A stylized landscape with rolling hills in shades of green and brown. A path of white footprints winds across the hills. A large, faint green dollar sign is visible in the background.

# Julie Genter

How to make pedestrian friendly communities an economically rational choice

Living Streets Aotearoa



# The economics of car dependence

How to make pedestrian friendly communities an economically rational choice

Julie Anne Genter 4 August 2008



**McCormickRankinCagney**

Prepared by:  
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# Introduction

Lens of economics : the study of the allocation of scarce resources.

Consumers and businesses make choices under constraints, i.e. trade offs

In transport modelling, trade offs are used to explain mode choices → The generalised cost = \$cost + (time x \$V)

Land use modelling, trade offs are used to explain location decisions → accessibility , transport costs, rents



# Introduction

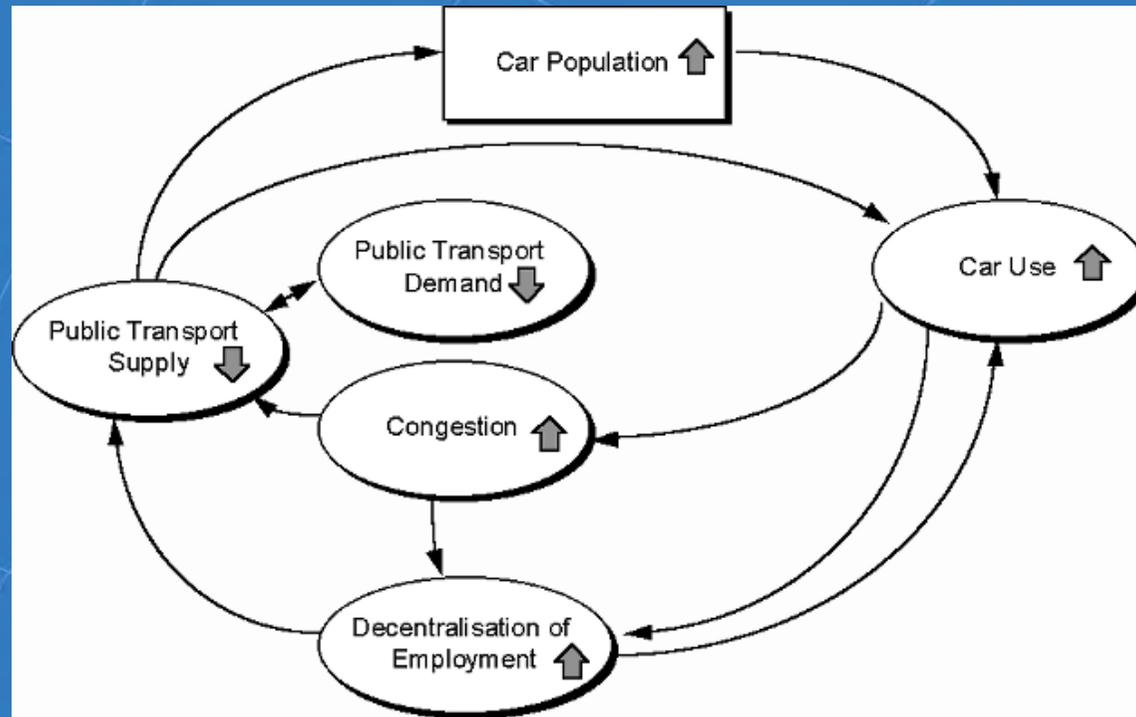
Car dependence: When you have to use a car to get to most places (Peter Newman, *Sustainability and Cities*, 1999)

Car dependence is the antithesis of walkable communities:

1. Development is spread out over greater distances, too far for walking
2. Walking environment is perceived as unsafe, unpleasant
3. Reduces economic viability of passenger transport



## What underpins car dependence?



## What underpins car dependence?

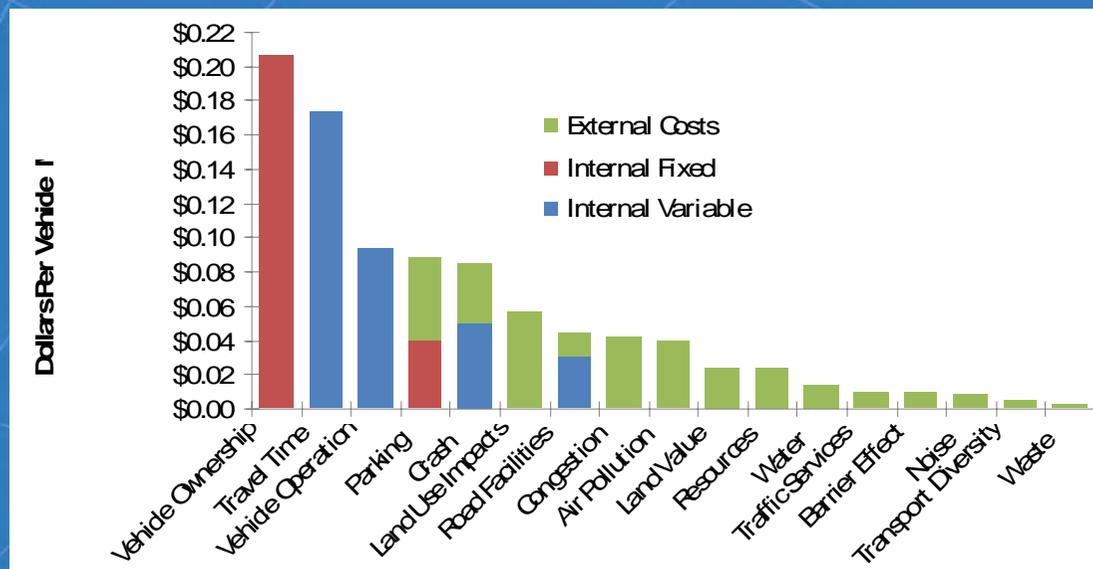
1. Price factors directly influence mode choice
2. Regulatory factors directly influence price of mode choice and urban form
3. Transport planning influences value of land and thereby urban form and mode choice



# The History: How did we get here?

1. Price factors directly influence mode choice:

Many costs of car use have been indirect and external



# The History: How did we get here?

2. Regulatory factors directly influence price of mode choice and urban form:

## a) Minimum Parking Requirements

### The High Cost of Free Parking (Shoup, 2005)

City plans mandate the provision of car parks in most parts of NZ.  
Demand based on 85<sup>th</sup> – 95<sup>th</sup> percentile demand for free parking.

Huge impact on affordability of development.  
Highly subsidises single occupant vehicle trips.



# The History: How did we get here?

2. Regulatory factors directly influence price of mode choice and urban form:

b) Single use zoning

Creates areas that are solely residential or commercial, thereby increases need to travel longer distances to access goods and services.



# The History: How did we get here?

3. Transport planning influences value of land and thereby urban form and mode choice

→ Increasing vehicle mobility reduces accessibility.

Impact on property values (Levinson and Krisek, 2008)

→ Arterials and motorways reduce property values immediately adjacent, but increase values further out.

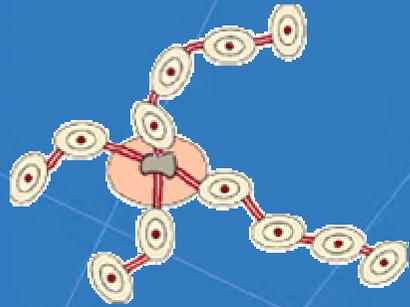
Induced development effect (Cervero, 2002)



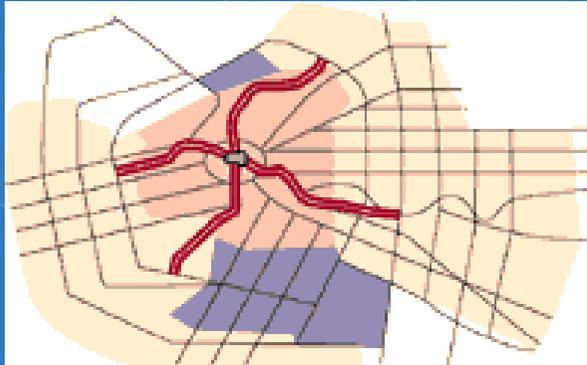
## The walking city: human scale



## The transit city: human scale extended



## The automobile city: motor vehicle scale



# How do we get from the car city back to the walking or transit city?

1. Price factors directly influence mode choice	Direct and efficient pricing Full internalisation of vehicle costs – direct charging
2. Regulatory factors directly influence price of mode choice and urban form	Remove minimum parking requirements and single use zoning. Requires better parking management including parking pricing
3. Transport planning influences value of land and thereby urban form and mode choice	Change transport planning and funding priorities to privilege access over mobility





If we do what we always did, we'll get what we always got...

Research suggests that mixed use zones and transit oriented development will not be enough to create truly accessible communities in the current situation.

Infrastructure provision is a necessary step as it affects land values and economic development.

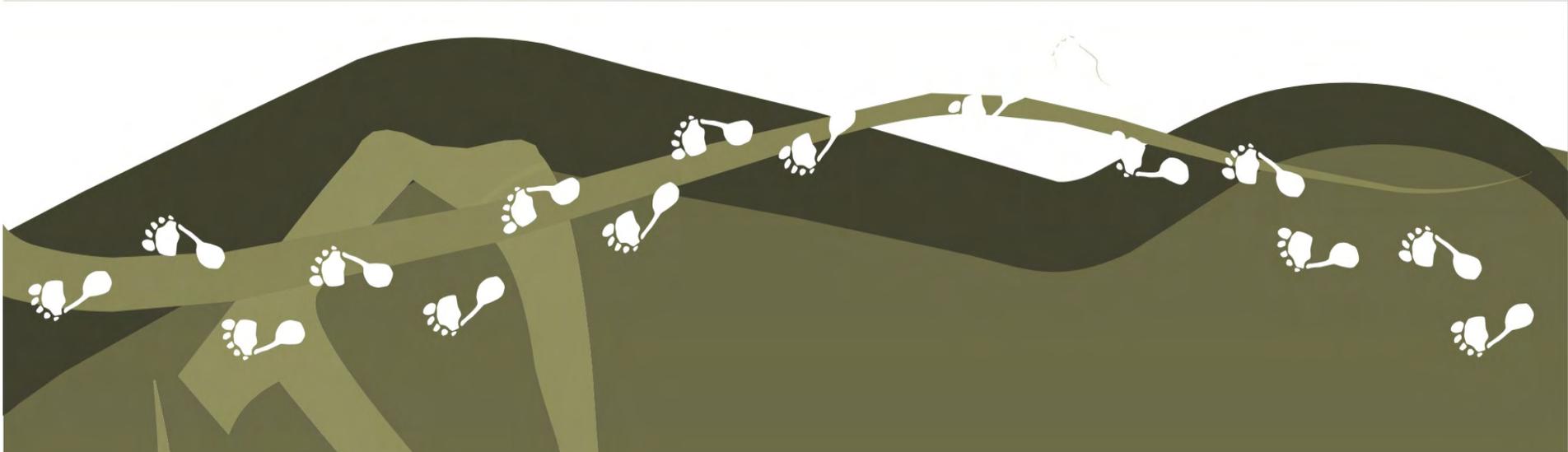
Un-subsidising private vehicles will be necessary to support economic development that favours accessibility. Increasing the perceived costs of private car use will create opportunities





consultants in transportation [www.mrcagney.com](http://www.mrcagney.com)

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A stylized landscape with rolling hills in shades of olive green and dark green. A path of white footprints winds across the hills. In the background, a white mountain peak is visible against a light sky. The overall aesthetic is clean and modern.

# Phil Hendon

**New Zealand State Highways and Pedestrians**

**Living Streets Aotearoa**





NZ TRANSPORT AGENCY  
WAKA KOTAHI

# State Highways and Pedestrians

Walking Conference, 'Double the feet on the street.'  
August 2008

Philip Hendon (Transport Planning)

# State Highways and Pedestrians

## Introduction

Characteristics

Objectives

Challenges

Solutions

Policy

Making it happen

Case Studies (x4)



# Characteristics and Objectives



# State Highways - Characteristics



# Objectives – Transport Sector



To increase walking and cycling and other ‘active modes’ to 30% of total trips in urban areas by 2040’

Updated New Zealand Transport Strategy (Draft, 2008)

# Objectives – State Highways



Operate the state highway system in a way that contributes to the aim of achieving an **affordable, integrated, safe, responsive, and sustainable land transport system**

Land Transport Management Amendment Act (2008)

# Objectives

## NZ Transport Agency – Statement of Intent Year 1

- Modal Shift
- Safer Travel
- Streamlined funding process!
- Value for money
- Partnerships – Working with Local authorities.

# Objectives

## NZ Transport Agency – Key Actions Year 1

- Encouraging mode shift through a programme of promotion campaigns, travel planning, integrated traffic management and travel demand projects.
- Supporting the switch to active modes through regional walking and cycling strategies, ensuring cycling and walking are integral parts of all transport networks, improving funding processes to reduce existing hurdles, and challenging traditional design assumptions that restrict active modes

# Challenges and Solutions



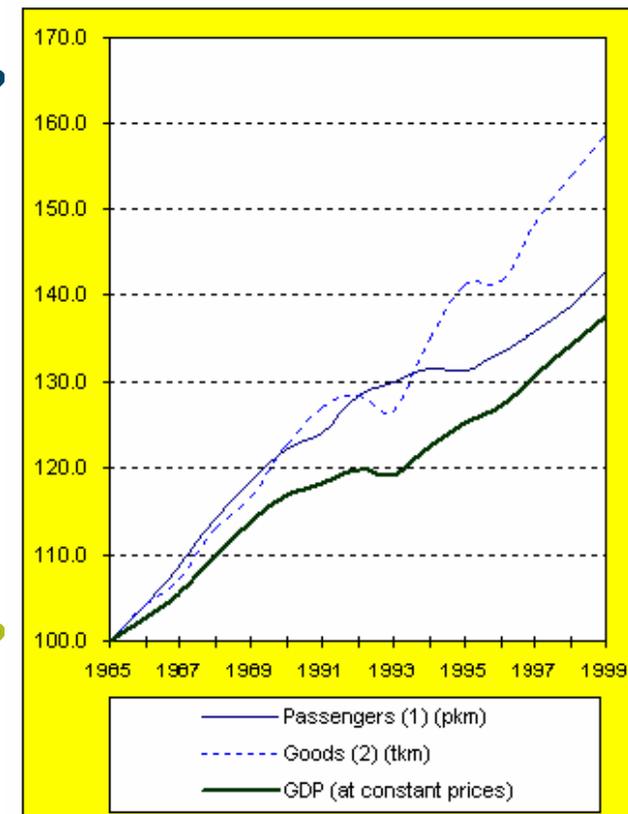
# Challenges – High Level

## Conflicts?

- The economy and car usage
  - Can we decouple economic growth (GDP) & km travelled?
- The economy and the environment
- Personal freedoms and sustainability
- Quality of life
- Safety

What part should transport play?

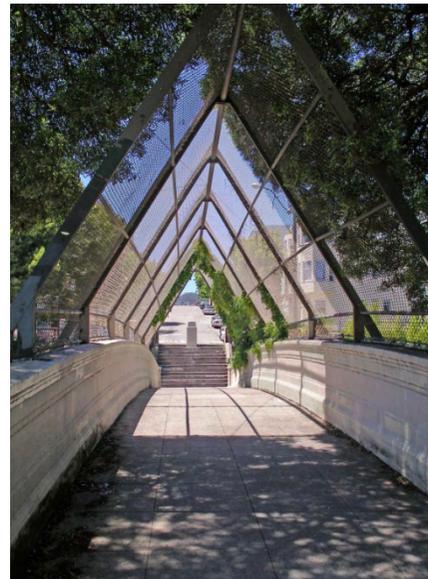
Transport Growth EU 15 3.1.1  
1985 = 100



# Challenges – Specific

## What is appropriate?

- Good
- Bad
- Gender
- Age
- Time of day
- Level of use
- Mobility



# Solutions



Busy urban area  
Ring road carrying  
large flows  
Yet pedestrian  
environment  
improved!



*Nottingham City Centre, Maid Marion Way.  
Picture courtesy of Nottingham City Council*

# Solutions

## Multi Faceted and Multi Modal Walking

- Do not discourage  
i.e. remove barriers first,  
can be low cost!
- Encourage  
i.e. new facilities so  
travelling environment
- Promote and market  
i.e. tell people about  
facilities and the  
benefits of using them



# Policy to making it happen!

## 3.3.4 Walking and cycling policy

Transit will fulfil this commitment by:

1. Work with local and regional authorities, Land Transport New Zealand, other transport providers and representatives of cyclists, pedestrians and the disability sector to facilitate an integrated and affordable network approach to planning, providing and maintaining walking and cycling facilities, including cycling and walking on and across state highways where appropriate.
2. Address walking and cycling requirements in its strategic transport planning, in its establishment of funding priorities, in its involvement in local and regional land use planning and at the outset of developing each state highway improvement project.
3. Seek consistency between local and regional cycling strategies, the relevant provisions of regional land transport strategies and Transit's State Highway Forecast.
4. Deliver facilities for cyclists and pedestrians that represent engineering best practice, high quality urban design and value for money.
5. Recognise the particular requirements of different types of journeys such as commuting, school travel, short urban trips, recreational, tourist and racing. Recognise also that cyclists and pedestrians need to travel both along and across state highways.
6. Gather data on the numbers of cyclists and pedestrians using the state highway network to enable targeted treatments to be implemented.
7. Maintain an active network of walking and cycling champions in all Transit regional offices to consult with cycling and walking stakeholders and ensure the needs of these road users are addressed.



# Policy – Walking at the core



## Embed walking into framework

These documents **emphasise** that we must consider the needs of pedestrians during network planning, development, design, implementation and maintenance of projects.

# Making it happen

- Engaging with and producing network wide strategies
- Providing improvements for pedestrians on and across state highways
- Influencing local growth
- Maintenance



# Case Studies



# Case Study 1 – Auckland State Highway walking and cycling strategy

## Background

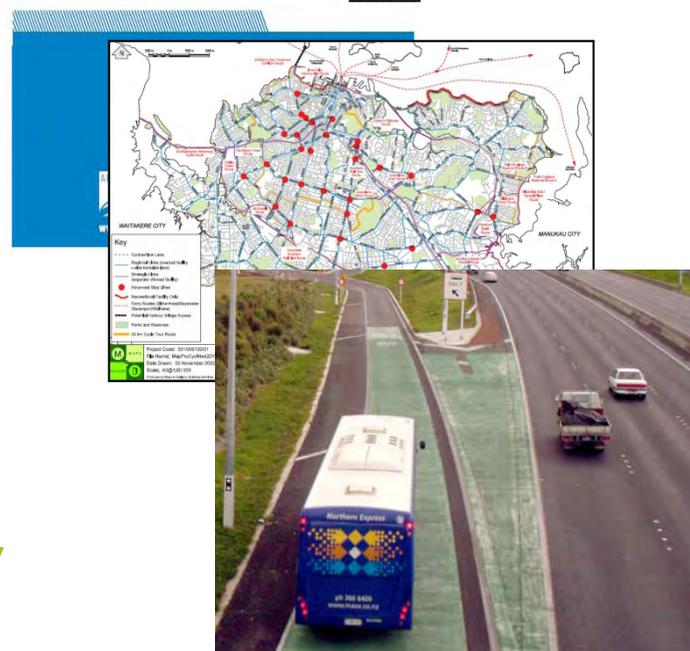
- Strategy covering Auckland Region
- Walking and cycling
- Purpose
  - To identify, assess and prioritise current and future walking and cycling projects on state highway network



# Case Study 1 – Auckland State Highway walking and cycling strategy

## ‘Joined-up’ thinking

- Phase 1
  - Project Identification
  - Project Consultation
- Key thought: Partnerships
- Phase 2
  - Project Assessment
  - Project Ranking
  - Project Urgency
  - Project Prioritisation
- Key thought: Transparency



# Case Study 2 – Mt Roskill Extension

## Background;

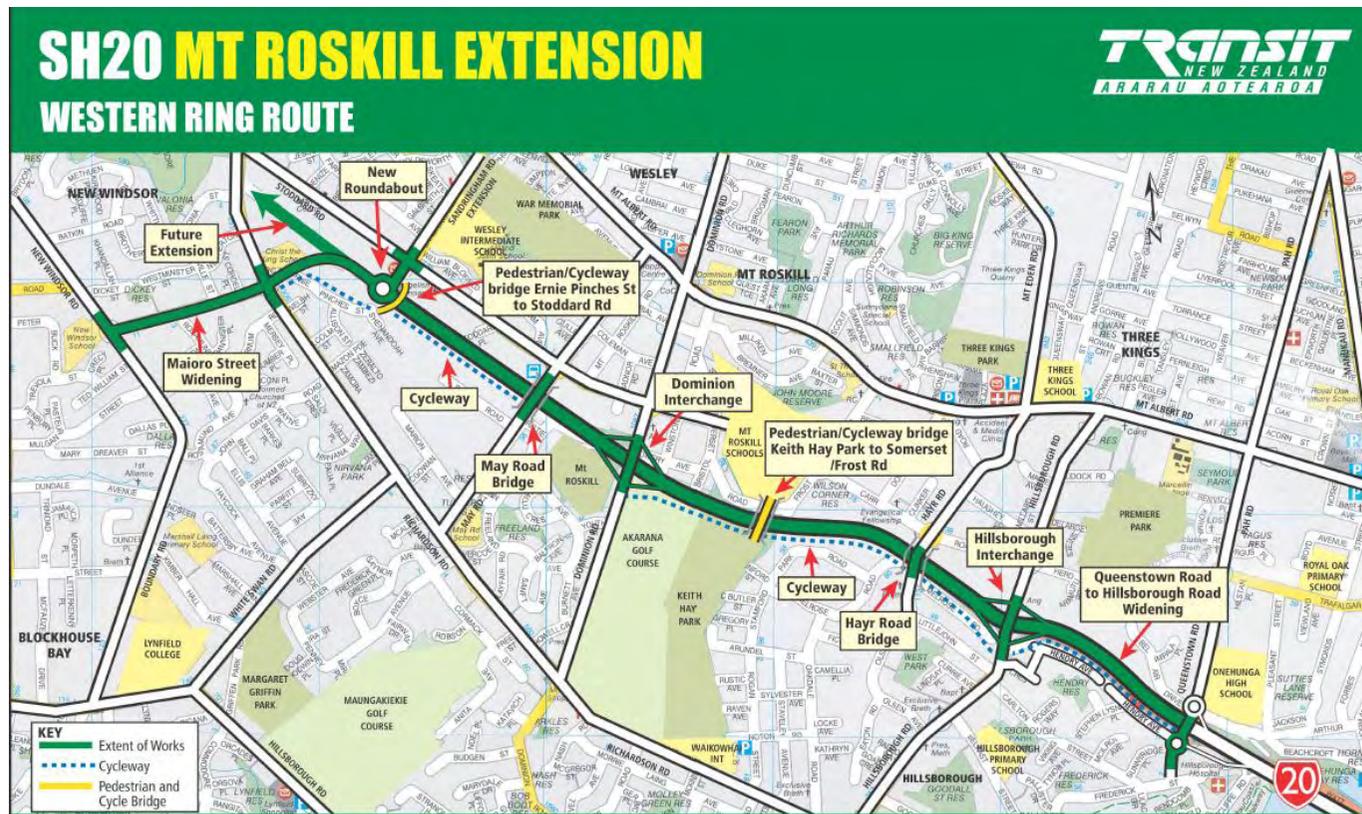
- Large Project > \$4.4m
- Regionally strategic Western Ring Route
- 4 Lane, 4km extension
- High traffic volumes
- Alternative to SH1
- Relief to local roads



# Case Study 2 – Mt Roskill Extension

Severance

Multi Modal



# Case Study 2 – Mt Roskill Extension

## Keith Hay and Ernie Pinches

- Convenience
  - key destinations, desire lines, existing routes, signage.
- Safety
  - Dedicated facility, lighting, width, visibility, ‘eyes on the path.’



# Case Study 2 – Mt Roskill Extension

## Keith Hay and Ernie Pinches

- Accessibility
  - Maintains access, gradual gradients, temporary traffic management
- Attractiveness
  - Iconic, exposure, graffiti



# Case Study 3 – Otaki

- Block Project < \$4.4m
- Small coastal community on SH1, growing retail, delays, congestion.
- Original solution
  - Increase capacity at roundabout
- Consultation!
- Final solution
  - Include pedestrian improvements.



# Case Study 3 – Otaki

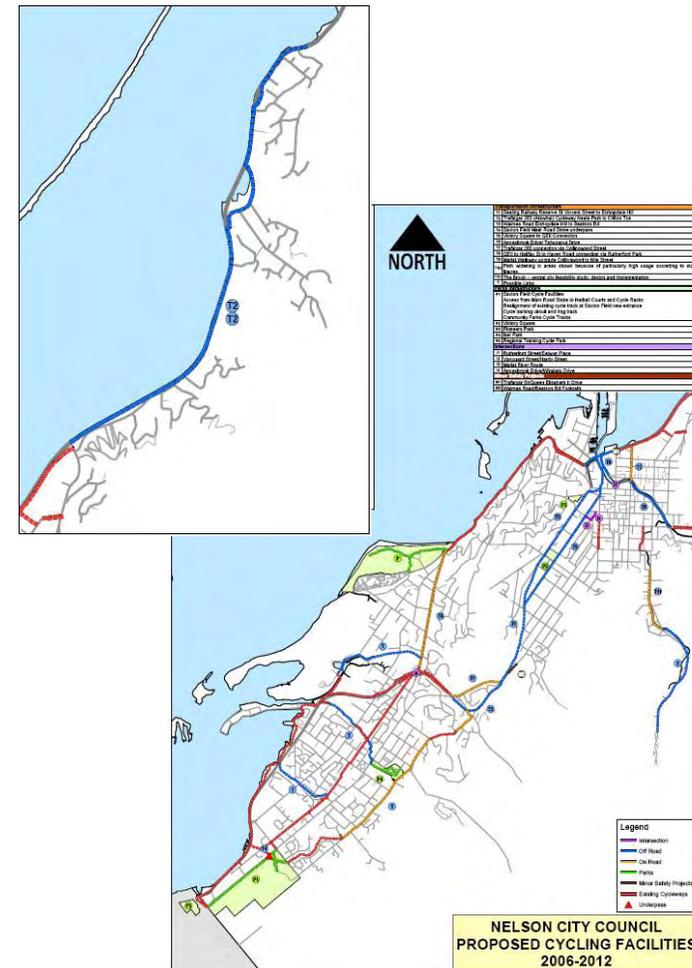
- Convenience
  - Easier to cross
- Safety
  - More Pedestrian friendly environment - slower speeds?
- Accessibility
  - Increase options for pedestrians
- Attractiveness
  - River boulder finish

**Compromises!**



# Case Study 4 – Atawhai shared-use path

- Walking and Cycling Project
- Nelson, SH6, 100km/h.
- Shared-use path, 3m width, 4km.
- Provides a facility for active modes to the residential areas north of Nelson
- Developed from NCC walking and cycling strategies
- Jointly funded



# Case Study 4 – Atawhai shared-use path

- Convenience
  - Route to and from CBD, well signed, covered maps
  - Intersections and deviations!
- Safety
  - Personal safety, education programme in support of project



# Case Study 4 – Atawhai shared-use path

## Walking and Cycling project

- Accessibility
  - Off-road route, flat, links to school, CBD & network
- Attractiveness
  - Parks and roadside, 100km/h. Promotion campaign in support of project.

## FUNDING COMPROMISES



# Conclusion

## Approaches to planning for walking important

- Coherence and 'joined-up' thinking critical
- One common fundamental to success – partnerships.



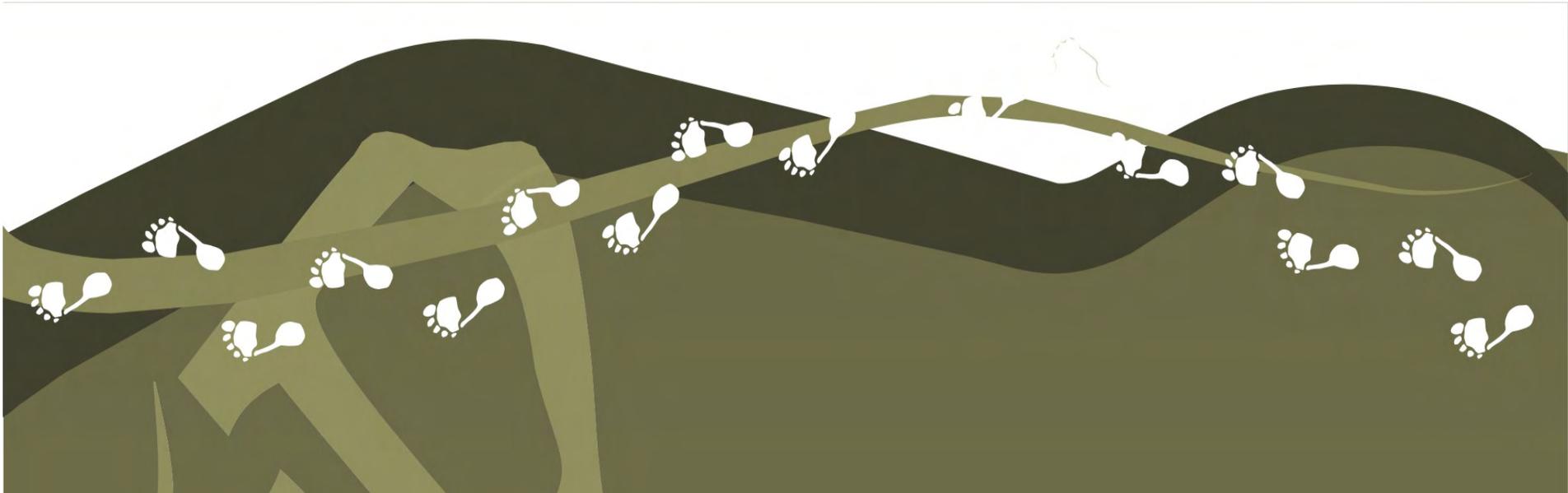
Thanks for listening

Feedback welcome

Questions

Contact:

[phil.hendon@nzta.govt.nz](mailto:phil.hendon@nzta.govt.nz)

A stylized landscape illustration featuring rolling hills in shades of olive green and dark green. A path of white footprints winds across the hills, suggesting a walkable route. The overall aesthetic is clean and modern.

Susan Mavoa, Karen Witten

Neighbourhood walkability tools

Living Streets Aotearoa





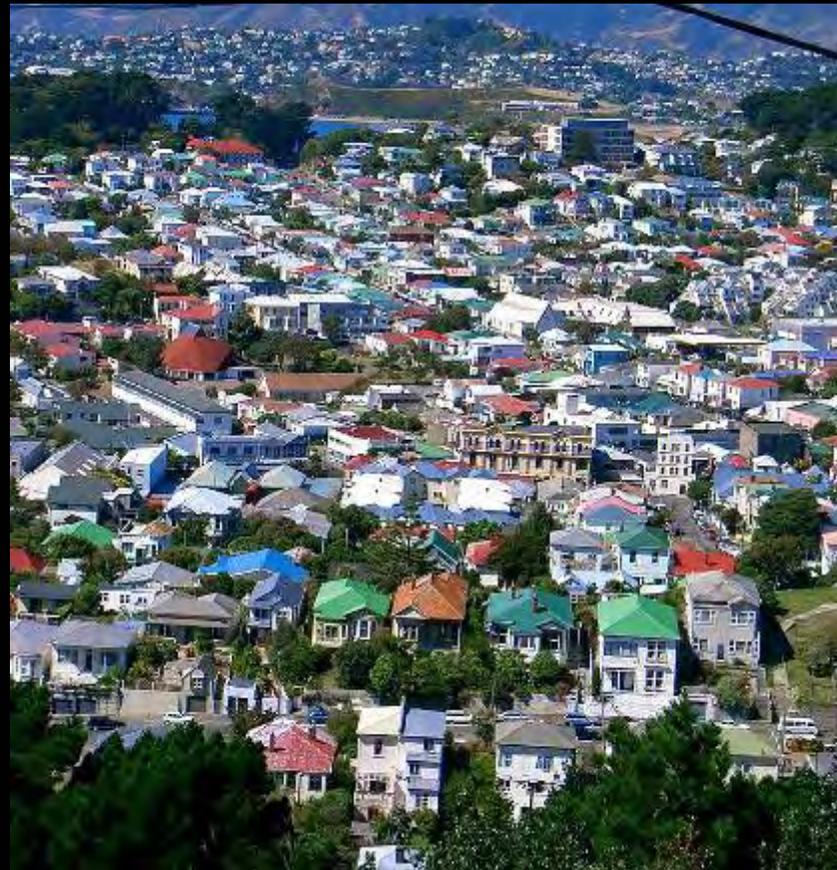
# Neighbourhood walkability tools: the URBAN study

Suzanne Mavoa and Karen Witten

SHORE, Massey University

The Built Environment  
Is Important

# At the city and neighbourhood level



At the street level



# At the perceptual level





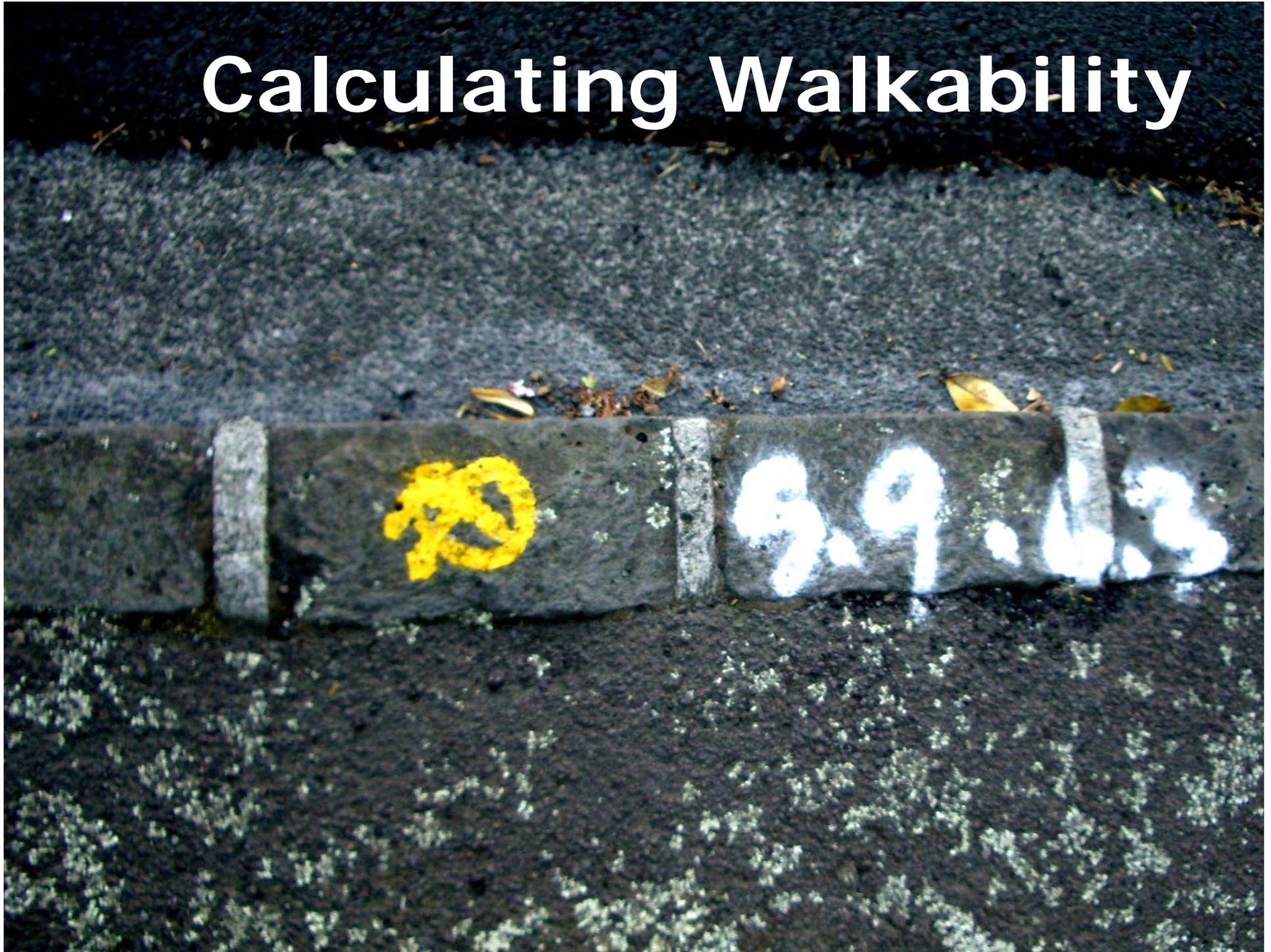
## **URBAN Study**

- 4 Cities
- 48 Neighbourhoods
- 2000 Participants

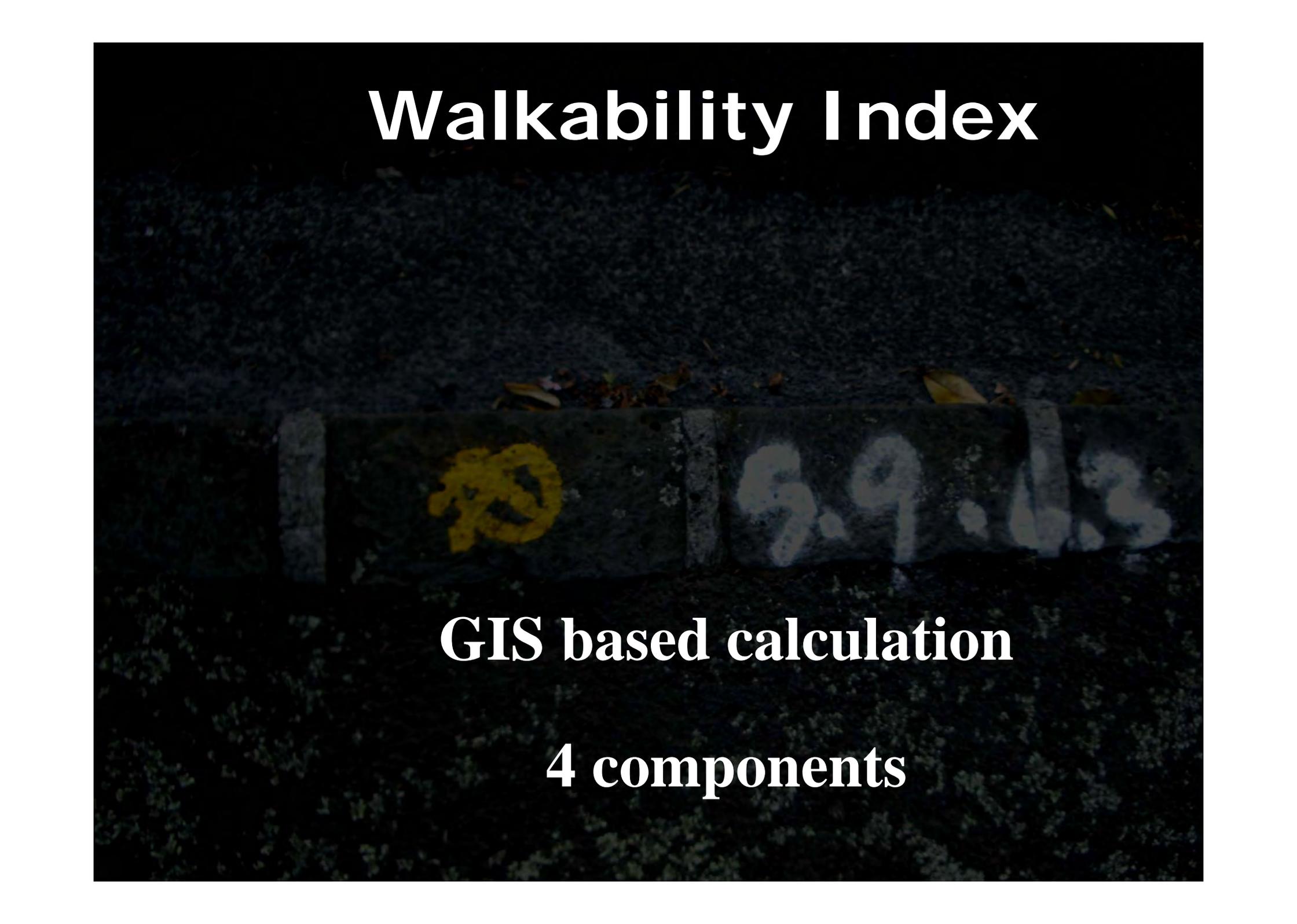
## **Research Tools**

- Walkability index
- Streetscape audit
- Photovoice

# Calculating Walkability



# Walkability Index



**GIS based calculation**

**4 components**

# Walkability Index Component

## Street Connectivity



Number of Intersections

Area

# Walkability Index Component

## Residential Density



Number of Dwellings  
Area



# Walkability Index Component

## Land Use Mix

Not Mixed = One Land Use in Area



Mixed = All Land Uses Equally in Area



# Walkability Index Component

## Commercial building to land area ratio

Less Walkable = more carpark



More Walkable = less carpark



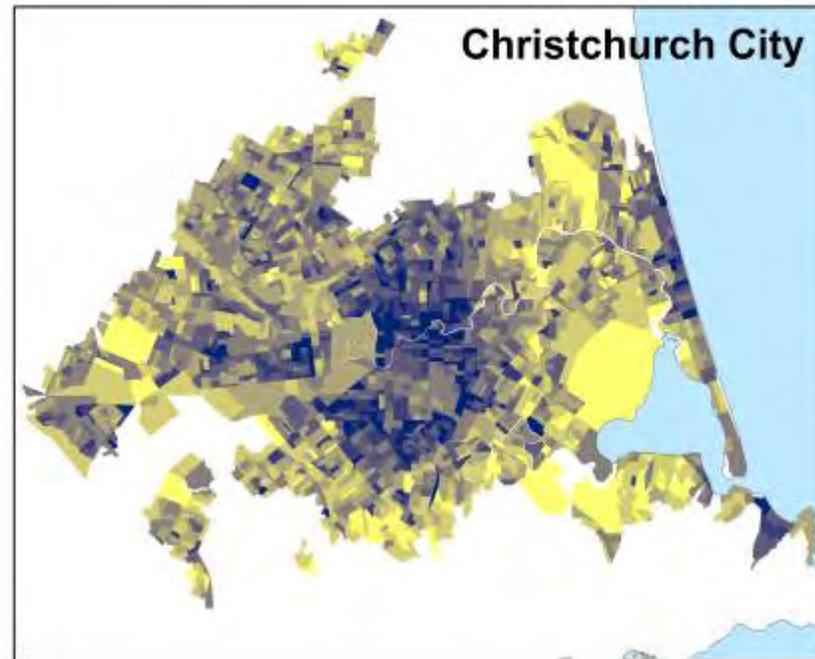
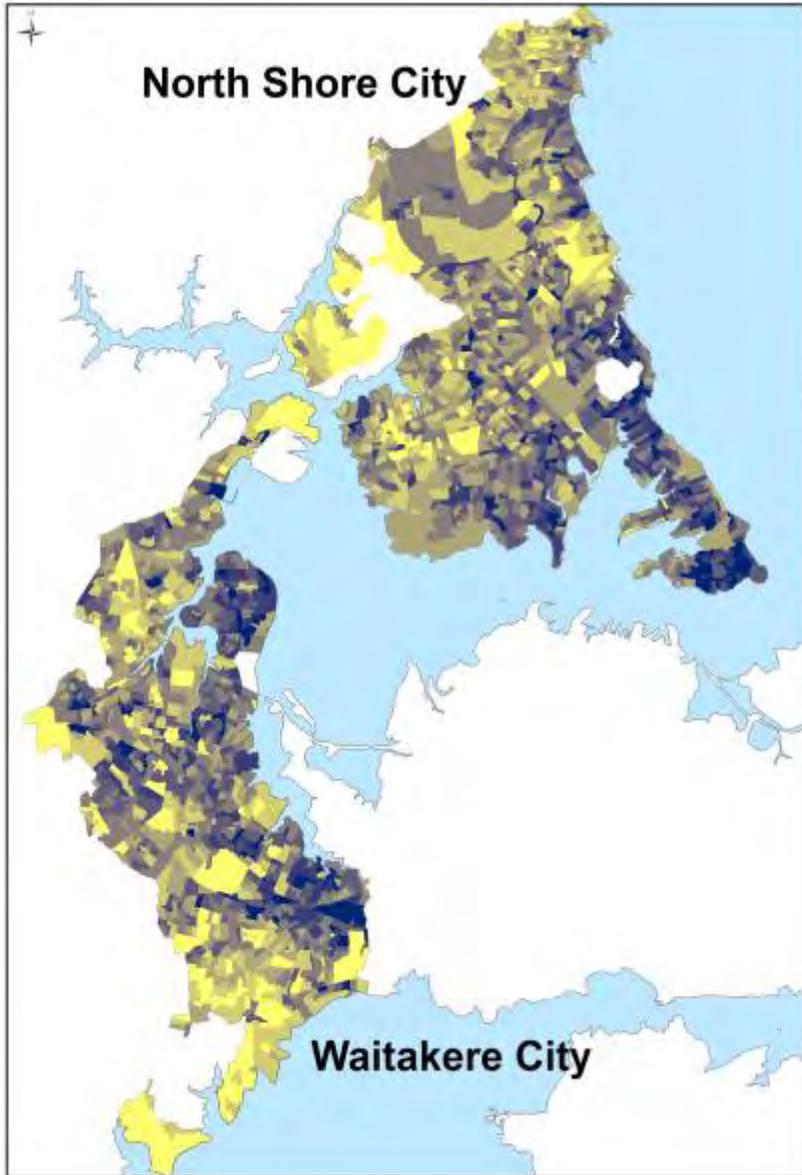
# URBAN Study Walkability Index Data Sources

<b><i>Component</i></b>	<b><i>Data source</i></b>
Street connectivity	Intersections density- road centreline database
Dwelling density	Census
Land use mix	TAs zoning data
Commercial building area to land area ratio	TAs building outlines and zoning data

# Walkability Index Issues



Data was the main problem

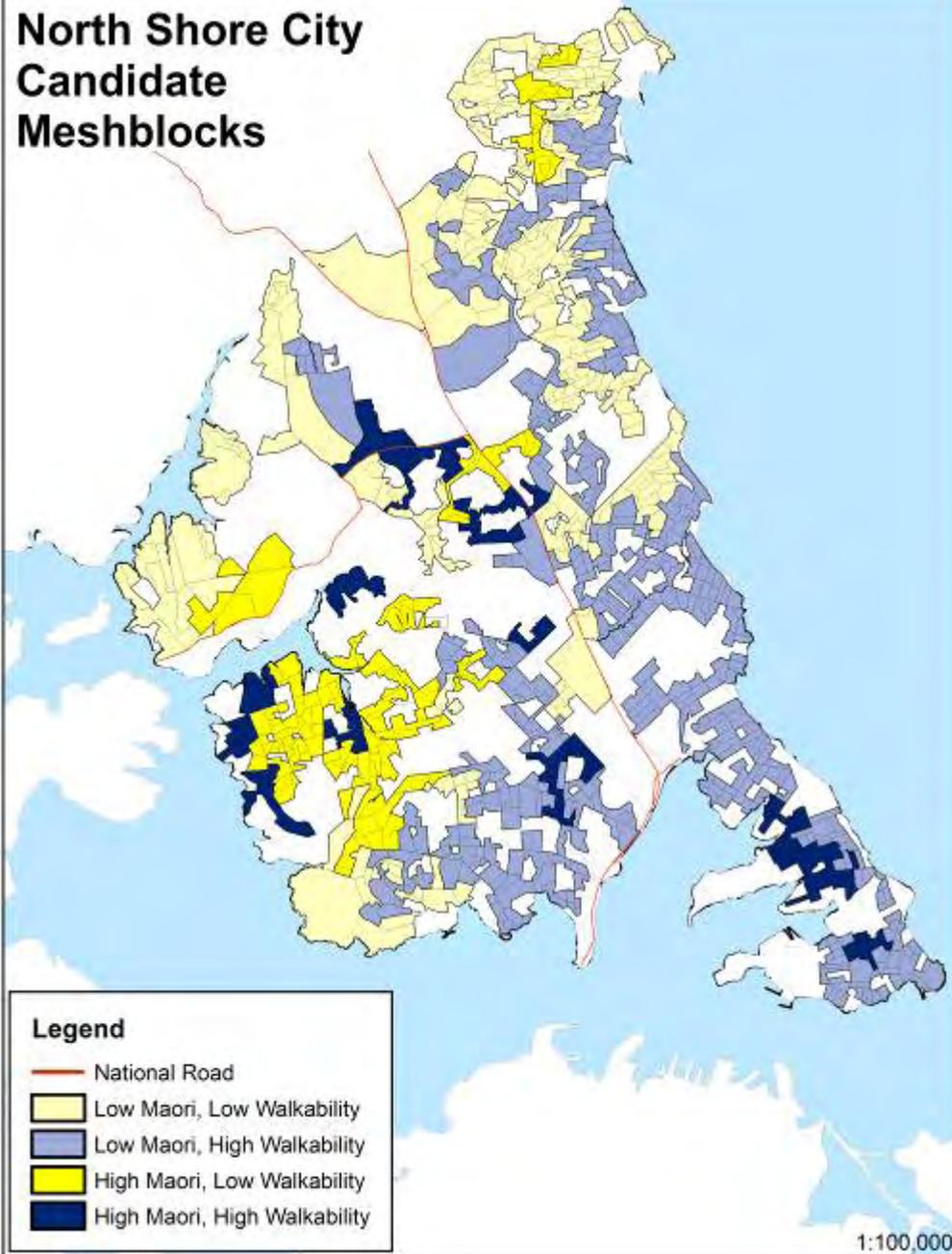


**Walkability Index =  
Residential Density +  
Street Connectivity +  
Land Use Mix +  
Retail Area**



Scale: 1:160,000

## North Shore City Candidate Meshblocks



## Neighbourhood Selection

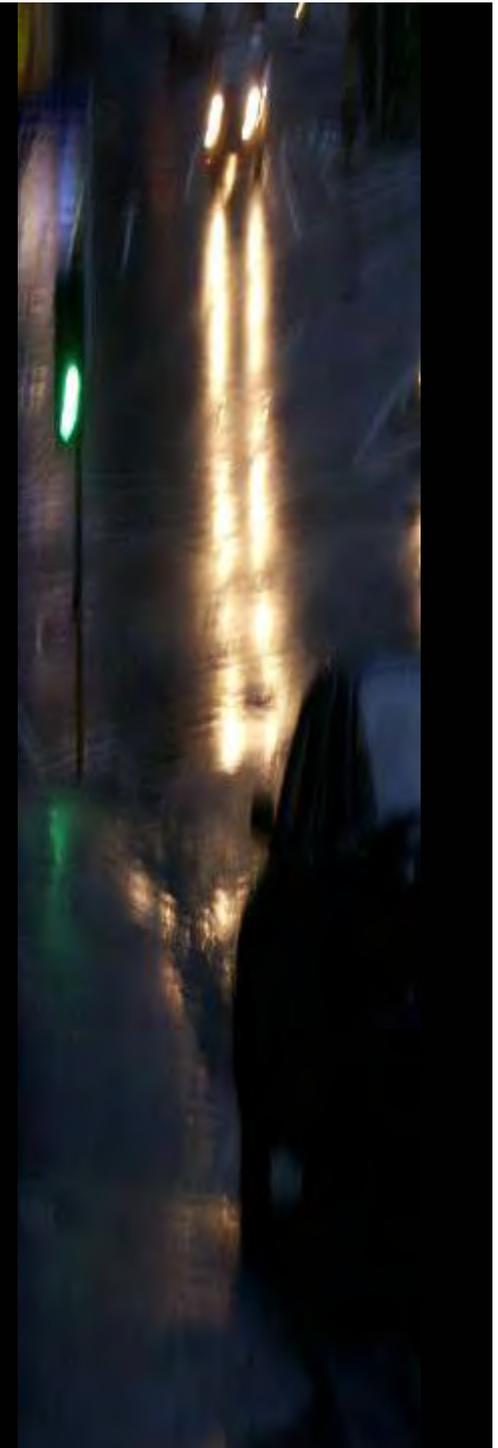
- Select 12 Neighbourhoods in each city:
- 3 Low Maori, Low Walkability
  - 3 Low Maori, High Walkability
  - 3 High Maori, Low Walkability
  - 3 High Maori, High Walkability

# streetscape

Environmental audit

SPACES – University of Western Australia

12 street segments per neighbourhood



# Kerbs

Poor transition



Smooth transition



# Footpaths



# Verges



# Cyclelanes



# Alternative Routes



# Traffic Control Devices



# Crossing Aids



# Graffiti and Vandalism



# Eyes on the Street



# Views

Nature (wild)



Nature (tended)



Residential



Commercial

# What's missing?

## Urban design qualities:

**Imageability** – quality of place that makes it distinct, recognisable and memorable

**Enclosure** – streets and public places with room-like qualities

**Human scale** – size, textures etc match proportions of humans (scaled for walking speed not car)

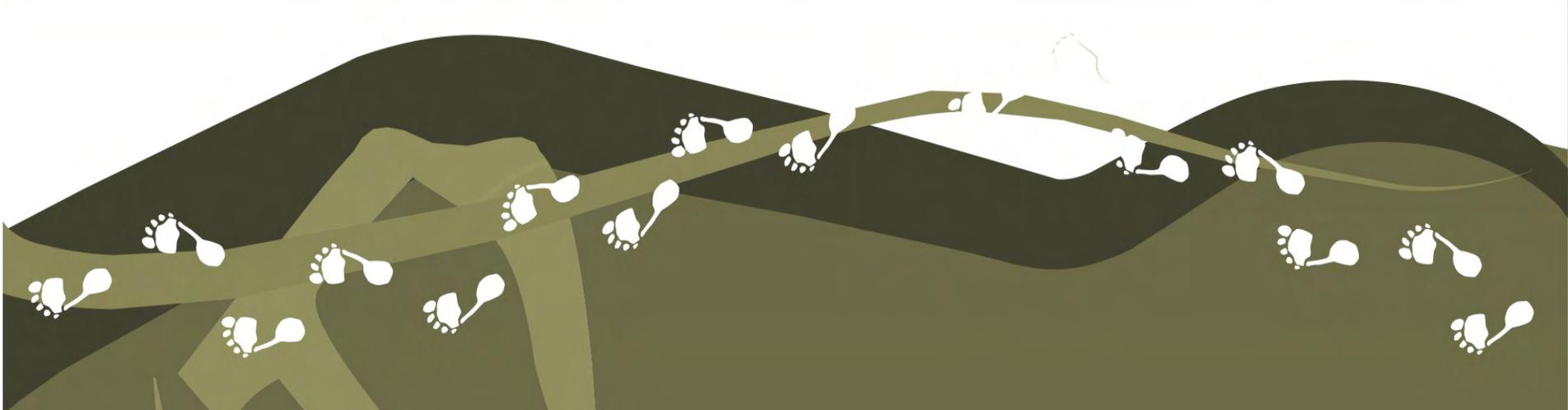
**Transparency** – seeing human activity beyond the edges of streets

**Complexity** – the visual richness of place

Clemente and Ewing et al, National Centre for Smart Growth, University of Maryland





A stylized landscape with rolling hills in shades of green and brown. A path of white footprints leads from the foreground into the distance, winding across the hills. The background is a light, hazy sky.

# Discussion & Question Time

Living Streets Aotearoa

