

ITS in Tauranga

September 26,
430 - 630pm @ Beca



Tauranga City



Hosted

by



TRANSPORTATION
GROUP NEW ZEALAND



BAY OF PLENTY
REGIONAL COUNCIL
TOI MOANA



ITSNZ is New Zealand's peak body for Intelligent Transport Systems (ITS) and tech-enabled transport solutions.

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Upcoming Events



CSLi open Day - Auckland
Rosedale
October 4th



International Webinar on
C-ITS for TTM
October 8th



ITS Asia-Pacific Forum
2025, Suwon, Korea
May 28-30
Call for Papers Open

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ITS in Tauranga



Speakers

Organisation

Topic

Richard Eaton, Duncan Wilson, Jarrod Levet

Tauranga Traffic Operations Centre

ITS Initiatives for Efficiency and Safety

Melissa Winters

Bay of Plenty Regional Council

BOPRC Baybus *On Demand* Trial Update

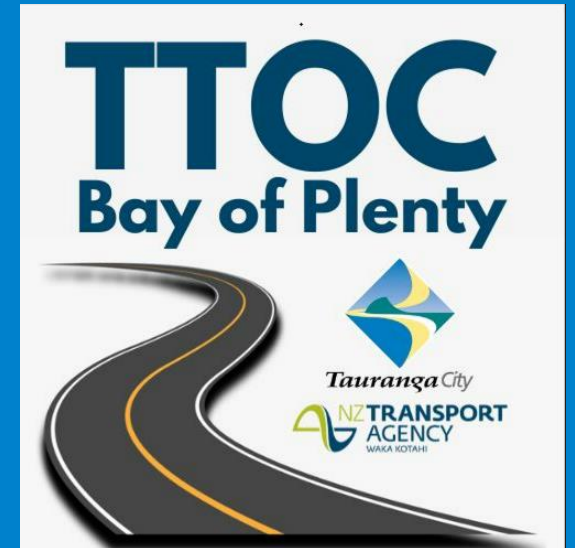
Peter Siemensma & Craig Richards

Tauranga City Council & Beca

Time in Use Charging

Tauranga Transport Operations Centre (TTOC)

Intelligent Transport System integration
26th September 2024



What is TTOC

- New Zealand's only Hybrid Traffic Operations Centre
- Partly funded through partnering agreements with NZTA, Rotorua Lakes Council & Taupo District Council
- Responsible for the Installation, Operation, Maintenance & Renewals of ITS devices in the Bay of Plenty region for our partner agencies
- 24/7 Operation with a Public safety and Traffic control focus
- All TTOC staff are employed by Tauranga City Council
- Deliver both Real Time Operations and Engineering services

Where we come from...

Started in 1995 as a small camera monitoring operation funded by Tauranga City Council in response to anti-social behaviour

Tauranga Camera Room



Mount Camera Room



Where we are now...

Modern Operations Centre funded by Tauranga City and NZTA

Tauranga Transport Operations Centre



Where we will be early next year...

New Operations Centre with increased capacity

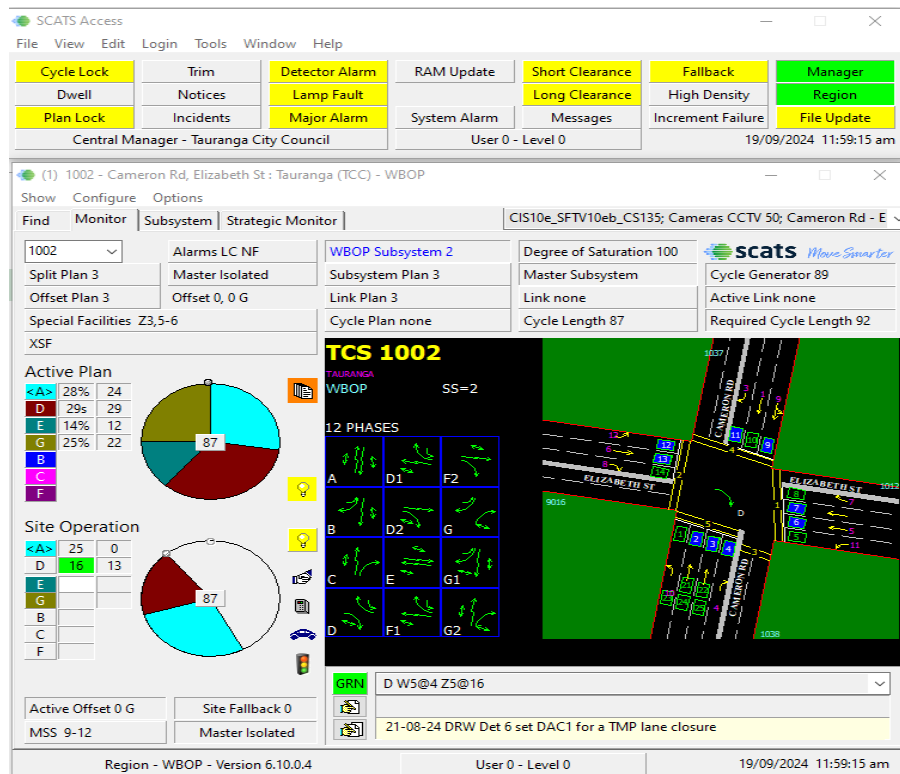


Who operates TTOC

- **Richard Eaton** manages the TTOC operation
- **Dave Warner** leads a team of 7 Real-time operations staff
- **Duncan Wilson**, Traffic Systems Engineer is our SCATS expert, configuring site operation and optimizing the network
- **Jarrold Levett** and **Kahn Day** design and implement ITS solutions, organising the installation, Configuration, Maintenance, Operation and Renewal of the assets
- **Mark Hollows** and **Kyle Willoughby** manage the ITS contracts for Traffic signals and Streetlighting.

TTOC ITS essentials

TfNSW **SCATS** – Adaptive traffic control system



105 Sites across three cities under TTOC control

Real time adjustment of phase splits and cycle times

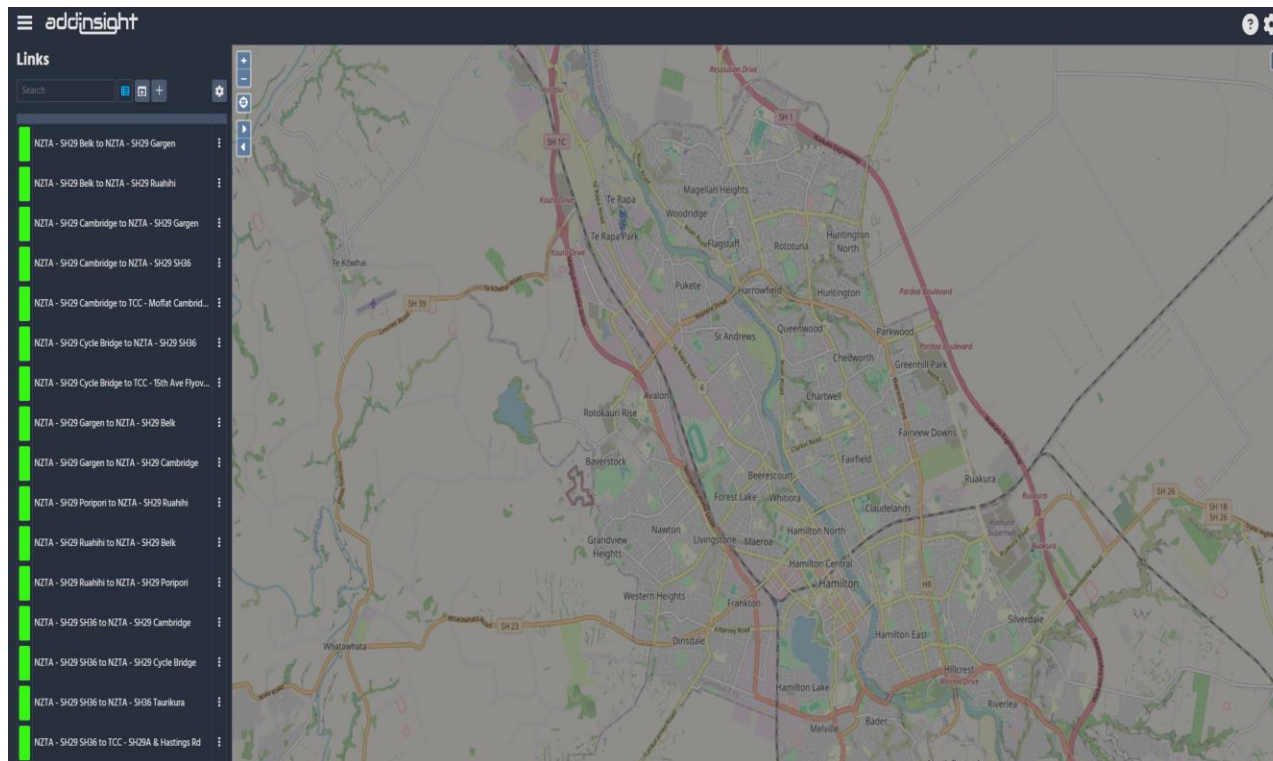
Enable provision of coordinated corridors (green wave function)

Real time intervention capability for TOC Operators (phase dwells)

Real time health monitoring (Lamp & detector faults)

TTOC ITS essentials

Sage **Addinsight** – Origin/Destination information & reporting



Bluetooth transmission sensing probes

Collects & analyses movement data

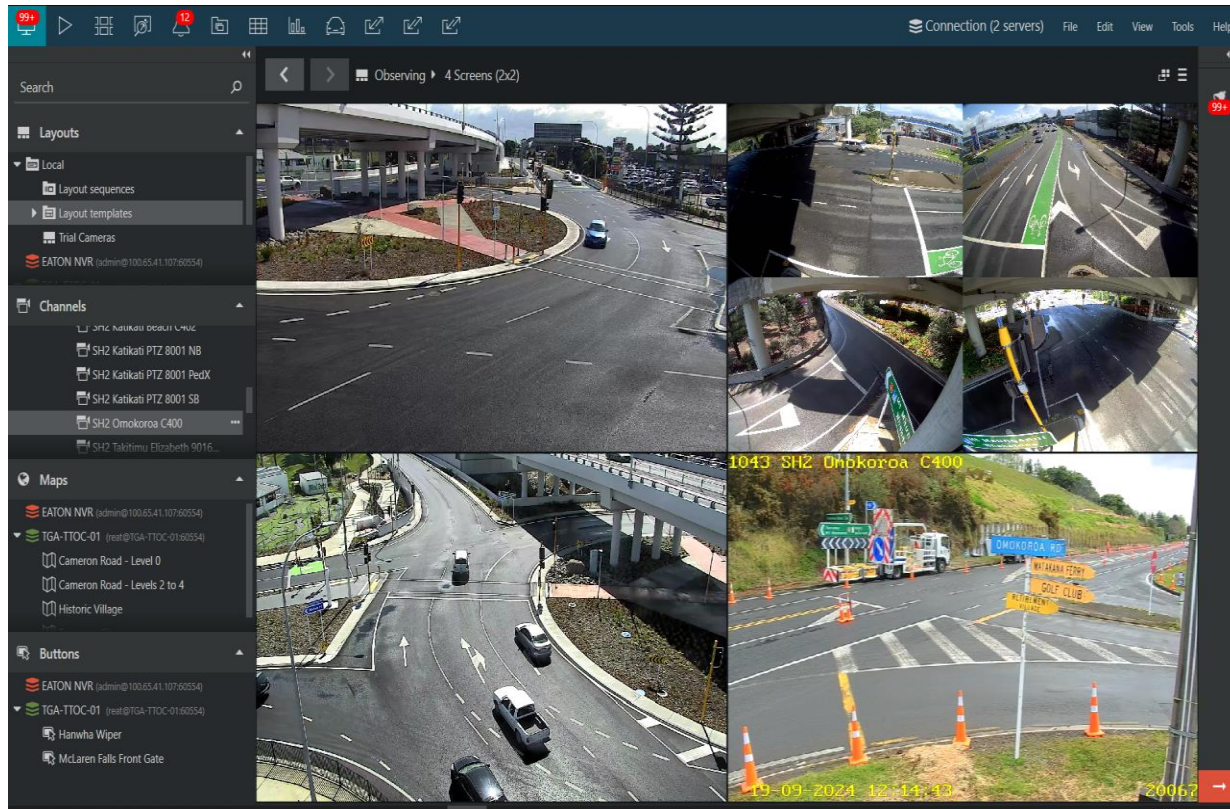
TMC mode alerts of unusual congestion or incidents

Transport planning and Traffic modelling

Full API to integrate with other systems

TTOC ITS essentials

Luxriot - Video Management System (VMS)



Enterprise level video monitoring

Smart search tools

Comprehensive video wall display

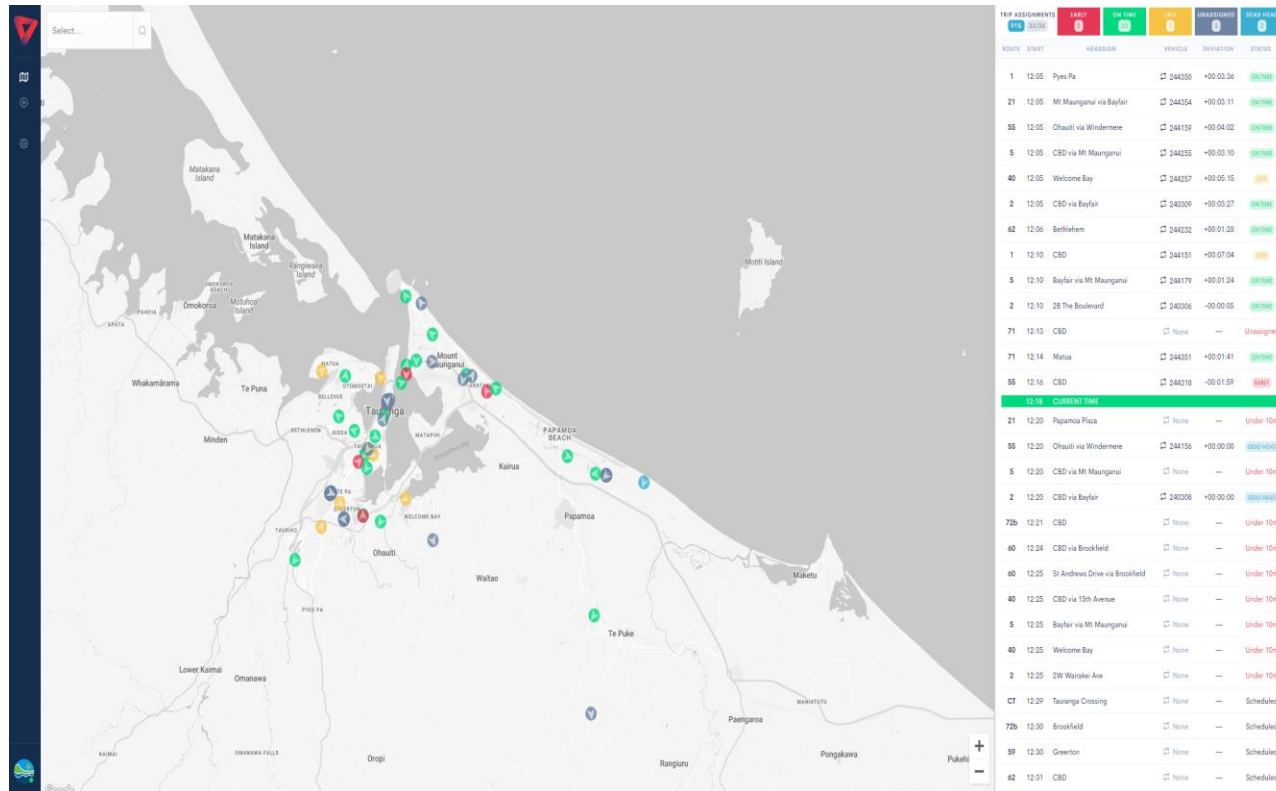
Central server governance

Powerful analytics, LPR, object detection

API integration via MQTT, IoT etc..

TTOC ITS essentials

Radiola - **DYNAMIS** real time bus information system



Real time bus travel information including schedule status i.e Early, Late & On time

Assists in detecting congestion

Linked via an API to a virtual SCATS site, which activates a switch when a bus occupies a geolocation point

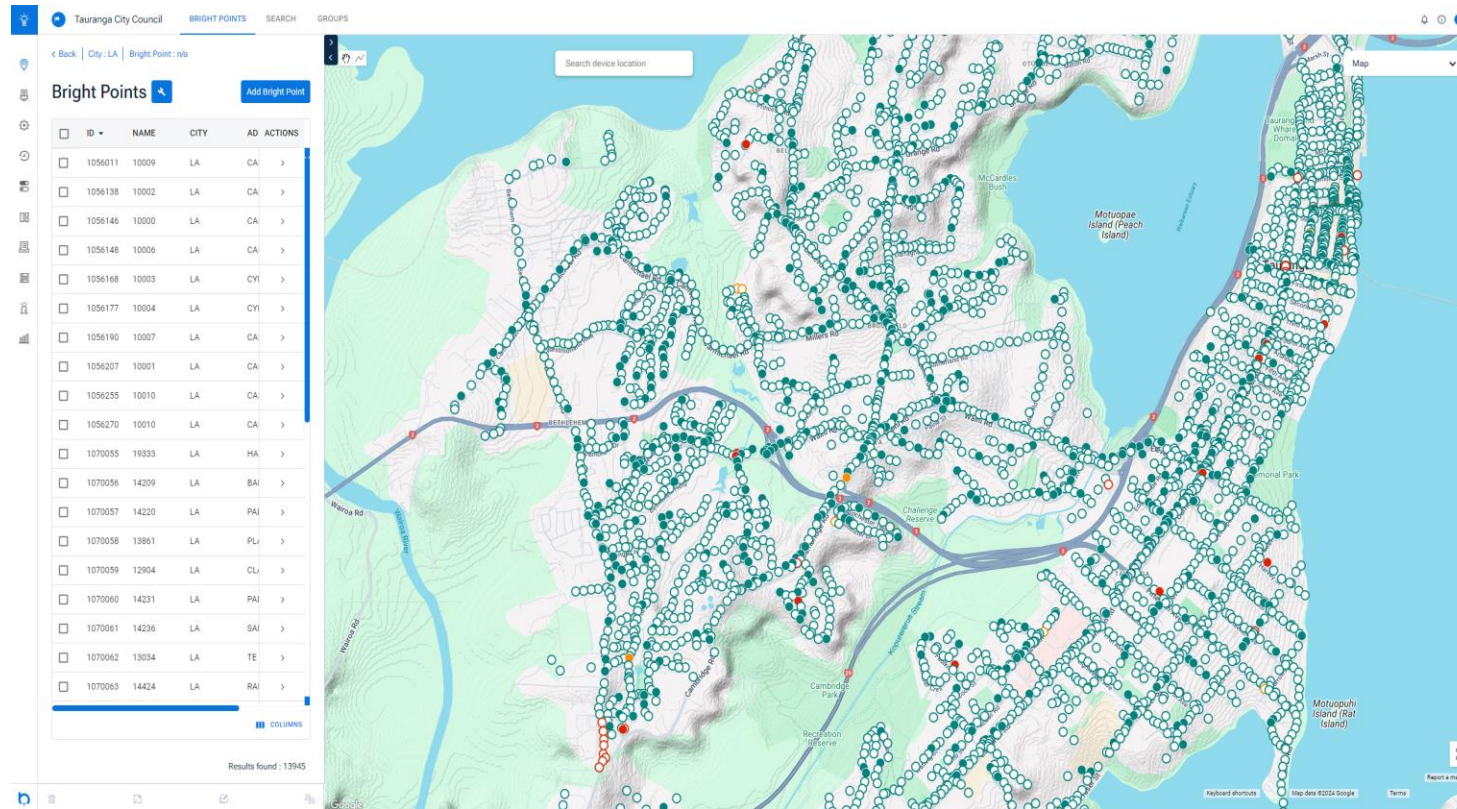
SCATS logic then determines whether to dwell a phase for this bus at the nominated intersection and allow the bus to continue

Each intersection where bus dwells are active has a unique switch at the virtual site

Shout out to John Kinghorn from Hamilton City who allowed us to duplicate this system they designed, and has been operating successfully

TTOC ITS essentials

Telematics - **Bright City** real time control of 14,500 streetlights



UHF radio controlled system

Auto enrolling Light Point Controllers

GPS location auto updated

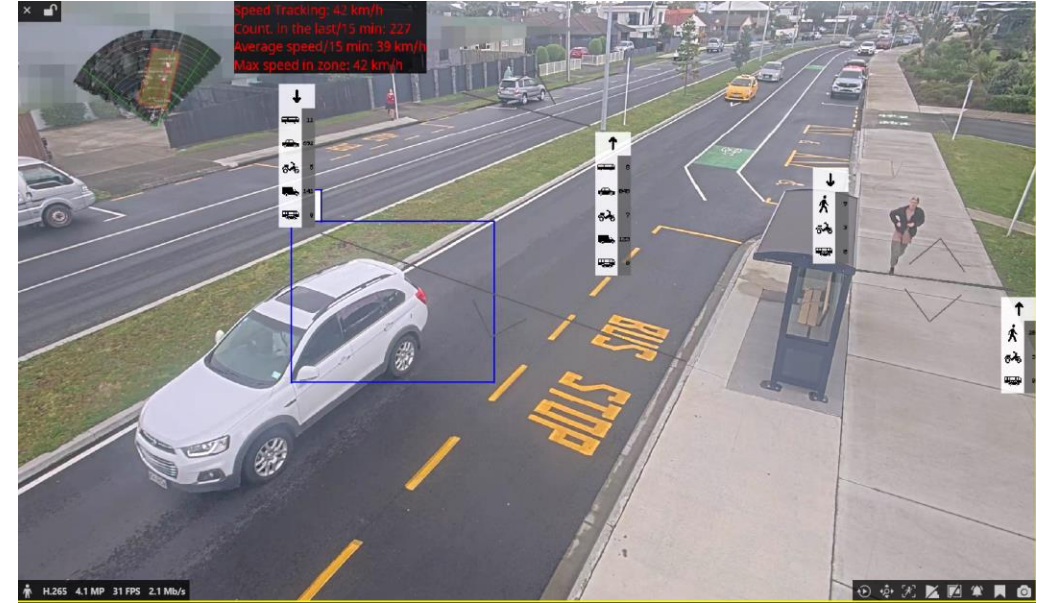
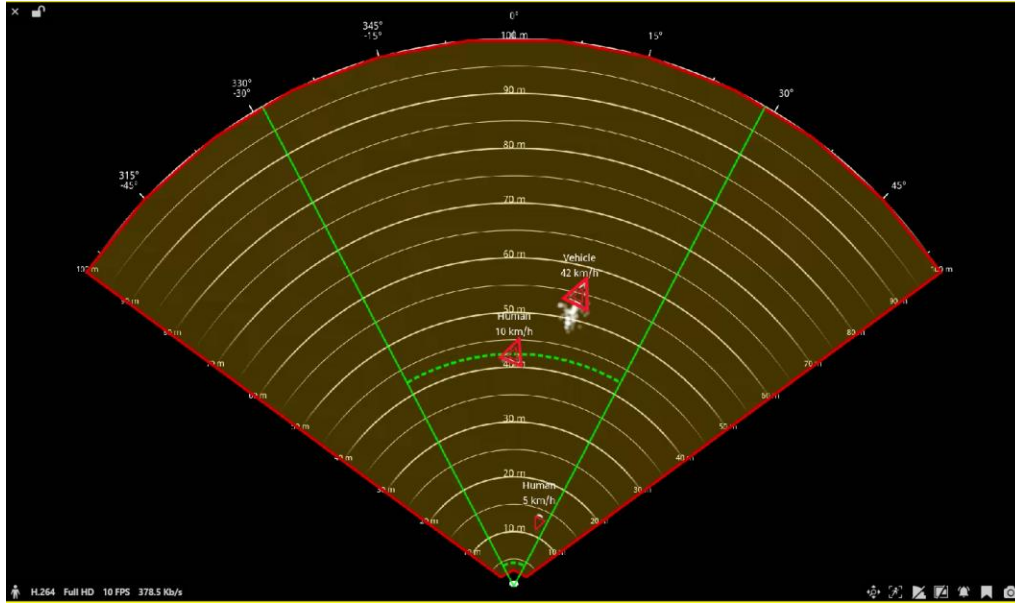
Extensive mapping system

Cloud based management software

Extensive API for integration

AXIS Radar/Camera installations

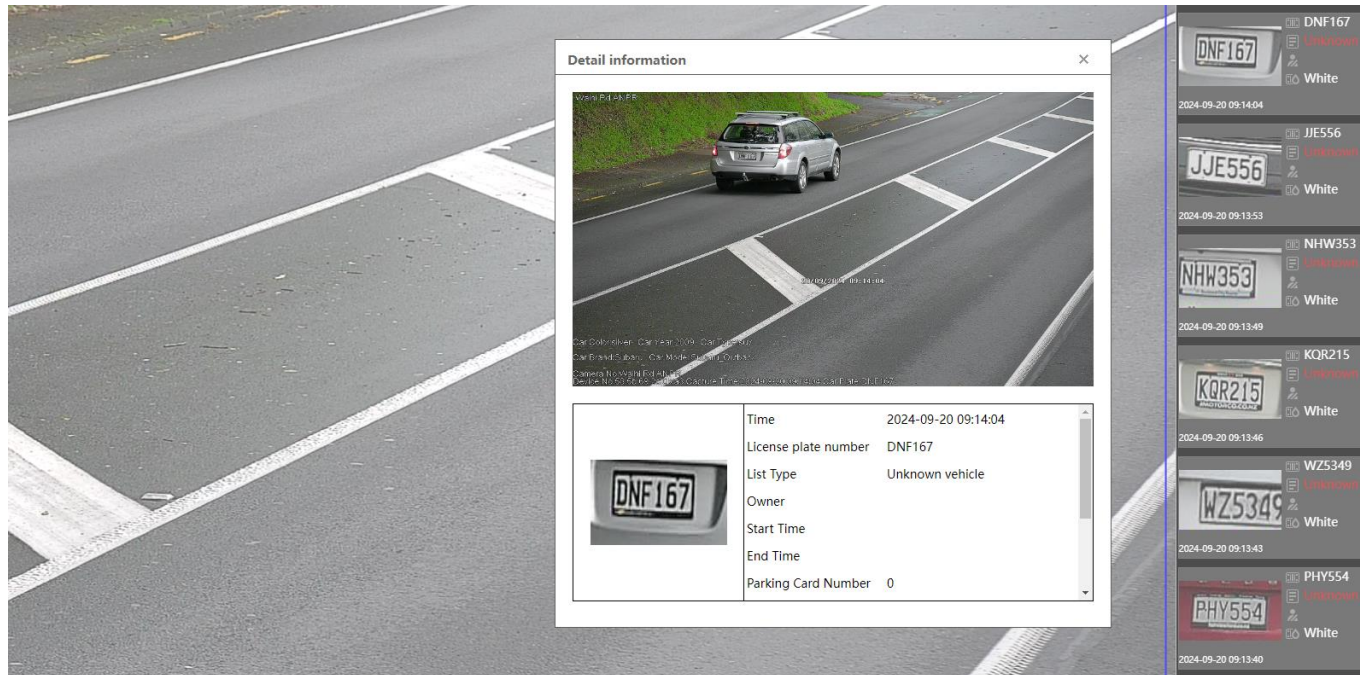
Speed monitoring & multi modal counting camera



Provides real time and historical speed data along with modal counts, bikes/people/cars/trucks. Metadata ingested into Luxriot VMS for analysis and reporting

License plate detection, recording and analysis

Tauranga employs LPR cameras throughout the city, used for a variety of purposes. LPR assists in traffic counts, fleeing vehicle tracking, origin/destination data and reviews for Police for criminal investigations.



Provides real time and historical data of captured plates, date and time. Metadata ingested into Luxriot VMS for analysis and reporting.

LPR Average Speed monitoring

Average speed monitoring via LPR (Point to Point LPR data)



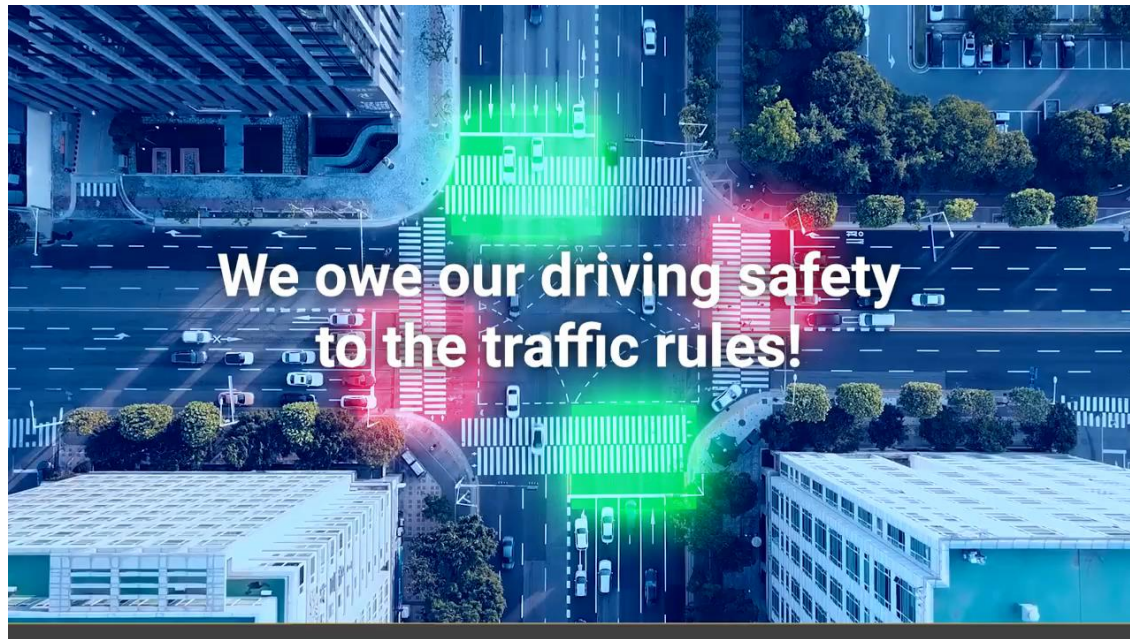
Uses LPR origin destination data

Measures time taken to cover distance

Not enforceable, but useful data

Adaptive Recognition - Enforce BOX Trial

Smart traffic violation enforcement using Enforce BOX AI edge device



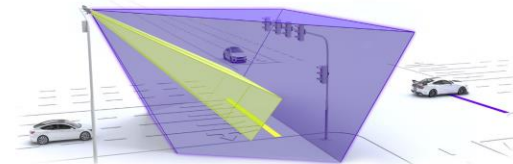
Integrates with any camera analysing traffic flows in real time

Detects 12 Types of traffic violations – RED Light running, Wrong way & U-turn detection, Forbidden zone, Bus lane, LPR, Stop sign violation and more

Enforce BOX Traffic Violation Detector

Smarter Traffic Law Enforcement with AI Edge Network Device
for Red Light & Multi-Violation Detection

Learn more 



Milesight – Traffic X Cameras Trial

Smart traffic violation enforcement using Traffic X cameras



Integrated camera with RED Light running detection

High Speed ANPR capture (up to 250Km/h)



TrafficX Enforcement Camera
TS5511-GH

For Red Light Violation

TTOC Future ITS plans

Local Road Variable Message Signage



Tauranga only has NZTA VMS signs on SH

Local road messaging seen as useful

Supports better decision making by road users

Increased safety through early incident warning

TTOC Future ITS plans

15th Avenue/Turret Rd – Dynamic lanes



Additional "Peak Flow" capacity for eastern suburbs

Reduce Peak travel times

Might implement T2 lane to improve bus travel times

Questions?





baybus OnDemand

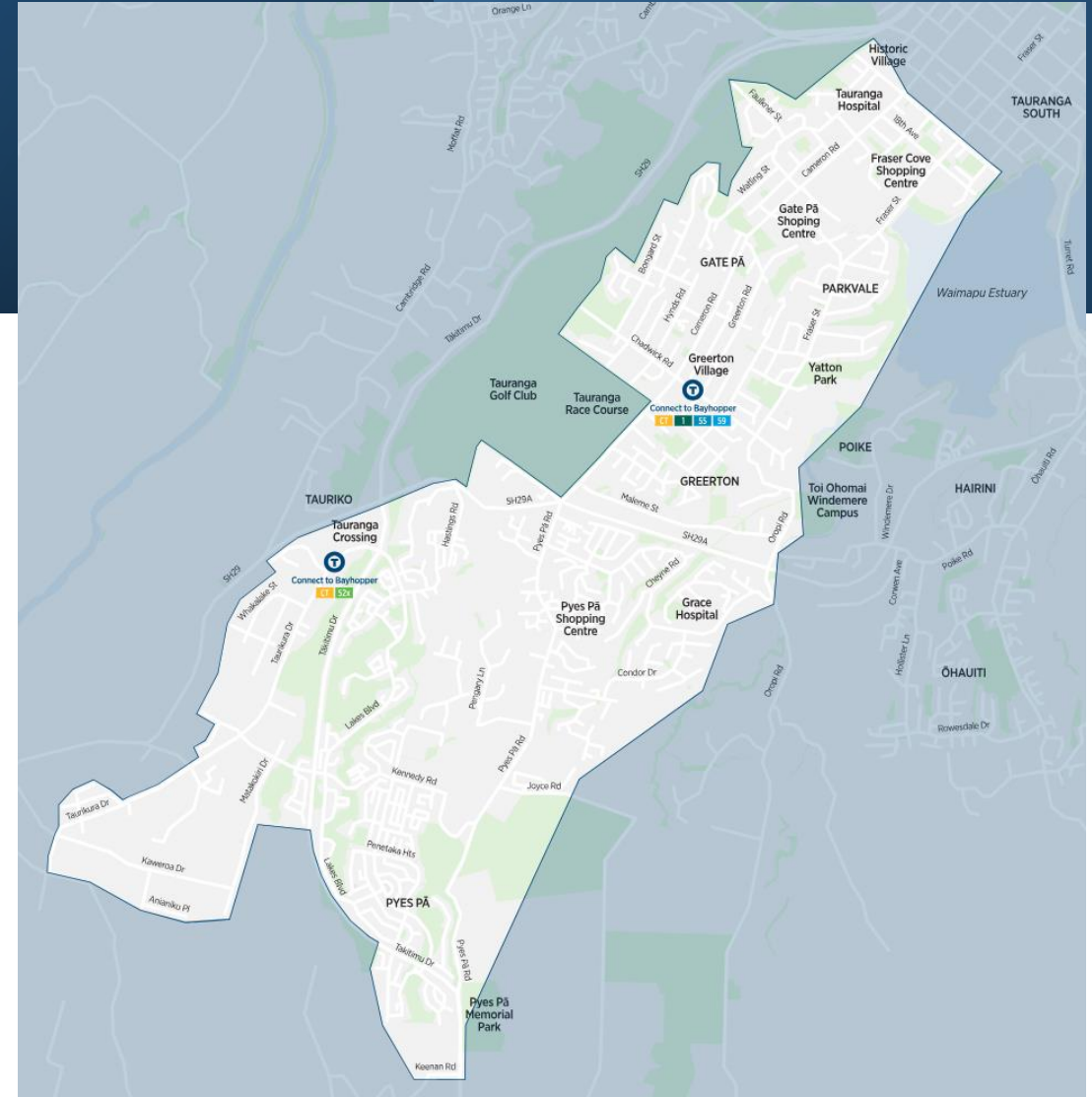
ITSNZ / Transportation Group
September 2024

Melissa Winters
Senior Network Planner
Bay of Plenty Regional Council

Zone of Operation

Key Destinations:

- Two hospitals
- Three shopping malls
- Three large schools
- Community facilities
- Retirement villages





**Baybus
OnDemand
is here.**

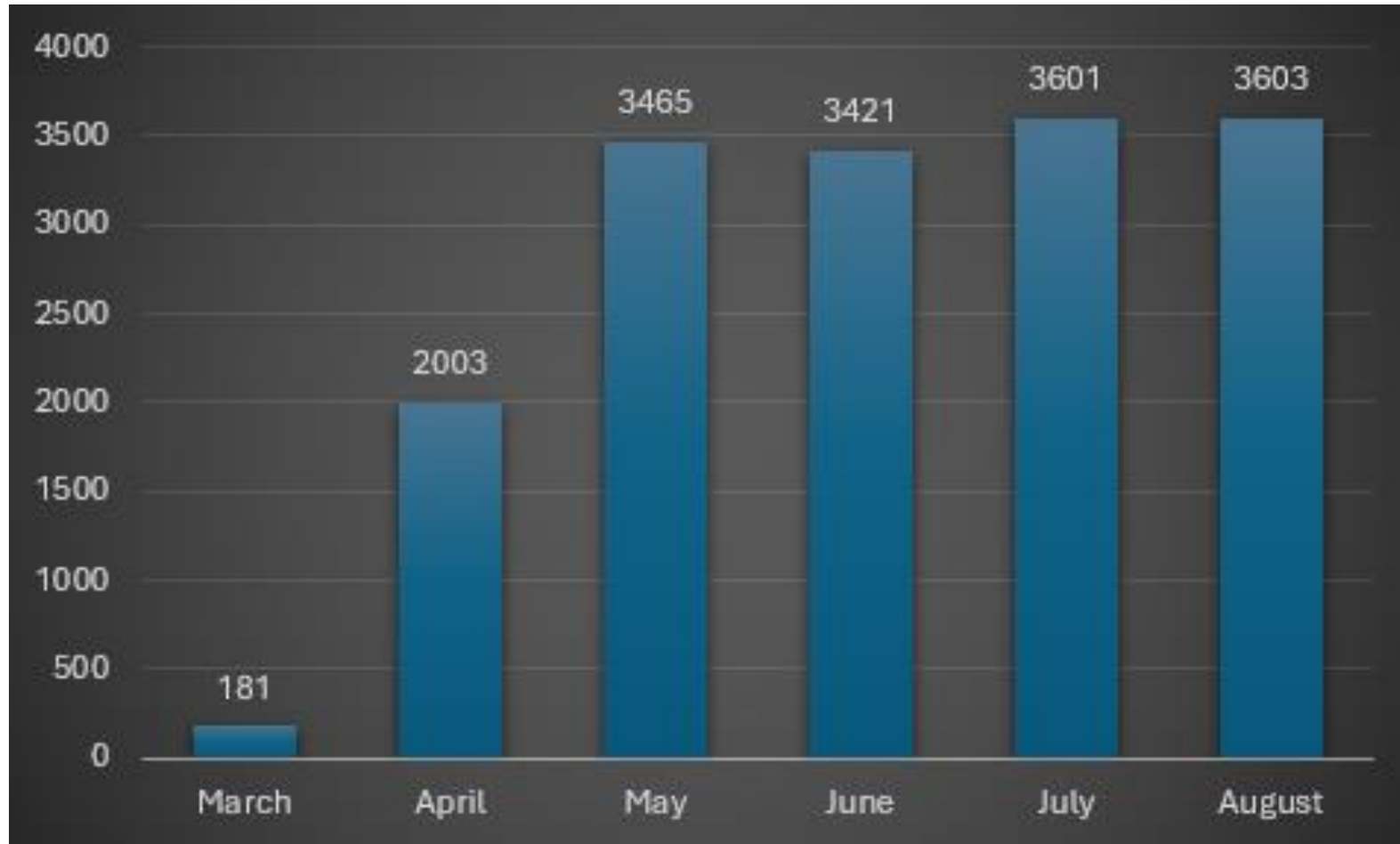


LDV eDeliver 9 'bigger'

51.5kW battery capacity, 1160kg payload, range 186-200km

Electric Vehicles





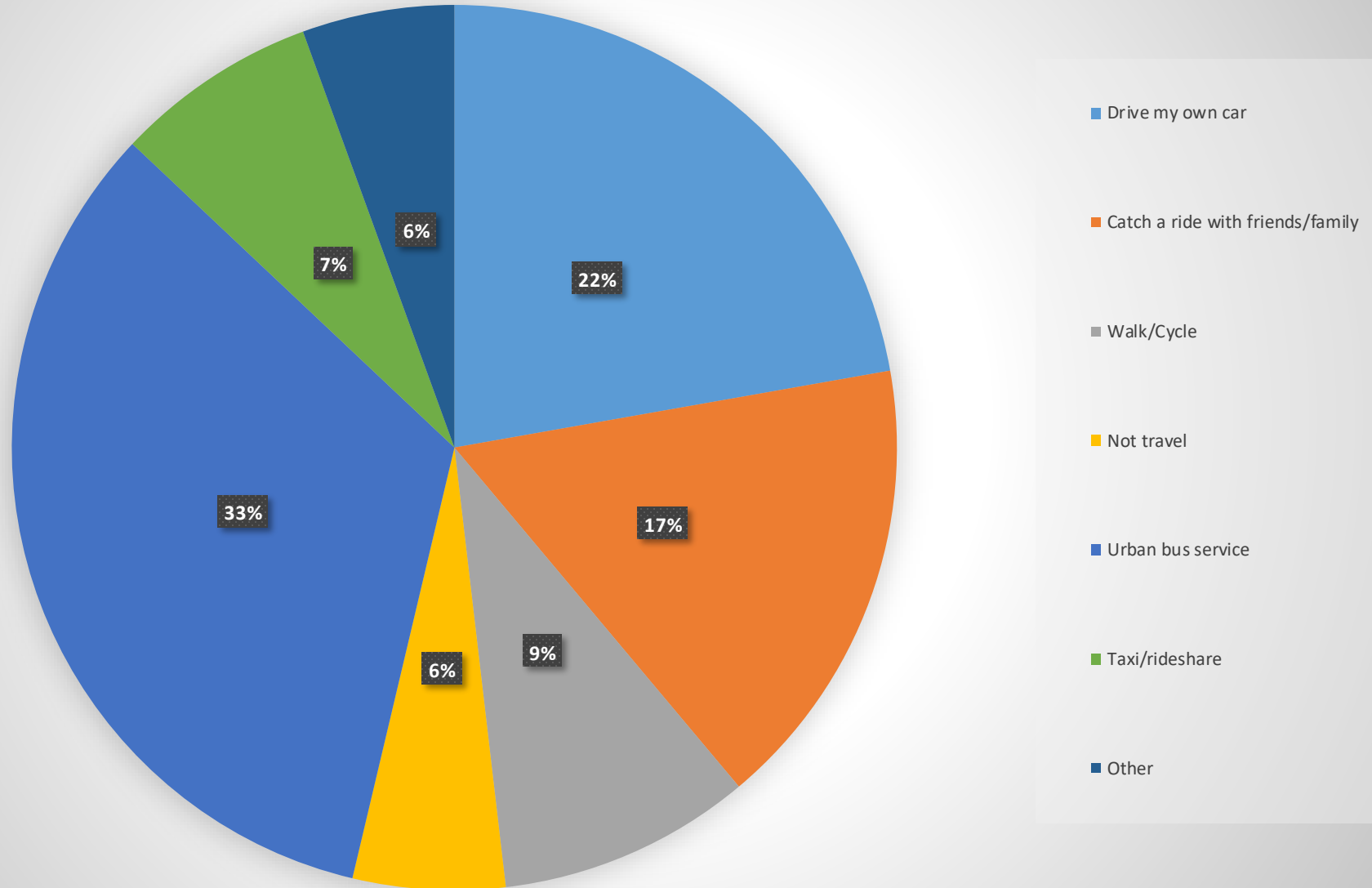
Patronage per Month

19,368 rides completed
(as of Tuesday)

- **Passenger survey via a link in the app**
- **Two weeks in August, 55 responses**

- **40% travel for work, 30% shopping or leisure, only 7% for medical reasons**
- **70% said they felt very safe**
- **88% were positive or neutral about sharing the ride**
- **92% felt the fare was value for money (\$3.40/\$2.74)**
- **45% said they would still use the service if the cost was \$5 a ride**

How would you have travelled if OnDemand wasn't available?



- **44% of trips are in peak time / 56% off peak**
- **95% of bookings are through the app**
- **76% of bookings are 'on demand' not pre-booked**
- **Fare collection is 70% Bee card / 30% credit card**
- **230 WAV trips completed**
- **30% adults, 33% child/youth, 12% SuperGold**
- **Over 1,000 transfers to/from urban services**
- **134,000 kms travelled to date**
- **Only 46% of kms travelled have riders onboard**

Technology Interventions

- **Change of algorithm to allow more deviation time (from 6 mins to 10 mins)**
- **Additional dwelling points added to prevent returning to depot between rides**
- **Automatic re-optimize of pre booked rides before afternoon peak**
- **Shift of customer experience dial towards efficiency**

06:30 07:00 07:30 08:00 08:30 09:00 09:30 10:00 10:30 11:00 11:30 12:00 12:30 13:00 13:30



Row 1: 06:30-07:00: 1 green checkmark. 07:00-07:30: 1 yellow checkmark, 1 green checkmark. 07:30-08:00: 1 green checkmark, 1 green checkmark with a colon. 08:00-08:30: 1 green checkmark with a colon, 1 green checkmark. 08:30-09:00: 1 yellow checkmark, 1 green checkmark, 1 green checkmark, 1 green checkmark. 09:00-09:30: 1 green checkmark, 1 green checkmark, 1 green checkmark, 1 green checkmark. 09:30-10:00: 1 green checkmark, 1 green checkmark. 10:00-10:30: 1 green checkmark, 1 green checkmark. 10:30-11:00: 1 green checkmark, 1 green checkmark. 11:00-11:30: 1 green checkmark, 1 green checkmark, 1 green checkmark. 11:30-12:00: 1 green checkmark, 1 green checkmark. 12:00-12:30: 1 yellow checkmark, 1 green checkmark, 1 green checkmark. 12:30-13:00: 1 yellow checkmark, 1 green checkmark, 1 green checkmark. 13:00-13:30: 1 green checkmark.

Row 2: 06:30-07:00: 1 green checkmark, 1 green checkmark. 07:00-07:30: 1 green checkmark, 1 green checkmark. 07:30-08:00: 1 green checkmark, 1 green checkmark. 08:00-08:30: 1 green checkmark, 1 green checkmark. 08:30-09:00: 1 yellow checkmark, 1 green checkmark. 09:00-09:30: 1 yellow checkmark, 1 green checkmark. 09:30-10:00: 1 yellow checkmark, 1 green checkmark. 10:00-10:30: 1 yellow checkmark, 1 green checkmark. 10:30-11:00: 1 yellow checkmark, 1 green checkmark. 11:00-11:30: 1 yellow checkmark, 1 green checkmark. 11:30-12:00: 1 yellow checkmark, 1 green checkmark. 12:00-12:30: 1 yellow checkmark, 1 green checkmark. 12:30-13:00: 1 green checkmark, 1 green checkmark, 1 green checkmark. 13:00-13:30: 1 green checkmark, 1 green checkmark, 1 green checkmark.

Row 3: 06:30-07:00: 1 yellow checkmark, 1 green checkmark, 1 green checkmark, 1 yellow checkmark. 07:00-07:30: 1 green checkmark, 1 green checkmark, 1 yellow checkmark. 07:30-08:00: 1 green checkmark, 1 green checkmark, 1 yellow checkmark. 08:00-08:30: 1 green checkmark. 08:30-09:00: 1 yellow checkmark, 1 yellow checkmark. 09:00-09:30: 1 green checkmark, 1 yellow checkmark, 1 green checkmark, 1 green checkmark. 09:30-10:00: 1 green checkmark, 1 yellow checkmark, 1 green checkmark, 1 green checkmark. 10:00-10:30: 1 green checkmark. 10:30-11:00: 1 green checkmark, 1 green checkmark. 11:00-11:30: 1 green checkmark, 1 green checkmark. 11:30-12:00: 1 green checkmark, 1 green checkmark. 12:00-12:30: 1 green checkmark, 1 yellow checkmark, 1 green checkmark. 12:30-13:00: 1 green checkmark, 1 yellow checkmark, 1 green checkmark. 13:00-13:30: 1 yellow checkmark.

B | ✓

Row 4: 06:30-07:00: 1 green checkmark, 1 green checkmark. 07:00-07:30: 1 green checkmark, 1 green checkmark, 1 green checkmark, 1 green checkmark. 07:30-08:00: 1 green checkmark, 1 green checkmark, 1 green checkmark, 1 green checkmark. 08:00-08:30: 1 green checkmark, 1 green checkmark, 1 green checkmark, 1 green checkmark. 08:30-09:00: 1 green checkmark, 1 green checkmark, 1 green checkmark, 1 green checkmark. 09:00-09:30: 1 green checkmark, 1 green checkmark, 1 green checkmark, 1 green checkmark. 09:30-10:00: 1 green checkmark, 1 green checkmark, 1 green checkmark, 1 green checkmark. 10:00-10:30: 1 yellow checkmark, 1 green checkmark. 10:30-11:00: 1 green checkmark, 1 green checkmark. 11:00-11:30: 1 green checkmark, 1 green checkmark. 11:30-12:00: 1 green checkmark, 1 green checkmark. 12:00-12:30: 1 green checkmark, 1 green checkmark. 12:30-13:00: 1 green checkmark, 1 green checkmark. 13:00-13:30: 1 yellow checkmark.

B | ✓



“SmartTrip” - Testing a Road Pricing concept to secure smart futures

ITS NZ & Transport Group – 26 September 2024

Peter Siemensma, Tauranga City Council and Craig Richards, Beca



Tauranga City

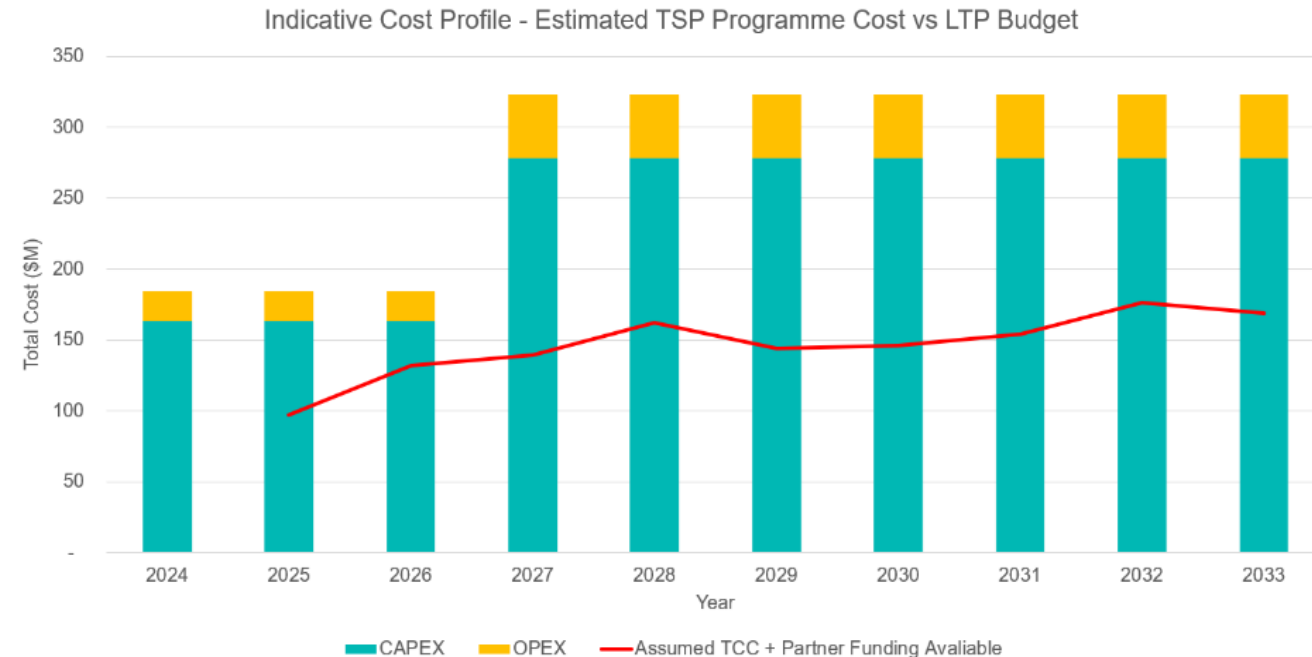
Overview – work to date

1. Urban Form + Transport Initiative (UFTI): planning for 400,000 residents
2. Investigation of international best practice
3. SmartTrip Proof-of-Concept Investigations
4. Engagement



Study Objectives

- Support **urban form outcomes** (primary outcome)
- **Optimisation** of transport system
- Improve **travel time reliability** and levels of service
- **Raise revenue to invest** in local transport solutions – accelerate financing/funding (SmartGrowth’s TSP)
- Lower carbon **emissions**
- Incentivise **travel choice**



What is Road Pricing?

STATIC Road Pricing – never changes, like tolling

DYNAMIC Road Pricing – changes based on live conditions

This requires:

- **Price certainty** when price is notified to driver
- **Price notification** in advance of priced route - driver make informed decision and consent.
- Choice of **alternatives** must be easy and safe.

VARIABLE Road Pricing – vary by time of day / week / season on a predetermined schedule. Most common

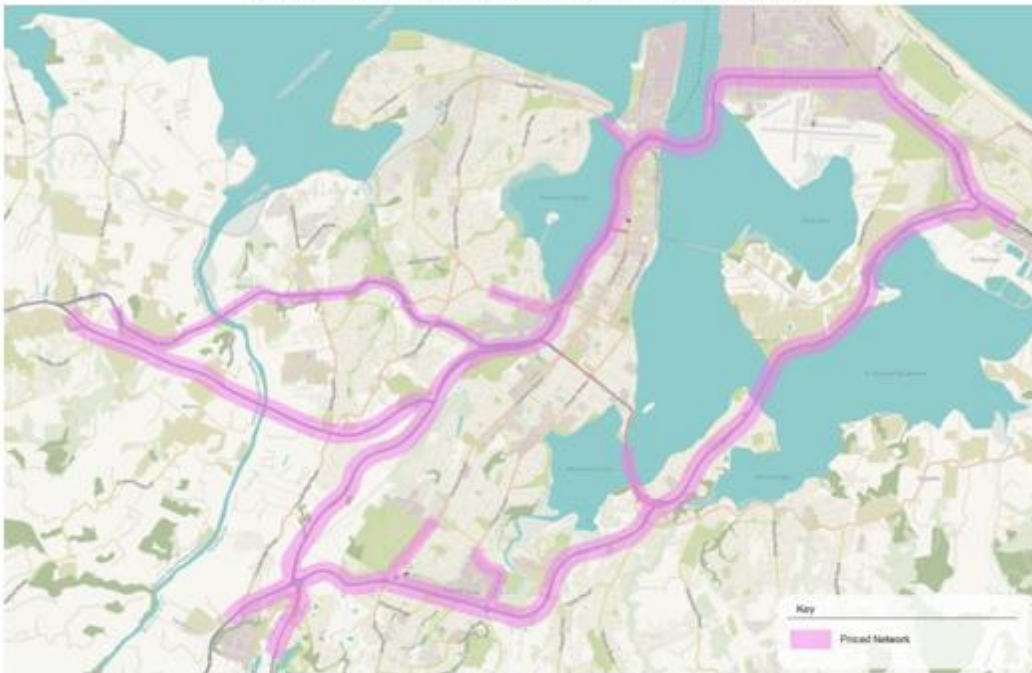
E.g. Singapore ERP, Oslo, Stockholm



Tauranga VRP

- Stage 1
modelling
options

Concept 1. Priced network with an access based charge



Concept 2. Priced network with a distance based charge



Concept 3. Te Papa Peninsula Cordon






Concept 4. Te Papa Peninsula Cordon + CBD Cordon

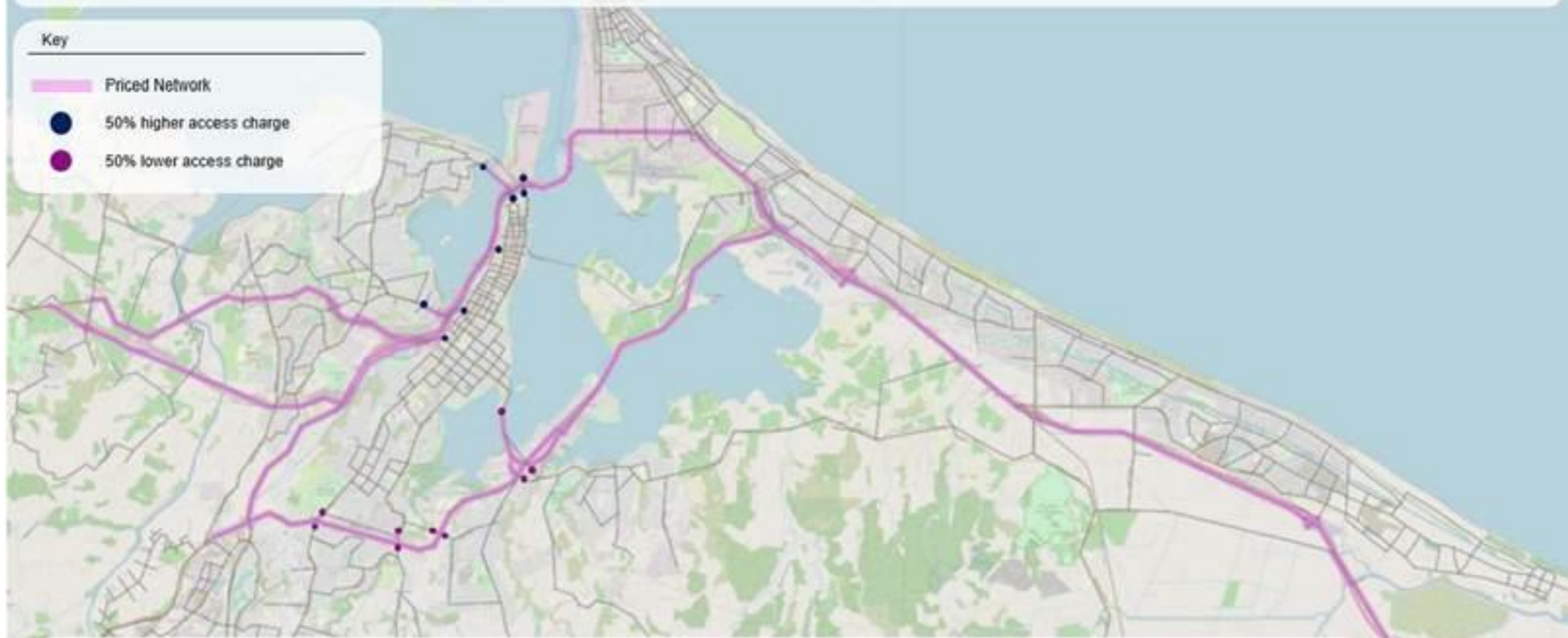


Variable Road Pricing Concept

2035 Concept 5 priced network and key network performance outcomes

Key

-  Priced Network
-  50% higher access charge
-  50% lower access charge



Peak charges



\$2.00 access plus 15 cents per KM



\$5.00 access plus 38 cents per KM



\$88m net revenue per annum

Delay

Vehicle hours/day

20% less



Mode shift

Change in PT and Cycle trips

6% more



VKT

KM/day

6% less



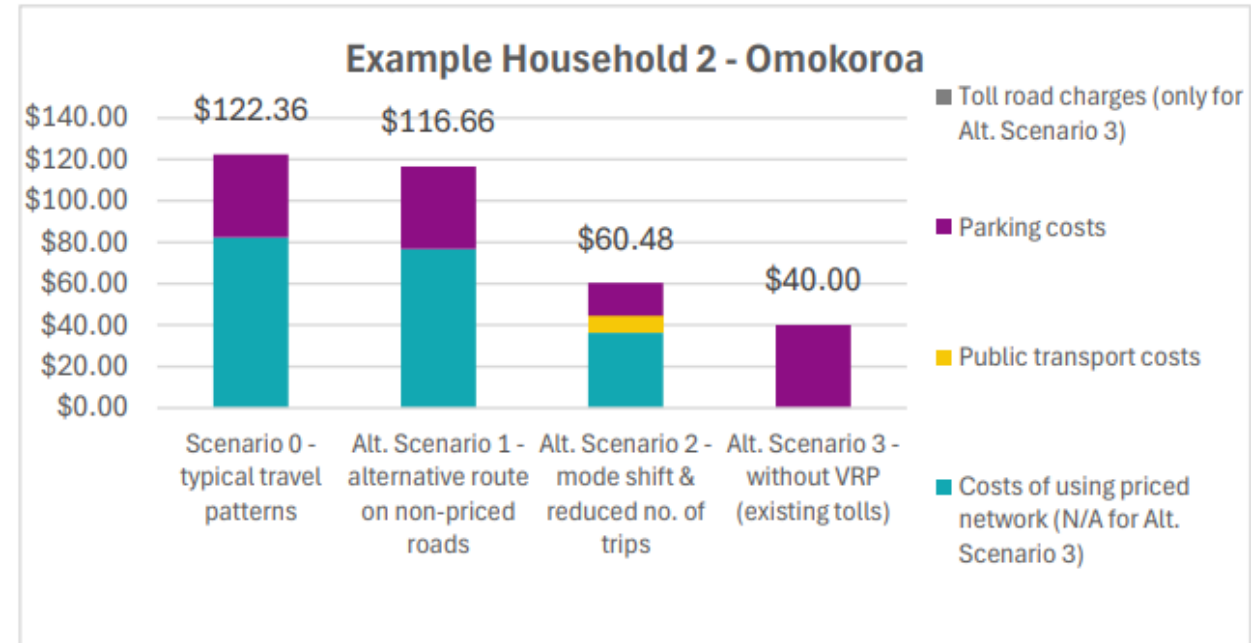
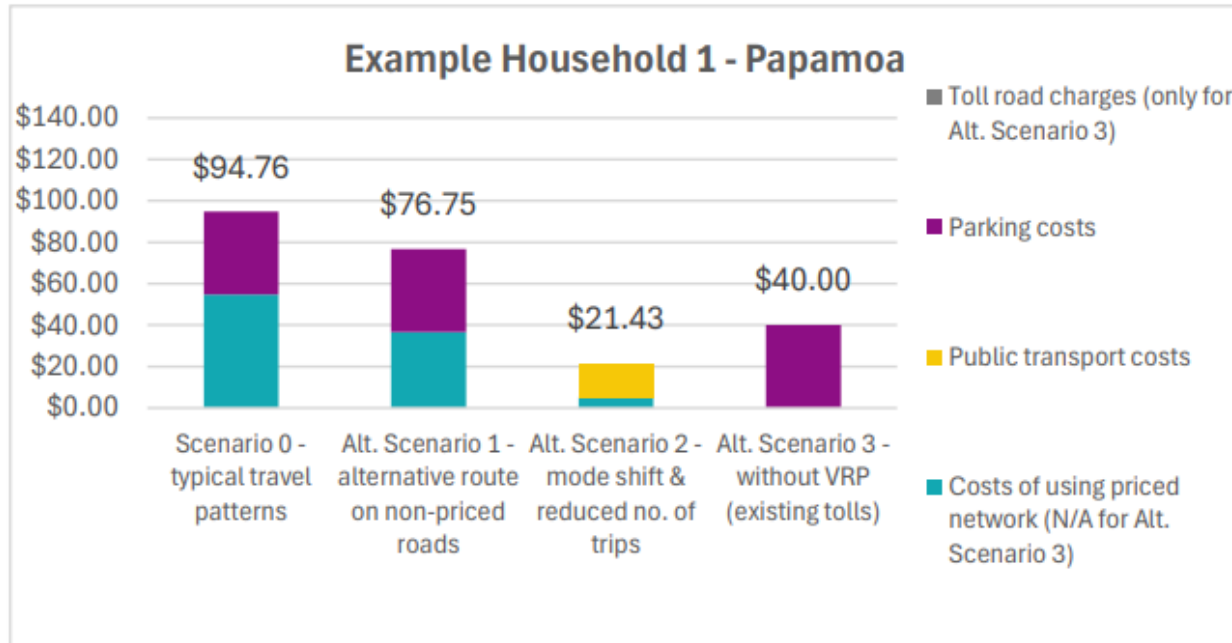
CO₂E

Kg/day

5% less



Household Cost Analysis



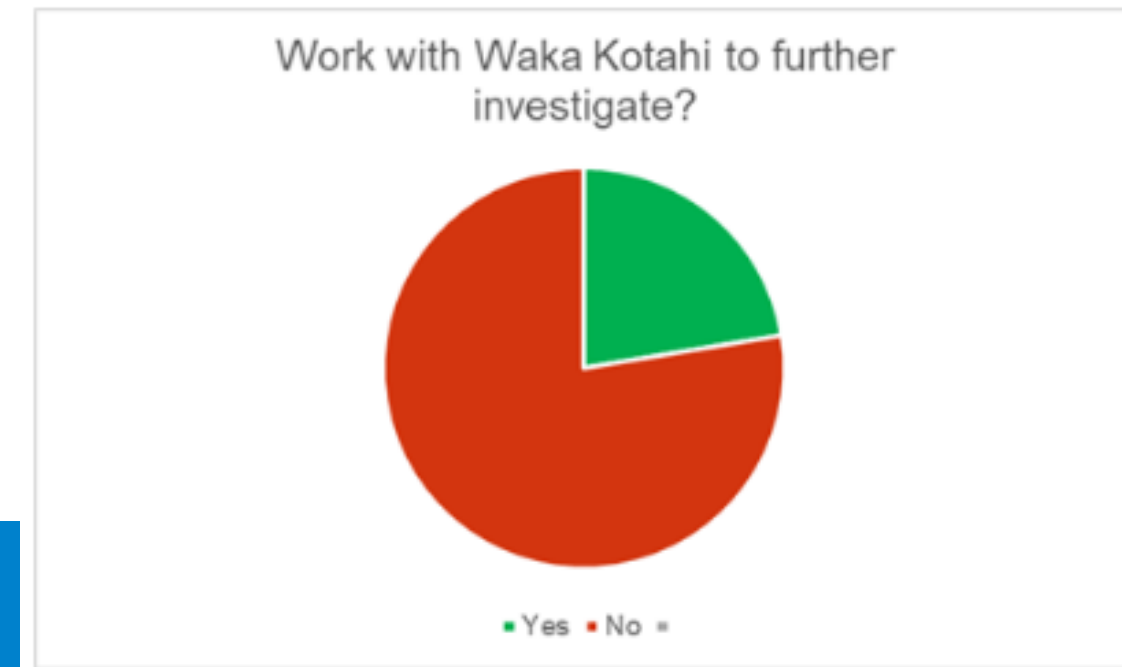
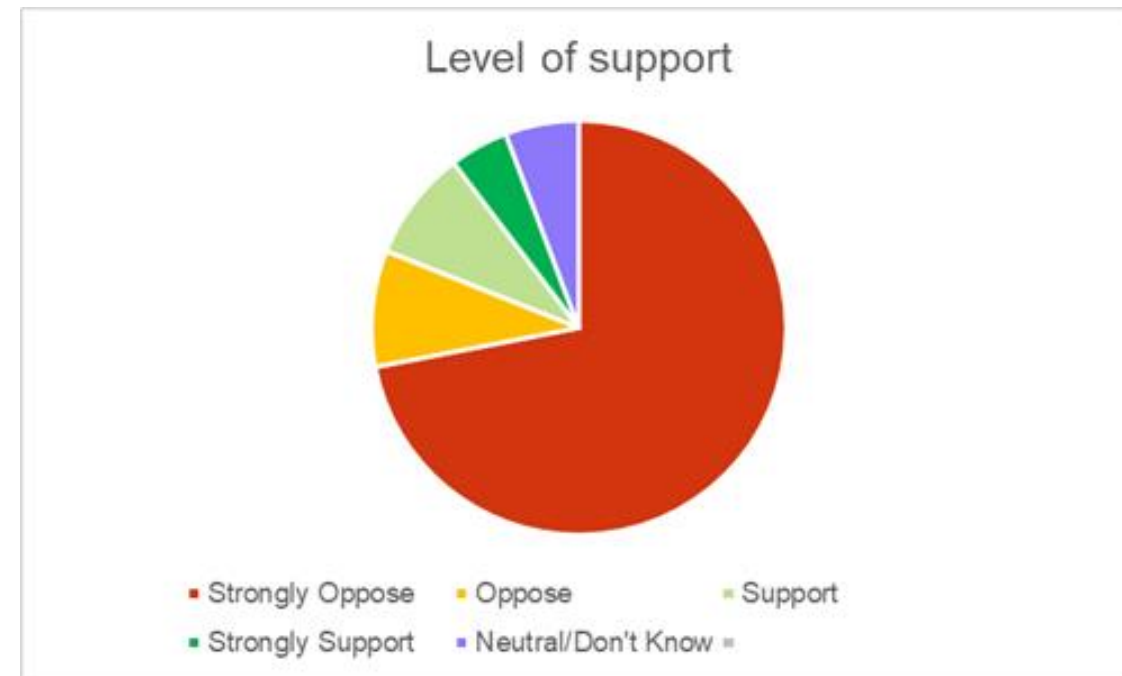
Whilst travel expenses of households will increase, impact will be different depending on household circumstances. There are options & alternatives to lessen costs.

In general, travel time is reduced with the VRP concept implemented, up to 17% reduction.

LTP consultation SmartTrip

Three engagement questions were asked:

- (a) *'What is your level of support for using SmartTrip variable road pricing to accelerate Tauranga's investment in a better road network and transport services thereby reducing congestion and carbon emissions?'*
- (b) *Should we work with Waka Kotahi and Government to further investigate SmartTrip through a business case investigation? (This would confirm the benefits variable road pricing could provide and identify solutions which would address any potential negative impacts).*
- (c) *Any comments?*



SmartTrip consultation feedback

Most common topics for not supporting SmartTrip:

- **Cost of living** / not able or willing to pay more
- Quality of **other modes** needing improvement
- **Equity** (affecting low incomes or certain suburbs)
- Can't change travel time (teachers / doctors / retail / medical appts)
- Nationally vs. Local
- Competition with other regions
- Unwelcoming for visitors/tourists

Anger at Tauranga's congestion charge plan



Traffic congestion is nothing new in Tauranga. File photo/SunLive.

"Money grabbing," "we might as well hand over our whole pay cheque",
"disgusting".

What's next for SmartTrip?

Commissioners resolved (March 2024) to:

- No business case, but work with NZTA + other councils
- Allocated \$1.5m for further investigations.

Other processes:

- Legislation
- Auckland is in the lead
- Ongoing discussions with NZTA and Auckland, but uncertainty remains

12 AUGUST 2024

Time of use schemes to reduce travel times

 HON SIMEON BROWN

 **Beehive.govt.nz**
The official website of the New Zealand Government

Auckland Transport

The Government will introduce legislation this year to enable time of use schemes to be developed to reduce travel times on our busiest roads and boost economic growth, Transport Minister Simeon Brown says.

Utunga haere
SmartTrip



Questions



**CONGESTION PRICING
QUESTIONS AND STORY IDEAS**