MIN-3899 LGWM Resilience and Key Projects in Wellington

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This note provides you with some information on Let's Get Wellington Moving's (LGWM) resilience issues including consideration given to earthquake risk and inundation for both the routes to the south and east; and a map of key projects in Wellington.

Let's Get Wellington Moving's response:

- All LGWM projects are aligned with the Wellington City Council (WCC) Proposed District Plan. The District Plan is the statutory framework that directs the scale, location and type of growth across the city. It reflects WCC's planned consideration of and response to resilience, including climate change. The District Plan also guides infrastructure delivery to support that growth.
- All LGWM projects assume that new infrastructure will meet current seismic design standards. Current standards are more stringent. New infrastructure will therefore improve resilience.
- The planning and option assessment work that supports the preferred option report for the Mass Rapid Transit (MRT) and Strategic Highway Improvements (SHI) projects includes assessment of resilience.
- LGWM and WCC planning includes other infrastructure delivery to support the transformation of the city, including 3 waters renewals and upgrades. The combination of new LGWM, WCC and 3 waters infrastructure in LGWM project locations would provide a combined resilience improvement in these areas. A new MRT corridor would result in upgraded utilities, transport, and residential and commercial buildings in some locations. These would be designed to current standards increasing the overall resilience in these locations.
- Detailed resilience considerations that informed the preferred programme option assessment and reporting are provided in the following sections.

MRT route planning

- Known resilience issues in Wellington's eastern suburbs were a key factor in the assessment of the earlier MRT route to Wellington Airport. The identified risks in the east are earth shaking, liquefaction, tsunami risk, flooding and sea level rise. These affect the suburbs of Kilbirnie, Rongotai and Miramar. Parts of these suburbs are only 2 metres above sea level. In combination, these risks severely limit the potential for intensified urban development in these suburbs, which is necessary to support the business case for MRT investment. WCC's Proposed District Plan acknowledges and responds to these issues by deprioritising urban development in the eastern suburbs.
- The preferred route for MRT to Island Bay reflects consideration of these risks and is subject to fewer of these risks. Target areas for intensified urban development in Mount Cook, Newtown, Berhampore and Island Bay are largely unaffected by sea level rise or tsunami risk. They are also less affected by the seismic risks of earth shaking and liquefaction due to the geology in these areas.
- In all options, MRT lanes would be usable by emergency service vehicles. This increases the overall resilience of the transport network.
- The preferred MRT route does travel through two areas at risk of inundation through sea level rise and/or tsunami:
    1. The waterfront route section from Wellington Railway Station to Taranaki Street. The risk here is borne by all infrastructure in the Wellington city centre. This will need to be mitigated in the future as part of a broader response to this issue reflecting the WCC Proposed District Plan.

2. The southernmost section of the route at Island Bay, including the terminus. This lies at 4 metres above sea level. Design measures to mitigate the risk in this location will be considered during the Detailed Business Case phase.

- Within Te Aro, the indirect risk of building collapse onto the MRT route is rated as lower on the Cambridge Terrace alignment (Options 1, 2 and 3) than on the Taranaki Street alignment (Option 4).

MRT mode selection

- Both light rail and Bus Rapid Transit (BRT) would involve the construction of a completely new pavement to current seismic design standards. Light rail tracks would typically be embedded in a continuous reinforced concrete slab throughout the length of the corridor. These would be designed so they could be quickly relevelled after liquefaction induced subsidence which would likely occur in a large earthquake.
- Following an earthquake there is potential for disruption to MRT operation, through damage to the track (for light rail) or pavement (for BRT), loss of power supply or collapse of buildings onto the roadway.
- BRT vehicles would be able to operate on all roads, allowing them to be rerouted around sections of damaged pavement or obstructions.
- Light rail would require damaged tracks to be repaired and obstructions cleared in order to reinstate operation.

Planning for a new Mt Victoria Tunnel

- The existing Mt Victoria road tunnel has been assessed as having a 'very high resilience risk' from seismic events. However, the tunnel portals are vulnerable to slope failure. Similar risk is likely to exist for the Hataitai bus tunnel, however this has not been assessed to the same level of detail.
- A new/extra Mt Victoria tunnel would have improved seismic resilience compared to the existing tunnel because it would be built to current seismic standards and the portals would be better protected. An extra tunnel would provide additional redundancy in the transport system improving network resilience.

Assessment within the Multi Criteria Analysis (MCA)

- An MCA was used to compare the Programme options. Resilience was weighted as 10% of the total score in alignment with the partners' agreed weighting of the LGWM programme objectives. Scoring of resilience included three Key Performance Indicators:
  - Enhances the resilience of land transport access to critical facilities and within the city.
  - Resilient to high-impact, low-probability events and contributes to access for communities. (e.g. seismic events)
  - Enhances the resilience of access to provide socio-economic functionality in low-Impact, high-probability and unplanned events. (e.g. traffic accidents, storms, unexpected incidents).
- All Mt Victoria tunnel options are considered to enhance resilience through the provision of additional infrastructure and thus greater redundancy. This includes the proposed active mode tunnel options, which would allow emergency vehicle access should other tunnels become unusable.
- Grade-separation of the Basin Reserve was assessed as an opportunity to address local flooding issues.
- All programme options improve resilience compared with the Do Minimum. On a scale from -5 to +5, Option 2 performs the best (scoring +2) followed by option 1 (scoring +1), Option 3 (scoring 0) and Option 4 (scoring -1) compared with the Do Minimum (scoring -2). It is important to note that resilience is only one of the many considerations in the MCA.
- Note: The Proposed District Plan Natural Hazard Overlay is aligned with the assessments released in May 2022 as part of Report from NZ Searise: Te Tai Pari O Aotearoa Report.

Key Projects in Wellington

- An updated map containing key projects in the Wellington region is attached as Appendix 1, complete with an updated 2021-24 National Land Transport Programme Factsheet.

Appendix 1.

Te Whanganui-a-Tara Wellington

Key projects

WAKA KOTAHI NZ TRANSPORT AGENCY

Te Kāwanatanga o Aotearoa New Zealand Government

2021–24 National Land Transport Programme Factsheet

Te Whanganui-a-Tara | Wellington

- A record $3.1 billion is forecast to be invested in Wellington in the 2021–24 National Land Transport Programme (NLTP) period.
- Our investment in Wellington during the 2021–24 NLTP is focused on getting more people using sustainable travel options to move around the region and improving the safety, reliability and resilience of the transport network. Progressing Let's Get Wellington Moving is a key part of this work.
- Wellington already has the highest proportion of people who use public transport in the country with 30% of journeys made by public transport and walking or cycling. Regardless, Wellington is the fourth highest contributor to transport carbon emissions, so a significant shift to the way people move about the region to reduce transport related carbon emissions needs to be enabled.
- Safety in Wellington continues to be a focus, with deaths and serious injuries having increased at a higher rate than population growth. People most at-risk are cyclists and pedestrians in the urban areas, and those travelling on high-risk motorcycle routes and high-risk rural roads.
- The Wellington region is constrained geographically and is vulnerable to earthquakes severe storms, landslides and sea level rise. Noting this, it is critical to ensure people and goods have reliable and efficient access to key destinations in the region such as the Wellington port, ferry terminals, airport and hospitals.
- Work is continuing to strengthen the resilience of two main corridors, SH1 and SH2 to help protect this constrained access.
- Wellington is also a vital gateway for freight and travel between the North and South Islands so work will continue with partners to ensure improve the resilience of this inter-island connection.
- The $3.1 billion forecast investment includes:
    - $490 million forecast maintenance and operations
    - $1.2 billion forecast public transport investment
    - $261 million forecast cycling and walking investment
    - $102 million forecast Road to Zero investment
    - $221 million forecast NZ Upgrade Programme.

Wellington investment highlights for 2021–24

- $28.4 million is being invested on improving the safety of 22.5kms of SH2 through the Remutaka Hill corridor, $15.6 million on 3.7kms of SH2 along the Hutt Valley corridor, and a further $22.6 million along 8.7kms of SH2 from Masterton to Carterton on both new infrastructure and speed reviews.
- Let's Get Wellington Moving:
    - Central City Pedestrian safety improvements to make it safer, quicker and easier for pedestrians to cross
    - Cobham Drive crossing and speed review to improve safety for pedestrians and cyclists to cross and connect with the Evans Bay cycleway
    - Golden Mile improvements making bus travel through the central city faster and more reliable, and improving safety for pedestrians along this corridor