Future Streets Design: Retrofitting neighbourhood routes to optimise public health

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Human Centred Design
But we are not Dutch!!!
Improving existing suburban infrastructure:

1. Self Explaining Roads (Liveable Streets)

2. Future Streets
Self Explaining Roads
What are self-explaining roads?

- Functionality
- Homogeneity
- Predictability

Self-explaining roads

Jan Theeuwes, Hans Godthelp
TNO Human Factors Research Institute, P.O. Box 25, 3769 ZG Soesterberg, The Netherlands
Crash reduction

Reduction in crash costs

Mackie, Charlton et al. (2013). AA&P 42(742-750).
Street design and Public Health

Physical Activity

Public Health

Road Safety
Future Streets
Te Ara Mua

Please let us know what you think by December 8 at www.futurestreets.org or by calling Hamish on (09) 579 2328

Proudly supported by Auckland Transport
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Future Streets Aims

With an equity focus,

1. demonstrate a *process* for design and implementation

2. Measure health, environmental, social effects of retrofitting low income suburban streets

3. model more generalisable costs and benefits

4. influence institutional change in transport policy
Before and after intervention study design

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<thead>
<tr>
<th>Before</th>
<th>Intervention area</th>
<th>Control area</th>
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<td>Mangere Central</td>
<td>Mangere East</td>
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**Traffic behaviour**
- Speed & volume 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

Intervention and control areas were matched for:
- Access to amenity destinations
- Street layout and age of development
- Demographics
### Where are we up to?

<table>
<thead>
<tr>
<th>Ethical Approval</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
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<tbody>
<tr>
<td><strong>Process for implementation of Future Streets</strong></td>
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<td>Treatment and Control areas</td>
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<td>Concept and detailed design</td>
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<td>Future Streets construction</td>
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<td><strong>Outcome measures from Future Streets</strong></td>
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<td>Baseline measures</td>
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<td>Post construction outcome measures\qual research</td>
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Community engagement
Background data
Making streets around Māngere Central safer and easier to travel around, especially by walking and cycling; and reflecting local identity
Design principles

1. Street/route hierarchy giving greater priority to pedestrians and cyclists
2. People feel safe on routes
3. Reduce traffic speed and make it more consistent
4. Improve peoples ability to cross the road safely
5. Schools and the Mall are priority destinations for the walking and cycling network
6. An arterial separated bike network is important
7. Improvements reflect the identity of Mangere people
Te Aranga and Key Possible Opportunities

- Mana (Authority)
- Whakapapa (Names and Naming)
- Tarao (The natural landscape elements)
- Maori Tu (Environmental health)
- Mahi Toi (Creative expression)
- Tohu (The wider cultural landscape)
- Ahi Ka (The living presence)

Te Aranga

Te Ara Mua Future Streets - Design Process and Response

- Naming of the community trail or possible reserves
- Use of particular patterns or colours in markers or paving that may point to indigenous narratives
- Recognising and creating connection with tohu (wider cultural landscape)
- Planting - Use of specific plantings that used to exist locally / Use of fruit trees that have a historical connection with the area
- Inspiration - Looking at fauna that were established in the Mangere area before European settlement
- The initiation of a marae or maunga hiko
- Use of waymarking and signage to re-create a connection to iwi history in the area, and through artwork developed in the area.

Steps:
1. Planting
2. Way Finding Signage
3. Trail Marker Posts
4. Community Trail Ground Plane
5. Pou - Art Installation
Overall Treatment Plan
TRAIL MARKER POSTS

- Trail diagram can be rotated
- Smooth concrete base
- Custom made signage panel for road network with cross hais to show location of marker
- The location plan can be rotated so the direction that the reader is facing corresponds to the location map
- Historical maua motif above and below signage

Kokowai

Wheel chair 1270mm

9 year old Child 1000mm
Access to the Town Centre
Waddon – Windrush walkway to the Mall
Improved crossings at roundabouts
Key local route – Fresian Drive
Fresian Drive (local route)
Informal re-allocation of space: smooth surface path for cycling, scooting, skateboarding, skating
Final Fresian design

CONSTRUCT NEW 100mm THICK 20MPa CONCRETE FOOTPATH WITH BLACK OXIDE EXPOSED AGGREGATE FINISH ON 100mm AP40 BASE COURSE, AS PER ATCOP STANDARD DETAIL FP001

INSTALL NEW PLANTED SIDE ISLAND WITH MOUNTABLE KERB AS PER CROSS SECTION B-B, ATCOP STANDARD DETAIL TC009, NEW SUBSOIL DRAIN TO DISCHARGE TO EXISTING KERB AND CHANNEL SUBSOIL DRAIN.

INSTALL NEW KERB BUILDOUT AS PER DETAIL C (REF DWG R3-003)

INSTALL NEW 2m WIDE PRAM CROSSING WITH TACTILE PAVERS ALIGNED CORRECTLY AS PER ATCOP STANDARD DETAIL FP009

INSTALL RAISED PLANTER BOX (1.5m x 2.0m), REFER TO BQFFA MISKELL DRAWING SET

INSTALL NEW 2m WIDE PRAM CROSSING WITH TACTILE PAVERS ALIGNED CORRECTLY AS PER ATCOP STANDARD DETAIL FP009

INSTALL RAISED CHIPSEAL SURFACE BETWEEN NEW ISLAND AND EXISTING CHANNEL RESURFACE

INSTALL NEW 40mm RAISED (20mm CHAMFER) COLOURED CONCRETE TREATMENT AS PER DETAIL G (REF DWG R3-007). SIDES ADJACENT TO CYCLE LANE TO BE RAMPED.

INSTALL NEW 2m WIDE PRAM CROSSING WITH TACTILE PAVERS ALIGNED CORRECTLY AS PER ATCOP STANDARD DETAIL FP009

RECONSTRUCT EXISTING BUSINESS VEHICLE CROSSING WITH BLACK OXIDE FINISH AS PER ATCOP STANDARD DETAIL I

INSTALL NEW KERB BUILDOUT AS PER DETAIL C (REF DWG R3-003)
Prioritising pedestrians at intersections: Mascot & Forbury (and Mascot & Heyford)
Enhanced zebra crossings

**Trial Active Zebra Crossing**

**Construct Active Zebra Crossing in Stages:**

**Stage 1:**
INSTALL STANDARD ZEBRA CROSSING, MONITOR

**Stage 2:**
1 MONTH LATER - INSTALL FLASHING SIGNS WITH AUDIO TACTILE CALL BUTTON, MONITOR

**Stage 3:**
1 MONTH LATER - INSTALL HEAT DETECTING SENSOR, MONITOR

FOR ACTIVE CROSSING POLE REFER TO DETAIL D (REF DWG R3-004)
Next Steps

Cultural dimensions - Now

Detailed design – Now


Future Streets community activities

Post implementation data collection and analysis
Thank you!