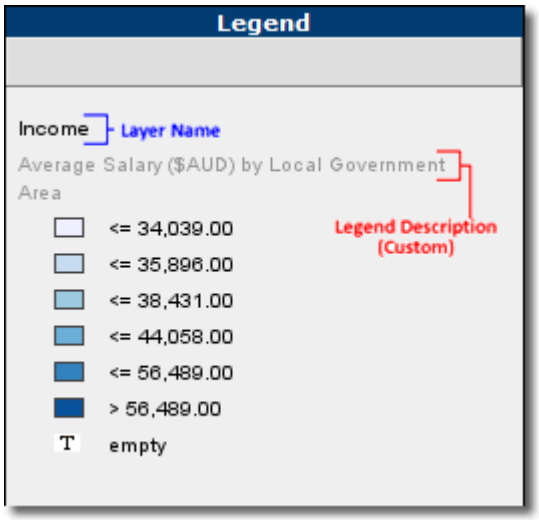


Figure 101. Legend showing a customized description

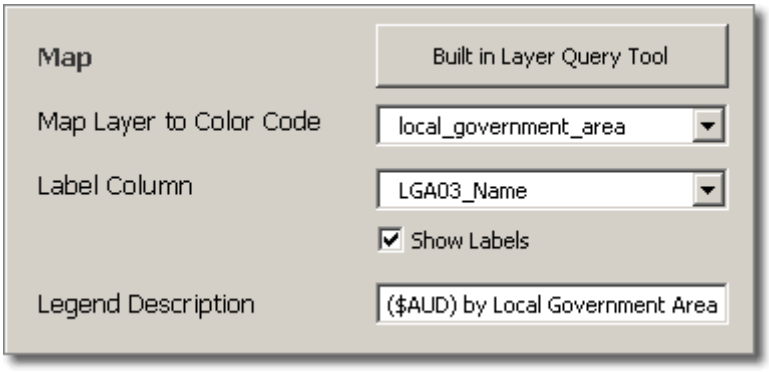


Figure 102 Map section of the Area Group Layer configuration screen.

DATA COLUMN COMMON TO MAP AND WORKSHEET SECTION

Area Group Layers require a union between a column in your worksheet and a column in the built-in map layer that you want to shade. You need matching values from these two columns for the Area Group Layer to work.

To configure the Data Column to map and Worksheet section

1. From the **Worksheet Join Column** drop-down list, select a column from your worksheet that contains values that will match the ones specified in the Map Layer Join Column (below).

2. From the **Map Layer Join Column** drop-down list, select a column from the built in map layer that contains values that match the ones specified in the *Worksheet Join* Column (above).

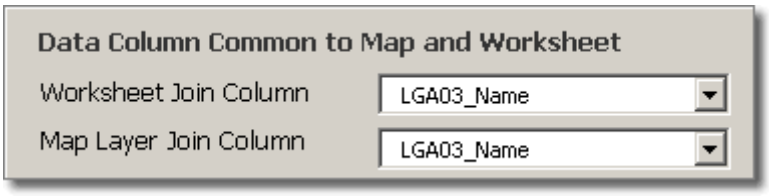


Figure 103 Data Column Common to Map and Worksheet Section of the Area Group Layer Configuration Screen.

CREATING THEMES FOR AREA GROUP LAYERS

Creating themes for Area Group Layers requires you to specify threshold conditions based on a Numeric or String aggregation using the **Themes** section on the Area Group Layer configuration screen.

NUMERIC AGGREGATION

Map Intelligence allows you to perform a function on values from a specified column. The specified built-in map layer will then be shaded according to the resulting values. The numeric functions available include: Count, Sum, Min, Max, Mean and Median.

There are two options for creating themes:

- **Quick Theme**: This option allows you to quickly create a theme using basic color palettes.
- **Advanced Theme**: This advanced option allows you to create sophisticated themes, including using ColorBrewer palettes and hatches.

Note: Clicking the *Advanced Theme* radio button will permanently disable the *Quick Theme* option for this layer.

Creating a Quick Theme based on a numeric aggregation

1. Select the **Quick Theme** radio button. The *Quick Theme* panel will be displayed.
2. From the **Fact Column** drop down list, select the column that contains the values to be measured for this layer.
3. For **Data Type**, select the **Numeric** radio button.
4. From the **Aggregation Function** drop-down list, select the function to use for the layer. The numeric functions available are: Count, Sum, Min, Max, Mean and Median.
5. For **Color Palette**, select either the **Red**, **Green**, **Blue** or **Assorted** radio button.

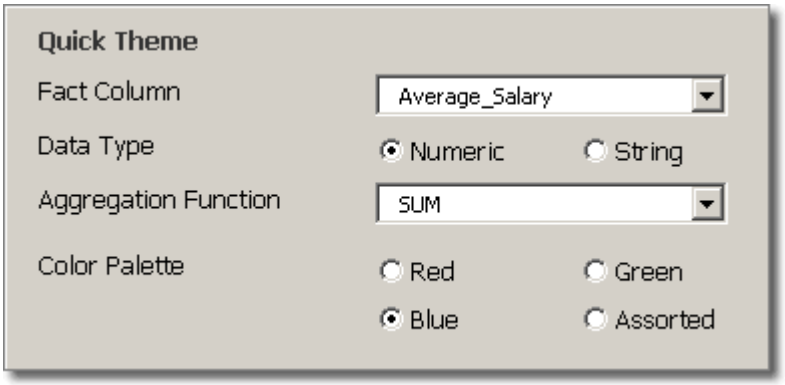


Figure 104. Quick Theme panel.

Note: Clicking the *Advanced Theme* radio button will permanently disable the *Quick Theme* option for this layer.

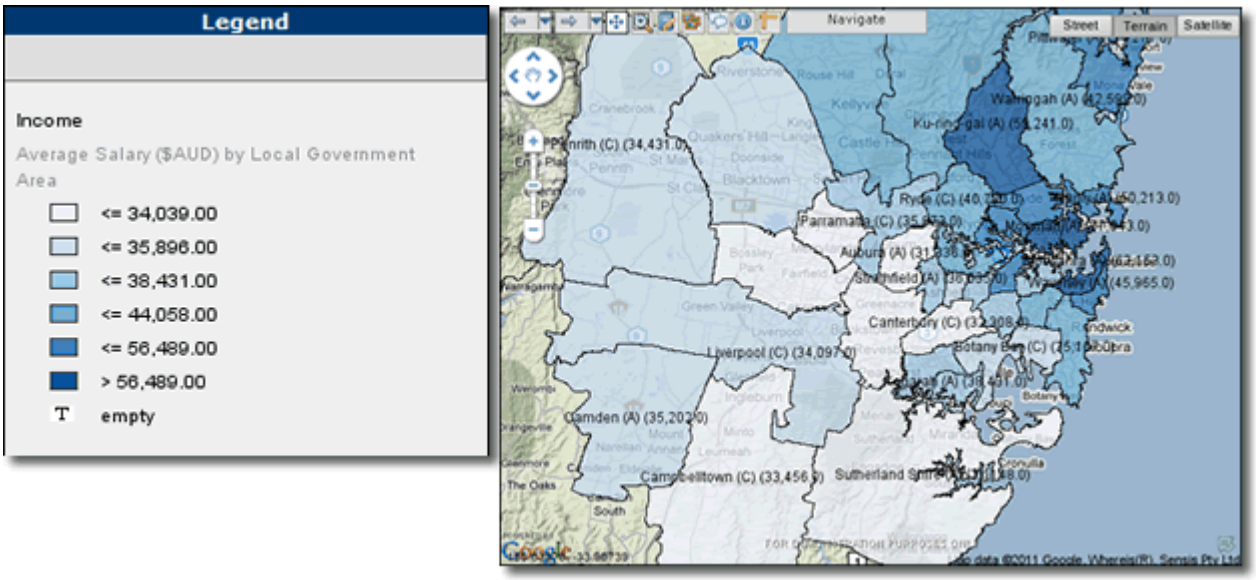


Figure 105. Area Group Layer – Example Map View and Legend showing Quick Theme (Blue option).

Creating an Advanced Theme based on a numeric aggregation

Note: Clicking the *Advanced Theme* radio button will permanently disable the *Quick Theme* option for this layer.

1. Click the **Theme Type** tab.
2. From the **Fact Column** drop down list, select the column that contains the values to be measured for this layer.
3. For **Data Type**, select the **Numeric** radio button.

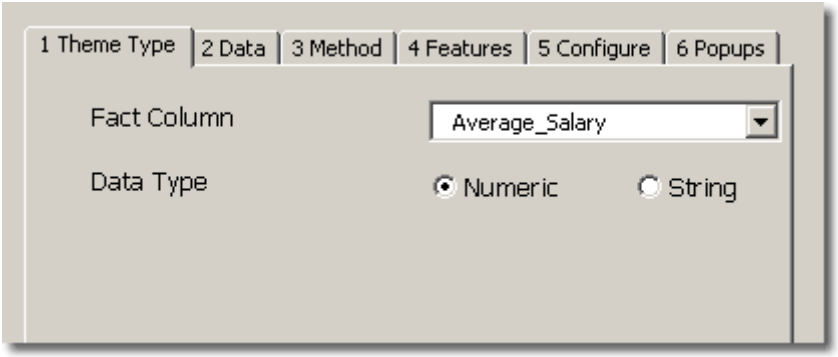


Figure 106. Theme Type Tab (Numeric).

4. Click the **Data** tab.
5. From the **Aggregation Function** drop-down list, select the function to use for the layer. The numeric functions available include: Count, Sum, Min, Max, Mean and Median.
6. For the **Calculation**, click either the **by Value** or **by Percentage** radio button.

   The aggregates can be used as the raw aggregate value or as a percentage of the total aggregate over the Point Layer.

Note: Note that only one color and one hatch layer can be displayed simultaneously for a particular built-in-layer. If you have multiple layers that use the same built-in layer, you can switch between these using the *Themes* option from the MI Viewer (refer to the ***Map Intelligence MI Viewer***

User Manual – (see Appendix D: Map Intelligence Manuals and Guides on page 137).

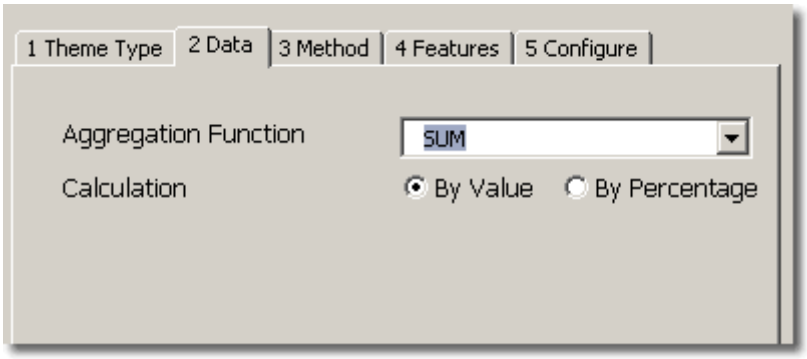


Figure 107. Data Tab (Numeric).

7. Click the **Method** tab.

   There are two methods for applying themes:

   - Automatic Method
   - Manual Method

AUTOMATIC METHOD

1. For **Theme Method**, click the **Automatic** radio button.

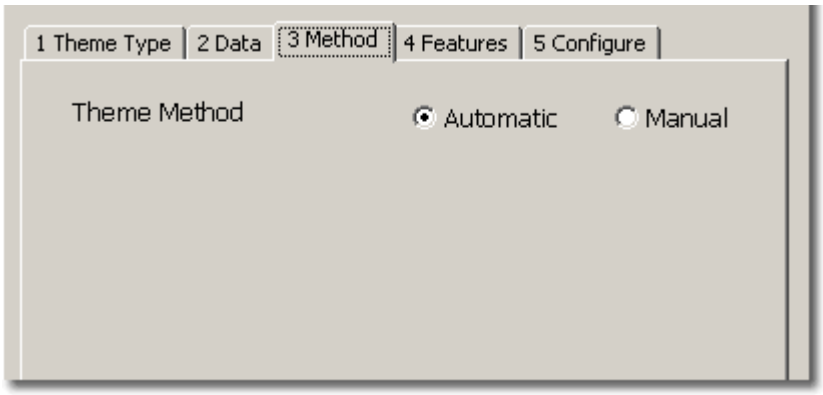


Figure 108. Method Tab (Numeric- Automatic).

2. Click the **Features** tab.

3. From the **Scheme** drop-down list, select a classification scheme.

   You can use a standard classification scheme to group similar values to look for patterns in the data. You can choose from three schemes for grouping data values into classes based on how the data values are distributed.

   - **Equal Interval**: The difference between the high and low values is the same for every class. So, the classification of the data will be based on a set of equal splits. For example, if the lowest value is 0 and the highest value is 10 in the data, and 5 classes are requested, the range of each class will be 0 to 2, 2 to 4, 4 to 6, 6 to 8, 8 to 10.
   - **Quantile**: Each class contains an equal number of features. In this case, the points are sorted in ascending order (for the chosen data field) and each class is filled with (total number of points)/(number of classes) points starting from the lowest value to the highest.

- **Standard Deviation**: Features are placed in classes based on how much their values vary from the mean. First the mean and standard deviation of the data values are calculated. The class breaks are found by successively adding or subtracting multiples of the standard deviation from the mean.

4. If **Equal Interval** was selected for **Scheme**, for **Scale**, click either the **Linear** or **Logarithmic** radio button.

5. If **Standard Deviation** was selected for Scheme, for **Multiplier** enter the multiplying factor.

6. From the **Number of Legend Classes** drop-down list, select the number of colors to appear in your shading range.

   There are three options for selecting the **Shading Option**:

   - **Specific Colors:** Allows you to specify a ColorBrewer palette or select individual colors.
   - **Color Range:** Allows you to choose a pre-defined color set or a specific start and end color.
   - **Hatch Patterns:** Allows you to specify a particular hatch for each class.

Selecting Specific Colors

1. Click the **Specific Colors** radio button.

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.

- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

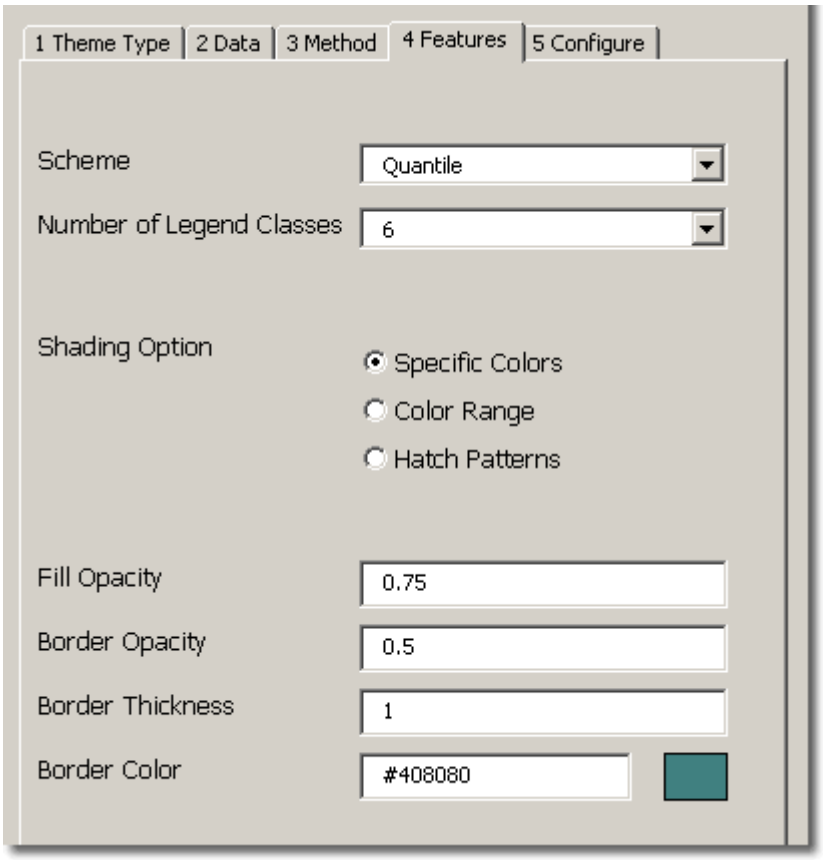


Figure 109. Features Tab (Numeric- Automatic – Specific Colors).

6. Click the **Configure** tab.

Specific Colors allows you to specify a *ColorBrewer* palette or select individual colors for each class from a color picker. The default color palette is the first palette in the Sequential palette series (see Color Brewer Palettes below).

USING COLORBREWER PALETTES

These palettes have been created using the ColorBrewer, a tool designed to create good color schemes for maps. There are three types of palettes:

- **Sequential palettes** are suited to ordered data that progress from low to high. Lightness steps dominate the look of these schemes, with light colors for low data values to dark colors for high data values (Figure 111).
- **Diverging palettes** put equal emphasis on mid-range critical values and extremes at both ends of the data range. The critical class or break in the middle of the legend is emphasized with light colors and low and high extremes are emphasized with dark colors that have contrasting hues (Figure 112).
- **Qualitative palettes** do not imply magnitude differences between legend classes, and hues are used to create the primary visual differences between classes. Qualitative schemes are best suited to representing nominal or categorical data (Figure 113).

The number of colors available in each palette is determined by the *Number of Classes* selected on the *Features* Tab.

7. From the **ColorBrewer Palette** drop down box, select a Palette Type (**Sequential**, **Diverging** or **Qualitative**). The available palettes will appear below in the Preview list box.

   Note The availability of ColorBrewer Palettes depends on the number of Legend Classes selected on the Features tab.
   - **Less than 2 Legend Classes:** No palettes available.
   - **Between 3 and 9 Legend Classes:** All palettes available.
   - **For 10 Legend Classes:** Only Diverging and Qualitative palettes available.
   - **For more than 10 Legend Classes:** Only Qualitative palettes available.

   Tip To see the color palette in reverse, click the **Display palette colors in reverse** checkbox, below the *Palette Preview* list box.

8. Click on a palette in the preview box to select it. The colored rectangles next to each class will update.

9. You can change any of the colors assigned to a particular Class by clicking on the colored rectangle and selecting a different **color** from the color picker. By right clicking on a colored rectangle you are able to select from the context menu the **Transparent** or **Unshaded** color options.

   By default any region that does not contain any values are set to be transparent. If you wish to assign a particular color for an empty region.

10. Click the **Empty Color** colored rectangle and select a color from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu.

    Note For further information on using the Transparent and Unshaded color options see Appendix B: Using the Unshaded and Transparent Color Options on page 132.

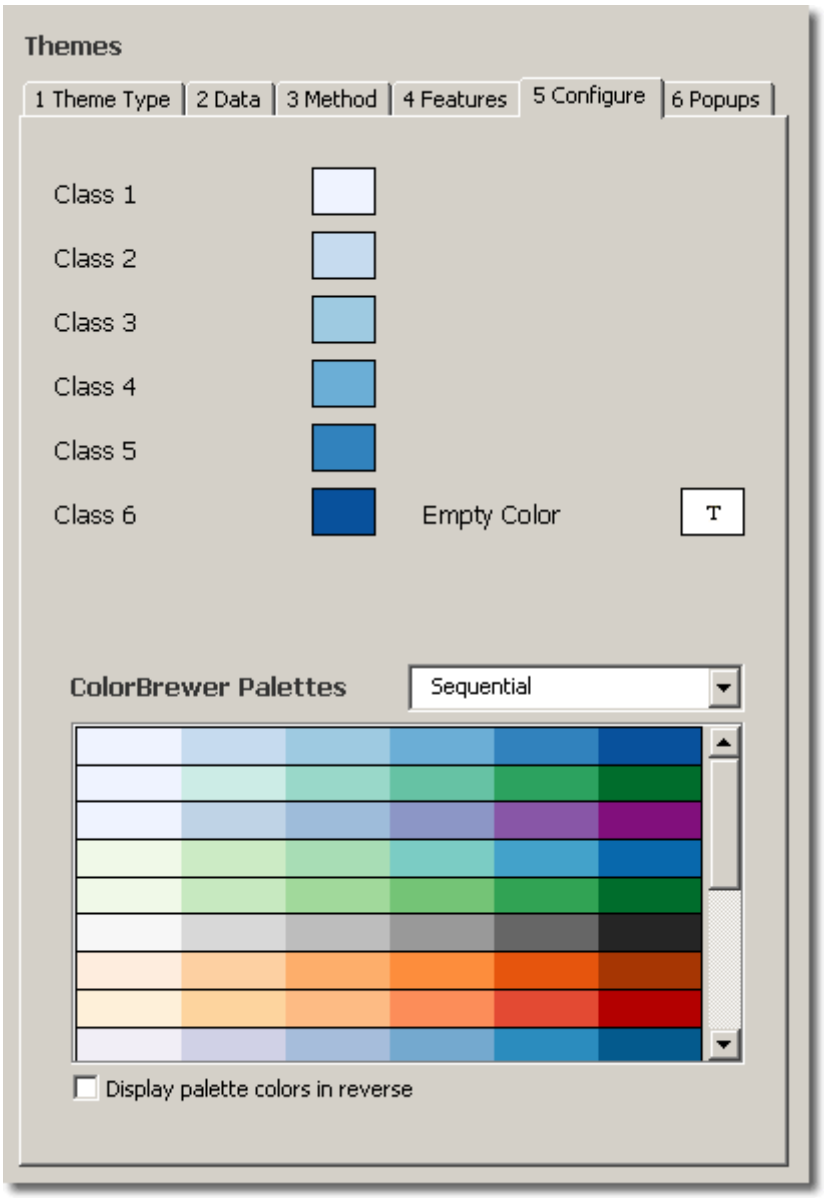


Figure 110. Configure Tab (Numeric- Automatic – Specific Colors).

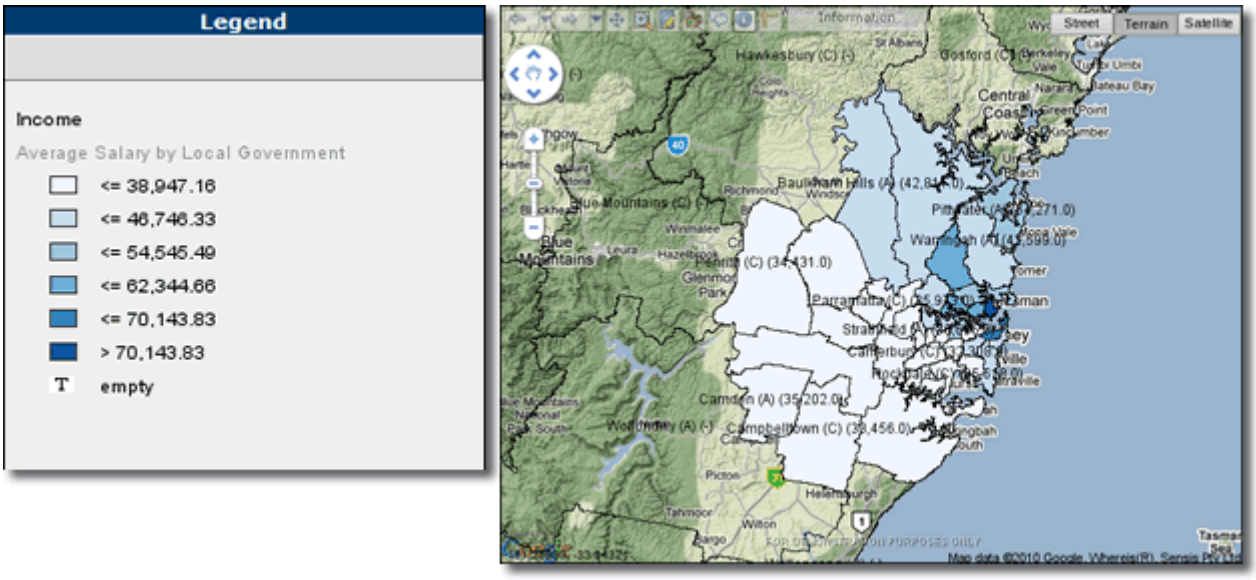


Figure 111. Area Group Layer – Example Map View and Legend showing Specific Color Theme (ColorBrewer Palette: Sequential).

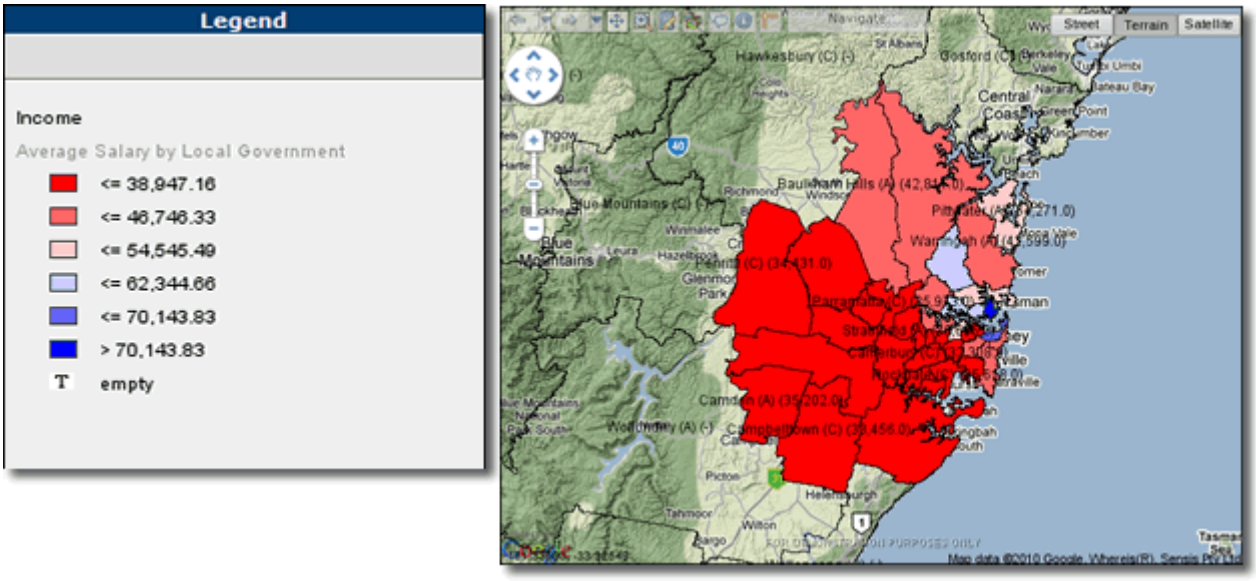


Figure 112. Area Group Layer – Example Map View and Legend showing Specific Color Theme (ColorBrewer Palette: Diverging).

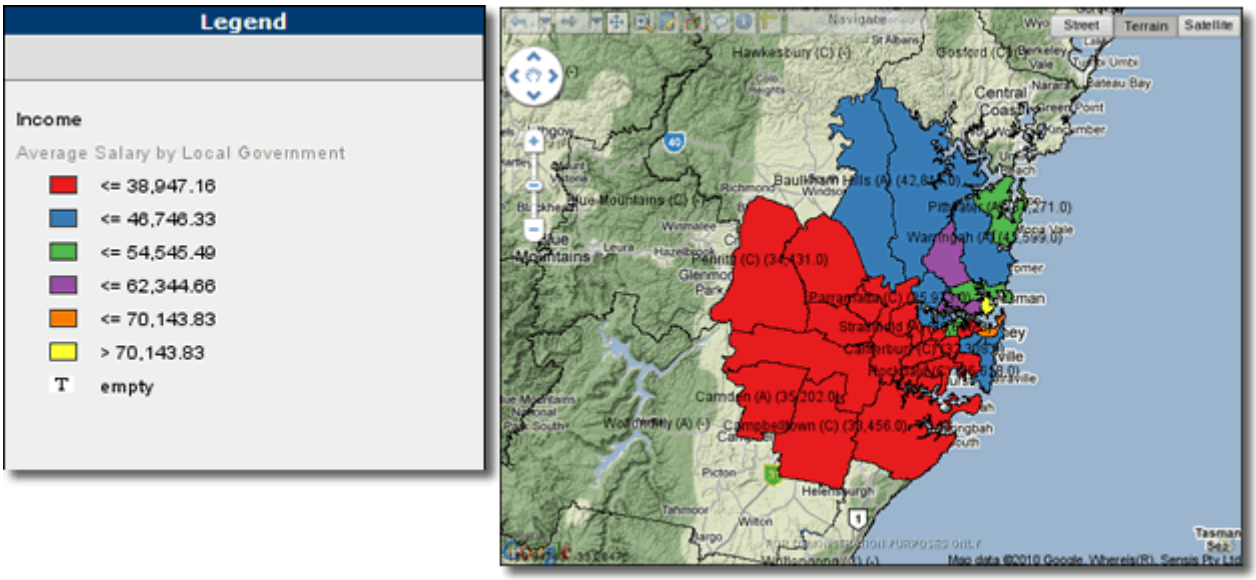


Figure 113. Area Group Layer – Example Map View and Legend showing Specific Color Theme (ColorBrewer Palette: Qualitative).

Selecting Color Range

1. Click the **Color Range** radio button.

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.
3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.
4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.
5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

Note

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.
- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

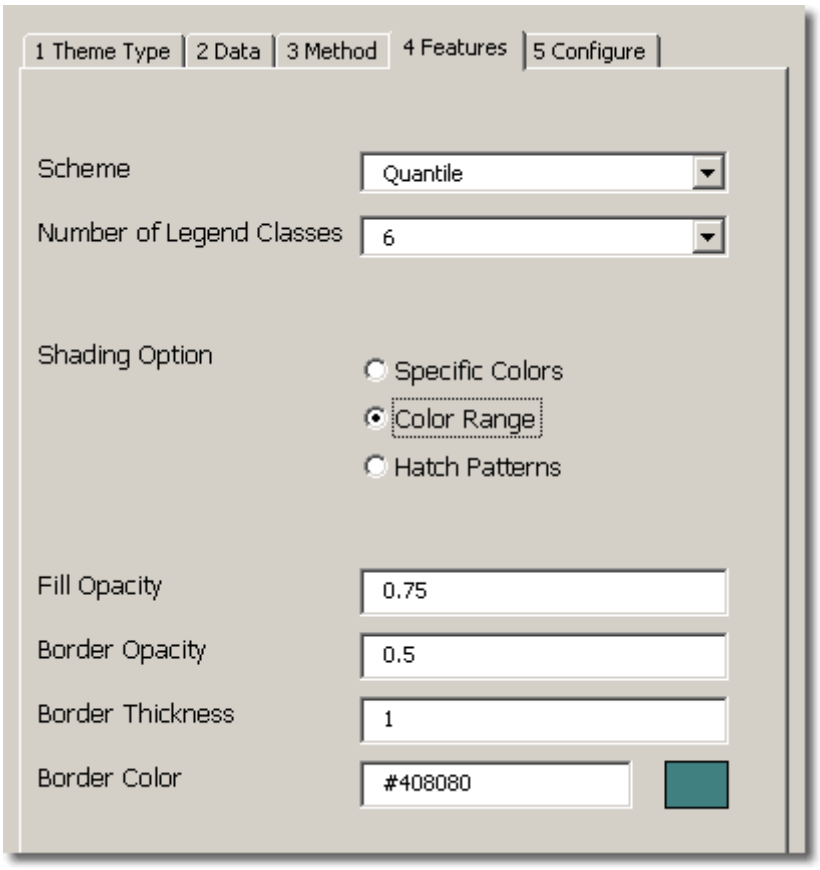


Figure 114. Features Tab (Numeric- Automatic – Color Range).

6. Click the **Configure** tab.

There are two options for color range, *Pre-defined Color Set* or *Custom Colors*. *Pre-defined Colors* shades according to color schemes built into Map Intelligence. *Custom Colors* allows you to choose a start color and end color and have a spectrum of colors between these two.

Selecting Pre-defined Colors

1. Click the **Pre**-defined **Color Set** radio button.

2. From the **Shade** Color drop-down list, select a pre-defined color scheme.

Note When using a pre-defined color scheme, Empty regions are always transparent.

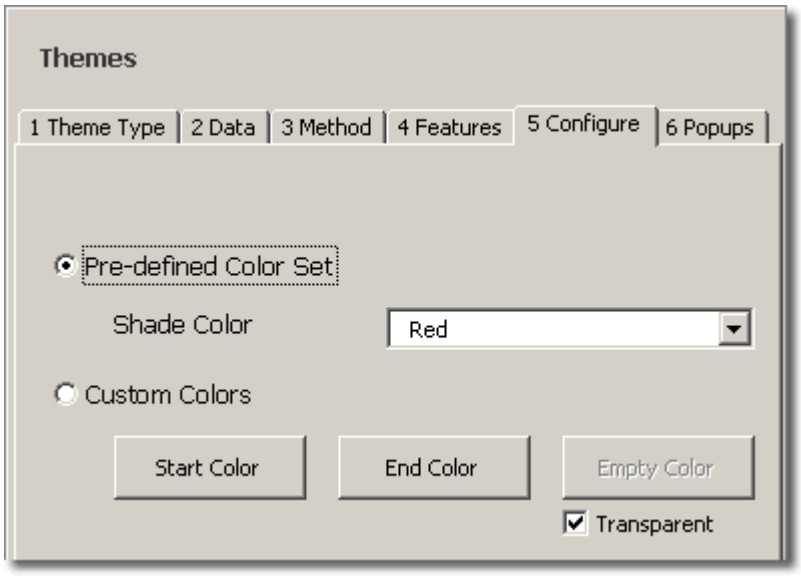


Figure 115. Configure Tab (Numeric- Automatic –Color Range – Pre-defined Color Set).

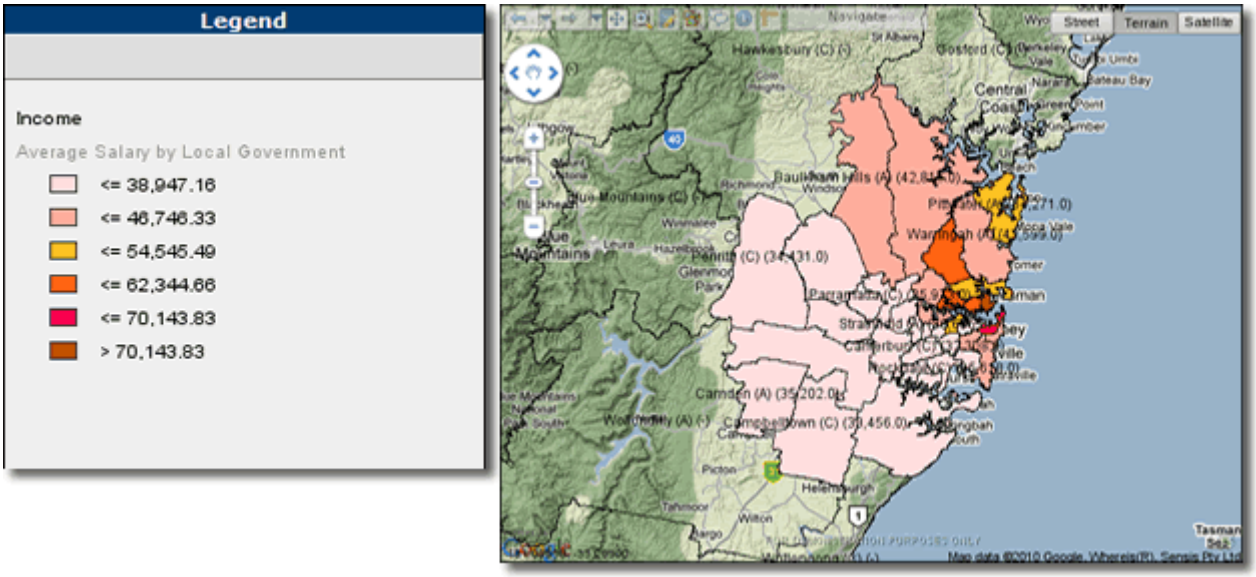


Figure 116. Area Group Layer – Example Map View and Legend showing Color Range - Pre-defined Color set (Red).

Selecting Custom Colors

1. Click the **Custom Colors** radio button.
2. Click the **Custom Colors** radio button.
3. Click the **Start Color** button.
4. Select the start color from the color picker and click **OK.**
5. Click the **End Color** button.
6. Select the end color from the color picker and click **OK.**

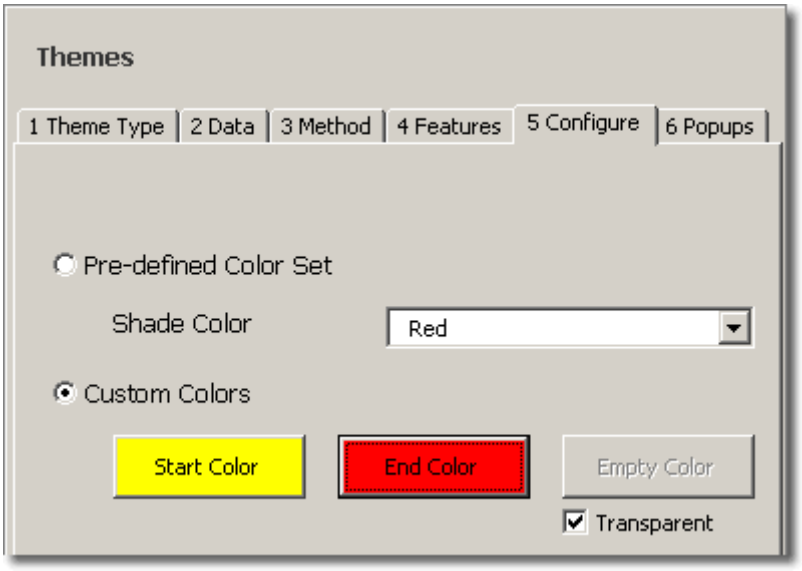


Figure 117. Configure Tab (Numeric- Automatic –Color Range – Color Colors).

By default any region that does not contain any values are set to be transparent. If you wish to assign a particular color for an empty region

7. Uncheck the **Transparent** checkbox.
8. Click the **Empty Color** button.
9. From the color picker, select a color for any region that does not contain any values and click the **OK**.

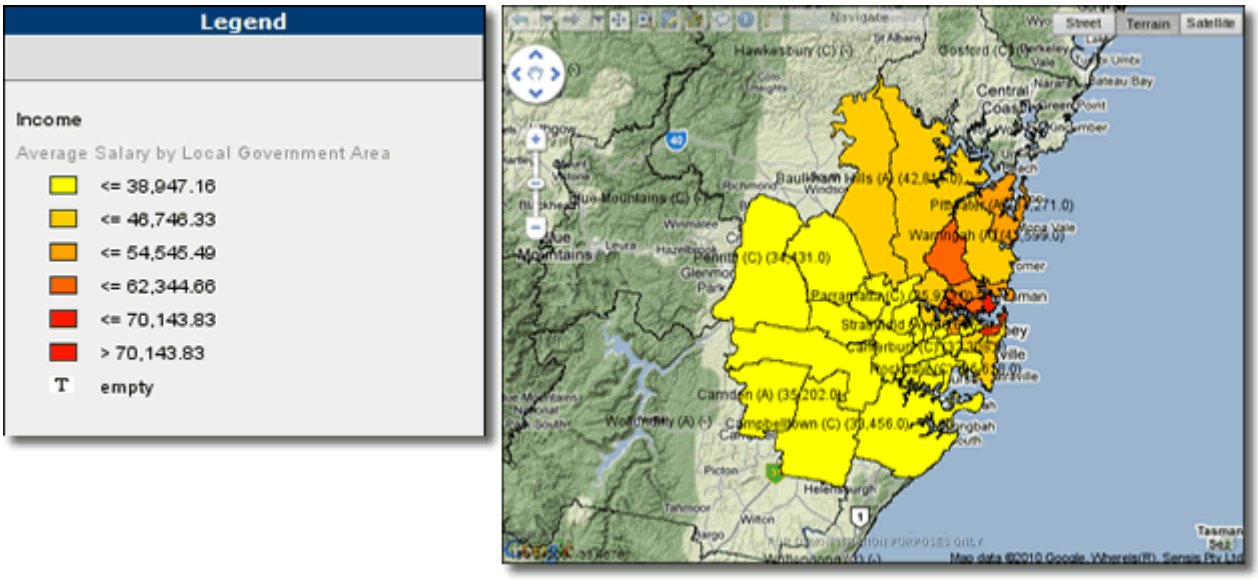


Figure 118. Area Group Layer – Example Map View and Legend showing Color Range – Custom Colors (Yellow to Red).

Selecting Hatch Patterns

1. For **Shading Option**, click the **Hatch Patterns** radio button.

Note Hatch Patterns for Radius Relationship layers are not available for the current version of Map Intelligence IMS.

2. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

6. In the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color.

Note

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.
- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

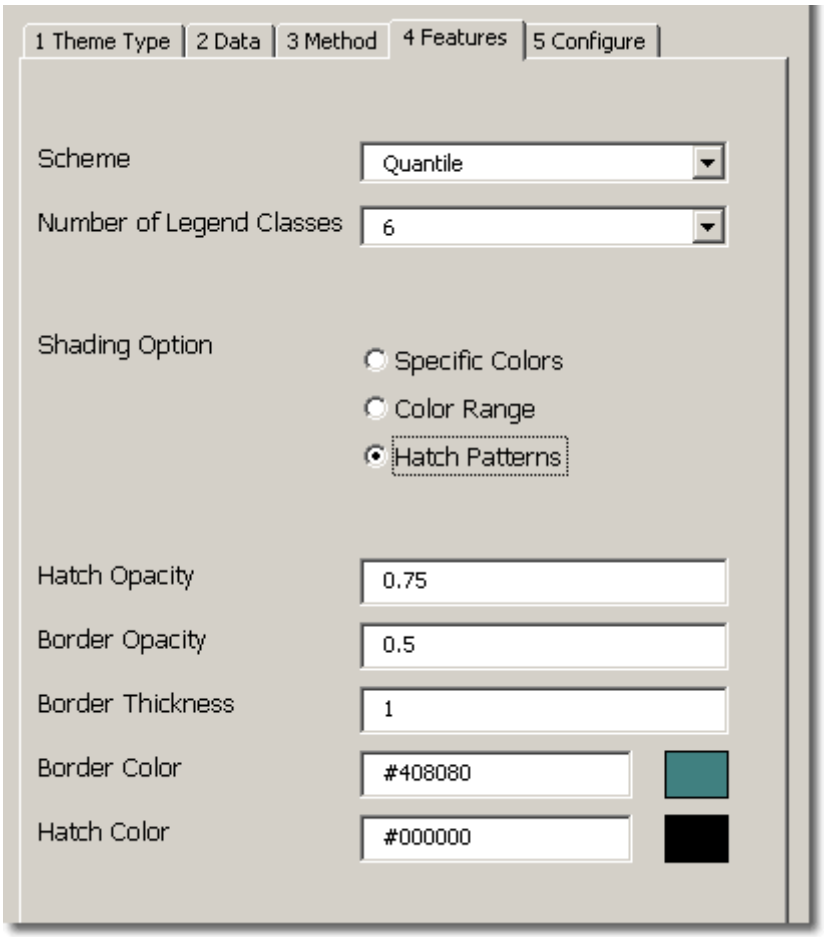


Figure 119. Features Tab (Numeric- Automatic – Hatch Patterns).

7. Click the **Configure** tab.

Hatch Patterns allows you to specify a particular hatch for each class.

8. Click the **Class 1** hatch rectangle.
9. Select a hatch from the hatch picker.
10. Repeat Steps the above steps for each class listed.

    By default any region that does not contain any values are set to be transparent. If you wish to assign a particular hatch for an empty region
11. Click the **Empty Hatch** rectangle.

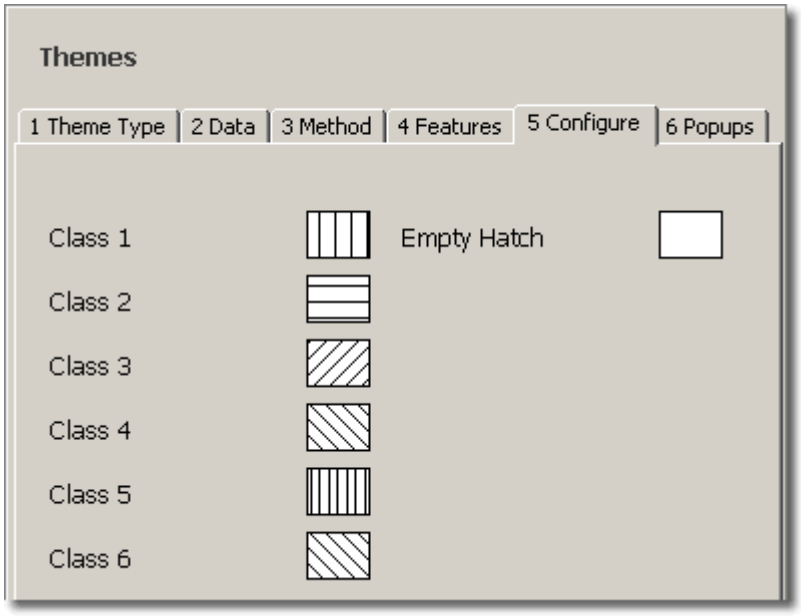


Figure 120. Configure Tab (Numeric- Automatic – Hatch).

12. Select a hatch for any region that does not contain any values.

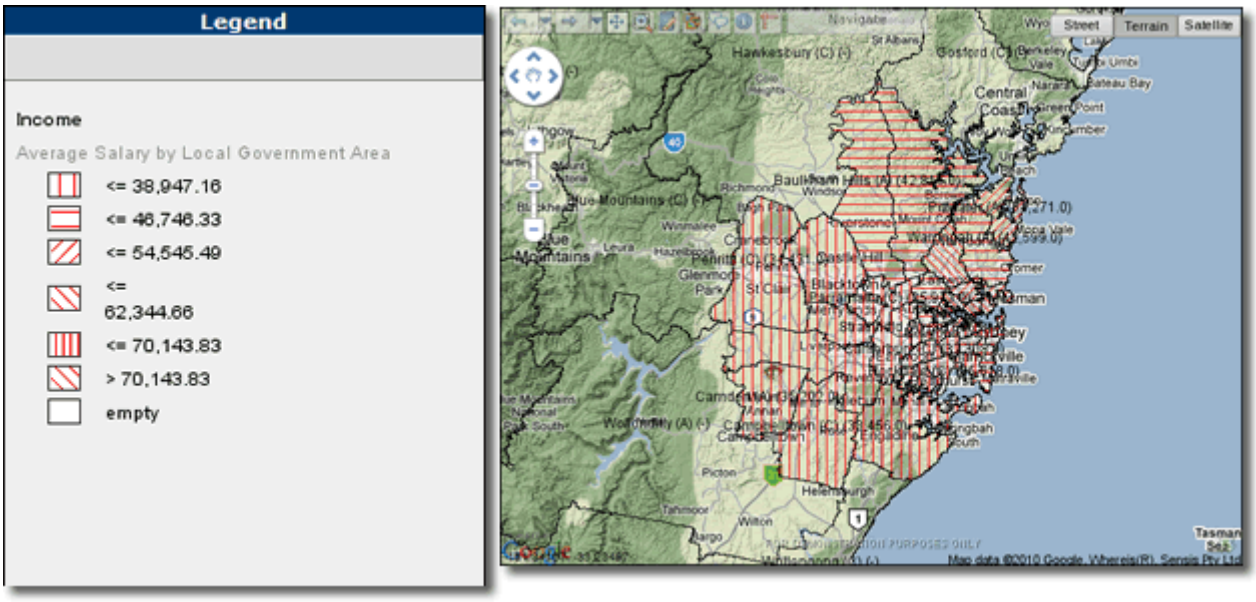


Figure 121. Area Group Layer – Example Map View and Legend showing Hatches (Red).

MANUAL METHOD

1. From the **Method** tab, click the **Manual** radio button.

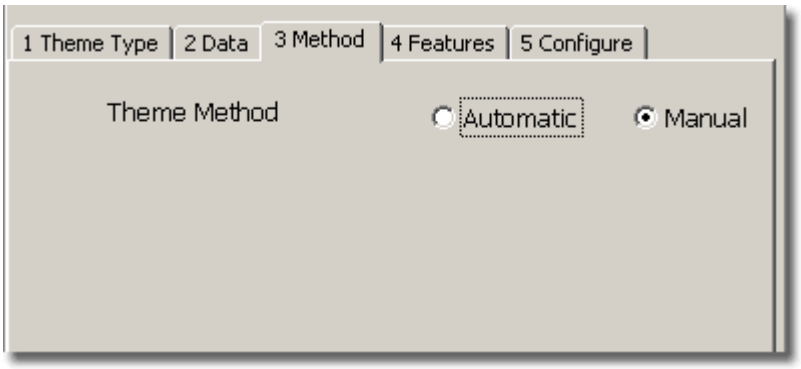


Figure 122. Theme: Method Tab (Numeric- Manual).

2. Click the **Features** tab.

Selecting Colors

1. For **Shading Option**, click the **Colors** radio button.

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

Note

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.

- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

6. Click the **Configure** tab.

7. In the **Number of Legend Classes** field, enter the number of colors to appear in your shading range.

   The list box below will update to display the default Red color palette and associated fields to enter threshold values.

8. Enter a value in each **Threshold** field.

Note **Important Note:** Threshold values must be sorted in order from lowest to highest value. i.e. the lowest threshold value should be the first threshold value in the list; the next lowest threshold

value, the second threshold in the list, etc; to the final threshold in the list being the highest value.

Tip To reorder the list use the up and down arrows next to each Threshold value.

9. To change the default the Red color palette, from the **Color Palette** section, click on either the **Green**, **Blue** or **Assorted** radio buttons.

Tip You can change individual colors within a selected color palette by clicking on a particular colored rectangle and selecting a **color** from the color picker. By right clicking on a colored rectangle you are able to select from the context menu the **Transparent** or **Unshaded** color options.

10. Click the **Values Outside Threshold** colored rectangle and select a **color** from the color picker or right click and select **Transparent** or **Unshaded** from the context menu, to represent any values that may be outside the specified threshold values.

    By default any region that does not contain any values are set to be transparent. If you wish to assign a particular color for an empty region

11. Click the **Empty Color** colored rectangle and select a color from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu.

Note For further information on using the Transparent and Unshaded color options see Appendix B: Using the Unshaded and Transparent Color Options on page 132.

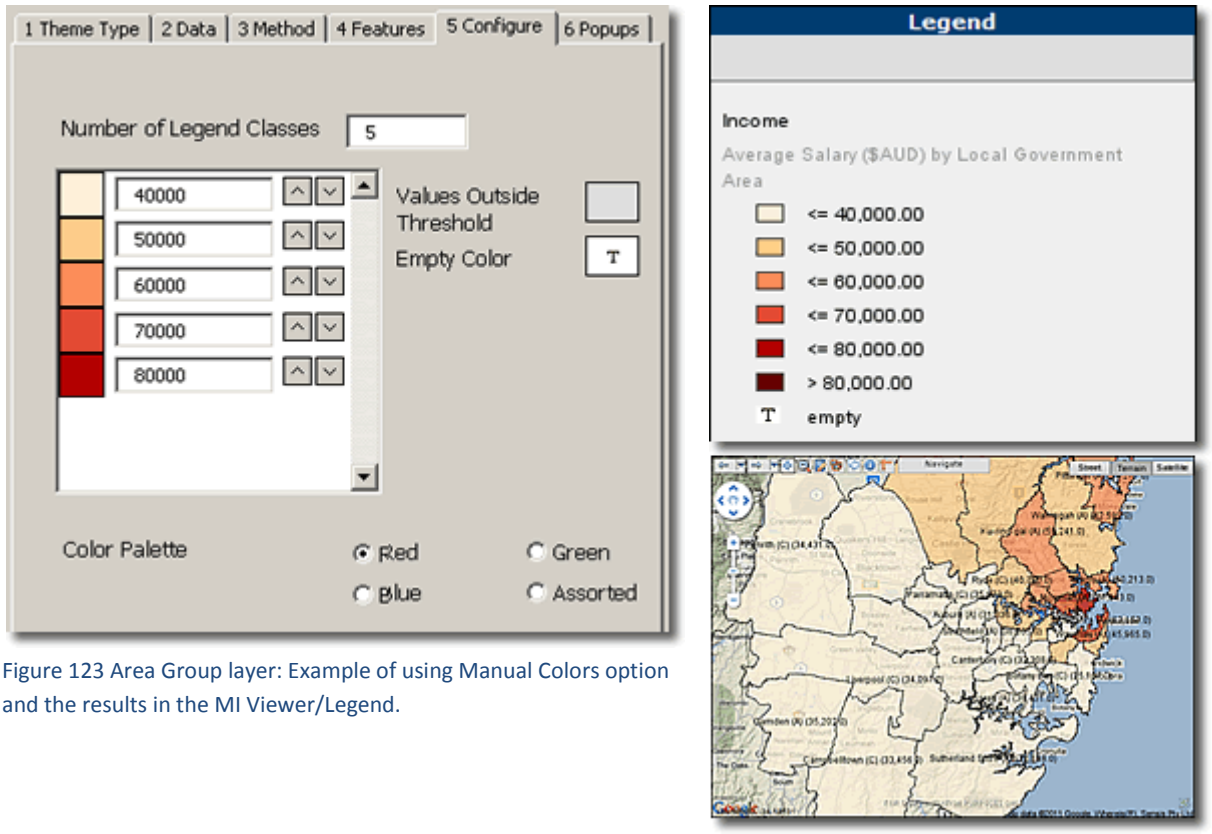


Figure 123 Area Group layer: Example of using Manual Colors option and the results in the MI Viewer/Legend.

Selecting Hatch Patterns

1. For **Shading Option**, click the **Hatch Patterns** radio button.

Note Hatch Patterns for **Radius** Relationship layers are not available for the current version of Map Intelligence IMS.

2. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

6. In the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color.

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.

- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

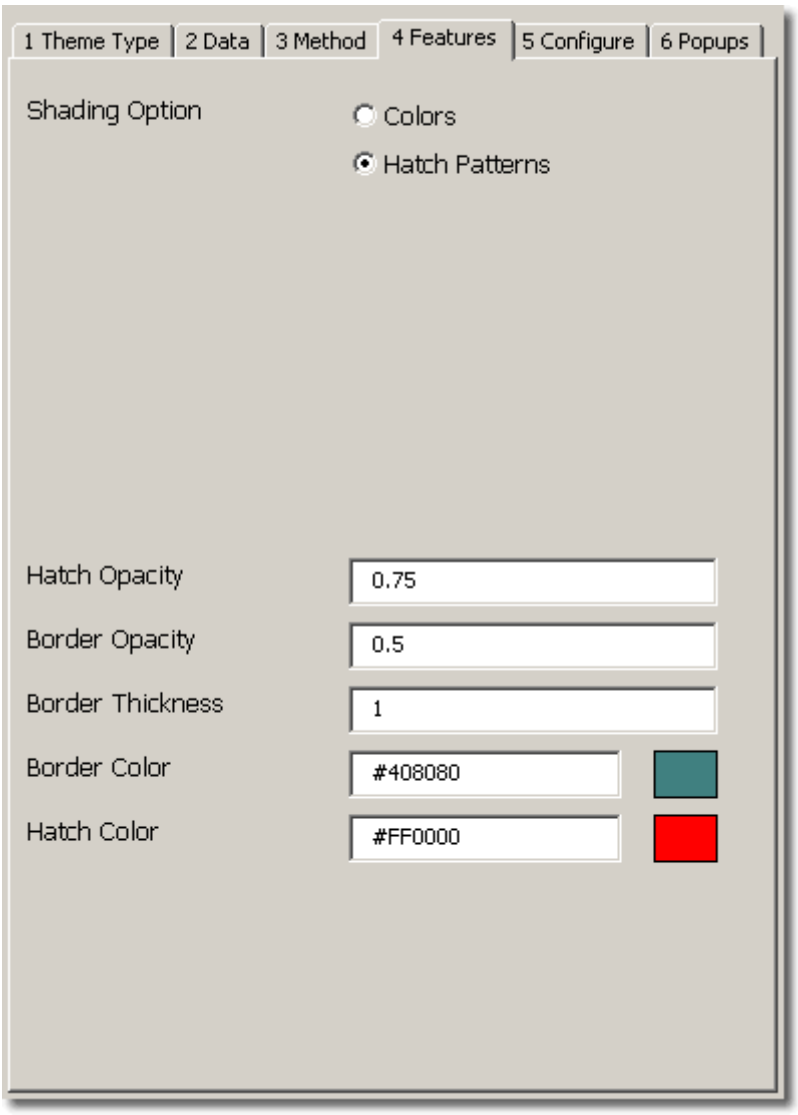


Figure 124. Features Tab (Numeric- Manual – Hatch Patterns).

7. Click the **Configure** tab.

8. In the **Number of Legend Classes** field, enter the number of hatches to appear in your shading range.

   The list box below will update to display the hatches and associated fields to enter threshold values.

9. Enter a value in each **Threshold** field.

   Note **Important Note:** Threshold values must be sorted in order from lowest to highest value. i.e. the lowest threshold value should be the first threshold value in the list; the next lowest threshold value, the second threshold in the list, etc; to the final threshold in the list being the highest value.

   Tip To reorder the list use the up and down arrows next to each Threshold value.

10. To change individual threshold hatch patterns click on the hatched rectangle next to the threshold and select a new hatch from the picker.

11. Click the **Values Outside Threshold** rectangle and select a hatch from the picker to represent any values that may be outside the specified threshold values.

12. Click the **Empty Hatch** rectangle and select a hatch from the picker.

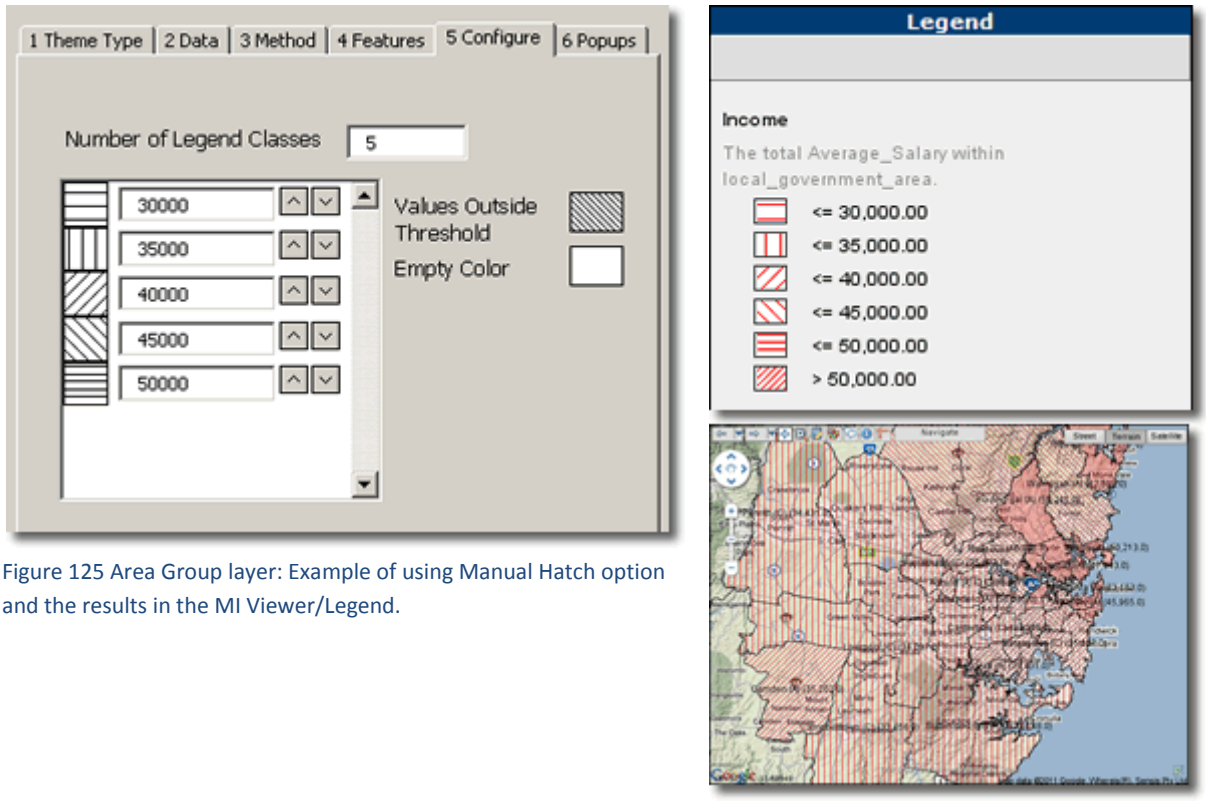


Figure 125 Area Group layer: Example of using Manual Hatch option and the results in the MI Viewer/Legend.

Note Null values are ignored on aggregations so an empty area may contain points or rows with null values.

STRING AGGREGATION

Map Intelligence allows you to perform a function on string values from a specified fact column. String aggregations require you to specify a color/hatch condition for a specific value instead of a threshold. The string functions available include:

- **Most Common** – this function applies the condition if the nominated value is the most common value in the region.
- **Uniform** – this function applies the condition if the nominated value is the only value from the specified column in the region.
- **Majority** – this function applies the condition if the nominated value makes up more than half of the values in the region.

Creating a Quick Theme based on a string aggregation

1. Select the **Quick Theme** radio button. The *Quick Theme* panel will be displayed.
2. From the **Fact Column** drop-down list, select the column that contains the values to measured in the layer.
3. For **Data Type**, select the **String** radio button.
4. From the **Aggregation Function** drop-down list, select the function to use for the layer. The string functions available are: MOST COMMON, UNIFORM and MAJORITY.
5. For **Color Palette**, select either the **Red**, **Green**, **Blue** or **Assorted** radio button.

Creating an Advanced Theme based on a String Aggregation

1. Click the **Theme Type** tab.

2. From the **Fact Column** drop-down list, select the column that contains the values to measured in the layer.

3. Select the **String** radio button.

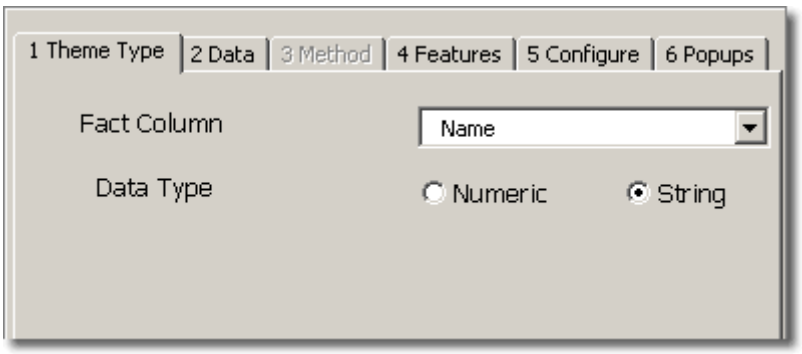


Figure 126. Theme Type Tab (String).

4. Click the **Data** tab.

5. From the **Aggregation Function** drop-down list, select the function to use for the layer. The string functions available include: Most Common, Uniform and Majority.

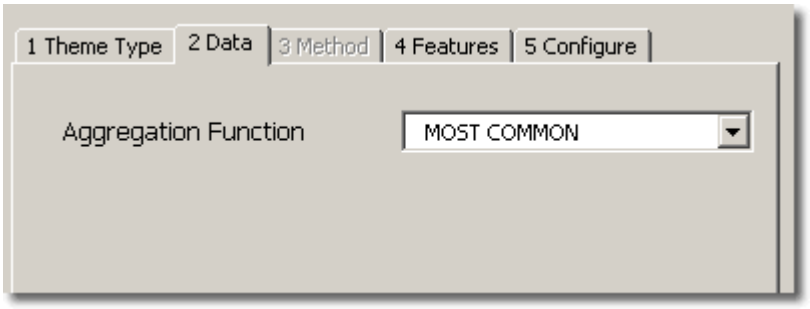


Figure 127. Theme: Data Tab (String).

6. Click the **Features** tab.

   There are two options for selecting the **Shading Option:**

   - Colors
   - Hatch Patterns

Selecting Colors

1. For **Shading Option**, click the **Colors** radio button.

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.
- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

6. Click the **Configure** tab. The *Configure* tab displays a list of values and an associated color.

   The standard default palette used is *Assorted*.

7. To select a different standard palette, from the **Color Palette** section, click either the **Red**, **Green** or **Blue** radio buttons.

8. To change a particular value color, click the colored rectangle next to the value and select a new **color** from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu.

9. To reorder the list use the up and down arrows next to each value.

10. To remove a value from the list, uncheck the value checkbox.

Any conditions not associated with a color will automatically be colored with the color selected for 'Other' (see below).

11. Click the **Other Values** rectangle and select a **color** from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu, to represent any values that have not been assigned with a specific color.

12. Click the **Conflict Values** rectangle and select a **color** from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu, to represent any region or circle that does not meet any specified condition. E.g. A Conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region.

13. Click the **Empty Values** rectangle and select a **color** from the color picker or alternatively right click and select **Transparent** or **Unshaded** from the context menu, to represent any region or circle that does not contain any values.

For further information on using the Transparent and Unshaded color options see Appendix B: Using the Unshaded and Transparent Color Options on page 132.

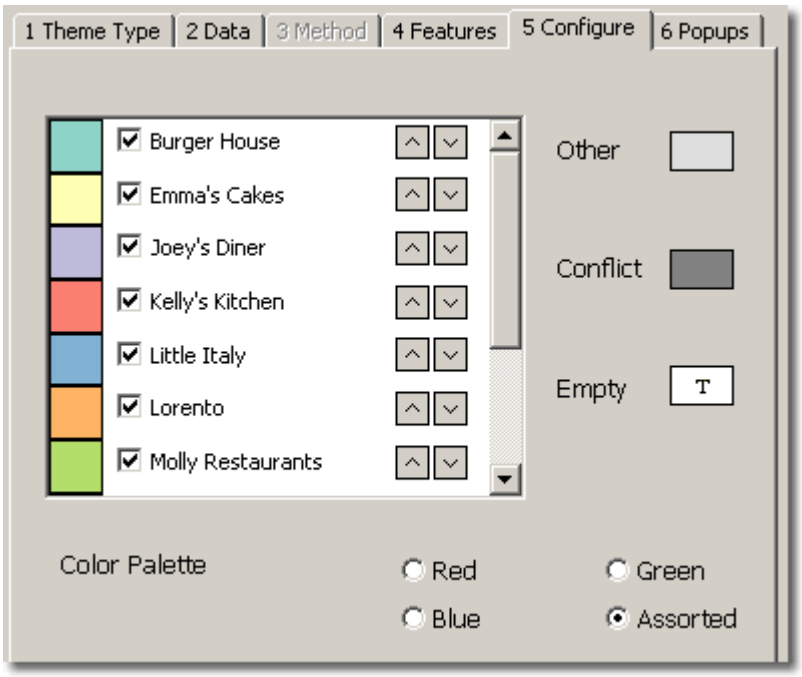


Figure 128. Theme: Configure Tab (String - Colors).

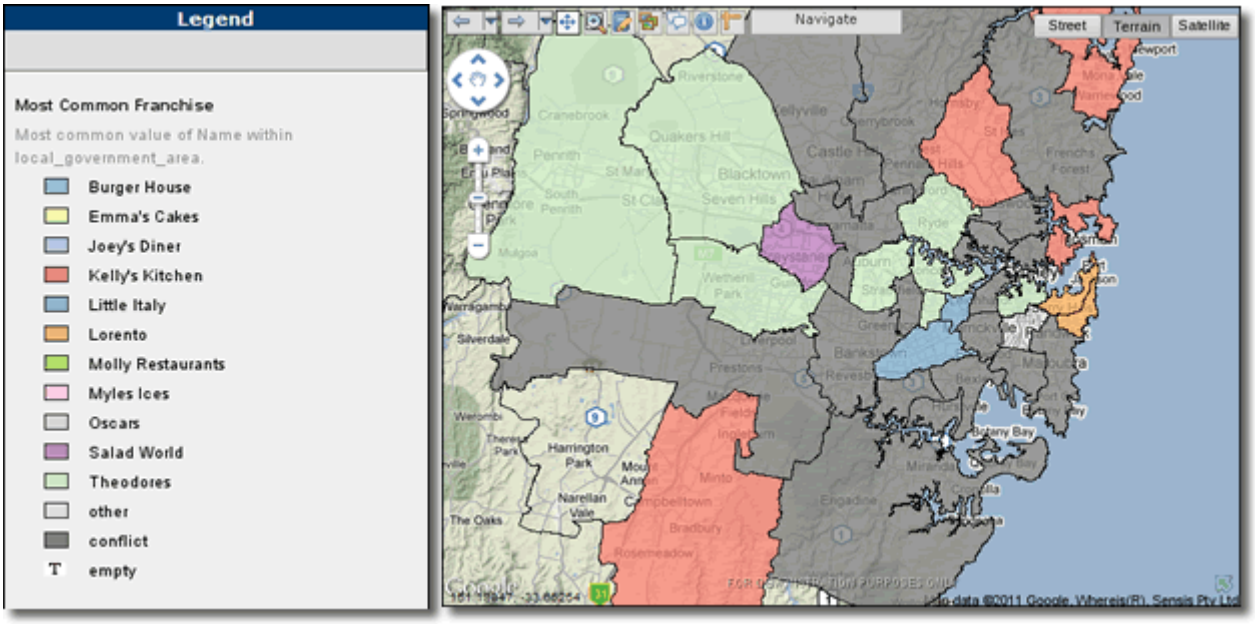


Figure 129. Area Group layer: Example of results in the MI Viewer/Legend, using the String – Colors.

Note Null values are ignored on aggregations so an empty area may contain points or rows with null values.

Selecting Hatch Patterns

1. For **Shading Option**, click the **Hatch Patterns** radio button.

Features Rendering Attributes

2. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color.

6. In the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color.

- Examples of using various Feature Attributes can be seen in Appendix A: Features Rendering Attributes on page 128.
- **Region border attributes:** If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

7. Click the **Configure** tab.

   The Configure tab displays a list of values and an associated hatch.

8. To change a particular value hatch, click the hatch rectangle next to the value and select a new hatch from the hatch picker.

9. To reorder the list use the up and down arrows next to each value.

10. To remove a value from the list, uncheck the value checkbox.

Any conditions not associated with a hatch will automatically be hatched with the hatched selected for 'Other' (see below).

11. Click the **Other** hatch rectangle and select a hatch to represent any values that have not been assigned with a specific condition.

12. Click the **Conflict** rectangle and select a hatch to represent any region or circle that does not meet any specified condition. E.g. A Conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region.

13. Click the **Empty** rectangle and select a hatch to represent any region or circle that does not contain any values.

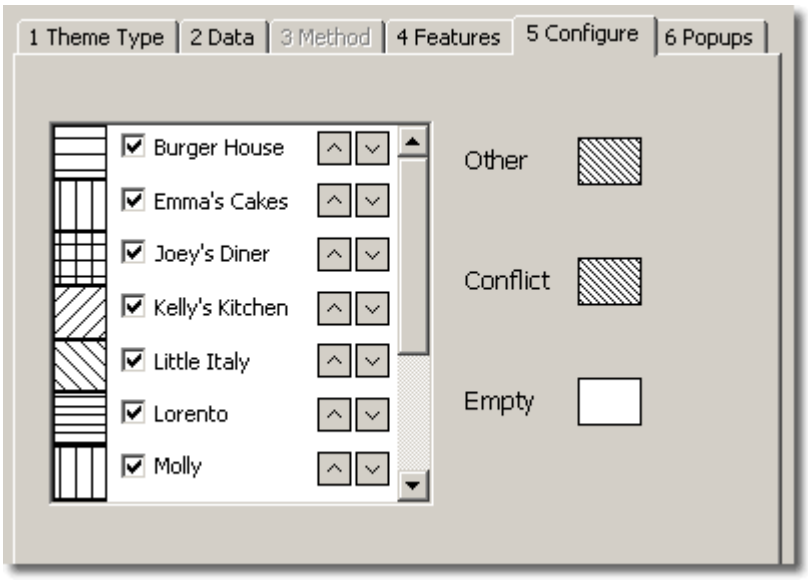


Figure 130. Theme: Configure Tab (String – Hatch Patterns).

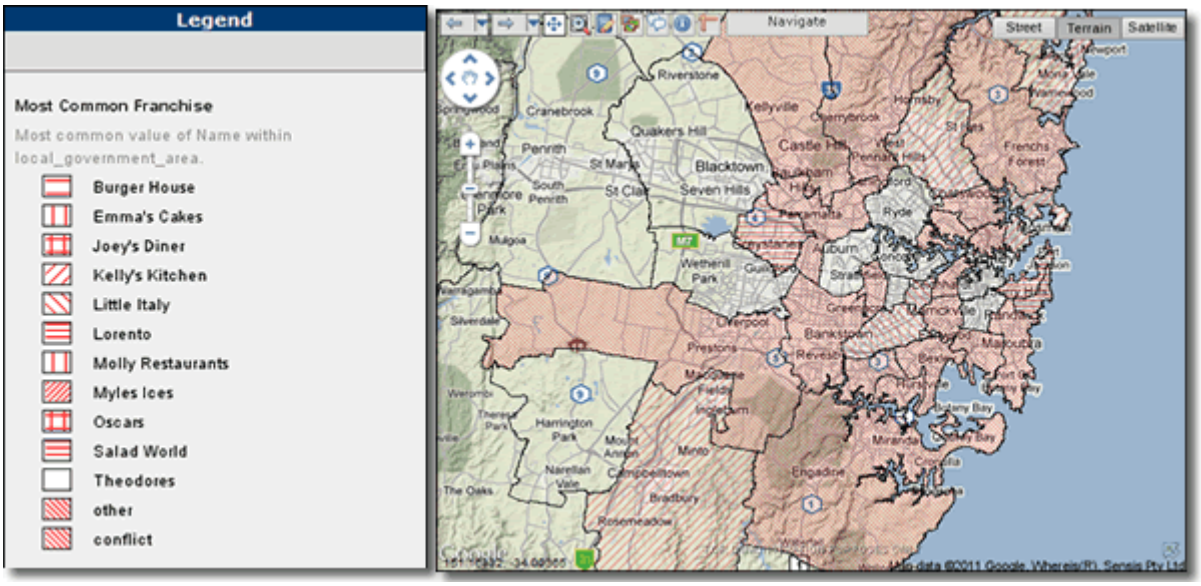


Figure 131. Area Group layer: Example of results in the MI Viewer/Legend, using the String – Hatch Patterns.

INFORMATION POPUPS ON AREA GROUP LAYERS

Information popup boxes provide further information about a region when you move your mouse over the region on the map.

1. From the **Themes section**, click the **Popups** tab.
2. To enable Information popups, select the **Show popups on regions** checkbox.
3. In the **Popup Description** field, enter a description to use for Information Popups for this layer. The Popup Description describes each region of the layer and may contain any of the following parameters:

${label}	Will be replaced with the label for the region.
${value}	Will be replaced with the value for the region determined by the column selected in the theme (see Creating Themes for Relationship Layers).
Example	${value} items in ${label}

If this field is left blank a description will be generated by Map Intelligence.

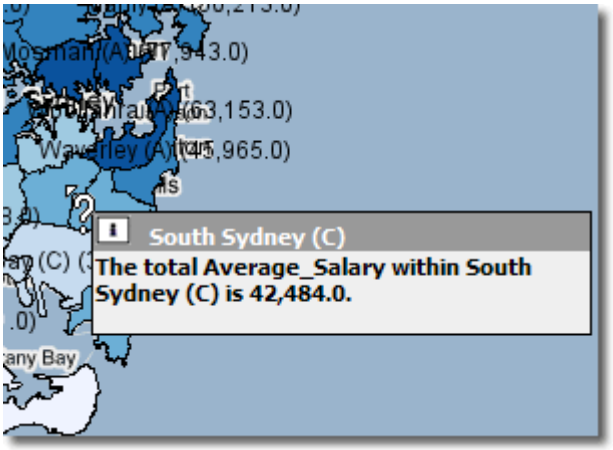


Figure 132. Information popup displaying a Map Intelligence generated Popup description

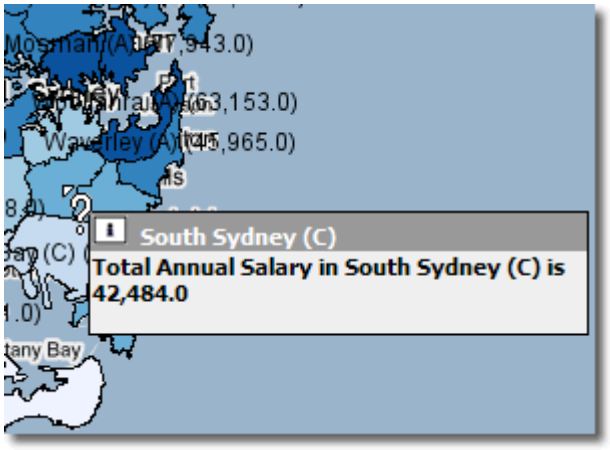


Figure 133. Customized Popup description. In this example the following description was entered into the Popup Description text box.

Total Annual Salary in ${label} is ${value}

The Popups tab shows a list of data columns, these columns can be specified as display columns to be included as additional information in the Information pop-up box. Each column has an associated aggregation function.

To configure data columns

1. Select a data column from the list on the left.

   Below the data column list, is a drop-down list, displaying a aggregation functions.

2. Select an **Aggregation Function** and click the > button. The selected data column will appear in the box on the right.

3. Repeat steps 1 and 2 to add further data columns.

Note

- You can remove a data column by selecting the data column in the right-hand list box and clicking the < button.
- To select all the data columns, click the >> button.
- To remove all data columns from the right-hand list, click the << button.

The examples shown in Figure 134 and Figure 135, show the result of adding the two additional data columns, showing Total Population for the LGA and the number of people in the LGA for a target age range (15 to 19 year olds).

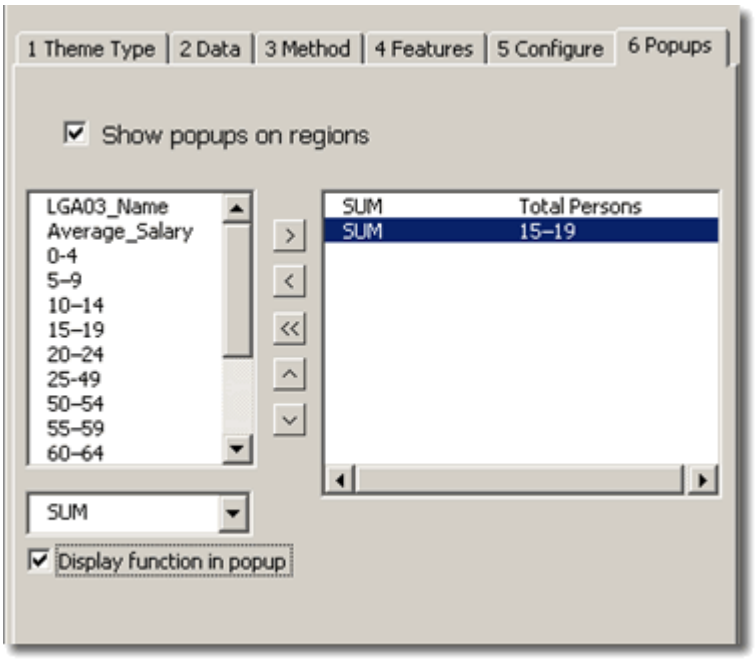


Figure 134. Selecting data columns.

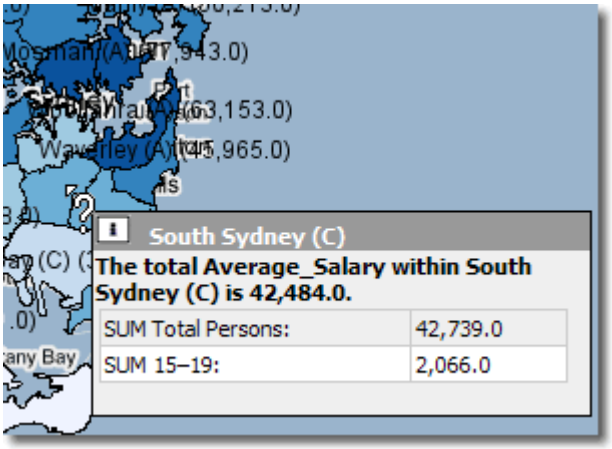


Figure 135. Example of Information Popup box with additional data column information.

SAVING THE LAYER

To save the Area Group layer configuration.

1. Click the **OK** button on the **Area Group Layer** configuration screen.

   The Area Group Layer name is listed on the Area Group Layer tab.

2. Click the **Done** button on the Layers window to return to the worksheet.

EDITING THE LAYER

To edit an Area Group Layer configuration

1. From the **Map Intelligence** drop-down menu, select **Layers**, the **Layers** window will open
2. Select the **Area Group Layers** tab.
3. Click on the layer you want to edit and click the **Edit** button.

The **Area Group Layer** configuration screen will open for editing.

4. After making your edits, click **OK** to save your changes.
5. Click the **Done** button on the **Layers** window.

If you change the layer name, a copy of the layer will be created with the new layer name.

DELETING THE LAYER

To delete a Area Group layer configuration.

1. From the **Map Intelligence** drop-down menu, select the **Layers** button, the **Layers** window will open.
2. Select the **Area Group Layers** tab.
3. Click on the layer you want to delete and click the **Delete** button.
4. A message box will open asking you to confirm you wish to delete the layer. Click the **Yes** button.

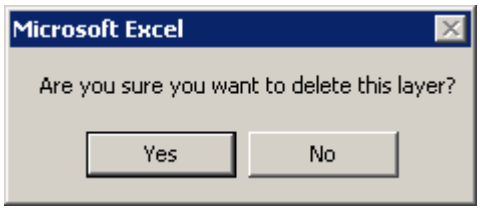


Figure 136 Delete layer confirmation message box

5. After deleting the layer, click the **Done** button on the **Layers** window.

CONFIGURE PIVOT LAYERS

The **Pivot Layer** tab allows you to configure a collection of Area Group layers (see Layer Types, Area Group Layer) based on a worksheet within your Excel Workbook which is in pivot form.

The image below shows a worksheet in pivot form, column A lists the names of the Local Government Areas (LGA), column B lists the franchise companies within each area, column C and column D are the revenue fact columns for the years 2009 and 2010. Once the MI Client Pivot Layer configuration screen is complete you can generate Area Group Layers with multiple themes describing each row in column B for the Local Government Area.

	A	B	C	D
1			2010	2009
2	Ashfield (A)	Burger House	204140	1463056
3		Joey's Diner	1354671	875980
4		Kelly's Kitchen	1432422	1421128
5		Little Italy	1339385	2200927
6		Myles Ices	1037264	1109814
7		Oscars	1372487	974781
8		Salad World	2352628	1553975
9		Theodores	1310440	610099
10		**Total**	**10403437**	**10209760**
11	Auburn (A)	Burger House	895590	1096655
12		Joey's Diner	1219446	1478049
13		Kelly's Kitchen	431308	197139
14		Little Italy	1254221	1214522
15		Molly Restaurants	551789	1107406
16		Myles Ices	198610	1434500
17		Salad World	1396343	643359
18		Theodores	1112967	2975209
19		**Total**	**7060274**	**10146839**

Figure 137 Example worksheet in pivot form

Note There can only be a maximum of 3 columns pivoted on the right or vertical axis of the data and a maximum of 3 header rows.

In this example Map Intelligence will theme each Local Government Area according to the revenue generated by the franchise company for each year. When the map is generated in the MI Viewer, from the Themes button on the Top Panel, you can select the franchise and year you wish to display on the map. For further information on using the Themes refer to the *MI Viewer User Manual*.

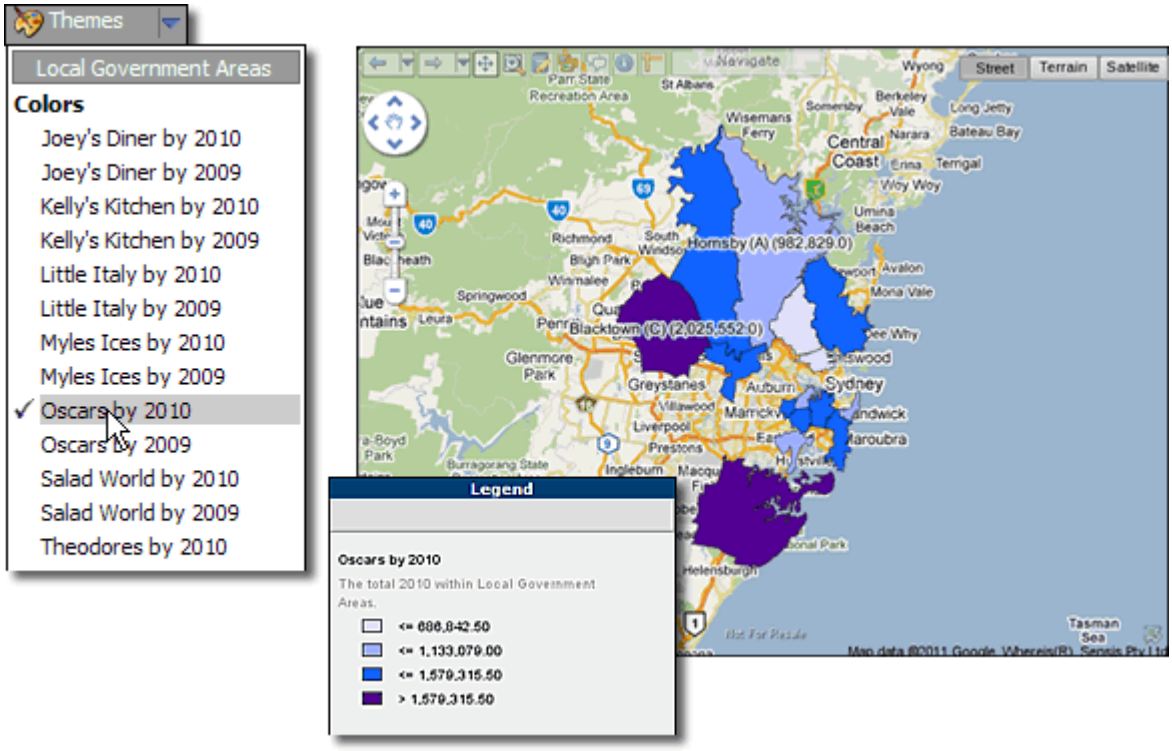


Figure 138 Selecting from Themes *Oscars by 2010* shades the LGA's according to the revenue generated by Oscar Restaurants.

To open the Pivot Layer configuration screen

1. From the **Map Intelligence** drop-down menu, select **Layers**, the **Layers** window will open.
2. Select the **Pivot Layer** tab.
3. Click the **Add** button.

   The *Pivot Layer* configuration screen will appear.

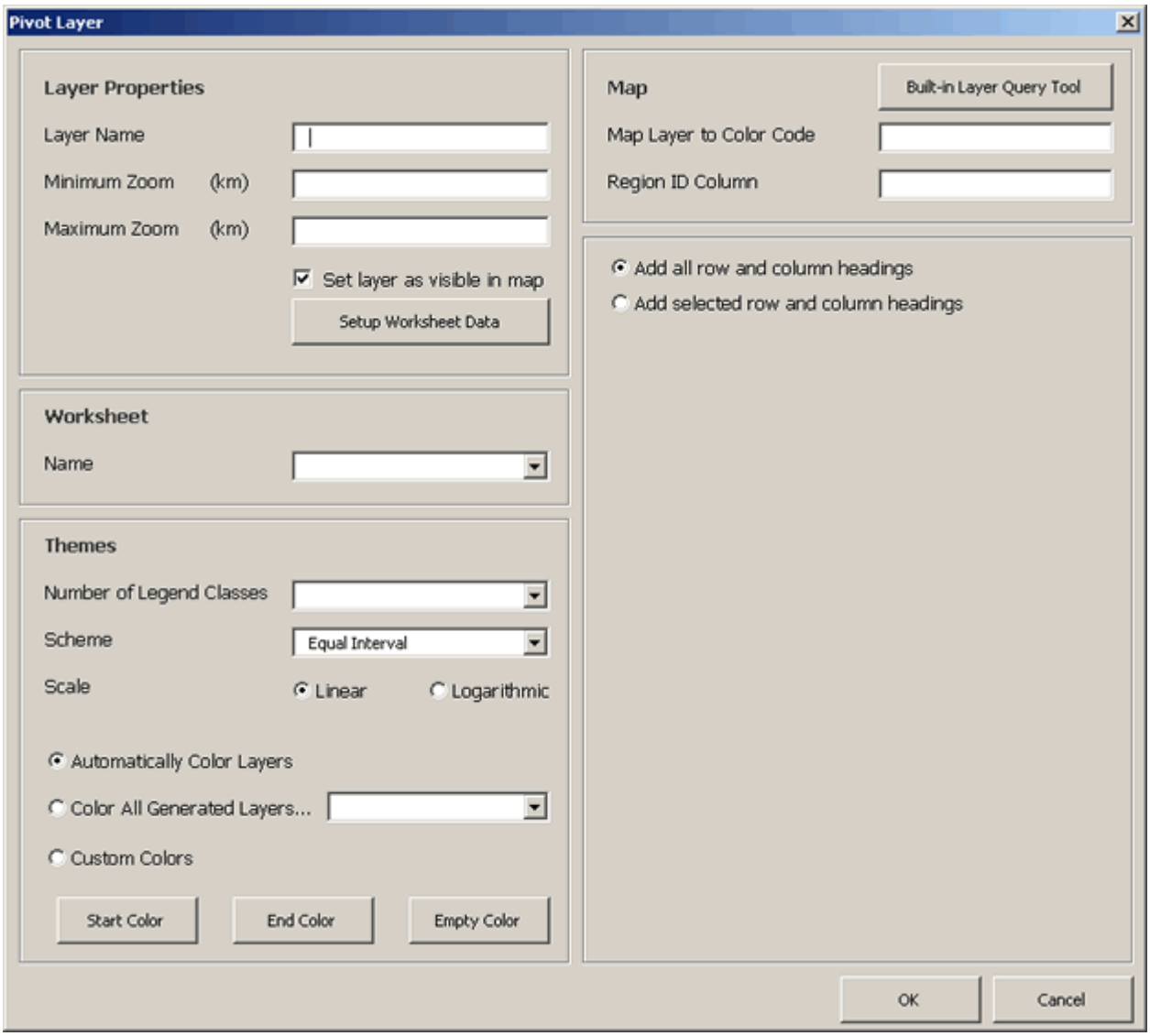


Figure 139 Pivot Layer configuration screen

LAYER PROPERTIES SECTION

To configure the Layer Properties section

1. In the **Layer Name** text box, enter the name for the Pivot Layer.
2. You can specify a range in which the layer will be visible on the map by entering a **Minimum Zoom and Maximum Zoom** value. The layer will only be visible if the current map width is within the specified minimum and maximum zoom values.

   Note The layer will only be visible if the current map width is within the specified minimum and maximum zoom values.

3. Select the **Set layer as visible in map** checkbox if you wish this particular layer to be visible when you first access the MI Viewer.
4. Click on the **Setup Worksheet Data** button. The **Setup Worksheet Data** dialog box will appear.

This dialog box allows you to tell the MI Client which cells on the worksheet constitute data rather than headings.

Note This step is only necessary if you wish to change the suggested settings.

5. In the **First Row** field, enter the number of the first spreadsheet row containing your data.

6. In the **First Column** field, enter the first spreadsheet column containing your data.

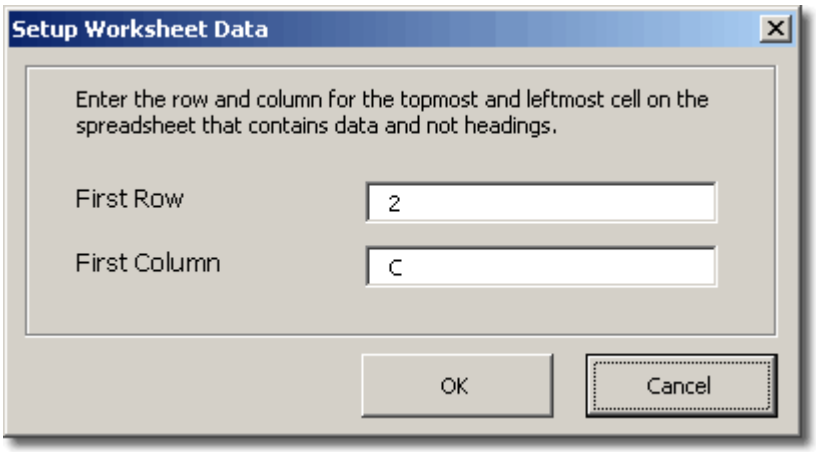


Figure 140 Setup Worksheet Data dialog box

The example above shows the suggested settings, the first row to contain data and not the headings, is Row 2, the first column to contain data is Column C.

7. Click **OK,** to return to the **Pivot Layer** configuration screen.

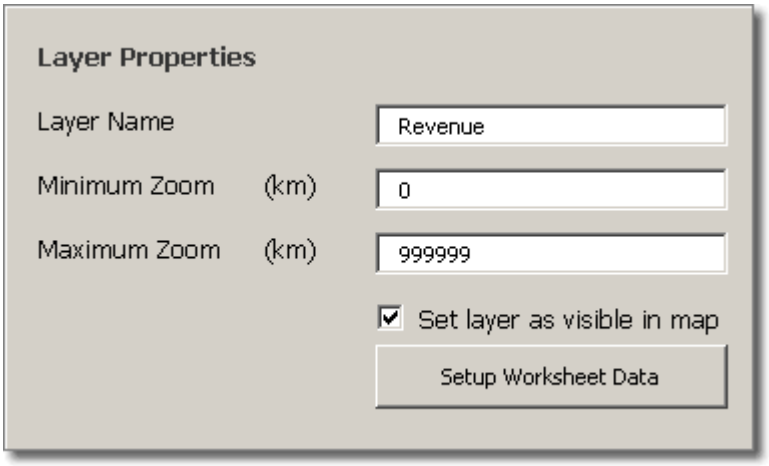


Figure 141 Layer Properties Section of the Pivot Layer configuration screen.

WORKSHEET SECTION

The Worksheet section allows you to configure the necessary worksheet settings for the layer.

To configure the Worksheet section

1. From the **Name** drop-down list, select the worksheet which contains the data to be used for this layer.

Note All worksheets within the spreadsheet will appear in the drop-down list.

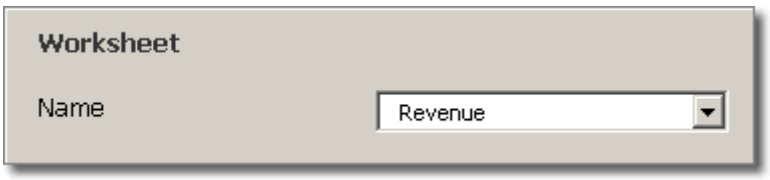


Figure 142 Worksheet Section of the Pivot Layer configuration screen.

THEMES SECTION

To configure the Themes section

1. From the **Number of Classes** drop-down list, select the number of colors to appear in the shading range.
2. From the **Scheme** drop-down list, select a classification scheme.

   You can use a standard classification scheme to group similar values to look for patterns in the data. You can choose from the following schemes for grouping data values into classes based on how the data values are distributed.

   - **Equal Interval**: The difference between the high and low values is the same for every class. So, the classification of the data will be based on a set of equal splits. For example, if the lowest value is 0 and the highest value is 10 in the data, and 5 classes are requested, the range of each class will be 0 to 2, 2 to 4, 4 to 6, 6 to 8, 8 to 10.
   - **Quantile**: Each class contains an equal number of features. In this case, the points are sorted in ascending order (for the chosen data field) and each class is filled with (total number of points)/(number of classes) points starting from the lowest value to the highest.
   - **Standard Deviation**: Features are placed in classes based on how much their values vary from the mean. First the mean and standard deviation of the data values are calculated. The class breaks are found by successively adding or subtracting multiples of the standard deviation from the mean.
3. If **Equal Interval** was selected for **Scheme**, for **Scale**, click either the **Linear** or **Logarithmic** radio button.
4. If **Standard Deviation** was selected for **Scheme**, for **Multiplier** enter the multiplying factor.

   There are 3 Color Scheme options

   - **Automatically Color Layers…**: Selecting this option will automatically set the shading range to shades of blue.
   - **Color All Generated Layers:** From the drop-down list, select either a Blue, Green, Red or Grayscale shading range.
   - **Custom Colors**: This option allows you to set the Start Color and End Color of the color range, by clicking on the Start Color and End Color buttons and selecting a color from the color picker. The Empty button allows you to select a color for any region that does not contain any values. The default color for all custom colors is transparent.
5. Select the appropriate **Color Scheme** radio button.

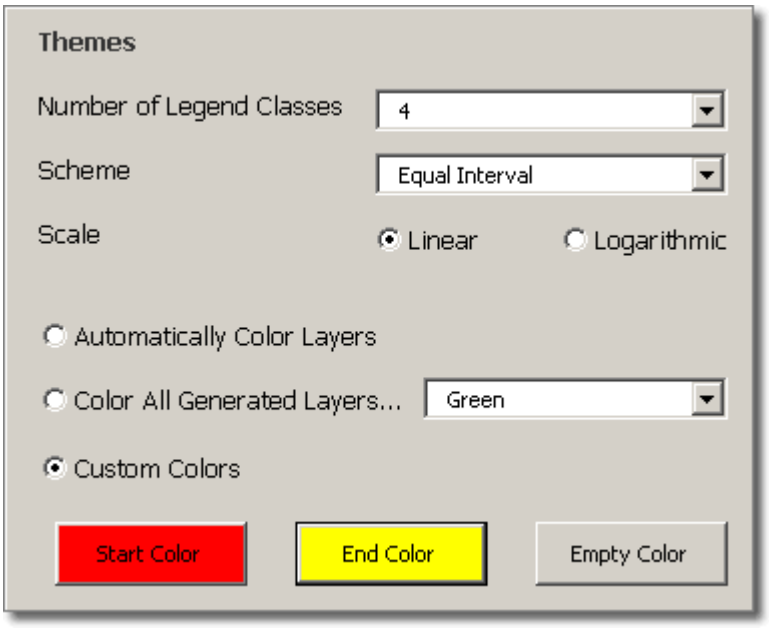


Figure 143 Themes and Color Schemes section of the Pivot Layer configuration screen, showing the Custom Colors option selected.

MAP SECTION

The **Map** section allows you to configure the necessary map settings for the layer.

To Configure the Map section

1. In the **Map Layer to Color Code** field, enter the built-in map layer that you want to shade or apply a color to.

Note

- If you do not know the name of the map layer you wish to use, click the *Built-in Layer Query Tool,* see Appendix C: Map Intelligence Query Tool on page 136 for further information.
- Only layers containing regions can be used as reference layers.
- Built-in layers are arranged in a particular order on the map. When selecting a built-in layer to shade, all map layers that sit under the selected layer will be covered by the selected color or hatch.

2. In the **Region ID Column** field, specify the built-in map layer column that contains values that match the ones in the first column of your worksheet.

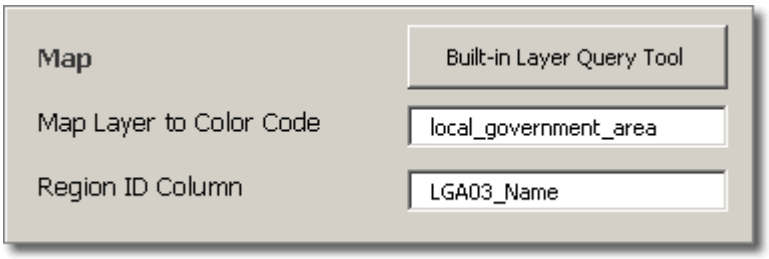


Figure 144 Map Section of the Pivot Layer configuration screen.

ROW AND COLUMN HEADING SELECTION

There are two options for selecting which row and heading columns will appear as themes

Add all row and column headings: This option will add all the row and column headings as themes from the Themes menu in the MI Viewer as shown in the image below.

1. Select the **Add all row and column headings** radio button, to select this option.

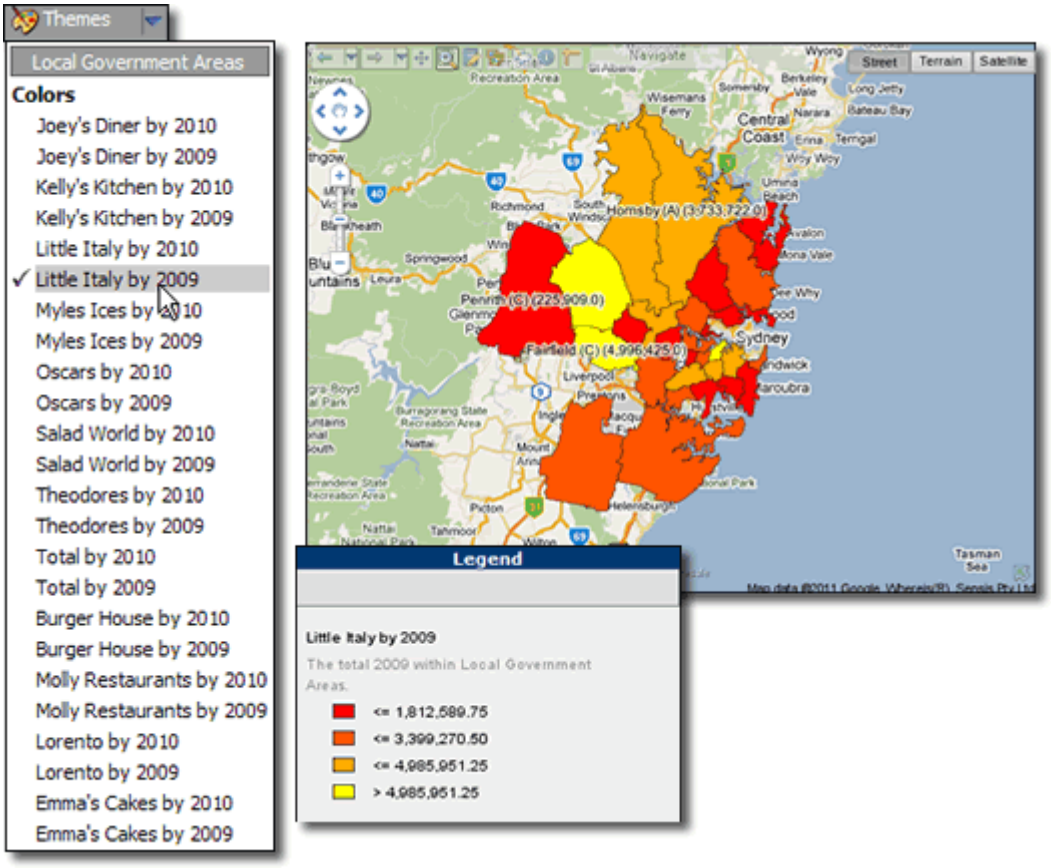


Figure 145 Theme Select menu displaying the results of selecting the 'Add all row and column headings' option, all possible themes are displayed. The Map Image and Legend shows the results when selecting 'Little Italy by 2009 'from the Themes menu.

Add selected row and column headings: This option allows you to select which rows and column headings you want to be available in the Themes menu. in the MI Viewer.

1. Select the **Add selected row and column headings** radio button, to select this option. The Add selected row and column headings panel will open.

2. From the **Row Headings** section select the row heading you want to include and click the button. The selected row heading will appear in the panel below.

3. From the **Column Headings** section select the column heading you want to include and click the button. The selected column heading will appear in the panel below.

Tip

- Clicking the will deselect a selected row or column heading
- Clicking the will add all row or column headings.
- Clicking the will deselect all row or column headings

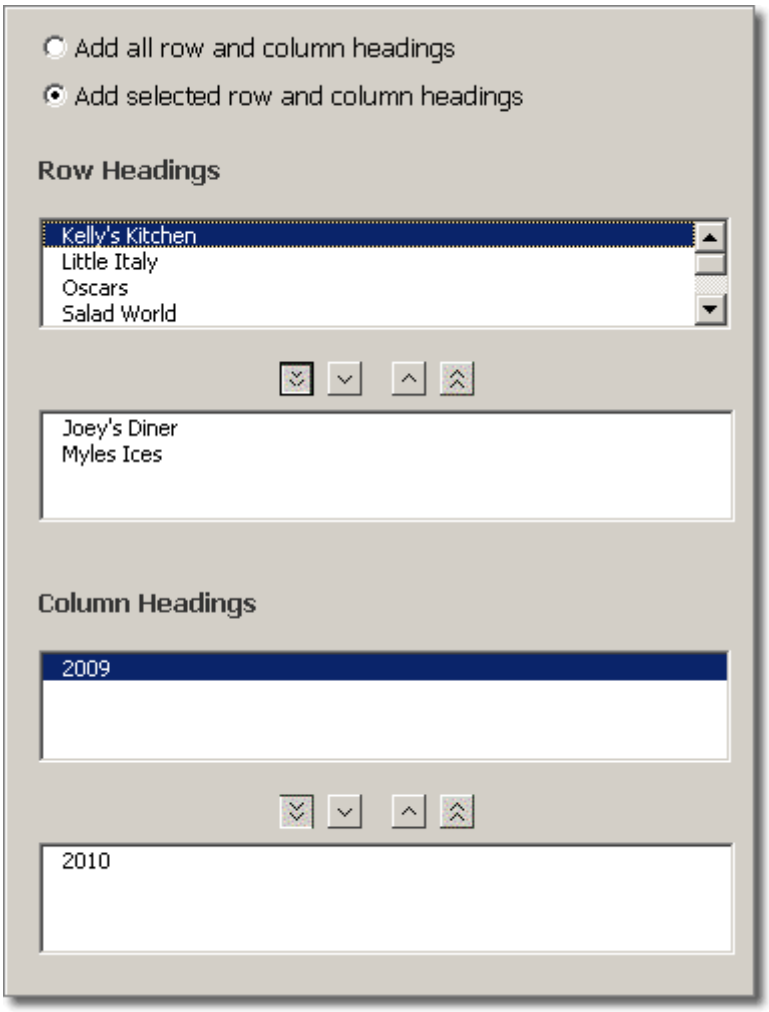


Figure 146 Add Selected row and column headings panel. In this example the row headings 'Joey's Diner' and 'Myles Ices' have been selected and for the column headings '2010'.

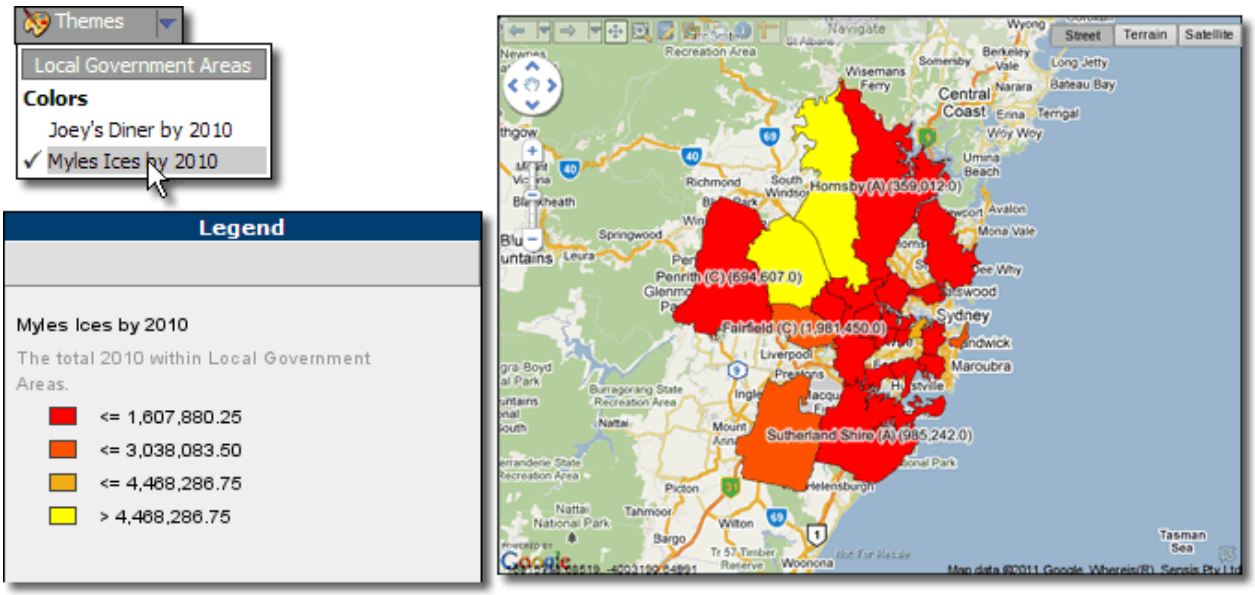


Figure 147 Themes menu displaying the results of selecting the 'Add selected row and column headings' option, the themes Joey's Diner and Myles Ices for the year 2010 are displayed. The Map Image and Legend shows the results when selecting 'Myles Ices by 2010 'from the Theme Select menu.

SAVING THE LAYER

To save the Pivot layer configuration.

1. Click the **OK** button on the **Pivot Layer** configuration screen.

   The Pivot Layer name is listed on the Pivot Layer tab.

2. Click the **Done** button on the **Layers** window to return to the spreadsheet.

EDITING THE LAYER

To edit an Pivot Layer configuration.

1. From the **Map Intelligence** drop-down menu, select **Layers**, the **Layers** window will open.
2. Select the **Pivot Layers** tab.
3. Click on the layer you want to edit and click the **Edit** button.

   The **Pivot Layer** configuration screen will open for editing.

4. After making your edits, click **OK** to save your changes.
5. Click the **Done** button on the **Layers** window.

If you change the layer name, a copy of the layer will be created with the new layer name.

DELETING THE LAYER

To delete a Pivot layer configuration.

1. From the **Map Intelligence** drop-down menu, select the **Layers** button, the **Layers** window will open.
2. Select the **Pivot Layers** tab.
3. Click on the layer you want to delete and click the **Delete** button.

   A message box will open asking you to confirm you wish to delete the layer. Click the **Yes** button.

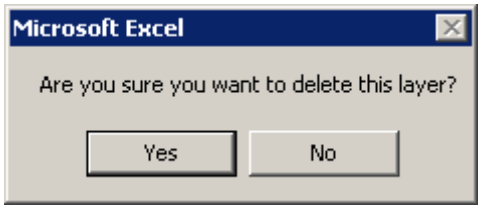


Figure 148 Delete layer confirmation message box

4. After deleting the layer, click the **Done** button on the **Layers** window.

SELECTION

CONFIGURING LAYERS FOR SELECTION

The **Selection** tool allows users to select points from the map and bring them back to the worksheet as filters.

The **ID Column** in the Points Properties section of the Point Layer Configuration screen is used to specify the specific column from the Point Layer that will be available for selection.

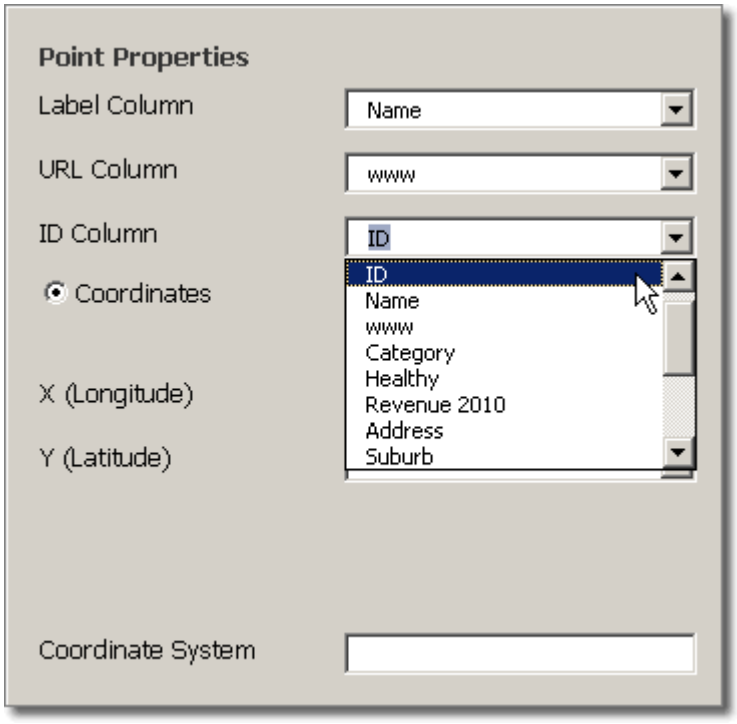


Figure 149 Point Layer Configuration screen – Point Properties section - ID Column

To configure layers for selection

1. From the **Id Column** drop-down list, select a column that contains unique values to be used to identify individual points when using the *Selection* tool.

MAKING A SELECTION FROM THE MAP

For information on how to make a selection from the map, refer to the *Foreground Tools*, *Selection* section of the *MI Viewer User Manual*, found on the Map Intelligence Server CD.

Note In the current version of the MI Client only points are available for selection.

ACCESSING SELECTIONS

To access your selections from the worksheet.

1. From the **Map Intelligence** drop-down menu, select **Selection**. The worksheet will focus on your selected points.

To clear all selections

2. From the **Map Intelligence** drop-down menu, select **Clear Selection**.

Note If Selection is used a new column named *MapIntelligenceSelectionCol* is added to the Excel worksheet.

CREATING APPLICATIONS

As well as interactively defining and creating maps, the MI Excel Client allows you to create applications for other users to use. There are two mechanisms for this.

- Saving Settings and Configurations as a Template
- Publishing Sessions

SAVING SETTINGS AND CONFIGURATIONS AS A TEMPLATE

The MI Client allows you to save your server settings and layer configurations as a template file. This allows you or another user who has the MI Client to reload the worksheet or a similar one containing the same worksheets and columns and to display the maps immediately.

When you configure maps for a specific Workbook, you can save these map settings and configurations to be reused on the same or compatible Workbooks in the future without having to redefine the layers. These templates can be loaded locally from disk or can be published to a remote server to be automatically loaded, the End User only has to press the *Show Map* button to display the map.

When creating templates you save the map settings and configurations, not the Workbook data. On loading, you recombine the template with the same or updated Workbook data. A Workbook could have many templates if desired.

- See also Map Intelligence Client Excel - Overview, Loading a template.

SAVING TEMPLATES

There are two options for saving templates.

- Locally
- To a remote server

To save a template locally

1. From the **Map Intelligence** drop-down menu, select **Save Template**, the **Save Template** dialog will open.
2. Click the **Save Locally** radio button.
3. Click the **Browse** button, the Select a file name window will open.
4. Browse to the location where you wish to save your template.
5. In the **File name** text box, enter a name for your template.

MI Client templates have the file extension **.tem**

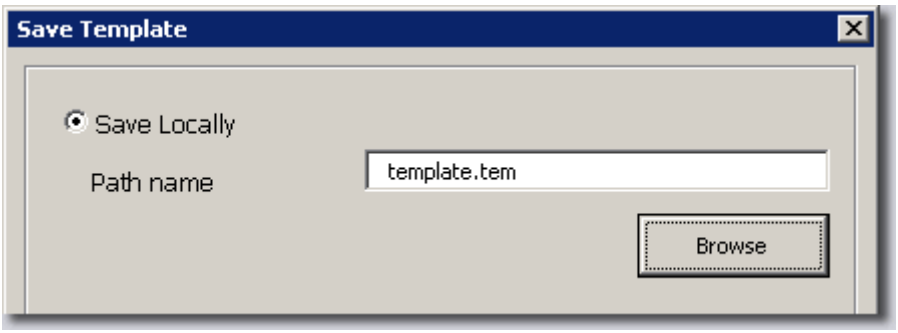


Figure 150 The Save Template Locally Section of the Save Template dialog box.

6. Click the **Save** button.

7. Click the **OK** button on the **Save Template** dialog box.

To save a template to a remote server

1. From the **Map Intelligence** drop-down menu, select **Save Template**, the **Save Template** window will open.

2. Click the **Save to Remote Server** radio button.

3. From the **Server Address** drop-down list, select the server you wish to save your template to.

4. In the **Template Name** field, enter the name for the template.

   Note: Template names must be alphanumeric with no spaces. They may contain periods, underscores and hyphens).

5. In the **Template Description**, enter a description of the template.

   Note: Both the template name and template description will appear listed in the Load Remote Template dialog box (see Map Intelligence Client Excel - Overview, Loading a template).

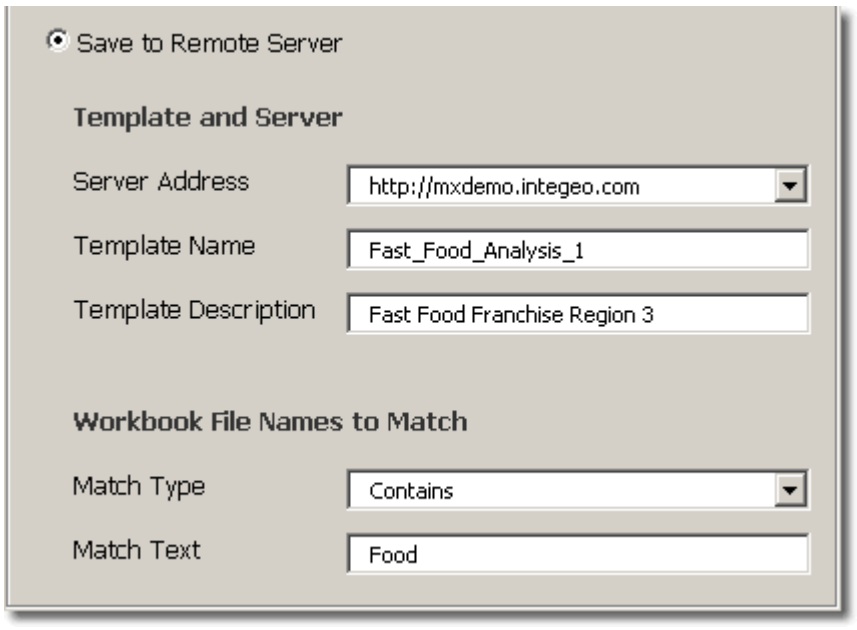


Figure 151 Save to remote server section of the Save Template Dialog Box.

Completing the Workbook File Names to Match

The **Match Type** and **Match Text** fields allows the Layer Designer to associate the template with a defined pattern in the spreadsheet file name. When loading a template the **Load Remote Template** dialog box will only list those templates that match this criteria.

For example, if the template is to be associated with Excel Workbooks named "*Burger Sales Daily Report xx-xx-xxxx*", where *xx-xx-xxxx* is the date format '*Month-Day-Year*', then the template should be saved with the Match Type 'Starts with' and the Match Text 'Burger Sales Daily Report'. When loading a template the Load Remote Template dialog box will only list templates on the server where the match criteria matches the currently open spreadsheet.

1. In the **Match Type** field select a match type from the drop-down.
2. In the **Match Text** field enter the text in the spreadsheet file name to be matched.
3. Click the **OK** button to save the template.

PUBLISHING SESSIONS

When you press the Map Intelligence *Show Map* button, Map Intelligence creates a new map request based on the current map configuration and data. This is then sent to the server to create a new map session. You have the option to save this request, so that it can be executed by anybody at a later time. The saved request or *launchfile* contains the map configuration and workbook data from the time the *Show Map* button was pressed. The launchfile is independent of Excel and can be run as a link from a web page. You cannot however update the data for the request. If you wanted to display a map for updated data, then you would need to publish a new launchfile.

To publish a Map Intelligence Session

1. From the **Map Intelligence** drop-down menu, select **Show Map**, to display the map, thereby sending a request to the server and creating a current launchfile.
2. From the **Map Intelligence** drop-down menu, select **Publish Session**, the *Publish Session* dialog will open.
3. The file default name is **launchfile.html**, you can rename the file.
4. Click the **Browse** button, the *Select a file name* window will open.
5. Browse to the location where you wish to save the file and click the **Save** button.
6. Click the **OK** button to close the *Publish Session* dialog box.

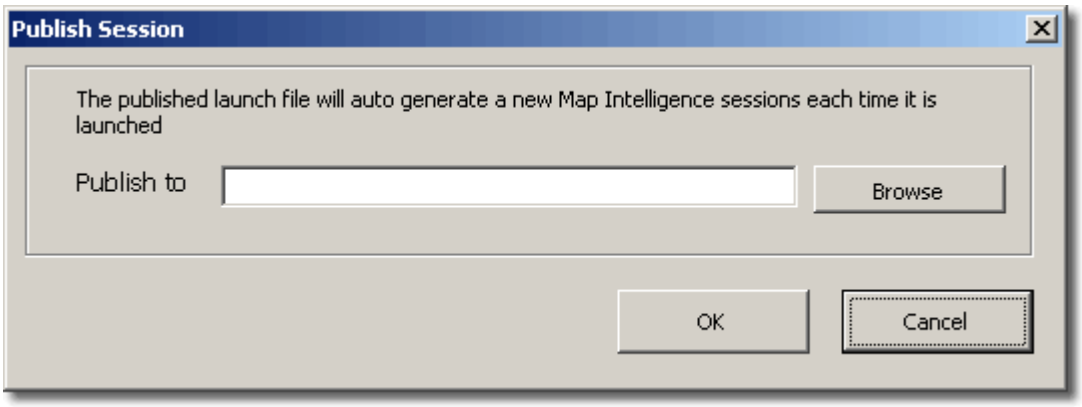


Figure 152 Publish Session dialog box

TEMPLATES V PUBLISHING SESSIONS

THE DIFFERENCE BETWEEN PUBLISHING SESSIONS (LAUNCHFILES) AND USING TEMPLATES

A launchfile is a snapshot of the map and data at the time the launchfile was created; the End User is unable create a map based on updated data. A template, however can be loaded for an updated version of the workbook and the map that is created will display the updated data from the new version of the workbook.

For example if you wanted to allow your users to have an interactive map of all sales for the last week, you could

a. Produce a weekly Sales Workbook. Each workbook should have the same format, only the actual sales data would change from week to week. Because the structure of the Workbook remains the same, you can map enable one instance of the workbook, save this as a template and then re-use that template to create maps over each subsequent weekly version of the workbook without any further changes.

   If each weekly spreadsheet has a similar (or the same) name, e.g. *SalesData-Feb2012.xls*, *SalesData-Mar2012.xls*, then you could publish the template to the Map Intelligence server to match Excel workbooks starting with *SalesData* and the users would simply have to open their version of the spreadsheet and press the map button to get the interactive map for that week.

b. Alternatively, using the Publish Session (launchfile) option, you could create a map enabled Workbook each week (you could use a template to do this) and then publish a launchfile for each week as a self contained map request . End users would not need Excel , the Workbook or the Map Intelligence Excel Client, they can simply click on a link to the launchfile from your web site to interact with the map for that week. Each week would have its one launchfile and link.

USING FILTERS

Filtering is a quick and easy way to find and work with a subset of data in your worksheet. A filtered list displays only the rows that meet the criteria you specify for a column. Your filtered data can then be displayed on the map.

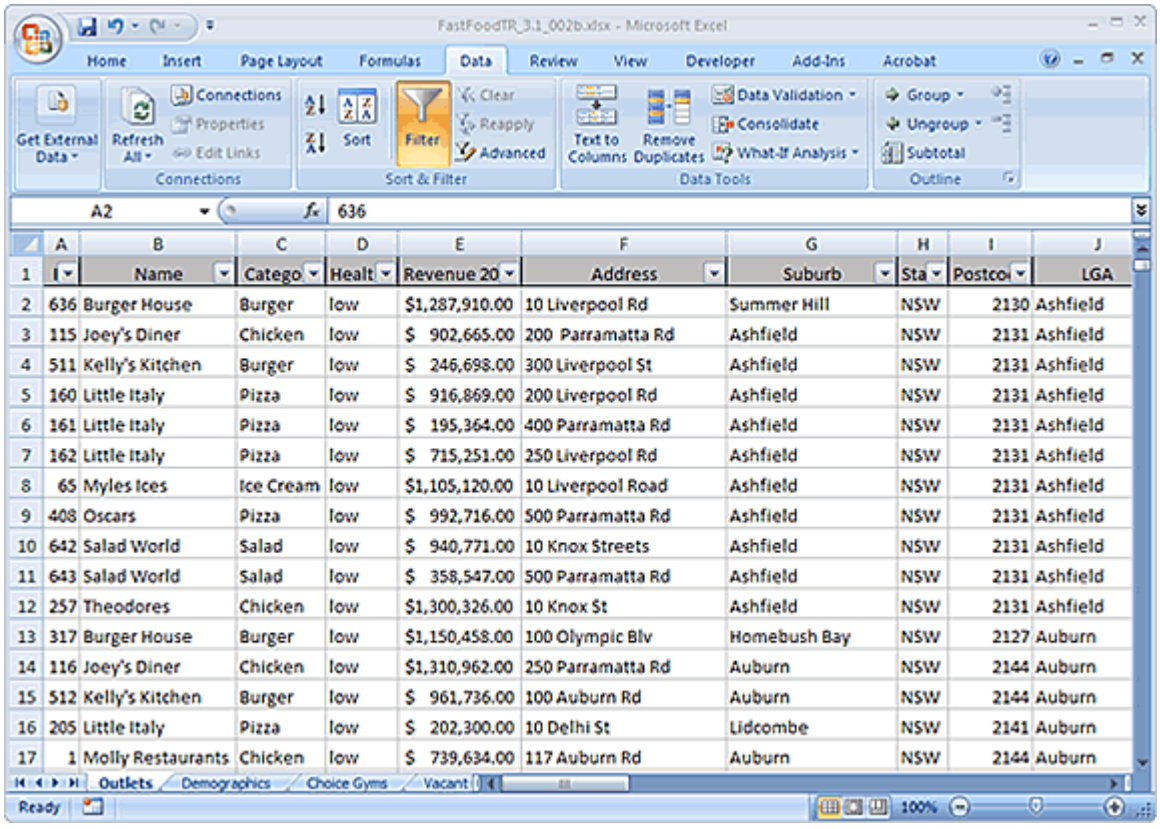
Microsoft Excel provides two commands for filtering lists:

- AutoFilter
- Advanced Filter

Note Further information on using filters can be found in the Microsoft Excel Help files.

Using the Auto Filter in Microsoft Excel

1. On the Excel **Data** tab, in the **Sort & Filter**, click **Filter**, drop-downs will appear next to the header of each column.



	A	B	C	D	E	F	G	H	I	J
1	I	Name	Catego	Healt	Revenue 20	Address	Suburb	Sta	Postco	LGA
2	636	Burger House	Burger	low	$1,287,910.00	10 Liverpool Rd	Summer Hill	NSW	2130	Ashfield
3	115	Joey's Diner	Chicken	low	$ 902,665.00	200 Parramatta Rd	Ashfield	NSW	2131	Ashfield
4	511	Kelly's Kitchen	Burger	low	$ 246,698.00	300 Liverpool St	Ashfield	NSW	2131	Ashfield
5	160	Little Italy	Pizza	low	$ 916,869.00	200 Liverpool Rd	Ashfield	NSW	2131	Ashfield
6	161	Little Italy	Pizza	low	$ 195,364.00	400 Parramatta Rd	Ashfield	NSW	2131	Ashfield
7	162	Little Italy	Pizza	low	$ 715,251.00	250 Liverpool Rd	Ashfield	NSW	2131	Ashfield
8	65	Myles Ices	Ice Cream	low	$1,105,120.00	10 Liverpool Road	Ashfield	NSW	2131	Ashfield
9	408	Oscars	Pizza	low	$ 992,716.00	500 Parramatta Rd	Ashfield	NSW	2131	Ashfield
10	642	Salad World	Salad	low	$ 940,771.00	10 Knox Streets	Ashfield	NSW	2131	Ashfield
11	643	Salad World	Salad	low	$ 358,547.00	500 Parramatta Rd	Ashfield	NSW	2131	Ashfield
12	257	Theodores	Chicken	low	$1,300,326.00	10 Knox St	Ashfield	NSW	2131	Ashfield
13	317	Burger House	Burger	low	$1,150,458.00	100 Olympic Blv	Homebush Bay	NSW	2127	Auburn
14	116	Joey's Diner	Chicken	low	$1,310,962.00	250 Parramatta Rd	Auburn	NSW	2144	Auburn
15	512	Kelly's Kitchen	Burger	low	$ 961,736.00	100 Auburn Rd	Auburn	NSW	2144	Auburn
16	205	Little Italy	Pizza	low	$ 202,300.00	10 Delhi St	Lidcombe	NSW	2141	Auburn
17	1	Molly Restaurants	Chicken	low	$ 739,634.00	117 Auburn Rd	Auburn	NSW	2144	Auburn

Figure 153 Worksheet with filter drop-down lists.

2. From the **column** drop-down list select a value. The worksheet will display only the rows with the selected value. The column drop-down arrow will change to the filter symbol to indicate the column is filtered.

Note
- Multiple filters can be used by selecting values in the other columns.
- Further information on using filters can be found in the Microsoft Excel Help files.

Using the Advanced Filter Command

The Microsoft Excel Advanced Filter command is beyond the scope of this manual. Instructions on how to use Advanced Filtering can be found in the Microsoft Excel Help files.

Advanced Filtering requires a worksheet to have at least three blank rows about the data to be used as a criteria range. This may require adjustment to the settings in the Setup Worksheet Data (Worksheet Location option) in the Point Layer and Area Group Layer configuration screens. See Point Layers - Worksheet section and Area Group Layers – Worksheet section.

If you intend to use Advanced Filtering, select the **Data in the Worksheet Location** option when configuring *Setup Worksheet Data,* this option does not require any adjustment to the location settings if Advanced Filtering is used.

ADVANCED TOPICS

CLEARING TEMPORARY FILES

The Map Intelligence Excel Client creates temporary files on your hard disk to cache data downloaded from the Map Intelligence Server and to store your user preferences. In some cases, for example, where file corruption takes place, it may be necessary to clean up these files. In general you do not need to do anything, but you may be asked by your support desk to delete some or all of these files if your system has trouble executing the Map Intelligence Excel Client.

To view temporary files status

1. From the **Map Intelligence** drop-down menu, select **Clear Temporary Files**, the *Clear Local Temporary Files* dialog will open.

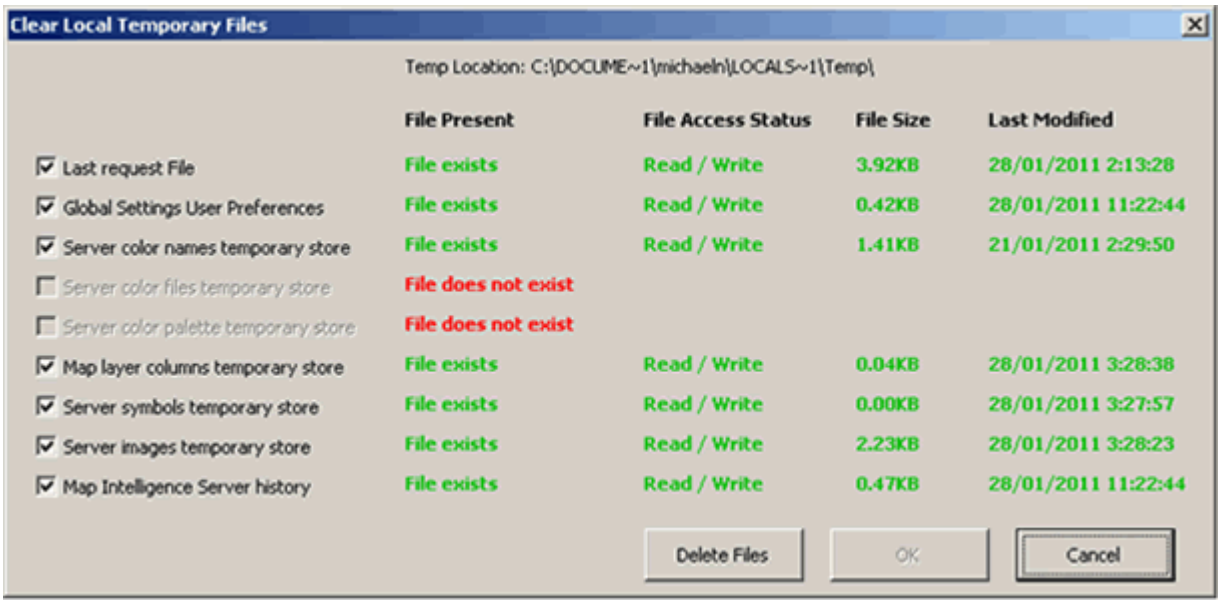


Figure 154 Clear Temporary Local Files dialog box.

The *Clear Local Temporary Files* dialog box shows the location of temporary files, a list of the local temporary files created by Map Intelligence, whether the file exists or not, the File Access Status, size and date the file was last modified. The table below shows further information about each of these files.

Description	File Name	Notes
Last File Request	Launchfile.html	The last request sent to the Map Intelligence Server.
Global Settings User Preferences	MIxlConfig.dat	The last configuration entered into Global Settings.
Server color names temporary store	colours.dat	List of all named colors on the server.
Server color files temporary store	colourfiles.dat	List of color files on the server.
Server color palette temporary store	tmpCols.dat	Color values for the last server color file accessed.
Map Layer columns temporary store	columns.dat	List of columns for the last map layer accessed.

Description	File Name	Notes
Server symbols temporary store	symb.dat	List of symbols available on the server.
Server images temporary	images.dat	List of images available on the server.
Map Intelligence Server history	servers.dat	List of Map Intelligence servers that have been accessed.

If you do need to delete some of these files, they can all be regenerated as part of normal program execution. Two files that you should be more careful about deleting are

- **Global User Preferences:** This file contains your last used settings for Global Settings. If you delete this file, you will need to update your Global Settings the next time you wish to generate a map. A new global preferences file will then be generated for you (see Global Settings: Server Settings section on page17).

- **Map Intelligence Server History:** This file contains the names of all Map Intelligence Servers that you have used to date. If you delete this file, all the names of servers, except the last server used, will be deleted. You will need to re-enter the servers in the *Map Intelligence Server* field on the *Global Settings* configuration screen. An example of when you might want to delete your server history is if your organization changes the URL for the Map Intelligence Server and you do not wish to see it in your server drop down in the future.

To delete a temporary file

1. Select the checkbox next to the file you wish to delete.

2. Click the **Delete Files** button. The file will be deleted and the dialog box will show “File does not exist”.

AUTO PILOT MODE

The Auto Pilot Mode (APM) controls some of the Map Intelligence Tools depending on the document being manipulated by the Client. For example, based on the name of a business intelligence document, a Layer Designer can control:

- what plugins must be excluded;
- what plugins must be deactivated, and
- what plugins must be activated and how.

An excluded plugin will not even appear in the list of plugins usually visible when the user clicks the **Tools** menu button in the Map Intelligence **MI Viewer**.

Auto Pilot mode requires some programming and access to the Map Intelligence server.

Further Information relating to Auto Pilot Mode can be found in the *Auto Pilot Mode in Map Intelligence* Technical Note found on the *Map Intelligence Client CD*.

INDEPENDENT MAPS AND LEGENDS

This section explains how to extract components of the Map Intelligence GUI and display them separately within a MI Client and retrieve printed images based on print templates.

MAPS

Independent maps can be retrieved as images and they are also implemented as tags that can be embedded in jsp's. They can also be invoked directly from an HTML request. Using the tag method, the map can be requested as an image only, or it can be interactive.

IMAGES

The following parameters are available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
w	Determines the width of the map in pixels.	No
h	Determines the width of the map in pixels.	No

If the width and height are not specified then the size of the map will be the size from the current user session.

The client retrieves a legend by contacting the MI server directly. The following url will retrieve a legend:

```
http://[machine-name]:[pot-number]/mapIntelligence/resizeableMapServlet
```

Example

To request a map with width 400 and height 400, the following url would be used:

```
<img src="http://[machine-name]:[port-
number]/mapIntelligence/resizeableMapServlet?userid=123456&w=400&h=400"
alt="map">
```

where the machine-name and port-number are those of the Map Intelligence server

TAGS

The tag creates a map image based on the main map image but scaled to the required size (usually smaller). Attributes can be set for a border and an action to be applied when the image is clicked on. If no height is given then the scale is based on the width of the map image and vice versa, based on the aspect ration of the main map settings.

The following parameters are available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
map-image-width	The width in pixels of the map. NOTE that the width will be coerced to the aspect ratio of the main map if it turns out that the suggested width is greater than the width derived from the scaling of the main map	No

	maintaining its aspect ratio. The default value is the width of the main map.	
map-image-height	The height in pixels of the map. NOTE that the height will be coerced to the aspect ratio of the main map if it turns out that the suggested height is greater than the height derived from the scaling of the main map maintaining its aspect ratio. The default value is the height of the main map.	No
map-image-not-clickable	Set to "true" if you do not want the map image to be interactive. The default value is "false", i.e. interactive. As an interactive map it will use the last foreground tool selected, or the zoom to marquee navigation setting.	No
map-image-border	You can set a border around the map as a number of pixels. The default value is "0" or no border.	No

Here is an example in an iframe:

```
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8">
</head>
<body onload="javascript:document.forms0.submit(); document.forms1.submit();
return true">
<iframe name="mapImage" width=400 height=300 frameborder=0></iframe>
<form action="http://localhost:11090/mapIntelligence/componentServlet"
method="post" target="mapImage">
<input type="hidden" name="frontendComponent" value="map-image-component"/>
<input name="userid" type="hidden" value="529433402750725595452649594 5">
<input name="map-image-width" type="hidden" value="320">
<input name="map-image-height" type="hidden" value="240">
<input name="map-image-not-clickable" type="hidden" value="true">
<input name="map-image-border" type="hidden" value="2">
</form>
</body>
</html>
```

Only the width or the height need be set but if both are set then the image is scaled based on a minimum of the scales resulting from the width and height to the original Map Intelligence viewer width and height. The aspect ratio of the original image is preserved.

LEGEND

Previously the image was a jsp that generated html to render the legend in the browser. It is now returned by a servlet as an image. The servlet is named /mapIntelligence/getLegendImage and has the following parameters available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
size	Determines the look and feel of the legend. If none is specified, the look and feel with an id of 1 is used. See Look and Feel below for more information.	No

The clients retrieve a legend by contacting the MI server directly. The following url will retrieve a legend:

```
http://[machine-name]:[pot-number]/mapIntelligence/getLegendImage
```

Example

To request a legend using the look and feel set of 2, the following url would be used:

```
<img src="http://[machine-name]:[port-
number]/mapIntelligence/getLegendImage?userid=123456&size=2" alt="legend">
```

where the machine-name and port-number are those of the Map Intelligence server

LOOK AND FEEL

To obtain the desired look and feel of the independent legend refer to the *Technical Note: Legend Customization* .– (see Appendix D: Map Intelligence Manuals and Guides on page 137).

PRINTED IMAGES

The results of printing with a print template can be returned as an image. For details on what print templates are and creating them, see the technical note on Creating a Print Template.

The following parameters are available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
template	The name of the print template to use.	No
p_	Custom parameters defined in the template can be passed by prefixing their parameter names with _p	No

The client retrieves a legend by contacting the MI server directly. The following url will retrieve a legend:

```
http://[machine-name]:[pot-number]/mapIntelligence/printImageServlet
```

Example

To request the default print template image and pass the custom parameters w and h, the following url would be used:

```
<img src="http://[machine-name]:[port-
number]/mapIntelligence/printImageServlet?userid=123456&template=default&p_w
=400&p_h=400" alt="print">
```

where the machine-name and port-number are those of the Map Intelligence server.

GETTING A PRINT TEMPLATE IMAGE FROM A FULL REQUEST

You can retrieve the print template image by adding the following parameters to the normal mapIntelligence request:

The following parameters are available:

Parameter Name	Value	Required
image	Use a value of 'true' to return a print template image	Yes
template	The name of the print template to use.	No

p_renderer	The image renderer to be used. Currently there is only one available.	No
p_wait	The time for the server to wait before rendering the html as an image. This exists to ensure that the html has completely loaded before rendering it. If the returned image is not complete, try increasing this value.	No
p_	Custom parameters defined in the template can be passed by prefixing their parameter names with p_	No

These parameters should be included in the standard request file

As of Map Intelligence Server Version 3.2.2, Map Intelligence allows organizations to create custom MI Viewer User Interfaces that can be used instead of the standard Map Intelligence MI Viewer. Examples of this could be to use Google Maps, Open Layers or even map layers from Excel over the existing in-house spatial applications being used by organizations. If more than one viewer is registered with your Map Intelligence server, then you can choose which viewer to use for this Excel Workbook from the *Global Settings, Server Settings*, ***Mapping Viewer*** drop down as shown in Figure 155.

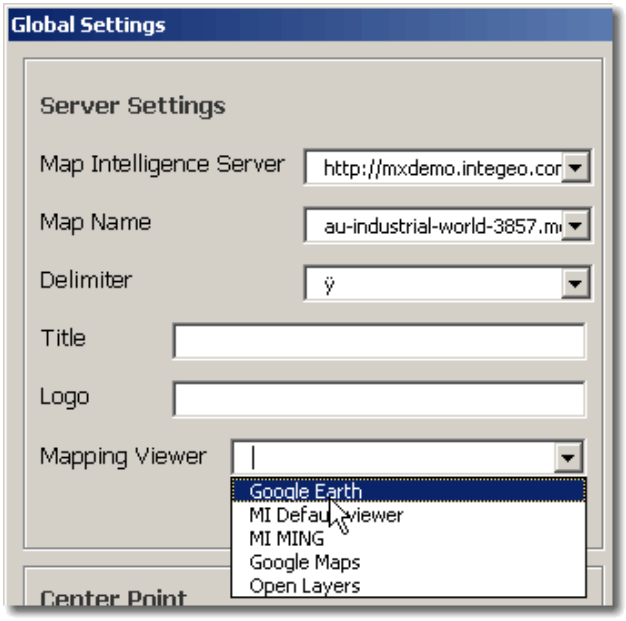


Figure 155. Mapping Viewer drop-down list.

To populate the Mapping Viewer drop-down list

To populate the Mapping Viewer drop-down list Server Administrators will need to:

1. Create a text file named **customGUIS.txt** which generates a lookup of *Display Name* to *Technical Name* as below:

   Note: The Technical Name is the exact name as it appears in the *…\tomcat\webapps\mapIntelligence\WEB-INF\templates\wms\application* directory.

   Google Earth:networklink
   MI Default viewer:
   MI MING:ming
   Google Maps:googleapidemo
   Open Layers:openlayers

   The *Display* Name and the *Technical Name* are separated by a colon '**:**'.

2. Save the **customGUIS.txt** file to the following Map Intelligence Server directory

   …\tomcat\webapps\mapIntelligence

Note:

- You can also type the technical name of the GUI directly into the *Mapping Viewer* field. These two methods allow sites to have 'published' GUIs that End Users see and 'hidden' GUIs that you need to know the technical name for to use.
- Further information on creating custom GUI's can be found in the Technical Note : **Web Map Service (WMS) implementation** (see Appendix D: Map Intelligence Manuals and Guides on page 137).
- Further Information on using the MING Viewer can be found in the **MI Viewer MING Quick Guide** (see Appendix D: Map Intelligence Manuals and Guides on page 137).

APPENDICES

APPENDIX A: FEATURES RENDERING ATTRIBUTES

FILL OPACITY

OPACITY OF COLORED CIRCULAR REGIONS IN RADIUS LAYERS

A number from 0 to 1 that indicates the opacity of all colored circular regions in radius relationship layers.

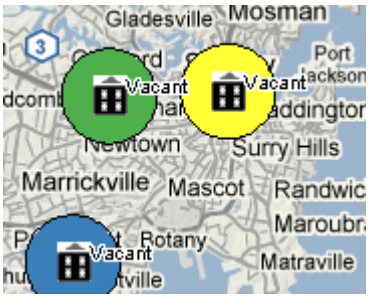


Figure 156. Opacity set to 1

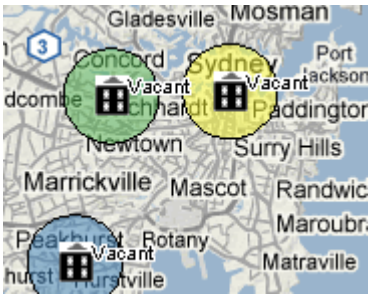


Figure 157. Opacity set to 0.5

Figure 158.Opacity set to 0.2

OPACITY OF COLORED REGIONS

A number from 0 to 1 that indicates the opacity of all colored region layers.

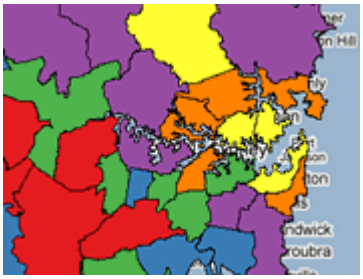


Figure 159. Opacity set to 1

Figure 160. Opacity set to 0.5

Figure 161.Opacity set to 0.2

OPACITY OF HATCHES ON LAYERS

A number from 0 to 1 that indicates the opacity of all hatched layers.

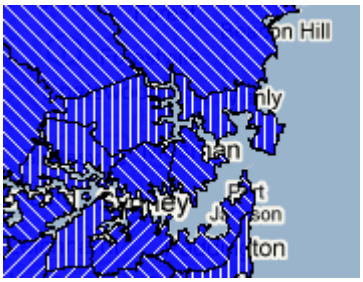


Figure 162. Opacity set to 1

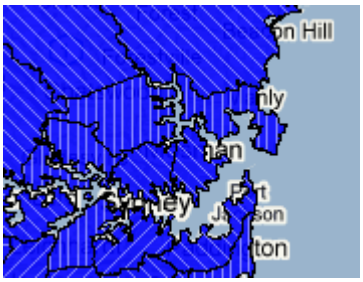


Figure 163. Opacity set to 0.7

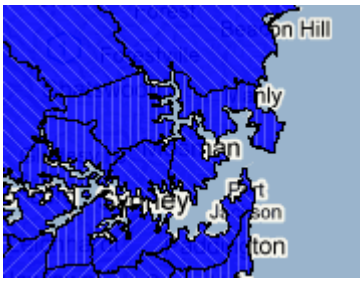


Figure 164. Opacity set to 0.5

BORDER OPACITY

OPACITY OF CIRCULAR REGION BORDERS IN RADIUS RELATIONSHIP LAYER

A number from 0 to 1 that indicates the opacity of all the circular region borders in a radius relationship layer.

Figure 165. Border opacity set to 1

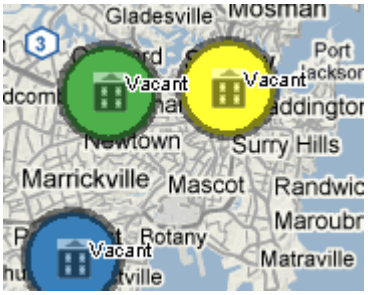


Figure 166. Border opacity set to 0.5

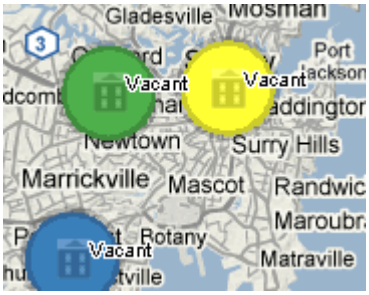


Figure 167. Border opacity set to 0.2

OPACITY OF REGION BORDERS

A number from 0 to 1 that indicates the opacity of all region borders.

Figure 168. Border opacity set to 1

Figure 169. Border opacity set to 0.5

Figure 170. Border opacity set to 0.2

BORDER COLOR

COLOR OF CIRCULAR REGION BORDERS IN RADIUS RELATIONSHIP LAYER

The RGB setting for the border color as a six hexadecimal digit (3 byte) number representing Red, Green and Blue.

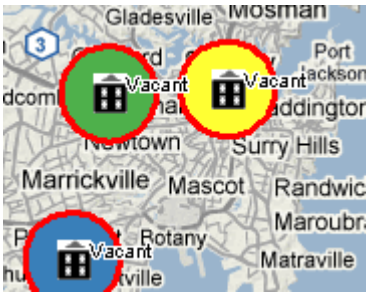


Figure 171. Border color set to Red (FF0000)

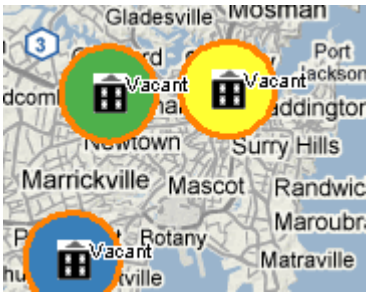


Figure 172. Border color set to Orange (#FF8000)

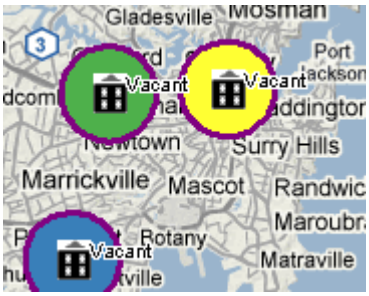


Figure 173. Border color set to Purple (#800080)

COLOR OF REGION BORDERS

The RGB setting for the border color as a six hexadecimal digit (3 byte) number representing Red, Green and Blue.

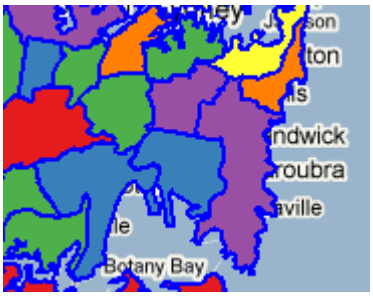


Figure 174. Border color set to Blue (#0000FF)

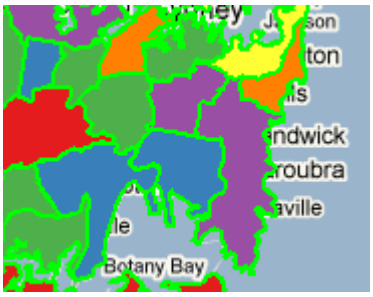


Figure 175. Border color set to Green (00FF00)

Figure 176. Border color set to White (FFFFFF)

BORDER THICKNESS

THICKNESS OF CIRCULAR REGION BORDERS IN RADIUS RELAMTIONSHIP LAYER

The thickness in points or pixels (depending on the GIS provider) of the circular region borders as a positive integer.

Figure 177. Border thickness set to 5

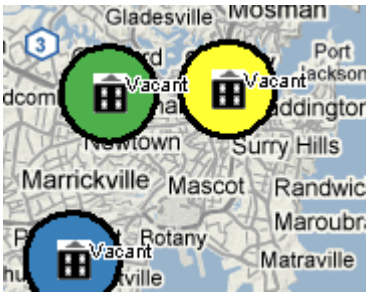


Figure 178. Border thickness set to 3

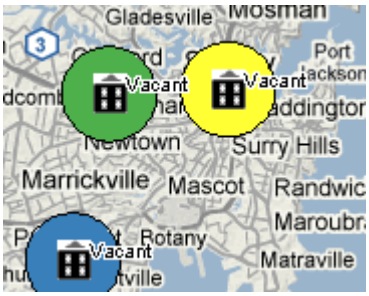


Figure 179. Border thickness set to 1

THICKNESS OF REGION BORDERS

The thickness in points or pixels (depending on the GIS provider) of the region borders.

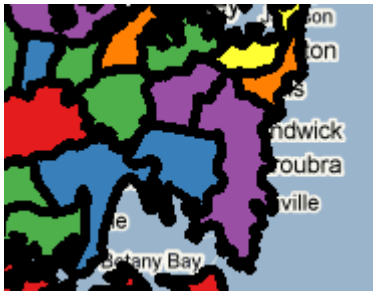


Figure 180. Border thickness set to 5

Figure 181. Border thickness set to 3

Figure 182. Border thickness set to 1

USE MAP BORDER ATTRIBUTES

If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

HATCH COLOR

COLOR OF HATCHES ON LAYERS

The RGB setting for the hatch color has a six hexadecimal digit (3 byte) number representing Red, Green and Blue.

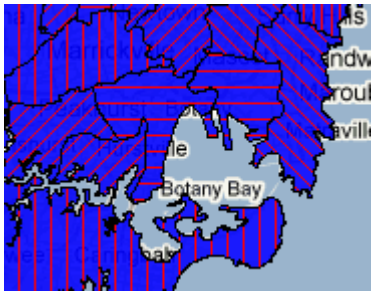


Figure 183. hatch color set to Red (FF0000)

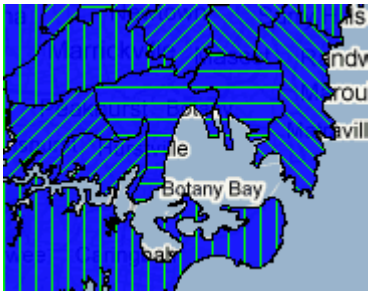


Figure 184. Hatch color set to Green (00FF00)

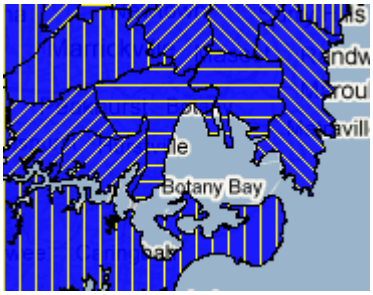


Figure 185. Hatch color set to Yellow (FFFF00)

APPENDIX B: USING THE UNSHADED AND TRANSPARENT COLOR OPTIONS

REGION RELATIONSHIP AND AREA GROUP LAYERS

The following example shows the differences when using the Unshaded and Transparent color options for Region Relationship and Area Group Layers. The example uses crime data to color-code parks in Sydney, NSW, Australia, according to the type of crime committed either Theft, Vandalism or Assault.

Figure 186 shows a map of Central Sydney using the built-in Map Layers as shown in the Internal Legend. We can see that the underlying layer for **Australia** is pale green , the areas of interest to us are Sydney parks shown by the built-in layer **nsw_parks** .

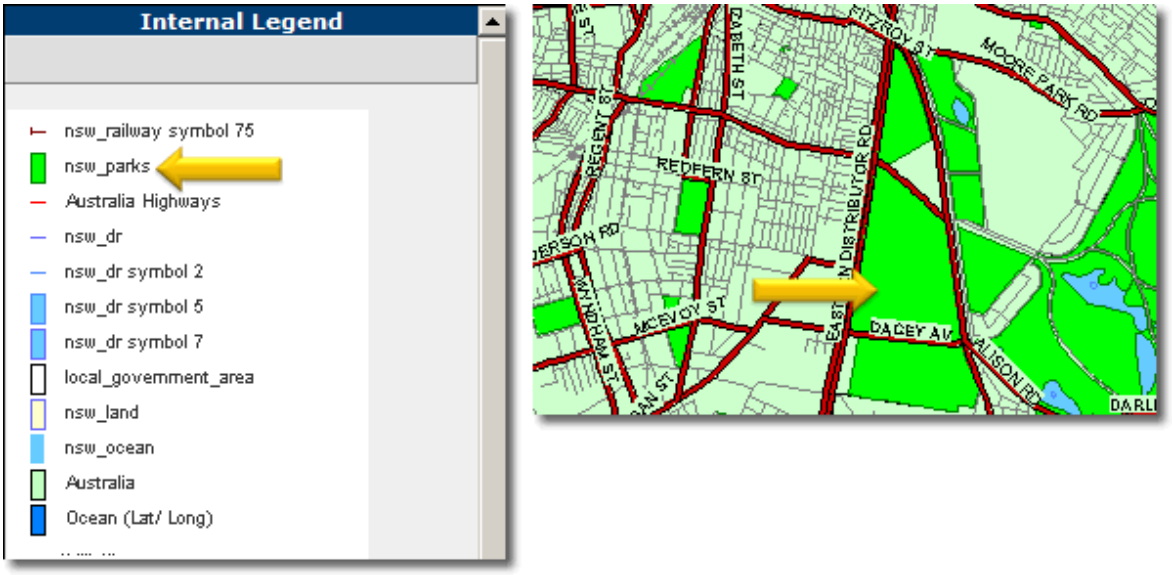


Figure 186 Built-in Map Layer – nsw parks

Using a Map Intelligence Region Relationship Layer, we have color-coded the *nsw_parks* built-in layer according to the Most Common crime type for each park. Theft is the most common crime in parks colored yellow, Vandalism= cyan, etc.

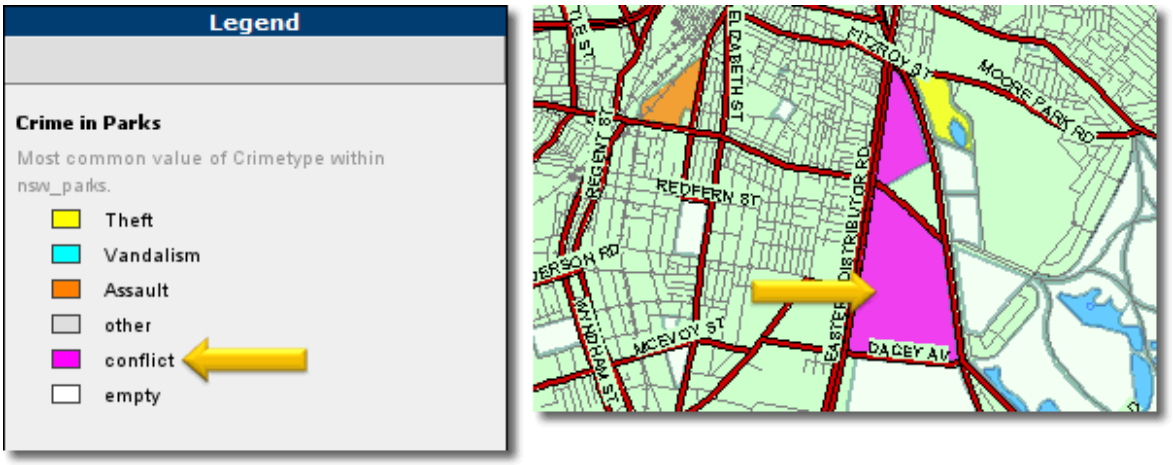


Figure 187 Map Intelligence Region Relationship Layer

Where a park has an equal number of crimes of the same type, this is shown as a "Conflict" and the park is colored Magenta .

Figure 188 shows the result for *Conflict* if we used the **Unshaded** option. You can see the parks that were once colored magenta are now unshaded, i.e. for these particular parks you see the original color-coding of the *nsw_parks* layer . Note that the other parks having no conflict crimes are still colored coded according to their most common crime type.

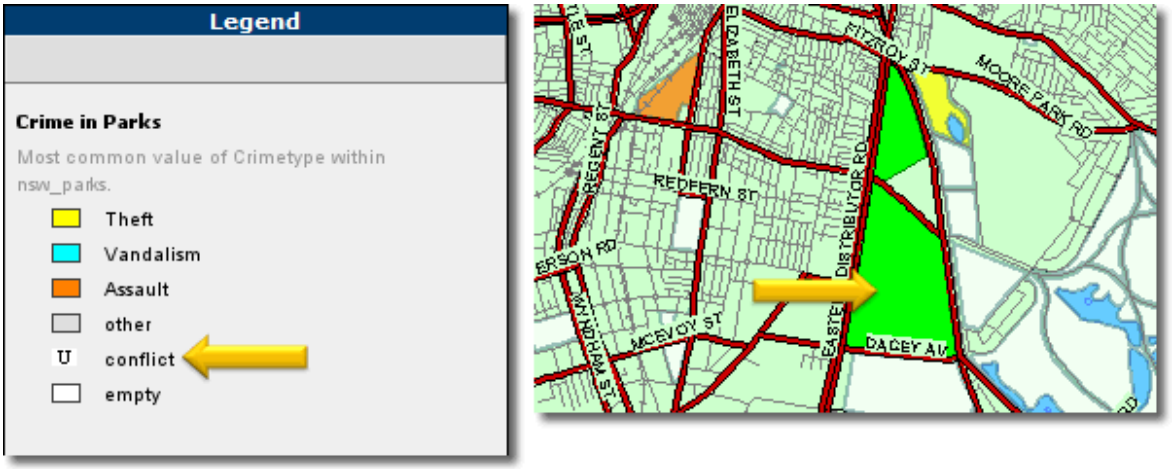


Figure 188 Unshaded option.

Figure 189 shows the same example, however this time the **Transparent** option has been selected for *Conflict.* You can see that the "Conflict" parks are not color-coded and the original color-coding for the *nsw_parks* layer for these particular parks is transparent, resulting in you seeing the underling *Australia* built-in layer . Note the other parks that do not have a conflict are still colored coded according to the most common crime type.

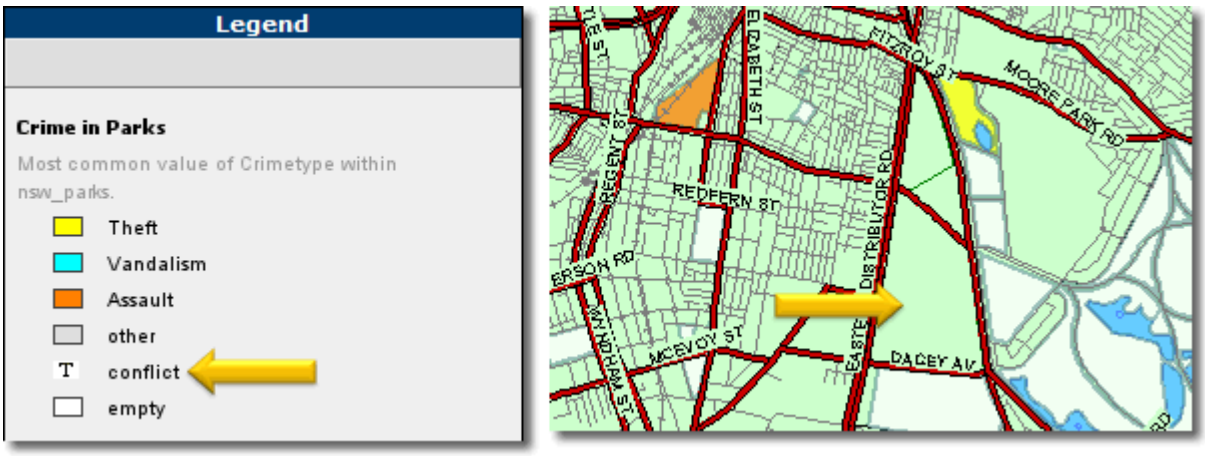


Figure 189 Transparent option.

RADIUS RELATIONSHIP LAYERS

The following example outlines the differences when using the *Unshaded* and *Transparent* color options for Radius Relationship Layers.

In this example potential new sites for Fast Food outlets 'Vacant Outlets' are shown as black buildings, around each 'vacant outlet' is a 3 km radius color-coded according to the most common Food Category of competitor outlets operating within the 3 km radius. Green circles indicate Burger outlets, grey circles Chicken outlets, etc. "Conflicts" are shown as Magenta as seen in Figure 190.

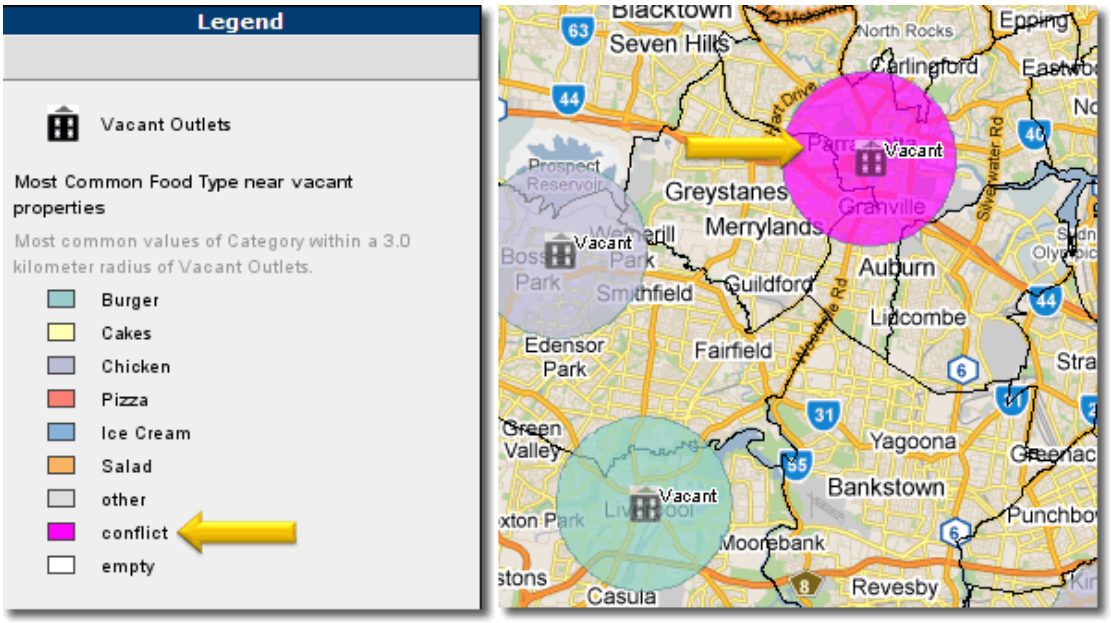


Figure 190 Radius Relationship Layer

If for *Conflict* the **Unshaded** option is selected, the circles are removed completely so that they do not appear on the map, nor can they be exported. Hidden circles do not have popup information (Figure 191).

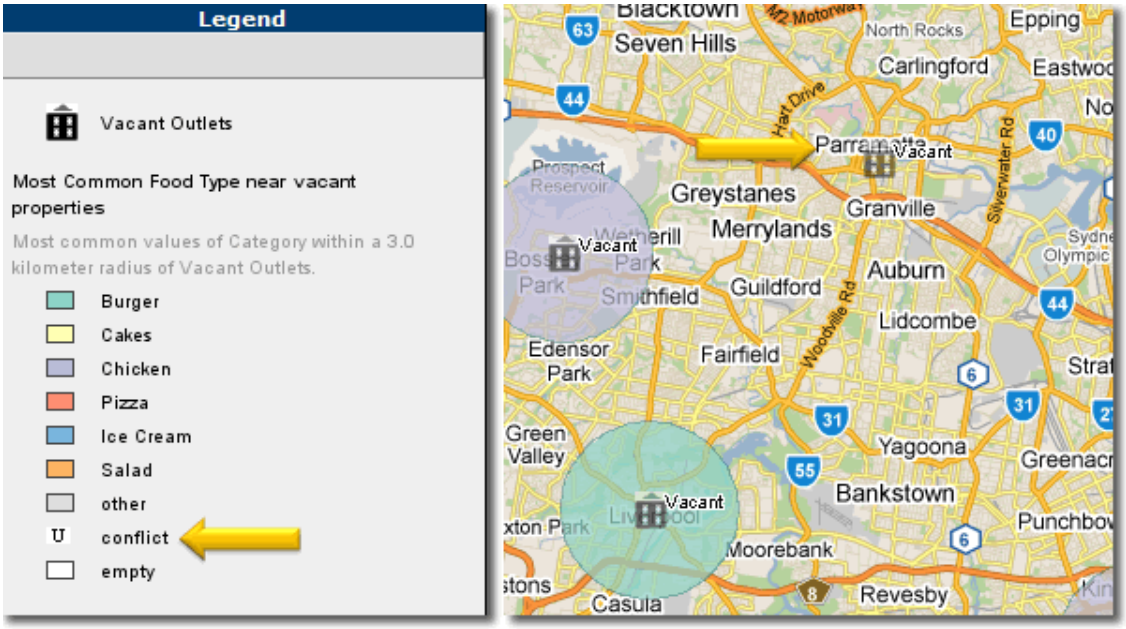


Figure 191 Unshaded Option

If for *Conflict* the **Transparent** option is selected, the circles appear 'see-through', except for a surrounding border. It will display popup information (Figure 192)..

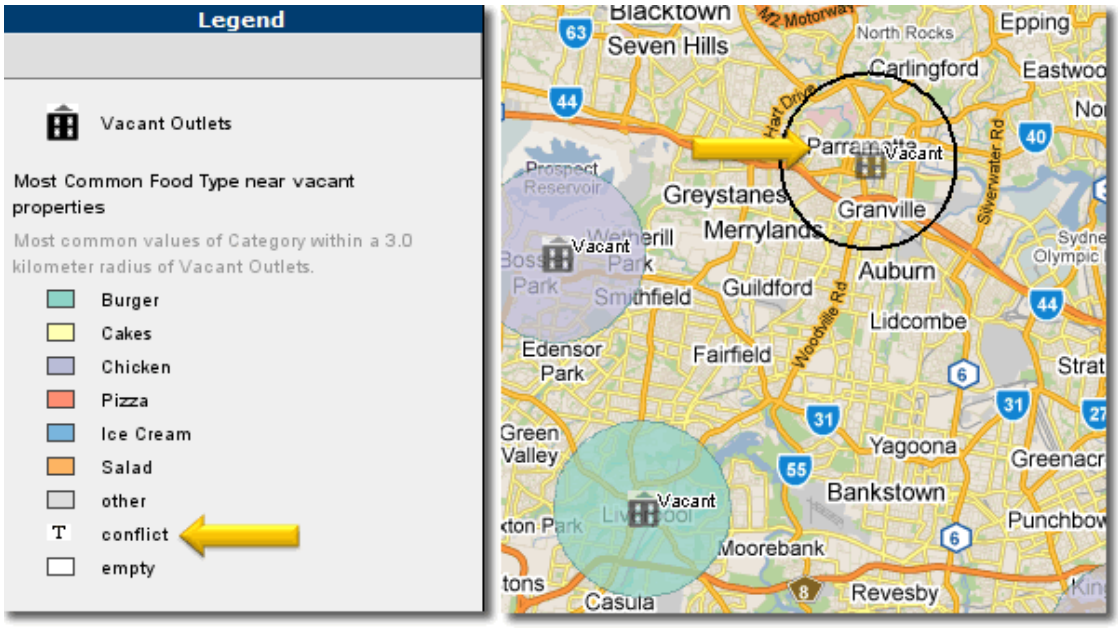


Figure 192 Transparent option.

APPENDIX C: MAP INTELLIGENCE QUERY TOOL

The Map Intelligence Query Tool allows you to view a list of all built-in maps available on the server along with the associated layers and attributes.

To list available built-in map layers

1. From the Area Group Layer or Pivot layer configuration screens, click the **Built-in Layer Query tool** button to get a list of the built-in map layers for the selected map. The *Map Intelligence Query Tool* page will appear.

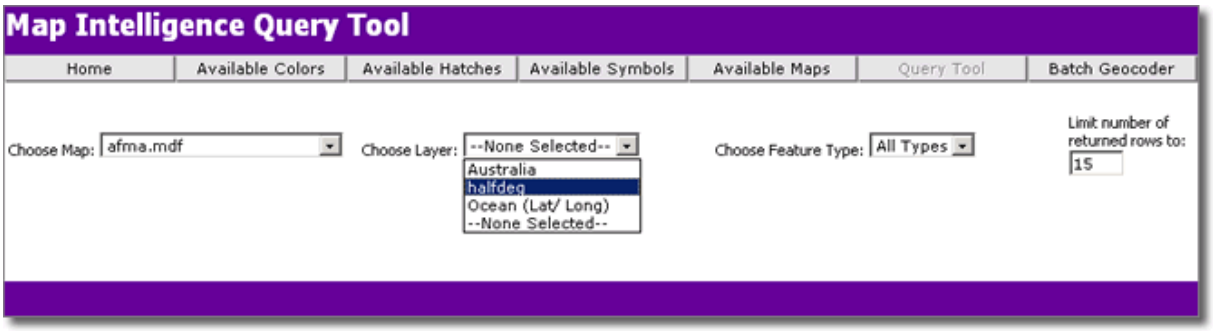


Figure 193 The Map Intelligence Query Tool

The Map Intelligence Query Tool allows you to see what layers are available in a map.

The first drop-down list **Choose Map:** shows the current map you are working on.

The second drop-down list **Choose Layer:** shows all built-in layers available for you to use.

2. Select a map layer from the **Choose Layer** drop-down list, a table will appear with the columns available for that layer and the values available from that column.

Note Once a map layer has been chosen, you can export the data to a csv file, by clicking on the **Get layer as a CSV file**.

3. To close the Map Intelligence Query Tool screen and return to the layer configuration screen, click the in the upper right hand corner of the browser window, or from the **File** menu, click **Close**.

APPENDIX D: MAP INTELLIGENCE MANUALS AND GUIDES

Product documentation for Spectrum Spatial for Business Intelligence, including Map Intelligence SP and the clients are located here:

support.pb.com/spectrum

All documentation can be found under the Solution Guides section of the Product Documentation.

GLOSSARY

Area Group Layer

Area Group layers correspond to existing areas on a map. The displayed theme is based on data attribute values, no spatial calculation is required. Instead, a column in your business data is designated to have values that match a column in the map data. For example, an existing map layer of suburbs may correspond to a data column for suburbs where the values are the suburb names. Then, for transaction data that represents customer complaints and that also contains a suburb column, it is possible to make a cross-reference between the transaction and the map area using the suburb name. An example that would use this correlation is displaying a theme on a suburb's area on the map that reflects the most common complaint type received from that suburb.

Built-in Layer

A built-in layer is defined by the map on the mapping server rather than the Map Intelligence Client. These layers may contain all types of feature such as lines, points and regions e.g. cities, rivers and parks.

Coordinate Systems

A coordinate system provides a frame of reference for measuring locations on the surface of the earth. A full list of acceptable coordinate systems is available in the Coordinate Systems document.

Data Columns

Data Columns are columns in a spreadsheet that are sent to the Map Intelligence Server and have their values available in the MI Viewer. Data column values are displayed in the map data screen and popups that appear when you move your mouse over a point in the map. ***Fact Point Layer***

Hatching

Hatching is overlaying a pattern on top of a polygon allowing it to be distinguished visually rather than by using color.

Icons

Icons are used to visually represent points on a map. Icons can be symbols (image files) selected by the user or colored shapes.

Layers

A layer is a set of spatial features displayed on a map. Objects in a layer are usually grouped logically e.g. capital cities or parks. Each feature in a layer has the same set of data attributes, so a layer is in many ways like a relation (table) in a relational database.

Map Intelligence Excel Client

The Map Intelligence Excel Client allows configuration of Map Intelligence layers and has the ability to launch and interact with the MI Viewer.

Map Intelligence Excel Client Viewer

The Map Intelligence Excel Client Viewer is a streamlined version of the standard client and only allows users to load predefined templates and view maps. The MI Client Viewer does not allow any configuration of Map Intelligence.

Map Intelligence Layer

A Map Intelligence Layer is a layer defined in the Map Intelligence Client. These layers display data as geographic features on a map.

Map Intelligence Server

The Map Intelligence Server is the engine that takes requests from the Map Intelligence Client and MI Viewer and responds by displaying maps and associated information.

MI Viewer

The MI Viewer displays the layers configured by the Layer Designer on the specified map. The MI Viewer is launched in a browser and provides controls that allow the end user to manipulate the map to return the desired analysis.

Pivot Layer

Pivot Layers allow you to configure a collection of Area Group layers based on a worksheet within your Excel spreadsheet which is in pivot form.

Point

A point is a geographic feature with a single pair of coordinates. These are used to represent objects or events e.g. house or accident locations.

Point Layer

Point layers are map layers where data is represented on the map as discrete point images or symbols. For example: a particular layer might represent the location of stores as push-pin icons and another layer could represent accidents as colored dots, where the color (theme) represents the severity of the accident. Typically, the rows in a table of data belong to a business concept such as people or address details, where each column is an attribute of that concept. Thus each row in your business data can be represented as an individual point in a point layer. In Map Intelligence, point layers form the foundation for relationship layers.

Radius Relationship Layer

Radius relationship layers are circular regions with themes around certain points of interest that show information about other points that fall within that circular region. These layers are generated by Map Intelligence. They are based on calculations made by Map Intelligence on the specified data values as specified by the Layer Designer. For example: different colored circles indicate the average house price within half a kilometer of a proposed waste plant. Another example is where different colored circles indicate the number of burglaries that have occurred within a five-mile distance of houses belonging to known burglars. In the current version of Map Intelligence, the circle center points (eg: houses belonging to known burglars) and the data being analyzed (burglaries), must be point layers.

Region Relationship Layer

A Region Relationship layer corresponds to a map area of any shape that is solely geographical in its definition and not generated by Map Intelligence. Examples would be suburbs, zip codes, local government areas or police precincts. Region Relationship layers can be given themes according to specified data rules associated with the points that fall within that region. An example of such a theme could be color-coding precincts according to the number of crimes that have taken place within their boundaries, or applying different hatches to suburbs based on the total value of house sales that have occurred in each one. Map Intelligence works out in which region a point (eg: a sale or accident) physically belongs by doing a spatial calculation.

***Relationship Layer*: (**See: Radius Relationship Layer and Regional Relationship Layer**).**

Theme

A theme can be described as a representation of map features according to different associated values.