



# Proceedings of the 2nd training material on basic Quantum Geographic Information System (QGIS)



**Bangladesh Forest Department**  
**09 – 10 January 2017**

**UN-REDD**  
PROGRAMME



The UN-REDD Programme, implemented by FAO, UNDP and UNEP, has two components: (i) assisting in developing countries to prepare and implement national REDD strategies and mechanisms; (ii) supporting the development of normative solutions and standardized approaches based on sound science for a REDD instrument linked with the UNFCCC. The programme helps empower countries to manage their REDD processes and will facilitate access to financial and technical assistance tailored to the specific needs of the countries.

The application of UNDP, UNEP and FAO rights-based and participatory approaches will also help ensure the rights of indigenous and forest-dwelling people are protected and the active involvement of local communities and relevant stakeholders and institutions in the design and implementation of REDD plans.

The programme is implemented through the UN Joint Programmes modalities, enabling rapid initiation of programme implementation and channelling of funds for REDD efforts, building on the in-country presence of UN agencies as a crucial support structure for countries. The UN-REDD Programme encourage coordinated and collaborative UN support to countries, thus maximizing efficiencies and effectiveness of the organizations' collective input, consistent with the "One UN" approach advocated by UN members.

The UN-REDD Bangladesh National Program is implemented by the Bangladesh Forest Department under the leadership of Ministry of Environment and Forests. United Nations Development Program (UNDP) and Food and Agriculture Organization (FAO) are the two implementing partners.

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## **Disclaimer**

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## **EXECUTIVE SUMMARY**

The training followed a structured and sequential method on the basis of the needs and the training methodology was fully interactive and hands on with the participation of 14 forest officers and RIMs officials.

- Printed agenda was provided to all the participants and all were presented and discussed in an easy, understandable manner.
- All the training sessions were interactive and the questions and difficulties were solved during practice session.
- All the participants were evaluated to know their enhanced capacity through a subject oriented test.

Total 20 participants (14 male and 6 female) attended the training.

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## 1. Background

The first national forest inventory for Bangladesh was implemented in the year 2005 with the support from FAO. The inventory was conducted using a systematic sampling design, based on measurement of 299 plots distributed across the entire country. Based on the existing national forest assessment data and additional accessible field inventory and model data, the aim of this training is to provide support on data management and analysis, quality control and assurance.

QGIS (previously known as Quantum GIS) is a community driven free and open-source desktop geographic information system (GIS) application that provides data viewing, editing, and analysis. Similar to other software GIS systems, QGIS allows users to create maps with many layers using different map projections. Maps can be assembled in different formats and for different uses. QGIS allows maps to be composed of raster or vector layers. Different kinds of raster images are supported, and the software can georeference images. QGIS has a small file size compared to commercial GIS's and requires less RAM and processing power; hence it can be used on older hardware or running simultaneously with other applications where CPU power may be limited. QGIS supports dxf, shapefiles, coverages, and personal geodatabases. MapInfo, PostGIS, and a number of other formats. Web services, including Web Map Service and Web Feature Service, are also supported to allow use of data from external sources.

A number of public and private organizations have adopted QGIS. Innovative use of QGIS plugins such as Open Street Map (OSM) may also provide efficiencies for the inventory process. OSM's functionality that provides geo-referenced printed maps that can be marked in the field and then uploaded and digitised may be useful for monumenting permanent sample inventory plots and assist in the archiving process.

## Objective

- Identify baseline capacity of GIS capacity external to RIMS
- Increase sustainability of GIS capacity at FD by targeting participants outside of RIMS
- Increase capacity on basic GIS operations

## Used Methodology

The training followed a structured and sequential method on the basis of the needs and the training methodology was fully interactive and hands on with the participation of 14 forest officers and RIMS officials.

- Printed agenda was provided to all the participants and all were presented and discussed in an easy, understandable manner.
- All the training sessions were interactive and the questions and difficulties were solved during practice session.
- All the participants were evaluated to know their enhanced capacity through a subject oriented test.

## QGIS Interface

To launch QGIS, click: **Start -> All Programs -> QGIS -> QGIS Desktop**. QGIS normally adds the version number after "QGIS", which is currently 2.16.2. The main windows of QGIS can be divided into three regions shown in Figure 1.

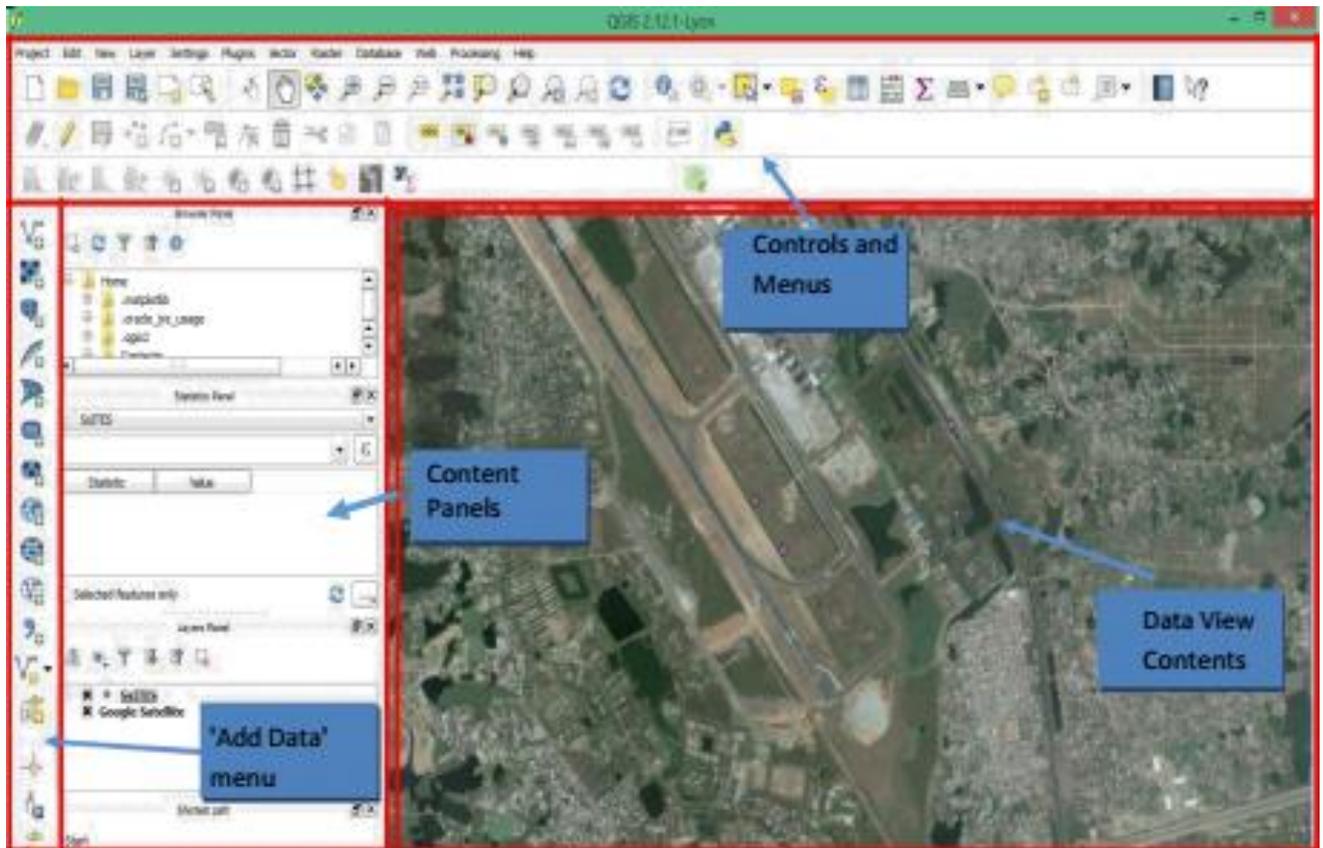


Figure 1. The Main Window of QGIS showing Region

### Frequently-used File Formats in QGIS:

- **Feature Data:** Feature data are usually organized as points, lines, and polygons in vector format.
- **Shapefile:** The most commonly used geospatial data format. Although it appears to be one file in ArcMap, shapefile includes **multiple files** with the same file name, but different extensions. \*.shp, \*.dbf, and \*.shx are must-have.
- **Personal Geodatabase:** These files are based on Microsoft Access (\*.mdb). From user perspective, all kinds of geodatabase are the same, which include multiple layers (different geospatial data) in one geodatabase.
- **MapInfo files:** The following three are legendary geospatial file formats. MapInfo is the first desktop GIS software for Windows. Its files (\*.tab) are widely used.

- **ArcInfo:** ArcInfo is the previous generation of ArcGIS. Its file (\*.e00) are supported in QGIS aswell.
- **Google Earth:** \*.kml and \*.kmz (zipped KML) are Google Earth file formats, which are popular in Location-Based Service now. Many websites support kml and kmz files.
- **GML and GeoJSON:** Open source geospatial data standard, which is also popular in online applications.
- **GPS:** The track of GPS records can be imported into QGIS as \*.gpx files. This function is very useful in surveying.
- **CSV:** \*.csv files stands for comma separated value, which can be regarded as a legendary spreadsheet file format.
- **Raster Data:** Raster data uses grid to represent a region with values as a “field”. Images explicitly have the parameter of resolution. Typical raster data is:
  - **GeoTIFF:** They have the file extension of \*.tif. The key difference between normal TIFF file and GeoTIFF is that GeoTIFF has projection information. Hence, normal TIFF files cannot be correctly added to the desired location.
  - **GeoJPEG:** Similar to GeoTIFF, but they have \*.jpg extension.
  - **Usage:** Raster data can be air photos, satellite images, elevation data (DEM). But raster data tends to be huge and slow to load.

### 3. Loading and Integrating Different Formats of data with QGIS

#### 3.1 GPS to QGIS

There are dozens of different file formats for storing GPS data. The format that QGIS uses is called GPX (GPS eXchange format), which is a standard interchange format that can contain any number of waypoints, routes and tracks in the same file.

To load a GPX file you first need to load the plugin. **Plugins**  **Plugin Manager...** opens the Plugin

Manager Dialog. Activate the  **GPS Tools** checkbox. When this plugin is loaded two buttons with a small handheld GPS device will show up in the toolbar:



Create new

- GPX Layer



GPS Tools

For working with GPS data we provide an example GPX file using which the following steps have to be performed-

1. Select **Vector >GPS >GPS Tools** or click the  icon in the toolbar and open the **LoadGPX file** tab (see [figure GPS 1](#)).
2. Browse to the folder `qgis_sample_data/gps/`, select the GPX file `national_monuments.gpx` and click **[Open]**.

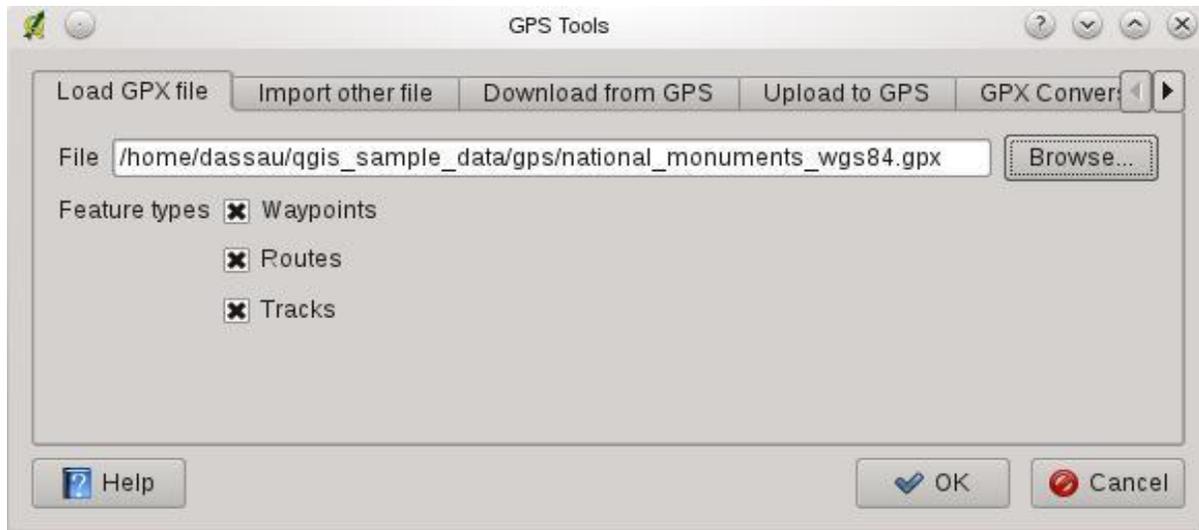


Figure 2.:The GPS Tools dialog window

Use the **[Browse...]** button to select the GPX file, then use the checkboxes to select the feature types you want to load from that GPX file. Each feature type will be loaded in a separate layer when you click **[OK]**. The file `national_monuments.gpx` only includes waypoints.

### Note

*GPS units allow to store data in different coordinate systems. When downloading a GPX file (from your GPS unit or a web site) and then loading it in QGIS, be sure that the data stored in the GPX file uses WGS84 (latitude/longitude). QGIS expects this and it is the official GPX specification.*

### Importing GPS data

To import GPS data from a file that is not a GPX file, you use the tool **Import other file** in the GPS Tools dialog. Here you select the file that you want to import (and the file type), which feature type you want to import from it, where you want to store the converted GPX file and what the name of the new layer should be. Note that not all GPS data formats will support all three feature types, so for many formats you will only be able to choose between one or two types.

## 3.2 Loading Vector data (shapefile)

Click the **Add Vector Layer**  button to add geospatial data (Figure 2), which opens a window (Figure 3)

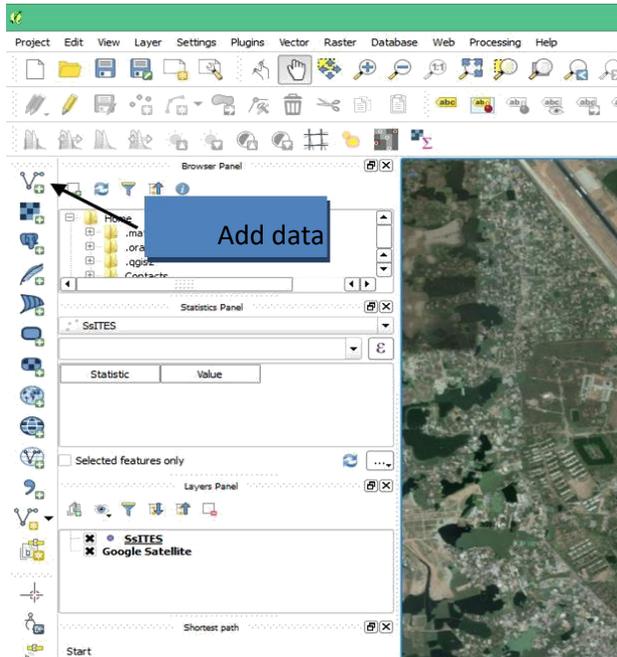


Figure 3. A. The Main Window : Add Vector Layer button

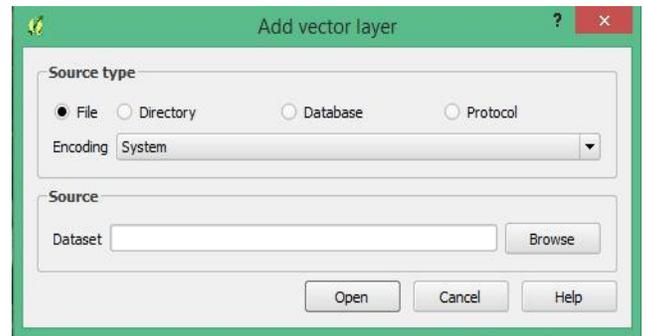


Figure 3.B. The Pop-up Window to "Add Vector Layer"

Then you can browse to the file you want to work with by clicking the **Browse** button just like any other file explorer dialogs in Windows. You can open multiple files at one time by holding the **Ctrl** or **Shift** button when you are clicking the mouse button to make selections. The by-default file filter is \*.shp file (Figure 4). But there are many other choices, such as \*.kml (Google Earth) and \*.csv, much broader than ArcGIS.

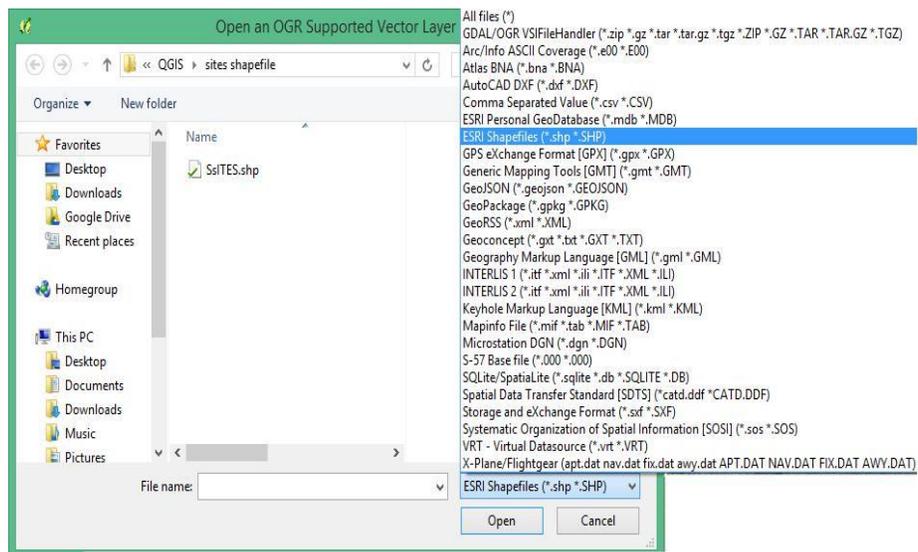


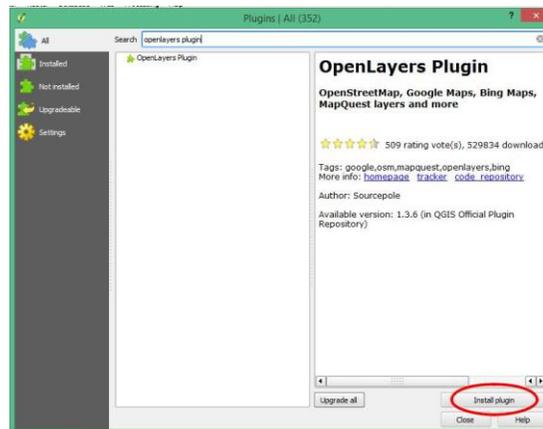
Figure 4. The File Open Dialog with File Filters

For example, you can browse Khulna\_Div.shp file from pov\_khl folder that was provided in Practice Data folder as your sample dataset.

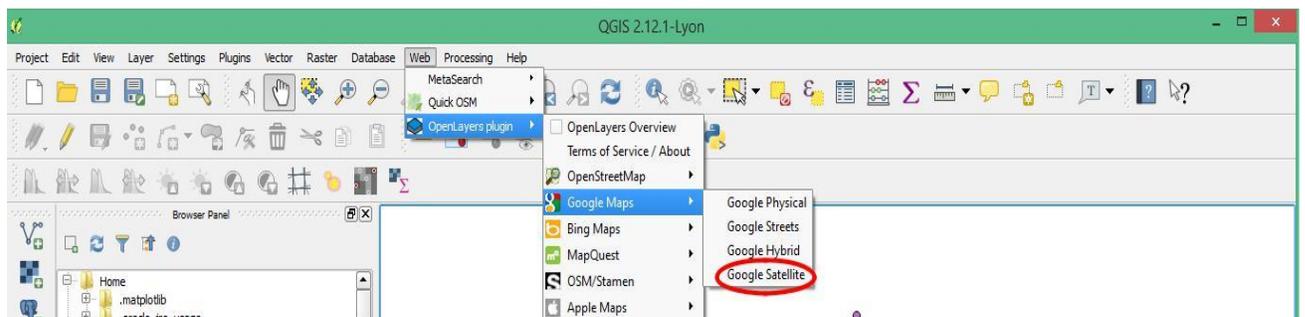
### 3.3 Load Google Maps ,Bing Maps and Openstreet Maps:

QGIS provides the flexibility of using Google (or Yahoo) Satellite images or Bing aerial images as a background layer in your map. To do so, follow the steps below:

1. Install the OpenLayers Plugin into QGIS:
  - a. Go to **Plugins -> Manage and Install Plugins**, which leads to a dialog.
  - b. Type '**Openlayers Plugin**' in the search box
  - c. Click on '**Install plugin**' and the '**Openlayers Plugin**' will be installed in your QGIS.
2. Add Google Satellite map as Background layer:



Go to the menu **Web ->Openlayers plugin ->Add Google Satellite Map**.



3. Add Bing Aerial Map as Background layer:

Go to the menu **Web ->Openlayers plugin -> Bing maps-> Bing aerial.**

4. Add Openstreet Map as Background layer:

Go to the menu **Web ->Openlayers plugin ->OpenstreetMap->OpenStreetMap**

### 3.4 Loading CSV File from excel and Modification of attribute table

A **CSV** is a comma separated values file, which allows data to be saved in a table structured format. CSV can be converted from an excel file and it is more necessary when we are using the data in QGIS. QGIS directly supports CSV file rather than an excel file. So, if you have an excel data to join, you must convert it into CSV file and then load into QGIS.

#### Conversion to CSV

- Open the Excel file in Microsoft Office Excel and save it as a new file
- Click on File>**Save As**> Select **CSV as Save as type**> **Save**

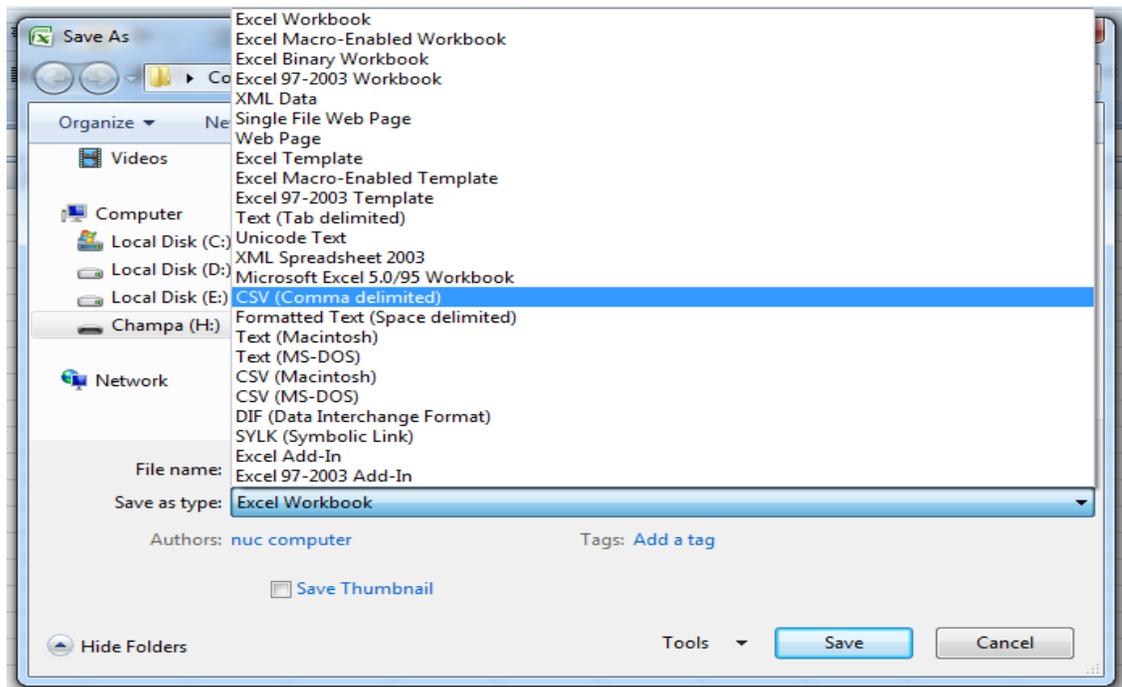


Figure 5. Pop-up window of Excel Save as type option

## 3.5 Loading CSV in QGIS

Now, the excel file has been converted into a CSV file and will be loaded into QGIS. Click on **Layer** on menubar>**Add Layer>Add Delimited Text Layer**. The point to be noted that there are two types of tabular data: one contains geographic data (x, y coordinates) and another contains descriptive data having in details information.

## 3.6 Creating KML layer in Google Map and Loading in QGIS:

Google map or Google Earth makes use of KML or keyhole markup language, to display features, which actually stores geographic features in Vector format. You can create KML file from Google map for mapping and displaying the same by again uploading the same KML file on Google map or created KML file converted from Shapefile. Before creating KML file on Google map, you should have an Google account and should be logged in with that. So that once KML file created, you would be able to see it in My Places of Google map after wards. You can also look link for how to create KML file from Google earth. Steps are following:

- Open **Google map** and sign in with all in one Google account.
- Click on **Menu** ( Left corner of search option)>**Your Places>Maps >Create Map** ( At the Bottom) ( A new window will open)
- Click on **Add layer** ( A new untitled layer will open)>**Layer Option** ( At the right corner with three dots) . You can rename , delete or see the table of the layer.

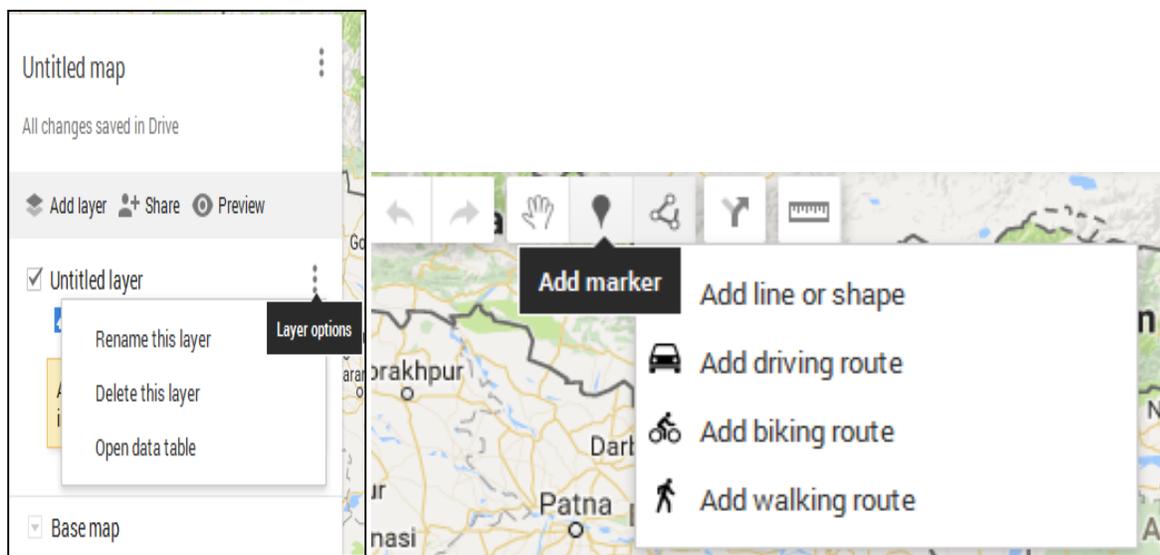


Figure 6 Layer Option Figure 6: The Drawing Options

- In the map window there are some drawing options. If you keep your cursor on the options, it will show you the name. **Add marker** is used only to put any points on map and **Add line or shape** is used for drawing any polygon or line. Before drawing, search your area in search options.

Note that while you are drawing any polygon, it will be a confined area and the starting and ending point will be the same. While drawing any feature, please complete your desired drawing with double click at ending point.

- When you have completed drawing any feature (point, line or polygon), a pop-up window will open to write the name and description about it and you will also find the edit and style options below the pop-up window.

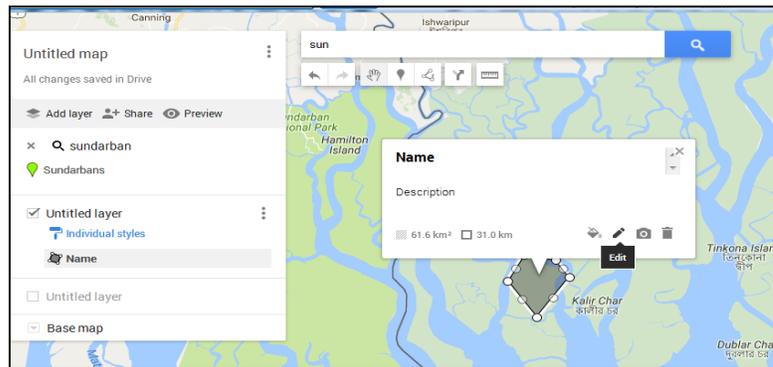


Figure 7. The pop-up window for feature details

- If you have completed drawing all the features under a layer, now it's time to export the layer as KML. From **Untitled map** at left top corner of the page, there are three dots as representing different options. Click on it and select **Export To KML**. A pop-up window will open and select the desired layer and download it. The layer has been saved as KML file.

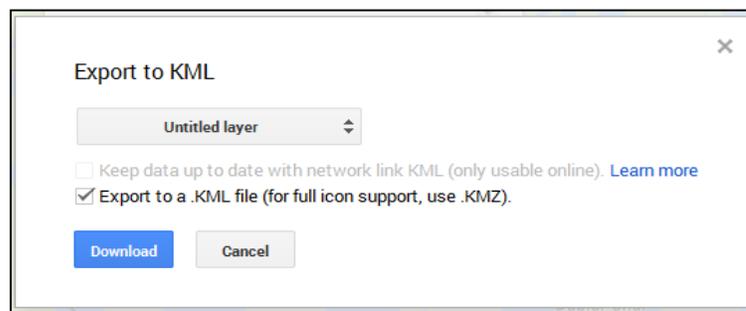


Figure 8. Pop-up window of Export to KML

- **Open QGIS desktop > Add Vector layer > Browse kml layer > Right click on kml layer > save it as a shapefile from Save as option**

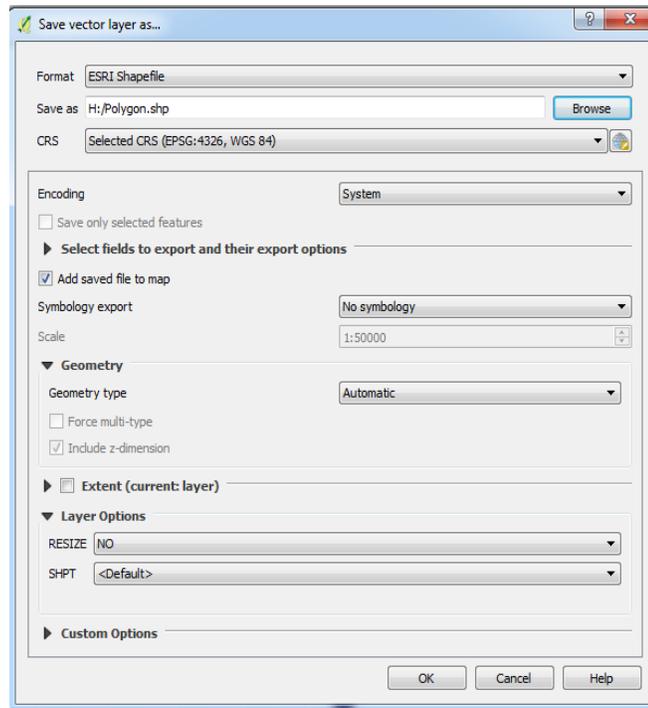


Figure 9. A pop-up window of save vector layer as option

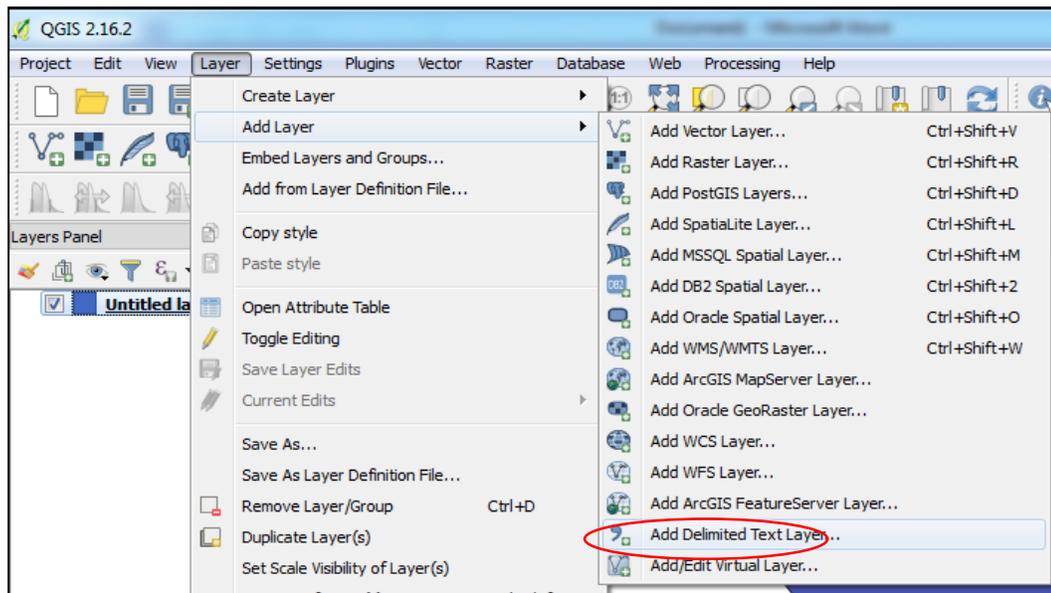


Figure 10. Pop-up window showing to Layer option

In case of geographic data, the file format will be CSV and geometry definition will be Point coordinates which will create a point layer in layer panel. Then you must save your layer as shapefile from *Save as* option by right clicking on the layer.

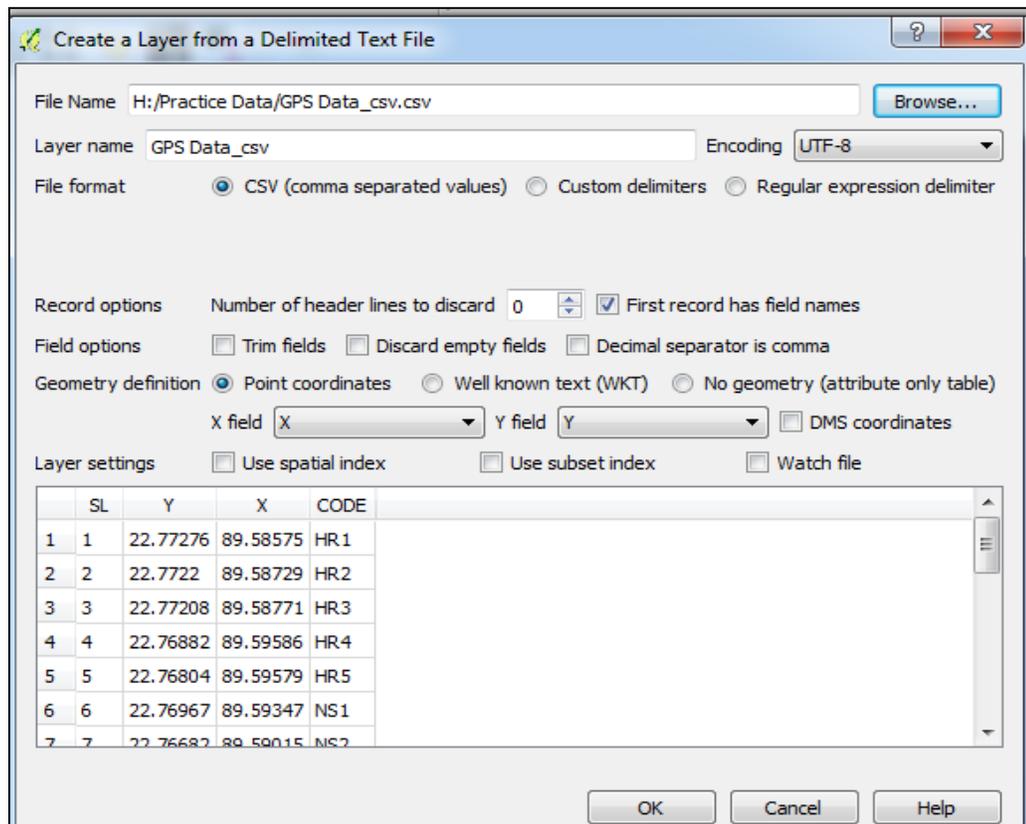


Figure 11. CSV browsing in case of geographic data

In case of descriptive data, file format will remain same as CSV but there be **NO geometry** in **Geometry definition** option but one thing to note down that this time data won't create any shapefile unlike geographic data as it is a descriptive file having no geometric points.

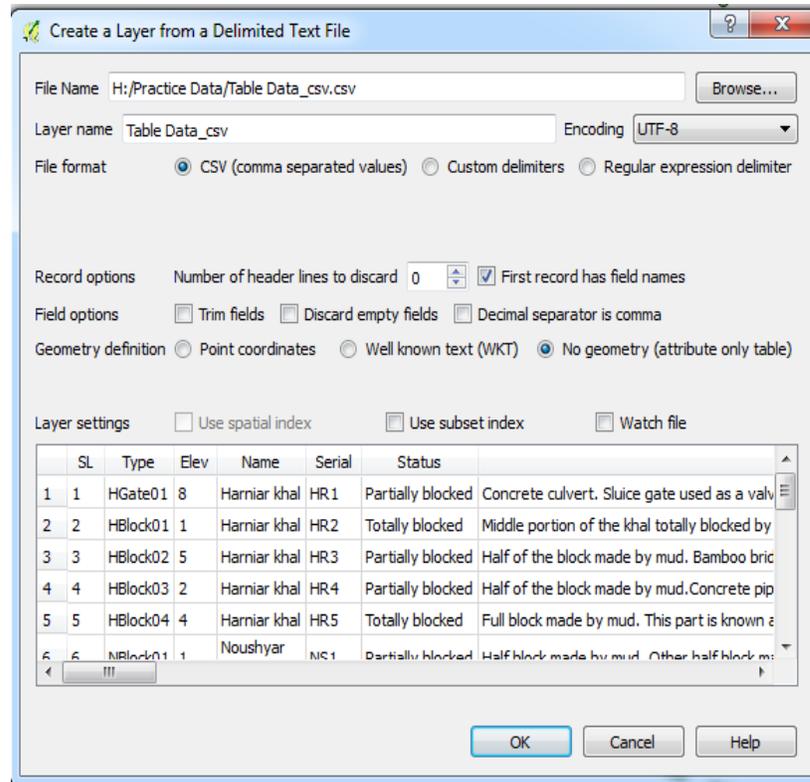


Figure 12. CSV browsing in case of descriptive data

### 3.7 Joining attribute table

If we have both geographic and descriptive data both for any specific location, we will generate a point shapefile from GPS data and there must be some common attributes like Serial number in both file on basis we can join both data. As the point layer is a shapefile , it's attribute table will expand after joining the description of the points. Besides, we can also join any tabular data with any shapefile with a condition of common coloumns in both .Steps are following:

- Right click on shapefile>**Properties>Joins**
- Click on plus sign (+) at the left bottom to add the the table
- **Join layer** will be the tabular descriptive data
- **Join Field** and **Target field** are the ncommon attributes we need to select
- Click on **Choose which fields are joined** and selecte the attributes according to requirements
- Then **Ok>** in next window **Apply>Ok**.

Now Open the attribute table of shapefile by right clicking and you will see the added columns in layer. But now, if we remove this layer now and then browse again you won't find the added field anymore as it wasn't saved when you added. So, whenever you are joining any data, just save it as another shapefile from **Save as** option and after that as much as you remove, you will find the data you added as same.

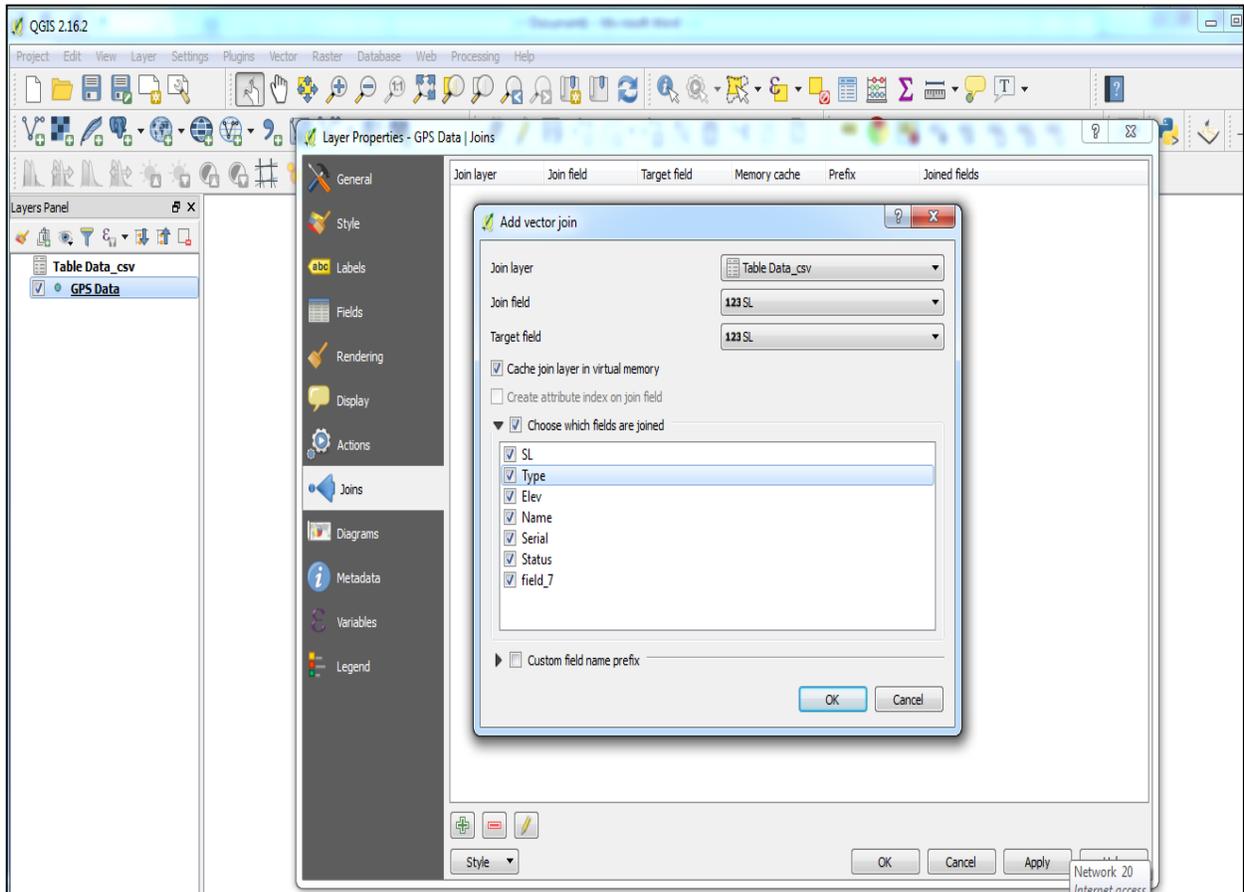
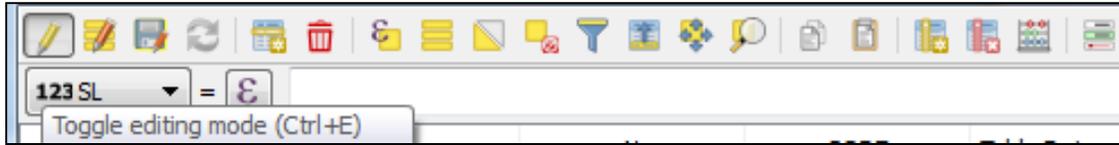


Figure 13. Pop-up window showing the join options

### 3.8 Editing in attribute table

As data input is very very manual, so it's not ever surprising if we find any typing mistake in attribute table. Then we need to make it correct or change anywhere if needed to use a correct data and from this point of view, editing is one of the most important part in attribute table modification. To edit, open the attribute table of the layer and click on the very first option, **Toggle editing mode** in toolbar. Now the editing mode is active and you can delete or change any text or number or calculate any field or create any new field or add any new feature.



### 3.9 Extracting selected attributes from table

While we are having huge dataset like any divisional map or any soil/forest map for a large area or any district map etc. having in detailed information and we want to work on a specific area or any specific attributes, we need to extract the data from the large dataset. The selection depends on the attributes we want to make an analysis over.

- Open the attribute table and click on **Select/ filter feature using from**( The view will be changed)
- Then **Column preview**> **select** the column in which desired attributes are existing
- Click on the attributes by pressing shift button you want to extract at left side ( The selected attributes will also be selected in map canvas)
- Now right click on layer and save it as a new shapefile from **Save as** option. Now the new shapefile contains the selected attributes only.

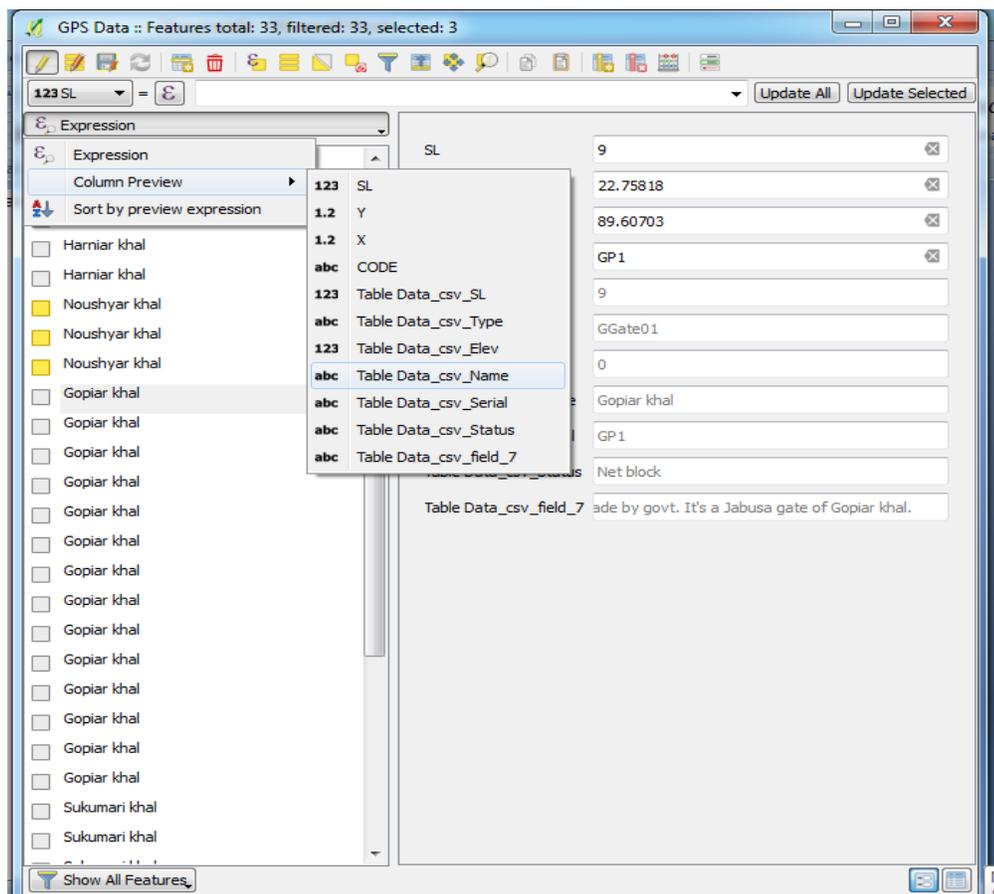


Figure. Pop-up window showing the select by attributes option

## 3.10 Extracting attribute table as an excel file

- Install the XY Tools into QGIS:
- Go to **Plugins -> Manage and Install Plugins**, which leads to a dialog.
- Type in the search box
- Click on **'Install plugin'** and the **XyTools** will be installed in your QGIS
- Select the layer in layer panel first and then click on **Vector>XY Tools>Save Attribute table as an excel file**
- Select the required fields and click on **ok**.

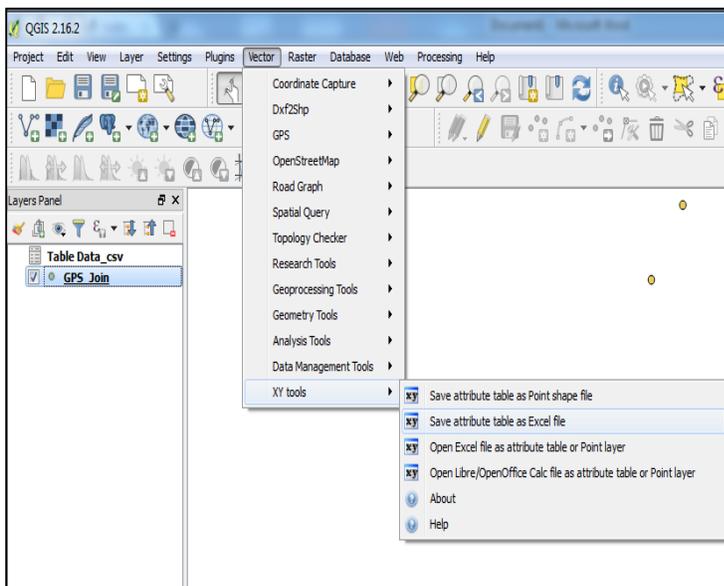


Figure 14. XY Tools option

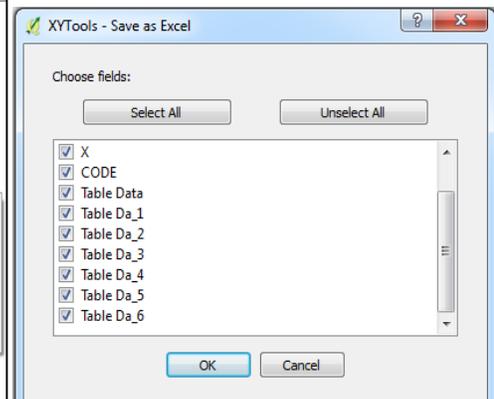


Figure 15. save as Excel option

## 3.11 Loading GPX File from excel and Using field calculator

GPX stands for GPS exchange Format that c

- Click on **ADD Vector layer > Browse GPX file format** using data type keeping GPX
- Select all the Layer

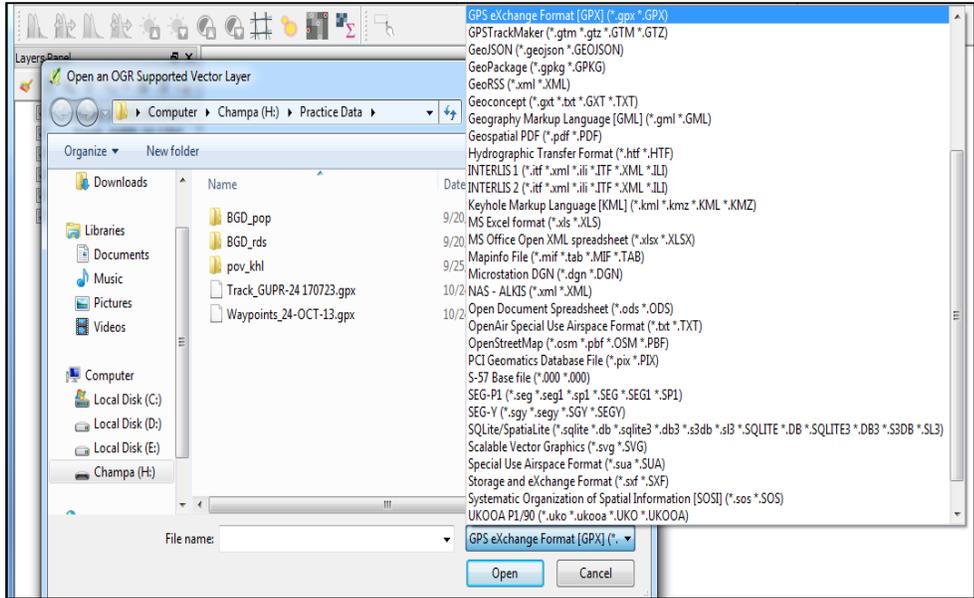


Figure 16. GPX Data Format

- Open Attribute table to check the data it contains. Waypoints , trackpoints have points in shapefile. Now we will calculate X and Y coordinates using Field calculator.

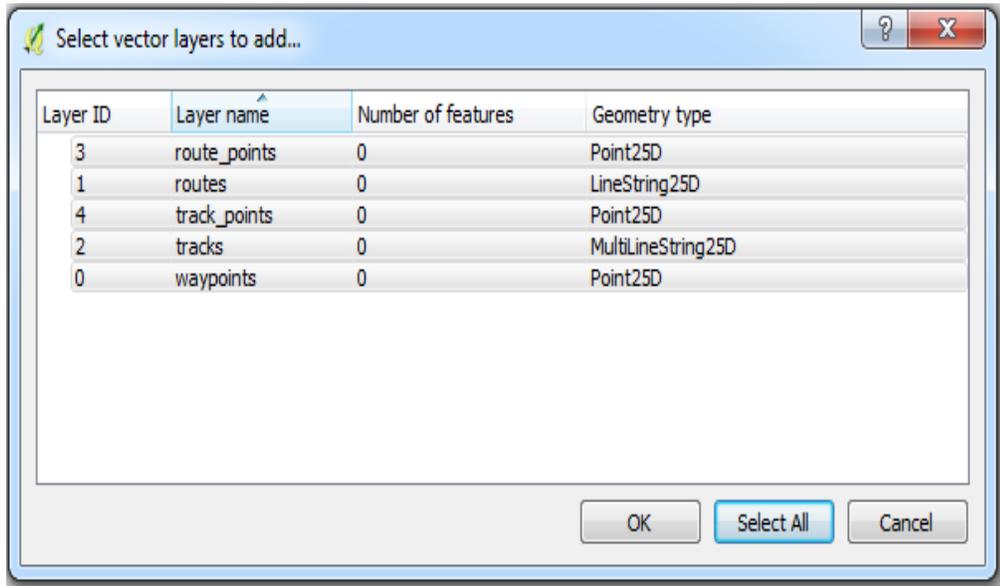
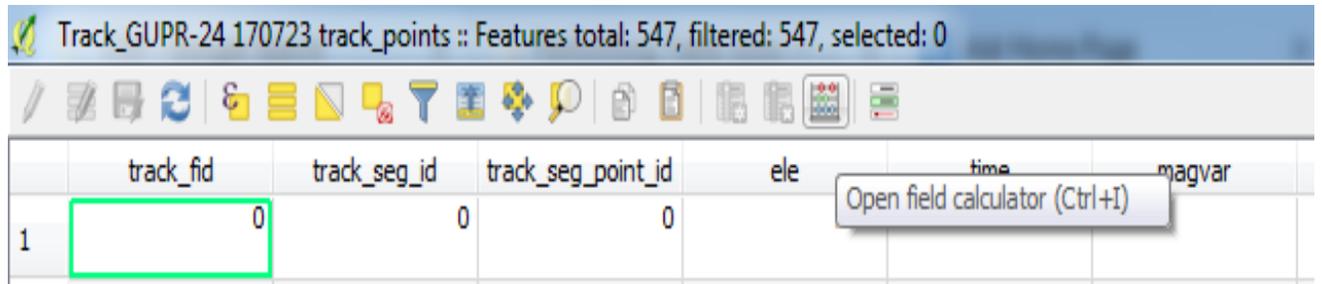


Figure 17. Pop-up window of Vector layer to add

- The point layer we want to add X and Y coordinates , need to open it's attribute table
- Click on **Open field calculator**



- Type field name , Field type, field length, precision and expression and Click on ok

Note that we are calculating latitude select \$y and double click on it to activate and while calculating longitude select \$X and double click on it. The field type will be decimal degree as it is coordinate.

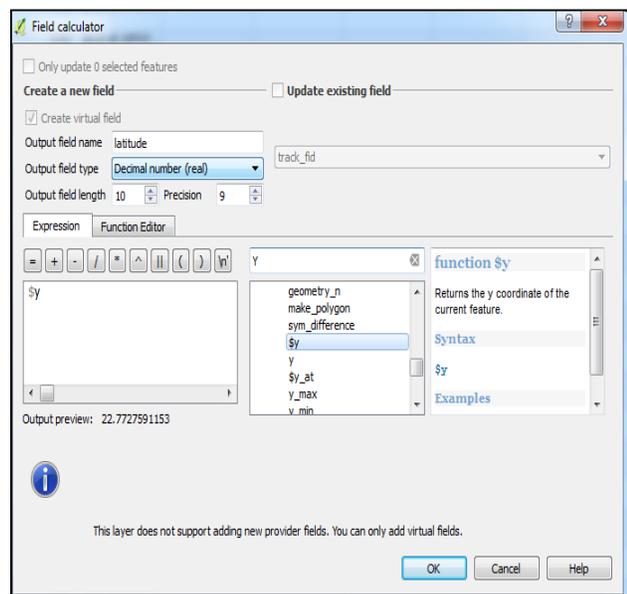


Figure 18. Pop-up window of Field calculator

## 5. Map Attributes: Labels and Symbology

### 5.1 Key Options of Geospatial Data Representations

Main options of changing geospatial data representations include layer order, layer transparency, symbology, label, and annotation. Apart from the first one (layer order) and last one (annotations), all the rest are located in the pop-up window when you right-click the layer you want to modify and select **property**. They are under either the **style** or **labels** tab.

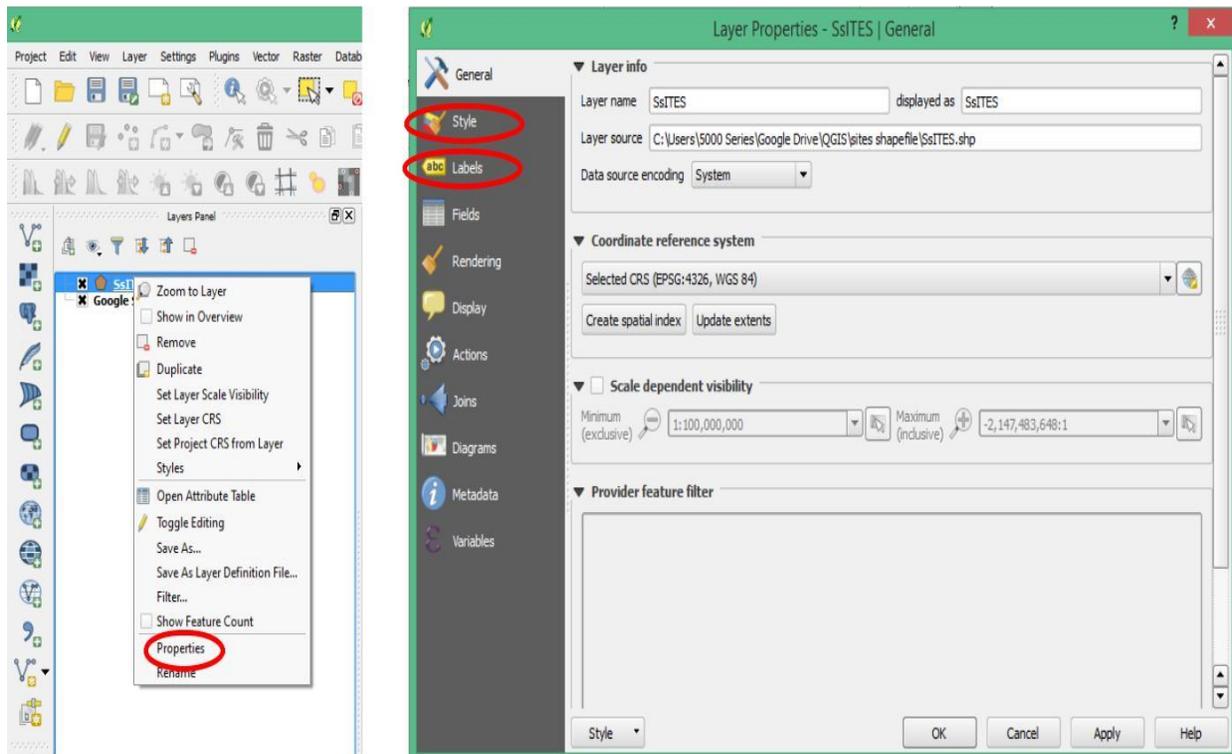


Figure 19. The Pop-up Window of a Layer's Property

Figure 28 : The Property Window

All options will be introduced as subsections in the following

### 5.2 Layer Order and Transparency

QGIS displays geospatial data according to the order in the table of contents: the bottom layer will be drawn on the screen first and covered by upper layer. Hence, the layer on the top in the table of contents will be displayed as the top layer in the map. Unlike ArcMap, QGIS will not order layers automatically.

When a feature layer (point, line or polygon) is put under a polygon-feature layer, the feature one is covered and invisible. You can change layer visibility by switching the checkboxes left to the layer name in table of contents (Figure). And the display order can be changed by simply dragging the layer toward or away from the top

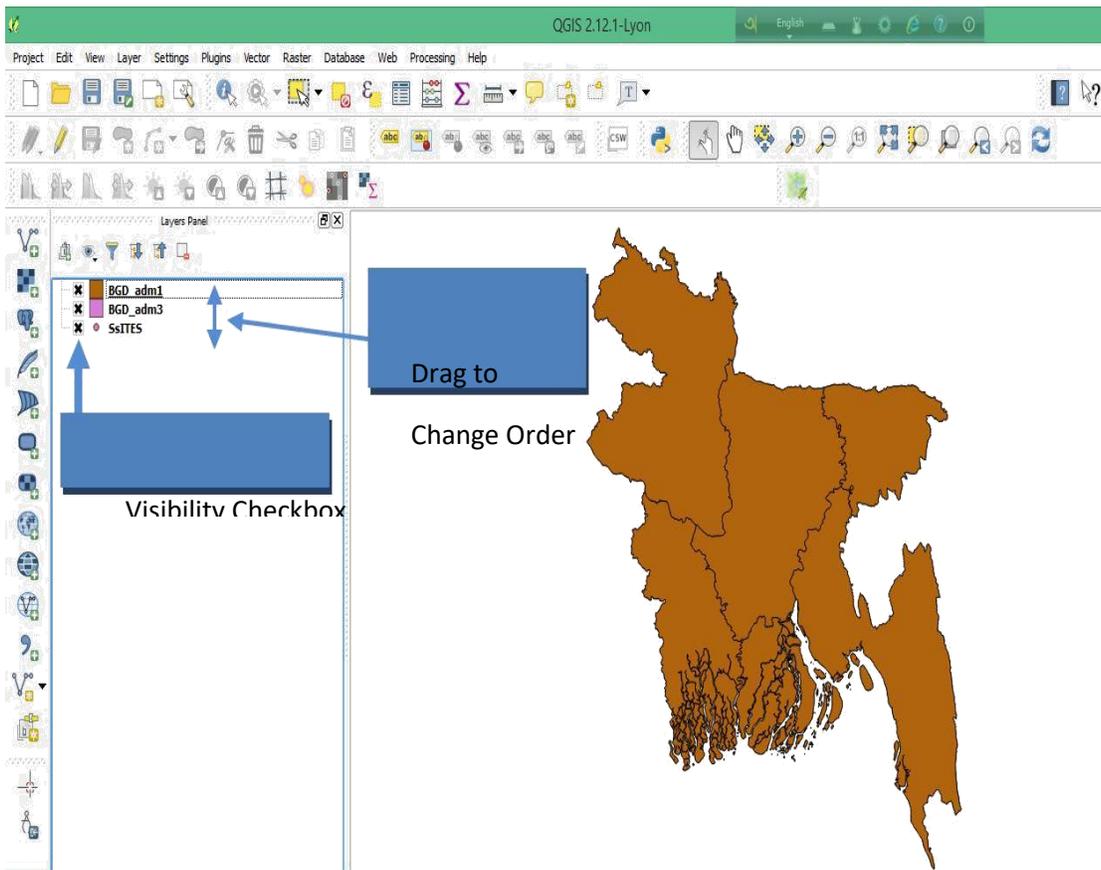


Figure 20. Layer Visibility and Order Control

When a polygon layer, such as buildings or parcels, is added over an image, the content on image under the building is often invisible. But sometimes users like to only show the parcel's boundary and keep the image displayed. In this case, layer transparency and hollow symbology can help. To do so, right-click on the polygon layer and select Properties first (Figure 8). Then switch to the tab Symbology and click on the symbol itself (Figure :Properties of style).

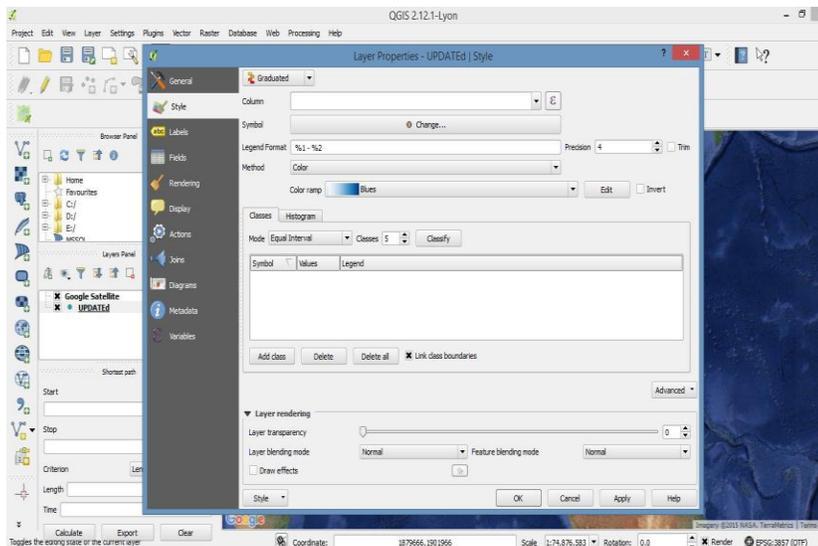


Figure 21. Properties of Style

## 5.3 Symbology and Label

Symbology or Style is critical in making maps, which are classified into four Legend type in QGIS (on the top of Figure). Due to its complexity, these four categories and their normal usages will be briefly introduced in the note region with further reading. We will only focus on symbol customization and classification symbols, which are mostly used. Unlike ArcMap, QGIS does not hold a large library of professional symbols. In fact, only point-feature layers can have different symbols (Figure), while line and polygon layers can only change line and fill options.

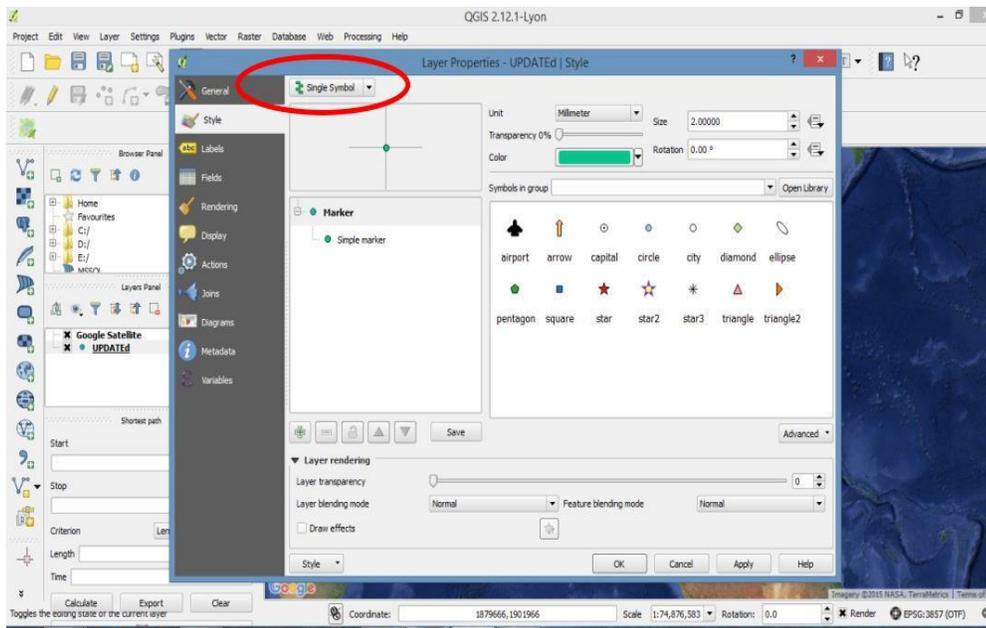


Figure 22. The Symbology or Style Customization Window

We can also categorized data depending on the categories in the Style option of Properties of a selected feature.

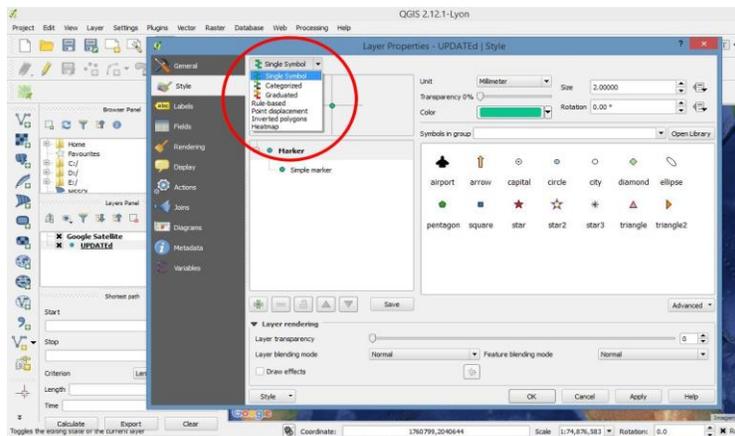


Figure 23. Categorization in Style option

Note that you can still customize individual symbols for each category (size, shape, etc) by double clicking the corresponding class on either the left pane or the line in Style window (Figure). The labels are an important feature of a map. By marking some property up on the map, for instance the name of the marked location, labels can make your map more useful, informative, and visually appealing. To add labels to your map, right-click on the layer that you want to add marks on and select Properties (Figure 8). Then follow the steps below:

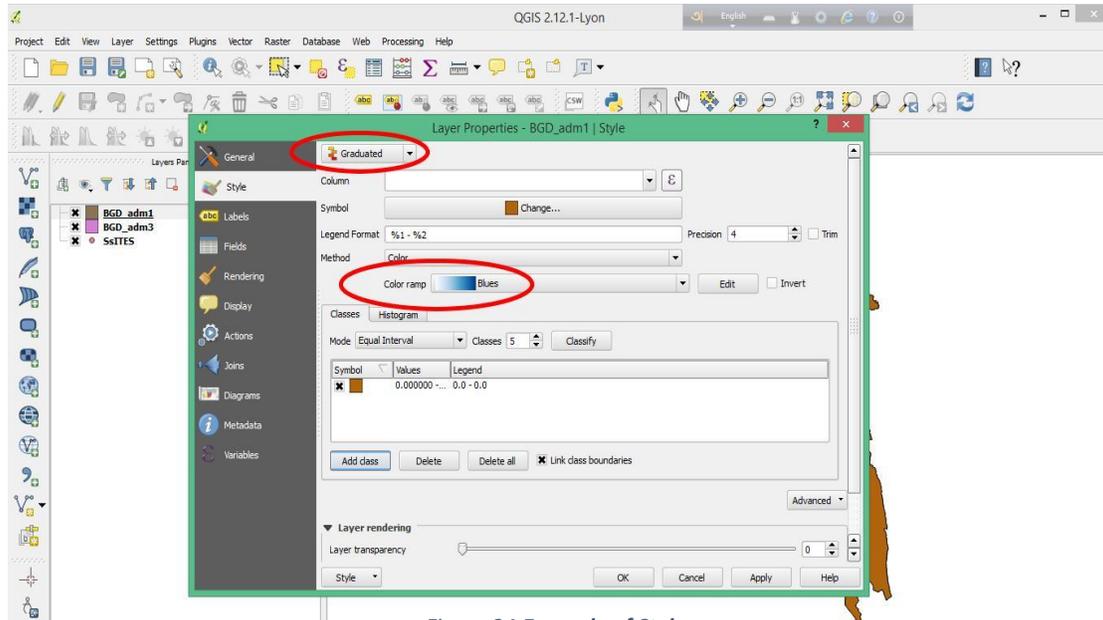


Figure 24. Example of Style

1. Select the Labels tab and check on (off by default) “Display labels”.
2. Choose the attribute you want to display on the map in the dropdown of Field Containing label
3. Change Font, so that it is clearly shown on the map.
4. You can click on the Apply button to see the effect until it is satisfactory. Then click OK to save your setting and exit.
5. (Optional) If you think the added labels are not distinct on the map background, you can make a buffer background around the texts. Please scroll down and check Buffer labels, which has the same effect of “mask” in ArcMap

*Example:* Graduated Map- To present variation of data within a region a graduated map can be developed by right clicking on the layer and select **Properties-> Style->** then select the options as the picture below. The class interval and the class breaks can be customized by clicking on them.

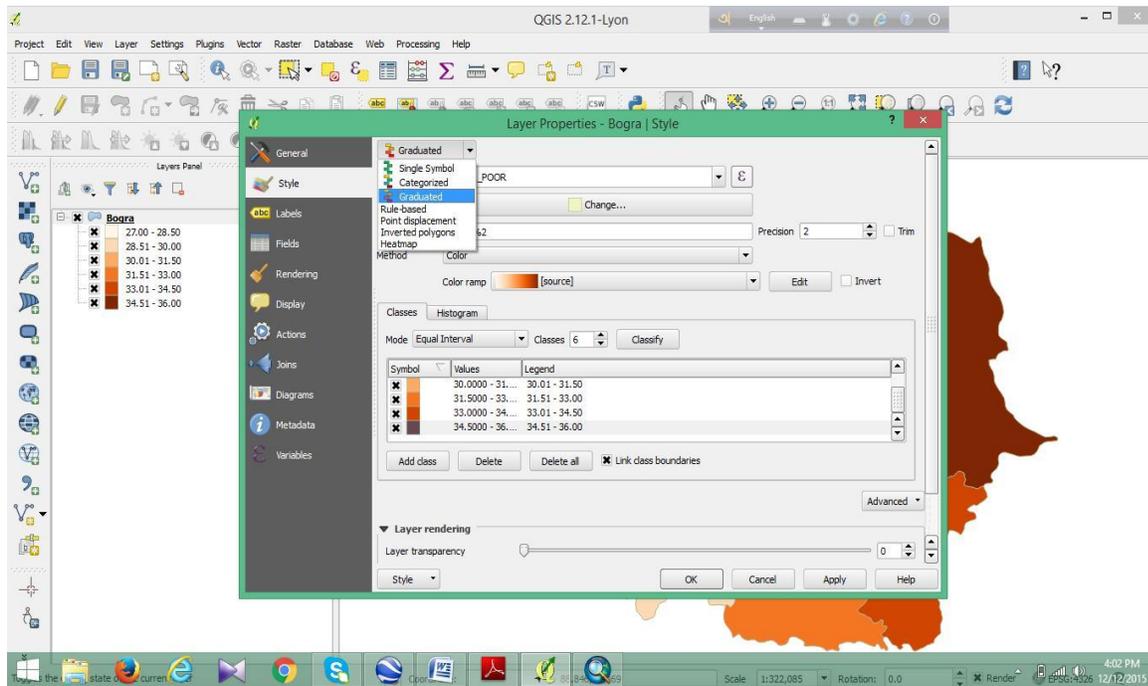


Figure 25. Selecting Graduated properties

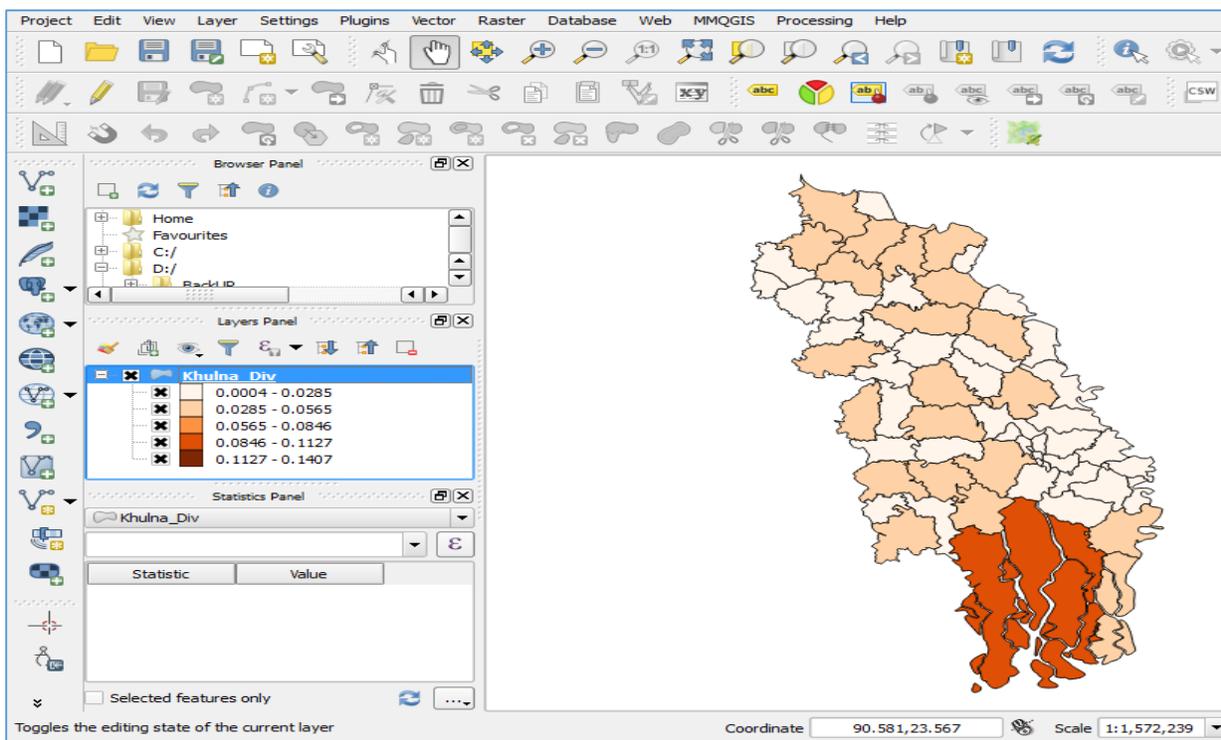


Figure 26. Graduated Map

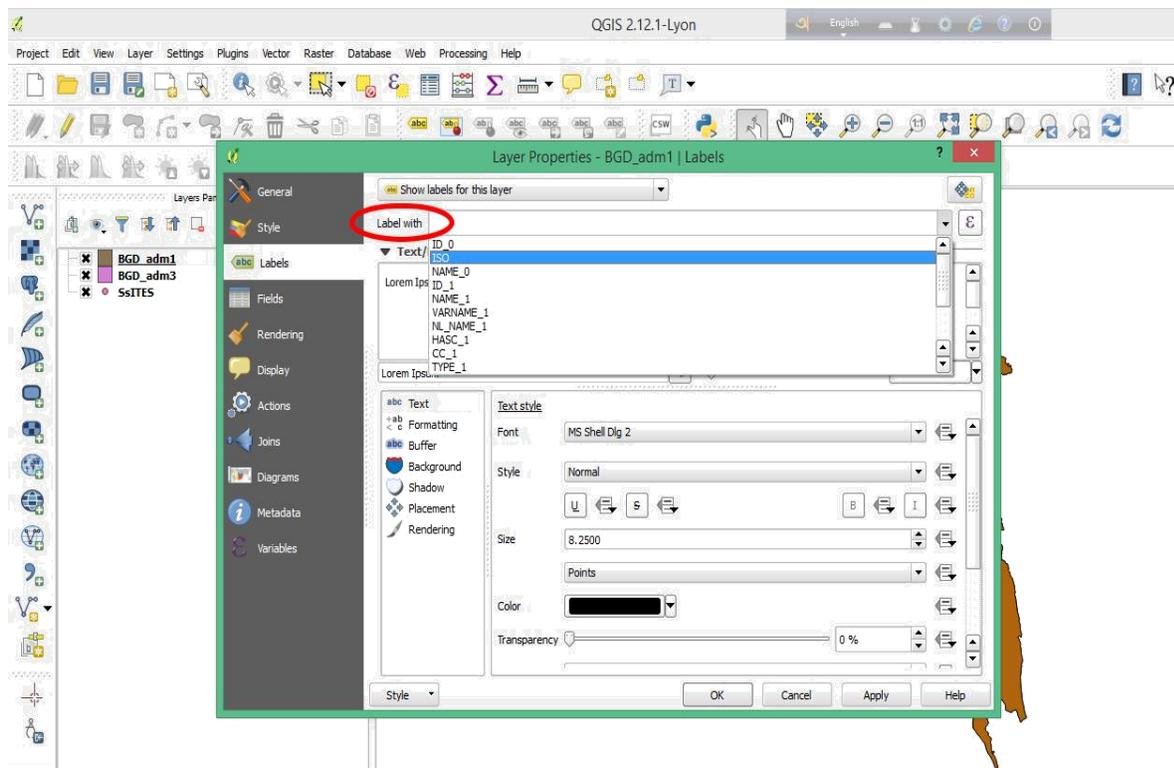


Figure 27. Labels setting window

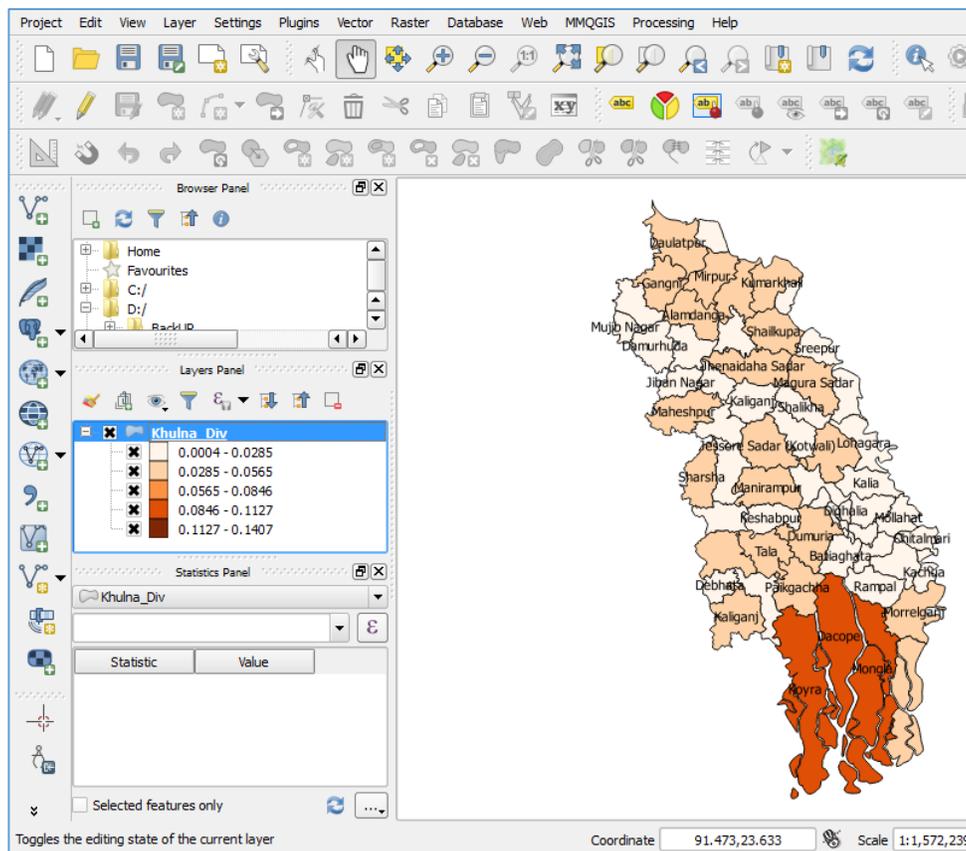


Figure 28. Graduated Map with labels

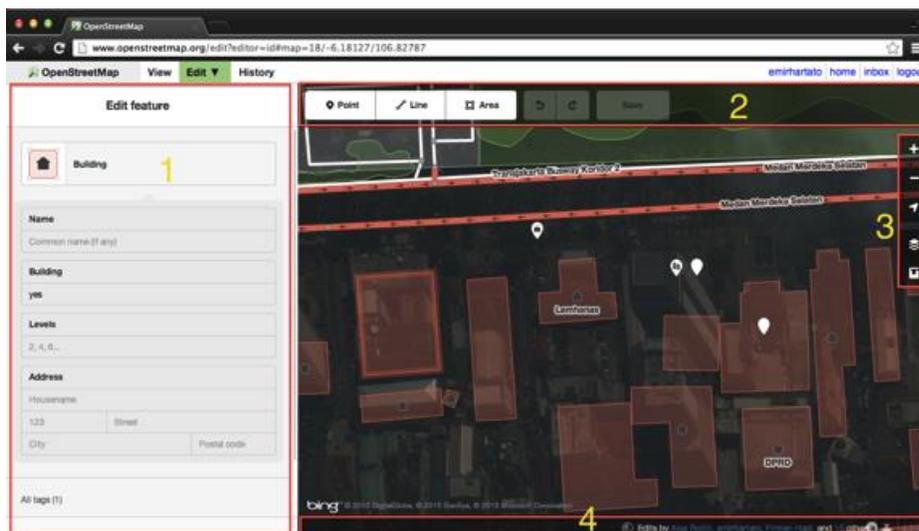
## 6. OpenStreet Map

### 6.1 STARTING THE iD EDITOR

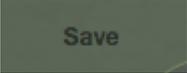
- To use iD you will need to be connected to the internet.
- Open your internet browser, and go to the OpenStreetMap website at <http://www.openstreetmap.org>.
- **Login** using your OpenStreetMap account
- Pan and zoom the map to the area that you want to edit.
- Click on the small arrow next to **Edit**. Then click **Edit with ID (in-browser editor)**.



### iD Editor User Interface



1. **Feature Panel:** This panel shows tags from the object selected on the map. You can add or edit tags from this panel.
2. **Tools:** This panel shows basic editing tools:

- Draw point 
- Draw line 
- Draw shape (polygon) 
- Undo 
- Redo 
- Save changes 

3. **Map panel:** This panel show various configuration functions:

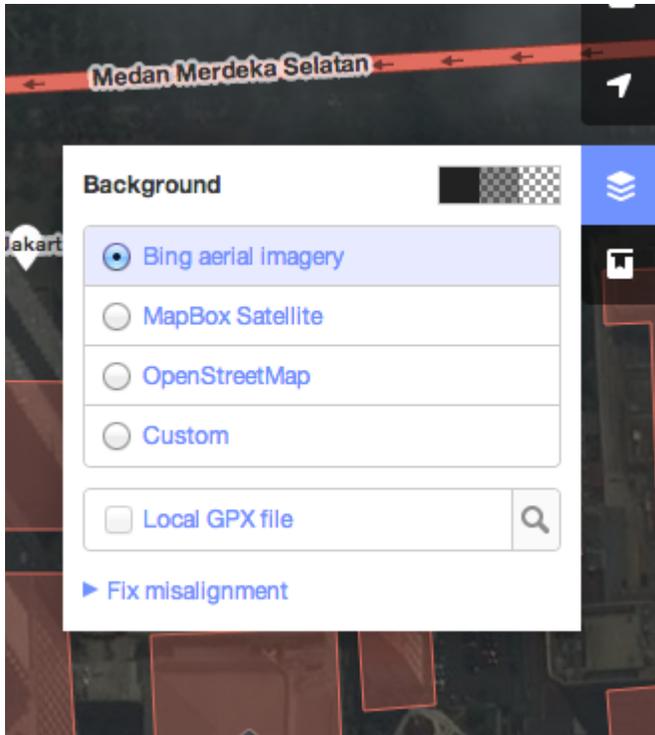
- Zoom In 
- Zoom Out 
- Go to your location 
- Configure background layer 
- Open Help Menu 

4. **Information panel:** This panel shows various information, such as which users have contributed to the area.

## 6.2 CONFIGURING THE BACKGROUND LAYER

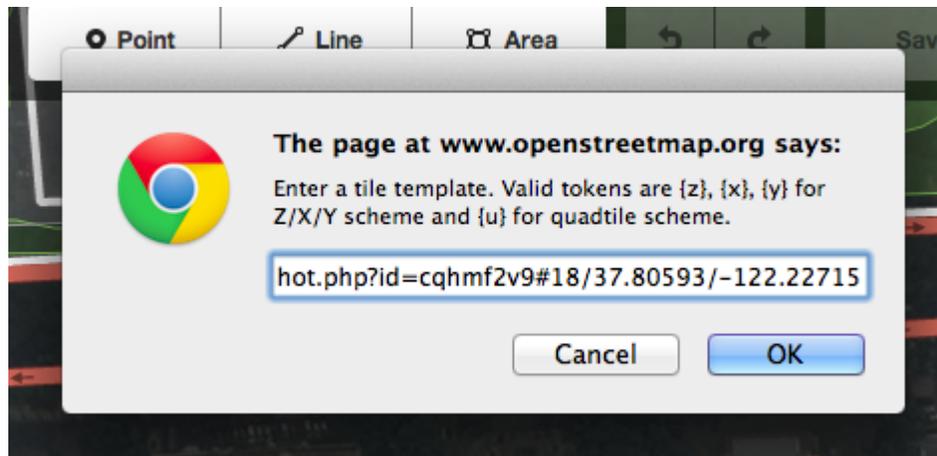
Before you start editing, you can change the background layer.

- Click the **Background settings** button. 
- You will see a panel like this:

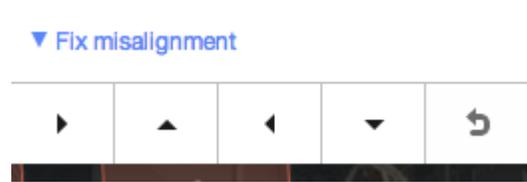


- You can change the **brightness level** by clicking one of these boxes: 
- There are 3 different brightness levels - 100%, 50%, and 0%. Click all of them to see the difference.
- You also can **change the background layer** based on your desired tile provider (the default is Bing Aerial Imagery). Try the various options available from this list.
- You can add your own map tiles by clicking on **Custom**.
- For example, if you want to **add a Field Paper**, click **Custom** and enter your **FieldPaper snapshot URL**, which will be something like this:

<http://fieldpapers.org/snapshot.php?id=cqhmf2v9#18/37.80593/-122.22715>



- You also can **display GPS tracks from your computer** (GPX format). It is very easy - just drag the GPX file into ID editor.
- If there is [imagery offset](#), you can **correct the imagery offset** by clicking Fix Misalignment.



- Click the navigation buttons to move the imagery. Click the reset button to return to the default position. ↻

### 6.3 HOW TO UPLOAD GPS DATA ?

1. Go to the [main OSM page](#).
2. Login (remember you need an OSM account by signing up [here](#)).
3. Click "GPS traces" along the top.
4. Click on "See just your traces, or upload a trace".
5. In the 3 boxes at the top do the following:
  1. Find and select the file you wish to upload (it should be **.gpx**format)
  2. Name the file.
  3. Add helpful tags that can be used to find it such as "London UK" (each word is a tag in itself, so Isle of Wight should be "IOW" or "Isle-of-wight").
6. If you would like your data to be available to others (encouraged) tick the "Public?" box.
7. Click "Upload".
8. The data will now take a short while to be included into OSM. However, as soon as you've uploaded it, you can immediately use it.

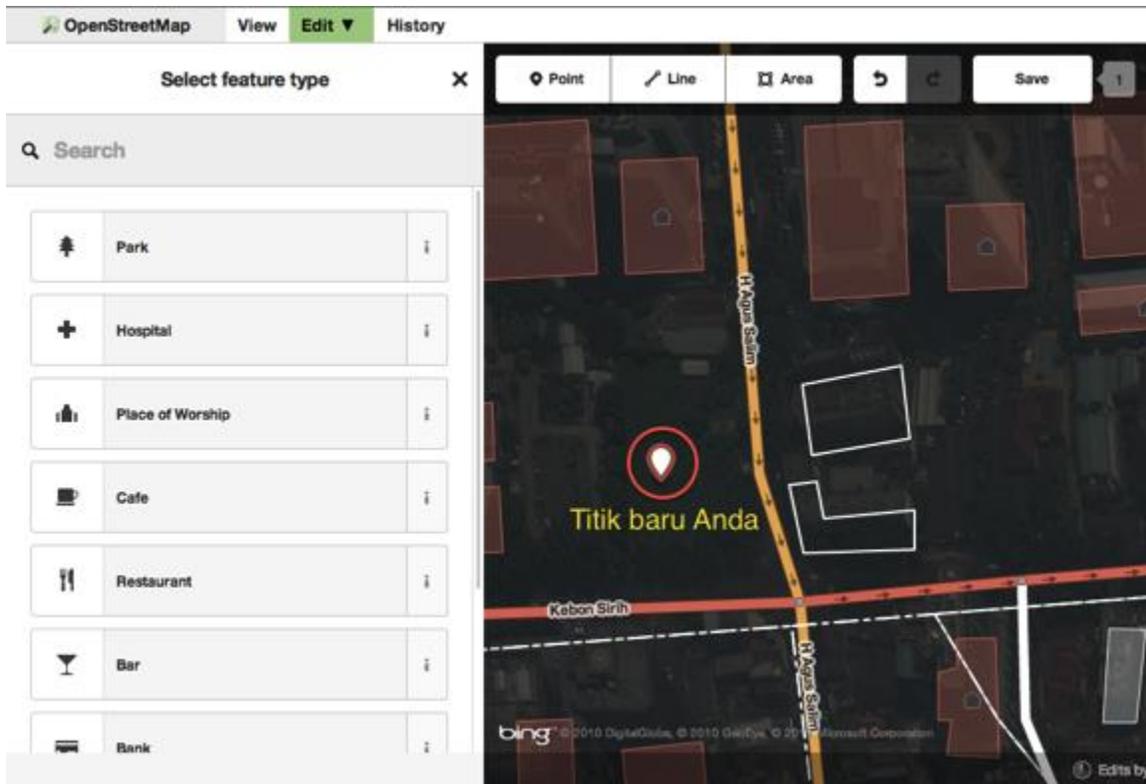
### 6.4 BASIC EDITING WITH iD

Before we start practicing with iD, **pan and zoom to a location that you familiar with**. You can pan by holding the left mouse button and dragging the map to your desired area.

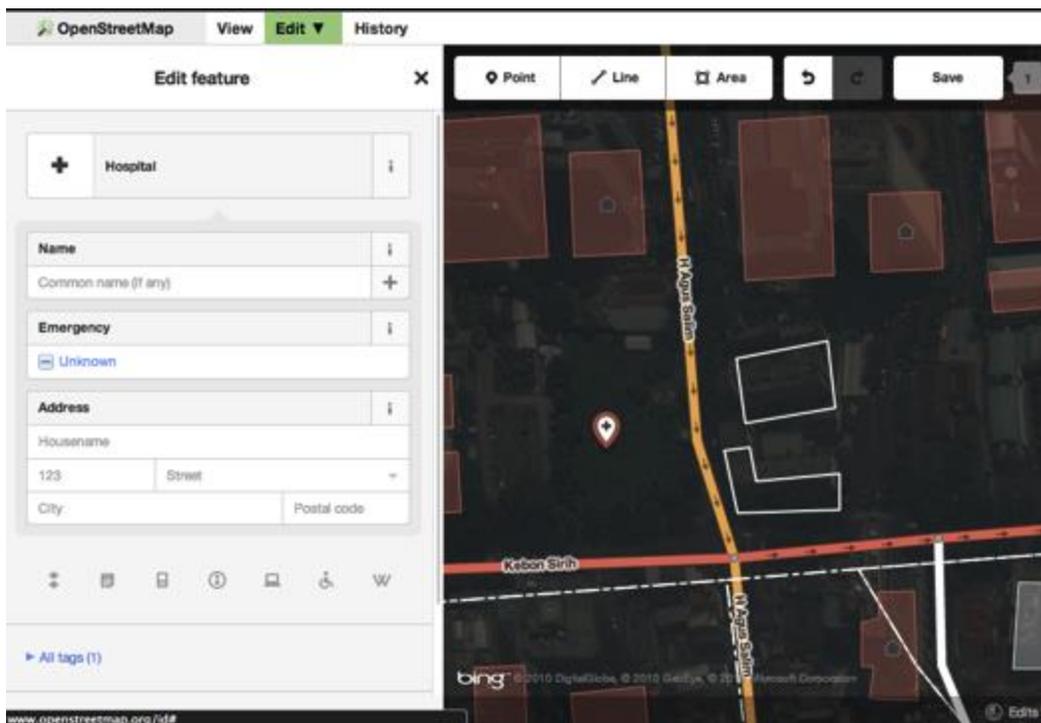
#### Adding Points

- To add a new point, click on the **Point** button.
- Your mouse cursor will change into plus (+) sign. Now, click on a position that you know to mark a location. For example, if you know that there is a hospital in your area, click on the hospital building.





- Notice that a new point is added. At the same time, the left panel will change to show a form where you can select attributes for the object. Click **Hospital** to tag the point as a hospital.



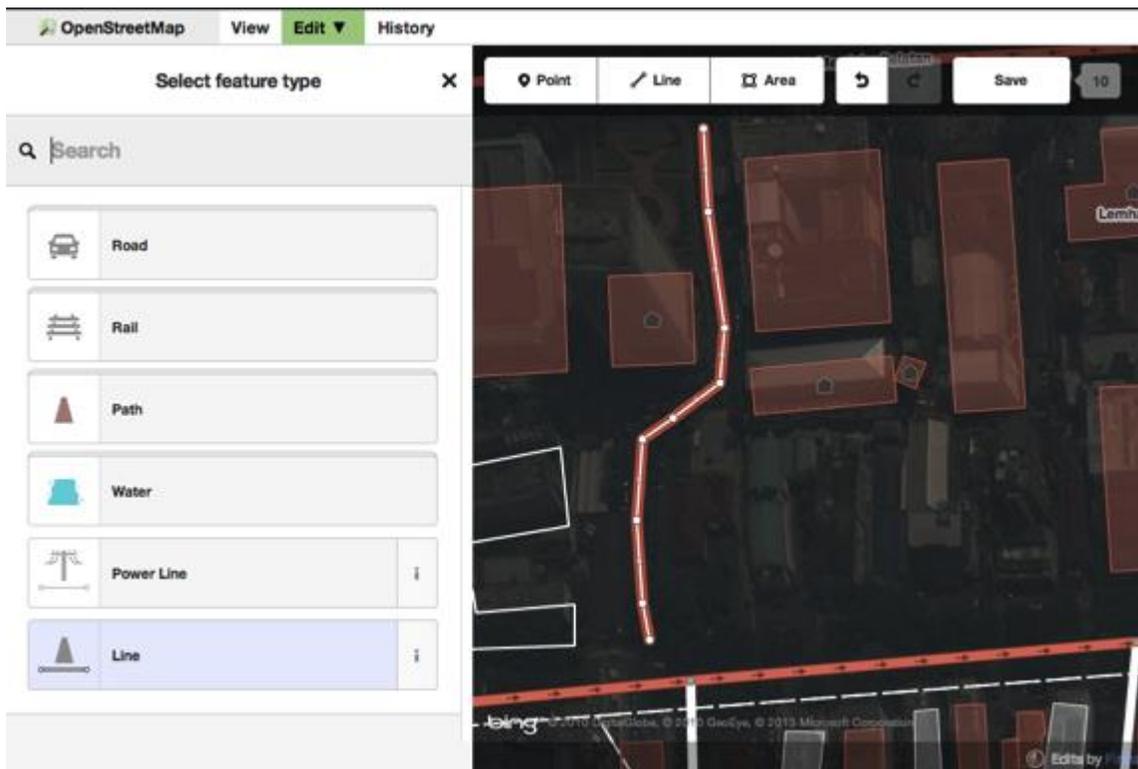
- You can use the forms to fill detail information about your point. You can fill hospital name, address, and/or other additional information. Note that each feature will have different form, depending on what tag you choose from the feature panel.
- If you make a mistake, such as a wrong location, you can drag your point to a new location by holding the left mouse button on your point. Or, if you want to delete your point click the left mouse button on the point and then click the button which looks like a trashcan.



A “point” created in the iD editor is actually a standalone “node” with a set of “tags” on it.

## Drawing Lines

- To add a new line, click on the **Line** button.  **Line**
- Your mouse cursor will change into plus (+) sign. Find a road that hasn’t been drawn on the map and trace it. Click once on a point where the road segment begins, move your mouse, and click to add additional points. Double-click to end the drawing process. Notice the panel on the left.



- Just as with a point, select the appropriate tags for your line.
- You can drag points from the line by clicking your left mouse button on a point and dragging it.

- You also can move the whole line by selecting it, and choosing the **Move tool**. Then drag the line to a new position.



- When you click your left mouse button on a point from the line, you will see these tools:

- Delete point from line 
- Disconnect point from line 
- Split a line into two line from the point you've selected 

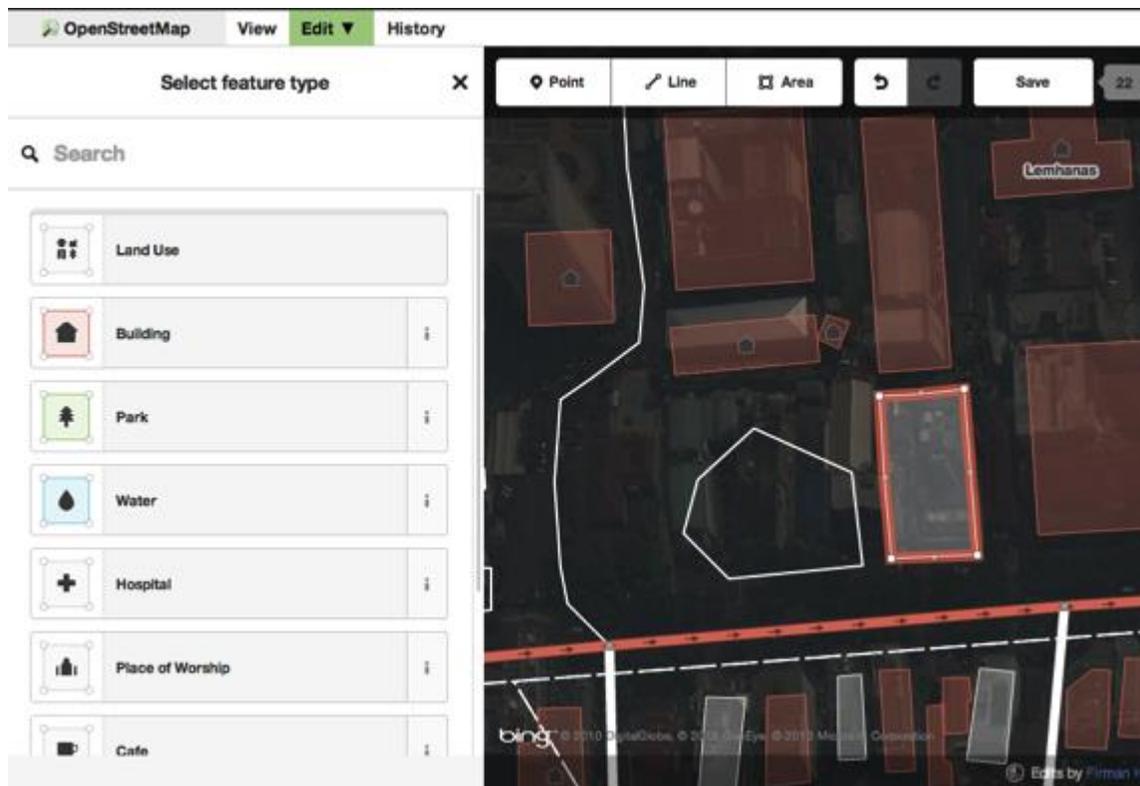
- When you click your left mouse button on a line, you will see these tools:

- Delete line 
- Create a circle from a line (only active if the line is closed) 
- Move line 
- Form a square shape from a line (only active if the line is closed) 
- Reverse line direction 

A “line” created in the iD editor is actually a “way” with “tags” on it.

### Drawing Shapes (Polygons)

- To add a new shape, click on the **Area** button.  Area
- Your mouse cursor will change into plus (+) sign. Try to trace a building using the imagery as a guide.
- You will notice that the color of your shape will change depending on the attributes that you assign to it.

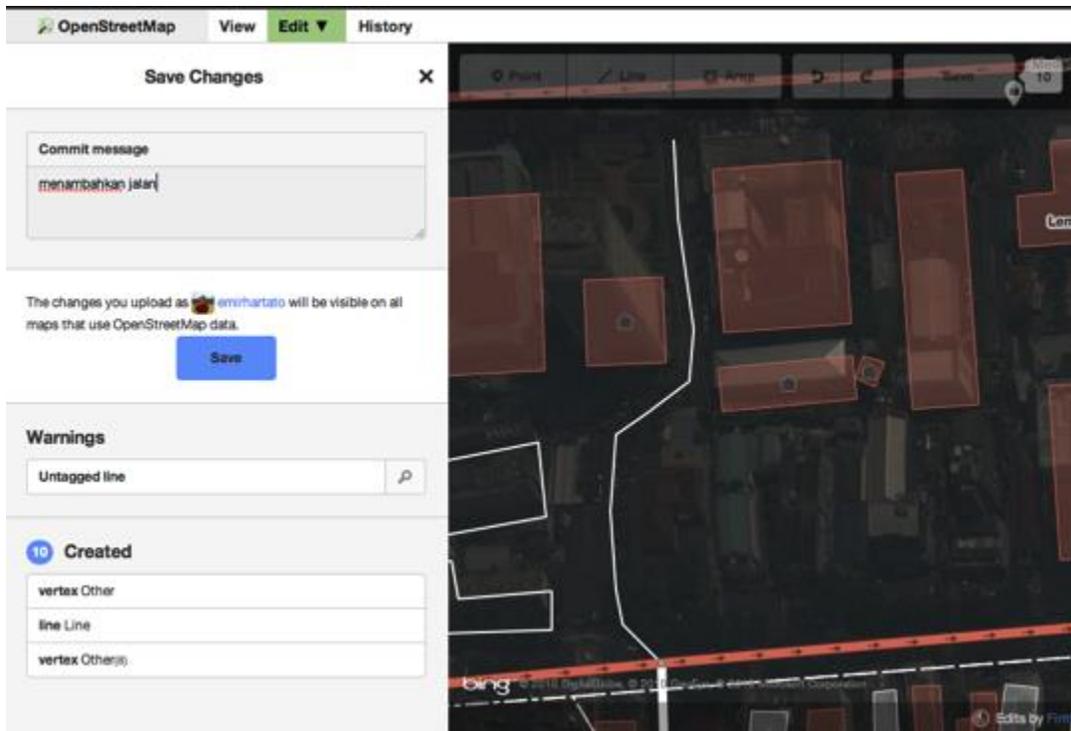


- The tools that are available when you select a shape are similar to those when you click on a line.

A “polygon” in the iD editor is actually a “closed way” with tags on it.

## SAVING YOUR CHANGES

- When (and if) you want to save your edits to OpenStreetMap, click the **Save** button. The panel on the left will show the upload panel.



- Enter a comment about your edits and click **Save**.

## ADDITIONAL INFORMATION AND CUSTOM TAGS

- When you are editing and object, you will see a strip of icons at the bottom of the attribute panel. You can add additional information by clicking these icons:

- Add elevation



- Add notes



- Add contacts / phone number



- Add source tag



- Add website



- Add accessibility information



- Add Wikipedia link



- Or, you can add custom tags by clicking **All tags**.

▶ All tags (1)

- This will show all the tags attached to the feature.

amenity	hospital	🗑️	i
		🗑️	i

+

- Click the plus sign (+) to add keys and values or click the trash icon to delete tags.

## ADDING TAGS

In the [previous section](#) you learned about OpenStreetMap's geo elements. It is time to learn a little about OpenStreetMap's tagging scheme. The basic tagging scheme can be found in [Tagging](#). The tagging page links to the [Map Features](#) page which lists most of the keys accepted by the OSM community. Many of the examples on the [Map Features](#) page, particularly those regarding roads, are specific to the U.K. Users in other countries will want to look at [Tagging](#) for guidance in applying the tagging scheme to their country.

## Types Of Geo objects

[OpenStreetMap's Tagging Scheme](#) has 3 data types that may be tagged:

**Node:** Just a node/point used to mark a particular point on the map. For example:

- A [town](#) may be marked using a **node** tagged with [place=town](#).
- A [theatre](#) may be marked using a **node** tagged with [amenity=theatre](#).

**Linear:** A **way** used to mark a particular linear item on the map. For example:

- A [motorway](#) may be marked using a **way** tagged with [highway=motorway](#).
- A [river](#) may be marked using a **way** tagged with [waterway=river](#).

**Area:** A closed way to mark a particular area on the map. For example:

- A lake may be marked using an **area** tagged with the [natural=water](#).
- A [town](#) may be marked using an **area** tagged as [place=town](#).

# Appendix



Food and Agriculture Organization  
of the United Nation

## Food and Agriculture Organization of the United Nation UNREDD National Programme (UNJP/BGD/057/UNJ)

Training on QGIS

Attendance of the participants

Date: 09-10 December 2016

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