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ENGINEERING

A tale of two wheels

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Formerly Undergraduate in Civil Engineering –
Monash University

GROUP OF EIGHT AUSTRALIA

Overview

1. My research – Safe Roads for Cyclists

2. Austraffic Worldwide Learning Opportunity

3. Australasian Transport Research Forum (ATRF) – Auckland 2017

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MY RESEARCH

- Research conducted during my undergraduate degree
- In collaboration with Dr Marilyn Johnson
  - Institute of Transport Studies, Monash University
  - Amy Gillett Foundation

Two Research Questions:

1. How do Australian bicycle safety strategies and design guidelines compare with best practice?
2. In which areas do current infrastructure provisions fail to meet Australian design guidelines?

1. Guideline Comparison

Figure 3: Dutch CROW Manual[1]

Figure 4: Cycling aspects of Austroads guides[2]

Overarching Principles

Five “Main Requirements”:

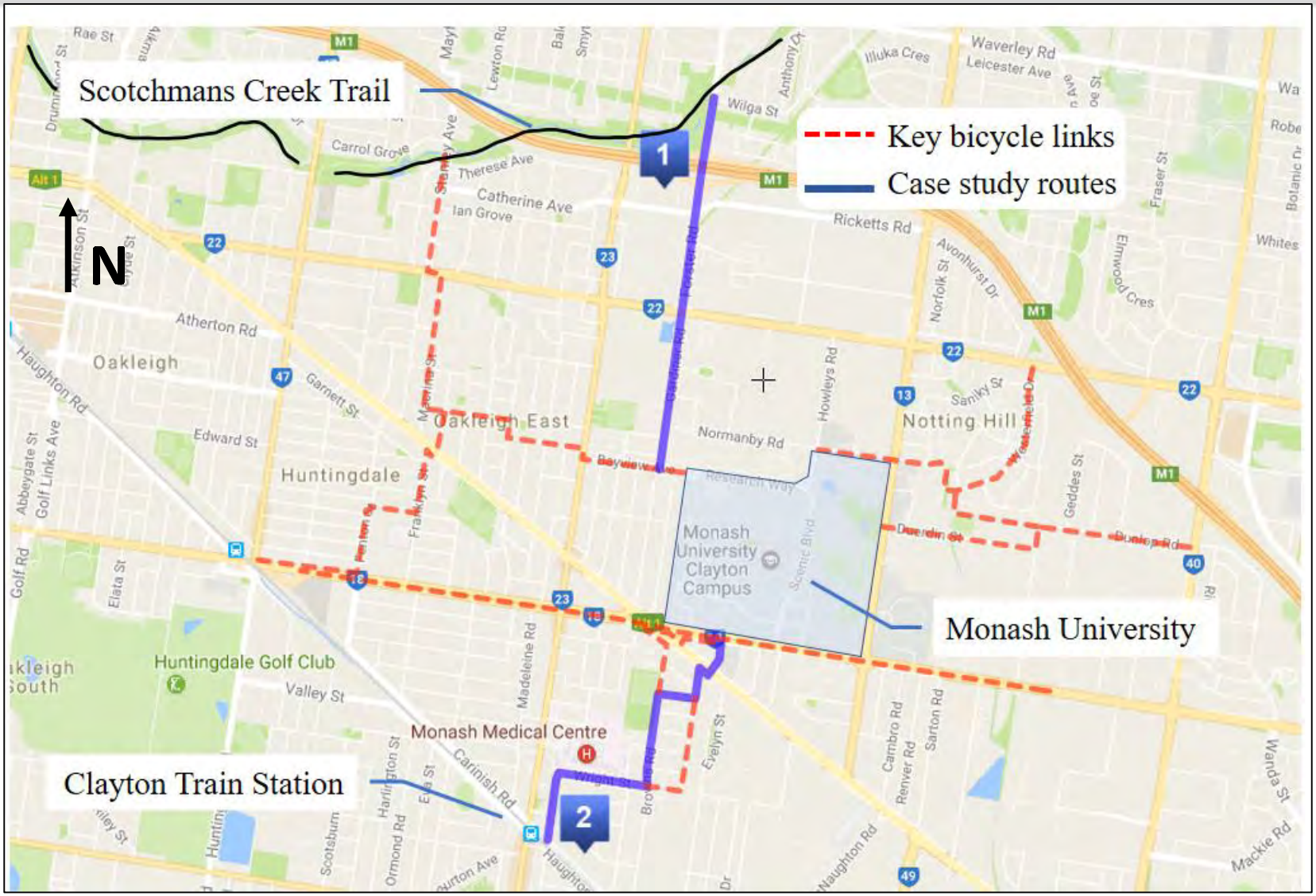
- Cohesion
- Directness
- Safety
- Comfort
- Attractiveness

Generally:

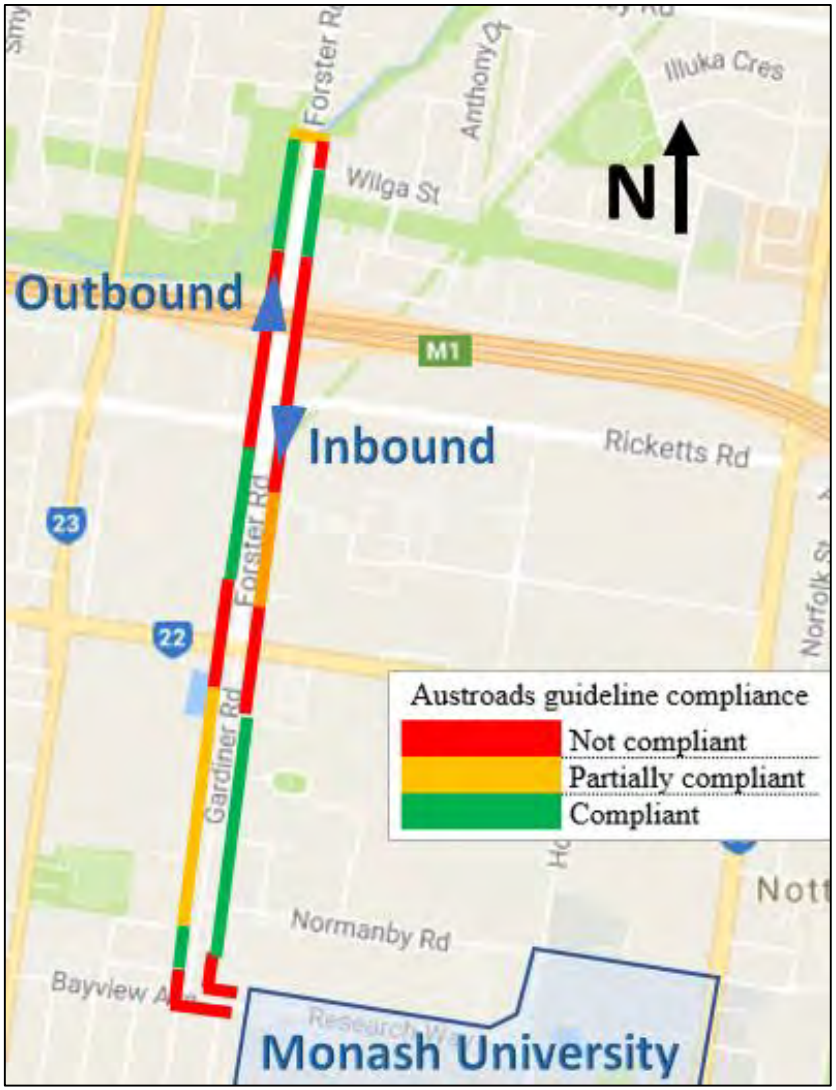
- Safety
- Geometry
- Space

Some mention of network significance

2. Infrastructure audit



2. Infrastructure audit



Key observations:

- Mid block:
  - Generally compliant
- Intersections:
  - Freeway interchange
  - Arterial Road
- Consequence:
  - **Discontinuity**

2. Infrastructure audit
Example: Alma Rd / Kooyong Rd, Caulfield North

BEFORE
5/2/16

2. Infrastructure audit
Example: Alma Rd / Kooyong Rd, Caulfield North

AFTER
4/5/17

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Worldwide Learning Opportunity

Worldwide Learning Opportunity

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- Generous sponsorship from John Reid of Austraffic
- Administered by the ITE
- Financial support to attend an international conference
- In November 2017, I attended the Australasian Transport Research Forum (ATRF) in Auckland
- Amazing opportunity to present, learn and network

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Australasian Transport Research Forum (ATRF) November 2017 – Auckland

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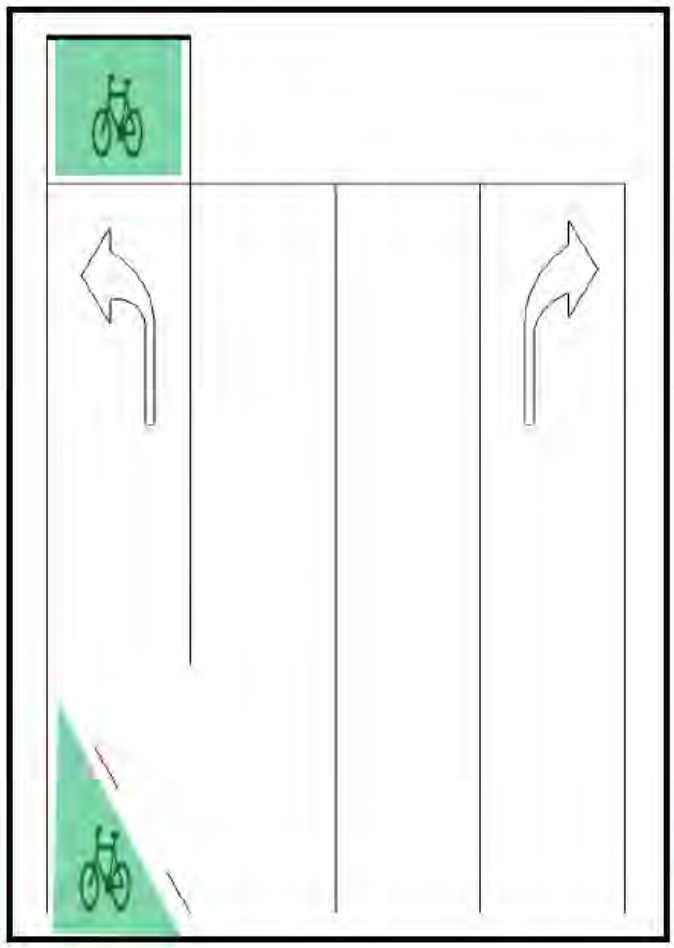
OVERVIEW

- Collection of video camera data at intersections
- Analysis of interactions between cyclists and drivers

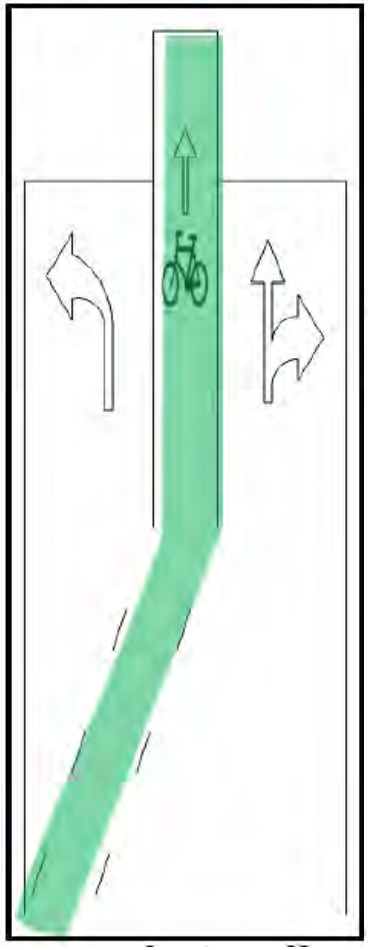
OUTCOMES:

- Understanding of relative driver/rider positions
- “Proper” negotiations are not mutually understood
- Optimal outcome, based on observations:
  - Advance Stop Line with continuous bike lane

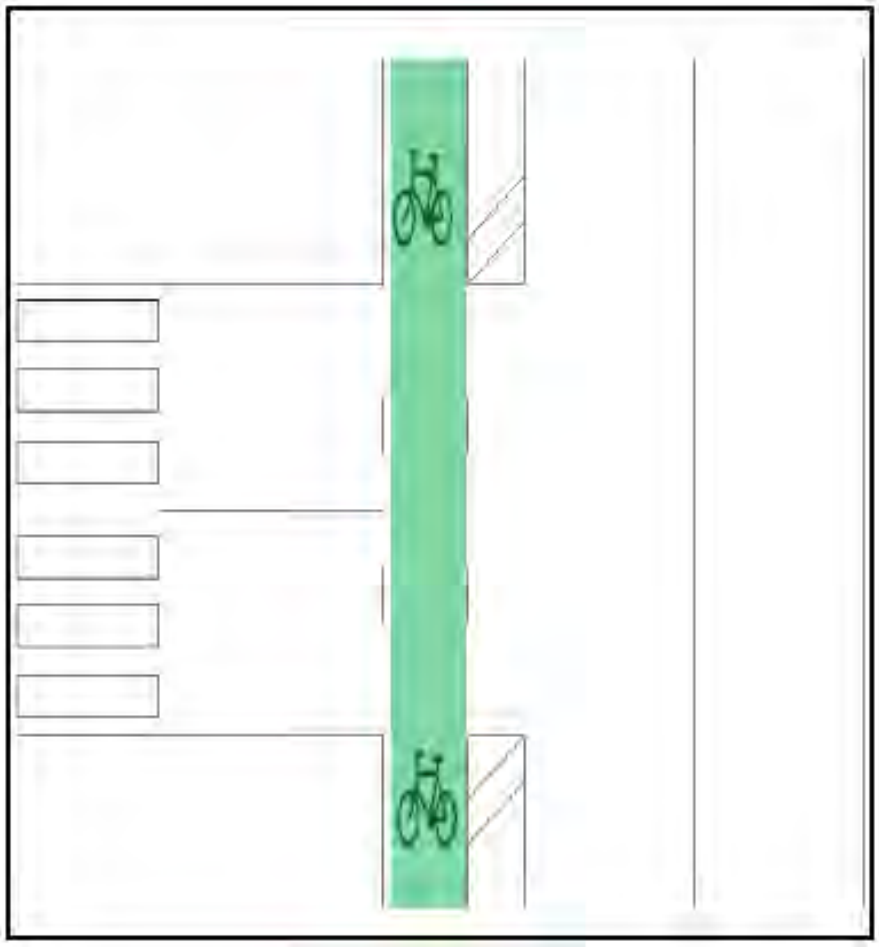
ATRF - Nicholls et al
Cyclists and left-turning drivers



Advance Stop Box



Advance Stop Line



Continuous Bicycle Lane

Figures from Nicholls et al, 2017[3]

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…. To be continued

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OVERVIEW

- System Dynamics modelling
- Series of “balancing” and “restoring” loops

OUTCOMES

- Simplistic case: protected bike lane on all arterial roads
  - 20% increase in cycling mode share
  - Huge public health benefit
  - Small increase in cyclist trauma
- Local to Auckland, but a great case study

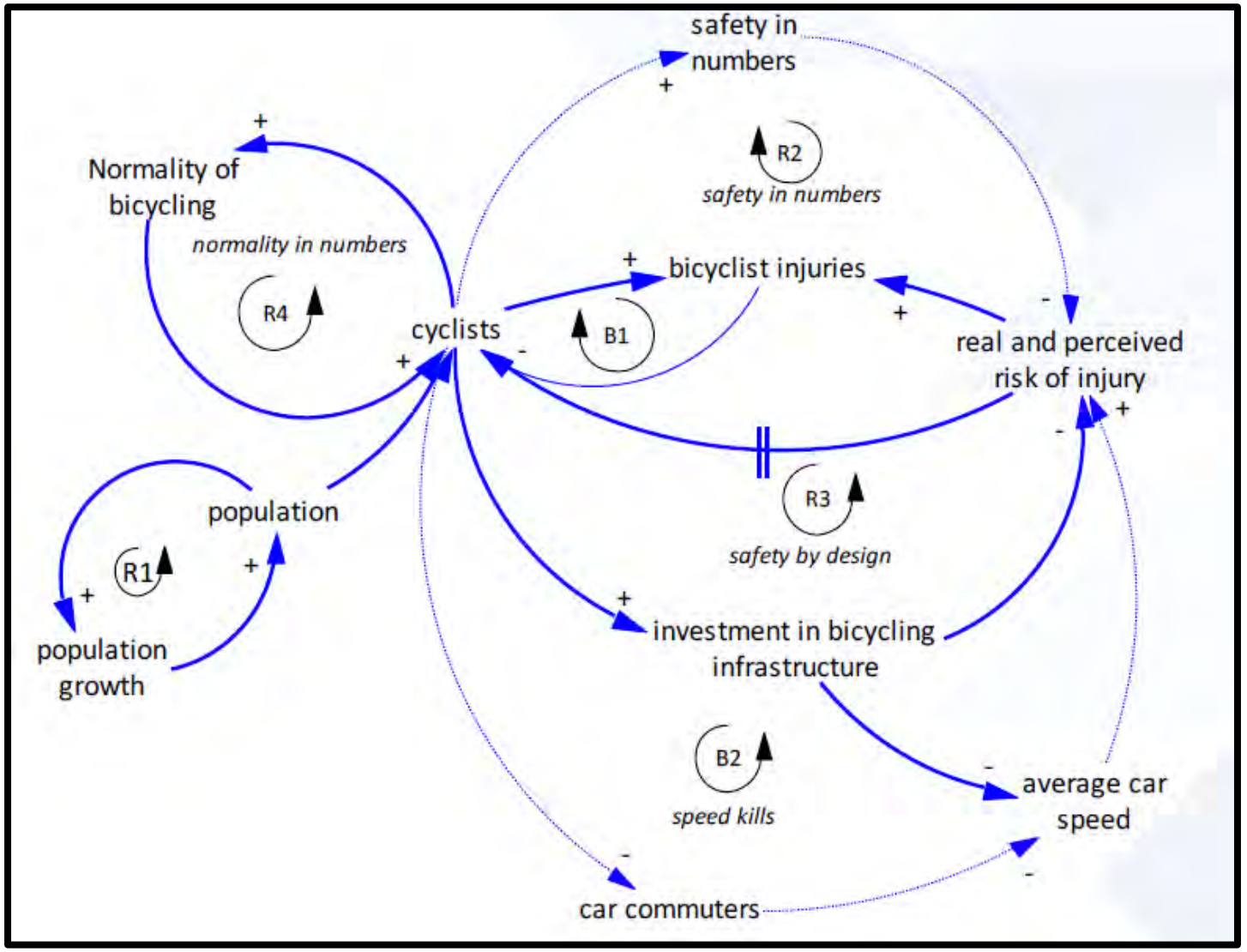

Figure from Macmillan, 2017[4]

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OVERVIEW

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OVERVIEW

- Market innovation has overtaken regulations
- International review of e-bike regulations

OUTCOMES

- Concerns – interactions with pedestrians (on paths) and vehicles (on road)
- Speed – should be regulated (especially on paths)
- Introduce specific DCA code for electric vehicles[5]

Dr Debbie Hopkins, University of Oxford

Putting People into Driverless Cars

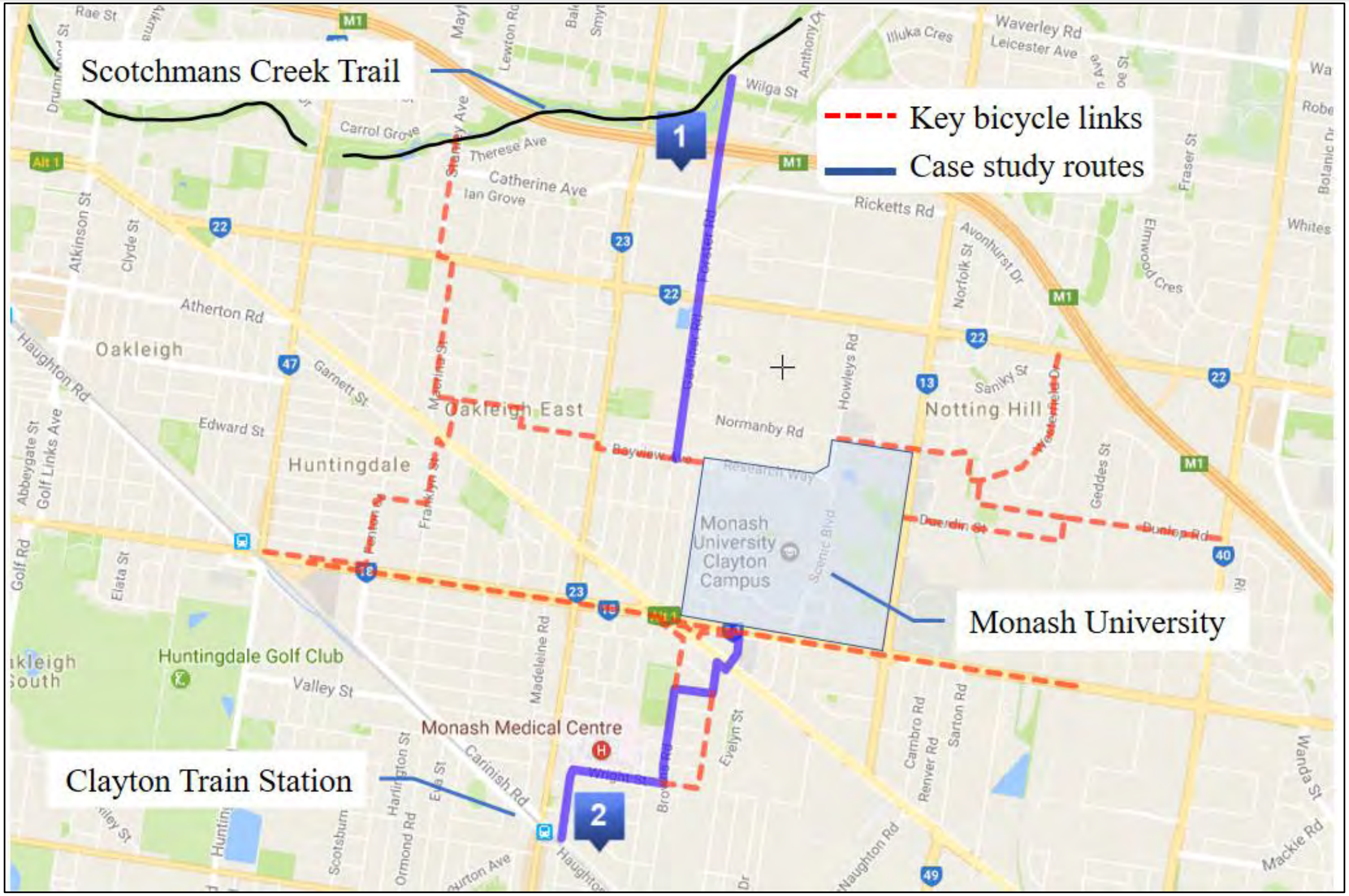
Martin McMullan, Director Connected Journeys at NZTA

Mobility as a Service – Queenstown Mobile App

Professor Graham Currie, Director of the Public Transport Research Group at Monash University

Lies, Damn Lies - AVs, Shared Mobility and Urban Transit Futures

Questions



Scotchmans Creek Trail
Key bicycle links
Case study routes
Monash University
Clayton Train Station
Oakleigh
Oakleigh East
Huntingdale
Notting Hill
Monash University Clayton Campus
Huntingdale Golf Club
Monash Medical Centre
Waverley Rd
Ricketts Rd
Atherton Rd
Normanby Rd
Research Way
Dunlop Rd
Wright St
Haughton Rd
Carinish Rd
1
2

REFERENCES

1. CROW 2007, Design manual for bicycle traffic, CROW, The Netherlands
2. Austroads 2014, Cycling Aspects of Austroads Guides, Austroads Ltd, Sydney
3. Hugo Nicholls, Geoff Rose, Marilyn Johnson and Rachel Carlisle, Cyclists and left-turning drivers: A study of infrastructure and behaviour at intersections, ATRF 2017 Auckland conference
4. Alex Macmillan, University of Otago, Modelling the co-benefits of investment in Auckland cycling, Transport Knowledge Conference (at ATRF 2017)
5. Glen Koorey and John Lieswyn, ViaStrada, Simon Kennett, NZTA, Regulation of e-bikes and other low powered vehicles