Themes

What is Mass Rapid Transit?
Dynamic Cities
New Zealand Contenders
Iconic Transport Projects
The New City Context
New Mobility and MRT
Planning MRT
Technology
Pathways to MRT
A moonshot factory with a mission to invent and launch technologies that someday could make the world a radically better place.

**FOCUS**
- Refining questions, not just developing answers

**TIME HORIZON**
- What can be brought to market in a 10 year time horizon?
What is MRT?

**MASS**
- Potential to move large numbers of people in a given amount of time
- Function of line capacity, network capacity and terminal capacity
- 4000+ passengers per hour per direction

**RAPID**
- Indicated by end to end journey time
  - Function of vehicle speed, frequency, stop/station spacing, level of priority
  - Influenced by ticketing and boarding/alighting arrangements
  - Journey time reliability is just as important

**TRANSIT**
- Transports people where they want to go
- Is accessible to all
- Caters for relevant journey purposes
- Forms part of an integrated transport system
Dynamic Cities

Momentum Index Developed by JLL
Range of socio-economic, commercial and real estate variables
Population Range 400k to 25m people
Growth Rates 4-30%
All have existing or planned Mass Transit Systems

History tells us that those who invest in advancing and diversifying tend to get the competitive edge.
Dynamic Cities
New Zealand Contenders

Auckland
Experiencing significant growing pains
Recently dropped out of the Top 30
Traffic congestion is a major issue

Wellington
‘Let’s Get Welly Moving’ - developing a long term integrated transport strategy
More sustainable future requires mode shift

Queenstown
Booming tourism economy
Growing peak period congestion
Highly constrained network
Iconic Transport Projects

are part of the attraction of world class cities.
The New City Context

Liveable
- Safe and Attractive
- Legible
- Pollution Free

Higher Density
- Upwards rather than outwards
- Mixed use
- Focus on transport nodes

Smarter
- Increasing array of electronic data
- Internet of Things
- Assets and resources managed remotely
New Mobility and MRT

Current and Emerging Technology

- Ride Sourcing – Uber, Lyft, Via
- Car Sharing
- Bike Sharing
- Alternative Transit
- Growth of Electric Vehicles
- Autonomous Vehicles
- Mobility as a Service
- Urban Air Mobility
- Hyperloop

Disruption
- Reducing car ownership
- Manufacturers embracing ridesharing
- Impacts on travel behaviour
- Increased congestion?

Evolution rather than Revolution
2040 time horizon

Complementary to but NOT a substitute for MRT
Planning MRT

Bottom Up

- Land Use Planning
- Transport Modelling
- Community Engagement
- Option Appraisal
- Business Case for Investment

Top Down

- Individual or Organisational Advocacy
- City wide perspective
- Private sector involvement
- Recognising the wider (beyond the manual) benefits

Set objectives with stakeholders that focus on the outcomes
Technology In Service

- Light Rapid Transit
- Bus Rapid Transit 24m - Malmo
- Self Guided Electric Bus - China
- LRT (Tramtrain) - Nottingham
- Bus Rapid Transit 18m - Spain
- Gondola - Bolivia
Capacity & Cost

LRT Cost Range - $35 - 100 million NZ$/km
BRT Cost Range - $15 - 120 million NZ$/km
LRT typically 2 to 3 times the cost of BRT of similar size and scale

13 km Gold Coast Light Rail - 16 stations and primarily on-road - $1.3 billion AUD (2014)
31 km Liverpool Light Rail - primarily on-road with limited grade separation - $477 million AUD (2016)

Transporting 4500 Passengers
Key Factors in Decision Making

- System Specification
- Capacity
- Geometric Fit
- Integration into wider Transport System
- Futureproofing
- Value for Money
- Funding
- Operating Model
Pathways to MRT

Phased approach can be tempting but:
- Converting from BRT to LRT is technically challenging
- Business cases for upgrades may not be as strong
Takeaways

• MRT is part of the fabric of many dynamic world cities.
• City contexts changing but MRT still ticks the boxes.
• Harness New Mobility to complement MRT. It is not a substitute for moving large numbers of people.
• MRT technology is changing but exert caution around proprietary systems. Tried and tested is not a bad way to go.
• Be innovative where appropriate but tap into global best practice.
• A sound business case will always be needed but advocacy, partnership and innovation can help get projects off the ground.

Fortune Favours the Brave!