Wellington Light Rail

Public transport network integration concepts

24th July 2018

Let's Get Welly Moving

Objectives

- Inputs to modelling spec
- Maximise utility of investment in LRT
- Connections, feeders, duplication, expresses
  ...forced transfers?

What would be required to make LRT really work as the core of a connected rapid transit network for the City of Wellington?

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LRT alignment

10.1km one way, 12 stations:

1. Airport
2. Mirimar Shops
3. Kilbirnie
4. Zoo
5. Newtown Shops
6. Hospital
7. Basin Reserve
8. Te Aro South (Vivian Street)
9. Te Aro North (Courtenay Place)
10. Civic Centre
11. Queens Wharf
12. Wellington Railway Station

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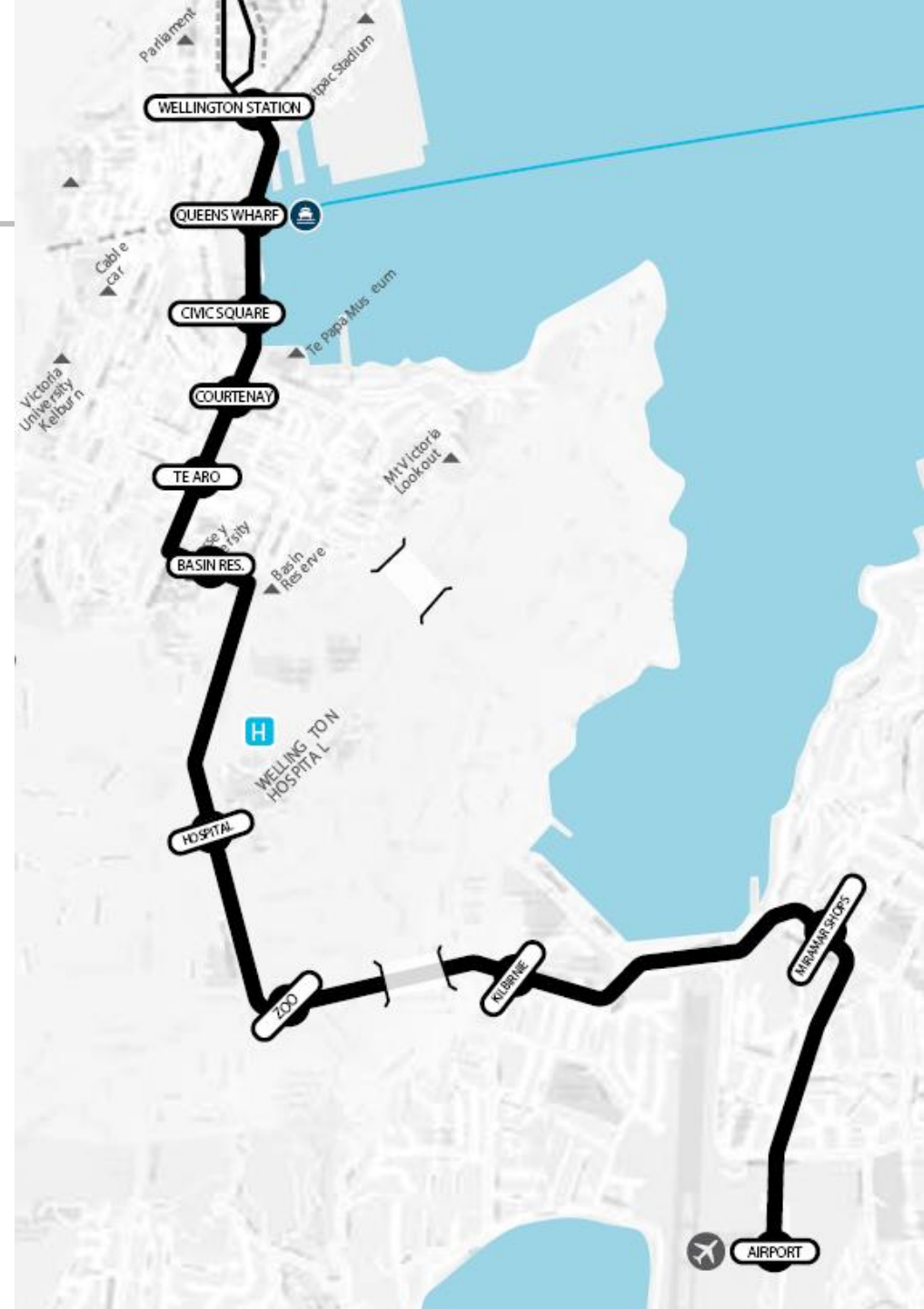
Principles

- An integrated 'trunk and feeder' network model

- Leverage capacity, speed and reliability potential of LRT

- Minimise bus volumes / congestion on Golden Mile
  - "Force" a shift to LRT through network improvements

- Co-ordinate rather than compete for patronage
  - Bus routes that directly compete with the LRT corridor should be removed or reconfigured
  - Buses beyond the end of the LRT corridor should be reconfigured as high frequency feeders

…but avoid forced transfers close to town, or double transfers to major destinations

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Speed and reliability

- Transferring to LRT should be at least as fast as a direct express bus
    - *need significantly faster LRT trunk* to overcome transfer penalty
    - Previously modelled at 20km/h average including stops (same as local bus)
- Express buses are fast, but very variable
    - Travel time variability ("reliability") is big factor in defacto travel time
    - But unreliability is *not* modelled
    - Can simulate high reliability LRT with faster relative speed

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Speed comparison

Route	Section	Type	Distance	Time	Average speed
Melbourne tram line (St Kilda Road)	St Kilda Junction to Flinders St station	On street, dedicated lanes, no intersection priority, closely spaced stops (12 stops: 375m spacing)	4.5 km	18 min	15 km/h
Melbourne 'light rail' (route 96)	St Kilda Station to Southern Cross Station	Primarily off street, dedicated running way, closely spaced stations (11 stops: 500m spacing)	5.5 km	16 min	21 km/h
Gold Coast light rail	Broadbeach South Station to Southport Station	On street, mostly dedicated lanes, moderately spaced stations (11 stops: 800m spacing)	8.8 km	24 min	22 km/h
Houston MetroRail LRT (North Line 700)	Fannin South Station to Downtown Transit Centre	Street level, dedicated lanes or surface running, widely spaced stops (11 stops: 900m spacing)	9.9 km	23 min	26 km/h
Seattle Link light rail	MLK Boulevard, Angle Lake Station to Rainier Beach Station	On street, dedicated lane, high priority, very widely spaced stations. (3 stops: 2,100m spacing)	6.3 km	10 min	38 km/h
Wellington LRT (high specification)	*Airport to Railway Station*	*On street, fully dedicated lanes, high priority ?* *Widely spaced stops (11 stops: 920m spacing)*	*10.1 km*	*20 to 24 min ?*	*25 to 30 km/h ?*

LRT speed and reliability implications

Tram Style

- 15-20km/h average speed
- Closely spaced 'bus stop' stops
- Mixed with traffic and buses
- Traffic turning across/queuing on tracks
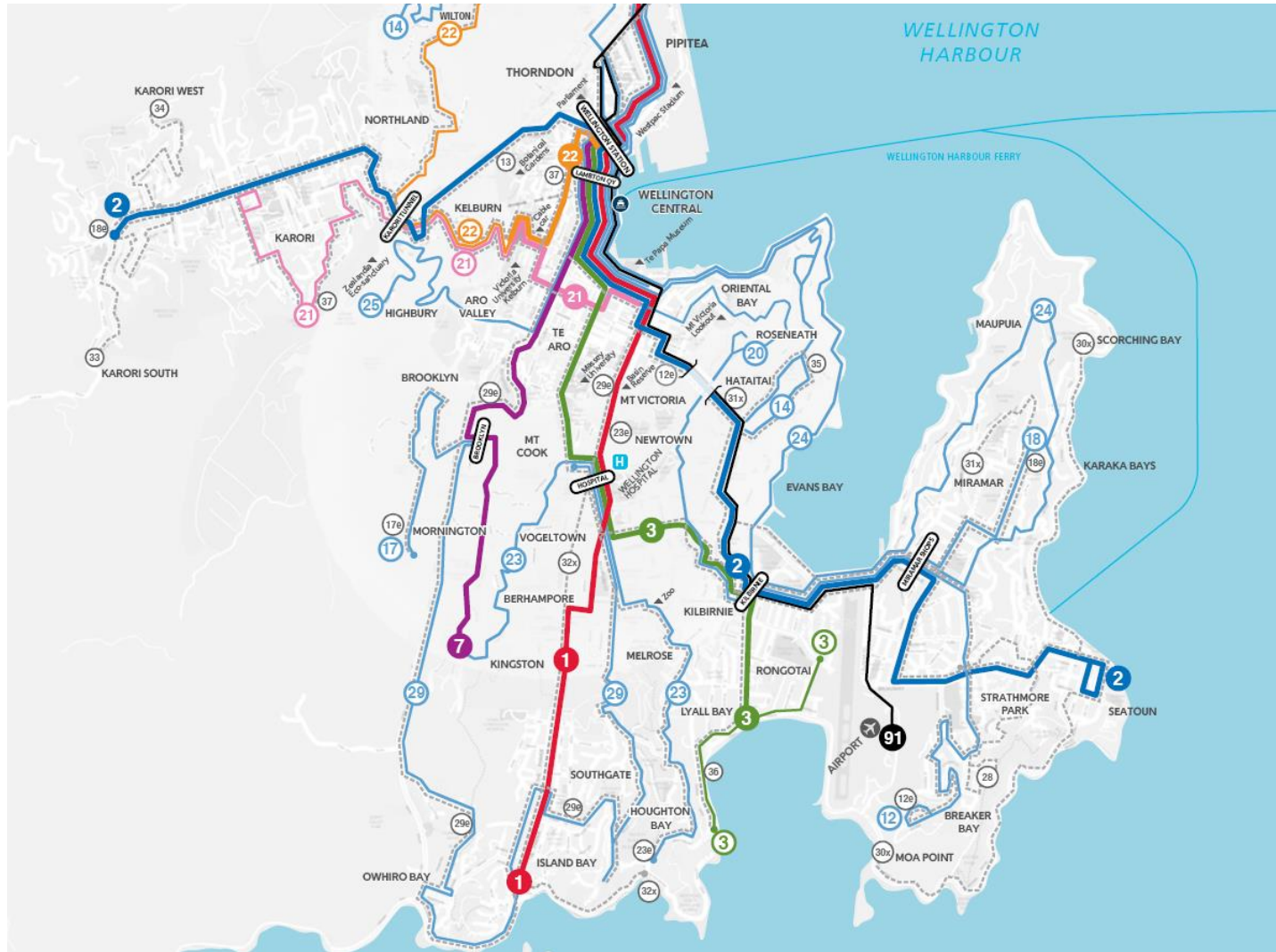- Little or no priority at intersections

Metro Style

- 25-30km/h average speed
- **Widely spaced** 'station' platforms
- Little to no mixing with traffic and buses: permanent, **physically separated dedicated lanes**
- **Parking removal**, traffic lane reduction
- **Right turn bans**: LiLo to driveways and minor streets
- Pre-emptive traffic **signal priority**


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Current Network

Proposed changes

- Remove directly competing bus routes
    - Remove the airport express bus and No.3 entirely
    - Run No.2 to Kilbirne-Lyall Bay instead

- Reconfigure express buses to feed to LRT
    - Truncate eastern expresses at first point of contact: Miramar, Kilbirnie or Hospital
    - Reinvest opex resources from shorter route as more frequency
    - Terminate northern expresses at Wellington Station> transfer to LRT for southern CBD

- Extend No.21 crosstown route
    - Miramar-Kilbirnie-Massey-Victoria Uni to avoid double transfers to uni
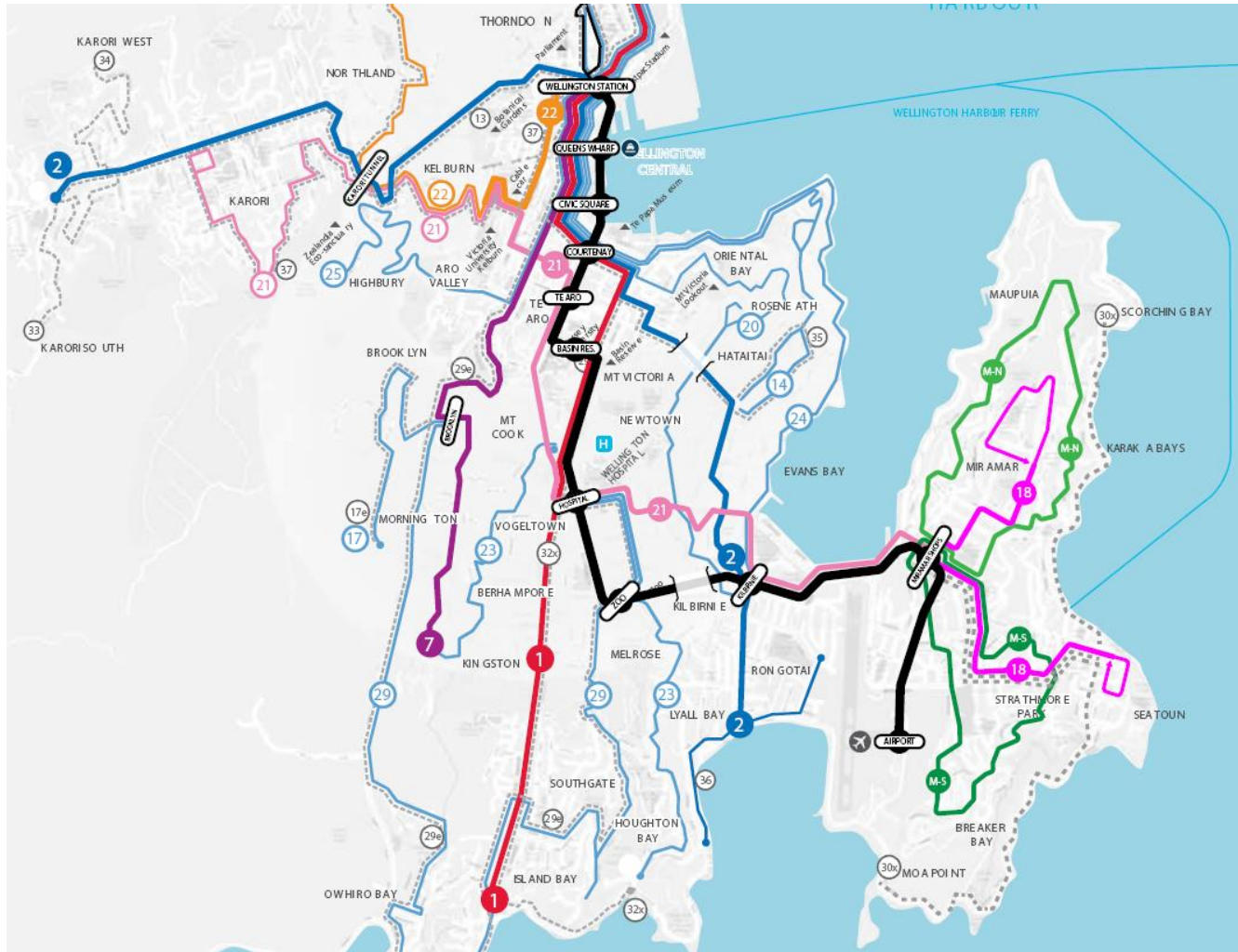

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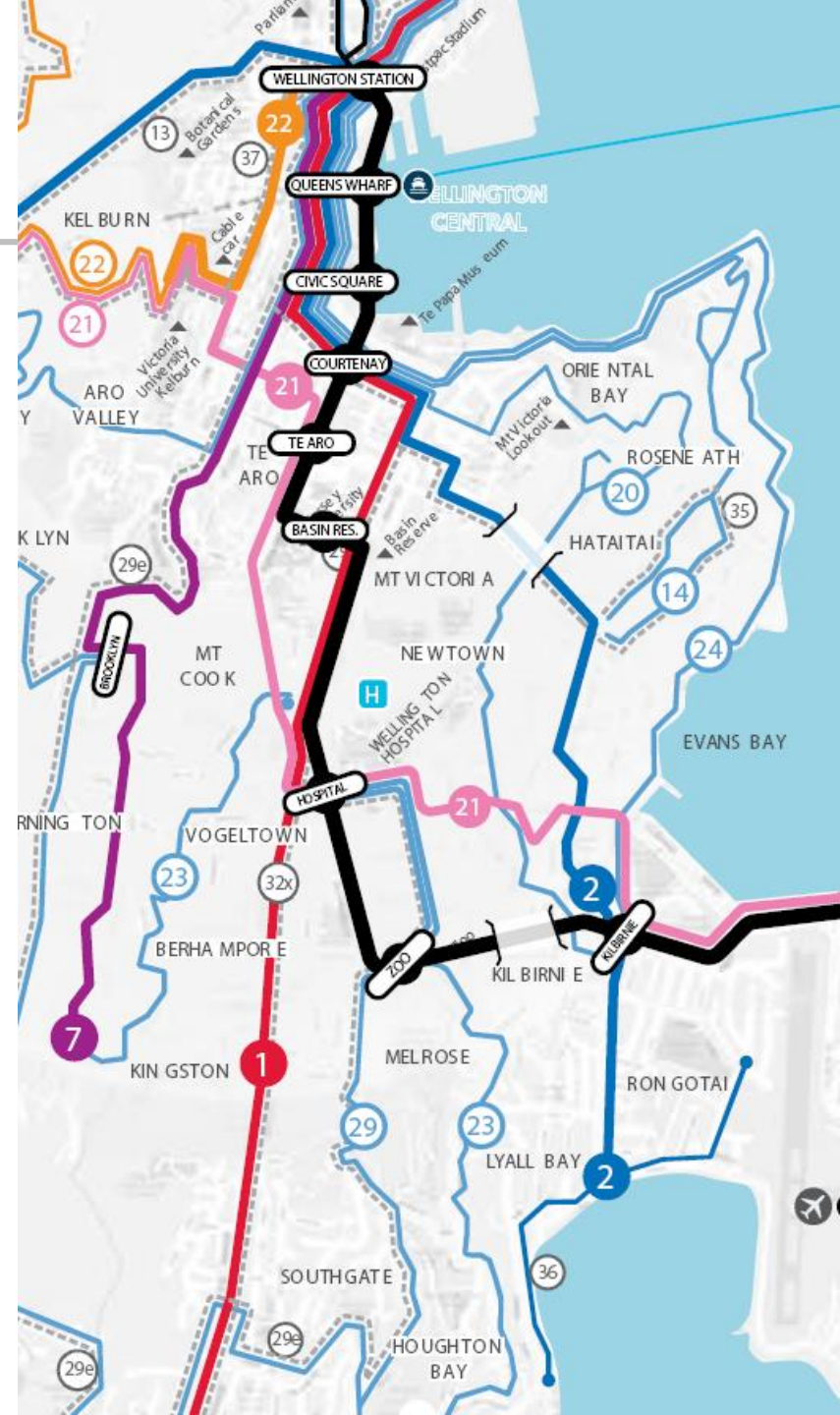
Proposed changes

- Reconfigure Miramar bus routes to act feeders to LRT at Miramar shops (timing point).

  - New No.18 frequent collector Miramar –Seatoun

  - New north and south feeder loops

  - Moa Point and Scorching Bay peak routes to Miramar station only

  - Reinvest opex resources from shorter route as more frequency

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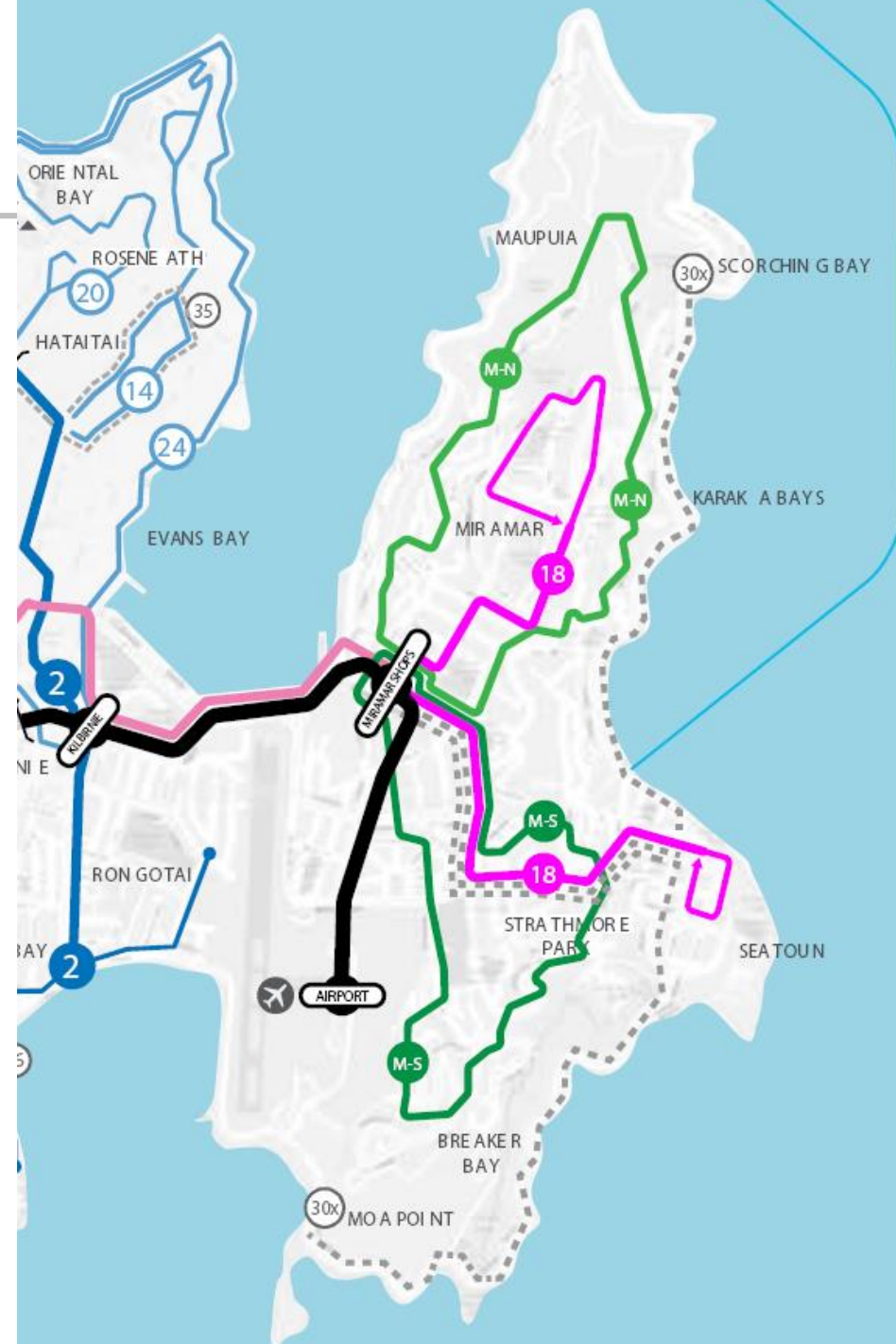
Proposed Network

Alternate option: separated corridors