

Image georeferencing and feature extraction

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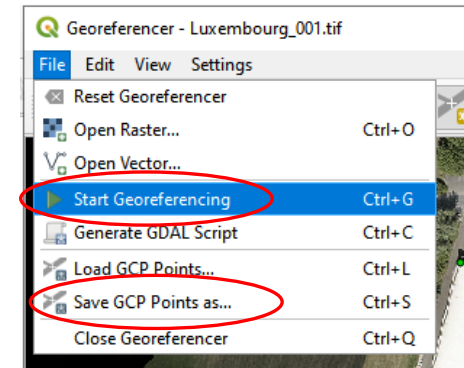
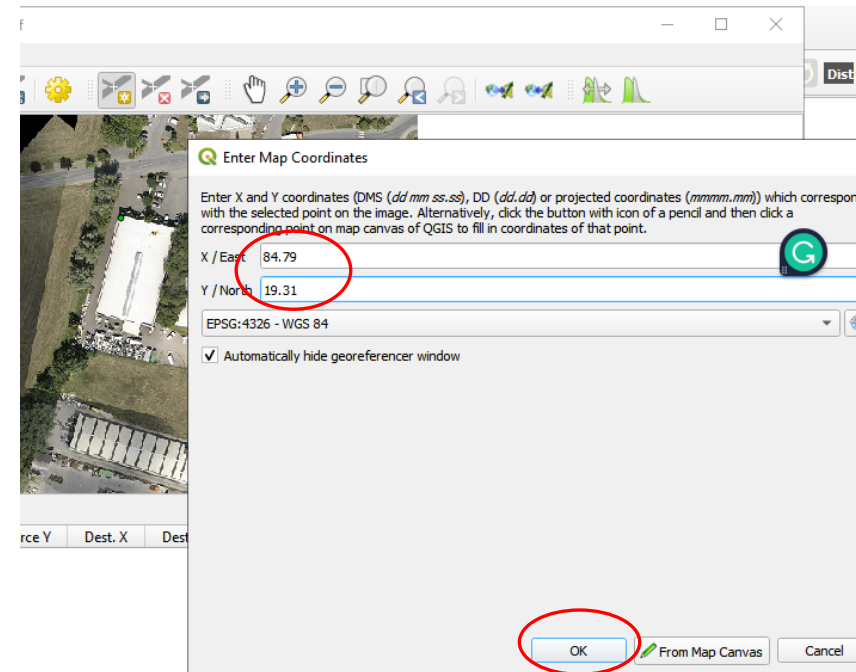
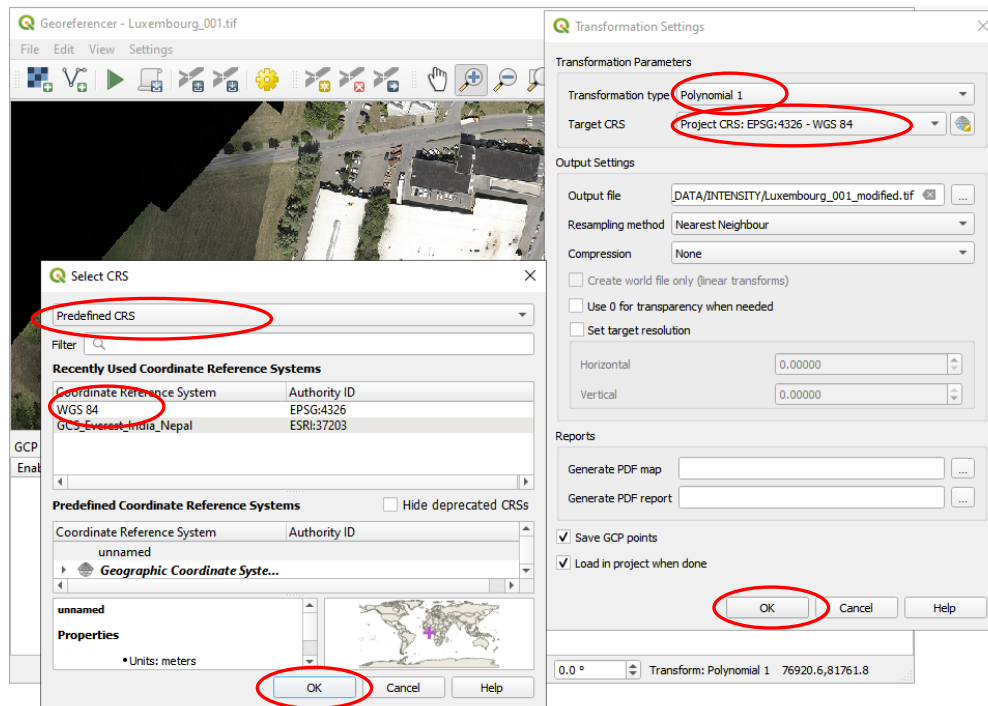


Outline

- Image/ Toposheet georeferencing
- Satellite data visualization
- Subset based on AOI
- Vector shape file creation
 - Data Clipping
 - Shape file creation (Point, Line, and Polygon)
 - Adding fields to attribute table
 - Attribute data editing
 - Vector data editing
 - Export to KML

Toposheet/ Image georeferencing

- Open QGIS → go to Layer → Georeferencer → Georeferencer window will open → go to file → open raster → browse our unreferenced image/ toposheet.
- Go to settings → Transformation Settings → Transformation type: select **polynomial1** → Target CRS : click on it → custom CRS : select predefined CRS → select WGS84 → output file: give output location and file name → resampling method : Nearest Neighbour → save GCP points → ok
- Click on add point → place point on toposheet/ image → enter lat and long values → ok → take 4 points
- Click on save GPC points as → give path and name → Now Go to the file and click on start georeferencing.



Shape file creation:

Shape files are three types :

1. Point shape file
2. Line shape file
3. Polygon shape file

Point Shape file creation :

Direct click on create new shape file icon

1. Layer menu
2. Create Layer
3. New Shapefile Layer...
4. File name field
5. Geometry type (Point)
6. Additional dimensions (None)
7. Name field
8. Type (Text data)
9. Length (30)
10. Add to Fields List
11. OK button

File name: D:\INCOIS_Training\test_p.shp

File encoding: UTF-8

Geometry type: Point

Additional dimensions: None

EPSG:32639 - WGS 84 / UTM zone 39N

New Field

Name: Name Code

Type: Text data

Length: 30

Precision:

Add to Fields List

Fields List

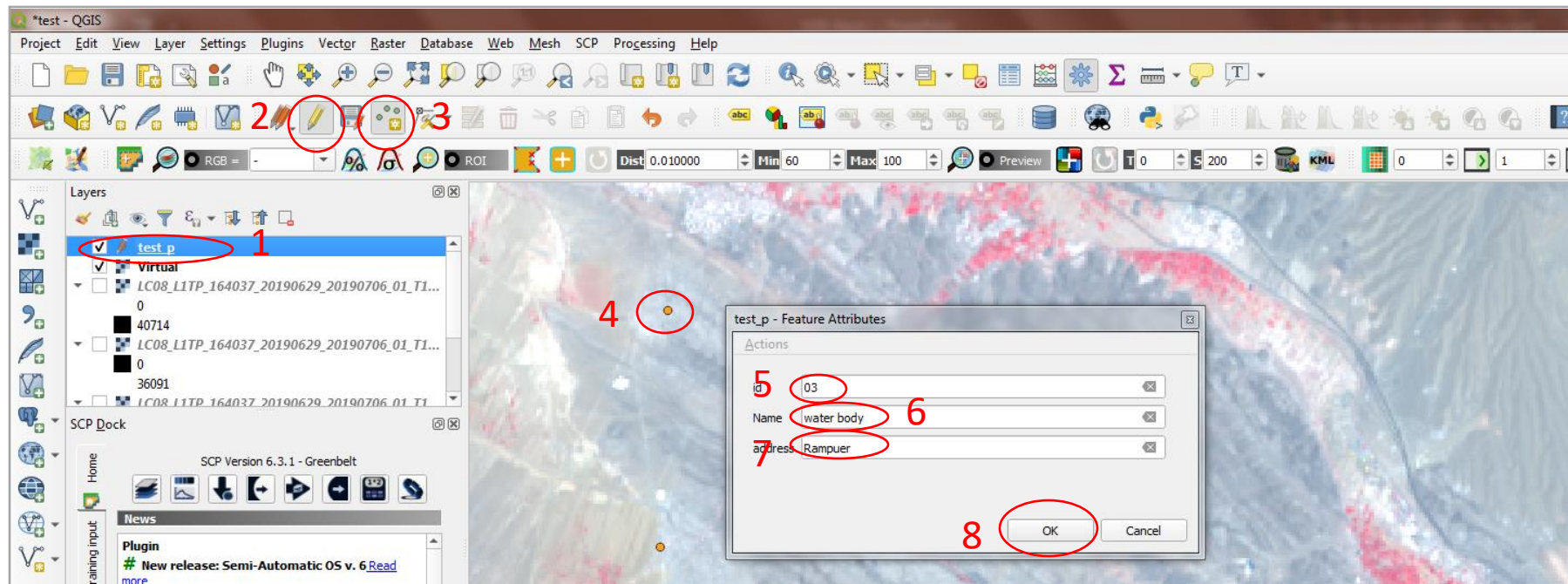
Name	Type	Length	Precision
id	Integer	10	
Name	String	25	
address	String	30	

Remove Field

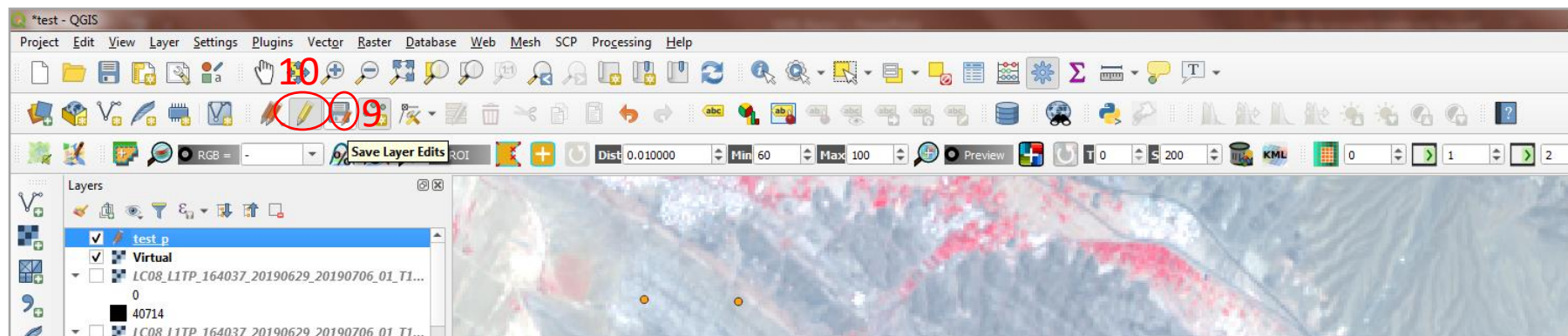
OK Cancel Help

Point Shape file Editing :

- Select point shape file
- Click on Toggle editing → add point feature → put points on image

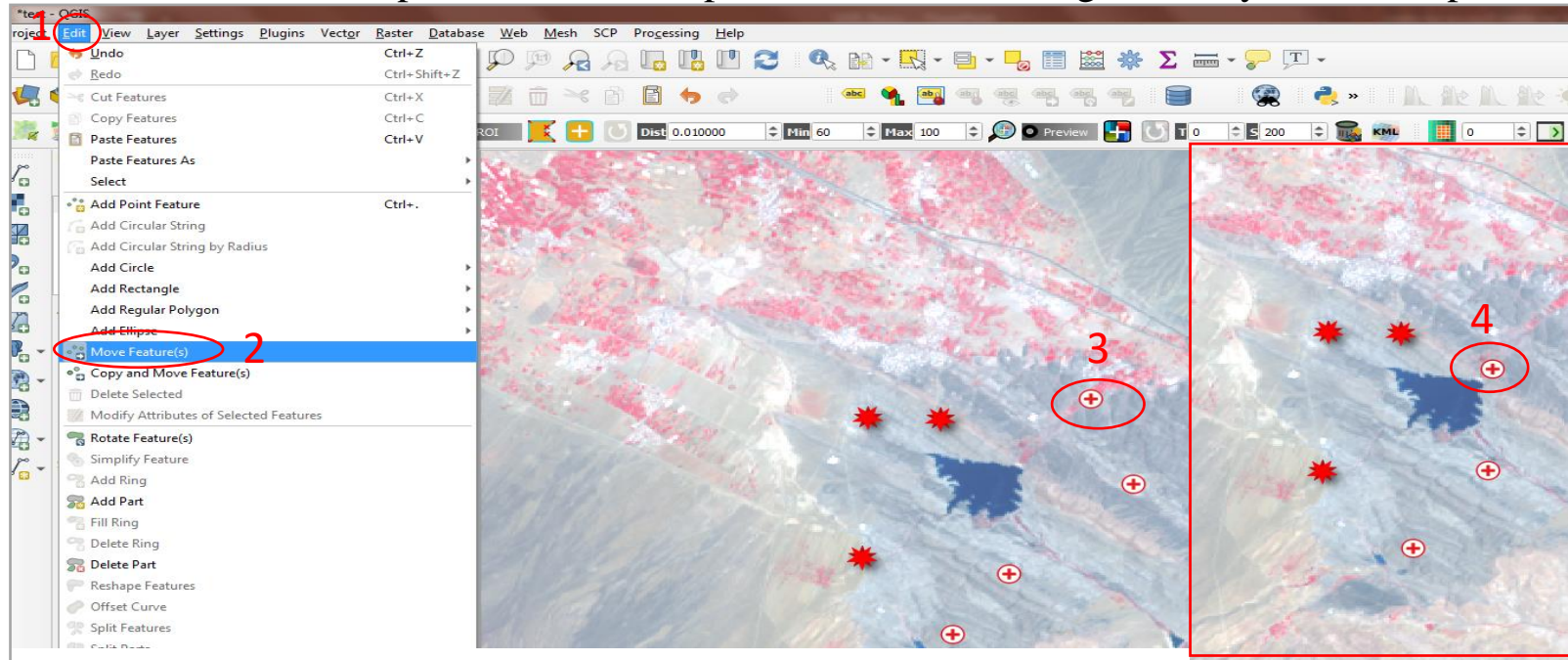


- To save edited data click on save layer edits.
- To stop editing click on Toggle editing



Contin.....

- Moving point from one location to another location .Go to Edit → Move feature
- Now click on point to select the point and click on image where you want to place that point

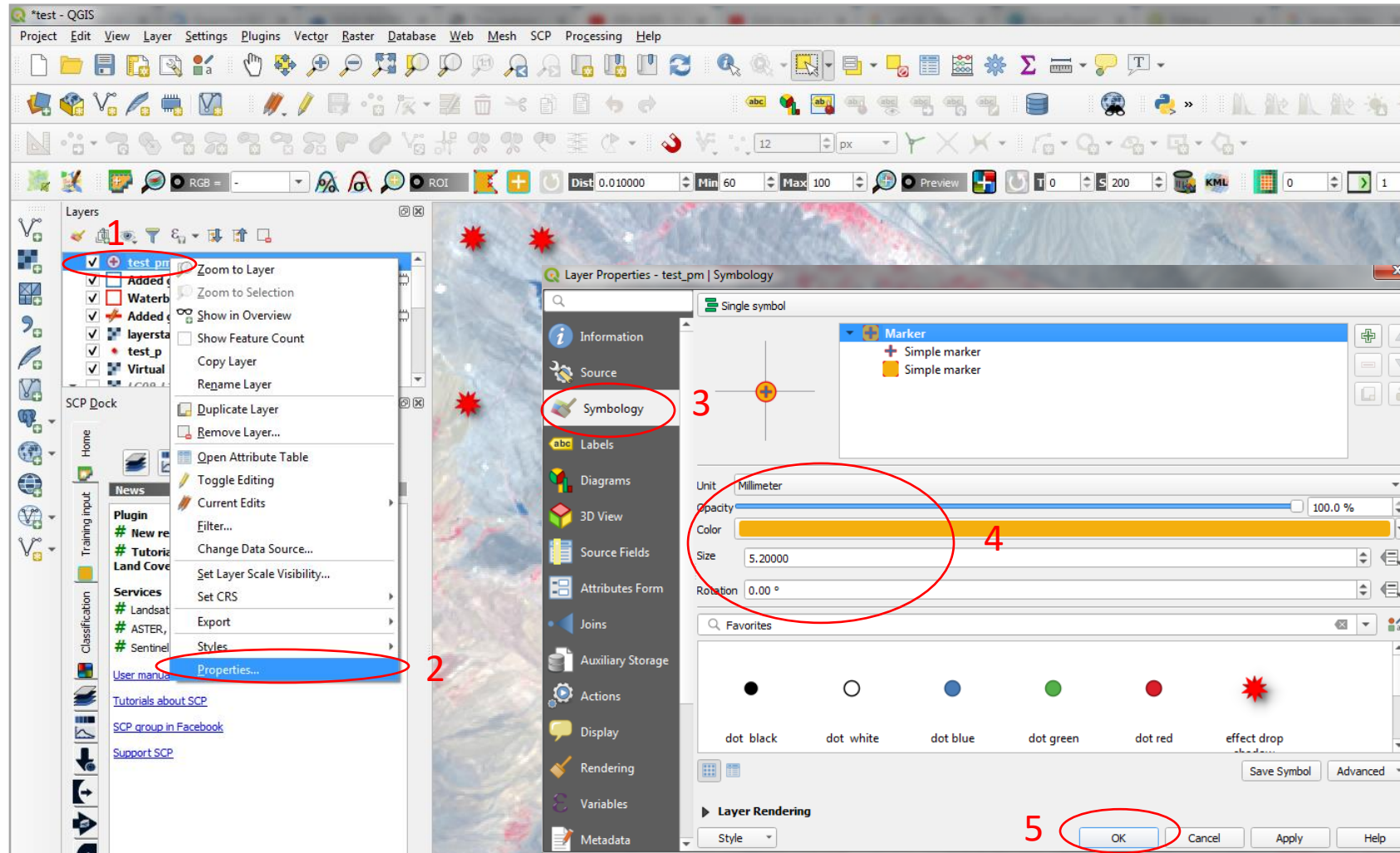


- To edit the attribute data select that point using select features by area or single click



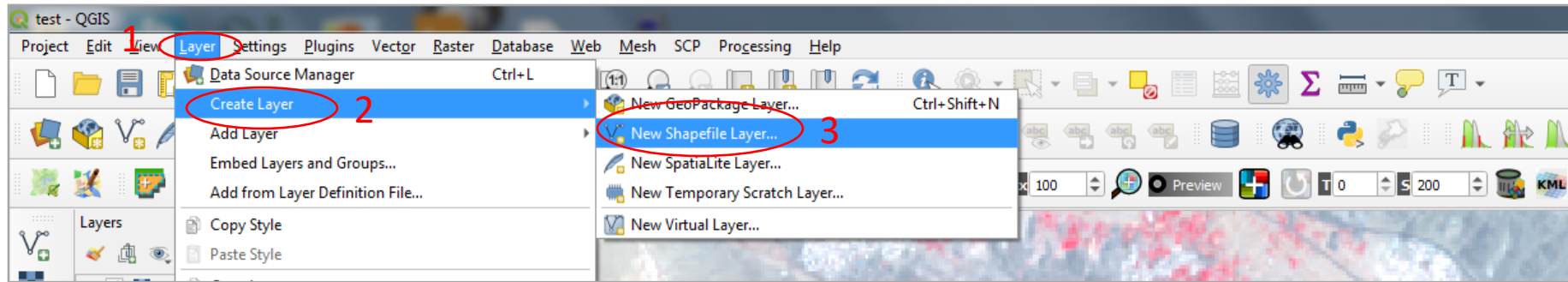
Symbology :

- To change symbol Select layer(Point or Line or Polygon) right click → Properties
- In layer properties window → Click on Symbology Now change the symbol style, colour, size → ok

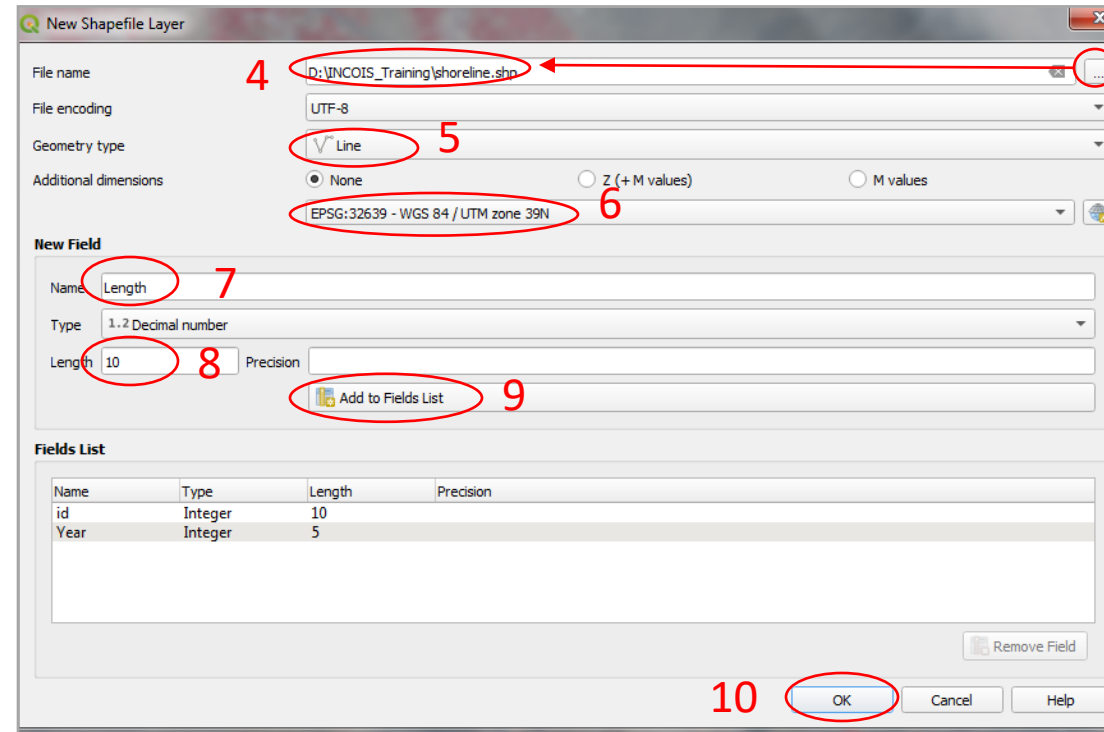
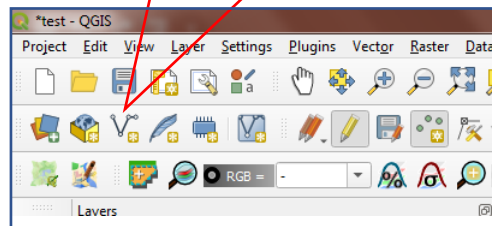


Line Shape file creation:

➤ Go to layer → Create Layer → New shapefile Layer

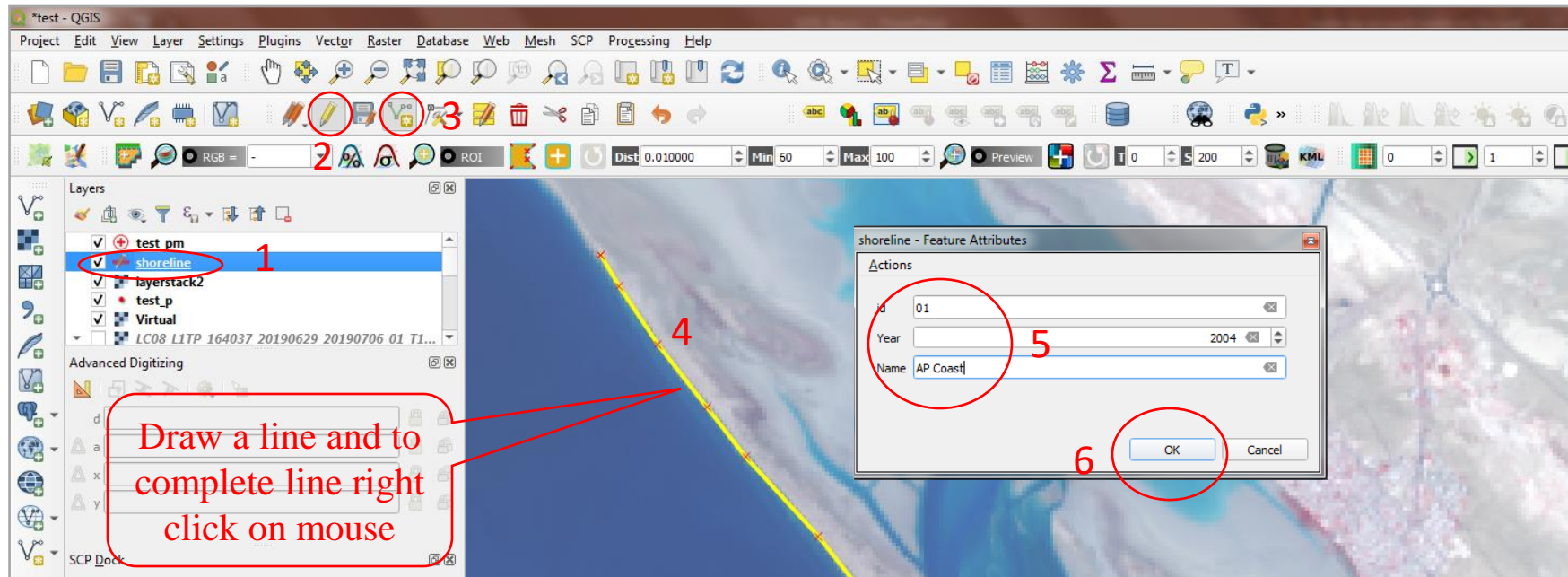


Direct click on create new shape file icon

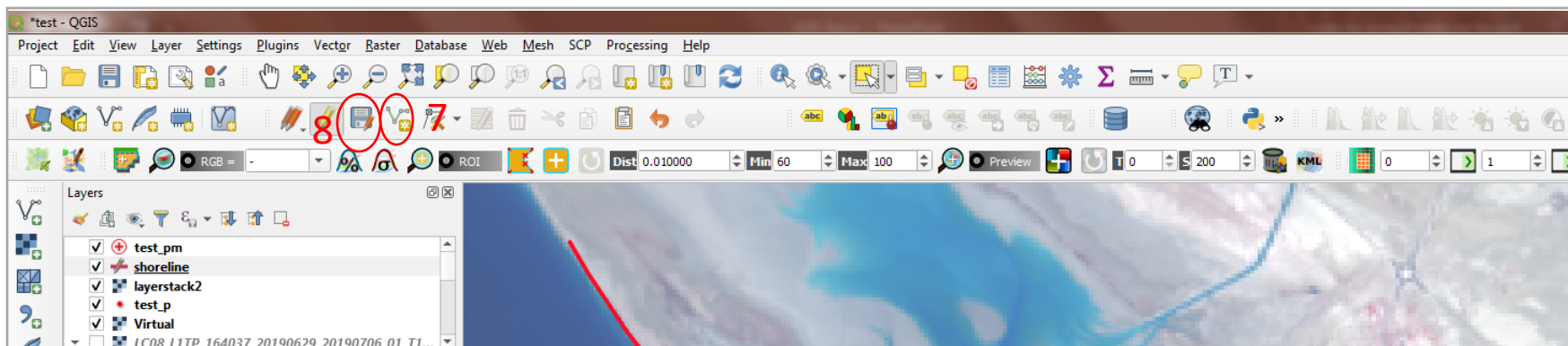


Line Shape file Editing :

- Select line shape file
- Click on Toggle editing → add line feature → draw a line on image



- To save edited data click on save layer edits.
- To stop editing click on Toggle editing



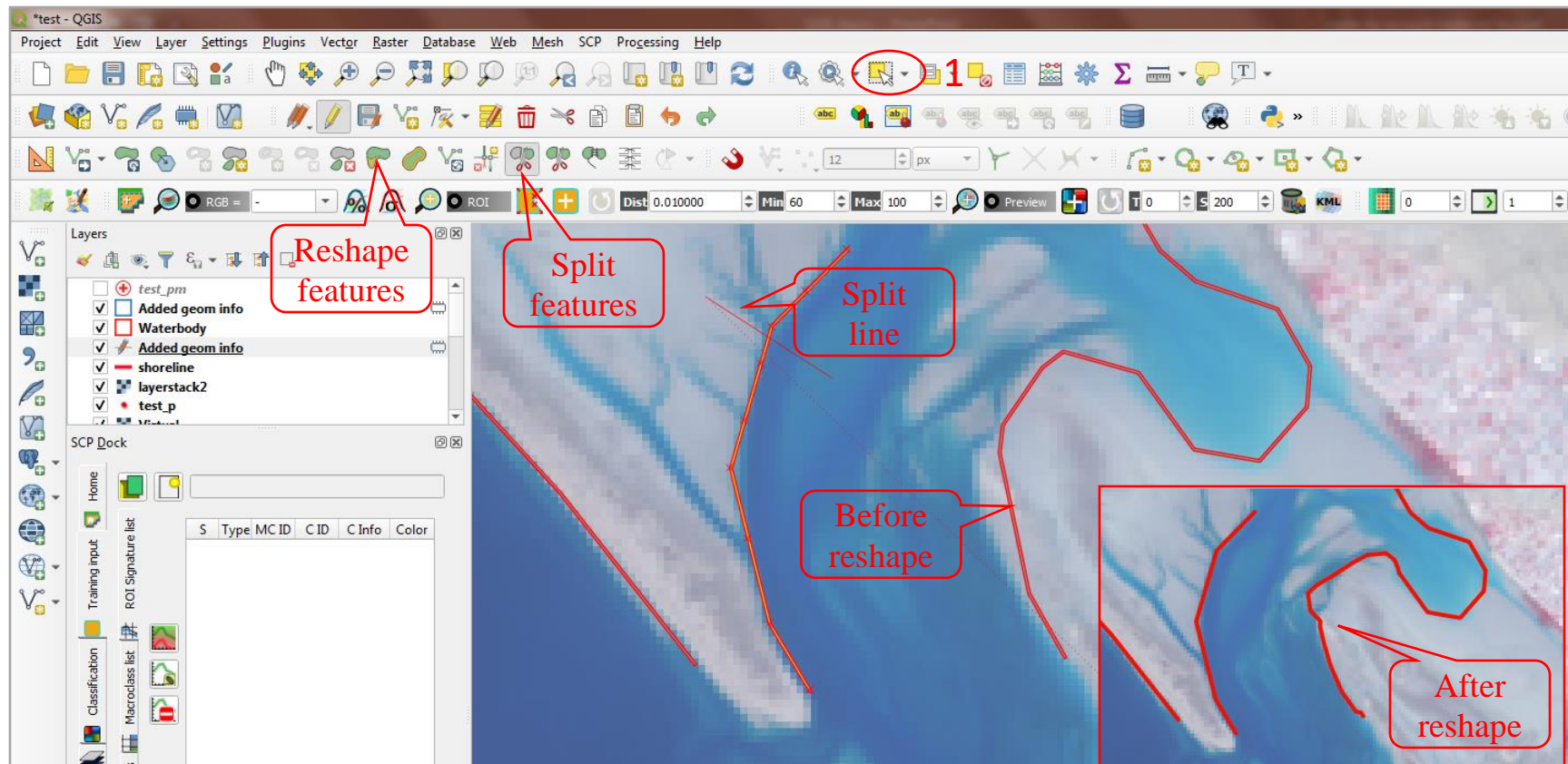
Split line feature :

- Select line which you want to split using select features by area or single click
- Click on split features → draw a line where you want to split and right click to complete line

Reshape Line feature:

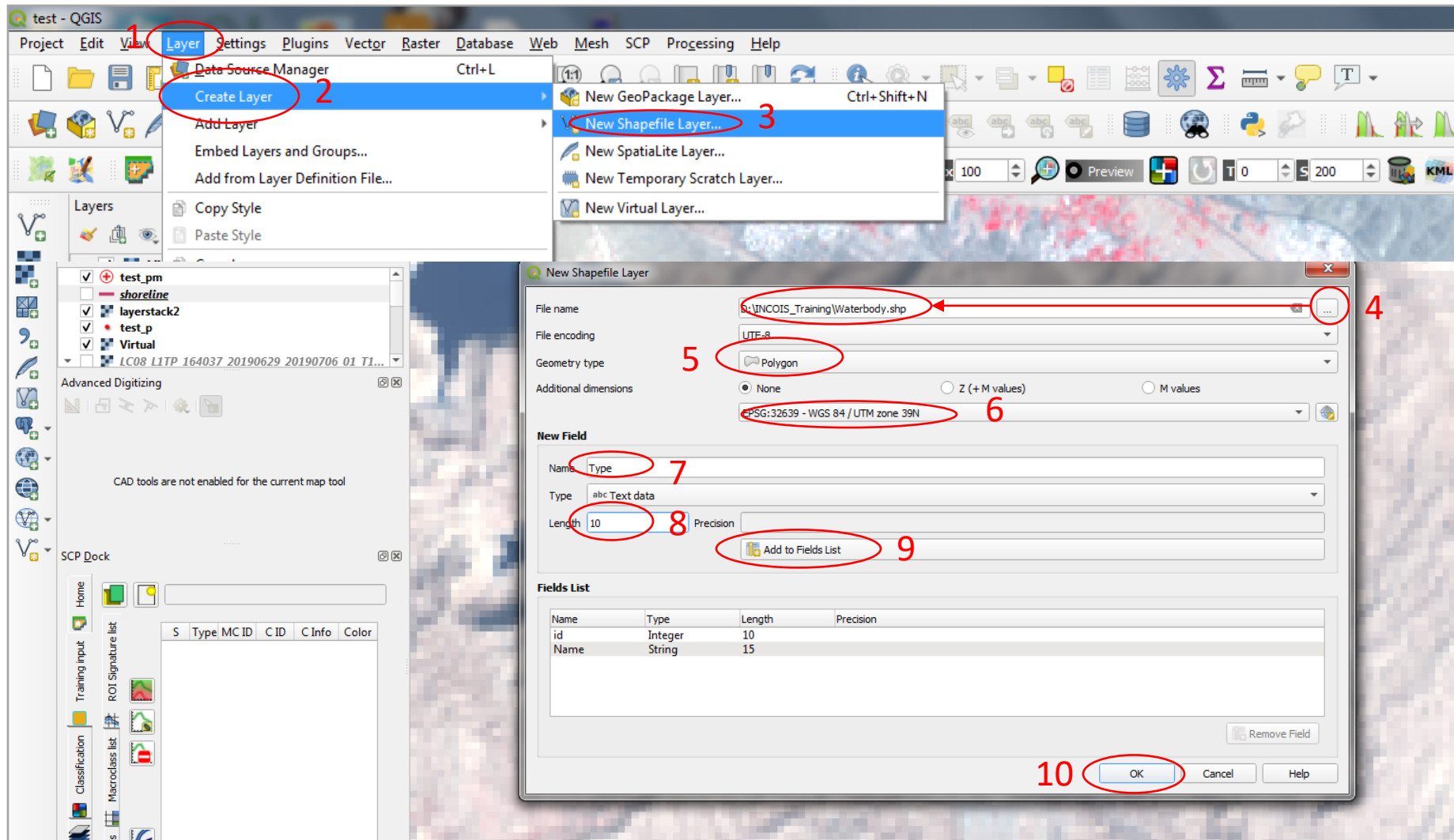
- Select line which you want to split using select features by area or single click
- Click on reshape feature → draw a line where you want to split and right click to complete line

Note: Drawing line in reshape feature line first point and last point should touch line feature



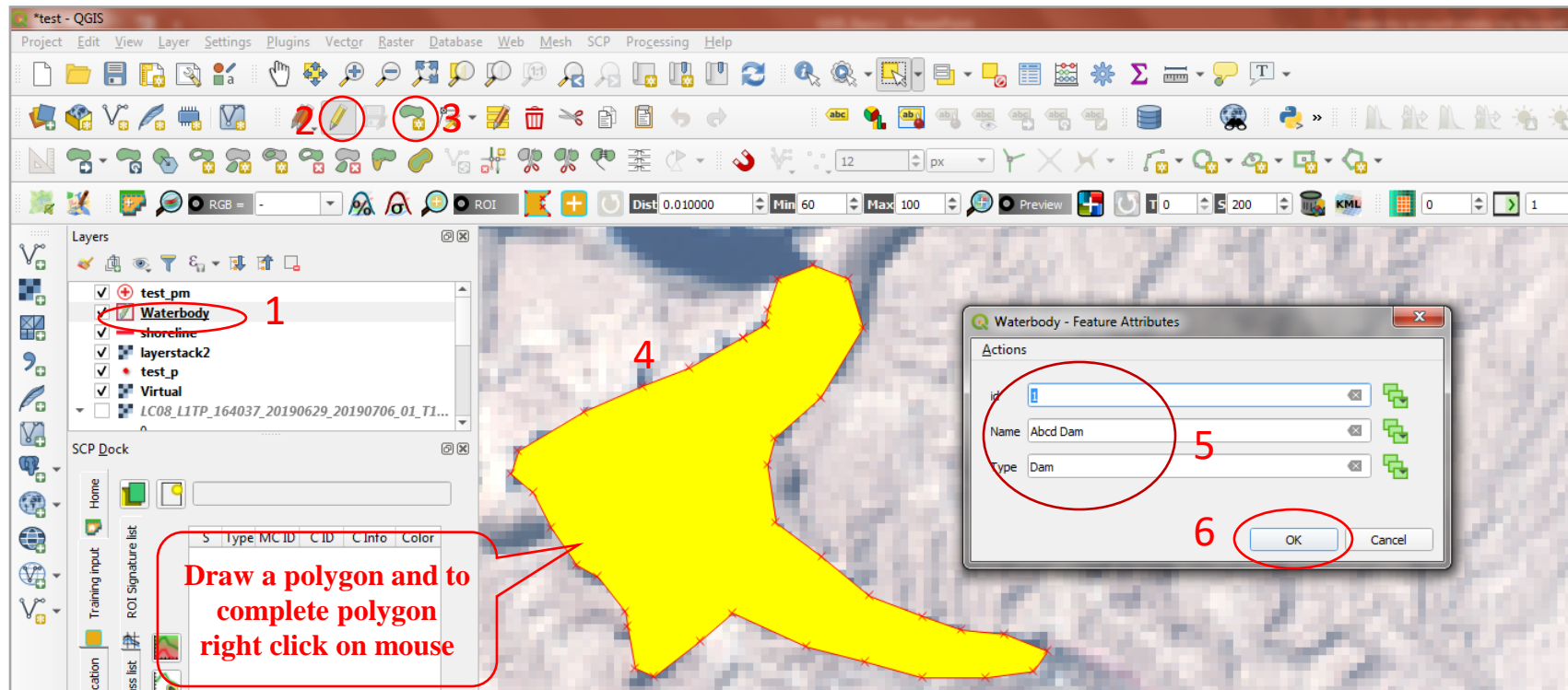
Polygon Shape file creation:

➤ Go to layer → Create Layer → New shapefile Layer



Polygon Shape file Editing:

- Select polygon shape file
- Click on Toggle editing → add polygon feature → draw a polygon on image



- To save edited data click on save layer edits.
- To stop editing click on Toggle editing

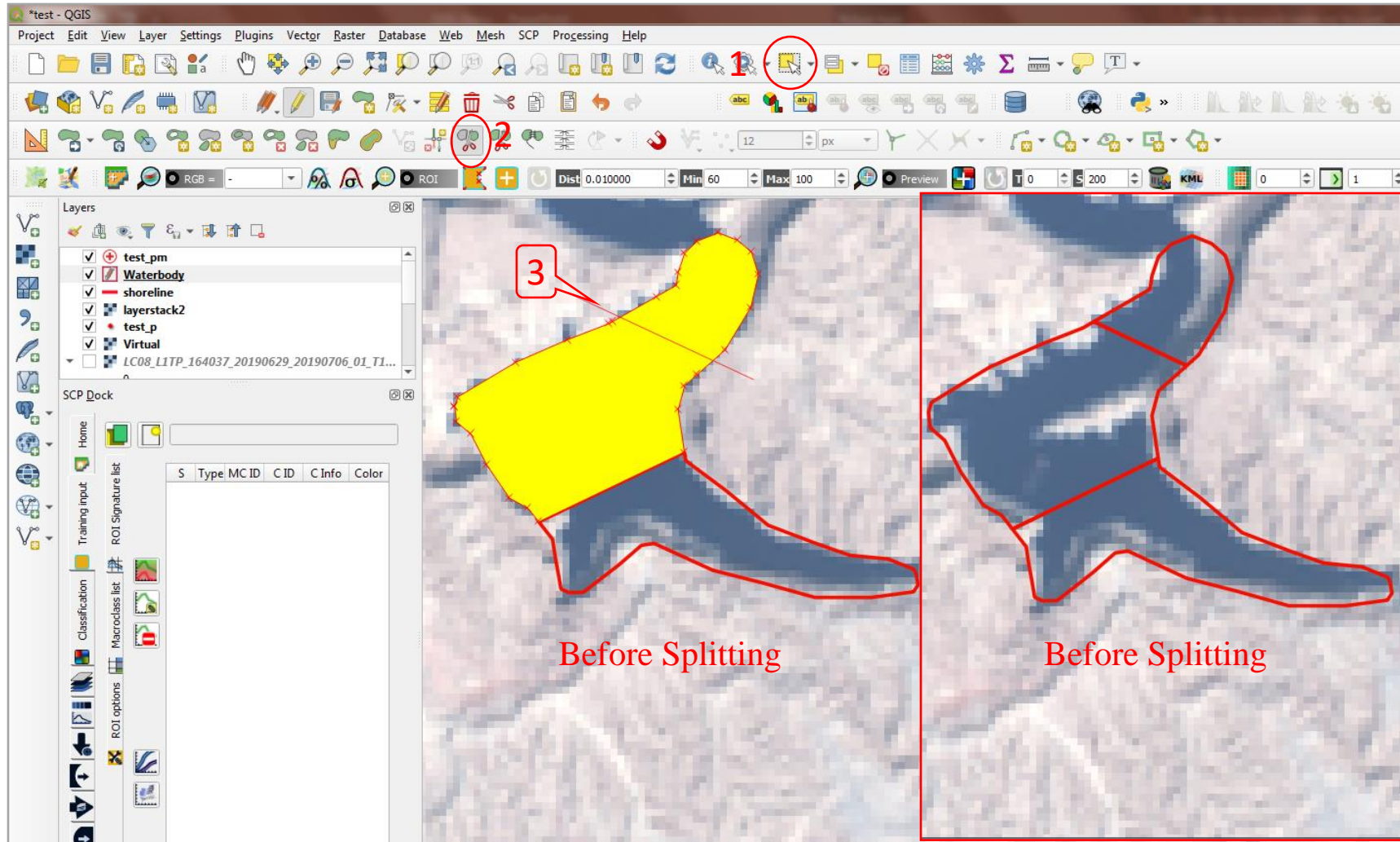


Splitting polygon

One to many polygons(Splitting polygon):

- Select the polygon using select features by area or single click
- Now click on Split features → Draw a line where to split polygon and right click

Note: Starting point and ending should touch the polygon line



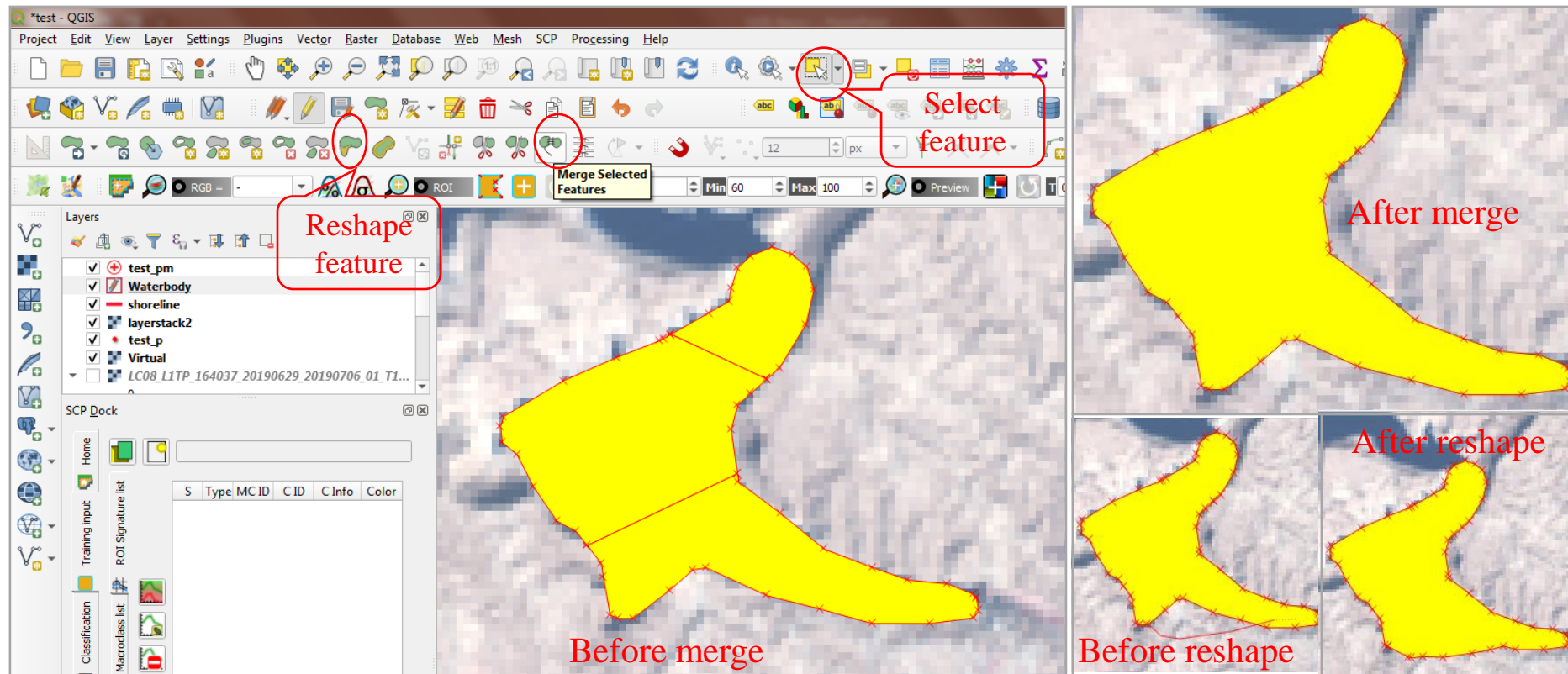
Merging and Reshaping Polygons

Many to one polygons (Merging Polygons):

- Select the polygon using select features by area or single click
- Now Select the polygons which you want to merge press shift key in keyboard and click on multiple polygons → click on Merge selected features.

Reshape polygon:

- Select the polygon using select features by area or single click
- Click on reshape features → Now draw a line the way you want to reshape feature and right click to complete. That line starting point and ending point should touch the polygon



Adding fields to attribute table

Adding fields to attribute table:

- Click on open attribute table → Attribute table window opens → Click on New field
- Add field window opens → Give the field name, type, length → Ok
- To Delete field → click on Delete field → Select field from delete field window → OK

The screenshot shows the QGIS interface with a map of a lake. The 'Layers' panel on the left lists 'test_pm', 'Waterbody', 'shoreline', 'layerstack2', 'test_p', and 'Virtual'. The 'Waterbody' layer is selected. The 'Attribute Table' window for 'Waterbody' is open, showing a table with 2 features. The 'New Field' button is circled in red and labeled '1'. The 'Delete Field' button is circled in red and labeled '2'. The 'Add Field' dialog box is open, showing the 'Name' field set to 'District' (labeled '3'), 'Type' set to 'Text (string)' (labeled '4'), and 'Length' set to '20' (labeled '5'). The 'OK' button is circled in red and labeled '6'. The 'Attribute Table' window after adding the field is shown, with the 'District' column added and the values 'Medak' and 'Nalgonda' (labeled 'After field add').

Waterbody :: Features Total: 2, Filtered: 2, Selected: 0

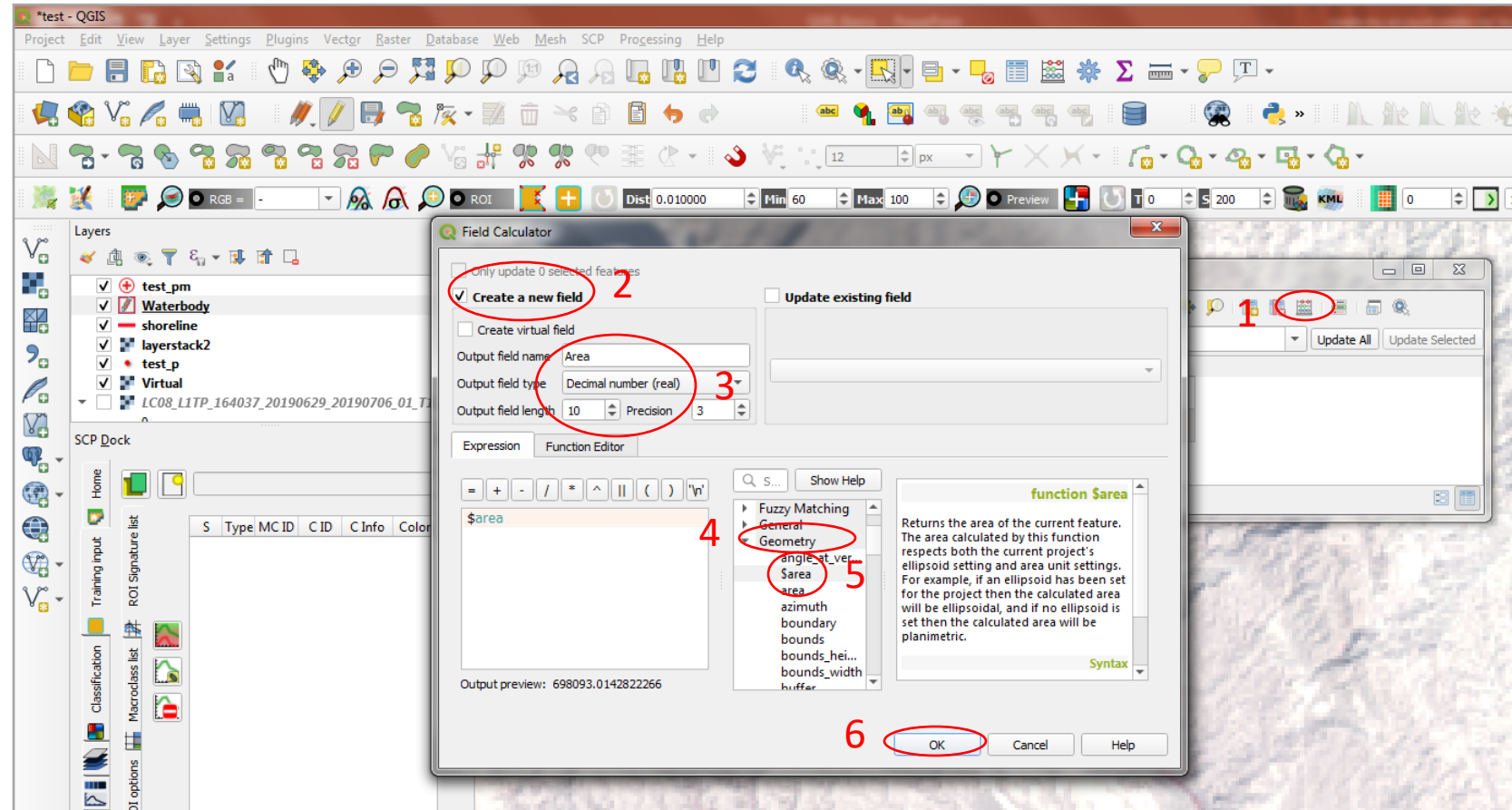
id	Name	Type	District
1	Abcd Dam	Dam	Medak
2	1 Abcd Dam	Dam	Nalgonda

After field add

Area calculation

Area calculation:

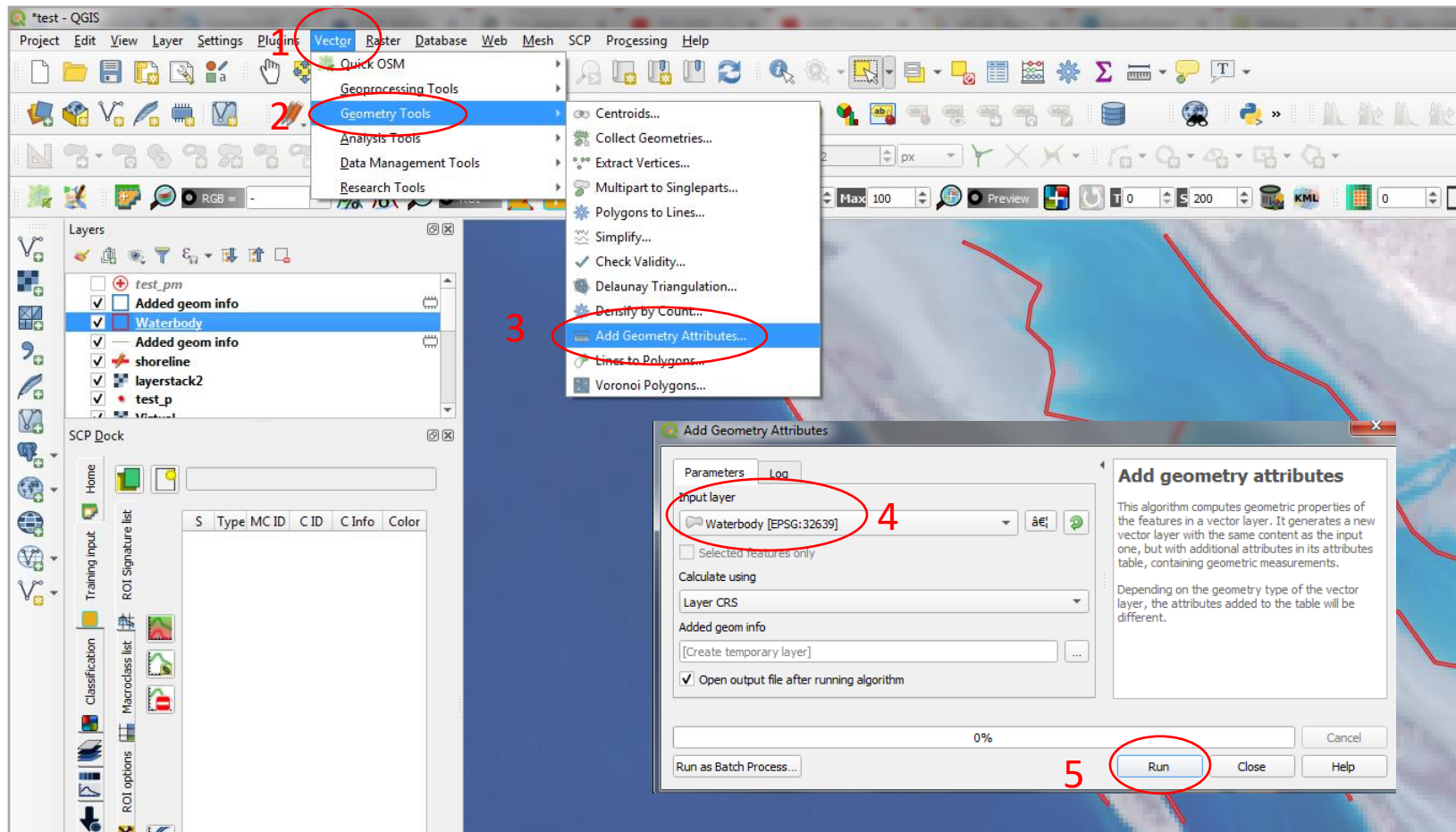
- Click on open Field calculator in attribute table window
- In field calculator → check create a new field → Give name, type, length
Geometry → double click on \$area → ok



Area and perimeter or length of line feature calculation:

- Click on vector → Geometry tools → Add Geometry attributes
- In input layer select polygon feature → Run (Calculates area and Perimeter)
- In input layer select line feature → Run (Calculates length of line)

Note: after calculating area and perimeter or length of line it will generate new shape file



Attribute data editing

If we want give the name to all same class fields at a time:

- Click on open attribute table
- Click on select by expression → type the expression → Click on Select feature
- Click on modify attributes of all selected features simultaneously → enter the name ok

The screenshot shows the QGIS interface with the 'Added geom info' attribute table open. The table has columns: id, Year, Name, and length. The data is as follows:

id	Year	Name	length	
1	8	2005	Chennai	6389.516407580...
2	3	2005	Chennai	2457.076001622...
3	2	2002	Hyderabad	2112.845058605...

The 'Select by Expression' dialog is open, showing the expression `Name='Chennai'` in the Expression field. A blue callout box points to the expression with the text: 'Text should be in single colon'. The 'Select Features' button is highlighted. The 'Feature Attributes' dialog is also open, showing the 'Name' field with the value 'Chennai' and the 'Year' field with the value '2005'. The 'OK' button is highlighted.

Numbered annotations in the image:

- 1: Open Attribute Table icon in the toolbar.
- 2: Select by Expression icon in the attribute table toolbar.
- 3: The expression `Name='Chennai'` in the 'Select by Expression' dialog.
- 4: The 'Select Features' button in the 'Select by Expression' dialog.
- 5: The 'Year' field in the 'Feature Attributes' dialog.
- 6: The 'OK' button in the 'Feature Attributes' dialog.

Export shape to KML

- Select our shape file → go to Layers → Save as → Select Format:KML → file name: give File name
CRS: if you want to change you can → symbology and Scale : select as per our requirement → OK
It will save in default folder → click on add → select layer from layer panel → export → save feature as
→ give path and name.

Save Vector Layer as...

Format: Keyhole Markup Language [KML]

File name: Road_Network

Layer name: lineshape

CRS: EPSG:4326 - WGS 84

Encoding: UTF-8

☐ Save only selected features

► Select fields to export and their export options

☒ Persist layer metadata

Symbology export: No Symbology

Scale: 1:500

▼ Geometry

Geometry type: Automatic

☐ Force multi-type

☒ Add saved file to map

OK Cancel Help



Thank you

