

# Using Google Maps Engine Connector for QGIS

## QGIS Tutorials and Tips



Author

Ujaval Gandhi

<http://google.com/+UjavalGandhi>

# Using Google Maps Engine Connector for QGIS

## **Warning**

As of 29 January, 2015 Google Maps Engine has stopped creation of new free accounts. If you already have a Maps Engine account, the Google Maps Engine Connector will continue to work till 29 January, 2016.

Google Maps Engine is a cloud based mapping platform for creating and sharing custom maps. [Google Maps Engine Connector](#) is a plugin that allows you to view and upload Google Maps Engine data from within QGIS. This tutorial will go through the process of creating a Google Maps Engine account, obtaining necessary credentials for using the connector, creating a map using Google Maps Engine and consuming the resulting map in QGIS.

## **Note**

Disclaimer: I am the author of the Google Maps Engine Connector and currently part of the Google Maps team.

## Overview of the task

We will take a line layer representing bike routes in San Francisco and upload it to Google Maps Engine using the plugin. Once the layer is styled and a map is created, we will add that map to QGIS as a WMS layer.

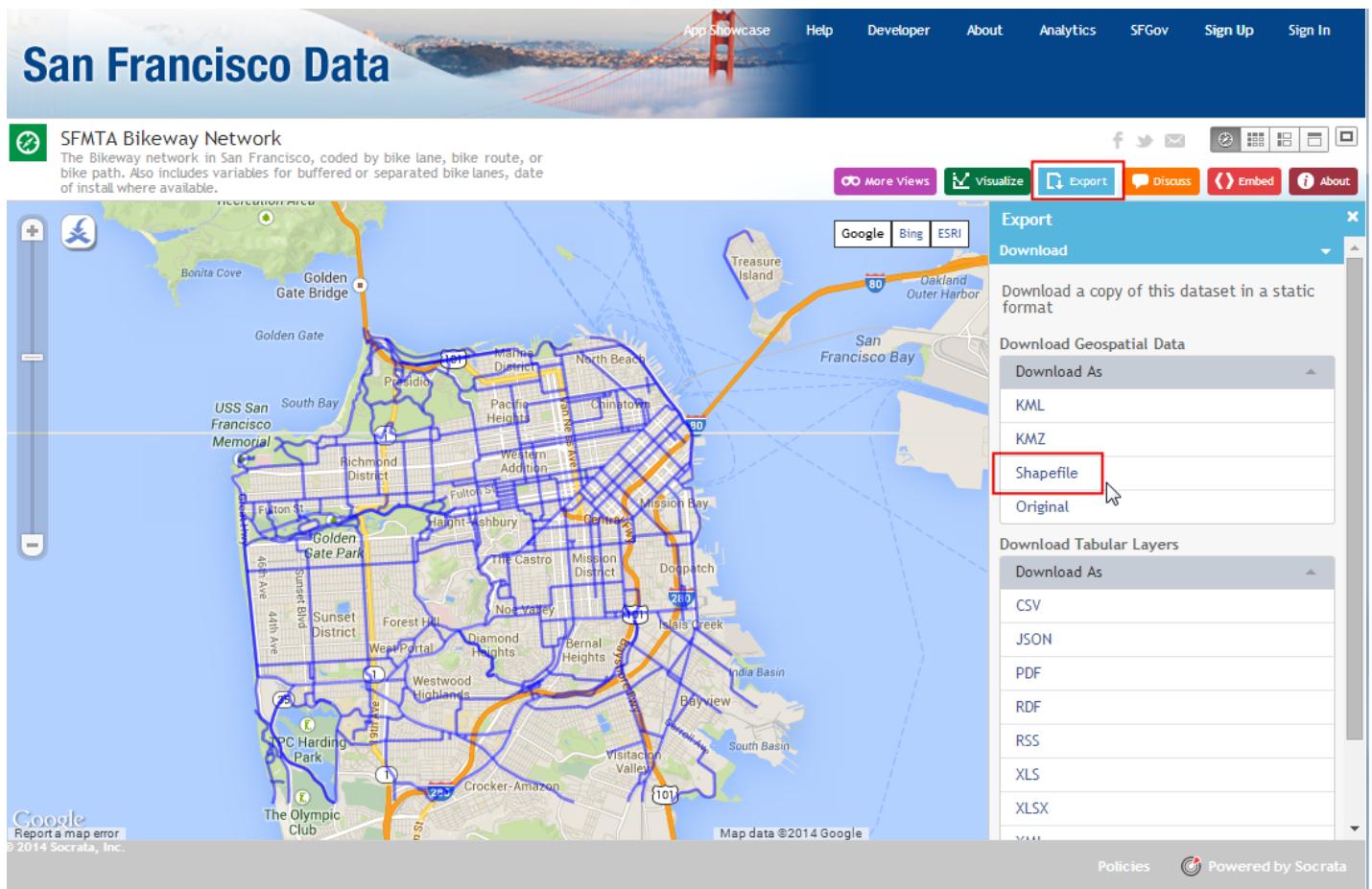
## **Other skills you will learn**

- Using the Google Developer Console to set up a new project for using Google APIs.

## Get the data

[San Francisco Data](#) is an excellent source of open data for San Francisco.

1. Download the [SFMTA Bikeway Network](#) shapefile using the Export option on the portal.



Data Source: [SFMTA]

## Create a Google Maps Engine account

2. You can sign up for a free Google Maps Engine trial account. The trial account is a full featured Maps Engine instance with limited storage quota. Visit [Google Maps Engine homepage](#) and click the Get started with a free account link.

Blog post nearly 50,000 retail touchpoints in real-time.' On the right side, there's a section titled 'Create and share custom Google Maps at scale' with descriptive text and a 'Get started with a free account' button. At the bottom left, there's a URL bar containing 'https://mapsengine.google.com/projects/new'."/>

Get started with a free account

https://mapsengine.google.com/projects/new

3. You will need to sign-in to your Google account. If you wish to use your work email, you can create a new Google account with your work email address as well. Once signed in, you will see the Create a Maps Engine Project screen. Enter a Project Name which will identify your account when using Google Maps Engine. Accept the terms and click Accept and create button.

# Google Maps Engine

## Create a Maps Engine Project

Get started with Maps Engine to create custom maps to share & publish on the web.

Welcome  Please enter your desired project name.

Wrong account ?  
Switch accounts by clicking on  
your name above.

Project Name:

The name will be used to identify your project in Maps Engine.

Project Administrator:

To get started you are the project administrator. Further administrators can be added from within Maps Engine. [Learn More](#).

- I have read and agree to the [Google Maps Engine Online Terms of Service](#).  
 I would like to receive emails about Maps Engine updates, special offers and events.

**Accept and create**

## Create a Google Developer Console project

4. The Google Maps Engine Connector uses the Google Maps Engine API to access the data stored in your account. You will need to obtain special credentials which the plugin will use to programmatically access your data. Visit [Google Developer Console](#) and click Create Project. Enter GME Connector for QGIS API as the PROJECT NAME and gme-qgis-api as the PROJECT ID. These names are just a suggestion - you may use any name and id you like.

### New Project

PROJECT NAME 

PROJECT ID 

**Create**

Cancel



5. Once the project is created, click the APIs & auth link. Scroll down and find the Google Maps Engine API. Click the OFF button to toggle it to ON.

The screenshot shows the Google Developers Console interface. On the left, a sidebar lists various sections like Overview, APIs & auth (which is selected and highlighted with a red box), APIs, Credentials, Consent screen, Push, Permissions, Settings, Support, App Engine, Compute Engine, Cloud Storage, Cloud Datastore, Cloud SQL, BigQuery, and Cloud Development. The main content area displays a list of APIs with their request limits and current status (OFF). The 'Google Maps Engine API' is specifically highlighted with a red box around its row, and a cursor is shown hovering over its 'OFF' button.

API	Requests/day	Status
Google Contacts CardDAV API	20,000,000	OFF
Google Maps Android API v2		OFF
Google Maps Coordinate API	1,000	OFF
Google Maps Embed API	2,000,000	OFF
<b>Google Maps Engine API</b>	10,000	OFF
Google Maps Geolocation API	100	OFF
Google Maps JavaScript API v3	25,000	OFF
Google Maps SDK for iOS		OFF
Google Maps Tracks API		OFF
Google Mirror API	1,000	OFF
Google Picker API	10,000	OFF
Google Play Android Developer API	200,000	OFF
Google Play App State	20,000,000	OFF
Google Play Game Management	1,000,000	OFF
Google Play Game Services		

6. Next, click on the Credentials link. Click CREATE NEW CLIENT ID under the OAuth section.

## &lt; GME Connector for ...

- Overview
- APIs & auth
- APIs
- Credentials**
- Consent screen
- Push
- Permissions
- Settings
- Support
- App Engine
- Compute Engine
- Cloud Storage
- Cloud Datastore
- Cloud SQL
- BigQuery
- Cloud Development

## OAuth

OAuth 2.0 allows users to share specific data with you (for example, contact lists) while keeping their usernames, passwords, and other information private.

[Learn more](#)[CREATE NEW CLIENT ID](#)Compute Engine and App Engine [Learn more](#)

Client ID

Email address

[Download JSON](#)

## Public API access

Use of this key does not require any user action or consent, does not grant access to any account information, and is not used for authorization.

[Learn more](#)[CREATE NEW KEY](#)[Return to original console](#)[Send feedback](#)[Privacy & Terms](#)

7. In the Create Client ID dialog, select Installed Application as the APPLICATION TYPE and Other as the INSTALLED APPLICATION TYPE. Click Create Client ID.

## Create Client ID

### APPLICATION TYPE

**Web application**

Accessed by web browsers over a network.

**Service account**

Calls Google APIs on behalf of your application instead of an end-user. [Learn more](#)

**Installed application**

Runs on a desktop computer or handheld device (like Android or iPhone).

### INSTALLED APPLICATION TYPE

**Android** [Learn more](#)

**Chrome Application** [Learn more](#)

**iOS** [Learn more](#)

**Other**

**Create Client ID**

Cancel

- Once the client id is created, you will see a new section called Client ID for native application. Note the Client ID and Client secret. These are the credentials you will need to use in QGIS.



## &lt; GME Connector for ...

## OAuth

[Overview](#)[APIs & auth](#)[APIs](#)**Credentials**[Consent screen](#)[Push](#)[CREATE NEW CLIENT ID](#)[Permissions](#)[Settings](#)[Support](#)[App Engine](#)[Compute Engine](#)[Cloud Storage](#)[Cloud Datastore](#)[Cloud SQL](#)[BigQuery](#)[Cloud Development](#)Compute Engine and App Engine [Learn more](#)

Client ID

Email address

[Download JSON](#)

## Client ID for native application

Client ID

Client secret

Redirect URIs

urn:ietf:wg:oauth:2.0:oob  
http://localhost[Download JSON](#)[Delete](#)

## Public API access

Use of this key does not require any user action or consent, does not grant access to any account information, and is not used for authorization.

[Return to original console](#)[Send feedback](#)[Privacy & Terms](#)

9. Back in QGIS, visit Plugins > Manage and Install Plugins.... Find the Google Maps Engine Connector plugin and click Install plugin.



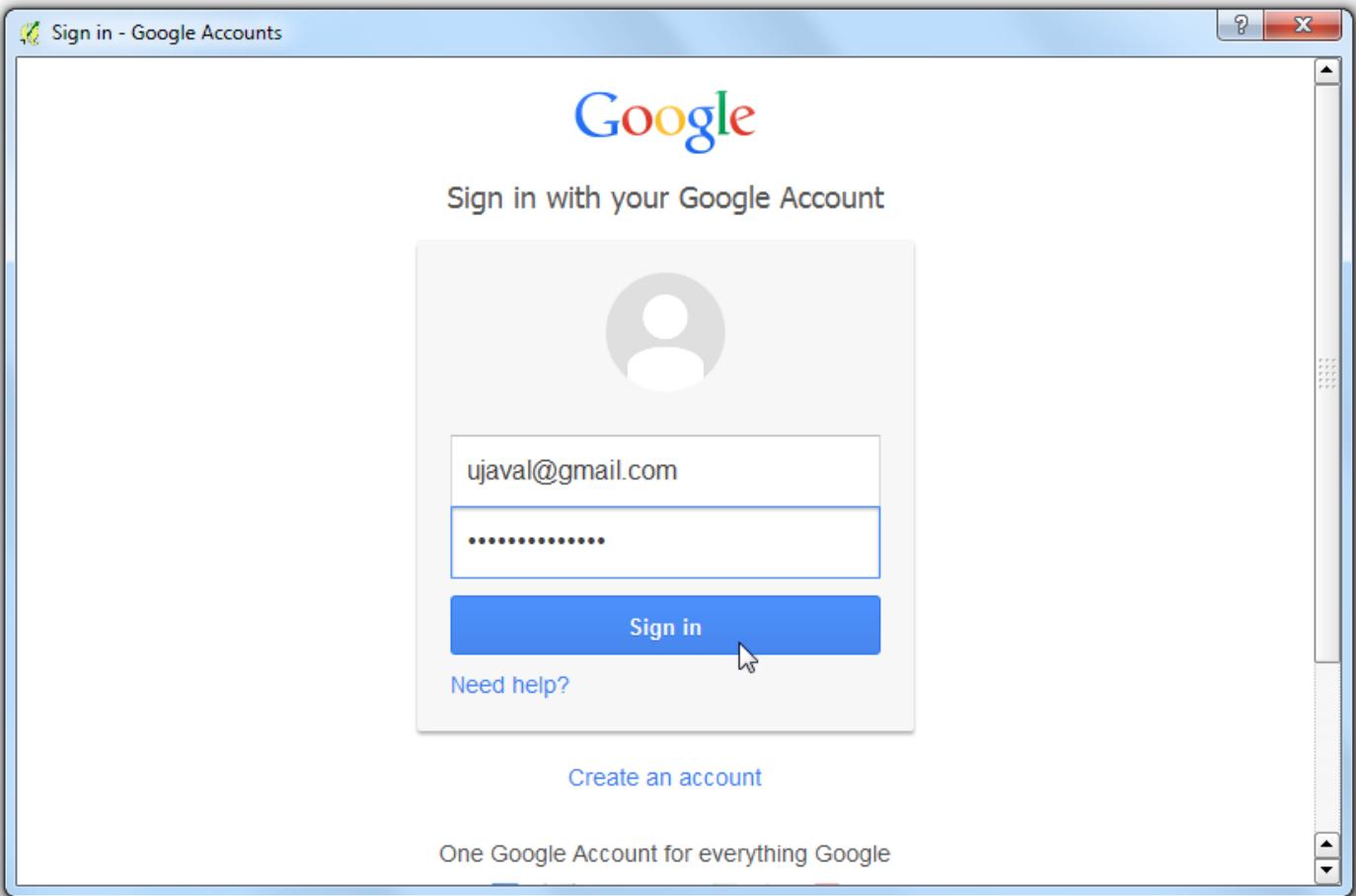
10 Once the plugin is installed, you will see a new toolbar in QGIS. This toolbar contains various tools to work with Google Maps Engine. Click the More button.



11 In the Advanced Settings dialog, enter the Client ID and Client Secret you obtained from Google Developer Console. Click OK.



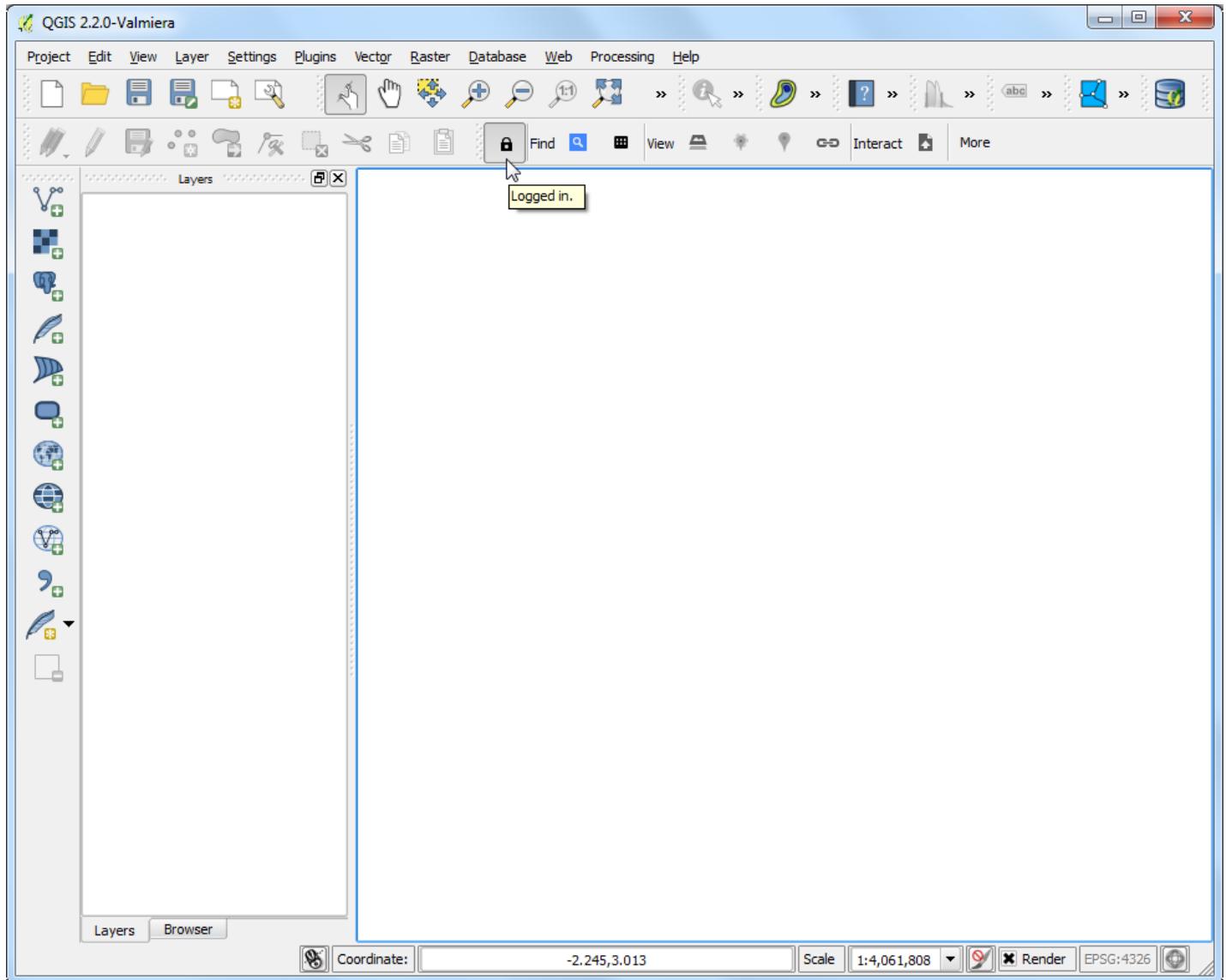
12 As you entered new API credentials, you will be prompted to log-in and authorize the plugin to use these. Sign-in to your Google account.



13 Click Accept in the next screen.



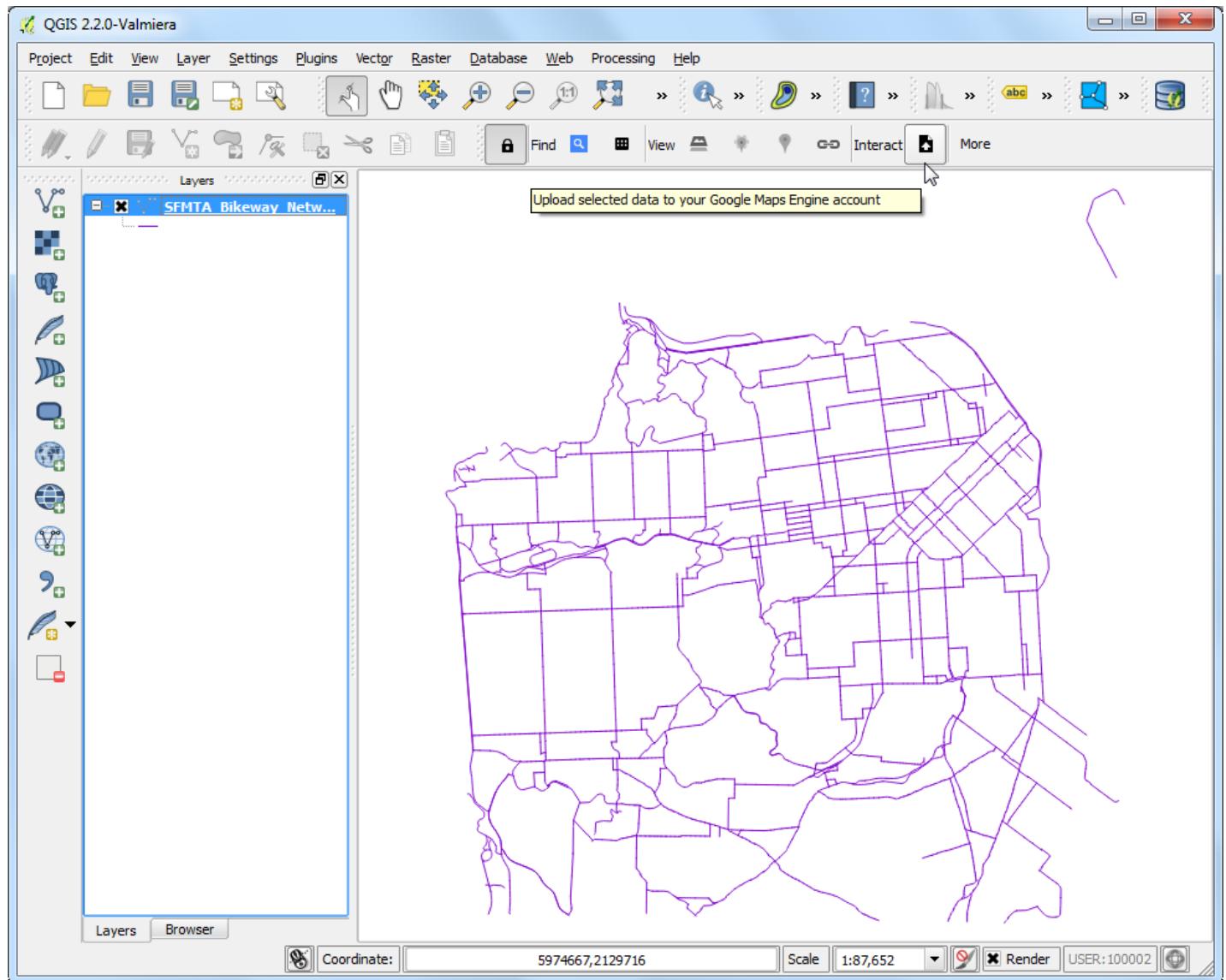
14 If all went well, you will see a message indicating you have successfully logged in.



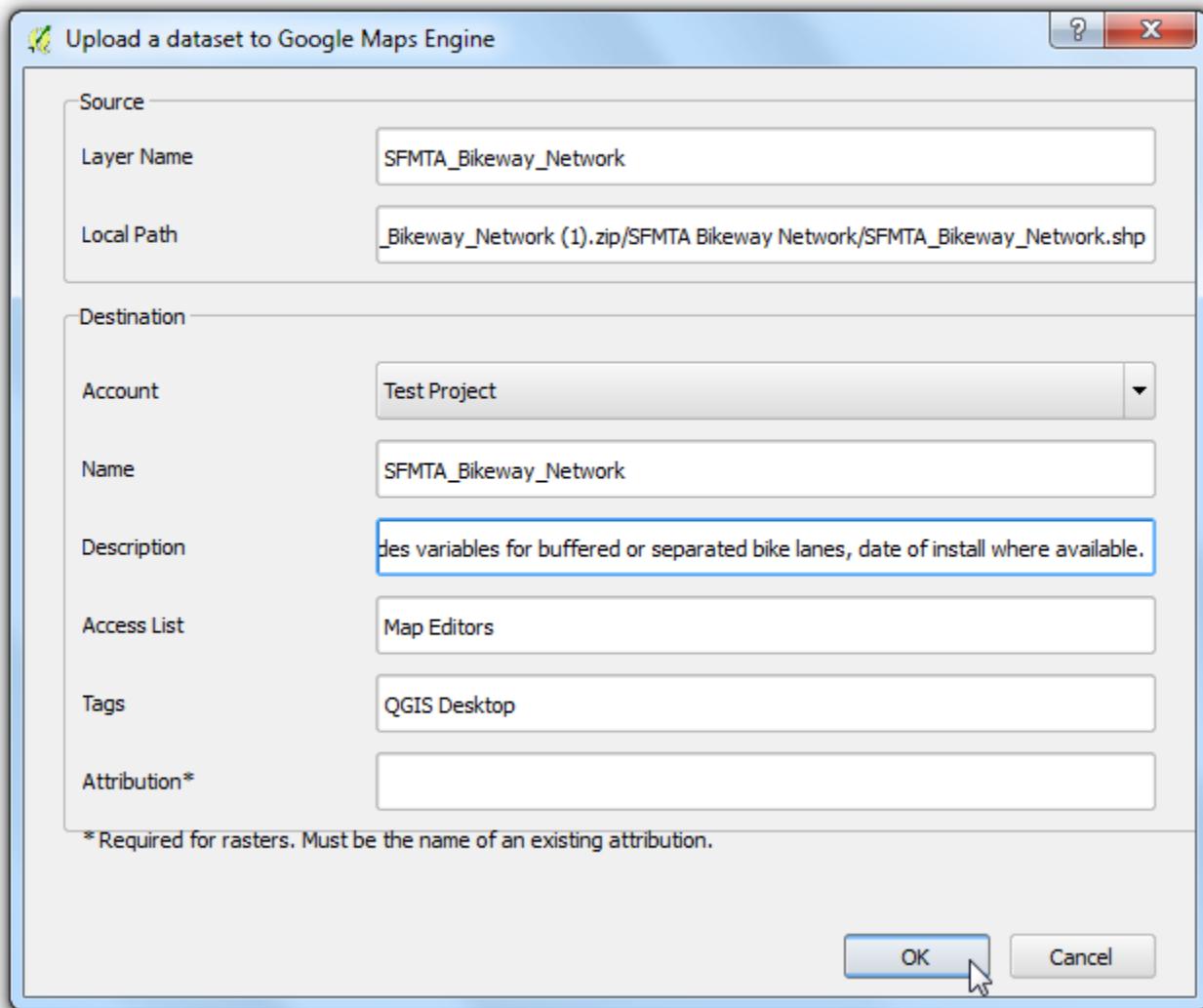
15 Now lets add the SFMTA Bikeway Network layer that was downloaded earlier. Go to . Layer > Add Vector Layer. Browse to the downloaded SFMTA\_Bikeway\_Network.zip file and click Open. Select the SFMTA\_Bikeway\_Network.shp layer and click OK.



16 One of the features of the Google Maps Engine Connector plugin is the ability to upload datasets directly from QGIS. Select the SFMTA\_Bikeway\_Network layer and click Upload icon in the toolbar.



17 In the Upload a dataset to Google Maps Engine dialog, enter a Description of the dataset. You may leave all other settings to default values. Click OK.



- 18 The plugin will use the Google Maps Engine API to upload the layer and create a Google Maps Engine *Data Source*. Once the upload is finished, a new browser tab will open and take you to the newly created data source.

Google Data sources Test Project ▾

Maps Engine SFMTA\_Bikeway\_Network

**CREATE**

**Dashboard**

**Maps**

**Layers**

**Data sources**

- Add to layer
- Add to mosaic
- Create styled layer
- Edit vector data
- Change primary key
- Add images
- Remove selected

**Edit details**

Evaluation: no time limit

Quota usage as of May 20, 2014 11:08

Public map loads: N/A

Private map loads: N/A

Storage: 17% used

Vector table is being processed Tue, May 20, 2014 11:08 Processing [Cancel](#)

Type: Vector table

Description: The Bikeway network in San Francisco, coded by bike lane, bi...

Created by: ujava@gmail.com - May 20 2014

Last modified by: ujava@gmail.com - May 20 2014

Tags: QGIS Desktop

Draft version sharing: Map Editors [create new](#) | [modify](#)

Published version sharing: [Map editors only](#) [create new](#) | [modify](#)

Metadata

Last updated:

- Geometry type: No value
- Feature count: No value
- Bad feature count: No value
- Vertex count: No value
- Bounds: No value
- Altitude: No value
- Attribute count: No value

Schema

Not processed

Settings

Source encoding: [UTF-8](#) ▾

©2014 Google - [About Maps Engine](#) - [Terms of Service](#) - [Help](#) - [Getting Started Guide](#)

19 The next few steps will demonstrate the process of creating a map using Google Maps Engine. Once the map is created, we will access that map using the plugin in QGIS. Once your vector table has finished processing, click Create styled layer.

Google Data sources Test Project ▾

**Maps Engine**

### SFMTA\_Bikeway\_Network

**CREATE**

**Dashboard** **Maps** **Layers** **Data sources** **Add to layer** **Add to mosaic** **Create styled layer** **Edit vector data** **Change primary key** **Add images** **Remove selected** **Edit details** **Evaluation: no time limit** **Quota usage as of May 20, 2014 11:09** **Public map loads: N/A** **Private map loads: N/A** **Storage: 17% used**

**Vector table was processed** Tue, May 20, 2014 11:08  
**Type:** Vector table  
**Description:** The Bikeway network in San Francisco, coded by bike lane, bi...  
**Created by:** ujava@gmail.com - May 20 2014  
**Last modified by:** ujava@gmail.com - May 20 2014  
**Tags:** QGIS Desktop  
**Draft version sharing:** Map Editors [create new](#) | [modify](#)  
**Published version sharing:** [Map editors only](#) [create new](#) | [modify](#)

Click to view vector table

Metadata		Schema	
Last updated: May 20 2014		STREETNAME	String
Geometry type: LINES		TYPE	String
Feature count: 2523		FROM_ST	String
Bad feature count: 0		TO_ST	String
Vertex count: 8759		FACILITY_T	String
Line count: 2523		YEAR_INSTA	Number
Bounds:	37.70796872888273, -122.51361671890315 to 37.832132251463854, -122.36981739412595	DIRECT	String
Altitude: No value		CNN	Number
Attribute count: 13		Shape_Leng	Number
		Surface_Tr	String
		Barrier	String
		Innovative	String

©2014 Google - [About Maps Engine](#) - [Terms of Service](#) - [Help](#) - [Getting Started Guide](#)

20 Name the layer as SFMTA\_Bikeway\_Network and click Create.

**Create new layer** X

1 vector table selected for layer

Layer title

**Create** **Cancel**

To style vector table **SFMTA\_Bikeway\_Network**, first create a layer. Enter a name for the new vector layer above.

21 Click Add rule to add a custom style for the layer.

## SFMTA\_Bikeway\_Network

Google Maps ▾

Publish on exit

Exit

Styles    Info windows

No display rules applied to this layer.  
Add a new display rule below or  
import display rules from another layer

Add rule    APPLY    Add display rule

Map    Satellite    No Basemap

Golden Gate National Recreation Area  
Golden Gate Bridge  
Bonita Cove  
USS San Francisco Memorial  
Presidio  
Richmond District  
South Bay  
North Beach  
Chinatown  
Mission Bay  
Dogpatch  
Bayview  
South Basin  
Golden Gate Park  
Sunset District  
Forest Hill  
West Portal  
Diamond Heights  
Innen Heights  
Noe Valley  
Westwood Highlands  
The Olympic Club  
Broadmoor  
Crocker-Ames  
Mission St  
Bayshore Blvd  
©2014 Google-Map data ©2014 Google | Terms of Use | Report a map error

22 Choose the color and label options under the Line style section. Click Apply to view the style settings applied to your layer. You may also select No Basemap option from top-right corner to allow you to see your layer without the underlying basemap. Once you are satisfied with the styling, switch to the Info windows tab.

## SFMTA\_Bikeway\_Network

The screenshot shows a map editing interface for the SFMTA Bikeway Network. On the left, there's a panel for styling rules. At the top of this panel, there are tabs for 'Styles' and 'Info windows', with 'Info windows' being highlighted by a red box and a mouse cursor hovering over it. Below these are sections for 'Display rule name' (with a dropdown menu), 'Zoom levels' (a slider set to 13), 'Line style' (set to dashed red, 2px width), 'Border style' (solid black, 1px width), 'Label style' (set to STREETNAME, black font, 11px size, Normal weight), and 'Filters' (an 'Add filter' button). At the bottom of the styling panel are 'Add rule' and 'APPLY' buttons. A text area at the very bottom contains the JavaScript code for the info window. On the right is a map of San Francisco showing a dense network of red lines representing bikeways. The map has a 'No Basemap' button at the top right. A copyright notice at the bottom right reads '©2014 Google-Map data ©2014 Google Terms of Use'.

23 Here you can specify what content is shown when a feature is clicked on the map. You can access the feature attributes using the markup `{attribute_name}`. In this case, we just want to display the street name for the line feature. Enter the following in the text area. Click Apply and click on any line feature on the map to test the info window code. When done, check the Publish on exit button and click Exit.

```
<div class='googeb-info-window' style='font-family: sans-serif'>
  {STREETNAME}  {TYPE}
</div>
```

## SFMTA\_Bikeway\_Network

Google Maps ▾

Publish on exit

Exit 

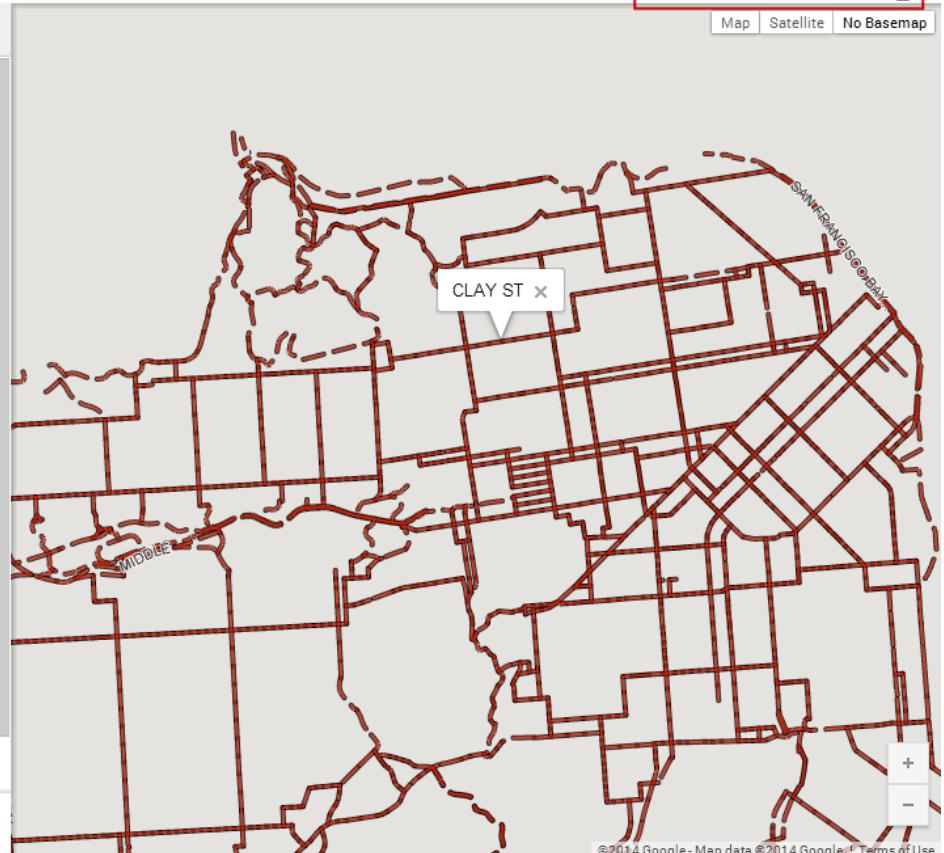
Styles

Info windows

Insert HTML content for info windows below:

A restricted set of HTML is supported: [Learn more](#)

```
<div class='googleb-info-window' style='font-family:  
sans-serif'  
{STREETNAME} {TYPE}  
</div>
```



24 Click Add to map to create a map with this layer.

Google Maps Engine Test Project ▾

**SFMTA\_Bikeway\_Network**

**CREATE**

**Description:**  
Created by: ujava@gmail.com - May 20 2014  
Last modified by: ujava@gmail.com - May 20 2014  
**Tags:**  
Draft version sharing: Map Editors [create new](#) | [modify](#)  
Published version sharing: [None](#) | [create new](#) | [modify](#)

**Add to map** **Select layers to add to a map**

Contains vector table: [SFMTA\\_Bikeway\\_Network](#) (details below)

**Vector table was processed** Tue, May 20, 2014 11:08  
**Type:** Vector table  
**Description:** The Bikeway network in San Francisco, coded by bike lane, ...  
Created by: ujava@gmail.com - May 20 2014  
Last modified by: ujava@gmail.com - May 20 2014  
**Tags:** QGIS Desktop

Evaluation: no time limit  
Quota usage as of May 20, 2014 22:40  
Public map loads: N/A  
Private map loads: N/A  
Storage: 17% used

**Metadata** Last updated: May 20, 2014 **Schema**

©2014 Google - [About Maps Engine](#) - [Terms of Service](#) - [Help](#) - [Getting Started Guide](#)

25 Select Create new and enter SFMTA Bikeway Network as the Map title.

Add to map

1 layer selected for map

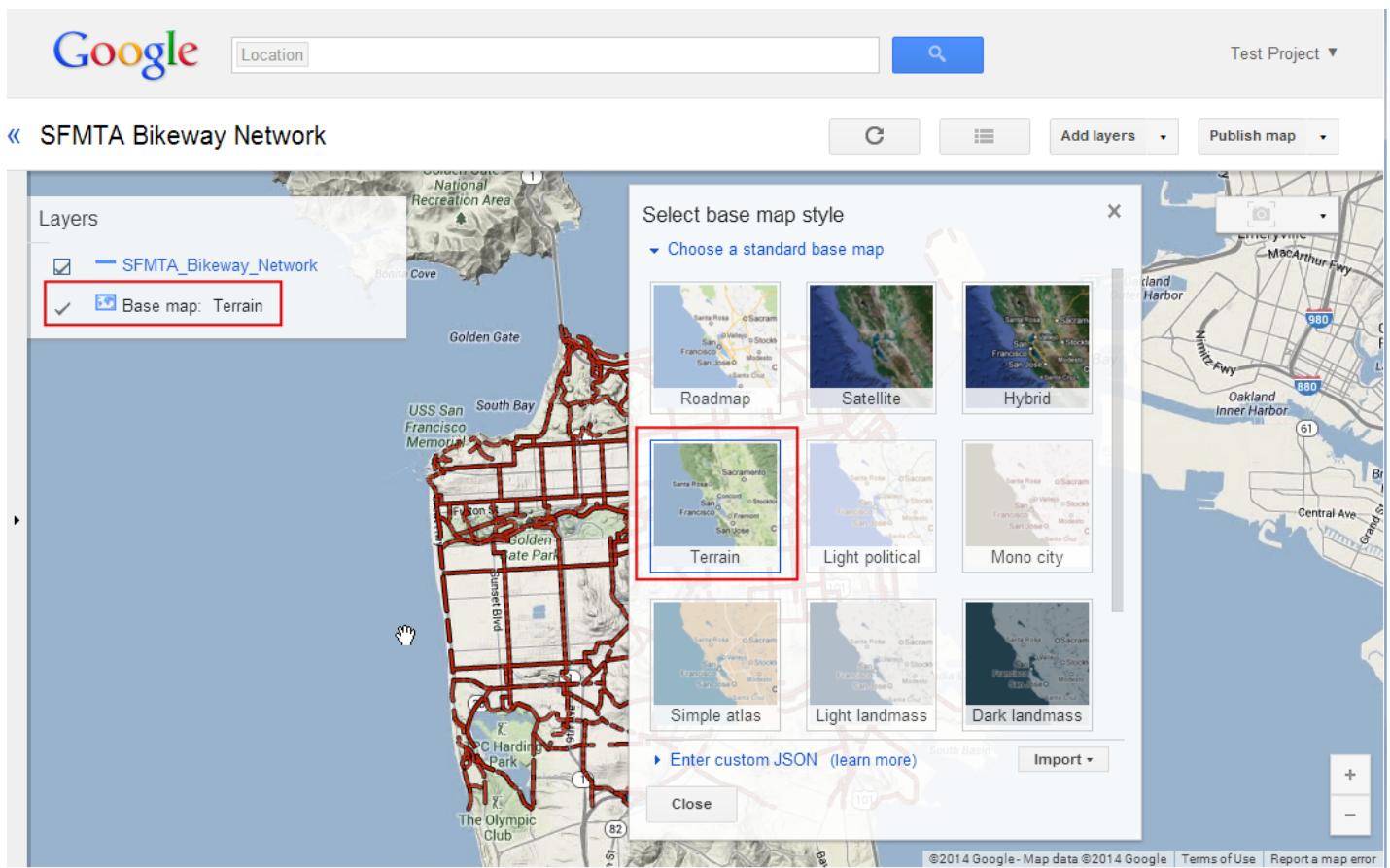
▶ Select existing

▼ Create new

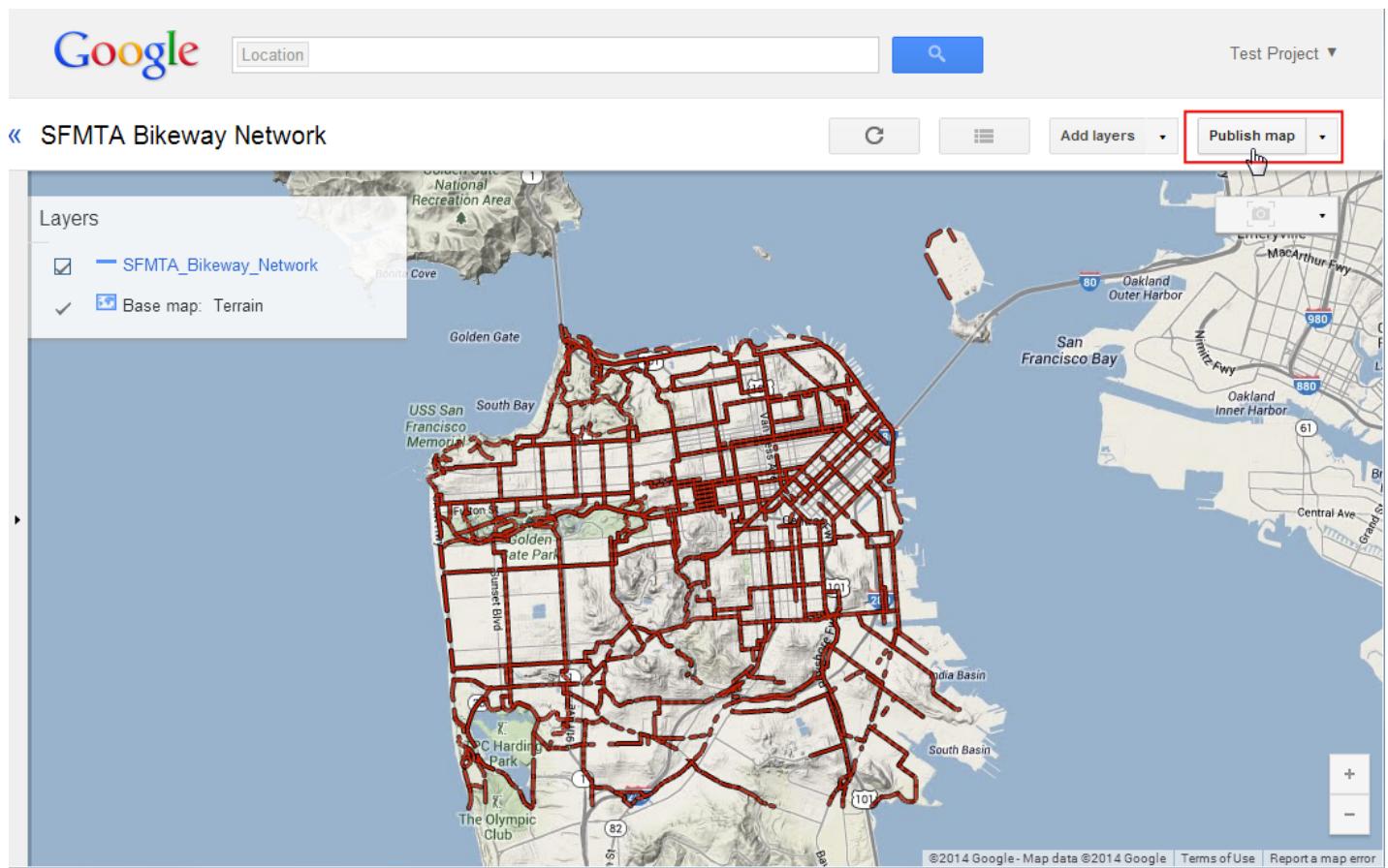
Map title **SFMTA Bikeway Network**

**Add to map** **Cancel**

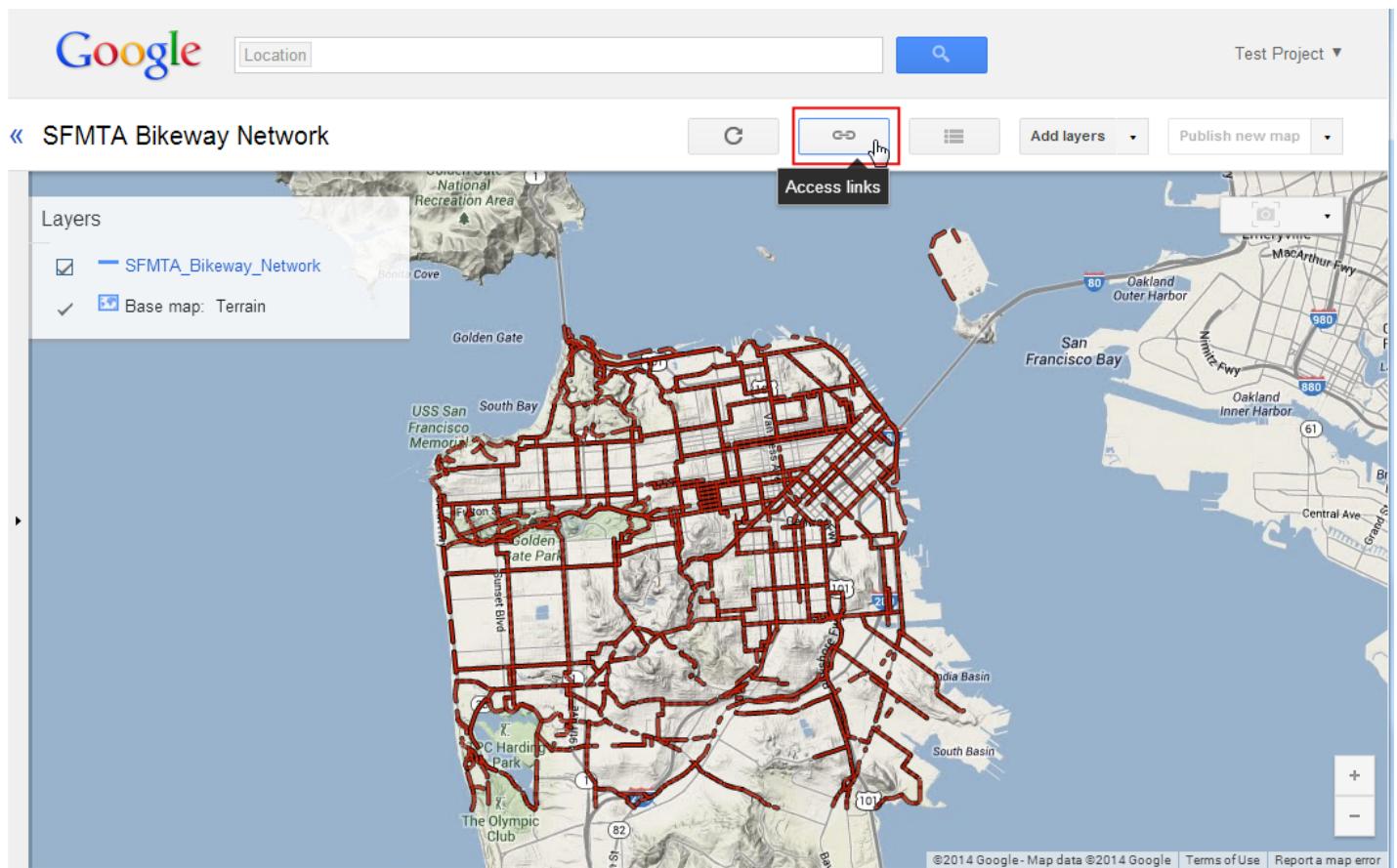
26 You will see a new map containing the styled layer. You have an option of choosing different basemaps for the map. Since this is a bike path map, you can select the Terrain style basemap.



27 Click Publish map.



28 Once the map is published, click on the Access links icon.



29 You will see various options to view, embed and access the newly created map.  
Since we will be accessing the map using the QGIS plugin, you do not need any links from here.



## Access Links

[Google Maps](#)

[Google Earth](#)

[API access](#)

[OGC](#)

### Maps Engine viewer URL

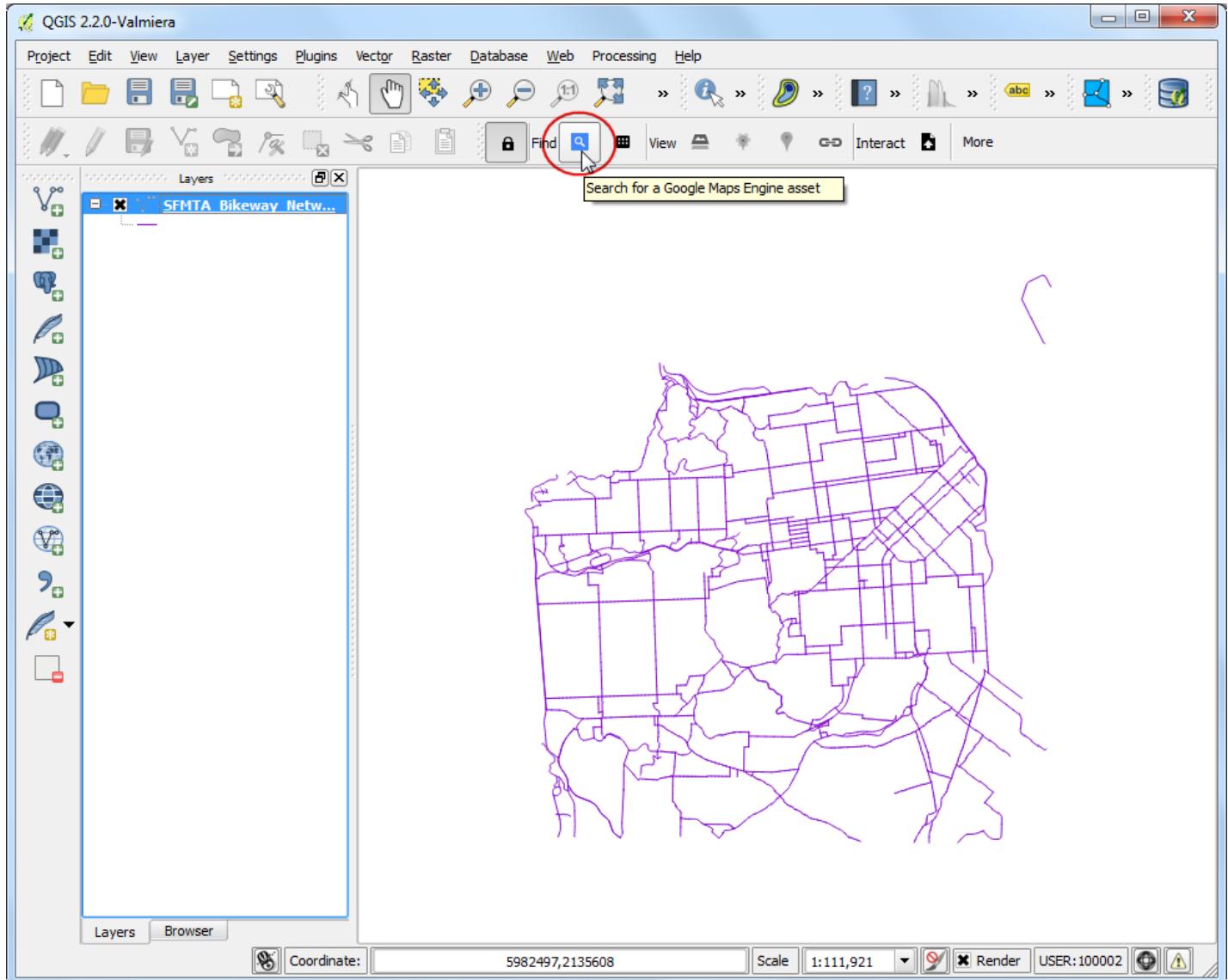
<https://mapsengine.google.com/13476080153727555143-08887688179650036554-4/r>

### Embed link

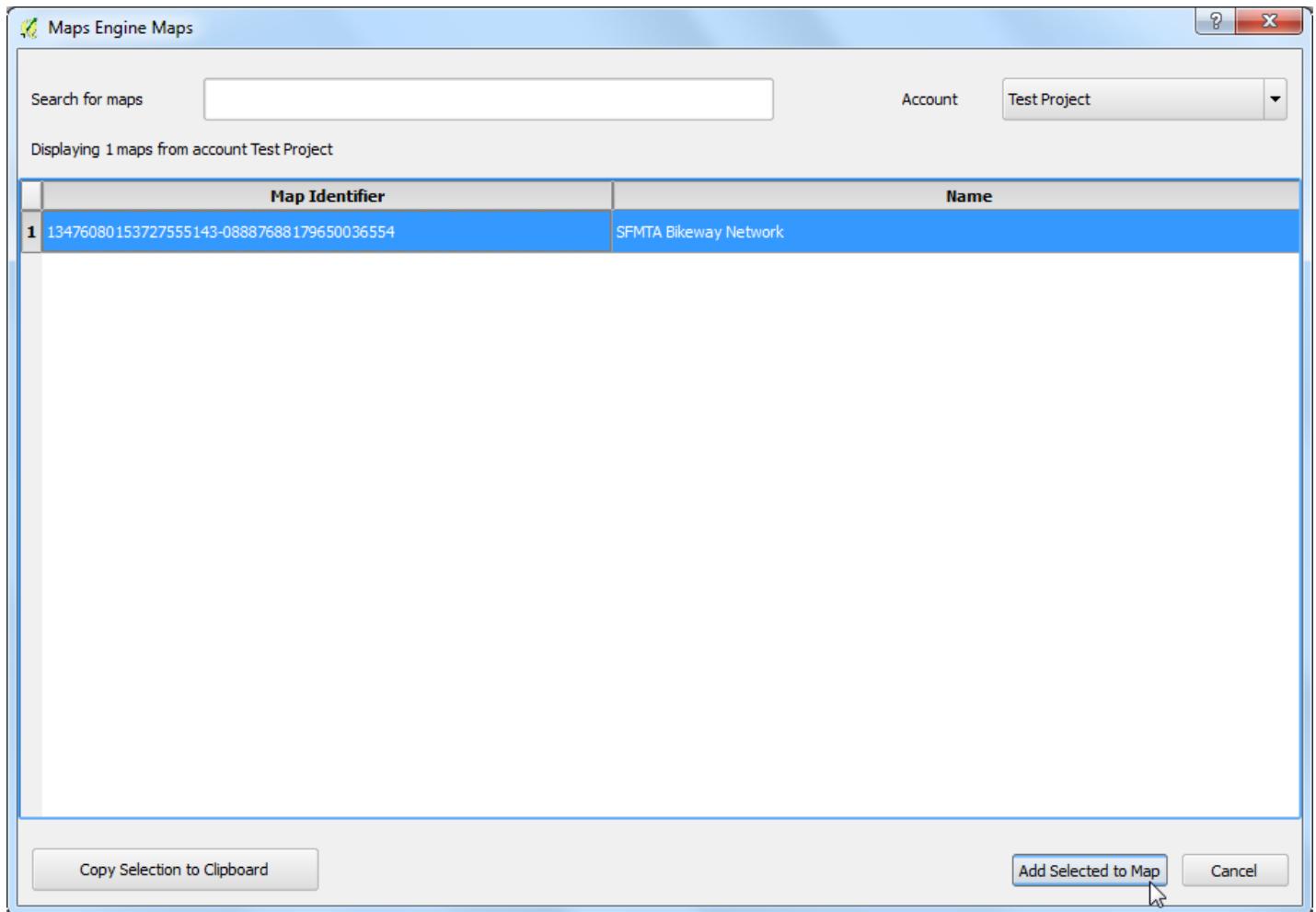
```
<iframe src="https://mapsengine.google.com/13476080153727555143-08887688179650036554-4/widget/in_iframe" width="70%" height="600px"></iframe>
```

[Done](#)

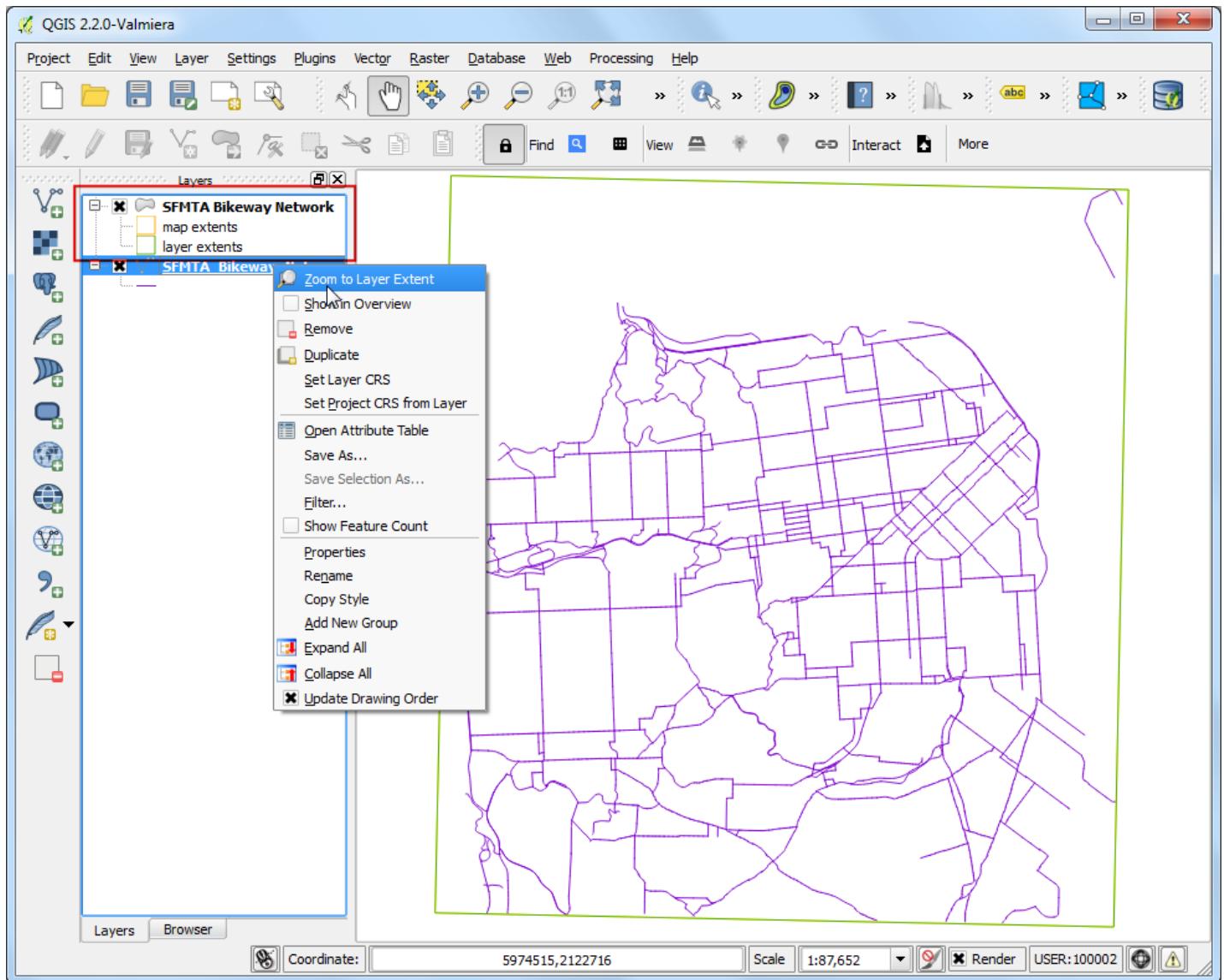
30 Back in QGIS, click the Search icon in the toolbar.



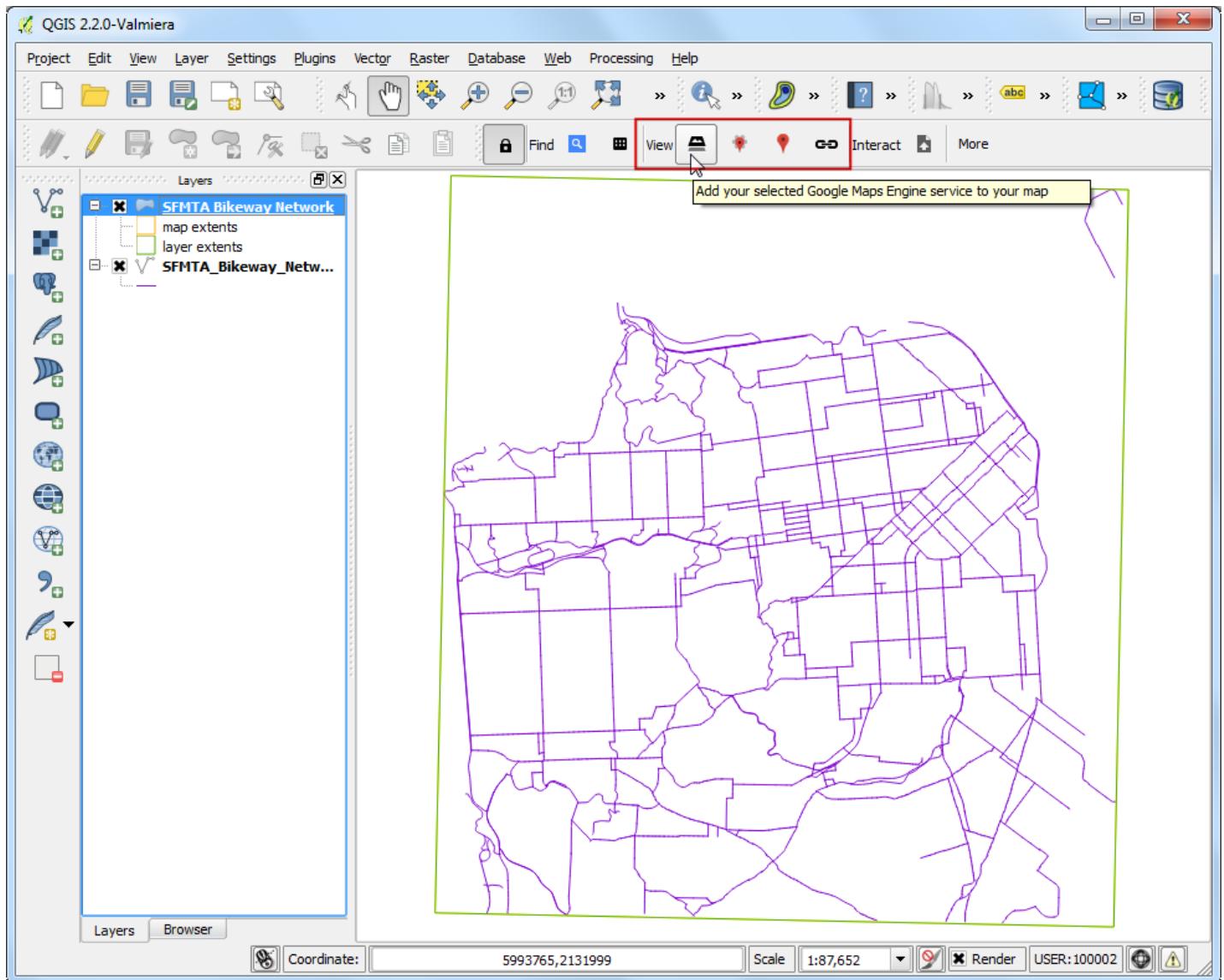
31 In the Maps Engine Maps dialog, you will see your map listed. Click on the row to select it. Click Add Selected to Map.



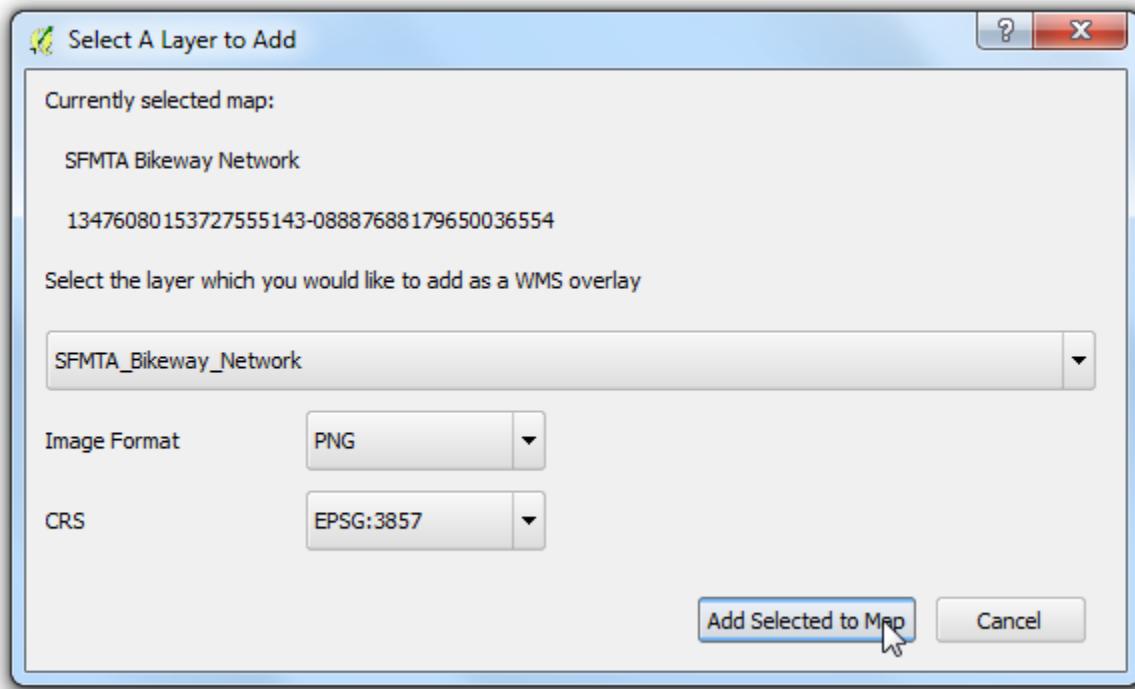
32 The plugin will query Google Maps Engine and load a vector layer containing the . bounding box of the map. If you do not see any data on the canvas, right-click on the SFMTA\_Bikeway\_Network layer and select Zoom to Layer Extent.



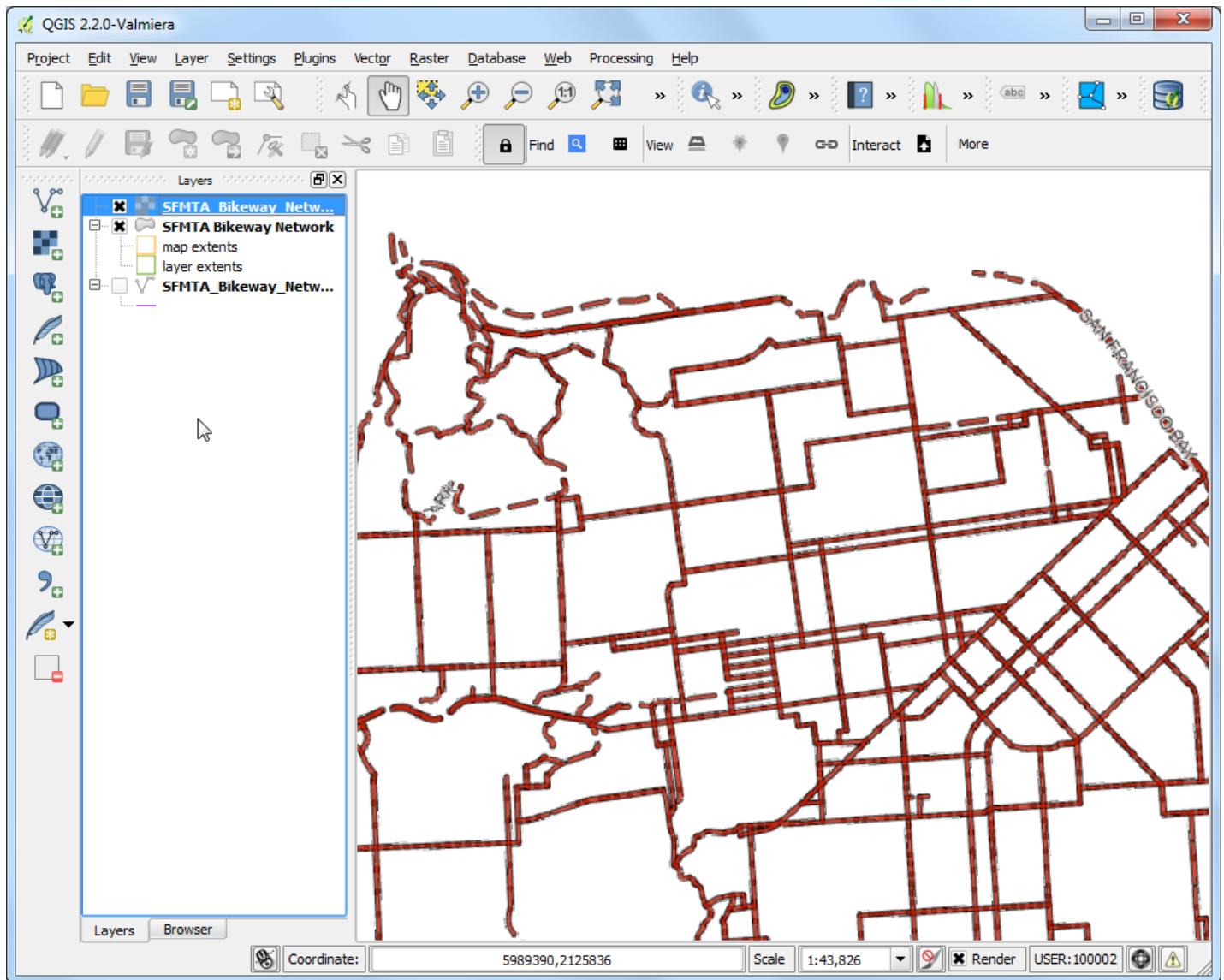
33 Click on the bounding box layer to select it. You will notice that the View tools are now enabled. Click on the WMS Overlay icon in the toolbar.



34 In the Select A Layer to Add dialog, choose the `SFMTA_Bikeway_Network` layer and click Add Selected to Map.



35 A new WMS layer will be added to QGIS and you will see your styled layer from . Google Maps Engine displayed in QGIS.



Hope this tutorial gives an overview of the capabilities of the plugin. You can visit the [plugin homepage](#) to view the source code and learn more about the plugin.