

Public Transport Network Planning

Michelle McCormick, Public Transport Planning Manager,
Planning and Investment

UDF 21 March 2011



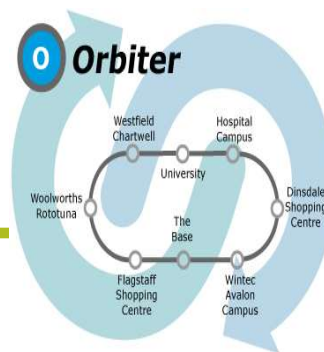
What's NZTA's role

- Invests in public transport infrastructure and services with AO partners
- Also investing in a National Integrated Ticketing Programme



What's NZTA's role

- Issues guidelines for regional public transport plans, and monitors their development
- Works with partners on studies such as the Wellington public transport spine
- Funds research as part of National Land Transport Plan



Context: Public Transport Leadership Forum (PTLF)

- Chief Executives of NZTA, MOT, ARTA, GWRC, ECAN, KiwiRail, Veolia, NZ Bus, Red Bus, Bus and Coach Association, Fullers ferries & Wellington CC
- 50 Year Vision: **Growing public transport as a mode of choice in our cities** - by developing a cost effective, smart & reliable PT network.
- Developed 3 year sector Action Plan for Improving Public Transport

Public Transport Effectiveness Framework

Vision: Growing public transport as a mode of choice in our cities – by developing a cost effective, smart and reliable public transport network



**Occurs within a context of the
Government Transport Outcomes**

Improved Customer Experience

Customer focused service delivering affordable, reliable and accessible public transport that is safe, attractive and easy to use

Provides

Integrated Networks

Integrated networks that promote the desired urban form and that support quality public transport infrastructure and services

Strengthened Leadership

Innovation driven by strong and collaborative sector leadership drawing on responsibilities, shared knowledge, research and evidence

Enables

Improved Operating Model

Establishing the rules of the game that provide for the development and delivery of effective public transport

Aligned Resources

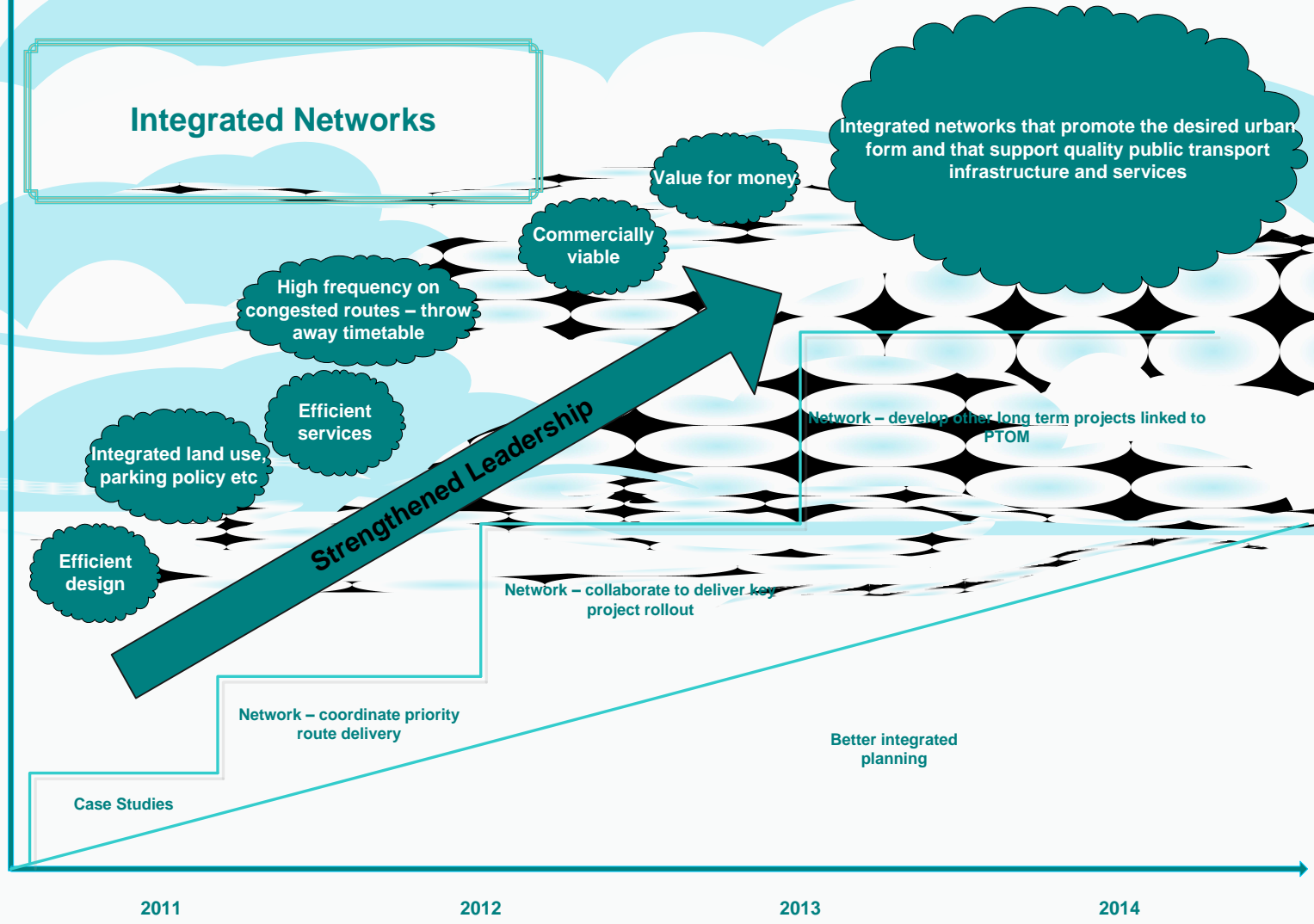
Synergies achieved by marshalling and aligning inputs and opportunities

Smarter Technology

Using technology to provide information and to reshape public transport for customers and suppliers

Growing public transport as a mode of choice in our cities – by developing a cost effective, smart and reliable PT network

Transformation – Integrated networks and services



NZTA Research Report 396

Public Transport network planning: a guide to best practice in NZ cities; March 2010 by P Mees, J Stone, M Imran, G Nielson - See website

<http://www.nzta.govt.nz/resources/research/reports/396/>

- EU Hi Trans Guide
- Comparator cities used



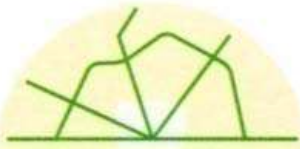
Network Design Approaches

Two different approaches to network design

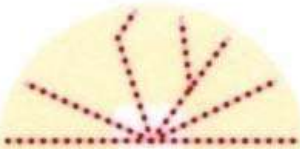
The Tailor-made approach



A dense, normal frequency network most of the day

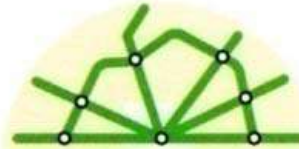


Reduced and low frequency network on holidays

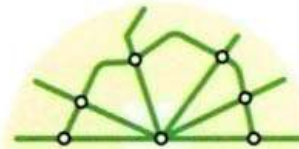


Express lines in peak periods

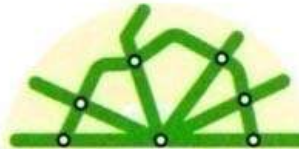
The Ready-made approach



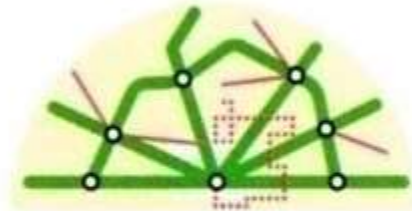
A basic high frequency network most of the day



Same network, reduced frequencies on holidays



Same network, higher frequencies in peak periods



One stable, easy-to-use network for all at all times

Comparator cities – urban form & PT

| | Auckland | Vancouver | Wellington | Zurich | Christchurch | Schaffhausen |
|-------------------------------|----------|-----------|------------|--------|--------------|--------------|
| Pop (m) | 1.3 | 2.1 | 0.45 | 1.3 | 0.35 | 0.04 |
| Density people per ha | 18.9 | 17.1 | 22.0 | 37.6 | 17.0 | 36.7 |
| Jobs in CBD | 13.5 | 12.6 | 22.0 | 12.2 | 16.6 | n/a |
| Work trip PT | 7.0 | 16.5 | 17.1 | 40.7 | 5.2 | 40.7 |
| Walk / cycle | 5.6 | 8.0 | 13.4 | 12.1 | 12.3 | 14.9 |
| car | 87.4 | 74.4 | 69.6 | 47.2 | 82.5 | 44.4 |
| PT boardings (millions) | 52 | 283 | 34 | 542 | 16 | 13 |
| | | | | | | |
| | | | | | | |

Comparator cities – urban form & PT

| | Auckland | Vancouver | Wellington | Zurich | Christchurch | Schaffhausen |
|----------------------------|----------|-----------|------------|--------|--------------|--------------|
| Boardings per capita | 40 | 135 | 77 | 417 | 46 | 289 |
| PT services (kms millions) | 42.3 | 116.2 | 24.5 | 71.9 | 18.8 | 2.7 |
| Service kms per capita | 32 | 55 | 61 | 57 | 59 | 61 |
| Subsidy per boarding \$NZ | 2.54 | 1.10 | 1.70 | 0.45 | 1.62 | 1.05 |
| | | | | | | |

Wellington – researcher's view

1. Very successful rail system
2. Some sound elements network planning
3. Lots of buses in central city
4. Parallel bus and train services
5. No overall express bus networks
6. Some through routes in city
7. Opportunities!



Three Key areas of changes recommended for NZ

1. Appropriate institutions and public Processes

- Whole of network planning
- Public education and consultation programmes to manage changes
- Simple fares
- Parking policy opportunity



Three Key areas of changes recommended for NZ

2. Network Structure:

- Provide a simple and stable network of lines throughout the day.
- Base mode choice for different lines in the network on required capacity, comfort and speed.
- Consider locations for suburban interchanges on the basis of
 - predicted travel patterns and
 - efficient vehicle operations.



Three Key areas of changes recommended for NZ

3. Network Operations

- Simplicity and directness
- Speed and Reliability
- Frequency
- Location of Stops and access to services
- Marketing for first time and occasional users



Some other thoughts

Karlsruhe: the tram-train

- A comfortable vehicle derived from light rail (width: 2.65m, 100km/h)
- One vehicle travels on both types of infrastructure tram way and railway
- Strong capacity of acceleration and braking
- Intended to serve suburban areas outside the city



Seamless transitions between the region and city

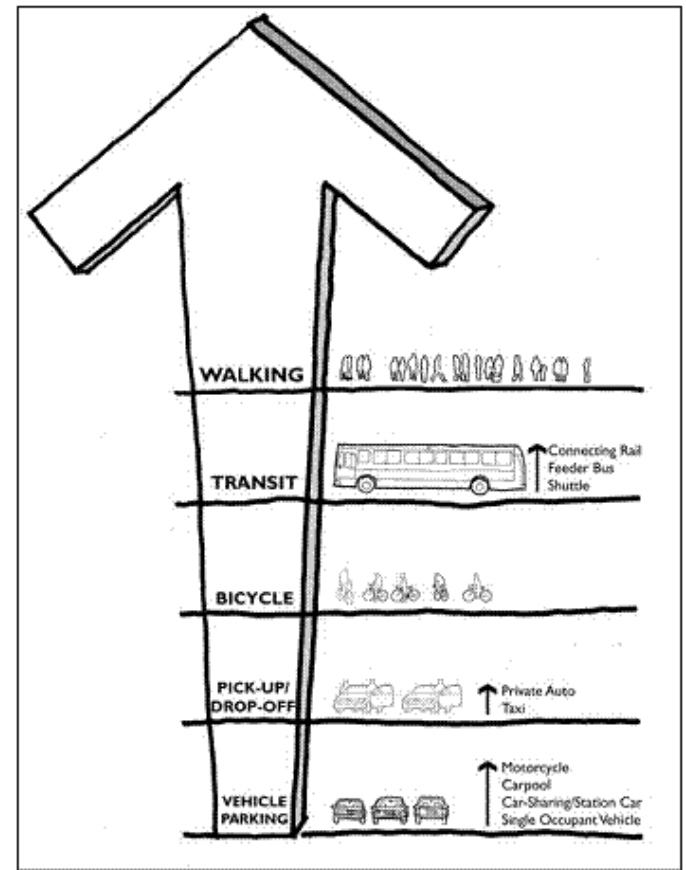
Well-coordinated connections (tram-train – trams / buses as feeder services)

Some other thoughts

BART Prioritising Access -

The Bay Area Rapid Transit (BART) accessibility guidelines emphasize a hierarchy of low-cost, high capacity modes. Modes that produce the highest use and fares revenue cost-effectively. In comparison single occupant vehicles and associated parking have the lowest priority.

BART Station Access Guidelines 2003



Summary

- Wellington strong base
- Good opportunity to think about the long term

