Preparing a topo overlay in ArcGIS
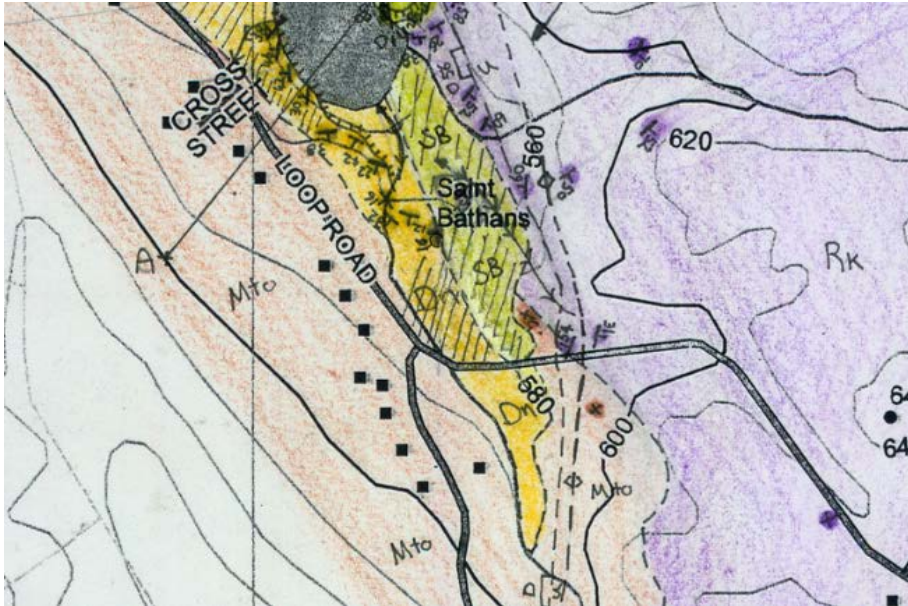
This document covers the process for preparing a topo overlay to be used as a layer in a digital geological map.
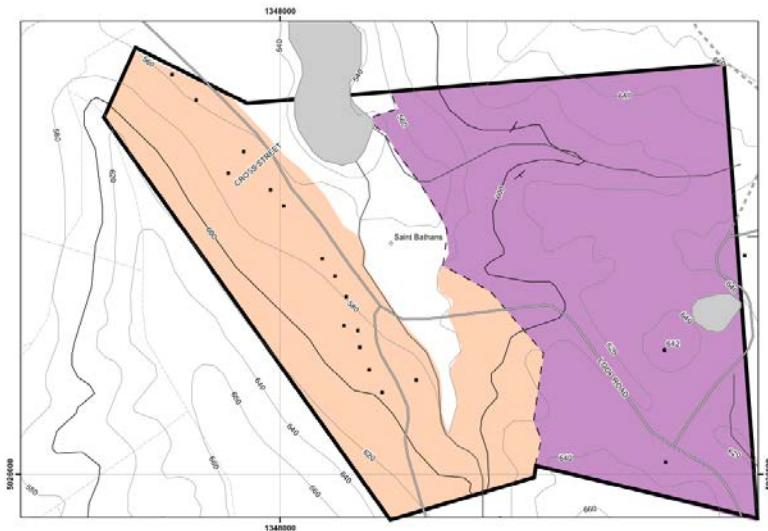
1   Setting the extent.

Examine your field map/maps (see example below)

The mapped area is probably slightly different from your original topo basemap. You should adjust the rectangular extent of your topo map in ArcGIS (using cursor tool) so that it matches better. If your field area is not a NESW oriented rectangle then it will not fit neatly in the map area. There are a couple of options for rectifying this.

1. Easiest option is to export as is and then draw a thick line in inkscape when your map is done to indicate the map area.

2. The other option is to clip the map area in ArcGIS so that it matches the area you mapped.

2   Clipping the map in ArcGIS

Bookmark the current view via **Bookmarks>Create New**.

2.1   Method 1: creating a shapefile for the extent (preferred)

This method will work in **data view or layout view.** It is a more robust method and the shapefile you create can be used as an extent indicator in a separate locality map.

In the arc catalog sidebar navigate to a suitable location to save your map. (e.g. your home folder.) (see image that follows)
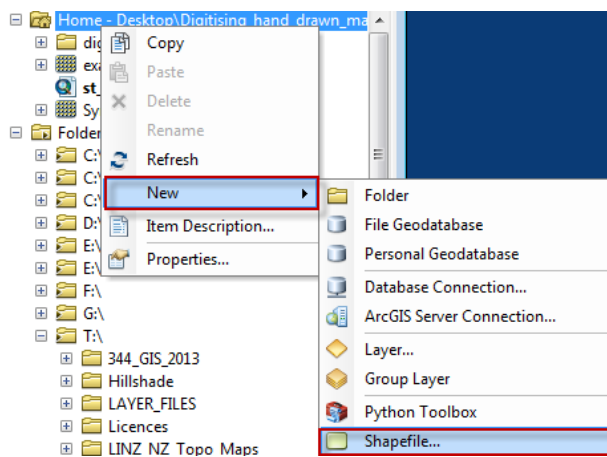
Name it "bounds", choose Polygon type and edit the spatial reference to NZTM.
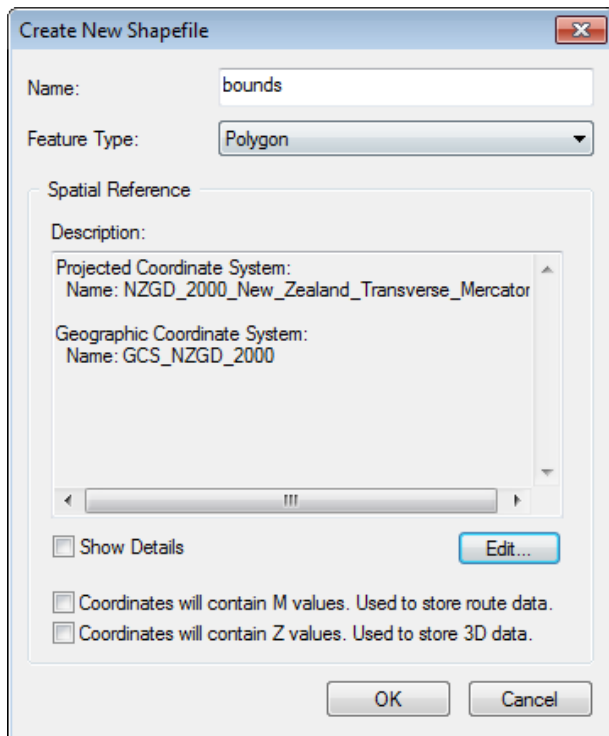
Open the editing toolbar (**customize>toolbars>editing**) Click on **Editor** in the editing toolbar and choose **start editing**. Choose **'bounds'** from the list of editable shapes. This will open an editing session and bring up a **Create Features sidebar.**

Click on **Bounds** in the sidebar and choose **Polygon** from the selection tools beneath if it is not already selected.

Create the shape for your map area and when you are finished **right Click** and choose **finish shape**.

Click on editor in the editing toolbar choose save edits and then choose stop editing.
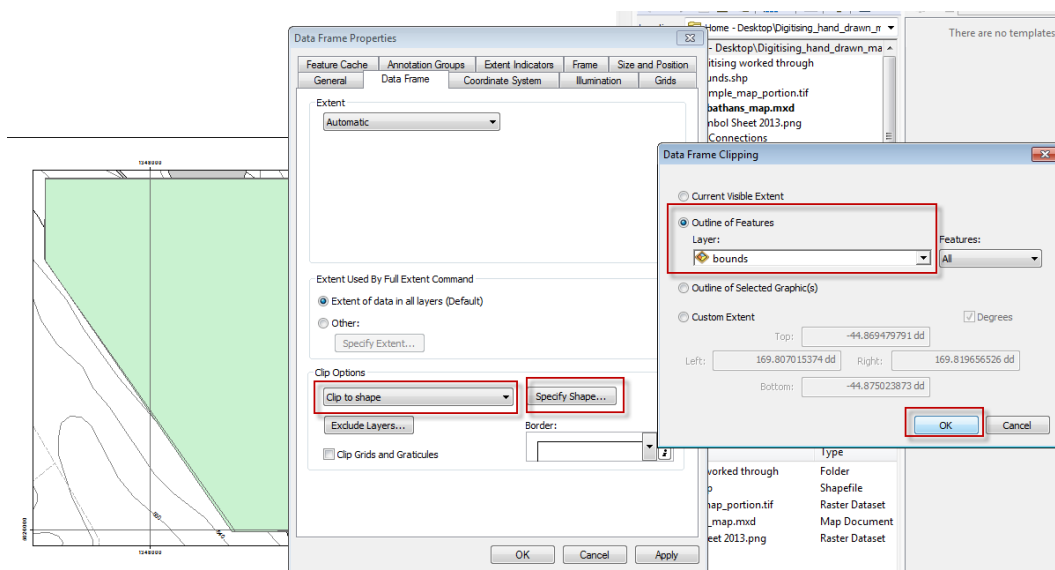
Go to **View> data frame properties.**

Select the **data frame tab**

In Clip options choose **clip to shape**

Click on **specify shape** and then choose **Outline of Features, choose bounds from the drop down list of features.**

Then click **OK** then **OK**

Hide bounds from the map view (uncheck in TOC)

2.2 Method 2: creating a graphics object for the extent

This method will **only work in data view.**

Note difference between drawing graphics in data view vs. layout view.
- Any graphics that you draw in data view will be tied to that data frame and geographically positioned (if you pan the map the graphics will stay in the same geographic position.)
- If you draw graphics in layout view they are not tied to a data frame and will move freely relative to your map area.

Whilst in data view go to **drawing> and select polygon from the drop down list for shape**

Draw a polygon that covers the area you mapped. Double click or press enter to finish the polygon. You can edit a selected graphic using the edit vertices tool in the drawing toolbar.
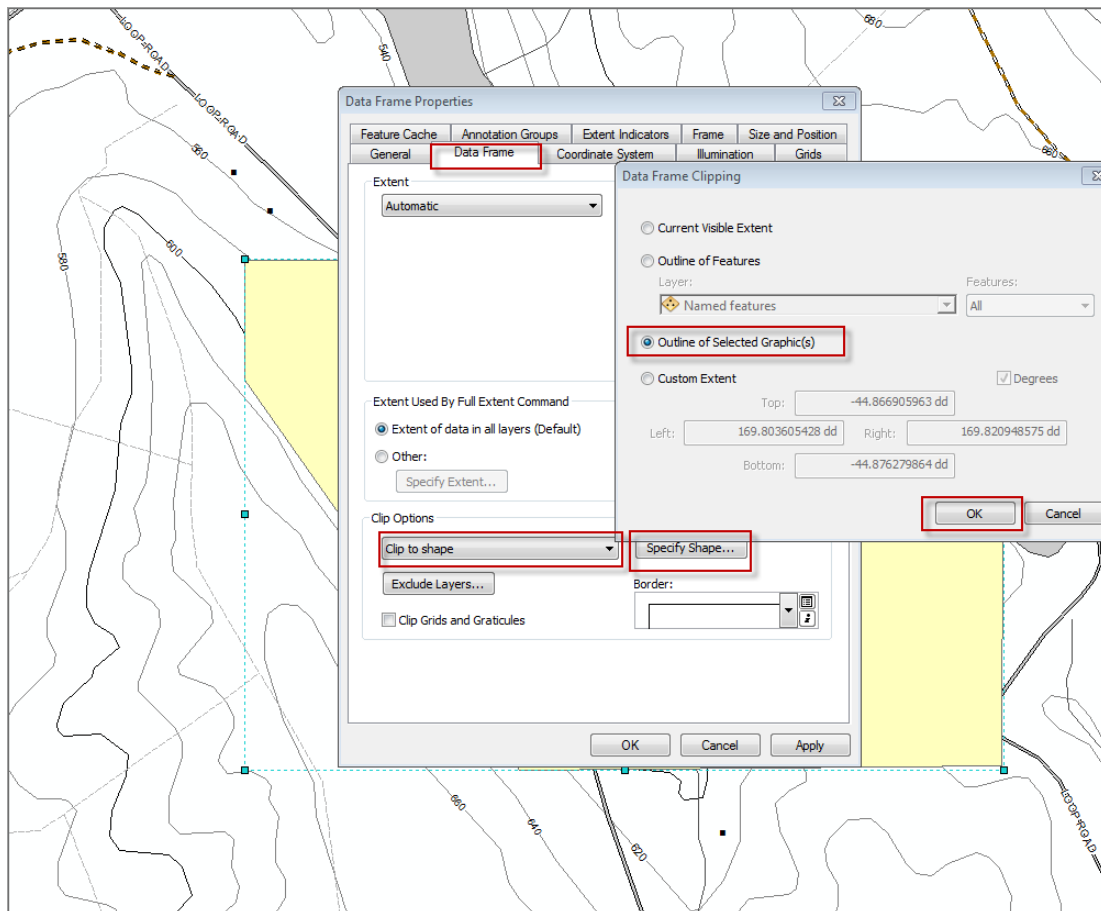

Select the graphic you drew (it should have a blue dotted outline). Go to **View> data frame properties.**

Select the **data frame tab**

In Clip options choose **clip to shape**

Click on **specify shape** and then choose **Outline of selected Graphic(s)**

Choose OK then OK again. The frame should now be clipped but the graphics are still being drawn.

In data view press delete once to delete the graphics. Setting the colour to none may still prevent labels from appearing so it is best to delete the graphics object after.

Optional: you can also clip grids in the data frame tab of data frame properties.

3   Setting up the symbology and checking the map scale

The method of using a topo **overlay** means that you need to uncheck any background raster layers (e.g imagery or hillshade).

You should also make your lake symbols transparent if you plan to map the geology beneath a lake.

Additionally it may be useful to make your map symbols grayscale so that it doesn't distract from the geology you draw on.

Now is good time to also check that the map scale is correct and matches your field map.

4   Exporting your map

We want to export a vector PDF version of the map. Go to File>Export, choose pdf as the Save as type.

In the options at the bottom go to the Format tab and ensure that layers will be vectorised and marker symbols converted to Polygons.

Save the output somewhere sensible.
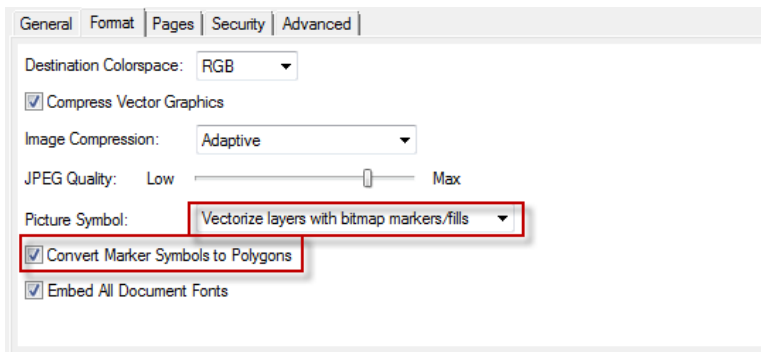
4.1   Checking the vector output

Open the exported map in adobe reader. Zoom in to check that it is vector output. If it is raster it will become blocky when you zoom in.

In inkscape open a new blank document and draw a large coloured box. Then select **File>import** and import the pdf map. Your map should appear as a series of lines, labels etc. with a transparent background so that you can see the coloured box you drew in the background (see image that follows). You can discard this inkscape document now.
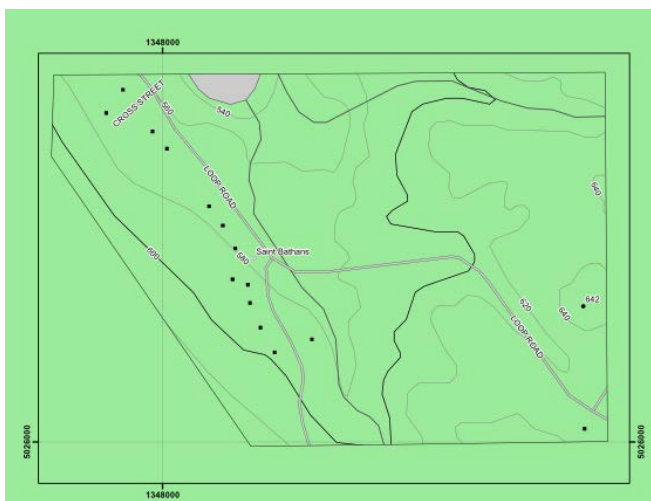
You are now ready to digitise (see document on digitising.).