Dynamic Lanes – Sweating the Asset

Whangaparaoa Road Trial Transport Assessment

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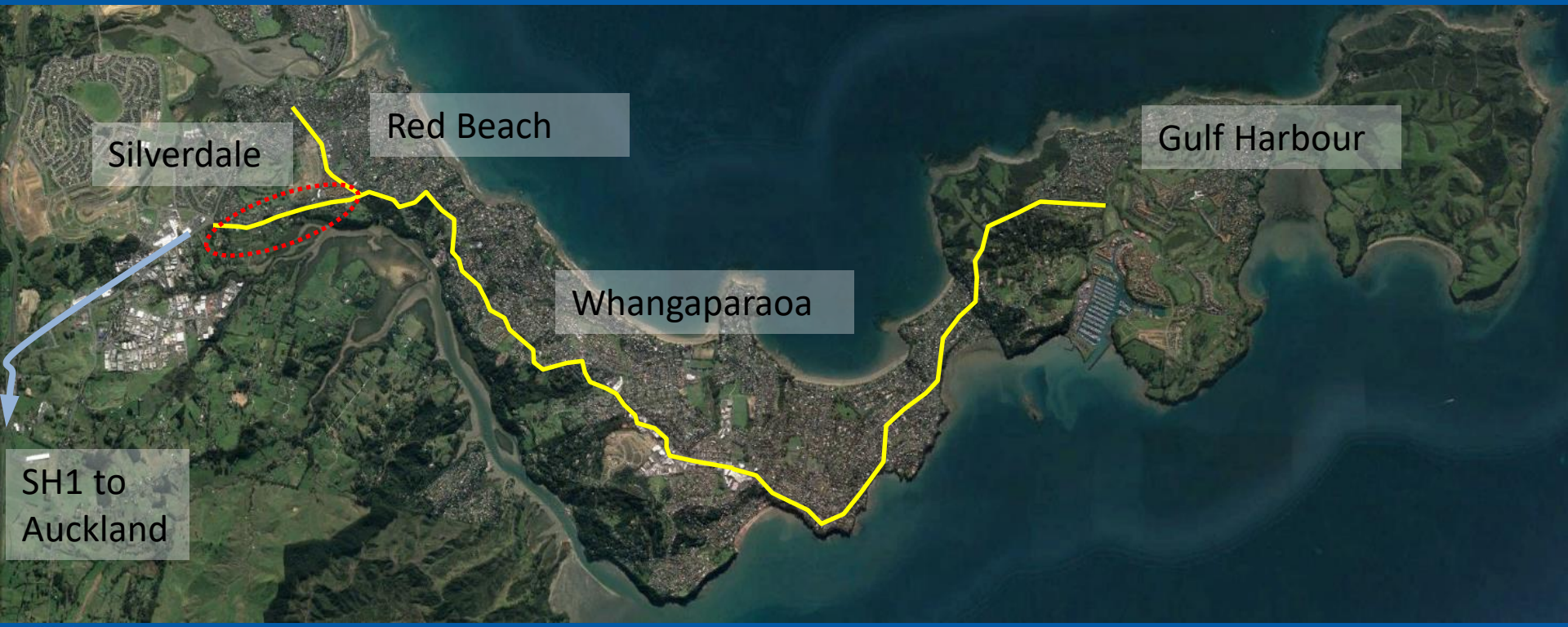
Terry Church
Senior Associate

Presentation Outline

- Corridor overview
- What are Dynamic Lanes
- Assessment
- Assessment predictions (Operation and Safety)
- Implementation
- Review Comparisons
- Where to from here

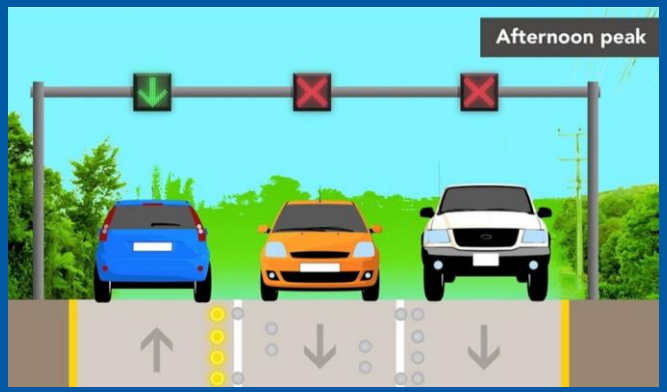
Corridor Overview

- Whangaparaoa Peninsula - one road in, one road out (Whangaparaoa Road)
- 13,000 households
- Population 34,000 people
- Main bottleneck is the Hibiscus Coast Highway/Whangaparaoa Road/Millwater Parkway intersection
- Daily traffic (two way) through study section = 25,000 to 30,000 vehicles per day
- Tidal Peak hourly traffic volume = 1,750 vehicles per hour



What are Dynamic Lanes

Terry Definition – *Dynamic Lanes*, adaptive traffic system that provides increased road capacity to improve the movement of tidal traffic flow



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Assessment Considerations

- Capacity of the receiving environment – shifting bottlenecks
- Safety – motorists and vulnerable road users
- Sufficient evidence to support trial

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Capacity Assessment – Check of Concept

- AM Peak – Capacity Assessment (westbound)

3,000 vph (Whangaparaoa Road)
200 vph (Red Beach Road)

1,950 outbound capacity ← 3,200 vph inbound capacity

Capacity Assessment – Check of Concept

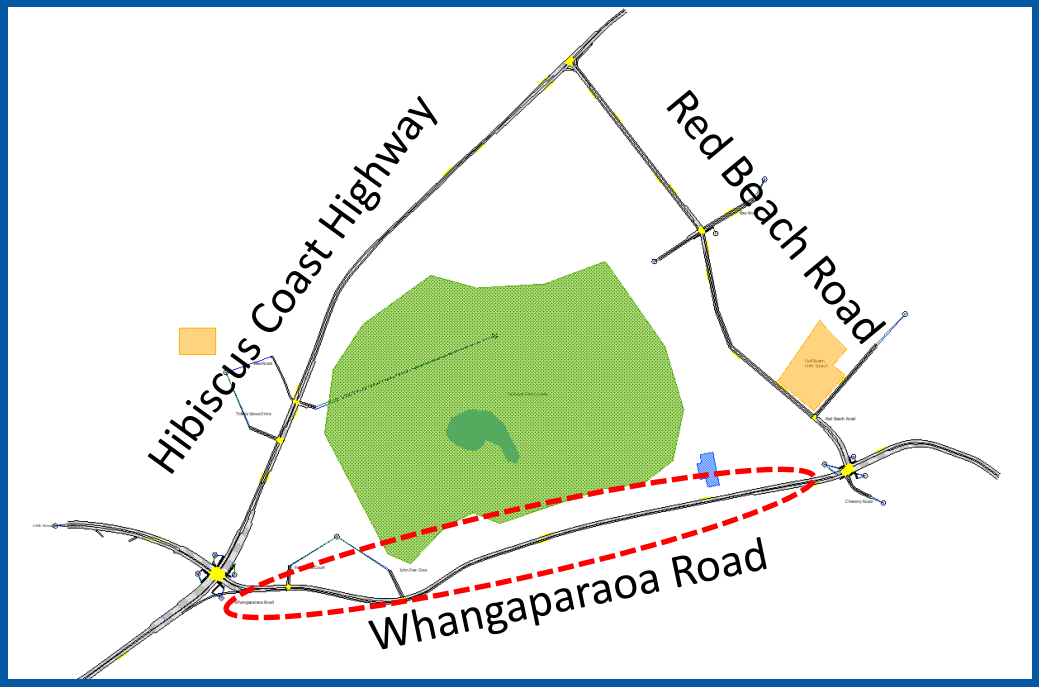
- PM Peak – Capacity Assessment (eastbound)

  1,450 vph (Hibiscus Coast Highway)
  300 vph (Millwater Parkway)
  1,750 inbound capacity → 2,100 outbound capacity

Assessment – AIMSUN

Benefits of corridor model

- Route assignment
- Better representation of Do Minimum constraints
- Travel time predictions through corridor (Whangaparaoa Road)
- Better understanding on signal phasing
  - Platooning (Hibiscus Coast Highway, Whangaparaoa Road)
- Wider economic benefits better understood



Predicted Assessment Outcomes

- Traffic flow increase
  - +200 vehicles per hour on Whangaparaoa Road eastbound
  - Shift from Red Beach Road to Whangaparaoa Road
- Reduction in travel times
  - Whangaparaoa Road (25% reduction, one minute +)
  - Red Beach Road – slight reduction 15 seconds
- Improvement intersection performance
  - Hibiscus Coast Highway/Whangaparaoa Road Intersection

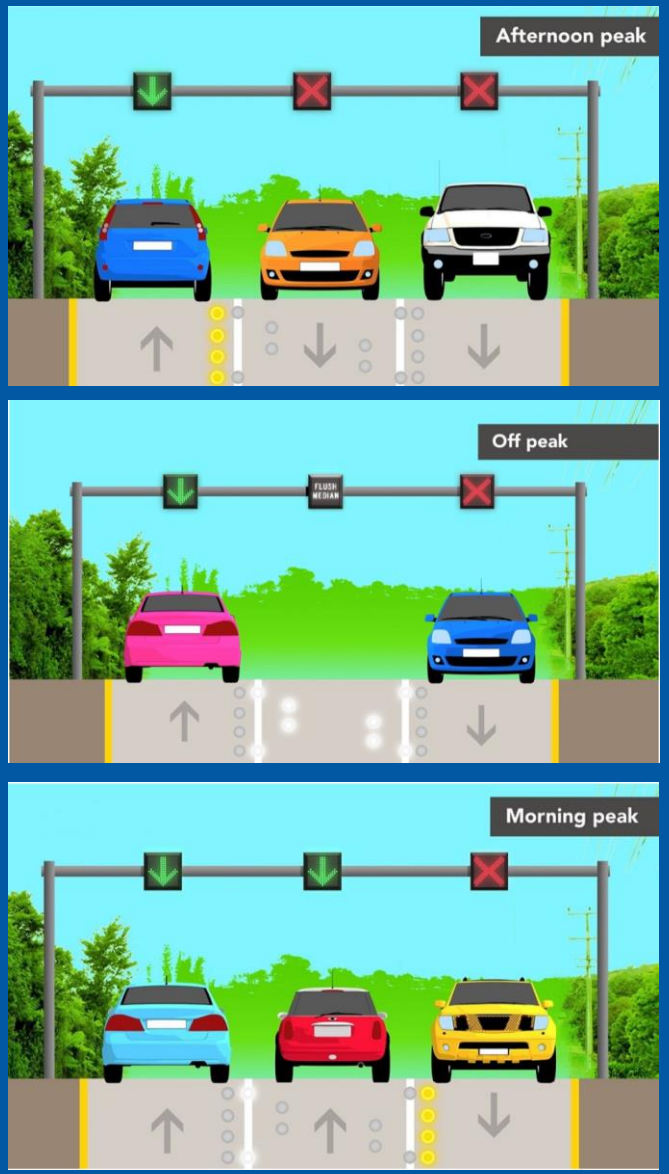
SAFETY – "Potential" Issues

- Head-on collisions through the inadvertent use of the flush median
- Turning into and out of driveways and side roads (spurred on by delay)
- Pedestrians crossing the road (removal of flush median and pedestrian refuge)
- Cyclists – no space for overtaking in a single traffic lane (counter peak direction)

Implementation

- 24 January 2018 Trial started (12 months)
- Initially PM (eastbound) 4:00 to 6:00pm
- 26 February 2018 PM time extended (to 7:00pm)
- May 2018 Trial extended to AM (westbound)

  6:00 to 9:00am
- Observations
- Reporting back to Board



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Operational Assessment

- Flow undertook extensive observations of the project from the Auckland Traffic Operations Centre (ATOC)
- Recommendations made to further enhance corridor performance during trial
- Comparisons between pre implementation and post implementation travel speeds
- Review of Crash Data

Comparisons

- Traffic Counts
  - Whangaparaoa Road +260 vehicles per hour PM Peak
  - Red Beach Road - 240 vehicles per hour PM Peak
- Phase Splits – only subtle changes observed
  - 3% or less at Hibiscus Coast Highway/Whangaparaoa Road Intersection
  - 9% or less at Whangaparaoa Road/Red Beach Road Intersection
- Improved operation of Hibiscus Coast Highway/ Whangaparaoa Road intersection

SAFETY – Crashes Recorded

- Fatal and Serious Crashes – None
- Minor or Non Injury (Crash Analysis System)

  - 3 rear end
  - 1 loss of control (drugs/alcohol suspected)
  - 1 hit parked car

  (3 occurred while dynamic lanes were operating)

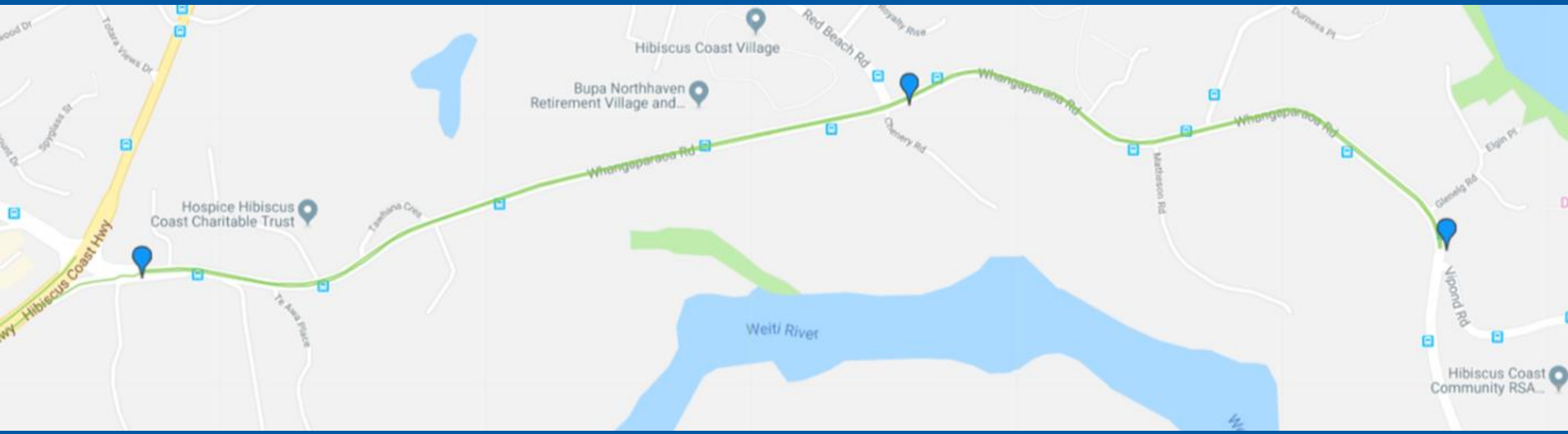
- Unreported crashes

  - 1 lane change crash westbound
  - 1 rear end in slow moving queue
  - 1 loss of control

- Dynamic lanes not considered to be a significant factor. Annual crashes fits with previous crash history

Comparisons

- Corridor Travel Times (Courtesy of TEAM WIFI Sites)
- Three WIFI Sites



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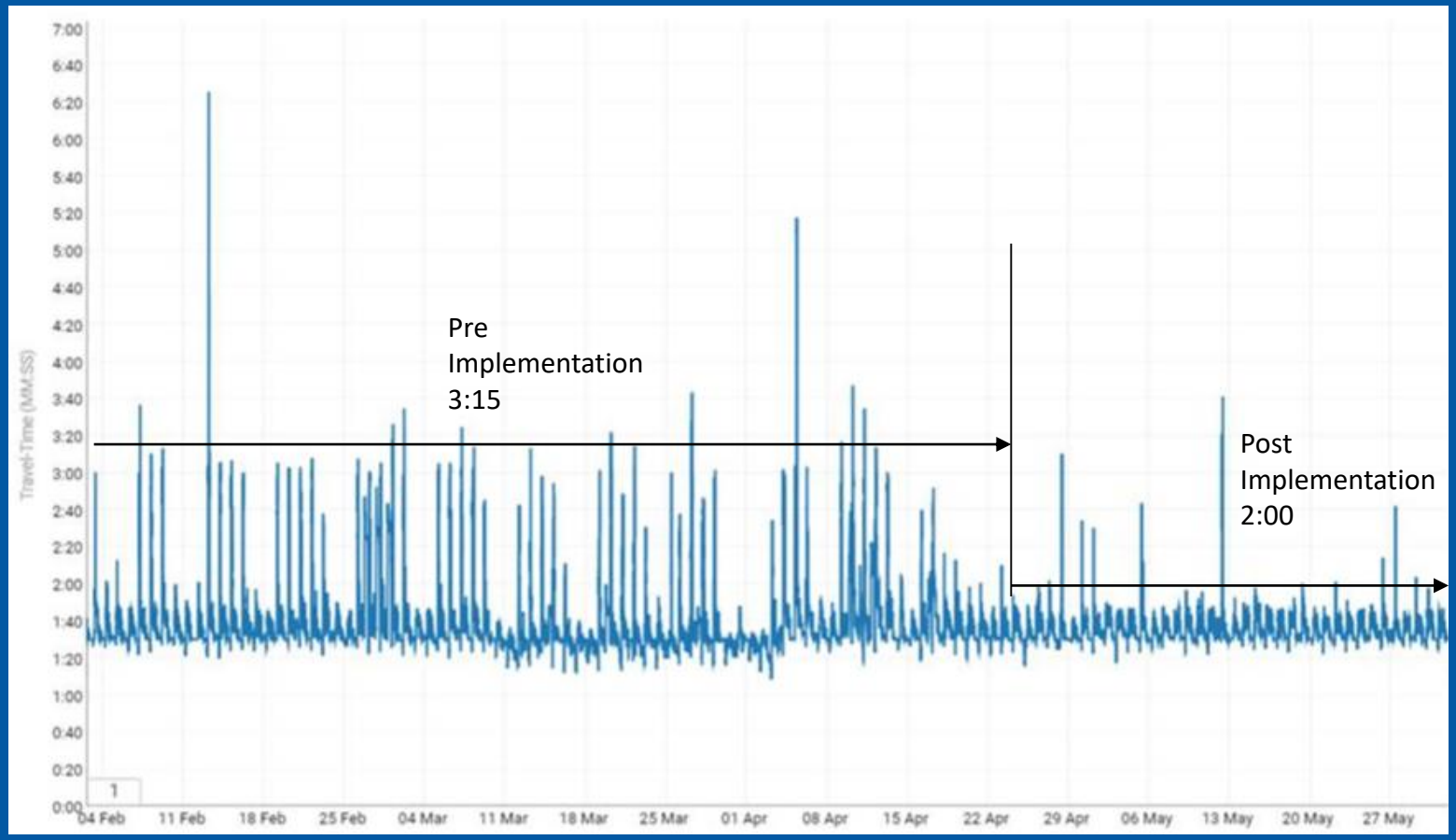
Comparisons

- AM Westbound – Red Beach Road to Hibiscus Coast Highway
- February 2018 to May 2018



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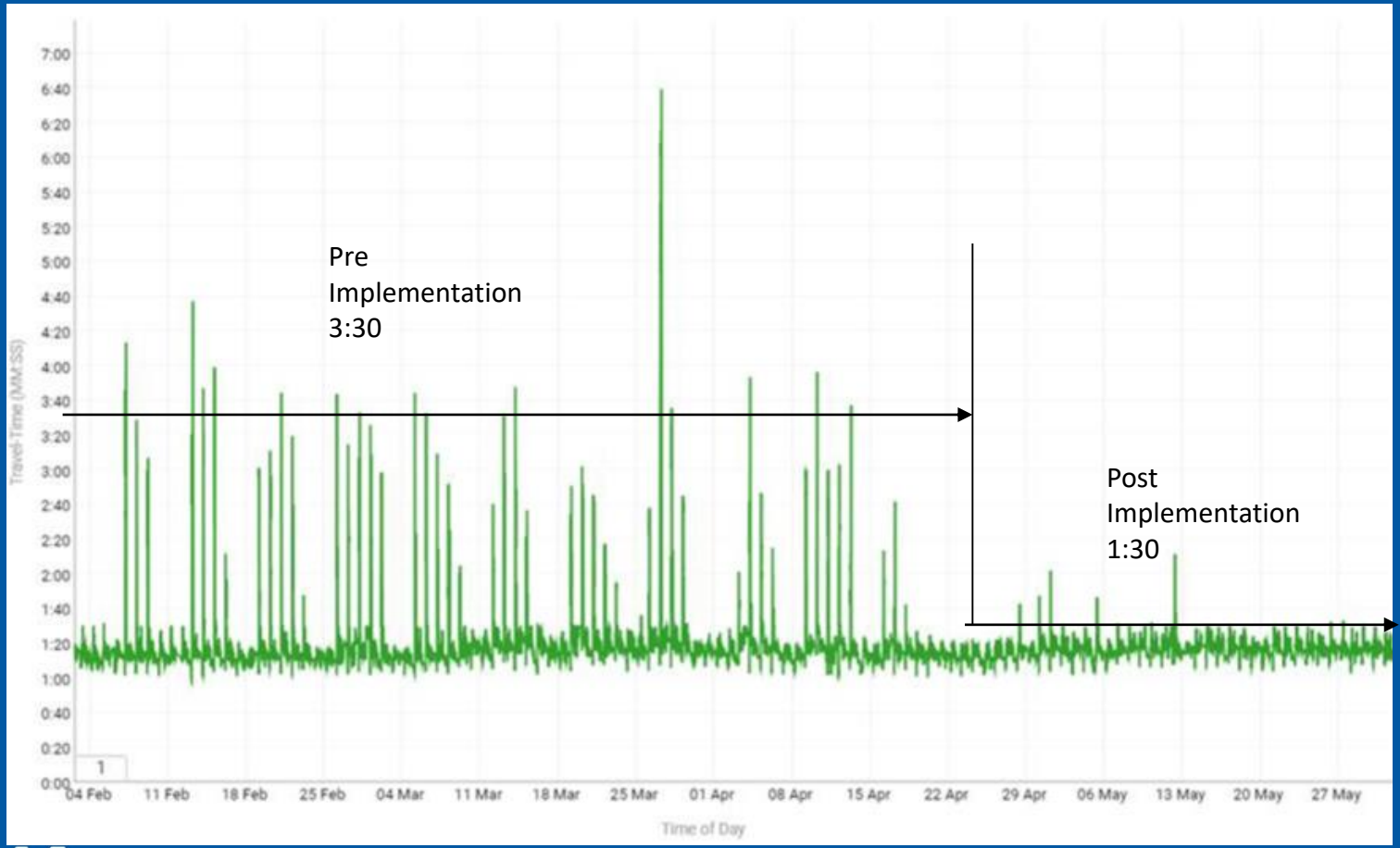
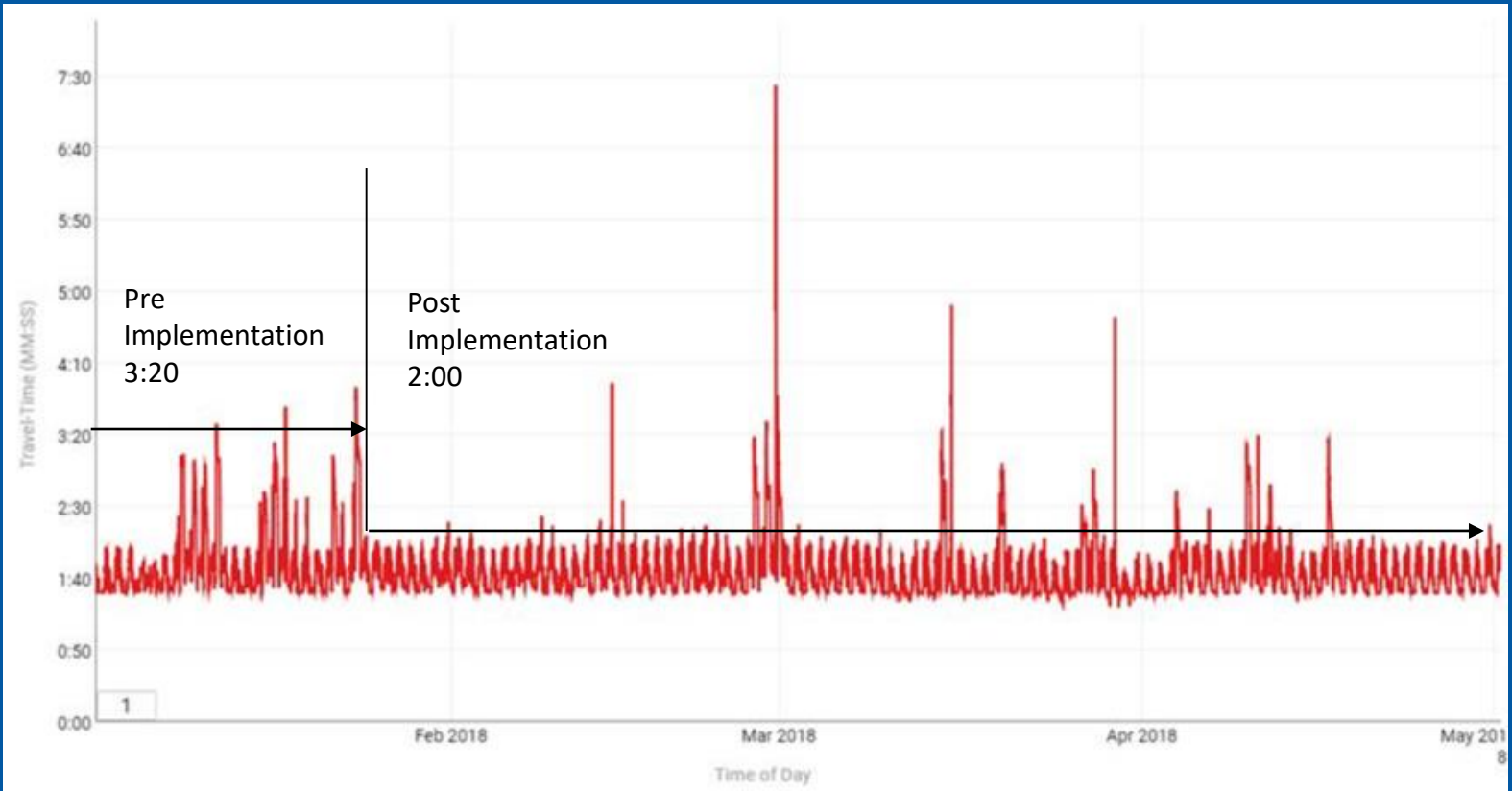
Comparisons

- AM Westbound – Vipond Road to Red Beach Road
- February 2018 to May 2018



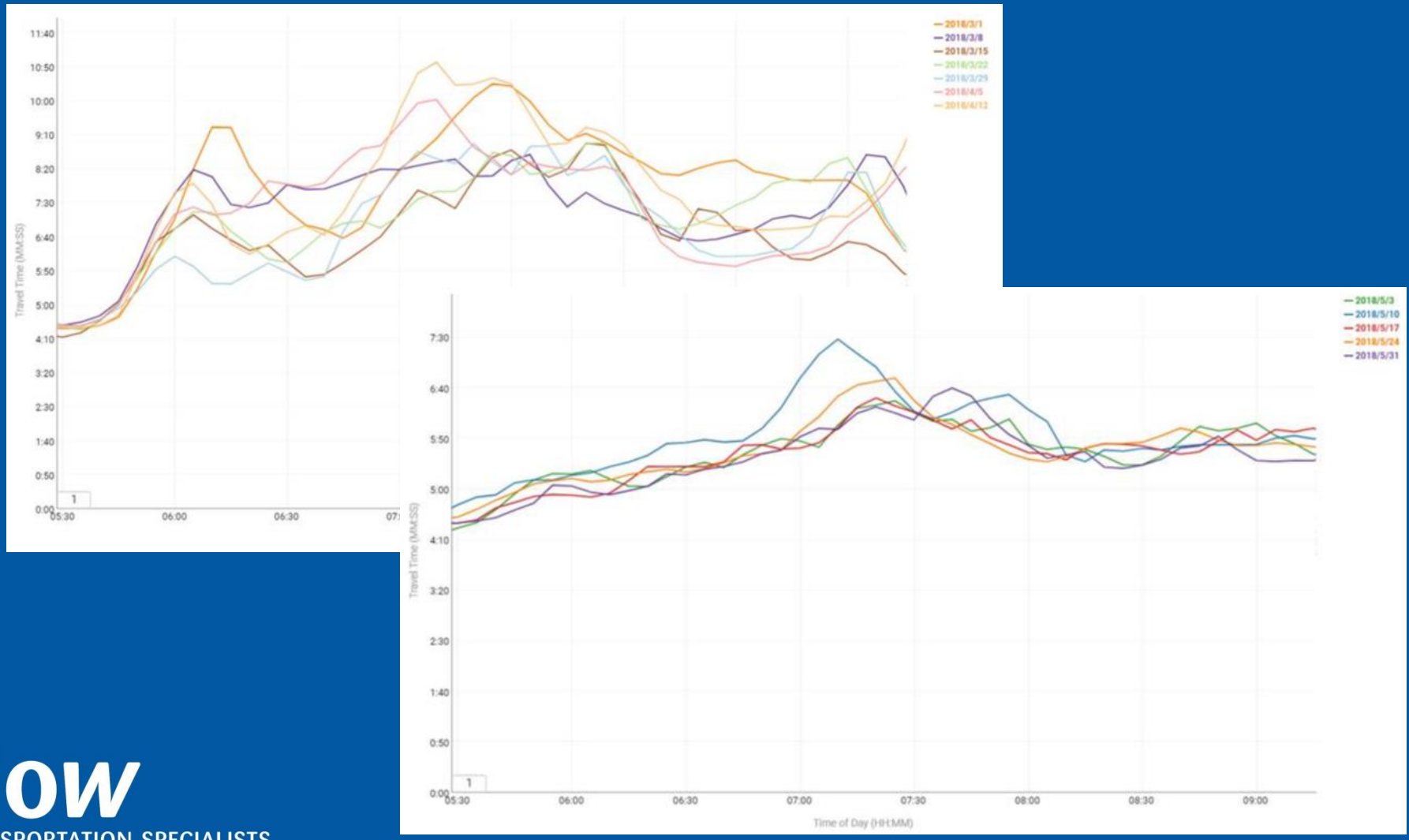
Comparisons

- PM Eastbound – Hibiscus Coast Highway to Red Beach Road
- January 2018 to May 2018



Comparisons

- Reliability (Westbound between Vipond Road and SH1 Silverdale I/C)



Where to from here

- Trial ticking the majority of boxes
- Auckland Transport reporting to NZ Transport Agency – Feb 2019
- Seeking approval for dynamic lanes to be treated as a formal road marking tool
- Seeking that dynamic lanes is incorporated into the Traffic Control Devices (TCD) Manual – Late 2019 (update)
- Other sites being investigated, as an extension to the trial
- Consideration of road space being used for T2, T3 and bus lanes, as examples.

Acknowledgements

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Thank You

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