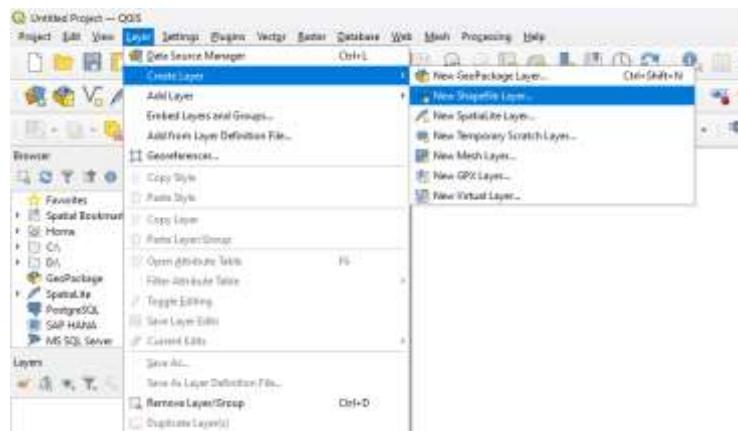
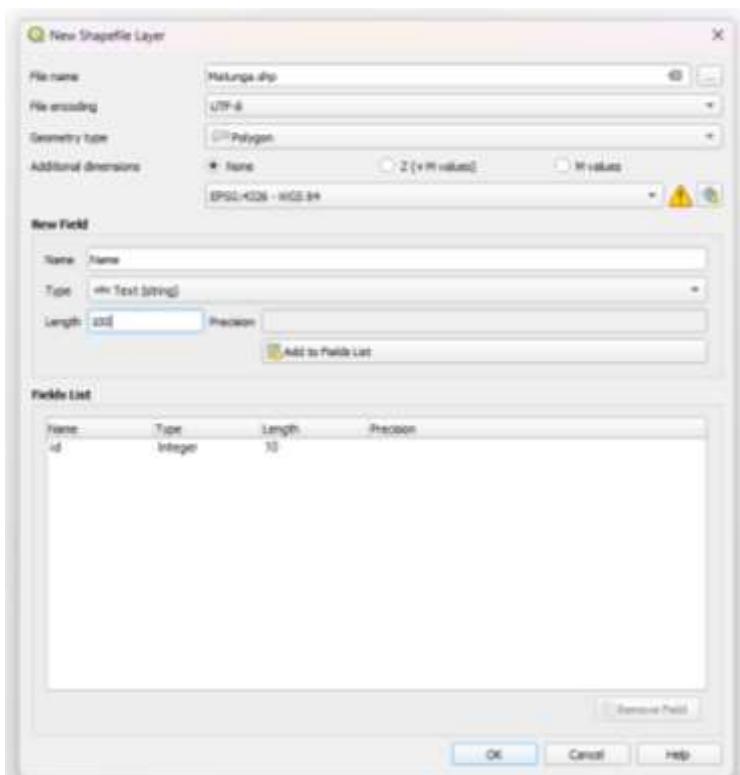


a) Creating Polygon vector layer

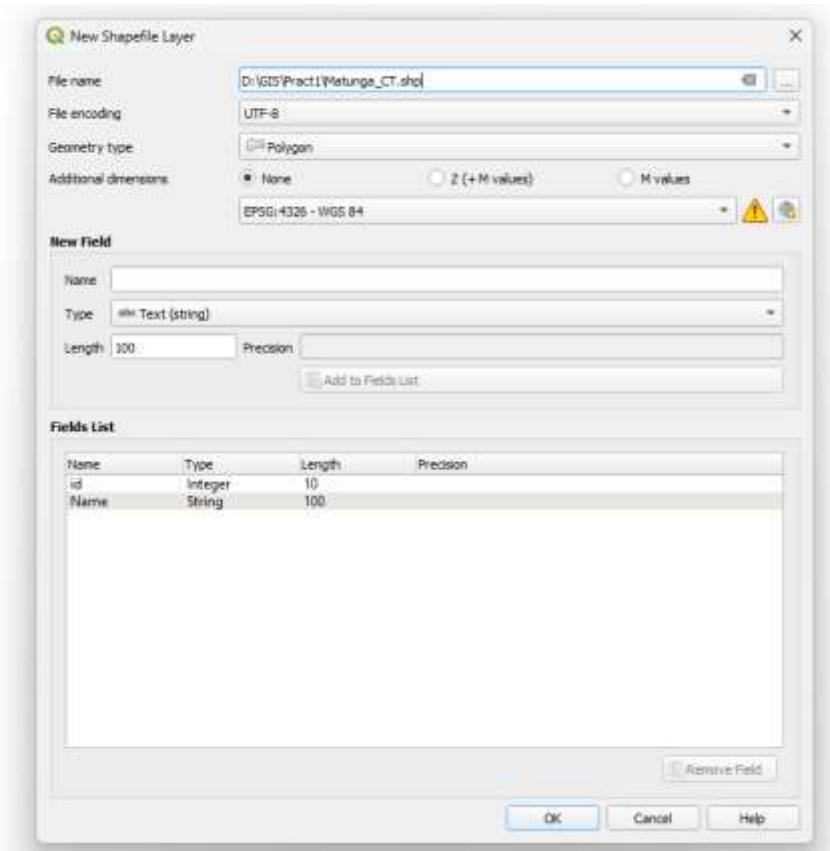
- Select Project→New
- Select Layer→Create Layer→New Shapefile Layer



- Following dialog box will appear on the screen. Select Polygon option from Geometry type.

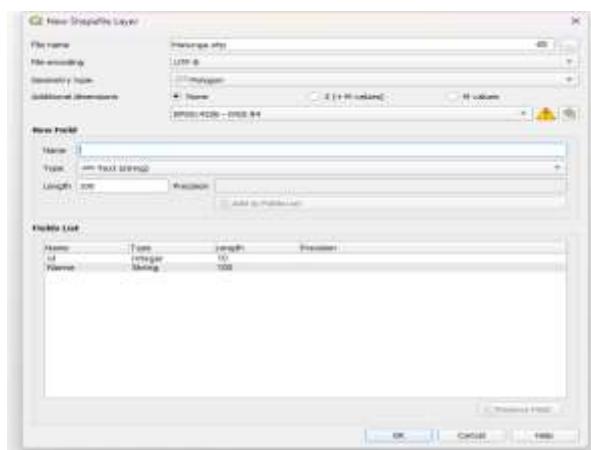


- Fill the appropriate information in each text box.
 - File name :
 - By default the file will be saved in bin folder.
 - To avoid it click on following button to change the location of file.

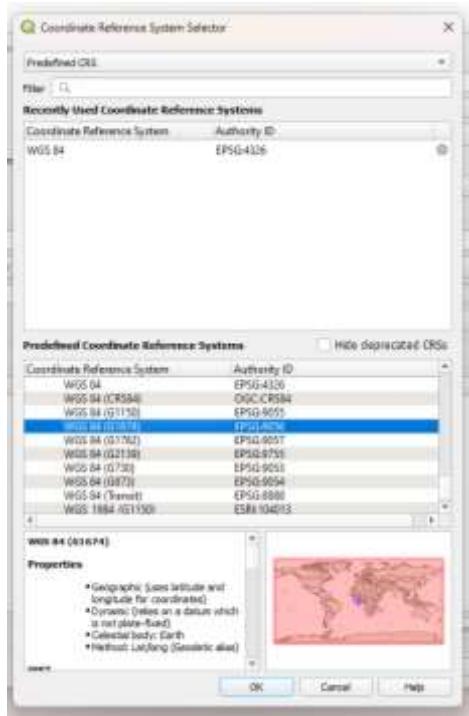


➤ Field Panel

- Add the Attribute you want to show. (Column Name for Table)
 - b. Specify Type (**DataType**:Text Data/Decimal Data/Whole Number/Date) of Attribute
 - c. Specify the **Length** of the Attribute. Specify **Precision** (If Data Type is Decimal)
- Click on Add to Field List Button.
- You can add as many fields (Column Name) as you want for the layer.
- Select Geometry Type as follows
 - Click on the following button



- The CRS dialog box will appear on screen. Click on the WGS84 option and it will be selected as follows. click on OK

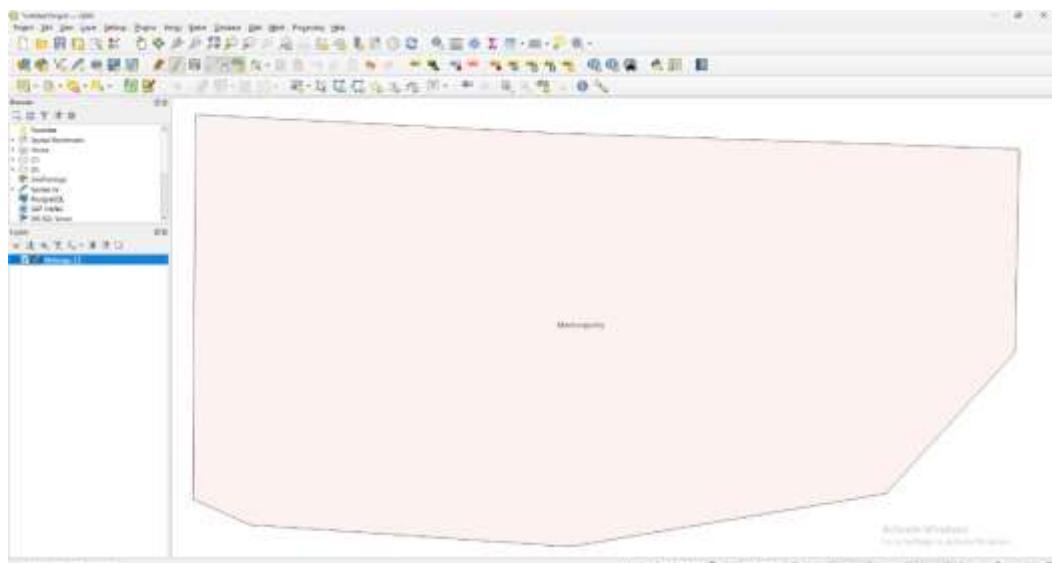


a) Follow the steps to plot Polygon features.

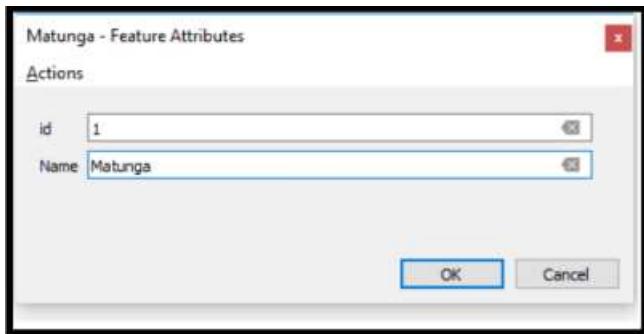
- Select the Polygon Feature(In our case it is Matunga for background) from layer panel



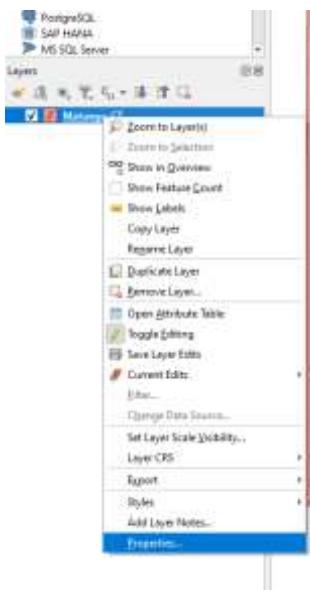
- Click **Toggle Editing Button** → Click on **Add Polygon** → Now place the cursor at the location where you want to place the polygon. for **Polygon layer minimum 3 points** should be selected



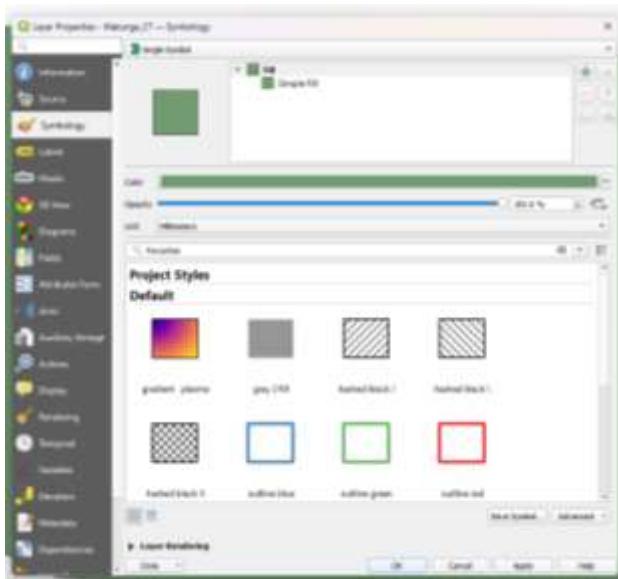
- Save the newly added polygon as follows.



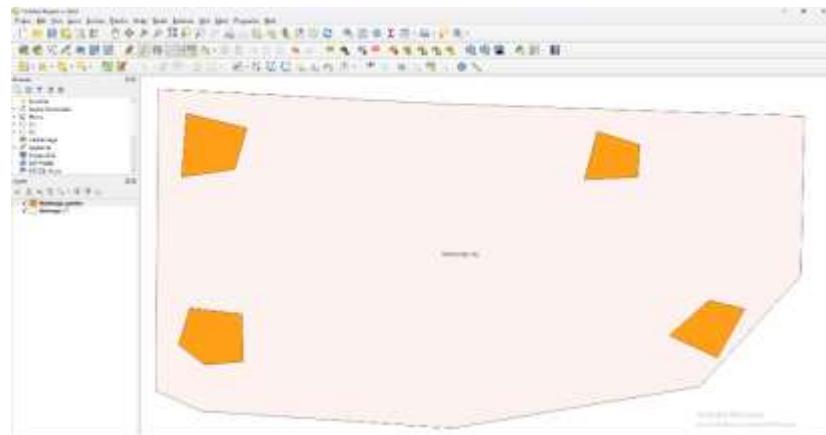
- Set style for polygon by using property window(Right click on Matunga Layer)



- Following screen will appear on the screen. Select pattern as you want and click on OK.



- Same way we can add one more polygon layer for Gardens.

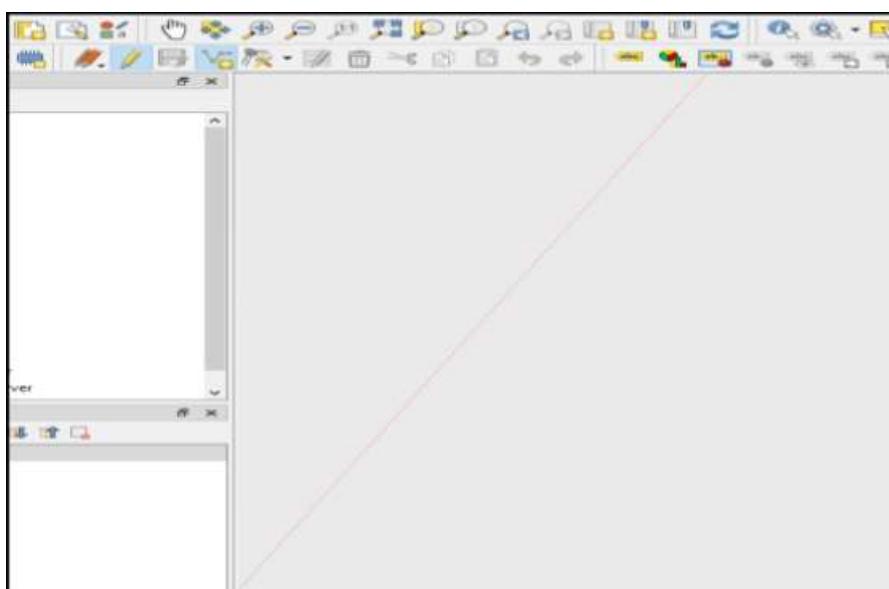


b) Creating Line vector layer

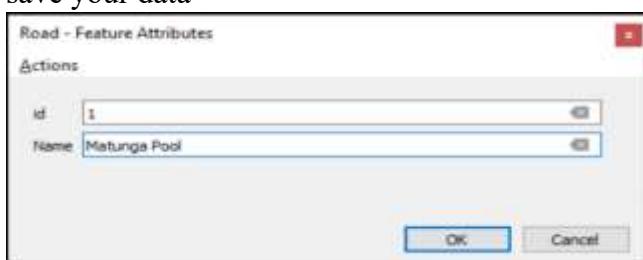
- Repeat the same steps as we have done for polygon layer.
- Select geometry type Line.'
- **Road layer :**
- To plot road click on Add Line Feature.



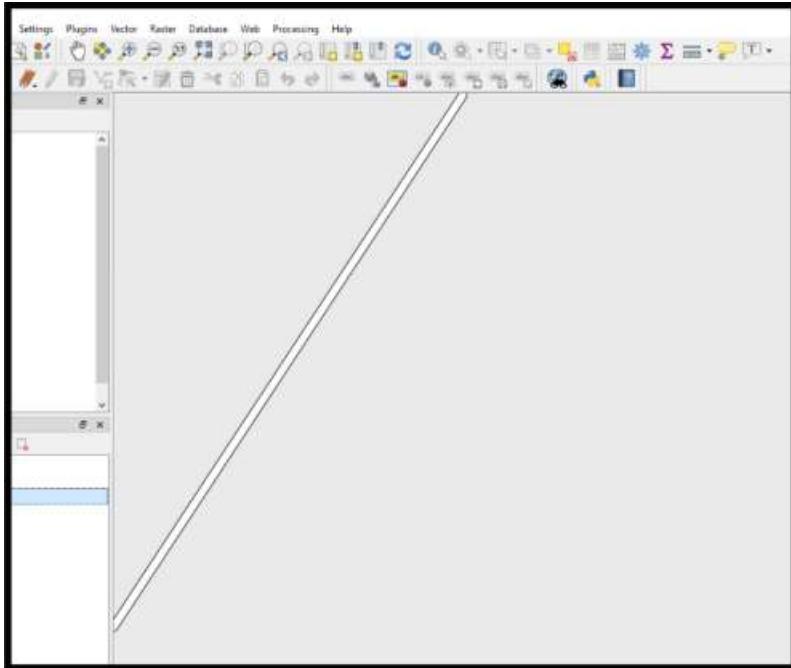
- Click on the map where you want to draw line.



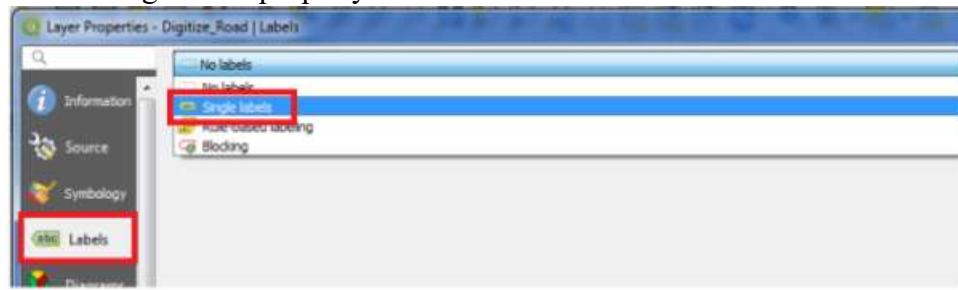
- Once you are done then right click on map (Dotted line turn into solid line)
- save your data



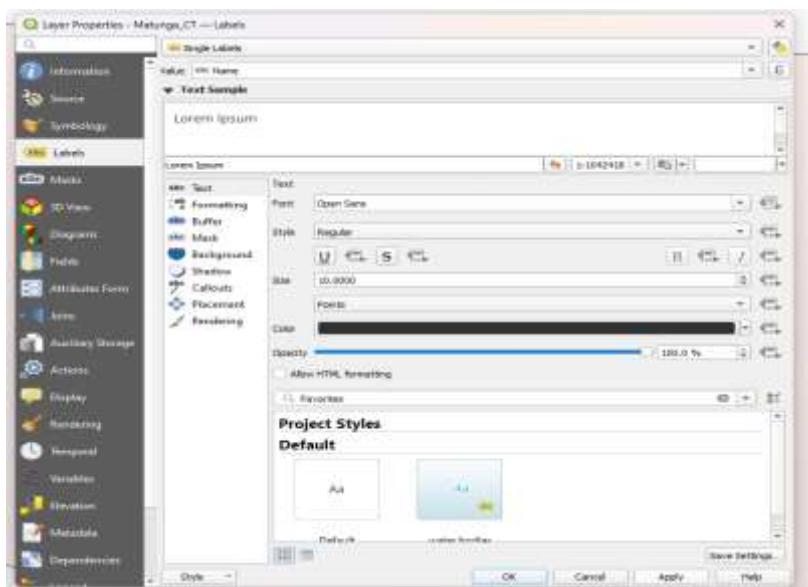
- set style for Roads in the same way as we have done for polygon
- Road will look as below



- To label your roads Right click on Road layer .Go to properties window then select label and set single label property

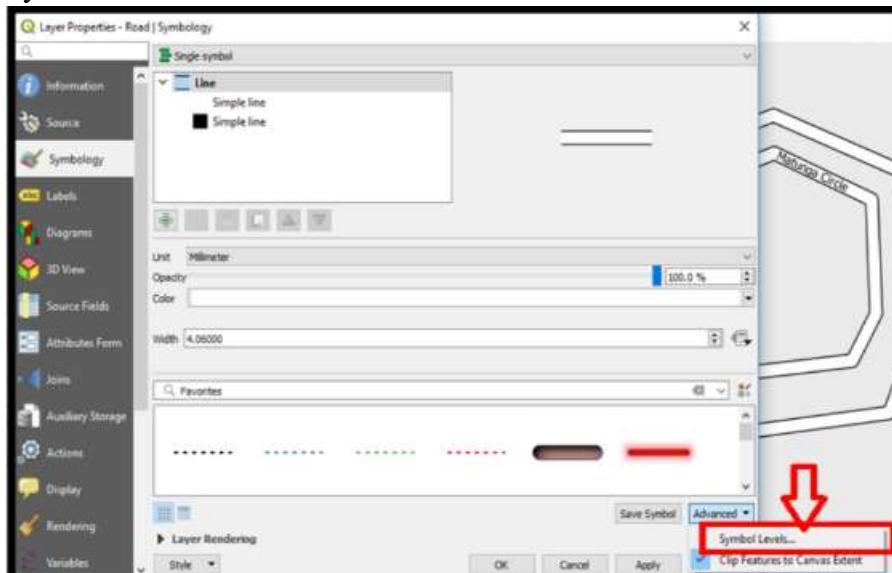


- Following window will appear on the screen

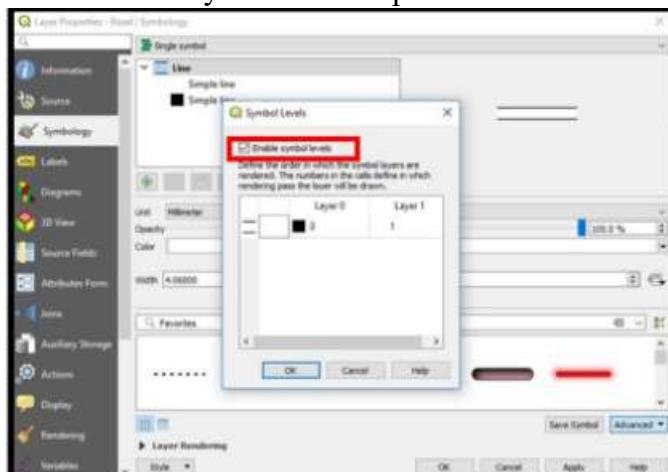


➤ To merge roads

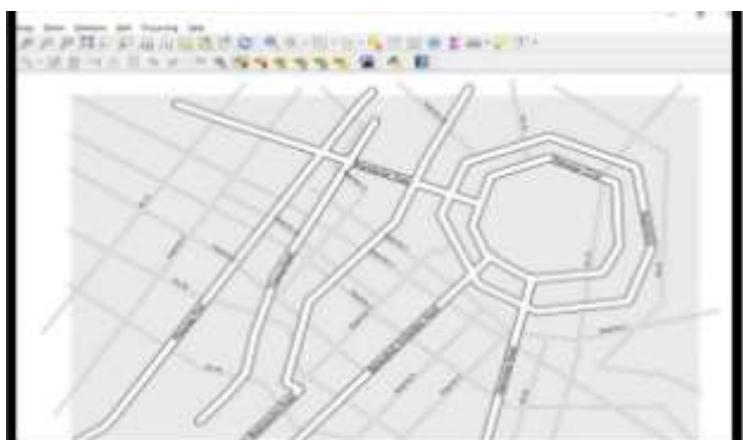
- Go to properties of road then select symbology. Click on Advanced button select Symbol levels.



➤ Check Enable symbol levels option

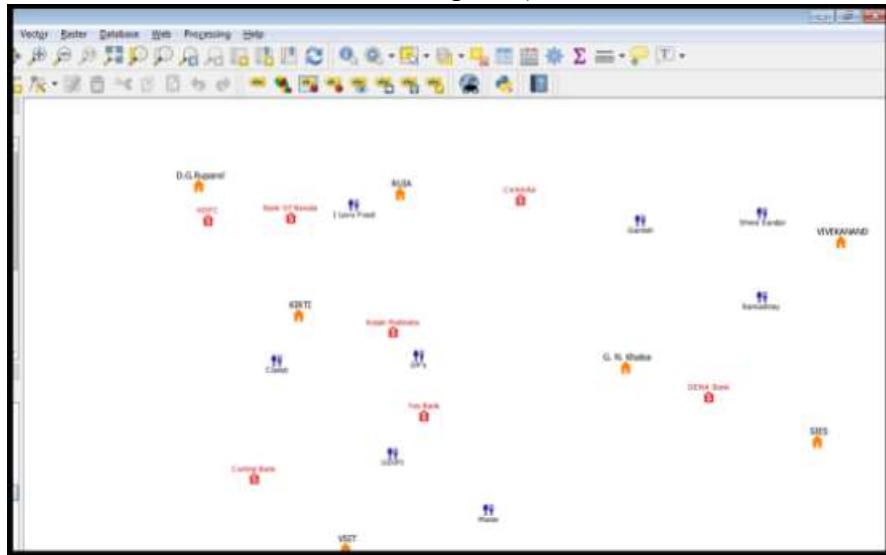


➤ Click ok & Road will appear

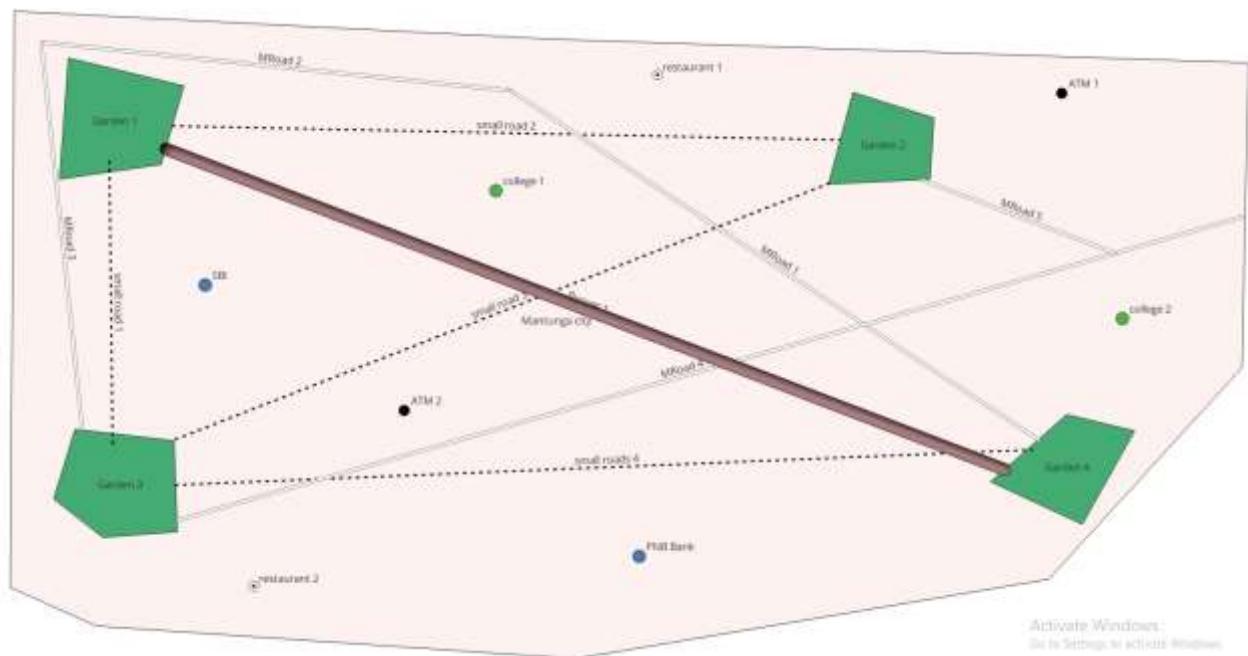


C. Create Point vector layer

- Repeat same steps to add point layers as we have done in previous layers.(For ATM, Restaurants, Banks, Bus Stops etc)

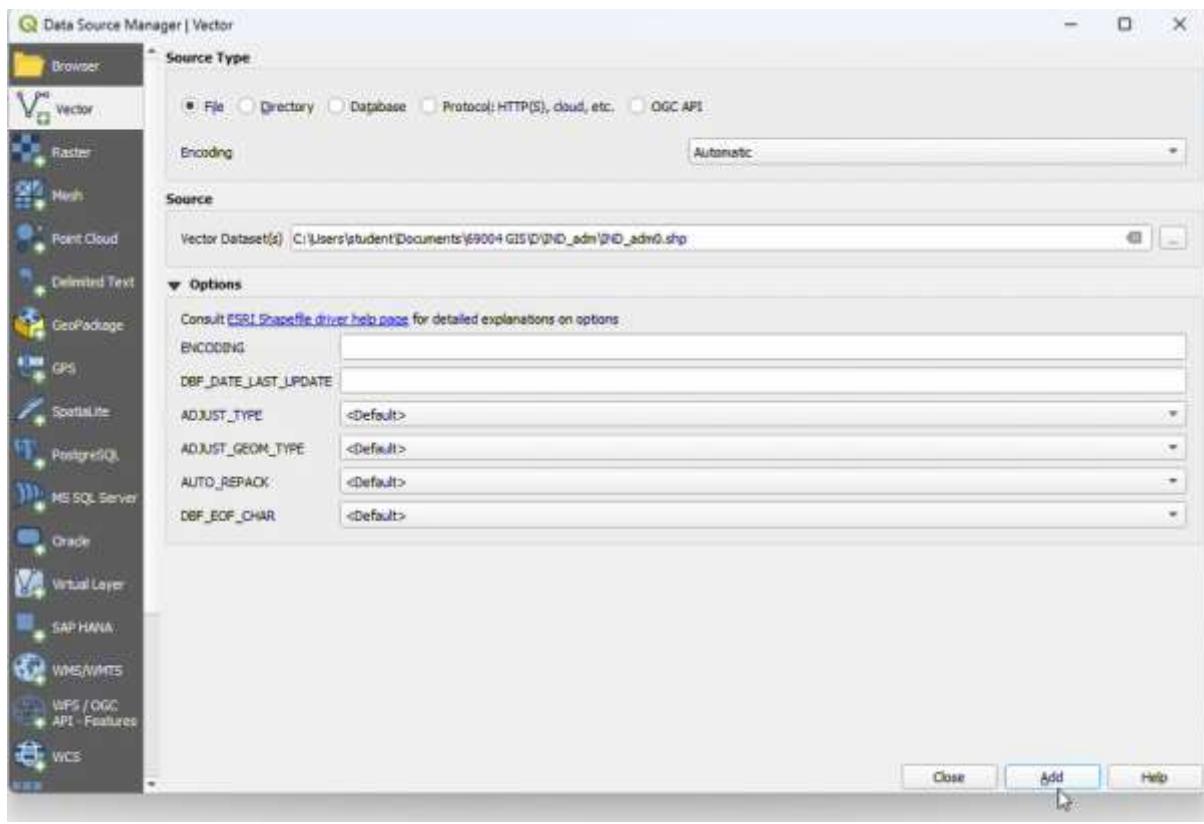


Final output:



d) Calculating line lengths and statistics

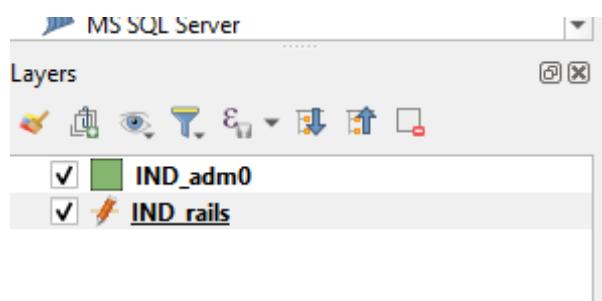
- Go to Layer → Add Layer → Add Vector Layer
- Add the following file to project



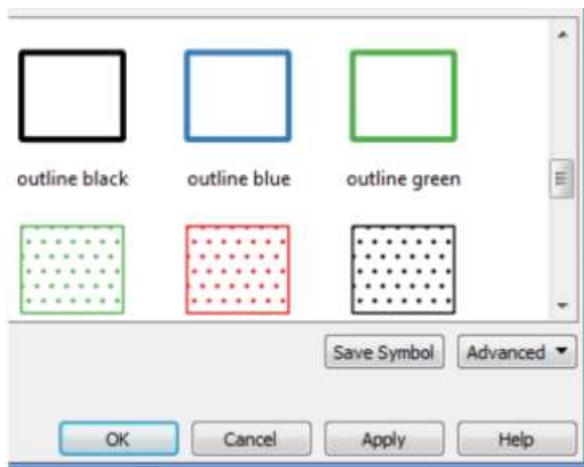
"\GIS_Workshop\Practicals\Practical_01\DATA\IND_rrd\IND_rails.shp"

Press "ADD"

- Also add India Administrative Map
"GIS_Workshop\Practicals\Practical_01\DATA\IND_adm\IND_adm0.shp"
- Double Click on IND_adm0



Select Symbology → Select any outline style from below given options.

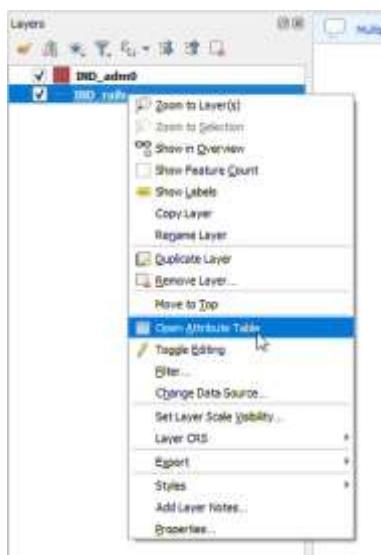


Press OK

- The display window will appear like

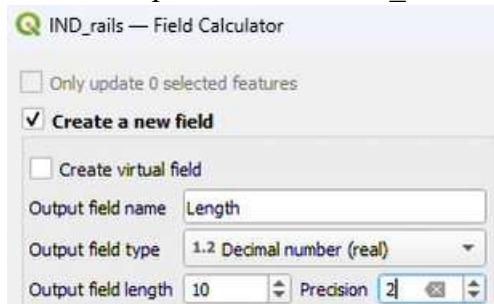


- In Layer Pane, Right click on IND_rails → Open Attribute Table

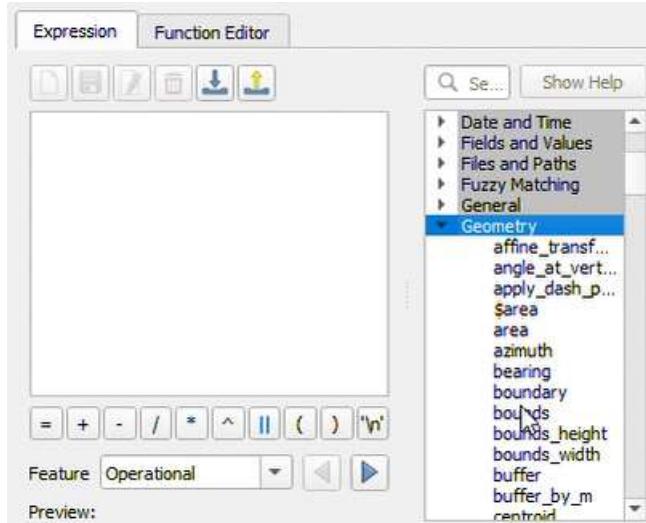


	FID_rail_d	F_CODE_DESCI	EXS_DESCRI	FCO_DESCRI	FID_countr	ISO	ISOCOUNTRY	Track_Len
1	144645	Railroad	Operational	Single	102	IND	INDIA	29
2	145991	Railroad	Operational	Single	102	IND	INDIA	66
3	146001	Railroad	Operational	Single	102	IND	INDIA	2
.	146002	Railroad	Operational	Single	102	IND	INDIA	2

- Press Toggle Editing button using button, on Attribute table window toolbar.
- Press Open Field Calculator using button.
- Set the output field as “Track_Len”, field type to “Decimal Number”.



- From Function List search \$length or go to Geometry → Select \$length



- Set expression as



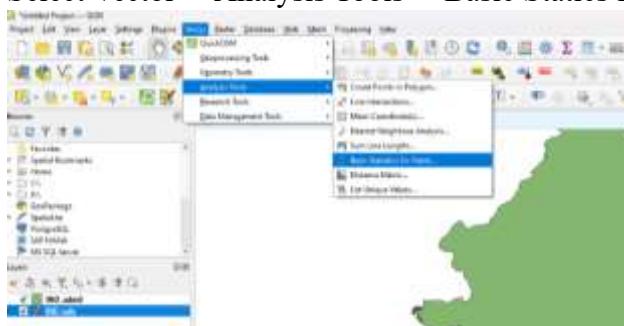
Press “OK”

- A new column is added to the attribute table with value representing the length of track in KM.

IND_rails — Features Total: 2012, Filtered: 2012, Selected: 0

d	F_CODE_DESCI	EXS_DESCRI	FCO_DESCRI	FID_countr	ISO	ISOCOUNTRY	Track_Len	Length
1	44645	Railroad	Operational	Single	102	IND	INDIA	29
2	45991	Railroad	Operational	Single	102	IND	INDIA	66
3	46001	Railroad	Operational	Single	102	IND	INDIA	2
4	46008	Railroad	Operational	Single	102	IND	INDIA	64
5	46096	Railroad	Operational	Single	102	IND	INDIA	93
6	46394	Railroad	Operational	Single	102	IND	INDIA	22

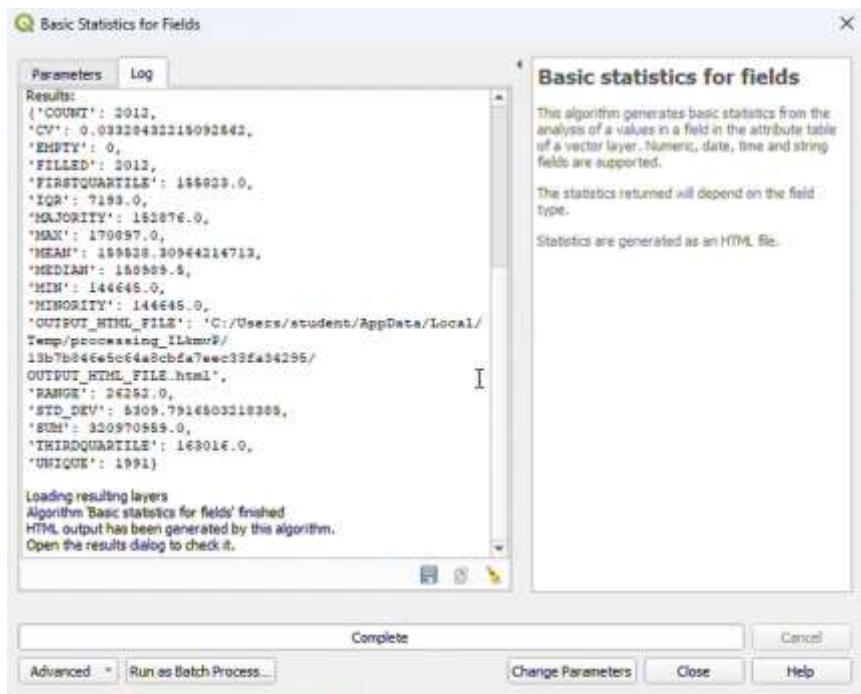
- Press CTRL+S or click on Save Edits option on tool bar
- Close the attribute table window.
- For calculating the total length of Railway tracks in India.
- Select Vector → Analysis Tools → Basic Statistics for Fields



- Select IND_rails layer from input layer. And select Track_Len in “Field to Calculate statistics on”



- Press RUN
- The Result is



- Open the “output.html” file to get the field statistics.

Analyzed field: FID_rail_d

Count: 2012

Unique values: 1991

NULL (missing) values: 0

Minimum value: 144645.0

Maximum value: 170897.0

Range: 26252.0

Sum: 320970959.0

Mean value: 159528.30964214713

Median value: 158989.5

Standard deviation: 5309.7916503218385

Coefficient of Variation: 0.03328432215092562

Minority (rarest occurring value): 144645.0

Majority (most frequently occurring value): 152876.0

First quartile: 155823.0

Third quartile: 163016.0

Interquartile Range (IQR): 7193.0

- The above statistics show that the total length of Railway track in India is 320970959.0 KM.