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Introduction

This guide contains instructions for viewing several types of map data from Digimap Ordnance Survey Collection in ArcGIS.

You will need access to ArcGIS software to complete all of the exercises in this guide. No prior knowledge of ArcGIS is required. The instructions and images have been prepared using ArcGIS version 10.1.

What will I learn?

- The key applications used in ArcGIS desktop software
- How to:
 - o add raster and vector map data to ArcMap
 - o add point data to ArcMap
 - o amend symbology of map layers
 - o select vector map features

What data do I have?

We have downloaded data from Digimap for you. The data we have downloaded is covered by the following licence:

OS OpenData licence: <u>http://www.ordnancesurvey.co.uk/oswebsite/docs/licences/os-opendata-licence.pdf</u>

We have intentionally downloaded data that is covered by this 'open' licence, in order that we can provide data freely with this training exercise.

Please remember that when you download data from Digimap Collections, the data is typically covered by the Digimap licence(s), meaning that the **use of the map data is strictly limited to educational use.**

Familiarise yourself with the Digimap licences here:

http://digimap.edina.ac.uk/webhelp/digimapsupport/about.htm#access/licence_agreement s.htm

OpenData folder

You have a folder called **OpenData**, with some sub-folders. Here's a summary of the data in these folders:

Name	Date modified	Туре
🌗 codepoint-poly_172415	17/04/2013 16:44	File folder
🌗 layers	25/04/2013 16:21	File folder
🌗 streetview_172418	18/04/2013 10:05	File folder
퉬 Vector Map District	01/05/2013 10:48	File folder
🔊 gazetteer_results_36ae08ce_7664_4017_90d2_7b87068b6efe.csv	18/04/2013 15:19	Microsoft Excel C

- **Code Point Polygons** postcode boundaries for the North-East postal region. Downloaded from Digimap OS in Shape file format.
- Layers layer files, for use with Vector Map District map data, used to apply a cartographic style to the map. Available from Digimap help pages.
- **OS Streetview** 1:10000 scale raster map. Downloaded from Digimap Ordnance Survey Collection in TIFF format.
- Vector Map District (VMD)
 - Vector map topographic map data, downloaded in Shape file format from Digimap Ordnance Survey Collection.
 - VMD is provided in 100 x 100 km square tiles from Digimap. We have 'clipped' the large tile to a smaller area of Newcastle city centre.
- **Gazetteer** point data. A selection of place name data for the Newcastle area, downloaded from the Gazetteer Plus service in Digimap OS, in CSV format.

Raster and Vector data

A raster consists of a matrix of cells (or pixels) in a grid, where each cell contains a value representing information, such as temperature. Rasters are scanned maps, digital aerial photographs, satellite imagery or digital photographs.

Vector map data represents geographic features with points, lines and polygons. Each point is a pair of geographic coordinates. Vector data can store information about the attributes of the map features.

Please read this Ordnance Survey page on raster and vector data:

http://www.ordnancesurvey.co.uk/support/understanding-gis/raster-vector.html

ArcGIS

ArcGIS is **Geographic Information System** software that is used to view and analyse geospatial data.

There are different levels of license for ArcGIS, but all levels include two applications: ArcMap and ArcCatalog.

- ArcMap is the application you work with to explore and analyse data and make maps.
- ArcCatalog is the application you work with to manage data.

Some ArcGIS Desktop products include additional applications, such as:

• ArcToolbox[™] - an application that contains many tools for GIS tasks. You can access ArcToolbox from both ArcMap and ArcCatalog.

ArcMap

The ArcMap interface consists of the table of contents on the left and the map display area on the right, as well as a number of toolbars and menus for working with the map and its data.



Table of contents

The order of layers within the table of contents is important; the layers at the top of the table of contents draw on top of the layers below them.

Therefore, you should put the layers that form the background of your map, such as the ocean, at the bottom of the table of contents.

Map display area

There are two views for working with data: data view and layout view.

You will find buttons to switch between views at the bottom left of the map display area.

m

In data view, you explore, edit, query, analyse, and symbolise data.

In layout view, you arrange data frames and add other map elements, such as scale bars, titles, and legends, to create a map layout that can be published in print or digital form.

Toolbars

The Standard and Tools toolbars are visible in this screen. Toolbar options are available from View > Toolbars on the main menu. Toolbars can be floating or fixed.

ſ	Q	Un	titled -	ArcMap	>							_	
	F	ile	Edit	View	Bookm	arks	Insert	Selectio	n Geo	processing	Customize	Windows	Help
	1	3	1	8	. 🖻 🕻	×	50	- 🔶 -				🖽 🇊 👼] ¦
	:0	Q	i 🧐	3 🕻	K K X <	€⇒	1/20 -		1	7 🗊 🍀	M 🛍 🕺	💿 편 🖕	_
l	-												

ArcCatalog

ArcCatalog is the ArcGIS application designed for browsing, managing, and documenting geographic data. Think of ArcCatalog as a window into your GIS database. From ArcCatalog you can access data stored on your computer's hard drives, local networks, and even the Internet.

To access data, you create a connection to its location (such as a folder on your C: drive). Collectively, the connections you create are called the Catalog.

The Catalog tree, on the left, can be used to browse and preview data.

The preview pane on the right provides three different tabs for previewing information about the data; contents, preview and metadata.

🧈 ArcCatalog - ArcInfo - M:\CPD\GISWirtualCampus\LearnA	rcGIS\Start\tourism.mxd
<u>Eile E</u> dit <u>V</u> iew <u>G</u> o <u>T</u> ools <u>W</u> indow <u>H</u> elp	
Data Conversion ▼ Image: Im	⋈? @ @ @ @ @ #
Location: M:\CPD\GIS\VirtualCampus\LearnArcGIS\Start\tourism.mxd	_
Stylesheet: FGDCESRI 🗾 🗐 🖆 🗃 👪	
C: C: C: C: MMLayers shape files D: M: CPD CIPD CIPD CIPD CIPD CIPD Cipt Citor Citor Cipt Citor	Contents Preview Metadata Name: tourism.mxd Type: Map Document San Diego, California Freview Pane

ArcToolbox

ArcToolbox provides an organised collection of tools used for GIS analysis, data management, and data conversion.



The number of tools you have depends on your ArcGIS license.

Start ArcMap

- **1.** Start ArcMap from your list of programs.
- 2. Select New Maps > Blank map.
- 3. Click OK.

Q ArcMap - Getting Started			X
Open existing map or make new ma	ap using a template		
Existing Maps	My Templates		· · · ·
- Recent - Browse for more - New Maps - My Templates - Templates - Templates - Standard Page Sizes			W
Architectural Paç ISO (A) Page Siz North American (Blank Map		
Traditional Layouts Industry	Architectural Page Sizes		^
USA World Browse for more	9 in. x 12 in.	9 in. x 12 in.	12 in. x 18 in.
•	ARCH A Landscape	ARCH A Portrait	ARCH B Landscape
C:\Users\Viv\AppData\Roaming\E	SRI\Desktop10.1\ArcMap\Templates	Wormal.mxt	
Default geodatabase for this ma	ap:		What is this?
C:\Users\Viv\Documents\ArcGI	S\Default.gdb		- 🖻
Do not show this dialog in the	future.		OK Cancel

Import Streetview raster map data

Let's add the OS Streetview raster map data.

Raster maps are provided in TIFF image format from Digimap.

These files are straightforward to work with in GIS; they require no preparation or conversion.

- 1. Click File > Add Data > Add Data, or the yellow icon with a plus sign on it.
- 2. You may need to connect to the folder that contains your Digimap data. ArcGIS does not automatically see your data folder. Click the **Connect to folder** button, a yellow



- 3. Select the folder **OpenData**.
- 4. Click OK.
- 5. Navigate to the folder OpenData > streetview.
- 6. Use CTRL-click to select all 4 .tif files.
- 7. Click Add.

Add Data		×
Look in: 🛅	streetview_172418 🔹 🏠 🏠 🗔 🏥 🗸 🖴 🗎	i) 📦
nz26ne.tif nz26nw.tif nz26se.tif nz26sw.tif os_open_co	nditions.txt	
Name:	nz26ne.tif; nz26nw.tif; nz26se.tif; nz26sw.tif Ad	d
Show of type:	Datasets, Layers and Results	cel

- 8. If asked to create pyramids, say Yes.
- 9. Tick the box 'use my choice and do not show this dialog...'

ſ	Create pyramids for nz26ne.tif (5000 x 5000)	×				
	This raster data source does not have pyramids or contains insufficient pyramids. Pyramids allow for rapid display at varying resolutions.					
	Pyramid building may take a Would you like to create	few moments. pyramids?				
	About pyramids Yes No Cancel					
	Pyramid resampling technique	Nearest Neighbor 🗸				
	Pyramid compression type	Default 👻				
	Compression quality	75				
	Use my choice and do not show this dialog in the future.					

10. If you receive this error, message, click OK:



In this exercise we will add several different map data files to ArcMap. The table of contents can get quite busy. Let's create a group layer to contain all of our Streetview data together.

- 11. Right-click on Layers.
- 12. Select New Group Layer.



13. Now right click on the New Group Layer and select Properties.



- 14. Select the General Tab.
- 15. Type **Streetview** in the Layer Name box.

Group Layer Properties	×
General Group Display	
Layer Name: Streetview	Visible
Description:	*
	_
Credite:	
You can specify the range of scales at which this layer will be shown:	
Show layer at all scales	
On't show layer when zoomed:	(11 - S
Out beyond: None> - (minimum scale)	
In beyond: <pre></pre>	and the
ОК	Cancel Apply

- 16. Click OK.
- 17. Click and drag all the Streetview layers to the new group layer.





Your ArcMap window should look similar to this:

- 18. Save your ArcMap document. Click File > Save as.
- 19. Name the file and click Save.

Import Code Point Polygons

Code-point polygons are GB postcode boundaries, showing the geographic extent of each postcode unit. These can be downloaded from Digimap's Ordnance Survey Collection in Shape file format, which is compatible with ArcGIS and many other GIS software packages.

- 1. Click Add Data.
- 2. Navigate to the **codepoint-poly** folder. Double click on it, then double click NE.
- 3. Click ne.shp and click Add.

Add Data	×
Look in: 🛅 r	ne 🔹 🔁 🔁 🐨 🗞
ne.shp	bxt
ne_vstreet_l	ookup.txt
Name:	ne.shp Add
Show of type:	Datasets, Layers and Results Cancel

You should see a new layer in the Table of Contents area.



Our NE.shp file has covered our Streetview data.

Let's amend the appearance of the Code Point Polygons layer so we can see the Streetview data too.

Amend Symbology of Code Point Polygons

1. Click once, on the rectangle shape under the text **ne** in the table of contents:



The Symbol Selector dialog box will open.

- 2. Click on the drop down arrow next to Fill Color.
- 3. Select No Colour.

Now change the border width and colour of the Code Point Polygons, so they will stand out more on our map.

- 4. Select Outline Width of 2.00.
- 5. Select an outline colour of your choice, anything that will stand out. We have selected red.
- 6. Click OK.

Type here	to search	▼ 😫 🔊 🛨	Current Symbol
Search:	All Styles	Referenced Styles	
ESRI —			
Green	n Blue	Sun	Fill Color:
			Outline Width:
Hollov	v Lake	Rose	Outline Color:
			Edit Symbol
Beige	Yellow	Olive	Save As Reset
Green	Jade	Blue	
			Style References

- 7. Zoom in for a closer look. Is your raster data visible through the Code Point Polygons?
- 8. Zoom in by moving the scroll wheel on your mouse away from your screen.
- 9. Or select the Zoom In button from the toolbar, then click and drag to draw a rectangle over the map where you wish to zoom in.



It would be useful to label the polygons with their postcode.

- 10. Right-click on **ne** in the table of contents.
- 11. Click Label Features.



Postcodes should now have been added to your polygons.



12. For more labelling options, right-click on **ne > Properties > Labels.**

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Import point data

Now we are going to add some point data to our map. This is vector map data.

In your OpenData folder you will see a CSV file, gazetteer_results....CSV

Name	Date modified	Туре
🍌 codepoint-poly_172415	17/04/2013 16:44	File folder
🌗 layers	25/04/2013 16:21	File folder
🍌 streetview_172418	18/04/2013 10:05	File folder
🎍 Vector Map District	01/05/2013 10:48	File folder
🔊 gazetteer_results_36ae08ce_7664_4017_90d2_7b87068b6efe.csv	1.8/04/2013 15:19	Microsoft Excel C

This file was downloaded from the Gazetteer Plus service in Digimap's Ordnance Survey Collection.

The file contains around 90 place names in the Newcastle area, along with their geographic coordinates.

When we add this data to the map, we will see each place name as a point on the map.



1. In ArcMap, click File > Add Data > Add XY Data.

🔍 ne	wcastle.mxd - ArcMap						
File	Edit View Bookmarks	Insert Se	lectio	on Geoprocessing Customize Win			
	New	Ctrl+N	b - I				
1	Open	Ctrl+0	k	🚺 🖉 💷 🔛 🗛 🚜 🖉 💽			
	Save	Ctrl+S	q				
	Save As						
	Save A Copy		-	The second and the se			
	Share As	•		h h h and t			
	Add Data	×	¢	Add Data			
	Sign In			Add Basemap			
	ArcGIS Online			Add Data From ArcGIS Online			
	Page and Print Setup		**+ * *	Add XY Data			

The first step is to identify our CSV file.

2. Click the Yellow folder icon, navigate to and select the file.

Add XY Data
A table containing X and Y coordinate data can be added to the map as a layer
Choose a table from the map or browse for another table:
gazetteer_results_36ae08ce_7664_4017_90d2_7b8 💌 🖻

3. Click Add.



- 4. Select Easting (X) and Northing (Y) as the X and Y fields.
- 5. Click Edit to identify the coordinate system as British National Grid.

Add XY Data						
A table contai map as a laye	ning X and Y coordinate data can be added to the $\ensuremath{\mathbf{r}}$					
Choose a tabl	e from the map or browse for another table:					
gazettee	r_results_36ae08ce_7664_4017_90d2_7b8					
X Field:	Easting					
Y Field:	Northing 🗸					
Z Field:	<none></none>					
Description Projected Name: Bi Geograph Name: G	Description: Projected Coordinate System: Name: British_National_Grid Geographic Coordinate System: Name: GCS_OSGB_1936					
•	4					
Show De	etails Edit					
🔽 Warn me i	f the resulting layer will have restricted functionality					
About adding	XY data OK Cancel					

- Select Projected Coordinate Systems > National Grids > Europe > British National Grid.
- 7. Click OK.

Spatial Reference Properties	
XY Coordinate System	
Type here to search 🔻 🍳 🕷	0 🚭 - 🔆
Europe	•
Belge Lambert 1972	
Belge Lambert 2005	
British National Grid	
CH1903 LV03	-
Current coordinate system:	
British_National_Grid WKID: 27700 Authority: EPSG	<u>^</u>
Projection: Transverse_Mercator False_Easting: 400000.0 False_Northing: -100000.0	E
Central_Meridian: -2.0 Scale_Factor: 0.9996012717 Latitude_Of_Origin: 49.0	
Linear Unit: Meter (1.0)	-
	OK Cancel

8. Click OK at the Add XY Data box.



9. Click OK if you see the message **Table does not have object-ID field**.



- 10. We want to view the point data in context; make sure the Streetview layer is displayed.
- 11. Uncheck the **ne** (code point polygons) layer in the Table of Contents so that it is not displayed.
- 12. You may not be able to see the points, depending on your location.
- 13. Right click on the gazetteer layer in the Table of Contents.
- 14. Click Zoom to layer.
- 15. Your ArcMap window should look similar to this:



To make our points more visible on our map, we can adjust the symbology.

- 1. Label the features. Right-click on the layer and select Label Features.
- 2. Now amend the size and colour of the symbol. In the Table of Contents, click on the dot under the Gazetteer layer.
- 3. This generates the Symbol Selector box.

The current symbol is only 4.00 points in size and is a dark colour.

4 Select an alternative – we suggest a bright colour and a size of 10 points or more.

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5 Click **OK**.



Your symbols should now be more visible.

Import Vector Map District data

Now let's add our Vector Map District map data.

- 1. First, let's add a **New Group Layer** in the Table of contents (as we did for Streetview map data).
- 2. Name the new group layer **VectorMapDistrict.**
- 3. Right click your new group layer and click Add Data.



- 4. Go to the Vector Map District folder.
- 5. Select all the Shape files and click Add.

Add Data	
Look in: 🛅	Vector Map District 🔹 🛧 🏠 🎲 🖬 🖛 🖾 🖓 🚳
 building.sh land.shp named_place public_ame railway_stat railway_trace road.shp surface_wat 	p woodland.shp ce.shp nity.shp ion.shp ck.shp ter_area.shp ter_line.shp
Name:	building.shp; land.shp; named_place.shp; public_amenity.s Add
Show of type:	Datasets, Layers and Results Cancel



Note that in the Table of Contents (shown in the image above), 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 current scale, you may not be able to see the VMD data clearly.

6. If you cannot see the VMD data, right click on **building** and select **Zoom to Layer**.



7. Uncheck the other map layers, so that you are only displaying VMD. Your map should look similar to the image below.



Amend Vector Map District symbology

We can apply a cartographic style to the VMD data. There are different methods for doing this.

Method 1 - Amend symbology using Layer Files

You can 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 for you but they are also available from the Digimap help pages: <u>http://digimap.edina.ac.uk/webhelp/os/using_data_with_arcgis/using_vectormap_data/using_vectormap_data/using_vectormap_district.htm</u>

1. In Windows Explorer, double click on the folder **layers**, supplied in the OpenData folder 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 a VMD map layer corresponding to each of theese layer files.

We only supplied you with 10 layers of map data, when we cropped the original 100 x 100km tile of map data to a more manageable size:

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

To apply a layer file.

1. In ArcMap, right click on a layer in the Table of Contents (try road) and select **Properties.**



2. Select Symbology, then click Import:

Layer Properties	×
General Source Selecti	on Display Symbology Fields Definition Query Labels Joins & <u>Relates Time</u> HTML Popup
Show: Features Single symbol	Draw all features using the same symbol.
Categories Quantities Charts Multiple Attributes	Advanced -
	Legend
A The sale	Description
\sim	Additional description appearing next to the symbol in your map's legend
	OK Cancel Apply

3. Click on the yellow folder icon.

1	Import Symbo	logy		-	×
	Import sym	bology definition from a	another layer in the	e map or from a la	yer file:
l	Import sym	bology definition from a	an ArcView 3 lege	nd file (*.avl):	
	Layer:	railway_track			
	What do yo	u want to import?			
	Complete	te symbology definition			
	Just the	symbols			
	 Just the 	classification		OK Ca	ancel

- 4. Now navigate to the layers folder, and click on **road.lyr.**
- 5. Click Add.

Import Symbology from Layer		×
Look in: 🔁 layers	- 🕹 🏠 🗔	🗰 🗸 🖆 🖆 🗊 🚳
 administrativeboundary.lyr airport.lyr building.lyr electricitytransmissionline.lyr foreshore.lyr glasshouse.lyr heritagesite.lyr land.lyr motorwayjunction.lyr 	 namedplace.lyr ornament.lyr publicamenity.lyr railwaystation.lyr railwaytrack.lyr railwaytunnel.lyr road.lyr roadtunnel.lyr spotheight.lyr 	surfacewaterarea.l surfacewaterline.ly tidalboundary.lyr tidalwater.lyr woodland.lyr
•		4
Name: road.lyr Show of type: Layer files (*.lyr)		Add

6. Click OK.

Ir	nport Symbo	ology	
Γ	Import sym	bology definition from a	nother layer in the map or from a layer file:
	Import sym	bology definition from a	n ArcView 3 legend file (*.avl):
	Layer:	NT_Road	▼
	What do yo	u want to import?	
	Complete	te symbology definition	
L	 Just the 	symbols	
	 Just the 	classification	OK Cancel

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

Import Symbology Matching Dialog
Select field(s) from the current layer to match to the field(s) used in the imported symbology definition:
Value Field CLASSIFICA
CLASSIFICA -
Value Field
Value Field
OK Cancel

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

9. Click Apply and then OK.

Concerning of the local division of the	be beleeth	on Displa	y Symbology	Fields	Definition Query	Labels J	loins & Relates	Time	HTML Popup
10W:		Draw ca	teaories usin	a uniau	e values of on	e field.		mport	
-eatures		Value Fie	и.		Color	Ramo			
Unique val	lies	CLASSIE			-	Tiomp			
Unique val	ues, many	CLASSI	ICA .					•	
Match to s	ymbols in a	Carlad	M.L.		1-1-1		C		
Quantities		Symbol	value		Labei		Count		
Charts			<all other="" td="" value<=""><td>s></td><td><all other="" td="" val<=""><td>ues></td><td></td><td></td><td></td></all></td></all>	s>	<all other="" td="" val<=""><td>ues></td><td></td><td></td><td></td></all>	ues>			
Multiple Attri	butes		<heading></heading>		CLASSIFIC	A			
			A Road		A Road		?		
			B Road		B Road		1	T	
		-	Local Street		Local Street		2		
•	<u> </u>		Matonumu		Metonway		2		
	VF		Pedectrianiced	Street	Pedestrianis	ad Street	2		
	A ()	_	Primary Road	Succi	Primary Boar	4	2		
	24		Private Road P	ublicly A	cces Private Road	- I Publicly Aco	ces?		
	- Sens	Add All V	alues Add V	alues	Remove	Remove	All Adva	nced •	

- 10. If you zoom out, you should be able to see a motorway junction and some of the different road types.
- 11. 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 (you have done road, there are 9 more layers). Go ahead and try this out if it's of interest to you.

Method 2 - use attribute data

It is possible to use the attribute date of vector map data to apply symbology.

Try this example for the **Public Amenity** layer.

- 1. Right click public amenity layer in the Table of Contents.
- 2. Select Open Attribute Table.

Table Of Contents	4 ×	
🗽 🥥 😓 📮 🗄		
🖃 <i> Layers</i>		
🖃 🗹 Vector Map District		
□ Dublic_amenit	Сору	L
🖃 🗹 railway_station 🗙	Remove	
<all other="" p="" v<=""></all>	Open Attribute Table	

3. Note the column Classifica.

4. This column has entries for the type of public amenity, e.g. hospital, place of worship.

Tal	ble			
:=	-	a- 4	N 🖓 🖾 🖗 🗙	
pu	blic_ar	menity		
	FID	Shape	CLASSIFICA	FEATCODE
•	0	Point	Education Facility	25250
	1	Point	Hospital	25252
	2	Point	Place Of Worship	25253
	3	Point	Hospital	25252
Π	4	Point	Place Of Worship	25253
	5	Point	Education Facility	25250
	6	Point	Hospital	25252
	7	Point	Leisure Or Sports Centre	25254

We can use these entries to apply a different map symbol to each type of public amenity.

- 5. Close the Attribute Table.
- 6. Right click the public amenity layer in the Table of Contents.
- 7. Select Properties.
- 8. Select Symbology.
- 9. On the left, select Categories, then Unique Values.
- 10. Ensure Classifica is selected as the Value Field.
- 11. Now click Add all values under the box.

aeneral Source Select how:	on Displa	ay Symbology Fields	Definition Query Lab	els Joins & Relates	Time	HTML Popup
reatures Categories Unique values	Value Fie CLASSI	eld FICA	Color Ram		import]
Quantities Charts Multiple Attributes	Symbol	Value <all other="" values=""></all>	Label <all other="" values=""></all>	Count		e F
					•	
	Add All V	Add Values	Remove	emove All Adva	auced .	

- 12. You should see the box populated with different symbols.
- 13. Click Apply.
- 14. Click OK at the Layer Properties box.
- 15. Your Table of Contents should now display different symbols for different public amenities.
- 16. You can change any symbol by clicking on it in the Table of Contents.
- 17. Click on the Hospital symbol.
- 18. The Symbol Selector box will open.
- 19. You can search for different symbol types in the box at the top, e.g. type in hospital and click the search icon.

Symbol Selector	
hospital	- @

- 20. Select one of the hospital search results.
- 21. Repeat this for as many public amenity symbols as you wish.

Selecting map features

Let's imagine we want to find out how many features of a particular type exist in a location, e.g. private roads, within a particular postcode sector (e.g. all postcodes beginning with NE1).

1. Uncheck the boxes next to the Streetview data and the Gazetteer data, to make our map display clearer.

Select postcodes

The first step is to select the postcodes that begin with NE1.

- 2. Open the attribute table for NE.
- 3. Click the first icon on the left at the top of the table.
- 4. Click Select by Attributes.

Table	2			
	• 🗄 • 🖳 🌄 🖸 🗛 💥			
A	Find and Replace			×
	Select By Attributes	РР	PC_AREA	
R	Clear Selection	0001925200	NE	
	Clear Selection	0000887830	NE	
	Switch Selection	0000887832	NE	
	Select All	0000887833	NE	
		0000887834	NE	
	Add Field	0000887835	NE	
	Turn All Fields On	0000887837	NE	
		0000887839	NE	
~	Show Field Aliases	0000887840	NE	
		000007044	115	

Complete the **Select by Attributes** box to match the image below – steps:

- 1. Double click Postcode.
- 2. Click Like.
- 3. Type **'NE1 %'**. NOTE: make sure you have a space between NE1 and the % sign. This ensures we only select postcodes that are for the sector NE1. Without a space we would also select NE10, NE11 etc.
- 4. Click Apply.

Select by Attributes	
Enter a WHERE clause to select records in the table window.	
Method : Create a new selection	•
"FID" "POSTCODE" "UPP" "PC_AREA"	
= <> Like > >= And < <= Or _% () Not	
Is Get Unique Values Go To:	
SELECT * FROM ne WHERE:	
"POSTCODE" LIKE 'NE1 %'	*
Clear Verify Help Load Sav Apply Clos	e

Some records will be highlighted in blue in the attribute table.

At the bottrom right of the table it tells you how many records are selected.

н	•	1	1 🕨 🖬 📗	(375 out of 33111 s	Selected)	
Ц	34	Polygon	NE1 1UW	0000400000000887867	NE	Ŧ
	33	Polygon	NE1 1UQ	0000400000000887866	NE	
	32	Polygon	NE1 1UN	0000400000000887865	NE	
	31	Polygon	NE1 1UH	00004000000001987892	NE	
	30	Polygon	NE1 1UG	0000400000000887864	NE	
	29	Polygon	NE1 1UF	0000400000000887863	NE	
	28	Polygon	NE1 1UE	0000400000000887862	NE	

- 5. Close the Select by Attributes dialog box.
- 6. Close the Attribute table.

The selected postcodes should be highlighted in blue on your map, similar to the image below:



Select Private Roads

Next we want to select all Private roads in our road map layer. First we need to work out if this information is contained in our attribute data.

- 7. Open the road attribute table.
- 8. Have a look at the Classifica column. It categorises roads e.g. into Minor Road, B Road etc. One of the categories is Private Road Publicly Accessible, as seen in the image below.

roa	road					
	DFTNUMBER	CLASSIFICA	FEATCODE			
Þ		Local Street	25760			
	B1318	B Road	25743			
		Private Road Publicly Accessible	25780			
		Minor Road	25750			

- 9. Close the road attribute table.
- 10. Click Selection and Select by Attributes at the top of the ArcMap window:

Selection		<u>G</u> eoprocessing	<u>C</u> ustomize
	Select	t By <u>A</u> ttributes	
	Select By Location		ľ
10	Calasi	Du Cranhing	

Complete the Select by Atrributes box to match the image below:

- 1. Select **road** as the layer.
- 2. Double click Classifica.
- 3. Click **Get unique values.** The box on the right will populate with the road categories.
- 4. Click Like.
- 5. Double click 'Private Road Publicly Accessible' from the box on the right (you may need to scroll).
- 6. Click Apply.
- 7. **Close** the Select by Attributes box.

Select By Att	ributes 🗾
Layer:	✓ road ✓ Only show selectable layers in this list
Method:	Create a new selection
"FID" "NAME" "DFTNUM "CLASSIFI "FEATCOL	BER" CA" DE"
	> Like = And = Or
_% () Not
SELECT * FI	ROM road WHERE:
"CLASSIFIC	A" LIKE 'Private Road Publicly Accessible'
Clear	Verify Help Load Save
	OK Apply Close

If we opened the road attribute table, you would see there are now 31 roads selected.

	452	Polyline			Private Road Publicly Acces:
	483	Polyline			Private Road Publicly Access
E	843	Polyline			Private Road Publicly Acces:
	914	Polyline			Private Road Publicly Access
	924	Polyline			Private Road Publicly Access
	1121	Polyline			Private Road Publicly Access
11	_		111		P.
1	• •	1) 🔜 📕 I (31 out of 1424 S	Selected)
r					

Select Private Roads with NE1 postcodes

Now we have selected all the Private Roads in our map data, we want to narrow down our selection to the Private Roads with a postcode of NE1.

- 1. Click **Selection** and **Select by Location** at the top of the ArcMap window.
- 2. The Selection method is 'select from the currently selected features in'

Select By Location	x			
Select features from one or more target layers based on their location in relation to the features in the source layer.				
Selection method:				
select features from				
select features from add to the currently selected features in remove from the currently selected features in				
select from the currently selected features in				

- 3. The target layer is **road**.
- 4. The source layer is NE, the postcode boundaries.
- 5. Click **'use selected features'** under Source Layer.
- 6. Click Apply.
- 7. Click Close.

Target layer(s):
 ✓ road □ ne □ NZ_Building □ building
Only show selectable layers in this list Source layer:
💖 ne 📃 💌
Use selected features (375 features selected)
Spatial selection method for target layer feature(s):
intersect the source layer feature
Apply a search distance
300.000000 Meters •
About select by location OK Apply Close

8. Open the attribute table for road, to see that there are 11 private roads with a postcode in the NE1 sector.

Table							
🗄 - 🖶 - 🖳 🌄 🖸 🚳 🗶 🖓 🖓 🚳 🐼 🗙							
roa	road ×						
	FID	Shape	NAME	DFTNUMBER	CLASSIFIC/		
Þ	286	Polyline			Private Road Publicly Access		
	397	Polyline			Private Road Publicly Acces:		
	404	Polyline			Private Road Publicly Access		
	408	Polyline			Private Road Publicly Access		
	417	Polyline			Private Road Publicly Access		
	451	Polyline			Private Road Publicly Access		
	452	Polyline			Private Road Publicly Acces:		
	483	Polyline			Private Road Publicly Acces:		
	843	Polyline			Private Road Publicly Acces:		
	914	Polyline			Private Road Publicly Acces:		
	924	Polyline			Private Road Publicly Acces:		
۰ III ۲							
I							
ro	road						

Export your selected records

It would be good to save our selected features, so we can use them again.

1. First, click on **List by Selection** at the top of the Table of Contents. It's an arrow icon, as shown in the image below.



You should be able to see that there are selections in two layers ,NE and road, as seen in the image below.

Table Of Contents	
≿ 🏮 🧇 🖳 🗉	
Selected	
🚸 ne	🖸 🖸 375
🔗 road	🖸 🖸 11
 Selectable (no features selected) 	
♦ NZ_Building	M 1 0
🕸 building	
 Not Selectable 	
🚸 nz26ne.tif	
🕸 nz26nw.tif	
🕸 nz26se.tif	
A no 26 milit	

We want to save the 11 Private Roads with a postcode starting with NE1.

- 2. Right click the road layer.
- 3. Click Create layer from Selected Features.



4. Now lick List by Drawing Order at the top of the Table of Contents, the icon furthest left.

Table Of Contents
法 🥥 😂 🔚
List By Drawing Order
 Layers are listed by drawing order. Drag and drop to change drawing order. Right-click layers for more
commands. Click a symbol to change it.
🛇 building

You should be able to see a new layer, called road selection.

- 5. Right click on the road_selection layer.
- 6. Select Data, then Export Data.

Iding	4 0	convert reatures to oraphics	NE4 S	98H
1		Convert Symbology to Representation	Y_	
6ne.		Data		Repair Data Source
6nw	\diamond	Save As Layer File	\	Export Data
.ose. 6sw.	Ŷ	Create Layer Package		Export To CAD
	1	Properties		Make Permanent
	_			View Item Description
			62	Review/Rematch Addresses
			NE	4 985 NE4 98R NE4 5PH

- 1. Choose to export All features.
- 2. Select to use the same coordinate system as the layer's source data.
- 3. Click on the yellow folder icon, to select where to save the new data.

Export Data	×					
Export: All features	•					
Use the same coordinate system as:						
It is layer's source data						
💿 the data frame						
 the feature dataset you export the data into (only applies if you export to a feature dataset in a geodatabase) 						
Output feature dass:						
Z:\User Support\Training\Geo\Training exercises\Newcastle\OpenD;						
OK Cance						

- 4. Select a suitable folder to save the data. we have chosen the Vector Map District folder.
- 5. Give the data a meaningful name we have input **private_roads_ne1**.
- 6. Note that there are three file type options at the bottom of the box select Shapefile.

7. Click Save.

NE247W	F7.40484 SASARD AND	NEV 480.5	<u>v c u</u>	~~		_	
Saving Data							×
Look in:	Vector Map District	•	仓 🟠	a m	- 🖴	<u></u>	6
					_		
Name:	private_roads_ne1					Save	
Save as type:	File and Personal Geod	latabase fea	ture class	es	-	Cancel	
	File and Personal Geodatabase feature classes						
HE AS	DAtabase feature das	ses			NEA	SENE1 4	E NE1

- 8. Click OK at the Export Data box.
- 9. Say Yes to adding the data as a new map layer.