Working with Google Earth

Using Quantum GIS

Working with Google Earth Using QGIS

Objective: The objective of this tutorial is to introduce you to Google Earth, Bing, Yahoo and Open street maps using Quantum GIS

Software: Quantum GIS, Google earth

Level: Beginner

Time required: 3 Hour

Prerequisites and Geospatial Skills

1. Quantum GIS and Google Earth should be installed on the computer
2. Internet connection
3. Basic knowledge about the QGIS interface
4. Should have completed Exercise ID: IGET_GIS_001, IGET_GIS_005 and IGET_GIS_006

Readings
1. Sutton, T., Dassau, O., & Sutton, M. (2009). A gentle introduction to GIS. *Chief Directorate: Spatial Planning & Information, Eastern Cape.*

**Tutorial Data:** Tutorial data can be downloaded from the IGET_GIS_012

Introduction

Google earth and Open Street Map (OSM) are important free sources of spatial data. It is very easy to mark the boundaries and digitize the spatial features of interest on Google Earth but digitizing in Google Earth doesn't solve our purpose every time. We need to export this data into some GIS software to create more comprehensive datasets that can be used for analysis and preparing maps. This tutorial is intended to describe how to use the products like Google Earth, OSM, Yahoo and Bing maps to create spatial datasets and maps. Before proceeding further ensure your computer is connected to Internet.

Exercise 1: Exporting shapefiles to Kml format and Opening in Google Earth

In this section we will learn how to export a shapefile into *Keyhole Markup Language* (*.kml). *Kml* format is the native format of Google Earth used to represent the spatial objects. For more information please read http://en.wikipedia.org/wiki/Keyhole_Markup_Language

1. Start the Quantum GIS via, '*Start → All Programs → QGIS Defour → QGIS Desktop 2.0.1*'.
2. Now add the vector layer '*Bharti_vidyapeeth_boundary.shp*' supplied to you with the tutorial data via '*Add Vector layer' button* → Click on '*Browse*' in the popup window → browse to the '*IGET_GIS_012_Data*' folder → make sure the file type should be '*ESRI Shapefiles*' → select the '*Bharti_vidyapeeth_boundary.shp*' files → Click on '*Open*' and again on '*Open*'.
3. Now *Right-click* on the added layer → To convert this layer into kml format click on '*Save As*'.
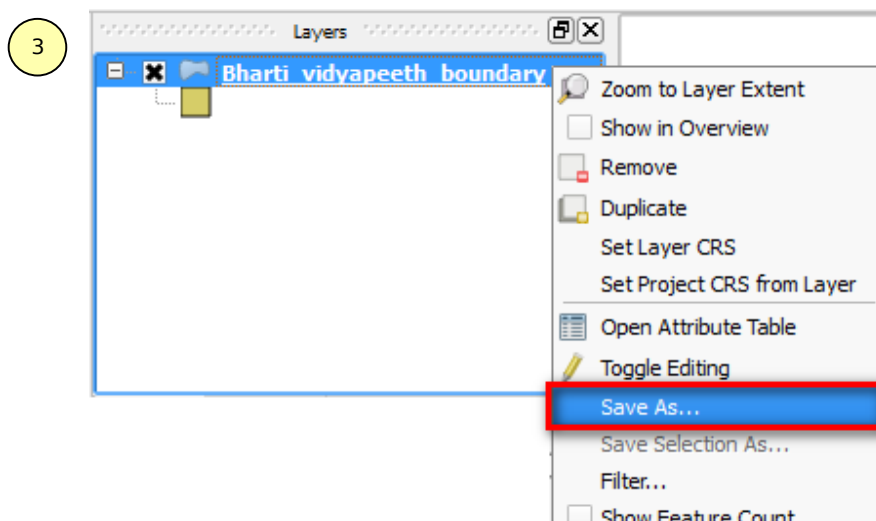
4. In the '*Save As*' popup window change the format from '*ESRI Shapefile'* to '*Keyhole Markup Language[KML]'*
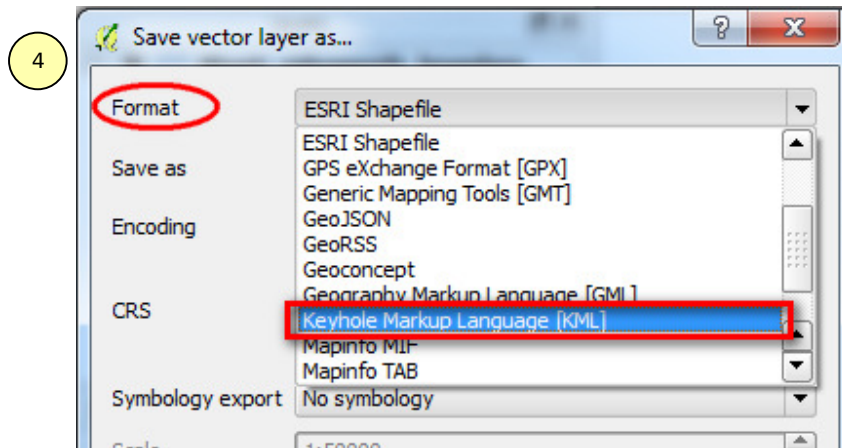

5. In *Save as* tab navigate to the desired destination folder and give an appropriate name such as '*Bharati_Vidyapeeth_GE'*
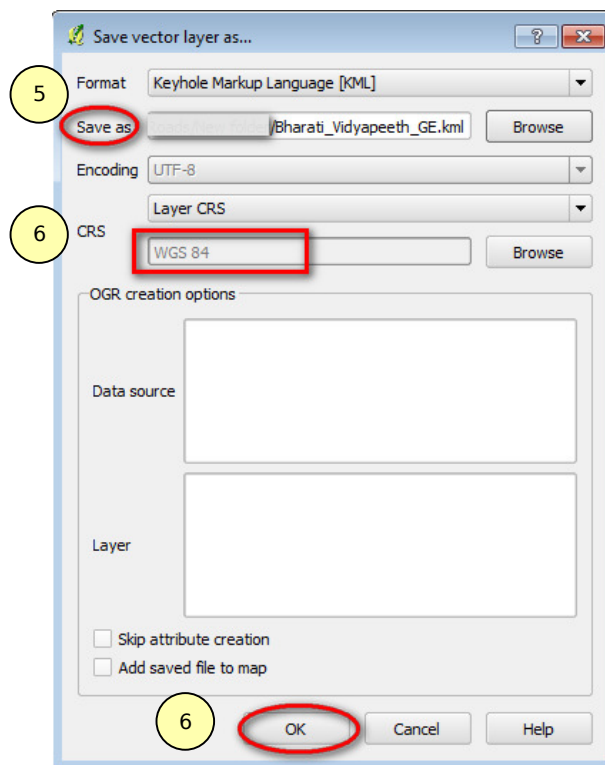
6. Make sure that CRS is '*WGS 84'*, if not click on '*Browsre*' to select the '*WGS 84*' as CRS. Now click on *OK*' to save the file in *kml* format and '*OK*' in prompt window.

7. Now navigate to the folder through the windows explorer and double click on the saved '***Bharati_Vidyapeeth_GE.kml***'.
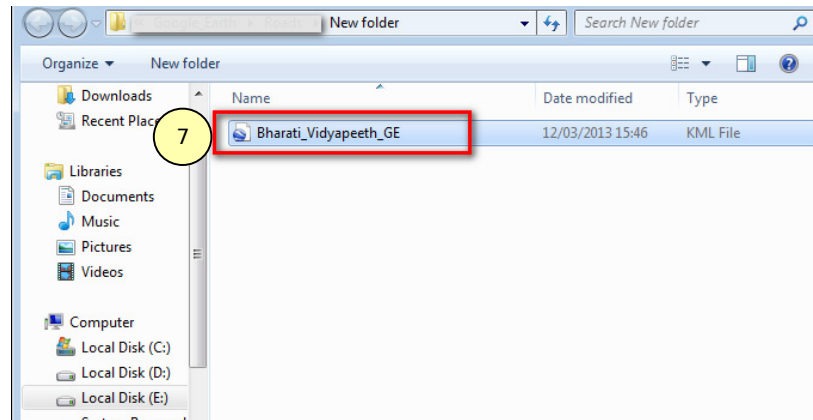
8. The Layer opens up in *Google Earth*. This layer demarcates the boundary of Bharti Vidyapeeth's Dhankawadi campus of Pune. In the following figure the red color polygon represent the area of interest.


In this way you can convert any supporting format file to KML format by using Quantum GIS.

Note: *Every time while converting into kml file make sure that the target CRS is set as* **WGS84**

Exercise 2: Digitizing in Google Earth.

In this exercise we will digitize polygon features of *Bharati Vidyapeeth University (BVU)* in *Google Earth*.

9. Go to the '***Places***' section in Google Earth → '***Right-click***' on '***My Places***' → '***Add***' → '***Folder***' → in the popup window name it as '***BVU_College***' →'***OK***'. This will add a new folder under the '***My Places***'
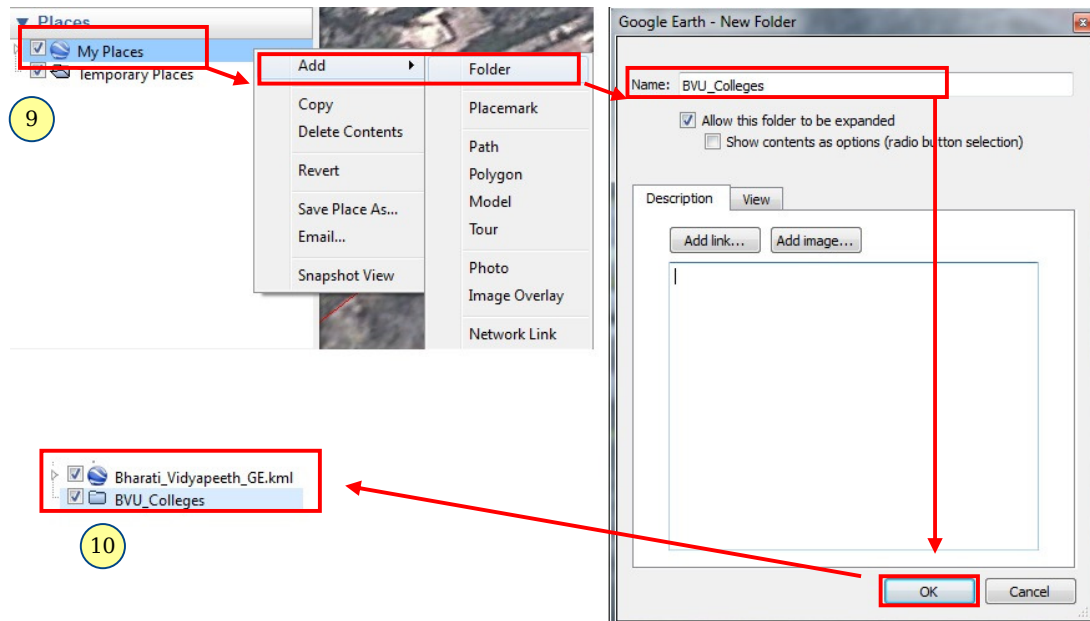

10. Now select the '***BVU_Colleges***' folder under places. We will use [polygon icon] (polygon) for digitizing the colleges inside the campus. Zoom in to the top left corner of the BVU boundary. In this location you can see *Institute Environment research & Education*.

11. Click on the '***Add Polygon***' [polygon icon] button located under menu bar or you can access the same tool via, *Menu bar → ADD → Polygon*. Now you will notice the 'New Polygon' popup window on screen, give the '***Name***' of the polygon as '***BVIEER***'.

12. Click on '***Style, Color***' **t**ab→ under '*Lines*' change '***Color***' to any desired color by click on '☐***Color box***' → Select the desired color from the palette and click on '***OK***' → Select '***Width***' as required for example: 'Color' to ***yellow*** and 'Width' as '***2***'. Select '***Outlined***' under '*Area*' section.
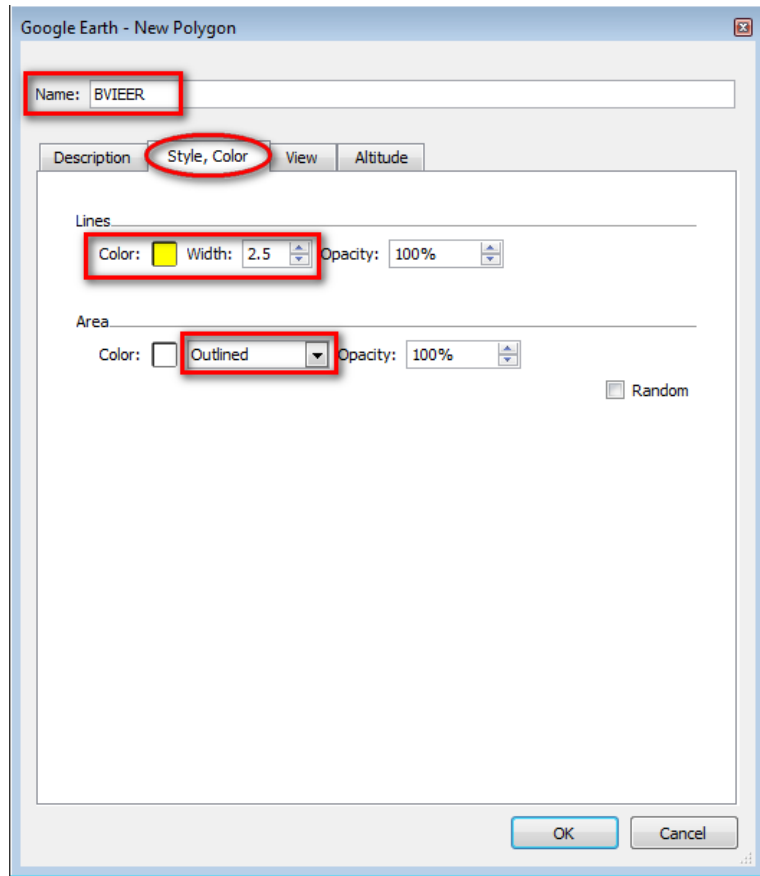
13. Now start digitizing the polygon of *BVIEER* by using left mouse button to place vertices, once you completed with the digitizing the building click on '***OK***' in *New Polygon* window.
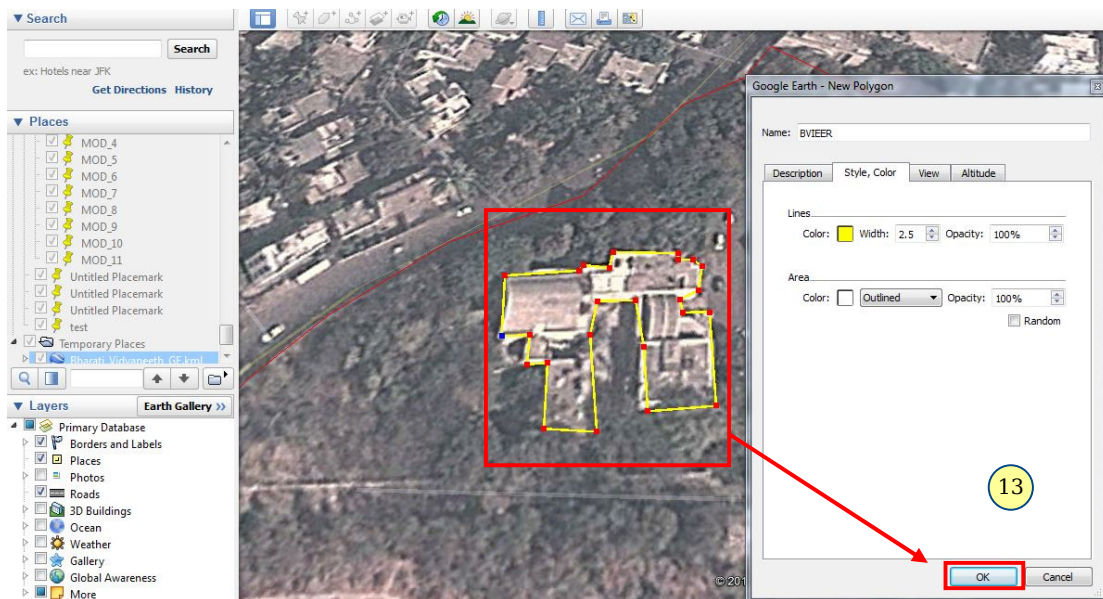
14. You can use the same procedure to digitize the rest of the buildings. Now we will save the digitized polygons to '*KML*' via Right-click on the folder contain digitized polygons here on '***BVU_Colleges*** and select '***Save Place As...***' Now navigate to the desired destination folder and give a proper name for example '***BVU_Colleges***', and *save as type* as '***Kml (*kml)***' click on '***Save***' in the popup window.
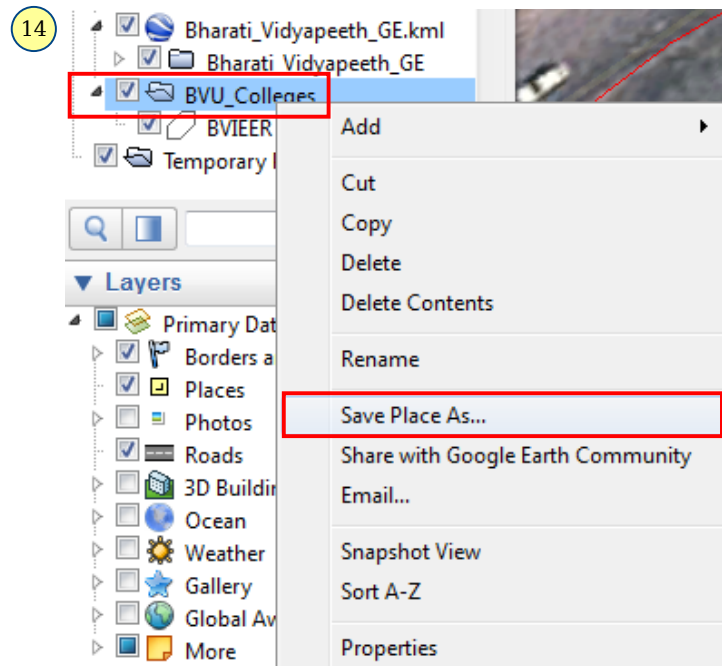

Task 1: Now digitize the road features by using on '***Add Path***' and trees by using '***Add placemark***' and export them as *Kml* files.

Exercise 3: Importing Kml file to shapefile by using QGIS

In this exercise we will import the digitized Kml in above exercise to shapefile by using QGIS.

15. Now add the digitized *Kml* file by using '*Add Vector layer*' refer *Step 1* for help. While browsing through the folders make sure that the file types set to '***.kml***'.
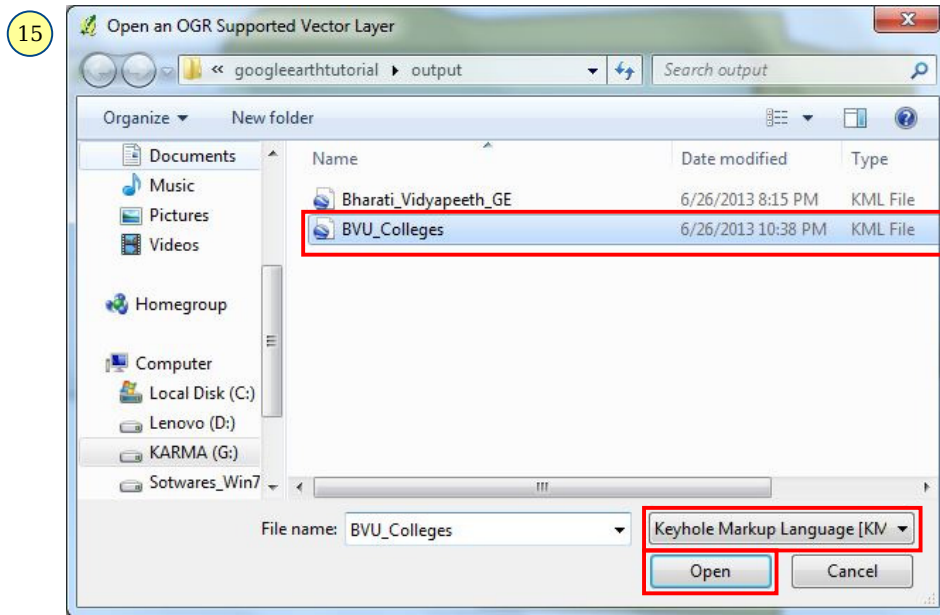
16. After adding the *Kml* file to QGIS map canvas→ '***Right-click***' on the *Kml* layer → To convert this layer into shape file format click on '***Save As'***.
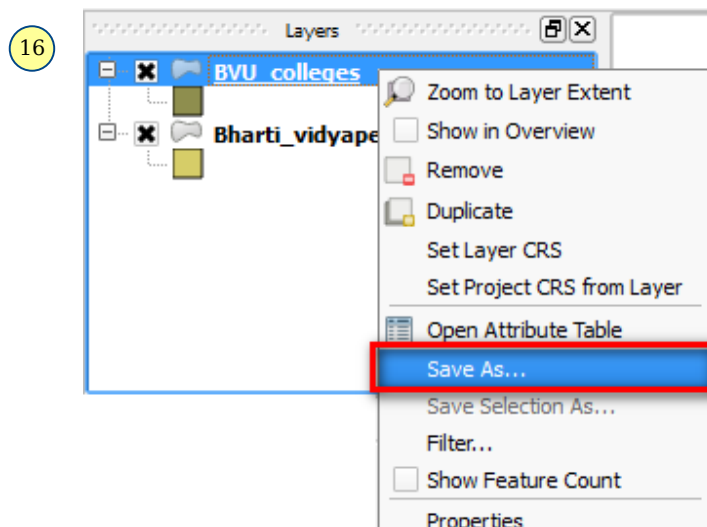
17. In the '*Save As*' popup window, change the format from '***Keyhole Markup Language[KML]'*** to '***ESRI Shapefile'*** and browse for desired destination folder and name it as '***BVU_Colleges***' click on '***OK***' to convert it into shapefile.
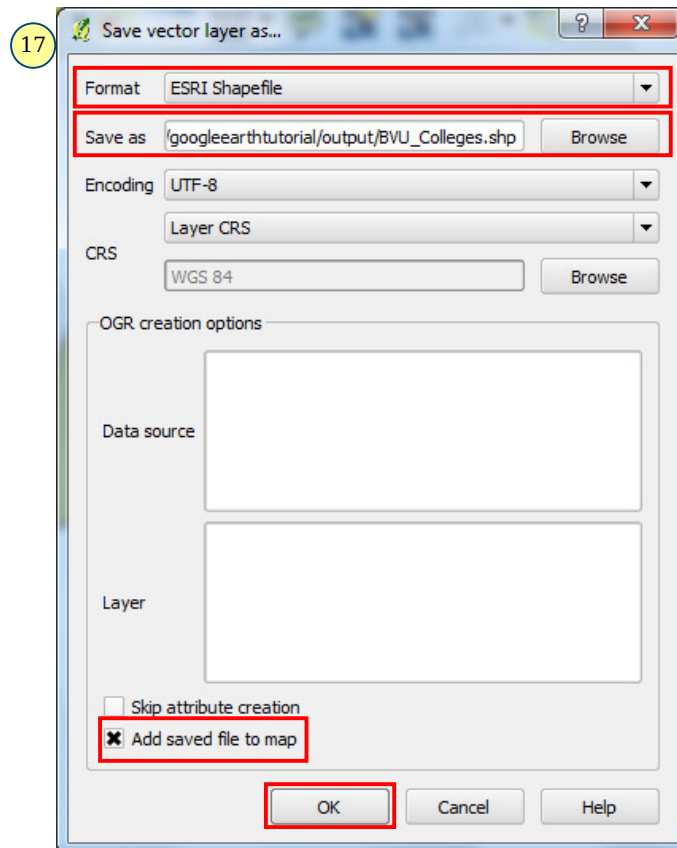
Task 2: Convert the road and trees Kml files digitized in task 1 to shapefile format

Exercise 4: Installing OpenLayer Pulgin

In this section we will learn how to install the *OpenLayer Plugin*. This pulgin helps to add the Google, Yahoo, OSM and Bing layers as base maps to the QGIS Map canvas. These layers can be used for visualization and as well as base map for digitization.

18. Change the layer style of '***Bharti_vidyapeeth_boundary.shp***' from '*Simple fill*' to '*Out line*'. To do this **double click** on the layer to open the properties. Click on '*Style'* tab to change the style.

19. Under symbol layers window click on '***Simple Fil***l' so that the editing of the style is possible.

20. Then select symbol layer type as '***Outline: Single Line'****.* Change the colour of the boundary to your desired color by clicking color palette. Once you finish up with editing click '***OK***'
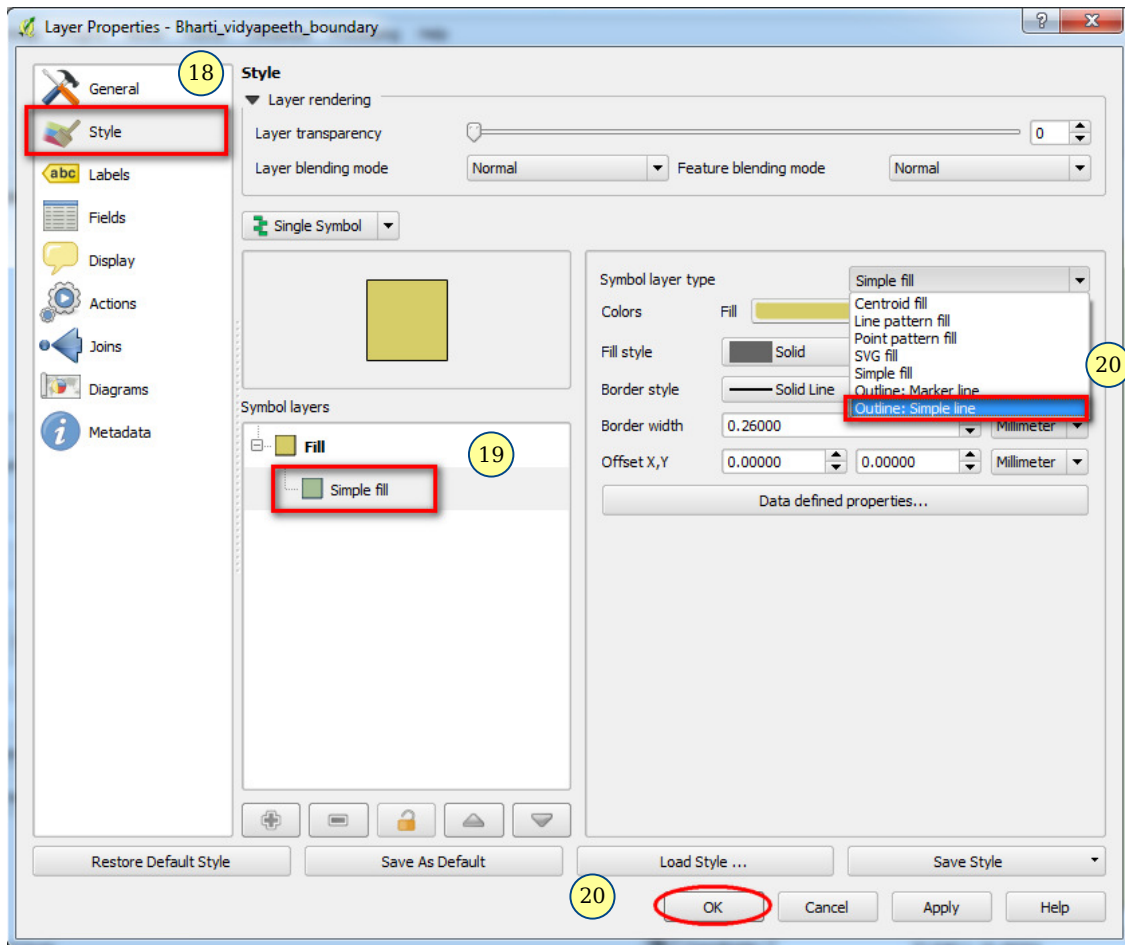
21. Go to '**Plugins'** in menu bar and click on '**Manage and Install Pulgins…'.**
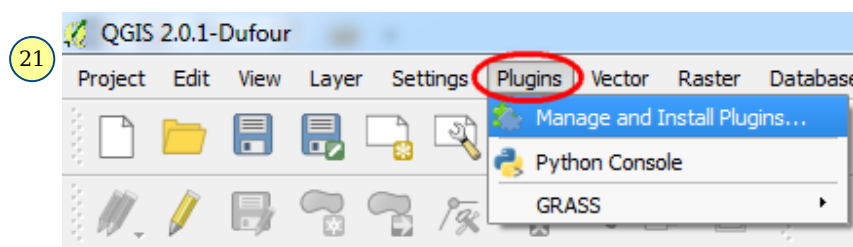

22. After completion of *Fetch* → click on '**Get More'** Type '**Open**' in the search tab. it will short the list of pulgins → Select '**OpenLayers Plugin**' → Click on '**Install Plugin**' button. It will install the plugin in to QGIS.
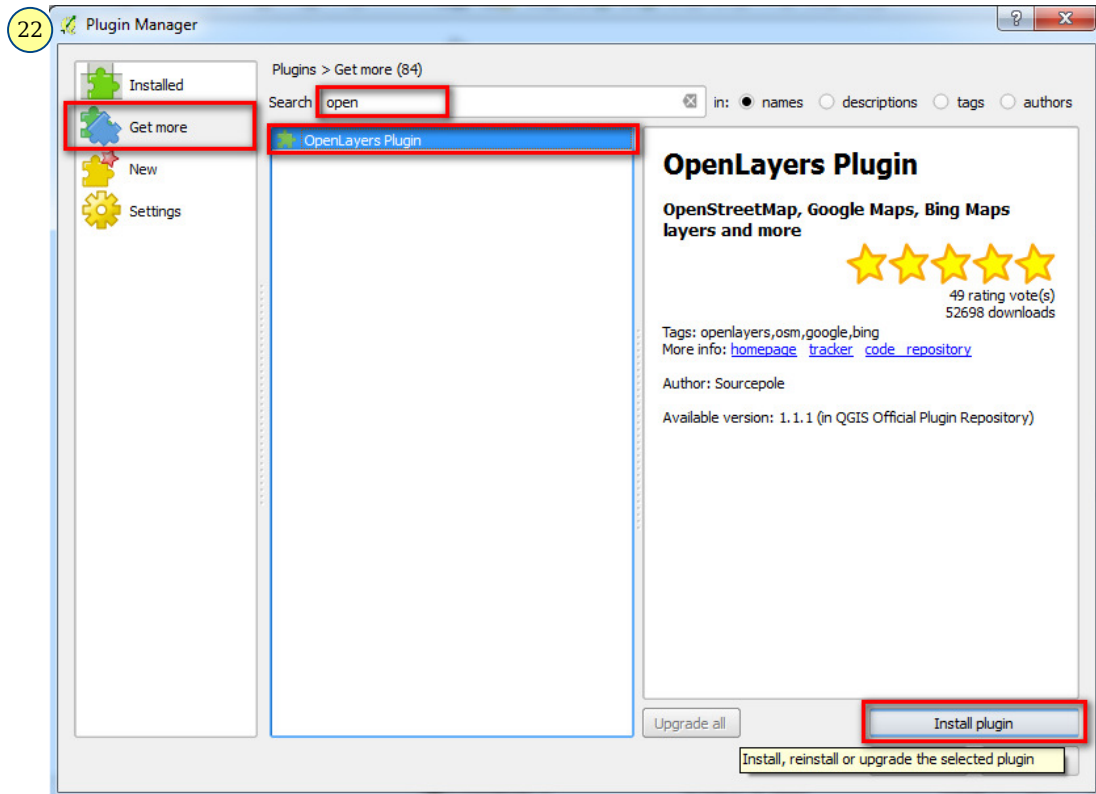
23. After installation of '**OpenLayer Plugin**' → Click on '**OK**' in popup window → click on '**Close**' in *QGIS Python Plugin Installer* window.

24. Now add the Google hybrid layer by using '**OpenLayer Plugin**' via, *Menu bar →Plugins → OpenLayers plugin →Add Google Hybrid layer*.
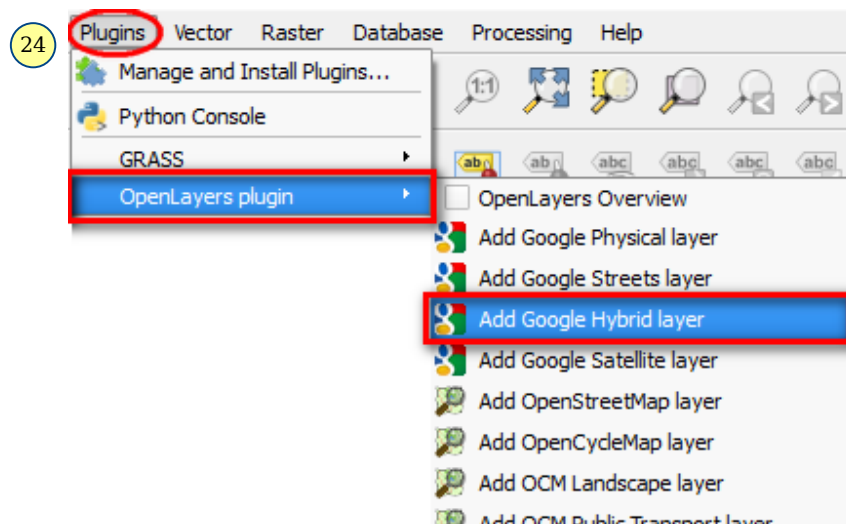
25. After a while you will notice *Google Hybrid* layer adds to the map canvas. Rearrange the Layers by bringing '*Google Hybrid*' layers to the bottom.
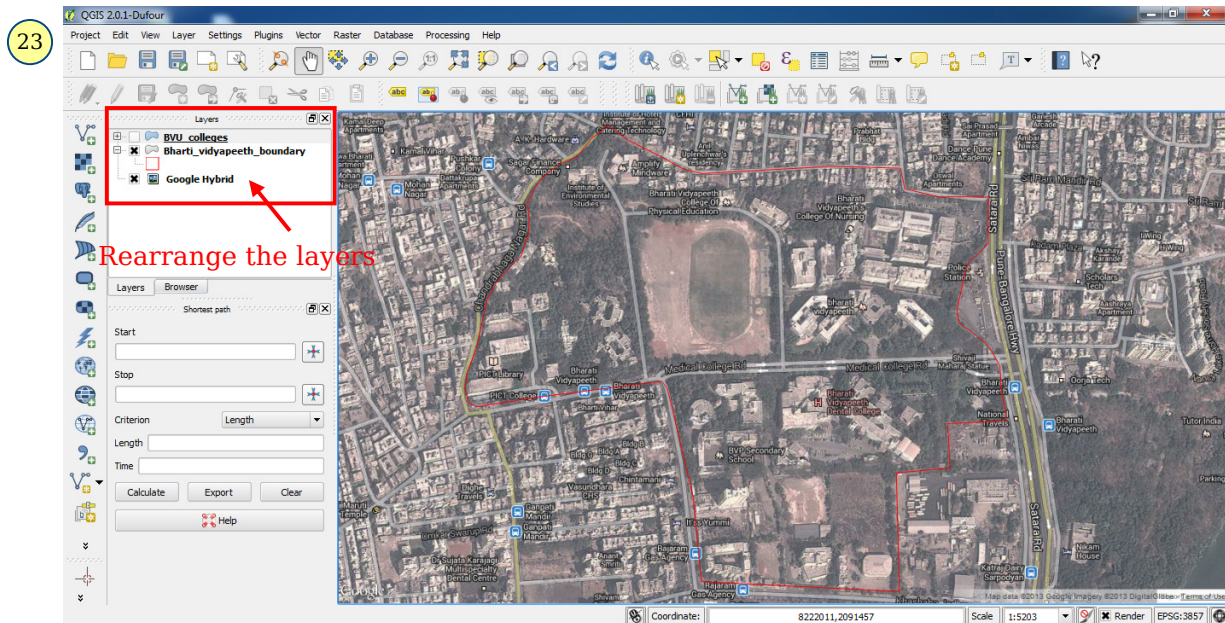
26. You may see the Google hybrid layer contains the high resolution imagery and as well as the attributes. This is very helpful to us to digitize and insert attributes at a time. Following figure showing the Open Street Map of BVU.
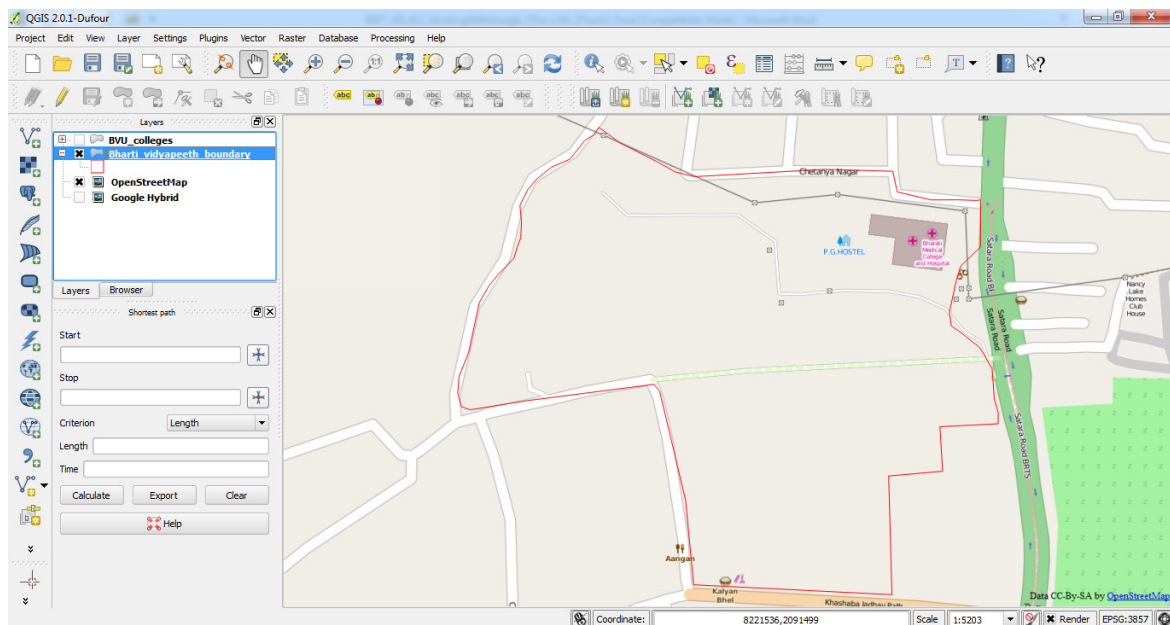
Task 3: Explore the other Open layers provided by the '*OpenLayers Plugin*' and write a brief note about features described in each layer.

Task 4: Refer *IGET_GIS_005: Digitization* and *IGET_GIS_006: Map Making* tutorials to prepare the map of *Bharati Vidyapeeth University*. You can see the sample map of BVU as prepared with the help of *OpenLayers* plugin shown below.