Future Streets Design: Retrofitting neighbourhood routes to optimise public health

Hamish Mackie and the Future Streets team
hamish@mackieresearch.co.nz
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).

Crash reduction

40%

Reduction in crash costs

50%
Street design and Public Health

Physical Activity

Public Health

Road Safety
Te Ara Mua – Future Streets is an exciting project to make streets around Māngere Central safer and easier for people to travel around, especially by walking or cycling.

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

Future Streets
Te Ara Mua

Proudly supported by Auckland Transport
The Research Team

- Peter Baas (TERNZ)
- Hamish Mackie (Mackie Research)
- Alex MacMillan (Otago)
- Adrian Field (Dovetail)
- Alistair Woodward (Auckland)
- Jamie Hosking (Auckland)
- Karen Witten (SHORE - Massey)
- Melody Oliver (AUT)
- Joanna Stewart (Auckland)

Lydia Sosene
Lina Samu
Rau Hoskins
Samuel Charlton
Bridget Burdett
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

<table>
<thead>
<tr>
<th></th>
<th>Intervention area</th>
<th>Control area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before</strong></td>
<td>Mangere Central</td>
<td>Mangere East</td>
</tr>
<tr>
<td><strong>Traffic behaviour</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Speed &amp; volume measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Video of behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Motorists, peds &amp; cyclists</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Footpaths &amp; roads</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Residents surveys</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Mode use to local destinations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Physical activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Neighbourhood perceptions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Injuries (self report &amp; data linkage)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Children &amp; adults</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Intervention and control areas were matched for:
- Access to amenity destinations
- Street layout and age of development
- Demographics
<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethical Approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process for...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment and Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concept and detailed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future Streets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome measures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline measures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post construction...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Intervention area Mangere Central
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)
- Taiao (The natural landscape elements)
- Mauri 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 to maunga hikoi
- Use of waymarking and signage to re-create a connection to iwi history in the area, and through artwork developed in the area

1. Planting
2. Way Finding Signage
3. Trail Marker Posts
4. Community Trail Ground Plane
5. Pou - Art Installation
NETWORK PLAN

Potential Areas of Focus

- Art Installation At Key Crossing: Pedestrian Air
  - A line of colored pools which highlight this significant pedestrian entry into the town centre and also connect the recreation facilities.

- Art Installation Along Key Pedestrian Axes
  - A line of colored pools which highlight this significant pedestrian entry into the town centre and also connect the recreation facilities.

Fitness Trail
- Area of focus includes: Ground plane treatment on paths
- Planting
- Lighting
- Wayfinding / signage
- Seating / furniture
- Possible artwork installations

Reserves
- Area of focus includes: Ground plane treatment on paths
- Planting
- Lighting
- Wayfinding / signage
- Seating / furniture
- Possible artwork installations

Walking and Cycling
- Some Routes

Potential East-West corridor
- Area of focus includes: Ground plane treatment on paths
- Planting
- Wayfinding / signage

One-Way Modeled
- Area of focus includes: Ground plane treatment on paths
- Planting
- Wayfinding / signage

Massey Road - Outside of project area for key crossing points and side street intersections

- Area of focus includes: Ground plane treatment on paths
- Planting
- Wayfinding / signage

DRAFT FOR DISCUSSION PURPOSES ONLY
TRAIL MARKER POSTS

- Smooth concrete base
- Custom made signage panel for road network with cross hairs 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 maunga motif above and below signage

Adult 1600mm
Wheelchair 1270mm
9 year old Child 1000mm
Waddon – Windrush walkway to the Mall
 PROVIDE CYCLE RAMPS TO ALLOW CYCLIST ON/OFF ROAD BEFORE BADGER/MASCOT ROUNDABOUT

 REMARK PARKING TO ALLOW A STRIP FOR PLANTING ADJACENT TO THE MALL ACCESS WALKWAY

 PROVIDE RAISED INTERSECTION AND CROSSING AREAS AT STAGGERED JUNCTION

 PROVIDE RAISED ZEBRA CROSSING AT INTERSECTION AND CONTINUOUS GREEN CYCLE LANE

 EXISTING TREES TO BE REMOVED

 PROPOSED TREES

 2m WIDE FOOTPATH

 2m WIDE FOOTPATH

 20m LONG CYCLE SEPARATORS

 5m LONG CYCLE SEPARATORS

 EXISTING TREES

 EXISTING TREES

 PROVIDE 1.8m WIDE FOOTPATH

 PROVIDE 20m LONG YELLOW NSAAAT LINES

 PROVIDE 20m LONG YELLOW NSAAAT LINES

 NEW RG-5 "STOP" SIGN

 REASSIGN ROAD WIDTH TO PROVIDE ON ROAD CYCLE LANES IN BOTH DIRECTIONS

 REPLACE EXISTING RG-6 SIGN TO RG-5 "STOP" SIGN

 EXISTING PW-32 SIGN

 EXISTING PW-32 SIGN

 PROVIDE CYCLE RAMPS TO ALLOW CYCLIST ON/OFF ROAD BEFORE BADGER/MASCOT ROUNDABOUT
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
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!