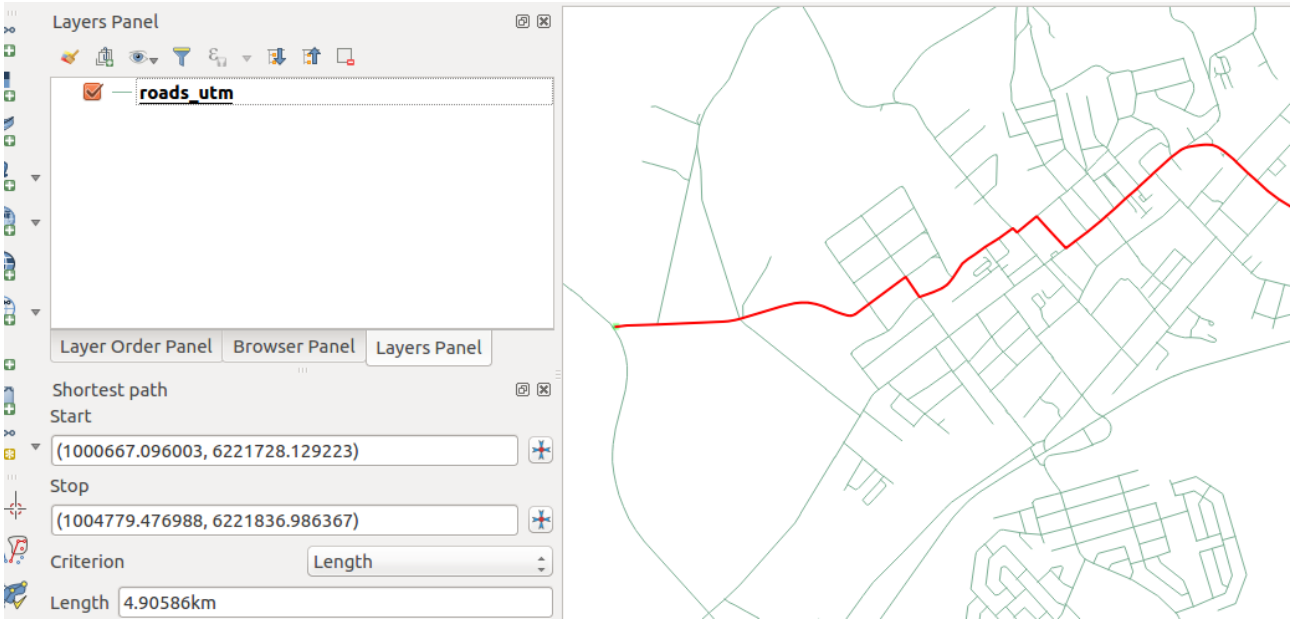
Network Analysis in Context

" 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 a different criteria.

NB: Explain your results in terms of distance and time

Name	Value
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 the network and checking for features which gives resistance to a route. Example of features that bring resistance are number of traffic lights,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:

1. **Which of the following statements is true:**

a) A network should be uni directional. All roads should be travelling in the same direction

b) A road network can be bidirectional. A road that goes in both direction

c) A vector layer that has units as decimal degrees can be used when estimating distances.

2. **Can a river be described as a network in the same way a road is:**

a) No we cannot determine the shortest path between two points because people do not travel in a river.

b) Yes, a river is a network and all operations done on roads can be done here.

c) A river is a GIS data depicting natural phenomenon so it cannot be used.

3. **Plugins are only installed when online:**

- True
- False

Answers: 1c, 2b, 3f

Further reading:

https://docs.qgis.org/2.14/en/docs/training_manual/vector_analysis/network_analysis.html
https://grasswiki.osgeo.org/wiki/Vector_network_analysis
https://grass.osgeo.org/grass73/manuals/wxGUI.vnet.html