



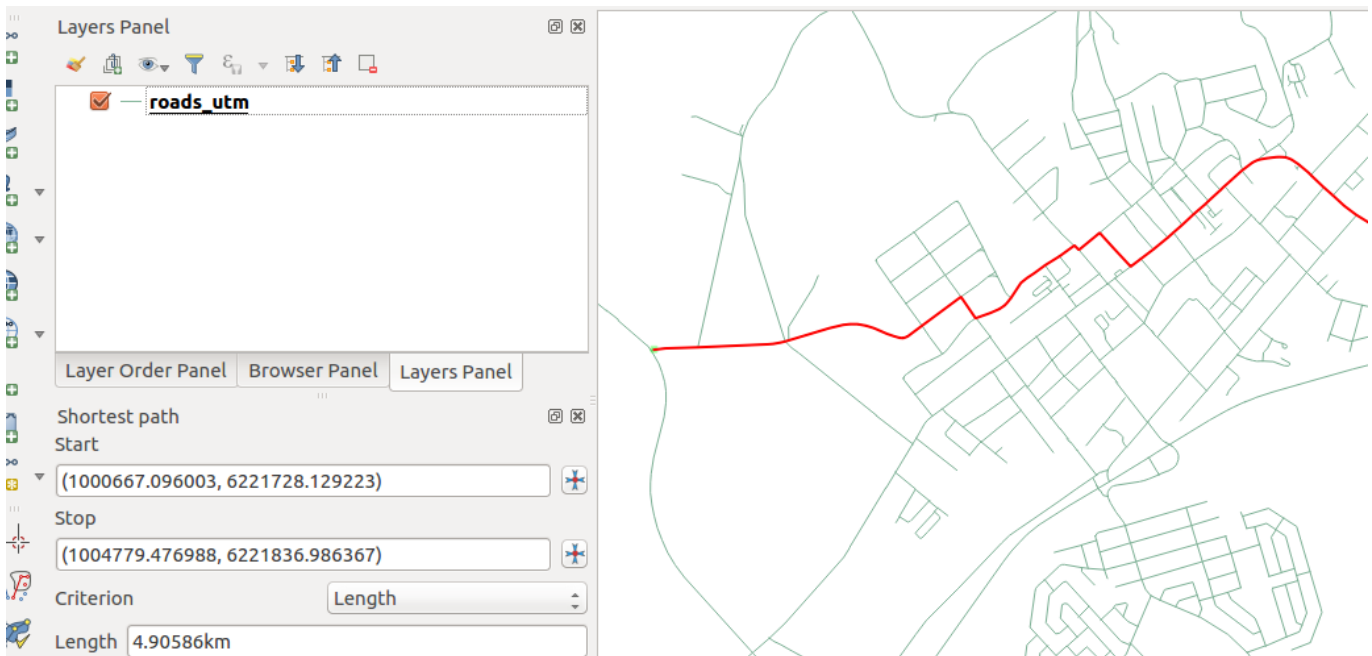
## Section : 10. Vector

### Module : 10.5. Network Analysis

#### Network Analysis in Context

*“A network is a set of connected lines. The networks are usually used to delineate rivers, road network. Network analysis studies the relationship between connected lines in terms of distance and time”*

In this module, we look at how we can use QGIS to plan a route based on the shortest distance or the shortest time it takes to travel between two connected lines



#### **You try:**

**Goal: To learn how to use the road graph plugin to calculate routes between two places.**

Data: appendix3-local-data

- Open a new project and load the network layer.
  - Activate the Road Graph Plugin.
  - Project the network layer to the specified CRS (name the resultant layer roads\_utm\_33s)
  - Navigate to the vector menu and choose Road graph settings
  - Click on the default tab and choose the speed
  - Click on a start in the Road graph panel and choose a starting point on the network (Use the projected layer)
  - Choose stop and activate it on the network
  - Choose the either of the criterion.
  - Repeat the procedure using different criteria.
- NB: Explain your results in terms of distance and time

Name	Expectation
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Speed	60 km/hr
Network layer	roads_osm.shp
CRS	UTM 33S WGS 84
Criterion	Length/time

### More about

Network analysis aims to establish if you can move from A to B and from B to C and is it possible to move from A to C. Network analysis is a type of connectivity analysis. Network analysis varies from simple analysis to complex analysis.

Complexity is achieved by analysis of the network and checking for features which give resistance to a route. Examples of features that bring resistance are the number of traffic lights and terrain, and this affects determining the shortest path between two points in a network. Travelling cost also vary because of these factors.

### Check your knowledge:

- Which of the following statements is true:
  - A network should be uni directional. All roads should be travelling in the same direction
  - A road network can be bidirectional. A road that goes in both direction
  - A vector layer that has units as decimal degrees can be used when estimating distances
- Can a river be described as a network in the same way a road is:
  - No we cannot determine the shortest path between two points because people do not travel in a river
  - Yes, a river is a network and all operations done on roads can be done here
  - A river is a GIS data depicting natural phenomenon so it cannot be used
- Plugins are only installed when online:
  - True
  - False

### Further reading:

- Network\_analysis: [https://docs.qgis.org/2.14/en/docs/training\\_manual/vector\\_analysis/network\\_analysis.html](https://docs.qgis.org/2.14/en/docs/training_manual/vector_analysis/network_analysis.html)
- Grass.osgeo.org: <https://grass.osgeo.org/grass73/manuals/wxGUI.vnet.html>
- Vector\_network\_analysis: [https://grasswiki.osgeo.org/wiki/Vector\\_network\\_analysis](https://grasswiki.osgeo.org/wiki/Vector_network_analysis)

Download the sample data for the lesson from [http://changelog.kartoza.com/media/images/lesson/worksheet/external\\_data/caa736ff463ea205f724611f9add80f172a4b80a.zip](http://changelog.kartoza.com/media/images/lesson/worksheet/external_data/caa736ff463ea205f724611f9add80f172a4b80a.zip).