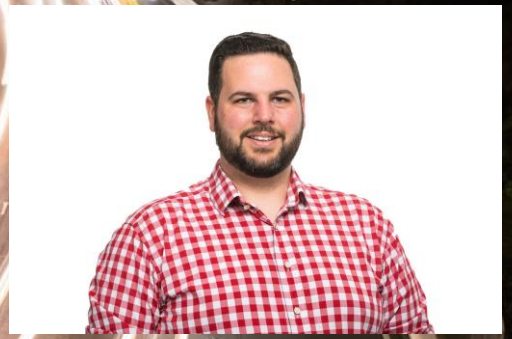
Valuing safety, resilience and efficiency

Reframing Network Efficiency for Safety Projects



Chris Blackmore
Principal Transport Planner
Abley, Christchurch

Please note:

- This is discussion of a proof-of-concept level analysis
- Method and analysis are only discussed at a high-level here.
- Abley are distributors and solution provider partners with TomTom. Thanks to TomTom for allowing the data to be used in this think piece.

Safety … prove netwo…

NZ news | Auckland

Electric … Aucklan…

Four-ve… betwee…

Stuff reporter

January 30, 2026 · 5:07pm

Just In

Fire and Emergency battle blaze at Taupō highschool

8 mins ago

Taupo high school on fire

…er …ay

895 4

If a key GPS aim is to improve network efficiency and resilience, surely reducing disruption from road closures should be considered in assessments of safety benefits?

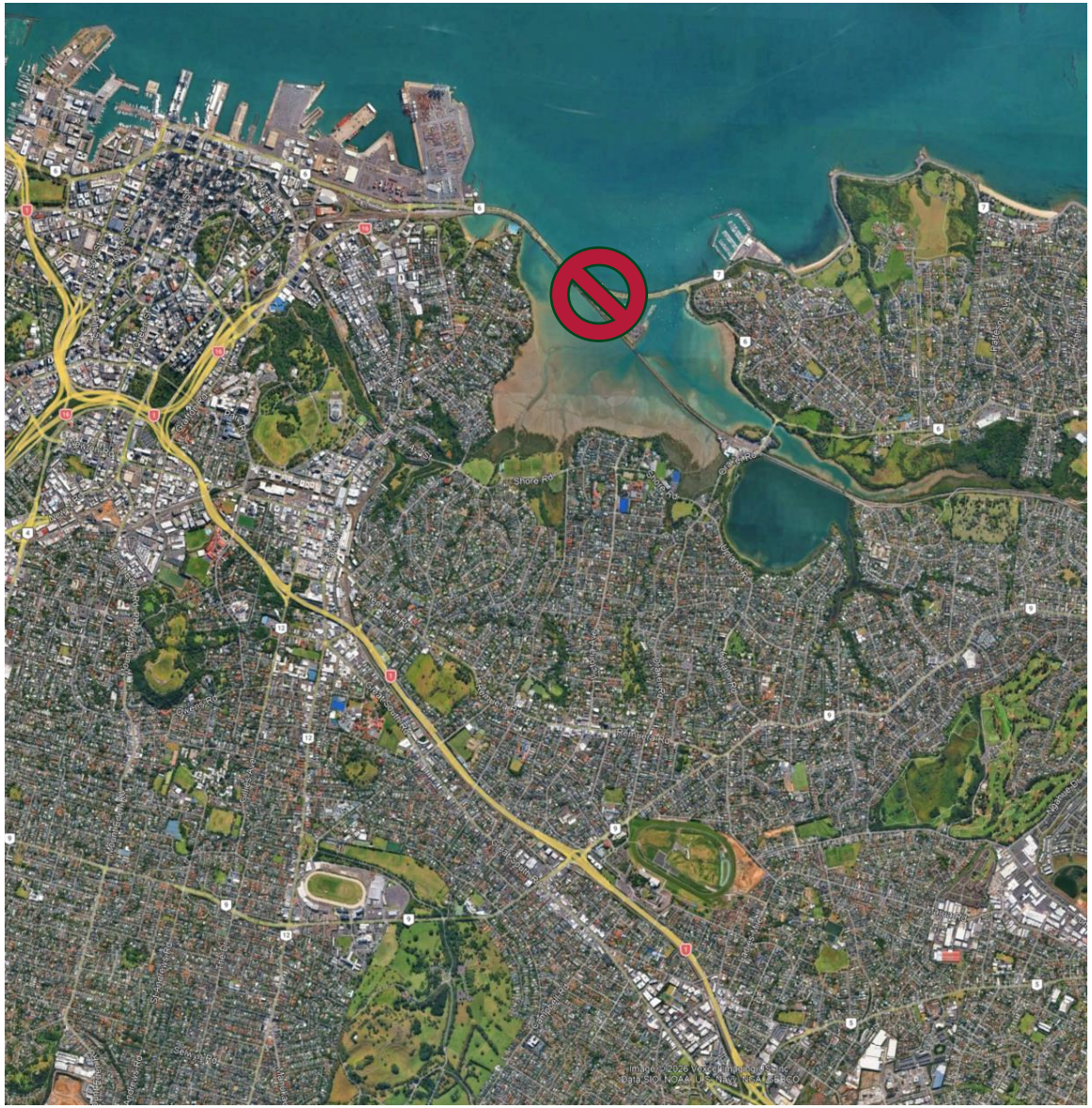
What our standard appraisals can miss

- Based on Value of Statistical Life
  - ~$14M per fatality (2024$)
  - Robust history and consistent with international comparisons
- Appraisals rarely capture wider impacts
  - Network-wide delays
  - Detours
  - Freight impacts
  - Forgone trips
- Miss disruption costs = undervalue safety interventions

One closure, one day, tens of thousands of lost hours

- Tamaki Dr ~24-hour closure
- Key link between Eastern Bays and Auckland Central
- Wide range of network impacts

Closure Impacts:
39,300hr net delay
$7.4-$10.5M network delay



Data now makes network disruption measurable

- Connected vehicle datasets aggregate operating information from multiple sources
  - Vehicle operating systems (telematics)
  - In-vehicle navigation
  - App-based navigation
- Can analyse and report a range of variables
  - Vehicle speeds
  - Braking, acceleration, cornering forces
  - Vehicle volumes (sample counts)
- A range of providers in New Zealand
  - TomTom
  - HERE Technology
  - Compass IOT

tomtom

Independent location technology specialists.

The leading independent location technology specialist, who are shaping mobility with **highly accurate maps**, **navigation software**, **real-time traffic information and services**.

Microsoft precisely CARTO Uber SUBARU HYUNDAI TOYOTA

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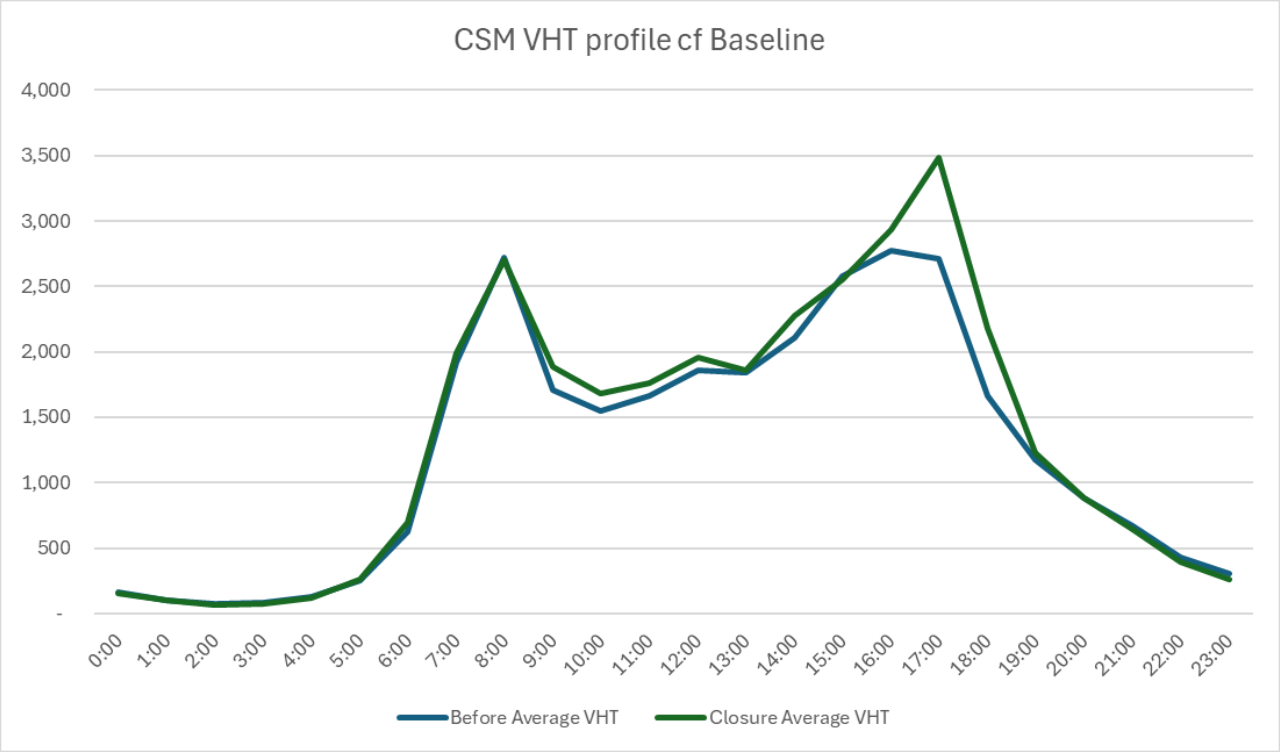
High-level method

1. From TomTom Area Speed report:
   - Baseline: Three months prior to closure
   - Test: Day of closure
   - Average sample count and vehicle speeds by hour
2. FME workbench compares baseline and test data by link
3. Specific adjustments
   - Difference in traffic volumes
   - HV proportions
   - Area sample rate
4. Quantify overall impact and monetise




0500 - 0600
Closure location
Direction of visible segments
Both
One direction
25
50
75
100
150
200
400 %
OpenStreetMap | TomTom


0600 - 0700
Closure location
DOWNTOWN
Mechanics Bay
Auckland Central
University of Auckland Law School
Auckland Strand
Auckland
Parnell Railway Station
Parnell
Grafton
Grafton Station
Newmarket
Broadway Park
Mount Eden
Remuera
Remuera Railway Station
Epsom
Orakei
Orakei Railway Station
Takaparawha Regional Park
Mission Bay
Kohimarama
Saint Heliers
Meadowbank Railway Station
Meadowbank
Saint Johns Park
Saint Johns
Glen Innes
Glen Innes Railway Station
Abbotts Way
Point Eng
Direction of visible segments
Both
One direction
25
50
75
100
150
200
400 %


0700 - 0800
Closure location
Direction of visible segments
Both
One direction
25
50
75
100
150
200
400 %
Auckland
Auckland Central
Mechanics Bay
Auckland Strand
Parnell Railway Station
Parnell
Grafton
Grafton Station
Newmarket
Broadway Park
Mount Eden
Remuera
Remuera Railway Station
Epsom
Orakei
Orakei Railway Station
Takaparawha Regional Park
Mission Bay
Kohimarama
Saint Heliers
Meadowbank
Meadowbank Railway Station
Saint Johns Park
Saint Johns
Glen Innes
Glen Innes Railway Station
Abbotts Way
Ngahue Drive
Market Road
Mountain Road
Bay Road


0800 - 0900
Closure location
Direction of visible segments
Both
One direction
25
50
75
100
150
200
400 %
Auckland
Auckland Central
Mechanics Bay
Tamaki Drive
Parnell
Grafton
Newmarket
Broadway Park
Mount Eden
Remuera
Epsom
Orakei
Takaparawha Regional Park
Mission Bay
Kohimarama
Saint Heliers
Meadowbank
Saint Johns Park
Saint Johns
Glen Innes
Point England
Abbotts Way
Ngahue Drive
Meadowbank Railway Station
Orakei Railway Station
Remuera Railway Station
Glen Innes Railway Station
Grafton Station
Parnell Railway Station
Auckland Strand
Market Road
Mountain Road
Bay Road


0900 - 1000
Closure location
Direction of visible segments
Both
One direction
25
50
75
100
150
200
400 %
Auckland
Auckland Central
Mechanics Bay
Tamaki Drive
Auckland Strand
Parnell Railway Station
Parnell
Grafton
Grafton Station
Newmarket
Broadway Park
Mount Eden
Mountain Road
Remuera
Remuera Railway Station
Market Road
Epsom
Takaparawha Regional Park
Orakei
Orakei Railway Station
Meadowbank Railway Station
Meadowbank
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Kohimarama
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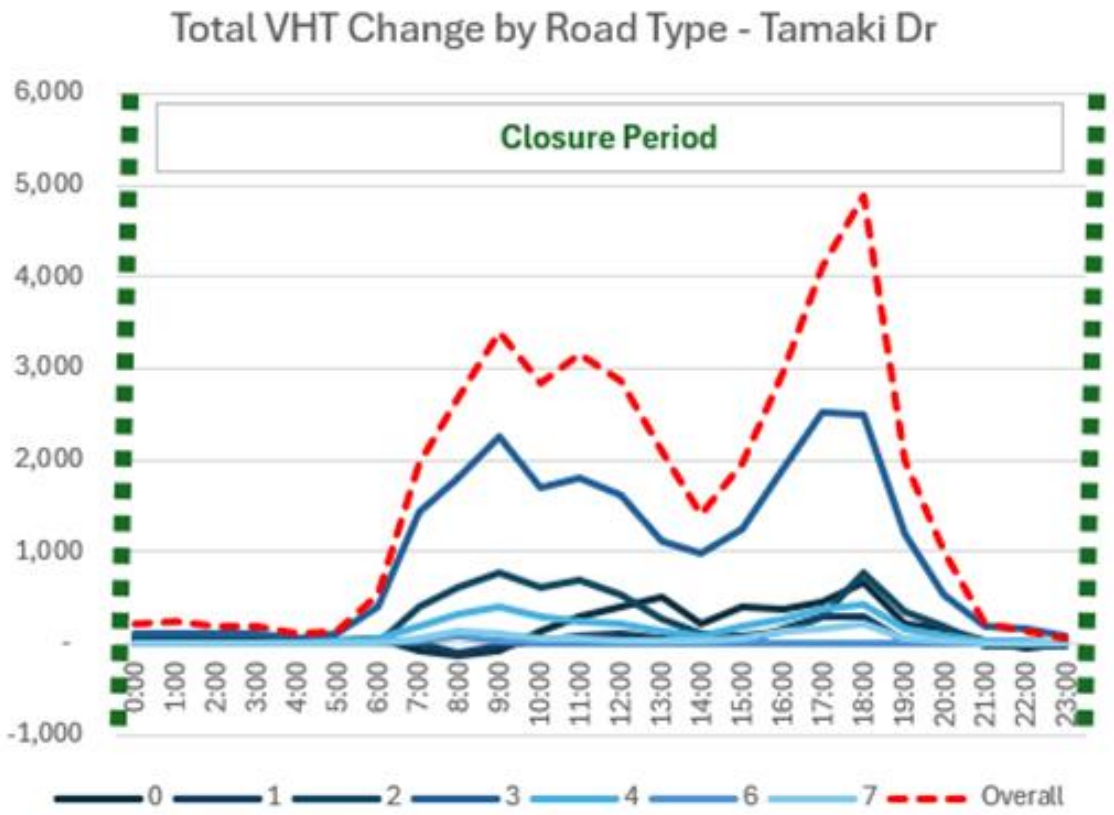
Saint Johns Park
Saint Johns
Glen Innes
Glen Innes Railway Station
Ngahue Drive
Abbotts Way
OpenStreetMap | TomTom

Case Study Impacts – Tamaki Dr



Case Study	Closure Type	Impacts	Network Cost
Tamaki Dr	24hr full	+39,300 VHT	$7.4-10.5M

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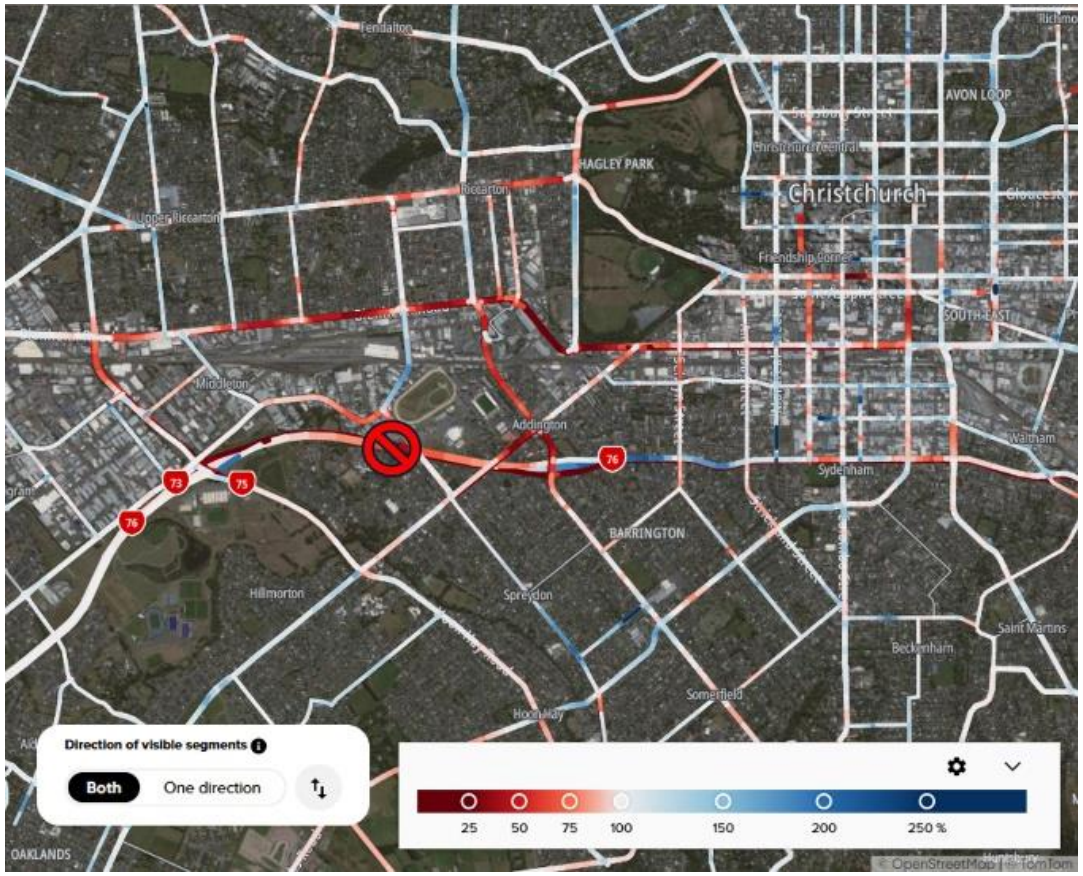
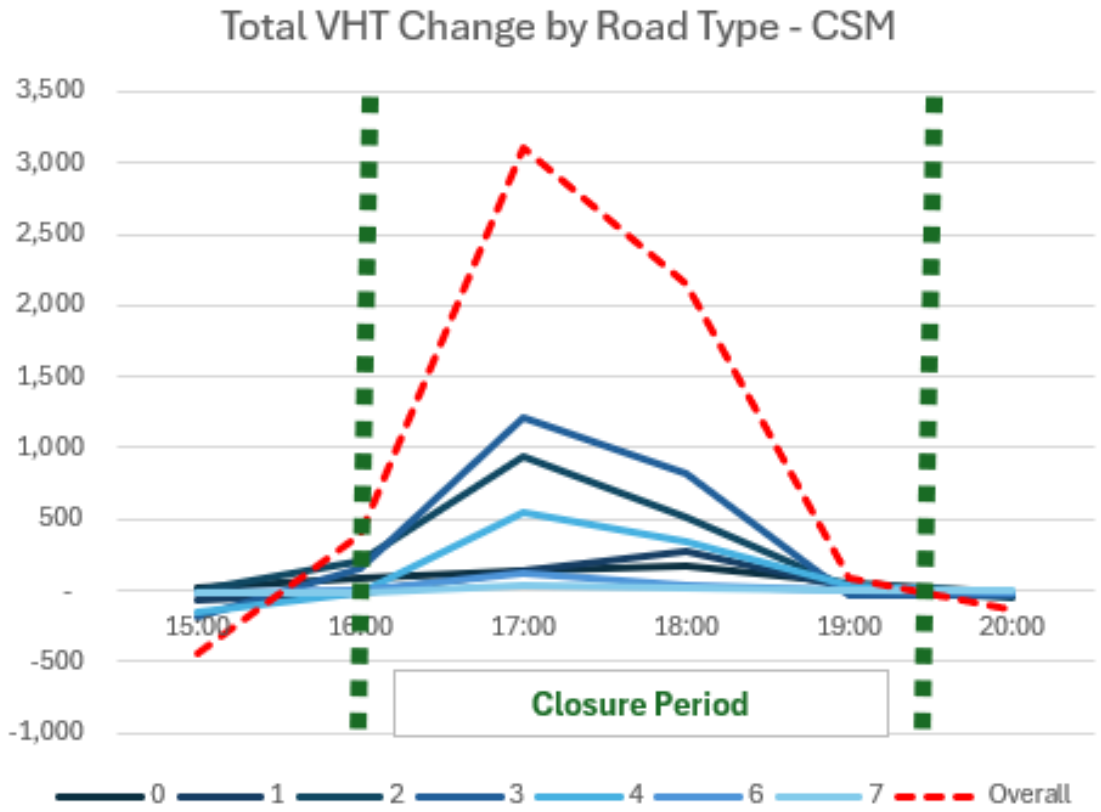
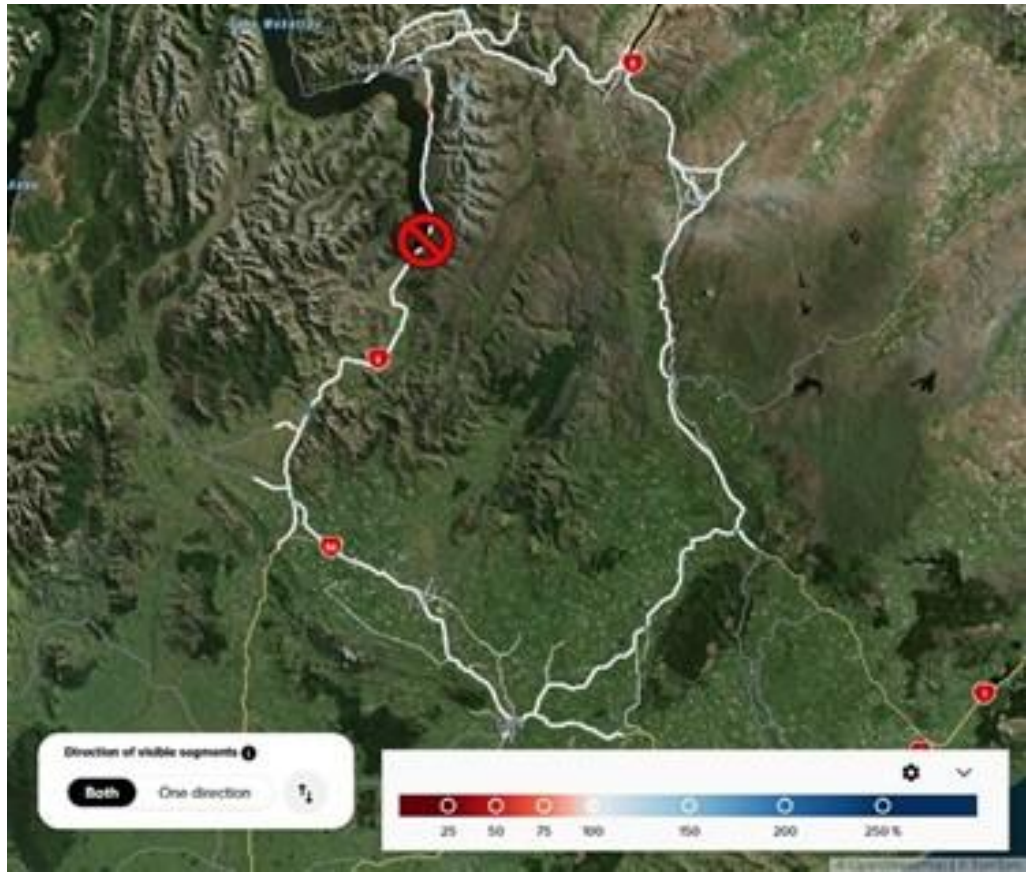
Case Study Impacts – CSM

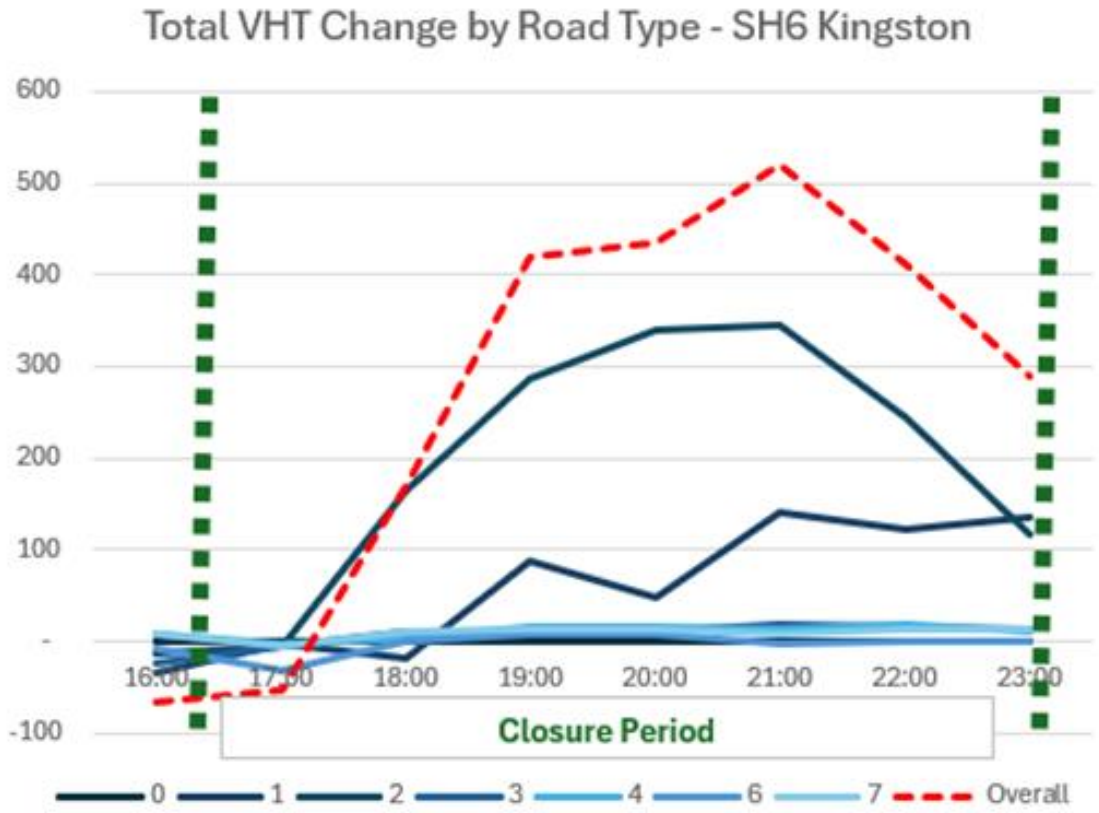




Case Study	Closure Type	Impacts	Network Cost
CHC Southern Motorway	1hr full + 3hr WB only, PM peak	+5,750 VHT	$1.2-1.7M

Case Study Impacts – SH6 Kingston





Case Study	Closure Type	Impacts	Network Cost
SH6 Kingston	10hr overnight, limited detours	+2,200 VHT +210k VKT	$0.6-0.8M

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Key Takeaways

- Not considering network disruption under-values the impact of road disruption
- Connected vehicle datasets can be used to look at actual impacts of disruption
- We can measure the impacts and value the delays
- Can be undertaken for any road closure in the last two years (current method)

Thanks for listening!

Open to any questions / discussion during or after the conference – just let me know!

Chris Blackmore
Principal Transport Planner
Abley, Christchurch

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Auckland
Level 1/70 Shortland Street
Auckland 1010
Aotearoa New Zealand

Wellington
Level 1/119-123 Featherston Street
Wellington 6011
Aotearoa New Zealand

Christchurch
Level 1/137 Victoria Street
PO Box 36446, Merivale
Christchurch 8146
Aotearoa New Zealand

hello@abley.com
+64 3 377 4703
abley.com