TE ARA MUA - FUTURE STREETS: Emerging impacts on road user behaviour

Lily Hirsch, Hamish Mackie, Nick Wilson, Zénobie Cornille

MACKIE RESEARCH
OPTIMISING HUMAN SYSTEMS

OUTLINE

- Background to Te Ara Mua – Future Streets
- Methods: road user interactions
- Emerging results and conclusions


BACKGROUND

TE ARA MUA - FUTURE STREETS

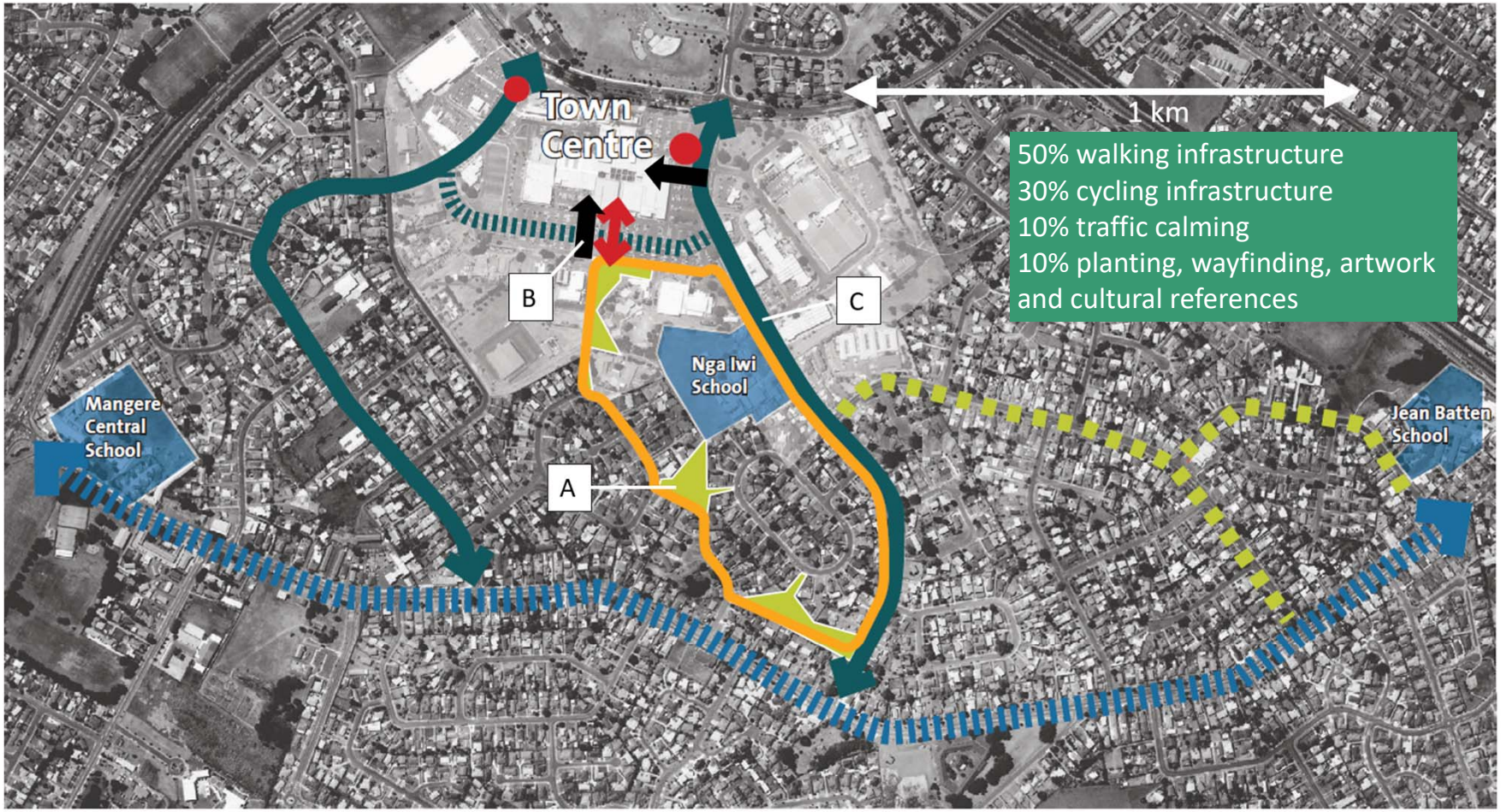
A project to demonstrate ‘healthier’ street and route design

A research project to measure safety, health, environmental, and social effects of improving suburban streets and routes

TE ARA MUA – FUTURE STREETS

Making streets around Māngere Central *safer* and easier to travel around, especially by walking and cycling; and reflecting local identity

TE ARA MUA – FUTURE STREETS


Town Centre
1 km
50% walking infrastructure
30% cycling infrastructure
10% traffic calming
10% planting, wayfinding, artwork and cultural references
B
C
A
Nga Iwi School
Mangere Central School
Jean Batten School
Māori 'Pou' or carved poles
Pedestrian route art
Walking and cycling trail
Public parks
Reconfigured minor arterial road
Calmed local streets
Painted pedestrian route through car park
New and upgraded crossings (cycle lanes to be added in future)
Improved pedestrian access to mall

WINDRUSH PARK

A

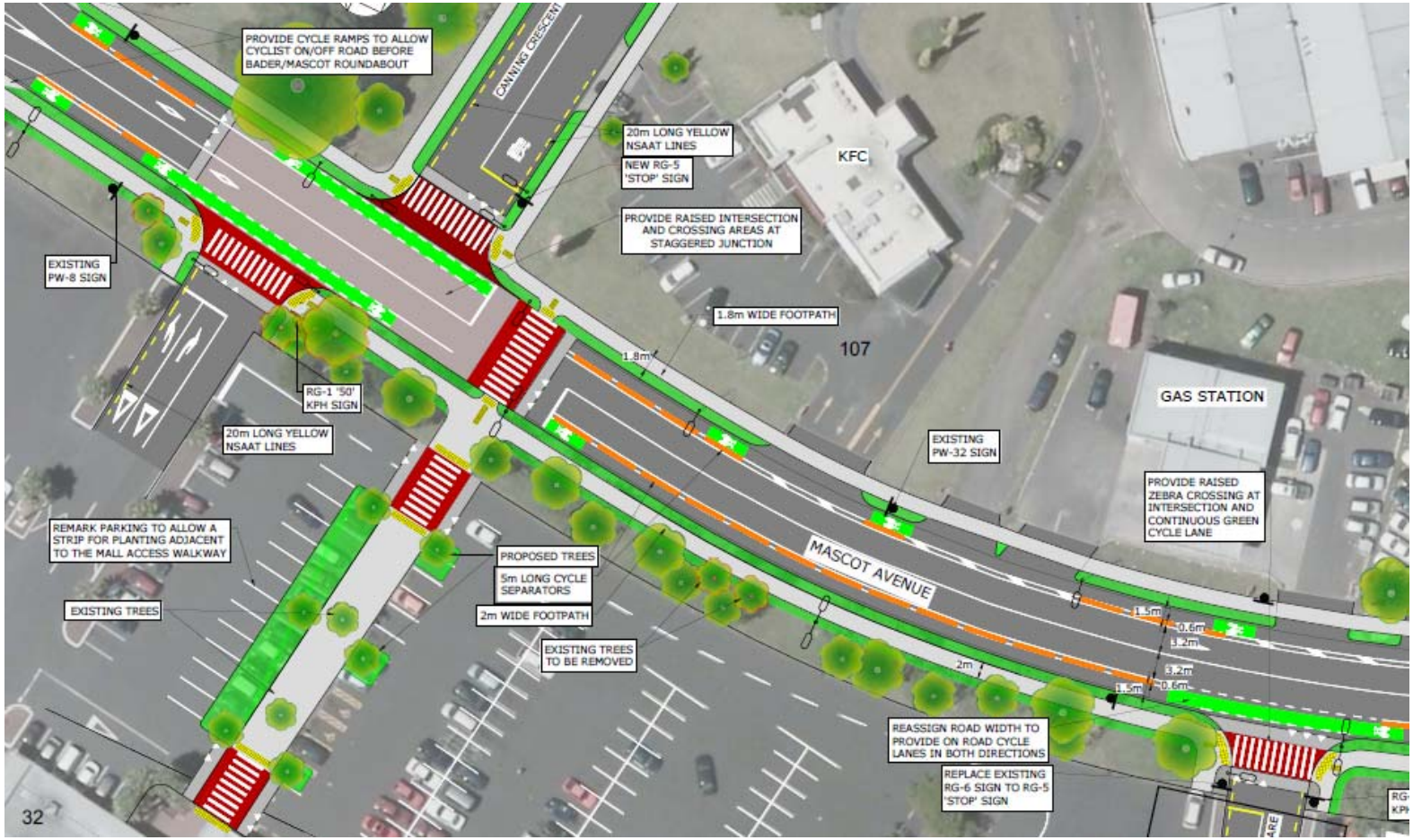
TOWN CENTRE

B

MASCOT AVENUE

MASCOT/ BADER

Pedestrian priority where there are lots of pedestrians, better access to the town centre



METHODS

	Intervention area Māngere Central	Control area Māngere East
Before	**Traffic behaviour** • Speed & counts measures • **Video of behaviour** Motorists, peds & cyclists Footpaths & roads **Residents surveys** • Mode use to local destinations • Physical activity • Neighbourhood perceptions • Injuries (self report & data linkage) • Children & adults	
After		

Intervention and control areas were matched for:

- Access to amenity destinations
- Street layout and age of development
- Demographics

Aim of road user interaction analysis

To understand the effects of Future Streets Treatments on:

- Road user behaviour
- Road user interactions

Hypothesis: Future Streets treatments will create a safer and more user-friendly road network that matches the intended road function.

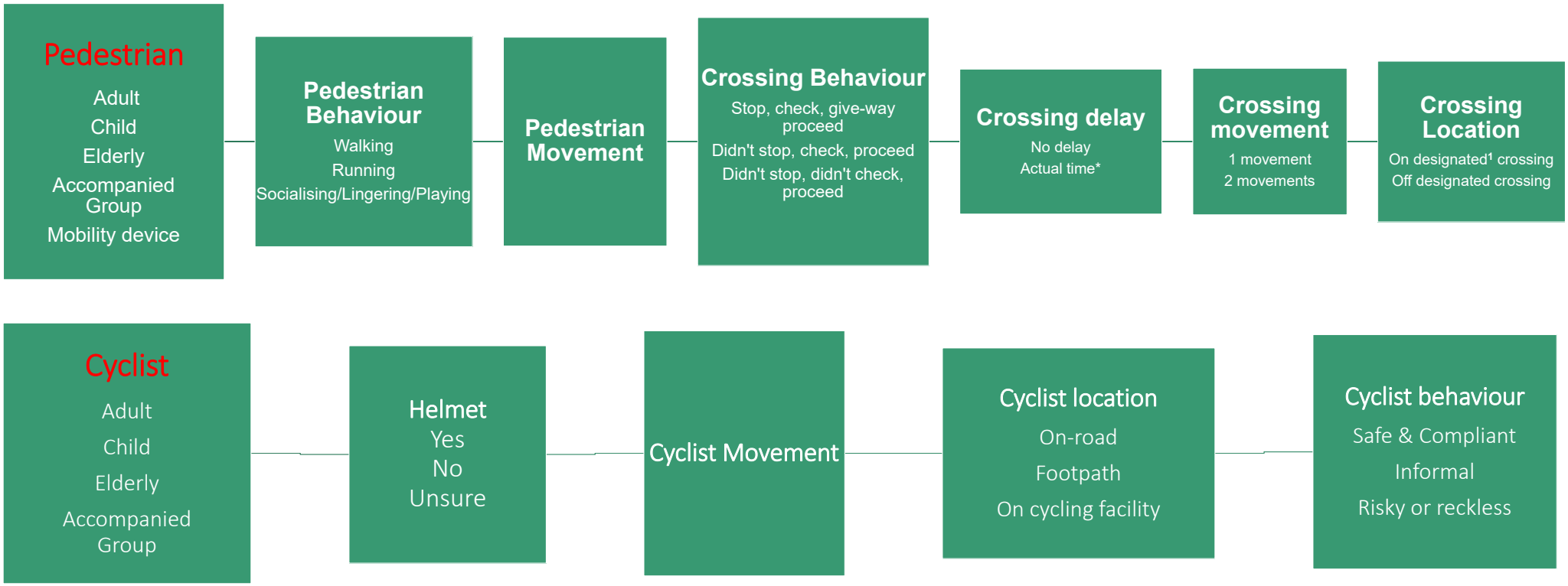
Video coding system method development

Previous Studies

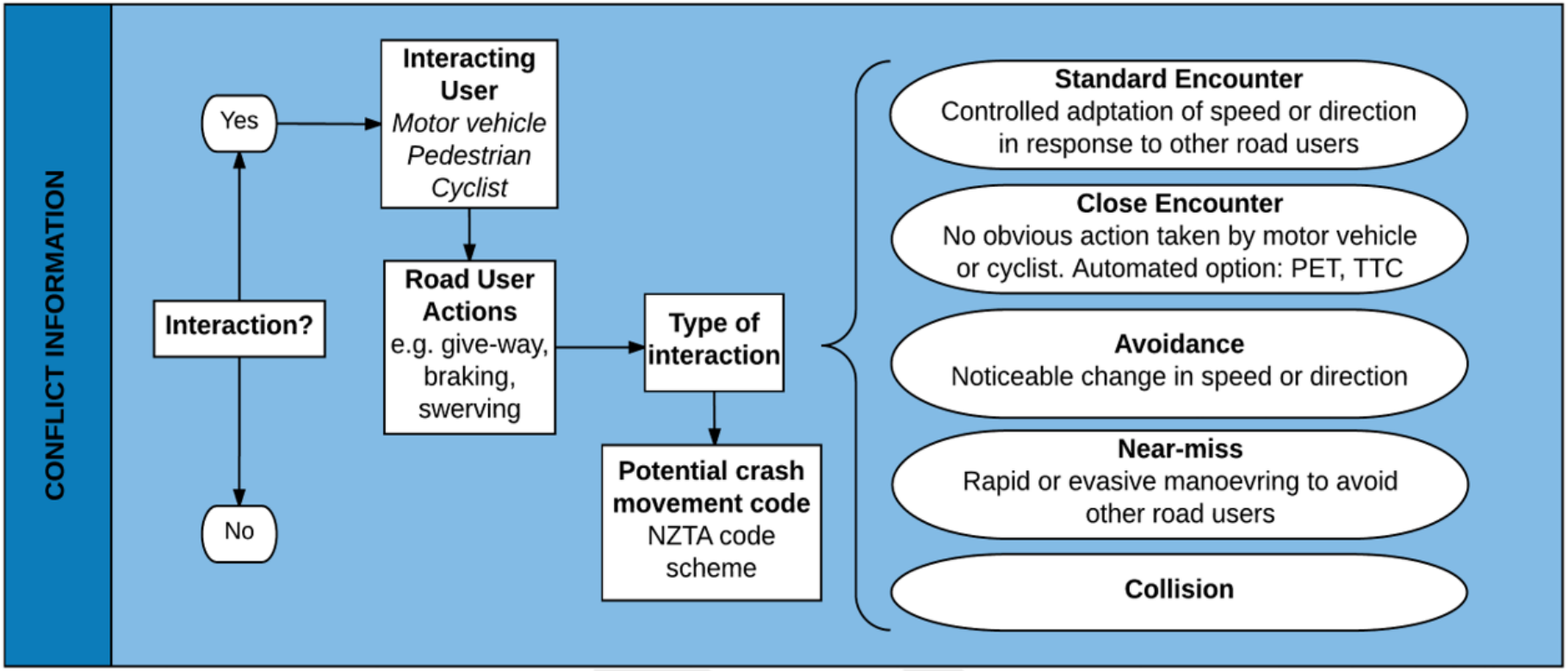
- Point England, Self-explaining Roads *(Mackie, 2013)*
- Traffic Conflict Studies *(St Aubin, 2015)*
- Naturalistic Cycling Studies (Johnson 2010)
- Before/After evaluation of infrastructure treatments *(H*unter, 2012)
- Hybrid automated/manual method – cyclists (*Thomas*, 2018)

Hyden, 1987

Vulnerable road user behaviour

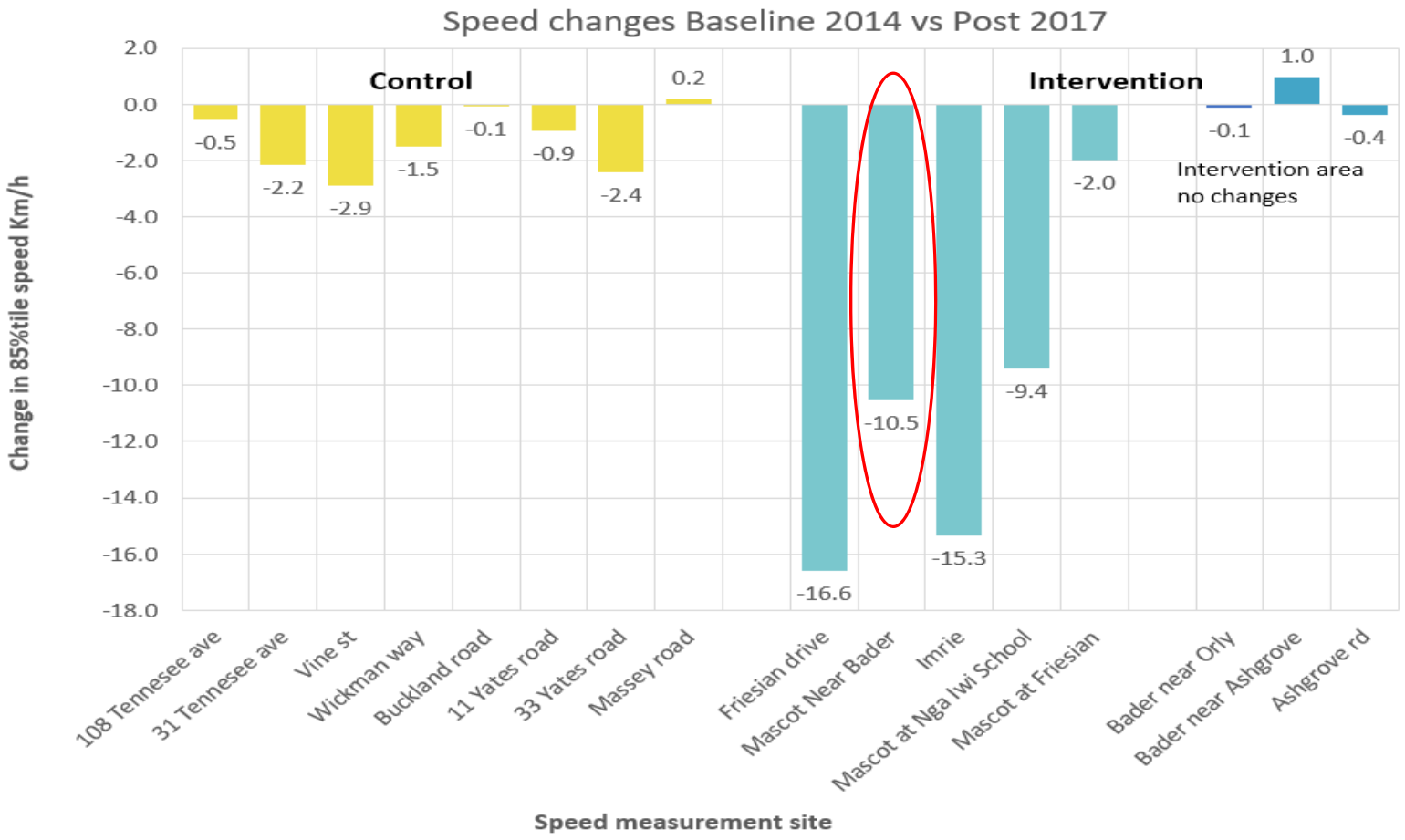


Road user interactions

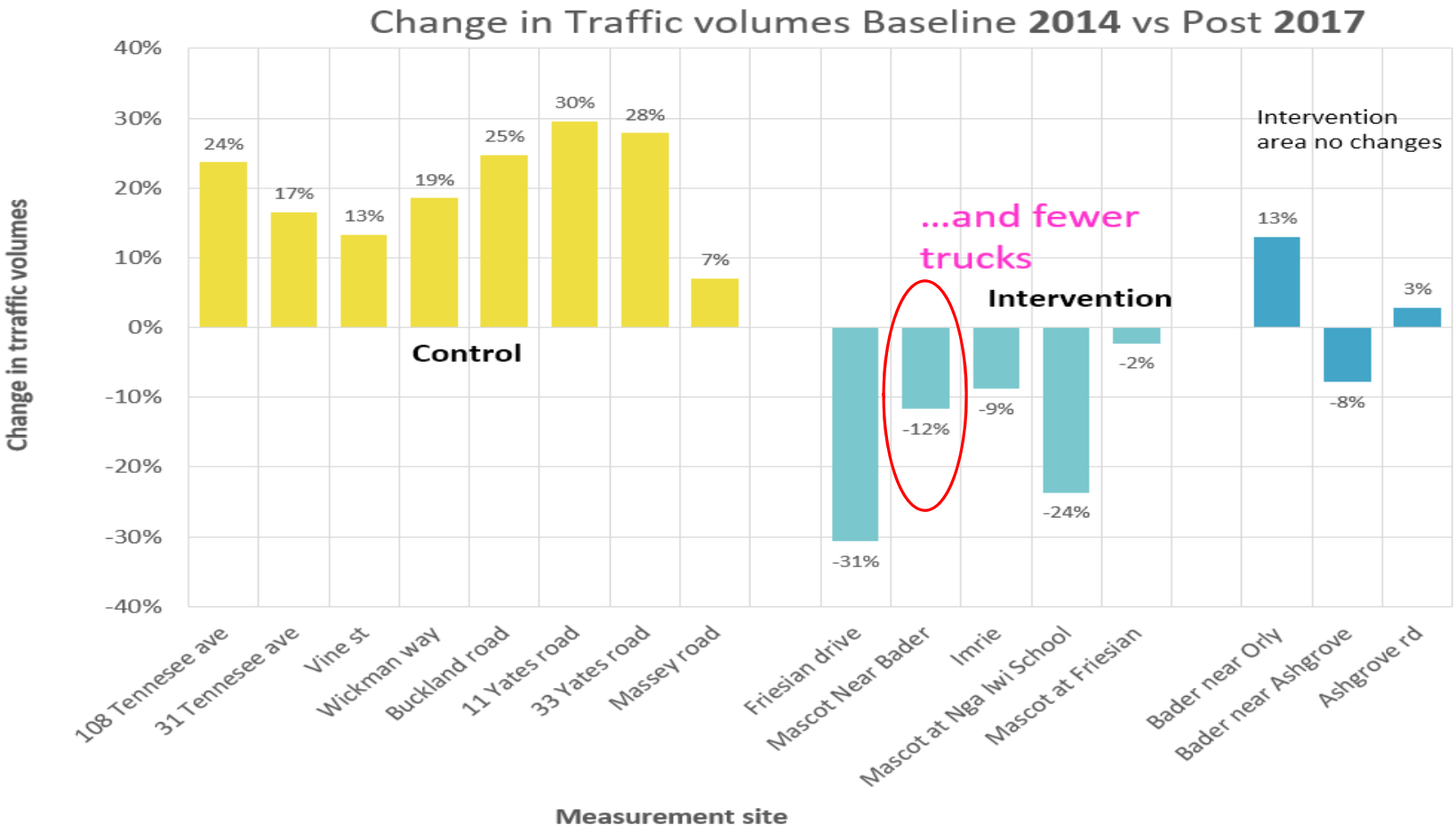


EMERGING RESULTS

SLOWER SPEEDS



LESS TRAFFIC



SAFER CROSSING BEHAVIOUR

2014

2017

CHANGES TO CROSSING MOVEMENTS

'Wheeled' movement has increased:

- Mobility-assisted movement has increased from **0.3% to 1.9%** of all pedestrians (from 2 pedestrians to 12)
- Pram movements 12 → 14
- Scooting and skating 0 → 5

Pedestrian crossing movements are safer, quicker, and more continuous:

- Crossing movements were **continuous** (pedestrians had to stop in the middle of the road); **51% → 97%** are continuous
- Pedestrians had to **wait more than 3 seconds** to cross: **77% →16%**
- **Fewer running across road**

FEWER INTERACTIONS

Pedestrian-car interactions

2014

2018

Pre Events

Close encounter

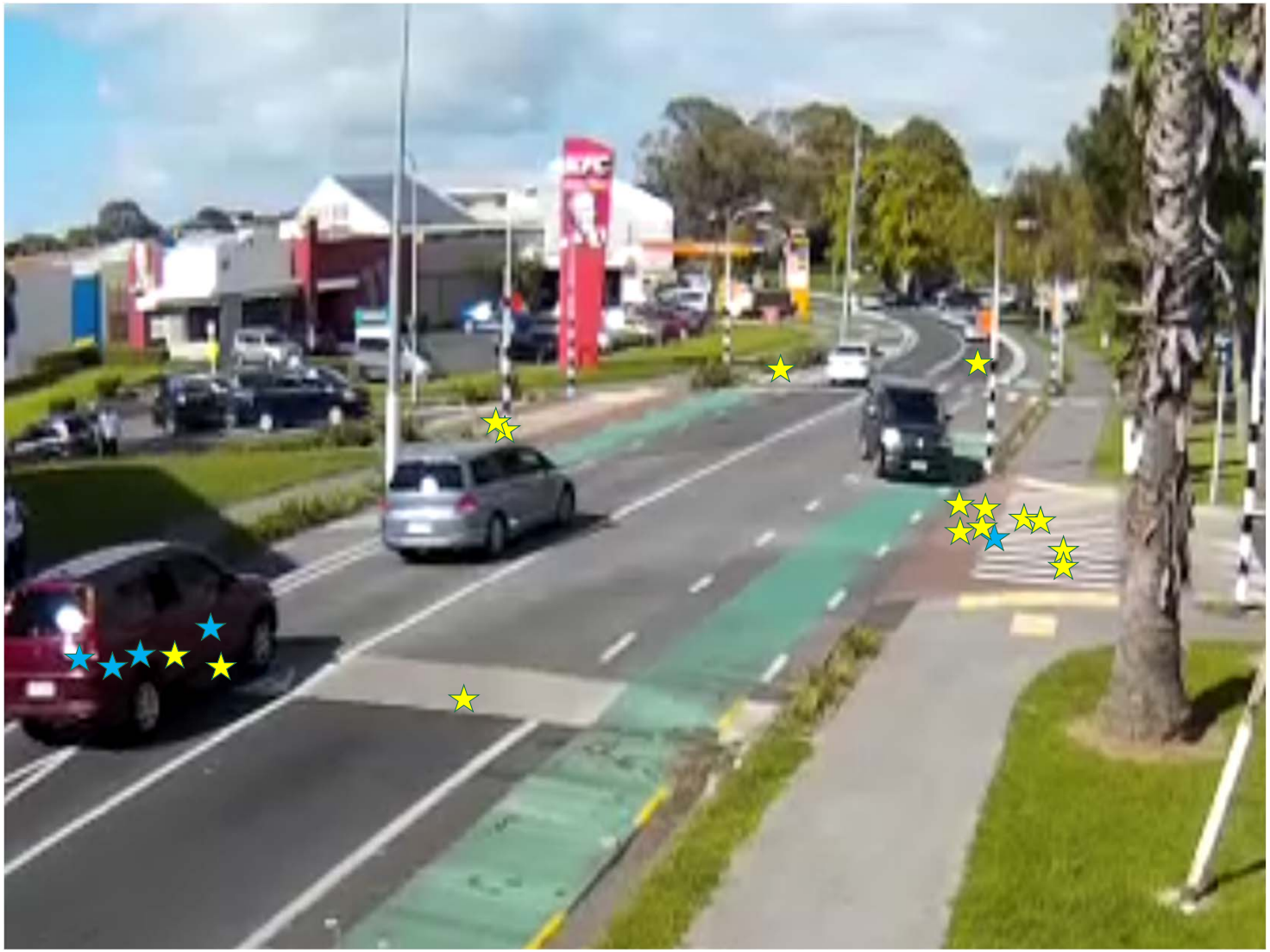
Avoidance

Near Miss


09:03:12:16
19/03/2014


08:05:37:18
29/03/2014


13:30:33:14
26/03/2014



Post Events

Close encounter

Avoidance

Near Miss

Cyclists

Pre

Post

BENEFITS FOR MOBILITY-ASSISTED MOVEMENT

"…I used to push from home to here [gym by the mall] every day and some of the roads were really bumpy, unsafe and even because you have done lots of good changes I feel independent and safe within myself – in my manual chair or in my power chair. All the local places I feel comfortable and it is freedom for me, so I don't have a bodyguard [someone to push her]."

36 year old woman with mobility impairment

1.9% of pedestrians crossing Mascot Ave used mobility aids at follow-up compared to 0.3% at baseline

CONCLUSIONS

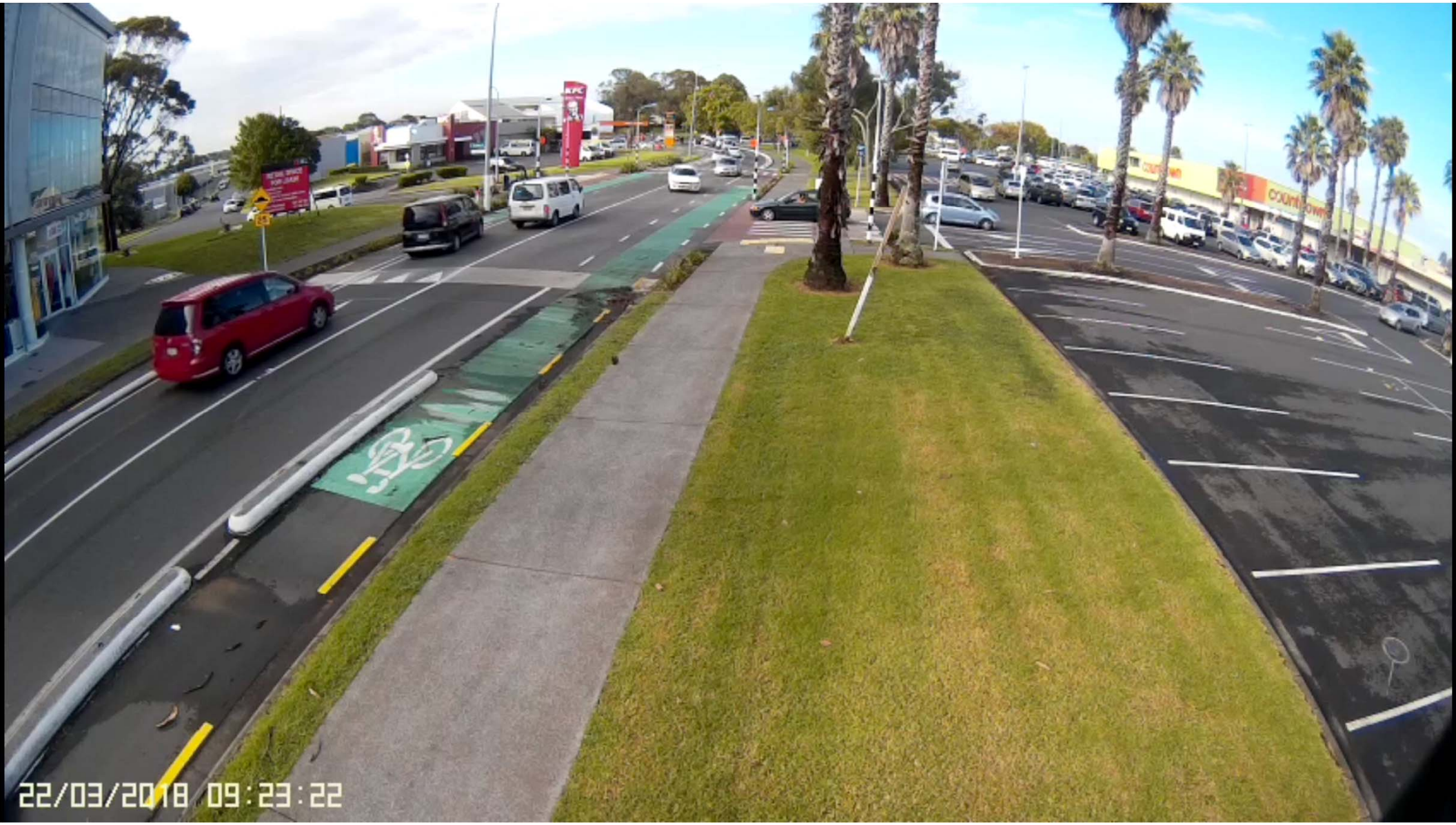
Future Streets treatments at Mascot Ave have created a more user-friendly environment for pedestrians (and cyclists)

Particular benefits for those with mobility devices/prams/shopping trolleys

Road user interactions have migrated to safer locations

There are remaining design issues that could be resolved


12:51:43:00
19/03/2014


KFC
22/03/2018 09:23:22