

Let's Get Wellington Moving

Cost Estimates for Preferred Programme

Let's Get Wellington Moving

Cost Estimates for Preferred Programme

Client: NZ Transport Agency

ABN: N/A

Prepared by

AECOM New Zealand Limited

08-Nov-2018

Job No.: 60508819

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

© AECOM New Zealand Limited (AECOM). All rights reserved.

AECOM has prepared this document for the sole use of the Client and for a specific purpose, each as expressly stated in the document. No other party should rely on this document without the prior written consent of AECOM. AECOM undertakes no duty, nor accepts any responsibility, to any third party who may rely upon or use this document. This document has been prepared based on the Client's description of its requirements and AECOM's experience, having regard to assumptions that AECOM can reasonably be expected to make in accordance with sound professional principles. AECOM may also have relied upon information provided by the Client and other third parties to prepare this document, some of which may not have been verified. Subject to the above conditions, this document may be transmitted, reproduced or disseminated only in its entirety.

Quality Information

Document Let's Get Wellington Moving

Ref 60508819

Date 08-Nov-2018

Prepared by Graeme Doherty

Revision History


Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	08-Jun-2018	Draft for Final Review	Graeme Doherty Manager - Civil Infrastructure	
B	13-July-2018	Incorporate Changes to Early Improvements	Graeme Doherty Manager - Civil Infrastructure	
C	08-Nov-2018	Final	Graeme Doherty Manager - Civil Infrastructure	

Table of Contents

1.0	Introduction	1
1.1	Purpose of this report	1
1.1.1	Structure	1
2.0	The Preferred Programme Including Costs	1
3.0	Interventions Associated With The Preferred Programme	2
3.1	A Walkable City - \$70M	2
3.2	Connected Cycleways - \$30M	5
3.3	Public Transport (to and Through the Central City, to the North) - \$260 to \$300M	5
3.4	Public Transport – Mass transit to Newtown - \$360 to \$990M	7
3.5	Public Transport – Mass transit Newtown to Airport - \$275 to \$450M	7
3.6	Better Access to the East - \$480M	7
3.7	Improving the Basin - \$100 to \$130M	7
3.8	More Reliable State Highway - \$400M	8
3.9	Reclaiming Te Aro - \$960 to \$1,100M	8
3.10	Smarter Transport Network - \$30M	8
3.11	Smarter Pricing - \$30M	9
3.12	Early Works Package - \$46 to \$82M (funded from the above Interventions)	9
3.12.1	Safer Speeds - \$0.8 to \$2.5M	10
3.12.2	Thorndon Quay and Hutt Road - \$15 to \$21.1M	10
3.12.3	Golden Mile - \$23 to \$50M	10
3.12.4	Technology and Network Enhancements - \$7.8 to \$9.1M	10
4.0	Assumptions Around Interventions	10
4.1	Underground Services	10
4.2	Cultural Heritage	11
4.3	Contaminated Land	11
4.4	Property Purchases	11
4.5	Mass Transit	11
4.6	Unlocking the Basin	11
4.7	Better Access to the East	12

1.0 Introduction

1.1 Purpose of this report

AECOM is currently assisting the Let's Get Wellington Moving (LGWM) team who have determined a preferred programme of activities and interventions for improving the transport and urban planning outcomes for Wellington City.

AECOM has been tasked with providing high level costing information associated with the preferred programme.

As well as providing rough order costs for the activities and some interventions, this report sets out the high level assumptions and constraints identified to date which have been used to inform the cost estimates.

Detailed design for the large interventions has not been undertaken and there will be a range of possible options for most of the interventions. This report bases the cost estimation at this stage on assumed options for each activity and intervention.

1.1.1 Structure

The structure of this report is as follows:

- Section 2 – Activities within the preferred programme;
- Section 3 – Interventions associated with the preferred programme of activities;
- Section 4 – Assumptions around interventions.

2.0 The Preferred Programme Including Costs

The preferred programme consists of the following activities and their costs:

- A Walkable City (\$70M);
- Connected Cycleways (\$30M);
- Public Transport (to and through the city, to the north) (\$260 - \$300M);
- Public Transport (mass transit to Newtown) (\$360 - \$990M);
- Public Transport (mass transit Newtown to airport) – (\$275 - \$450M)
- Better Access to the East (\$480M);
- Improving the Basin (\$100 to \$130M);
- More Reliable State Highway (\$400M);
- Reclaiming Te Aro (\$960M to \$1,110M);
- Smarter Transport Network (\$30M);
- Smarter pricing (\$10 - \$30M);
- A package of Early Improvements funded from the above interventions (\$46 to \$82M)

Rough order outturn costs (client managed costs, construction costs and professional fees) for the activities have been estimated and formatted to feasibility level ("FE" type estimate as per the NZ Transport Agency's Cost Estimation Manual). Contingency has been qualitatively assessed and applied to the base estimate. Funding risk has not been applied at this stage.

The estimates are based on generalised costs for items eg cost per kilometre for a new shared path, cost per kilometre for a new road, and using previous estimates from previous reports (where available) and from similar projects elsewhere, as the basis for estimating the costs. Professional fees, client managed costs and contingencies are determined as a percentage of the construction costs, correlated to the complexity of the intervention.

3.0 Interventions Associated With The Preferred Programme

The following interventions (projects) form part of the main activities specified in 2.0 above. A high level description of each intervention is provided.

3.1 A Walkable City - \$70M

Interventions identified to date are below. These interventions have been costed at \$210M, of which \$70M has been allocated within the preferred programme. A decision as to which interventions to progress will be made during the next phase of investigative work, in conjunction with the investigative work associated with the major interventions:

- Minor lighting, surfacing and crossing improvements for laneways Opera House Lane to Marion Street, York Street to Holland Street, Swan Lane and Garrett Street to Victoria Street;
- Pedestrian priority signal changes on Featherston Street, trial an LED light strip that translates phase times to walking speeds:
 - Add pedestrian crossing to western leg of Whitmore / Featherston;
 - Add pedestrian crossing to northern leg of Featherston / Bunny;
 - Add pedestrian crossing facility on southern side of Ballance / Featherston intersection;
 - Add pedestrian crossings on Hutt Road between Aotea and Thorndon Quays, signalise zebra crossings on Thorndon Quay next to Davis Street and Moore St (Include as part of changes to Thorndon Quay).
- Provide missing pedestrian crosswalks at:
 - western departure at Wakefield/Tory;
 - eastern leg of Tory/Cable;
 - eastern leg of Chaffers/Cable;
 - southern leg of Jervois/Harris;
 - southern leg of Jervois/Willeston;
 - northern leg of Customhouse/Brandon;
 - southern leg of Customhouse/Johnston;
 - southern leg of Waterloo/Whitmore;
 - southern leg of Waterloo/Bunny.
- Pedestrian zebra crossings on Boulcott Street near top of Plimmer Steps;
- Add crosswalk to Civic Square and Victoria Street signals on the east side;
- Add signalised pedestrian crossing on Lambton Quay near the Ballance St intersection;
- Zebra crossing on Tory Street near Holland Street;
- Improve marking and signage for key pedestrian routes;
- Provide countdown timers at pedestrian traffic lights: Cuba/Ghuznee, Willis/Mercer, Riddiford/Constable, Onepu/Coutts;

- Install movement sensors at intersections that automatically cancel the cross-now phase when no one is waiting;
- Widen footpaths:
 - 60m - Featherston St eastside at Whitmore / Ballance (Z station) (included in the “connected cycleways” activity);
 - 55m – Victoria Street westside - next to ANB Building (south of Willeston) (included in the “connected cycleways” activity);
 - 50m - Bowen Street southside - west of The Terrace junction;
 - 60m - Aurora Terrace northside - The Terrace / SH overbridge;
 - 60m - The Terrace eastside - Everton Terrace / Boulcott staircase;
 - 10m - Boulcott Street northside - at bottom of staircase below The Terrace;
 - 500m - Willis Street westside - Boulcott / Vivian (included in the “connected cycleways” activity);
 - 300m - Dixon Street southside - Taranaki / Victoria;
 - 2 X 250m The Terrace both sides - Bowen / Aurora.
- Provide pedestrian shelters on Jervois Quay, Lambton Quay Featherston Street, Hunter, Stout Street, Balance Street, Manners / Cuba, Cable Street / Oriental Parade;
- Improve pedestrian lighting;
- Signalise zebra crossing next to Hawkestone Street (on Tinakori Road);
- Improve safety of crossing at Mulgrave Street/Thorndon Quay;
- Signalise intersection of Molesworth/Hawkestone Streets (related to signalised crossing point near New World);
- Create pedestrian/cycle crossing on Cobham Drive near Troy Street. (dependency on speed review);
- Provide pedestrian crossing point on Ruahine Street near Wellington Road (dependency on speed review);
- Signalise zebra crossing on Taranaki Street next to Wellington High School;
- Signalise zebra crossing on John Street just east of Wallace Street;
- Signalise zebra crossing next to Massey University on Wallace Street;
- Reprioritise signals in favour of pedestrians where appropriate along The Terrace;
- Add pedestrian crossing facilities on The Terrace near Aurora Terrace, Dalmuir Lane and Bolton intersections;
- Add pedestrian crosswalk to The Terrace/SH1 off-ramp (related to Terrace off-ramp capacity item);
- Add pedestrian crosswalk to The Terrace/Salamanca Road;
- Add pedestrian crosswalk to The Terrace/Bowen Street;
- Provide pedestrian crossing point Boulcott Street near steps to the Terrace;
- Pedestrian crossing points at Macdonald and Ghuznee intersections with The Terrace;
- Pedestrian crossing point at start of slip lane to Boulcott Street;
- Improve pedestrian route: Allenby Terrace / O'Reilley Ave.
- Customhouse Quay - Approximately 240m of widening between Whitmore and Panama Streets;
- Dixon Street - Full redesign between Taranaki and Willis Streets including junction with Willis Street;

- Bunny Street - Full redesign of station forecourt and Bunny Street to remove general traffic and increase usability of public space;
- Stout Street - Full redesign between Lambton Quay and Balance Street including junction with Ballance Street;
- Stout Street - Widen footpath (south side), north of Whitmore Street;
- Lambton Quay - Remove general traffic and increase pedestrian space;
- Lambton Quay - Reconfigure junction with Bunny Street;
- Willis Street - Remove general traffic north of Vivian and increase pedestrian space + amenity between Boulcott and Vivian Streets;
- Remove general traffic from northern Willis Street, southern Lambton Quay and parts of Courtenay Place
- Mercer Street - Full redesign to increase pedestrian space and amenity, keep bus route if needed;
- Manners Street - Remove general traffic between Cuba and Taranaki Streets and increase pedestrian space;
- Manners Street - Reconfigure junction with Victoria Street;
- Courtenay Place - Remove general traffic and increase pedestrian space;
- Cuba Street - Full redesign of the mall between Manners and Ghuznee Streets;
- Cuba Street – Remove traffic from lower Cuba Street;
- Cuba Street - Re-allocate space to increase pedestrian priority between Ghuznee and Webb Streets (could include pedestrianising area, shared surfaces and/or removal of car parking to widen footpaths);
- The Terrace - Reallocate space from on-street parking to pedestrians between Bowen Street and Aurora Terrace. All side streets to have raised crossings. Signalise Aurora Terrace junction to provide a formal pedestrian crossing facility. Improve Bowen Street / The Terrace junction to increase pedestrian utility;
- Farmers Terrace - Redesign to increase pedestrian amenity and safety (lighting, art, etc);
- Victoria University of Wellington (VUW) to CBD link - Improve footpaths / junctions / lighting on Salamanca Road / The Terrace / Allenby Terrace / O'Reilly Avenue;
- Tory Street - Add missing pedestrian crossing link to west of Tory Street / Wakefield Street junction;
- Tory Street - Add missing pedestrian crossing link to north of Tory Street / Cable Street junction;
- Tory Street - Detune Tory Street between Courtenay Place and Wakefield Street; could become a local access shared surface;
- Tory Street - Reallocate space from on-street parking to pedestrians south of Courtenay Place. All side streets to have raised crossings. Signalise junctions (Tennyson, Lorne, Colledge, Haining) to provide formal pedestrian crossing facilities;
- Cambridge / Kent Terraces – Boulevard enhancements eg tree planting and other amenity improvements;
- Taranaki Street - Amenity and safety improvements;
- Dixon Street - Re-allocate space / green time to increase pedestrian priority;
- Quays (Waterloo Quay south of Bunny Street, Jervois Quay, Customhouse Quay, Cable Street) - Reduce pedestrian delay at signalised junctions, widen western footpath, add

eastern footpath where missing, add 4th leg of pedestrian crossings, increase amenity /street trees, improve side pedestrian crossings, remove Harris Street pedestrian overbridge / add at grade signalised pedestrian crossing;

- Blair Street - Reallocate space from on-street parking to pedestrians / public space;
- Allen Street - Reallocate space from on-street parking to pedestrians / public space;
- Mulgrave Street - Redesign Mulgrave / Kate Shepherd / Lambton / Thorndon Quay junctions to increase pedestrian utility;
- Majoribanks Street - Increase pedestrian utility at Majoribanks Street / Kent & Cambridge Terraces junctions;
- Adelaide Road - Increase pedestrian utility along and across Adelaide Road north of John Street (eg provide crossing facilities on all legs of all junctions, add formal signalised crossings where distance between crossings exceeds 200m, provide weather protection at crossings);
- Riddiford Street - Increase pedestrian utility along and across Riddiford Street;
- Place-making projects on Mercer Street, Lower Cuba Street and Courtenay Place.

3.2 Connected Cycleways - \$30M

Interventions include:

- Protected bike lanes in:
 - Featherston Street (and short section of Whitmore from Featherston to Bowen);
 - Victoria Street;
 - Willis Street;
 - Courtenay Place - Dixon Street;
 - Taranaki Street (as part of PT trial);
 - Thorndon Quay and Hutt Road (as part of PT trial);
 - Changes to intersections to facilitate separate cycle signals and crossing points for the protected bike lanes
- Crossing point on Cobham Drive;
- Setting safer speeds.
- Protected bike lanes on Kent and Cambridge terraces, potential to be implemented as part of Basin improvements or PT corridor improvements.

3.3 Public Transport (to and Through the Central City, to the North) - \$260 to \$300M

Interventions include:

- BRT from Railway Station along Golden Mile, Elizabeth Street to Haitaitai Tunnel (or Duplicated Mt Victoria Tunnel, Ruahine Street, Cobham Drive to Airport). The cost excludes improvements to the Basin Reserve area, Mt Victoria tunnel duplication and Ruahine Street / Wellington Road widening, which are included in other major interventions);
- Part time or full time bus lanes on Hutt Road and Thorndon Quay from Ngauranga Gorge to Mulgrave Street;
- Wider bus priority:

- Glenmore Street (from Upland Road intersection), Bowen Street to Lambton Quay, conversion of existing bus lane on Chaytor St to 24/7 operation;
- Brookland Road -inbound bus lane and bus phase on Willis St approach to Karo Drive, Outbound bus lane on Victoria St (Ghuznee St to Karo Drive) to signalised stop line;
- Courtenay Street to Kilbirnie via Elizabeth Street, Brougham Street and Pirie Street to the existing Haitaitai tunnel and then priority at intersections along Waitoa Road, Moxham Avenue and Kilbirnie Crescent;
- Basin Reserve to Newtown via Adelaide Road, Riddiford Street to Mein Street intersection;
- Newtown to Kilbirnie –buses run with general traffic along Constable Street and Crawford Road with priority at intersections.
- Early Improvements:
 - Replace angle parking on Lambton Quay with parallel parking in the vicinity of Stout Street;
 - Improve bus priority at intersections along Golden Mile and Kent/Cambridge:
 - ✓ Northbound Lambton/Bowen - Advanced detection to extend phase for buses;
 - ✓ Southbound Lambton/Whitmore - Advanced detection to extend phase for buses;
 - ✓ Southbound Lambton/Midland Park - Advanced detection to extend phase for buses;
 - ✓ Northbound Lambton/Midland Park - Advanced detection to extend phase for buses;
 - ✓ Southbound Lambton/Brandon - Extend B displays to match demand more closely;
 - ✓ Southbound Willis/Chews - Advanced detection to extend phase for buses;
 - ✓ Northbound Willis/Chews - Advanced detection to extend phase for buses;
 - ✓ Southbound Willis/Mercer - Advanced detection to extend phase for buses;
 - ✓ Southbound Willis/Mercer - Remove unnecessary phases;
 - ✓ Northbound Manners/Willis - Advanced detection to extend phase for buses;
 - ✓ Southbound Willis to Victoria - Review SCATS coordination settings;
 - ✓ Northbound Manners to Mercer - Review SCATS coordination settings;
 - ✓ Northbound Manners/Victoria - Advanced detection to extend phase for buses;
 - ✓ Southbound Manners/Cuba - Advanced detection to call phase for buses;
 - ✓ Southbound Manners/Taranaki - Advanced detection to extend phase for buses;
 - ✓ Southbound Courtenay/Reading - Extend B displays to match demand more closely;
 - ✓ Southbound Courtenay/Tory - Revise intersection markings;
 - ✓ Southbound Courtenay/Blair - Advanced detection to extend phase for buses;
 - ✓ Southbound Courtenay/Cambridge - Advanced detection to extend phase for buses;
 - ✓ Quantify and report on bus travel times and variability to establish a baseline for monitoring;
 - Trial bus lane and priority on Hutt Road (in-bound only to Thorndon Quay) and Thorndon Quay to railway station;
 - Conversion from trial to permanent bus lane and priority on Hutt Road (in-bound only to Thorndon Quay) and Thorndon Quay to railway station (cost includes cycling and two pedestrian refuges).
- Remove the bus shelter and stop signs at Stout Street;
- Trial remove general traffic from Mercer Street, along Willis Street and Lambton Quay, to Panama Street;
- Trial restrict general traffic on sections of Courtenay Place, potentially a loop using Allen/Blair/Taranaki;
- Review bus lane times and length along Riddiford/Adelaide citybound;
- Trial PT priority on Taranaki Street;

- Review bus lane times and length along Bowen Street citybound;
- Increase intersection capacity at Willis Street/ Karo Drive by restricting a car park;
- Remove three car parks on Victoria Street south of Vivian Street;
- Investigate bus priority on Willis and Victoria streets.
- Unlocking rail network capacity and resilience across the region (outside LGWM);
- Higher frequencies and service levels, and integrated ticketing (outside LGWM);

3.4 Public Transport – Mass transit to Newtown - \$360 to \$990M

- Mass Transit in the form of a light rail transit system or similar rubber tyre system (like light rail transit – LLRT) from the railway station to Newtown (Zoo) via waterfront Quays, Taranaki Street, Tasman Street, Rugby Street, Adelaide Road, Riddiford Street, Mansfield Street, Roy Street, Daniell Street and Manchester Street.

The full outturn cost for the intervention described above has been estimated at \$920M. Recognising that there are options to link the mass transit system from Taranaki Street to Adelaide Road, a contingency of \$70M has been incorporated into the \$990M cost for the whole intervention.

The costing of this intervention assumes that the underpass carrying the relocated eastbound state highway lanes (part of the “Reclaiming Te Aro” intervention) is built (either before or as part of the “Mass Transit to Newtown” intervention) between Taranaki Street and Tory/Tasman Streets, enabling the mass transit to run on top of the underpass to access Tasman Street from Taranaki Street.

3.5 Public Transport – Mass transit Newtown to Airport - \$275 to \$450M

- Mass Transit in the form of a light rail transit system or similar rubber tyre system (like light rail transit – LLRT) from Newtown (Zoo) to the Airport via a tunnel under Mt Albert, Rongotai Road, Cobham Drive, Troy Street, Cobham Drive, Miramar Avenue, Hobart Street, Broadway Street, Stewart Duff Drive.

3.6 Better Access to the East - \$480M

Interventions include:

- Mt Vic Tunnel Duplication;
- Widening of Ruahine Street and Wellington Road to the intersection with Kilbirnie Crescent.

3.7 Improving the Basin - \$100 to \$130M

Interventions include:

- Conflicting movements consolidated to north western corner and grade separated;
- At-grade improvements as part of early improvements:
 - Four circulating lanes, potentially one bus dedicated (similar to previous WCC at-grade scheme, includes both signalised intersections);
 - Restrict Sussex Street parking;
 - Restrict Ellice street access;
 - Widen footpath along rugby street;

- Adjust traffic island at Adelaide Road intersection.

A decision will be made in the next phase as to which early improvements to continue with, correlated to timeframe of completion of the main intervention.

3.8 More Reliable State Highway - \$400M

Interventions include:

- Terrace Tunnel Duplication;
- Ngauranga to Aotea Quay (N2AQ) southbound widening (includes Aotea Quay off-ramp);
- On and off-ramp reconfiguration;
- Early Improvements:
 - Optimise turns (WB) Karo Drive/ Cuba Street;
 - Optimise lanes at Victoria/Karo intersection;
 - Change the SH1 Arthur Street left lane to left turn only after Taranaki Street;
 - Increase stacking capacity on the Tinakori Road off ramp and optimise the Tinakori Road intersection;
 - Improve queueing capacity at Terrace off-ramp.

A decision will be made in the next phase as to which early improvements to continue with, correlated to timeframe of completion of the main intervention.

3.9 Reclaiming Te Aro - \$960 to \$1,100M

The extent of this activity is from the south portal of the existing Terrace Tunnel to Sussex Street on the western side of the Basin Reserve.

The cost range covers the choice between a partial cut-and-cover intervention and a fully lidded intervention. Costs are inclusive of:

- Relocating the eastbound state highway lanes on Vivian Street to the Karo Drive corridor;
- Reverting Vivian Street to a two-way road with cycling;
- Early Improvements:
 - Restrict parking on Vivian Street to create a third lane during peak operation.

3.10 Smarter Transport Network - \$30M

Interventions could include some of the following:

- System change management (funded from major activities);
- Early Improvements:
 - Minor safety improvements at Courtenay Place/Allen St intersection;
 - Minor safety improvements at Courtenay Place/Blair St intersection;
 - Minor safety improvements at Courtenay Place/Taranaki St intersection;
 - Minor safety improvements at Wakefield/Taranaki St intersection;
 - Minor safety improvements at Wakefield/Tory St intersection;
 - Minor safety improvements at Kent/Cambridge Terrace/Majoribanks Street intersection;
 - Minor safety improvements at Courtenay/Tory St intersection;
 - Continue investment in smart parking infrastructure;

- Improve loading zone management;
- Traveller information variable message sign Wellington Airport;
- Additional CCTV cameras at intersections for the purposes of monitoring traffic;
- Ensure bus stops allow buses to exit and enter vehicle flows (9 stops identified);
- Encourage more friendly interaction between pedestrians and cyclists along the waterfront route by trialling use of rumble strips at narrow sections;
- Provide double right turn out of Hinemoa St onto Waterloo Quay;
- Increase intersection capacity at Tinakori/Bowen by restricting a car park;
- Increase intersection capacity at Tinakori/Harriet by restricting a car park;
- Trial half cycle minor phases at traffic signals at peak times (e.g. Tinakori rd./ramp/Harriet Street, Pirie Street/Vivian/K/C, Abel Smith West/Karo/Willis, Taranaki NB RT/Vivian, Tory/Vivian, Majoribanks/K/C/Courtenay);
- Active queue warning sign at Aotea Quay off-ramp;
- Minor safety improvements north of Terrace Tunnel;
- Minor safety improvements south of Terrace Tunnel;
- Improve response to adverse weather – investigate lane lights north of Terrace Tunnel to Thorndon Overbridge;
- Improve incident response – special vehicles, staff and performance requirements for responding to small scale events e.g. spills and breakdowns;
- Implement any nationally led project resulting from MaaS business case (customise to Wellington context);
- Increase the capability to support Workplace and School Travel Plans;
- Encourage adoption of e-bikes;
- More operations resource for WCC signal improvements team;
- Apply appropriate speeds across CBD and SH1 to the east;
- Bus priority at Hamilton Road/Wellington Road intersection;
- Minor safety improvements at Wellington Road - Ruahine Street intersection;
- Minor safety improvements at Wellington Road - Hamilton Road intersection;
- Minor safety improvements at Wellington Road - Evans Bay Parade intersection;
- Minor safety improvements at Cobham Drive - Troy Street roundabout;
- Minor safety improvements at Cobham Drive - Calabar Road roundabout;
- Improving the right turn from Bowen/The Terrace into Museum St;
- Use of technology for on-street parking management e.g. sensors in loading zones.

3.11 Smarter Pricing - \$30M

Interventions include:

- Transition to an integrated operating system (un-scoped and therefore not priced);
- Implement a road pricing mechanism.

3.12 Early Works Package - \$46 to \$82M (funded from the above Interventions)

Acknowledging that the major interventions will take some time to investigate and construct, packages of early works to support the major interventions have been identified. These packages combine some of the “Early Improvements” from the interventions described above and some of the interventions that are associated with a major intervention.

The Early Works packages are described in the following sub-sections:

3.12.1 Safer Speeds - \$0.8 to \$2.5M

- Lower speed limits on selected roads in the central city and parts of State Highway 1 east of Mt Victoria (Ruahine Street, Cobham Drive and Calabar Road)

3.12.2 Thorndon Quay and Hutt Road - \$15 to \$21.1M

- Public transport and cycling priority along the corridor with integrated walking and amenity improvements.

3.12.3 Golden Mile - \$23 to \$50M

- Bus priority enhancements;
- Safety improvements;
- Removing general traffic from parts of northern Willis Street, southern Lambton Quay, and Courtenay Place;
- Place-making projects on Mercer Street, Lower Cuba St, and Courtenay Place.

3.12.4 Technology and Network Enhancements - \$7.8 to \$9.1M

- Mobility as a Service platform for Wellington;
- Traffic signal and intersection enhancements e.g. pedestrian countdown timers, signalling Hawkestone Street / Tinakori Road and Molesworth Street / Hawkestone Street;
- Pedestrian crossing improvements, including a new crossing on Cobham Drive;
- Pedestrian shelter, lighting and wayfinding enhancements;
- Lengthening nine bus stops so that buses can pull up to the kerb;
- Further use of technology for on-street parking management e.g. sensors in loading zones;
- Increased traffic monitoring CCTV coverage;
- Better information e.g. variable message sign at the airport;
- Rationalise bus stops on Kilbirnie Crescent at the aquatic / community centre.

4.0 Assumptions Around Interventions

4.1 Underground Services

At this stage of the investigation, stormwater and sewer pipe distribution networks associated with the “Reclaiming Te Aro” activity are a major constraint between the southern portal of the existing Terrace Tunnel and the Basin Reserve due to cut and cover activities.

It is assumed that the stormwater and sewer networks can be relocated and continue to operate under gravity flow conditions by taking them parallel to the proposed intervention along Karo Drive and connecting them to the existing systems at the Basin Reserve and near the Terrace Tunnel.

For the mass transit interventions that operate on rails, all services are relocated outside of the mass transit corridor to mitigate the risk of service disruption due to a failed service or a requirement by the service provider to undertake work on their services. For a mass transit system that operates on rubber tyres, an allowance for some services to be relocated has been made, the assumption being that rubber tyre vehicles can manoeuvre around construction areas.

For all other interventions, affected services are relocated as and when required and facilitated within the proposed ground levels.

4.2 Cultural Heritage

Items of natural or cultural heritage are known to exist within the space required by the interventions. The cost estimates have allowed for relocation of Cultural Heritage buildings.

4.3 Contaminated Land

Parcels of land that have had activities that are on the Hazardous Activities and Industries List (HAIL) are known to exist within the space required for the interventions. It is assumed that approvals from WCC and GWRC to disturb contaminated soils will be granted.

4.4 Property Purchases

It is assumed that properties required to enable an intervention to be constructed are willingly sold and do not require purchase via the Public Works Act. The outturn cost estimates provide for net property costs ie the cost of purchasing property less the revenue generated from selling surplus property after completion of an intervention.

4.5 Mass Transit

Mass transit [Light Rail (LRT) or Like Light Rail (LLRT)] is assumed to operate in its own dedicated 'lanes' adjacent to general traffic lanes. Therefore, the overall minimum width required along a mass transit corridor in each direction equates to 2 'lanes' (one for general traffic and the other for mass transit).

The costs for both LRT and LLRT assumes that LRT is operating on rails and LLRT is operating on rubber tyre wheels. Mass transit is assumed to occupy road space at the same cross-sectional elevation as general traffic.

All parking along the mass transit corridor is removed to minimise the quantum of widening required. Allowing parking along these corridors would significantly increase both construction and property costs. These have not been quantified.

Operational costs or vehicle fleet costs for Mass Transit have not been included. The ever-changing technological advances means it is difficult to determine the future operating environment. Depending on an individual's viewpoint, the future could be any of the following examples, whilst also acknowledging that something new may also appear. The next ten years is considered to be a transformational period, which will have a big impact on operational costs, of which labour is a major component.

- Fully electric buses;
- Battery operated light rail;
- Driverless buses or light rail vehicles;
- Developments in fare collection technology.

4.6 Unlocking the Basin

Grade separation is assumed to occur at the north-western corner of the Basin Reserve. North-south local road movements all occur on the western side of the Basin Reserve.

The costs assume that the eastbound state highway lanes (on Vivian Street) have been relocated to Karo Drive and run alongside the westbound state highway on the north side of the Basin Reserve. On the eastern side of the Basin, the costing assumes that the state highway lanes connect into the existing merge and diverge areas just to the west of the Mt Victoria tunnel near the closed intersection with Brougham Street.

4.7 Better Access to the East

As well as provision for a total of 4 lanes of traffic from the Kilbirnie Crescent intersection and a duplicate tunnel under Mt Victoria, the costing provides for:

- the work required to create a two-lane approach to the new tunnel portal on the western side of Mt Victoria from the closed intersection with Brougham Street;
- a separate pedestrian tunnel;