

Infrastructure Mapper - Roads

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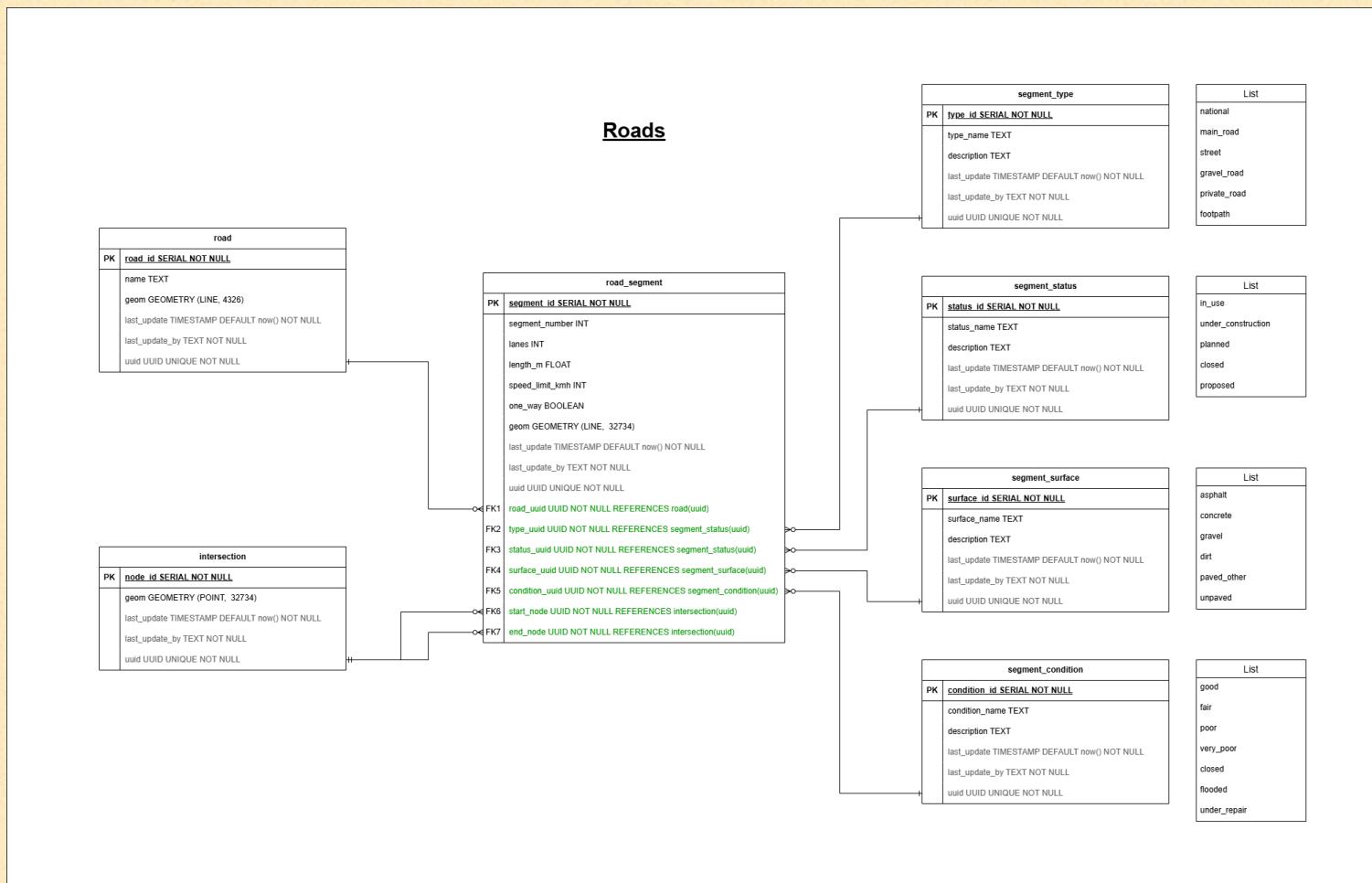
About Me

- Intern at **Kartoza**
- Background in spatial analysis
- Passionate about data-driven decision making, sustainable development, and map design

The Tools

- QGIS
- QFieldCloud
- PostgreSQL
- pgAdmin
- VS Code
- Marp
- GitHub

The Model



The Forms

Form Layout

id

Alias ID

Comment The unique intersection ID. This is the Primary Key.

Editable

Reuse last entered value Label on top

Form Layout

General

- segment_number
- lanes
- speed_limit_kmh
- one_way

Lookup

- road_uuid
- type_uuid
- status_uuid
- surface_uuid
- condition_uuid

Geometry

- start_node
- end_node

Alias Condition

Comment The foreign key which references the uid from the road segment condition table.

Editable

Reuse last entered value Label on top

Value Relation

Select layer, key column and value column

Layer Segment Condition

Key column abc uuid

Value column abc condition_name

✓ Add feature on Intersection ✎

ID
112

✓ Add feature on Road Segment ✎

General Lookup Geometry

Segment Number
1

✓ Add feature on Road Segment ✎

General Lookup Geometry

Road

Type
Street

Status
In Use

Surface
Asphalt

Condition
Fair

✓ Add feature on Road Segment ✎

General Lookup Geometry

Start Node
13

End Node
14

Lanes
2

Speed Limit (km/h)
40

One Way
False



Rose Street

Berg Street

Field Collection

Data collected in the field using mobile GIS apps and GPS-enabled devices.





Collection Results

- **Total features collected:**
 - Points: 108
 - Lines: 139
- **Area covered: 1.9 km^2**



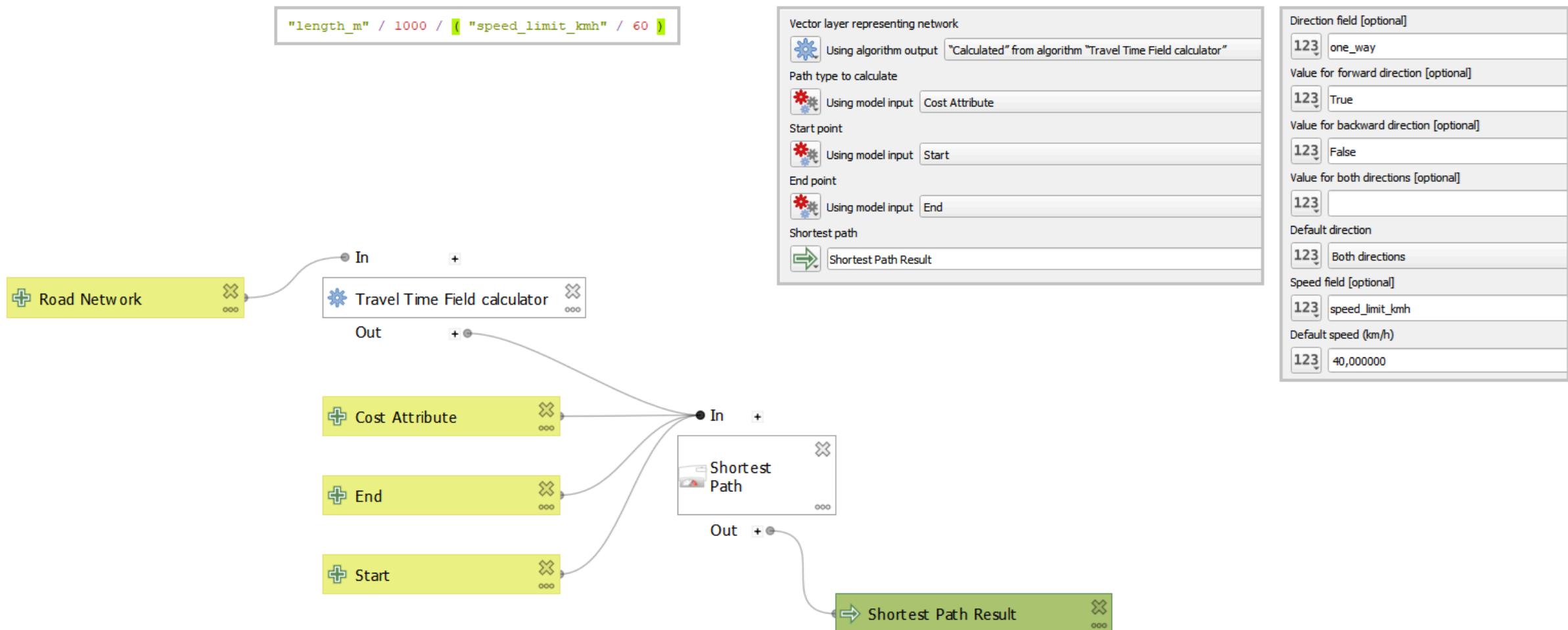
Analysis Problem

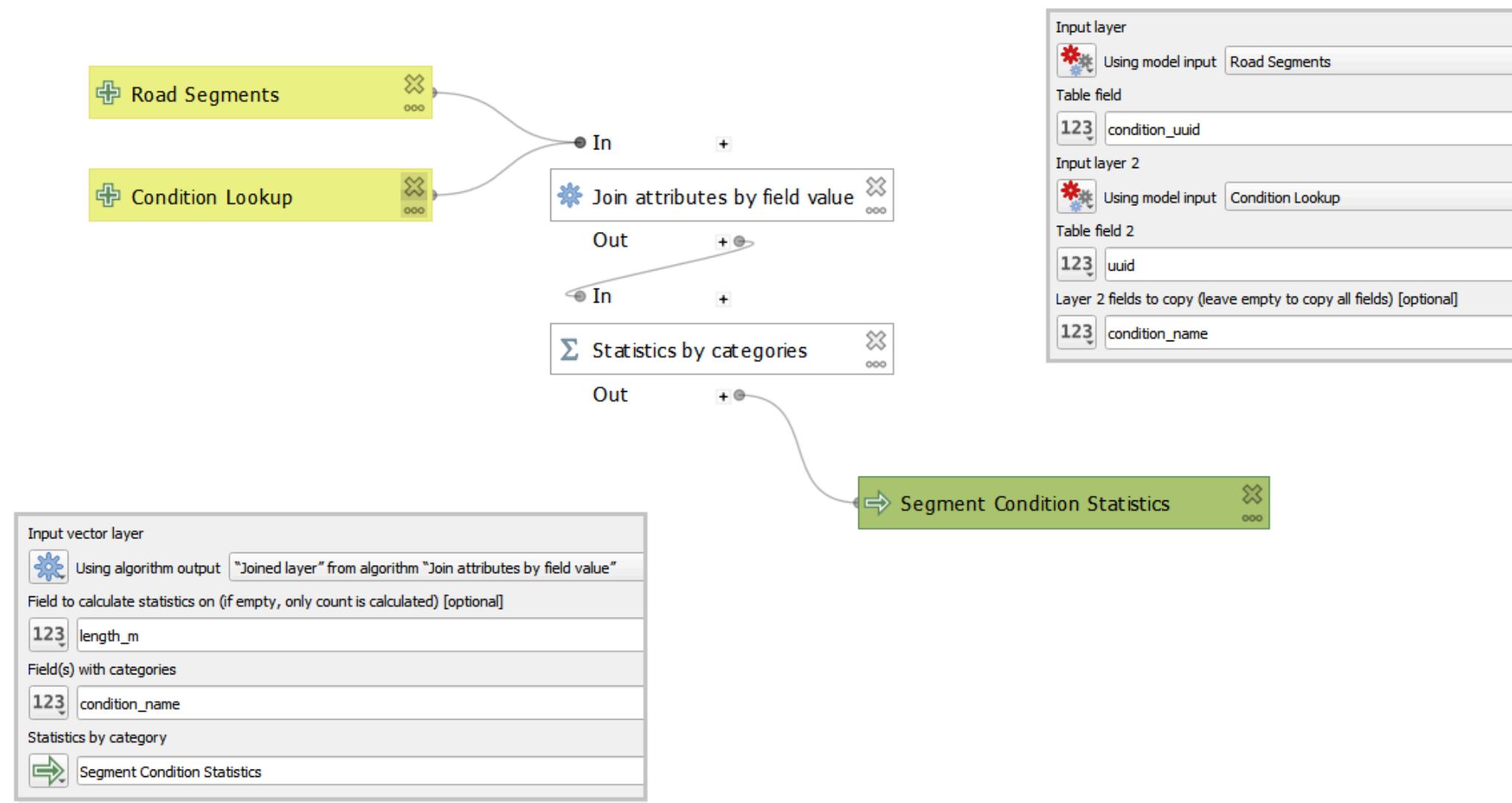
- Routing analysis
- Road condition assessment



Methodology



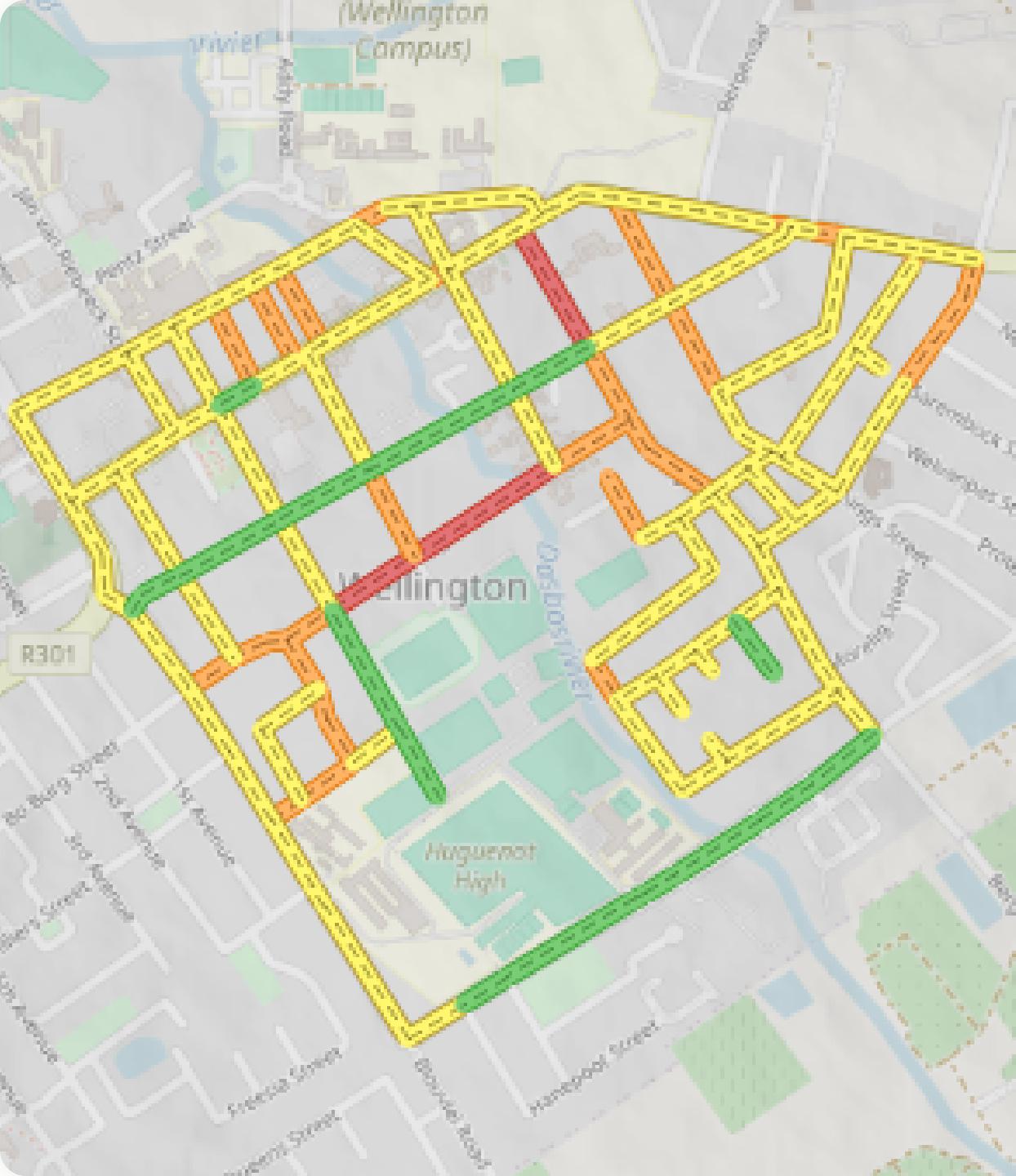




Results - 1

Shortest distance analysis





Results - 2

Road condition

Insights

- 30 segments need repair (~2,6 km total)
- 3 segments critical (~639 m total)

🔧 Recommendation:

- Redo entire Burg Street

Further Research

If I had more time, I would:

- Use more advanced networking tools (pgRouting)
- Digitize bridge and speed bump features
- Increase the study area



My Internship Experience

Highlights

-  Learned to use QGIS and multiple other software/tools
-  Collaborated on a real project and gained practical experience
-  Gained confidence in presenting and communication
-  Learned effective time management

Contact Me

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