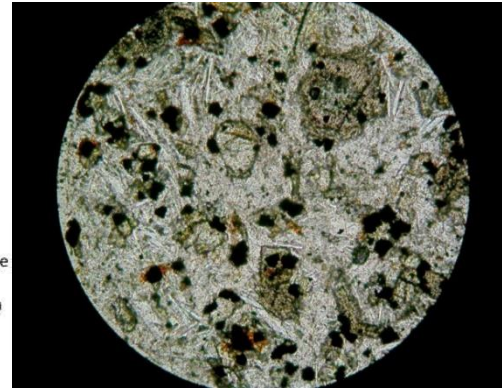
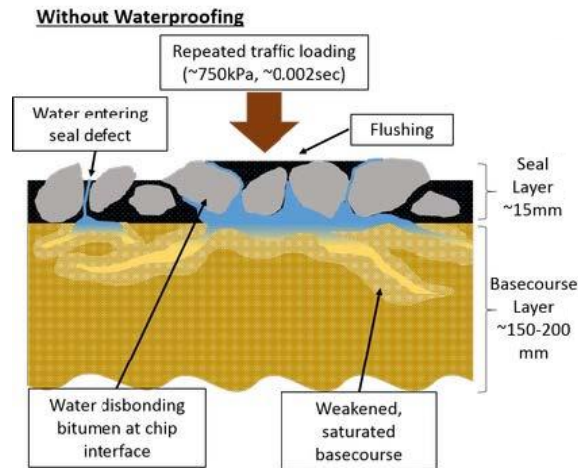


# Transportation Research at University of Auckland

## Showcasing some of the Research

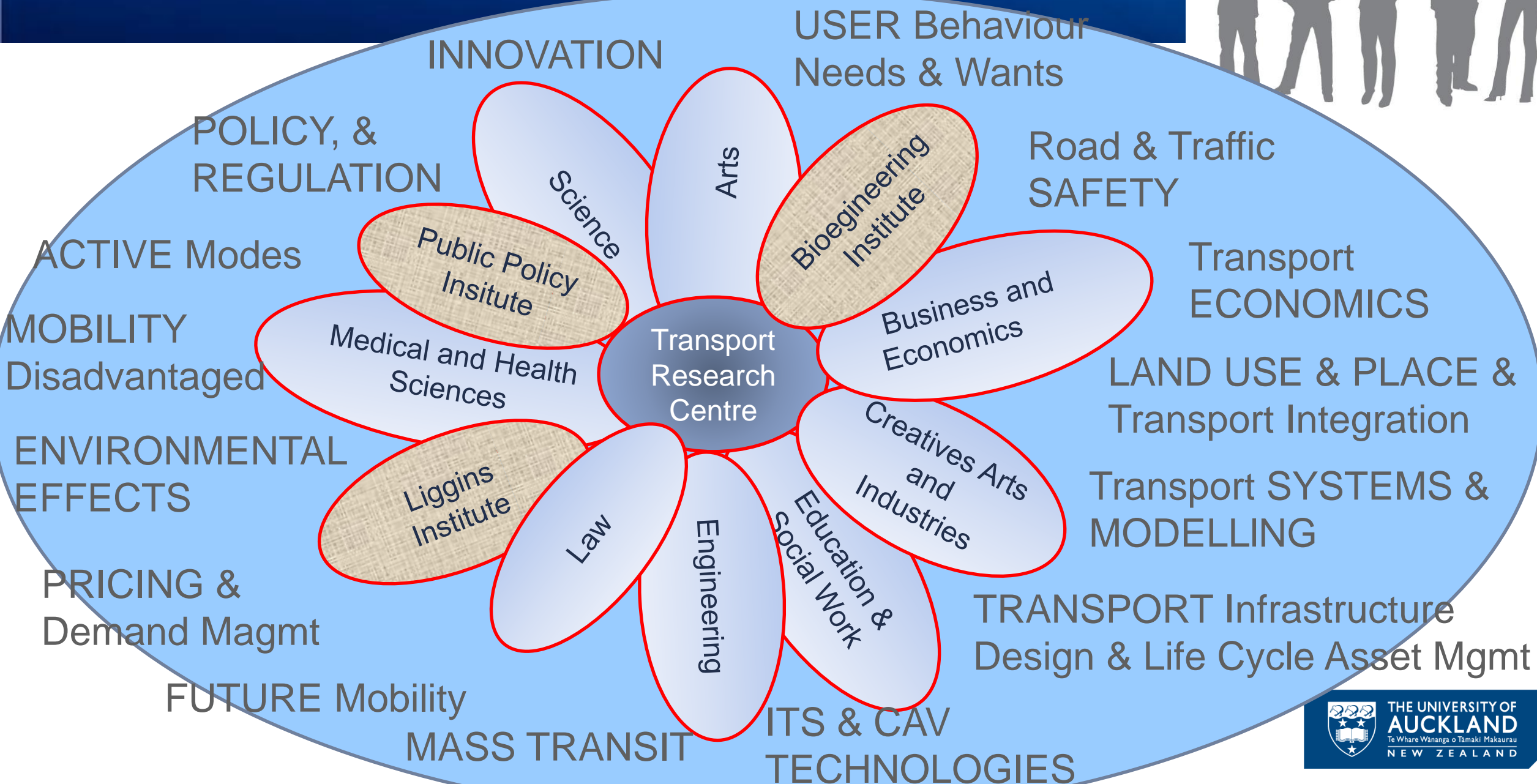
Dr Douglas Wilson

Wednesday 14<sup>th</sup>  
November 2018





# Transportation Research – University of Auckland



# Tricia Austin, Architecture and Planning

*...designing neighbourhoods for residents of different ages,  
life stages, ethnicities and abilities / disabilities*

## Assessing exposure to risk from traffic for children in residential neighbourhoods



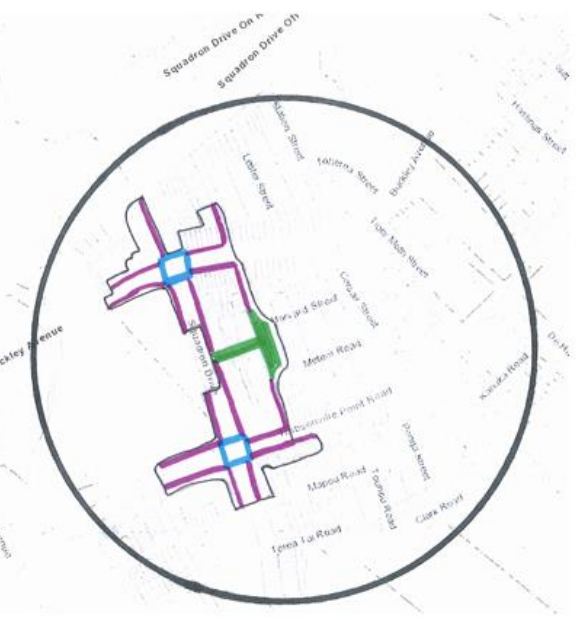
- Green is a safe car-free route
- Orange is a shared surface driveway / service lane
- Red is a crossing over a road

## Comparing pedsheds for pedestrians with diverse abilities

400 m. Pedshed along the  
walking network



400 m. Pedshed for a vulnerable  
wheelchair user



Shaping Places: Future Neighbourhoods

*He auaha tūwāhi Ngā hapori o mua*

National  
**Science**  
Challenges

**BUILDING BETTER  
HOMES, TOWNS  
AND CITIES**

Ko Ngā wā Kainga hei  
whakamāhorahora

# Energy Centre – Prof Basil Sharp, Dr Selena Sheng

## ■ Objectives / Mission

- Provide research, policy analysis and educational programmes to
- help business & Govt confront energy issues of national significance to NZ

## ■ Background Context

- Economics Dept of Business School
- Founded 2004
- Supported by Energy Education Trust NZ



## ■ Three Broad Research Themes

- Energy markets,
- Resource and environment markets and
- **Transport economics**

## ■ Example Current Research projects

- Electricity, market design, demand side managements,
- Renewables, wind, solar
- **Transport, mode of choice to work, congestion management**
- Oil and gas, development, intern markets
- Energy efficiency
- Greenhouse gas emissions
- Simulations of Wind in electricity



# Future & Inclusive Streets – Healthy Future Mobility Solutions

School of Population Health, Key Contact: Prof Alistair Woodward



University of Auckland, Massey University,  
University of Otago, Mackie Consulting,  
Dovetail Consulting, Auckland Transport,  
NZTA, Māngere-Ōtāhuhu Local Board, Design  
Tribe Architects, MBIE

Prof Shanthi Amerautunga



# Public Policy Institute

## Te Whare Marea Tātari Kaupapa



**PUBLIC POLICY INSTITUTE**  
Te Whare Marea Tātari Kaupapa

@PolicyAuckland



### Connecting People

- Communities
- Researchers
- Stakeholders

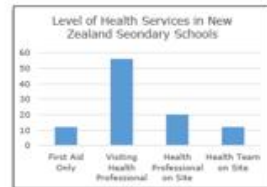
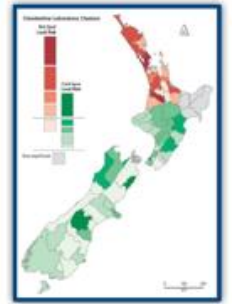


**THE UNIVERSITY OF AUCKLAND**  
Te Whare Marea Tātari Kaupapa  
**PUBLIC POLICY INSTITUTE**

**Policy Briefing 2/2017**

### Hot Property in New Zealand: Housing bubbles in the metropolitan centres

Dr Ryan Greenaway-McGrew, University of Auckland  
Distinguished Professor Peter C.B. Phillips, University of Auckland; Sterling Professor of Economics, Yale University; University of Southampton; Singapore Management University



### Independent, critical research

- Evidence-informed
  - Interdisciplinary
- Policy design, advocacy and evaluation

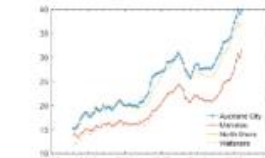


Figure 1: Price-to-rent ratios in the Auckland metro area

**THE UNIVERSITY OF AUCKLAND**  
Te Whare Marea Tātari Kaupapa  
**PUBLIC POLICY INSTITUTE**

**Policy Briefing 5/2017**

### Measuring and Managing Health System Performance in New Zealand

Dr Linda Martin Chalmers, Auckland District Health Board  
Professor Toni Ashton, University of Auckland  
Associate Professor Tim Terheijden, University of Auckland



### Teaching



**Master of Public Policy MPP**

### Events

**GABRIEL MAKHLUF**  
**'Social Capital and National Wellbeing'**  
Tuesday 27 March, 5.30pm  
Venues: Fife Pacifica, University of Auckland



### Knowledge Exchange

- Impact
- Policy briefings
- Policy Commons blog
- Policy Pod



**NZ's Most Pressing Health Policy Problems, and How to Address Them**  
Nov 8, 2017 - Policy Commons

**The Shaping of Crown**  
Nov 8, 2017 - Policy Commons





**THE UNIVERSITY OF  
AUCKLAND**  
Te Whare Wānanga o Tāmaki Makaurau  
**NEW ZEALAND**

# **PUBLIC POLICY INSTITUTE**

**Te Whare Marea Tātari Kaupapa**

**The Public Policy Institute fosters independent, critical research on key policy issues affecting New Zealand, the Asia Pacific, and the global community. We bring together researchers from across disciplines to create and disseminate evidence-informed, policy-relevant knowledge that speaks to policy agendas and amplifies policy impact. We support the work of those undertaking policy design, advocacy, and evaluation, to grow partnerships with governments (both local and central), non-profits, communities, and others engaged in policy research and evaluation in New Zealand and internationally.**

**The PPI is committed to creating strong relationships with iwi and hapū to ensure that all aspects of our research, teaching, and external activities support and engage with mātauranga Māori and the goals of Māori self-determination and development.**

**The PPI is also home to the Master of Public Policy, where postgraduate students engage in learning and knowledge exchange with researchers and professionals to address a range of challenging policy questions.**

## **Core Research Themes:**

- **Liveability, Ecology and Infrastructure**
- **Wellbeing across Generations**
- **Wealth, Poverty and Inequality**
- **Diversity and Justice in a Bicultural Society**
- **Science for Policy**
- **Global Policy and Foreign Affairs**



# Transportation Research Centre – Engineering

Dr Theuns Henning, A/Prof Seosamh Costello & Dr Doug Wilson

- **Objectives / Aim:**

- Provide a vibrant and innovative research hub for both academic and commercial research in Transportation Engineering in NZ

- **We offer:**

- Multi – disciplinary expertise from Engineering, Science and Business Faculties
- Extensive collaborative ties with Central, Local Govt, industry and international researchers
- Extensive Transportation Laboratories (both in laboratories and in field testing)
- Founded 2002

- **Three Broad Research Themes:**

- Transportation infrastructure materials, design and life cycle asset management,
- Traffic engineering, operations, ITS and modelling
- Traffic Safety, Sustainability and Travel behaviour

- **Example Current Research projects:**

- Transport Infrastructure & materials
- Infrastructure resilience & climate adaptation
- Active Modes & Mobility disadvantaged
- Road safety & traffic management
- Future Mobility & Sustainability
- ITS, SAV and Future mobility

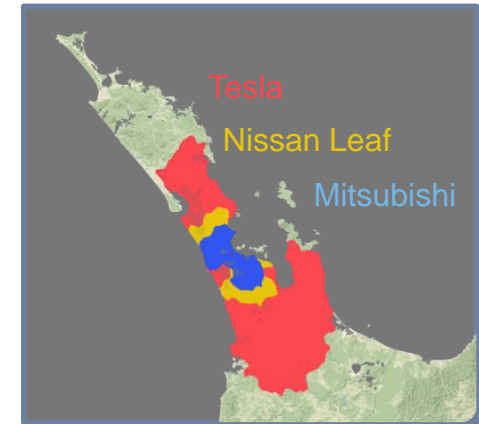
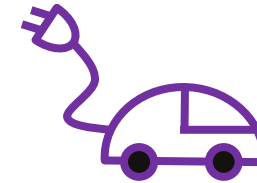


# Analytics & Optimisation Tools for Transport Modelling

Engineering Science, Key Contact: Dr Andrea Raith

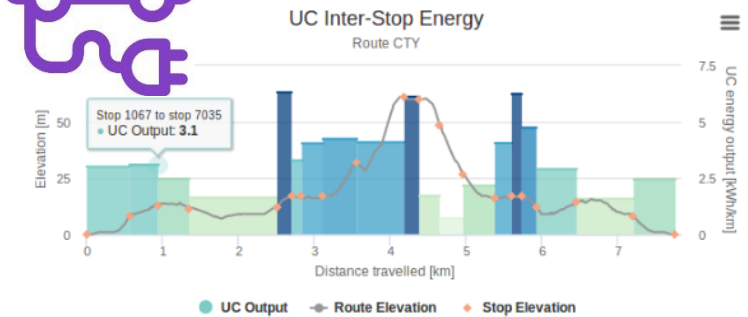
## ■ Electric Vehicles

- Impact of incentives on uptake
- Electric Vehicle routing with planned charging stops and optimal location of chargers



## ■ Electric bus

- energy modelling and network optimisation



## ■ First-Last-Mile Transport and automated vehicles in future transport systems

## ■ Traffic emission optimisation

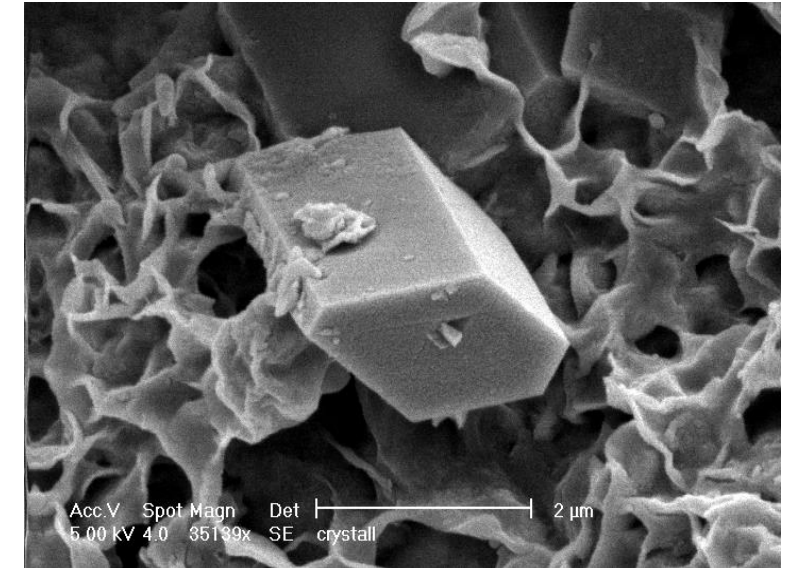
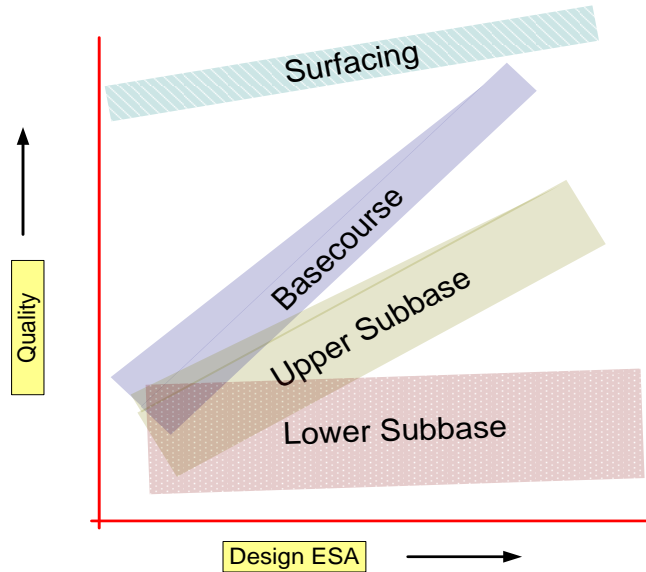
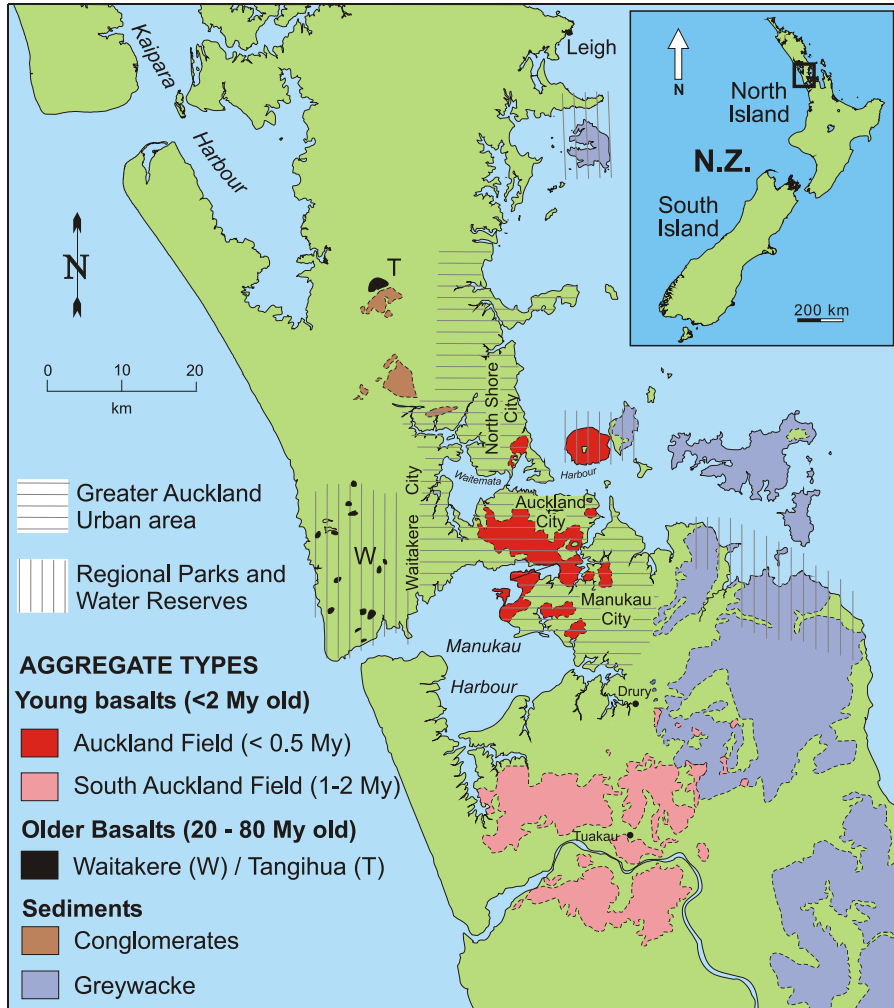


## ■ Modelling of cyclist route choice for optimal infrastructure investment



Modelled cyclist flows  
Auckland

# Leveraging Aggregate Resources – Achieving Greater Sustainability through better use of Aggregate Mineral Resources – Dr Doug Wilson, Prof Philippa Black



## Current PhD Students

Pritesh Karan

Wentao Li

Ebrahim Sangsfedi

Ashkan Tatari

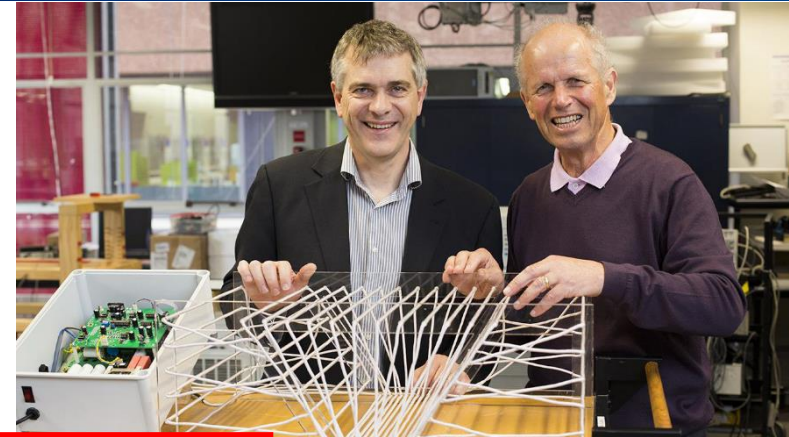
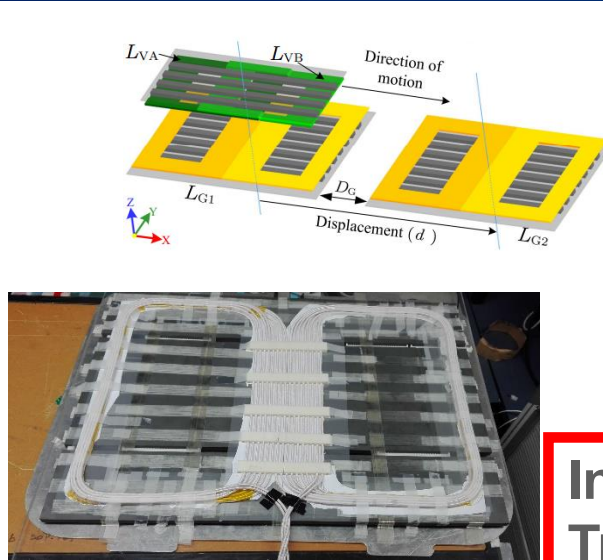
Nazanin Ardalan

Ahmed Marghani



# Inductive Power Transfer (IPT) charging of EVs in Roadways

Key Contacts: Prof Grant Covic, Prof Simon Bickerton & Dr Doug Wilson



**Inductive Power Transfer (IPT)**  
**\$11.8M Project**



Ministry of Business,  
Innovation & Employment







The consortium currently consists of:



ENGINEERING



### Current UoA Research

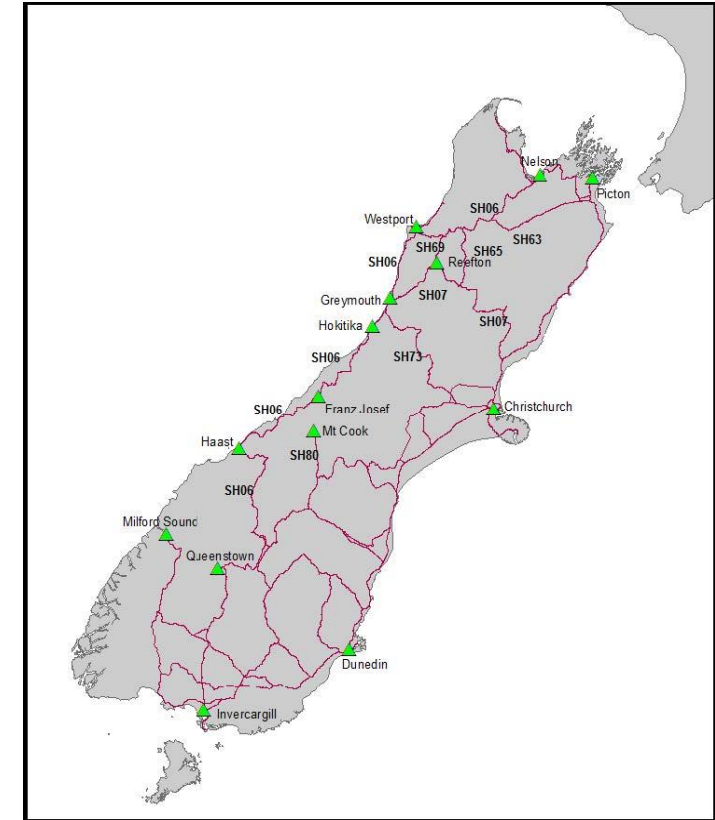
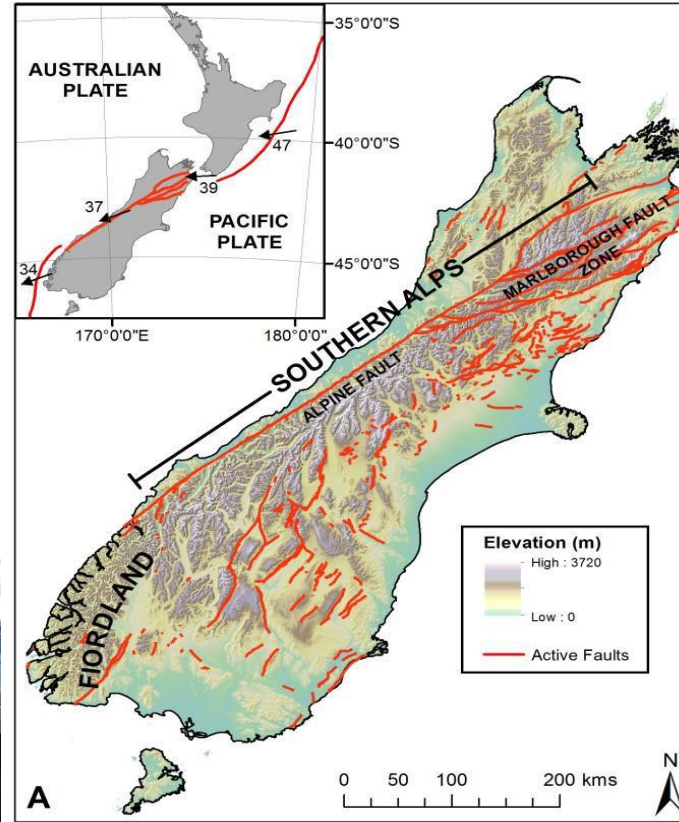
1. SAV User Perception
2. First Km – Last Km solutions
3. Public Transport Integration
4. Mobility Disadvantaged
5. Economics and Optimisation



# Assessing the Resilience of Rural Transportation Network

**Aim:** Assess the resilience of rural road network based on Alpine Fault (AF8) scenarios using special transportation simulation

(West Coast of South Island, NZ)



Mohammad T. Aghababaei

**Contact :** [m.aghababaei@auckland.ac.nz](mailto:m.aghababaei@auckland.ac.nz)

**Supervisors:** AP. Seosamh Costello

Dr. Prakash Ranjitkar

RESILIENCE  
TO NATURE'S  
CHALLENGES

Kia manawaroa  
– Ngā Ākina o  
Te Ao Tūroa

National  
**Science**  
Challenges



# Development of a Cycle Safety Risk Index (CSRI)

- Hormoz. ETEMAD, Supervisors : S.B. COSTELLO and D.J. WILSON

## Research Goal:

- The intention is to be able to estimate perceived risk of a route based on objective measures of the surrounding infrastructure and traffic. The long-term goal is to develop a cycle risk safety index (CRSI) which will provide a relative indicator for cyclist safety, thereby helping to inform cyclists of safer route choices.

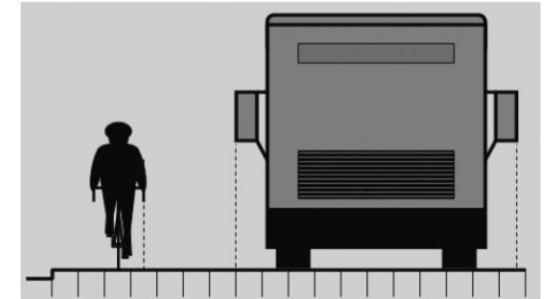
## Naturalistic Methodology on Bicycles

- Bicycle safety can benefit from the naturalistic methodology
- By recording all events leading to an accident, naturalistic data can provide a better understanding of the driver's behaviour, and thus valuable and unique insight into accident causation

## Bicycle Instrumentation Setup



Sensors	To Measure/Record
1. Ultrasonic Rangefinder	Proximities between cyclists and overtaking motor vehicles
2. Video Cameras	Video information of conflicts
3. Accelerometer	Road Roughness (Vibration)
4. Data and power hub parts:	
1. Power source	1. Battery Source
2. Single computer board	2. Data logger
3. GPS	3. Location, Speed
4. Ultrasonic rangefinder	4. Passing distance
5. Rear video camera	5. Vehicle type
6. Powered USB hub	6. Connect the sensors to data logger





# Some of our Current PhD Researchers in Engineering



Frank L.



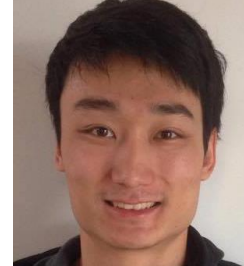
Nazanin A.



Irina H.



Stefan H.



Jun P.



Pritesh K.



Ashkan T.



Hormoz E.



Ebrahim S.



Mohammad A.



Ajjima S

.....



This could be you?  
Or someone working for you?

We have more than **25 current PhD Students in Transportation Engineering** and many more Masters and Final Year project students

Approx. **160 current PhD Students in Civil & Environmental Engineering.**