

**CONTENTS**

<b>CONTENTS</b>	<b>1</b>
<b>INTRODUCTION</b>	<b>2</b>
WHAT WILL I LEARN?	2
WHAT DATA DO I NEED TO DOWNLOAD?	4
<b>DOWNLOAD HISTORIC MAP DATA</b>	<b>5</b>
ORDER MAPS	5
DOWNLOAD THE MAPS	10
<b>VIEW HISTORIC DIGIMAP MAP DATA IN ARCMAP</b>	<b>13</b>
<b>ADD OS VECTOR MAP DISTRICT DATA</b>	<b>20</b>
STYLE THE OS VECTOR MAP DISTRICT DATA	24
METHOD 1 – AMEND SYMBOLOGY USING LAYER FILES	24
METHOD 2 – AMEND SYMBOLOGY USING ATTRIBUTE DATA	30
LABEL MAP FEATURES	34

## INTRODUCTION

This exercise will be useful to you if you are interested in using historic maps from Historic Digimap in GIS (Geographical Information System). To complete all the exercises in this guide, you will need:

- To be able to login to Historic Digimap - your college or university must have a subscription to the service to allow this.
- Access to ArcGIS software.
- These notes were prepared using ArcGIS version 10.1

## WHAT WILL I LEARN?

By the end of this guide, using the instructions and map data provided, you will be able to:

- Download historic maps from Historic Digimap
- Add and view raster historic maps in ArcGIS
- Add and view vector Ordnance Survey map data
- Apply a cartographic style to vector map data

What data have you given me?

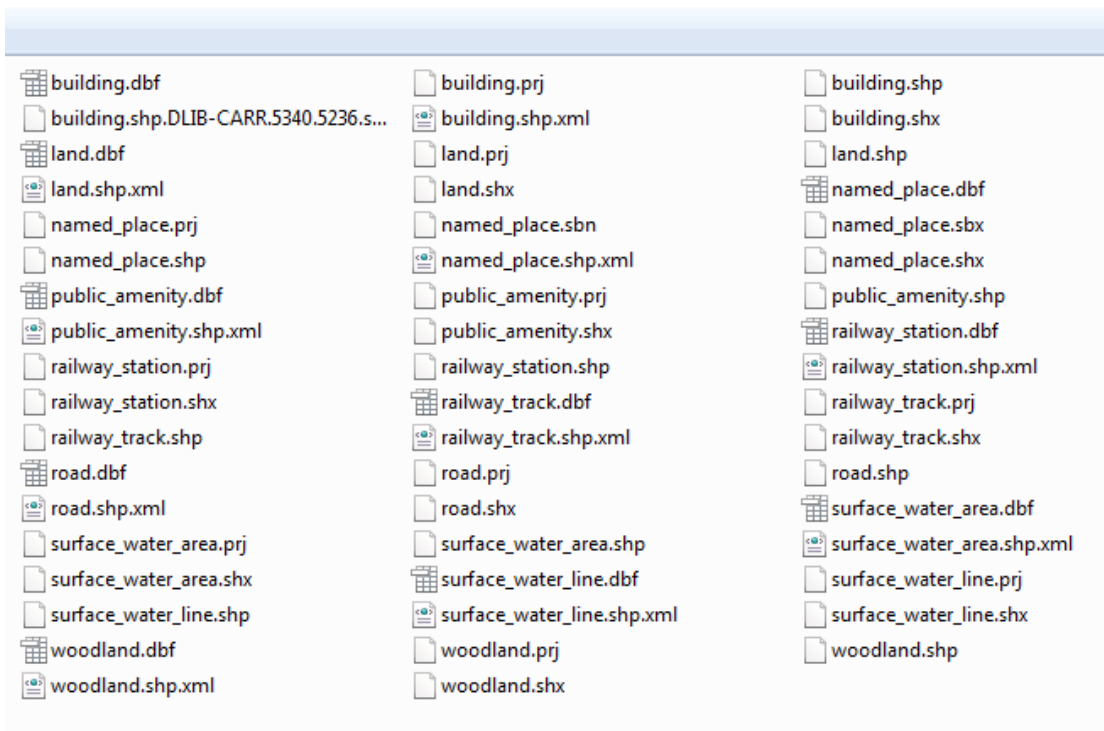
We have supplied some contemporary vector map data for Leeds city centre, in order that you can complete the exercises in this guide.

The data is **Vector Map District** data. It can be downloaded from Digimap’s Ordnance Survey Collection Data Download service.

Vector Map District is supplied in 100 x 100 km areas. We have cropped the data to a smaller area to make it more manageable.

The map data is supplied as SHAPE files, which are compatible with ArcGIS and many other software packages.

1. In the folder **Vector Map District**, you will find a list of files as shown in the image below. For each SHAPE file, there are associated files, e.g. SHX, DBF and PRJ files. Do not discard any of the files in this folder – all component files are required in order that your SHAPE files work in GIS.



2. **Layers** - we have also given you a folder called Layers, which contains files that can be used to apply a pre-defined cartographic style to the Vector Map District map data. We will demonstrate this process in these instructions.

## WHAT DATA DO I NEED TO DOWNLOAD?

You will need to download some historic maps from Historic Download service. We cannot supply you with historic maps directly due to the terms of use of the Digimap licence.



Historic Download allows users to download historic maps for use in GIS software. Maps are provided in TIFF format and are geo-referenced.

You can choose to download map tiles referenced to the British National Grid, or the original map sheet as it was published.

The following 3 sets of map data are available:

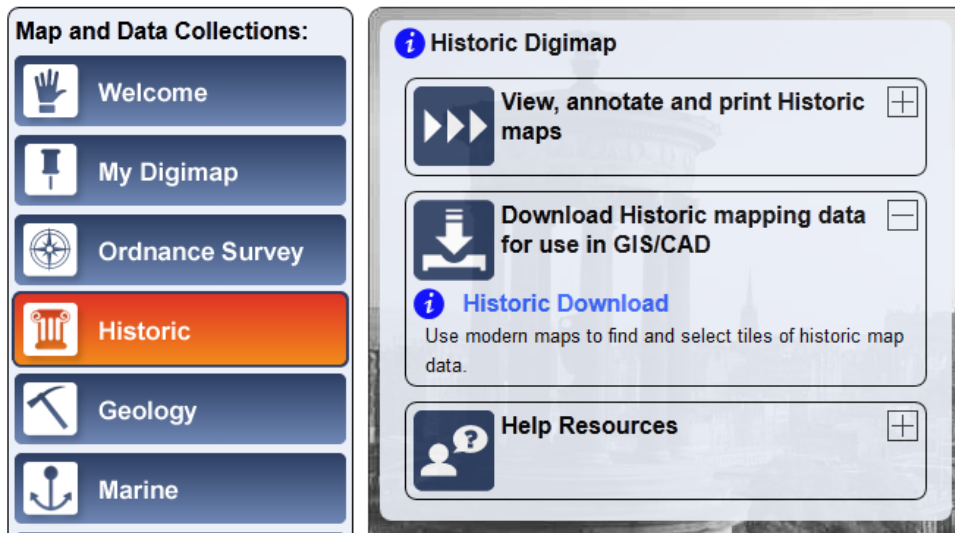
- County Series maps at 1:2500 and 1:10560 scales published between 1843 and 1939,
- Town Plan maps at 1:500, 1:528 and 1:1056 scales published from 1848 and 1939, for towns with a population in excess of 4000 at the time of survey,
- National Grid maps at 1:1250, 1:2500 and 1:10560/10000 scales, published from 1945 – 1990s.

## DOWNLOAD HISTORIC MAP DATA

Please follow the following steps to download the historic maps we will use:

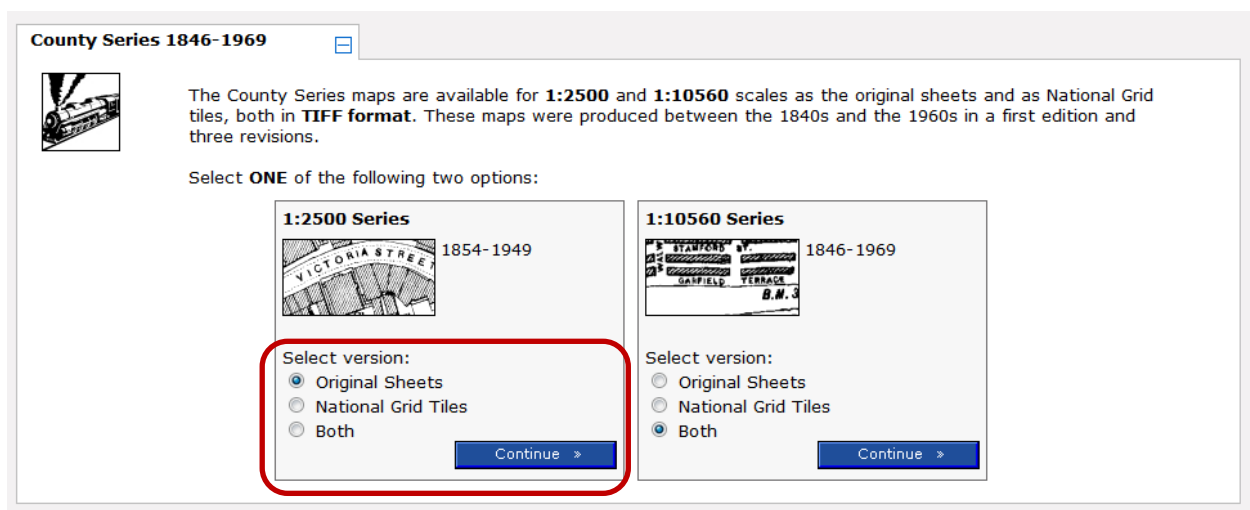
### ORDER MAPS

1. Click on **Historic Download**:



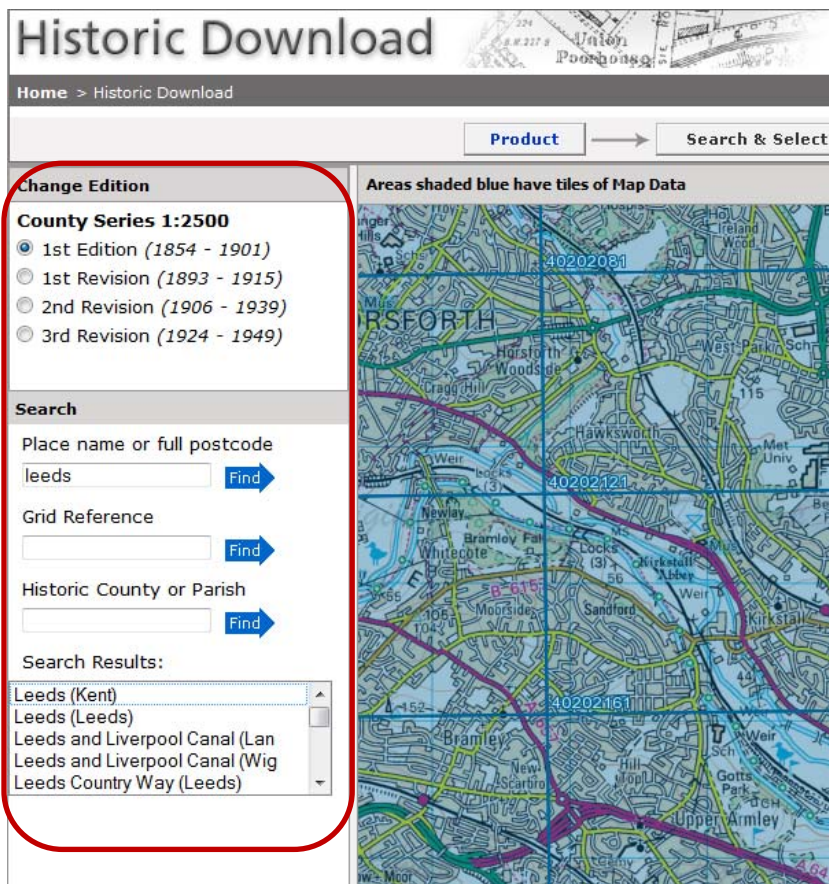
2. Select **County Series 1:2500 scale, Original Sheets**.

3. Click **Continue**:



4. On the left of the next window:
5. Select 1<sup>st</sup> Edition.
6. Type **Leeds** in the place name box.
7. Click **Find**.
8. Select **Leeds (Leeds)** from the search results

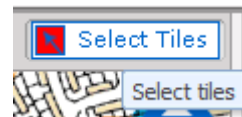
Your screen should look similar to this image:



9. **Zoom in to the Woodhouse area** (look for the words Woodhouse and University in the middle of the screen) by double clicking on the map, until your screen looks similar to the image below:

The screenshot shows the 'Historic Download' web application. At the top, there's a navigation bar with 'Home > Historic Download', 'My Account | Help | Contact Us | Log-Out', and a 'Start again' button. Below this is a breadcrumb trail: 'Product' → 'Search & Select Tiles' → 'Download'. The main interface is divided into three columns. The left column has a 'Change Edition' section for 'County Series 1:2500' with radio buttons for '1st Edition (1854 - 1901)', '1st Revision (1893 - 1915)', '2nd Revision (1906 - 1939)', and '3rd Revision (1924 - 1949)'. Below that is a 'Search' section with input fields for 'Place name or full postcode', 'Grid Reference', and 'Historic County or Parish', each with a 'Find' button. A 'Search Results' dropdown menu is open, showing 'Leeds (Kent)', 'Leeds (Leeds)', 'Leeds and Liverpool Canal (Lan)', 'Leeds and Liverpool Canal (Wig)', and 'Leeds Country Way (Leeds)'. The middle column is a map of Leeds with various colored overlays. A text box above the map says 'Areas shaded blue have tiles of Map Data'. The right column has a 'Tiles Selection' section with 'Selected Tile(s): 0 (Max Allowed: 150)' and a 'Continue' button. Below that is a table titled 'Selected Tiles' with columns for 'Tile', 'County', and 'Edition'. The bottom of the page has '© University of Edinburgh.' on the left and 'Terms of Use' on the right.

Now we want to select tiles. Anywhere shaded blue has tiles of map data. Where the map is darker blue, means there is more than one map available for that area.



10. Click the Select Tiles button so that the arrow is red
11. Click on the map where it says University and click the tile next to it, to select those maps for download, until your screen looks similar to the image below.

The screenshot shows the 'Historic Download' web interface. At the top, there is a navigation bar with 'Home > Historic Download', 'My Account | Help | Contact Us | Log-Out', and a 'Start again' button. Below this is a breadcrumb trail: 'Product' -> 'Search & Select Tiles' -> 'Download'. The main content area is divided into three sections:

- Change Edition:** A section for selecting the map edition. Under 'County Series 1:2500', there are four radio buttons: '1st Edition (1854 - 1901)' (selected), '1st Revision (1893 - 1915)', '2nd Revision (1906 - 1939)', and '3rd Revision (1924 - 1949)'.
- Search:** A section with search criteria: 'Place name or full postcode' (with 'leeds' entered and a 'Find' button), 'Grid Reference' (with a 'Find' button), and 'Historic County or Parish' (with a 'Find' button). Below this is a 'Search Results:' dropdown menu showing: 'Leeds (Kent)', 'Leeds (Leeds)', 'Leeds and Liverpool Canal (Lan)', 'Leeds and Liverpool Canal (Wig)', and 'Leeds Country Way (Leeds)'.
- Map:** A central map of Leeds with various colored overlays. A note above the map says 'Areas shaded blue have tiles of Map Data'. There are 'Move Map' and 'Select Tiles' buttons above the map.
- Tiles Selection:** A section on the right with the text 'Selected Tile(s): 2 (Max Allowed: 150)'. Below this is a 'Continue' button and a 'Selected Tiles' table:

Tile	County	Edition
40218011	Yorkshire	1st Ed
40218021	Yorkshire	1st Ed

At the bottom of the page, there is a copyright notice '© University of Edinburgh.' and a 'Terms of Use' link.

Note also that you will see the list on the right become populated, with the list of maps that you have selected.

This is a close-up screenshot of the 'Selected Tiles' section from the previous image. It shows the 'Selected Tile(s): 2 (Max Allowed: 150)' text, a 'Continue' button, and the table below:

Tile	County	Edition
40218011	Yorkshire	1st Ed
40218021	Yorkshire	1st Ed

12. Click **Continue** (if you have selected too many tiles, you will be unable to click Continue. The easiest thing to do here is to click Start again).



13. Name your order:

**Order Details**

Give your order a name, then enter and confirm your email address:

\* mandatory

Order Name:  \*

Enter Email Address:  \*

Confirm Email Address:  \*

This email address will be used solely for the purpose of delivering the data you have requested to you. It will be logged against your data request for service management purposes.

14. Check your order – the image below shows the details of the maps that we selected.

At this point you could delete some of the maps in the list if you wished.

**Selected Data Summary**

You may edit the tile selection by selecting tiles you wish to delete and pressing the **Delete Selected** button.

Order Content	Tile	County	Edition	Version	Publication	Size (Kb)
<input type="checkbox"/>	40218011	Yorkshire	1st Edition	SHEET	1893	2086
<input type="checkbox"/>	40218021	Yorkshire	1st Edition	SHEET	1893	1973

If you return to the Search and Select Tiles page and add more tiles you may find some that you have deleted are back in the list. Once you are happy with the list in the table above select your Archiving option and click **Order Data**.

15. Click Order data

**Format & Archiving Options**

**Choose Format:**

tiff (compressed)

**Choose Zip Option:**

Zip Archive

Tar Archive

Gzipped Tar Archive

## DOWNLOAD THE MAPS

1. Wait for an email from Digimap to tell you the maps are ready to download.
2. Click on the link in the email (you should be logged in):

### Your Historic Digimap Order Is Ready For Download

EDINA Digimap <edina@ed.ac.uk>

Extra line breaks in this message were removed.

Sent: Mon 22/04/2013 14:51

To: vivienne.carr@ed.ac.uk

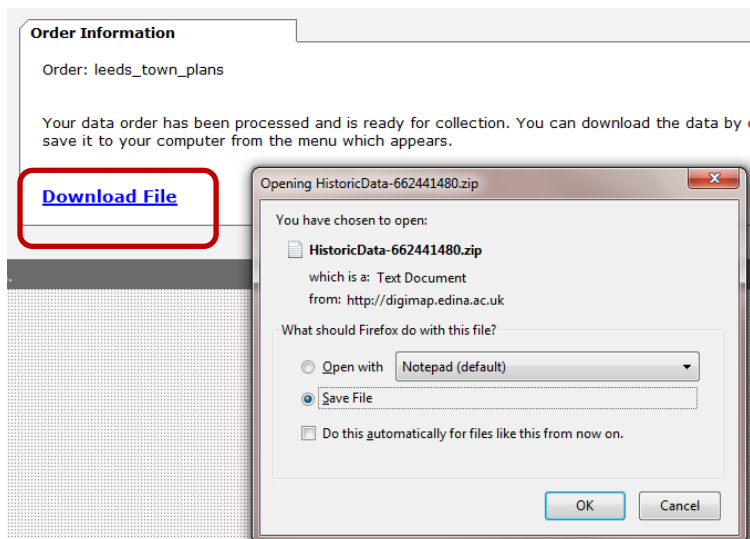
22 April 2013 at 14:50

The order (ref: leeds) you placed for Historic data from Digimap on 22 April 2013 at 14:46 has been processed and the data can now be collected. You can do this by logging in to Historic Digimap and clicking on the following link or copying and pasting it into your web browser:

[http://digimap.edina.ac.uk/historicdownloader/downloader?\\_eventId\\_start=true&filedownload&user=edi:jaiunecwniuavx71&order=8ace5739-cee2-4212-8008-5a3c03d203e1](http://digimap.edina.ac.uk/historicdownloader/downloader?_eventId_start=true&filedownload&user=edi:jaiunecwniuavx71&order=8ace5739-cee2-4212-8008-5a3c03d203e1)

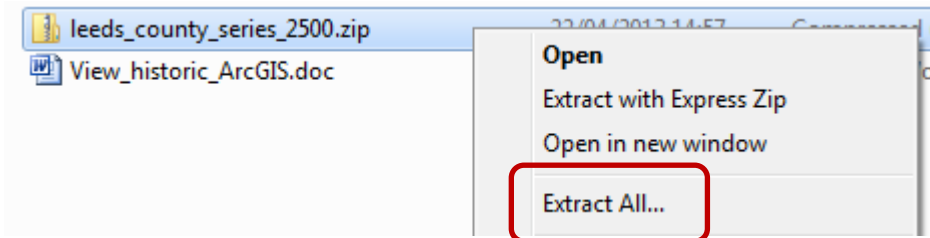
NOTE: You must be logged in to access your data, if you are prompted to log in after following the link you will need to re-enter the link or click it again after logging in.

3. Click **Download File**.
4. Click **Save File, OK** and save the file somewhere on your computer:

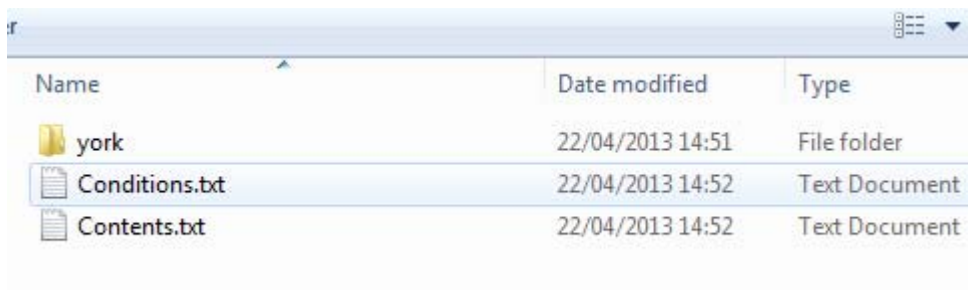


The file you download from Historic Digimap is a zip archive file.

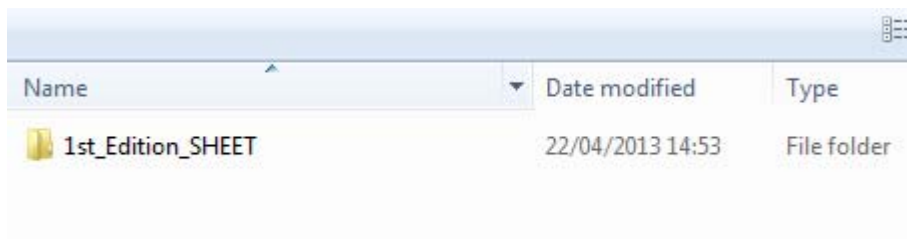
5. In Windows Explorer, or equivalent, right click on the Zip file.
6. Select **Extract All**, and follow the instructions to extract the contents of the file to a separate folder:



7. Double click on the new folder to have a look at the contents.
8. Depending on what you downloaded, you should now see a sub-folder, or folders. The image below shows there is 1 folder in our download, York (we downloaded maps for the county of Yorkshire).



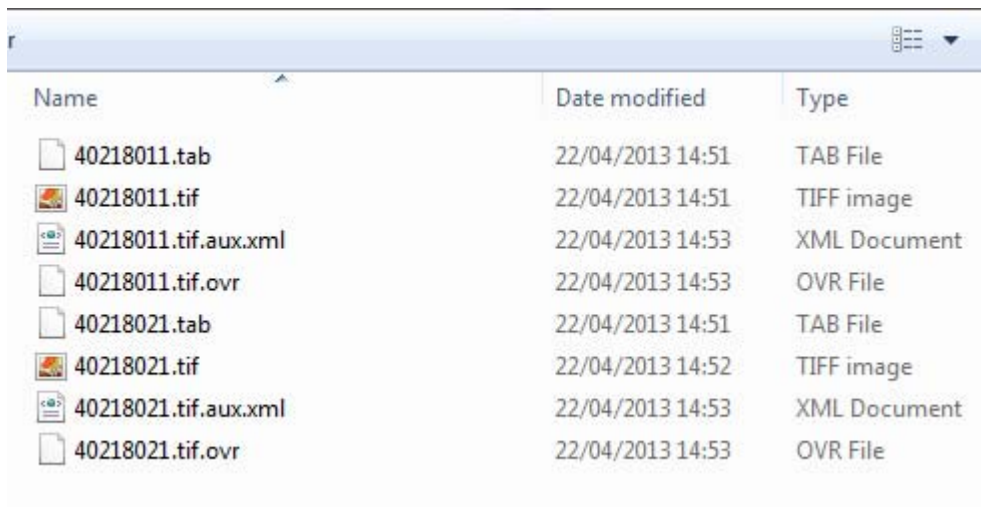
9. Click on the **york** folder. Now you will see a folder named **1st\_edition\_Sheet**, or similar. Remember that we selected to download original map sheets, and chose the first edition.



10. Double click on 1<sup>st</sup>\_Edition\_SHEET. You should see some files, similar to the image below.

- a. TIFF – these are the maps, in TIFF image format. Maps in this format are commonly referred to as **RASTER maps**, a printed map in the form of an image<sup>1</sup>.
- b. The remaining files contain geographic coordinates and projection information.

DO NOT DISCARD ANY OF THE FILES!



Name	Date modified	Type
40218011.tab	22/04/2013 14:51	TAB File
40218011.tif	22/04/2013 14:51	TIFF image
40218011.tif.aux.xml	22/04/2013 14:53	XML Document
40218011.tif.ovr	22/04/2013 14:53	OVR File
40218021.tab	22/04/2013 14:51	TAB File
40218021.tif	22/04/2013 14:52	TIFF image
40218021.tif.aux.xml	22/04/2013 14:53	XML Document
40218021.tif.ovr	22/04/2013 14:53	OVR File

---

<sup>1</sup> <http://www.ordnancesurvey.co.uk/oswebsite/products/backdrop-mapping.html>


## VIEW HISTORIC DIGIMAP MAP DATA IN ARCMAP

Let's view our historic maps in ArcGIS. The TIFF image maps can be imported directly to ArcGIS.

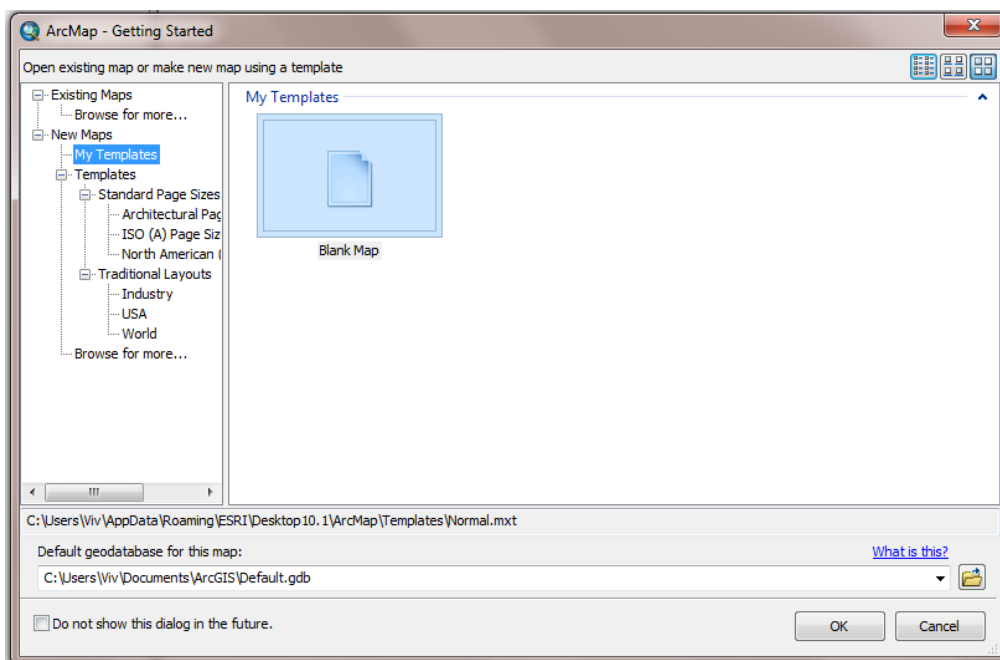
These notes have been prepared using ArcMap 10.1.

1. Start ArcMap. ArcMap is the application within ArcGIS that is used to view and analyse map data: <http://www.esri.com/software/arcgis/arcgis-for-desktop>

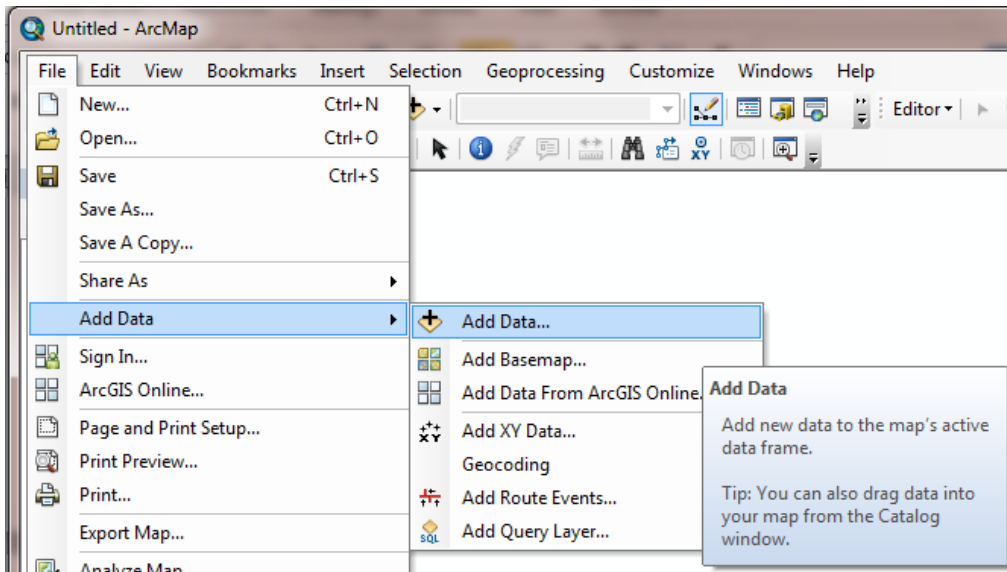
### Programs (1)

 [ArcMap 10.1](#)

2. Select the default option, **Blank map**.
3. Click **OK**.

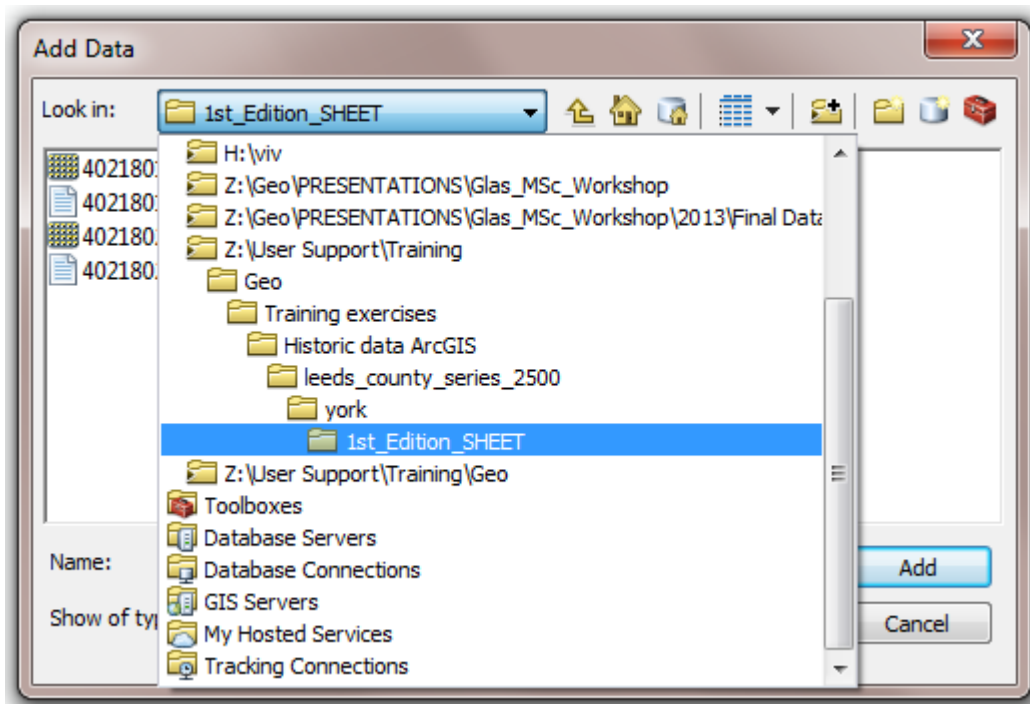


4. Click File > Add Data > Add Data.

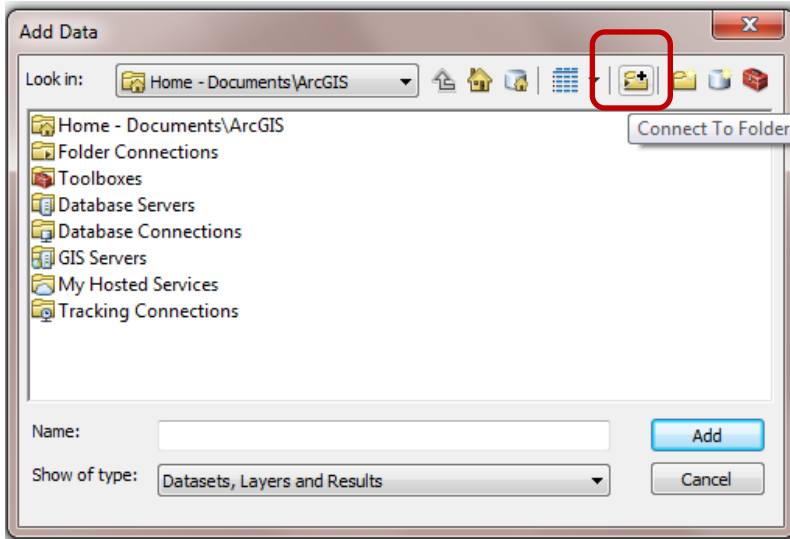


5. Click on the drop down arrow to see what **Folder Connections** you have and try to navigate to your **york, 1<sup>st</sup>\_Edition\_SHEET** historic maps folder. Image below is an example – the path to your files will be different.

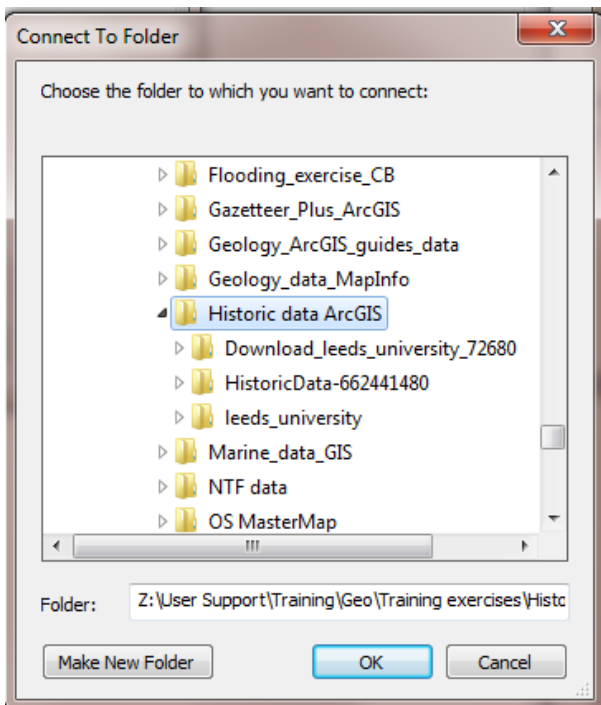
***If you cannot navigate to your historic maps you may have to connect to the folder (go to Step 6).***



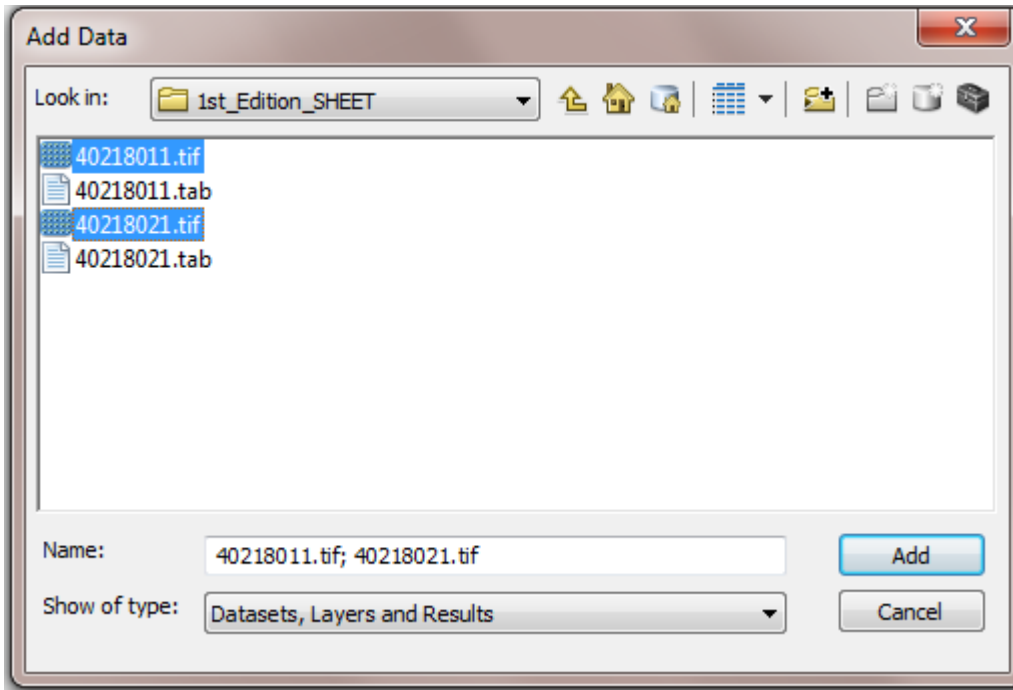
6. ArcGIS has to connect to a folder before it recognises it. Click the yellow folder with the plus icon, **Connect to Folder**.



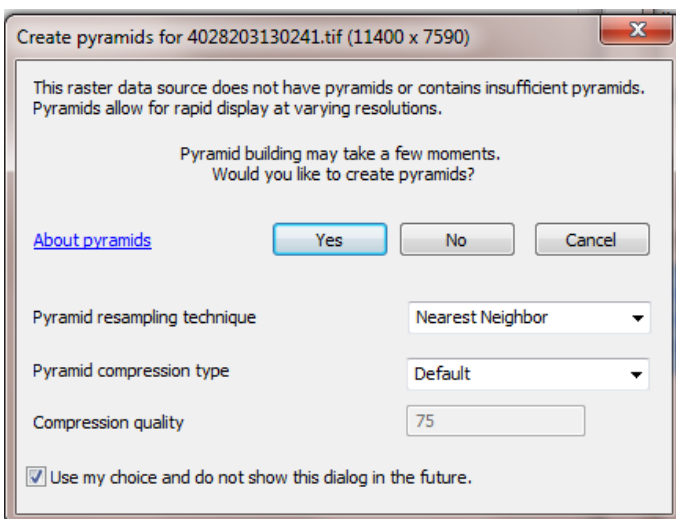
7. Select the folder containing your historic maps (the image below shows an example, where we select a folder called Historic data ArcGIS).
8. Click OK.



9. Go back to the Add Data window. Navigate to your historic maps folder. Select the TIFF files.
10. Click Add.

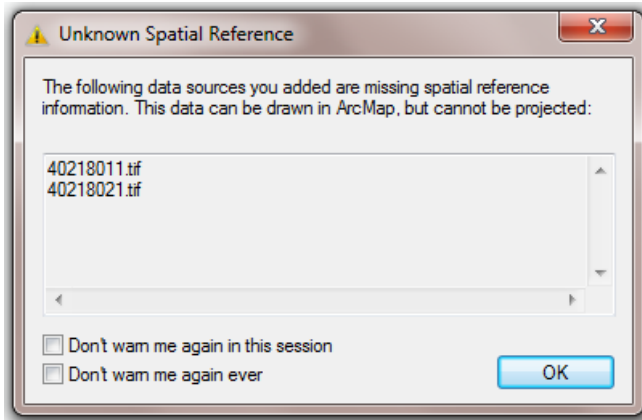


11. If asked to Create pyramids, select Yes.
12. Tick 'use my choice and do not show this dialog in the future'.

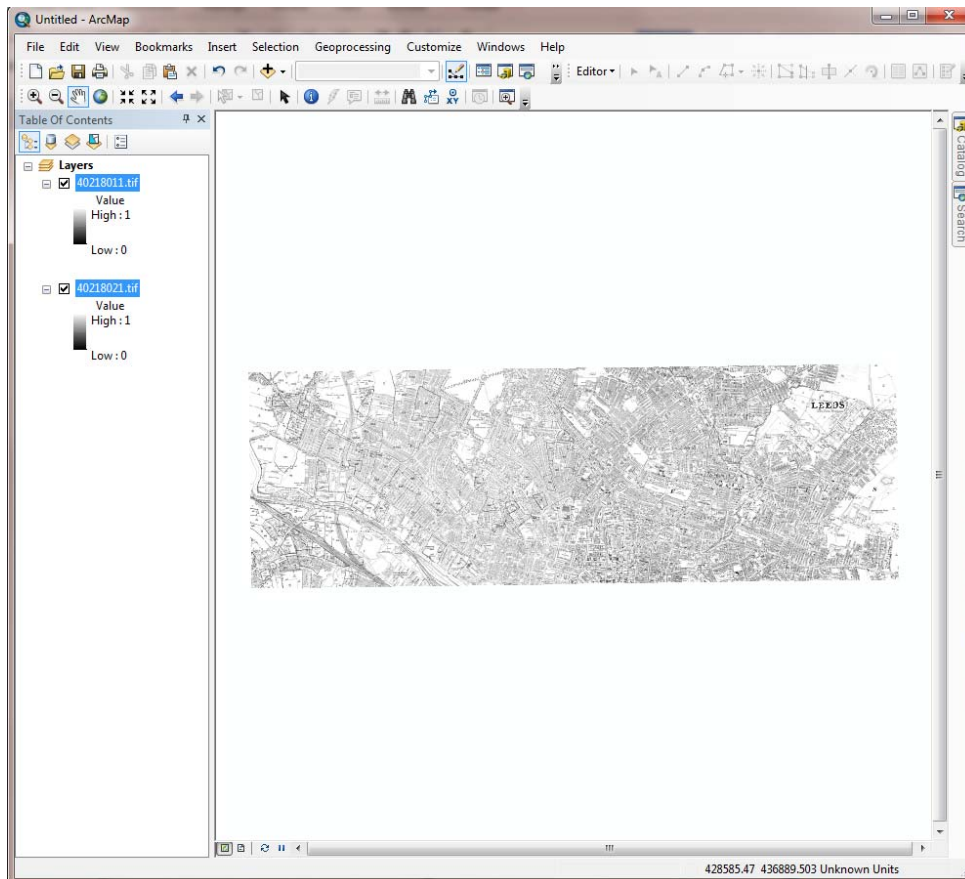




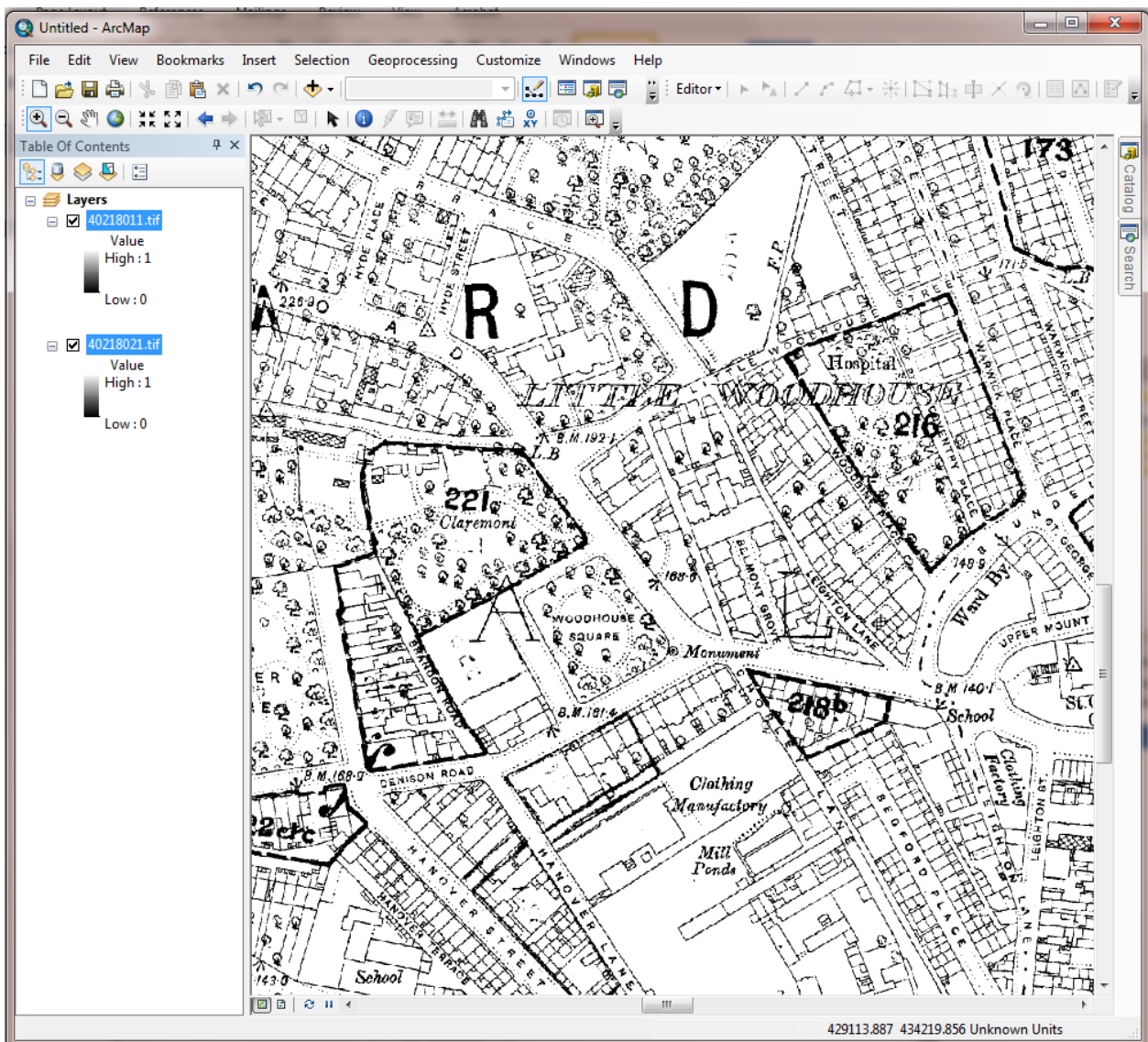
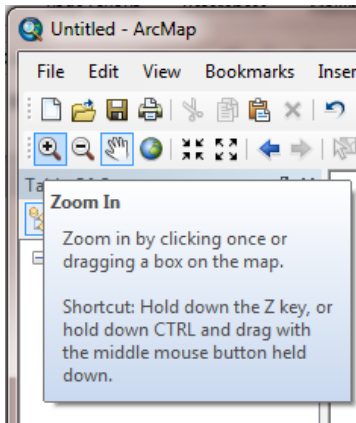
13. Click OK if you see the warning about Unknown Spatial Reference.



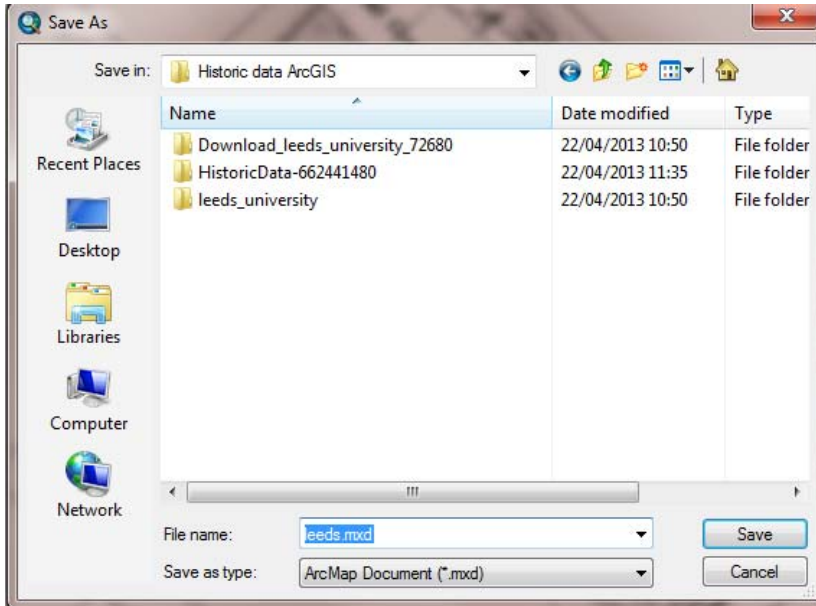
ArcMap should now be displaying your historic maps – note that the Table of Contents on the left is now displaying 2 map 'layers':



- Click on the zoom in button and click on the map, for a closer look. Note that with a raster map we can look at the data but we cannot select any individual map features such as roads or buildings.



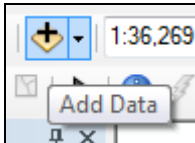
15. Click **File> Save as** and save your ArcMap document.



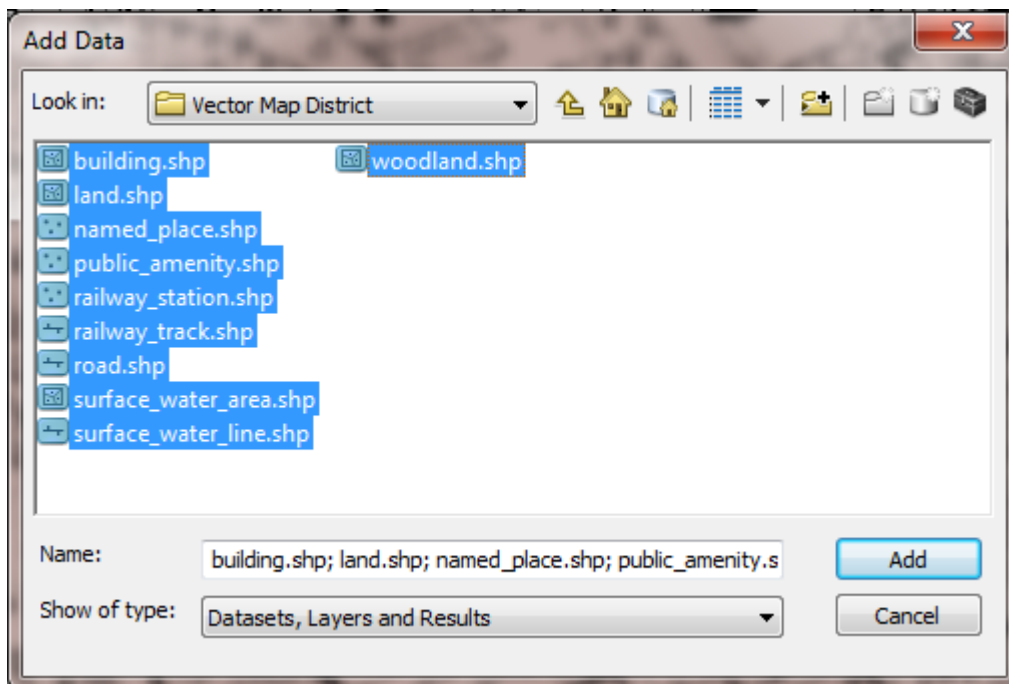
## ADD OS VECTOR MAP DISTRICT DATA

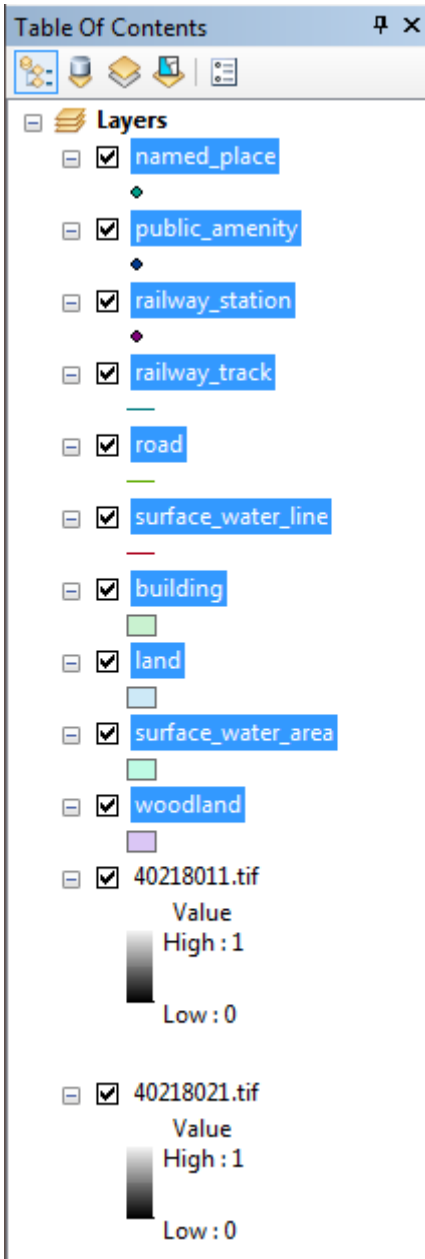
Now let's add our Vector Map District map data. A **vector map** is designed for use in a Geographic Information System (GIS). With vector maps you can select individual features, turn map layers on and off, and analyse the map data more easily.

1. Click Add Data.



2. Go to the Vector Map District folder.
3. Select all the Shape files and click Add.



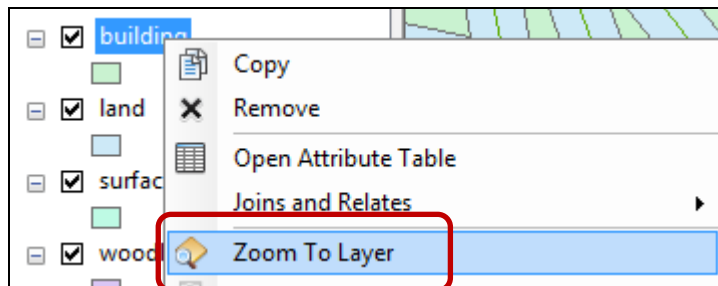


Note that in the Table of Contents (shown in the image on the left), the points are added first, then the lines, then the polygon layers and raster layers at the bottom.

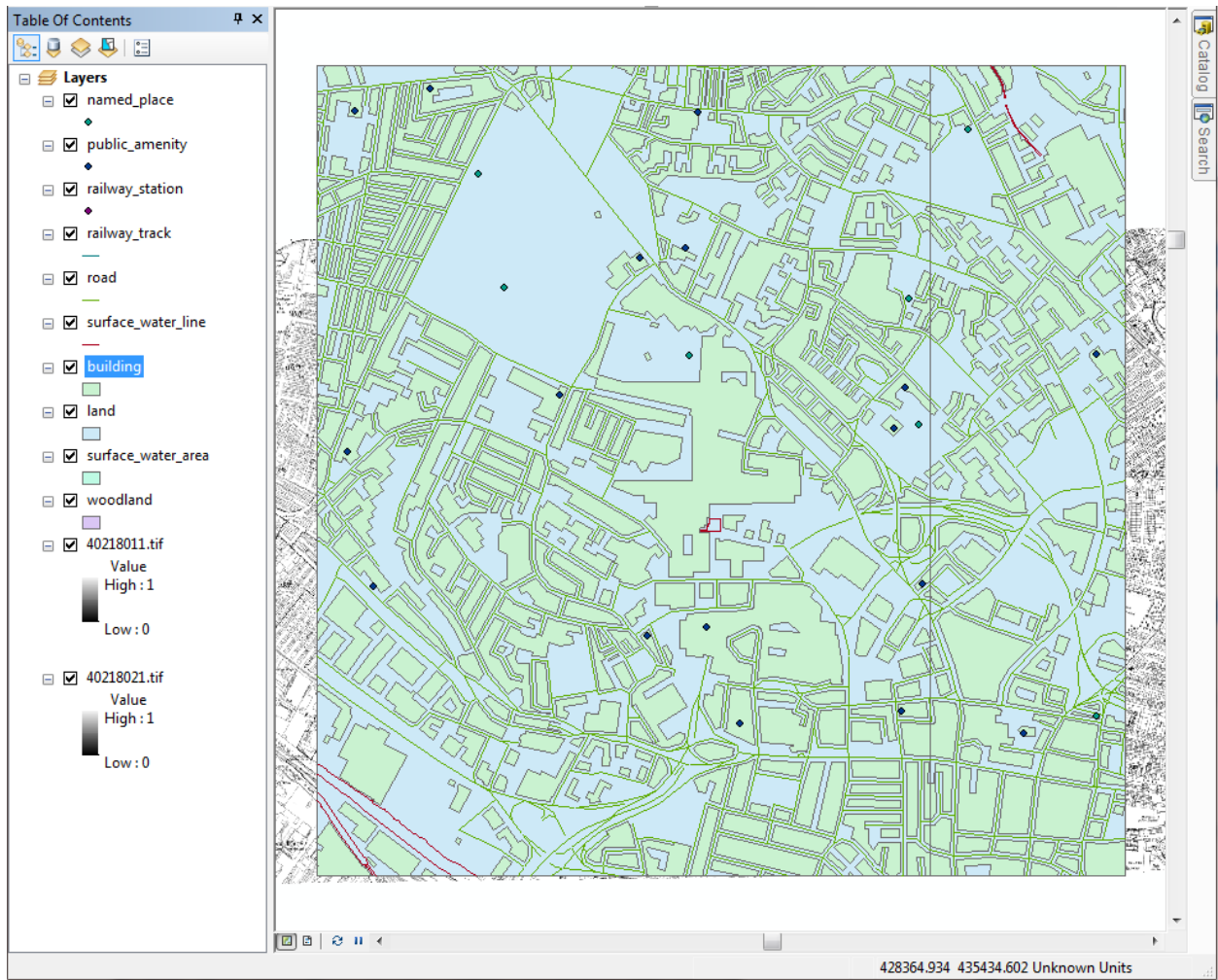
ArcMap imports vector map data in random colours. We will show you how to change the colours.

**Depending on your map scale, you may no longer be able to see any of your historic map. The Vector Map District (VMD) polygon layers may be covering it up.**

4. Right click on **building** and select **Zoom to Layer**.



You should now be able to see the historic maps at the edge of your map window, under the VMD map.

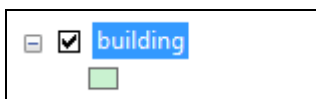


Our aim here is to view the historic maps, with the outline of contemporary buildings overlaid on the top.

5. Switch off some polygon layers. Uncheck the boxes next to Woodland, Land and Surface Water area.

Now let's make the buildings hollow and change the outline colour.

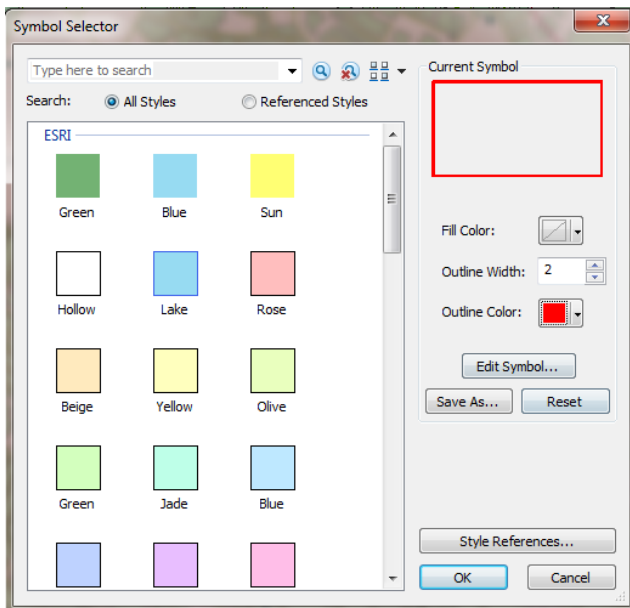
6. Click on the square symbol under buildings.



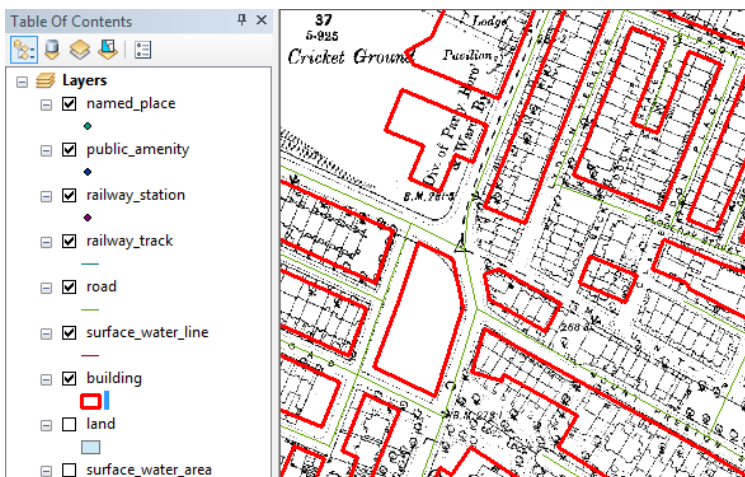
The Symbol Selector is generated.

7. Change the fill colour to Hollow.

8. Chagne the outline width to 2, and select a bright colour, for example red. Click OK.



Now if we zoom in, we can see the contemporary building outlines on top of the historic maps, as seen in this image:



## STYLE THE OS VECTOR MAP DISTRICT DATA

We can apply a cartographic style to the VMD data. There are different methods for doing this, we will try two:

- Apply a pre-defined style to each layer, contained within a **layer file**. The layer files we will use are specifically for use with VMD. We have provided them to you but they are also available from the Digimap help pages:  
[http://digimap.edina.ac.uk/webhelp/os/using\\_data\\_with\\_arcgis/using\\_vectormap\\_data/using\\_vectormap\\_district.htm](http://digimap.edina.ac.uk/webhelp/os/using_data_with_arcgis/using_vectormap_data/using_vectormap_district.htm)
- Create a style using the attribute data contained within the Shape files.

## METHOD 1 – AMEND SYMBOLOGY USING LAYER FILES

1. Double click on the folder **layers**, supplied with the instructions for this exercise. You will see a list of files.

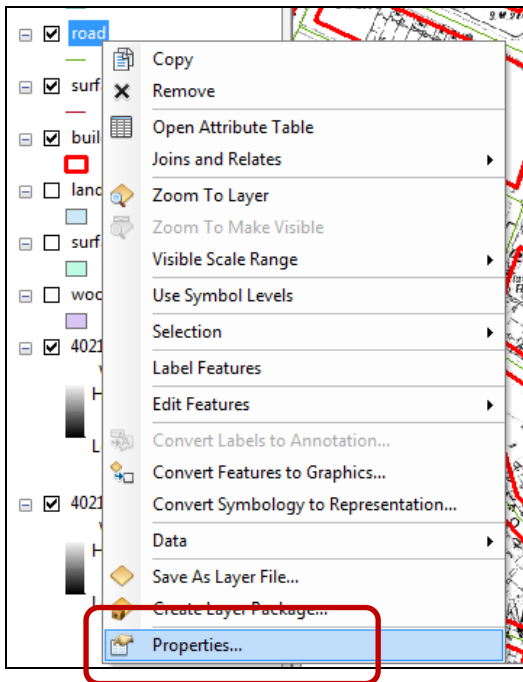
There is a layer file for each layer of VMD data. NOTE that we do not have all of these map layers. We only supplied you with 10 layers of map data, when we cropped the original data to a more manageable size:

Name	Date modified	Type	Size
administrativeboundary.lyr	22/04/2013 17:08	ArcGIS Layer	8 KB
airport.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
building.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
electricitytransmissionline.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
foreshore.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
glasshouse.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
heritagesite.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
land.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
motorwayjunction.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
namedplace.lyr	22/04/2013 17:08	ArcGIS Layer	10 KB
ornament.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
publicamenity.lyr	22/04/2013 17:08	ArcGIS Layer	11 KB
railwaystation.lyr	22/04/2013 17:08	ArcGIS Layer	13 KB
railwaytrack.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
railwaytunnel.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
road.lyr	22/04/2013 17:08	ArcGIS Layer	19 KB
roadtunnel.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
spotheight.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
surfacewaterarea.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
surfacewaterline.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
tidalboundary.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
tidalwater.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB
woodland.lyr	22/04/2013 17:08	ArcGIS Layer	7 KB

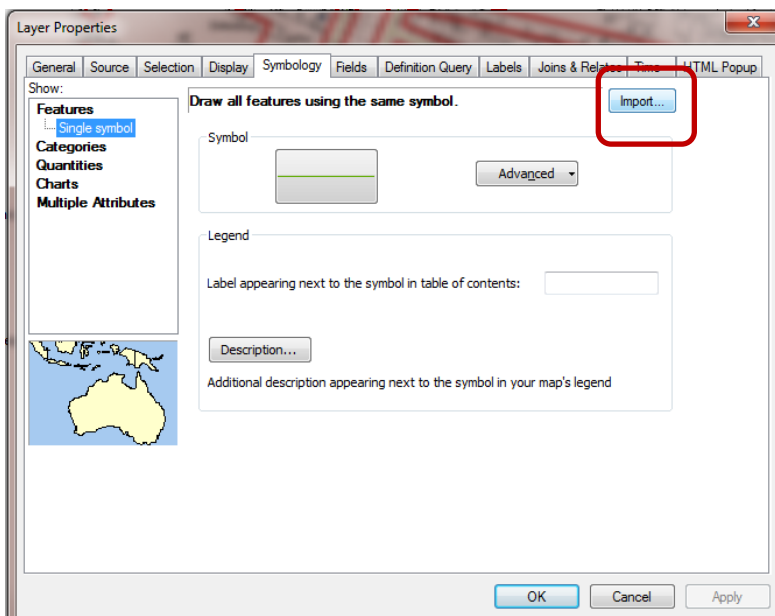


TO APPLY A LAYER FILE.

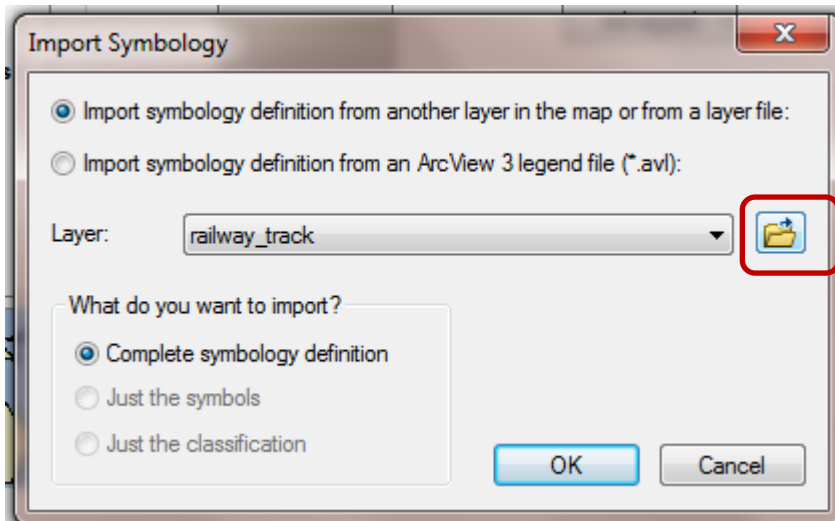
1. Right click on a layer (try road) and select **Properties**.



2. Select Symbology, then click Import:

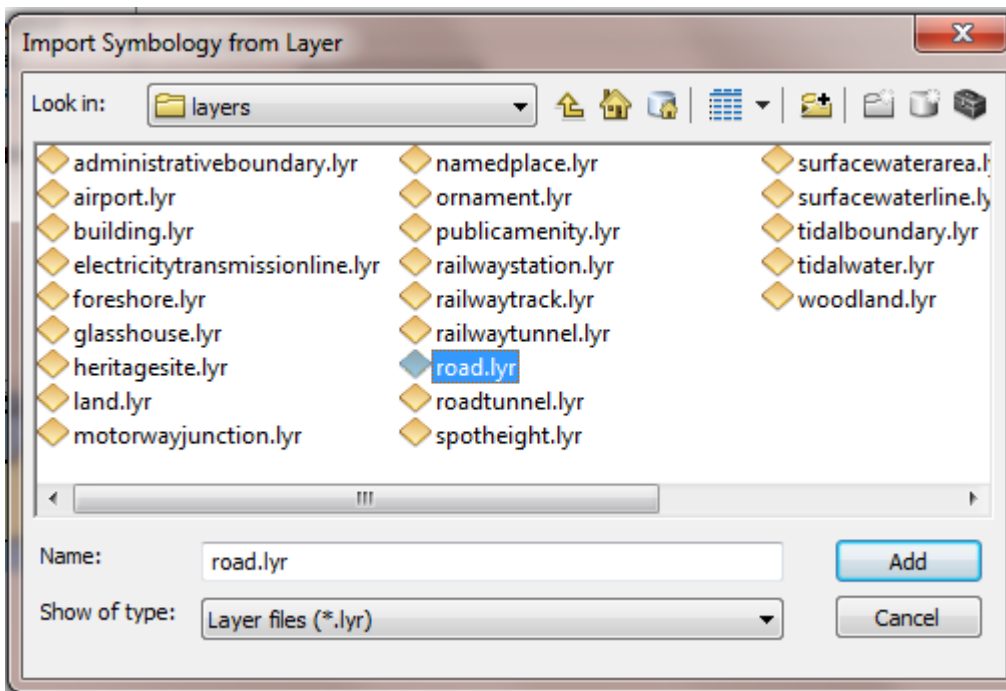


3. Click on the yellow folder icon.

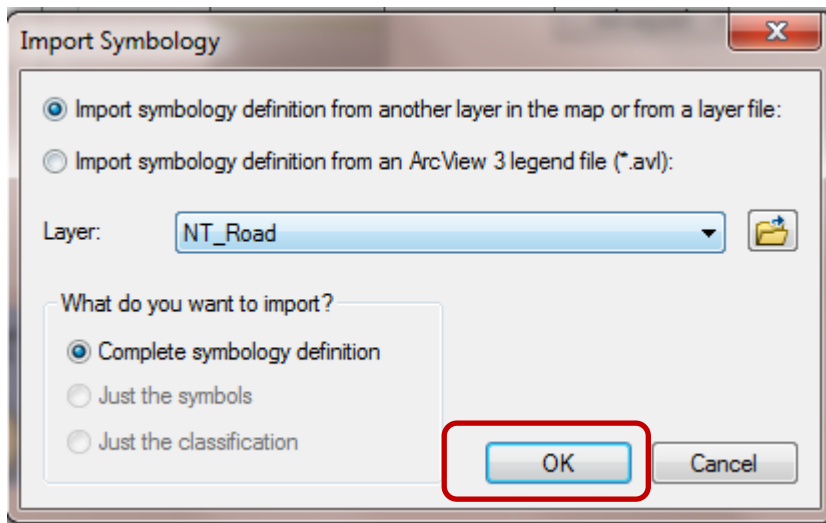


4. Now navigate to the layers folder, and click on **road.lyr**.

5. Click Add.

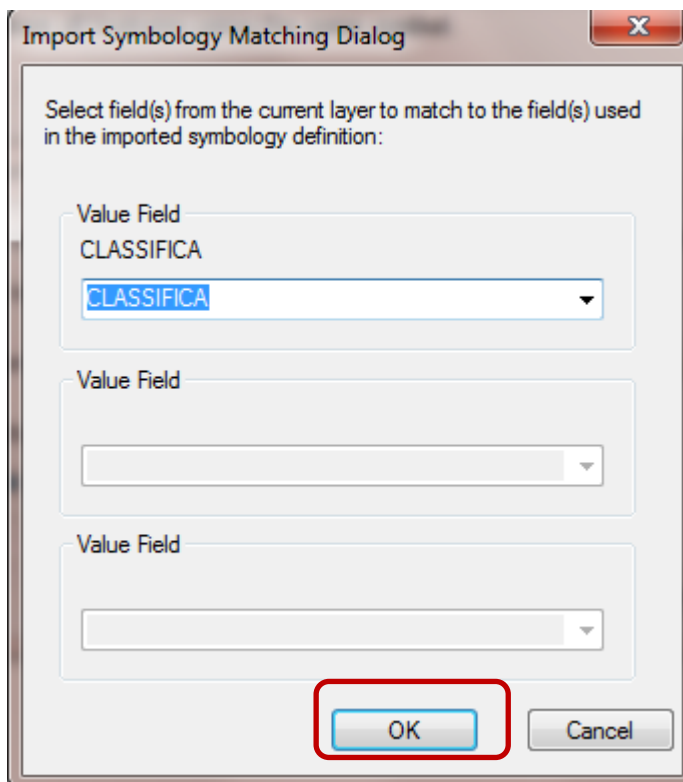


6. Click OK.



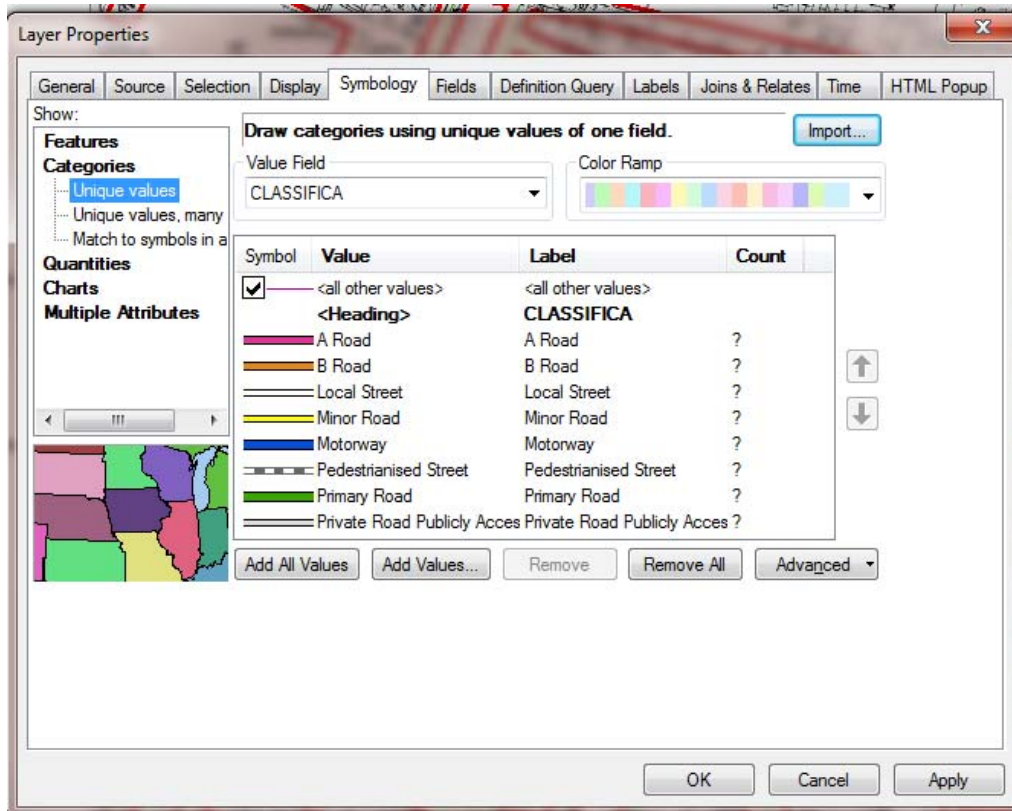
7. Set Classifica as the value field to be used. This value in the map data defines the type of road, A road, B road, Motorway etc.

8. Click OK.

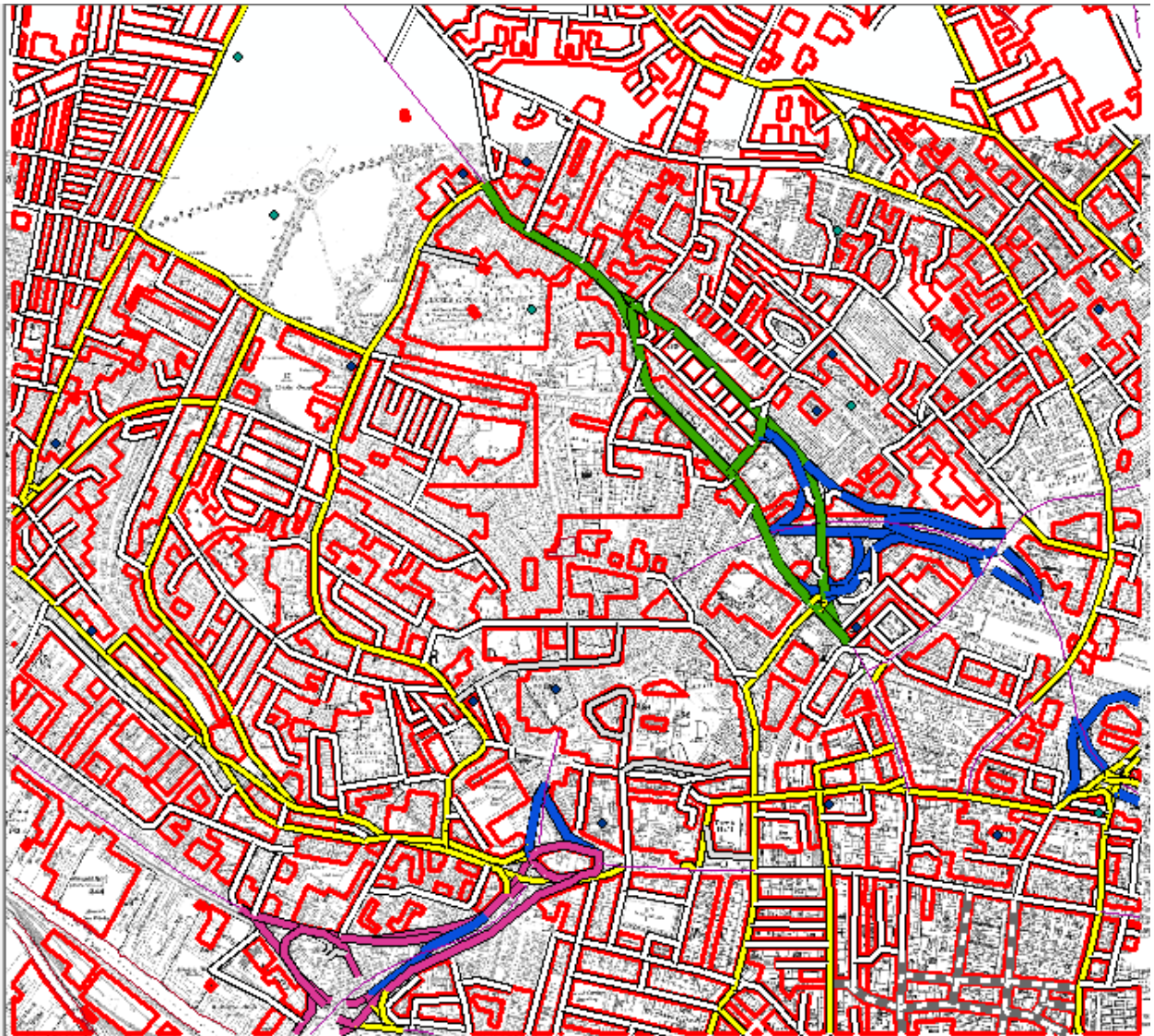


You should now see that there are many different symbols for different road categories in the Symbology tab.

9. Click Apply and then OK.



10. If you zoom out, you should be able to see a motorway junction and some of the different road types.

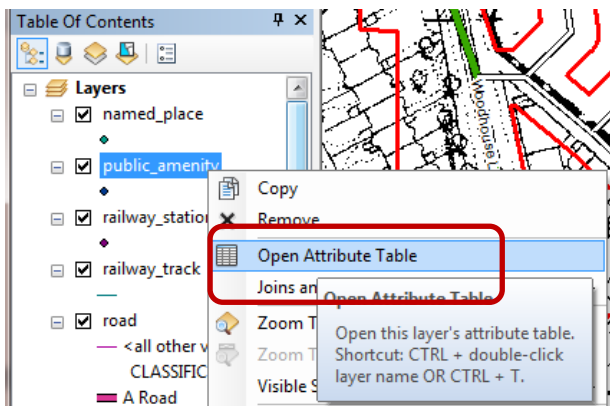


11. OPTIONAL - You could now go ahead and apply the relevant layer file(s) to some or all of the different layers of VMD you have on your map. Go ahead and try this out if it's of interest to you.

METHOD 2 – AMEND SYMBOLOGY USING ATTRIBUTE DATA

You can also use the *attribute* data in map layers to style it. Let’s look at the attribute data for a layer first.

1. Right-click on the **public\_amenity** layer.
2. Click **Open Attribute Table**.



The attribute table shows us all the data that we have for a layer.

Currently all the **public\_amenity** points have the same symbol. For this layer we could use the **Classifica** field to style the data, so that we have a different symbol for Place of Worship, for Education Facility and so on.

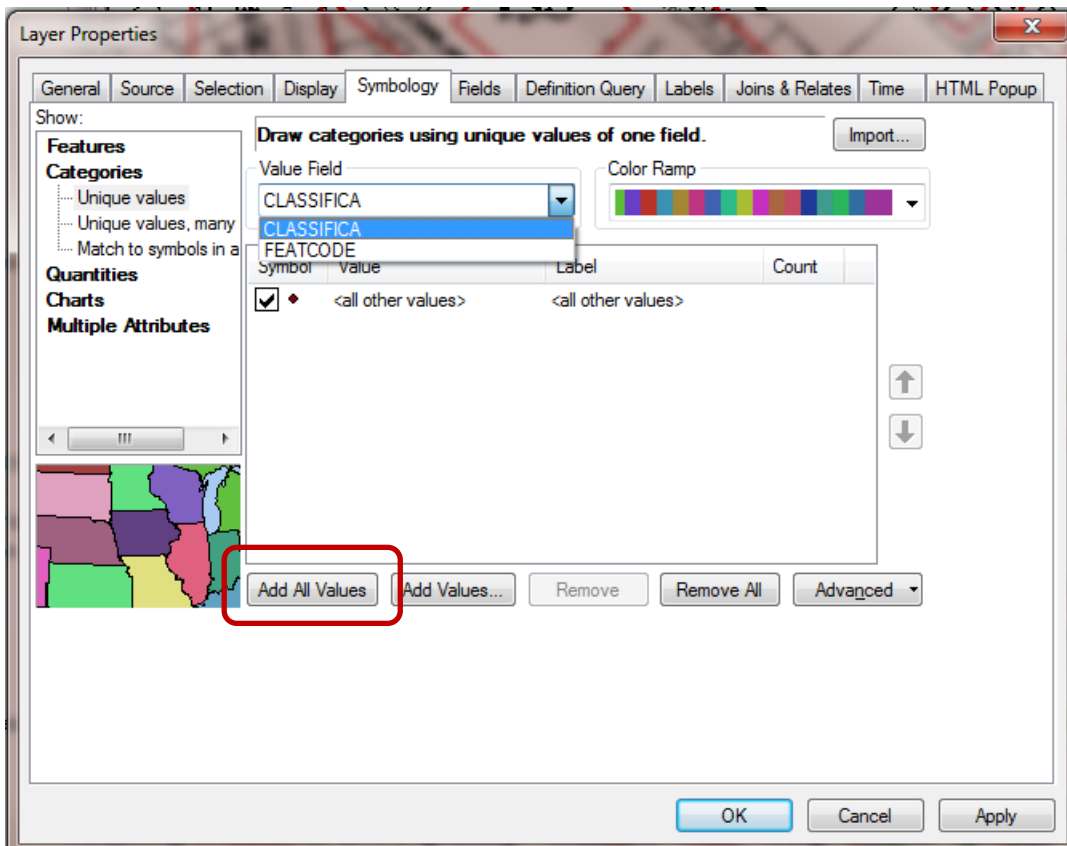
3. Close the Attribute Table.

The screenshot shows the 'Table' window in ArcGIS. The table has the following data:

FID	Shape	CLASSIFICA	FEATCODE
0	Point	Place Of Worship	25253
1	Point	Education Facility	25250
2	Point	Education Facility	25250
3	Point	Place Of Worship	25253
4	Point	Place Of Worship	25253
5	Point	Leisure Or Sports Centre	25254
6	Point	Place Of Worship	25253
7	Point	Education Facility	25250
8	Point	Place Of Worship	25253
9	Point	Police Station	25251

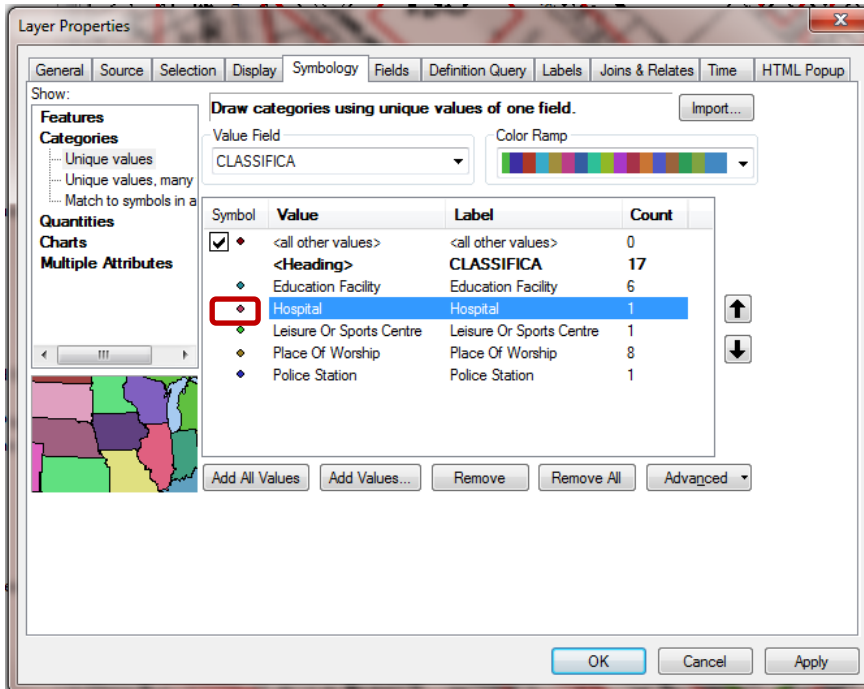
The table is titled 'public\_amenity' and shows 10 rows of data. The status bar at the bottom indicates '(0 out of 17 Selected)'.

4. First, right-click on **public\_amenity** and select **Properties**.
5. Open the Symbology tab.
6. Select **Categories** and **unique values** on the left.
7. Select **Classifica** as the **value field** and click **Add all values**.



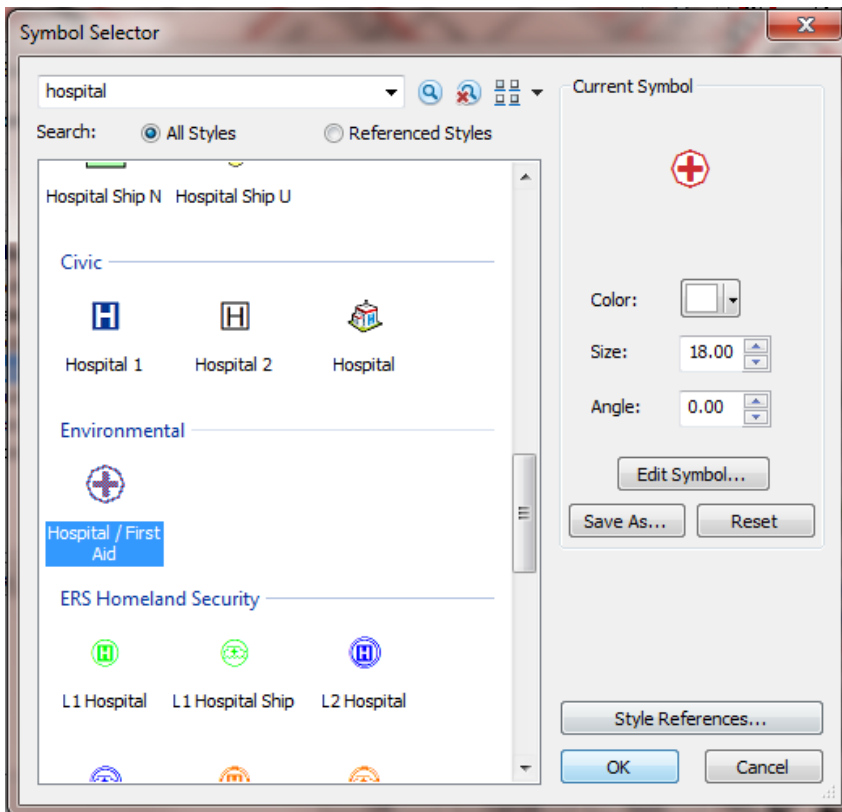
You will see the different types of public amenity populate the Values field, with a different coloured symbol for each one.

8. You can click Apply and OK to select these symbols, or you can edit them.
9. To amend the symbols used, just click on any symbol to generate the Symbol Selector, for example click on the symbol next to **Hospital**.



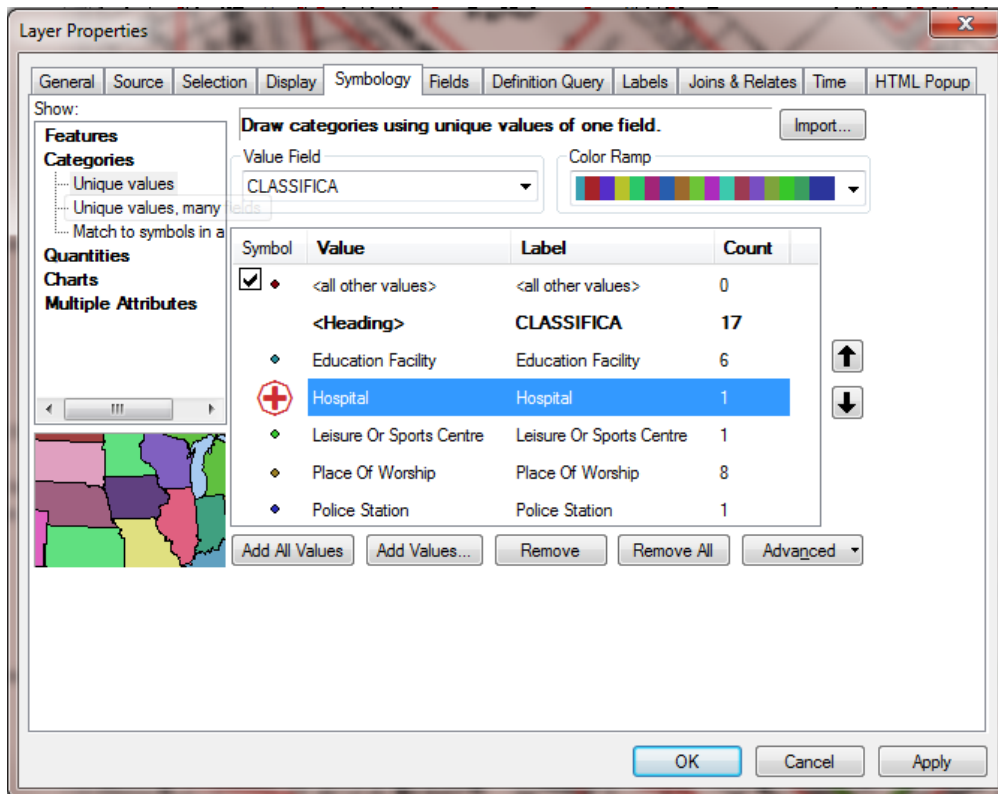
10. Choose any symbol you like from the Symbol Selector and click OK.

NOTE: you can search for symbols, using the search box at the top of the box.





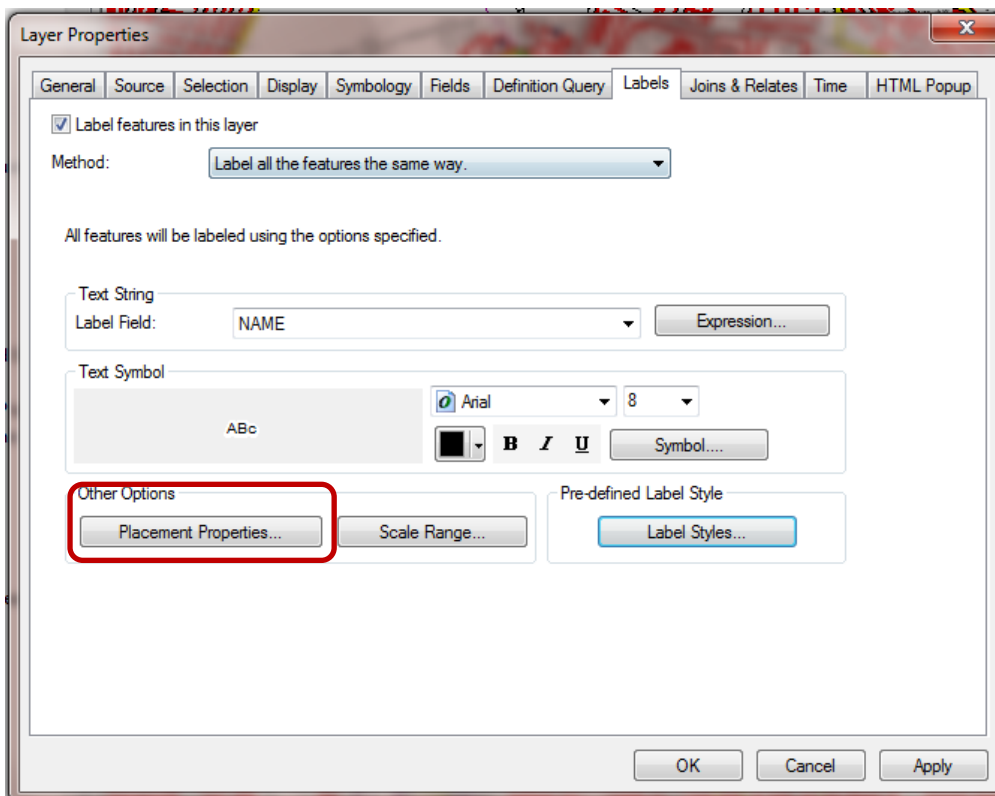
11. When you are satisfied with your selection of symbols, click Apply and OK.



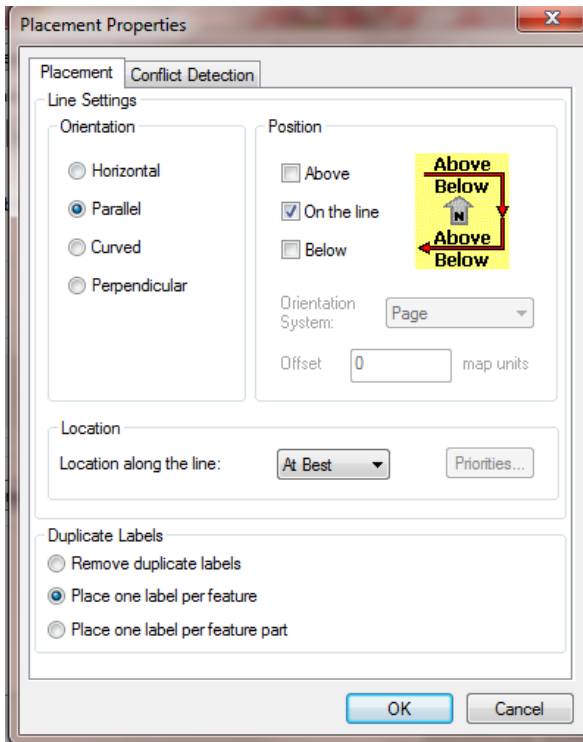
## LABEL MAP FEATURES

There are lots of options for labelling features. Here are some simple options for applying labels to the road layer.

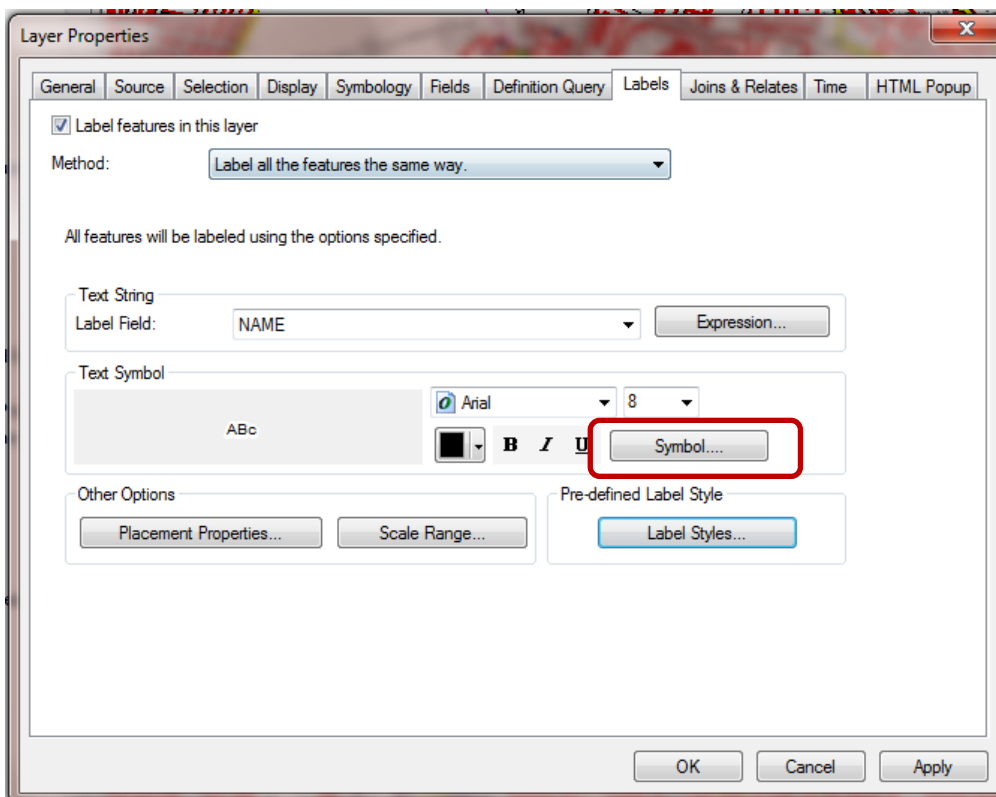
1. Right click **road** and select **Properties**.
2. Select **Labels**.
3. Select the options as shown below.
4. Click **Placement Properties**.



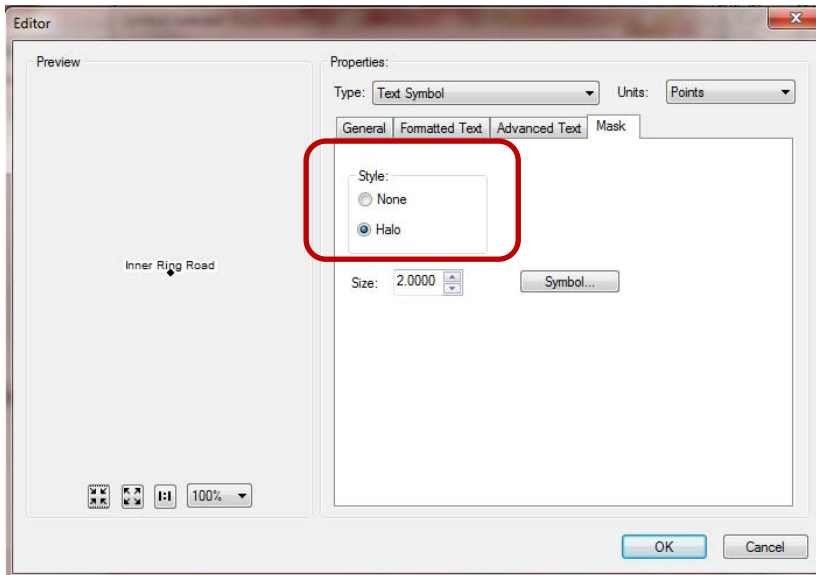
5. Select the options as shown, to place labels on the road line.
6. Click OK.



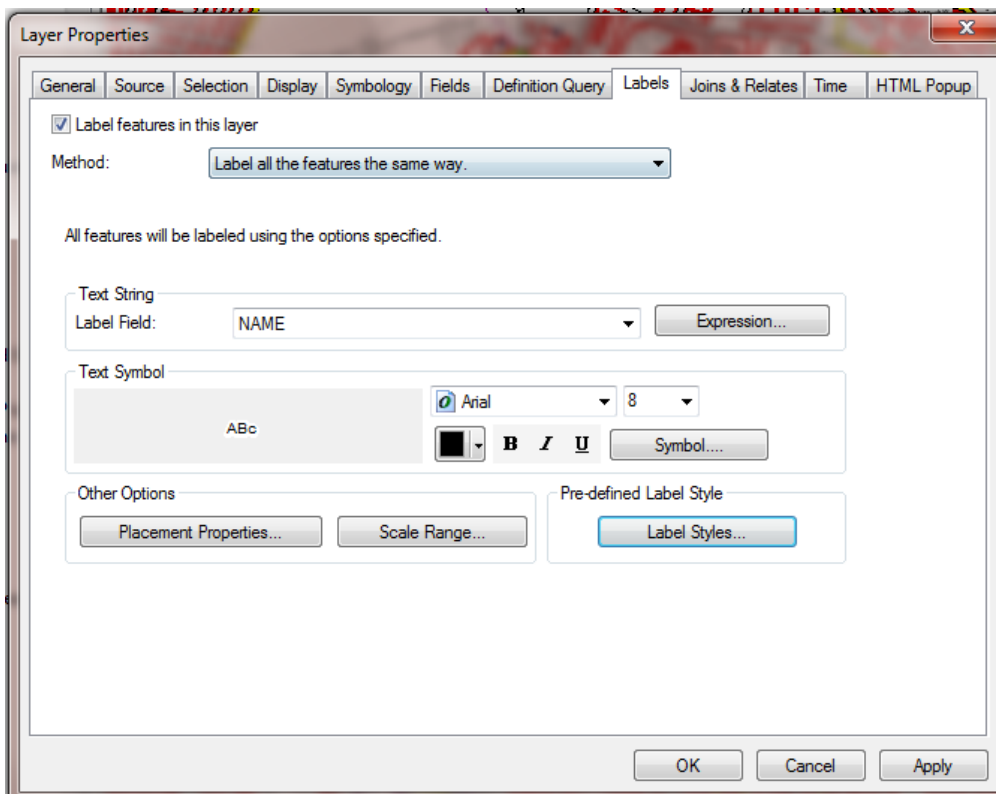
7. Now click **Symbol**, then **Edit Symbol**.



8. Select the Mask tab and click Halo. This will place a white background on your label to make it easier to read.
9. Click OK.



10. Click Apply and OK.



Your labels should be visible on the roads.

