

Exercise Supplement: Creating Your Own Polygon Layer

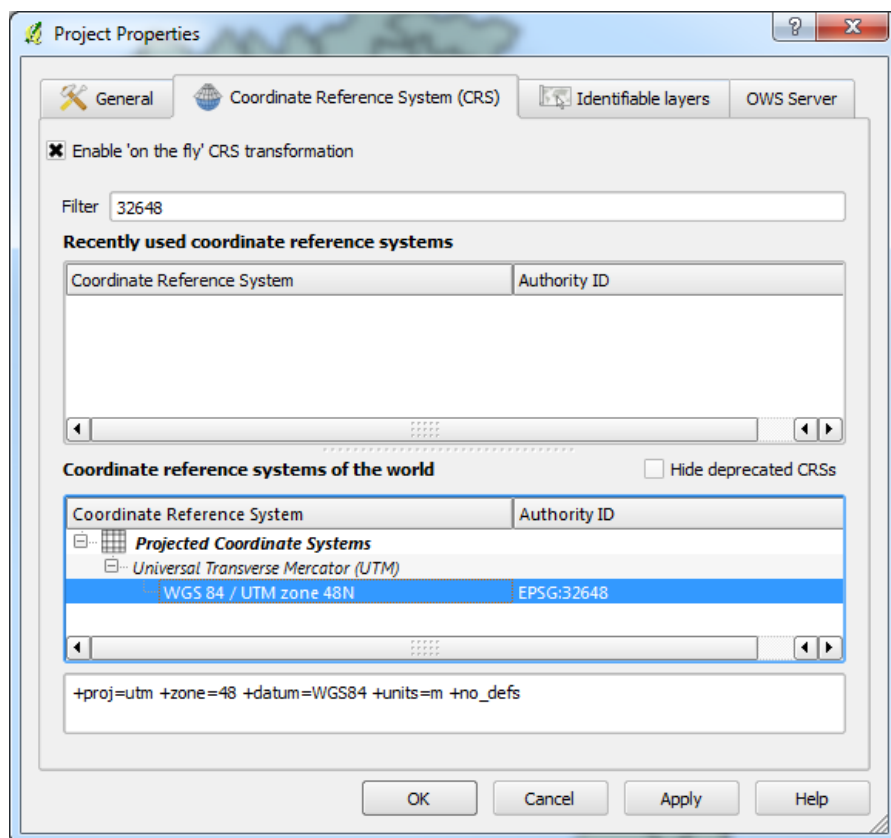
This exercise will teach you how to create your own polygon shapefiles and then calculate the area of the created features. This could be very useful when delineating project sites, or outlining refugee/emergency camps.

Section 1: Set the Map Projection

Remember in Exercise 7 when we set the map to a Projected Coordinate System so that the map units were meters instead of decimal degrees? In order to correctly calculate polygon area in the last part of this exercise we need to repeat those steps to change the map's coordinate system.

1. Open QGIS Desktop
2. Click *File>Open Project...* and open \\Vietnam_Training\04_Exercises\Project_Files\VNM_Creating_Polygons.qgs
3. In the main map window click on *Settings>Project Properties*
4. Click on the *Coordinate Reference System (CRS)* tab
5. Check the box next to Enable 'on the fly' CRS transformation
6. Type 32648 into the *Filter* box and click find **OR** scroll down to the Coordinate Reference System called *WGS 84 / UTM zone 48N* and select it by clicking on it

☒ Enable 'on the fly' CRS transformation



7. Click *OK*

Section 2: Creating a New Layer

1. Zoom to a familiar area of Hanoi

2. Click the *New Shapefile Layer* button

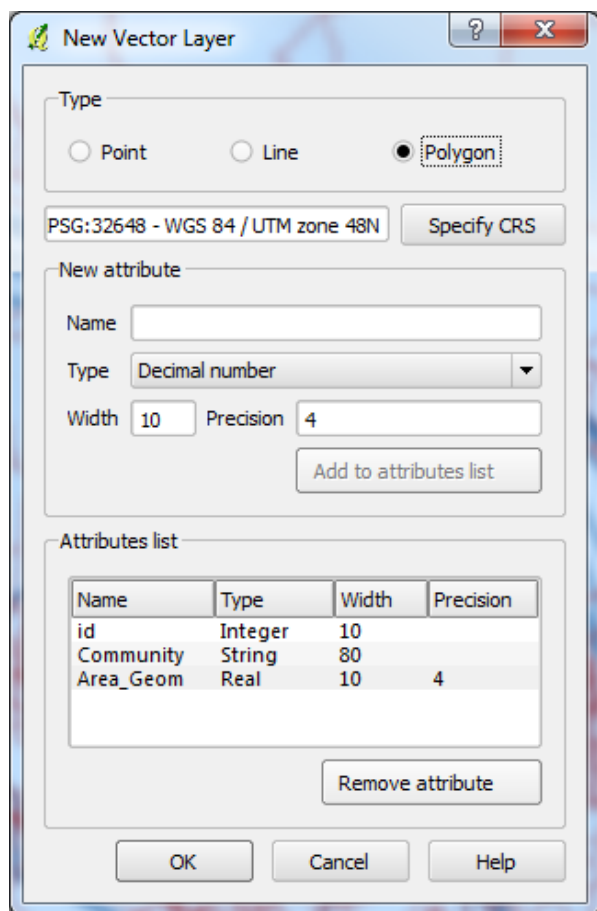


Note: The *New Shapefile Layer* button looks similar to the *Add Vector Layer* button. Make sure you click the one with a yellow star.

3. Click *Polygon*
4. Click *Specify CRS* and select *WGS 84 / UTM zone 48N, EPSG:32648*

Note: Choosing a Projected Coordinate System will allow us to calculate area correctly in later steps.

5. Under *New Attribute*, in the *Name* dialog box, type “Community” and click *Add to Attributes List*
6. Type “Area_Geom” in the *Name* dialog box
7. Change *Type* to *Decimal Number*
8. Type “10” for *Width* and “4” for *Precision*
9. Click *Add to Attributes List*. Your *New Vector Layer* dialog box should look like the following example.



New Vector Layer

Type

☐ Point ☐ Line ☒ Polygon

PSG:32648 - WGS 84 / UTM zone 48N

New attribute

Name

Type

Width Precision

Attributes list

| Name | Type | Width | Precision |
|-----------|---------|-------|-----------|
| id | Integer | 10 | |
| Community | String | 80 | |
| Area_Geom | Real | 10 | 4 |

10. Click *OK*.

11. Navigate to \\Vietnam_Training\06_Participant_Work, name the file *Traced_Communities* and click *Save*.

12. Select the new *Traced_Communities* layer in your *Table of Contents*.

13. Start editing by clicking the *Toggle Editing* button.



14. Click the *Add Feature* button.



15. To create your polygon, left click along the boundary of the area you wish to create. If you make a mistake, press the *Delete* key on the keyboard to undo your last click and then continue creating your polygon. The more vertices you create with clicks, the more detailed your polygon will be. When you reach the final vertex, right click to finish your polygon.

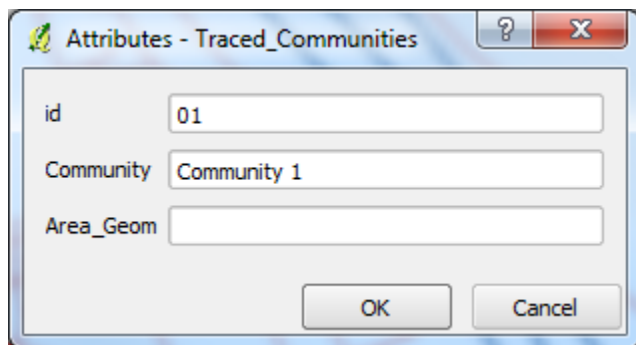
16. When you have created a polygon you are happy with, and have closed it by right clicking where your last point should be, an *Attributes* box will appear.

17. Fill in the ID box with "01"

Note: The ID is a unique identifier that distinguishes this feature from any other in the layer. The next polygon you create will have an ID of 02, then 03, etc. THIS IS ESSENTIAL FOR ANY ATTRIBUTE TABLE YOU CREATE, whether in Excel or in QGIS.

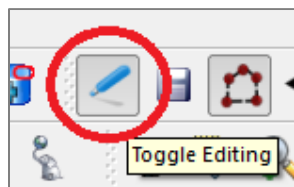
18. Replace "NULL" in the *Community* box with the name of the community

19. Leave *Area_Geom* blank. Your dialog box should look like the following example.



20. Click *OK*.

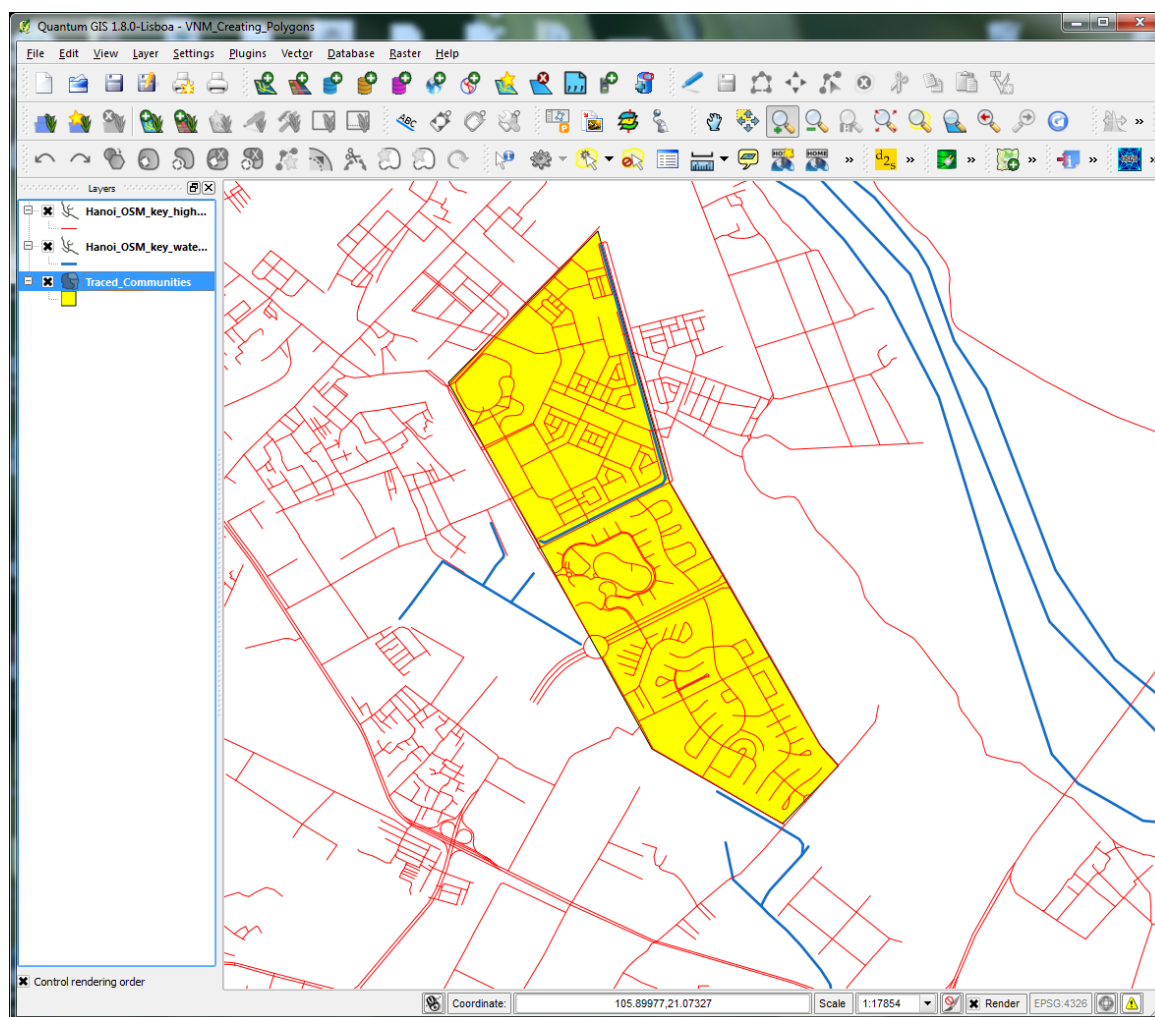
21. End your editing session by clicking the *Toggle Editing* button.



22. Click *Save* when the *Stop Editing* dialog box pops up.

Note: It is good practice to end your editing session and save your new edits after each polygon you create. This way, if you make a mistake, your previously created polygons are still saved.

Your screen may look like the following example.



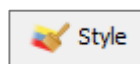
23. Practice making polygons and create at least three.

Section 3: Changing Transparency of Layers

You can visualize the map features from the other layers by adjusting the display order or you can change the transparency of the newly created layer. Sometimes we would like layers to be present on our map for context, but do not want certain features as pronounced as others. This technique is commonly used to symbolize roads, rivers, and other features that tend to clutter a map but are necessary for the “story” being told. Playing around with transparencies of various layers is a nice way to de-clutter a map without losing context.

1. Move your *Traced_Communities* layer above the *Hanoi_OSM_key_highway* and *Hanoi_OSM_key_waterway* layers in your *Table of Contents*.

2. Double click on *Traced_Communities* and navigate to the *Style* tab.



3. Notice that *Transparency* is set to 0%. Set the scroll bar to 50% and click *OK*.
4. View the changes on the map, then open up the *Style* tab again, and play around with different transparencies.

Note: You can click *Apply* instead of *OK* to view changes without closing the dialog box



Section 4: Calculating Geometry of Created Polygons

These newly created community polygons are very useful, but we know very little information about them since they were created virtually. We will now populate the geometry field to find out the area of these polygons.

1. Open *Created_Communities' Attribute Table*

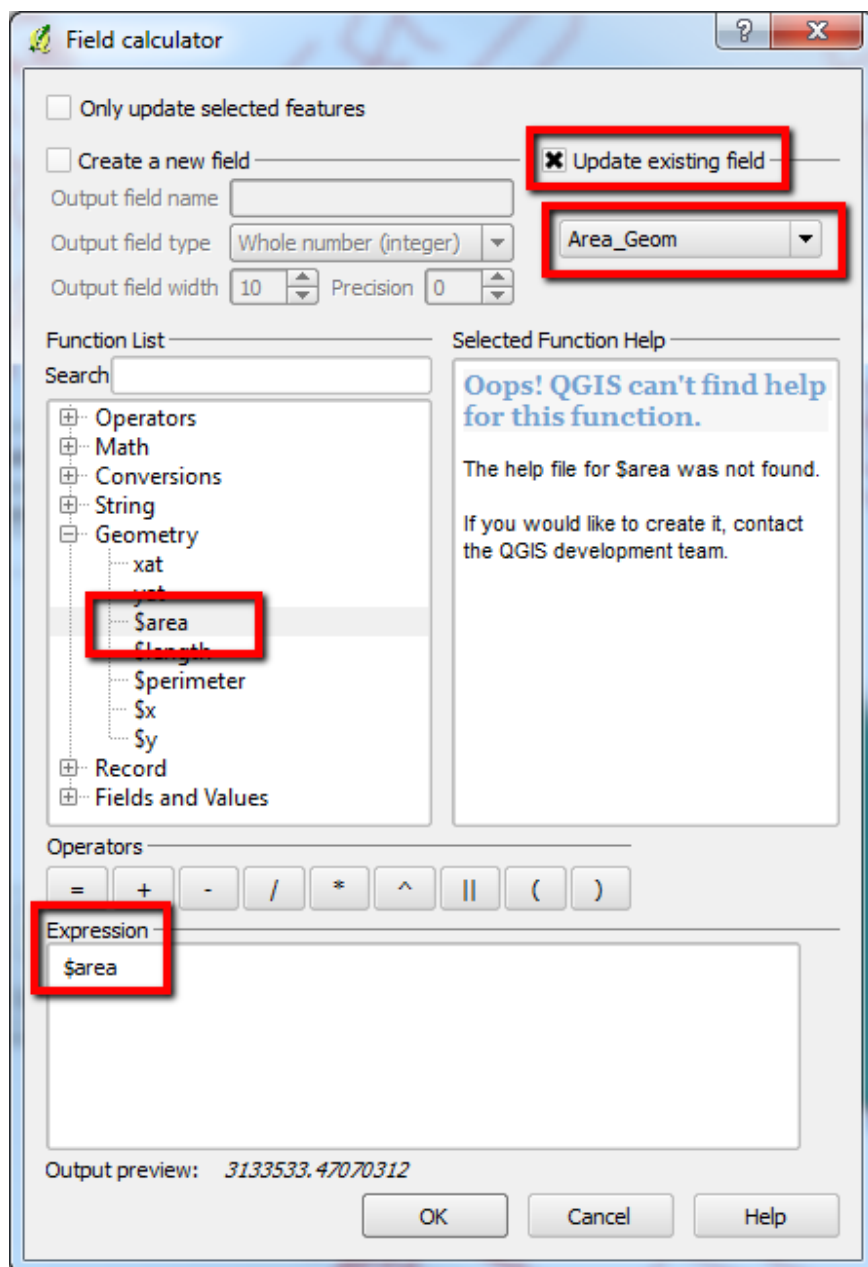
2. Click the *Toggle Editing* button at the bottom left of the dialog box



3. Click the *Open Field Calculator* button



4. Uncheck *Only Update Selected Features* to calculate the area of all the polygons in your layer
5. Check *Update existing field* and select *Area_Geom* in the dropdown menu
6. Double click *Geometry*
7. Double click *\$area* and the *Expression* box should automatically fill. The Window should look like the following example.



Field calculator

☐ Only update selected features

☐ Create a new field

☒ Update existing field

Output field name:

Output field type: Whole number (integer)

Output field width: 10 Precision: 0

Function List

Search:

- Operators
- Math
- Conversions
- String
- Geometry
 - xat
 - \$area**
 - \$length
 - Perimeter
 - \$x
 - \$y
- Record
- Fields and Values

Selected Function Help

Oops! QGIS can't find help for this function.

The help file for \$area was not found.

If you would like to create it, contact the QGIS development team.

Operators

Expression:

Output preview: 3133533.47070312

OK Cancel Help

- Click OK
- Note that the fields under *Area_Geom* have been populated with the area of the polygons in square meters.

End Exercise.

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