uDig Walkthrough 2

Edit with uDig and WFS-T

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1 Introduction

In this workbook we are going to cover two major topics. The first is a tour of Web Feature Server functionality using a local GeoServer installation. We will use a WFS to edit both feature geometry and feature attributes. We will also show how to export information out of a WFS using both a local shape file and the system clip board.

As we went to Press GeoServer 2.0.1 was tested and working.

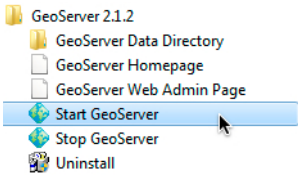
The rest of the workbook is devoted to working with information. We will create a new feature type by hand, and work with a range of feature creation and editing tools. Finally we will save the result to a new file.

2 WMS and WFS Integration

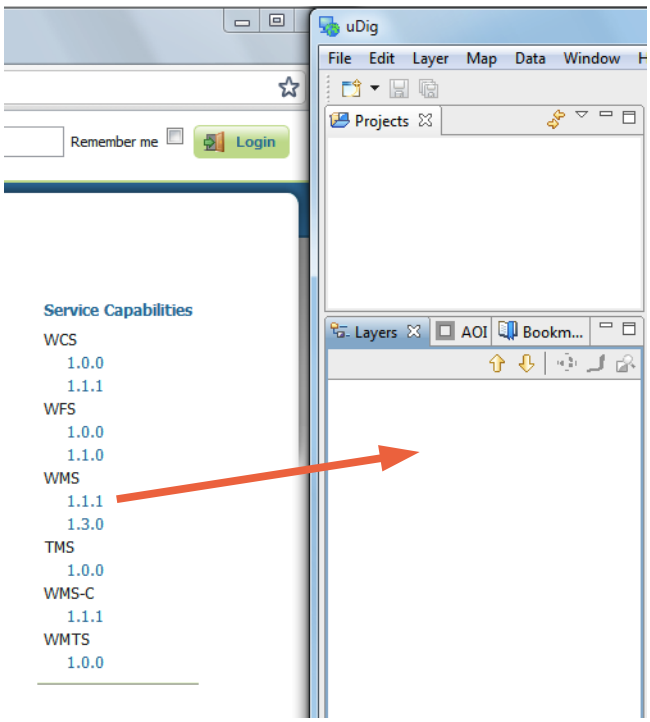
In this section we will use uDig to display contents from our local Web Feature Server. We will also make use of some of the more interesting selection features.

If you were unable to get GeoServer installed please ask the instructor for help, we may be able to provide a URL to a demo machine

1. Start **uDig**, under the **File** menu select **New-> New Map** to create a new map.
2. Make sure your local GeoServer is started and ready to go. You can run GeoServer from the Start menu.



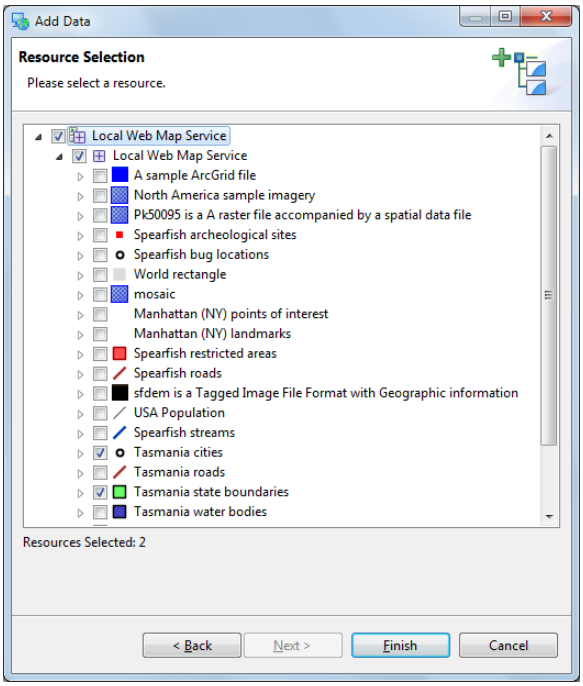
3. Navigate to that GeoServer **Welcome** page: http://localhost:8080/geoserver/
4. Drag and Drop the **WMS 1.1.1 Capabilities** link on to your Map.



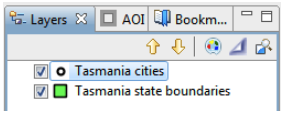
IE9 and Opera do not support drag and drop.

If using a browser that doesn't support drag-and-drop copy the link, selecting the Catalog, Layer or Map view and Paste.

5. This will bring up a Wizard allowing you to choose which Layers you wish to see. Select **Tasmania state boundaries** and **Tasmania cities** and the press the **Finish** button.

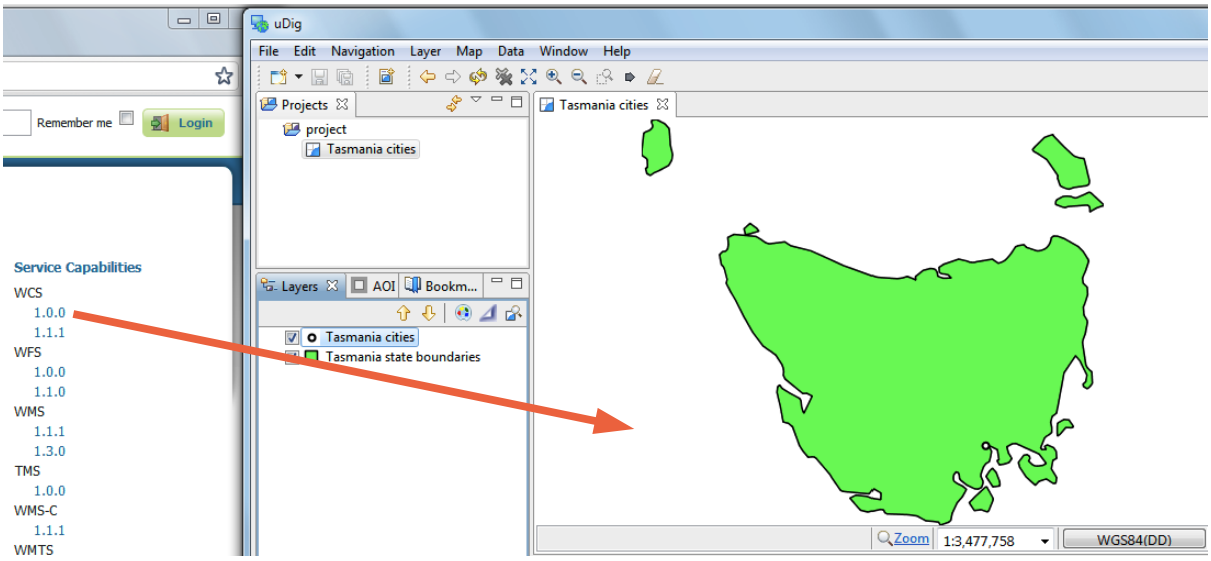


6. Move **tasmania_cities_Type** to the top of your layers view.

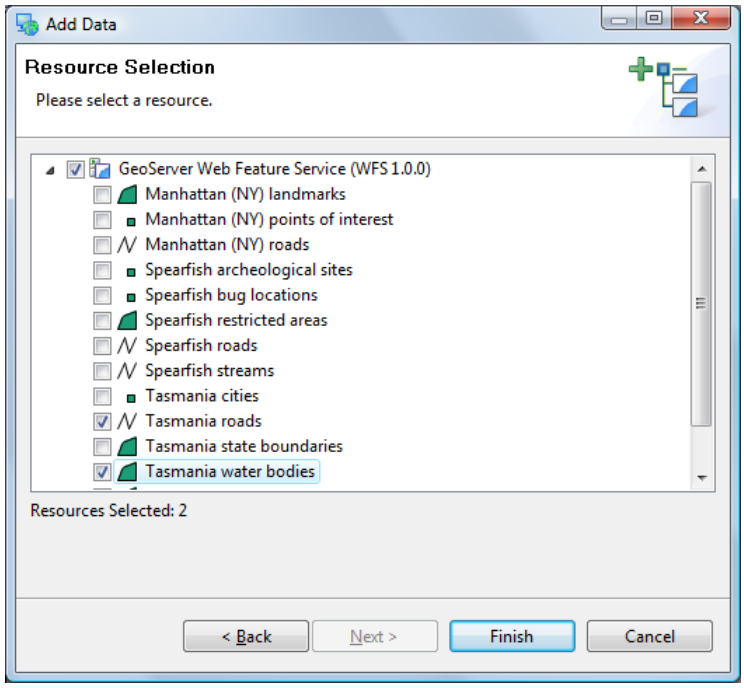


We are using WFS 1.0 in order to have read-write access to GeoServer.

7. Drag and Drop the **WFS 1.0.0 Capabilities** link on to your Map.



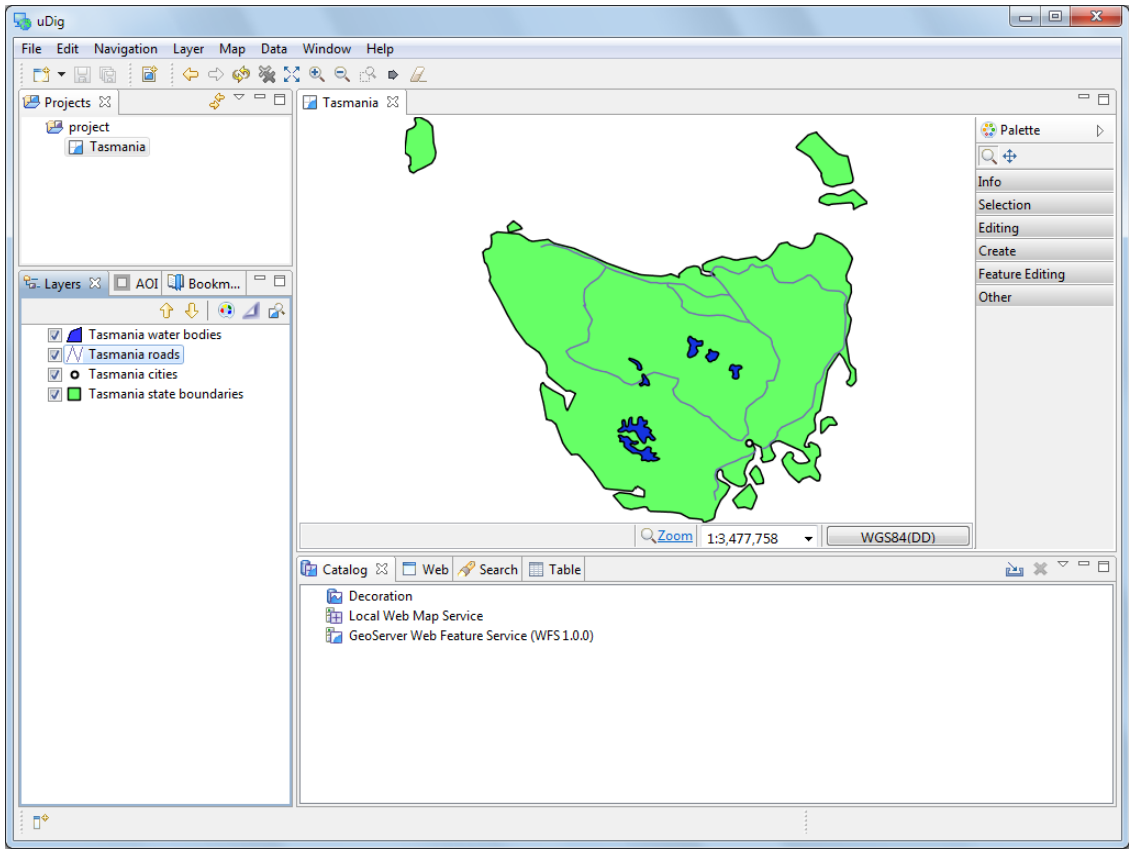
8. This will bring up a Dialog allowing you to choose which Layers you wish to see. Select **Tasmania roads** and T**asmania water bodies** and press the **Finish** button.



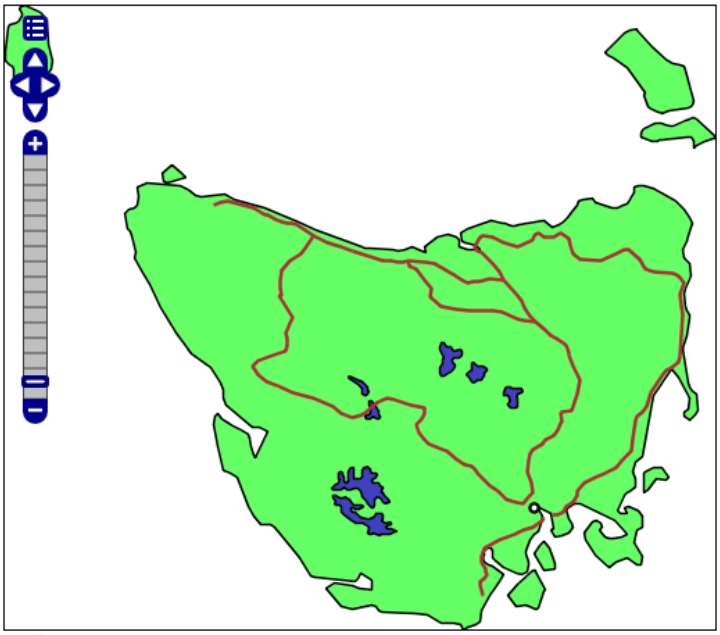
9. Select the Map in the projects view and choose **File->Rename** menu item.

10. Rename to **Tasmania.**

You may wish to adjust the styles so that lakes are blue as shown in the picture.



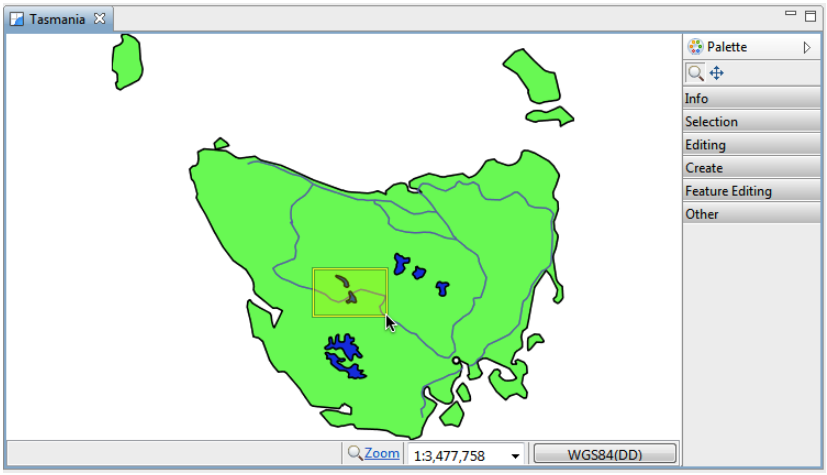
11. You can compare your map with what is shown by GeoServers layer preview for the Tasmania layer.



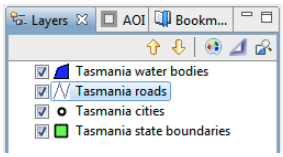
3 Editing Geometry with WFS

We will use the Edit Geometry tool to move the road around the lake.

1. Zoom into the road that is crossing the lake in the center of the country



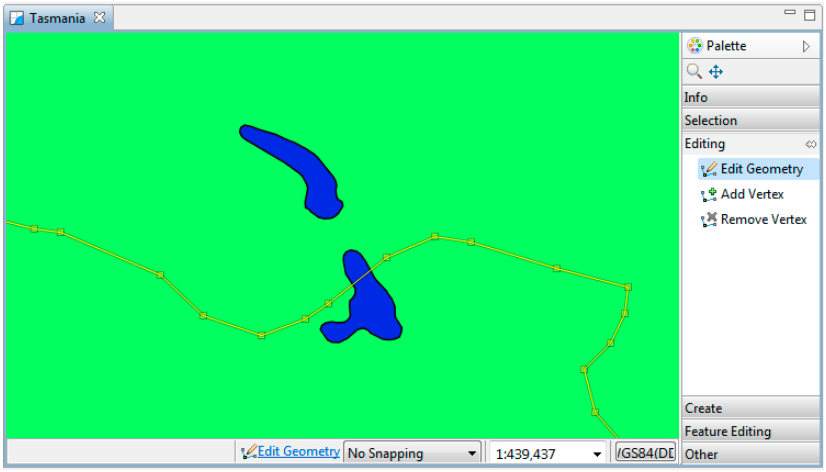
2. Select **tasmania_roads_Type** in the **Layers** view.



3. Change to the **Edit Geometry** tool from the tool palette (click the **Editing** drawer to see the available editing tools).

You can use the keyboard short-cut 'e' to choose the edit tool

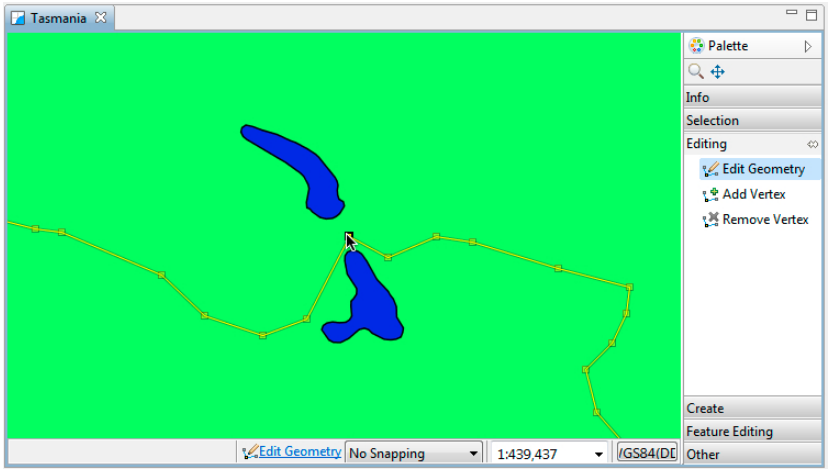
4. Use the **Edit Geometry** tool to select the road crossing the lake.



5. The road will change color and develop "vertex handles".

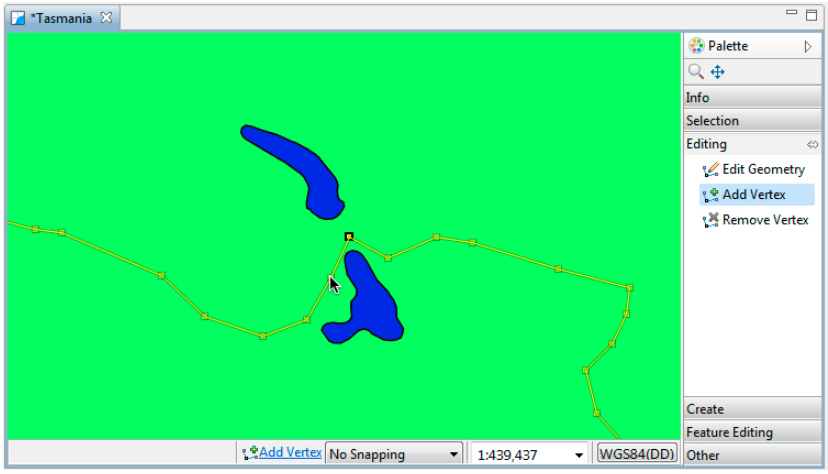
6. Move the vertex handles so the road does not enter the water.

By default no snapping takes place. We will show how to turn on snapping later in this workbook.

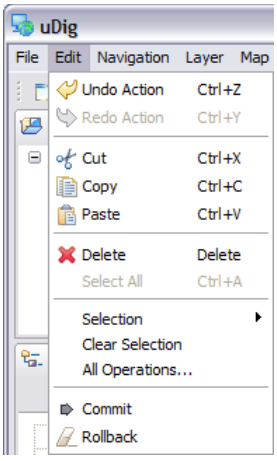


7. Add new vertices by switching to the **Add Vertex** tool.
8. You can click any where on the road to add a new vertex.

You can cycle through the available edit tools by pressing "e".

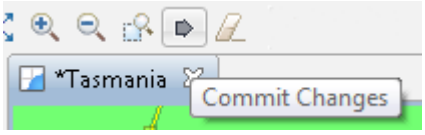


9. You can use **Undo** and **Redo** in the Edit menu as required.



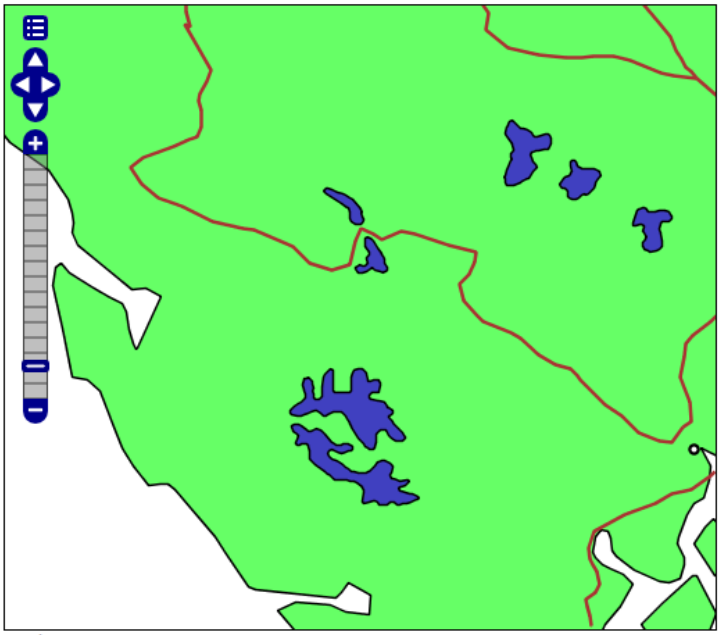
10. Press the **Commit Changes** button in the tool bar to send your changes off to the Web Feature Server.

You may also press Revert (in the tool bar) to rollback any changes you have made.



11. Your line has now been moved.

12. You can now refresh your web page to confirm that your changes have been made.



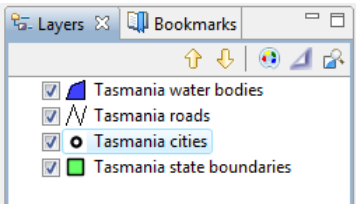
13. You can edit many Features at once, from different layers, or from different sources of data. Pressing **Commit Changes** will send off all the changes made in the current map.

4 Working with Attributes

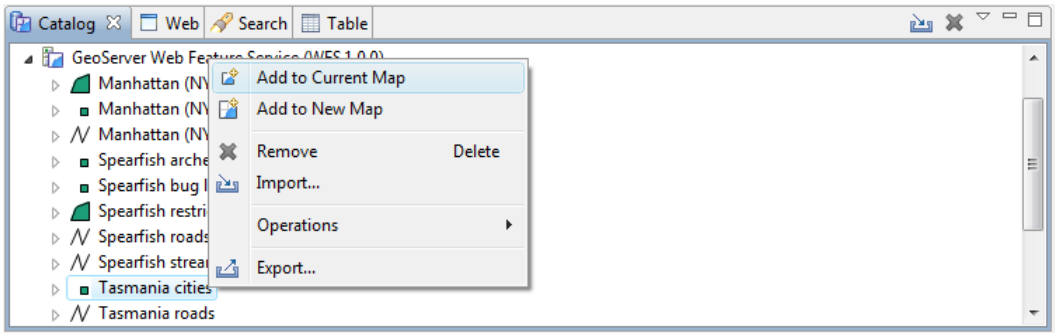
In this section you will learn how to edit an Attribute, along the way we will explore the use of styling.

To start out with lets figure out the name of that city:

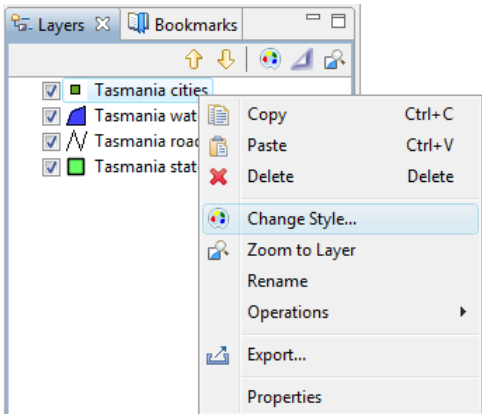
1. Select **Navigation > Show All** from the menu bar.
2. Select the **Tasmanian cities** in the Layers View.



3. Select the **Edit > Delete** command from the menu bar
4. In the **Catalog** view expand the **GeoServer Web Feature Service (WFS 1.0.0)** entry and select **Tasmania cities**.



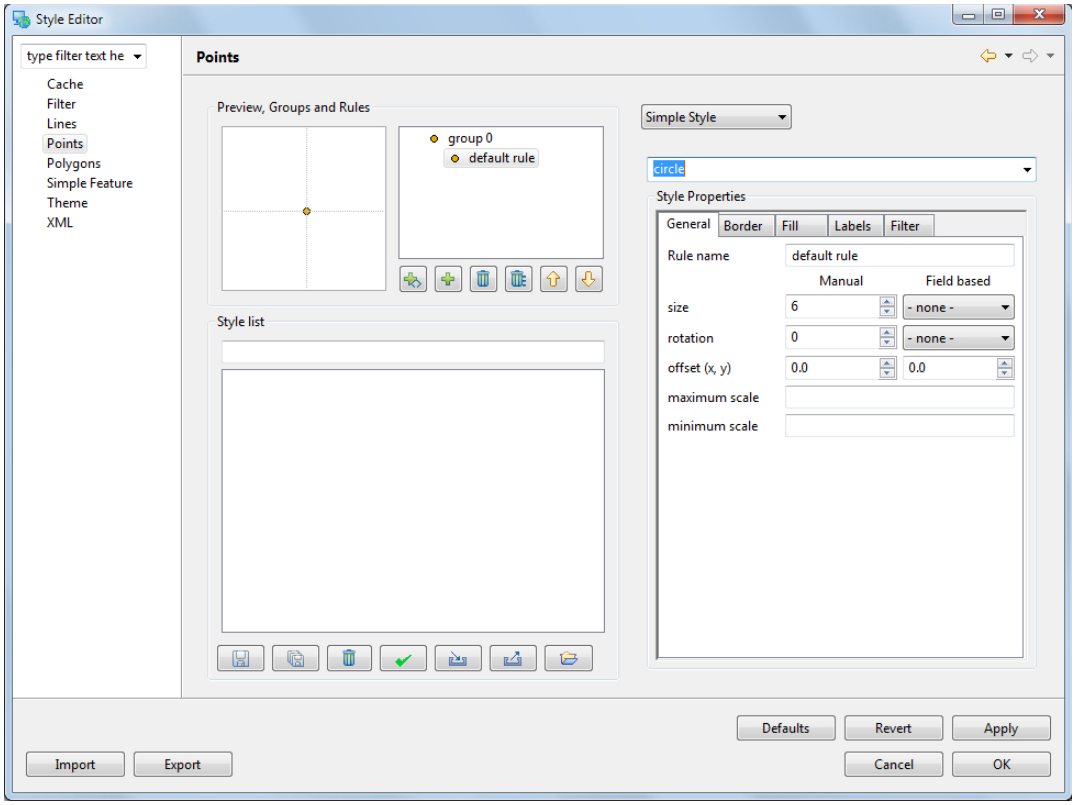
5. Right Click and select **Add to Current Map**.
6. Right click on T**asmania cities** in the **Layers** view, and click on **Change Style**.



This opens the **Style Editor** dialog.

7. Define the point shape using style as follow:

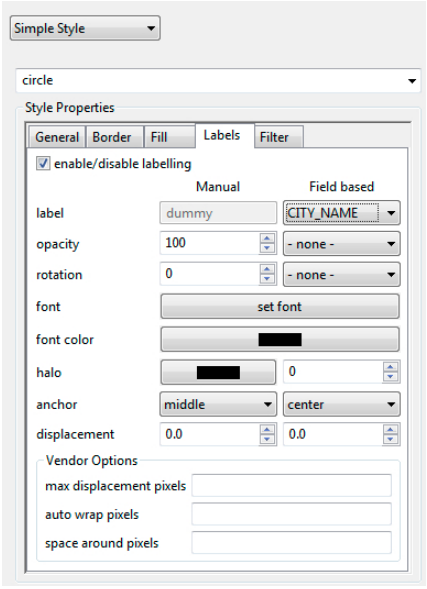
- Select the **Points** page from the list on the left hand side of the **Style Editor**.
- Choose **Simple Style** to access the the built in shapes.



- Choose **circle** from the list of built in shapes.

8. Configure the style properties for labeling:

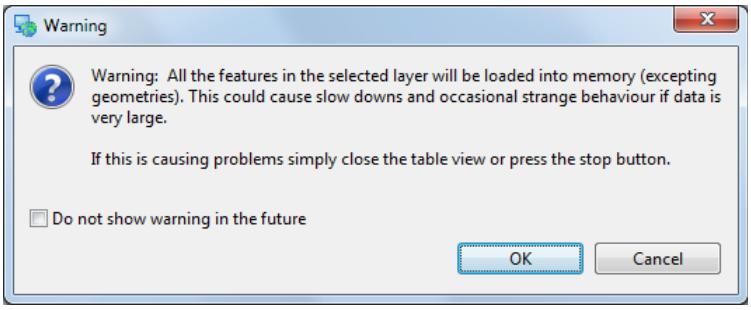
- Click on the **Labels** tab
- Check the **enable/disable** labeling
- Choose **CITY_NAME** for the label property.



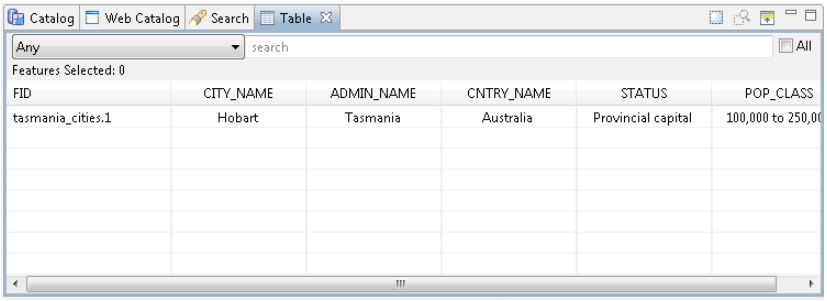
9. After making changes, hit the **Apply** button to update the map, you can experiment with the settings and press **Close** when you are finished.

10. Ensure that **Tasmania cities** is still selected in the layers view, and select the **Table** view.

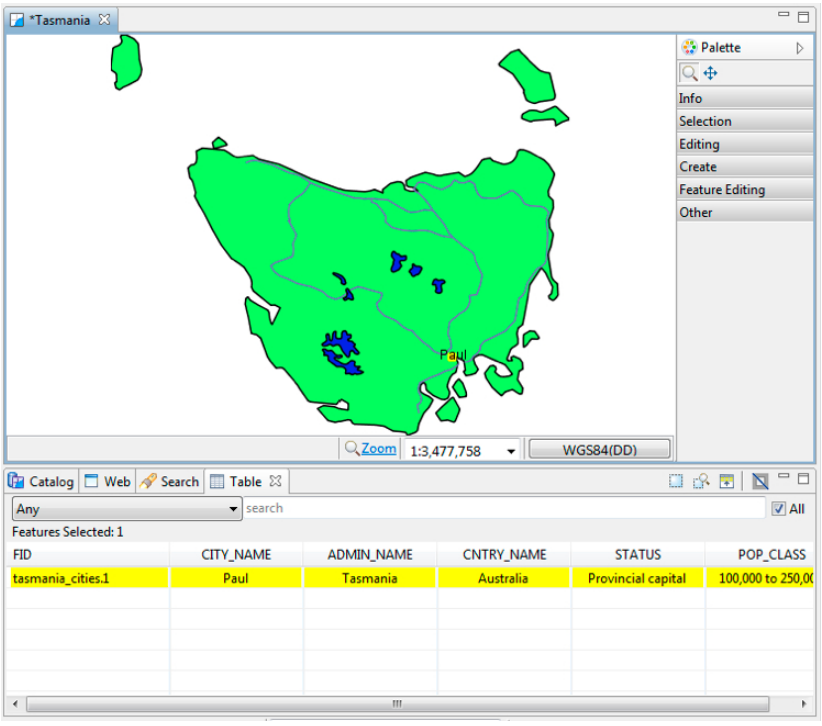
11. The first time you use table view you will need to accept a warning that all the features will be loaded into memory.



12. The Table view shows all the features for the current layer.



13. Go ahead and rename the city after yourself. Change the CITY_NAME attribute and you can watch the map update.



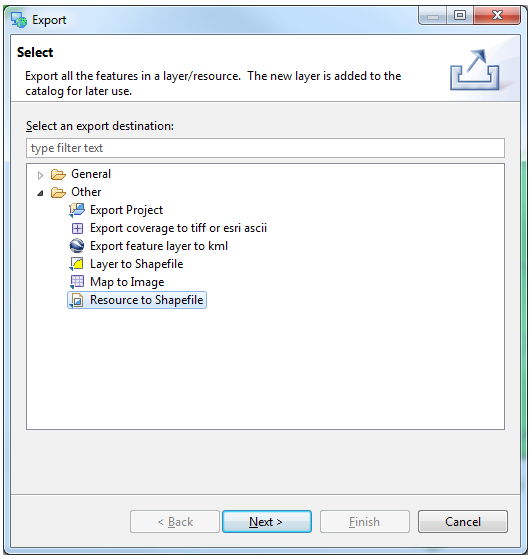
Not all aspects of a feature are editable. - bounds are derived from the geometry, and ID is dictated the WFS.

14. Press the **Commit Changes** button, in the tool bar, to send your changes off to the Web Feature Server.

5 Exporting to Shape file

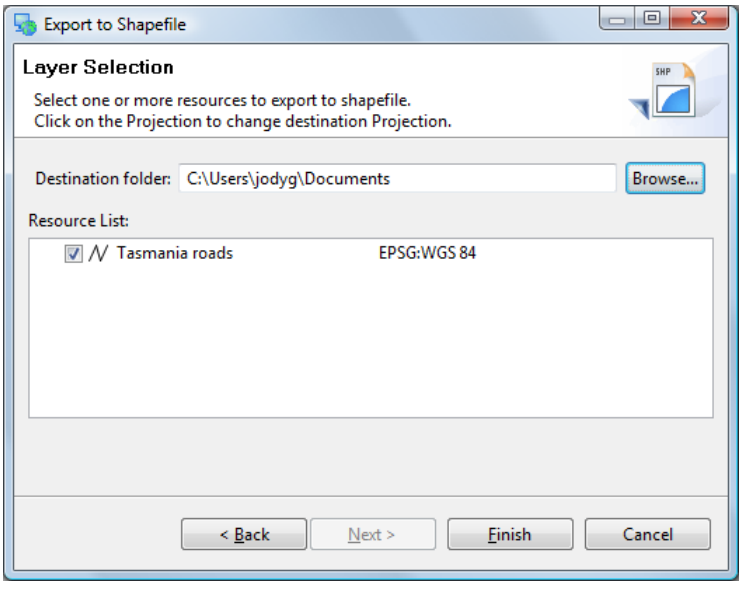
In addition to editing content from many sources, you can also export content to a shapefile.

1. With **Tasmania roads** selected, choose **File > Export** from the menu bar
2. Select the **Resource to Shapefile** and press **Next**



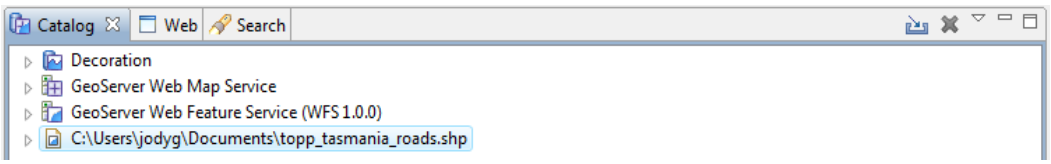
3. Your **Tasmania roads** layer will be available for export, you can see that it is in the "WGS84" projection.

The projection for your data is listed to the right. Click on this value to transform your data into a different projection.



4. Press **Finish** to save the file to disk.

Exported files are added to the catalog.



6 Take a Break!

Wow that was a lot of content, lets take a break and go over some ideas you can try at home.

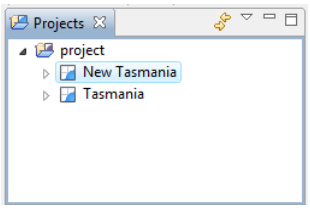
- The OpenLayers application also include the ability to edit, see if you can edit something in the browser and get the change to show up in uDig.
- There are additional Web Feature Servers listed in the Web Catalog. Try downloading some content and seeing what you can learn.

Okay lets move on.

7 Creating Feature Type

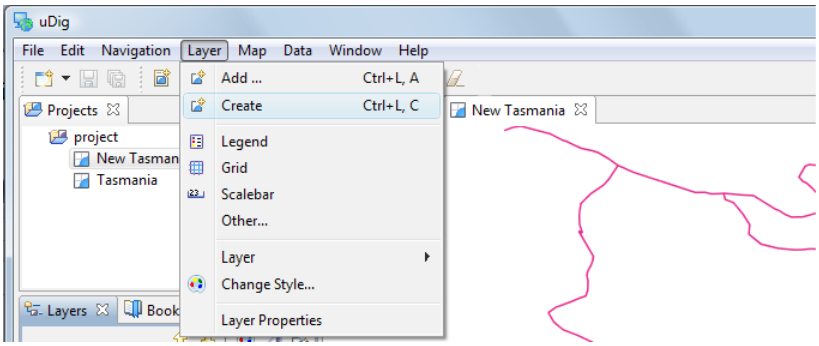
We are going to create a new feature type to experiment with some of the more interesting edit tools.

1. Create a **New Map**
2. Rename the map to "**New Tasmania**"



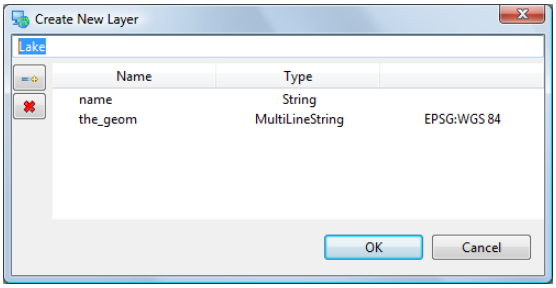
3. Add the "**tasmanian roads.shp**" file you created previously. You can drag and drop the file onto the map, or use **Layer > Add** from the menu bar.
4. Select the **Layer -> Create** command from the menu bar.

Ctrl+L followed by C will also open the Create Feature Type dialog.

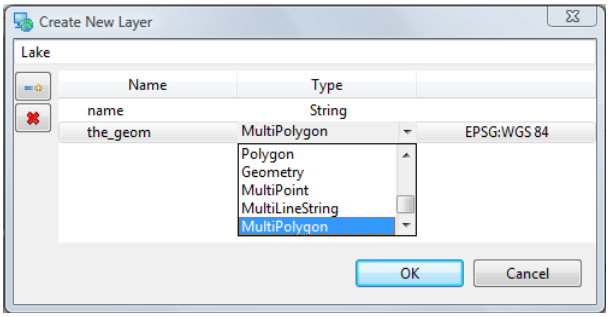


5. Replace "New Feature Type" with "**Lake**".

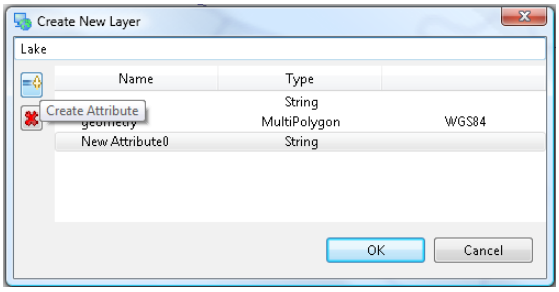
If you have a shapefile selected you will see "the_geom"; the default attributes are based on the current selection.



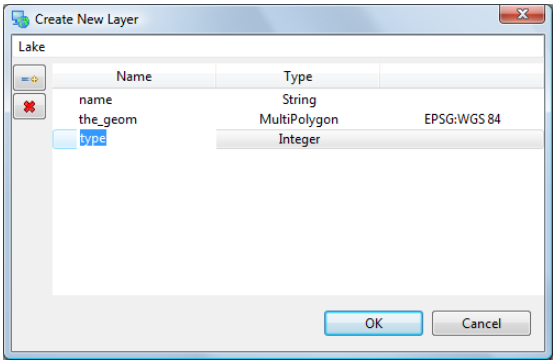
6. Change the type of the "the_geom" attribute to **MultiPolygon**.



7. Click **Add Attribute** button.

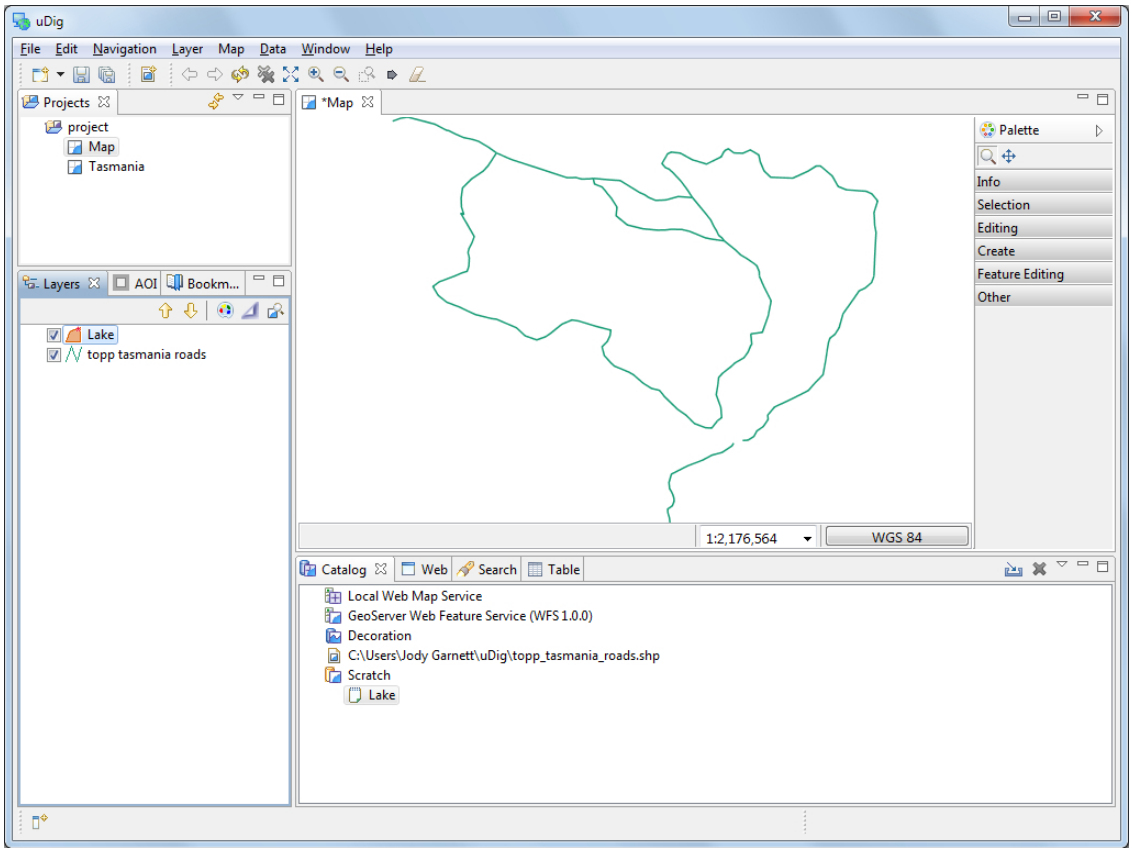


8. Select your new attribute and change the Type to "**Integer**" and the Name to "**type**"



9. Press **OK** button

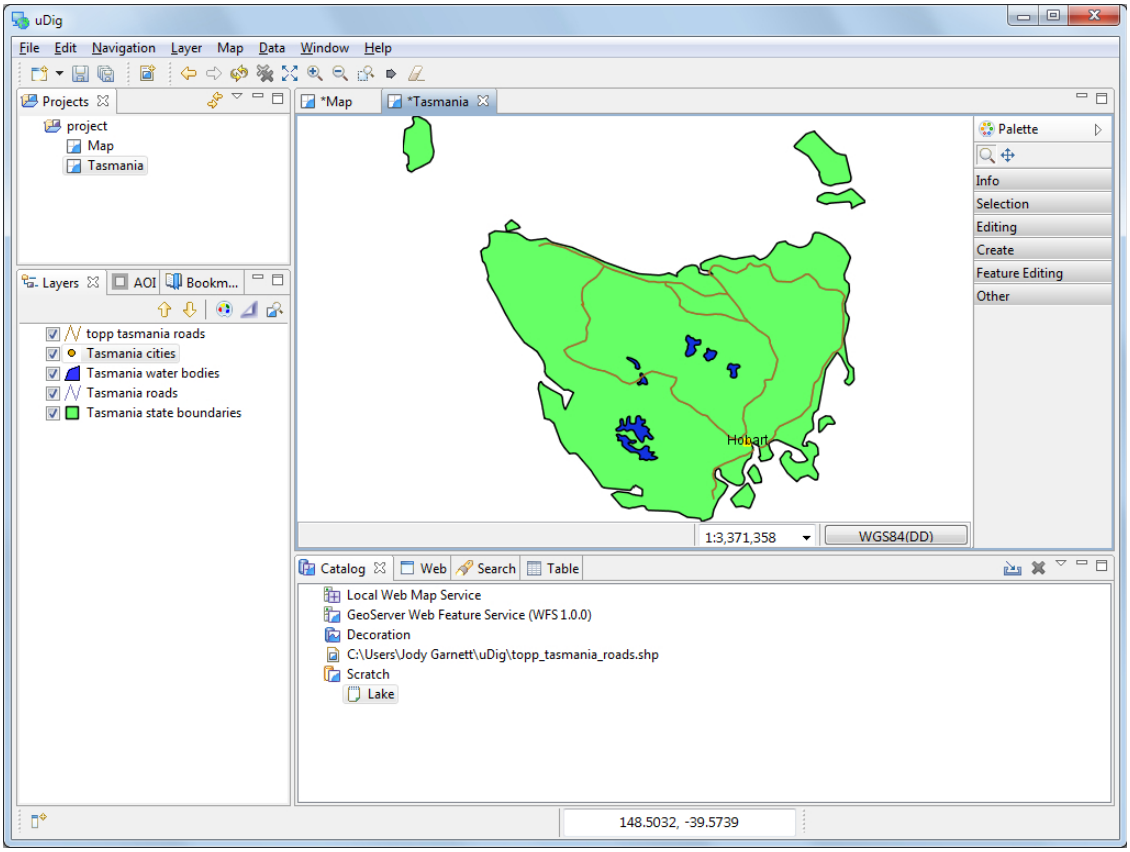
- Your layer has been added to the current map
- Your data has been added to the **Scratch** area of the catalog



8 Copying Content

Now that we have created a new feature type, we can use cut and paste to grab geometry content from our WFS. This is different from the export we did earlier in that we are using our layer type.

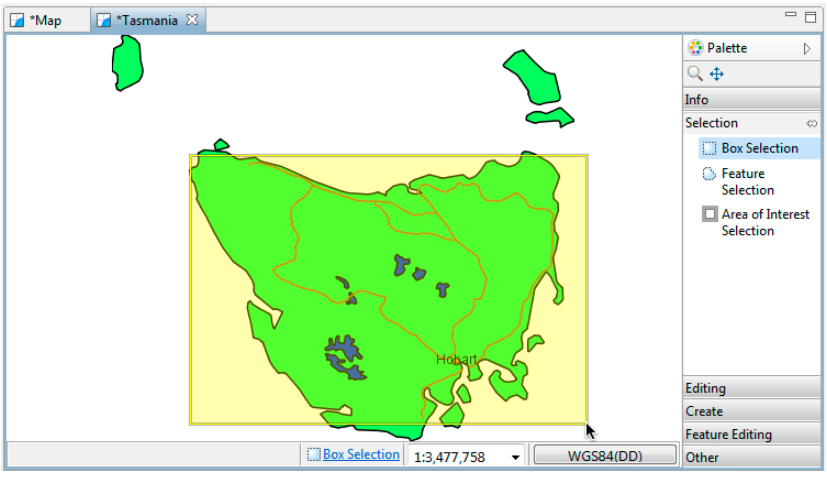
1. Change to **Tasmania** map and select **Navigation->Zoom AOI** in the menu bar.
2. In the Layers view make sure that **tasmania_water_bodies_Type** is selected as shown below.



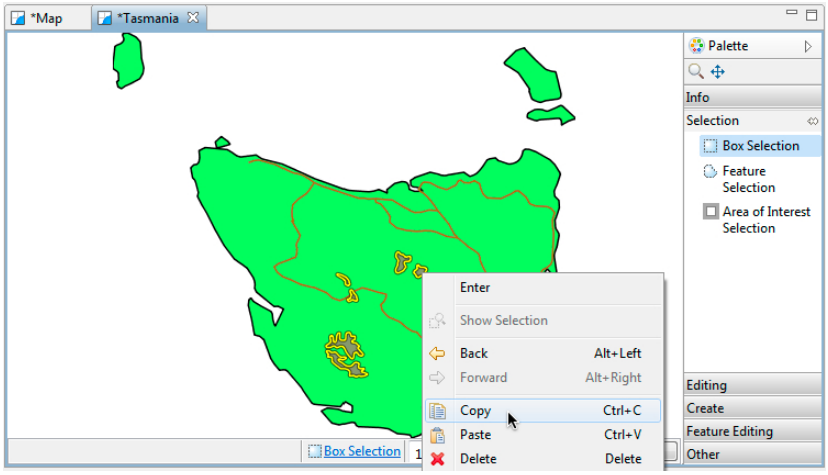
3. Select **Box Selection** from the tool palette.

Press "S" to use the select tool at any time.

4. Use the Box Selection tool to draw a box around all the lakes. The lakes will change color when selected.

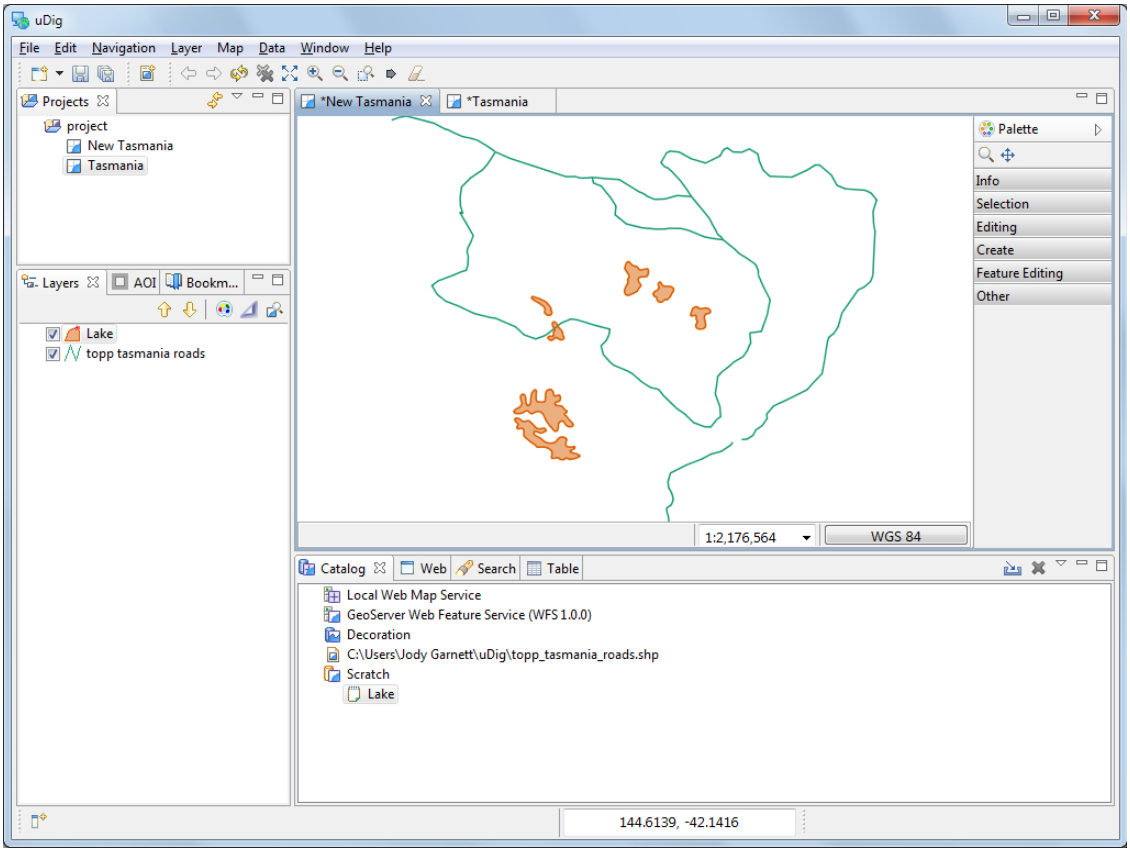


5. Select **Edit->Copy** from Edit menu. These lakes will be placed onto the clipboard.



6. Switch over to the **New Tasmania** map. Ensure your select **Lake** layer is selected in the layer view, and r**ight-click** mouse button to select **Paste**.

You can paste geometry into other applications as either GML or WKT.



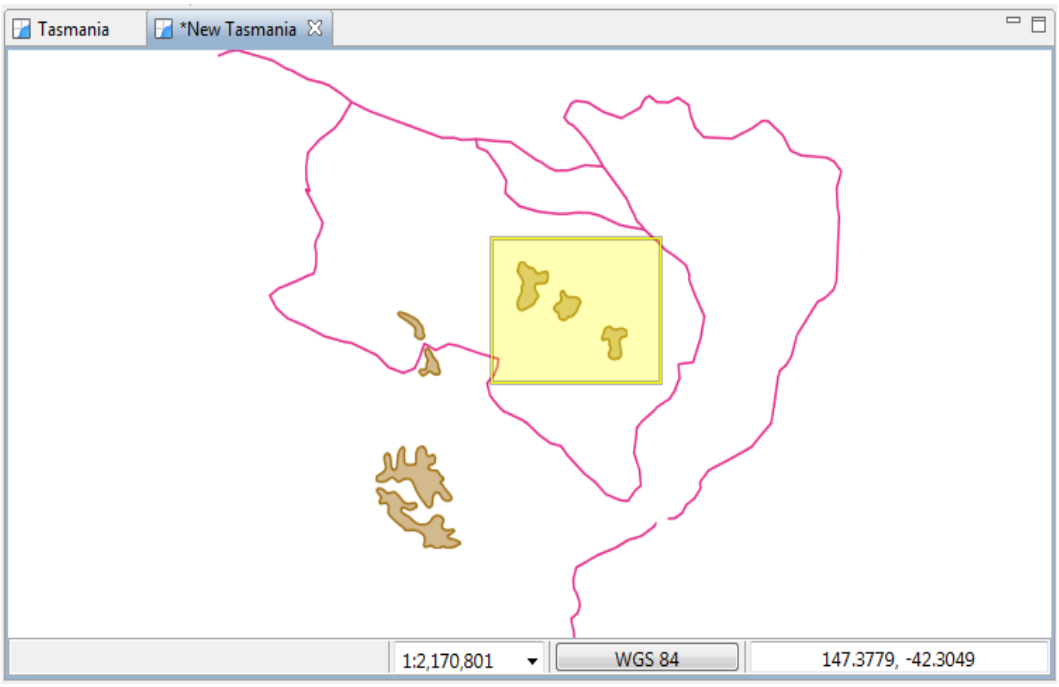
7. Press **commit** to write these new features into your Scratch layer.

9 Hole Cutter

In this section we will cover how to create a hole in a polygon.

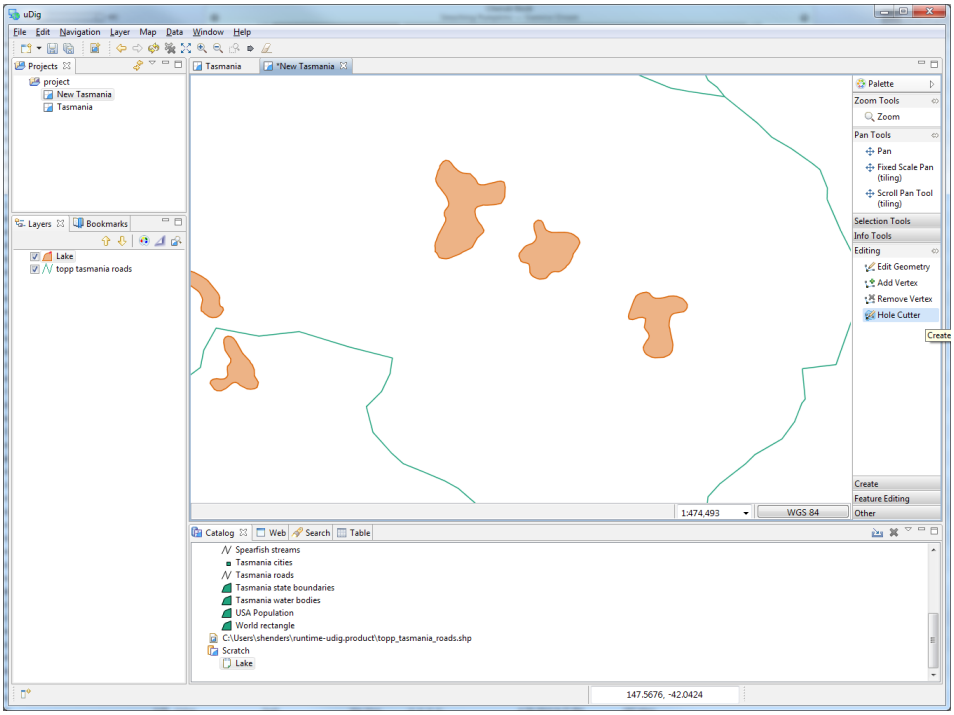
Additional editing tools supplied by the community are available.

1. Open the **New Tasmania** map and zoom to lake shown below.

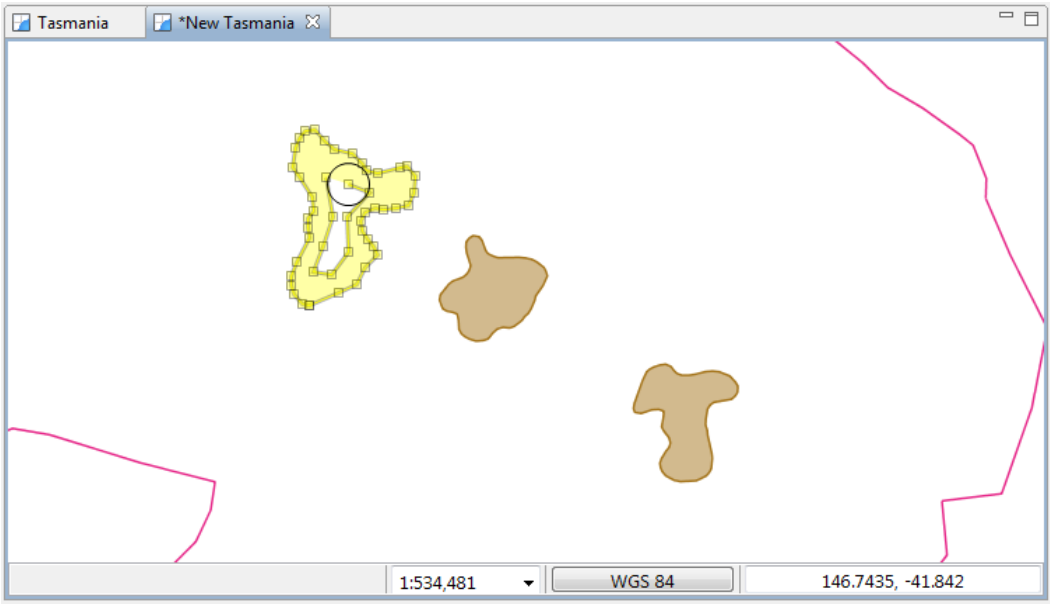


You can use the keyboard short-cut 'e' to cycle between the edit tools.

2. Open the **Editing** drawer of the **Palette** to show all the edit geometry tools. Select the **Hole Cutter** tool from the tool palette.



3. Use the hole cutter to draw a polygon **within** the lake.



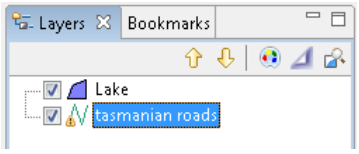
You can press Esc to cancel your edit.

4. Press **Enter,** or click on the first vertex, to create the island.
5. Press the **Commit** button in the toolbar.

10Create Geometry

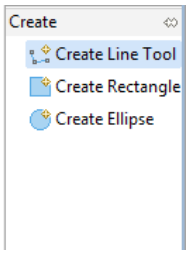
The second category of tools involves creating geometry, we will cover line and polygon creation and “vertex snapping”.

1. Select **tasmanian roads** in the layer view.

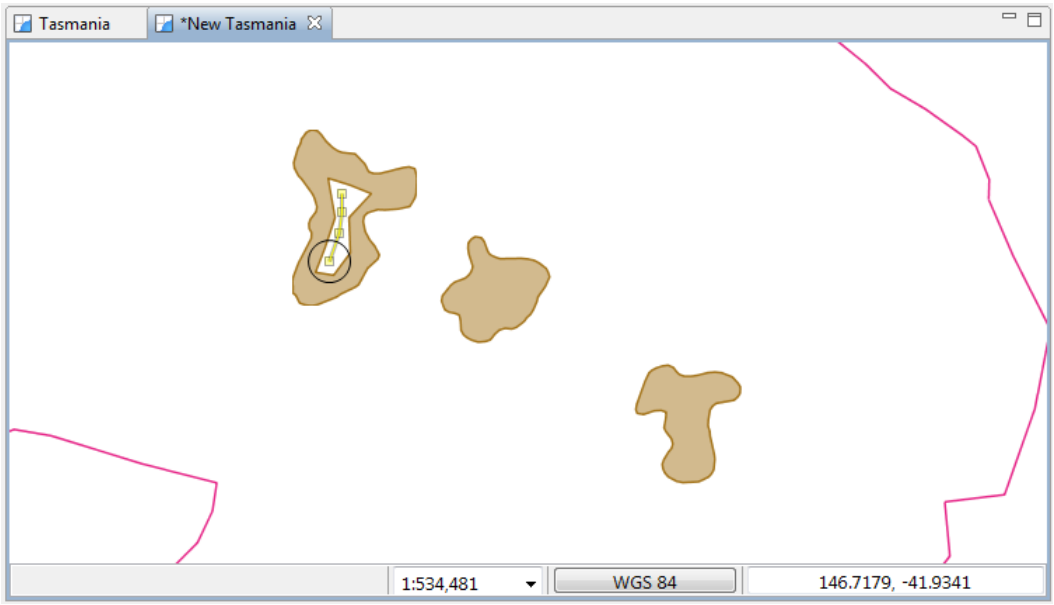


Use the keyboard short-cut ‘c’ to cycle between the create tools.

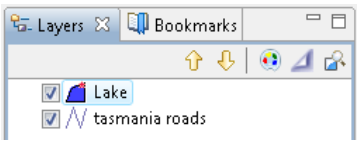
2. Choose the **Create Line Tool** from the **Create** drawer of the **Palette**.



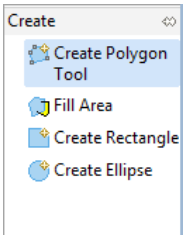
3. **Draw** a road on the northern part of the island, once again **Enter** to indicate that you are finished your line.



4. You have just created a new road, remember to press **commit** in the tool bar to write your change to the shape file.
5. Change to the **Lake** layer in the layer view.

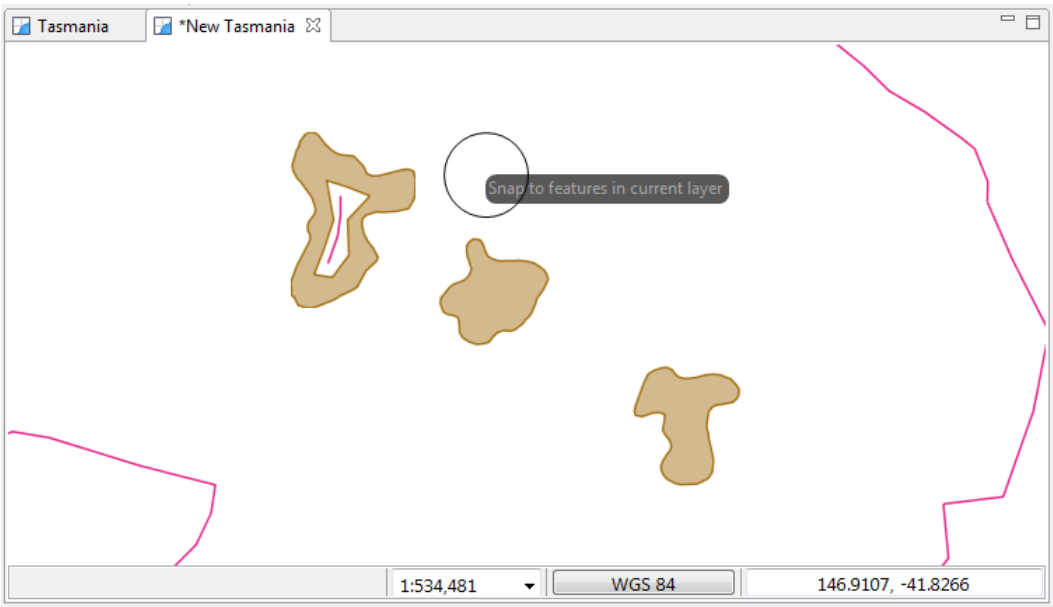


6. Select the **Create Polygon** Tool.



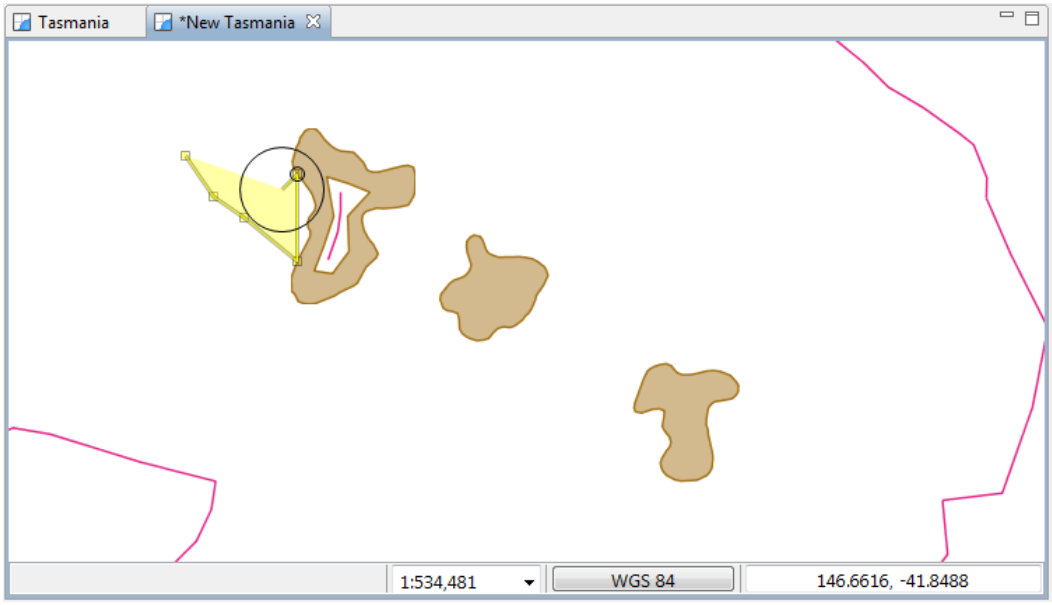
7. Enable snapping by pressing **CTRL+SHIFT+S** until **Snap to features in current layer** is displayed in a dialog.

If you go too far just keep pressing Control-Shift-S, it will cycle through all the snapping options.



8. Draw a polygon, close to a feature, as you draw close to another polygon you can watch how snapping effects the drawing process.

If you watch closely the last vertex will expand closely when you are about to close the polygon.



9. You can complete your polygon by ending it on the vertex that started the polygon.
10. Please press the **commit button** in the toolbar.

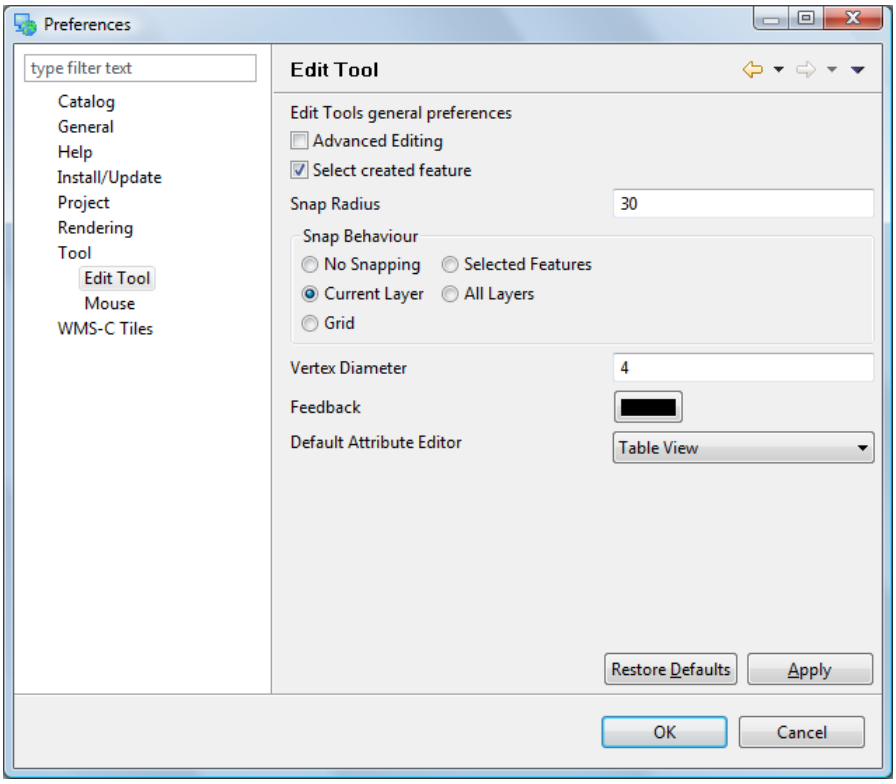
11 Changing Snapping Behavior

The snapping choices included with uDig are as follows:

No Snapping	Snapping is turned off by default.
Selected Features	Snap to a vertex in a selected feature.
Current Layer	Snap to a vertex in the current layer
All Layers	Snap to a vertex in any layer
Grid	Snap to the nearest grid intersection

There are three different ways to change the snap behavior:

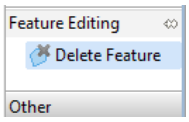
1. In the Edit Tool Preferences which can be found in the **Window > Preferences** menu.



2. While an edit tool is *active* press CTRL+SHIFT+S. This will cycle through the available snap behaviors. A small pop-up will display the new behavior.
3. You can see a short cut of the tool snapping options in the tool options along the bottom of the map.

12 Delete Feature Tool

1. To delete the feature just created select the **Delete Feature Tool** in the tool palette.

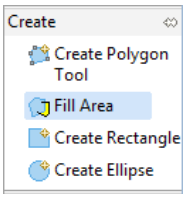


2. **Click** on the newly created feature and it will be **deleted**.

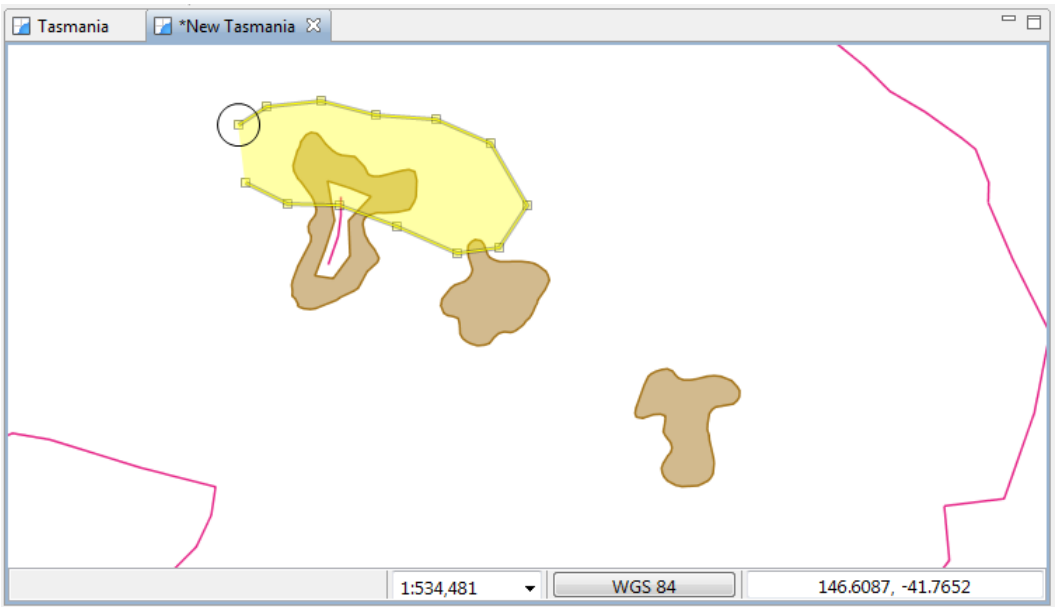
13 Fill Tool

The Fill tool fills spaces that are **not** occupied by existing features.

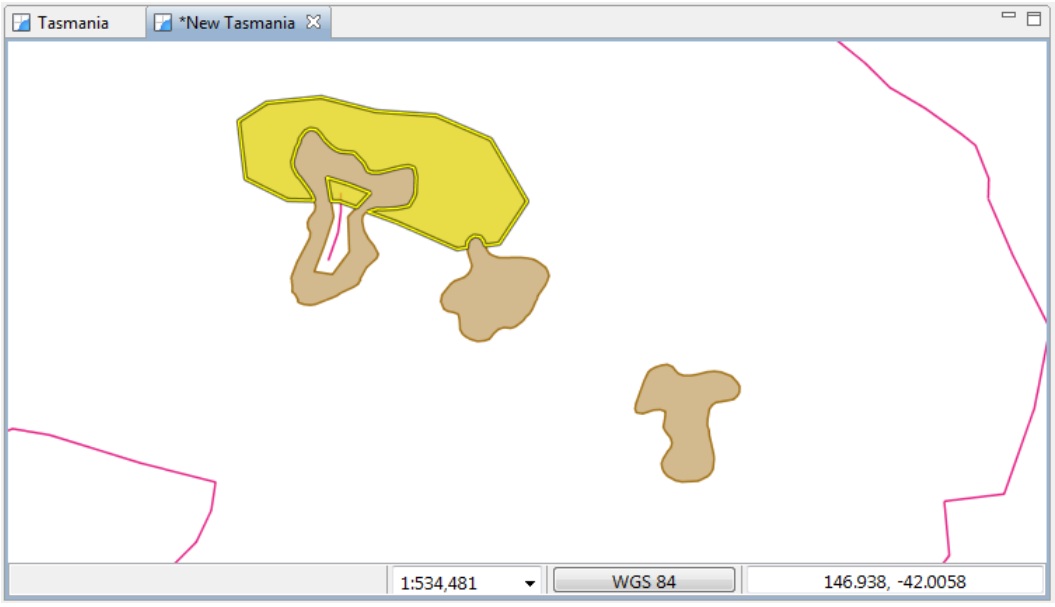
1. Select the Fill Area Tool.



2. **Draw** a Polygon that goes through some existing features.



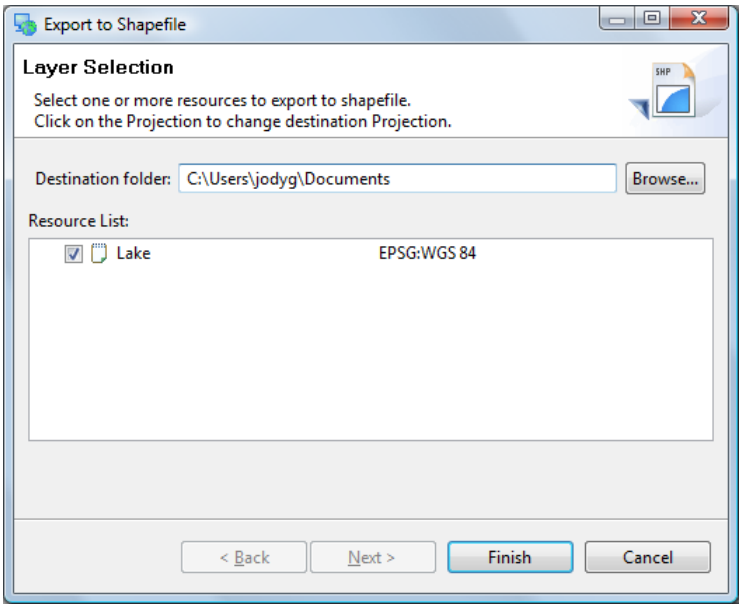
3. Change to the select tool and click on the Polygon to select it. This is in-fact a multi polygon; a single feature made up of separate shapes on the map.



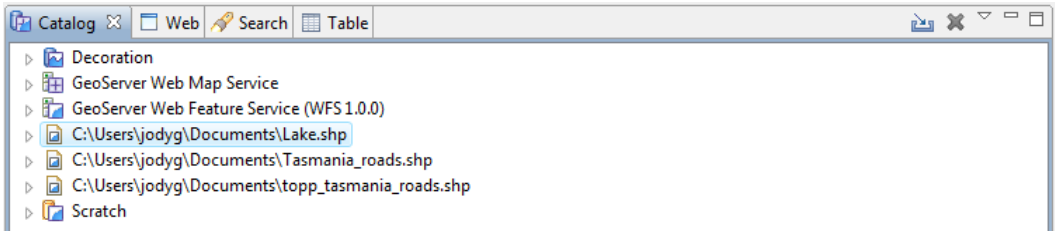
14 Save

We are now going to save the “Scratch” layer we have been working with.

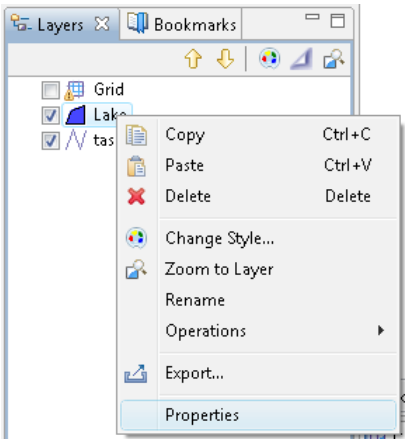
1. Please press the **Save** button in the tool bar (or choose save from the File menu).
2. Ensure that your scratch layer **Lake** is selected and press **Finish**.



3. A new shapefile has been created in the directory indicated, you can see this file in your catalog.



4. Your map has been updated to use your new layer, you can verify this by right clicking on your Lake layer and checking its Properties.

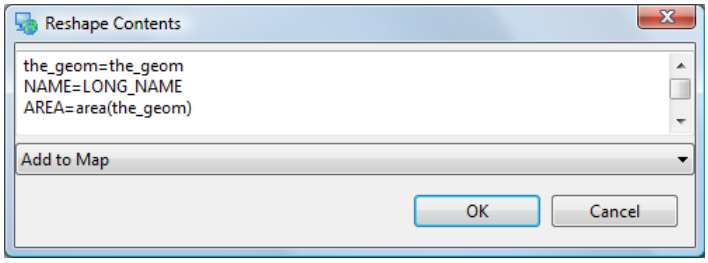


15 What to Do Next

Where to go from here? Try out the following:

- You can use the **Reshape** operation reorder and rename attributes and even create new ones using simple formulas

Look at the "Common Query Language" in the online help for a complete function list.



- Enable Advanced Editing Tools in **Windows > Preferences** and see what ideas the developers are considering. You will need to close and open your map for the settings to take effect.
- The uDig community site has additional editing tools.
  Try out the tools provided by Axios.