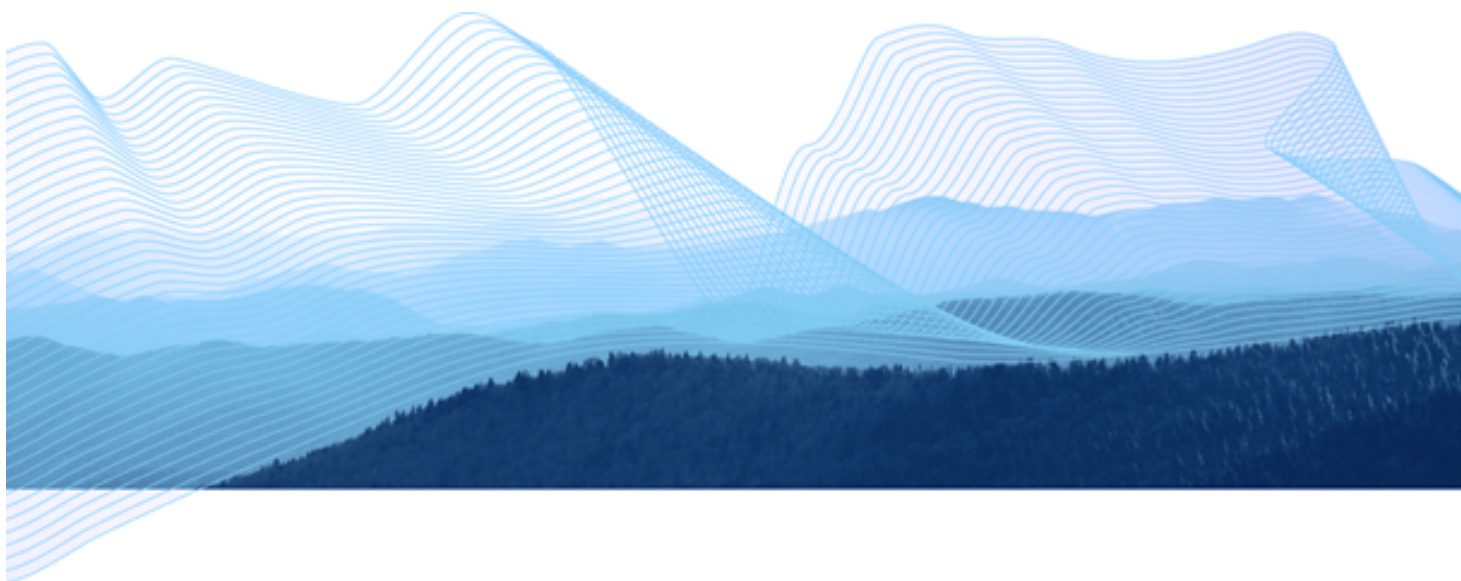


# WALKTHROUGH 2

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*Editing with uDig and WFS-T*

*01 January 2009*



Refractions  
RESEARCH



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# 1 GOALS

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*

*1.7.1 was tested*

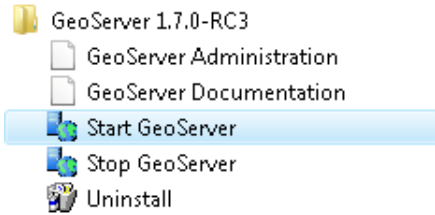
*and working.*

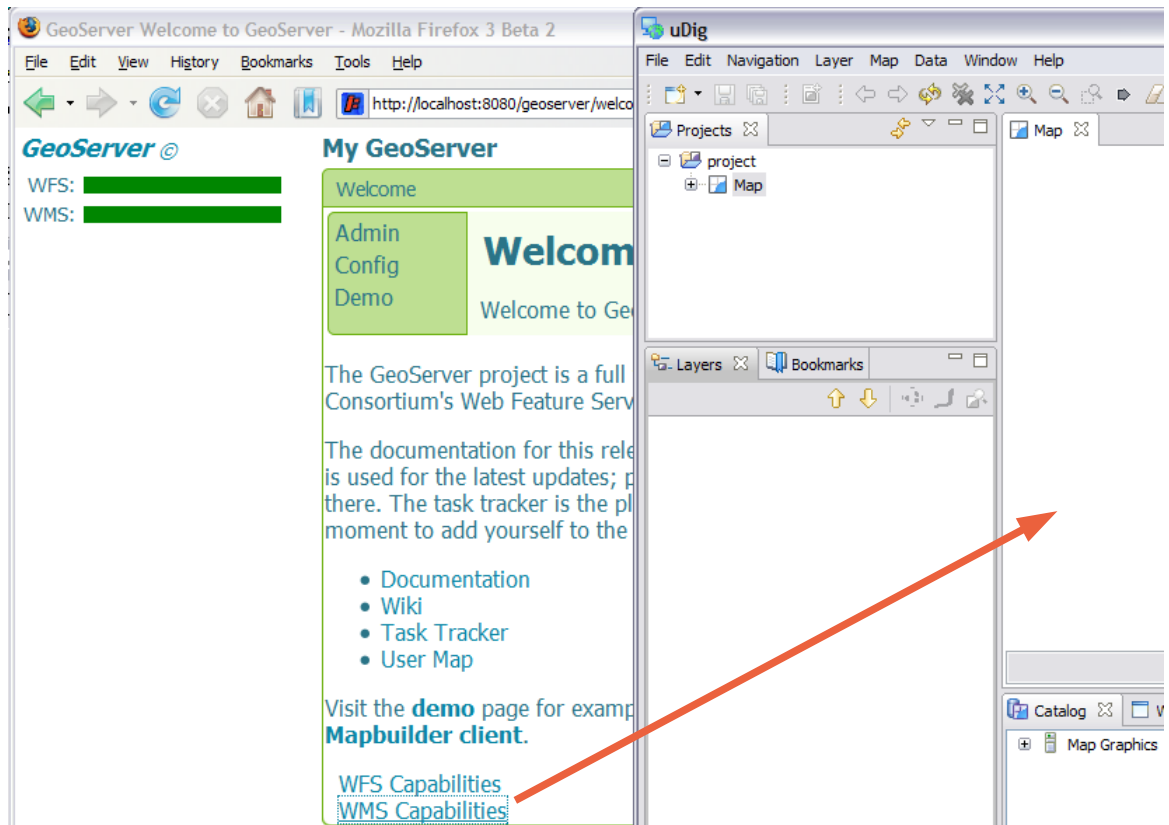
The rest of the workbook is devoted to working with information. We will create a new feature type by hand, and work with a range of feature creation and editing tools. Finally we will save the result to a new file.

## 2 WMS AND WFS INTEGRATION

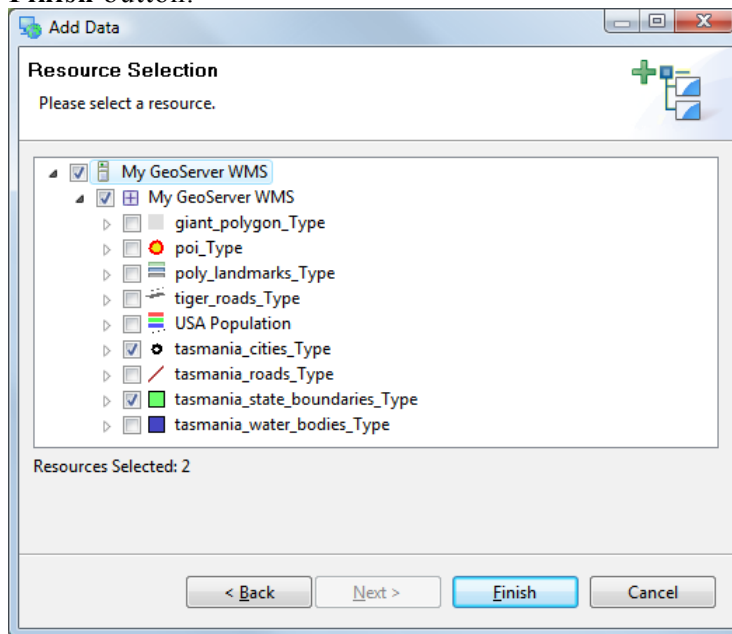
In this section we will use uDig to display contents from our local Web Feature Server. We will also make use of some of the more interesting selection features.

*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*

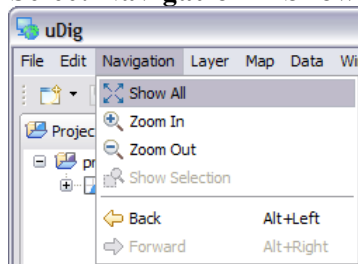
1. Start **uDig**, under the **File** menu select **New-> New Map** to create a new map.
2. Make sure your local GeoServer is started and ready to go. You can run GeoServer from the Start menu.
  - GeoServer 1.7.0-RC3
    - GeoServer Administration
    - GeoServer Documentation
    - Start GeoServer
    - Stop GeoServer
    - Uninstall
3. Navigate to that GeoServer **Welcome** page:  
<http://localhost:8080/geoserver/>
4. Drag and Drop the **WMS Capabilities** link on to your Map.



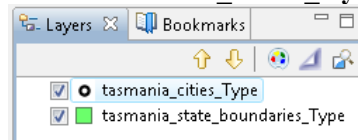
5. This will bring up a Wizard allowing you to choose which Layers you wish to see. Select **tasmania\_state\_boundaries\_Type** and **tasmania\_cities\_Type** and then press the **Finish** button.



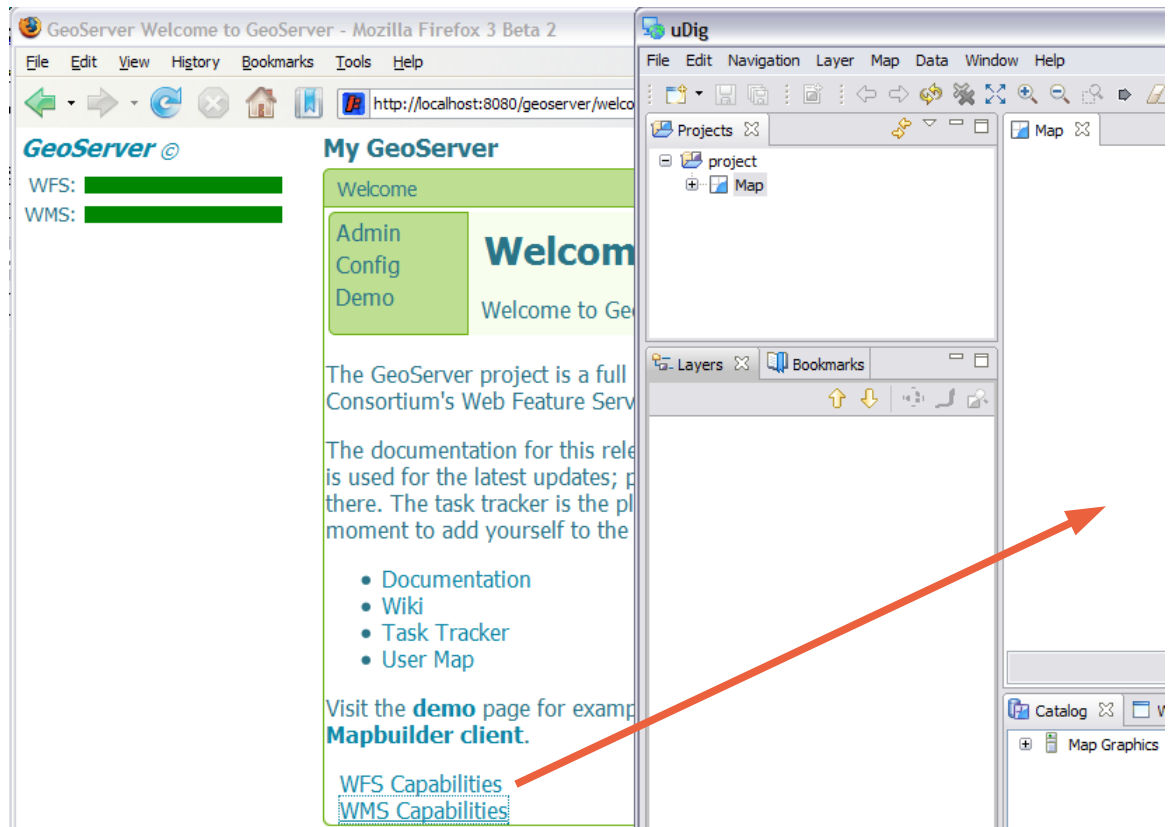
6. Select **Navigation > Show All** from the menu bar.



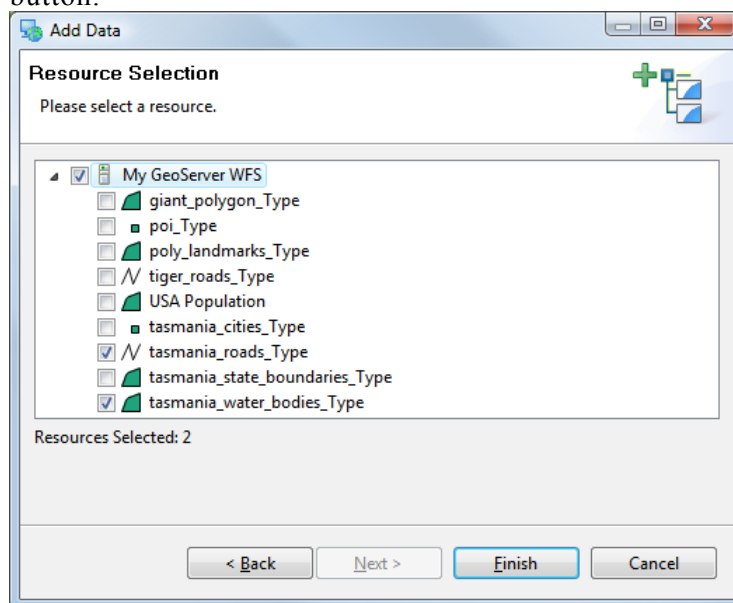
7. Move **tasmania\_cities\_Type** to the top of your layers view.



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



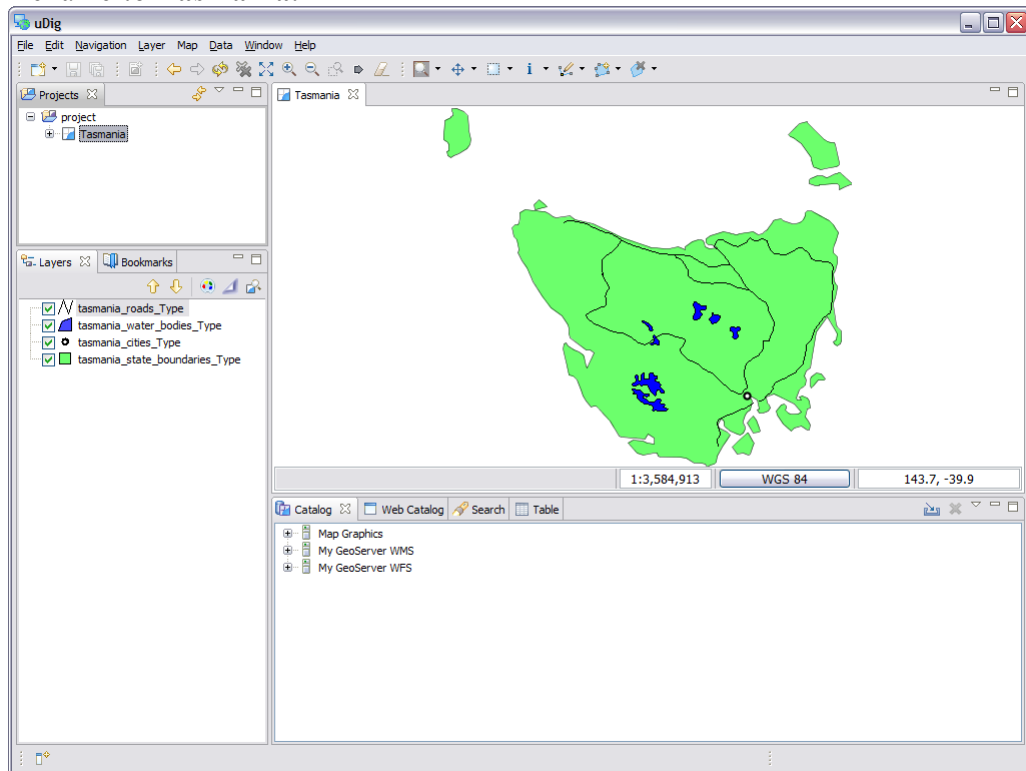
9. This will bring up a Dialog allowing you to choose which Layers you wish to see. Select **tasmania\_roads\_Type** and **tasmania\_water\_bodies\_Type** and press the **Finish** button.



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

## 11. Rename to **Tasmania**.

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



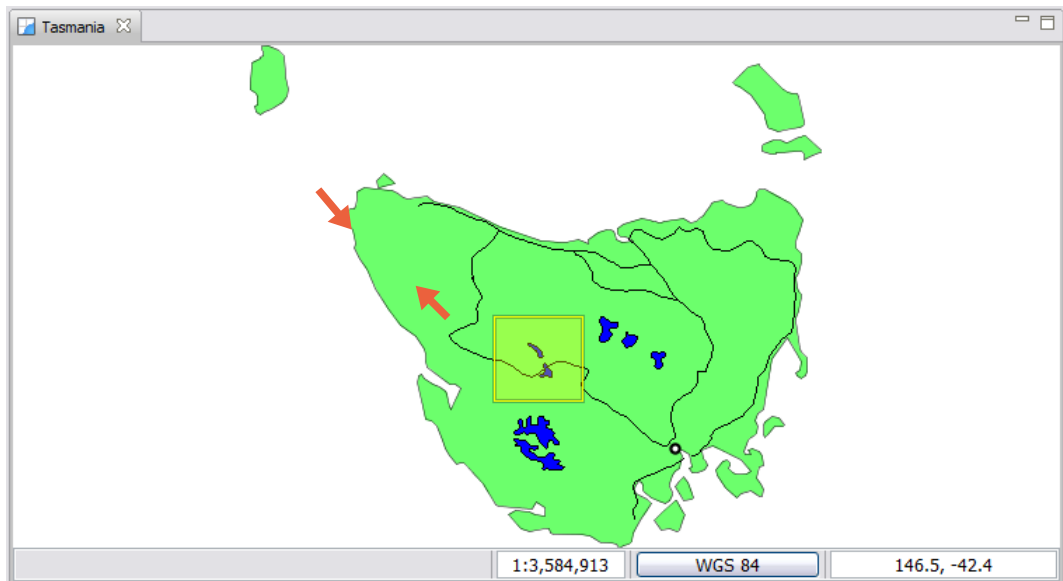
## 12. You can compare your map with what is shown on the web

- **GeoServer 1.4 with MapBuilder**  
[http://localhost:8080/geoserver/wfs-t\\_demo/index.html](http://localhost:8080/geoserver/wfs-t_demo/index.html)
- **GeoServer 1.5 with Open Layers**  
[http://localhost:8080/geoserver/wfst\\_demo/wfs-t.html](http://localhost:8080/geoserver/wfst_demo/wfs-t.html)
- **GeoServer 1.6 with Open Layers**  
<http://localhost:8080/geoserver/www/wfs-t.html>

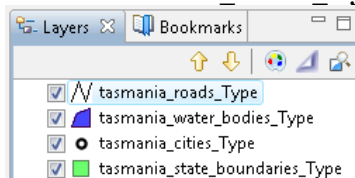
### 3 EDITING GEOMETRY WITH WFS

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

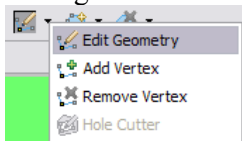
1. Zoom into the road that is crossing the lake in the center of the country (draw a box between the two arrows).



2. Select **tasmania\_roads\_Type** in the **Layers** view.



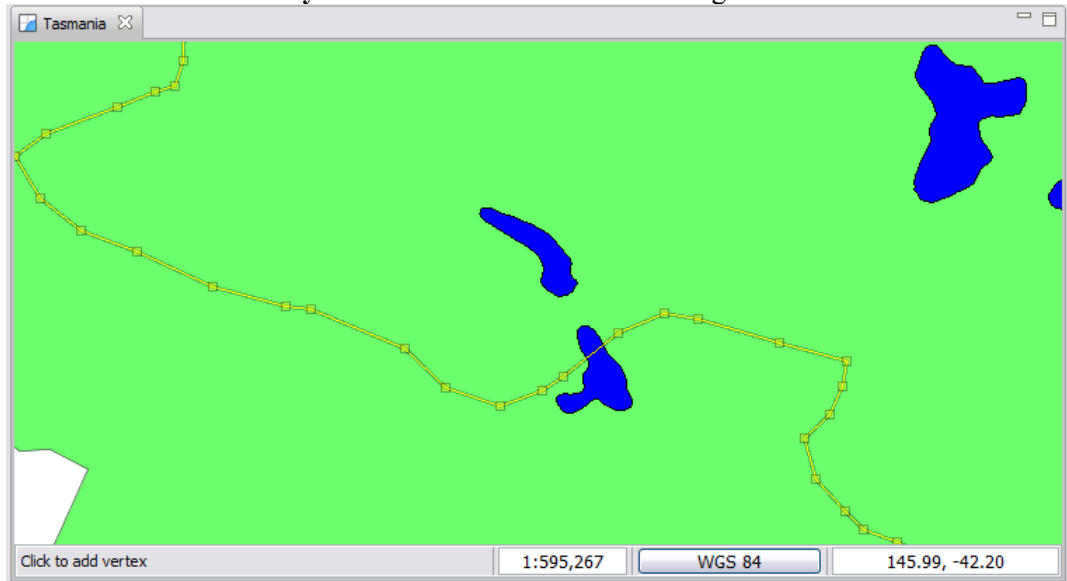
3. Change to the **Edit Geometry** tool from the tool bar



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



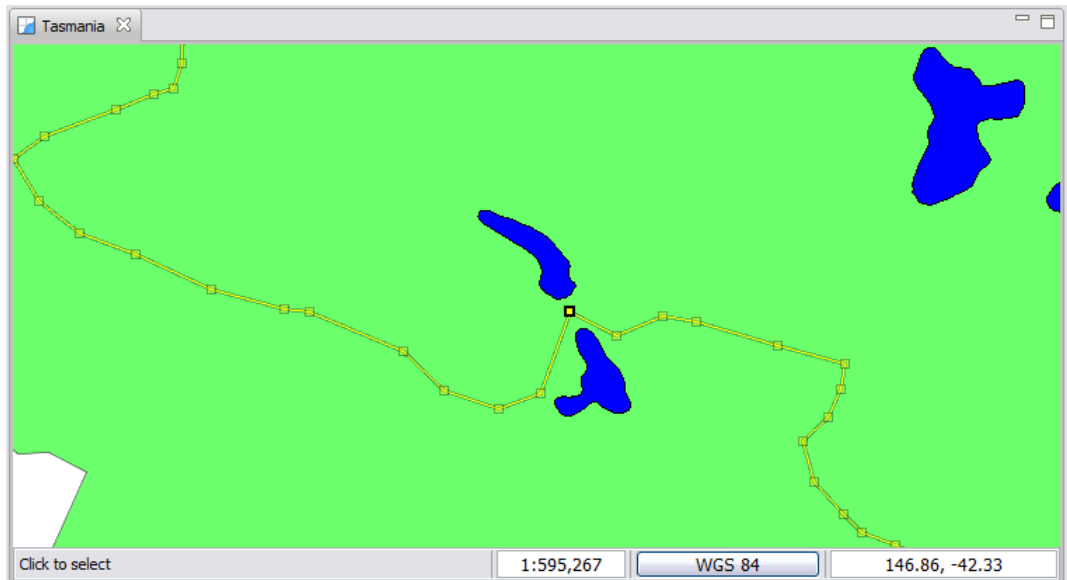
4. Use the **Edit Geometry** tool to select the road crossing the lake.



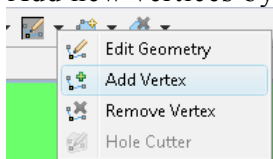
The road will change color and develop “vertex handles”.

5. 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.*

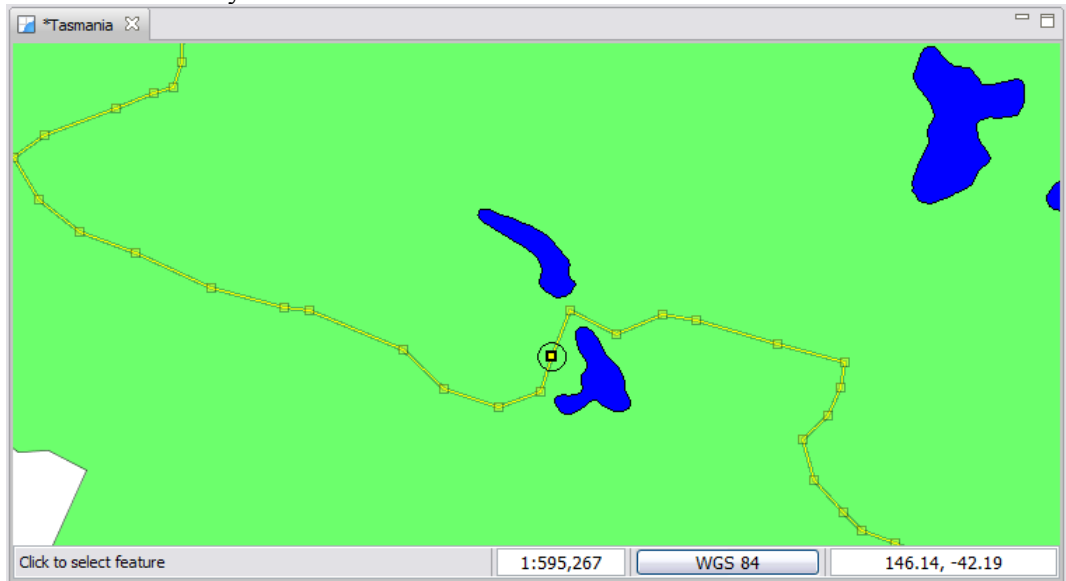


6. Add new vertices by switching to the **Add Vertex** tool:

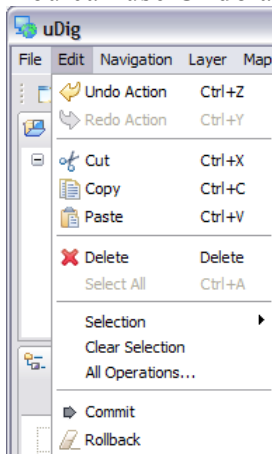


7. You can click anywhere on the road to add a new vertex.

*You can cycle through the available edit tools by pressing “e”.*



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



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

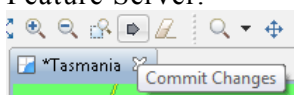
*You may also press Revert (*

*in the tool bar)*

*to rollback any*

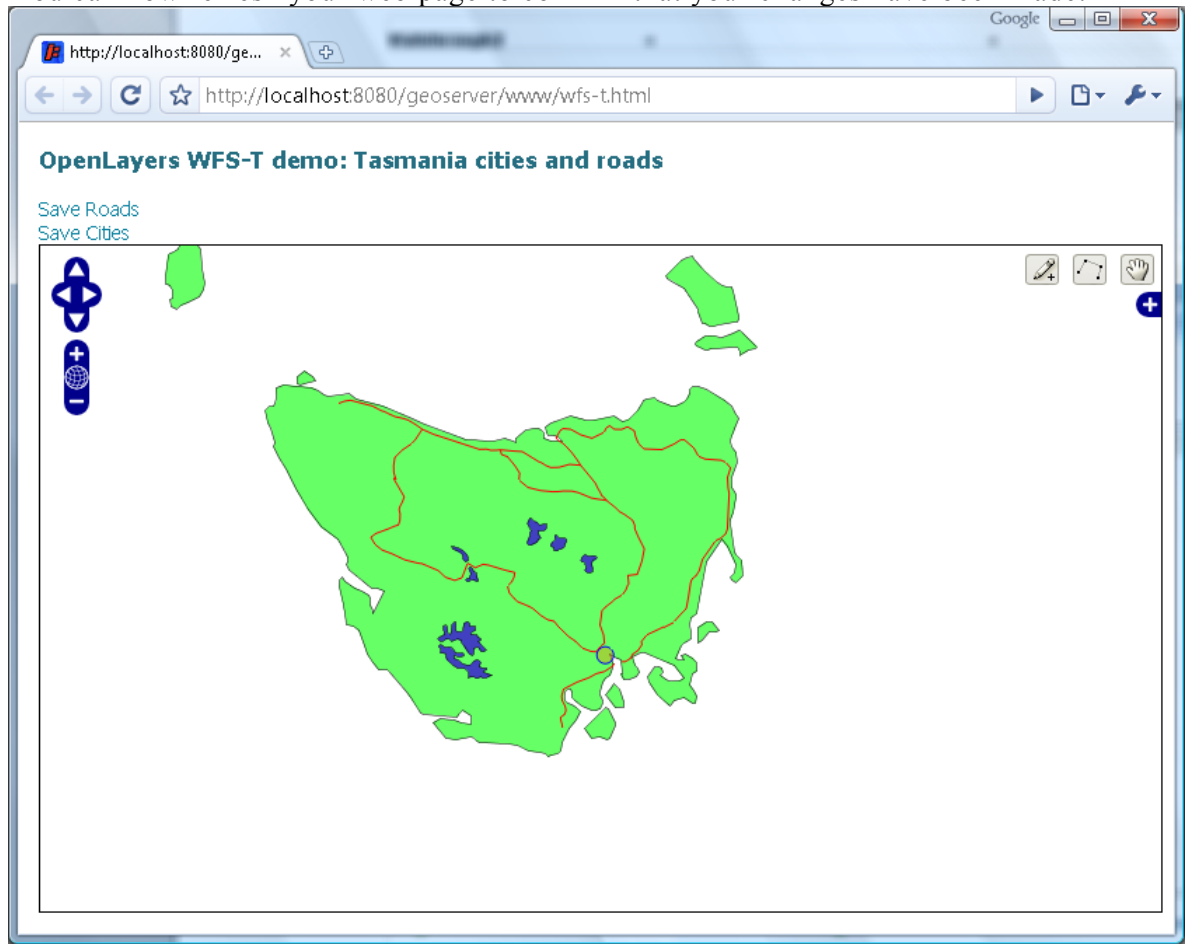
*changes you have*

*made.*



10. Your line has now been moved.

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



- **GeoServer with Open Layers**  
<http://localhost:8080/geoserver/www/wfs-t.html>
- **GeoServer 1.5 with Open Layers**  
[http://localhost:8080/geoserver/wfst\\_demo/wfs-t.html](http://localhost:8080/geoserver/wfst_demo/wfs-t.html)
- **GeoServer 1.4 with MapBuilder**  
[http://localhost:8080/geoserver/wfs-t\\_demo/index.html](http://localhost:8080/geoserver/wfs-t_demo/index.html)

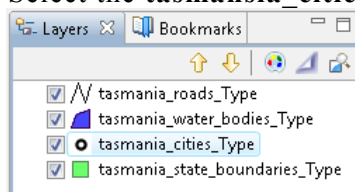
12. You can edit many Features at once, from different layers, or from different sources of data. Pressing **Commit Changes** will send off all the changes made in the current map.

## 4 WORKING WITH ATTRIBUTES

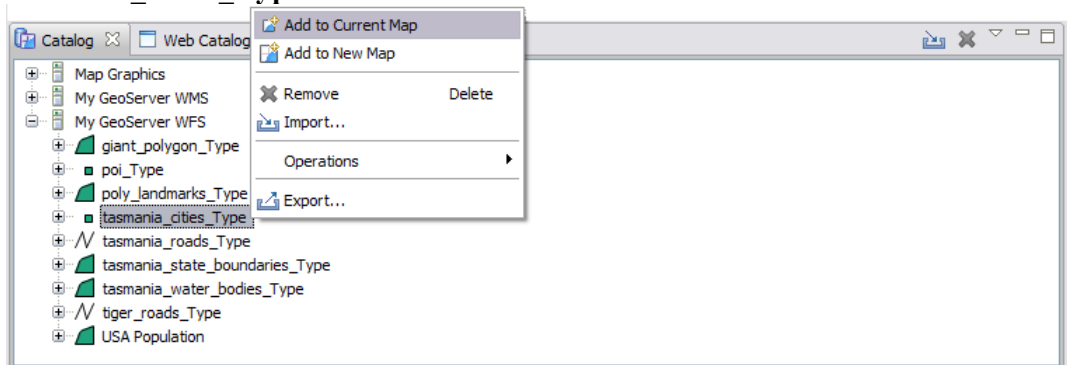
In this section you will learn how to edit an Attribute, along the way we will explore the use of styling.

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

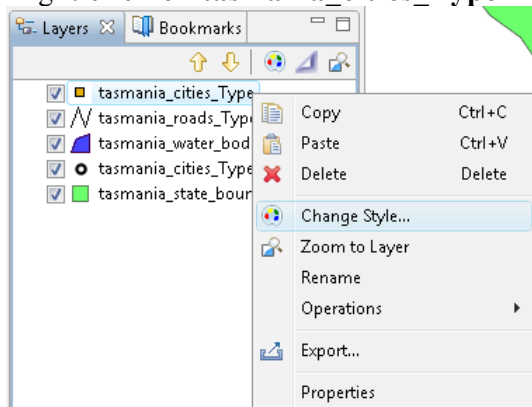
1. Select **Navigation > Show All** from the menu bar.
2. Select the **tasmania\_cities\_Type** in the Layers View.



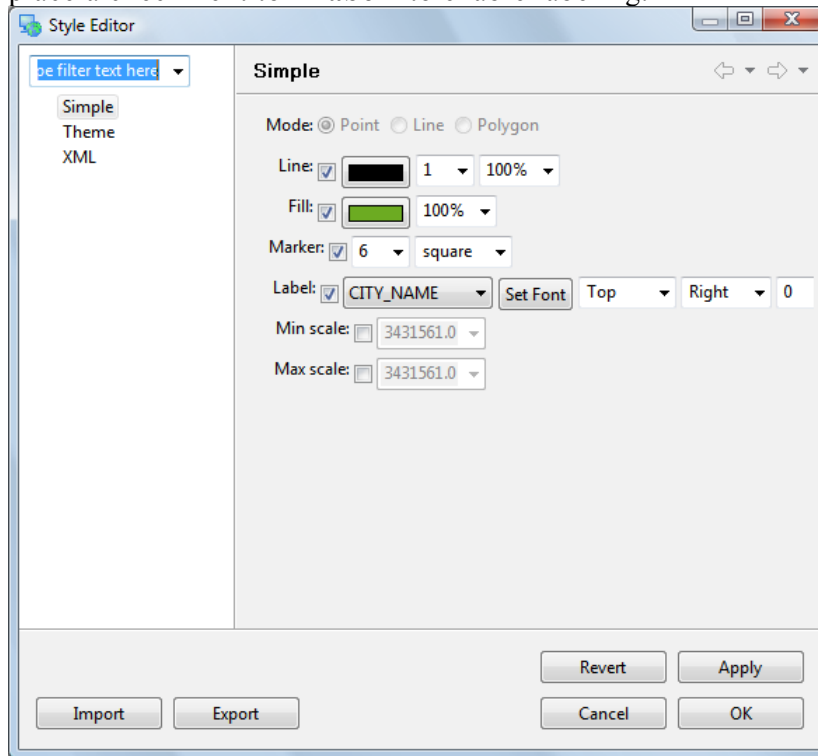
3. Select the **Edit > Delete** command from the menu bar
4. In the **Catalog** view expand the **My GeoServer WFS** entry and select **tasmania\_cities\_Type**.



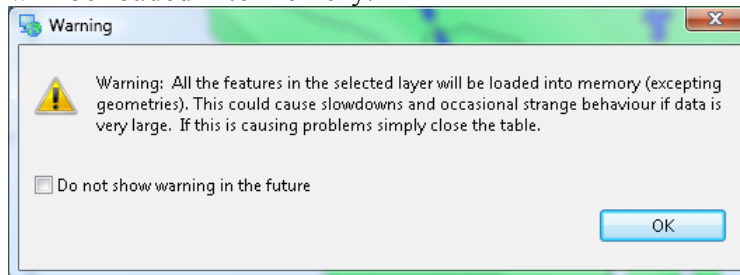
5. Right Click and select **Add to Current Map**.
6. Right click on **tasmania\_cities\_Type** in the **Layers** view, and click on **Change Style**.



7. This opens the **Style Editor**. Select “**Simple**” from the list on the left hand side, and place a check next to “**Label**” to enable labeling.



- After making changes, hit the **Apply** button to update the map, you can experiment with the settings and press close when you are finished.
- Ensure that **tasmania\_cities\_Type** is still selected in the layers view, and select the **Table** view.
- The first time you use table view you will need to accept a warning that all the features will be loaded into memory.

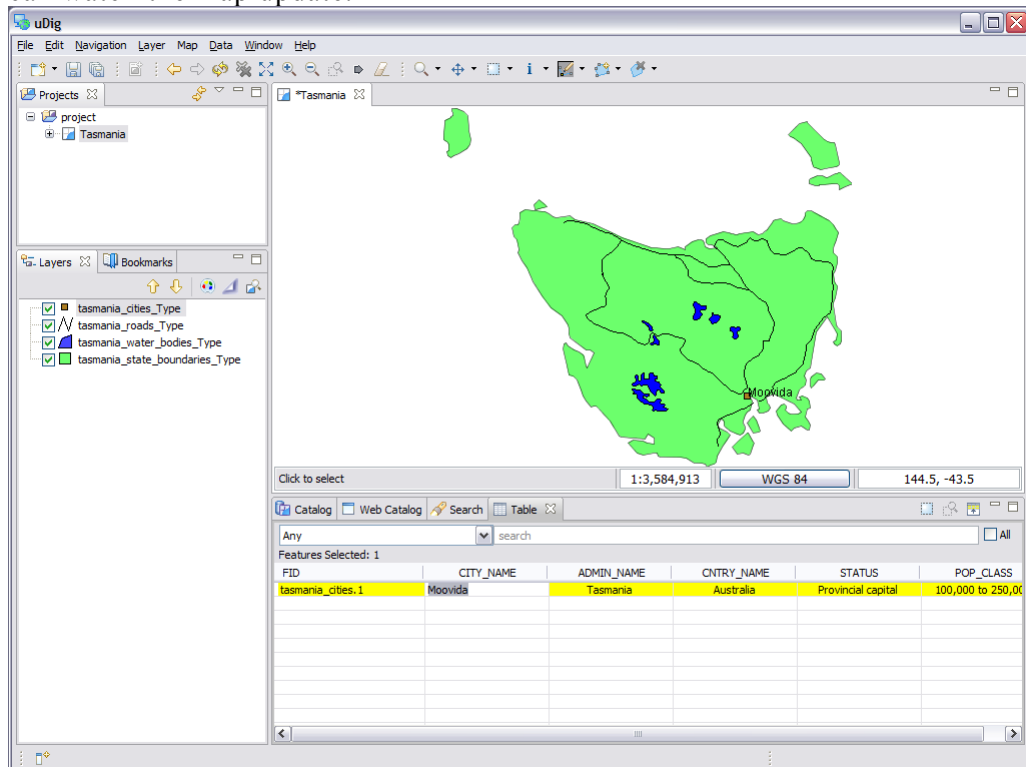


11. The Table view shows all the features for the current layer.

The screenshot shows the 'Table' window in the 'Catalog' application. The window has a title bar with 'Catalog', 'Web Catalog', 'Search', and 'Table' buttons. Below the title bar is a search bar with a dropdown menu set to 'Any' and a search button. The main area displays a table with the following columns: FID, CITY\_NAME, ADMIN\_NAME, CNTRY\_NAME, STATUS, and POP\_CLASS. The first row contains data for 'tasmania\_cities.1', 'Hobart', 'Tasmania', 'Australia', 'Provincial capital', and '100,000 to 250,000'. The table is currently empty except for this one row.

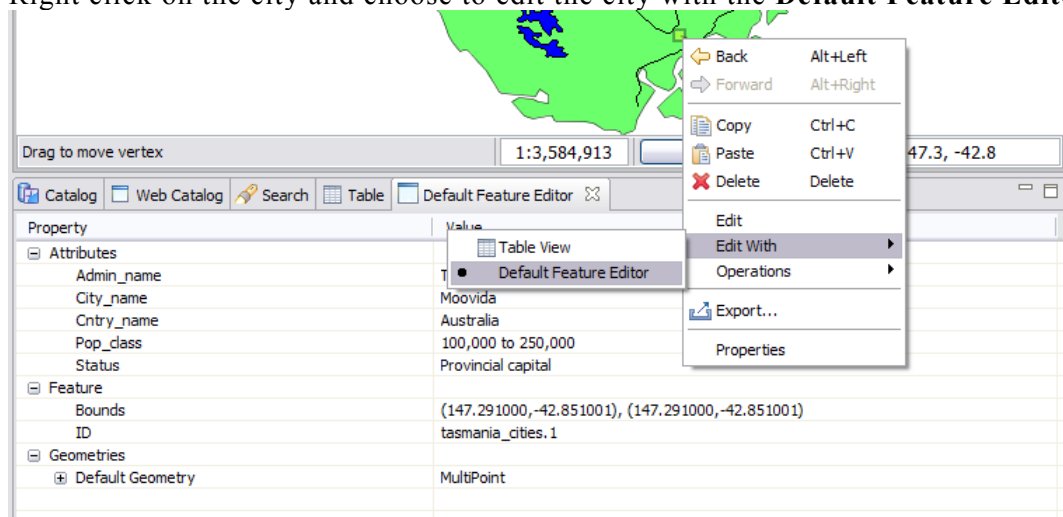
FID	CITY_NAME	ADMIN_NAME	CNTRY_NAME	STATUS	POP_CLASS
tasmania_cities.1	Hobart	Tasmania	Australia	Provincial capital	100,000 to 250,000

12. Go ahead and rename the city after yourself. Change the CITY\_NAME attribute and you can watch the map update.



13. You may also be interested in looking at the details for your city. Start by switching to the **Edit Geometry** tool.
14. Click on the your city with the **Edit Geometry** tool (it will turn yellow in the table view). Right click on the city and choose to edit the city with the **Default Feature Editor**.

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

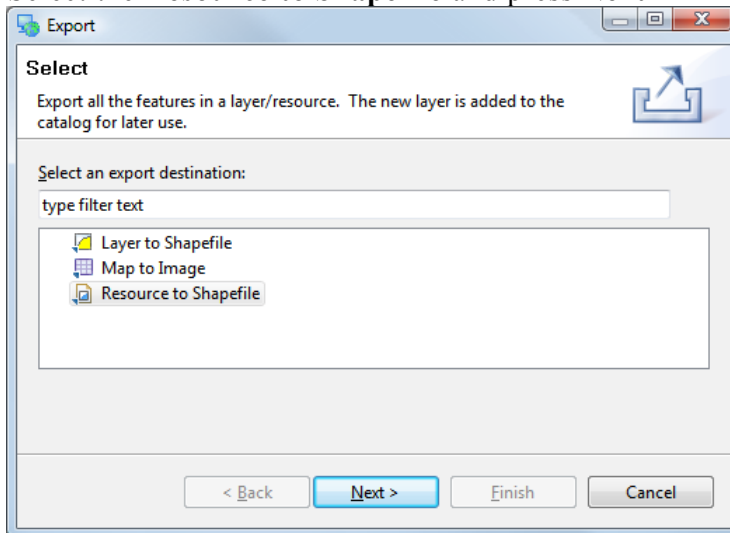


15. Press the **Commit Changes** button, in the tool bar, to send your changes off to the Web Feature Server.

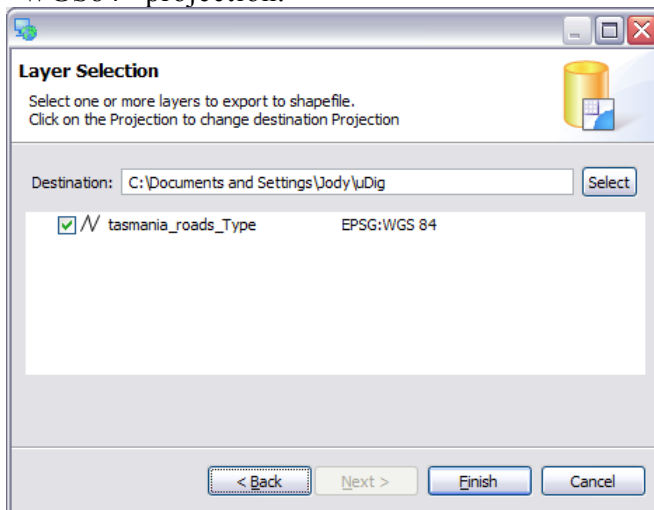
## 5 EXPORTING TO SHAPE FILE

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

1. With the **tasmania\_roads\_Type** selected, choose **File > Export** from the menu bar
2. Select the **Resource to Shapefile** and press **Next**



3. Your **New Tasmania** 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.

## 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 (or MapBuilder) applications 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.
- Advanced: GeoServer 1.4 includes a validation engine, see if you can set up a rule to prevent roads from being drawn across lakes in the future.

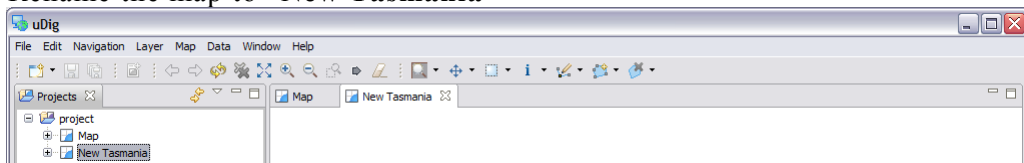
Okay lets move on.



## 7 CREATING FEATURE TYPE

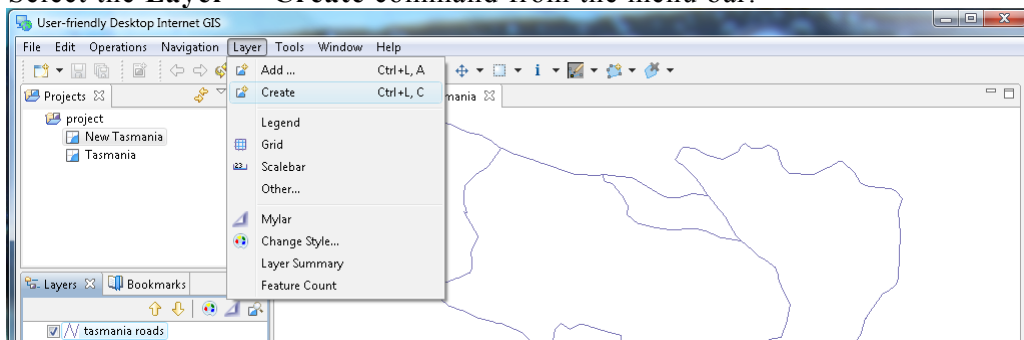
We are going to create a new feature type to experiment with some of the more interesting edit tools.

1. Create a New Map
2. Rename the map to “New Tasmania”



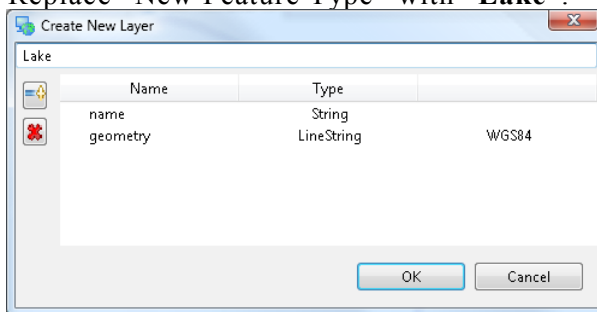
3. Add the “tasmanian roads.shp” file you created previously. You can drag and drop the file onto the map, or use **Layer > Add** from the menu bar.
4. Select the **Layer -> Create** command from the menu bar.

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

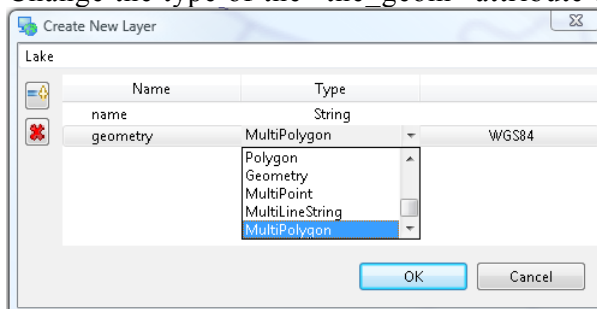


5. Replace “New Feature Type” with “Lake”.

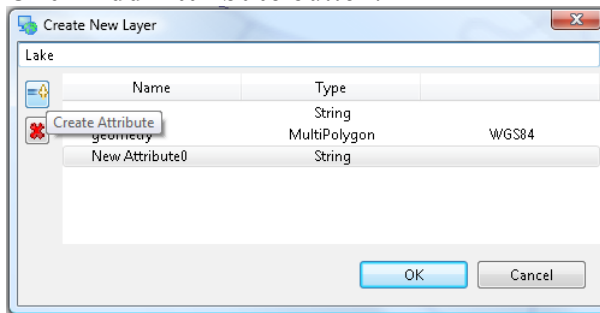
*If you have a shapefile selected you will see “the\_geom”; the default attributes are based on the current selection.*



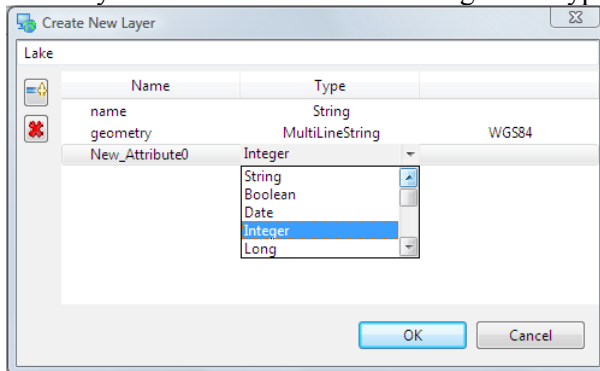
6. Change the type of the “the\_geom” attribute to **MultiPolygon**.



7. Click **Add Attribute** button.



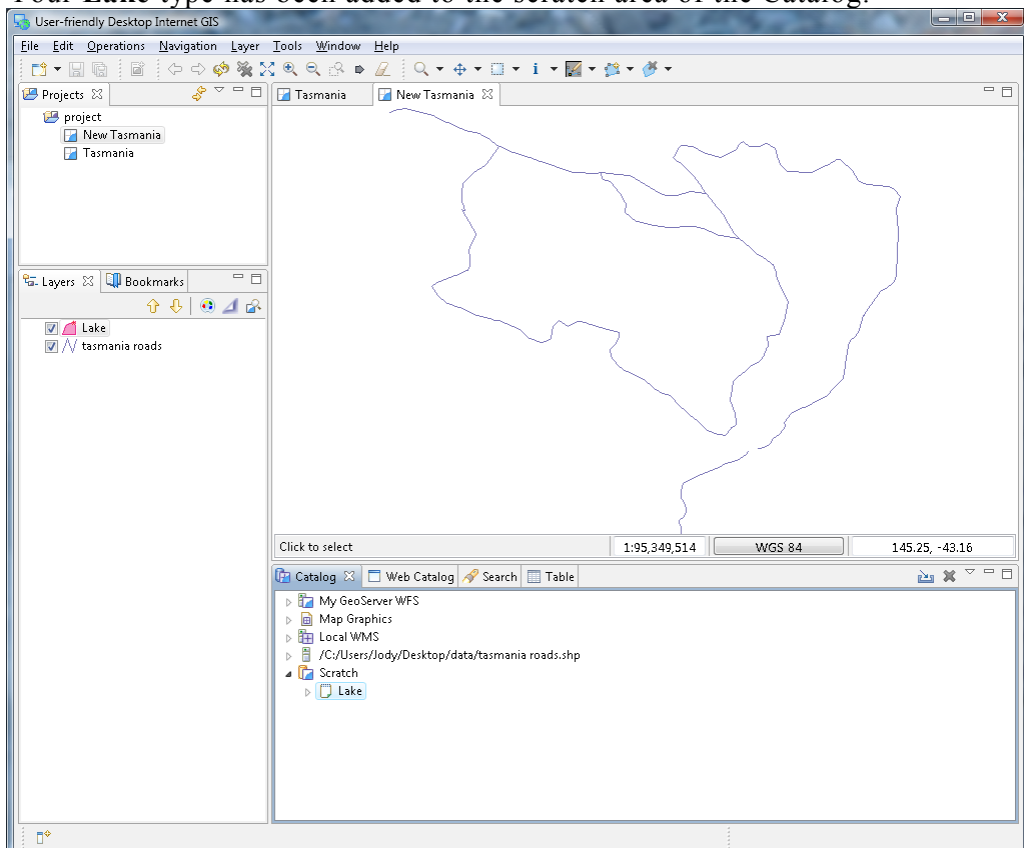
8. Select your new attribute and change the Type to “**Integer**”.



9. Change the name of the attribute to “**type**”

10. Press **OK** button

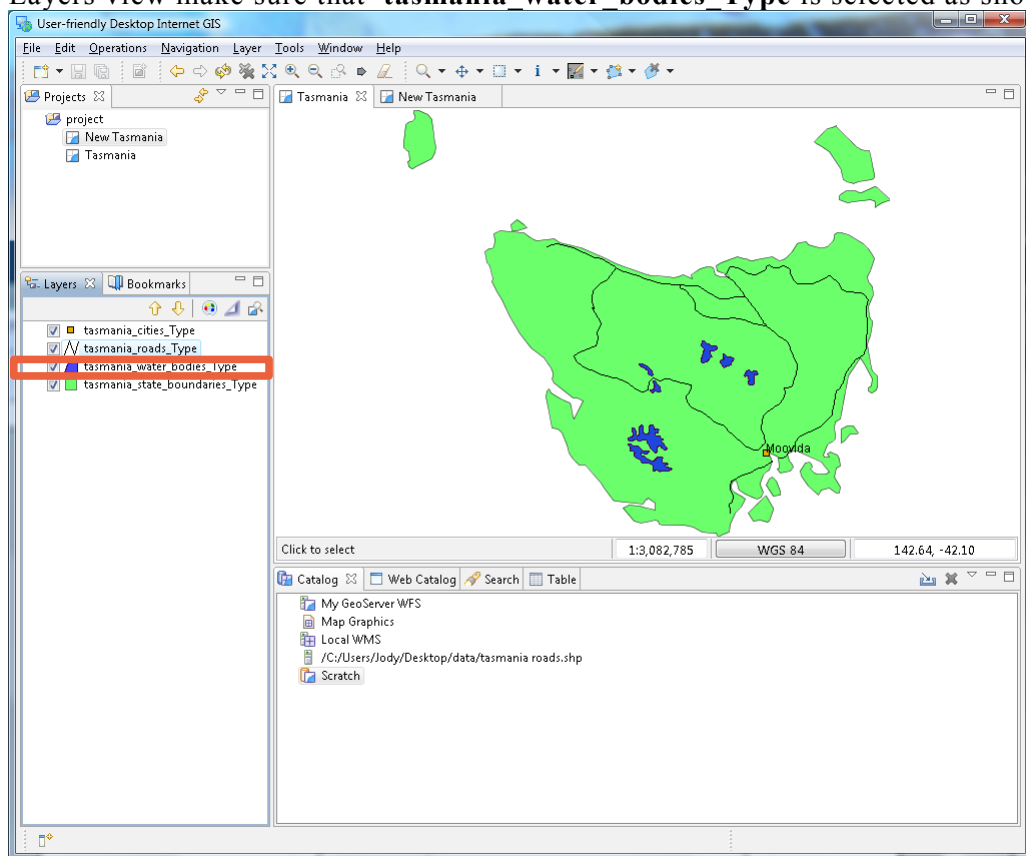
11. Your **Lake** type has been added to the scratch area of the Catalog.



## 8 COPYING CONTENT

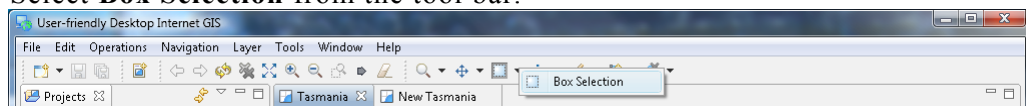
Now that we have created a new feature type, we can use cut and paste to grab geometry content from our WFS. This is different from the export we did earlier in that we are using our layer type.

1. Change to **Tasmania** map and select **Navigation->Show All** in the menu bar. In the Layers view make sure that **tasmania\_water\_bodies\_Type** is selected as shown below.

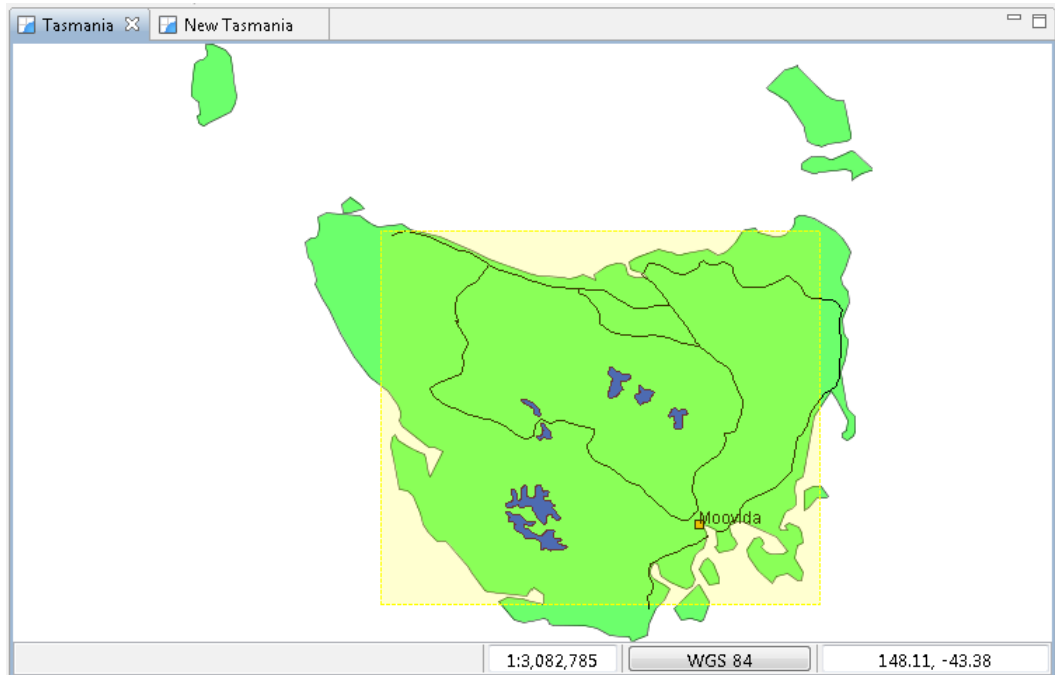


2. Select **Box Selection** from the tool bar.

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

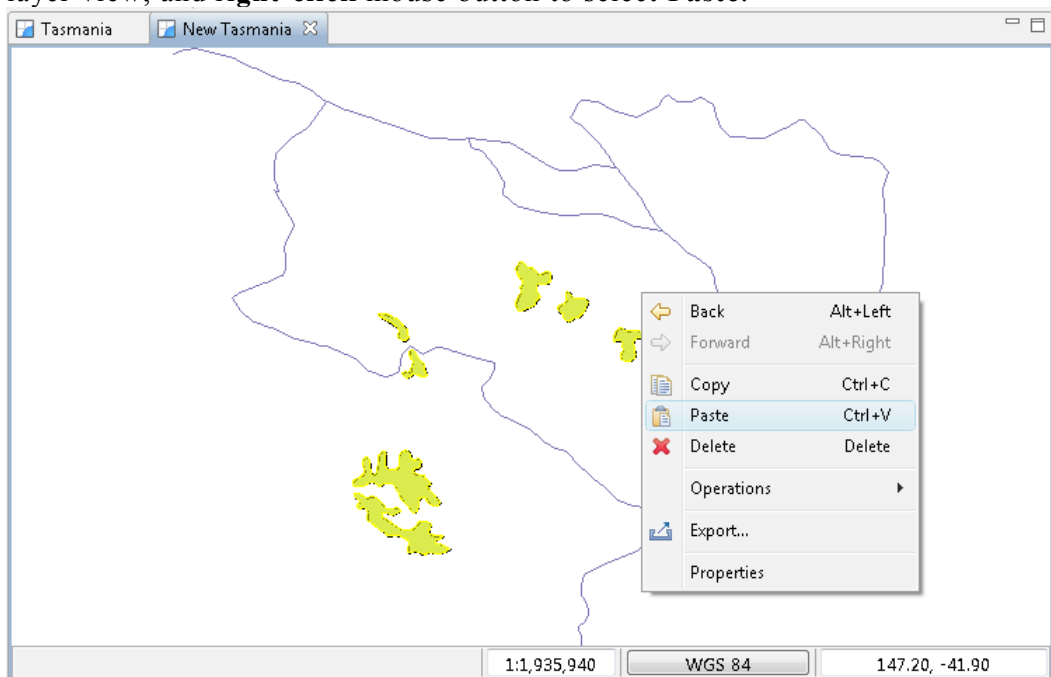


3. Use the Box Selection tool to draw a box around all the lakes. The lakes will change color when selected.



4. Select **Edit->Copy** from Edit menu. These lakes will be placed onto the clipboard.
5. Switch over to the **New Tasmania** map. Ensure your select **Lake** layer is selected in the layer view, and **right-click** mouse button to select **Paste**.

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



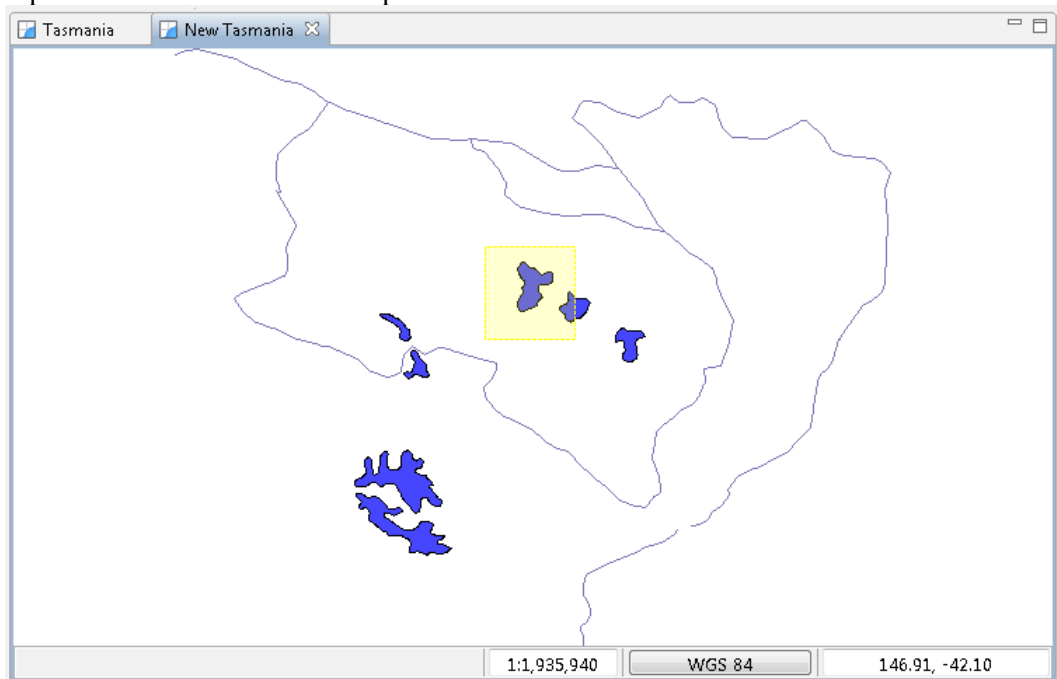
6. Press **commit** to write these new features into your Scratch layer.

## 9 HOLE CUTTER

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

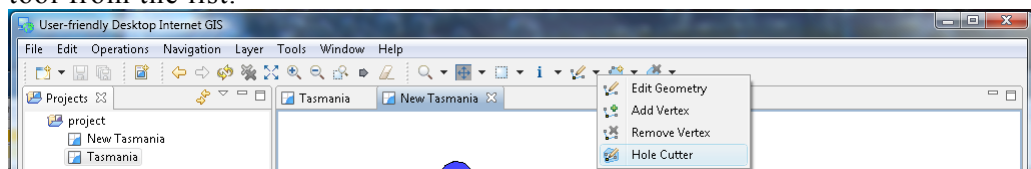
1. Open the **New Tasmania** map and zoom to lake shown below.

*Additional editing tools supplied by the community are available.*

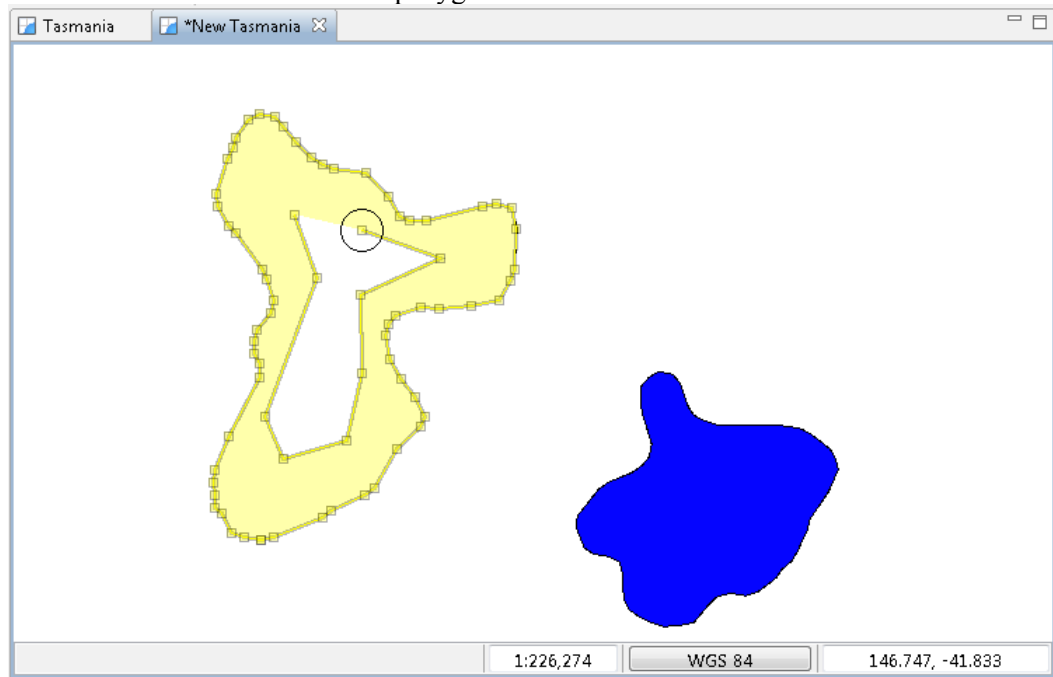


2. Press the **drop arrow** to show all the tools in the edit category. Select the **Hole Cutter** tool from the list.

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



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



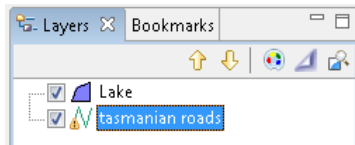
4. Press **Enter**, or click on the first vertex, to create the island.
5. Press the **Commit** button in the toolbar.

*You can press  
Esc to cancel  
your edit.*

## 10 CREATE GEOMETRY

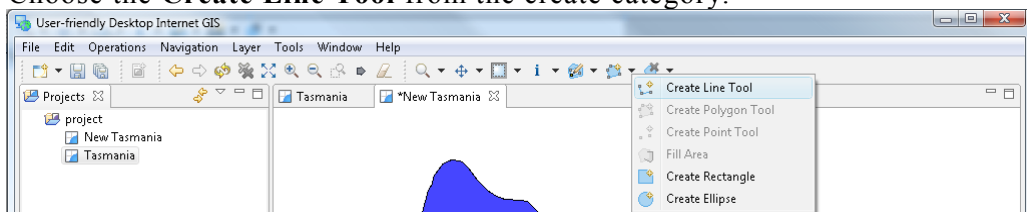
The second category of tools involves creating geometry, we will cover line and polygon creation and “vertex snapping”.

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

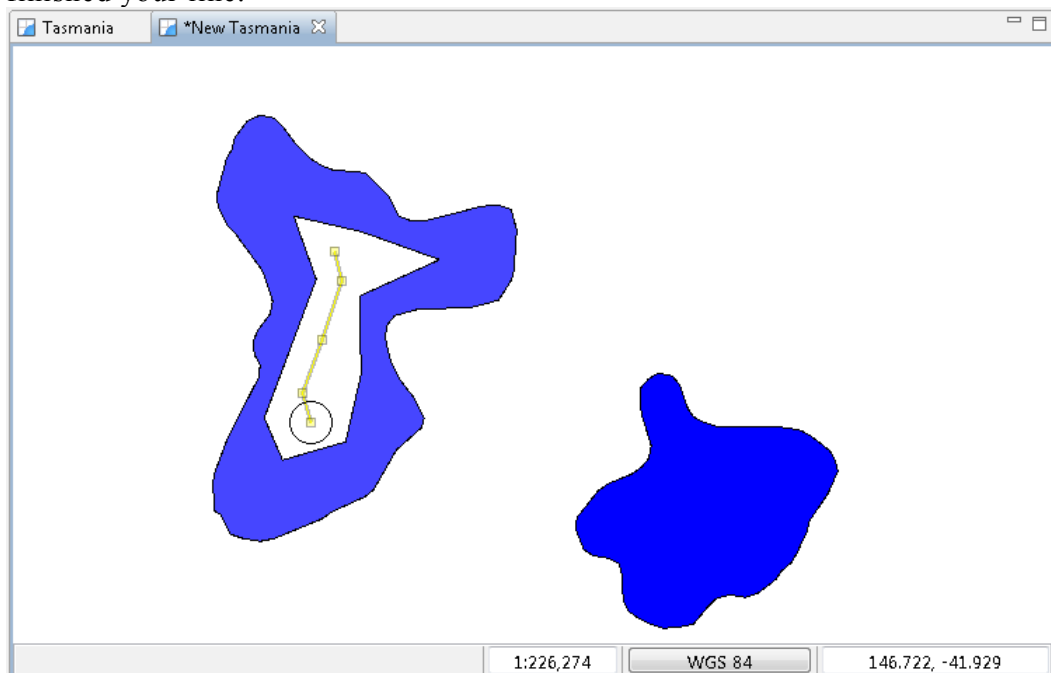


2. Choose the **Create Line Tool** from the create category.

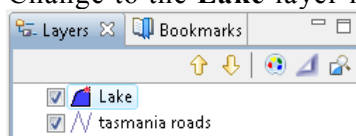
*Use the keyboard short-cut 'c' to cycle between the create tools.*



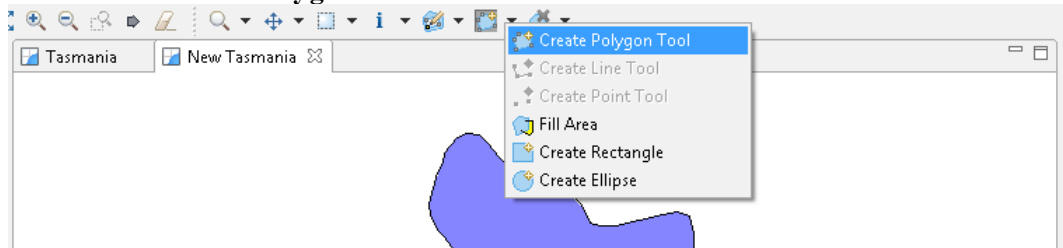
3. **Draw** a road on the northern part of the island, once again **Enter** to indicate that you are finished your line.



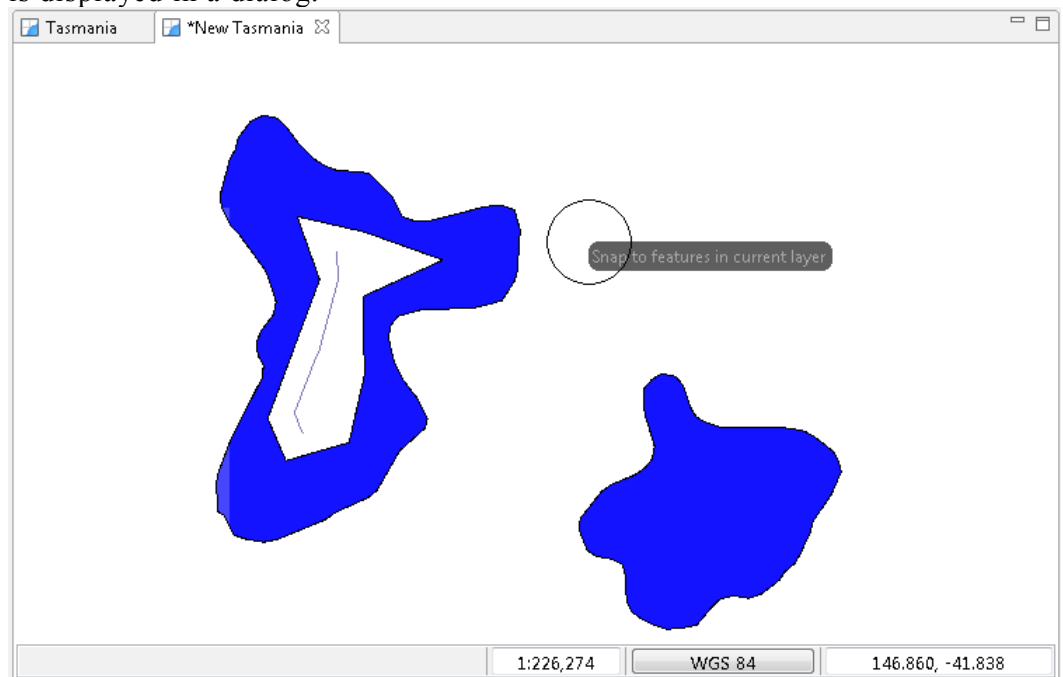
4. You have just created a new road, remember to press **commit** in the tool bar to write your change to the shape file.
5. Change to the **Lake** layer in the layer view.



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

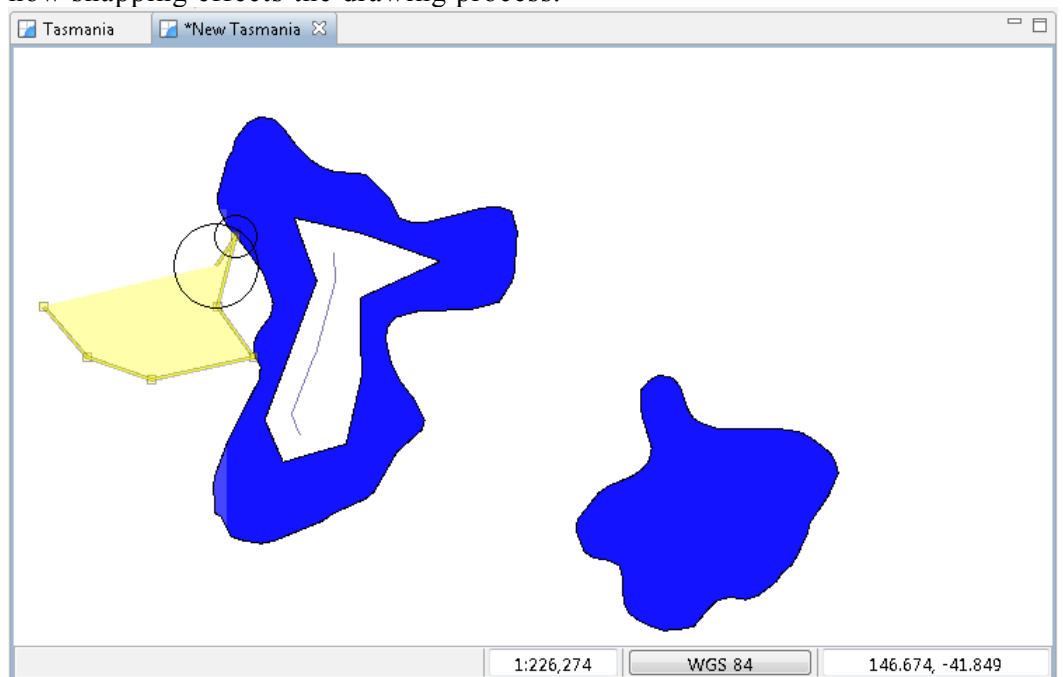


7. Enable snapping by pressing **CTRL+SHIFT+S** until **Snap to features in current layer** is displayed in a dialog.



*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.



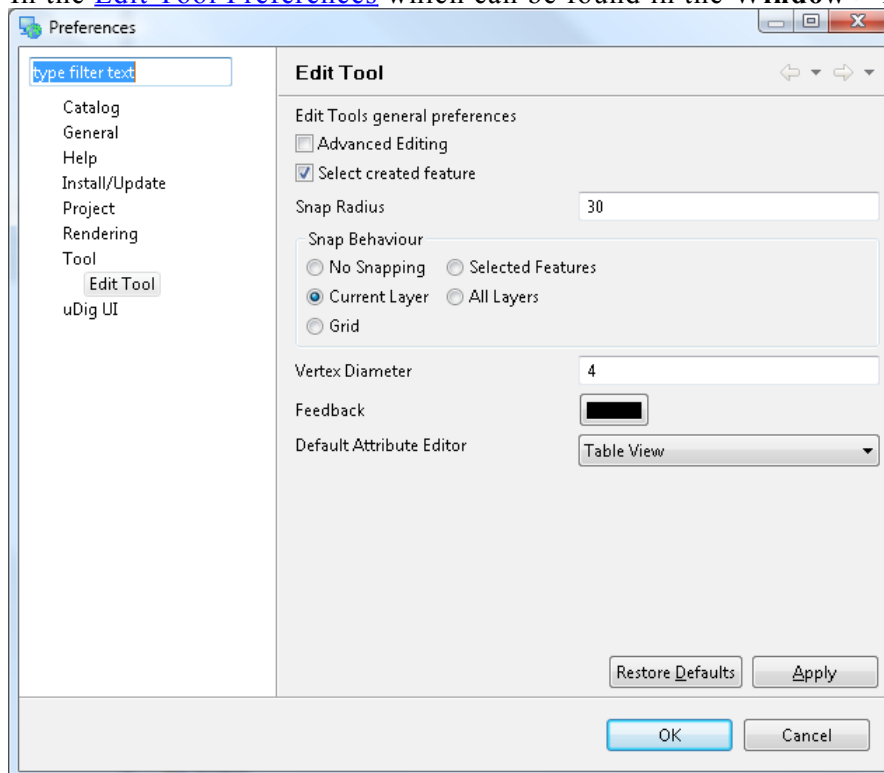
## 11 CHANGING SNAPPING BEHAVIOR

The snapping choices included with uDig are as follows:

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

There is two different ways to change the snap behavior:

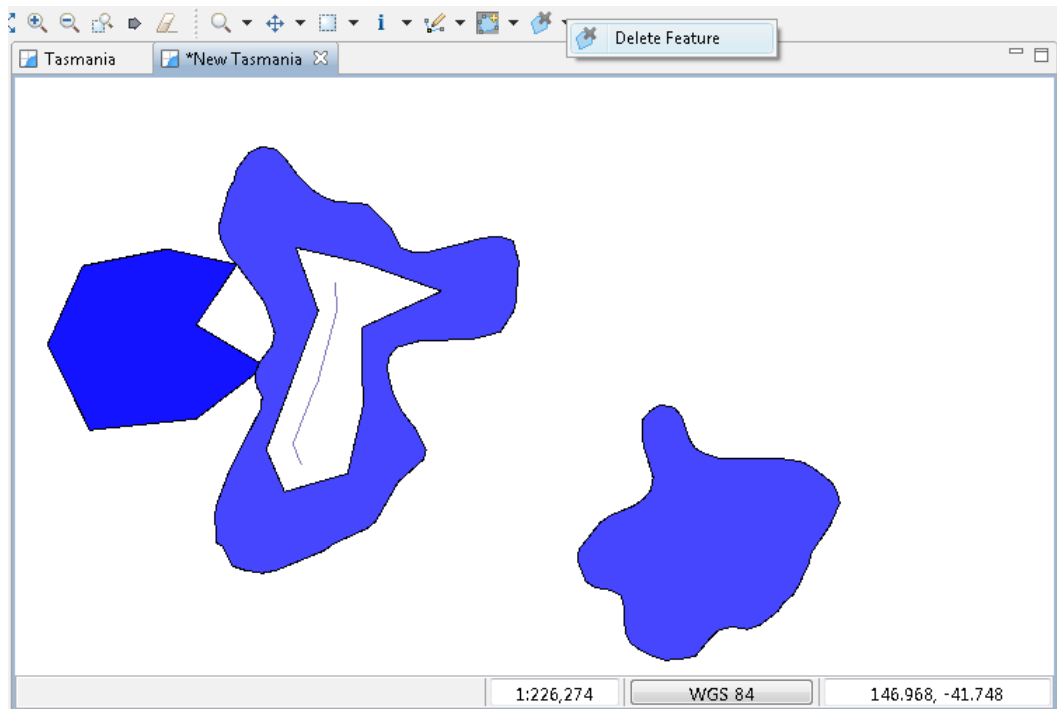
1. In the [Edit Tool Preferences](#) which can be found in the **Window > Preferences** menu.



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.

## 12 DELETE FEATURE TOOL

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

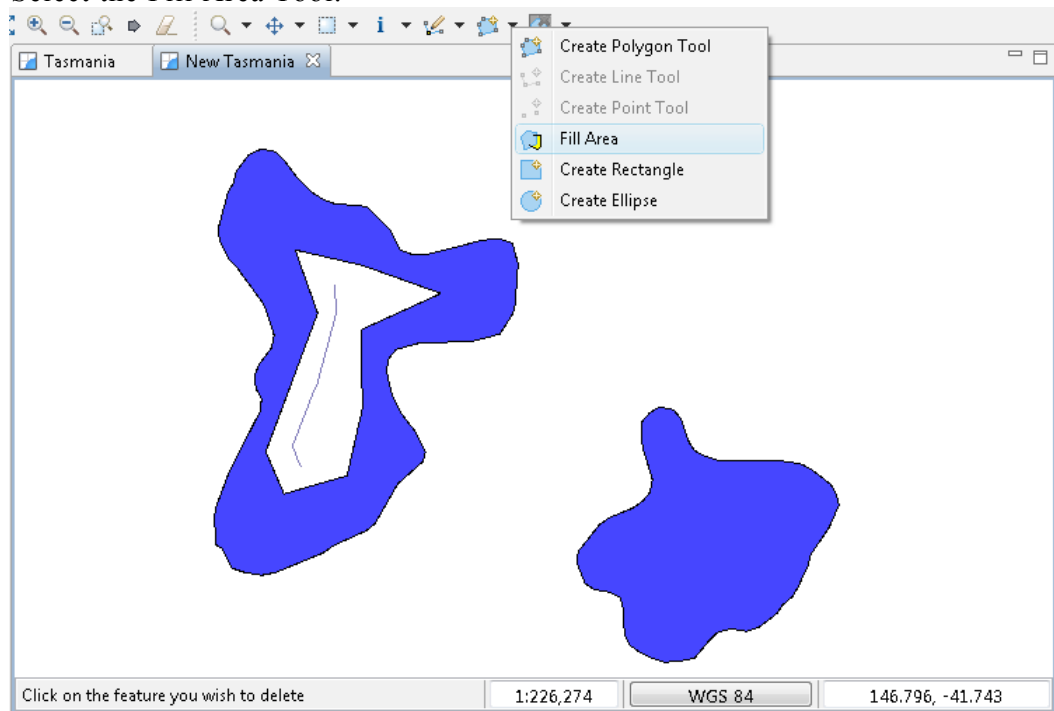


2. **Click** on the newly created feature and it will be **deleted**.

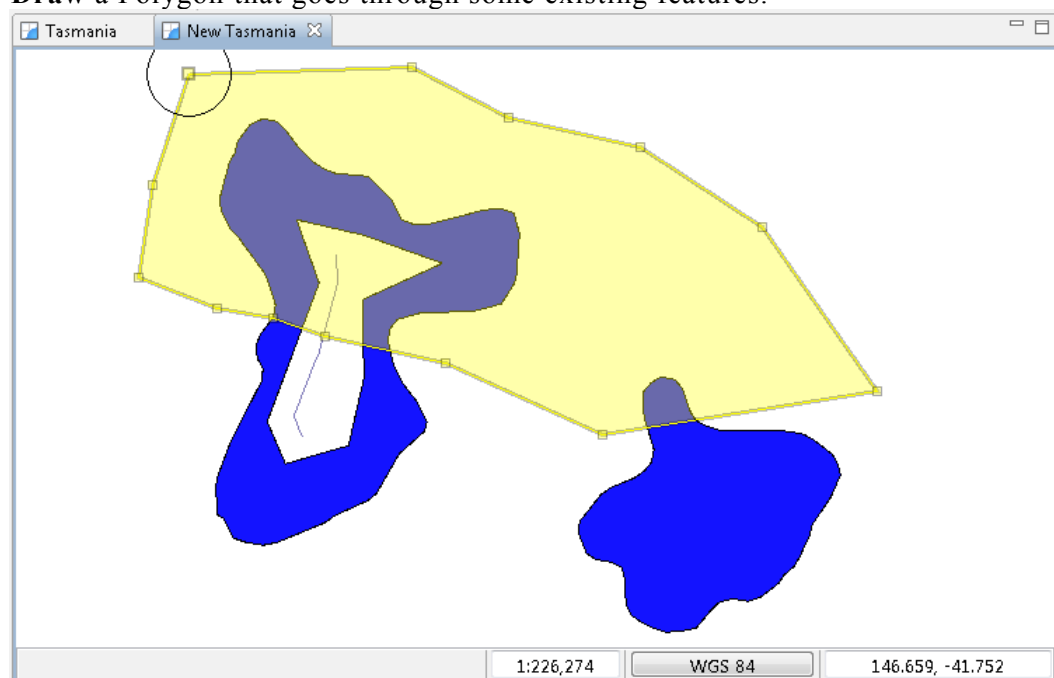
## 13 FILL TOOL

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

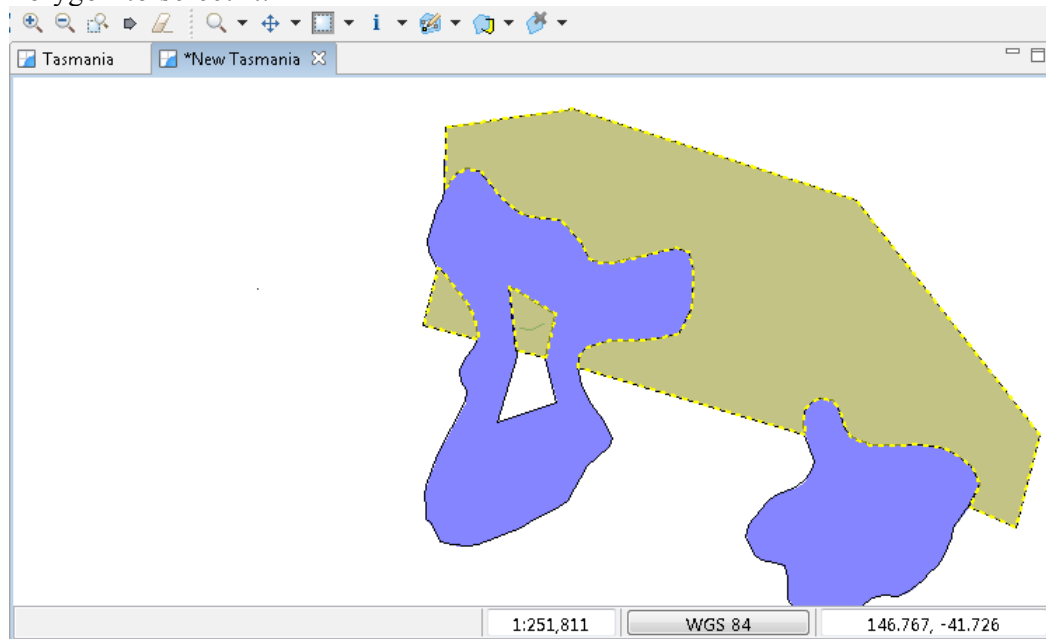
1. Select the Fill Area Tool.



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



3. You can select the polygon to show its shape, change to the select tool and click on the Polygon to select it.

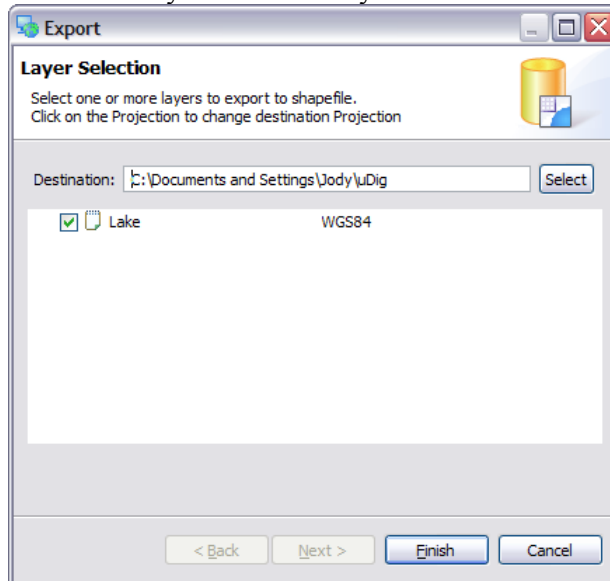


4. You can see that this is in-fact a multi polygon; a single feature made up of separate shapes on the map.

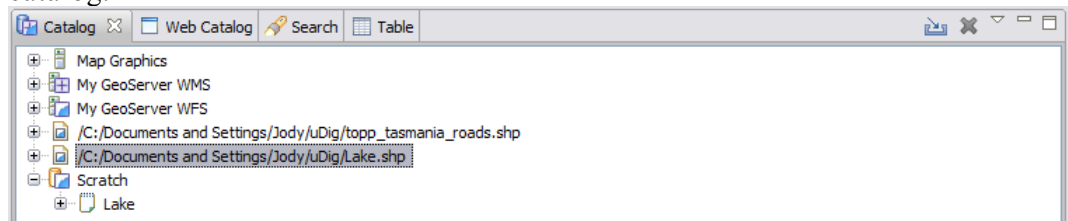
## 14 SAVE

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

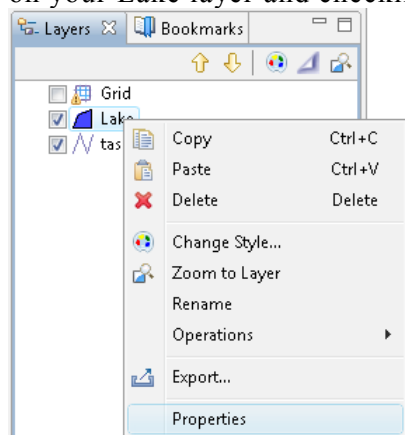
1. Please press the **Save** button in the tool bar (or choose save from the File menu).
2. Ensure that your scratch layer **Lake** is selected and press **Finish**.



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



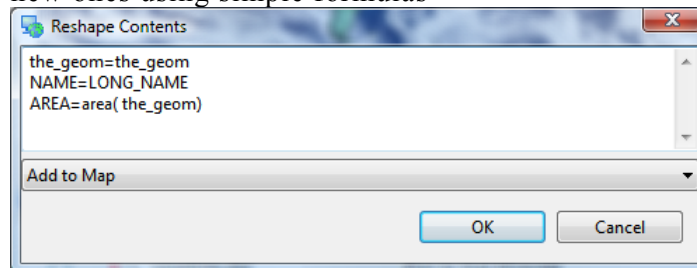
4. Your map has been updated to use your new layer, you can verify this by right clicking on your Lake layer and checking its Properties.



## 15 WHAT TO DO NEXT

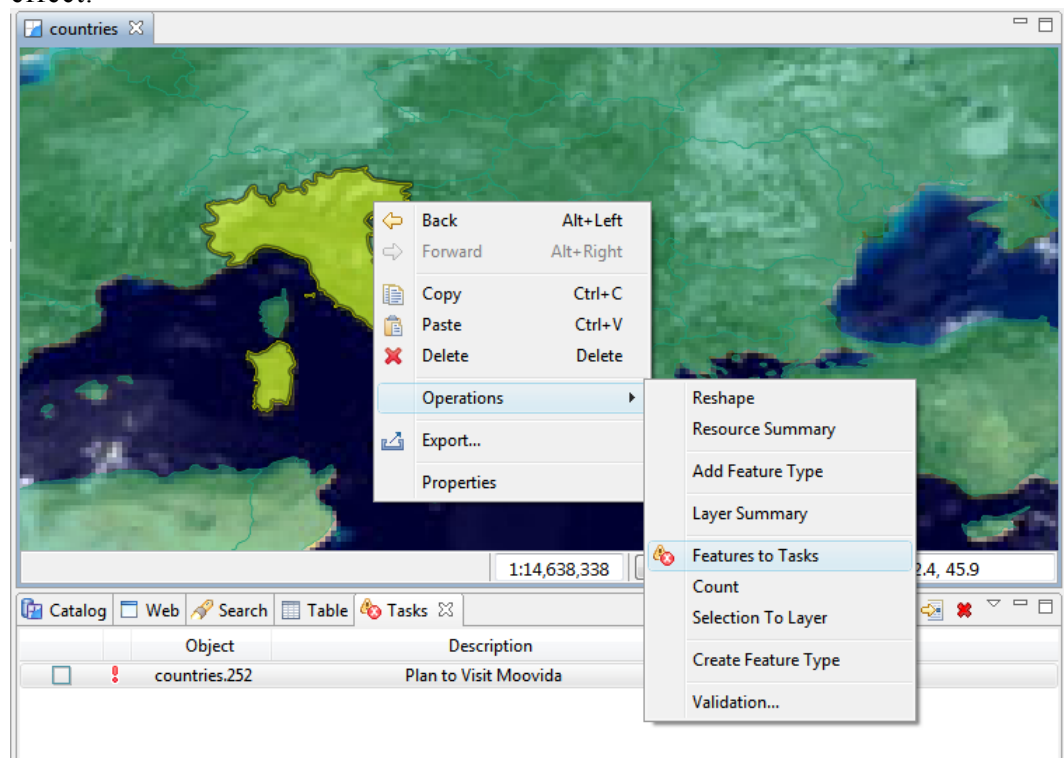
Where to go from here? Try out the following:

- 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 restart uDig for the settings to take effect.



*Workflow components like the validation engine can use the tasks view to schedule items for human review.*

You can define your own issues by right clicking on a selected Feature. In a work group setting your team can use a shared issues list to track and review each failure in turn.

- The uDig community site has additional editing tools. Try out the tools provided by Axios.

What ideas do these exercises give you? How can you use PostGIS, GeoServer and uDig in your organization?