The Connectivity Framework as a Tool to plan Nature Restoration Measures

A graph-theory approach to assess aquatic habitat connectivity of the Sliedrechtse Biesbosch

MSc Thesis - Supplementary Material

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This document serves as supplementary material to the main document with corresponding title. Figures included in this document correspond to the results discussed in Chapter 5 of the main document.

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A

Bypass around Zoetemelkskil

This chapter gives the connectivity results for the situation in the Sliedrechtse Biesbosch described in section 5.2 of the main document, The nature restoration measure discussed here is the construction of a bypass around the Zoetemelkskil. Figure A.1 illustrates the time-varying connectivity metrics, i.e. the number of components (NOC) of the graph, the order of the largest component and the length of connected pathways (LOCOP) of the largest component. Next are the graphs indicating the available channels in the system and visualizing the largest available habitat on a time interval of 10 minutes.

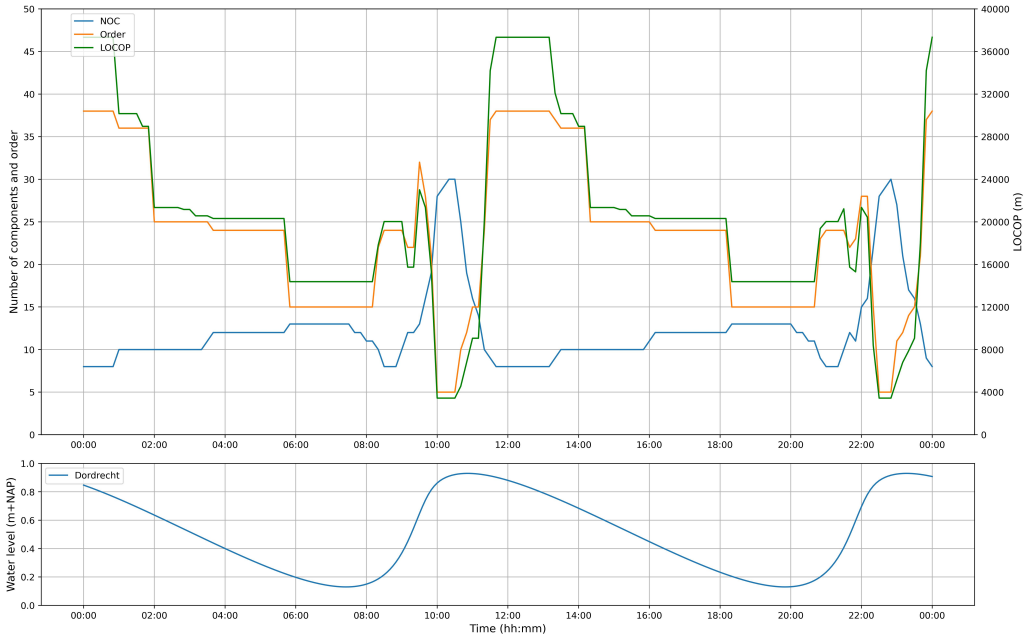
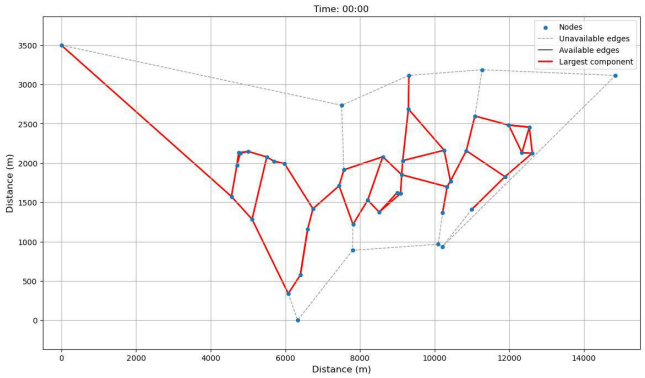


Figure A.1: Evolution of connectivity of the Sliedrechtse Biesbosch during one day and a maximum tolerable flow velocity of $u_{max} = 0.3$ m/s, evaluated by means of three metrics: the number of components (NOC) in the graph, the number of nodes in the largest component, and the length of connected pathways (LOCOP) of the largest component.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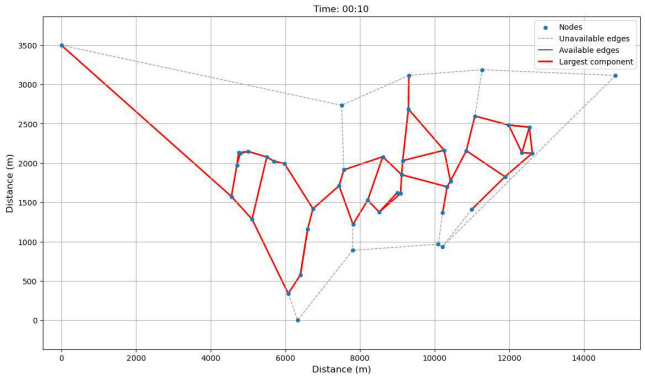
Distance (m)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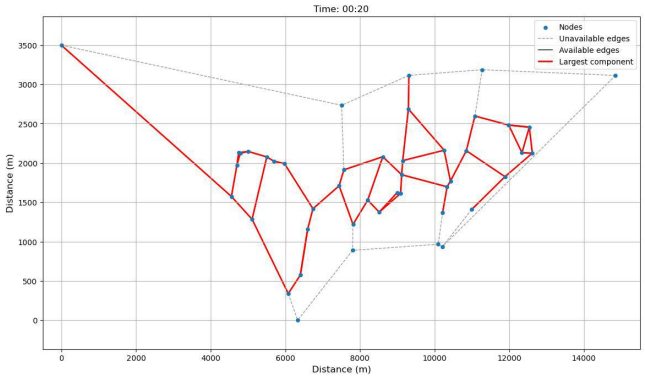
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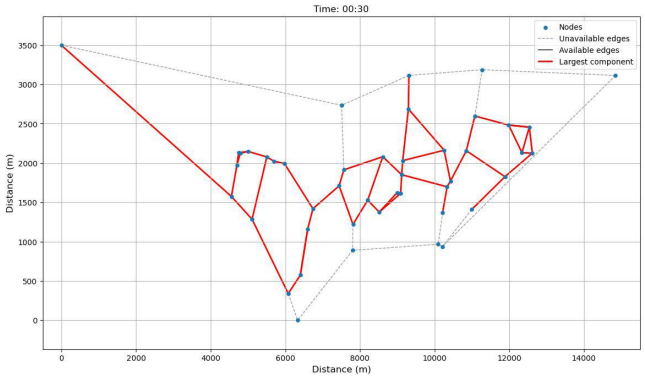
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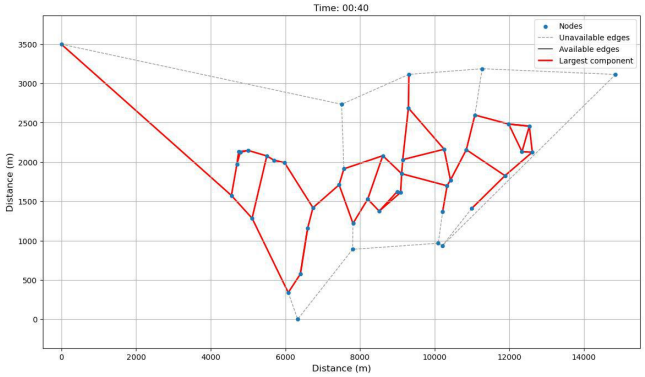
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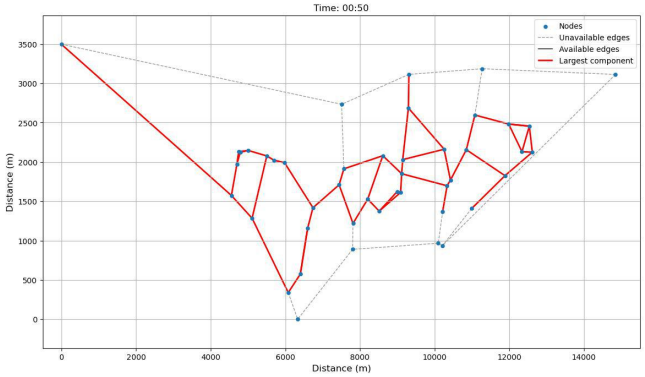
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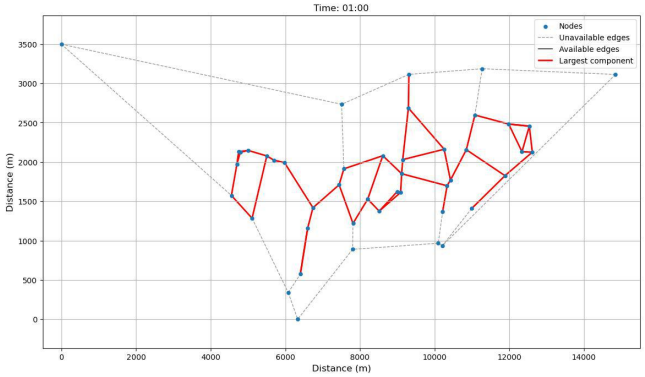
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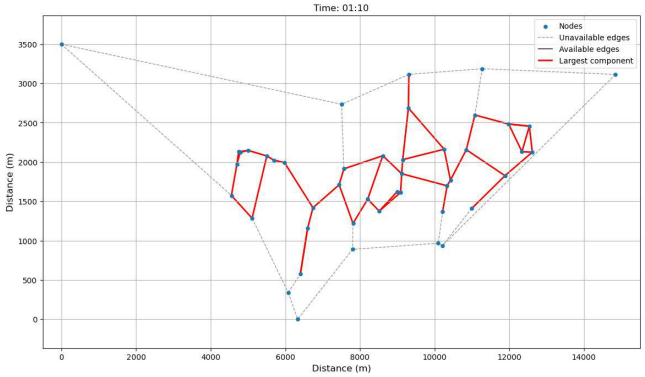
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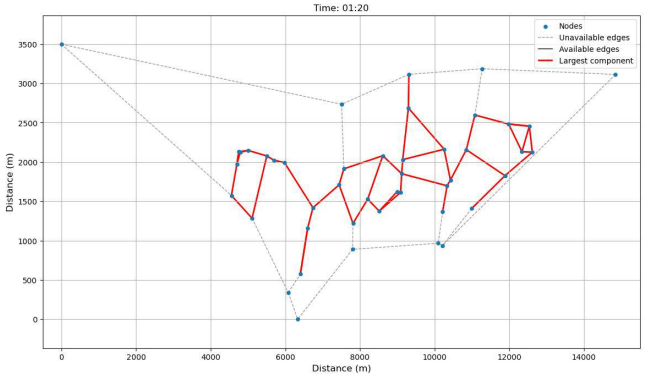
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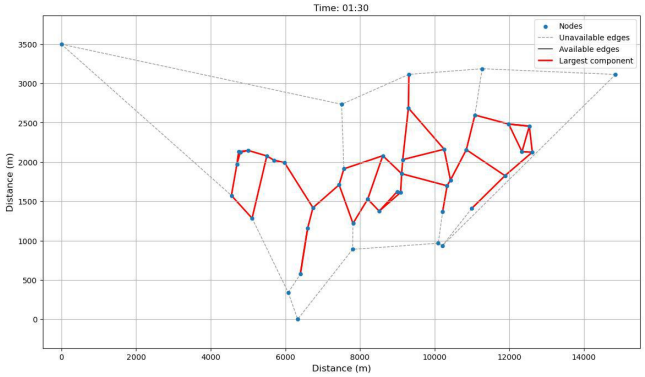
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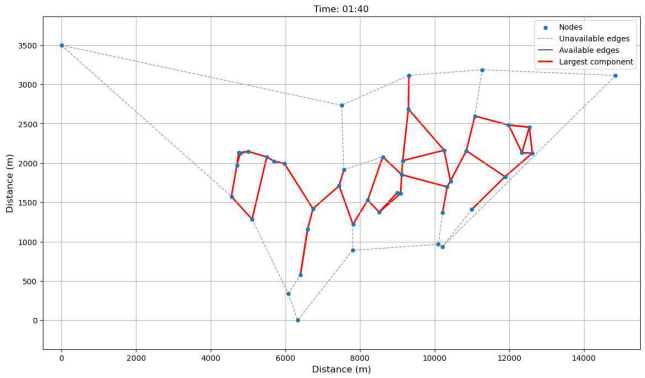
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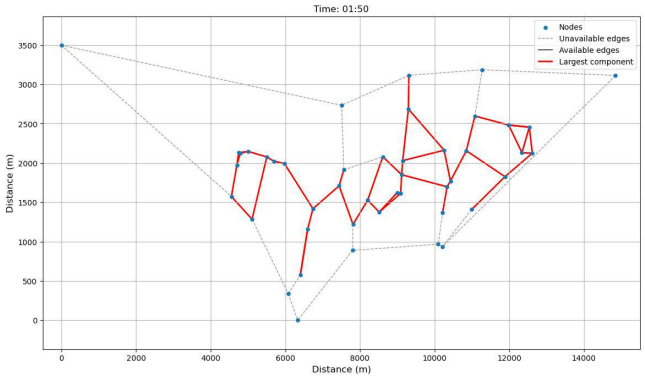
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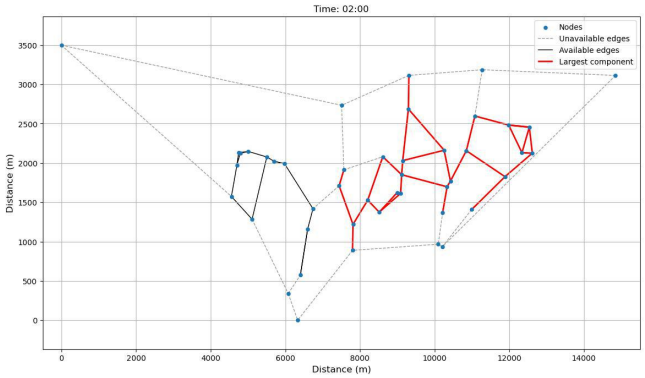
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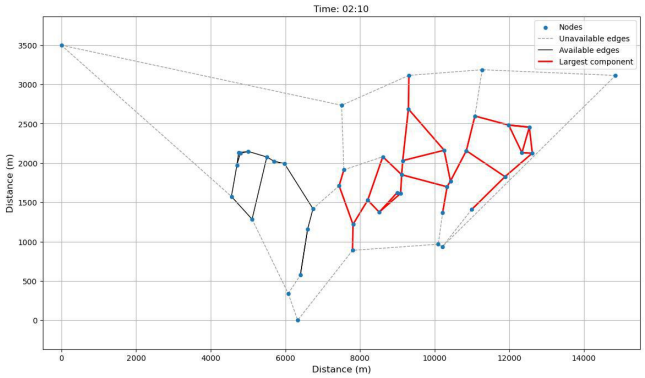
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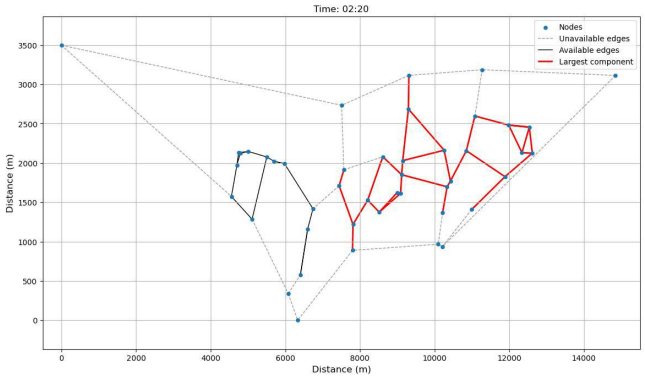
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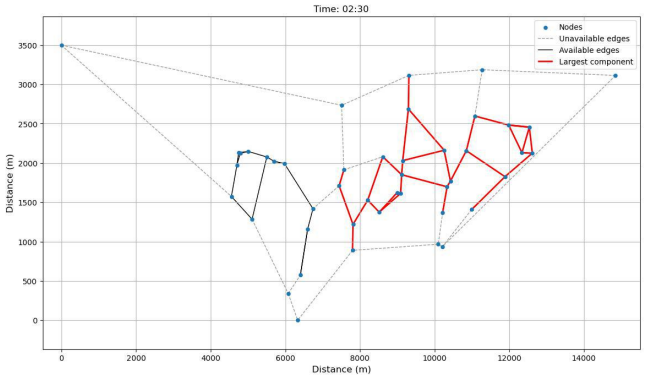
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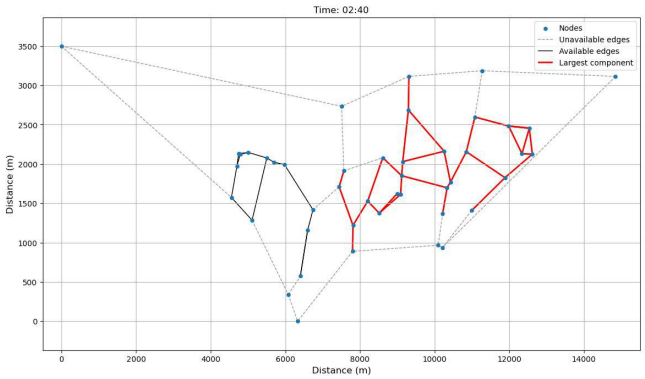
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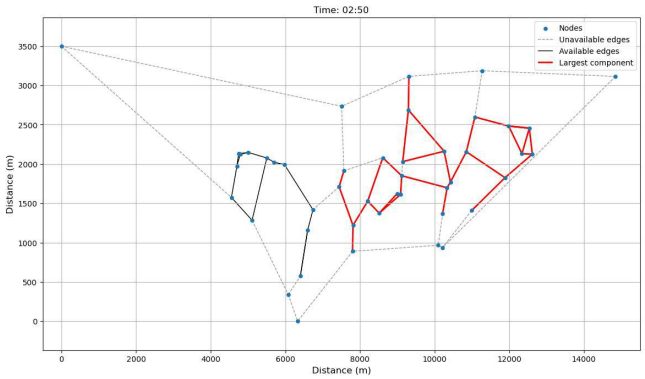
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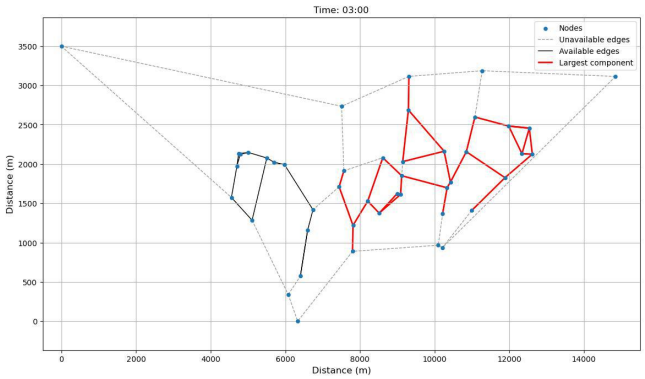
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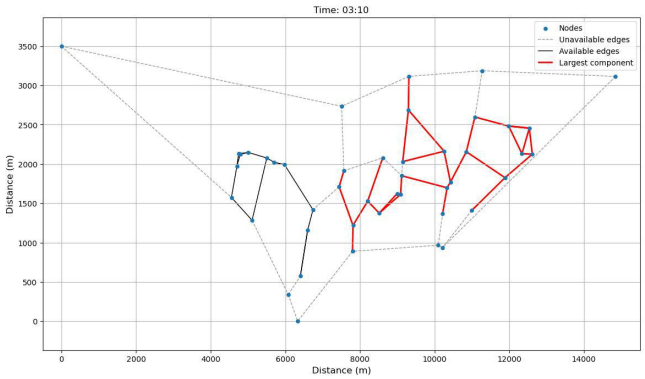
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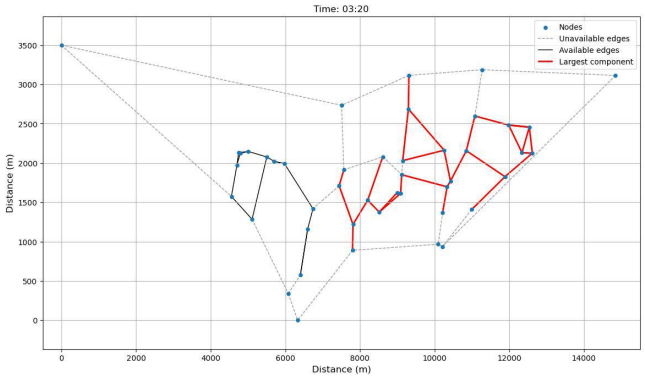
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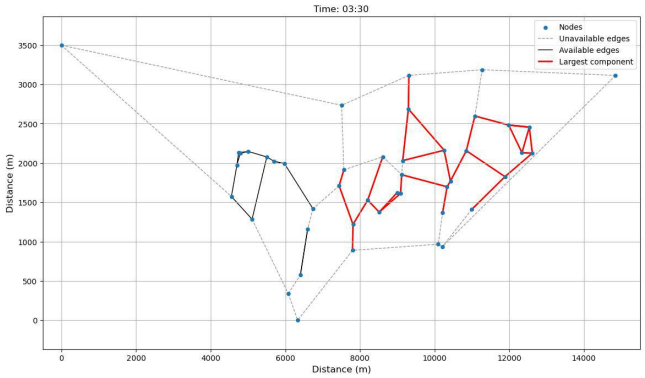
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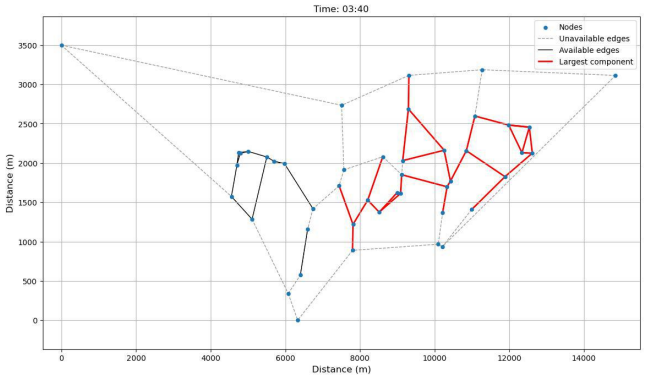
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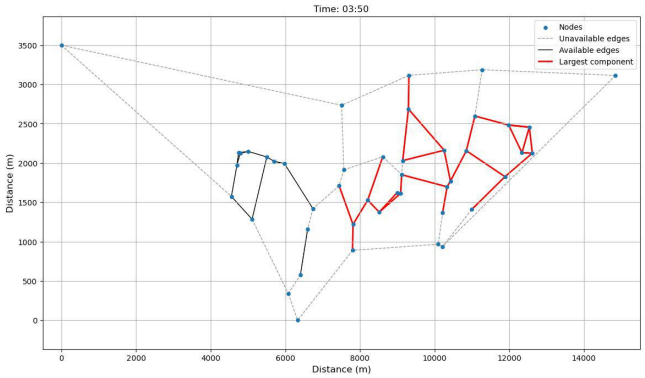
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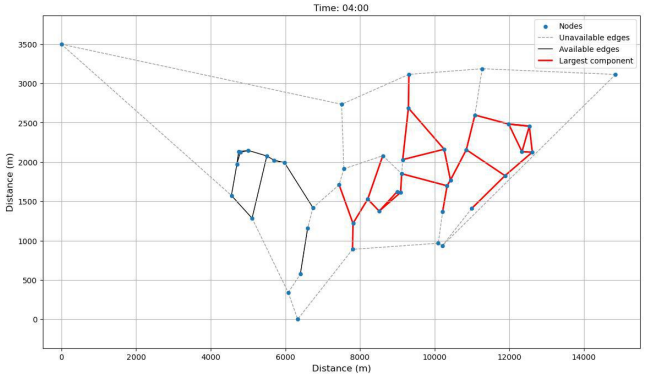
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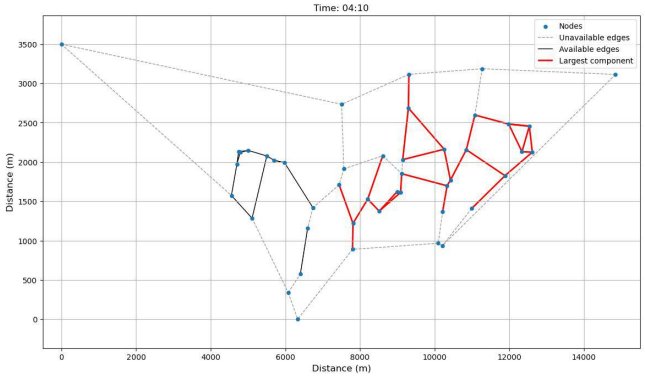
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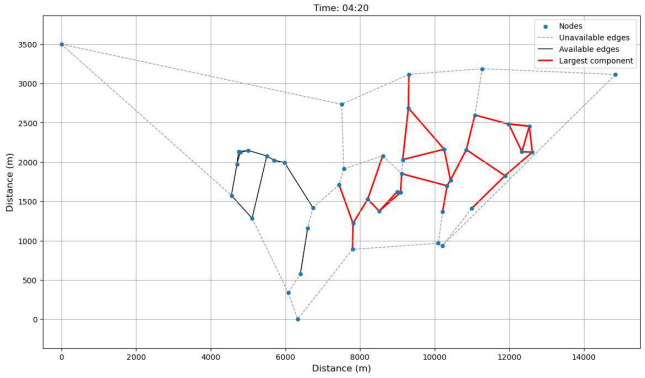
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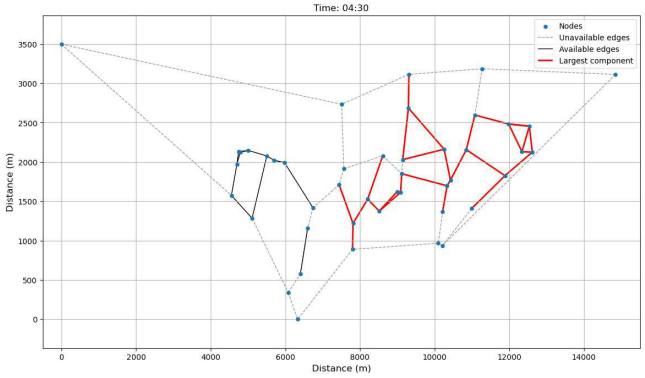
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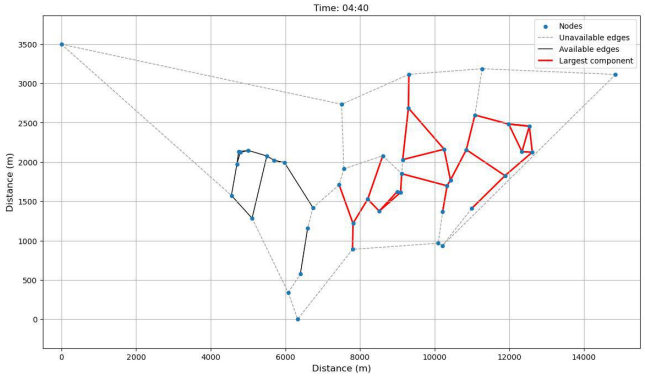
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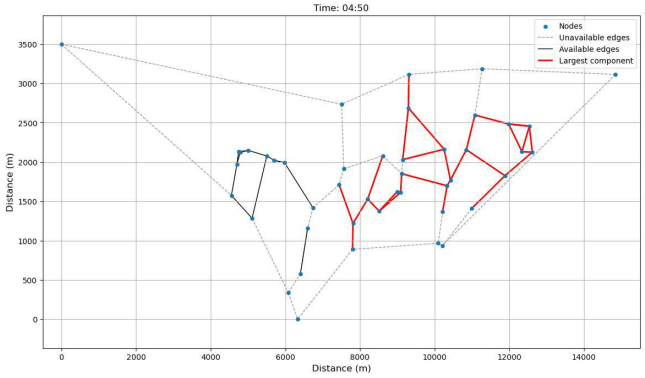
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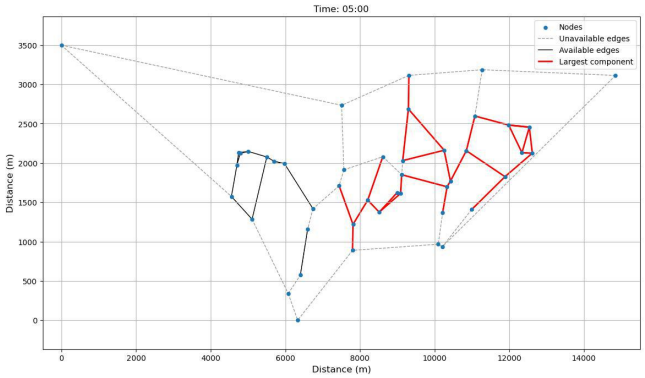
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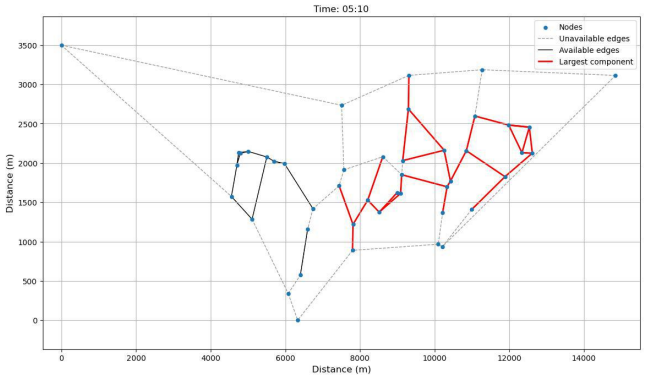
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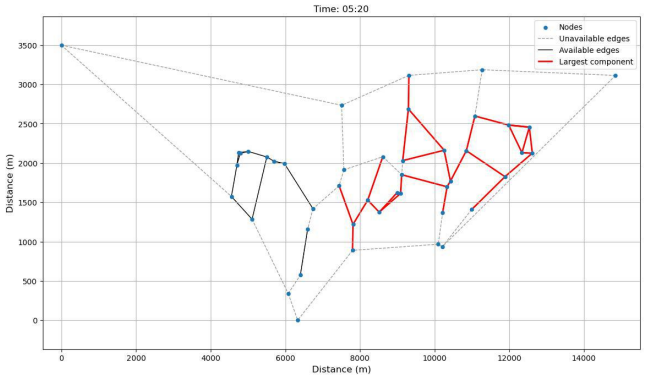
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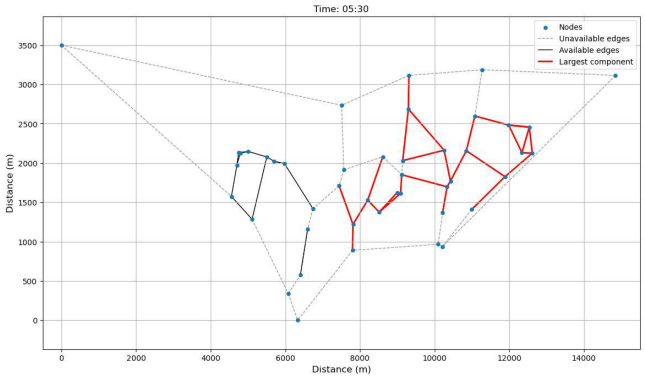
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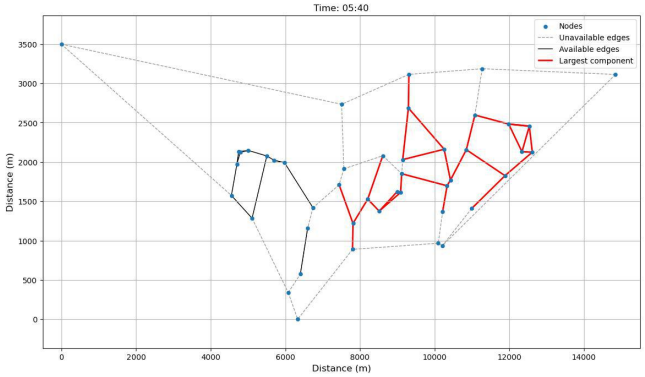
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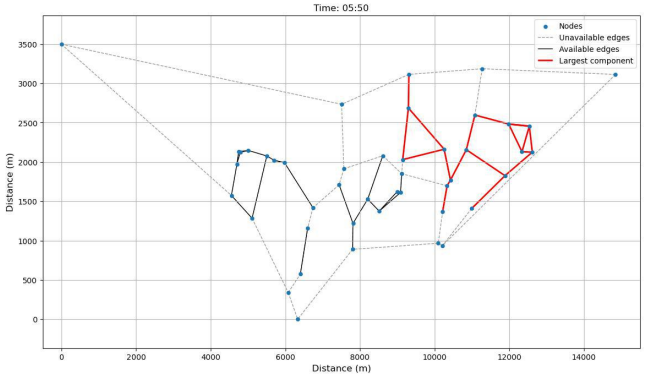
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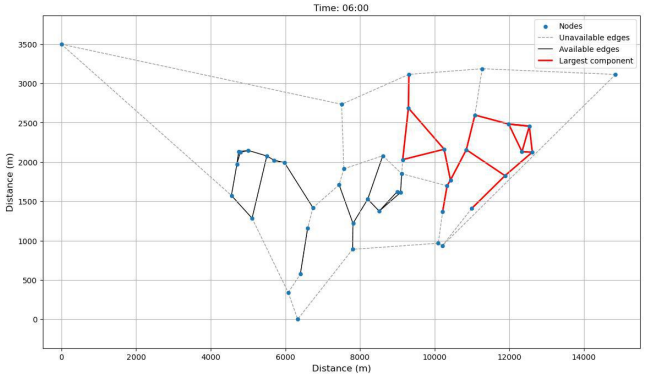
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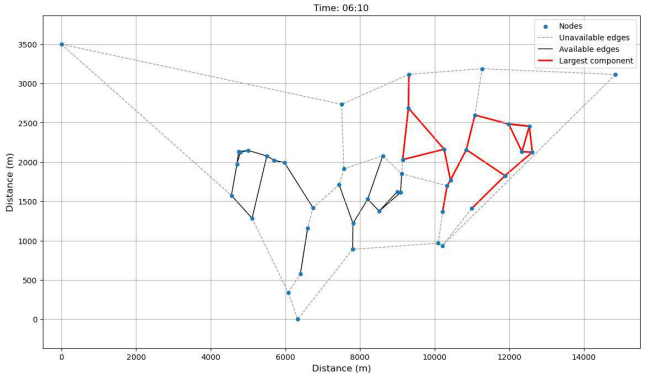
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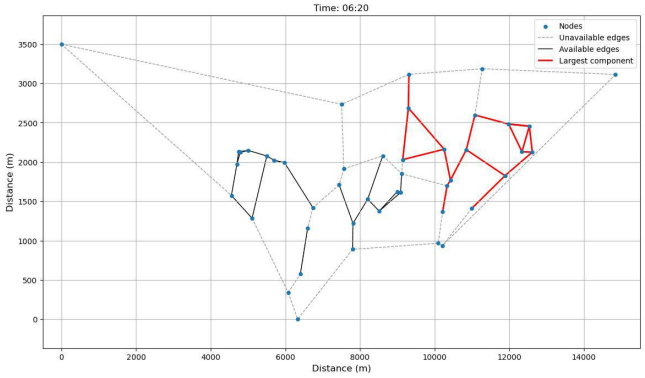
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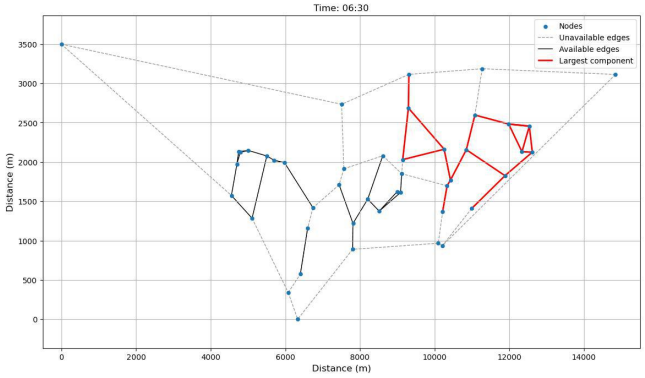
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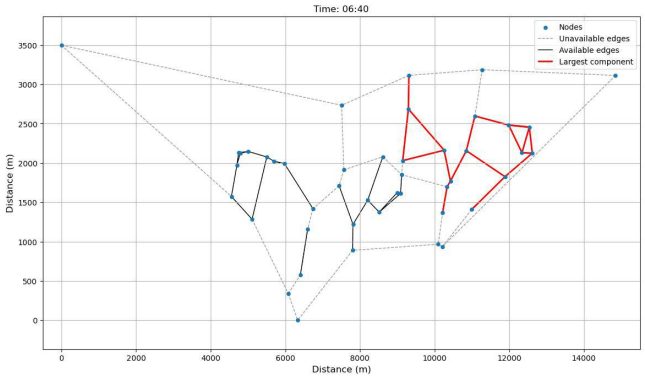
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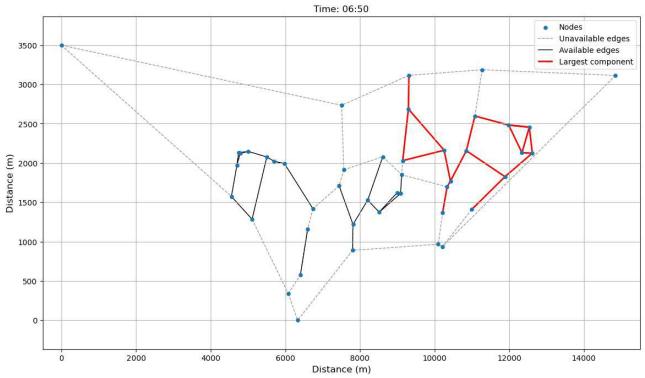
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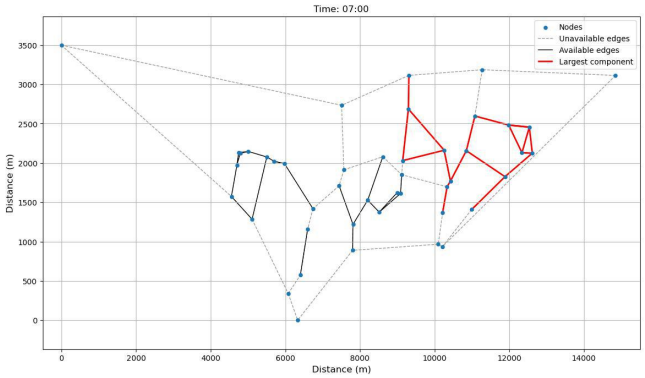
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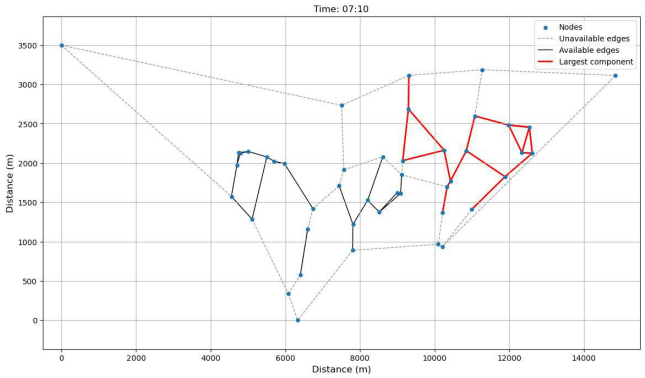
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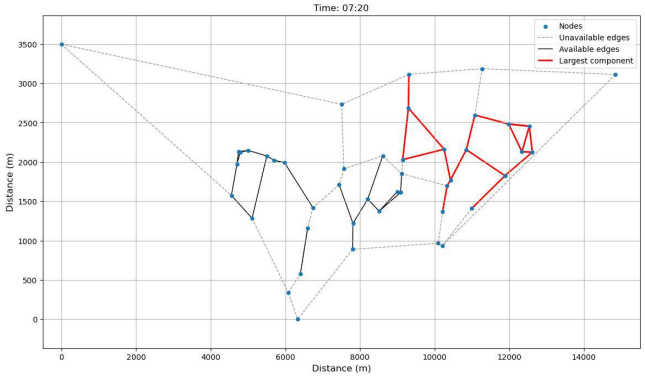
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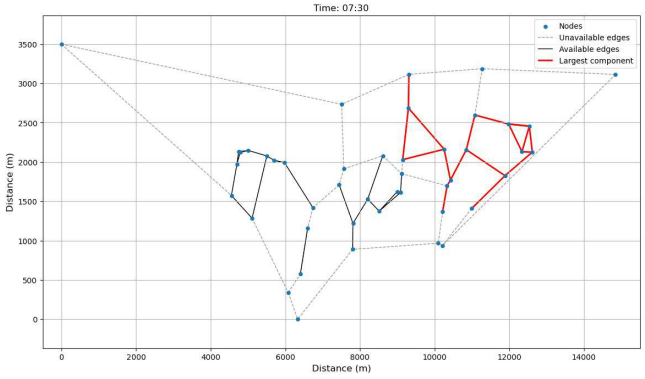
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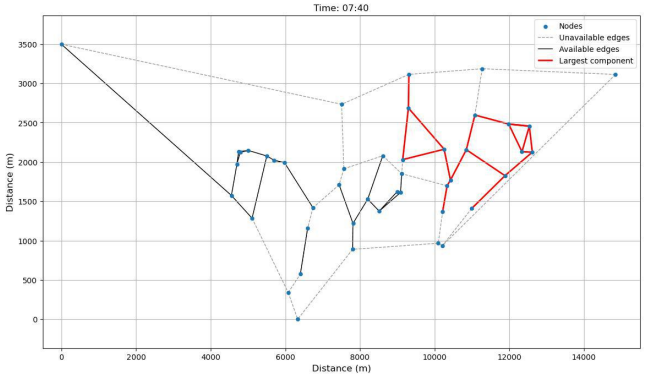
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Available edges
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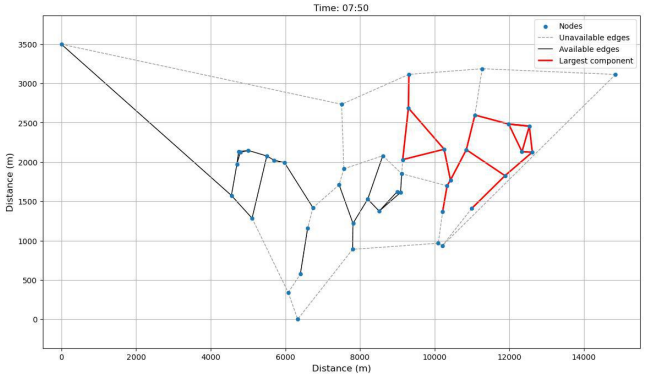
Distance (m)


Time: 07:50
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Available edges
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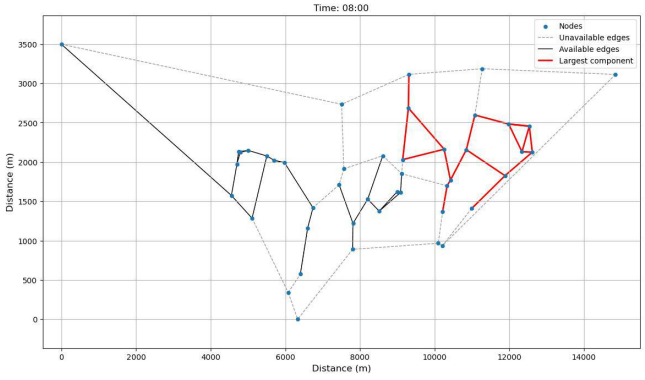
Distance (m)
Distance (m)


Time: 08:00
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Available edges
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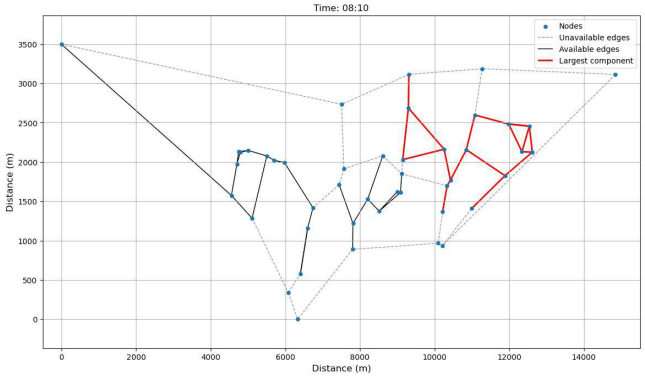
Distance (m)
Distance (m)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Nodes
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Available edges
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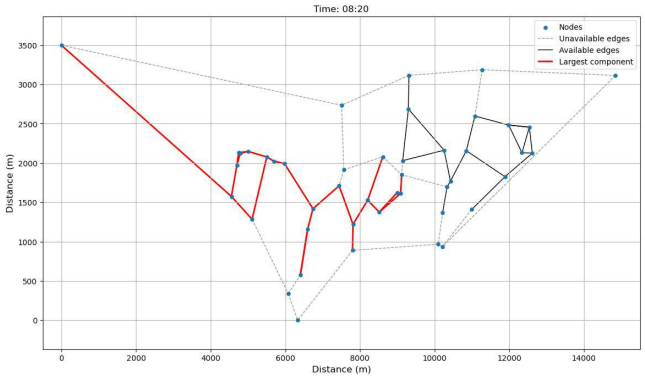
Distance (m)
Distance (m)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Nodes
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Available edges
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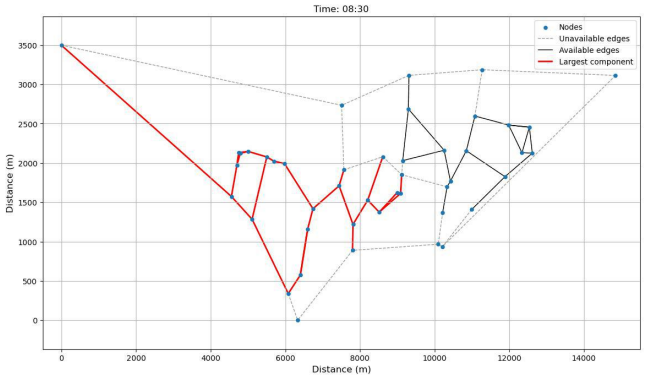
Distance (m)
Distance (m)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Nodes
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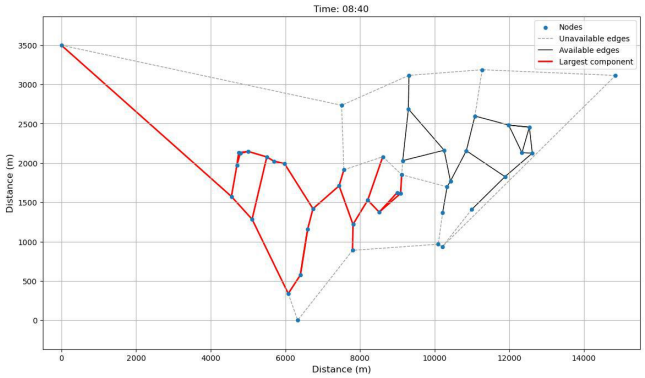
Distance (m)
Distance (m)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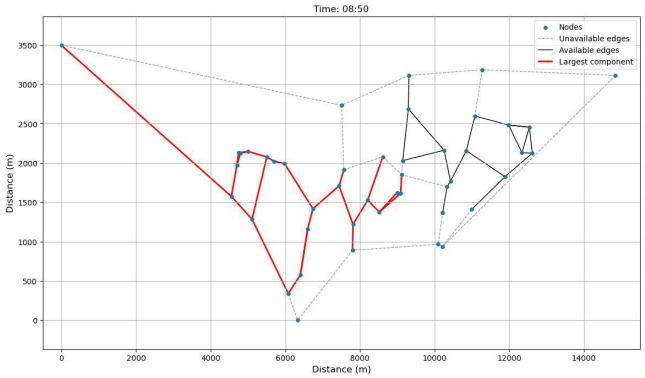
Distance (m)
Distance (m)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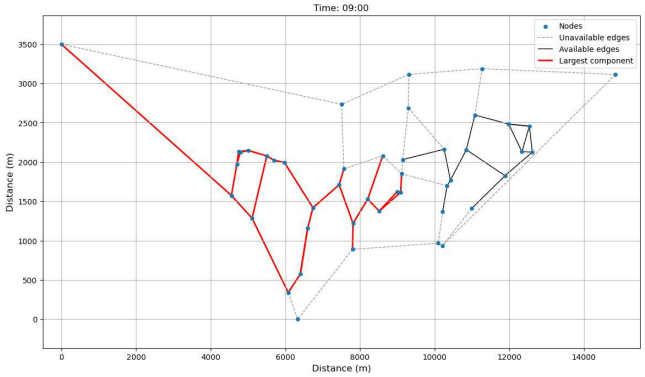
Distance (m)
Distance (m)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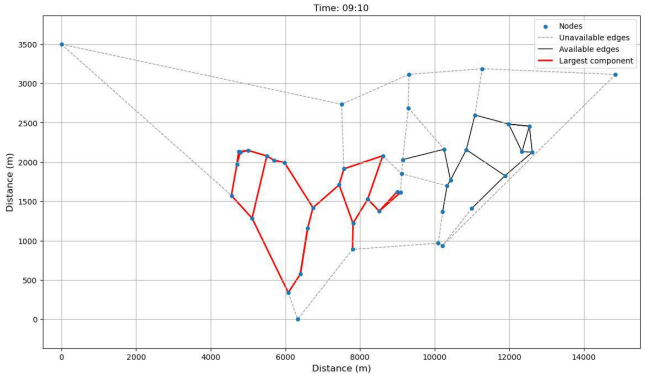
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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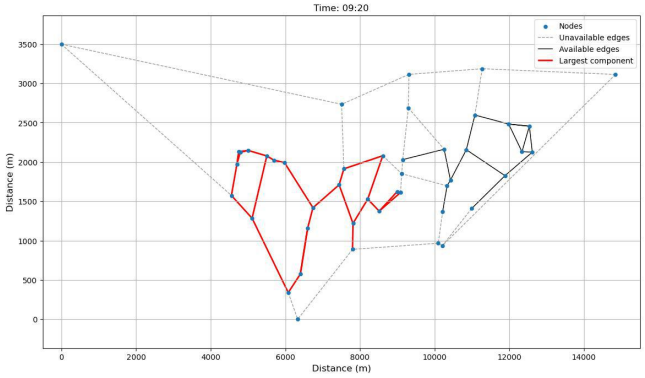
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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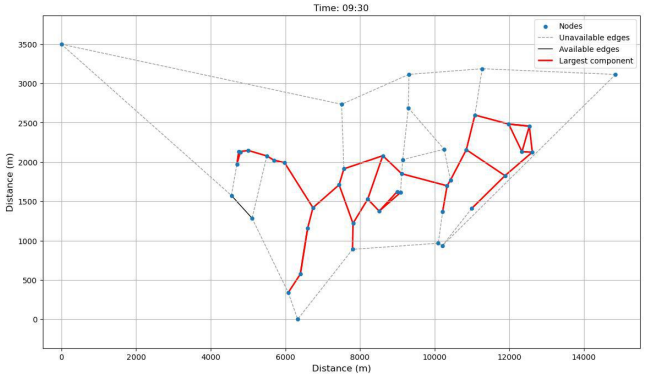
Distance (m)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Nodes
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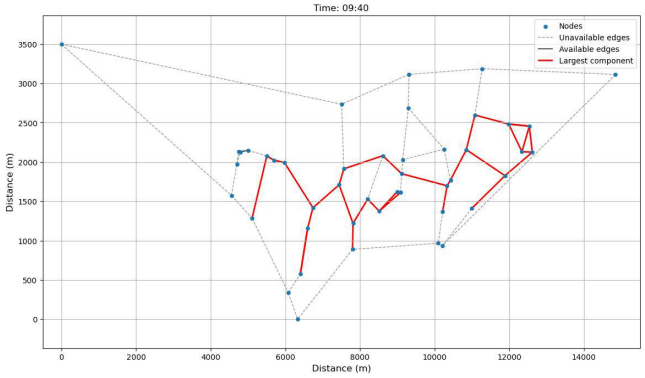
Distance (m)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Nodes
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Available edges
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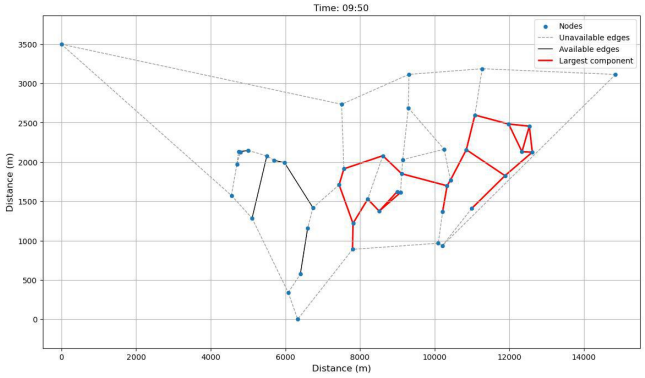
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Largest component
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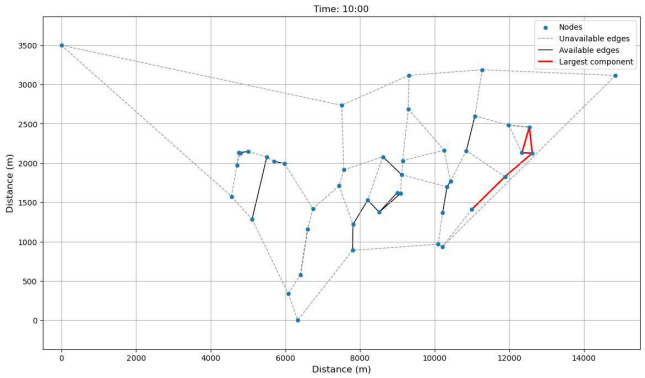
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Largest component
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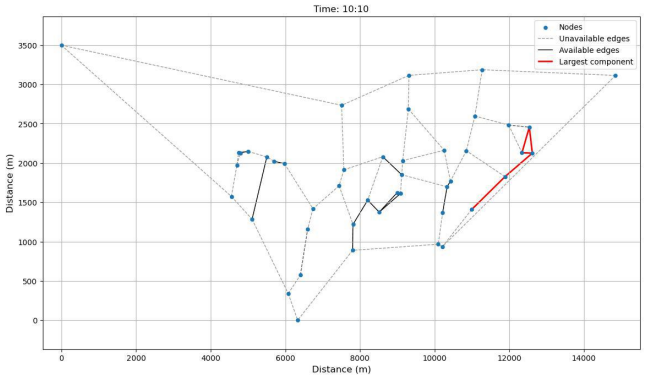
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Nodes
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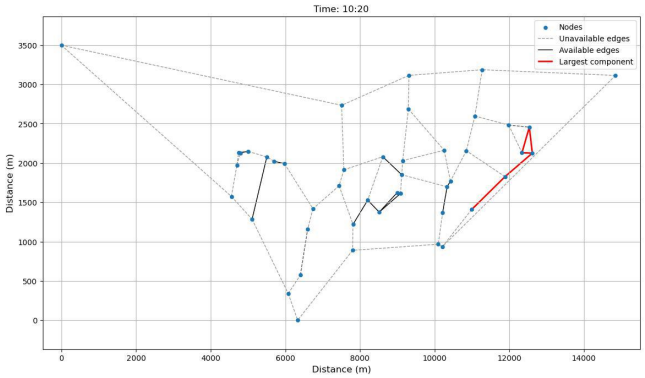
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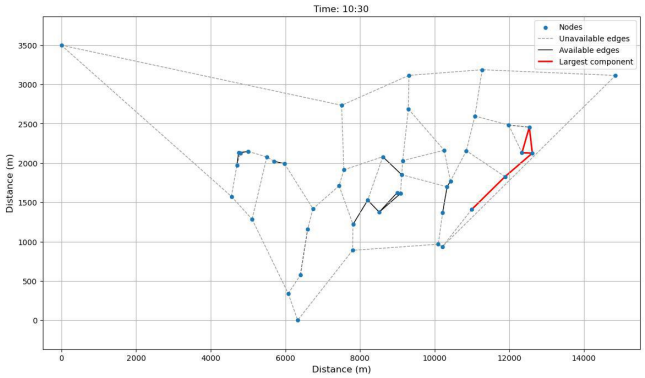
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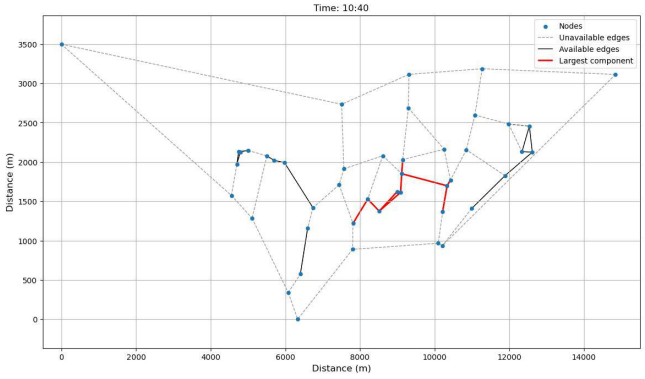
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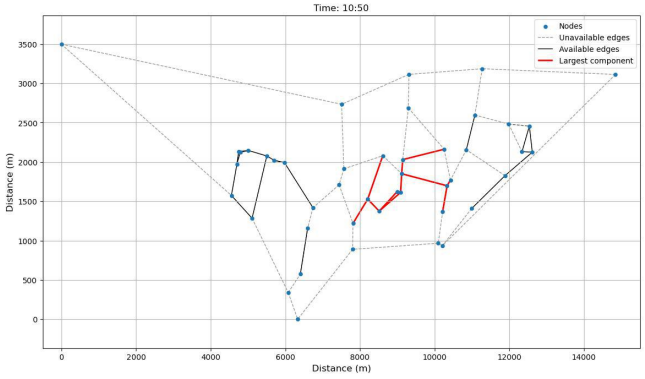
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Largest component
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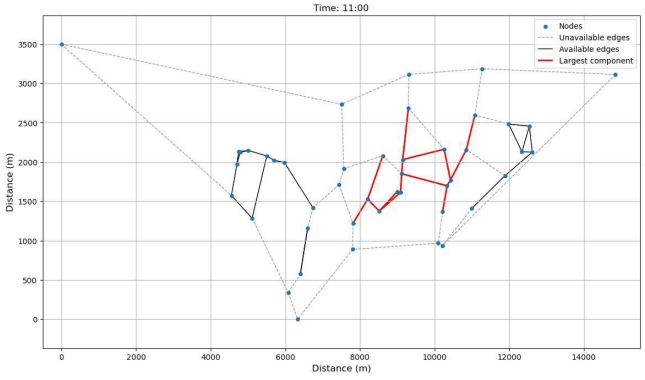
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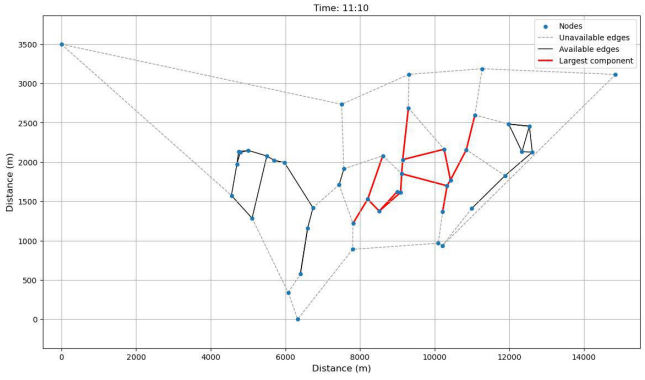
Distance (m)
Distance (m)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Nodes
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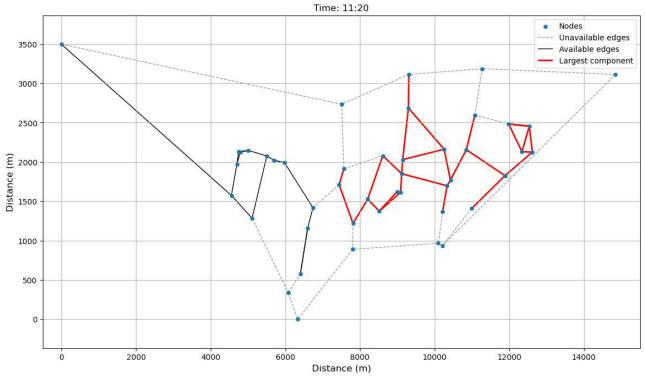
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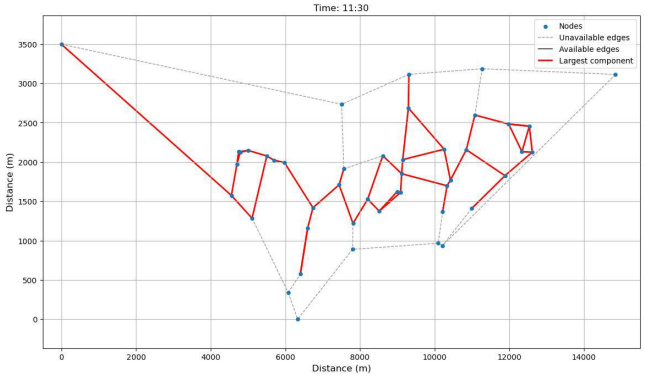
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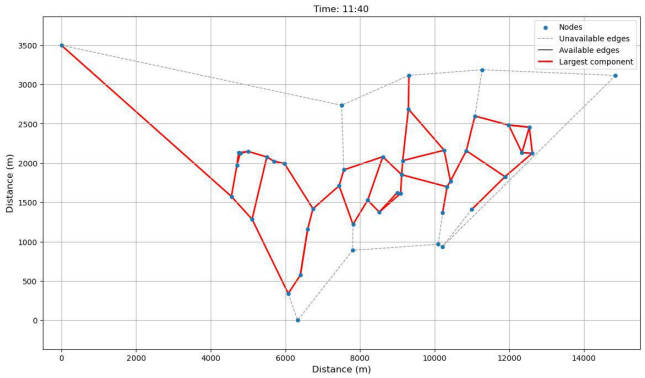
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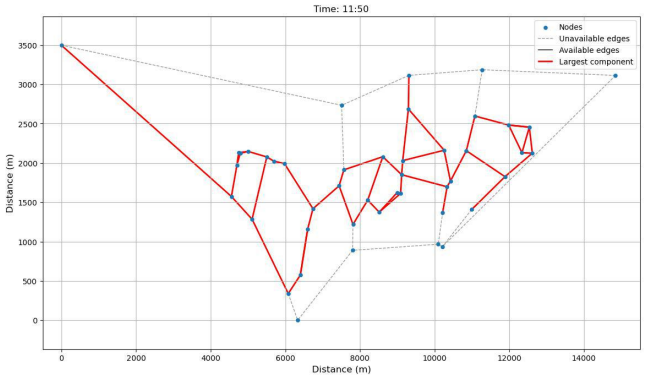
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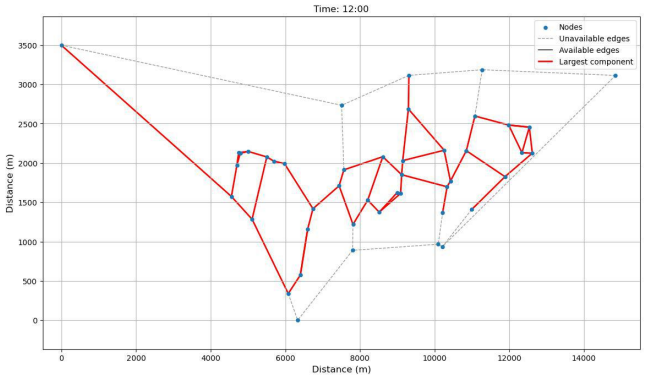
Time: 12:00
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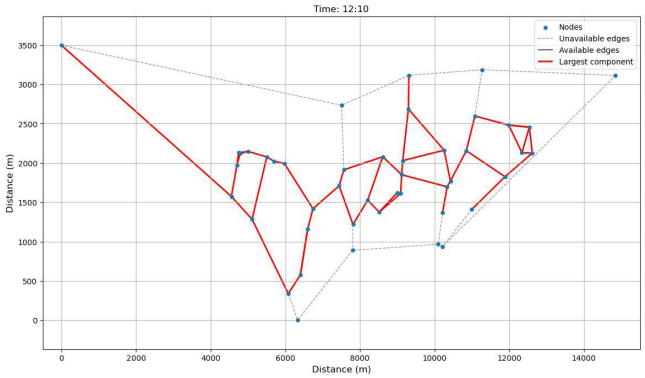
Largest component
Distance (m)
Distance (m)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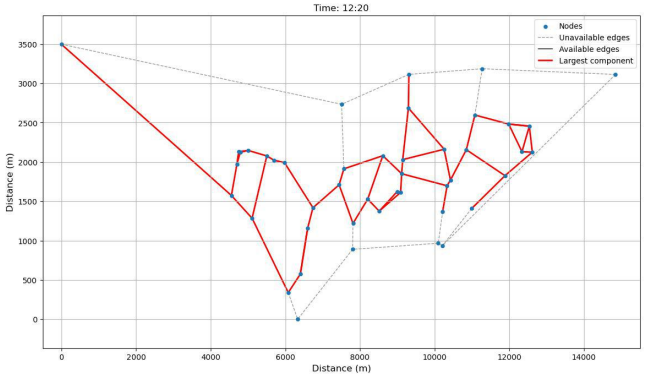
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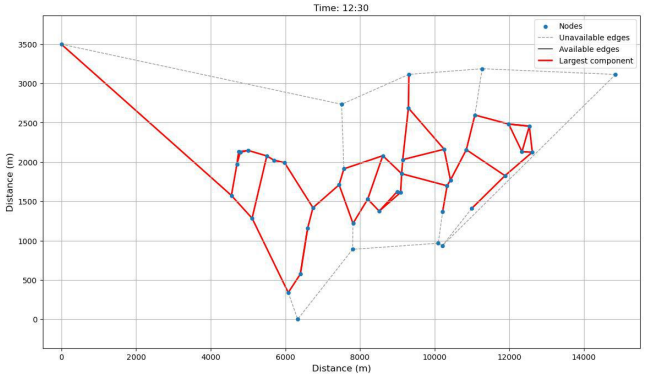
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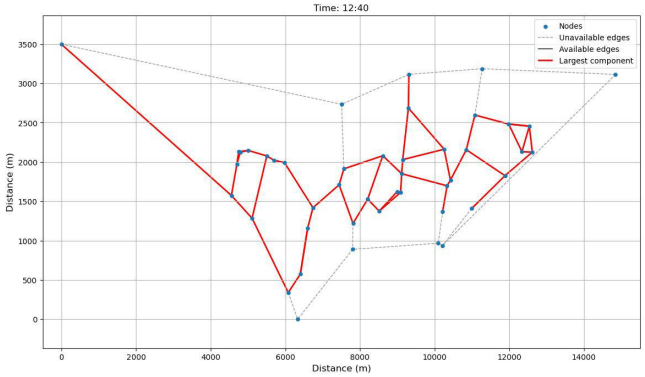
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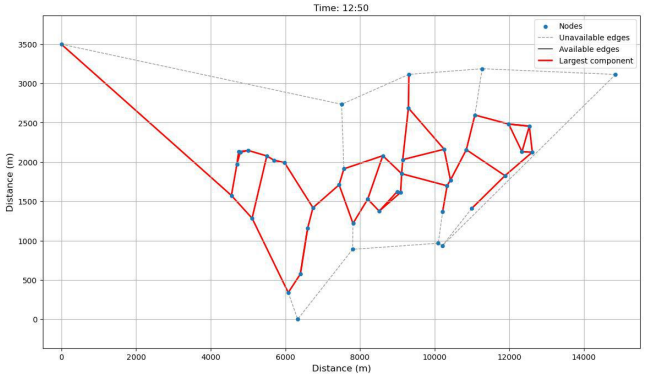
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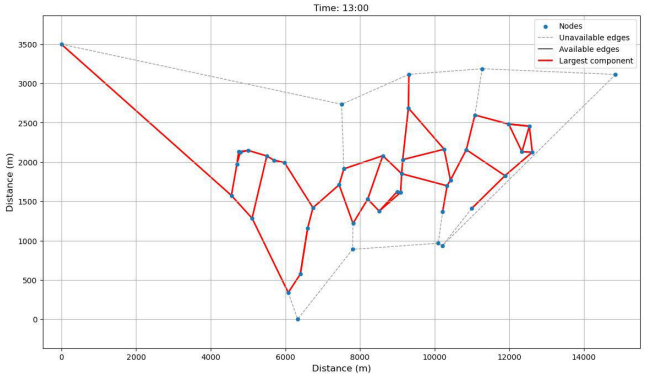
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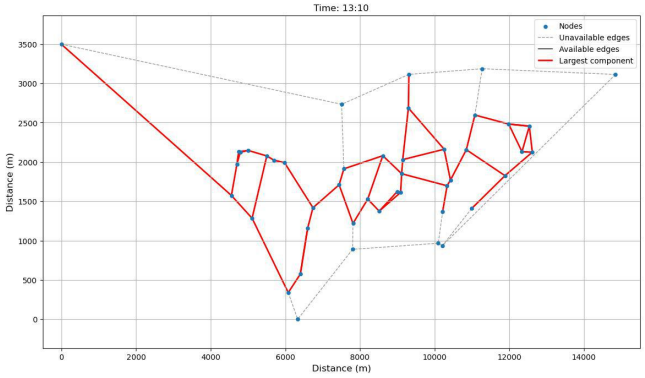
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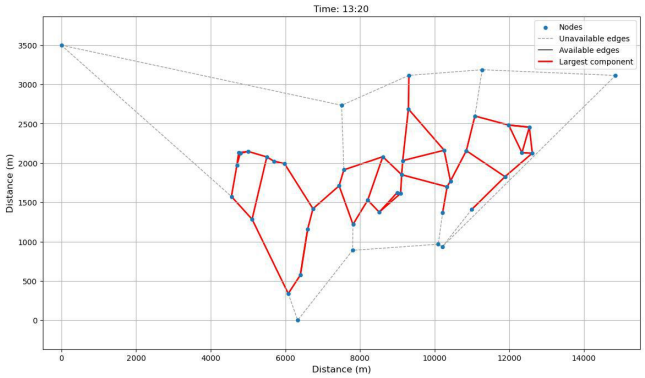
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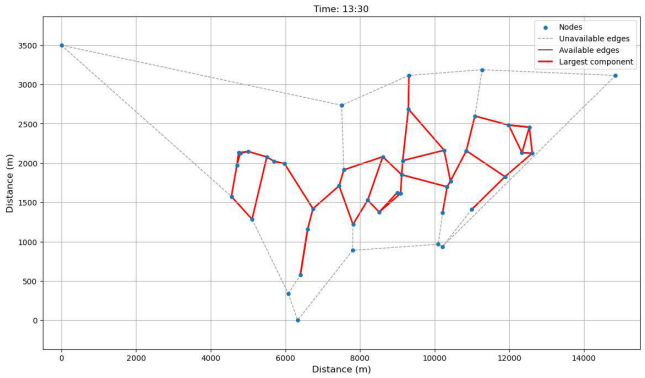
Time: 13:30
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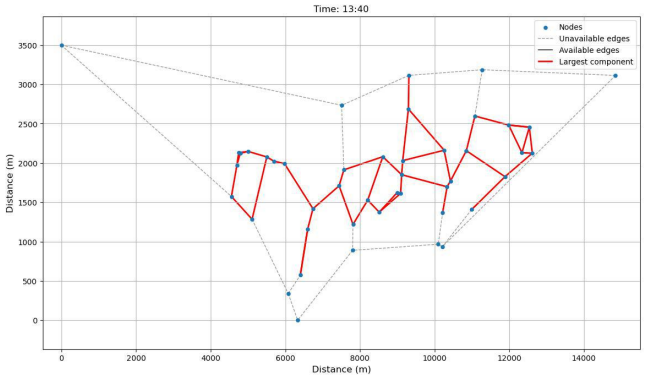
Largest component
Distance (m)
Distance (m)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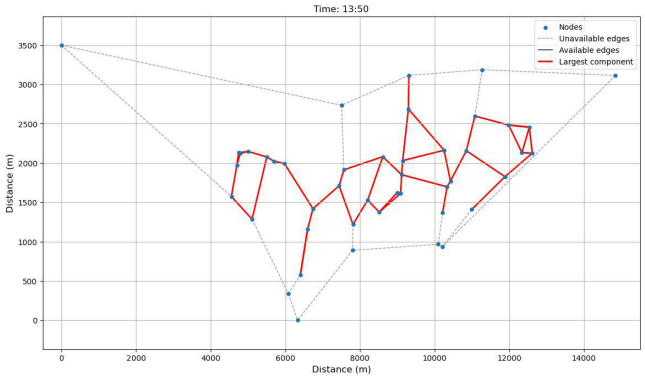
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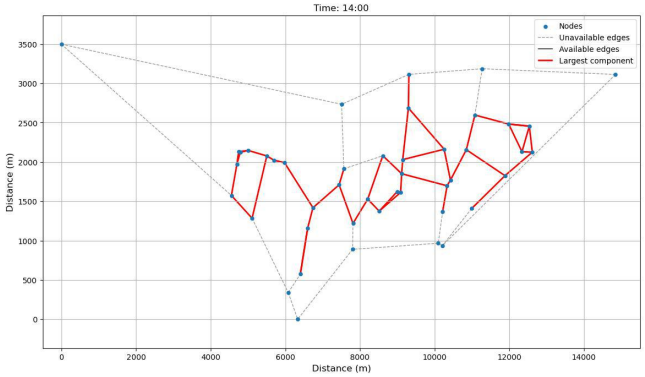
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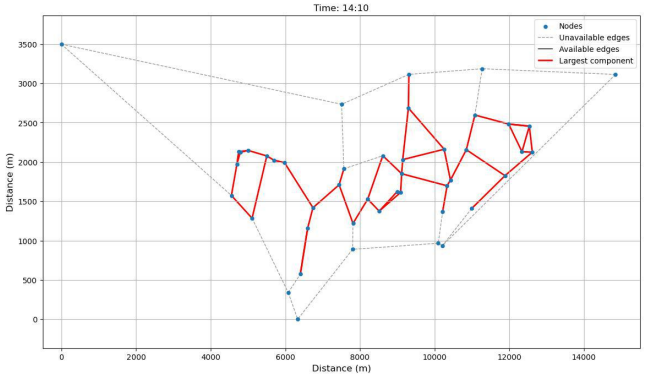
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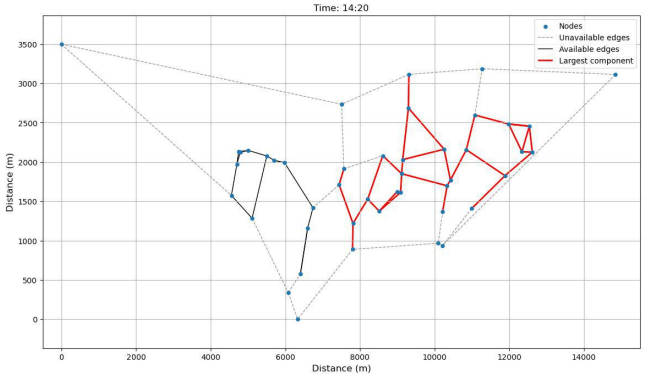
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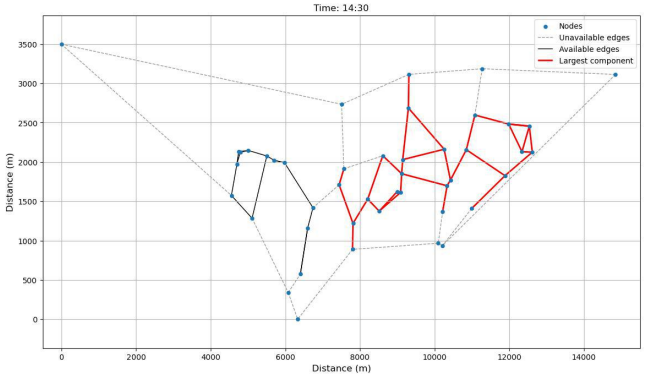
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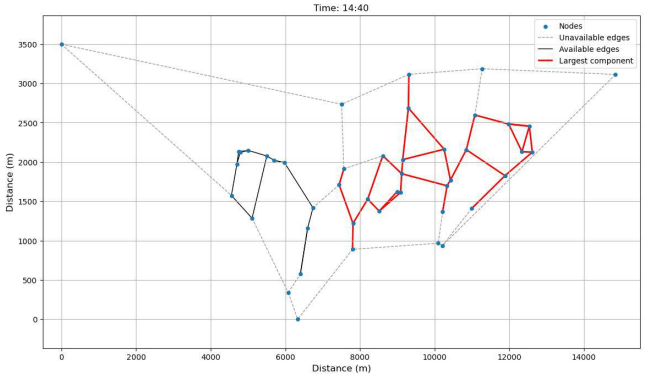
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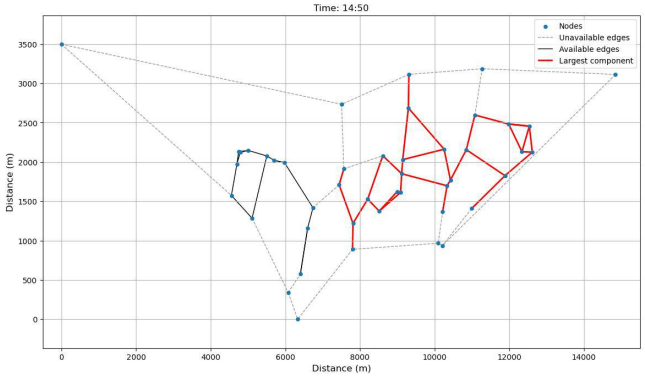
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Largest component
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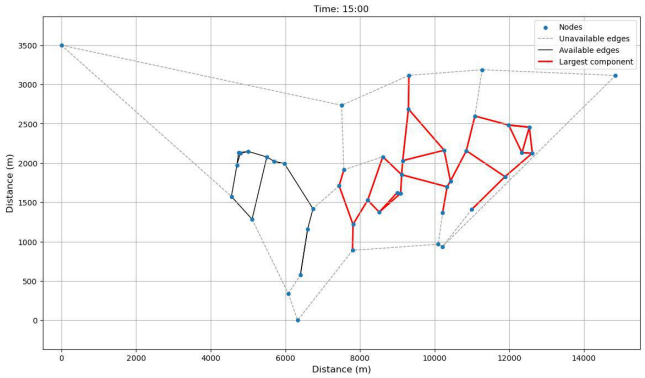
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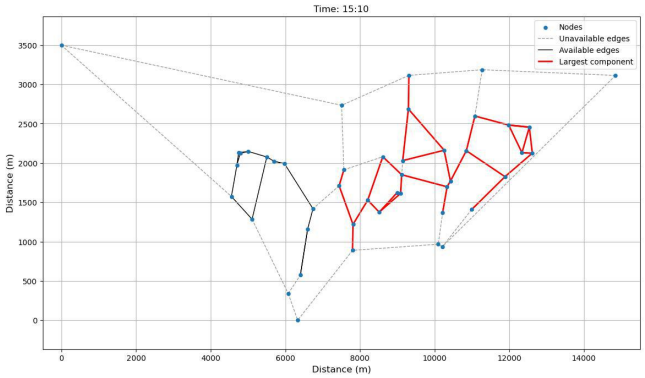
Distance (m)


Time: 15:10
Nodes
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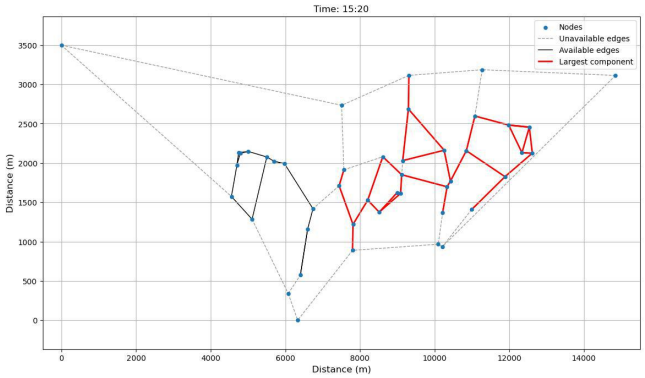
Available edges
Largest component
Distance (m)
Distance (m)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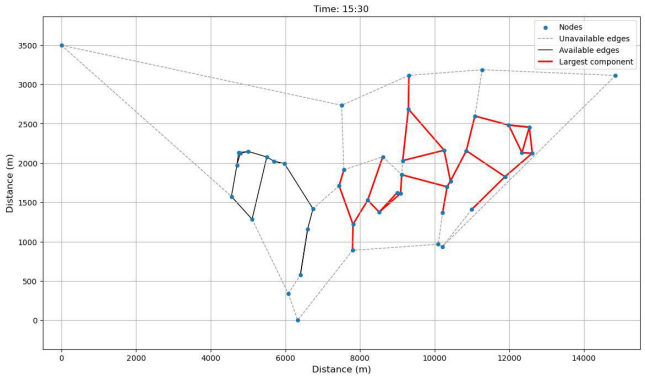
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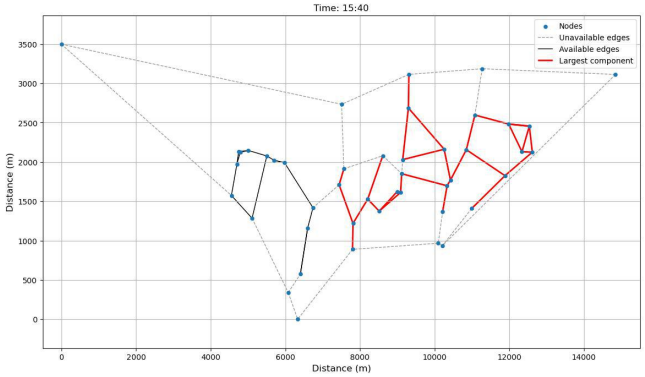
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Nodes
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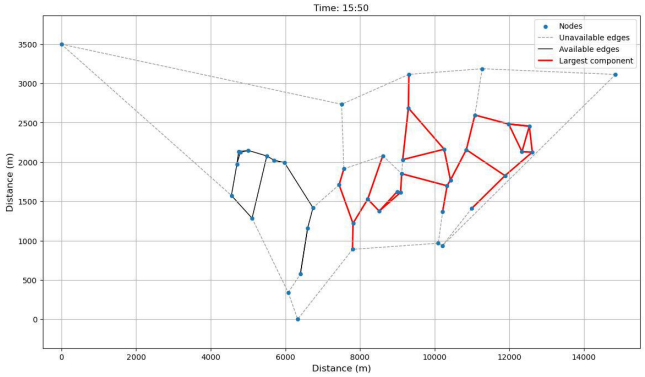
Largest component
Distance (m)
Distance (m)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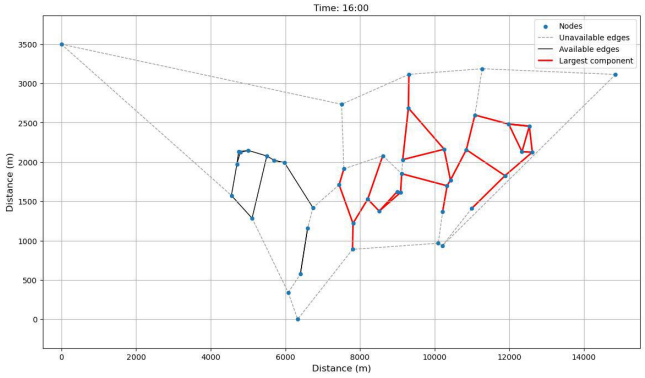
Distance (m)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Available edges
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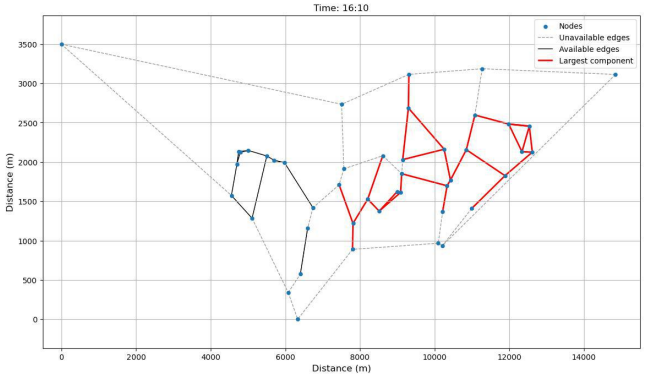
Distance (m)
Distance (m)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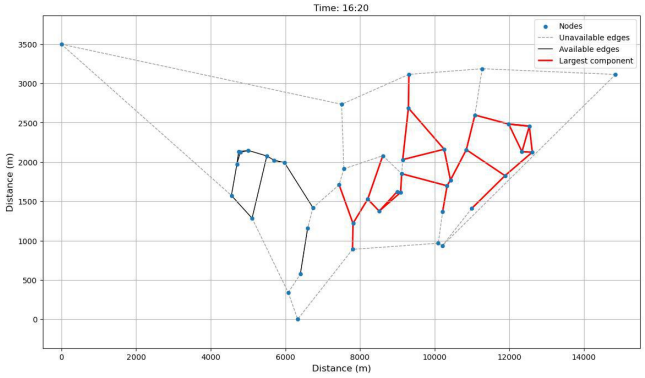
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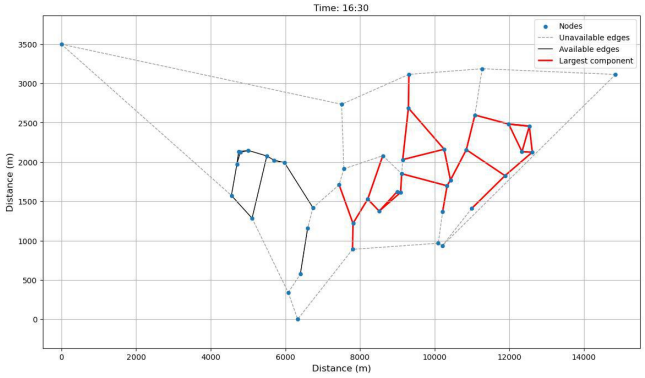
Distance (m)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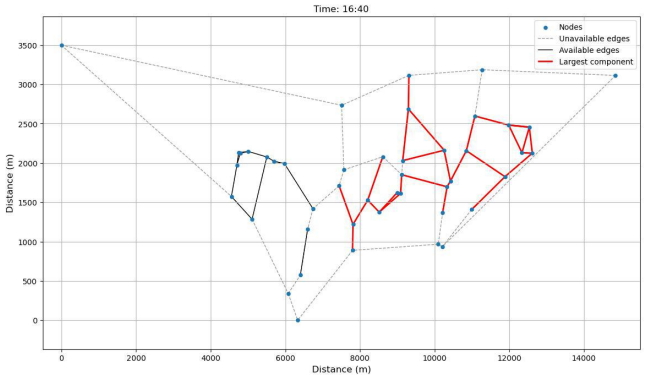
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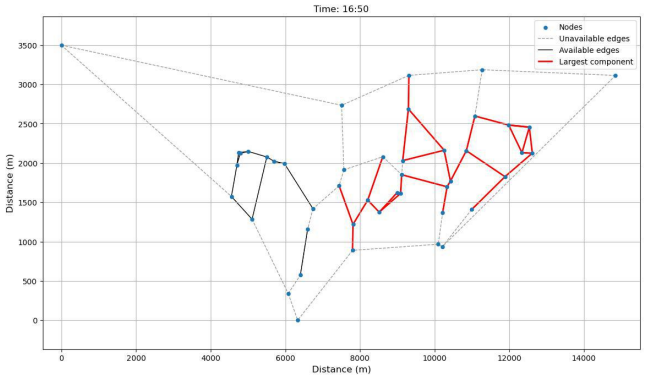
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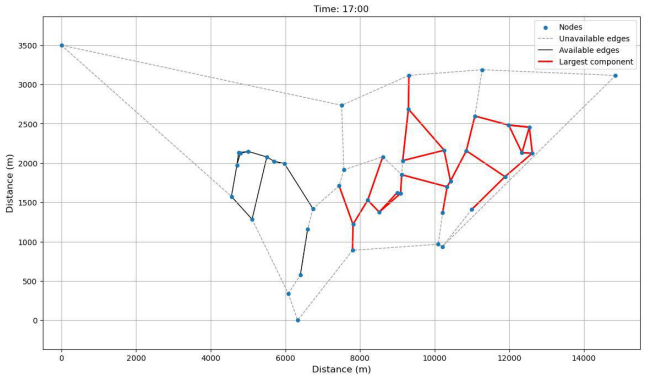
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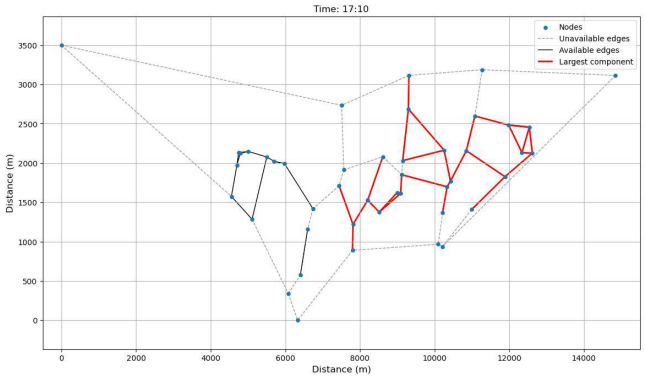
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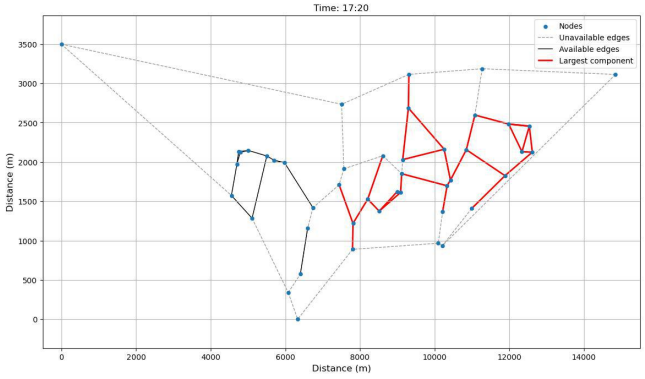
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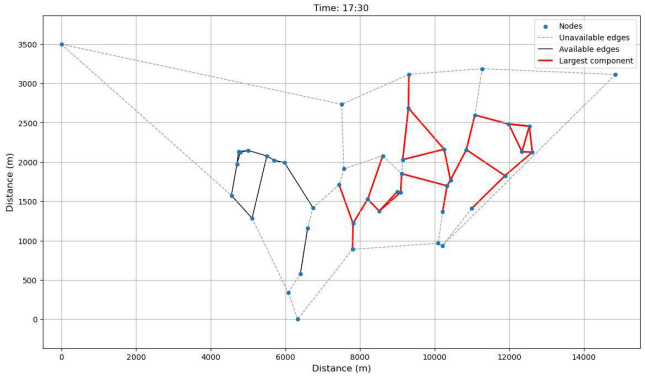
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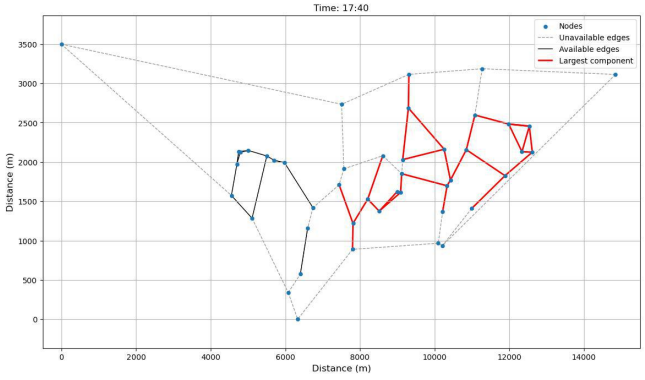
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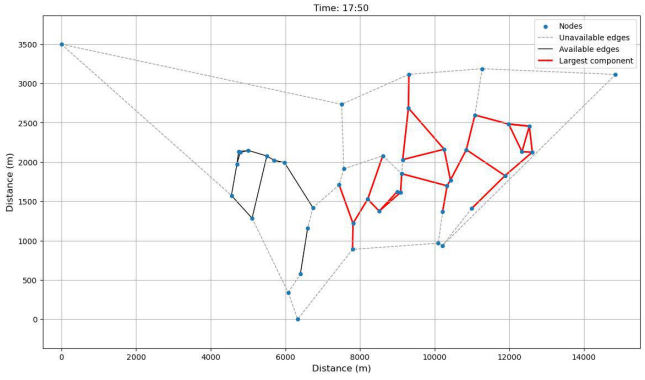
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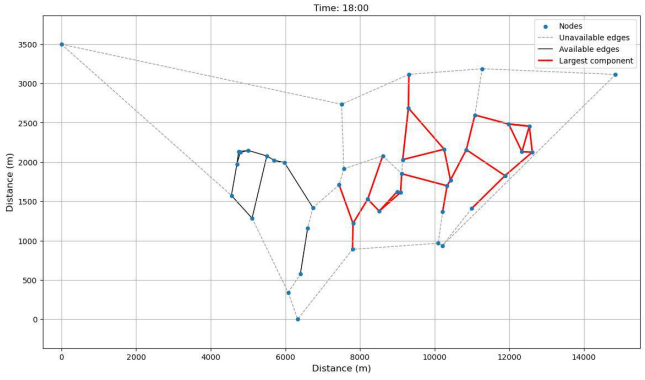
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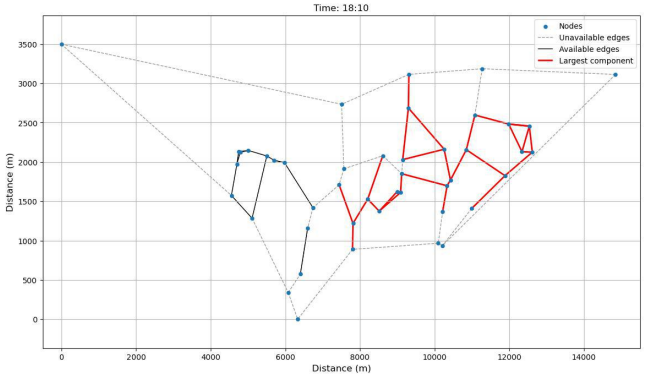
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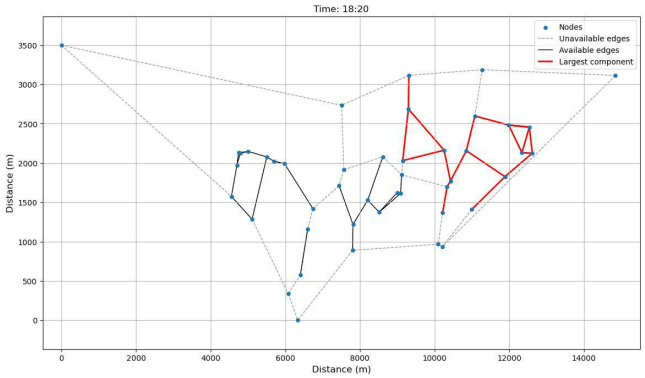
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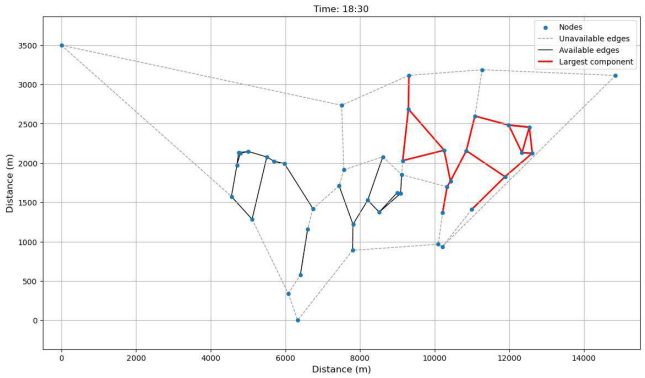
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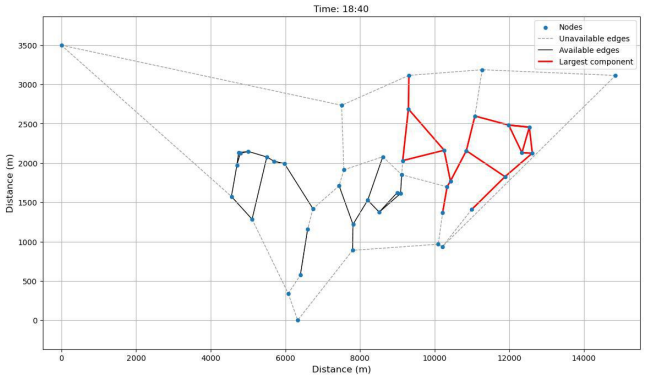
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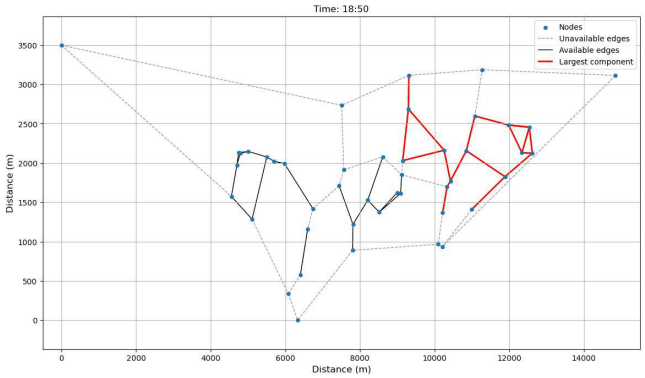
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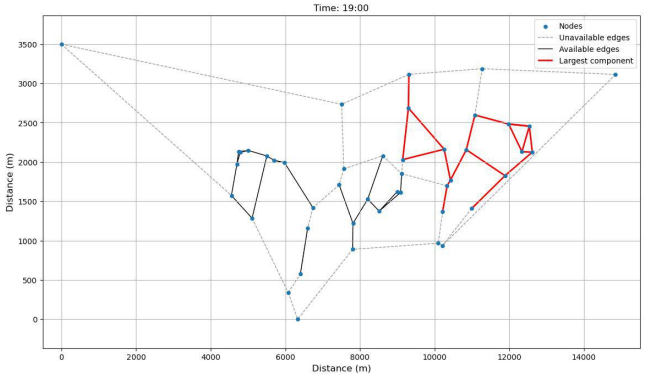
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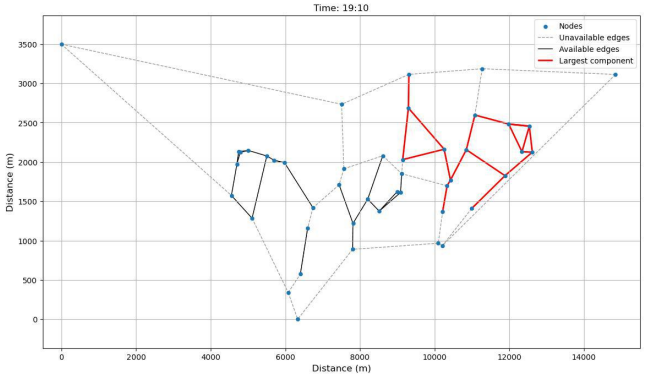
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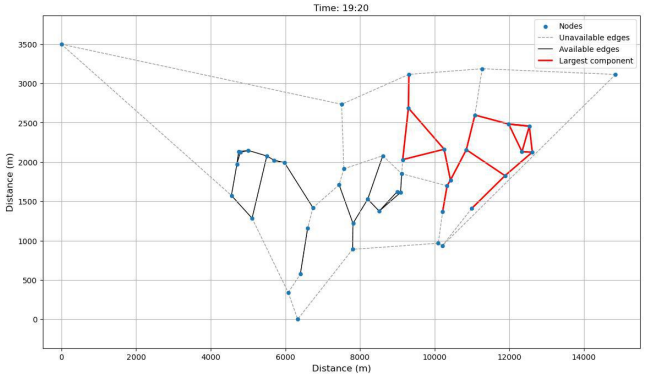
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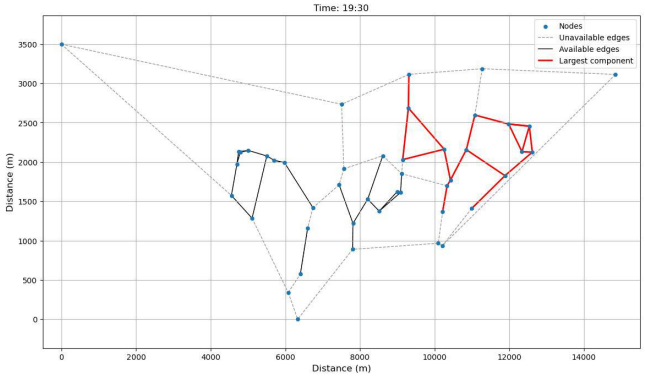
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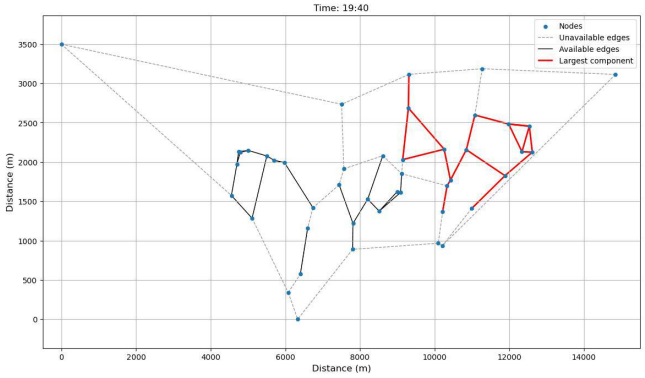
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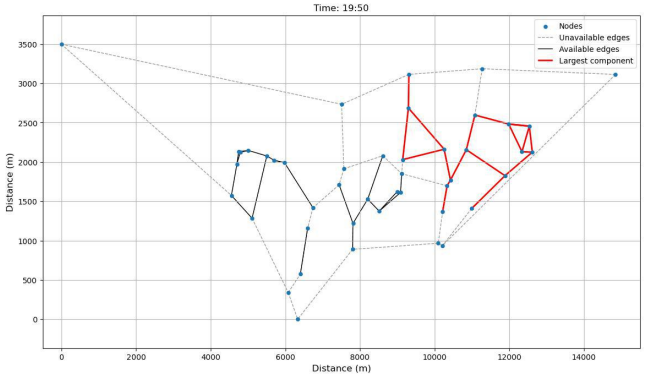
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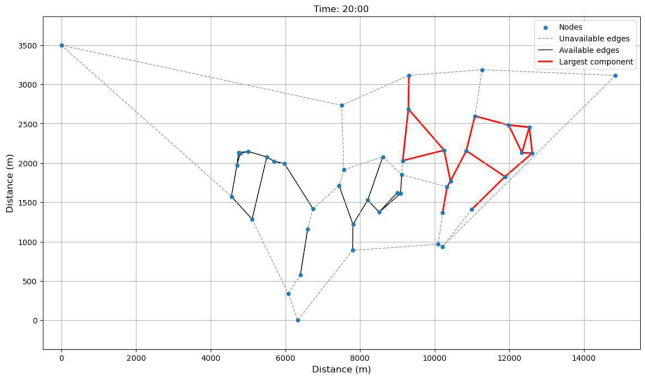
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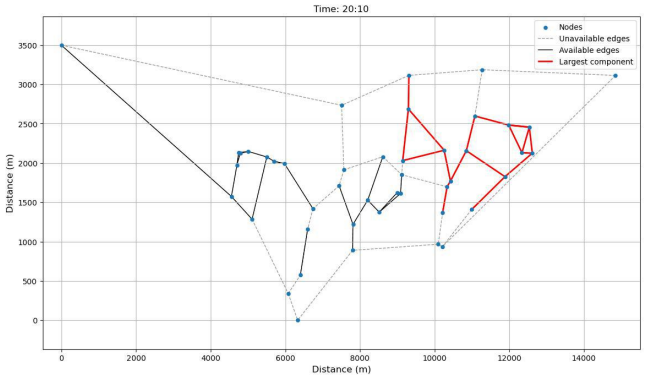
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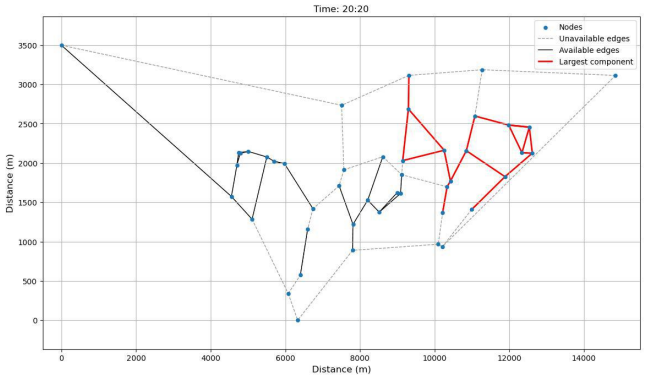
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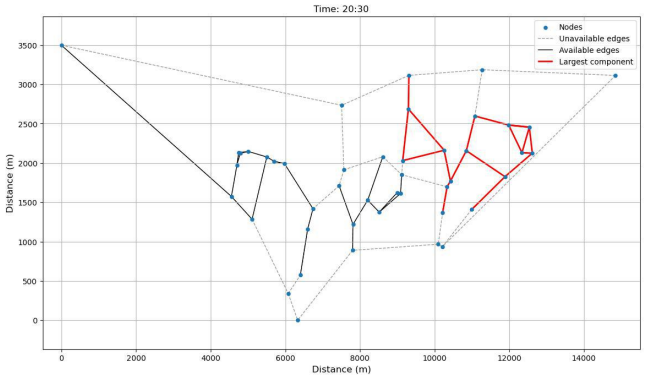
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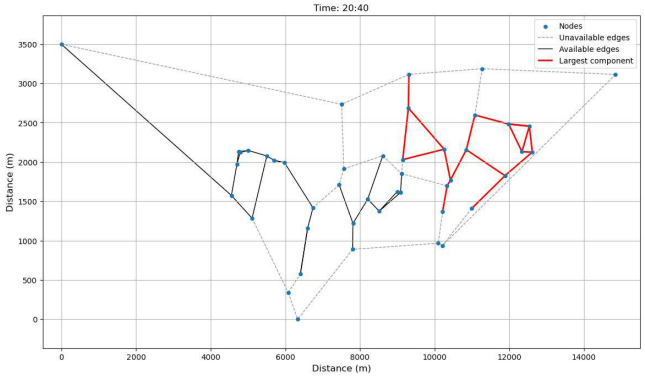
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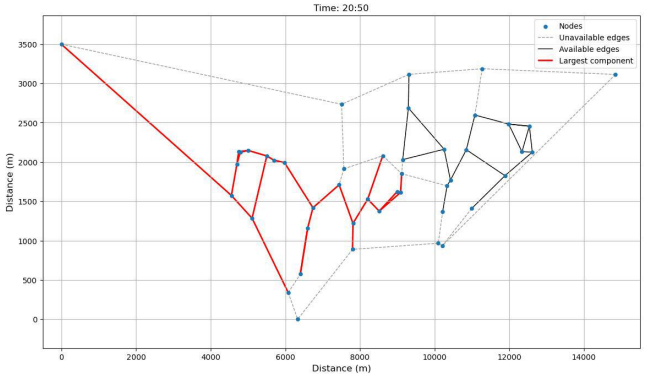
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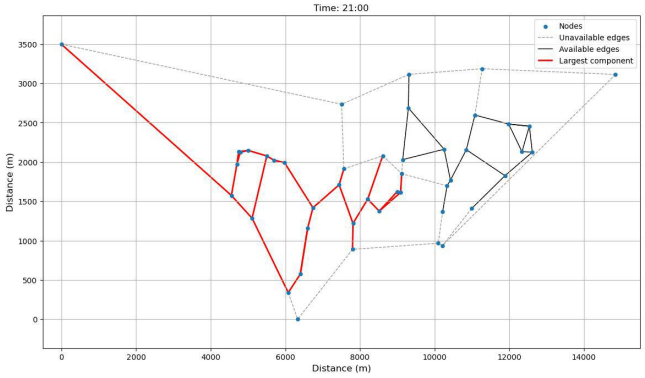
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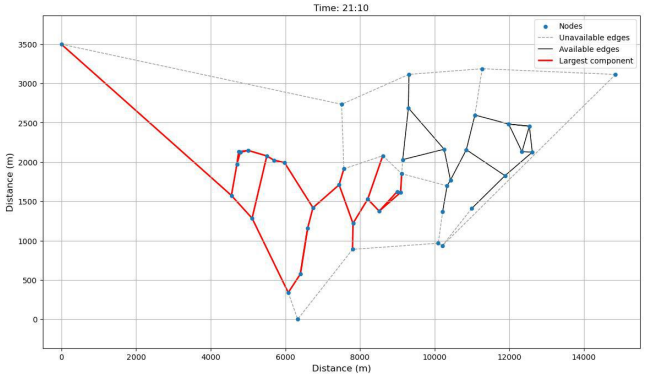
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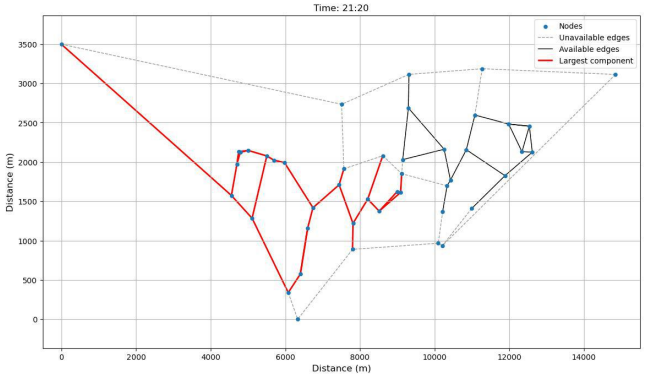
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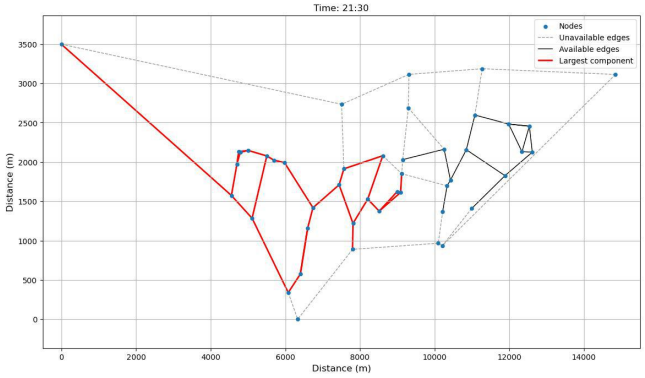
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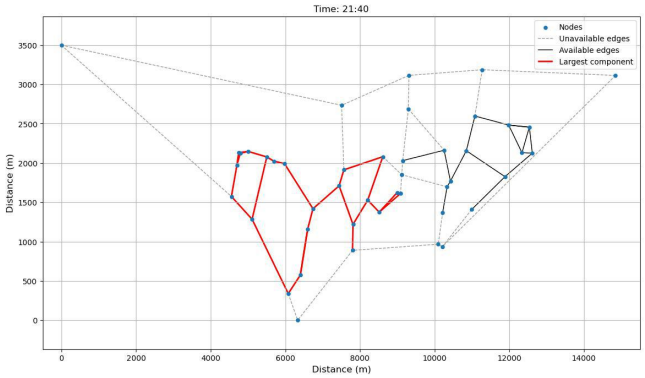
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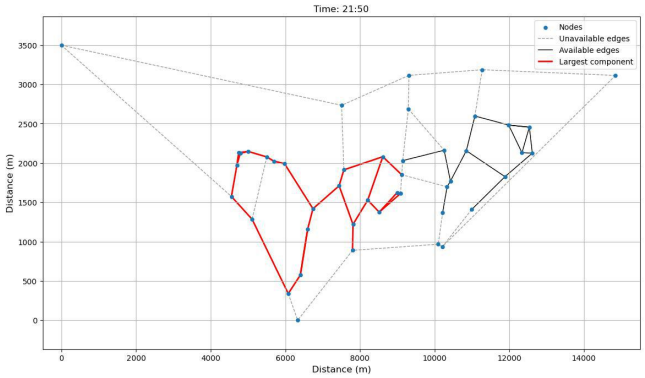
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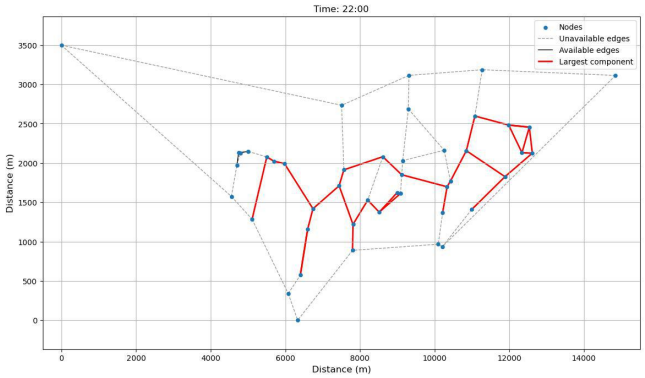
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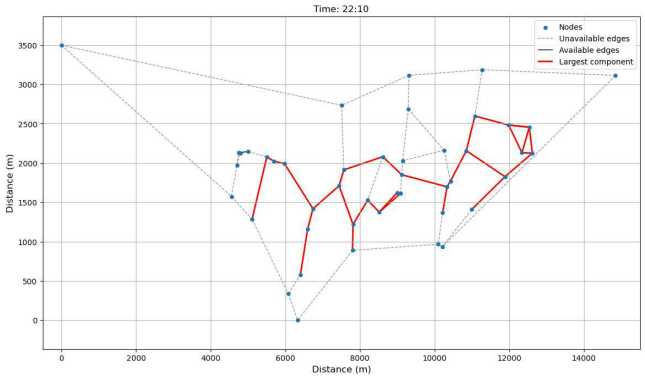
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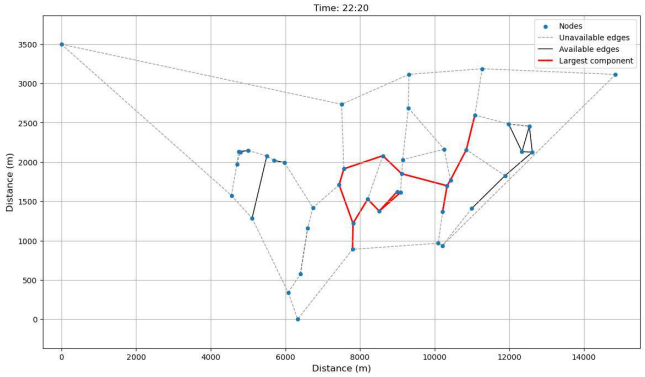
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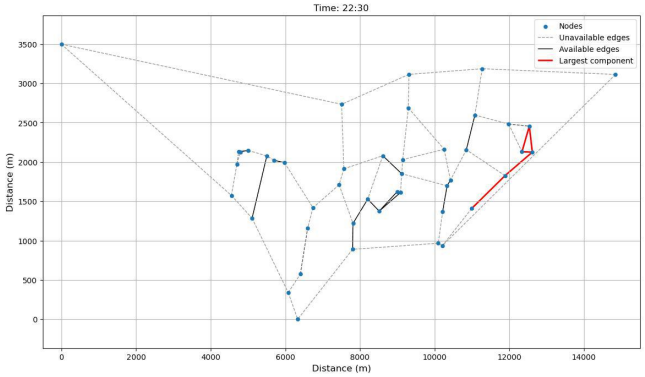
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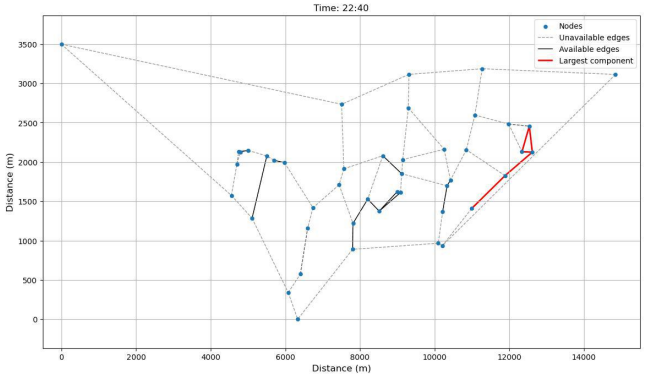
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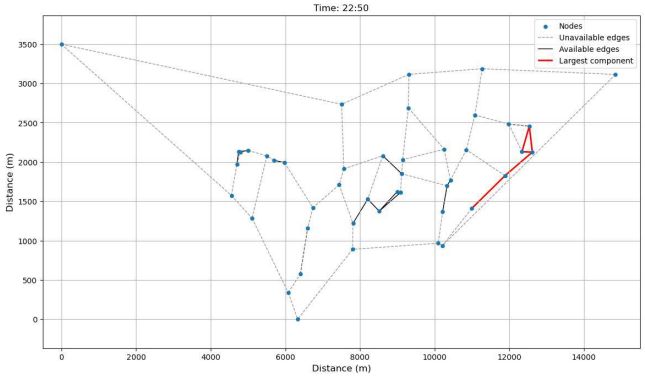
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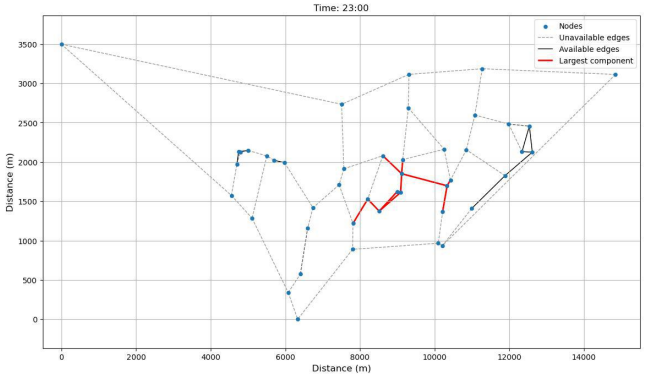
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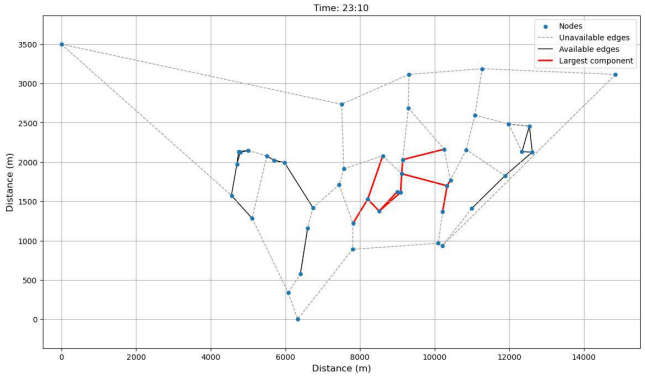
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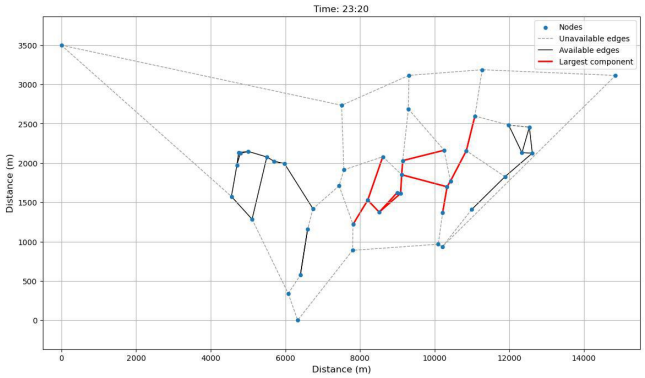
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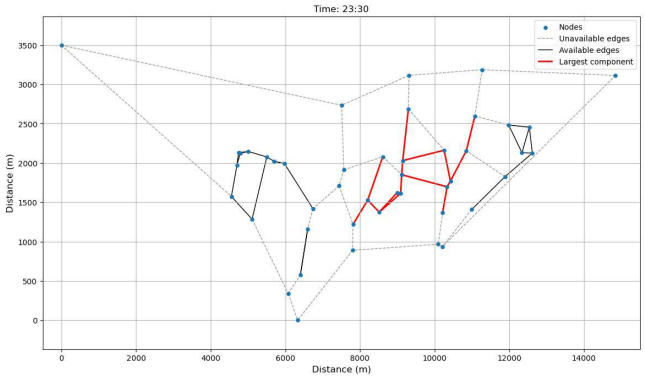
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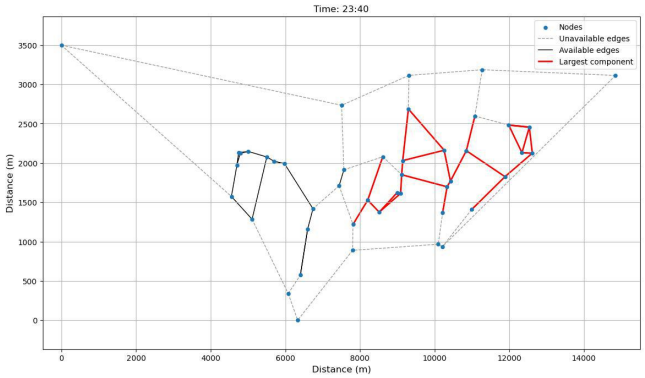
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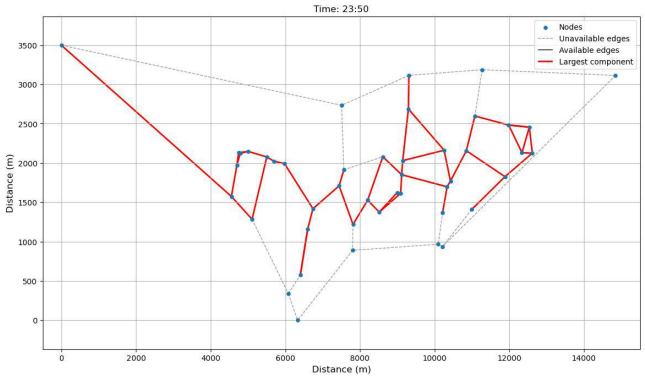
Time: 23:50
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Largest component
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B

Opening Helsluis

This chapter gives the connectivity results for the situation in the Sliedrechtse Biesbosch described in section 5.3 of the main document, The nature restoration measure discussed here is the permanent opening of the Helsluis. Figure B.1 illustrates the time-varying connectivity metrics, i.e. the number of components (NOC) of the graph, the order of the largest component and the length of connected pathways (LOCOP) of the largest component. Next are the graphs indicating the available channels in the system and visualizing the largest available habitat on a time interval of 10 minutes.

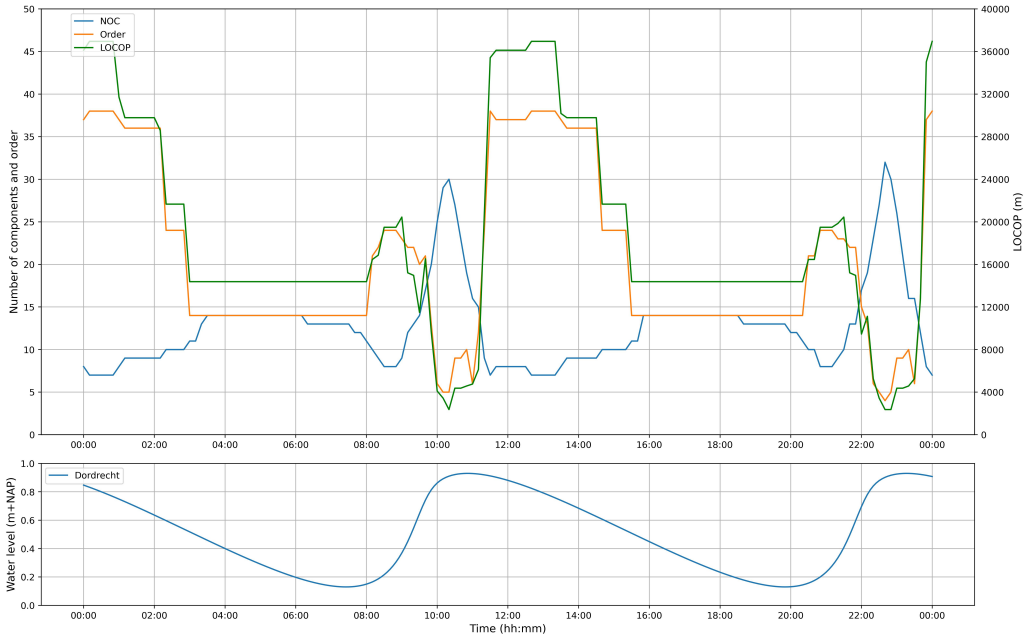
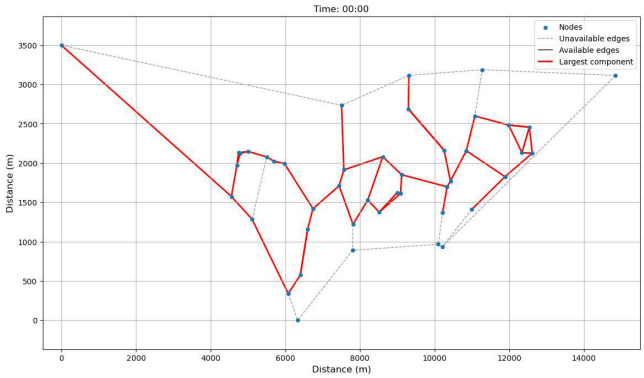
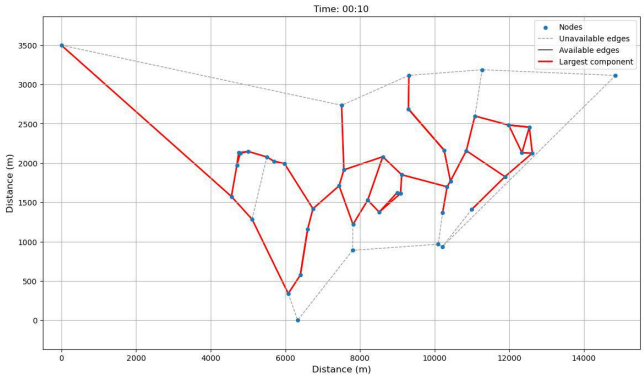
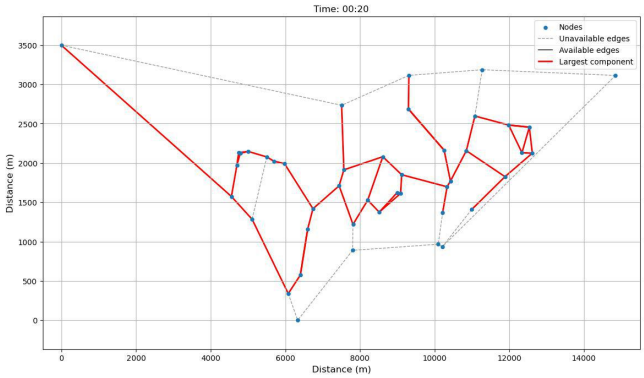


Figure B.1: Evolution of connectivity of the Sliedrechtse Biesbosch during one day and a maximum tolerable flow velocity of $u_{max} = 0.3$ m/s, evaluated by means of three metrics: the number of components (NOC) in the graph, the number of nodes in the largest component, and the length of connected pathways (LOCOP) of the largest component.


Time: 00:00
Nodes
Unavailable edges
Available edges
Largest component
Distance (m)
Distance (m)


Time: 00:10
Nodes
Unavailable edges
Available edges
Largest component
Distance (m)
Distance (m)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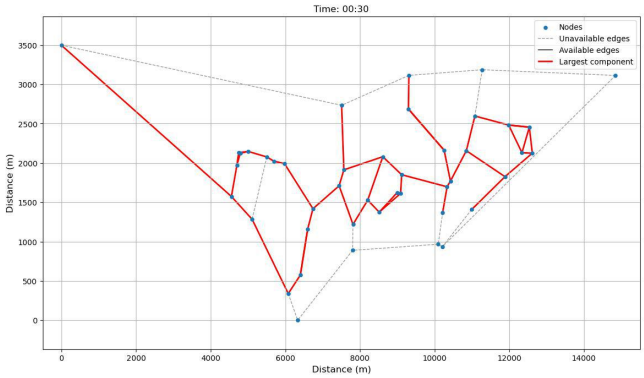
Nodes
Unavailable edges
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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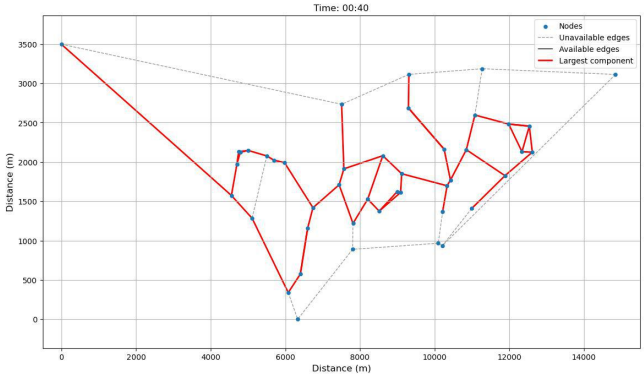
Available edges
Largest component
Distance (m)
Distance (m)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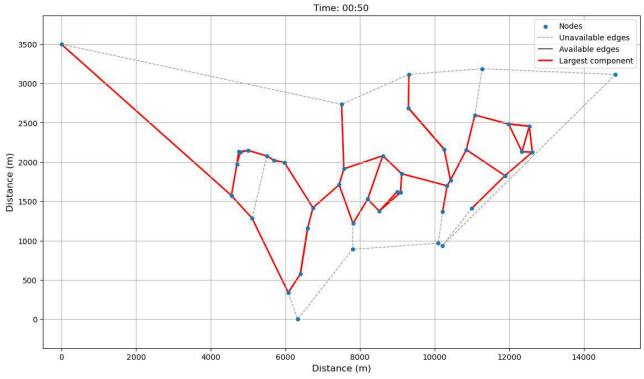
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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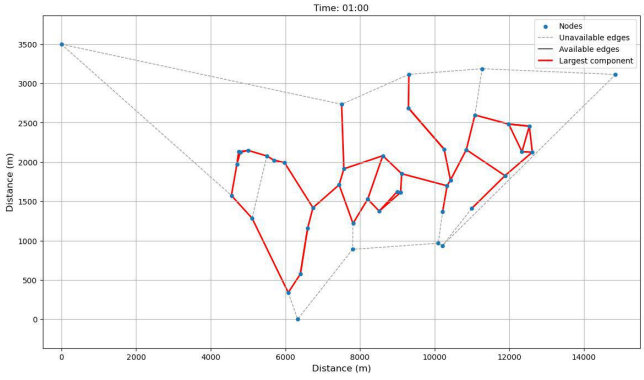
Available edges
Largest component
Distance (m)
Distance (m)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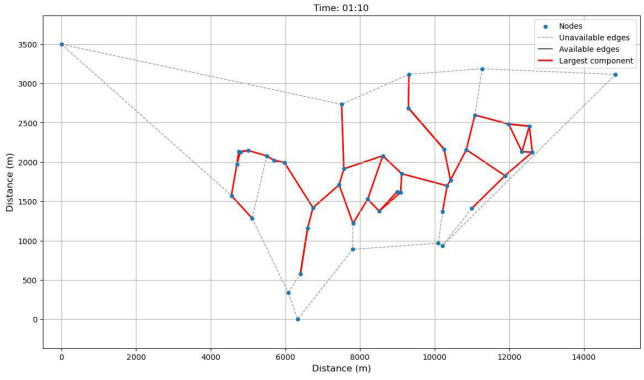
Available edges
Largest component
Distance (m)
Distance (m)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Available edges
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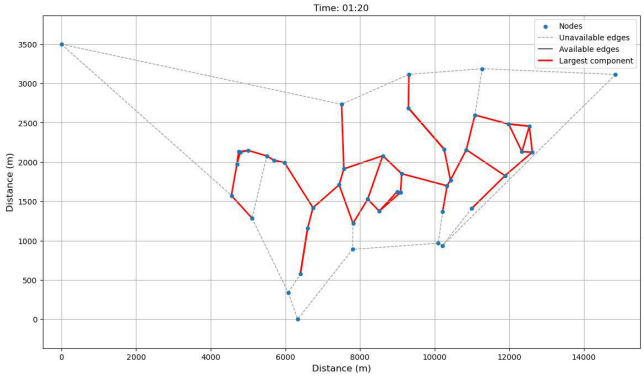
Distance (m)
Distance (m)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Available edges
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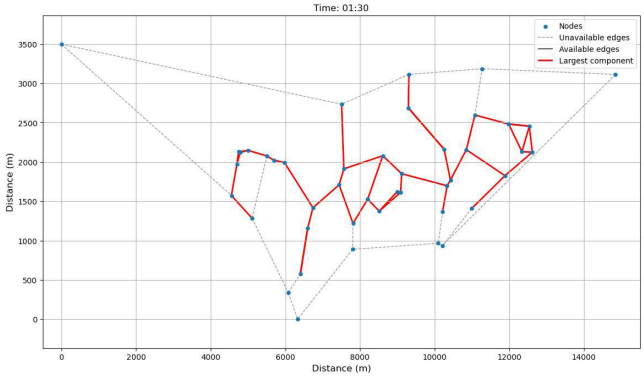
Distance (m)
Distance (m)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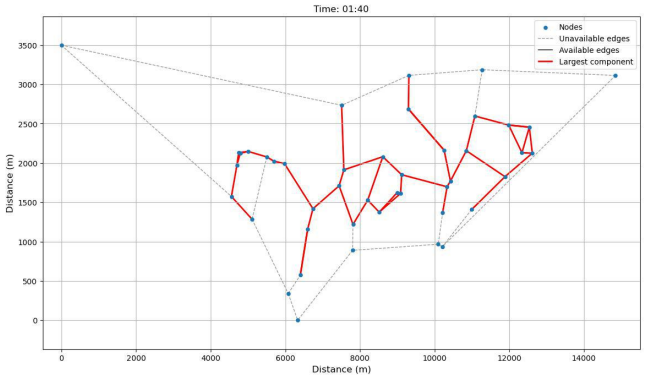
Available edges
Largest component
Distance (m)
Distance (m)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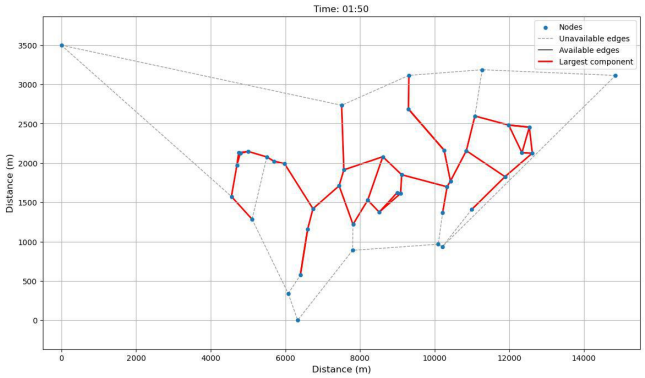
Available edges
Largest component
Distance (m)
Distance (m)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Available edges
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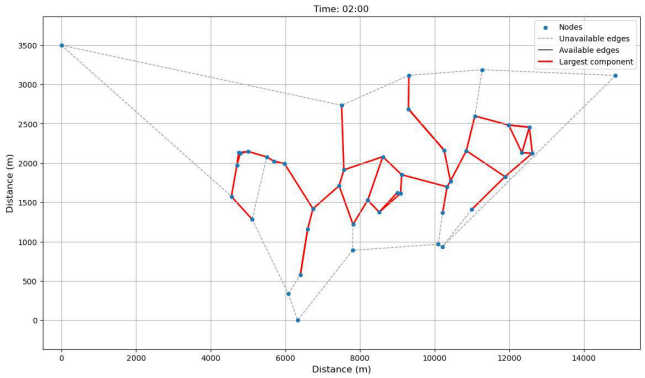
Distance (m)
Distance (m)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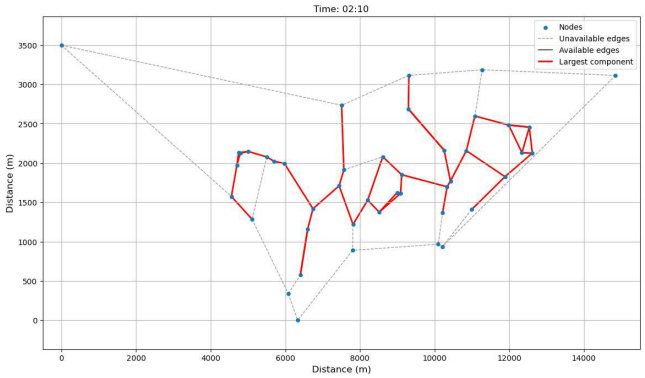
Available edges
Largest component
Distance (m)
Distance (m)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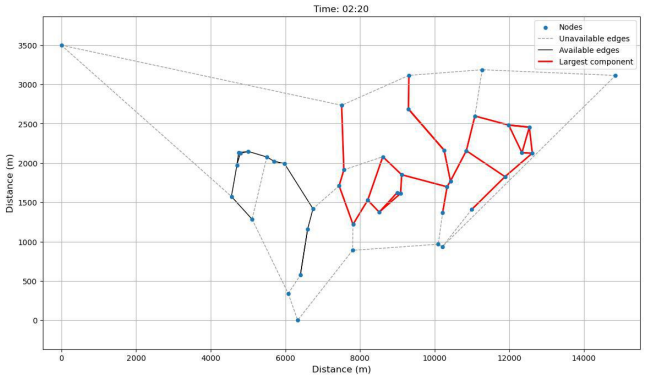
Distance (m)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Available edges
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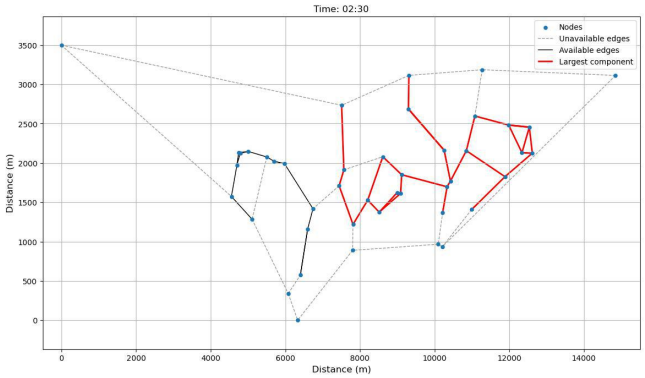
Distance (m)
Distance (m)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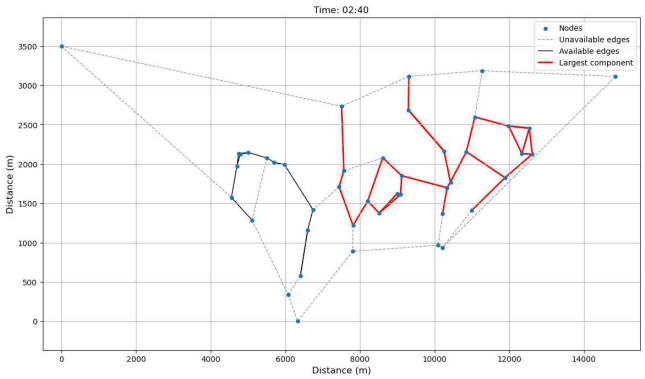
Distance (m)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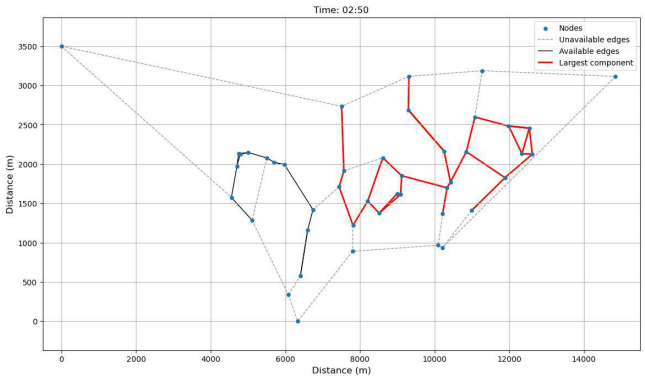
Distance (m)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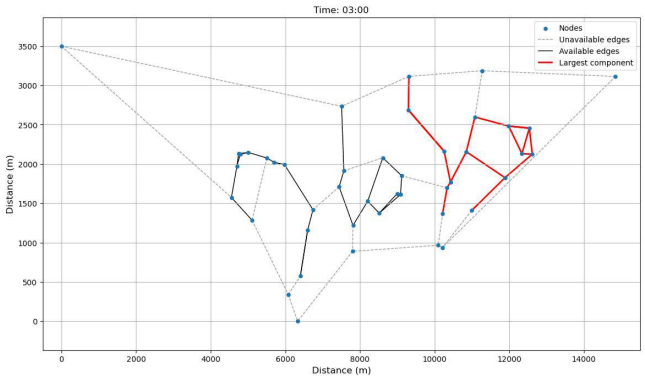
Distance (m)
Distance (m)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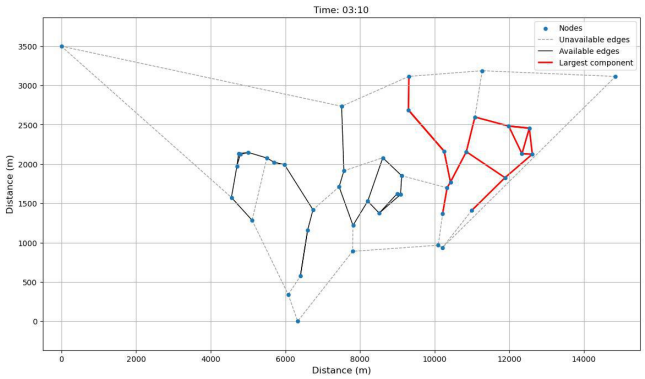
Distance (m)
Distance (m)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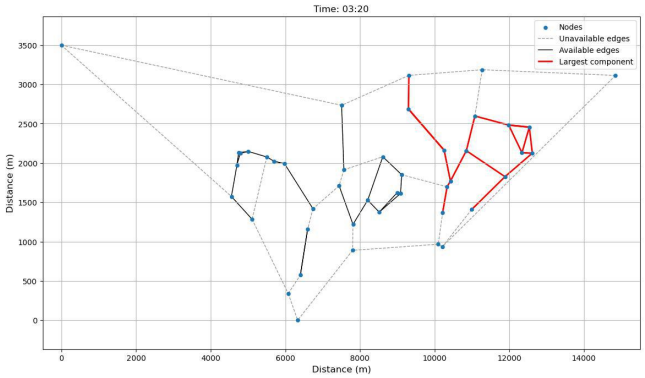
Distance (m)
Distance (m)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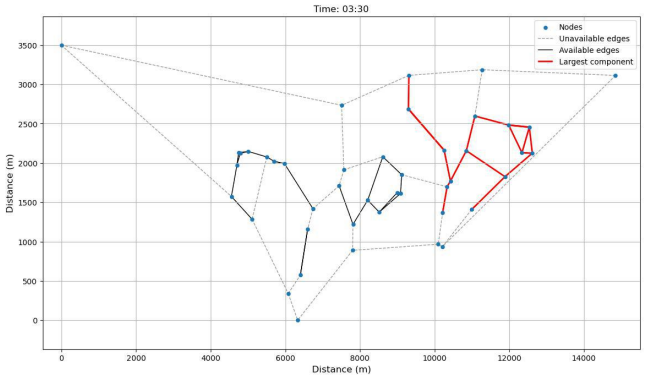
Distance (m)
Distance (m)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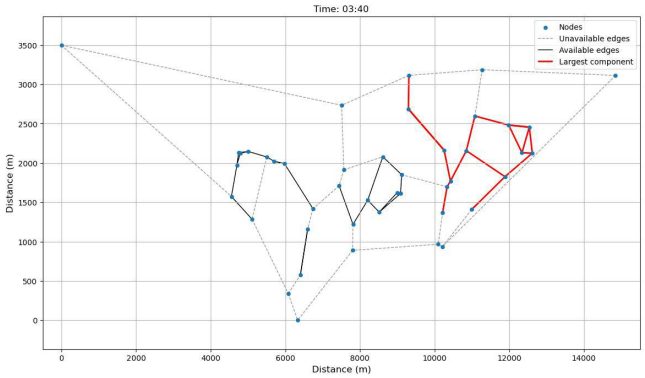
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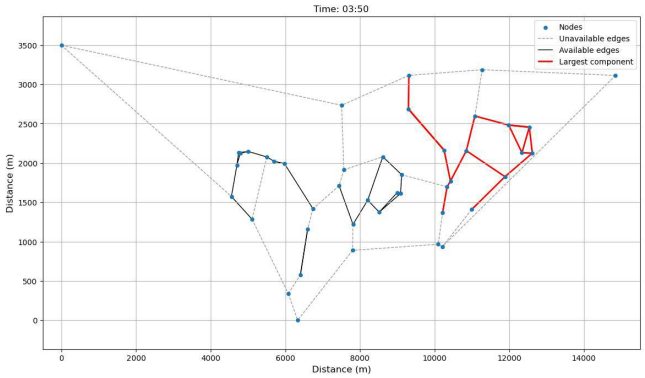
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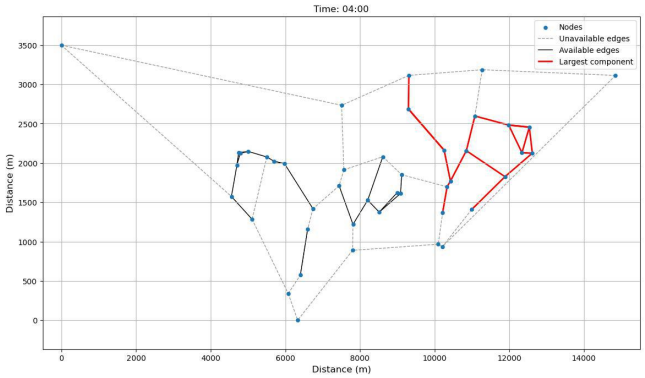
Distance (m)
Distance (m)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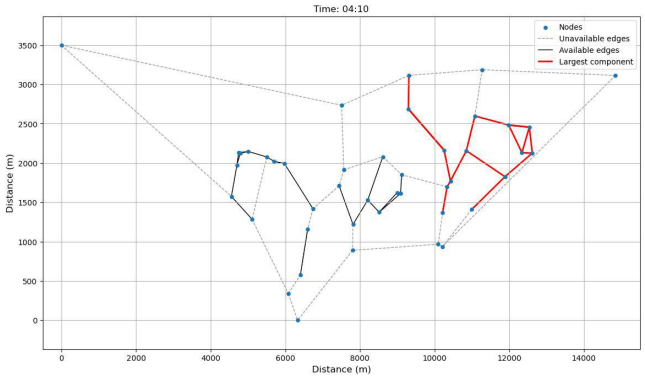
Largest component
Distance (m)
Distance (m)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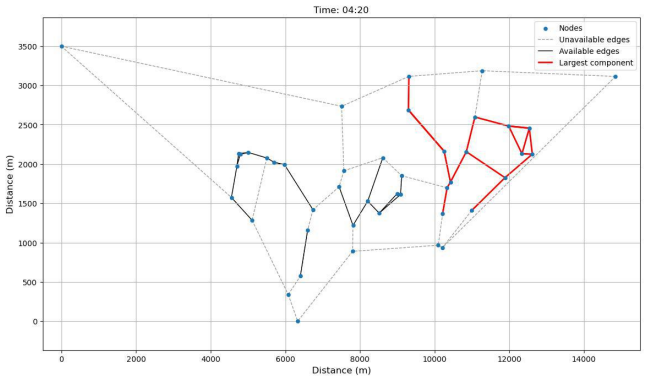
Available edges
Largest component
Distance (m)
Distance (m)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Largest component
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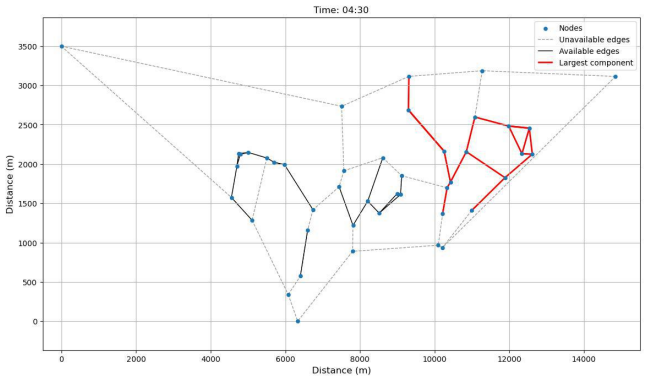
Distance (m)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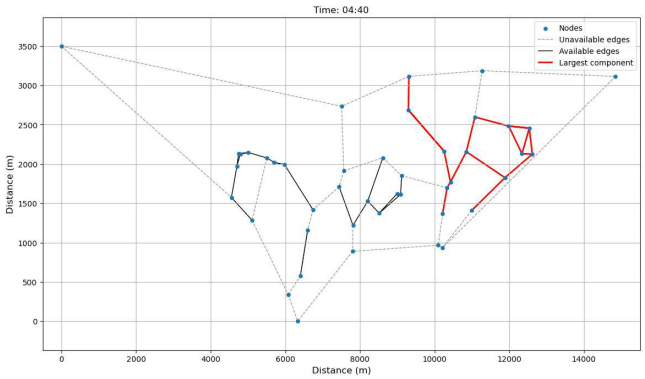
Available edges
Largest component
Distance (m)
Distance (m)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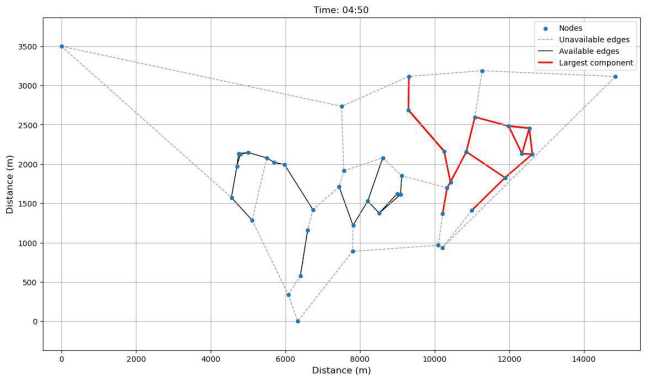
Distance (m)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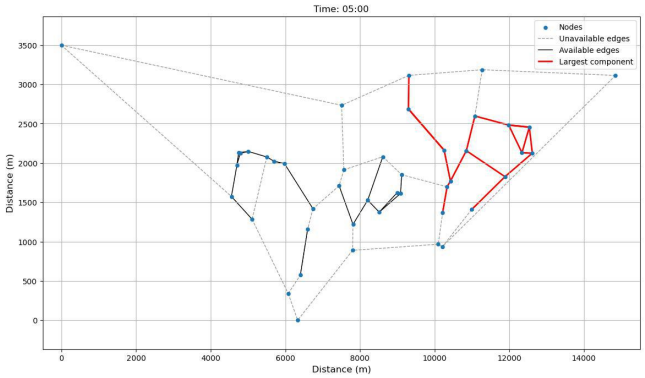
Distance (m)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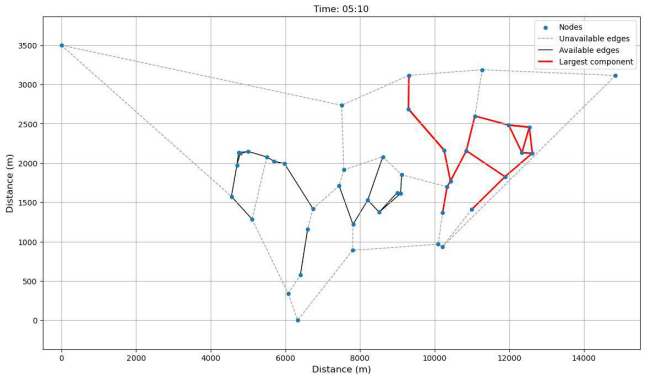
Distance (m)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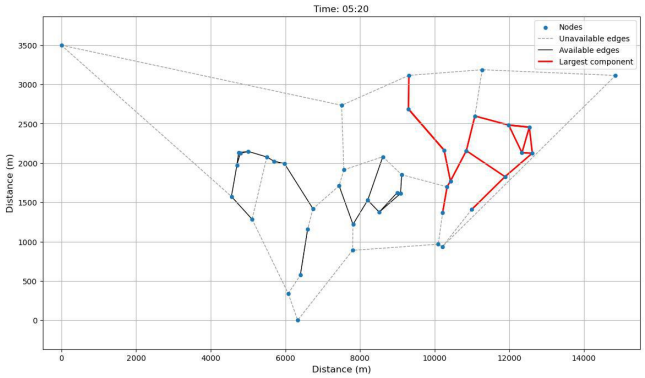
Available edges
Largest component
Distance (m)
Distance (m)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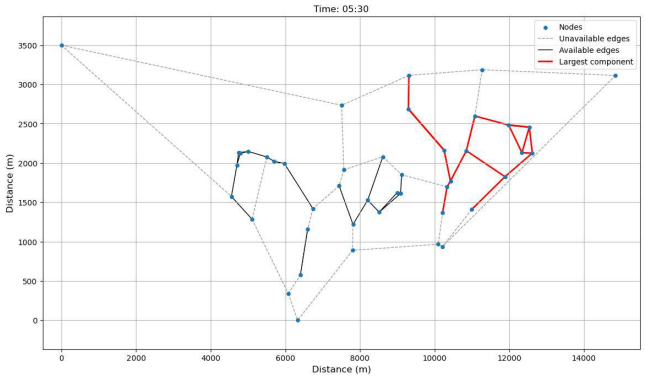
Distance (m)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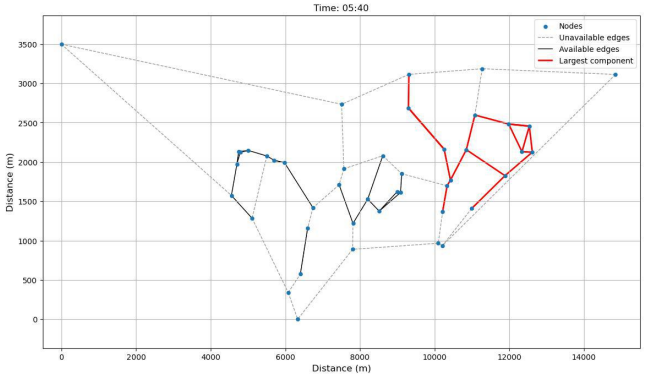
Distance (m)
Distance (m)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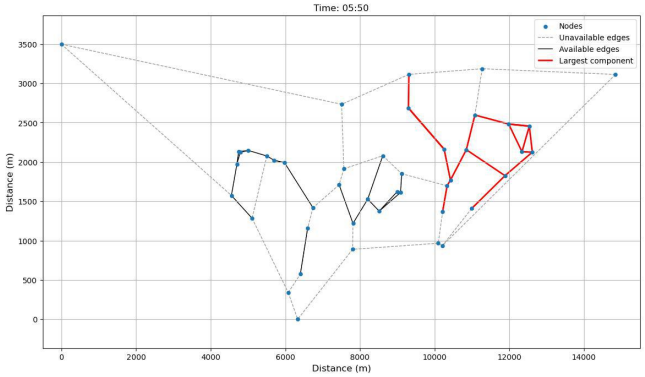
Distance (m)
Distance (m)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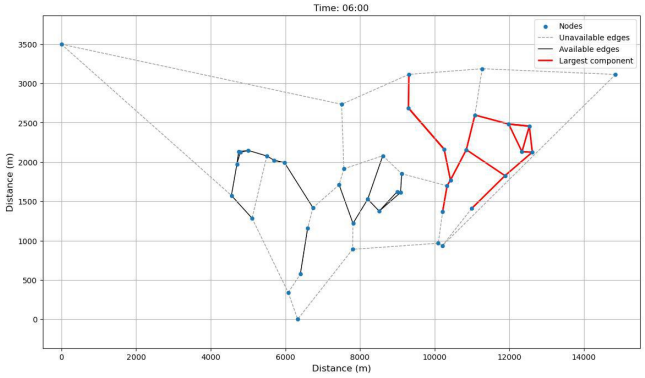
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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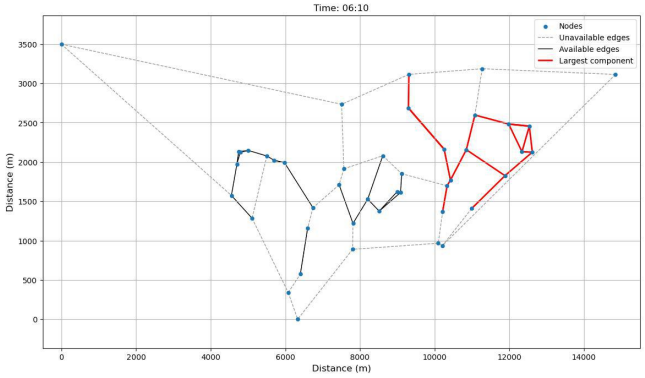
Largest component
Distance (m)
Distance (m)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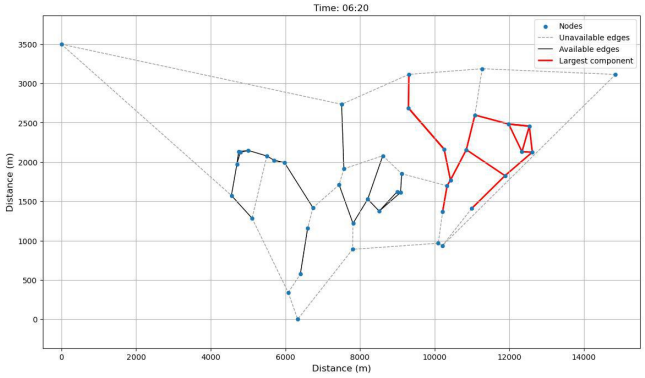
Available edges
Largest component
Distance (m)
Distance (m)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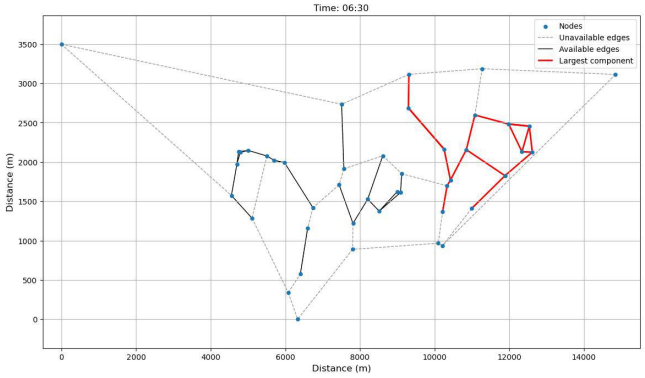
Distance (m)
Distance (m)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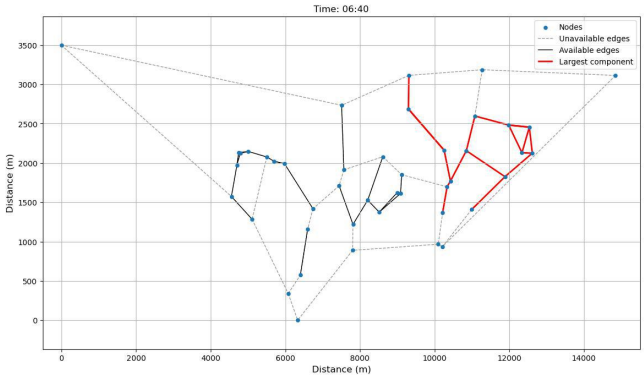
Available edges
Largest component
Distance (m)
Distance (m)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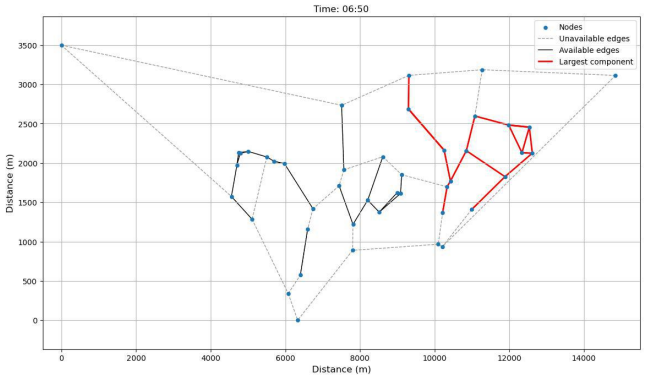
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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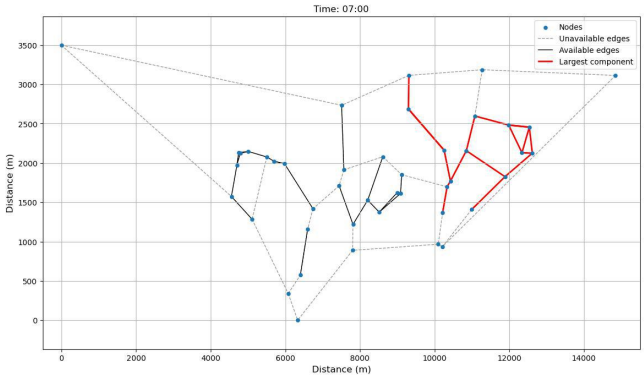
Available edges
Largest component
Distance (m)
Distance (m)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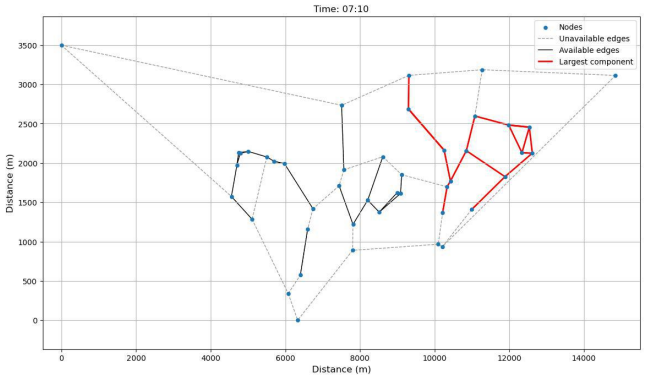
Available edges
Largest component
Distance (m)
Distance (m)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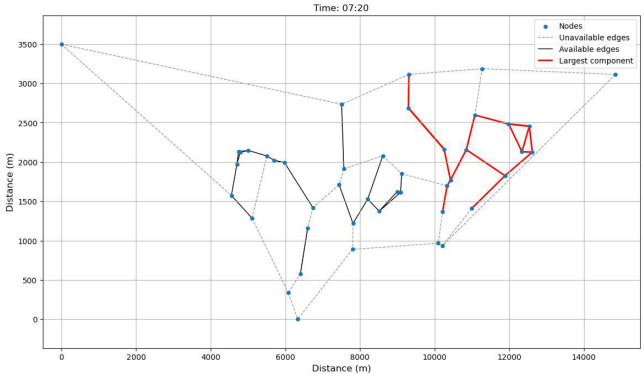
Available edges
Largest component
Distance (m)
Distance (m)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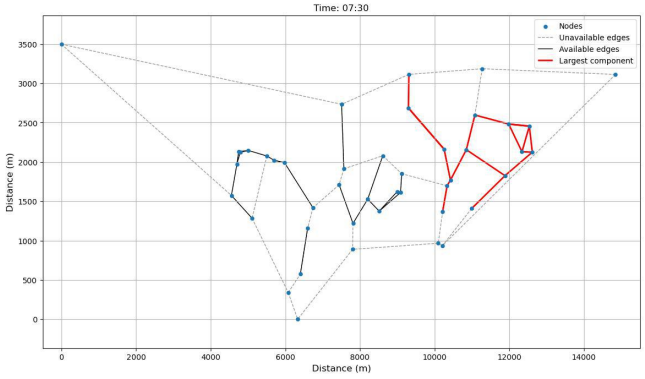
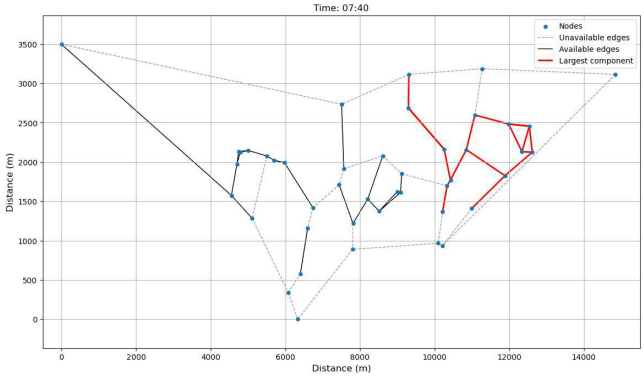
Nodes
Unavailable edges
Available edges
Largest component
Distance (m)
Distance (m)


Time: 07:30
Nodes
Unavailable edges
Available edges
Largest component
Distance (m)
Distance (m)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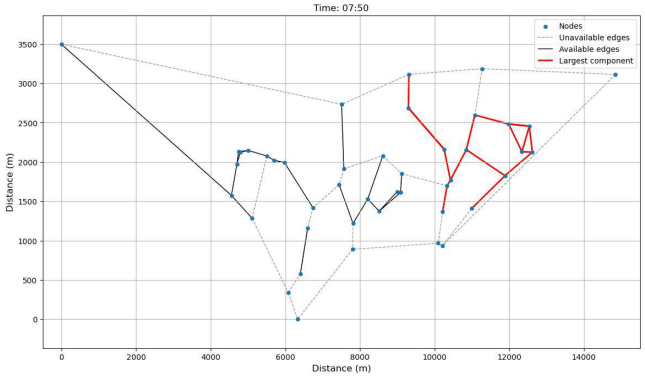
Available edges
Largest component
Distance (m)
Distance (m)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Available edges
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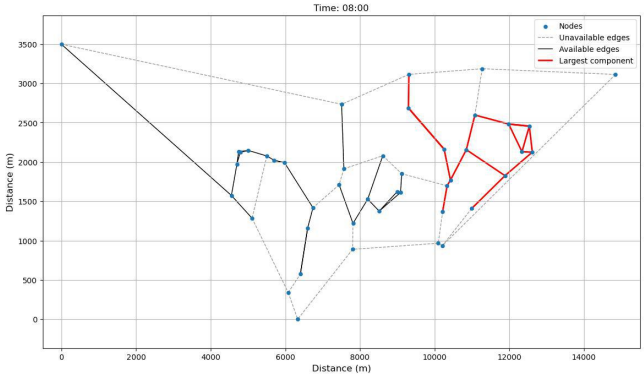
Distance (m)
Distance (m)


Time: 08:00
Nodes
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Available edges
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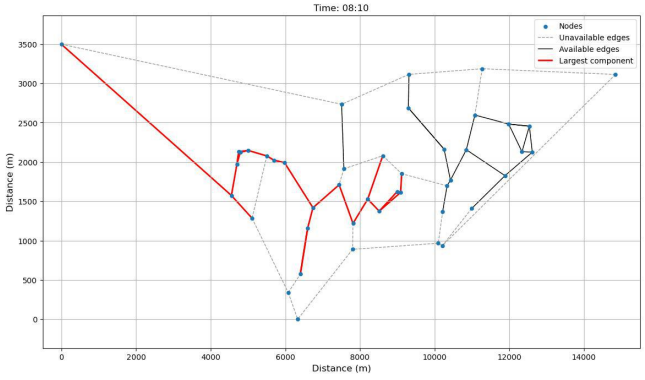
Distance (m)
Distance (m)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Available edges
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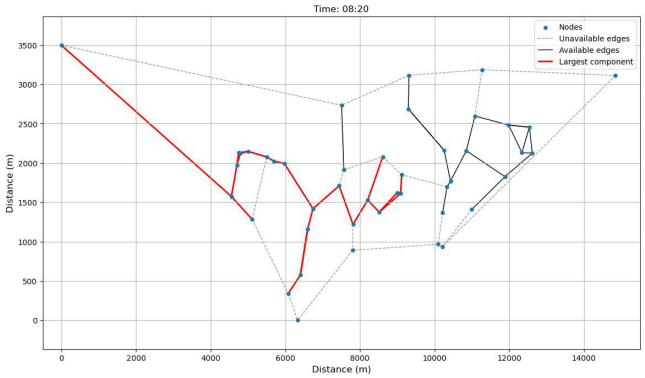
Distance (m)
Distance (m)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Nodes
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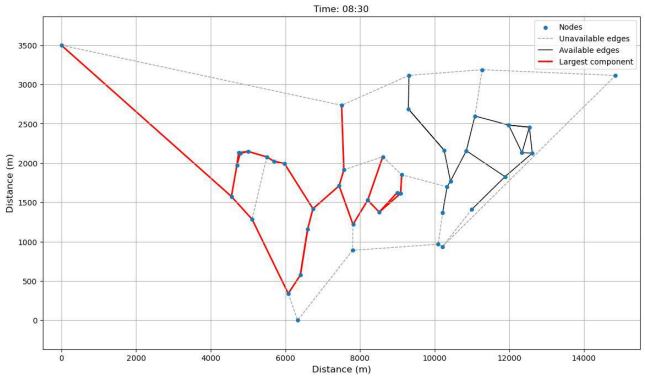
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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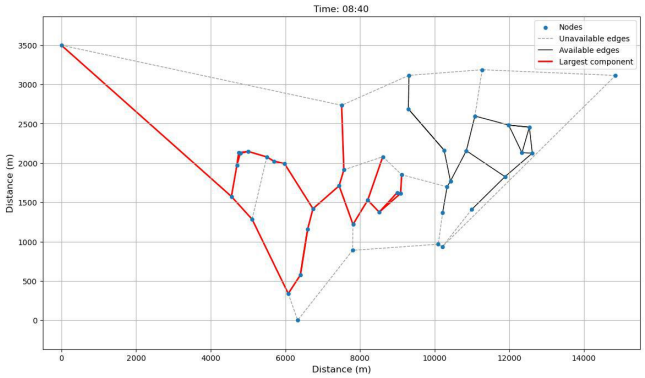
Distance (m)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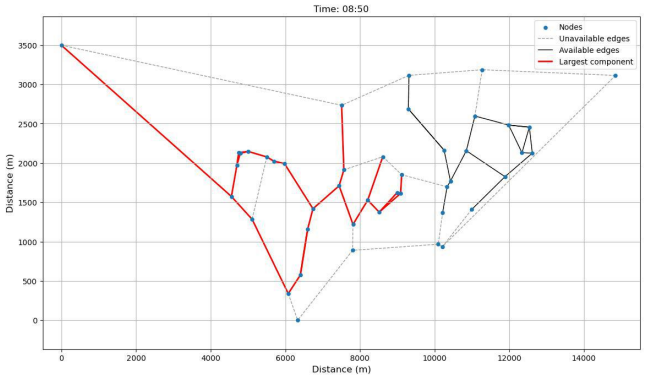
Distance (m)
Distance (m)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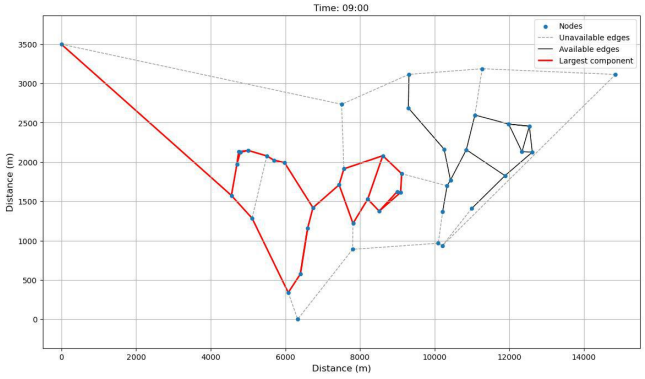
Distance (m)
Distance (m)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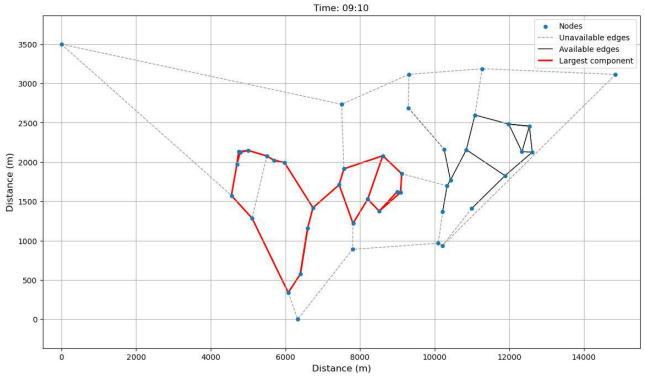
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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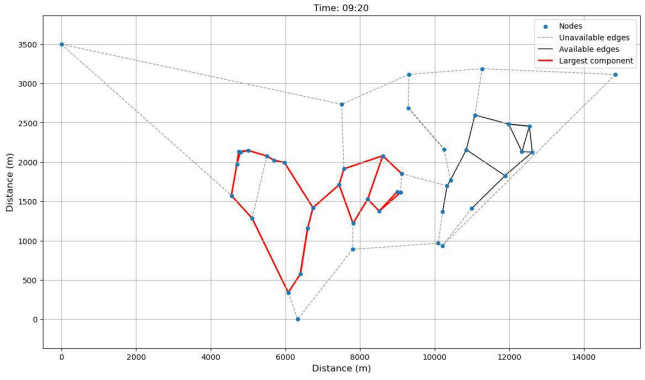
Available edges
Largest component
Distance (m)
Distance (m)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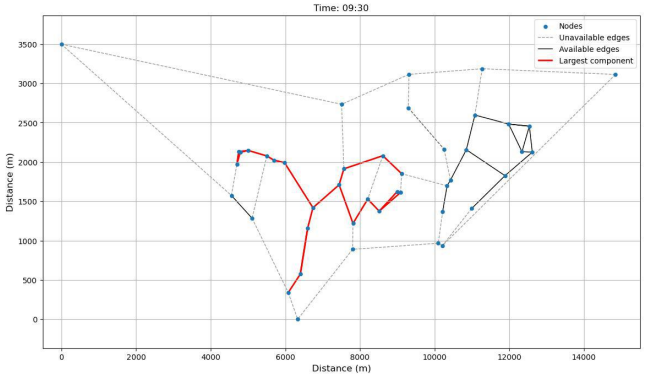
Available edges
Largest component
Distance (m)
Distance (m)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Available edges
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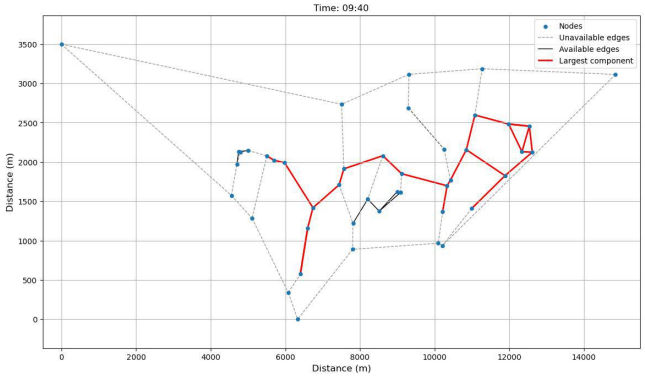
Distance (m)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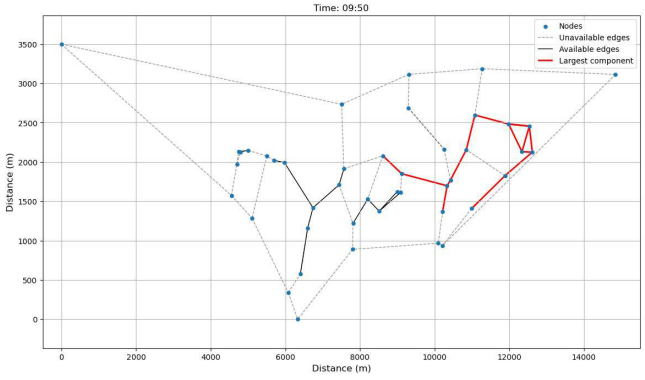
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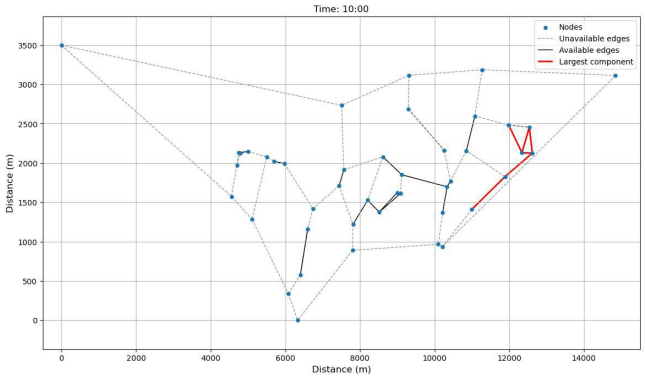
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Nodes
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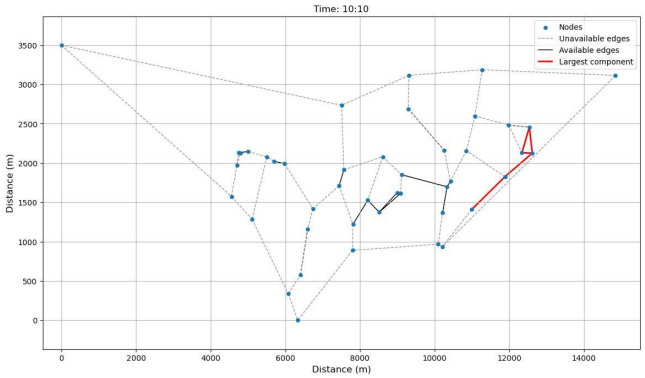
Largest component
Distance (m)
Distance (m)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Largest component
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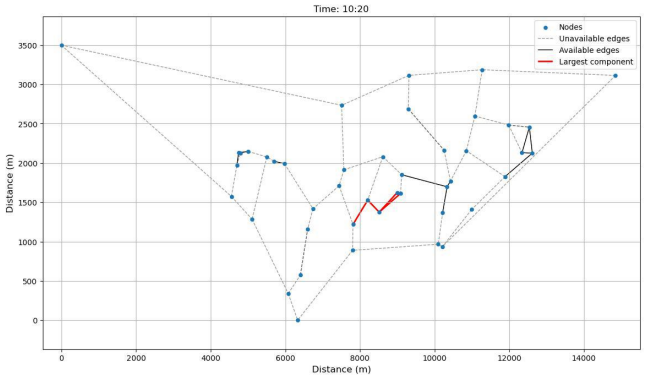
Distance (m)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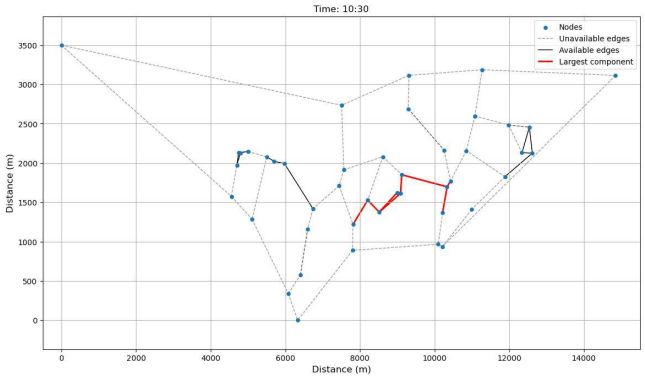
Largest component
Distance (m)
Distance (m)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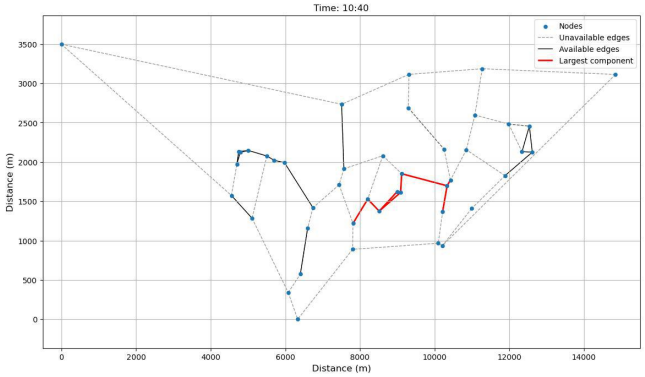
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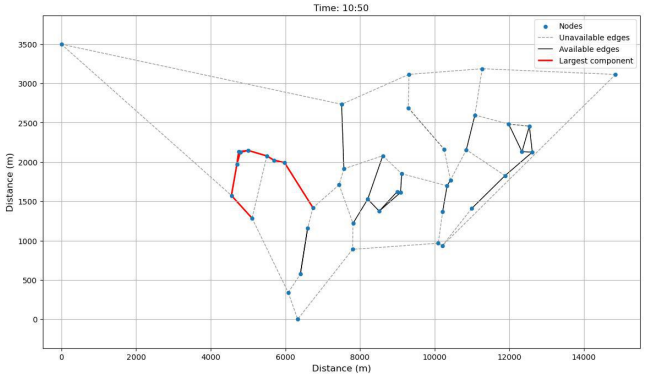
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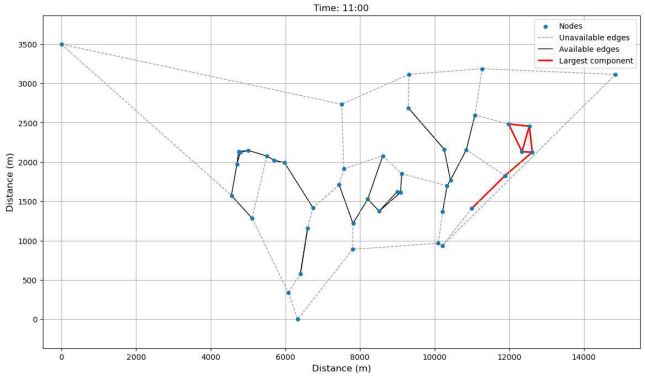
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Distance (m)
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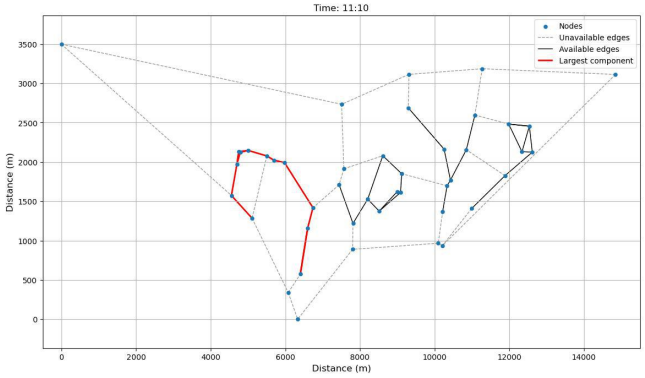
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Nodes
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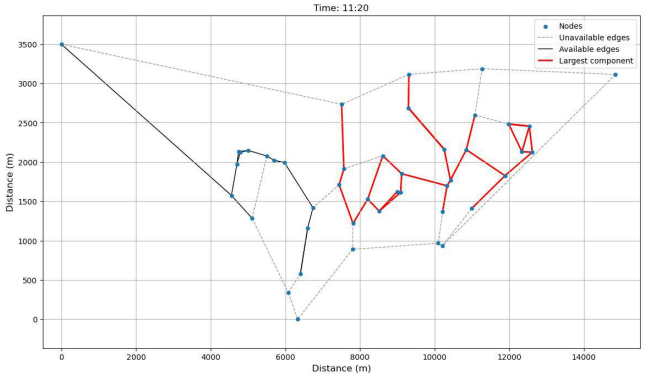
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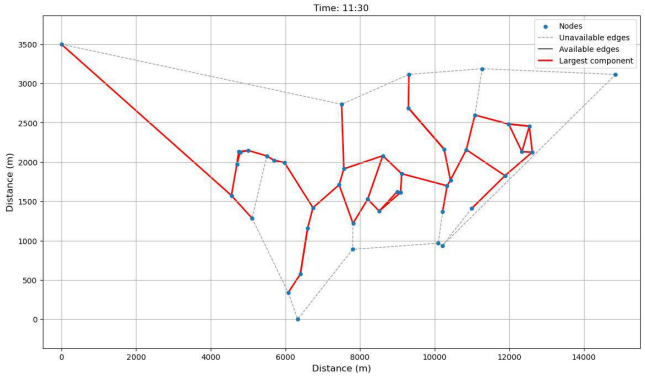
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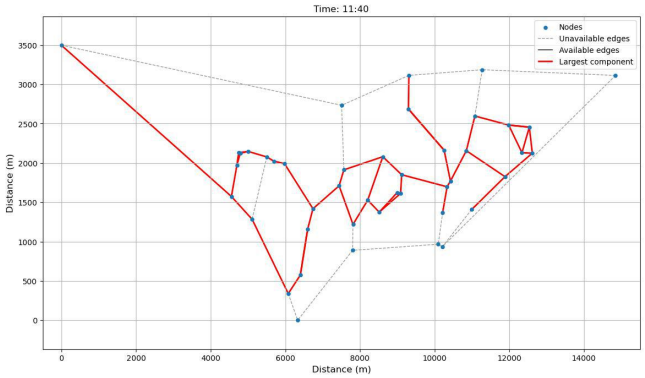
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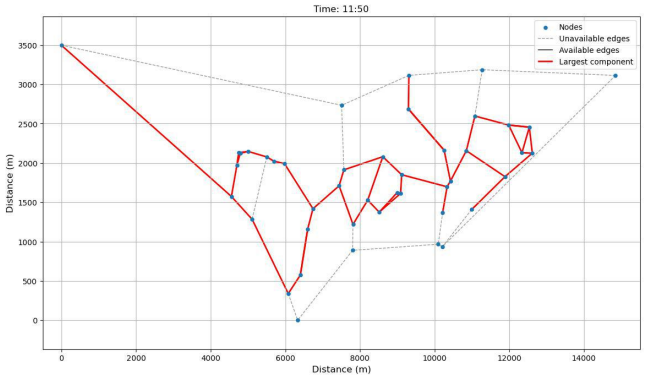
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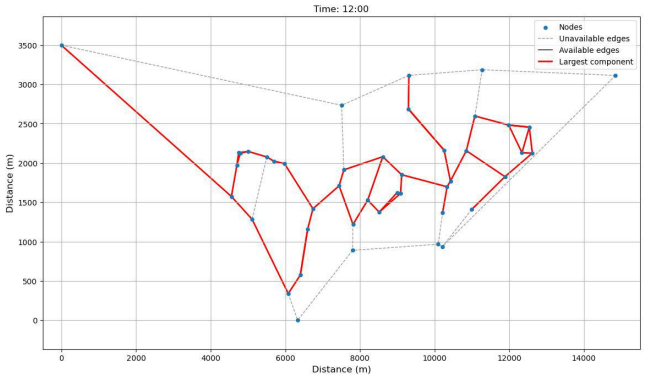
Distance (m)
Distance (m)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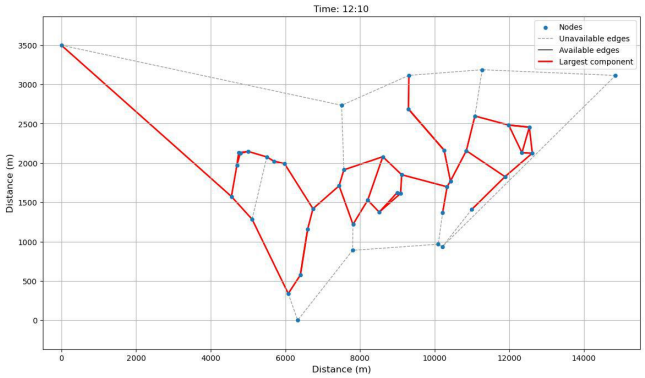
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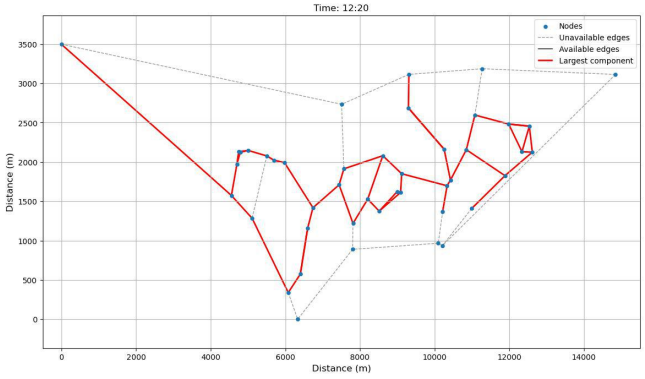
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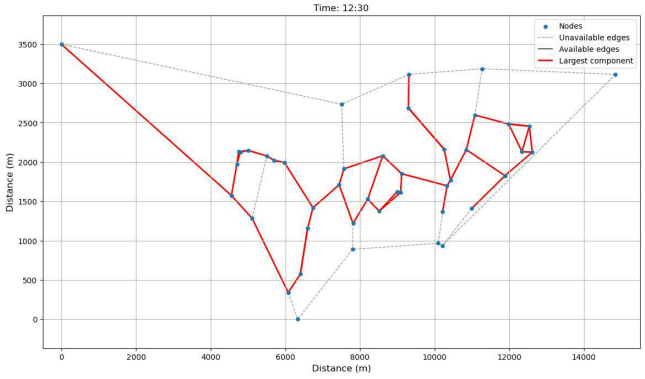
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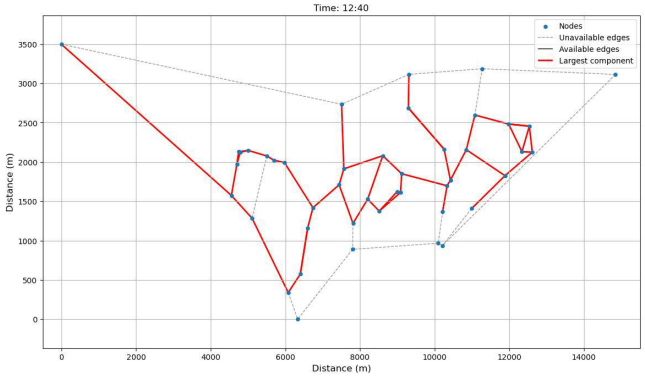
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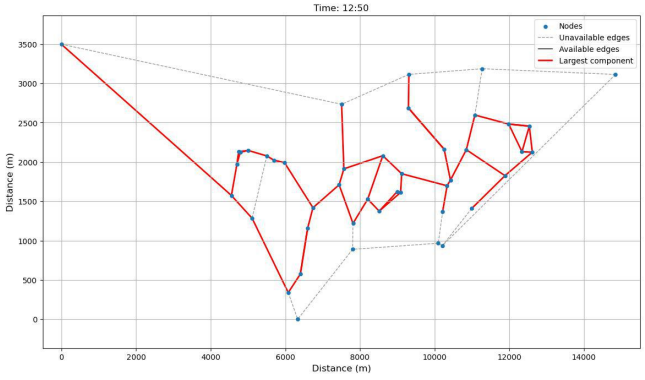
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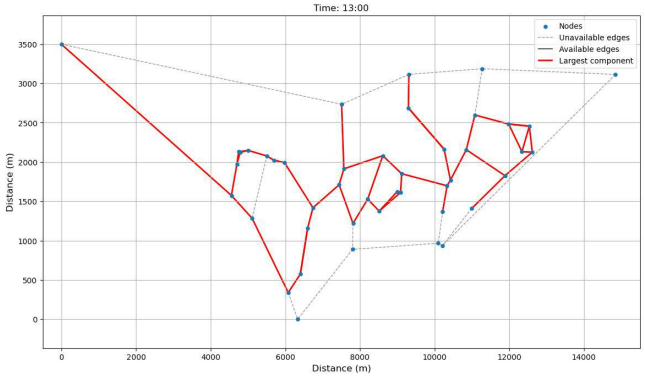
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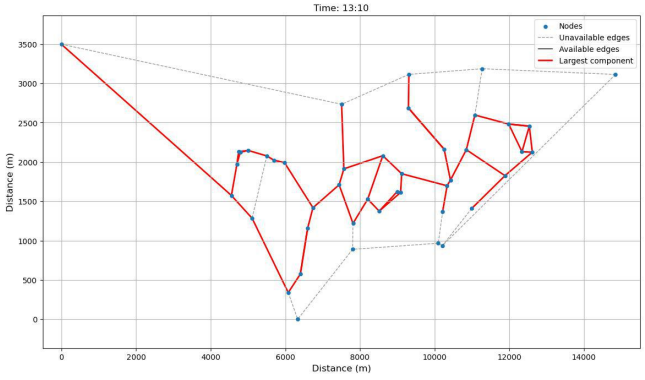
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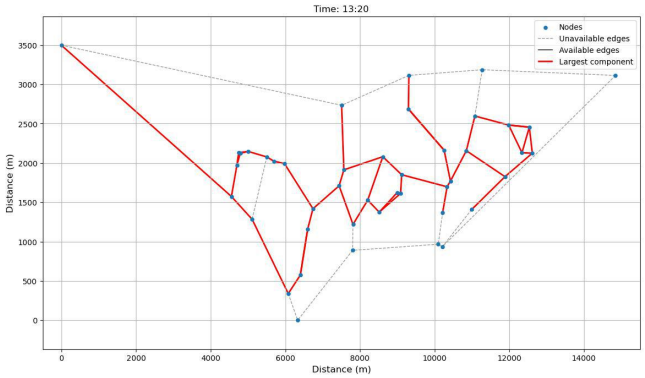
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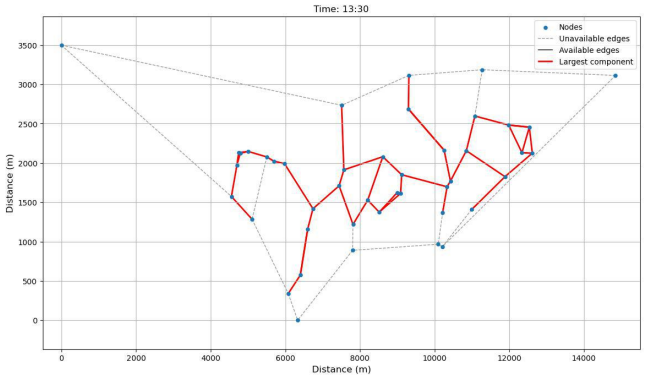
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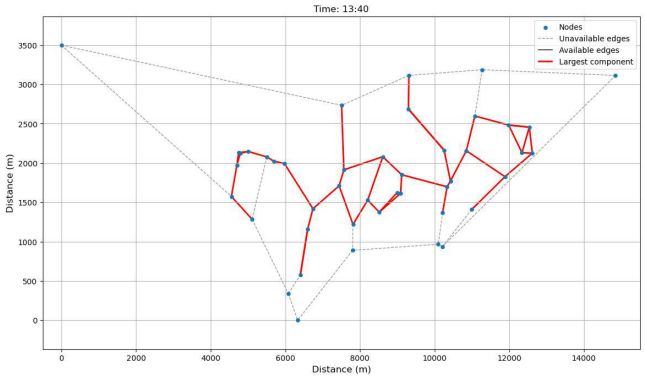
Distance (m)
Distance (m)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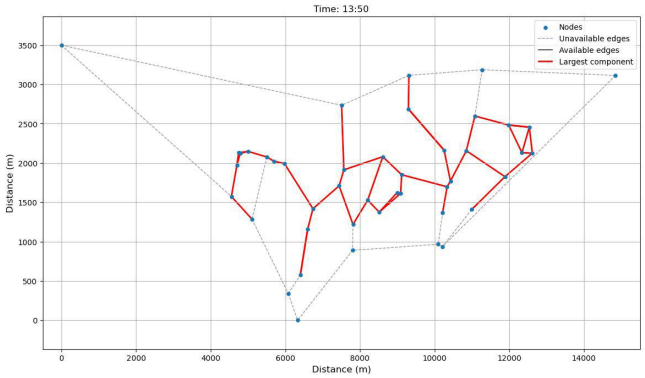
Distance (m)
Distance (m)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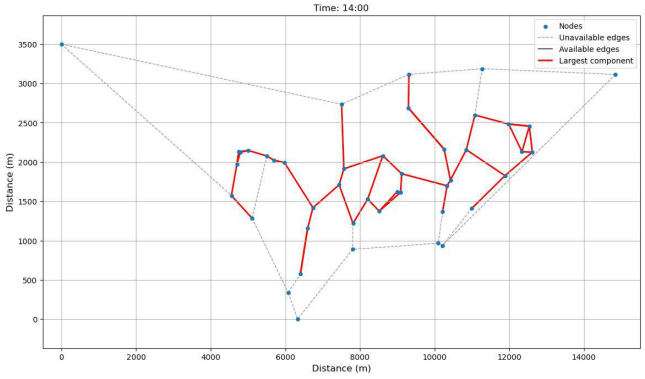
Distance (m)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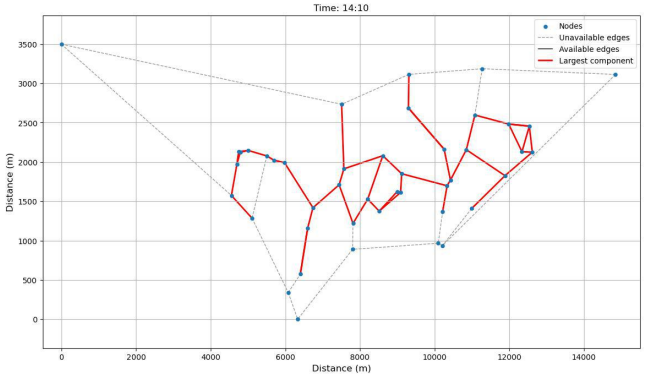
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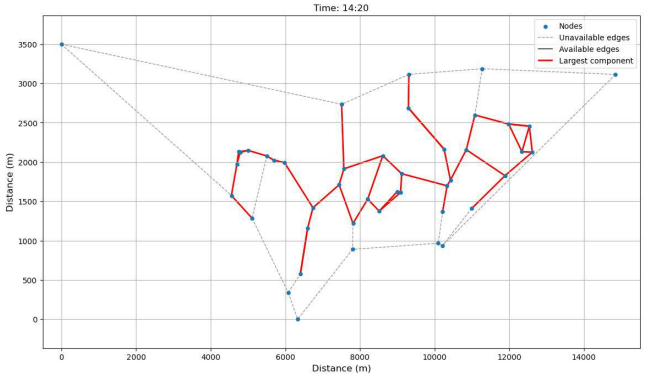
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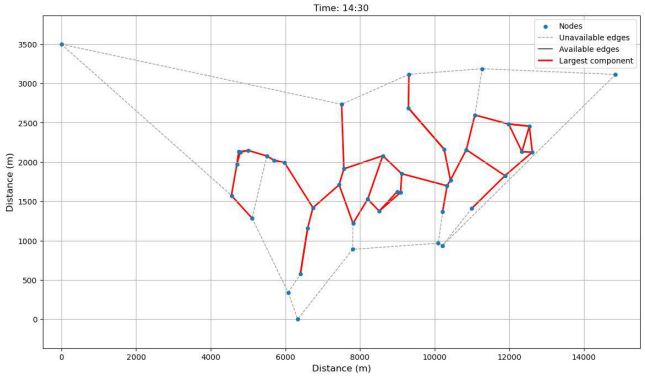
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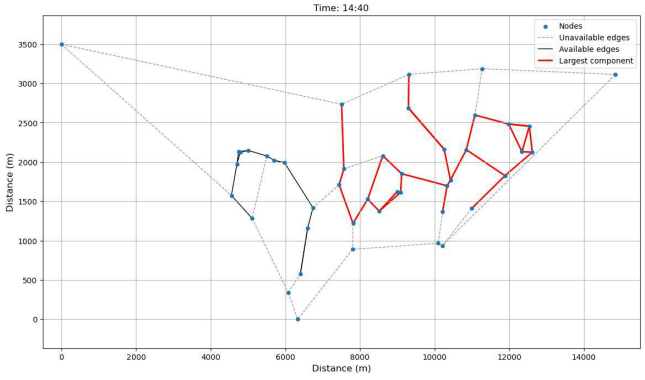
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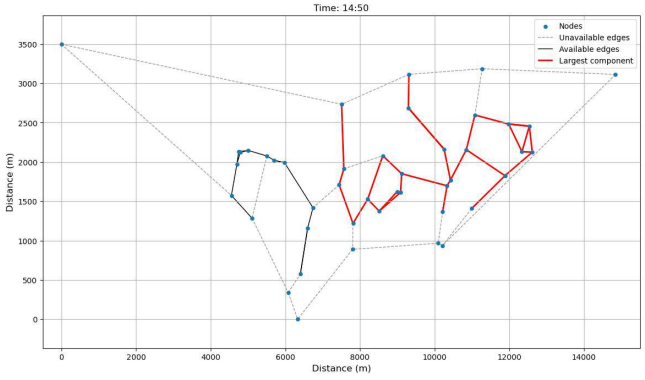
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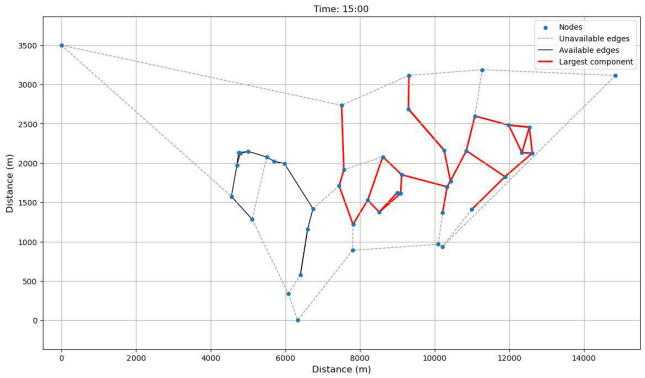
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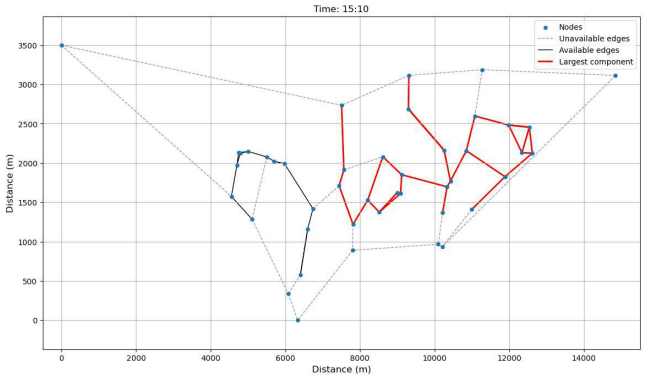
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Available edges
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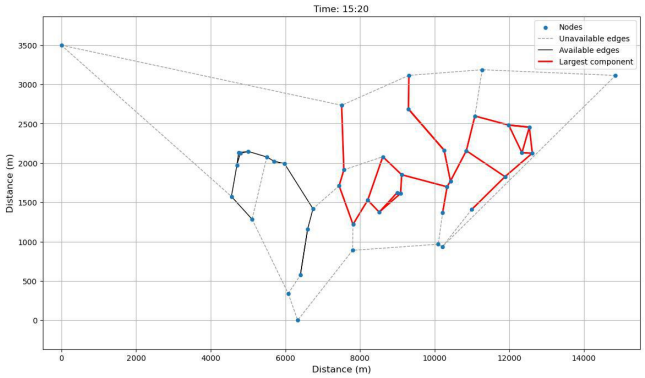
Distance (m)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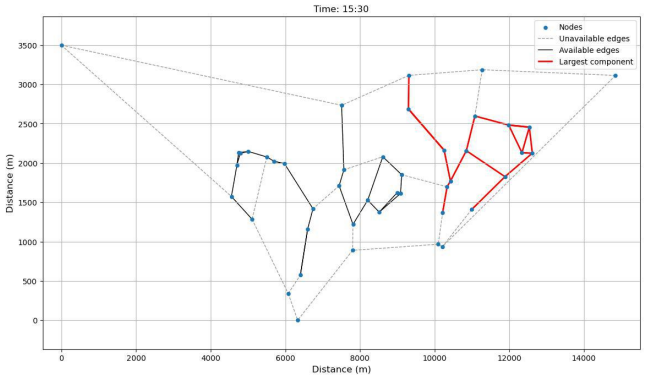
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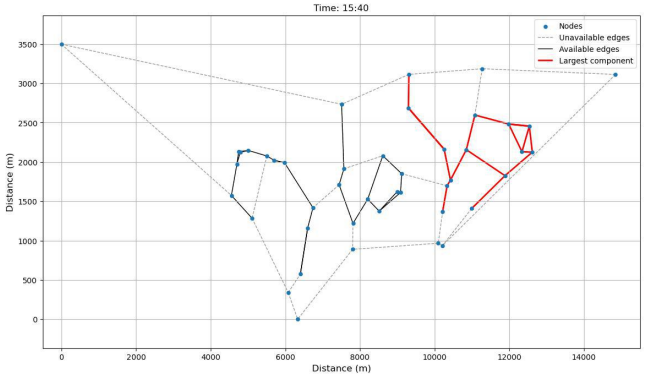
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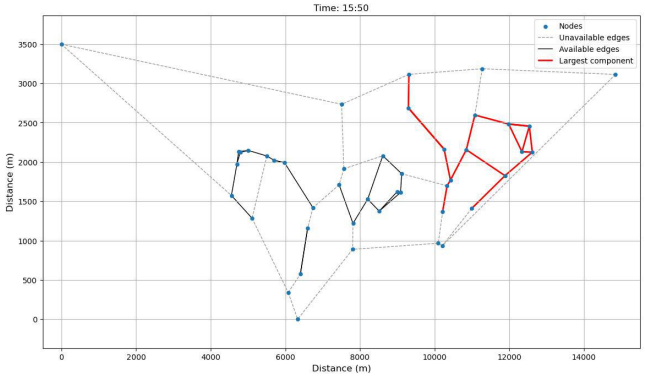
Distance (m)


Time: 15:50
Nodes
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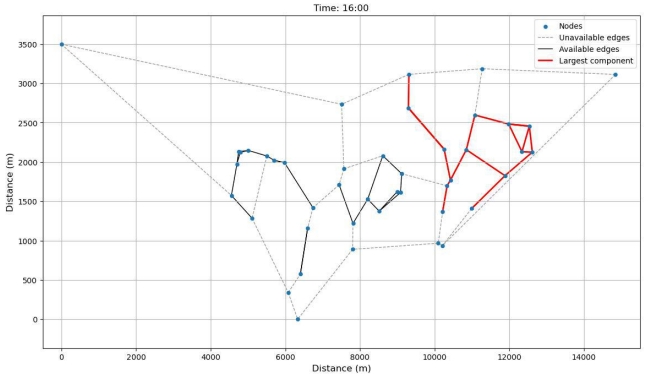
Largest component
Distance (m)
Distance (m)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Available edges
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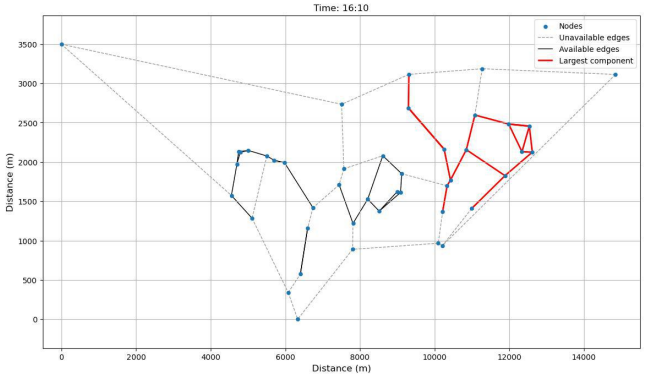
Distance (m)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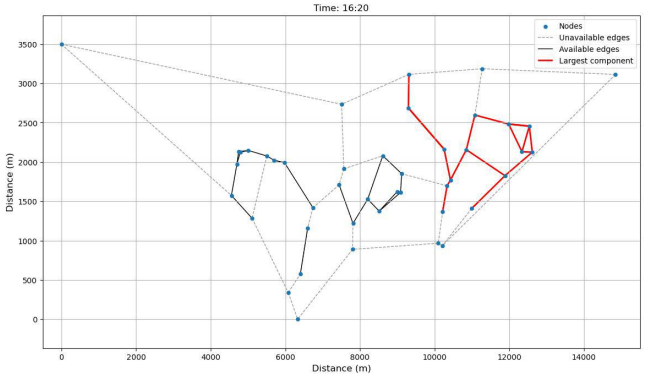
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Available edges
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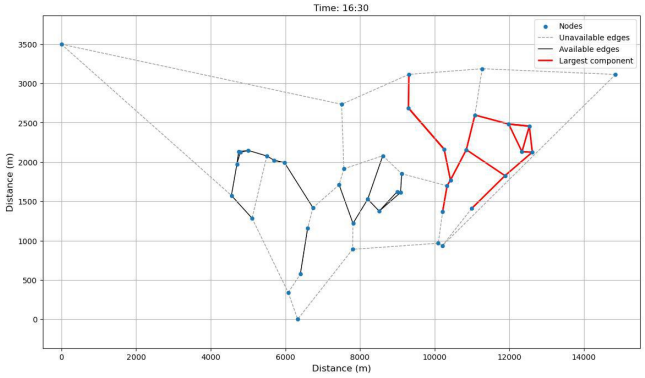
Distance (m)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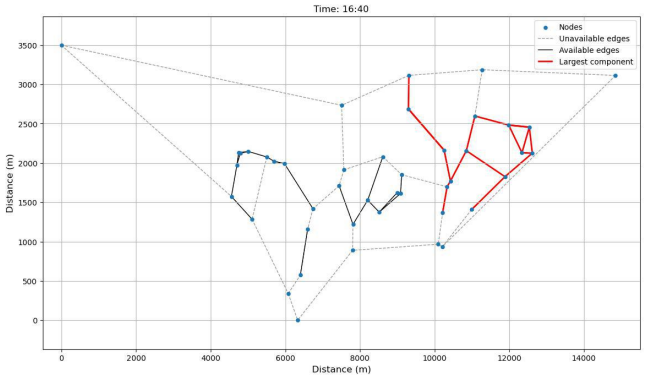
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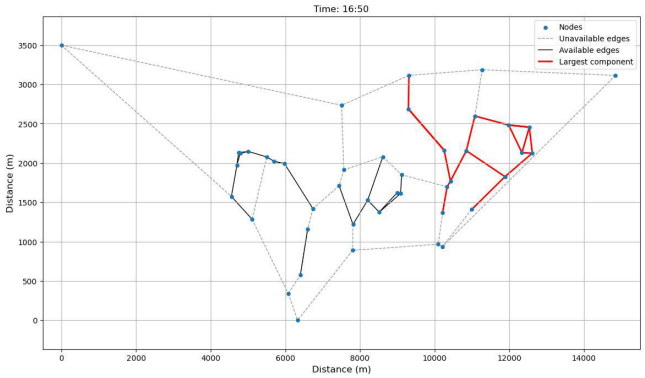
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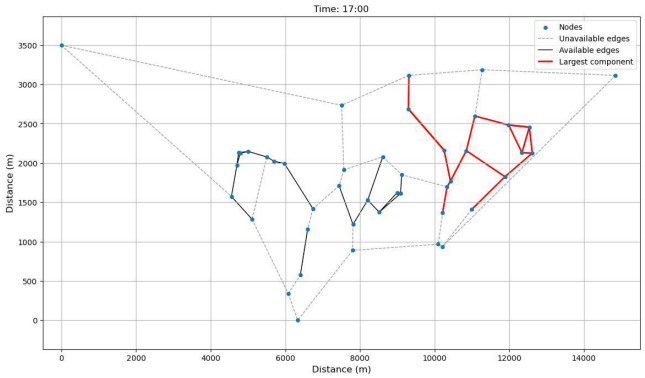
Distance (m)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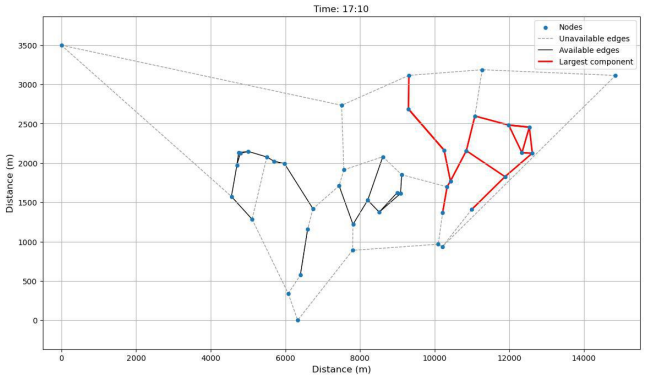
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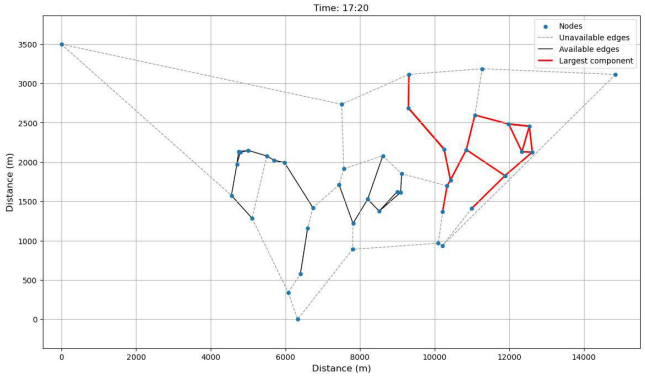
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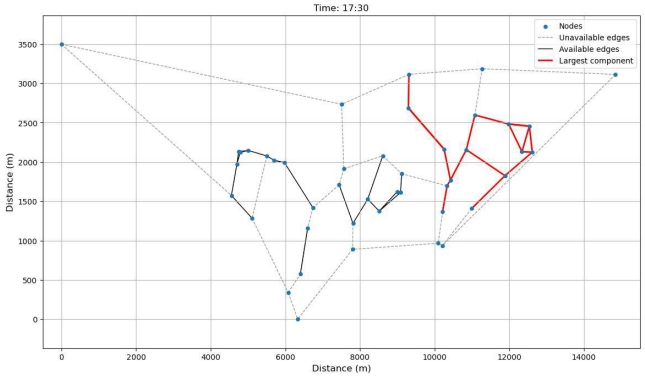
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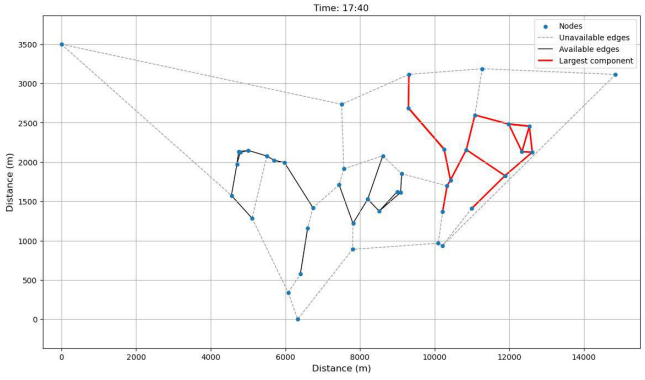
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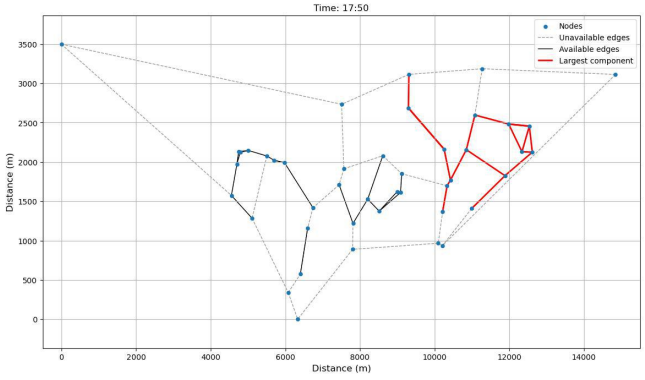
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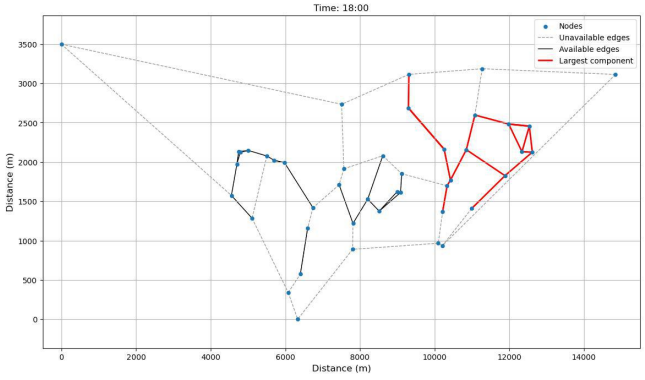
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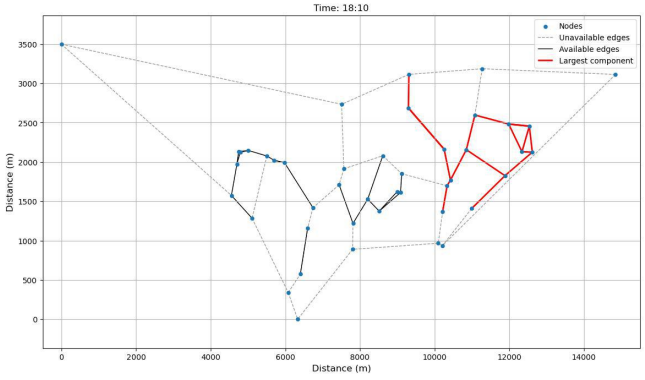
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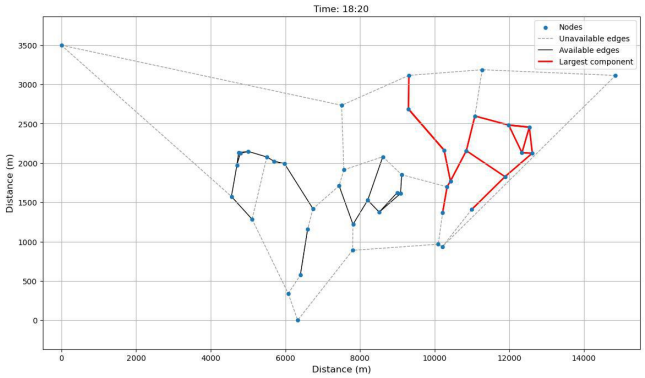
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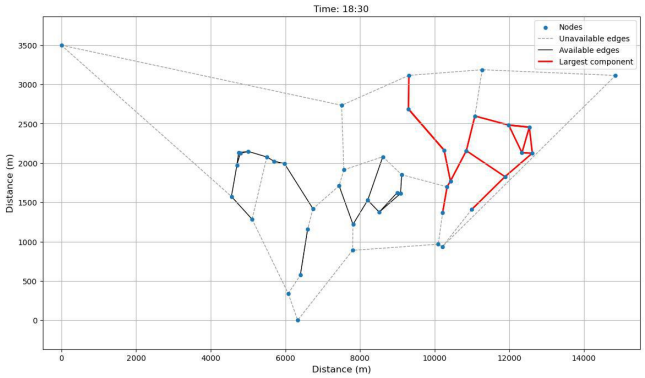
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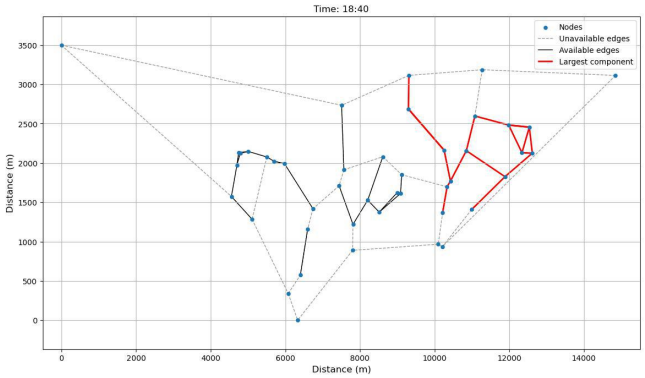
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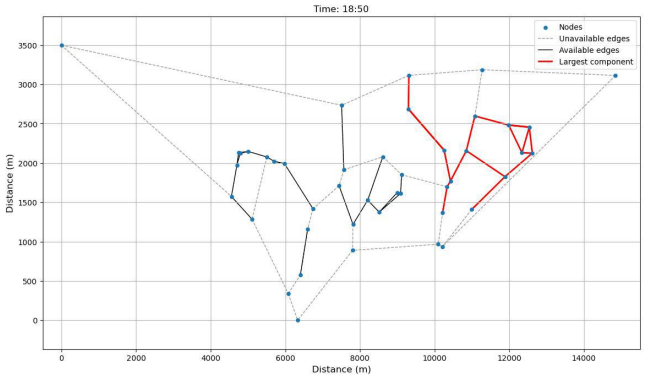
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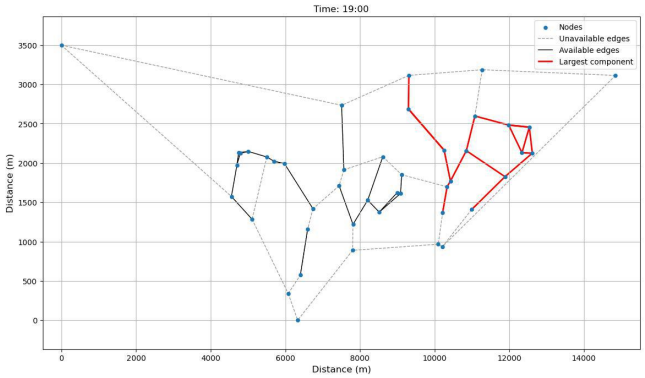
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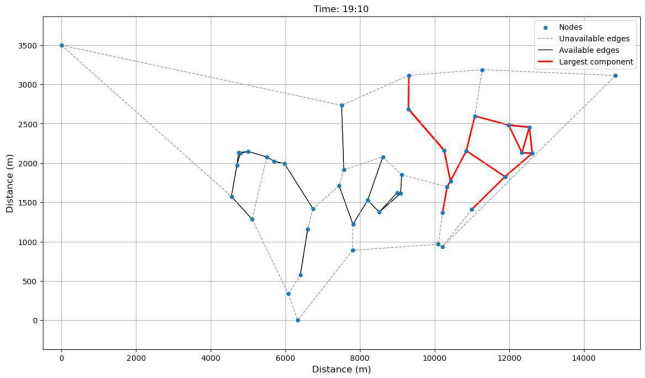
Distance (m)
Distance (m)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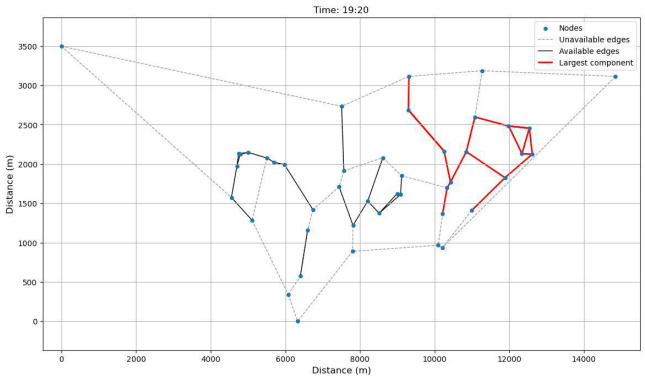
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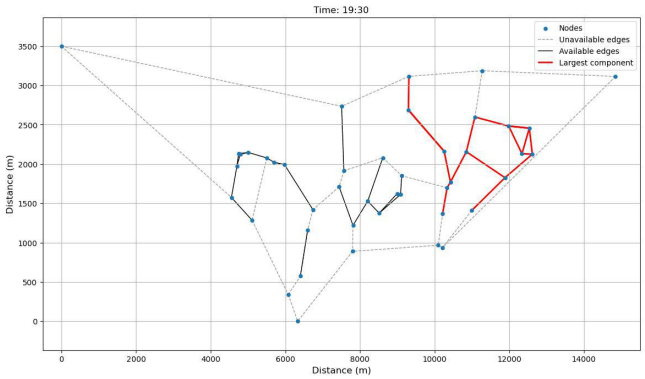
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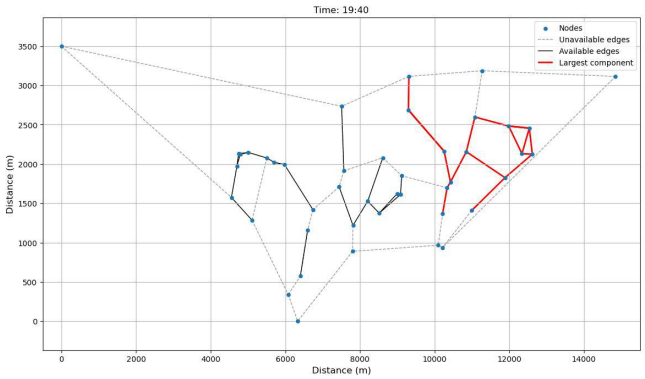
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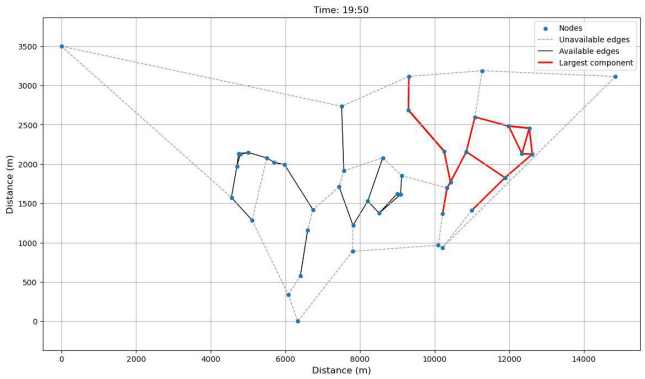
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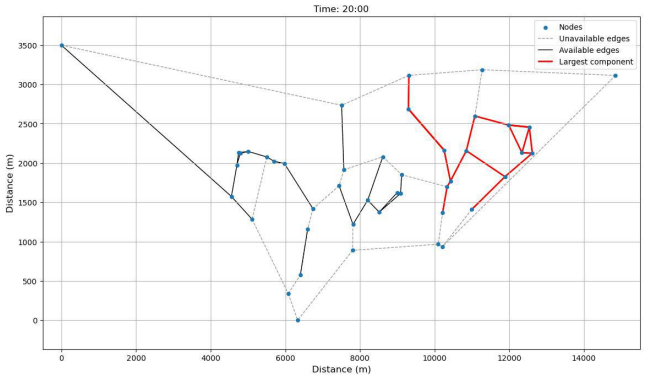
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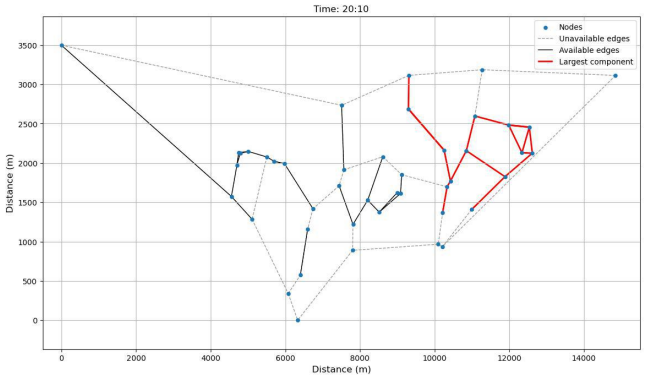
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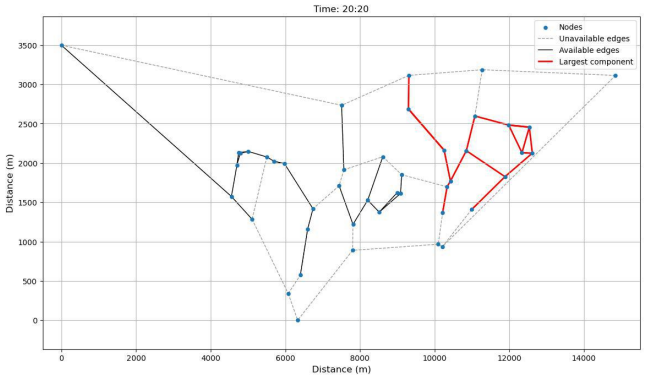
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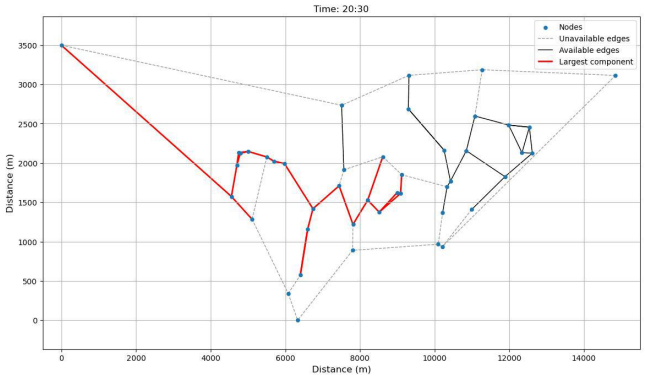
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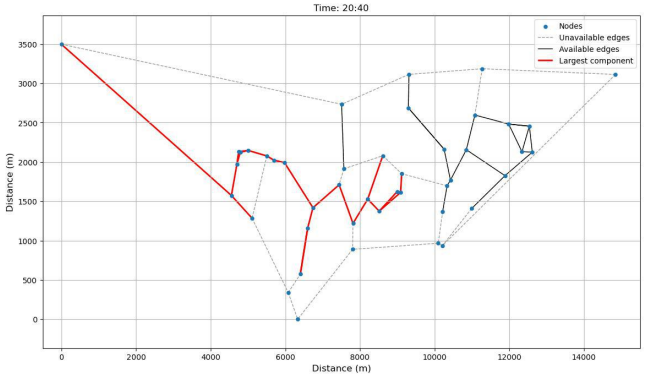
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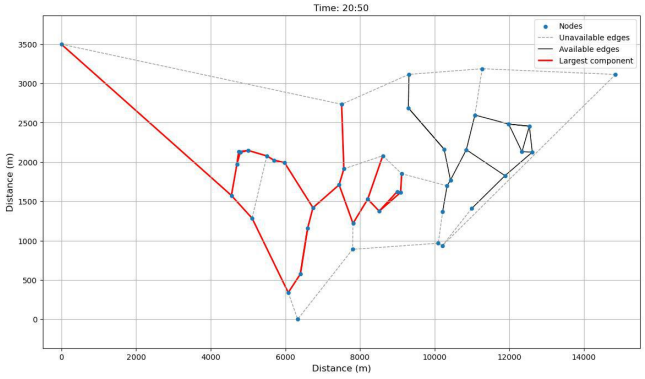
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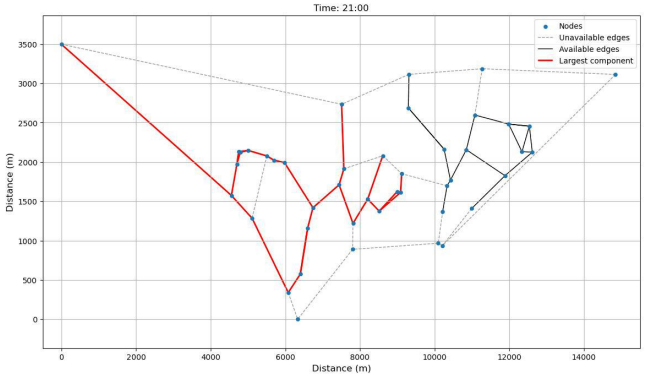
Distance (m)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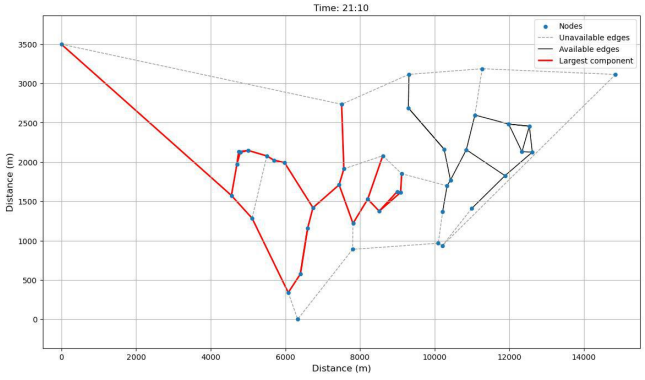
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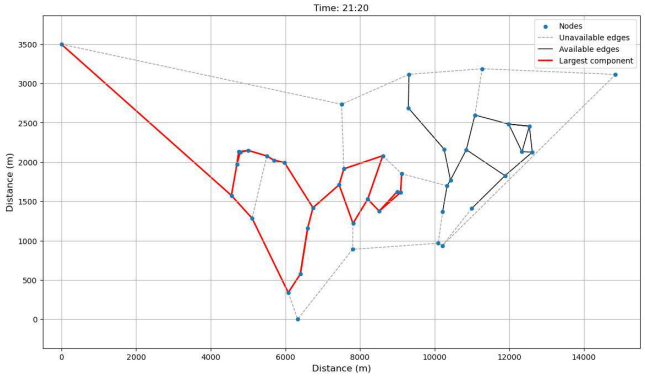
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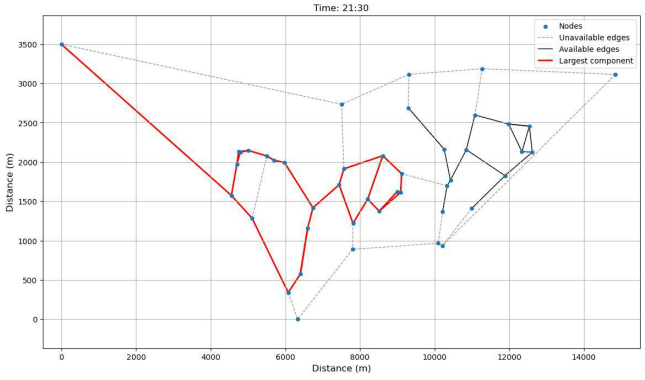
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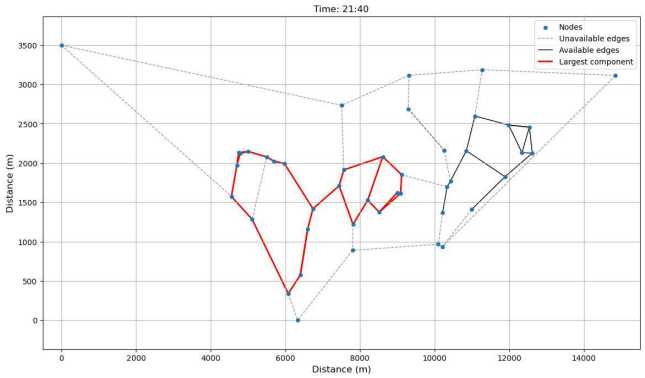
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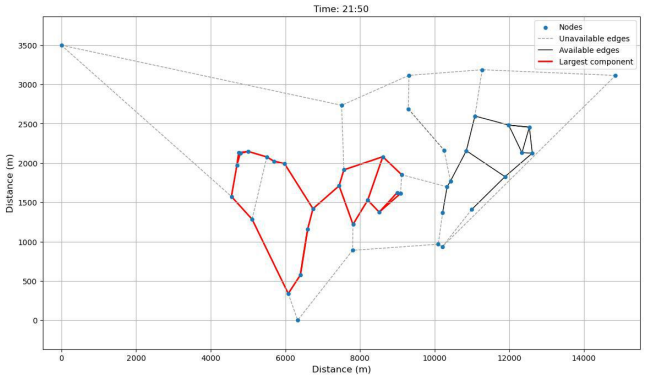
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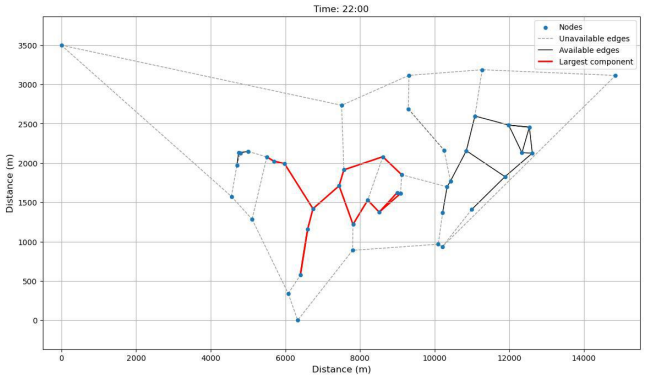
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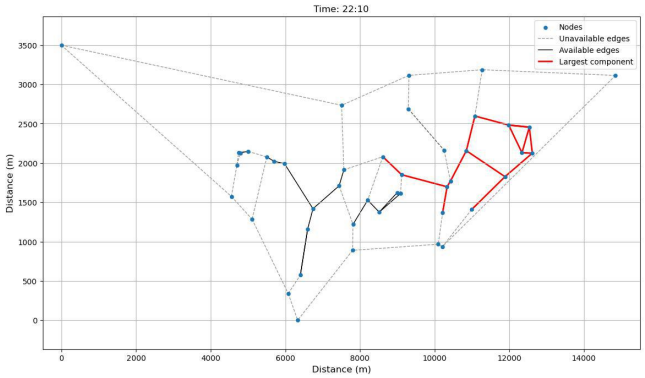
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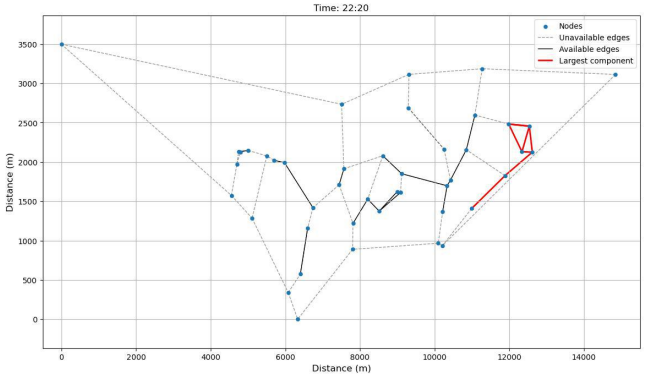
Distance (m)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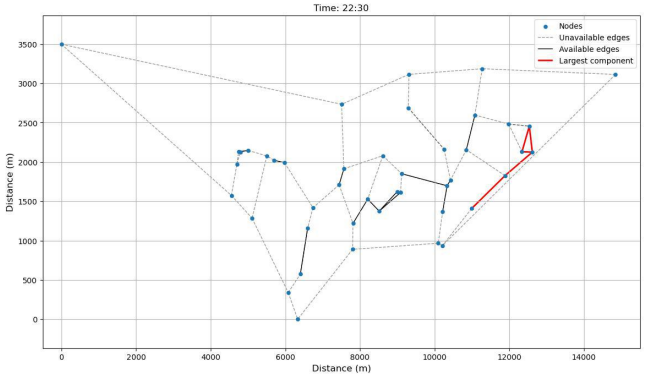
Distance (m)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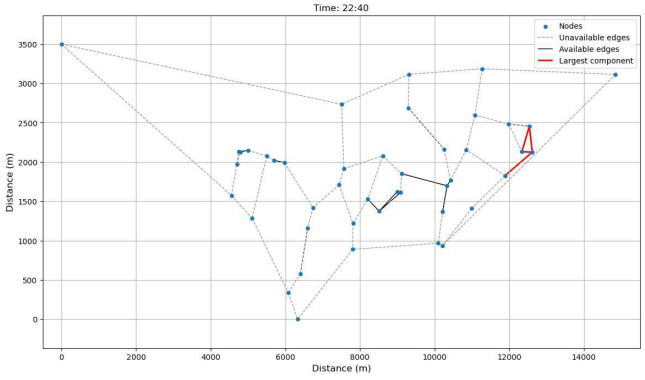
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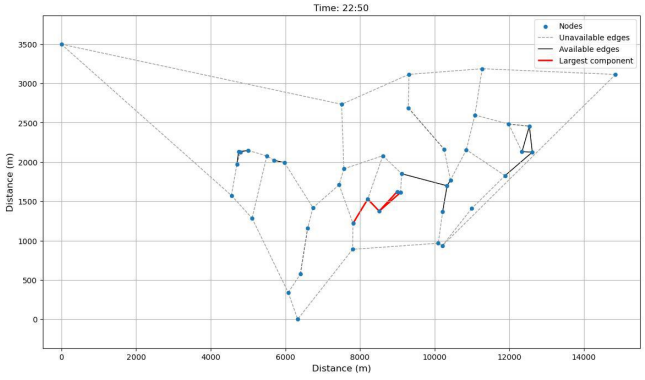
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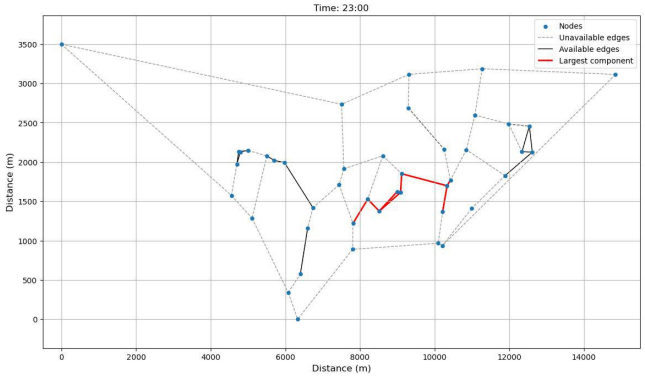
Distance (m)


Time: 23:00
Nodes
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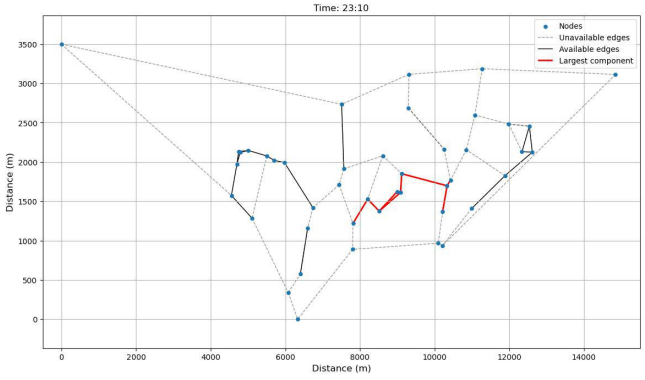
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Nodes
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Largest component
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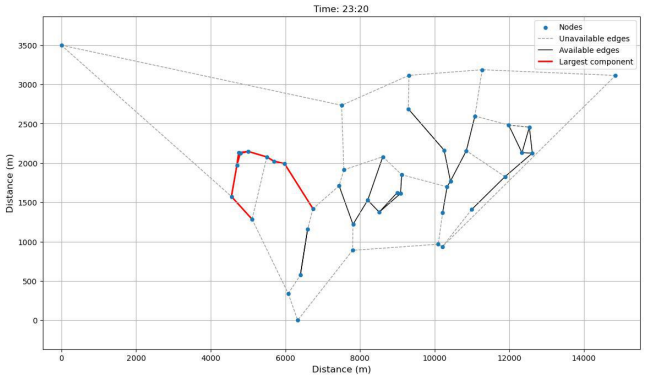
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Largest component
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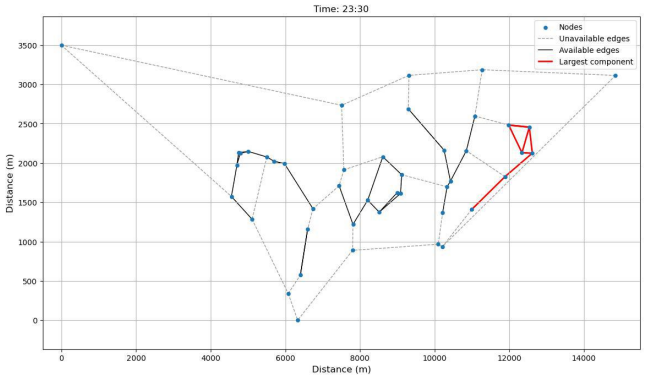
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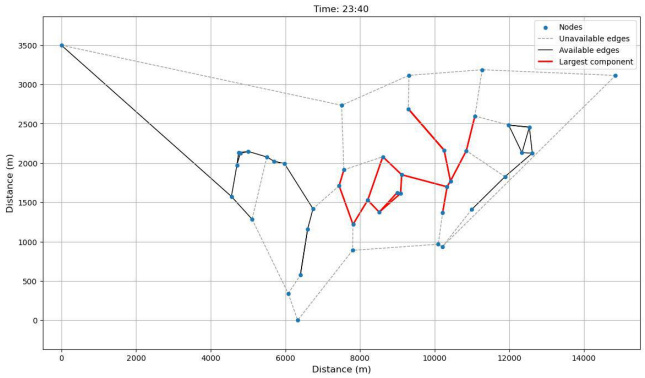
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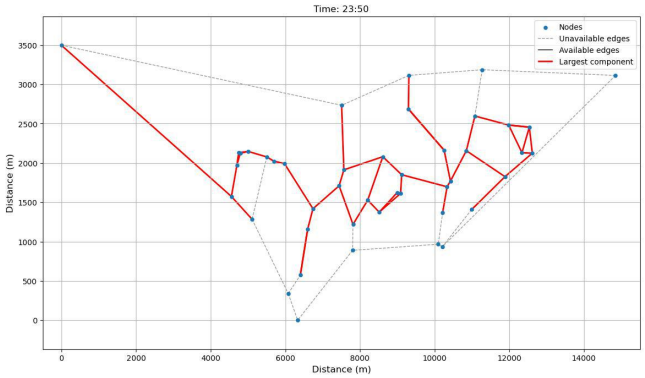
Distance (m)


Time: 23:50
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Available edges
Largest component
Distance (m)
Distance (m)

C

Opening Ottersluis

This chapter gives the connectivity results for the situation in the Sliedrechtse Biesbosch described in section 5.4 of the main document, The nature restoration measure discussed here is the permanent opening of the Ottersluis. Figure C.1 illustrates the time-varying connectivity metrics, i.e. the number of components (NOC) of the graph, the order of the largest component and the length of connected pathways (LOCOP) of the largest component. Next are the graphs indicating the available channels in the system and visualizing the largest available habitat on a time interval of 10 minutes.

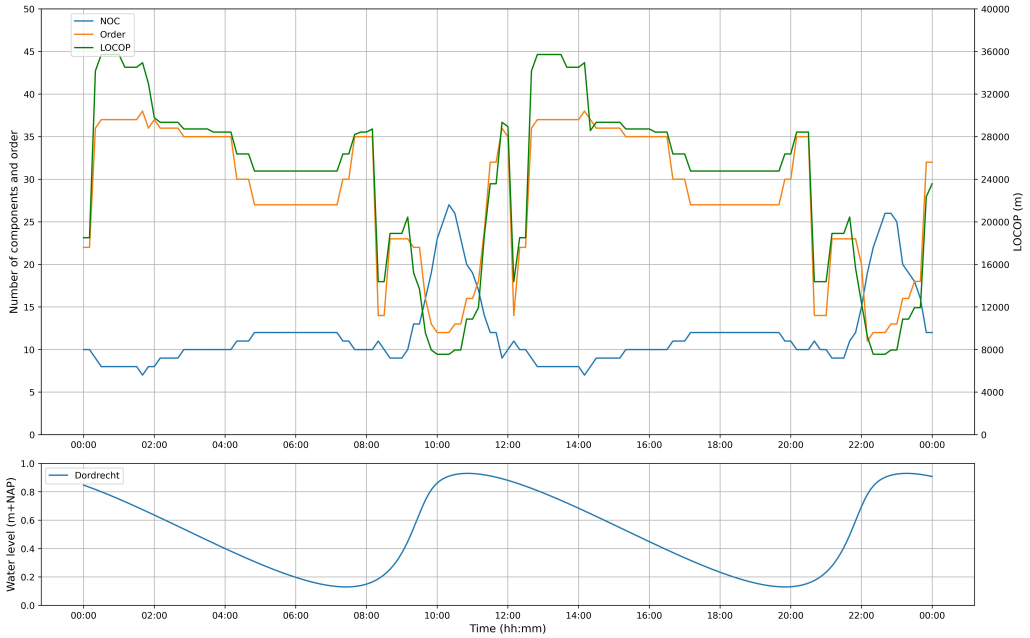
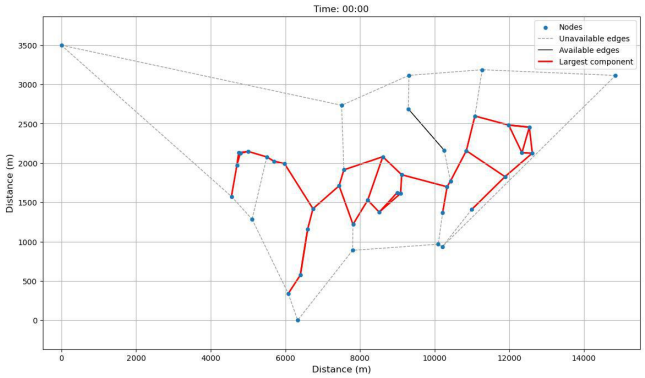
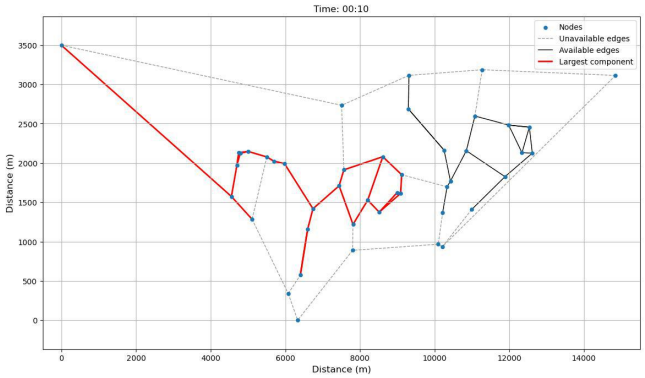
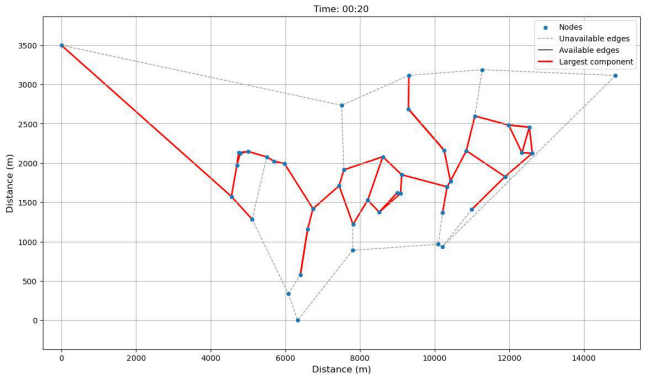


Figure C.1: Evolution of connectivity of the Sliedrechtse Biesbosch during one day and a maximum tolerable flow velocity of $u_{max} = 0.3$ m/s, evaluated by means of three metrics: the number of components (NOC) in the graph, the number of nodes in the largest component, and the length of connected pathways (LOCOP) of the largest component.


Time: 00:00
Nodes
Unavailable edges
Available edges
Largest component
Distance (m)
Distance (m)


Time: 00:10
Nodes
Unavailable edges
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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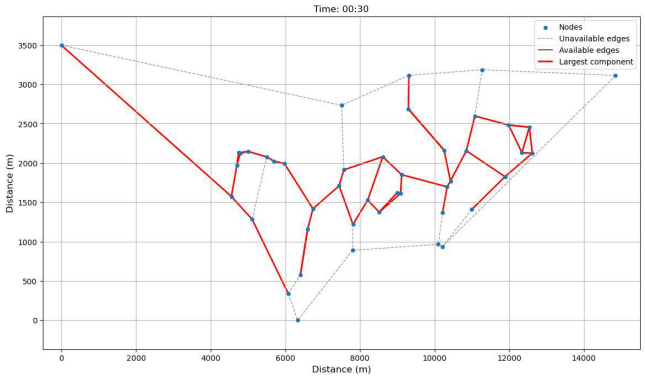
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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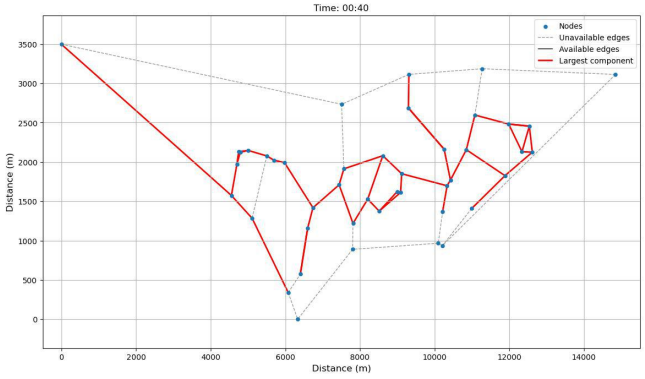
Available edges
Largest component
Distance (m)
Distance (m)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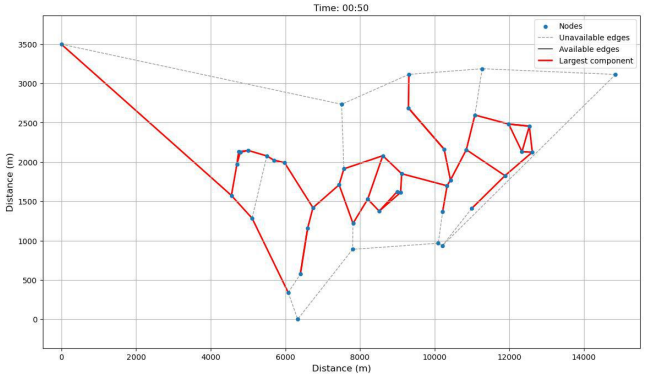
Available edges
Largest component
Distance (m)
Distance (m)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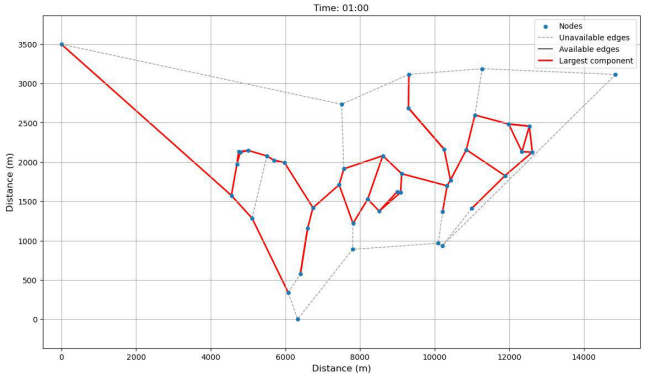
Available edges
Largest component
Distance (m)
Distance (m)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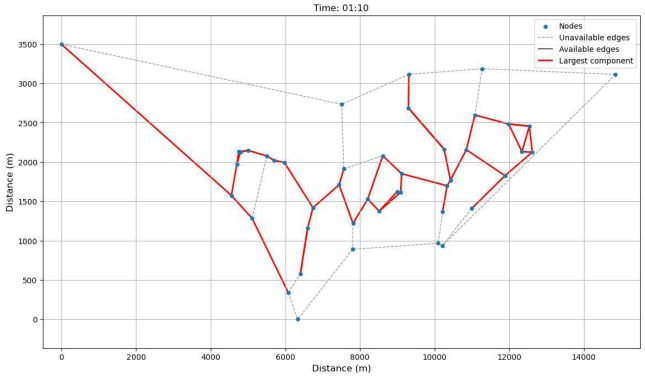
Available edges
Largest component
Distance (m)
Distance (m)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Available edges
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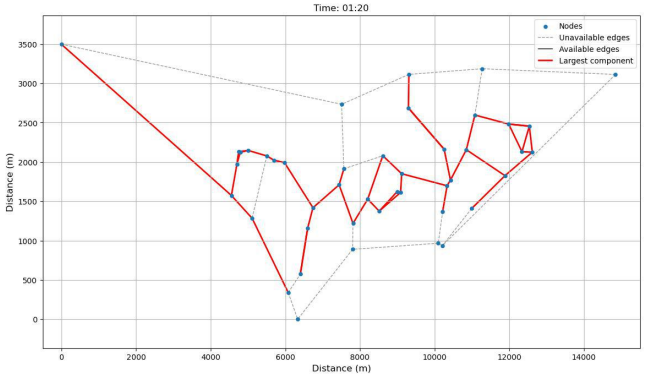
Distance (m)
Distance (m)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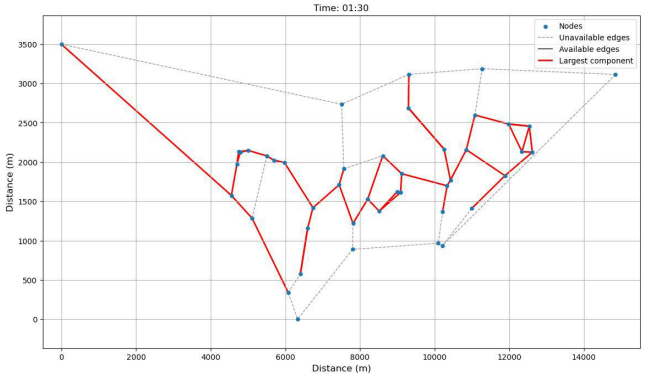
Distance (m)
Distance (m)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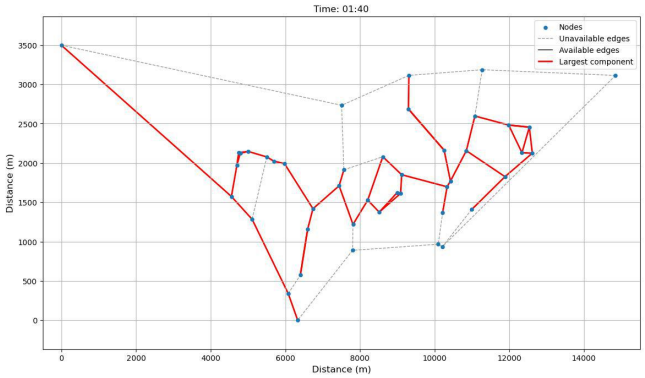
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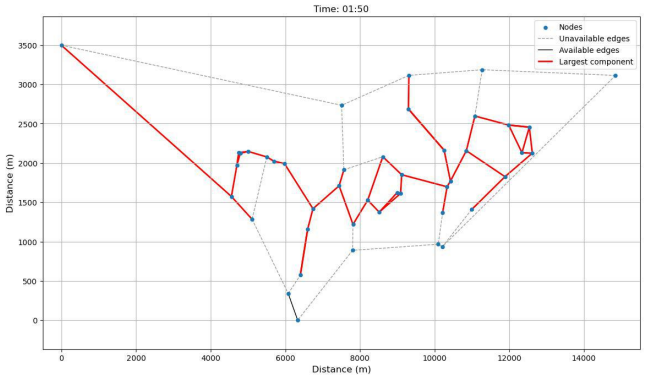
Distance (m)
Distance (m)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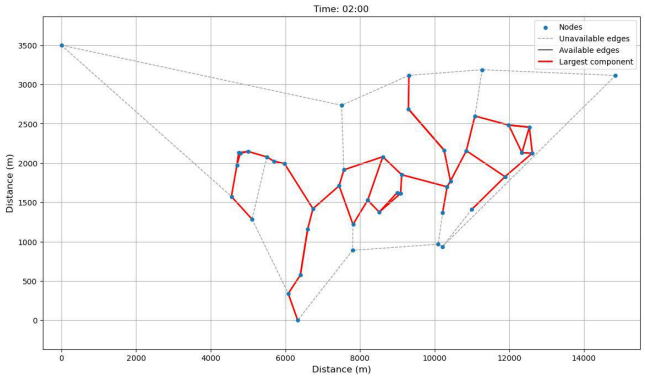
Largest component
Distance (m)
Distance (m)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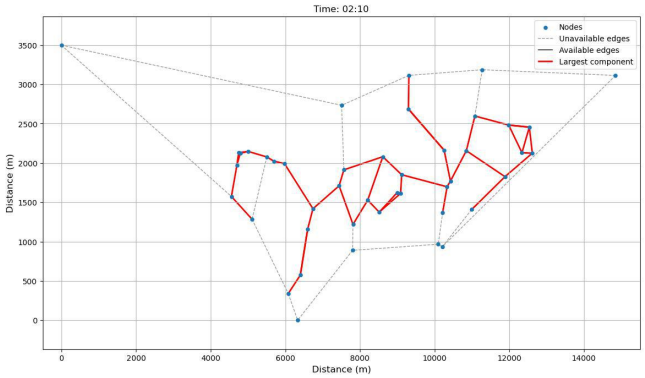
Available edges
Largest component
Distance (m)
Distance (m)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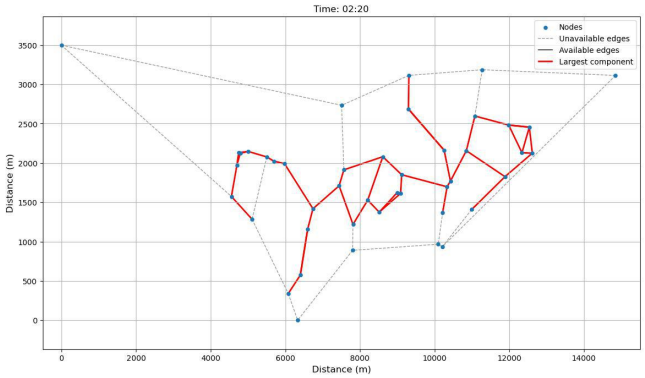
Distance (m)
Distance (m)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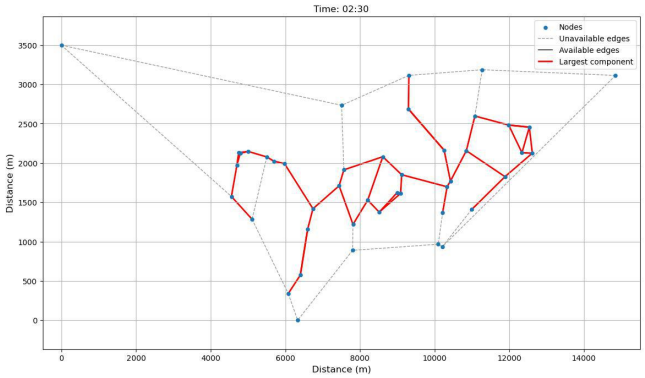
Distance (m)
Distance (m)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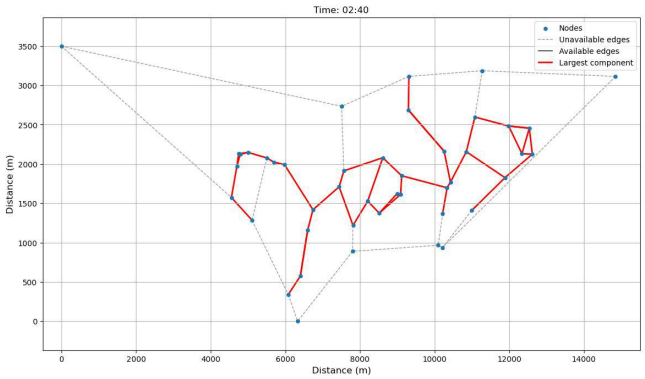
Distance (m)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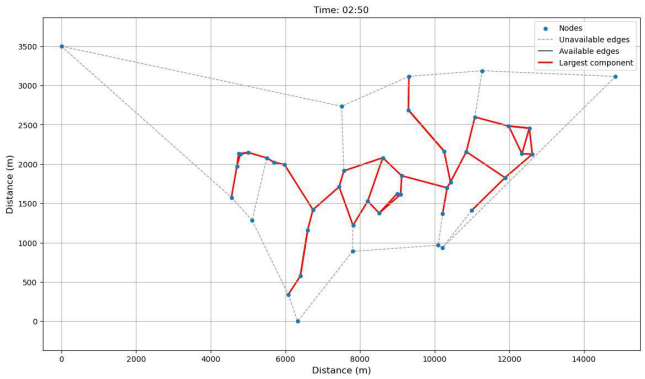
Distance (m)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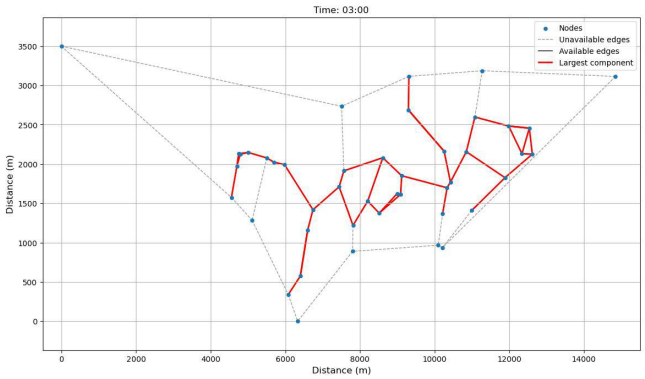
Distance (m)
Distance (m)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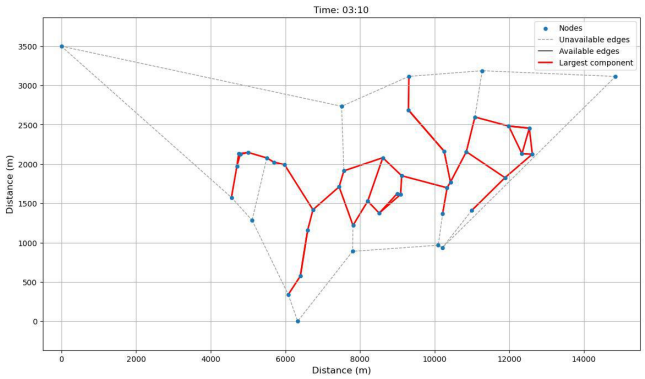
Distance (m)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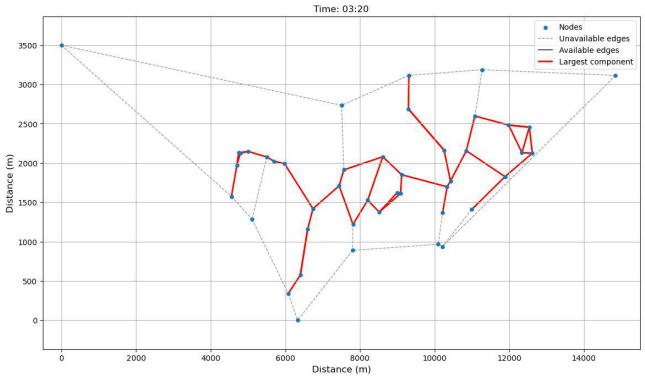
Distance (m)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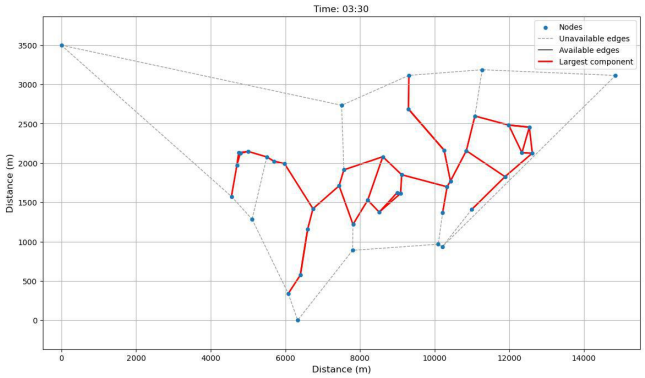
Distance (m)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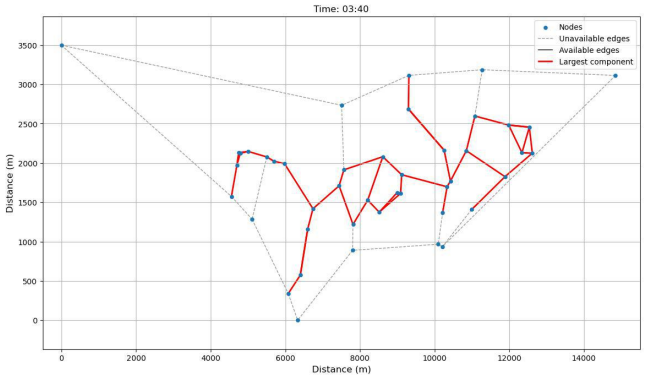
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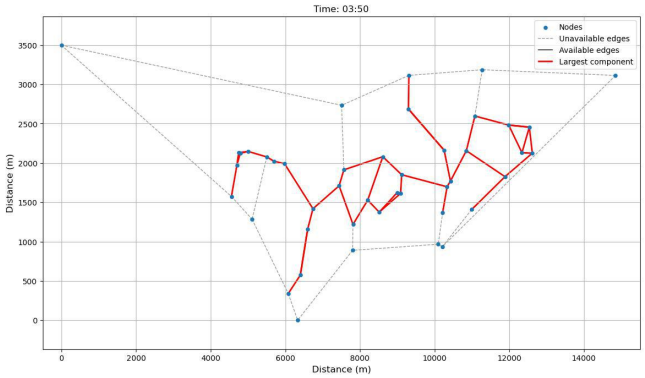
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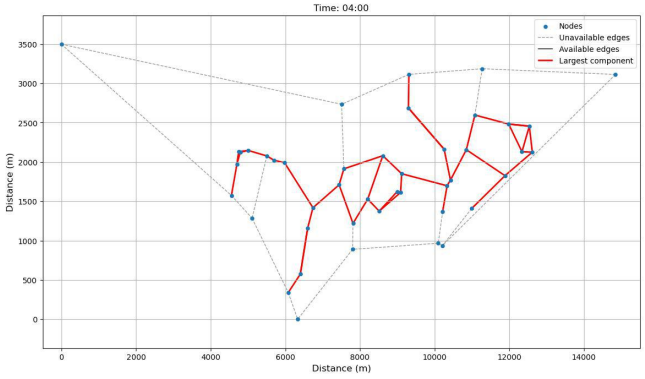
Distance (m)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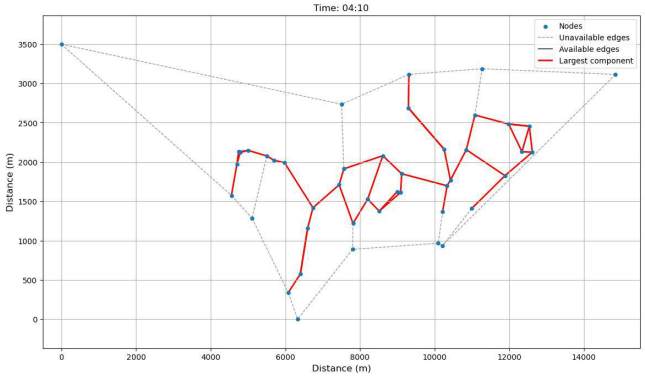
Distance (m)
Distance (m)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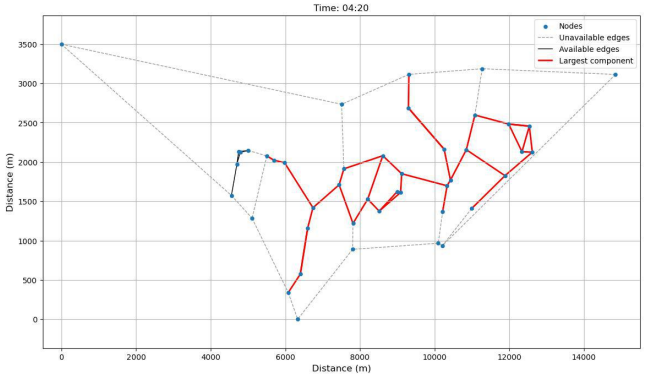
Largest component
Distance (m)
Distance (m)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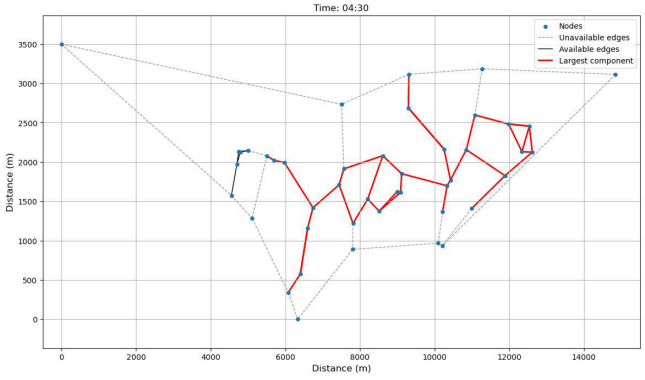
Largest component
Distance (m)
Distance (m)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Largest component
Distance (m)
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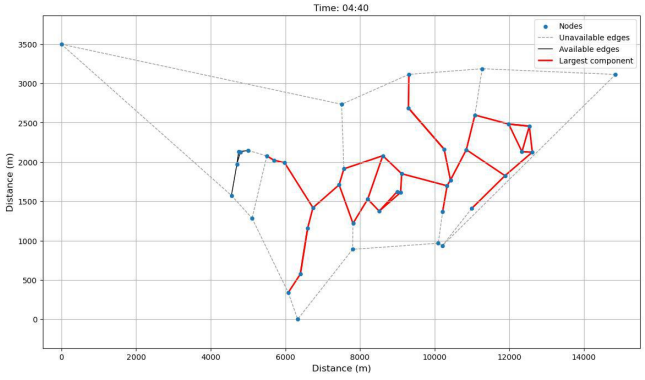
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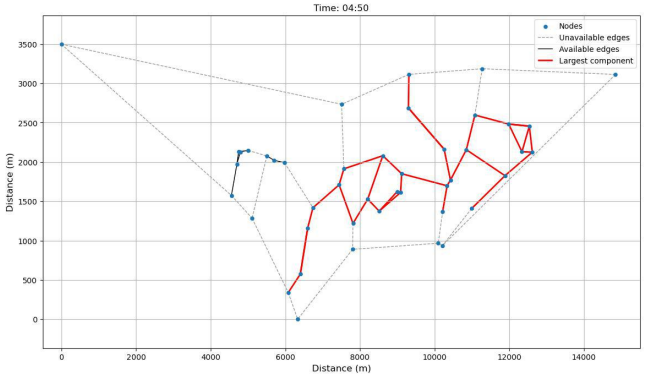
Largest component
Distance (m)
Distance (m)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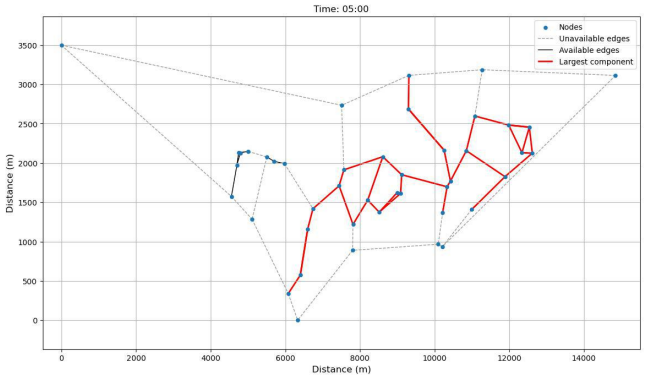
Distance (m)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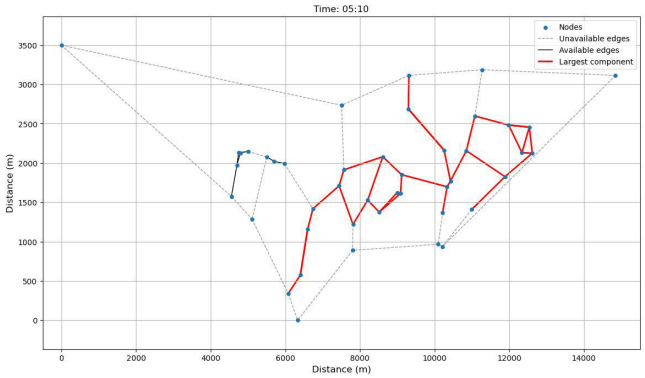
Distance (m)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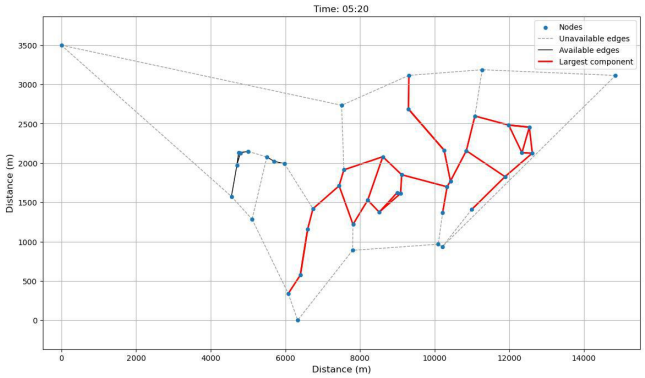
Largest component
Distance (m)
Distance (m)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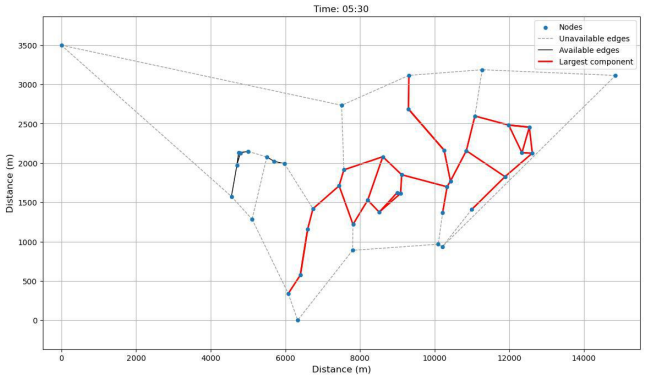
Distance (m)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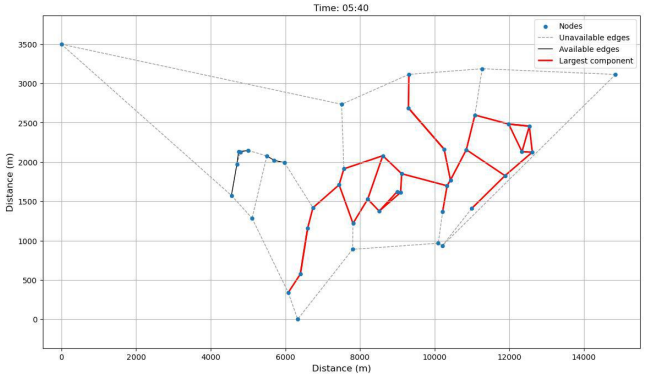
Largest component
Distance (m)
Distance (m)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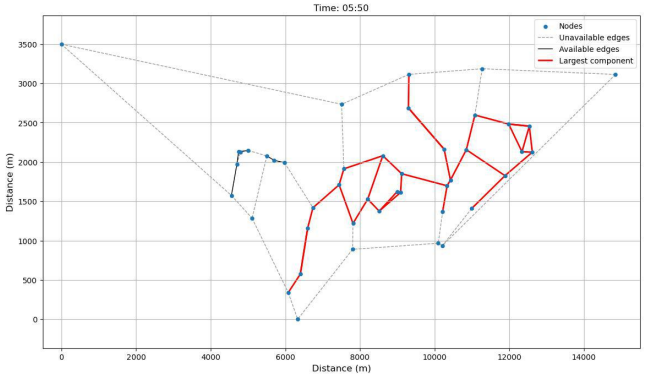
Largest component
Distance (m)
Distance (m)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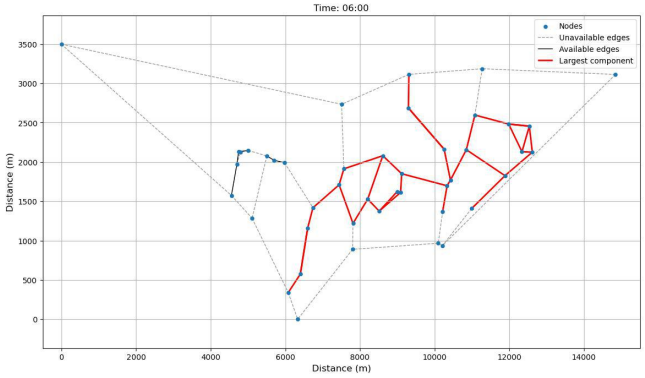
Distance (m)
Distance (m)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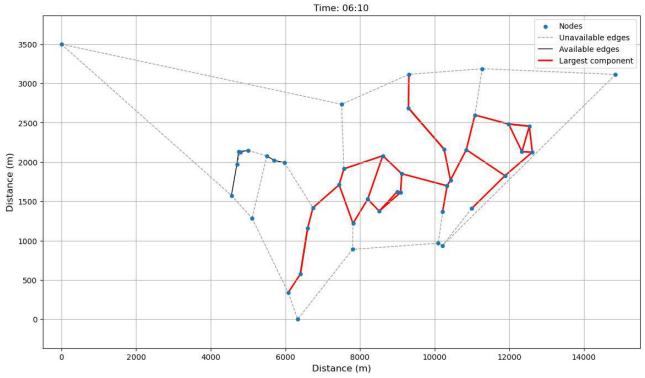
Distance (m)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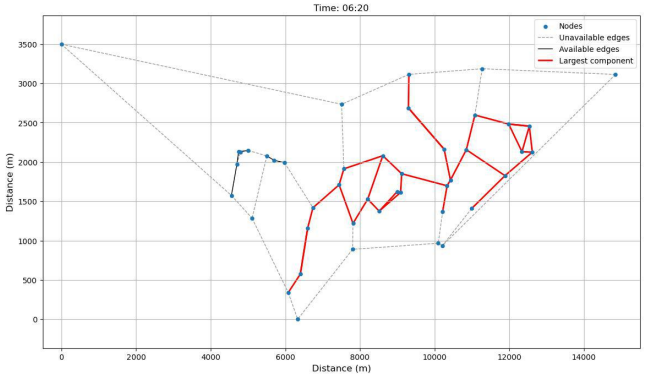
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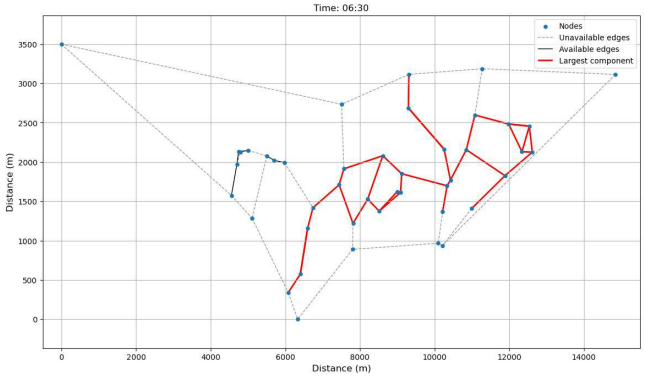
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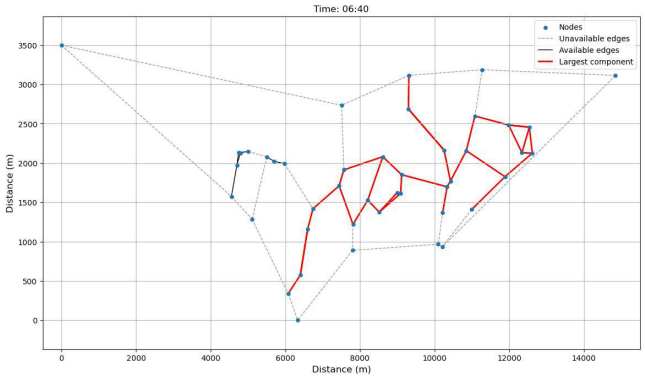
Distance (m)
Distance (m)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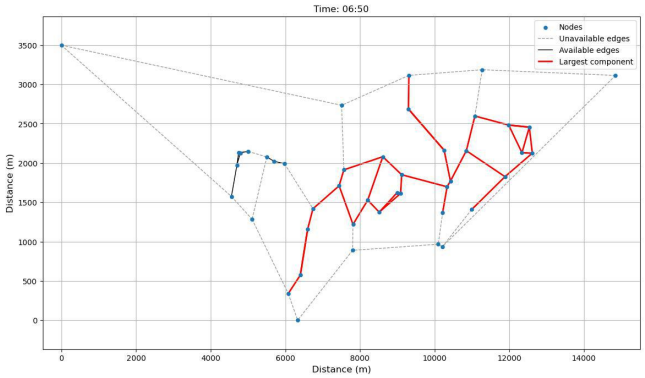
Available edges
Largest component
Distance (m)
Distance (m)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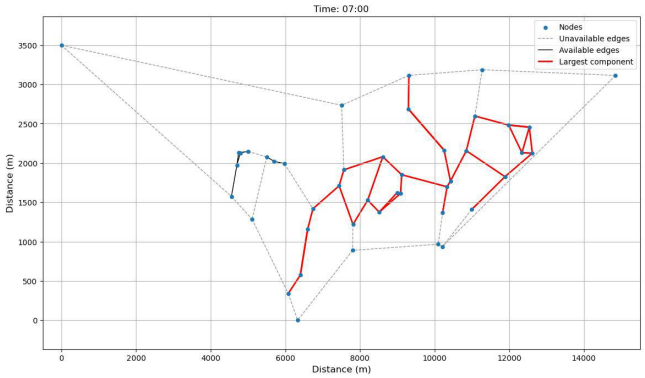
Available edges
Largest component
Distance (m)
Distance (m)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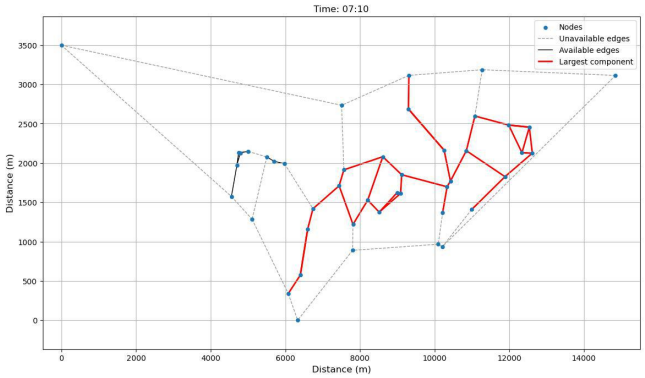
Available edges
Largest component
Distance (m)
Distance (m)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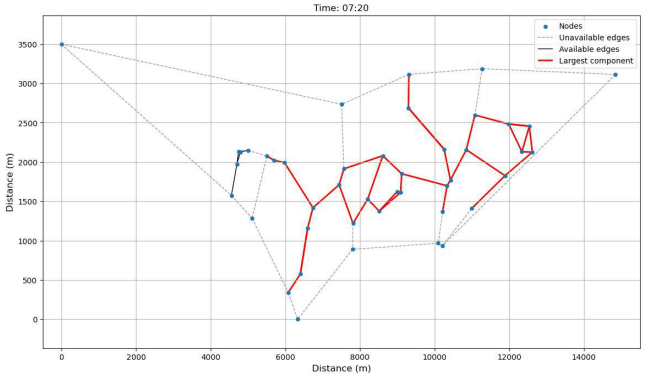
Available edges
Largest component
Distance (m)
Distance (m)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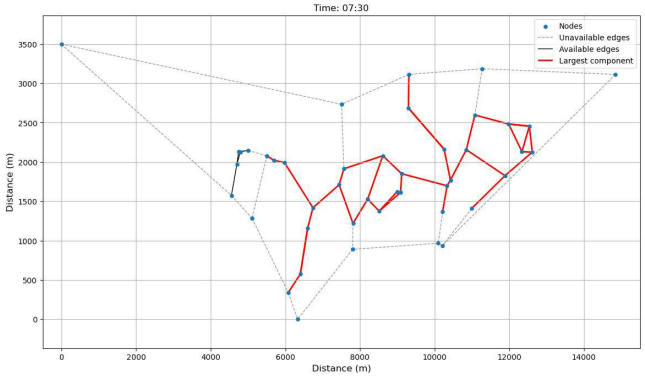
Largest component
Distance (m)
Distance (m)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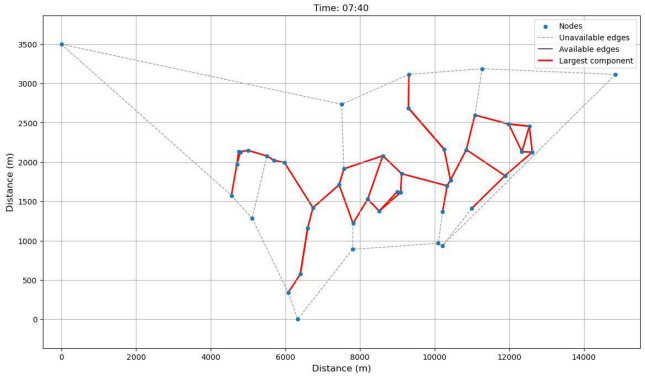
Largest component
Distance (m)
Distance (m)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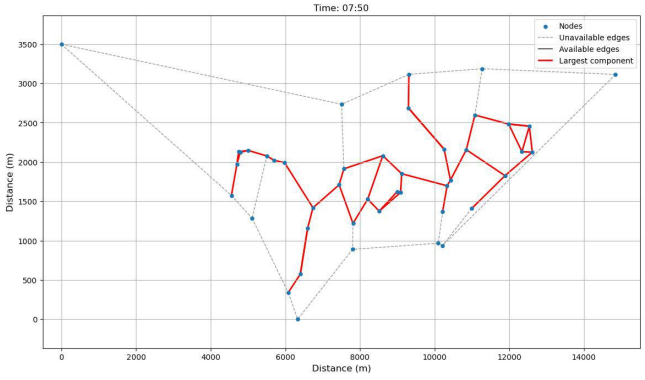
Available edges
Largest component
Distance (m)
Distance (m)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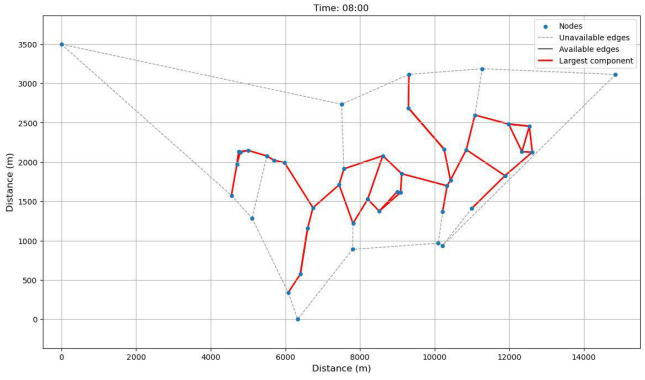
Distance (m)
Distance (m)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Available edges
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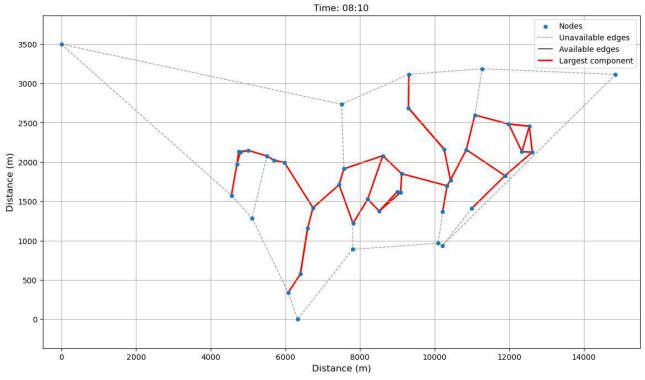
Distance (m)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Available edges
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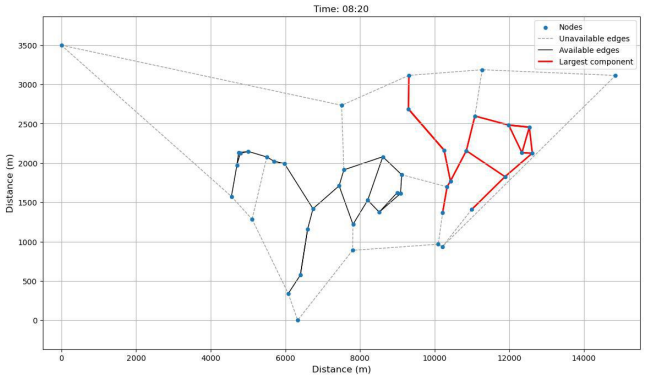
Distance (m)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Nodes
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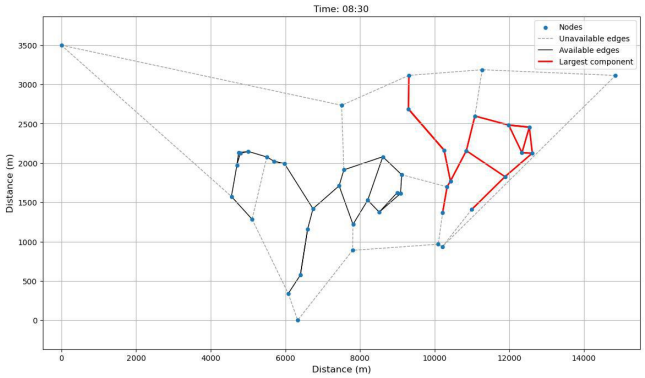
Available edges
Largest component
Distance (m)
Distance (m)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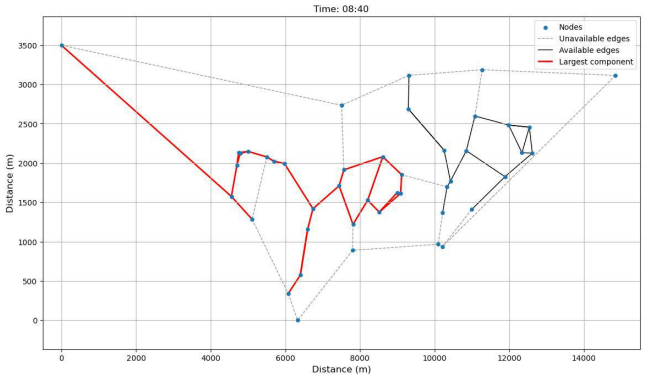
Distance (m)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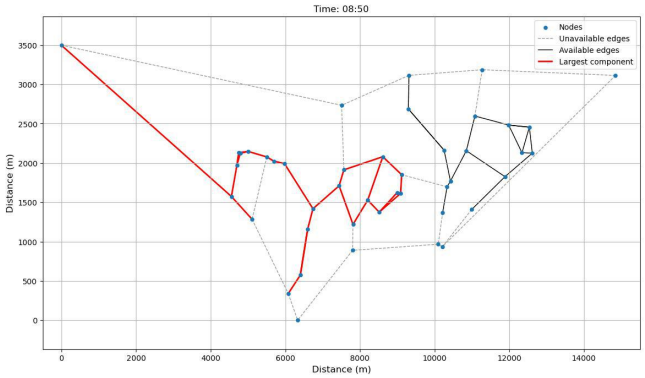
Distance (m)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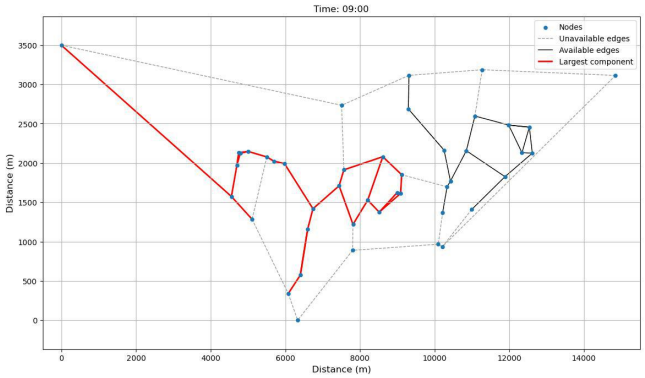
Distance (m)
Distance (m)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Available edges
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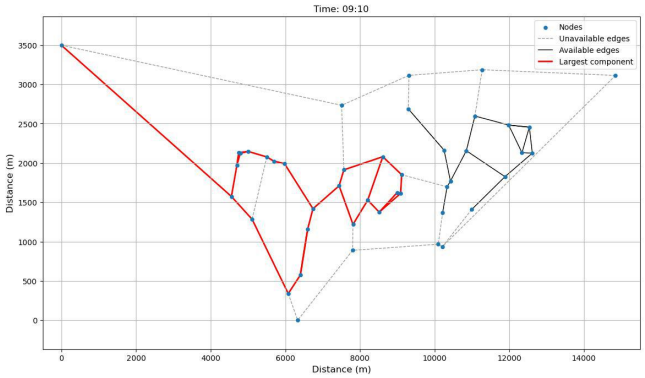
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Nodes
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Largest component
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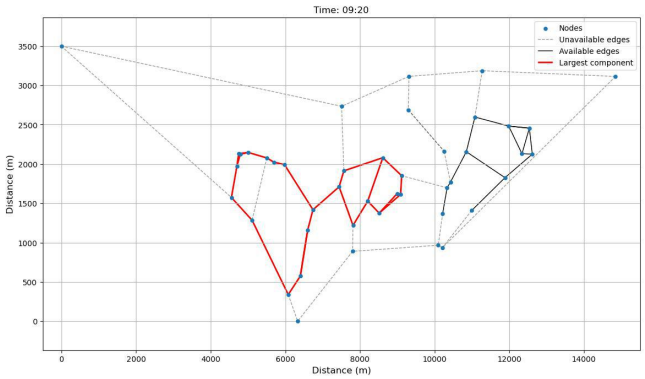
Distance (m)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Nodes
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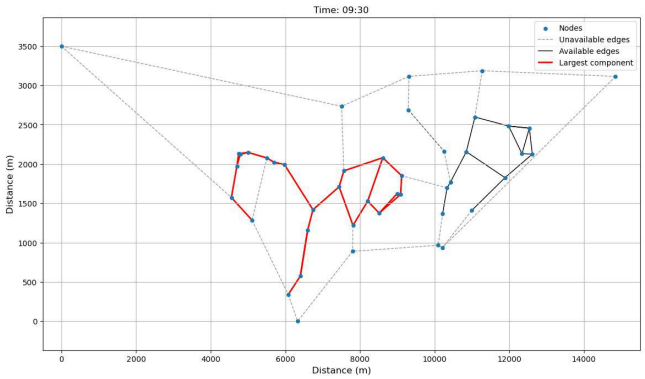
Largest component
Distance (m)
Distance (m)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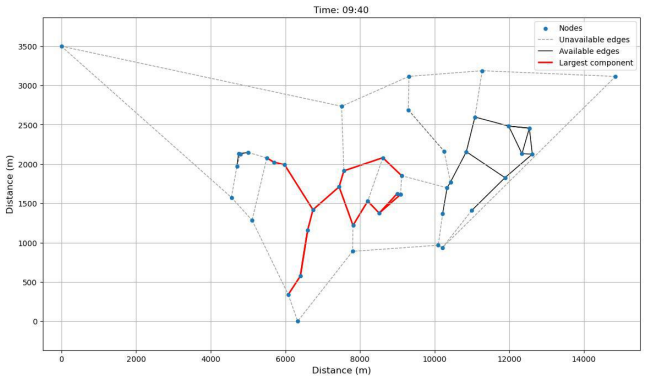
Available edges
Largest component
Distance (m)
Distance (m)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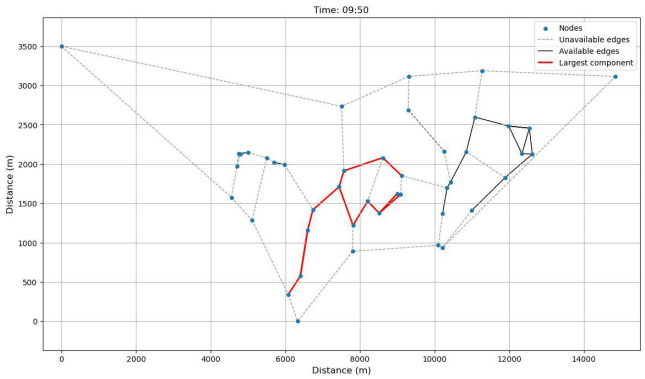
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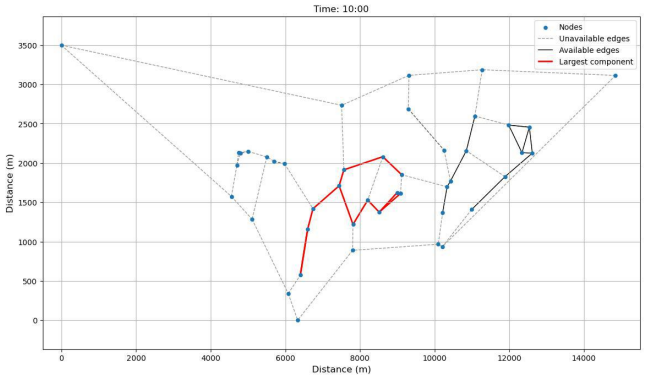
Distance (m)
Distance (m)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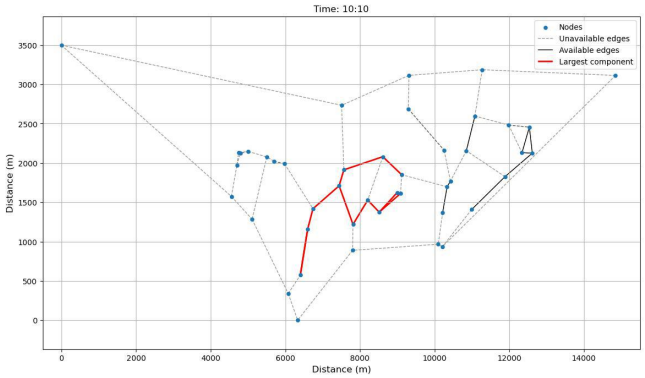
Largest component
Distance (m)
Distance (m)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Nodes
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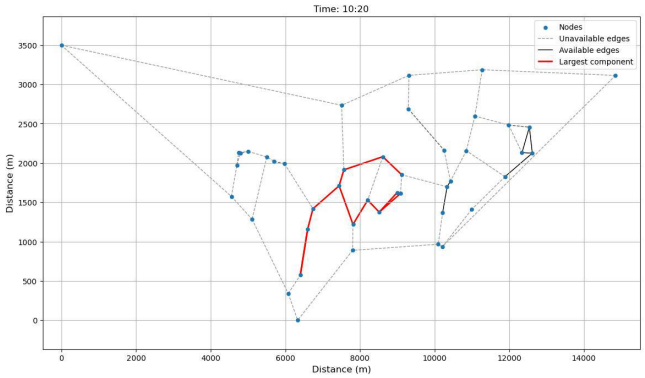
Largest component
Distance (m)
Distance (m)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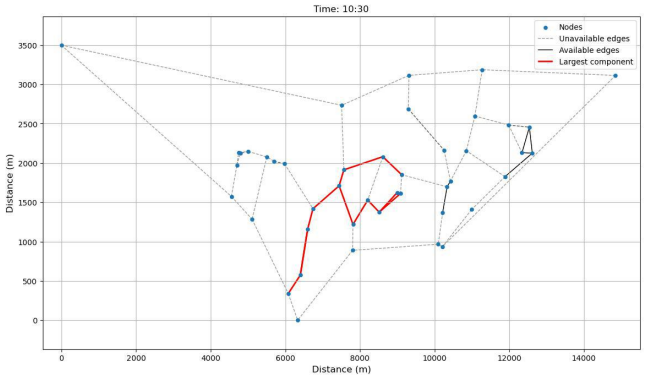
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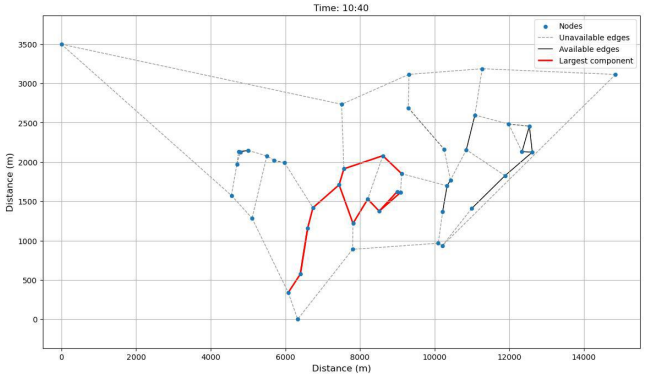
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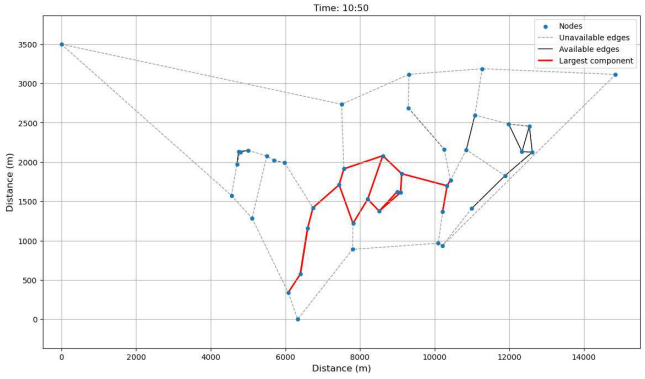
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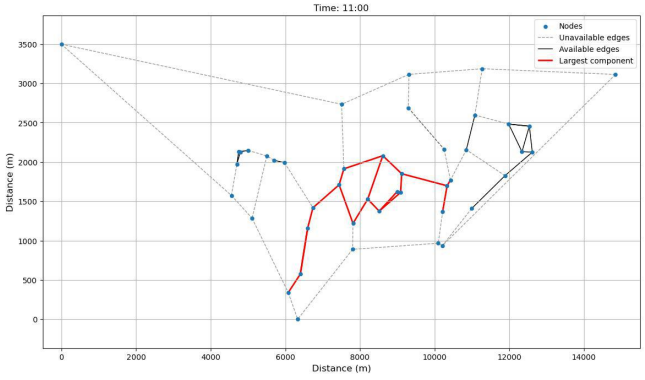
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Largest component
Distance (m)
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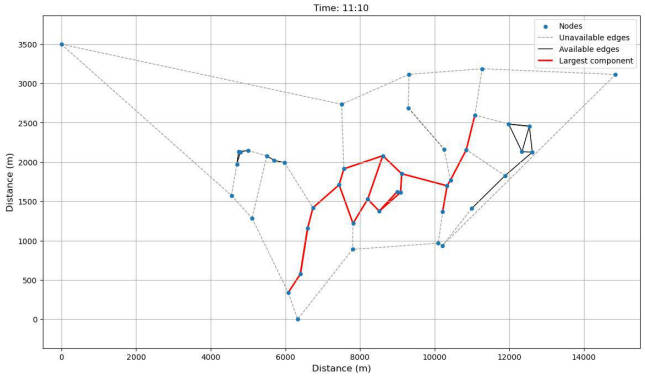
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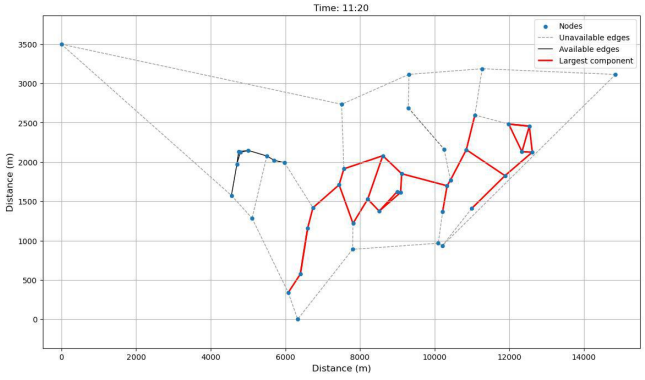
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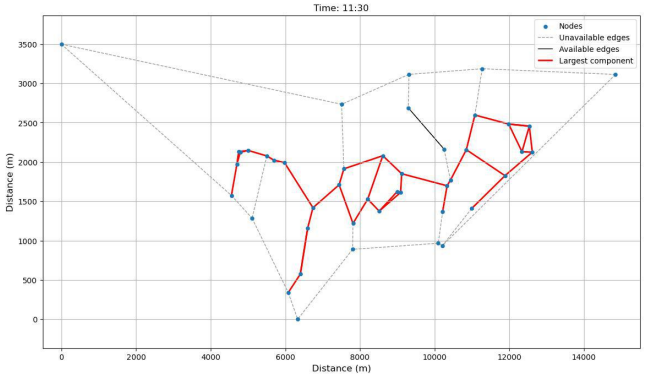
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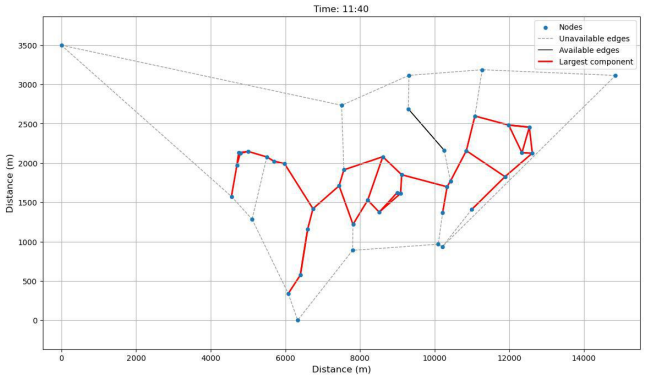
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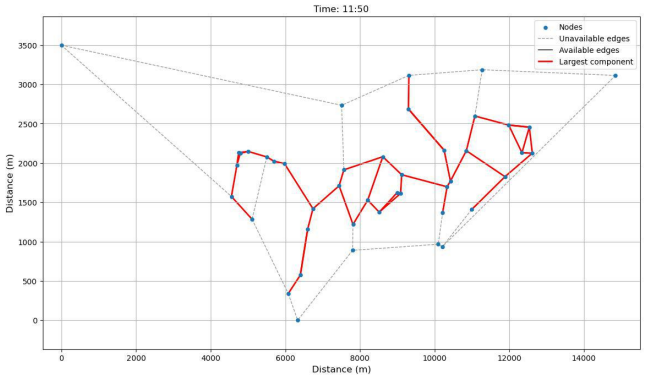
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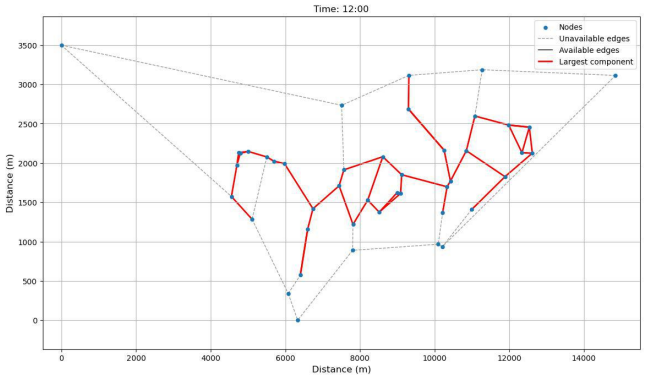
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Distance (m)
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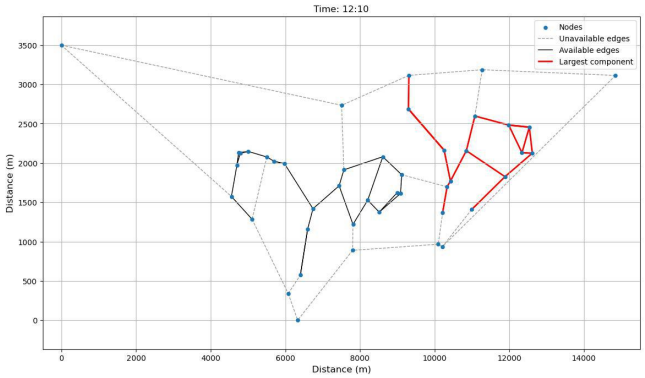
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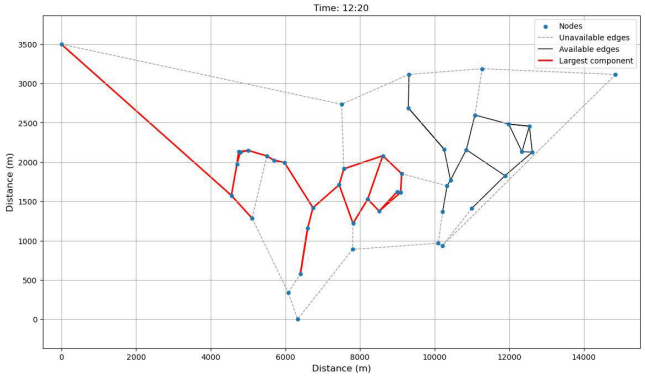
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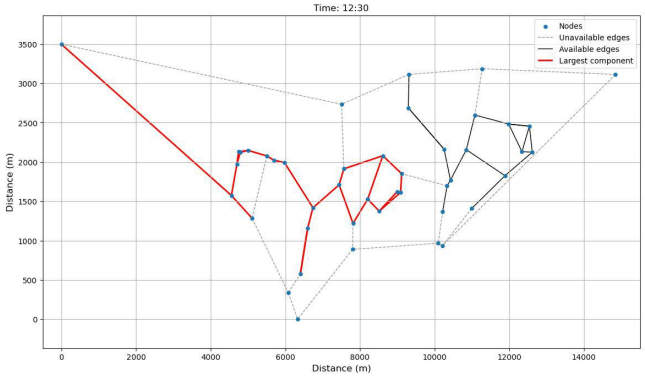
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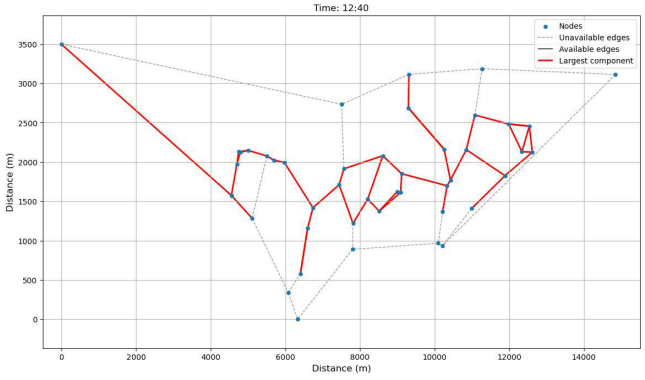
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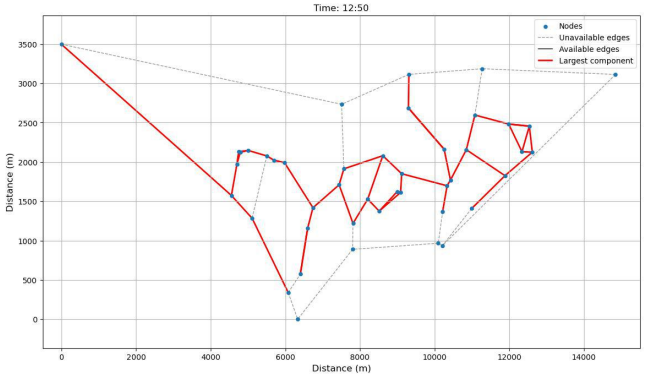
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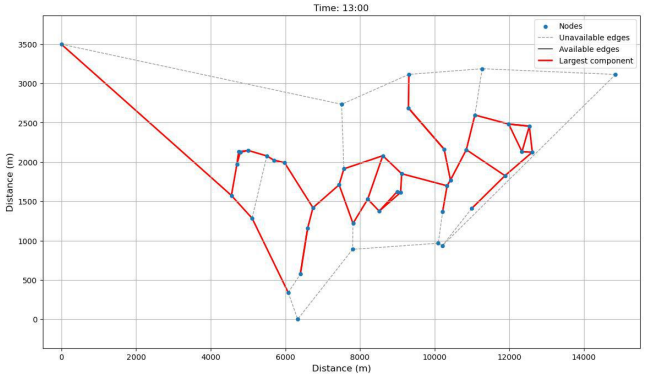
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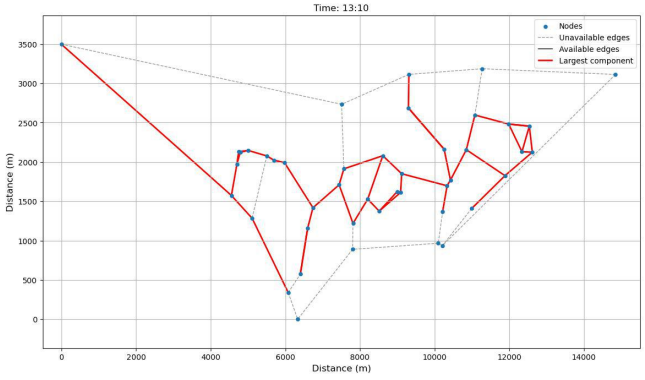
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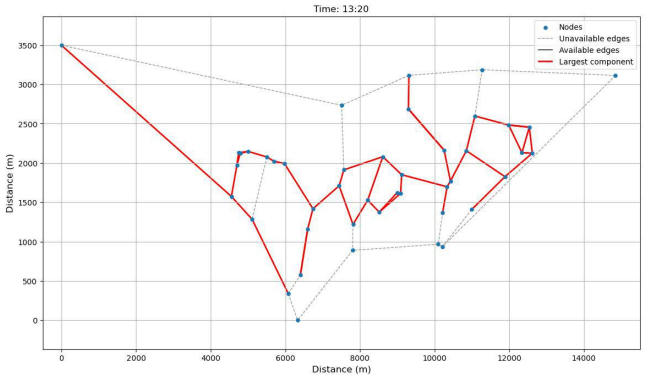
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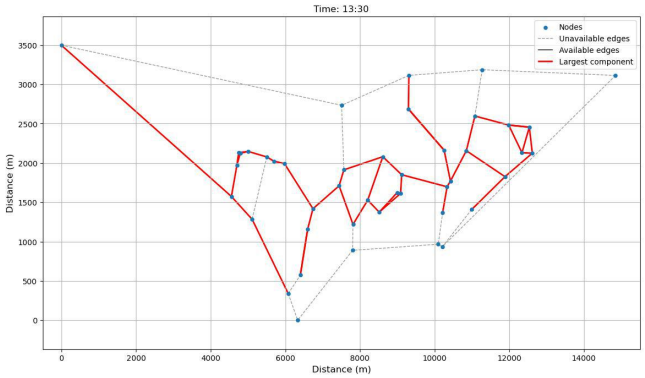
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Distance (m)
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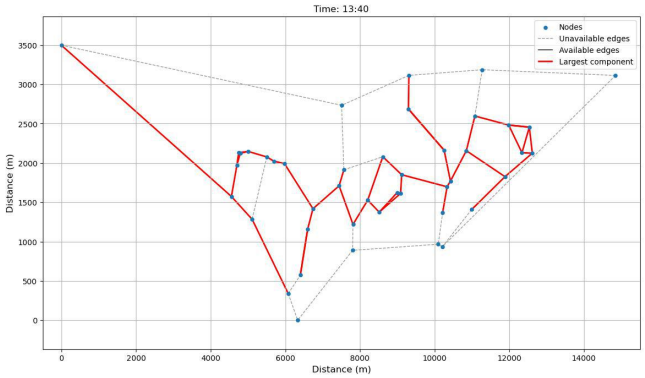
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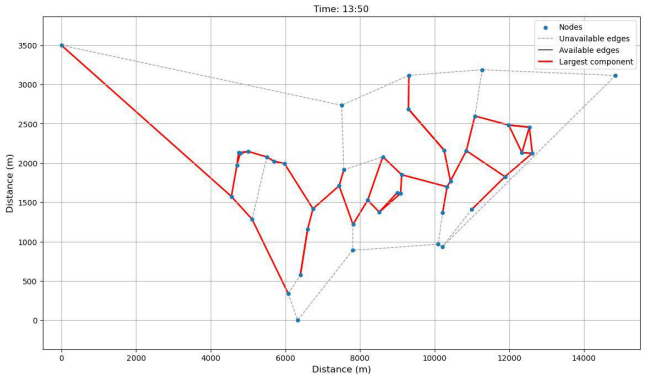
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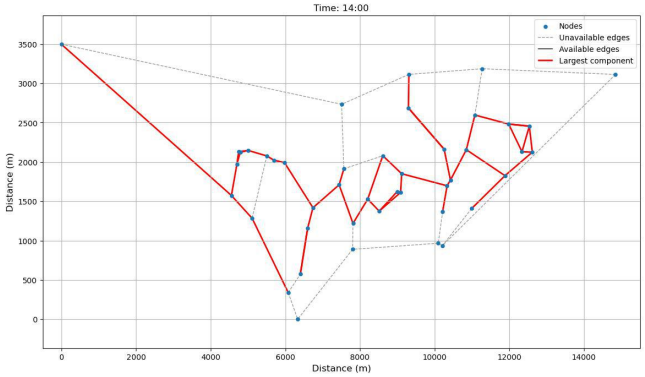
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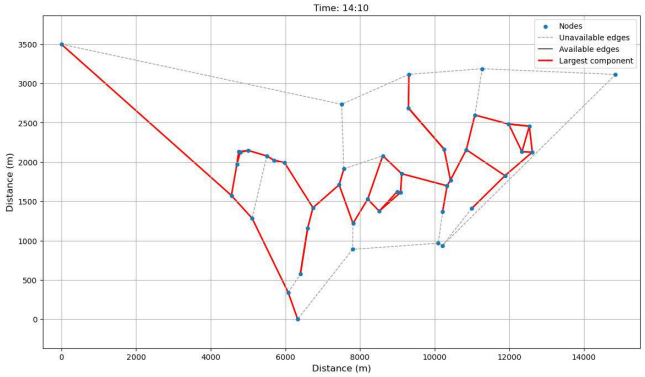
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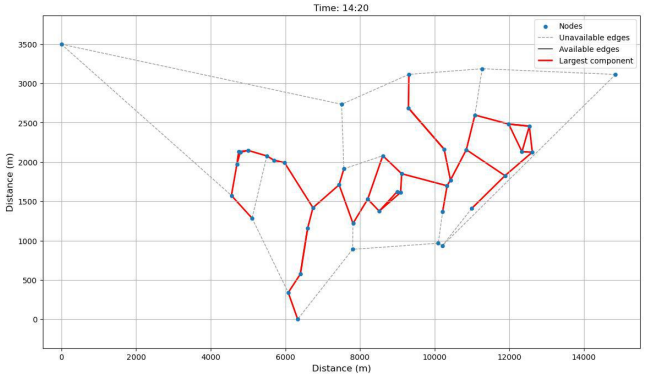
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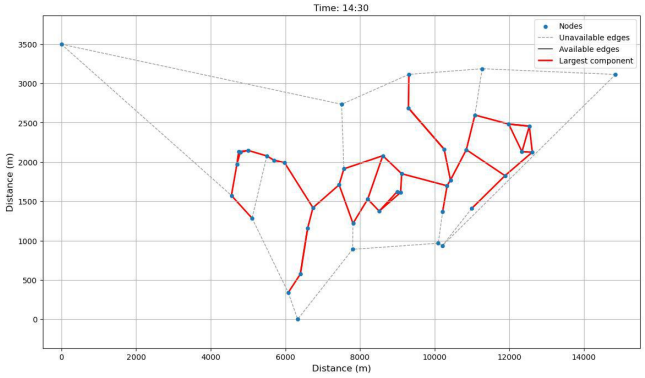
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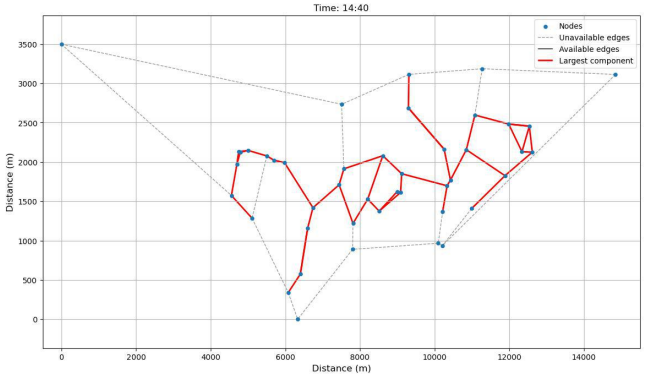
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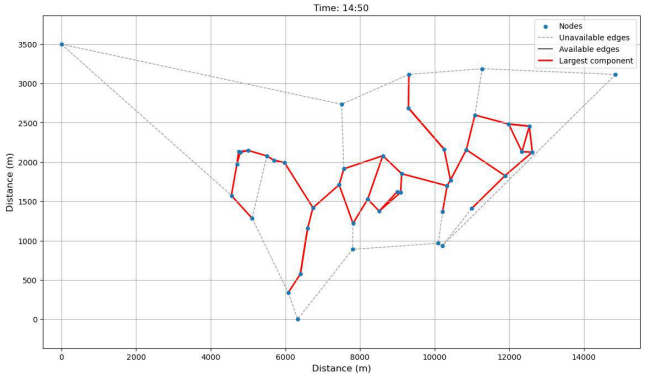
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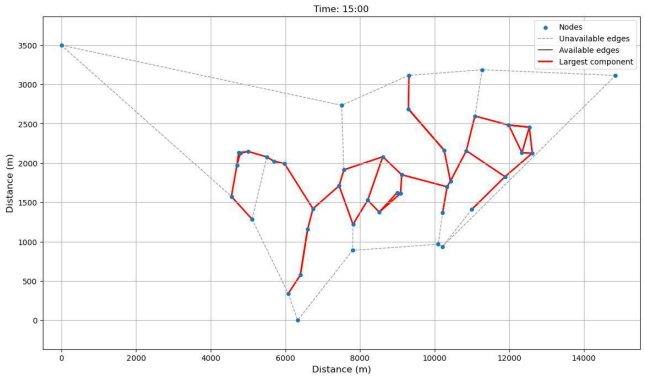
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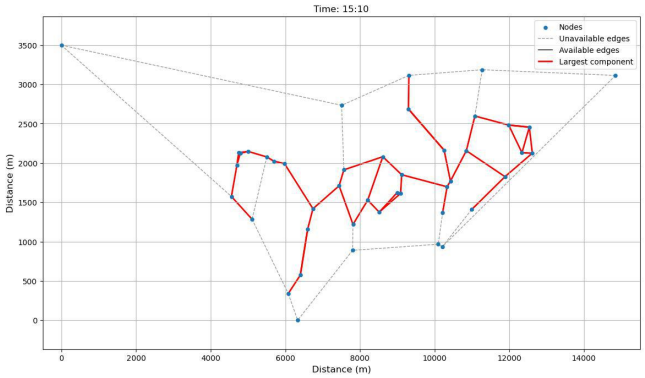
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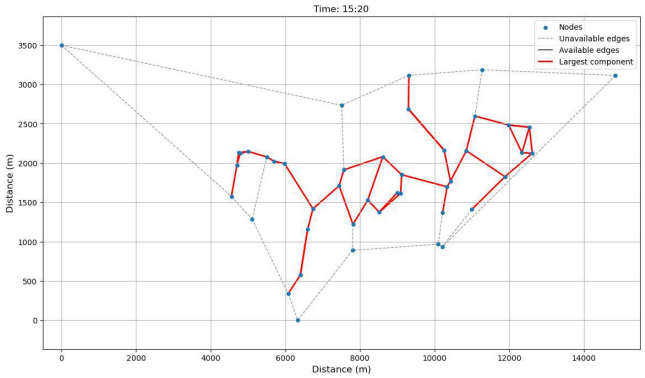
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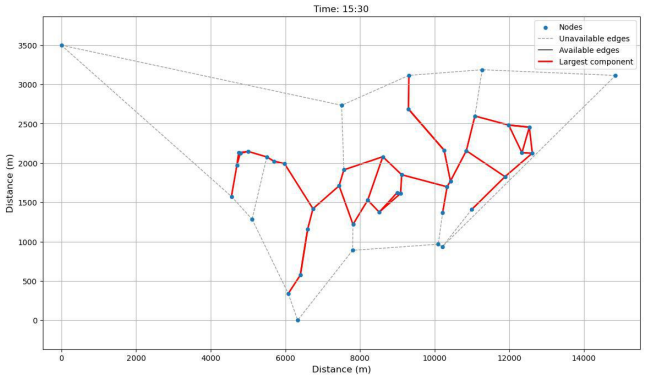
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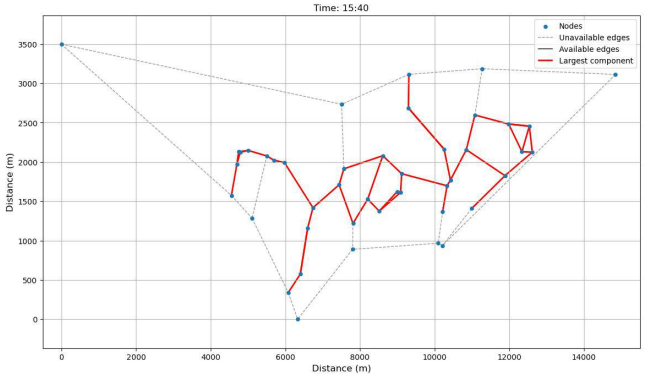
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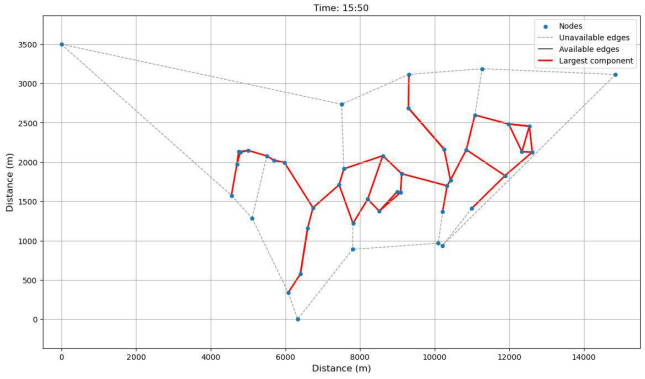
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Nodes
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Largest component
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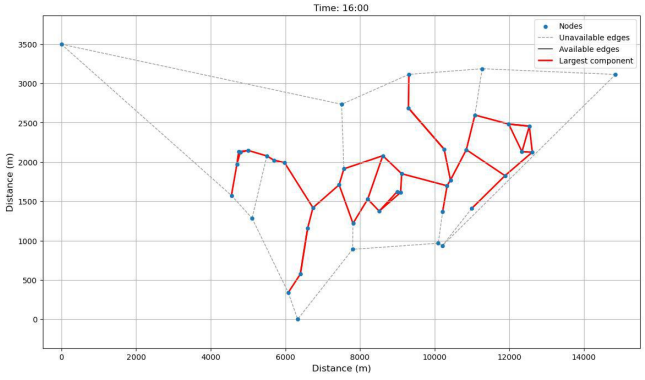
Distance (m)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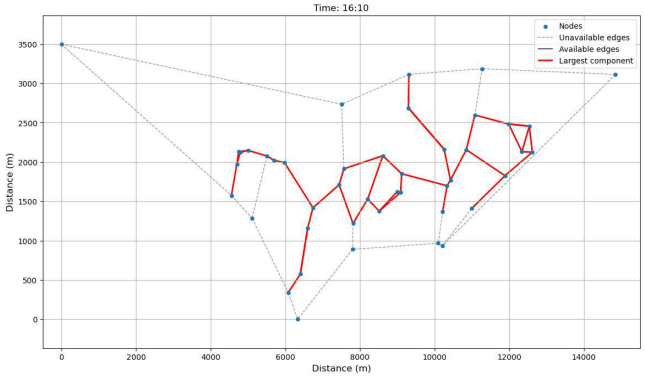
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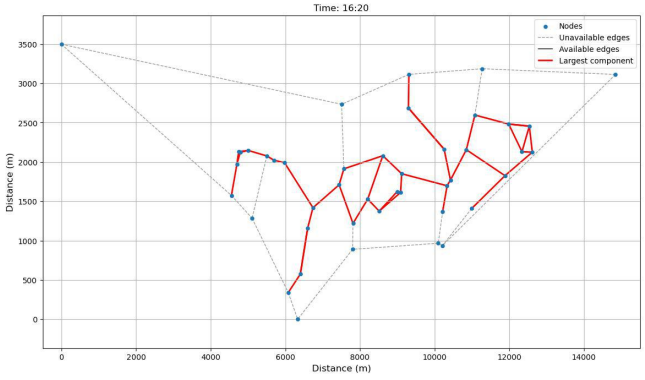
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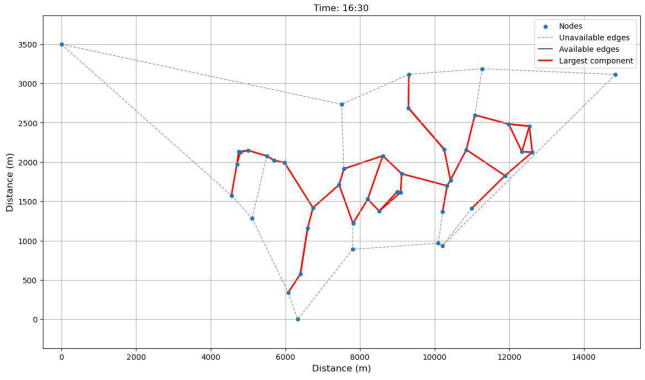
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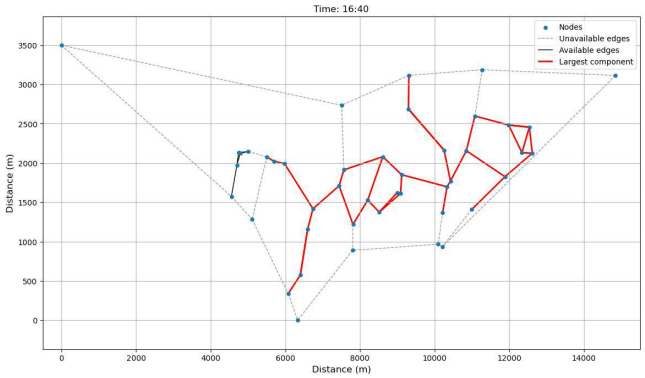
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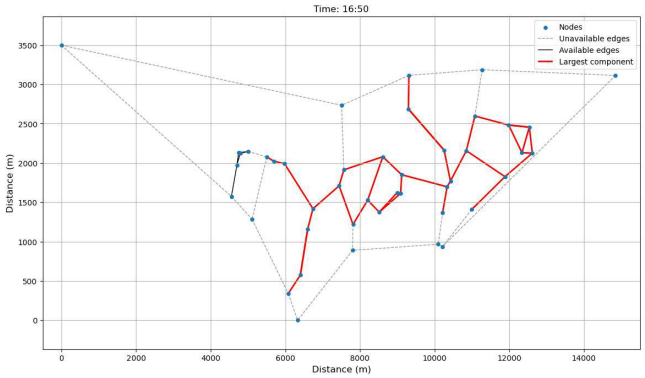
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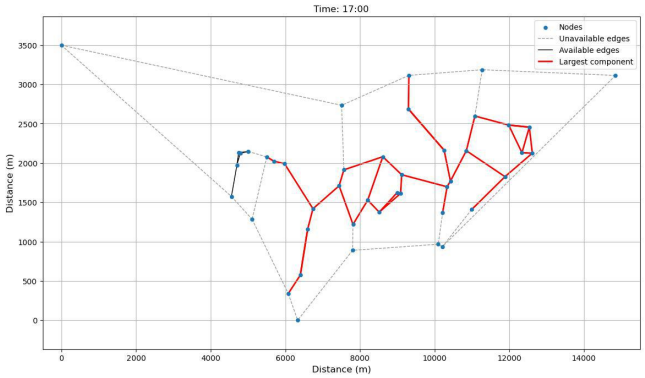
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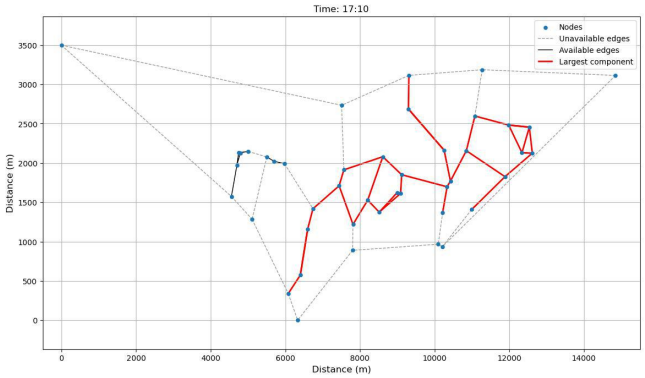
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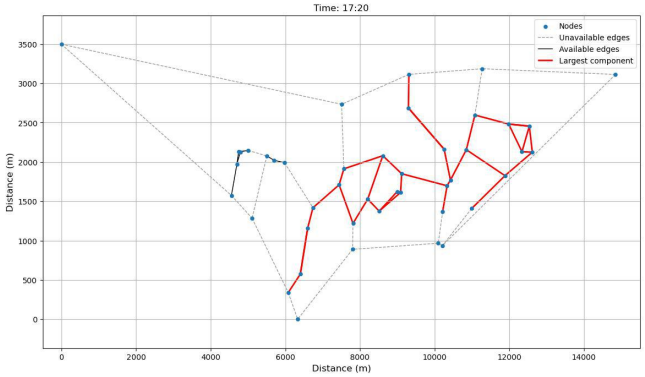
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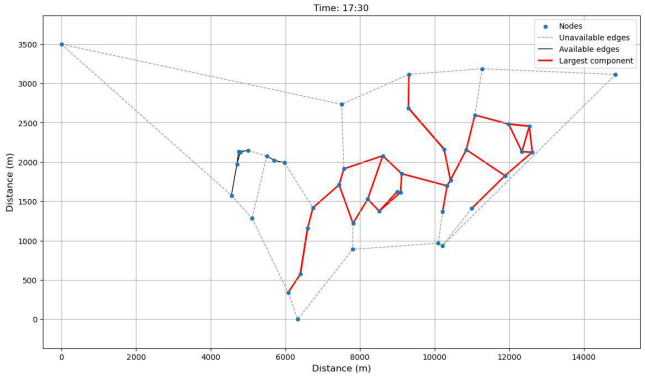
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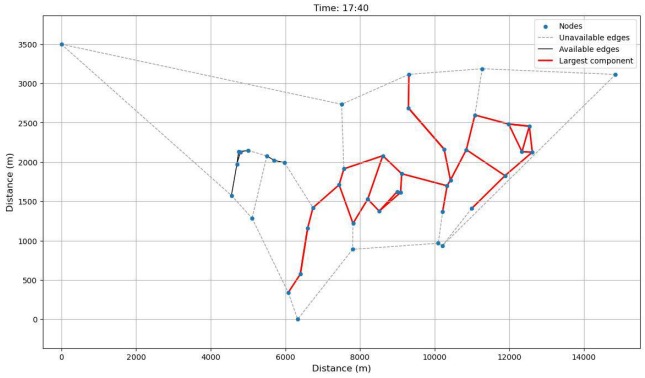
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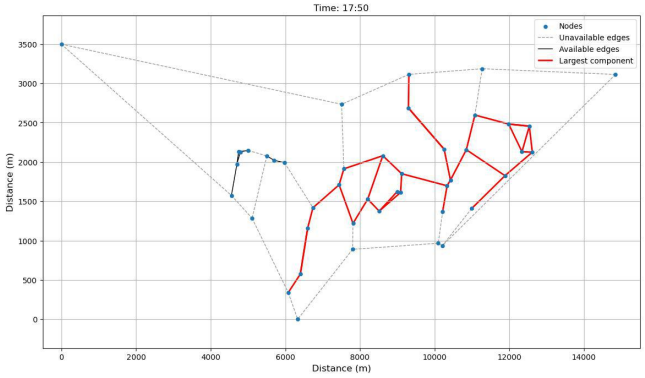
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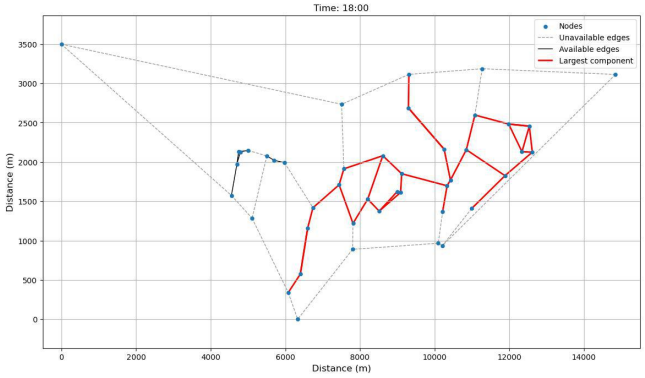
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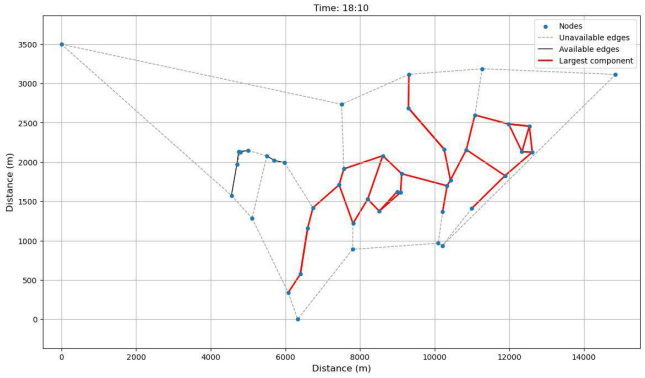
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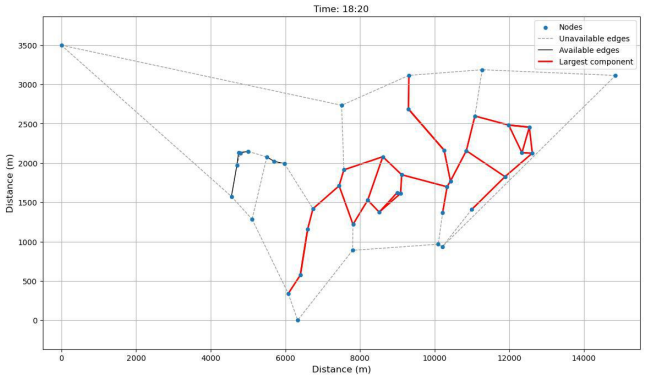
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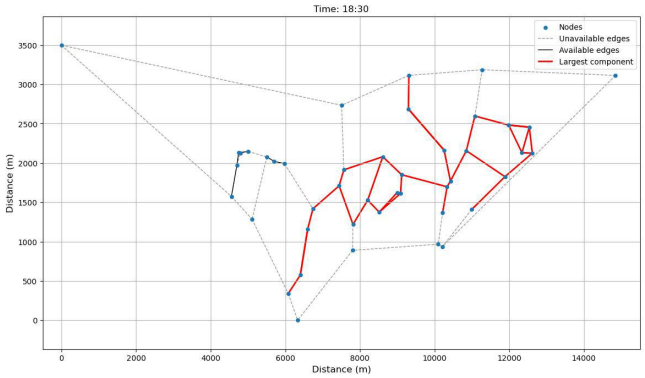
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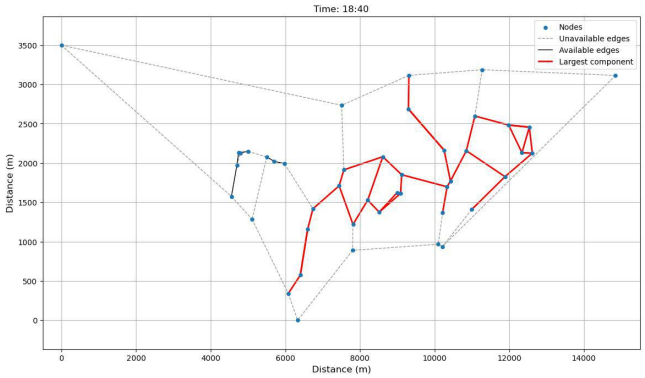
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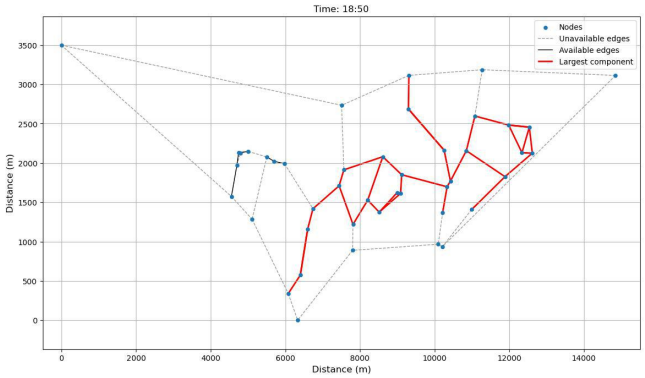
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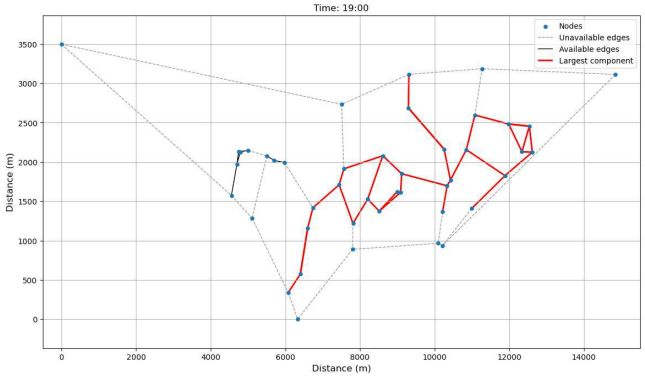
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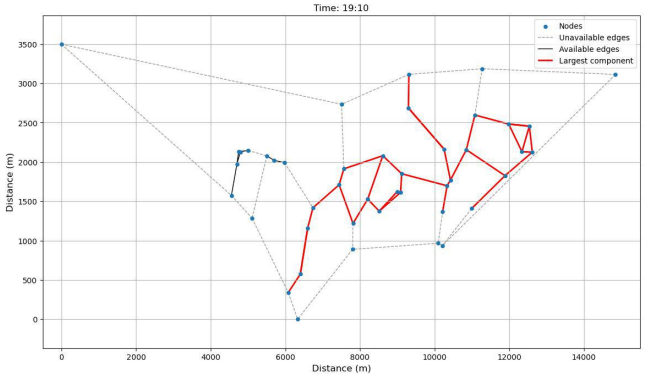
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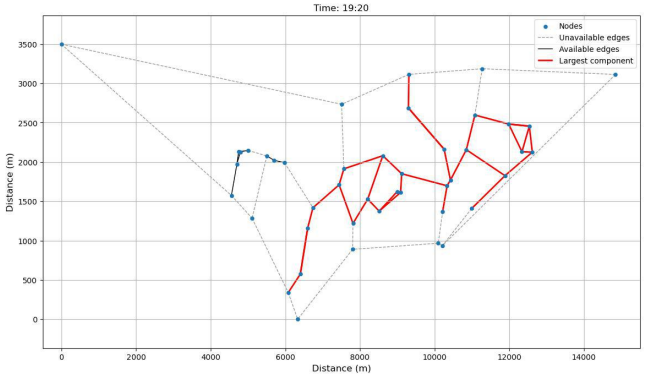
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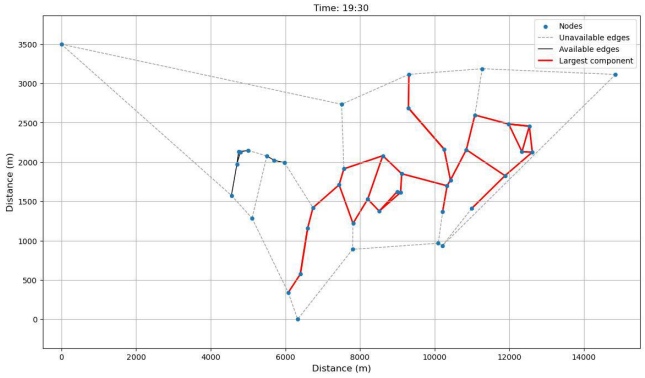
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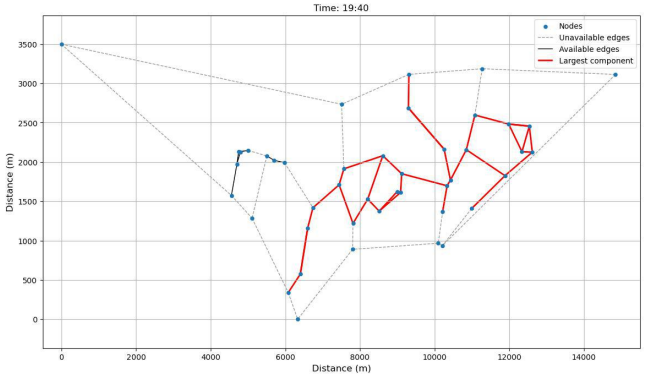
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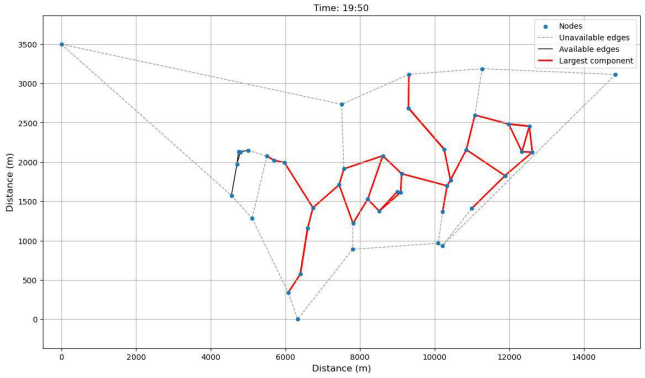
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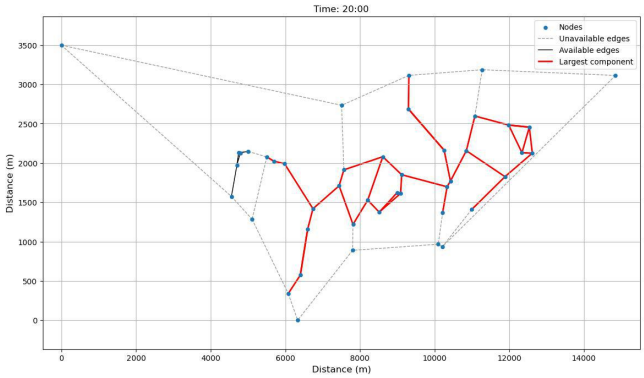
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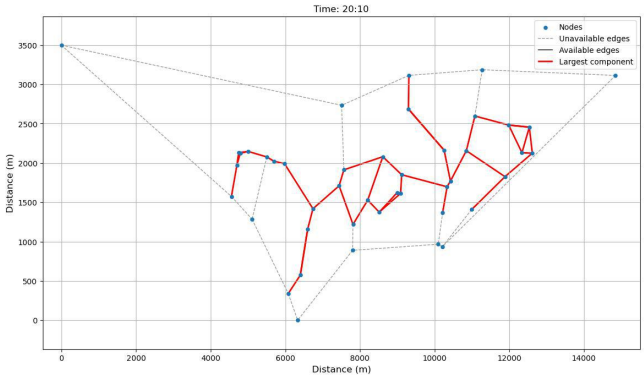
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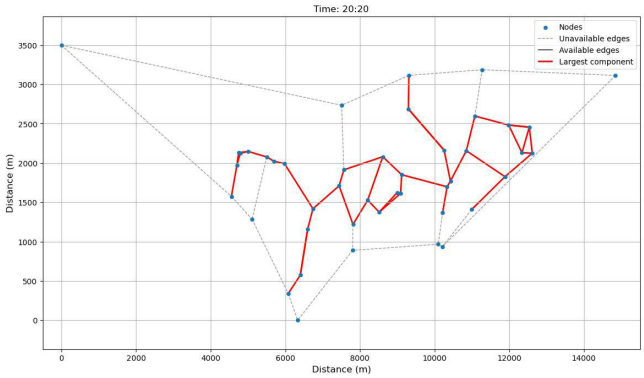
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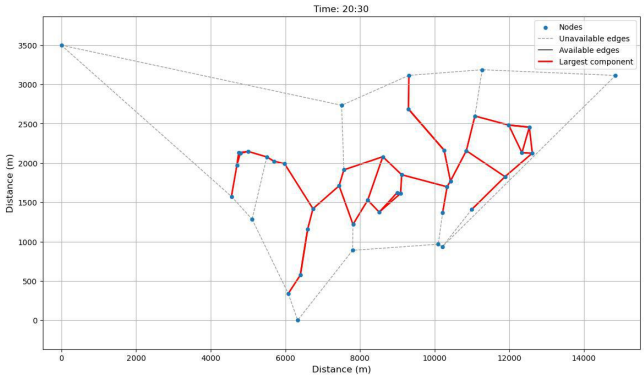
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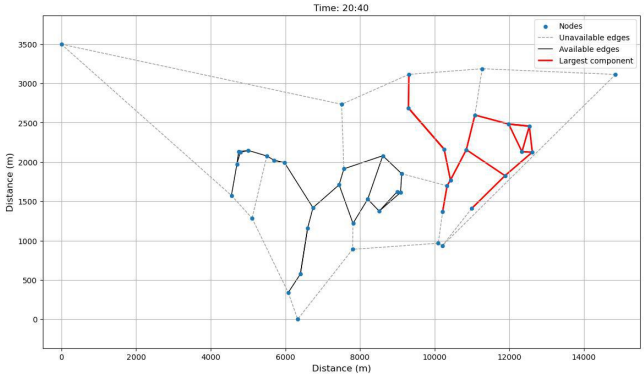
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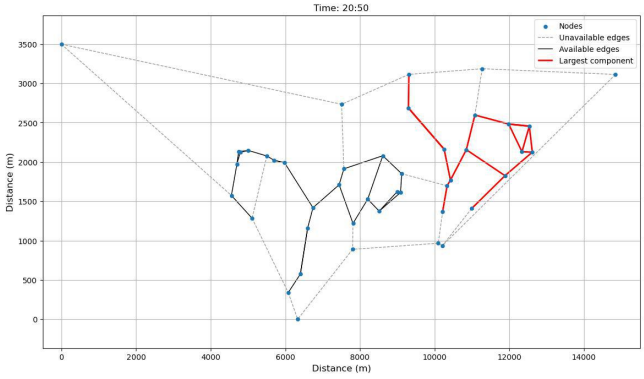
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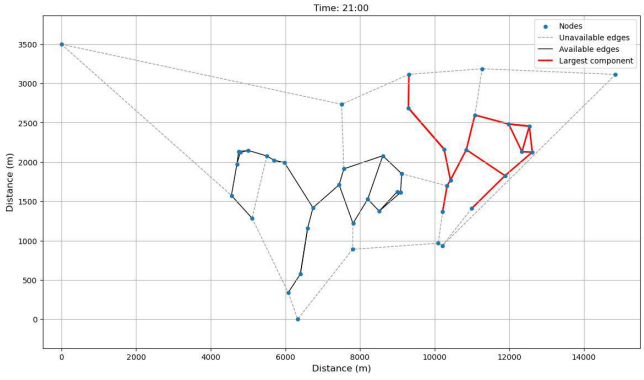
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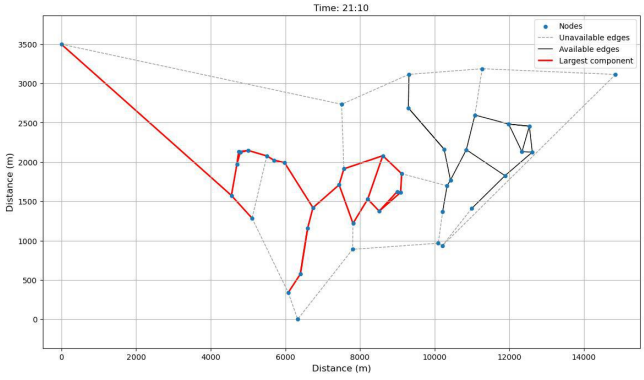
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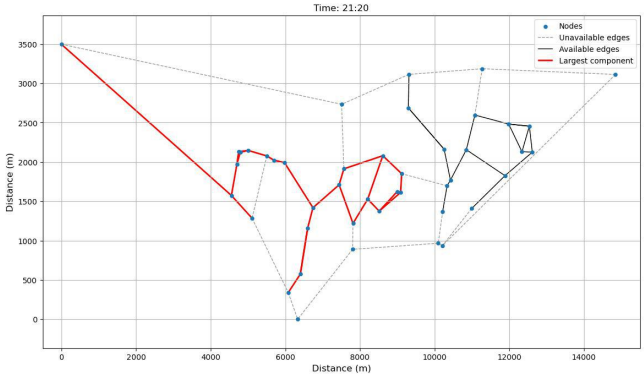
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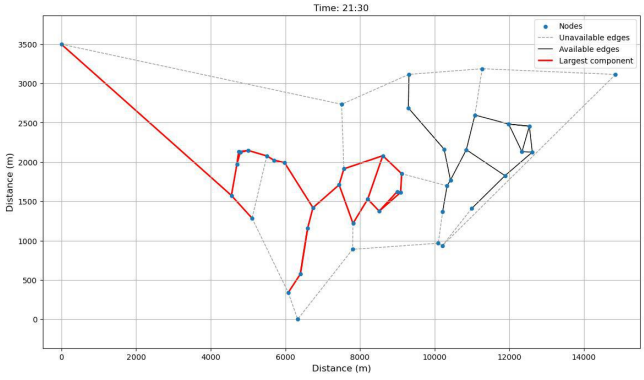
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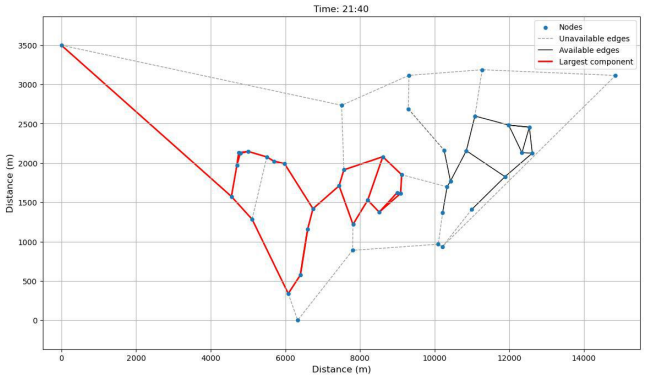
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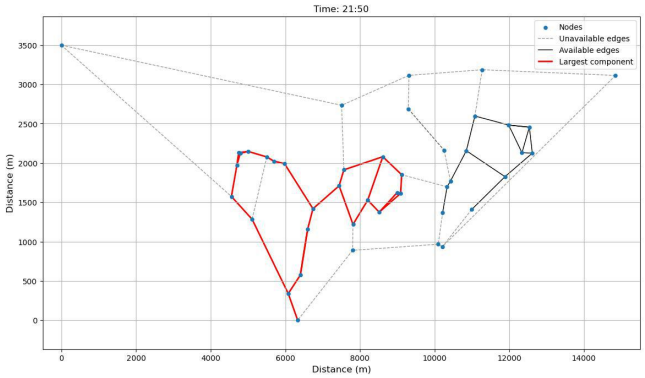
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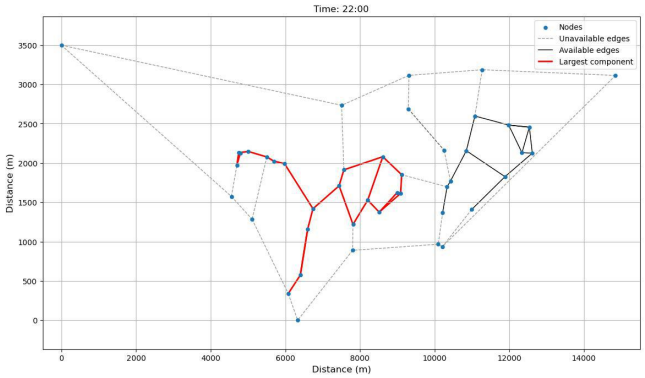
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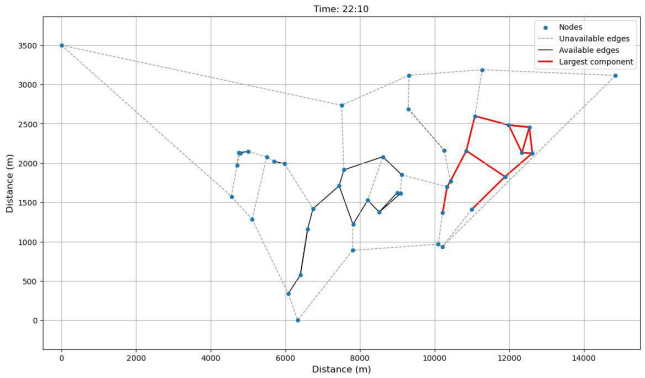
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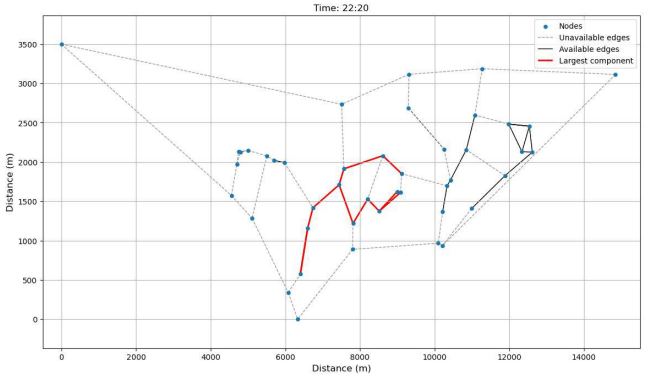
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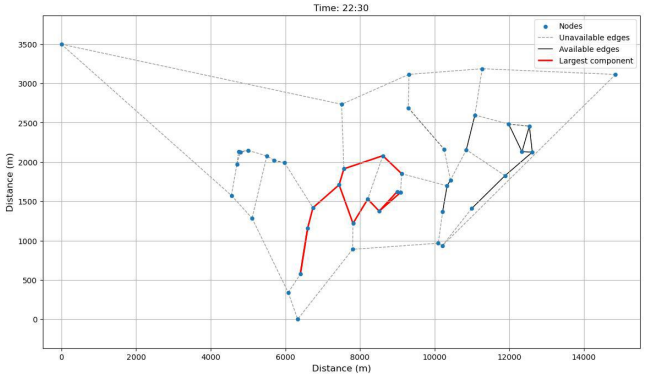
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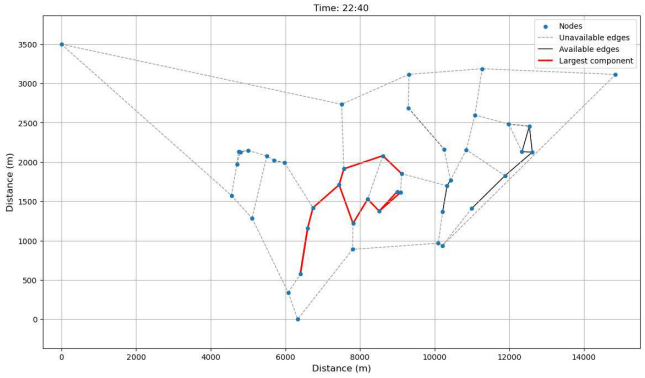
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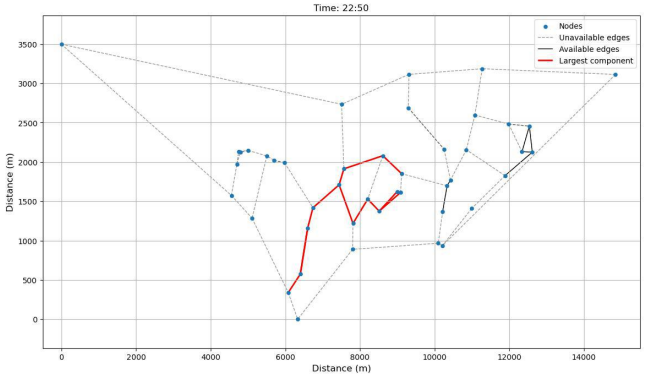
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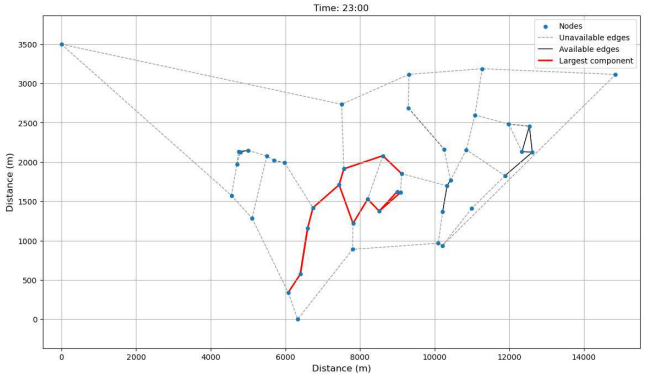
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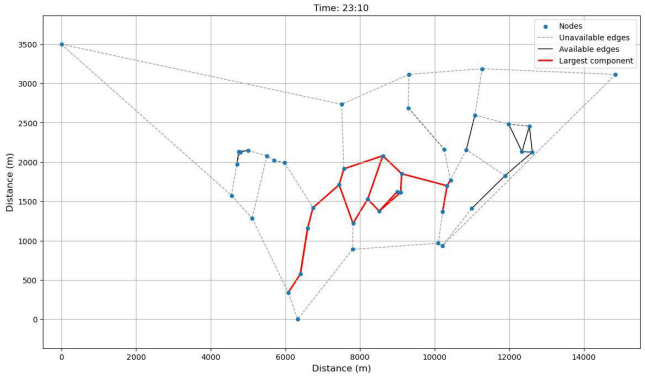
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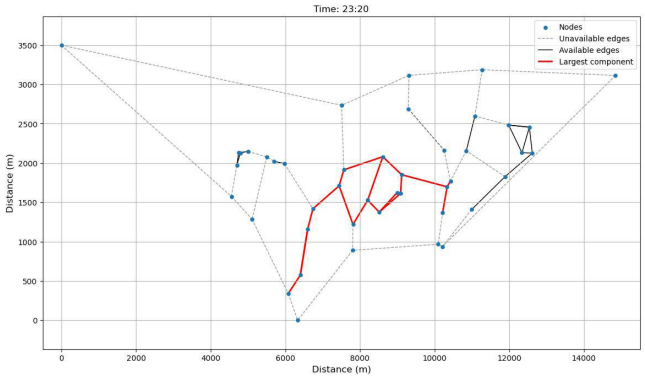
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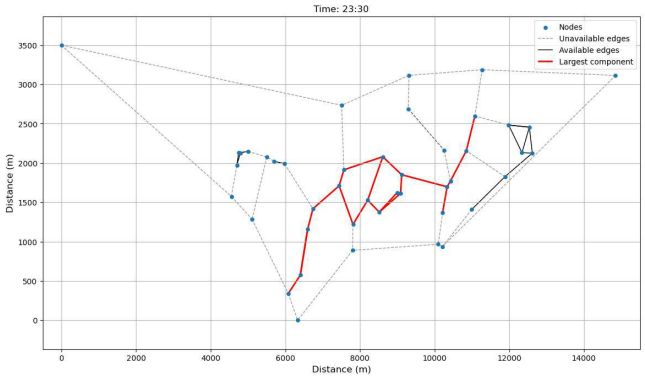
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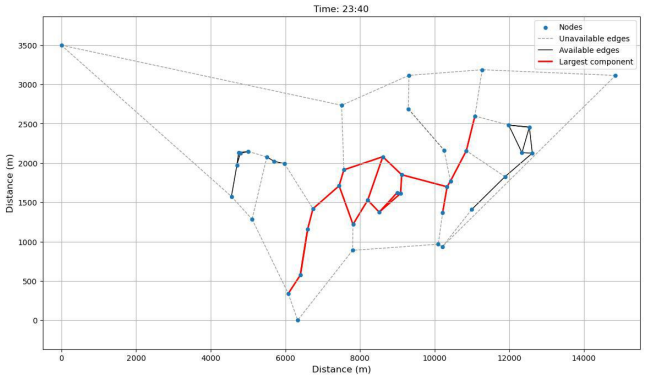
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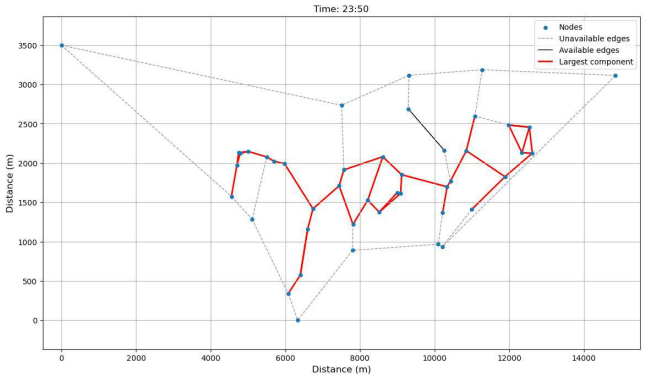
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Largest component
Distance (m)
Distance (m)

D

Bypass around Zoetemelkskil and opening Helsluis and Ottersluis

This chapter gives the connectivity results for the situation in the Sliedrechtse Biesbosch described in section 5.5 of the main document, The nature restoration measure discussed here is a combination of the three measures discussed before, being the construction of a bypass around the Zoetemelkskil, the permanent opening of the Helsluis and the permanent opening of the Ottersluis. Figure D.1 illustrates the time-varying connectivity metrics, i.e. the number of components (NOC) of the graph, the order of the largest component and the length of connected pathways (LOCOP) of the largest component. Next are the graphs indicating the available channels in the system and visualizing the largest available habitat on a time interval of 10 minutes.

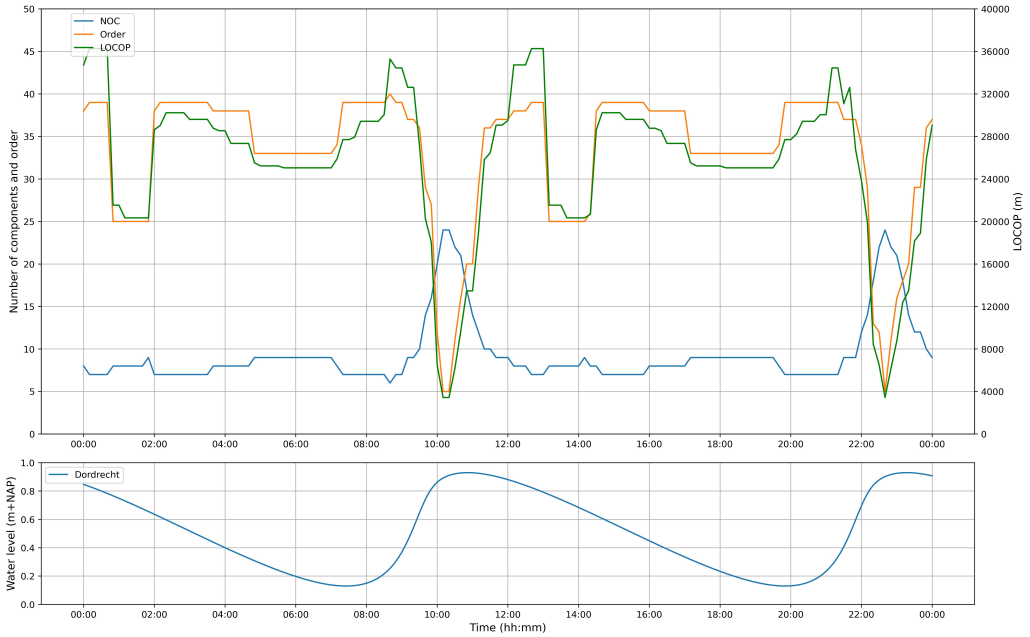
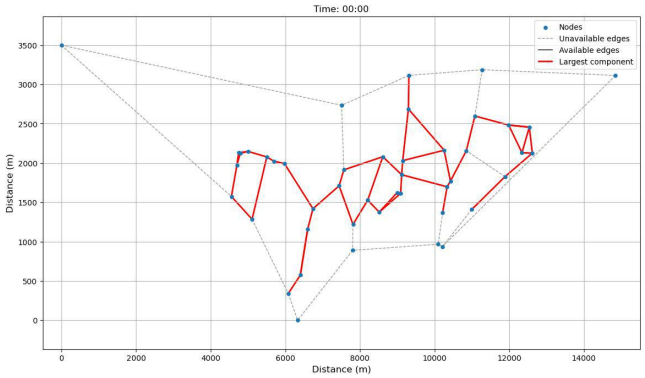
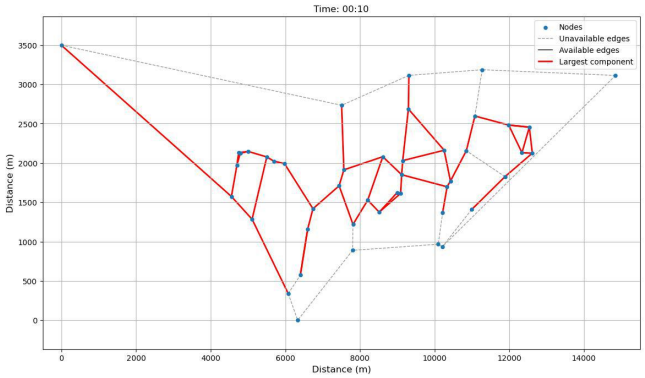


Figure D.1: Evolution of connectivity of the Sliedrechtse Biesbosch during one day and a maximum tolerable flow velocity of $u_{max} = 0.3$ m/s, evaluated by means of three metrics: the number of components (NOC) in the graph, the number of nodes in the largest component, and the length of connected pathways (LOCOP) of the largest component.


Time: 00:00
Nodes
Unavailable edges
Available edges
Largest component
Distance (m)
Distance (m)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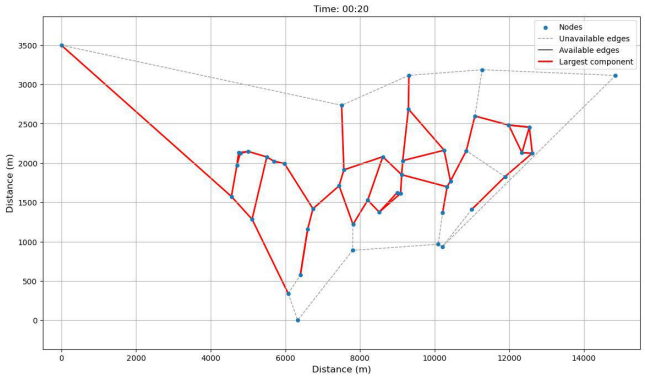
Nodes
Unavailable edges
Available edges
Largest component
Distance (m)
Distance (m)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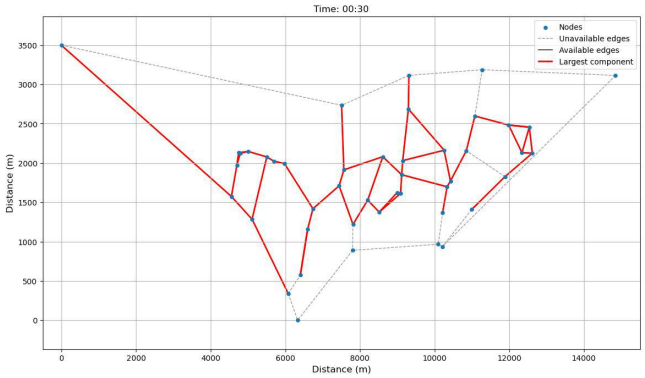
Nodes
Unavailable edges
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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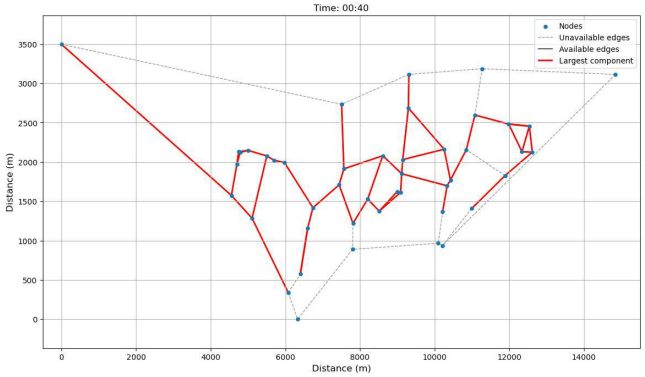
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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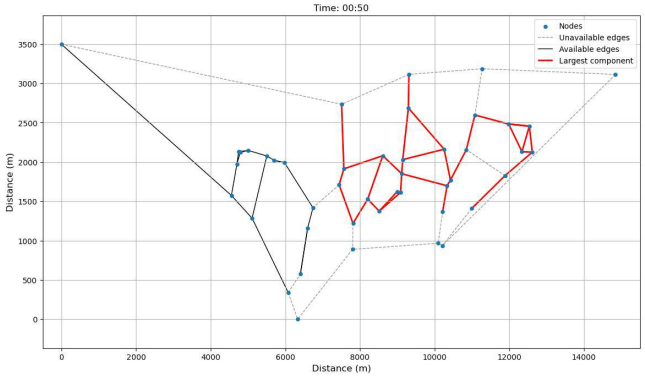
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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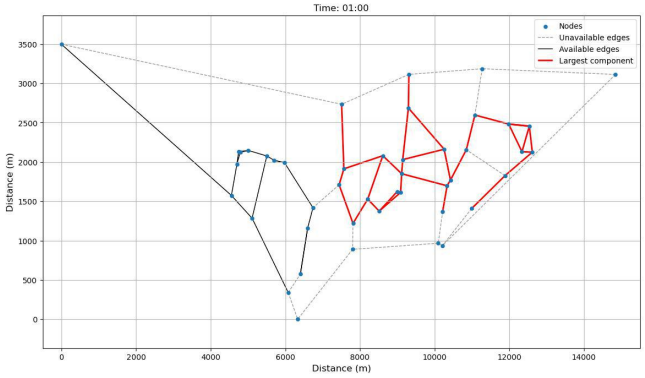
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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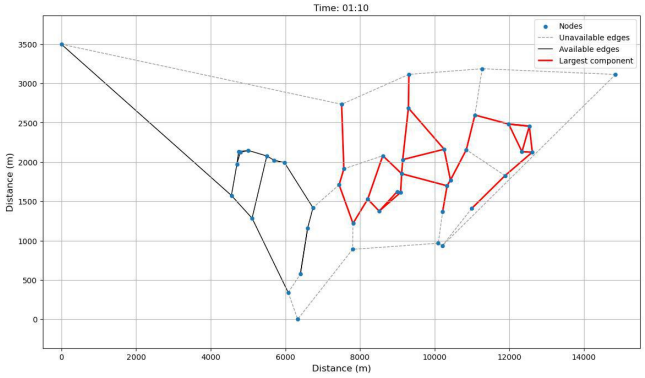
Available edges
Largest component
Distance (m)
Distance (m)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Available edges
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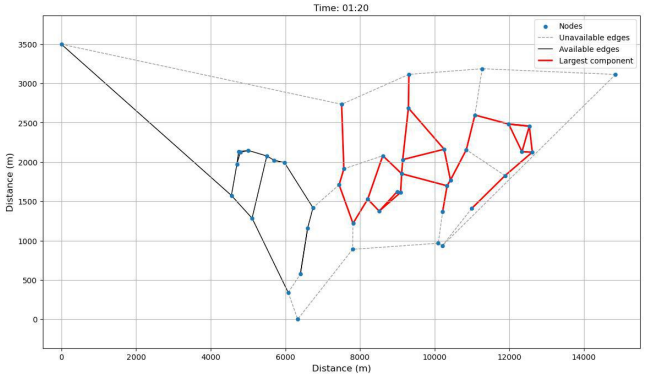
Distance (m)
Distance (m)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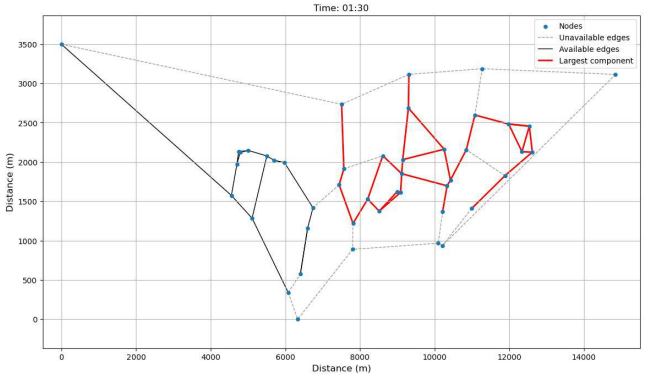
Distance (m)
Distance (m)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Available edges
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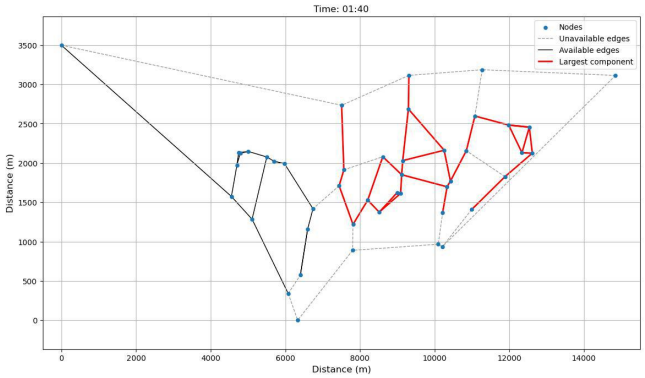
Distance (m)
Distance (m)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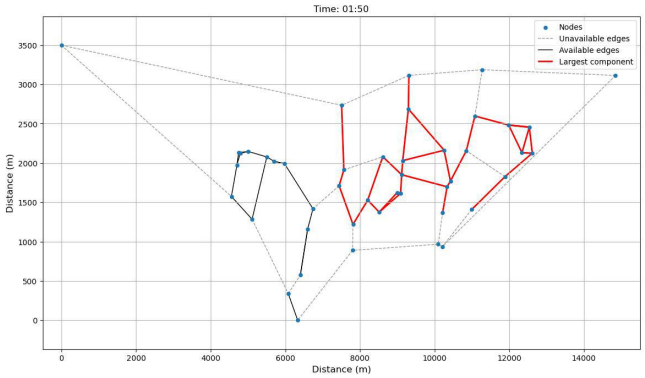
Available edges
Largest component
Distance (m)
Distance (m)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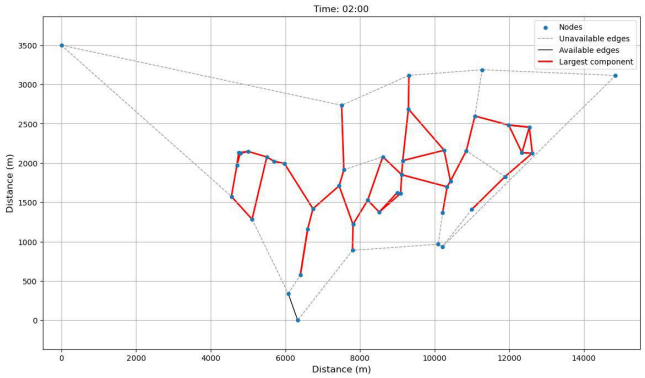
Available edges
Largest component
Distance (m)
Distance (m)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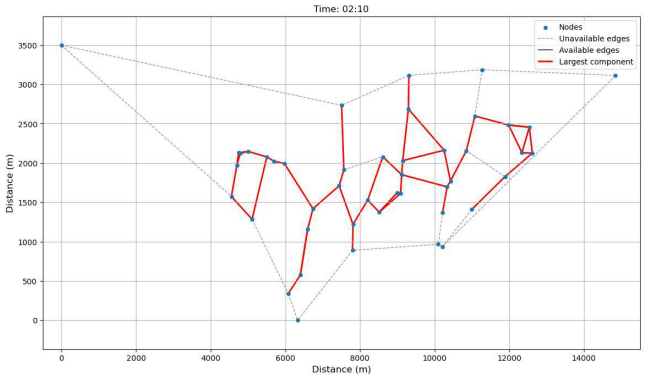
Nodes
Unavailable edges
Available edges
Largest component
Distance (m)
Distance (m)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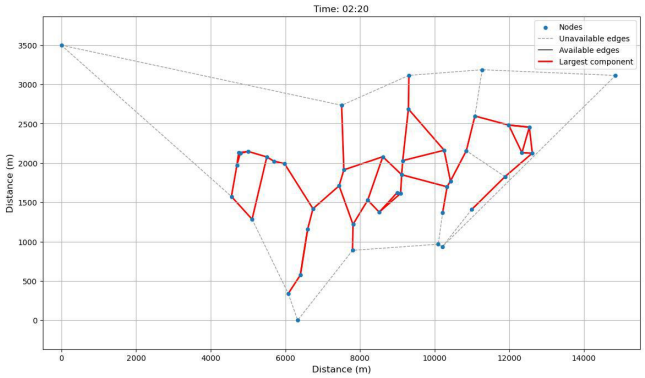
Distance (m)
Distance (m)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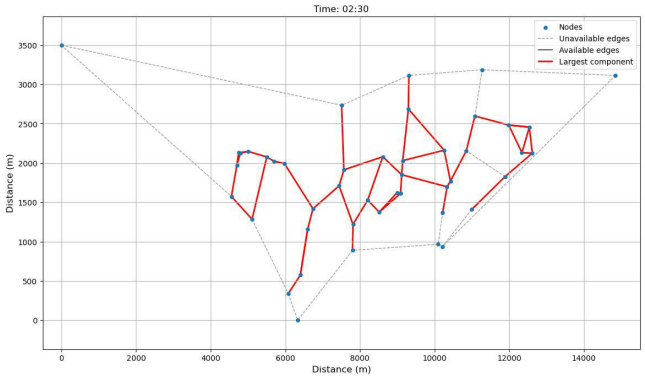
Available edges
Largest component
Distance (m)
Distance (m)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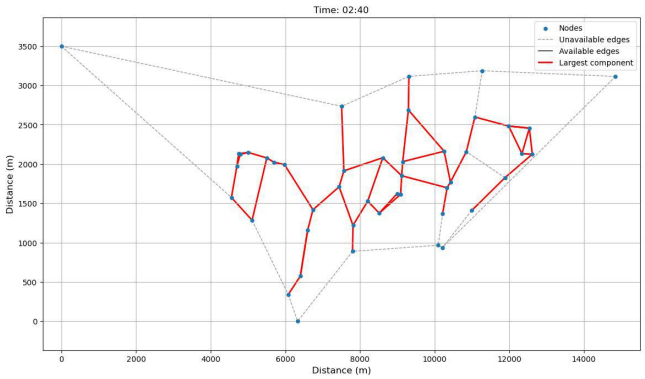
Distance (m)
Distance (m)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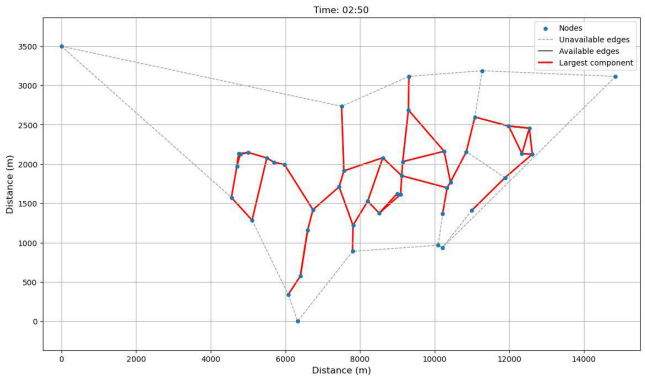
Distance (m)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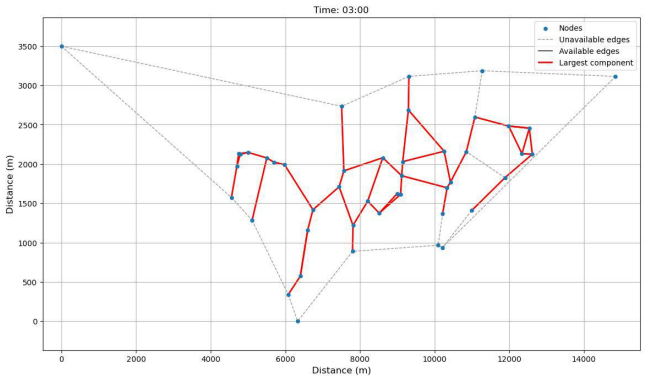
Available edges
Largest component
Distance (m)
Distance (m)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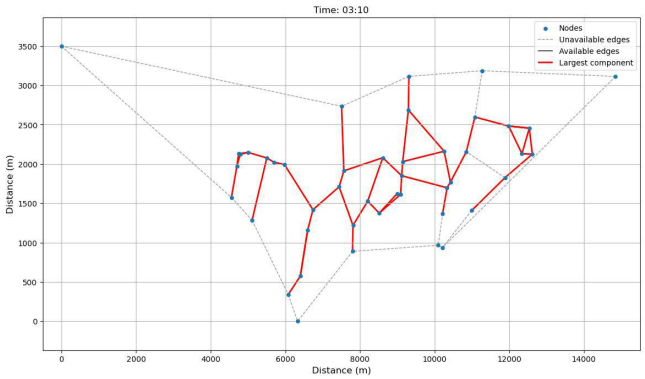
Distance (m)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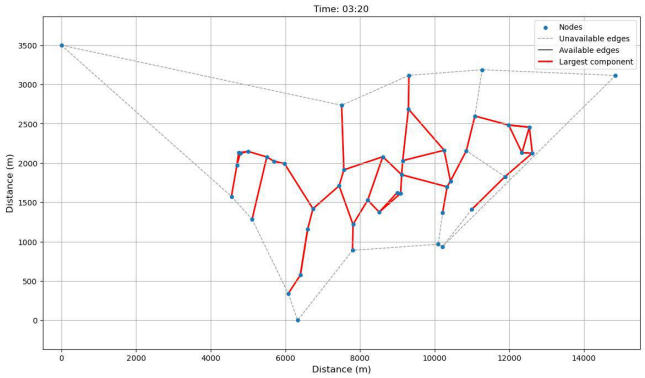
Distance (m)
Distance (m)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Distance (m)
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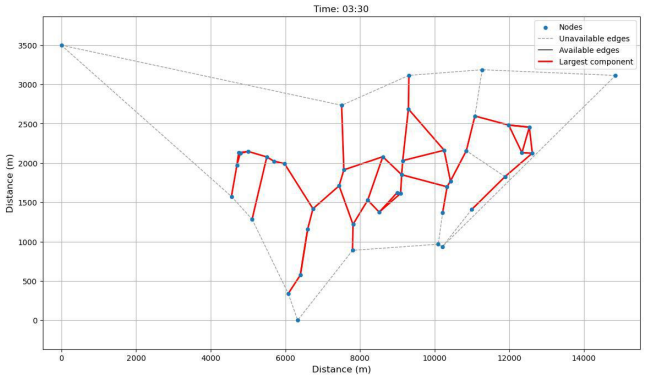
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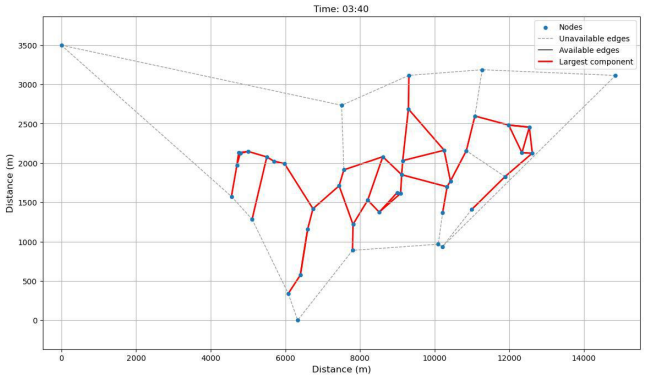
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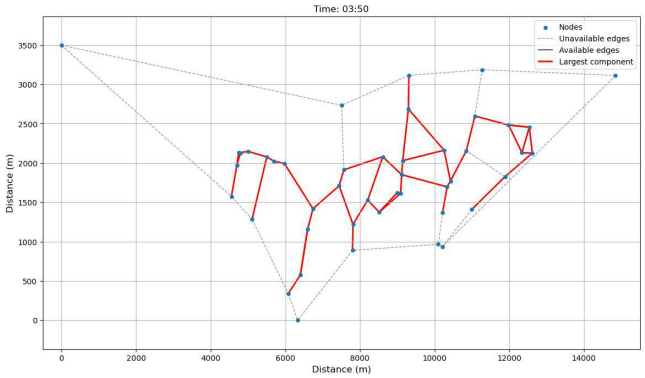
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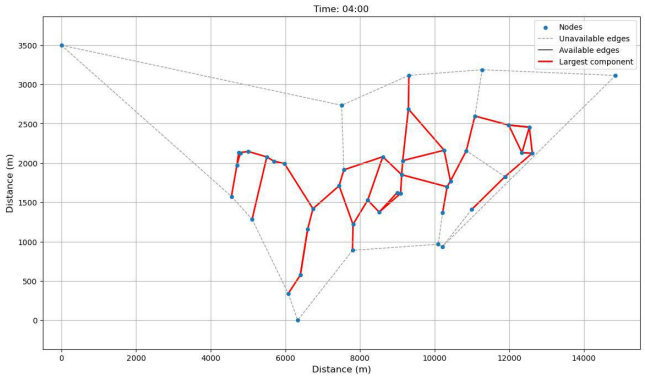
Distance (m)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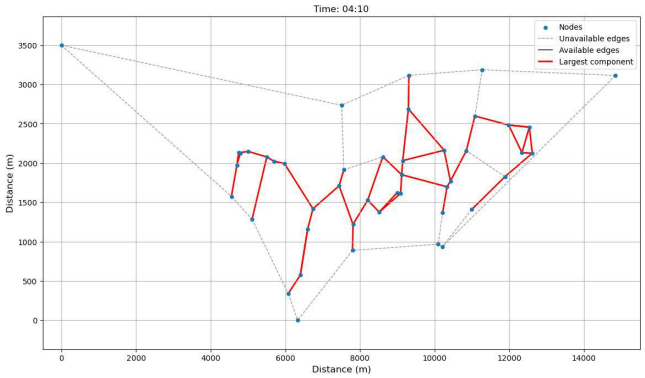
Distance (m)
Distance (m)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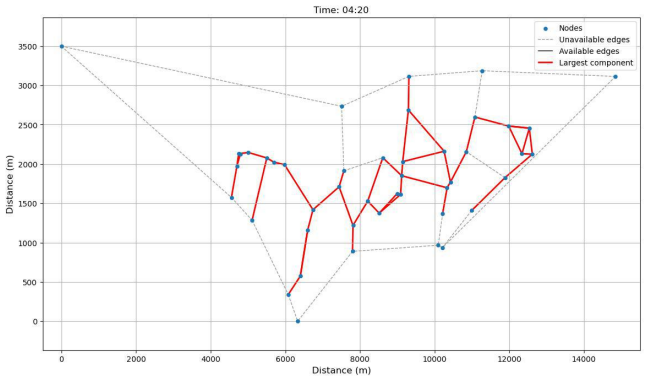
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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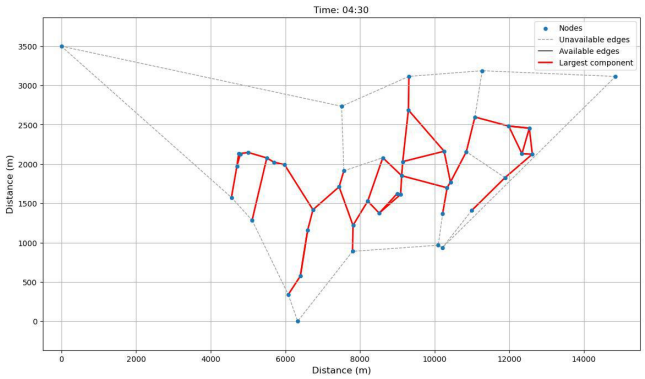
Largest component
Distance (m)
Distance (m)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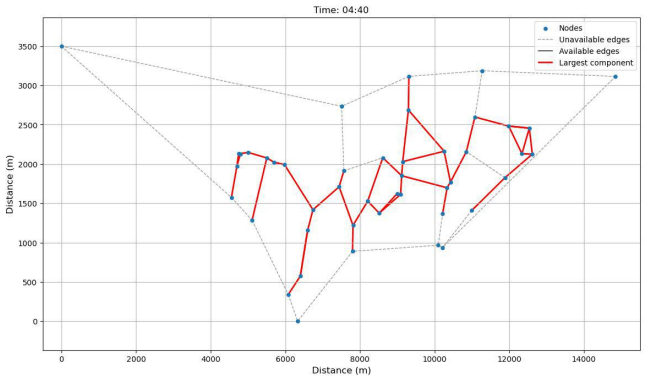
Available edges
Largest component
Distance (m)
Distance (m)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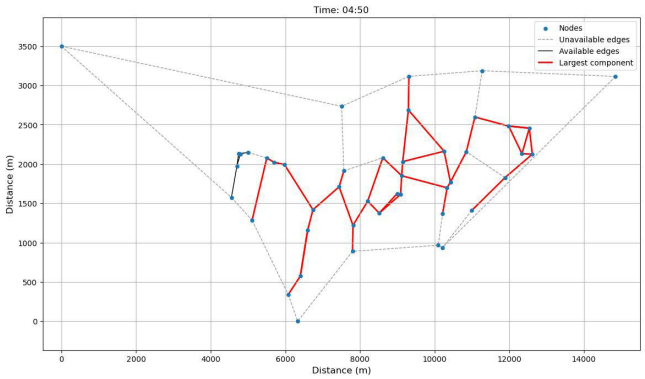
Available edges
Largest component
Distance (m)
Distance (m)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Distance (m)
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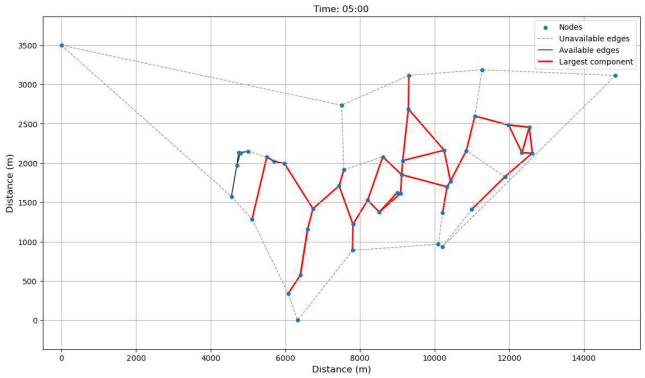
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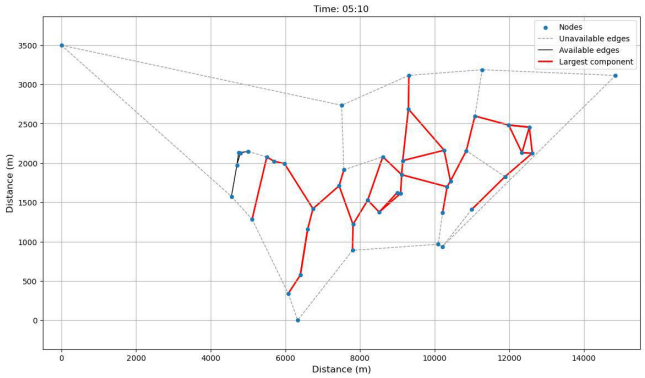
Distance (m)
Distance (m)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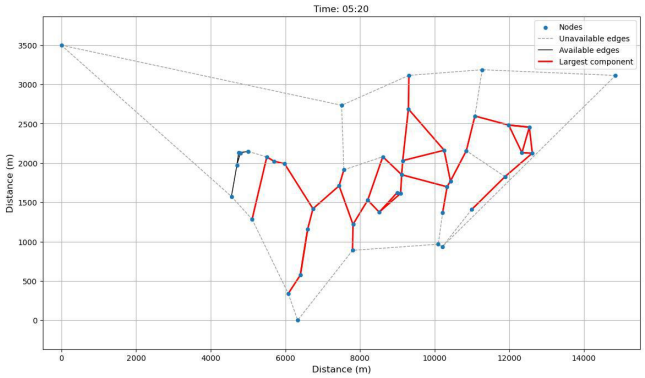
Available edges
Largest component
Distance (m)
Distance (m)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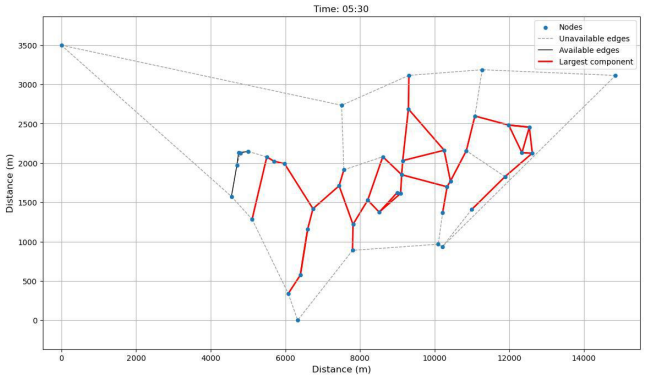
Distance (m)
Distance (m)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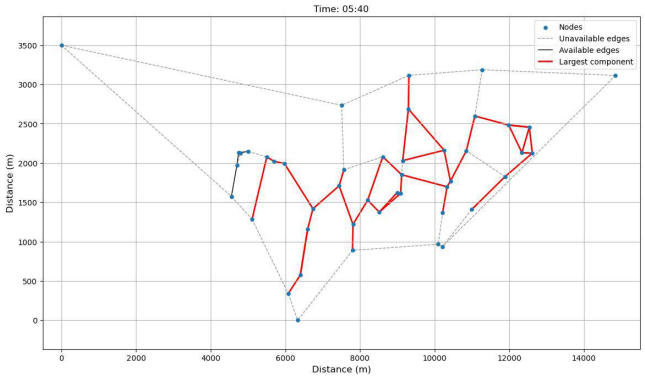
Available edges
Largest component
Distance (m)
Distance (m)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Available edges
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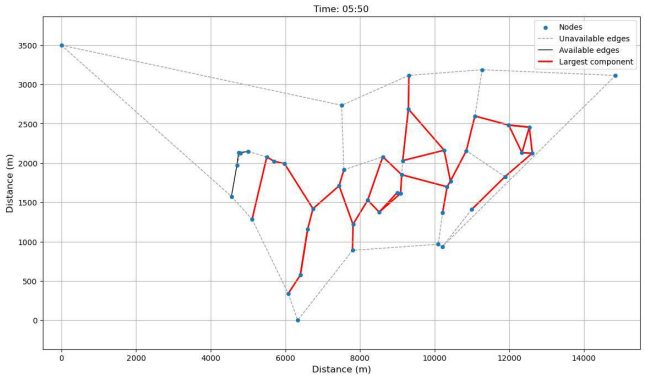
Distance (m)
Distance (m)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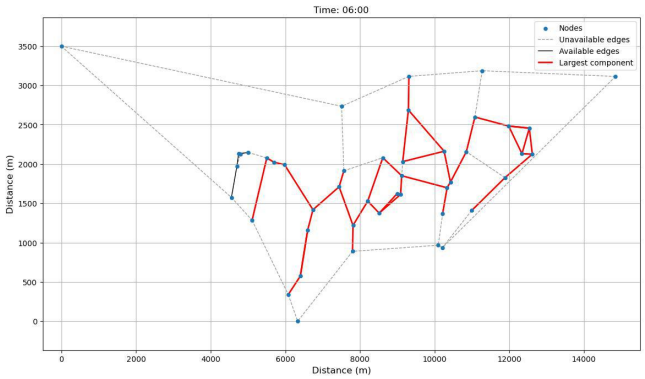
Available edges
Largest component
Distance (m)
Distance (m)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Largest component
Distance (m)
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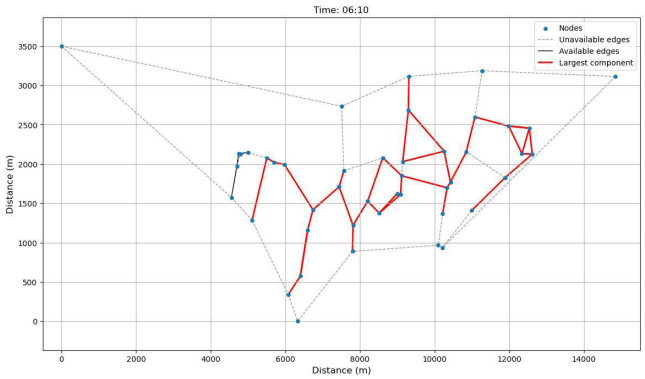
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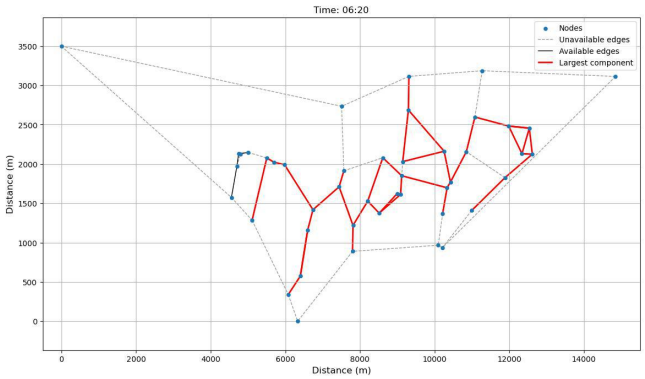
Distance (m)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Distance (m)
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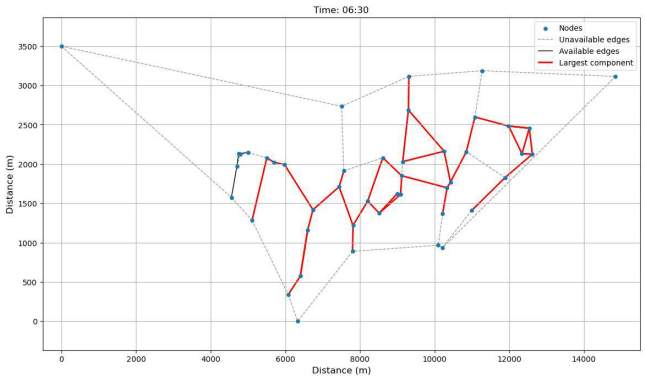
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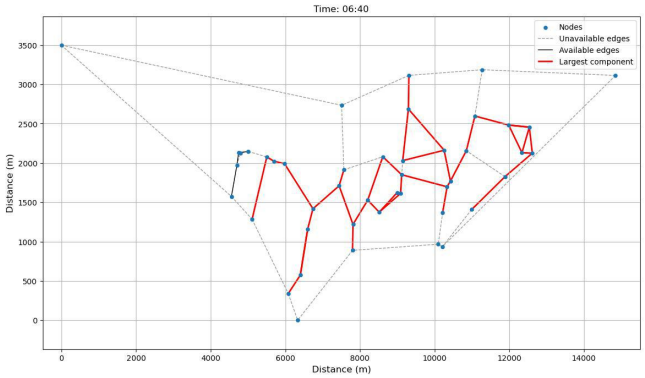
Distance (m)
Distance (m)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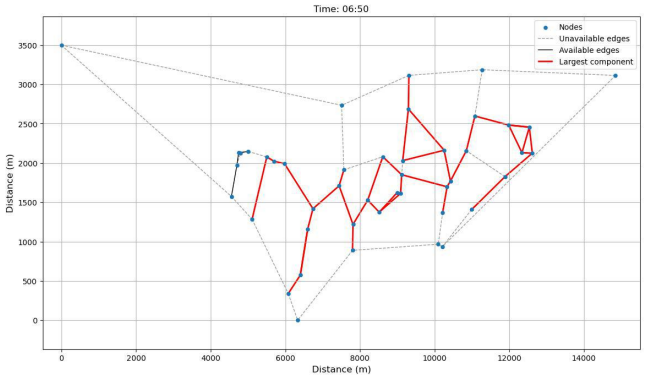
Available edges
Largest component
Distance (m)
Distance (m)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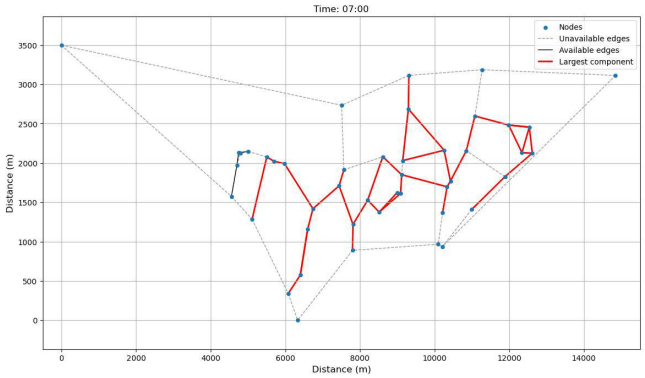
Available edges
Largest component
Distance (m)
Distance (m)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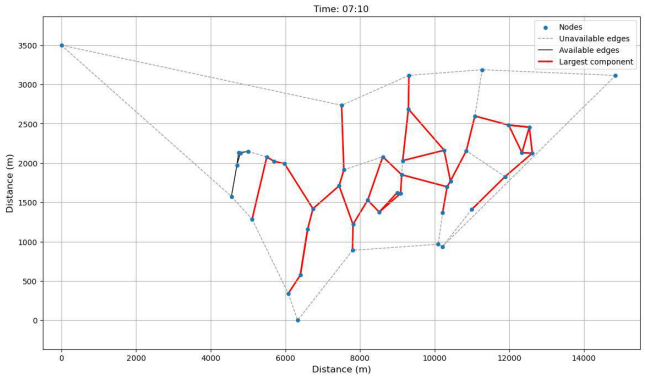
Available edges
Largest component
Distance (m)
Distance (m)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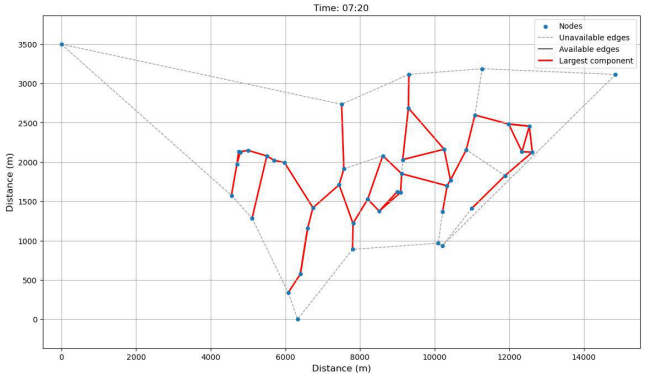
Largest component
Distance (m)
Distance (m)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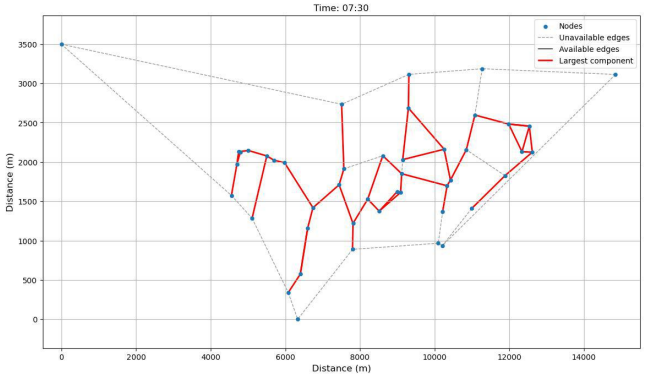
Distance (m)
Distance (m)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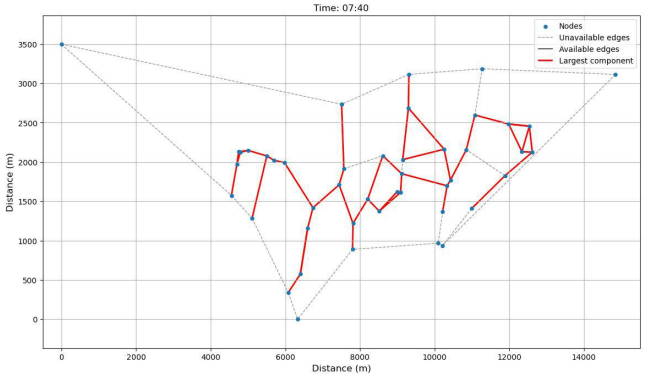
Largest component
Distance (m)
Distance (m)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Nodes
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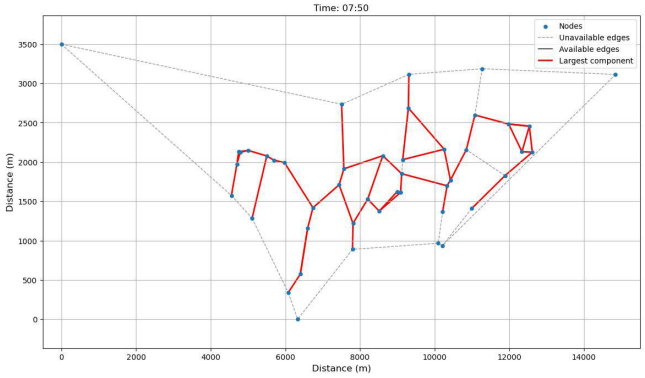
Available edges
Largest component
Distance (m)
Distance (m)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Available edges
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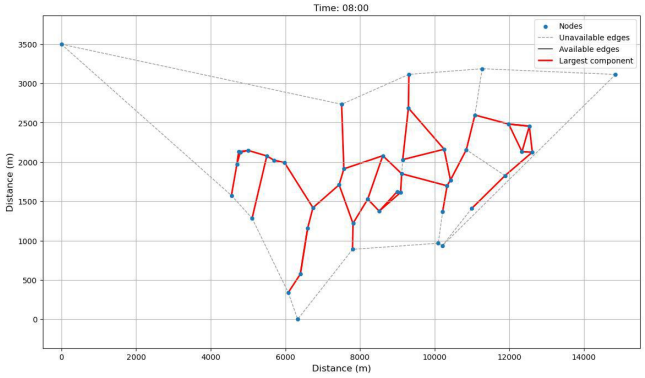
Distance (m)
Distance (m)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Available edges
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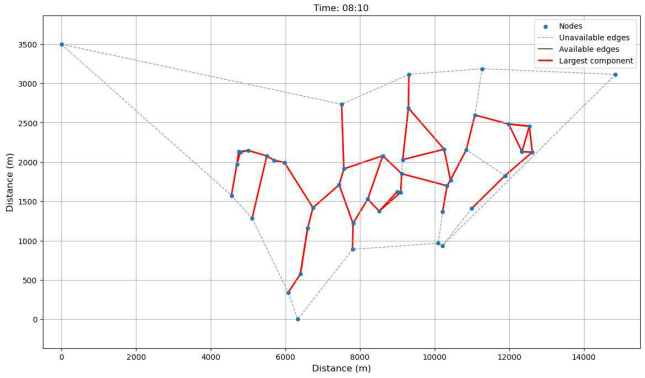
Distance (m)
Distance (m)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Available edges
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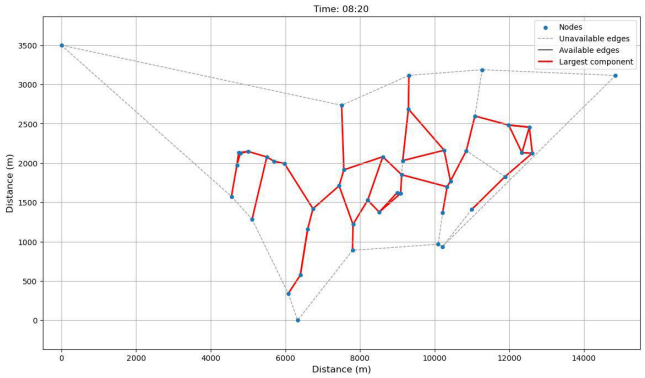
Distance (m)
Distance (m)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Nodes
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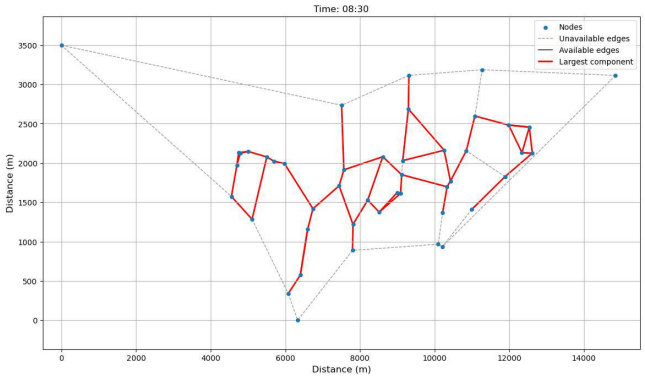
Available edges
Largest component
Distance (m)
Distance (m)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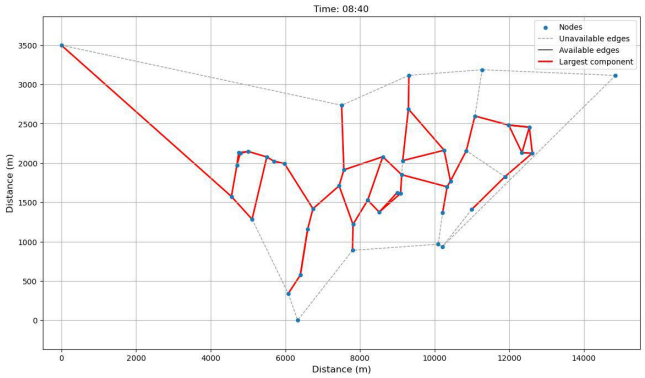
Distance (m)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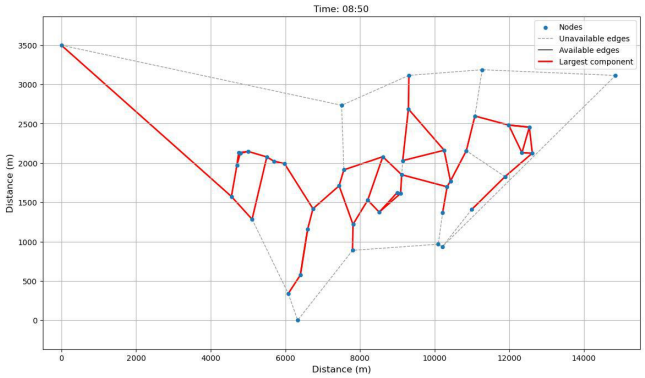
Distance (m)
Distance (m)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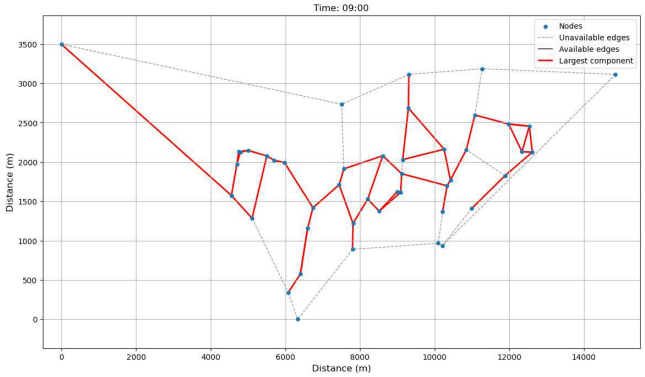
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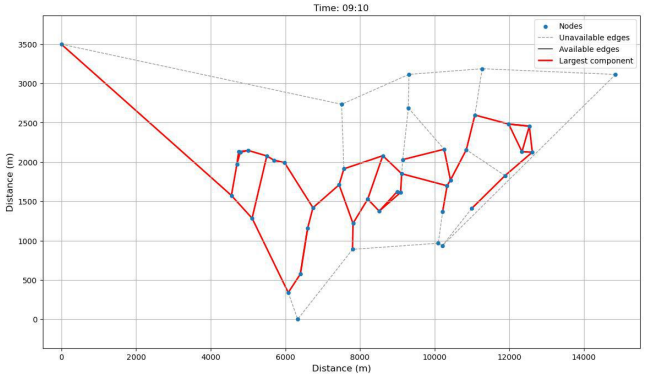
Distance (m)
Distance (m)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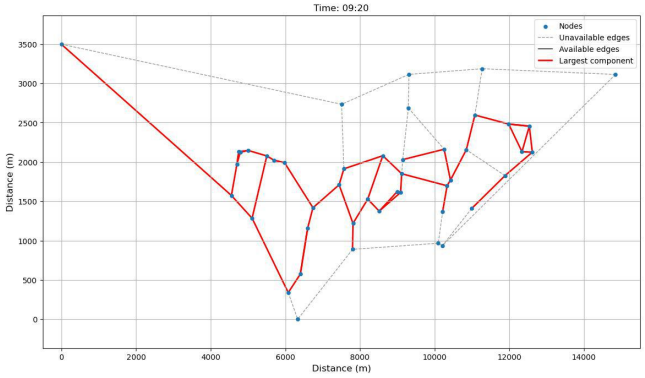
Distance (m)
Distance (m)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Nodes
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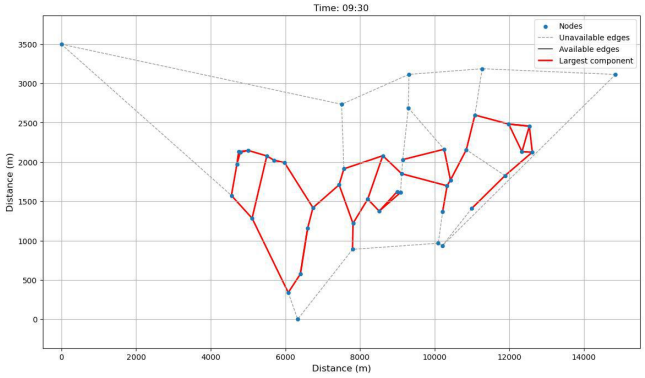
Largest component
Distance (m)
Distance (m)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Nodes
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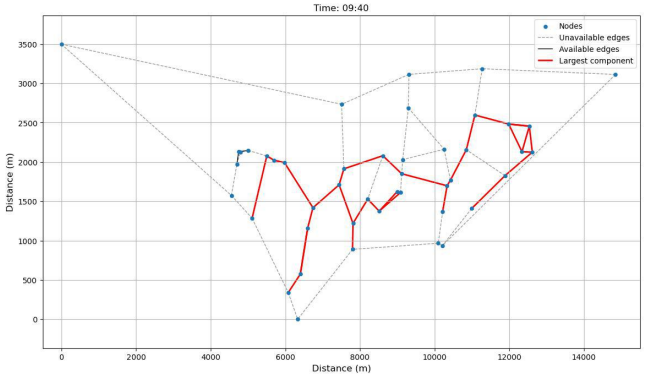
Distance (m)
Distance (m)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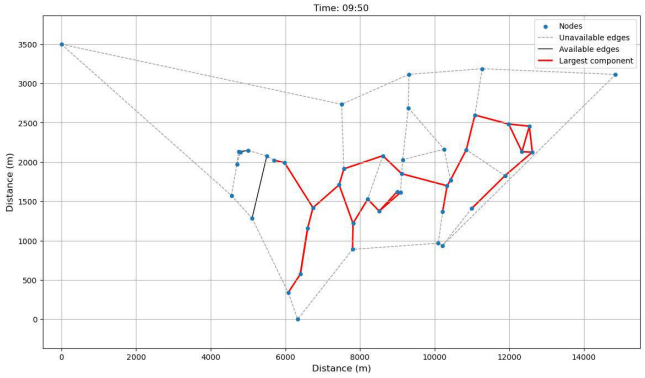
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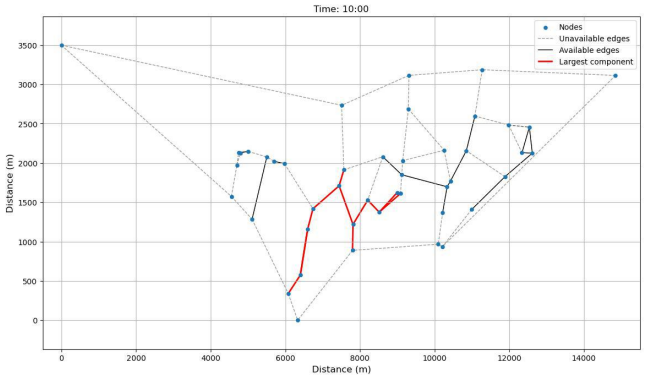
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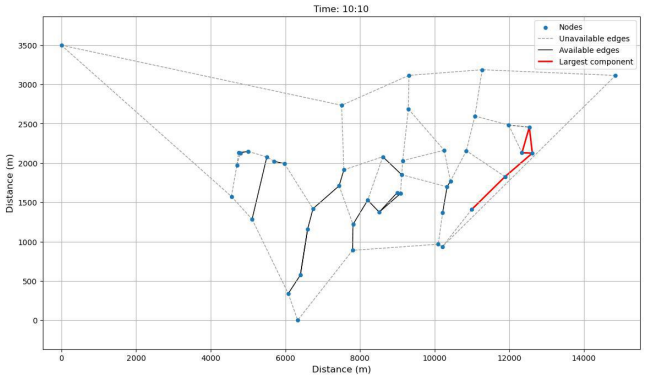
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Largest component
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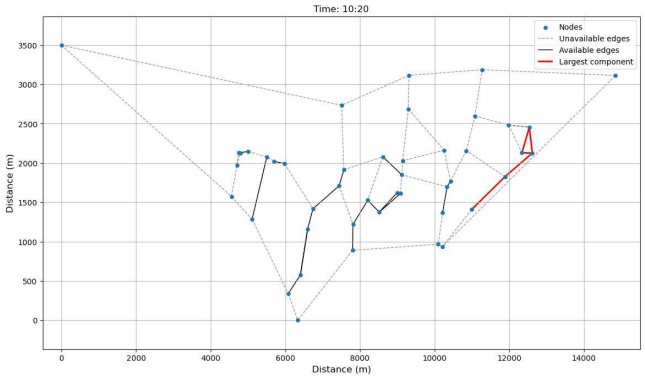
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Nodes
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Largest component
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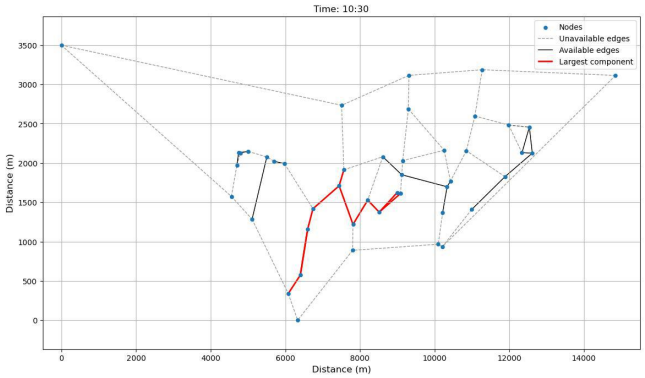
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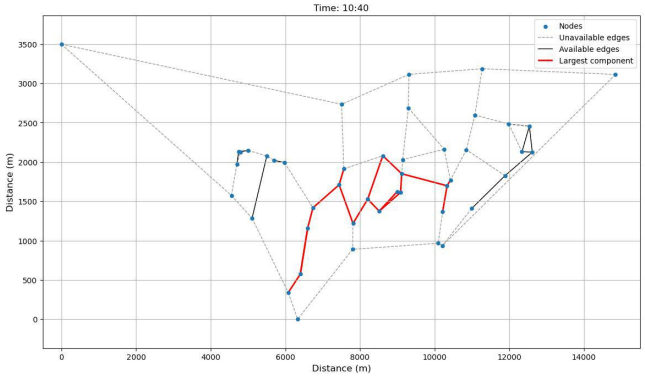
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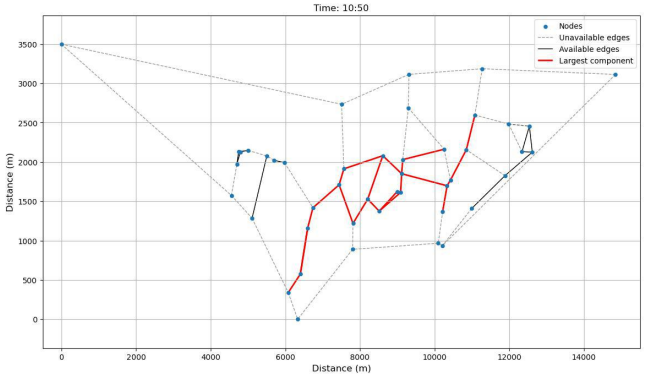
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Largest component
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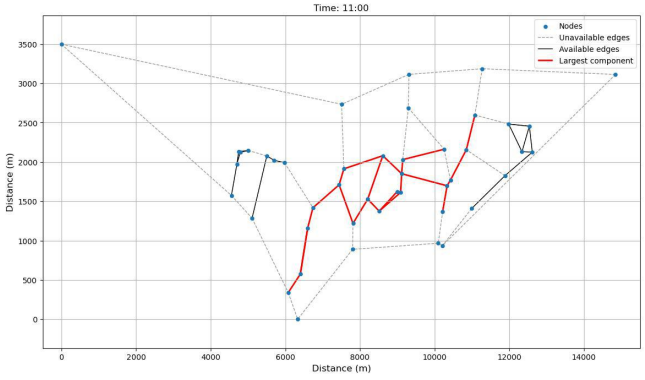
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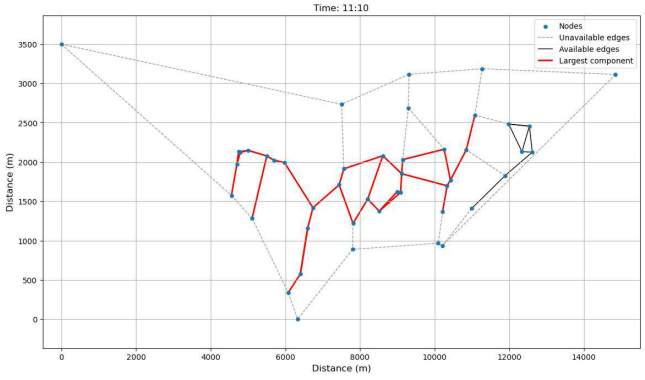
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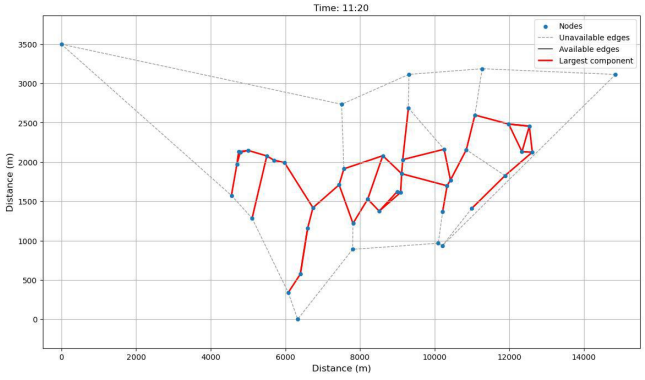
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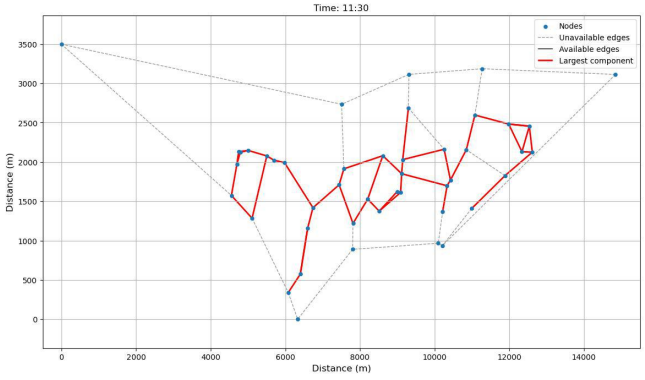
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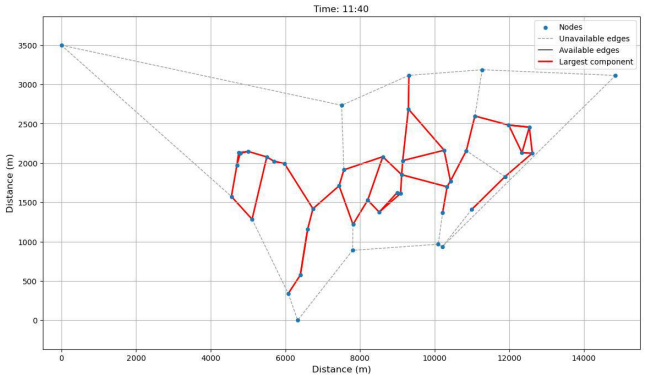
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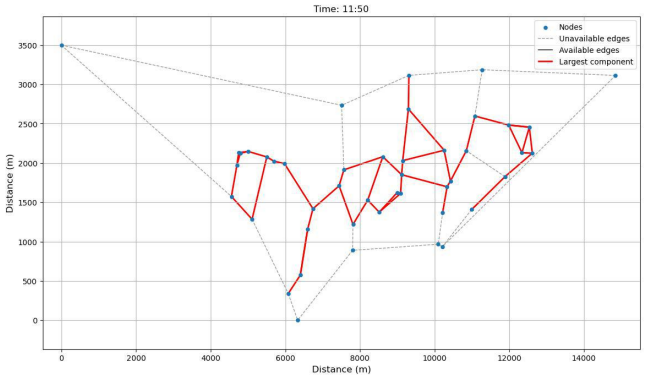
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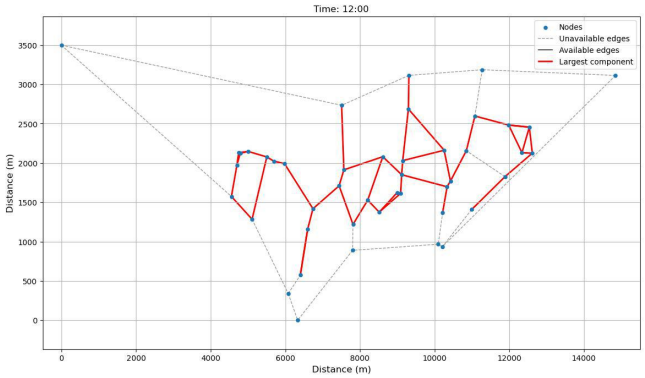
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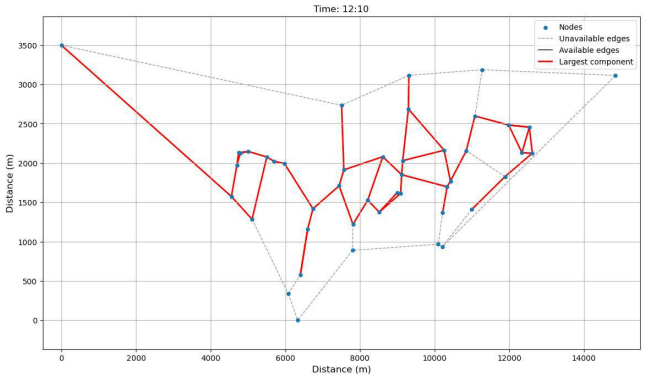
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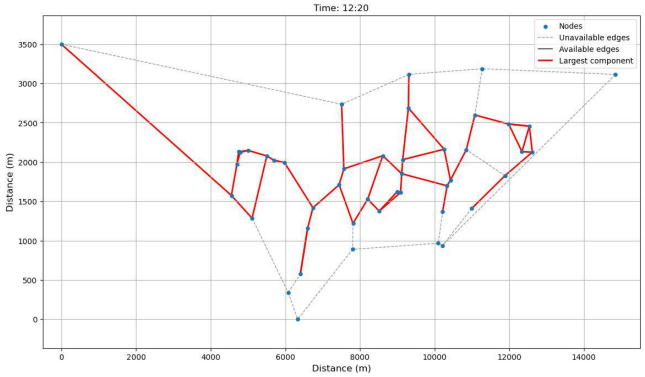
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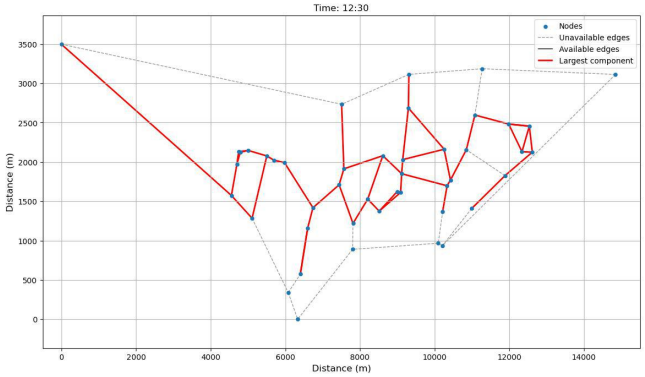
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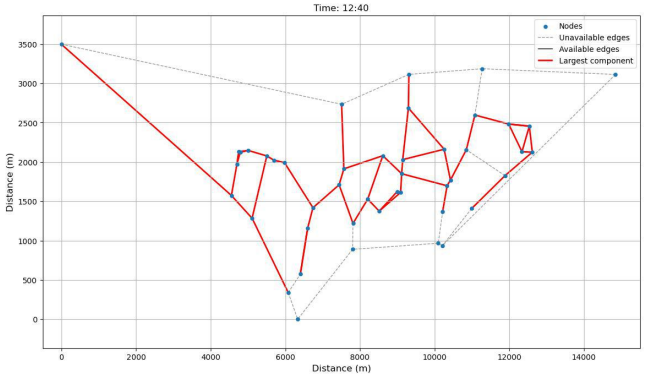
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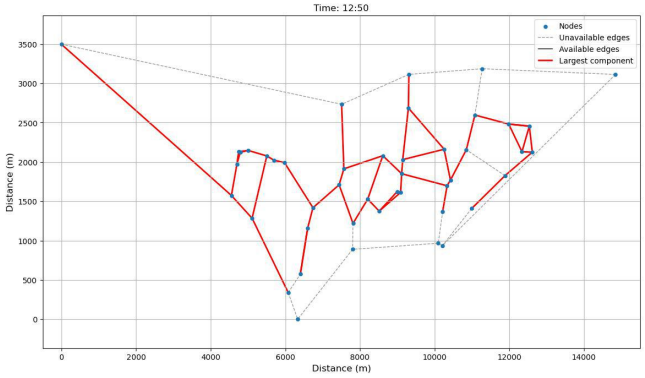
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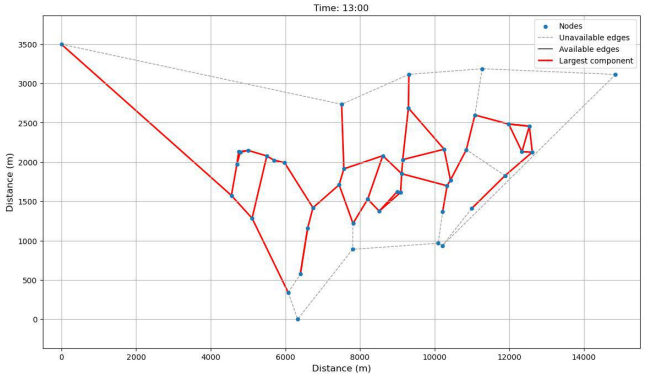
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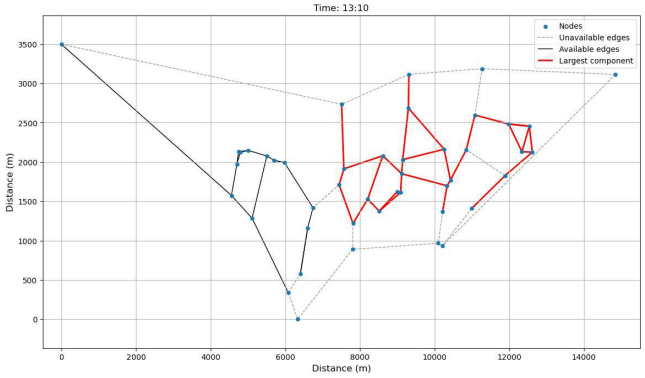
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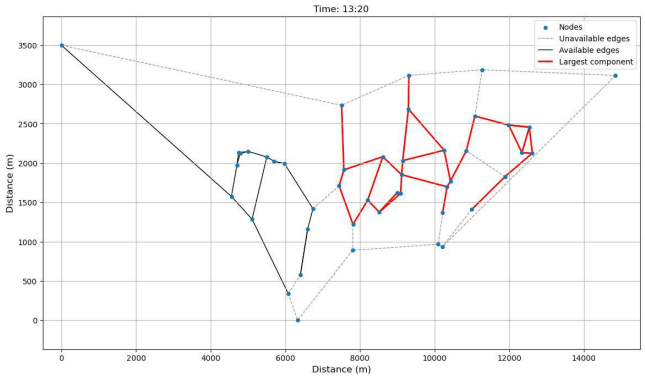
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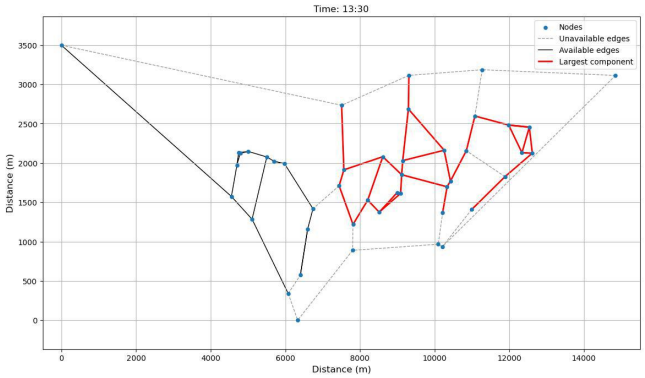
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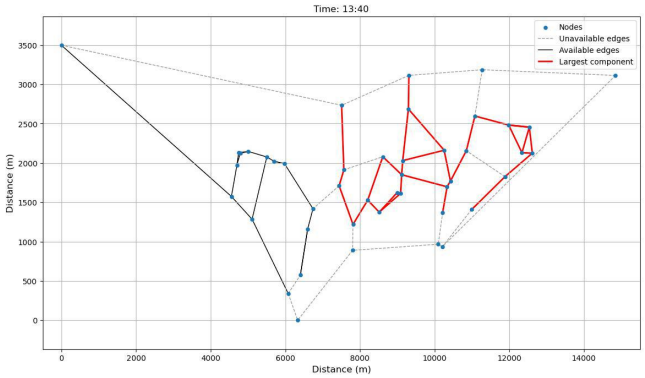
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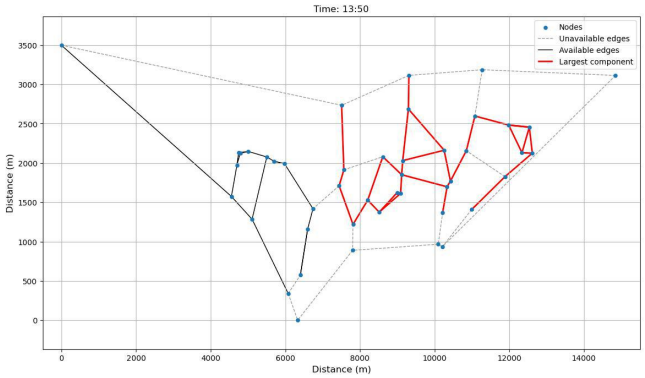
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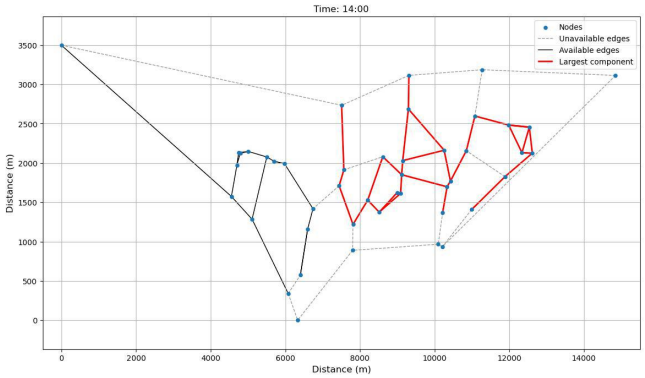
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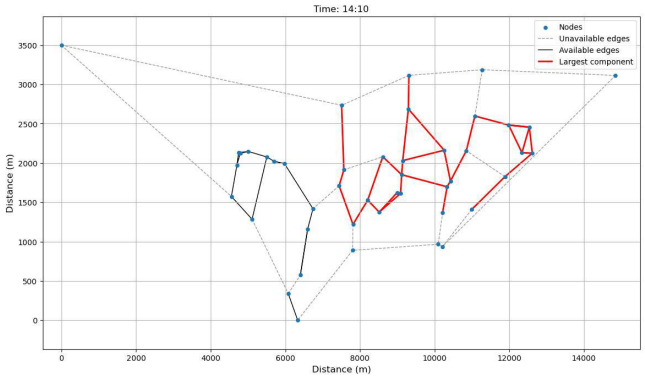
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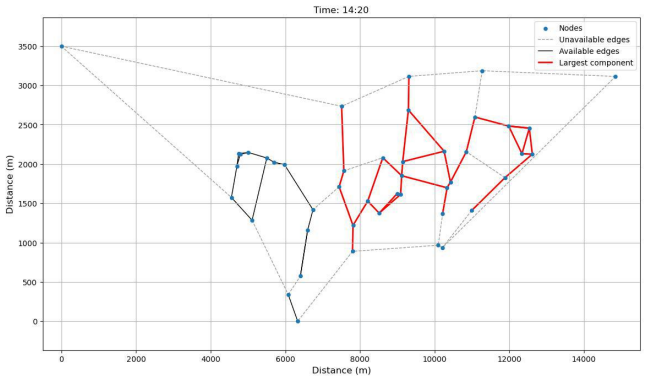
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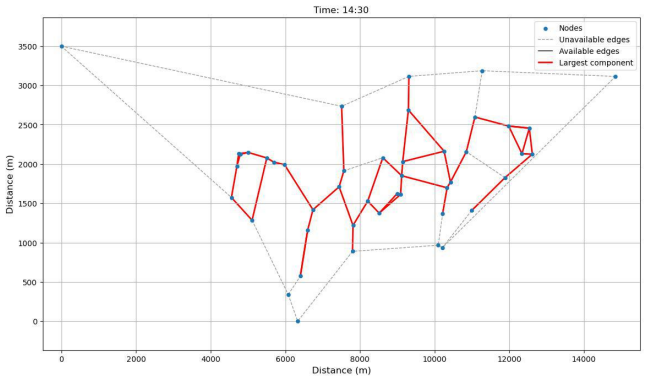
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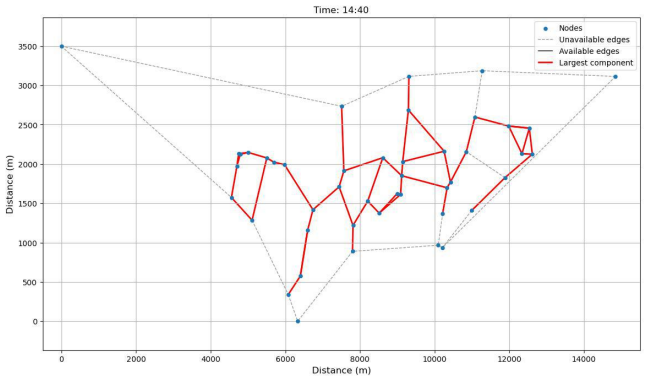
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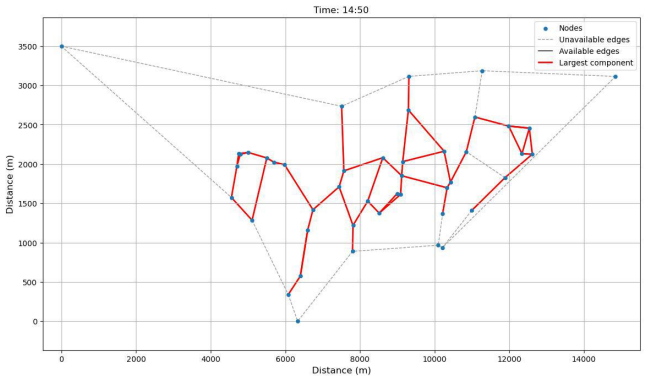
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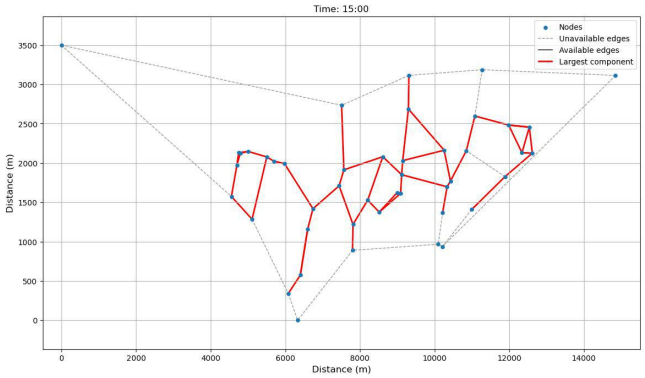
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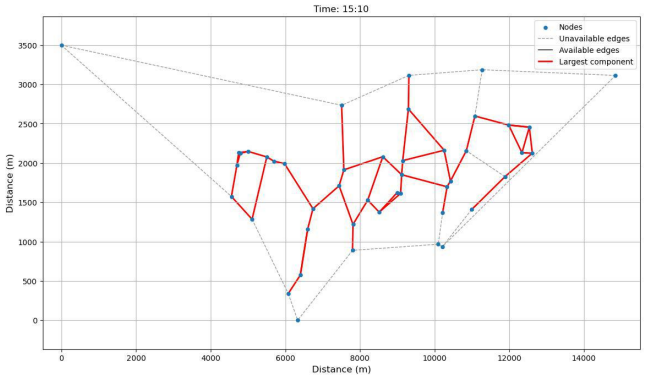
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Distance (m)
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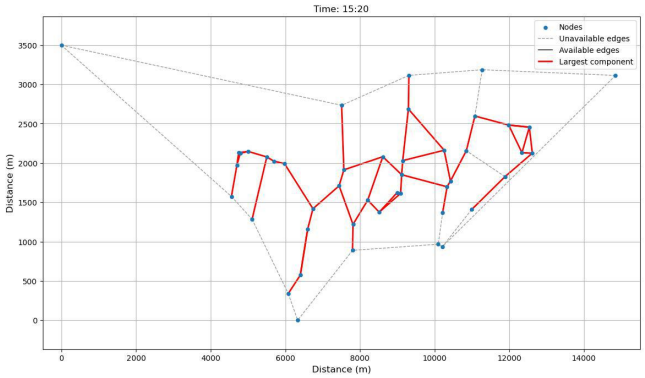
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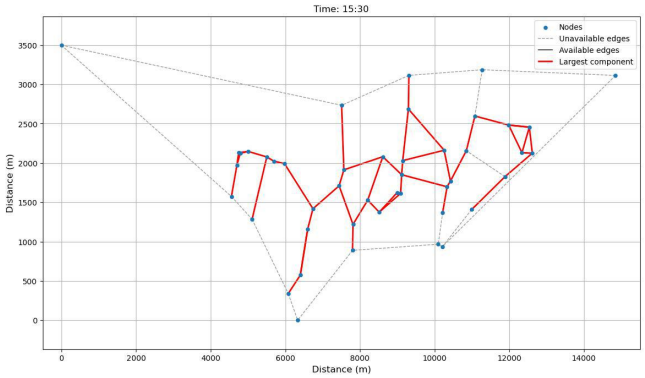
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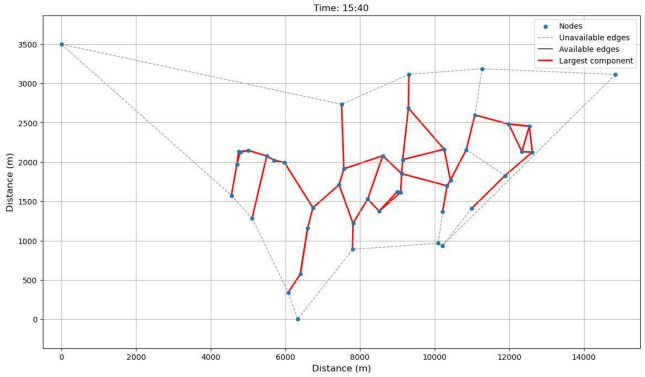
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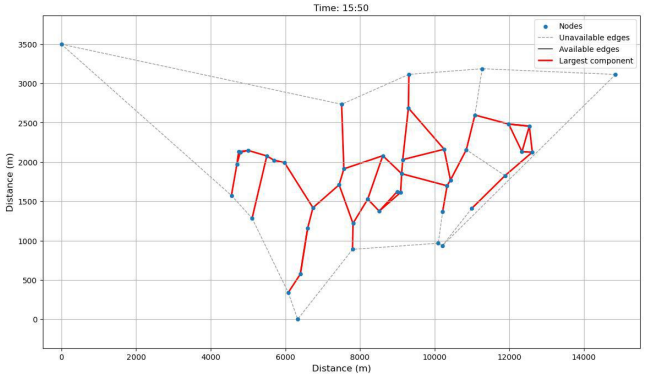
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Nodes
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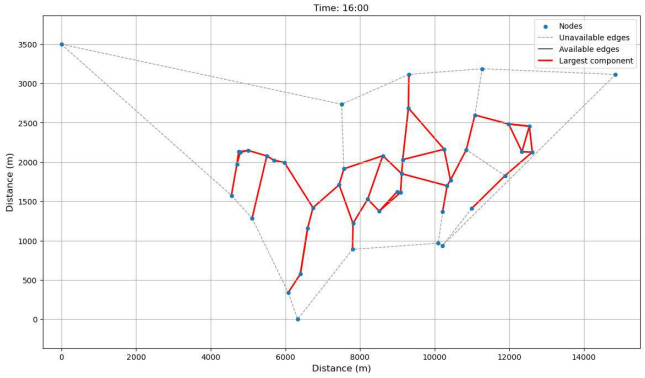
Distance (m)
Distance (m)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Available edges
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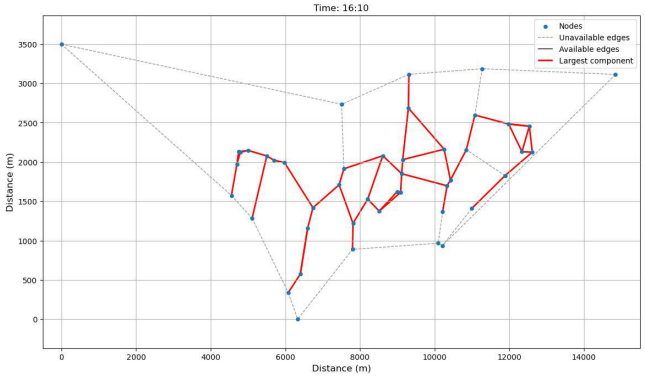
Distance (m)
Distance (m)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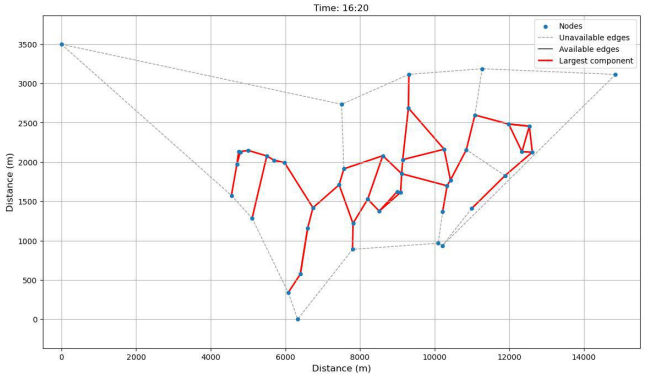
Available edges
Largest component
Distance (m)
Distance (m)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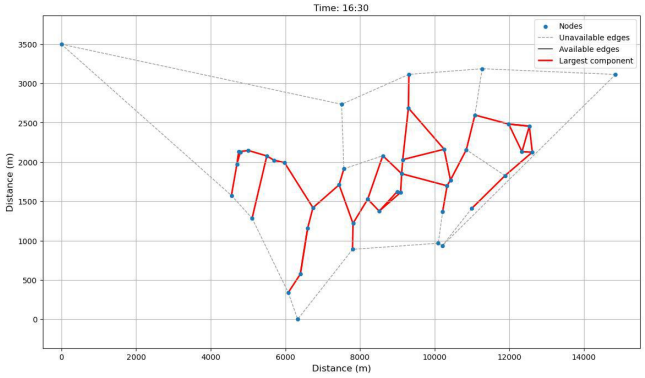
Available edges
Largest component
Distance (m)
Distance (m)


Time: 16:30
Nodes
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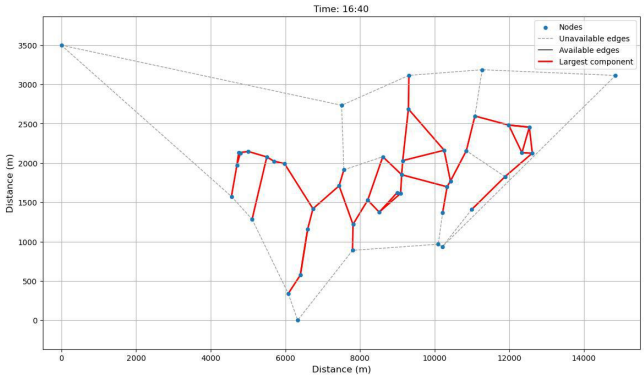
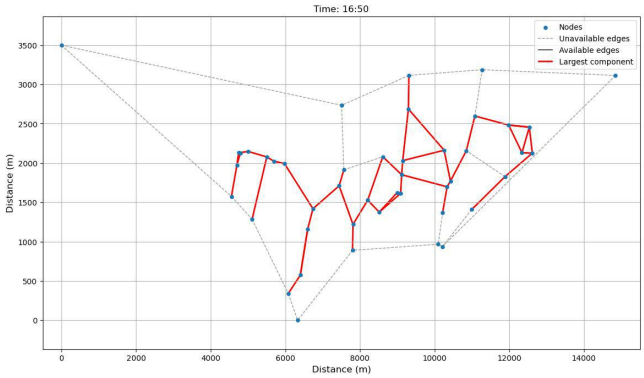
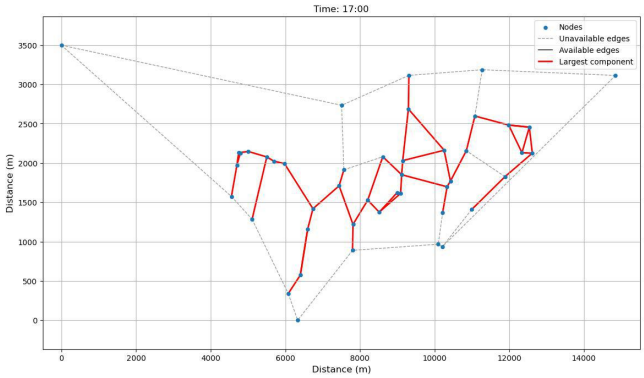
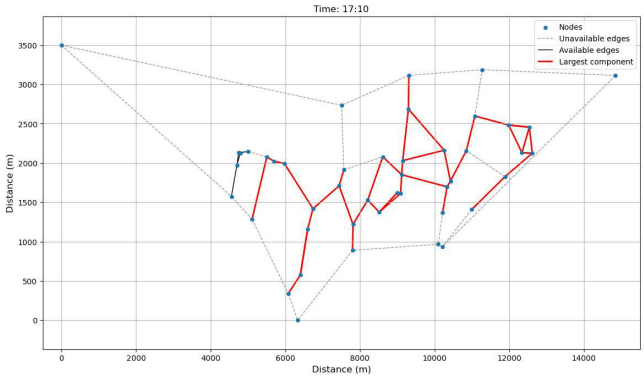
Available edges
Largest component
Distance (m)
Distance (m)

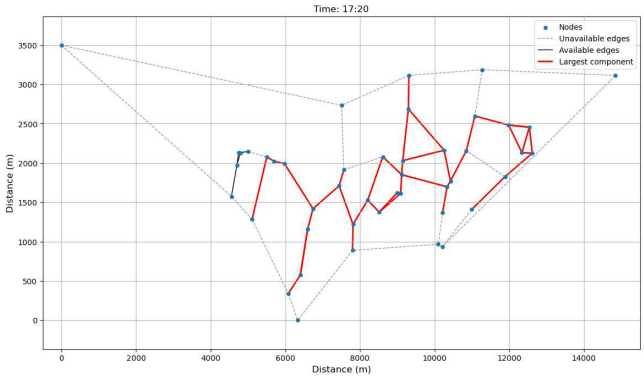
D BYPASS AROUND ZOETEMELKSKIL AND OPENING HELSLUIS AND OTTERSLUIS

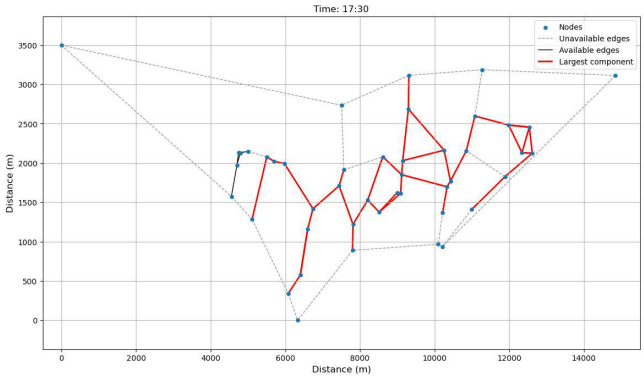


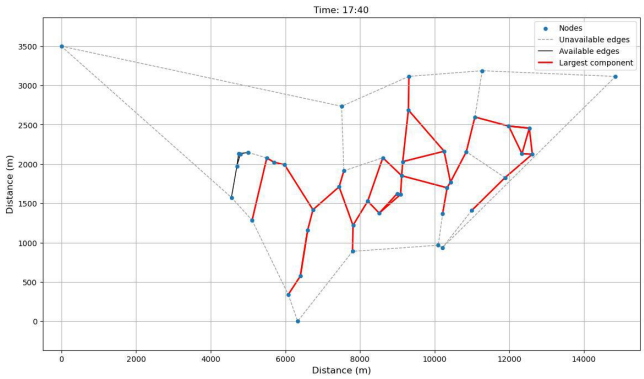


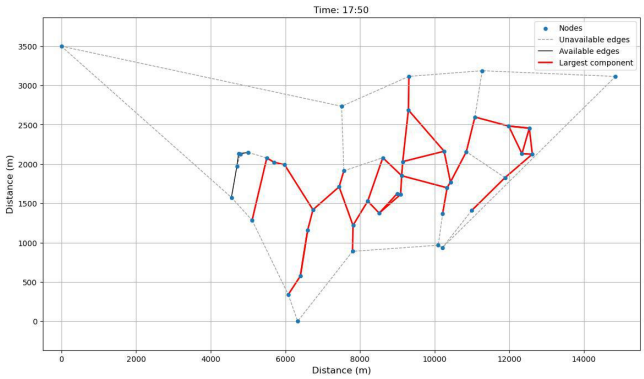


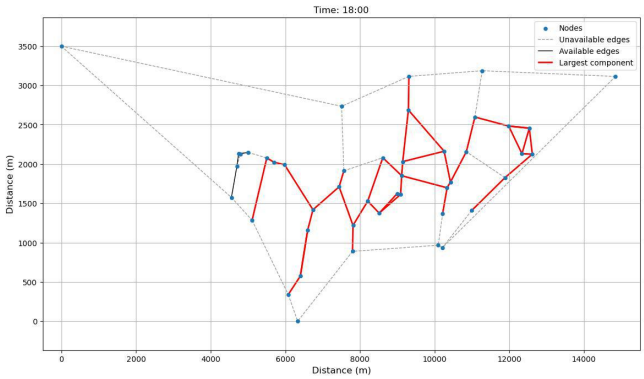


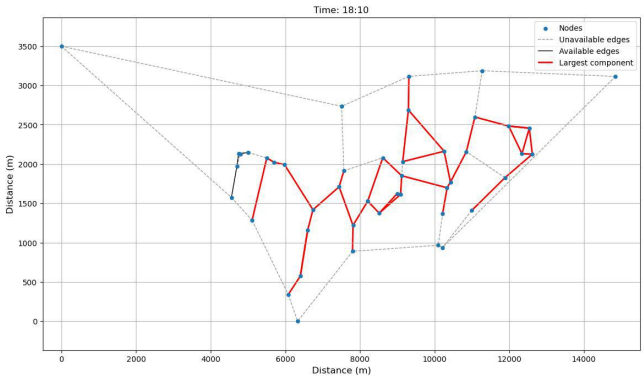


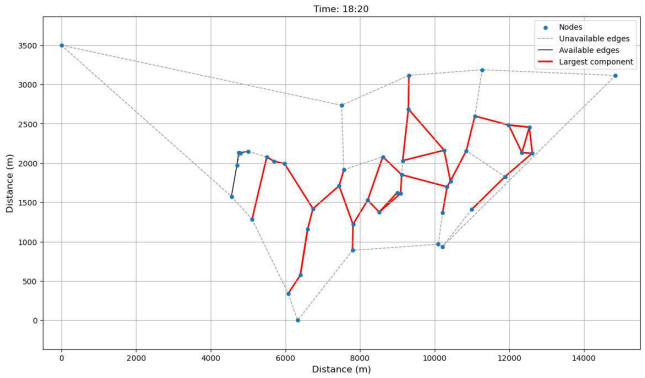








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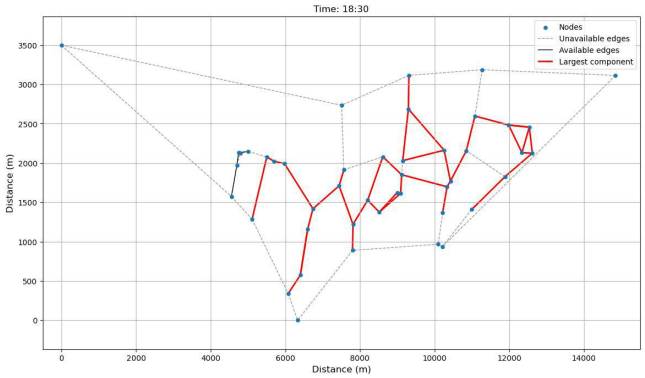
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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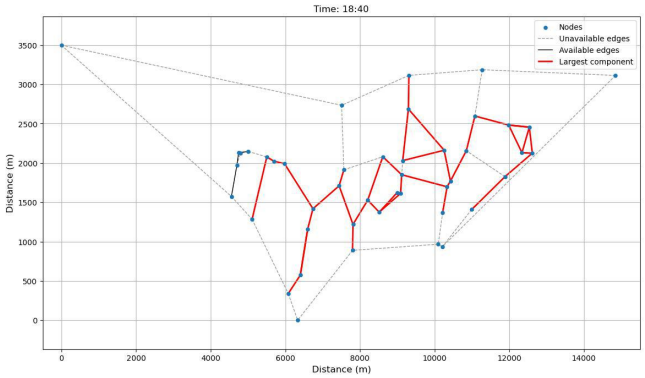
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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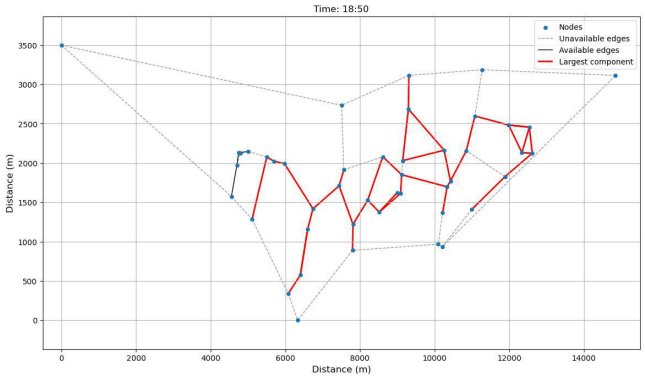
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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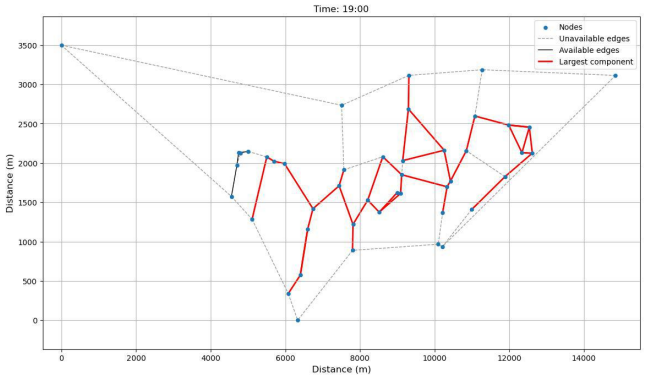
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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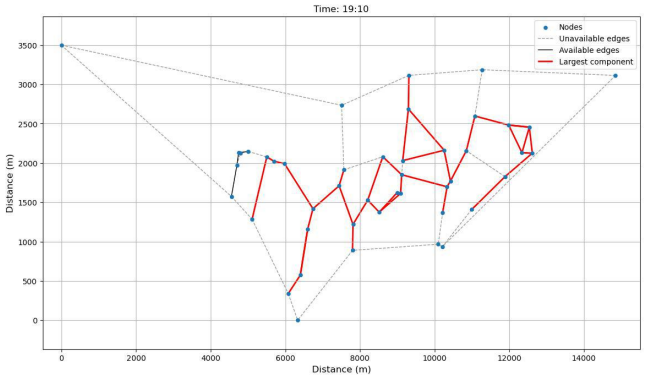
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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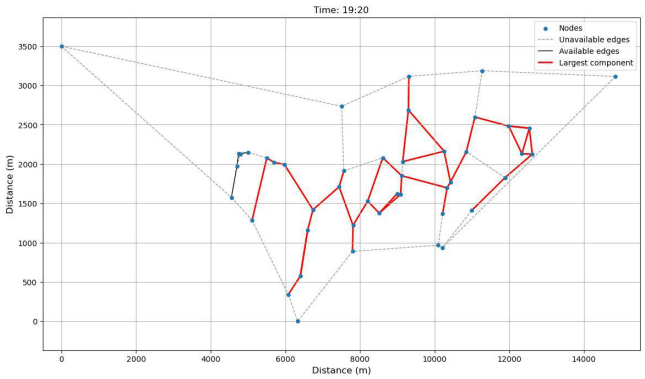
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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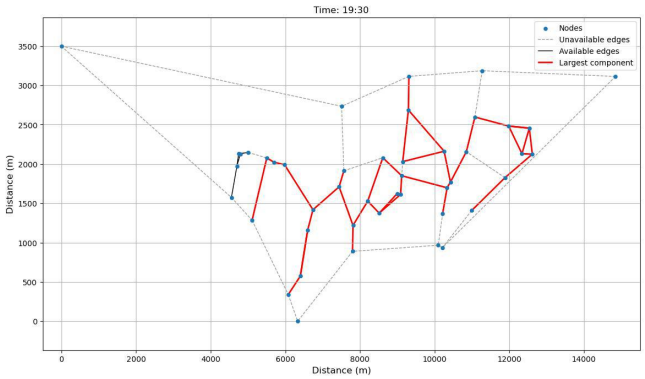
Available edges
Largest component
Distance (m)
Distance (m)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Nodes
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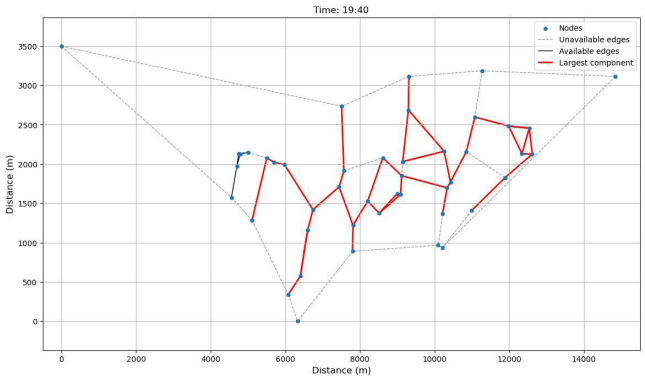
Available edges
Largest component
Distance (m)
Distance (m)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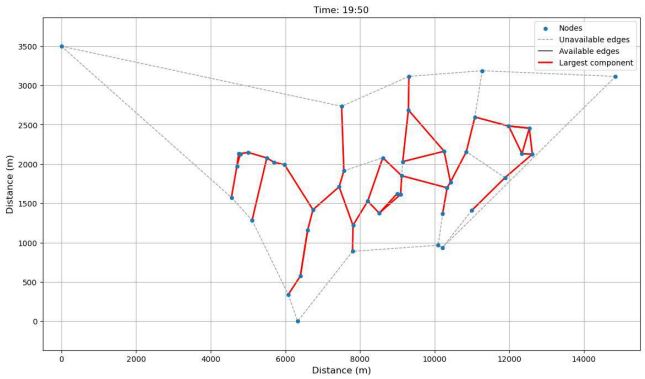
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Nodes
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Distance (m)
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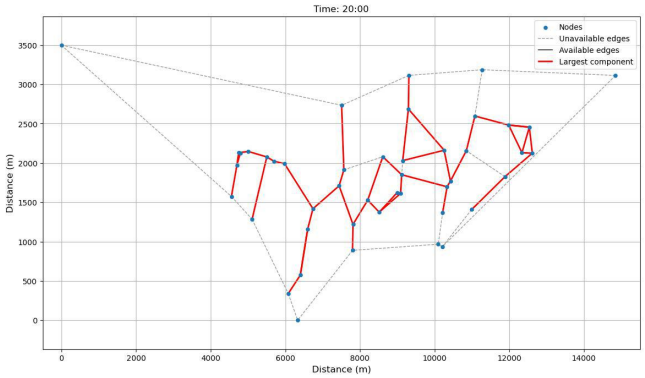
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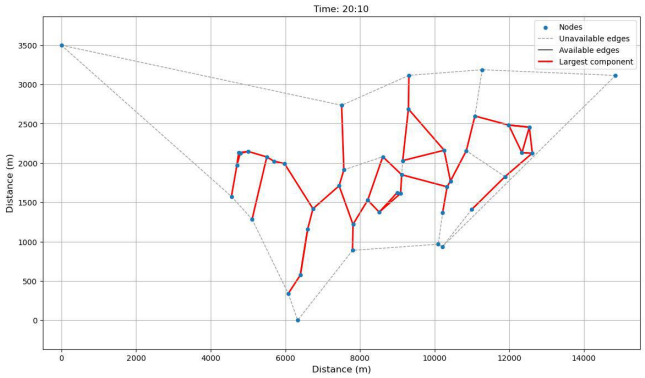
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Nodes
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Largest component
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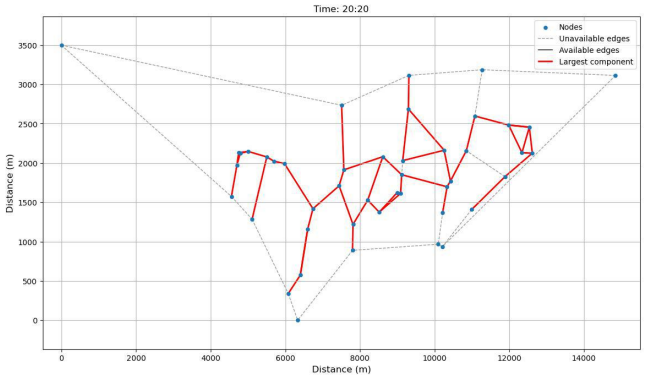
Distance (m)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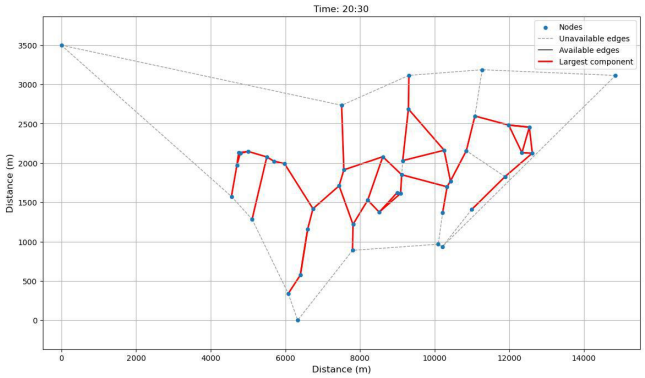
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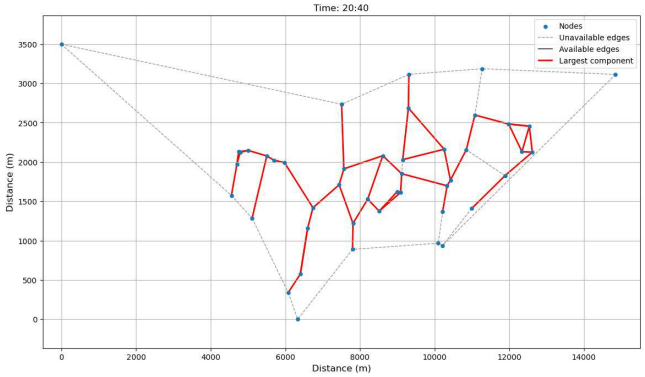
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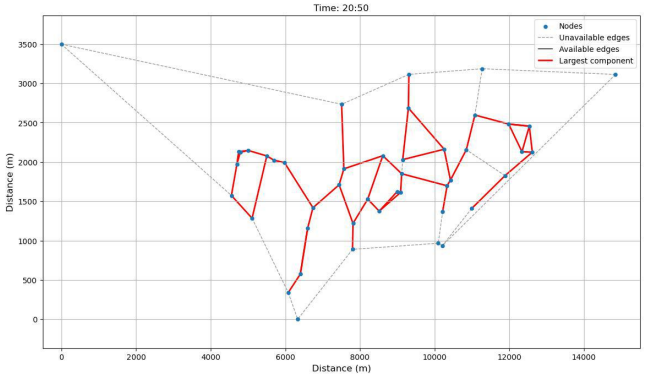
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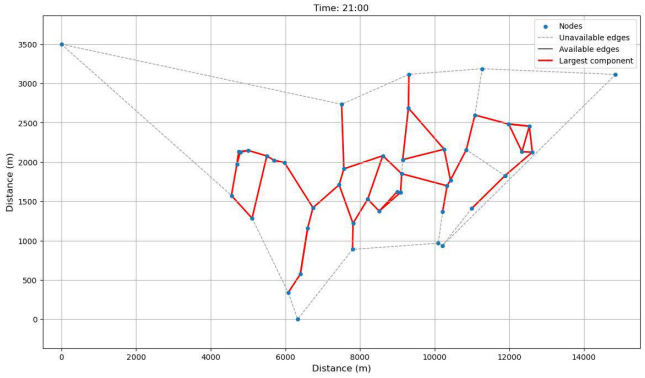
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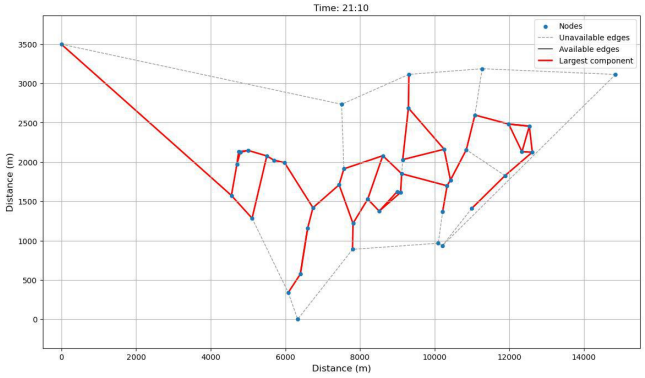
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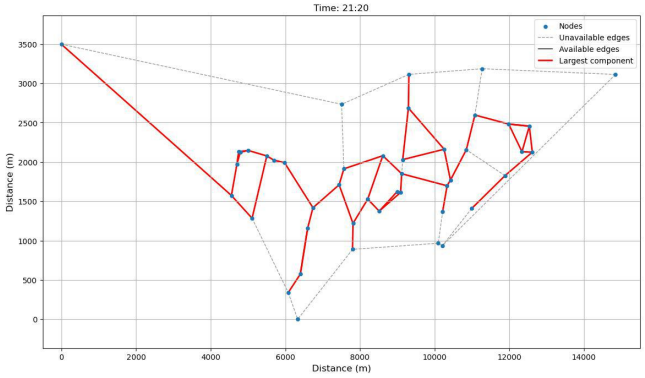
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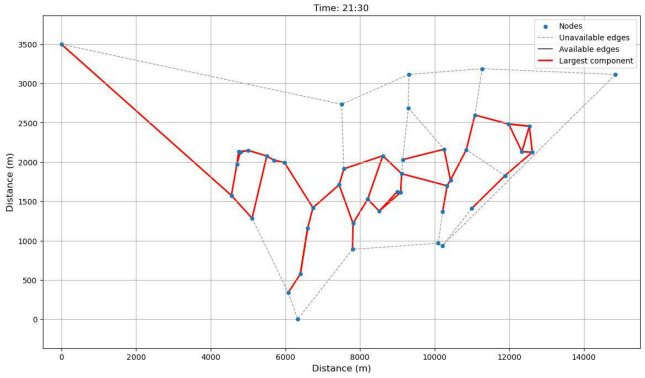
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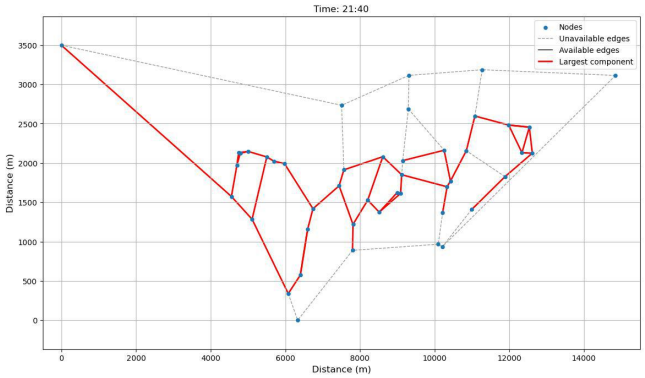
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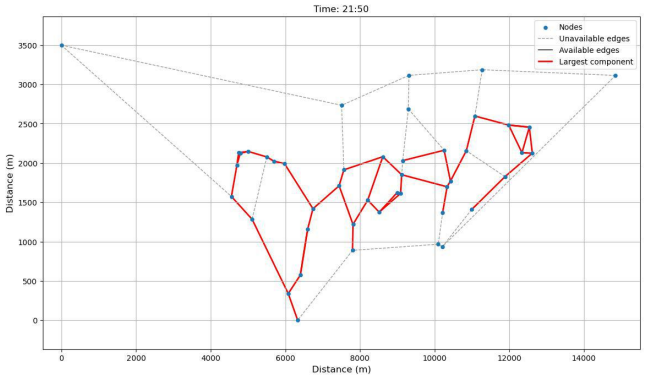
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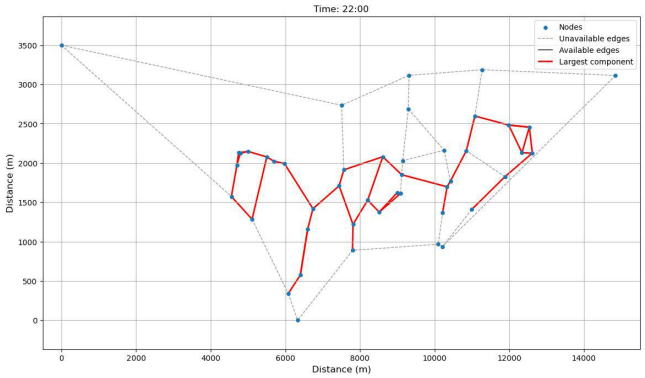
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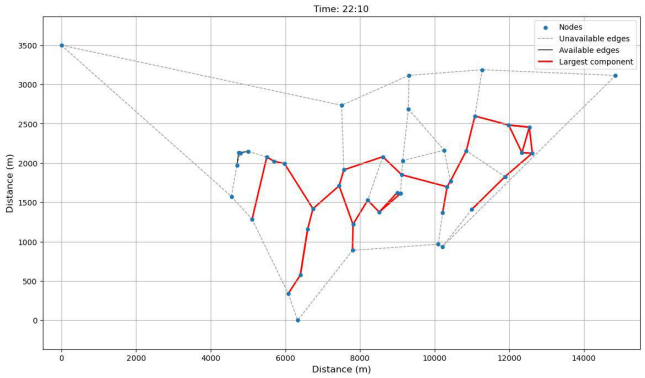
Distance (m)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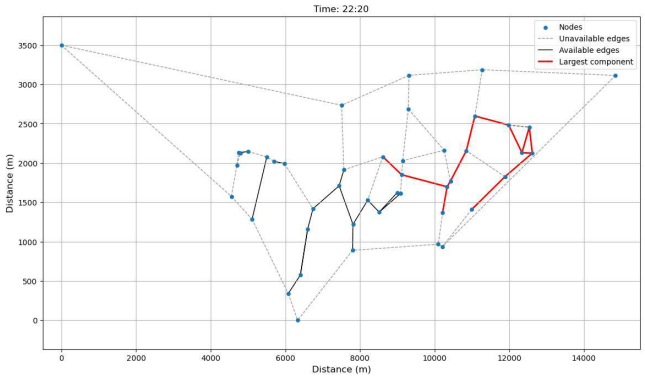
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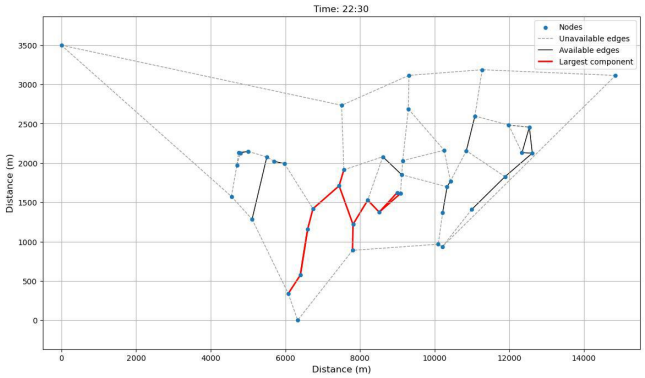
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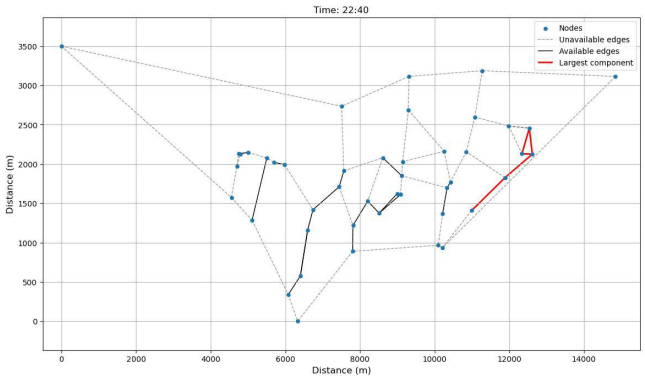
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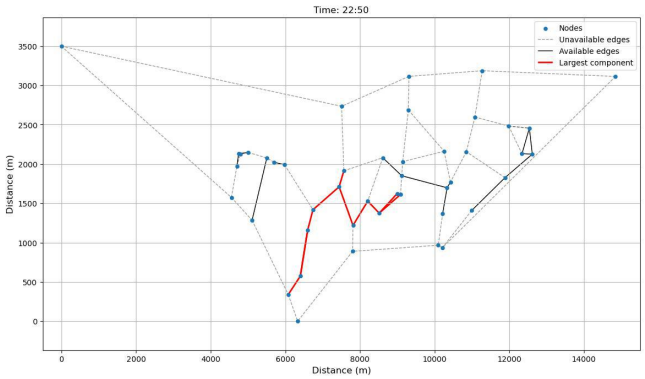
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Largest component
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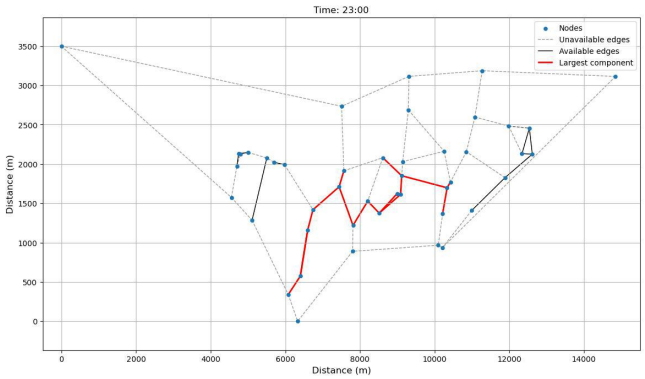
Distance (m)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Nodes
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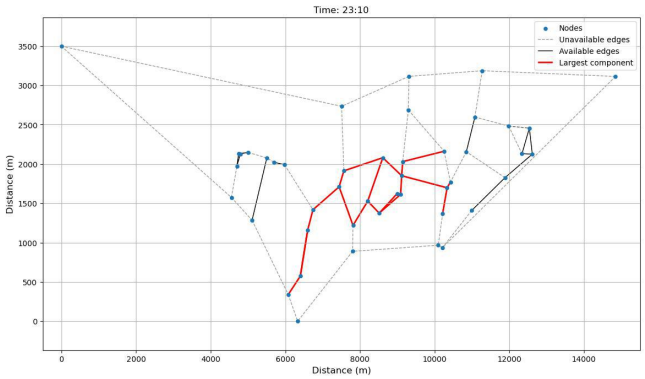
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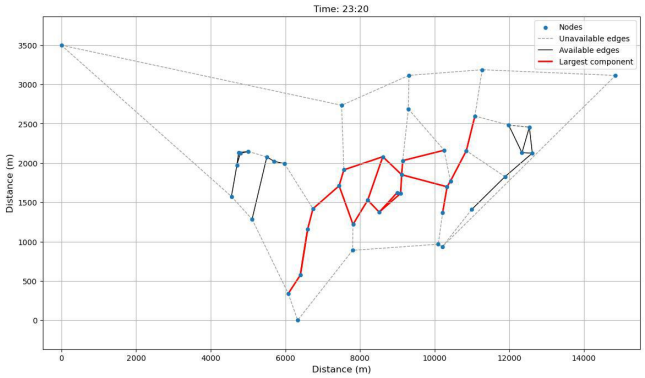
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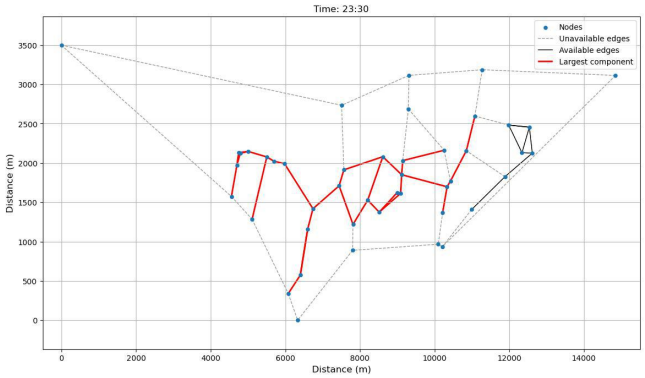
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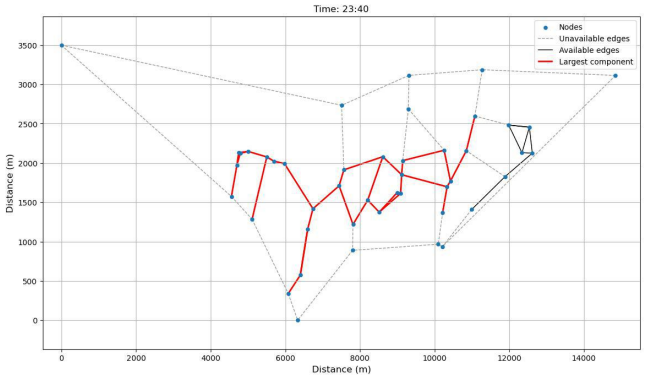
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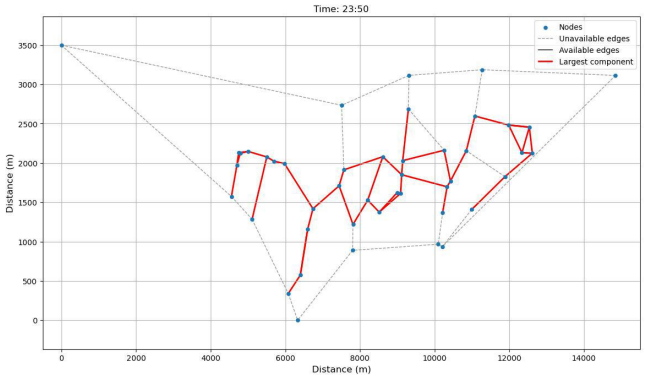
Largest component
Distance (m)
Distance (m)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Available edges
Largest component
Distance (m)
Distance (m)