

```
<?py # This templating language is pyTenjin ?> <?py #  
http://www.kuwata-lab.com/tenjin/pytenjin-users-guide.html ?>
```

```
<?py if title: ?>
```

```
# {title}
```

```
<?py #end ?>
```

## QGIS Tutorials and Tips



### Author

```
<?py for author in authors: ?> .. cssclass:: author
```

```
# {author}
```

<http://www.spatialthoughts.com>

```
<?py #end ?>
```

# 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.

The page features a large map of Oak Island, NC, showing various roads, landmarks, and geographical features like the Elizabeth River and Dutchman Creek Park. Below this is a smaller inset map showing a delivery route for FedEx, with several purple dots numbered 3 through 9 indicating delivery points along a street labeled "Washington".

**Google Maps Engine**

Create and share custom Google Maps at scale

Bring the power of Google Maps to your organization with Google Maps Engine. Layer your data on top of Google's base map and create your own maps and geospatial applications that are supported by Google's reliable, world-class infrastructure.

Offering both a platform solution and professional application, Google Maps Engine enables a full spectrum of maps creation. Learn more and decide which edition is right for you.

[Get started with a free account](#)

FedEx uses Maps Engine to update details for [Blog post »](#) nearly 50,000 retail touchpoints in real-time.

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:

Test Project

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

GME Connector for QGIS API

#### PROJECT ID

`gme-qgis-api`



**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.

Google Developers Console

+Ujalal 

**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

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

Return to original console  Send feedback Privacy & Terms

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

Google Developers Console

+Ujalal 

**GME Connector for ...**

Overview

APIs & auth

**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](#)

**Compute Engine and App Engine** [Learn more](#)

**Client ID**   
**Email address**   
[Download JSON](#)

**CREATE NEW CLIENT ID** 

**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.



8. 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](#)[Permissions](#)[Settings](#)[Support](#)[App Engine](#)[Compute Engine](#)[Cloud Storage](#)[Cloud Datastore](#)[Cloud SQL](#)[BigQuery ↗](#)[Cloud Development](#)

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](#)

## 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

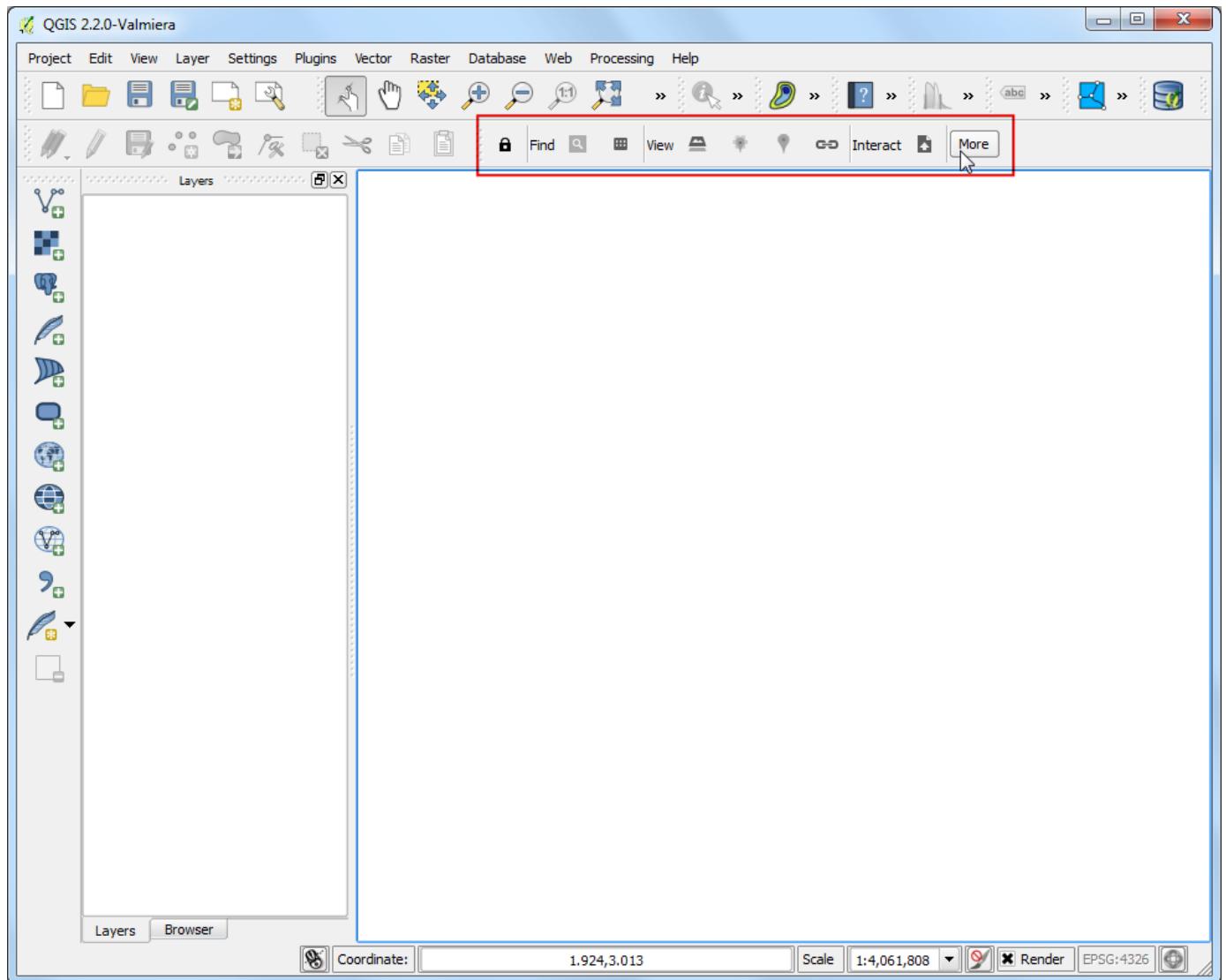
Use of this key does not require any user action or consent, does not grant access to any account information, and is not used for authorization.

[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.



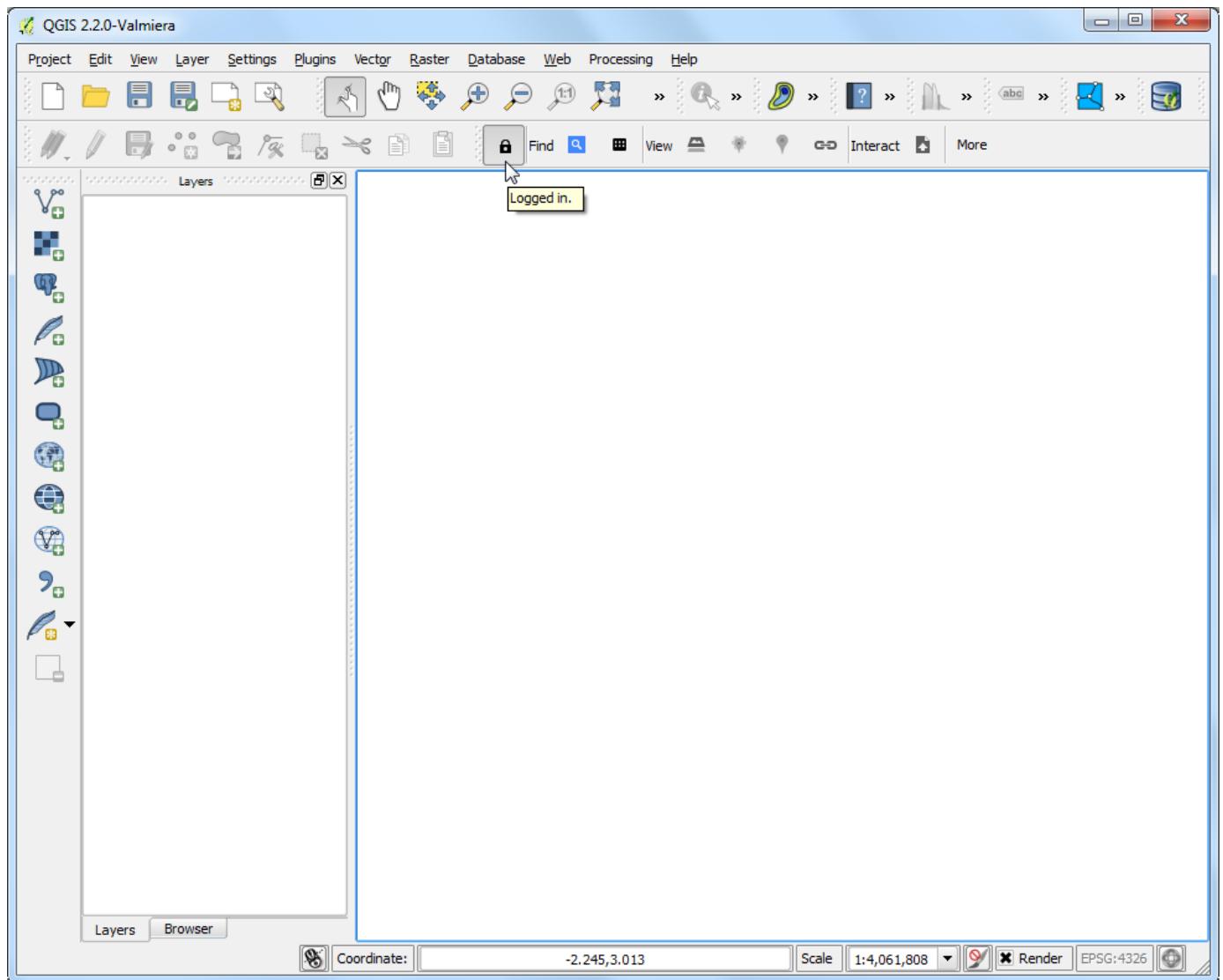
12. As you entered new API credentials, you will be prompted to log-in and authorize the plugin to use these. Sign-in to your Google account.



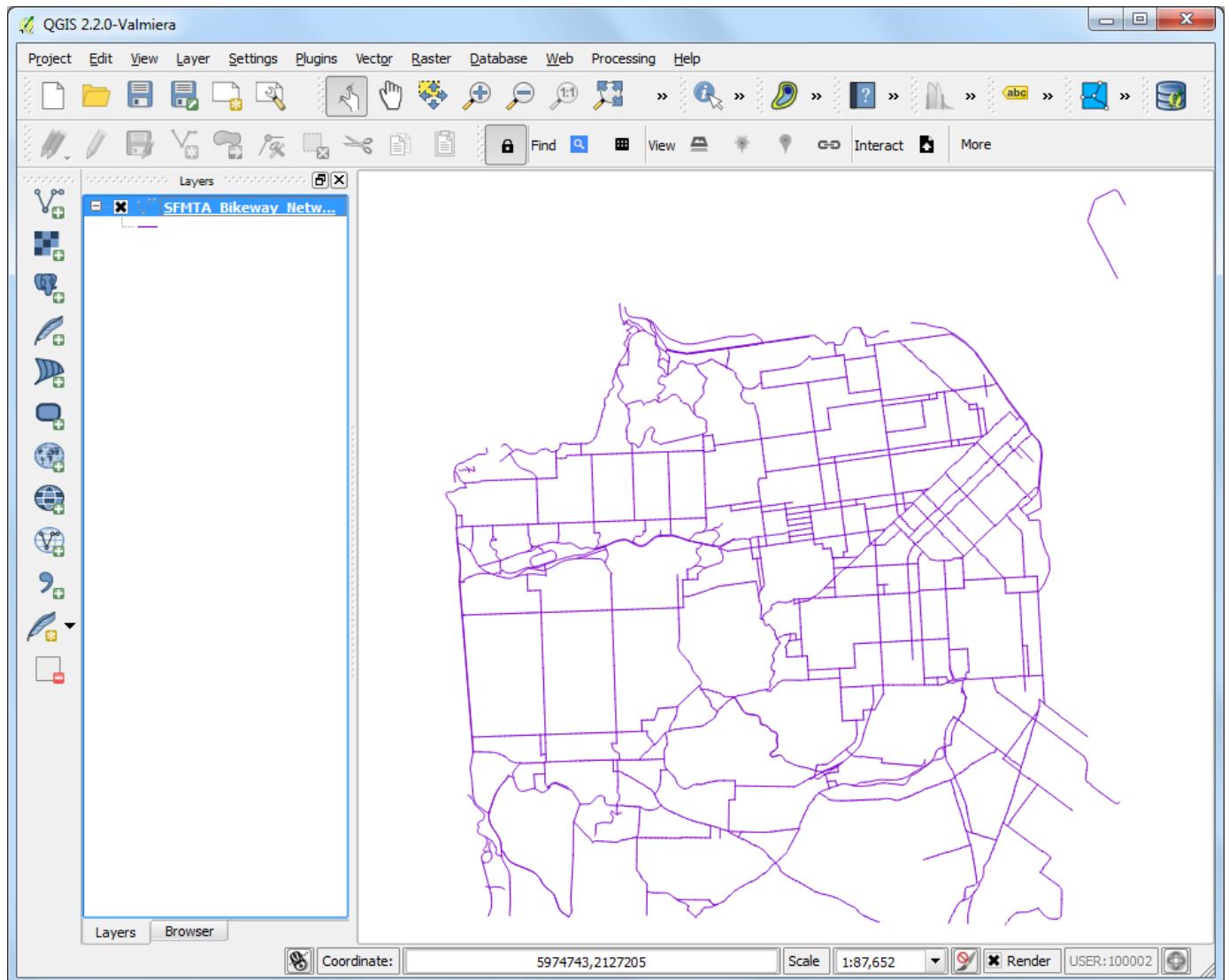
13. Click Accept in the next screen.



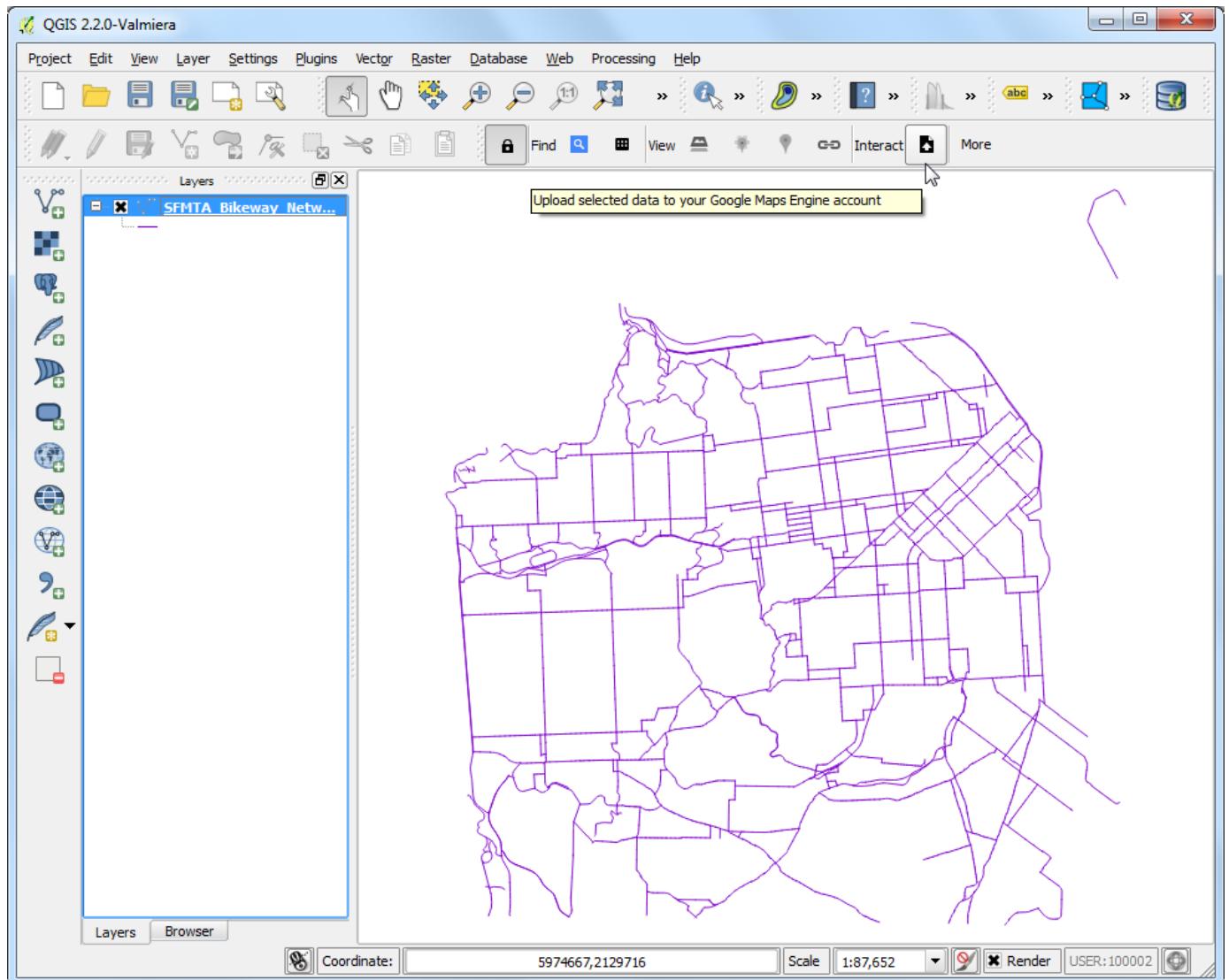
14. If all went well, you will see a message indicating you have successfully logged in.



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.

## Maps Engine

### SFMTA\_Bikeway\_Network

<b>CREATE</b>	
<b>Dashboard</b>	
<b>Maps</b>	
<b>Layers</b>	
<b>Data sources</b>	
Add to layer	
Add to mosaic	
Create styled layer	
Edit vector data	
Change primary key	
Add images	
Remove selected	
<b>Edit details</b>	
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...

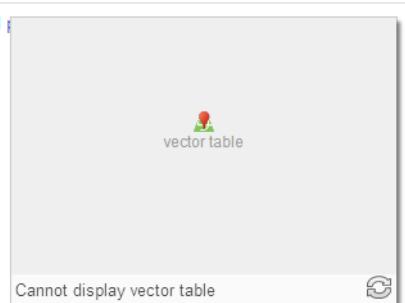
Created by: ujaval@gmail.com - May 20 2014

Last modified by: ujaval@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](#)



Cannot display vector table

#### 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](#)

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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.

## Maps Engine

### SFMTA\_Bikeway\_Network

<b>CREATE</b>	
<b>Dashboard</b>	
<b>Maps</b>	
<b>Layers</b>	
<b>Data sources</b>	
Add to layer	
Add to mosaic	
<b>Create styled layer</b>	
Edit vector data	
Change primary key	
Add images	
Remove selected	
<b>Edit details</b>	
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: ujaval@gmail.com - May 20 2014

Last modified by: ujaval@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

Last updated: May 20 2014

Geometry type: LINES  
Feature count: 2523  
Bad feature count: 0  
Vertex count: 8759  
Line count: 2523  
Bounds:  
37.70796872888273, -122.51361671890315 to 37.832132251463854,  
-122.36981739412595  
Altitude: No value  
Attribute count: 13

#### Schema

STREETNAME	String
TYPE	String
FROM_ST	String
TO_ST	String
FACILITY_T	String
YEAR_INST	Number
DIRECT	String
CNN	Number
Shape_Leng	Number
Surface_Tr	String
Barrier	String
Innovative	String

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

## Create new layer

X

1 vector table selected for layer

Layer title

SFMTA Bikeway Network

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

Create

Cancel

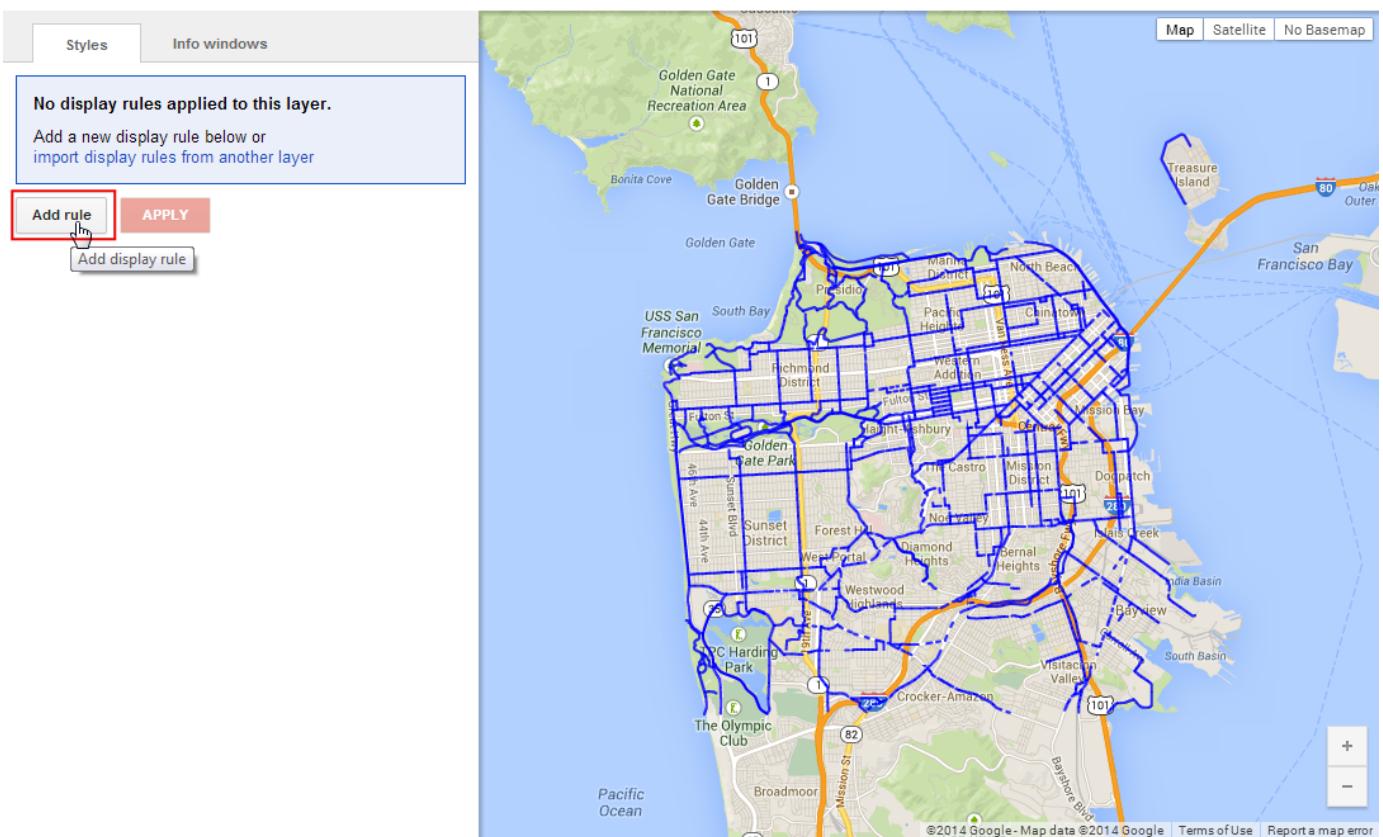
## 21. Click Add rule to add a custom style for the layer.

SFMTA\_Bikeway\_Network

Google Maps ▾

Publish on exit

Exit



## 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

Google Maps  Publish on exit

Display rule name

Zoom levels 13

Line style: Line:  Color:  Width: 2 px  
Border: Color:  Width: 1 px

Label style: STREETNAME  Outline:   
Size: 11 px Normal

Filters Add filter

Add rule

javascipt:;

Map Satellite No Basemap

MIDDLE ALEMAN SOMA MISSION NORTH BEACH TENDERLOIN SOFTWORLD

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](#)

Map Satellite No Basemap

Styles Info windows

Insert HTML content for info windows below:  
A restricted set of HTML is supported: [Learn more](#)

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

**APPLY**

©2014 Google - Map data ©2014 Google [Terms of Use](#)

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

Google [Layers](#) Test Project

Maps Engine [« SFMTA\\_Bikeway\\_Network](#)

**CREATE**

**Dashboard**

**Maps**

**Layers**

**Add to map** [Select layers to add to a map](#)

**Add data**

**Remove selected**

**Edit layer style**

**Edit details**

**Delete layer**

**Data sources**

**Access lists**

**Attribution**

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

**Layer was published** Tue, May 20, 2014 22:40 [Unpublish layer](#)

Description:  
Created by: ujaval@gmail.com - May 20 2014  
Last modified by: ujaval@gmail.com - May 20 2014

Tags:  
Draft version sharing: Map Editors [create new](#) | [modify](#)  
Published version sharing: [None](#) [create new](#) | [modify](#)

**C** [GO](#)

©2014 Google - Map Data [Terms of Use](#) [Report a map error](#)

Contains vector table: **SFMTA\_Bikeway\_Network** (details below)

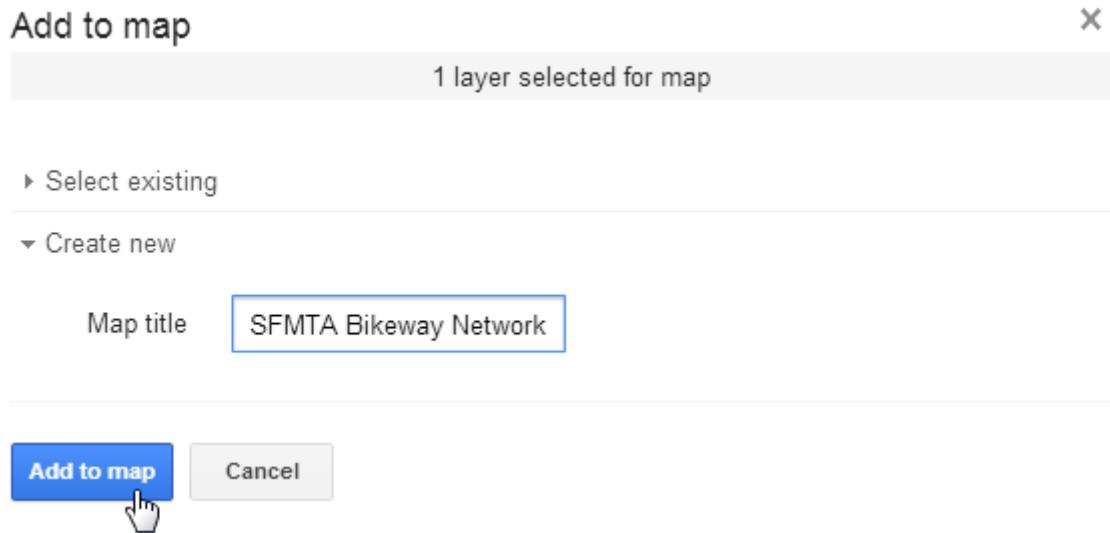
**Vector table was processed** Tue, May 20, 2014 11:08

Type: Vector table  
Description: The Bikeway network in San Francisco, coded by bike lane, ...  
Created by: ujaval@gmail.com - May 20 2014  
Last modified by: ujaval@gmail.com - May 20 2014  
Tags: QGIS Desktop

**Metadata** [Last updated: May 20, 2014](#) **Schema**

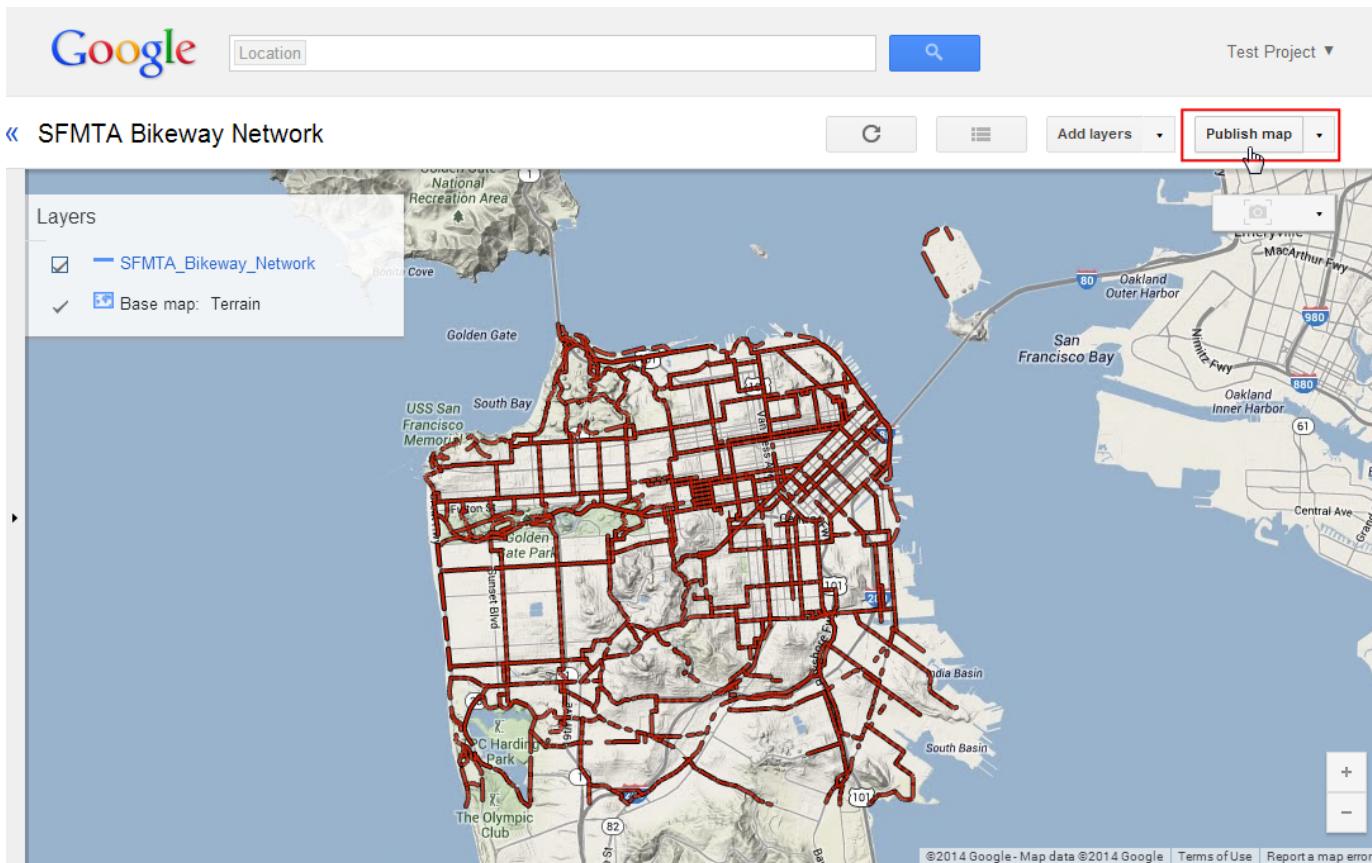
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25. Select Create new and enter SFMTA Bikeway Network as the Map title.

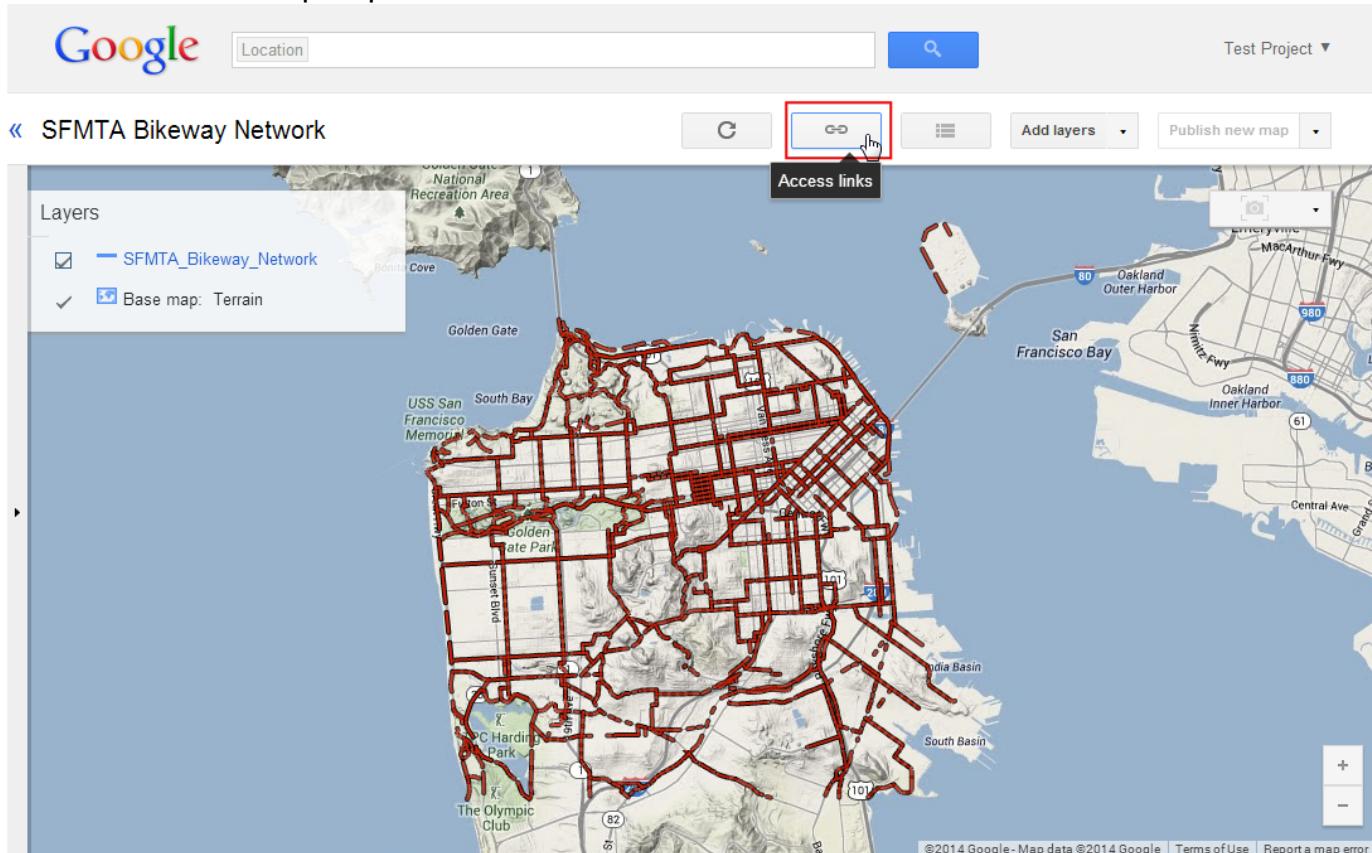


26. You will see a new map containing the styled layer. You have an option of choosing different basemaps for the map. Since this is a bike path map, you can select the Terrain style basemap.

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

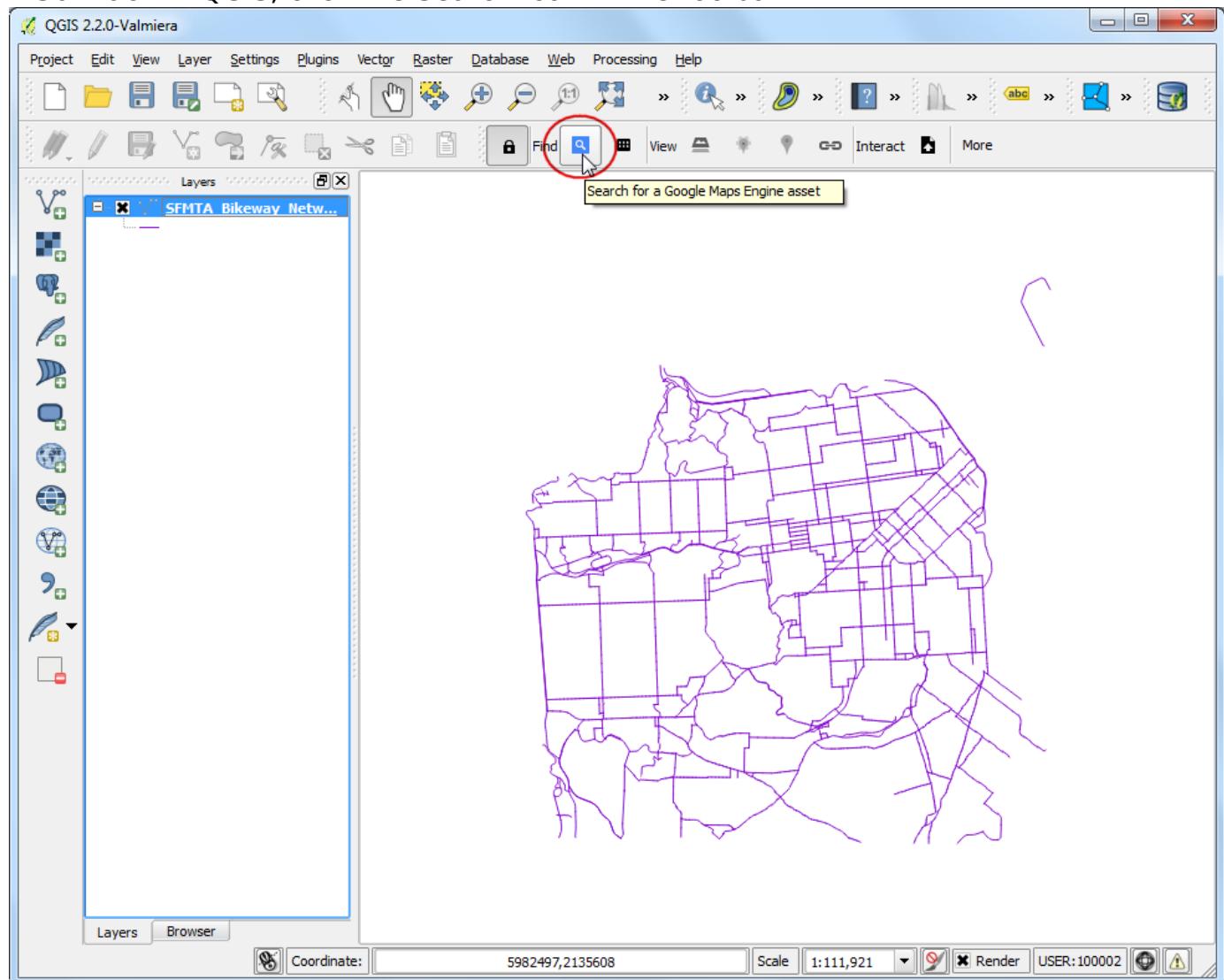
<https://mapsengine.google.com/13476080153727555143-08887688179650036554-4/r>

### Embed link

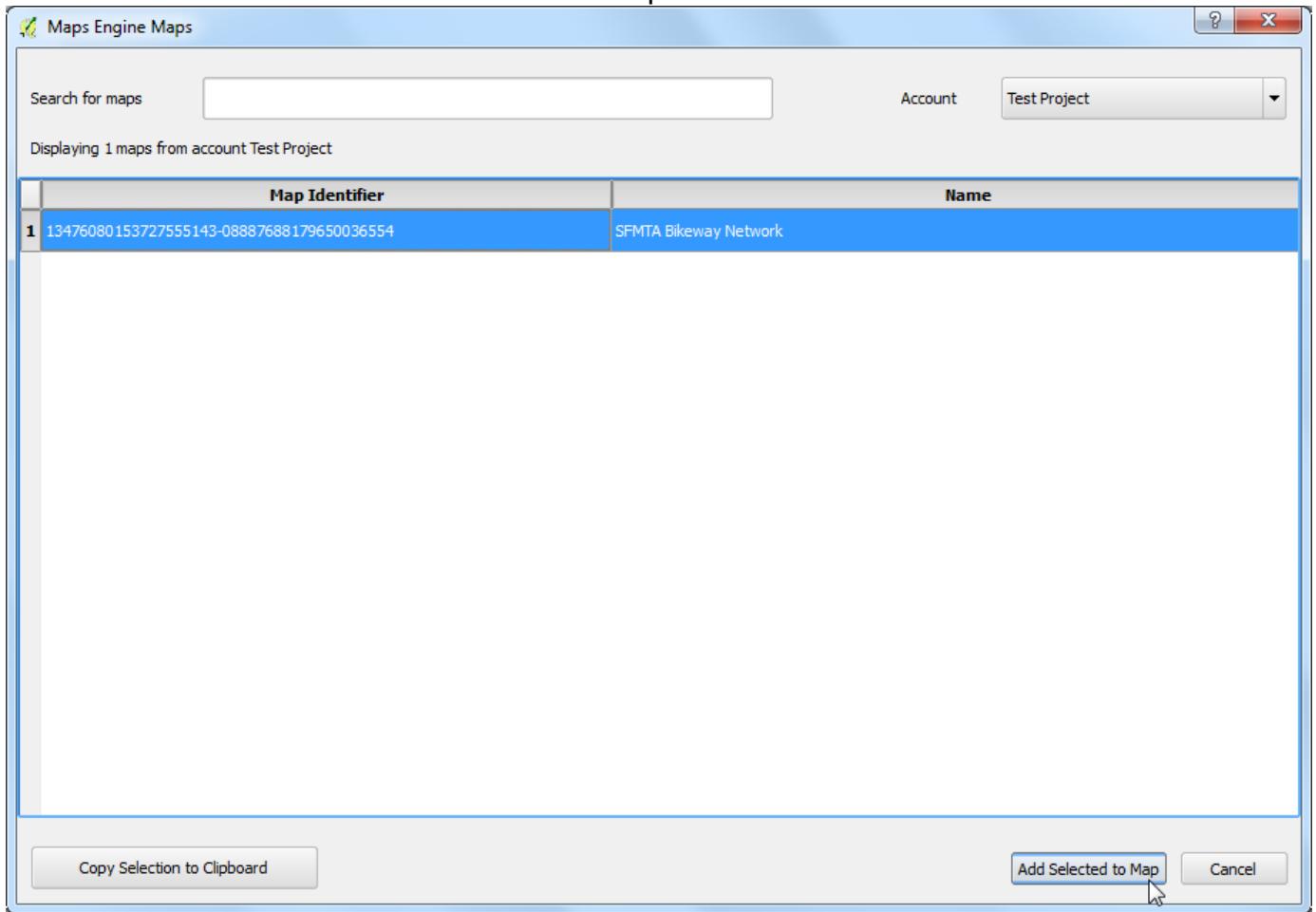
```
<iframe src="https://mapsengine.google.com/13476080153727555143-08887688179650036554-4/widget/in_iframe" width="70%" height="600px"></iframe>
```

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.



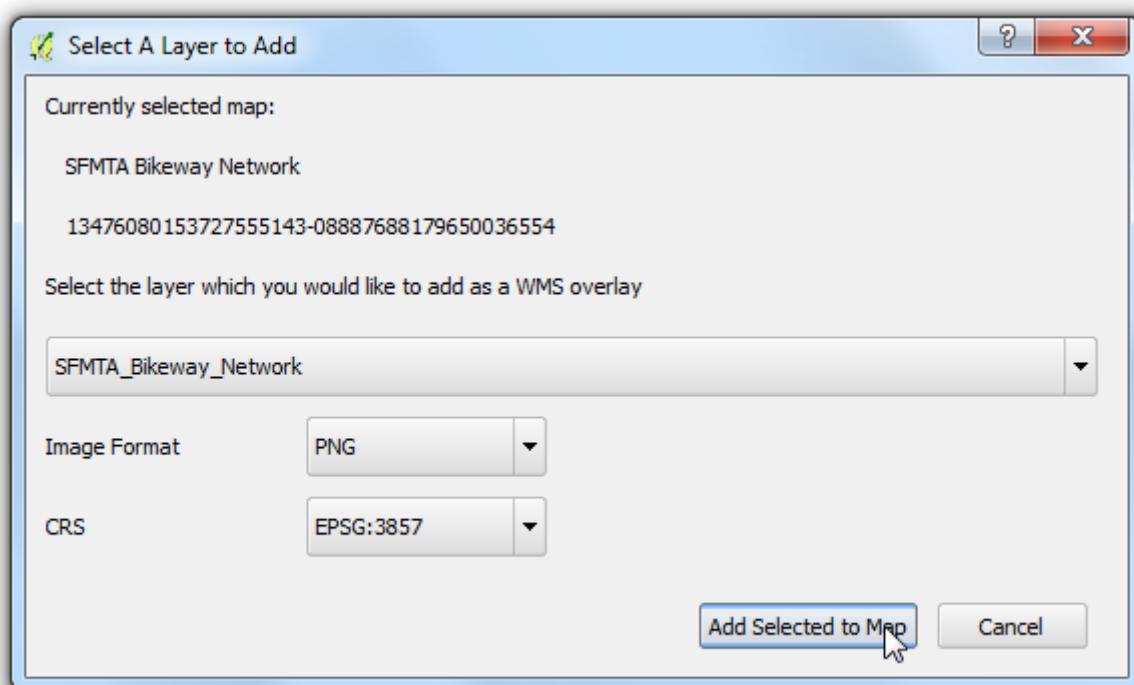
32. The plugin will query Google Maps Engine and load a vector layer containing the bounding box of the map. If you do not see any data on the canvas, right-click on the SFMTA\_Bikeway\_Network layer and select Zoom to Layer Extent.



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.