

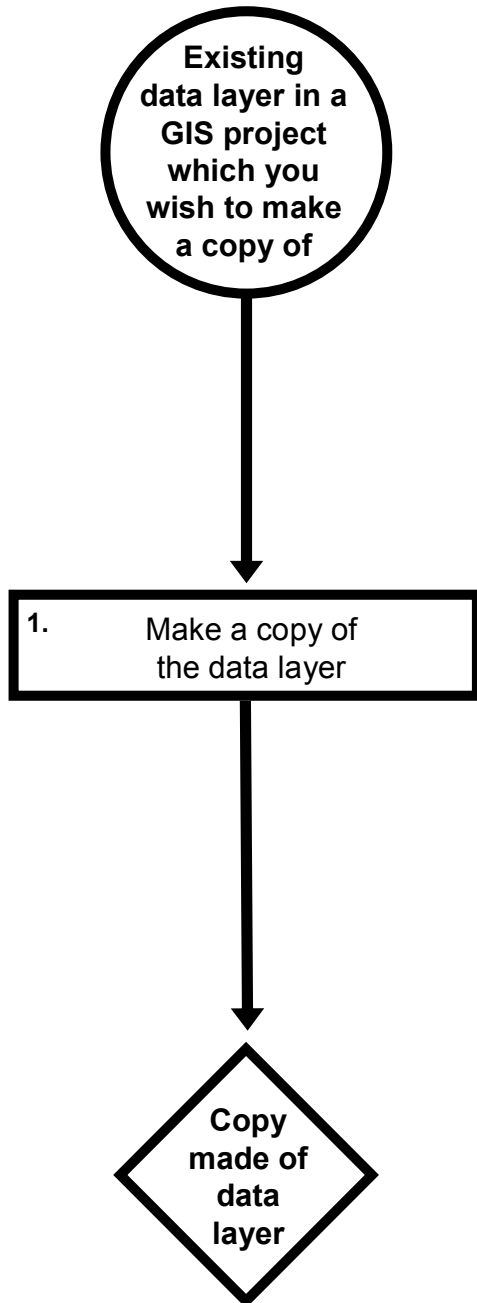
How To Edit Existing Point, Line And Polygon Data Layers

Often, you will need to alter a data layer once you have created it, or adapt a data layer that someone else has made for your own purposes. For example, you may wish to remove individual features, or groups of features, from it. Similarly, you may decide that you need to move a specific feature, or change its shape so that it represents a feature in your study area more accurately. Alternatively, you might want to create a new data layer using only a subset of the data in an existing data layer, or merge two data layers together. Finally, you might want to change the information in the attribute table in a number of different ways, such as adding fields, removing fields, or changing the information in individual cells of the table. This chapter will take you through how to edit the spatial characteristics of point, line and polygon data layers in a variety of different ways and making new data layers based on subsets of features in existing data layers. Instructions for editing the contents of the attribute tables associated with feature data layers can be found in chapter sixteen.

However, you need to be very careful if you are editing a data layer, as any edits that you do to a data layer in one GIS project will also affect any other GIS projects which use the same data layer from the same source file. This is because when you add a data layer to a GIS project, it remains at the same location on your disk where it is stored and is simply accessed from there. As such, a GIS project is more similar to a list of locations where the data layers are stored than a document into which you paste copies of the data. Therefore, multiple GIS projects can contain the same data layer, and if you edit a data layer in one project it will also change in all other projects that use the same file. As a result, if the data layer you wish to edit is used in multiple GIS projects, it is best to make a copy of the data layer, and edit the copy, to avoid any unexpected consequences. Similarly, with tasks which will permanently alter the contents of a data layer, it is often better to make a copy of the data layer first to avoid accidental loss of data.

Therefore, the first instruction set provided in this chapter is how to make a copy a data layer, and this is provided on the next page.

23. How to make a copy of an existing data layer:



Right click on the name of the data layer you wish to copy in the TABLE OF CONTENTS window. Select DATA> EXPORT DATA. In the EXPORT DATA window, beside EXPORT select ALL FEATURES. Next, in the section about coordinate systems, make sure you select THIS LAYER'S SOURCE DATA. In OUTPUT FEATURE CLASS section, type in the location where you wish the new data layer to be saved and the name that you wish to use for the copy you are making. Alternatively, use the button at the right hand end of this section of the window to browse to a location and then type in a name for the new data layer. When asked if you wish to add it to the current data frame click YES if you want to add it to your GIS project. Click NO if you are simply making a back-up copy that you do not want to use in your GIS project.

24. How to add a new feature to an existing data layer:

You may find that you wish to add more features of the same type to an existing data layer. For example, you might wish to add more locations to a point data layer representing sampling locations, or more survey tracks to a line data layer representing survey effort. Instructions for how to add new features to existing point, line and polygon data layers can be found below (**NOTE:** If you get stuck on step three of any of these instruction sets, please see the additional information at the bottom of page 132).

To add a new point feature to a point data layer, work through this flow diagram:

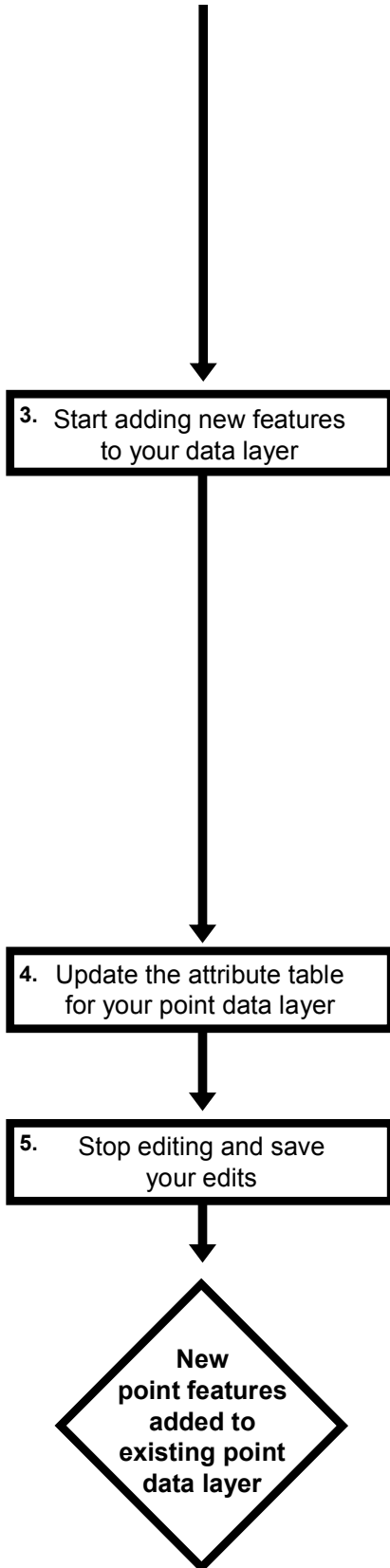


1. Make sure that your data layer is the only one from which you can select features

Right click on the name of your point data layer in the TABLE OF CONTENTS window and select SELECTION> MAKE THIS LAYER THE ONLY SELECTABLE LAYER.

2. Start the EDITOR tool

Make sure that the data frame with your data layer in it is active by right-clicking on the data frame's name in the TABLE OF CONTENTS WINDOW and selecting ACTIVATE. Click on the CUSTOMIZE menu in the main menu bar and select TOOLBARS. Make sure there is a tick next to the EDITOR toolbar. On the EDITOR toolbar, click on the EDITOR button and select START EDITING. If the START EDITING window opens, select the name of your new data layer and click OK. This will open the EDITOR window (usually on the right hand side of the ArcMap user interface). **NOTE:** The START EDITING window will only open if you have data layers which are stored in more than one folder in your GIS project. If it does not appear, it is safe to move onto step four. **NOTE:** If a message comes up stating that your data layer is in a different coordinate system from the map, go back and ensure that your data layer is in the same projection/coordinate system as your data frame.



Make sure that your data layer's name appears in the EDITOR window, (which is sometimes titled CREATE FEATURES – if this window is not visible click on the EDITOR button and select EDITING WINDOWS> CREATE FEATURES). Next, click on its name to select it. At the bottom of the EDITOR window there will be a section titled CONSTRUCTION TOOLS. This is where you select the tool you wish to use to draw your lines. In most cases you will want to select the POINT tool. Now click on the location where you wish the new point to be placed.

If you wish to plot a point at a specific location, you can right-click anywhere in the MAP window and select ABSOLUTE XY. You can then enter the coordinates where you wish the point to be positioned in the ABSOLUTE XY window. Once you have entered them, hit the return key on your keyboard.

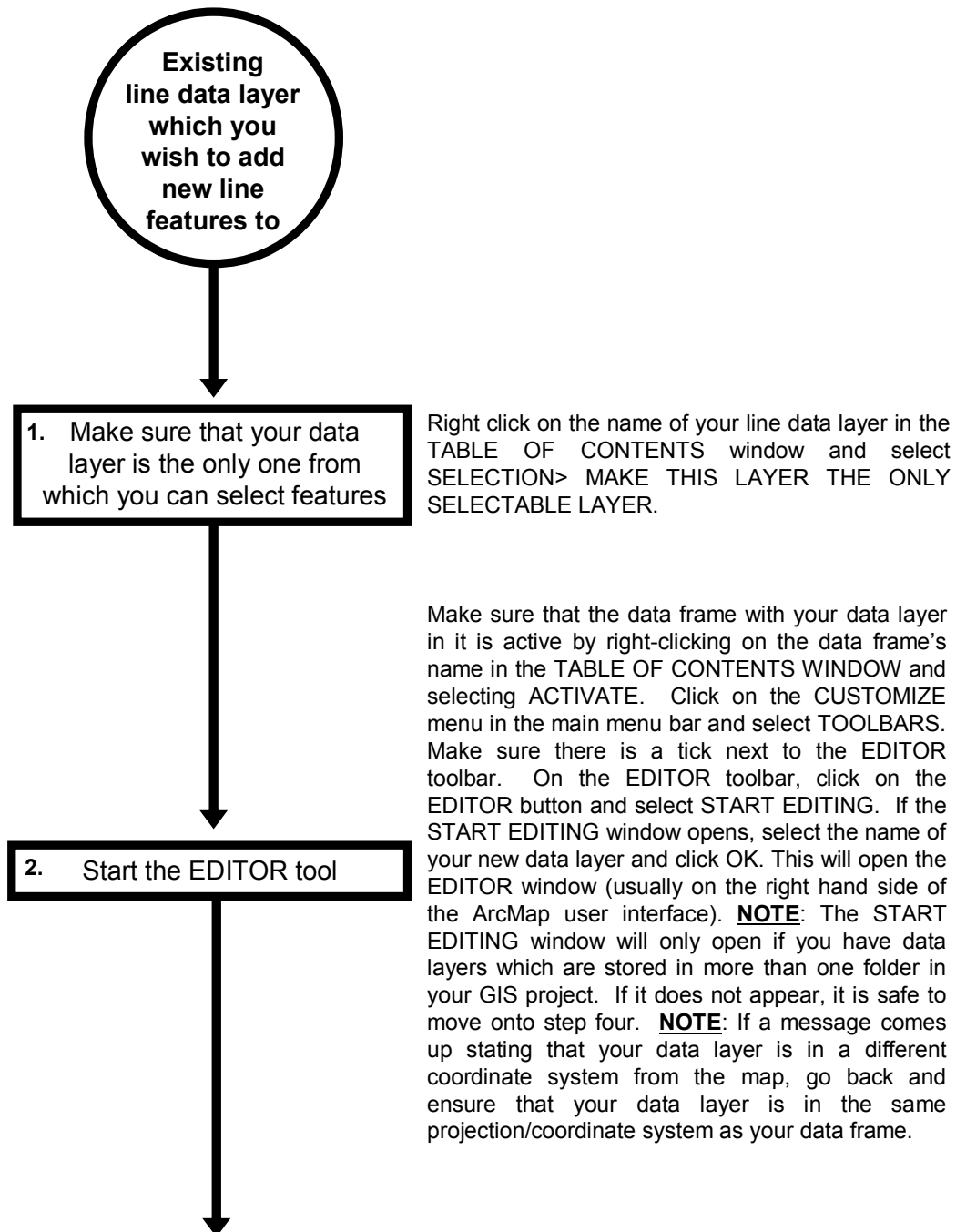
NOTE: These coordinates will need to be in the coordinates of the projection/coordinate system of the data frame and not necessarily latitude and longitude. This means that if you want to position points using latitude and longitude, you will need to use the geographic 'projection' for the data layer and data frame. Repeat to add more points.


If you want to delete a point, click on the EDIT TOOL on the EDITOR tool bar (to the right of the EDITOR button), click on the point you want to delete go to the EDIT menu in the main menu bar and select DELETE.

Once you have added your new point features to your data layer, you can then add information to its attribute table for your new features. Right click on the data layer's name in the TABLE OF CONTENTS window and select OPEN ATTRIBUTE TABLE. You can now click on individual cells in the attribute table and fill them in. Once you have completed this, close the attribute table.

On the EDITOR toolbar, click on the EDITOR button and select STOP EDITING. When asked, save your edits.

To add a new line feature to a line data layer, work through this flow diagram:






3. Start adding new features to your data layer

Make sure that your data layer's name appears in the EDITOR window, (which is sometimes titled CREATE FEATURES – if this window is not visible click on the EDITOR button and select EDITING WINDOWS> CREATE FEATURES). Next, click on its name to select it. At the bottom of the EDITOR window there will be a section titled CONSTRUCTION TOOLS. This is where you select the tool you wish to use to draw your lines. In most cases you will want to select the LINE tool. Now click on the location where you wish the new line to start, then move the cursor to the place where you want any corners of the line to be placed and click once on that point. Once you get to the end point, double-click the left mouse button to complete the line.

If you wish to place positions along the line at specific locations, first place the line in approximately the right position. Then before you double-click to finish it, right click the last point location on the line you added in MAP window and select SKETCH PROPERTIES from the drop down menu that will appear. When it opens, type in the exact coordinates you wish to use into the EDIT SKETCH PROPERTIES window and then click the FINISH SKETCH button.

NOTE: These coordinates will need to be in the coordinates of the projection/coordinate system of the data frame and not necessarily latitude and longitude. This means that if you want to position lines using latitude and longitude, you will need to use the geographic 'projection' for the data layer and data frame. Repeat to add more lines.

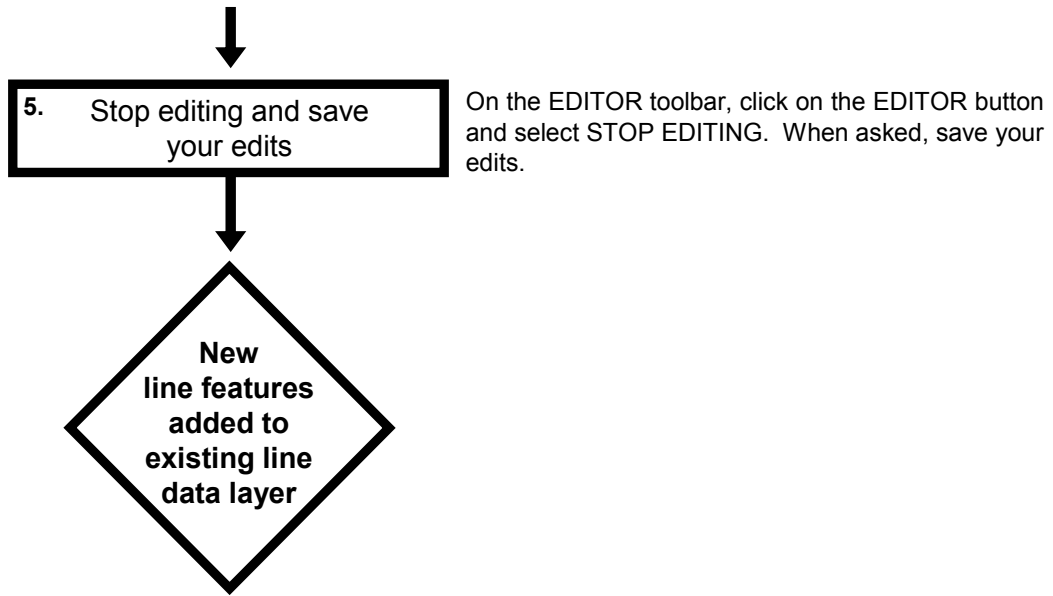
If you go wrong when drawing your line and want to remove a point on it, select the EDIT menu from the main menu bar and then UNDO ADD VERTEX. If you want to delete a whole line, click on the EDIT TOOL in the EDITOR tool bar (the button with the black arrow on it next to the EDITOR button), click on the line you want to delete, go to the EDIT menu in the main menu bar and select DELETE. **NOTE:** This will only work with completed lines.



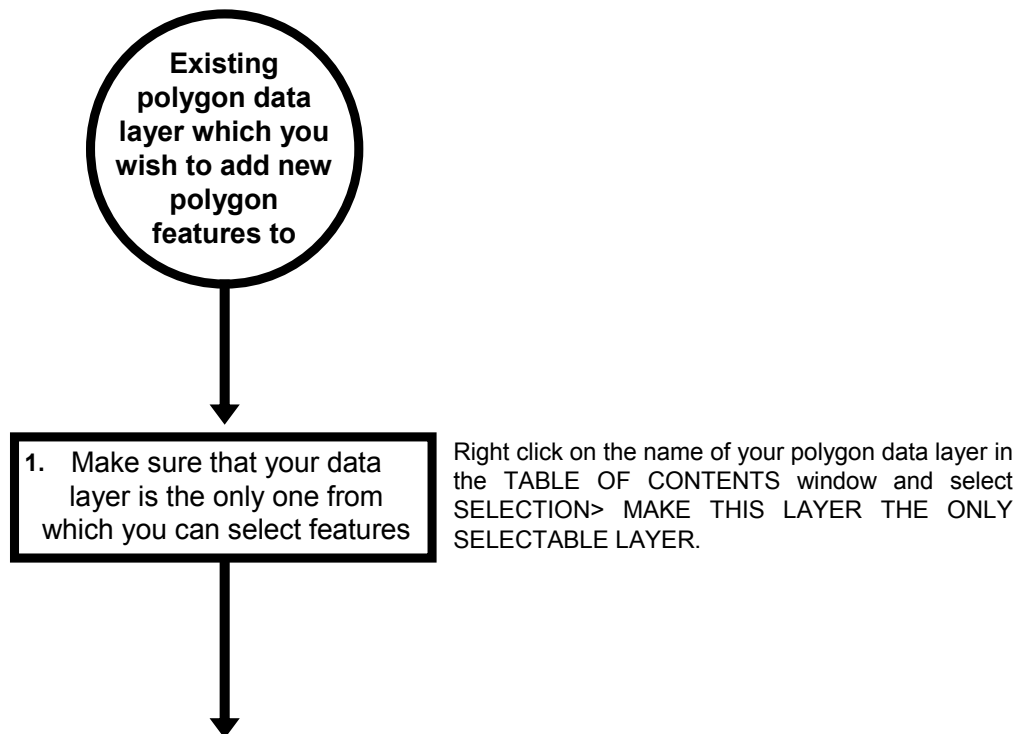
4. Update the attribute table for your line data layer

Once you have added your new line features to your data layer, you can then add information to its attribute table for your new features. Right click on the data layer's name in the TABLE OF CONTENTS window and select OPEN ATTRIBUTE TABLE. You can now click on individual cells in the attribute table and fill them in. Once you have completed this, close the attribute table.





To add a new polygon feature to a polygon data layer, work through this flow diagram:

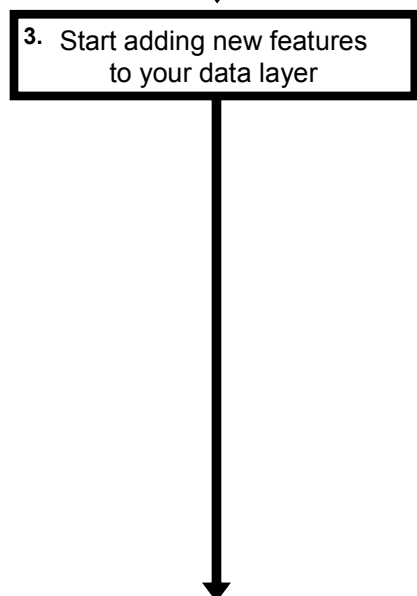




2. Start the EDITOR tool

Make sure that the data frame with your data layer in it is active by right-clicking on the data frame's name in the TABLE OF CONTENTS WINDOW and selecting ACTIVATE. Click on the CUSTOMIZE menu in the main menu bar and select TOOLBARS. Make sure there is a tick next to the EDITOR toolbar. On the EDITOR toolbar, click on the EDITOR button and select START EDITING. If the START EDITING window opens, select the name of your new data layer and click OK. This will open the EDITOR window (usually on the right hand side of the ArcMap user interface). **NOTE:** The START EDITING window will only open if you have data layers which are stored in more than one folder in your GIS project. If it does not appear, it is safe to move onto step four. **NOTE:** If a message comes up stating that your data layer is in a different coordinate system from the map, go back and ensure that your data layer is in the same projection/coordinate system as your data frame.

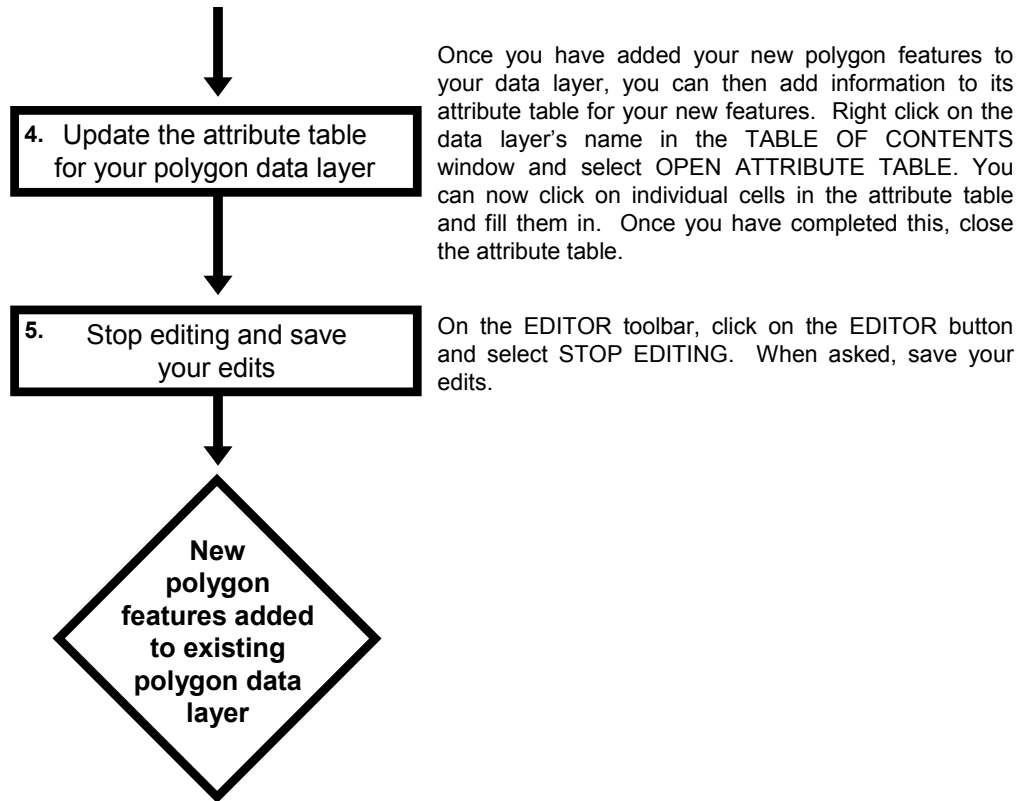
Make sure that your data layer's name appears in the EDITOR window, (which is sometimes titled CREATE FEATURES – if this window is not visible click on the EDITOR button and select EDITING WINDOWS> CREATE FEATURES). Next, click on its name to select it. At the bottom of the EDITOR window there will be a section titled CONSTRUCTION TOOLS. This is where you select the tool you wish to use to draw your polygon. In most cases you will want to select the POLYGON tool. Now click on the location where you wish the new polygon to start, then move the cursor to the place where you want each corner of the polygon to be placed and click once on that point. Once you get to the final corner, double-click the left mouse button to complete the polygon.



3. Start adding new features to your data layer

If you wish to place the corners of a polygon at specific locations, first place each corner in approximately the right position. Then before you double-click to finish it, right click on the last corner you added and select SKETCH PROPERTIES from the drop down menu that will appear. When it opens, type in the exact coordinates you wish to use into the EDIT SKETCH PROPERTIES window and then click the FINISH SKETCH button. **NOTE:** These coordinates will need to be in the coordinates of the projection/coordinate system of the data frame and not necessarily latitude and longitude. This means that if you want to position polygons using latitude and longitude, you will need to use the geographic 'projection' for the data layer and data frame. Repeat to add more polygons.

If you go wrong when drawing your polygon and want to remove a corner of it, select the EDIT menu from the main menu bar and then UNDO ADD VERTEX. If you want to delete a whole polygon, click on the EDIT TOOL in the EDITOR tool bar (the button with the black arrow on it next to the EDITOR button), click on the polygon you want to delete go to the EDIT menu in the main menu bar and select DELETE. **NOTE:** This will only work with completed polygons.



NOTE: In this illustration of how to add new polygons to a polygon data layer, it is assumed that all the new polygons to be added to the existing data layer are separate from each other. If you want to make a new polygon that shares one, or more, of its edges with a one or more existing polygons see the instructions on page 106. If you want to create new polygons by splitting existing polygons in a number of different parts see page 158

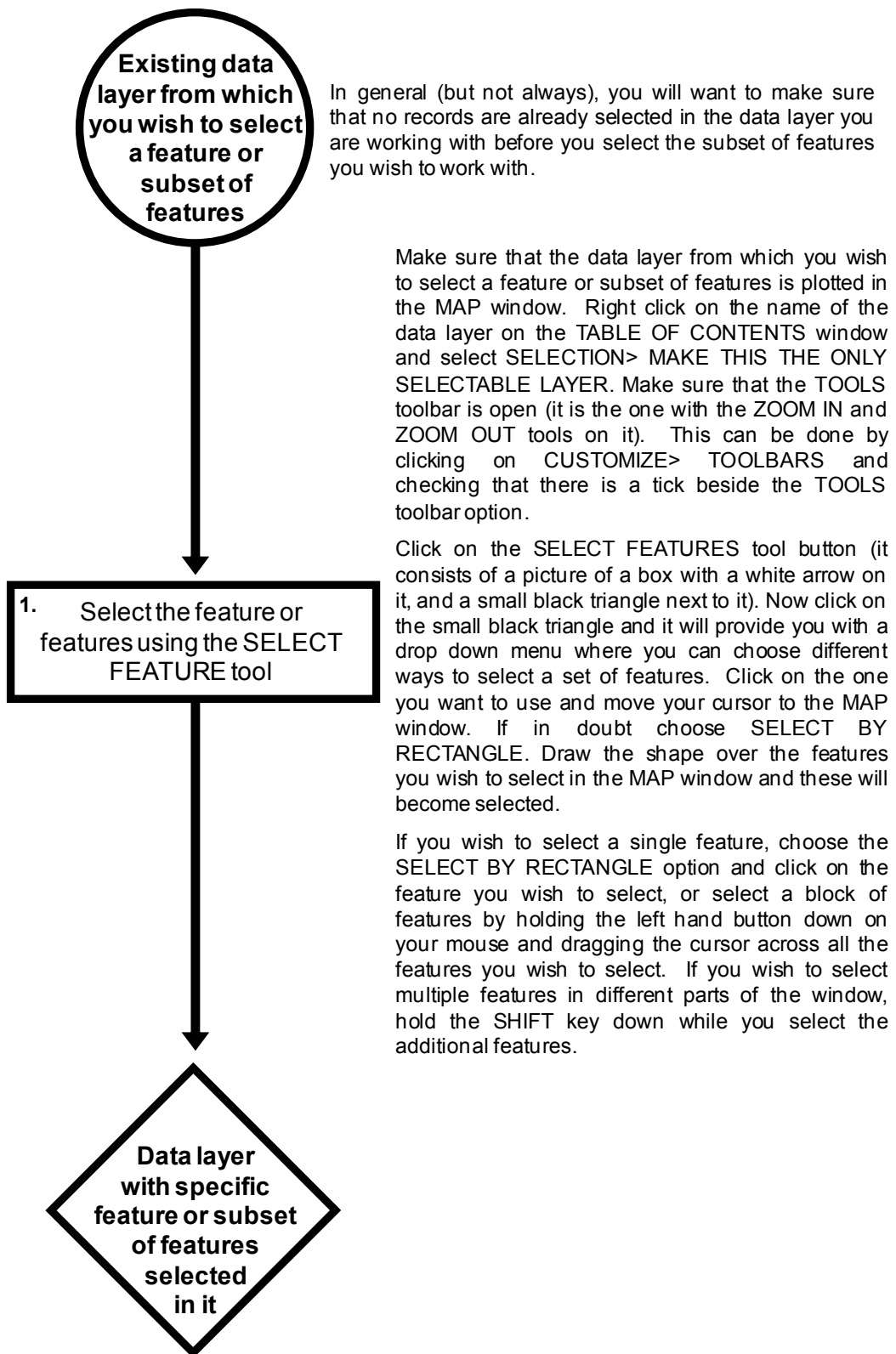
NOTE: For the three instructions sets provided above, if you find that in step three, your new data layers name does not appear in the EDITOR/CREATE FEATURES window, this may be because it does not have a template associated with it. To create a template for it, click on the ORGANIZE TEMPLATE button at the top of the EDITOR/CREATE FEATURES window (it should be the second button from the left at the top of the window). This will open the ORGANIZE FEATURE TEMPLATE window. Next click on NEW TEMPLATE and make sure there is a tick next to the name of your new data layer and then click FINISH. Now click CLOSE in the ORGANIZE FEATURE TEMPLATES window. You should now find that your data layer appears in the EDITOR/CREATE FEATURES window and you can now select it and add features to it.

25. How to unselect and select features in an existing data layer:

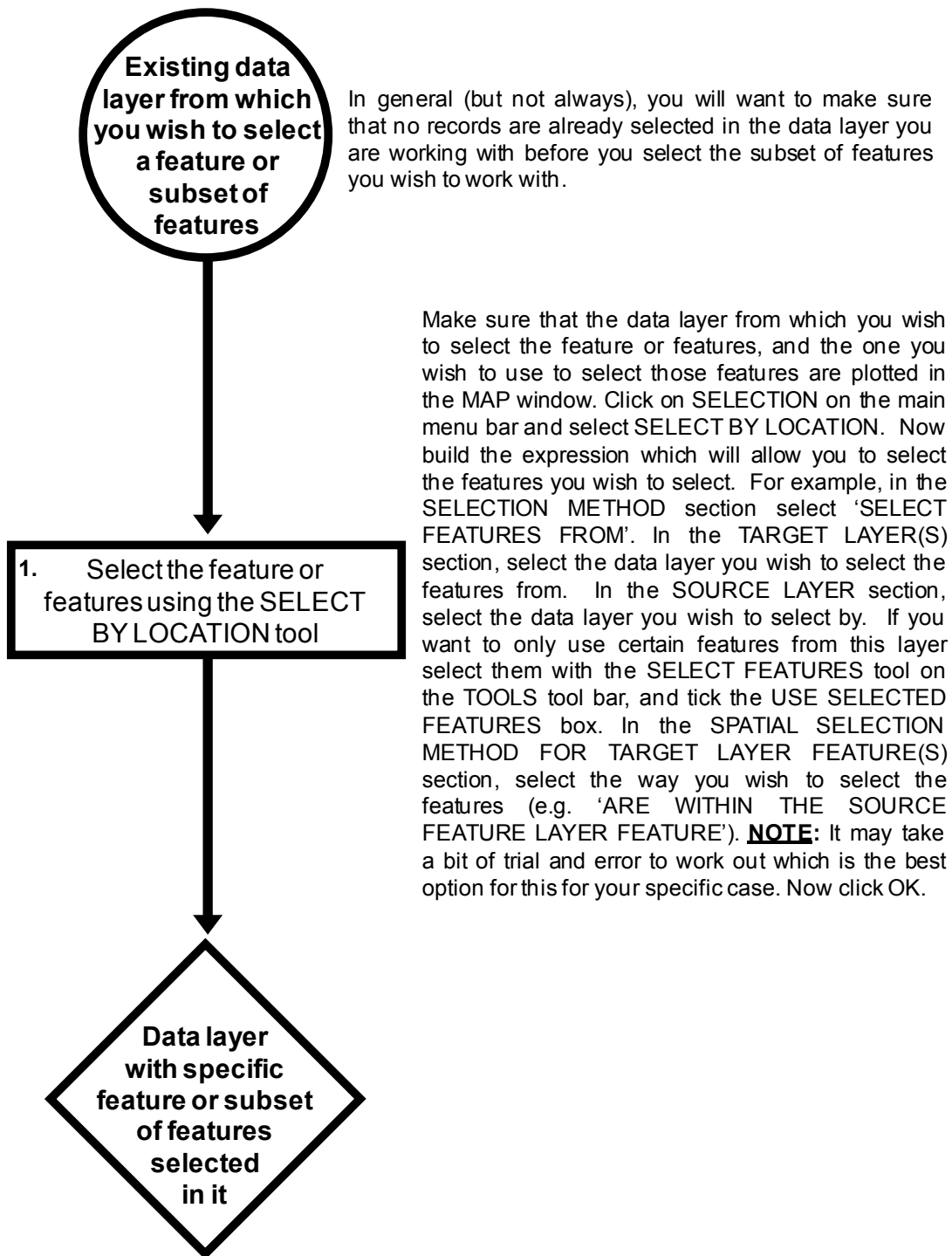
With many GIS tools, you can choose to work with only a subset of features in a data layer by first selecting the ones you want to work with before you run the tool. Some times this is very useful, while at others it can be very frustrating. In particular, if you do not realise that you have one or more features in a data layer selected before running a particular tool, you may accidentally end up working with only a subset of the data when you intended to work with the full data set. Therefore, it is good to get into the habit of checking whether any features in a data layer are selected before you use it in any tasks. This can be done very easily. Simply right click on the name of a data layer in the TABLE OF CONTENTS window and select OPEN ATTRIBUTE TABLE. At the bottom of the TABLE window, you will see text which says X OUT OF XXXX SELECTED. This will tell you whether any records are selected, and, if any are, how many. If there are any records selected and you do not wish to have them selected, click on the TABLE OPTIONS button at the top left-hand corner of the ATTRIBUTES TABLE window and select CLEAR SELECTION. This will unselect any selected features and allow you to work with all the features in a data layer.

If you wish to select a specific subset of features in a data layer to work with, this can be done in one of the four basic ways outlined below. The best one to use at any given time will depend on exactly what you want to do. For example, the approach you use to select records may differ depending on whether you wish to select a single record, or multiple records, or whether you want to select data based on a field in the attribute table or by an area in space. In addition, you can use a number of these different ways of selecting data in sequence to select a very specific subset of data. For example, you could select a specific subset of features in the MAP window using the SELECT FEATURES tool, and then use the SELECT BY ATTRIBUTE tool to further refine which of these features you wish to remain selected after a second selection process (see instruction sets below).

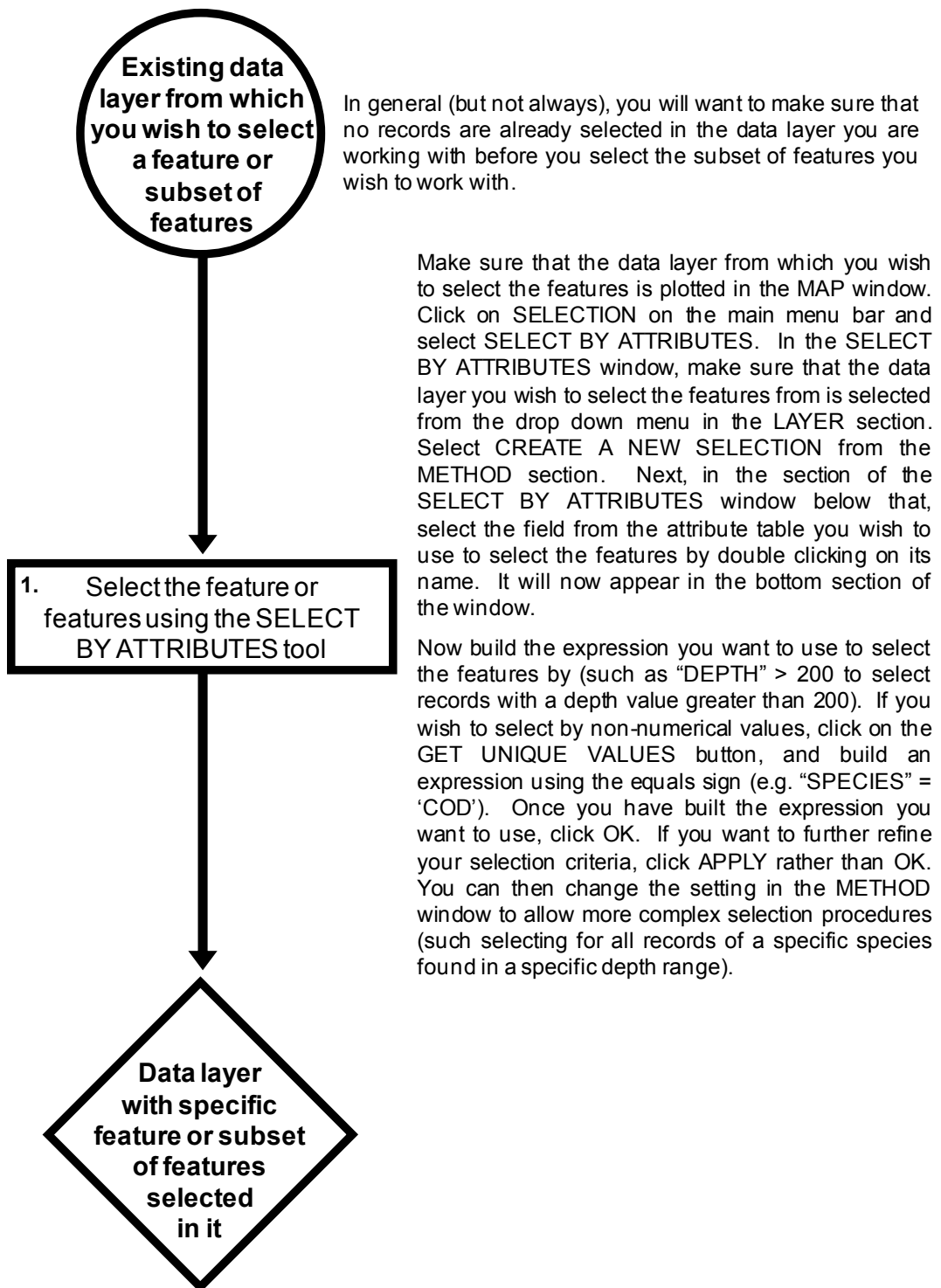
To select a subset of features in a data layer in the MAP window using the SELECT FEATURES tool, work through the flow diagram on the next page.



To select a subset of features in a data layer using the features of another data layer, work through this flow diagram:



To select a subset of features in a data layer using the contents of its attribute table, work through the following flow diagram:



To select a subset of features directly from the attribute table, follow this instruction set:



In general (but not always), you will want to make sure that no records are already selected in the data layer you are working with before you select the subset of features you wish to work with.



Right click on the name of the data layer which you wish to select the features from and select OPEN ATTRIBUTE TABLE. In the TABLE window, click on the grey box at the start of the line representing the feature you wish to select. If you can still see the MAP window and the data layer is set to display, you will see the features become highlighted on the map as you do so. To select multiple records in a single block, hold down the SHIFT key as you click on them. To select multiple records in a non-continuous block hold down the CTRL key as you click on them. Now close the TABLE window.

