Absolutely Positively Wellington City Council
Me Heke Ki Pōneke

ORDINARY MEETING
OF
PŪRORO ĀMUA - PLANNING AND ENVIRONMENT COMMITTEE
AGENDA

Time:	9:30am
Date:	Wednesday, 25 August 2021
Venue:	Ngake (16.09) Level 16, Tahiwi 113 The Terrace Wellington

MEMBERSHIP

Mayor Foster
Deputy Mayor Free
Councillor Calvert
Councillor Condie
Councillor Day
Councillor Fitzsimons
Councillor Foon
Liz Kelly
Councillor Matthews
Councillor O'Neill
Councillor Pannett (Chair)
Councillor Paul (Deputy Chair)
Councillor Rush
Councillor Sparrow
Councillor Woolf
Councillor Young

Have your say!
You can make a short presentation to the Councillors at this meeting. Please let us know by noon the working day before the meeting. You can do this either by phoning 04-803-8334, emailing public.participation@wcc.govt.nz or writing to Democracy Services, Wellington City Council, PO Box 2199, Wellington, giving your name, phone number, and the issue you would like to talk about. All Council and committee meetings are livestreamed on our YouTube page. This includes any public participation at the meeting.

AREA OF FOCUS

The Pūroro Āmua | Planning and Environment Committee has the following responsibilities:

- RMA matters
- Urban Planning, District Plan
- Built environment
- Natural environment and biodiversity
- Future Development Strategy, Spatial Plans and Housing Supply
- Climate Change Response and Resilience
- Heritage
- Transport Strategy and Planning, including significant traffic resolutions
- Parking policy
- Submissions to Government or other local authorities
- Regulatory activity and compliance
- Planning and approval of business cases for Let's Get Wellington Moving, associated
- traffic resolutions and other non-financial statutory powers necessary for progressing
- the business cases (such as decisions under the Local Government Act 1974)
- Implementing and monitoring delivery of the affordable housing strategy

The Committee has the responsibility to discuss and approve a forward agenda.

To read the full delegations of this committee, please visit wellington.govt.nz/meetings.

Quorum: 9 members

TABLE OF CONTENTS
25 AUGUST 2021

Business **Page No.**

1. Meeting Conduct

1.1 Karakia

The Chairperson will open the meeting with a karakia.

Whakataka te hau ki te uru,	Cease oh winds of the west
Whakataka te hau ki te tonga.	and of the south
Kia mākinakina ki uta,	Let the bracing breezes flow,
Kia mātaratara ki tai.	over the land and the sea.
E hī ake ana te atākura.	Let the red-tipped dawn come
He tio, he huka, he hauhū.	with a sharpened edge, a touch of frost,
Tihei Mauri Ora!	a promise of a glorious day

At the appropriate time, the following karakia will be read to close the meeting.

Unuhia, unuhia, unuhia ki te uru tapu nui	Draw on, draw on
Kia wātea, kia māmā, te ngākau, te tinana, te wairua	Draw on the supreme sacredness
I te ara takatū	To clear, to free the heart, the body
Koia rā e Rongo, whakairia ake ki runga	and the spirit of mankind
Kia wātea, kia wātea	Oh Rongo, above (symbol of peace)
Āe rā, kua wātea!	Let this all be done in unity

1.2 Apologies

The Chairperson invites notice from members of apologies, including apologies for lateness and early departure from the meeting, where leave of absence has not previously been granted.

1.3 Conflict of Interest Declarations

Members are reminded of the need to be vigilant to stand aside from decision making when a conflict arises between their role as a member and any private or other external interest they might have.

1.4 Confirmation of Minutes

The minutes of the meeting held on 4 August 2021 will be put to the Pūroro Āmua | Planning and Environment Committee for confirmation.

1.5 Items not on the Agenda

The Chairperson will give notice of items not on the agenda as follows.

Matters Requiring Urgent Attention as Determined by Resolution of the Pūroro Āmua | Planning and Environment Committee.

The Chairperson shall state to the meeting:

1. The reason why the item is not on the agenda; and
2. The reason why discussion of the item cannot be delayed until a subsequent meeting.

The item may be allowed onto the agenda by resolution of the Pūroro Āmua | Planning and Environment Committee.

Minor Matters relating to the General Business of the Pūroro Āmua | Planning and Environment Committee.

The Chairperson shall state to the meeting that the item will be discussed, but no resolution, decision, or recommendation may be made in respect of the item except to refer it to a subsequent meeting of the Pūroro Āmua | Planning and Environment Committee for further discussion.

1.6 Public Participation

A maximum of 60 minutes is set aside for public participation at the commencement of any meeting of the Council or committee that is open to the public. Under Standing Order 31.2 a written, oral or electronic application to address the meeting setting forth the subject, is required to be lodged with the Chief Executive by 12.00 noon of the working day prior to the meeting concerned, and subsequently approved by the Chairperson.

Requests for public participation can be sent by email to public.participation@wcc.govt.nz, by post to Democracy Services, Wellington City Council, PO Box 2199, Wellington, or by phone at 04 803 8334, giving the requester's name, phone number and the issue to be raised.

2. Petitions

PETITION: WE NEED ROUTES FROM NEWTOWN TO THE CBD SAFER FOR CYCLING AND BETTER FOR PEOPLE ON BUSES

Summary

Primary Petitioner: Jill Ford
Total Signatures: 520

Presented by: Jill Ford

Recommendation

That the Pūroro Āmua | Planning and Environment Committee:

1. Receive the information and thank the petitioner.

Background

1. Jill Ford opened a petition on Change.org in May 2021.
2. The petition details are as follows:

This is what Wellingtonians want you, their council to do:

Wellingtonians overwhelmingly want councillor's to prioritise active and public transport. People of Wellington want and need better cycle, and bus options to the CBD from southern suburbs and the hospital. By making some small changes to clearways the council can support more people using bikes, improve reliability of buses and meet its own goals around reducing transport carbon emissions very quickly.

With all progress has been delayed by LGWM, and routes becoming increasing congested,

We call on WCC to make the following Clearways:

**Hall St to John St - 7 – 9am, 3.00pm – 6pm.*

**John St to Basin reserve - north -3.00pm – 6pm.·*

**Mein St - Daniel St to Riddiford St; 7-9am, 2.30 – 6pm – Mon – Fri, 7 – 2pm – Sat*
**Both sides of middle of Cambridge/Kent Terrace, Courtney Place to Basin Reserve 7 – 9am, 4- 6pm.*

These are a simple way to make it easier for more people to get to and from these suburbs without waiting for LGWM

Why these clearways?

These are key routes from CBD to southern suburbs and Wellington Hospital.

These small changes would reduce congestion, supporting more people on bikes and more reliable buses.

The current bus lanes do not extend as far needed and are only for a short time which enables free all day parking. Making the streets dangerous for people on bikes and buses held up in.

The parking in narrow Mein St makes it difficult for Ambulances, dangerous for the school children and for cyclists.

3. As at 14 July 2021 the petition had received 520 signatures. The petition and signatures can be viewed on Change.org: https://www.change.org/p/wellington-city-council-we-need-routes-from-newtown-to-the-cbd-safer-for-cycling-and-better-for-people-on-buses?redirect=false

Officers' response

4. We are pleased to receive this petition. The petition provides weight to the programme of works required as we step towards a zero carbon transport system.
5. Council officers agree that Newtown to the CBD is a critical route for both public and active transport improvements.
6. The request to create clearways is consistent with officers' current thinking for this corridor, however we would also like to go further to consider interim infrastructure improvements that are consistent with an innovating streets/transitional programme approach.
7. Council officers are to bring a report to Committee in September with a proposed refresh of the bike network plan (2015 masterplan) and the transitional programme (rapid rollout).
8. Officers are currently working on a transitional programme solution for this section of the southern connection to be delivered as soon as possible.
9. Following the Committee meeting on 23 September 2021, Council officers will invite Jill Ford, the primary petitioner, to meet and discuss plans in more detail.
10. We have also noted that the long-term solutions for this corridor are considered once the LGWM MRT and City Streets preferred routes are known (subject to public consultation in October 2021).

Attachments

Nil

Authors	Anna Blomquist, T/I Transport Safety Education Daniel Cairncross, Principal Transport Engineer
Authoriser	Vida Christeller, Manager City Design & Place Planning Liam Hodgetts, Chief Planning Officer

SUPPORTING INFORMATION

Engagement and Consultation
No engagement strategy is required in response to this E-petition.

Treaty of Waitangi considerations
Mana Whenua will be included in any engagement strategy.

Financial implications
Funding for proposed solutions are included in the LTP.

Policy and legislative implications
Proposed works will take into account our Parking Policy and Cycleways Masterplan.

Risks / legal
Reputational risk due to delay in works.

Climate Change impact and considerations
Provision of services for people on bike and those taking public transport is in alignment with our goals for achieving our Te Atakura outcomes.

Communications Plan
No communications plan is required in response to this E-petition.

Health and Safety Impact considered
No health and safety risks in response to this E-petition.

PETITION: BERHAMPORE VILLAGE UPGRADE

Summary

Primary Petitioner: Mark Johnston
Total Signatures: 118

Presented by: Mark Johnston

Recommendation

That the Pūroro Āmua | Planning and Environment Committee:

1. Receive the information and thank the petitioner.

Background

1. Wellington City Council operates an online system of petitions whereby people can conveniently and electronically petition the Council on matters related to Council business.
2. Mark Johnston opened a petition on the Wellington City Council website on 18 May 2021.
3. The petition details are as follows:

   1. Make Berhampore village a more people friendly space

   2. Reduce traffic speed and danger in Berhampore village

   3. Make changes to Berhampore village now instead of waiting for the area to be included in the Let's Get Wellington Moving programme

   This petition calls Wellington City Council to act on feedback it gathered in 2019 through the Newtown Connections consultation.
4. The background information provided for the petition was:

   The Newtown Connections active transport project started consulting in 2014. Through consultation on that programme of work in 2018, Berhampore village was highlighted as a 'special area' which needs attention. Council events in 2019 were well attended by our local community, leading to excellent feedback on potential changes for the village centre and the surrounding streets. The majority of respondents wanted to see change.
5. The petition closed on 18 June with 118 authenticated signatures. The list of authenticated signatures is presented as Attachment 1.

Officers' response

Council acknowledges the E-petition.

Council officers note that budget is allocated in this and next financial year to co-design a town centre upgrade for Berhampore and Island Bay town centres.

These town centre upgrades are therefore no longer integrated into a transport project and will be progressed as public space projects in parallel with the planned cycleways / LGWM City Streets project.

Council has begun the recruitment process for a project lead for both of these projects and as soon as this person is on board, we will begin the co-design process.

Council officers intends to use a co-design approach with the Berhampore community, Iwi and Council staff, to ensure project outcomes are coordinated with Council's objectives for placemaking in town centres and ensuring community objectives are included in the planning and design process.

This process will build on the successful engagement with the community in 2019, where Council staff and a community working group started a design process. The work to date included mapping opportunities, constraints, positive aspects and issues that currently effect the community. These highlighted a diverse range of views including, pedestrian safety, traffic & speed issues, village character, heritage and development opportunities. A summary of this engagement is attached as appendix A.

As a direct result of this engagement, Council made, in 2020, safety improvements to some of the side streets off Adelaide Rd and Luxor St. These addressed in particular concerns around pedestrian safety and traffic speed in the proximity of the local primary school.

Attachments

Author	Liam Farrell, T/I Public Space Delivery
Authoriser	Vida Christeller, Manager City Design & Place Planning Liam Hodgetts, Chief Planning Officer

SUPPORTING INFORMATION

Engagement and Consultation

No engagment stratey is required in response to this E-peitition. A full engagement plan will be developed once the project is in early development phase.

Treaty of Waitangi considerations

Mana Whenua will be included in any enagement strategy as the project develops from the early stages.

Financial implications

Council has an approved in this years LTP a $2.5M CAPEX budget for devleoping this public space project as well as a similar project in Island Bay.

There are no costs for respsone to this E-petition.

Policy and legislative implications

No policy or legislative implications are part of this E-petition response.

Risks / legal

There are no legal risks in response to this E-peitition.

Climate Change impact and considerations

Provision of services for people on all transport modes, will be part of our design response when the project is in design phase, these outcomes will be in alignement with our goals for achieving our Te Atakura outcomes.

Communications Plan

There is no requirement for a communuications plan in response to this E-peitition. A full communications will be developed once the project is in early development phase.

Health and Safety Impact considered

No health and safety risks in response to this E-peitition.

Berhampore Village Upgrade

Workshop 2 - 03 July 2019

Attendees:

Working Group	*Representing*	***WCC and Consultant***
Kate Searle Peter Frater James Timmins Merio Marsters Chris Wilkinson	Resident Resident Community Association Berhampore CCC First Retail Ltd	Liam Farrell Steph O'Shea Bridget Parrott Lyn Murphy

What we did

- WCC presented three analysis maps (Appendix 1). The maps visualised the group discussions from Workshop 1; identifying the specific issues and opportunities discussed.
  We discussed the maps in detail to validate the feedback received; discussions were open to add anything that wasn't captured and for further questions to be brought to the table.
- WCC presented summary of project problem definition and vision statement (Appendix 2) for validation.

What we heard

Validation was received for:

1) Feedback captured in the analysis maps with inclusion of additional discussion points.

2) General agreement of the problem definition and vision statement
   Request to share with community and to aid in further discussion with community on defining Berhampore's identity.

Discussion points

- Previous heritage and character study has been done on the area. Want to know how these existing strategies line up with the Berhampore Village Upgrade.
- Idea to have an avenue of trees down Luxford St.

- Development of Cohen and Victory flats by Housing NZ.
  Possibility for partnership to address the developments direct connection with the village.
- Upgrade toilet facilities; redesign, its unclean, WCC to follow up on the maintenance schedule for this facility
- Cabbage trees on Luxford St are a problem, too narrow and trip hazard.

Traffic and movement

- There is already a clearway on Adelaide Rd during peak times
- No loading zones available for local businesses
- Bus stop on Adelaide Rd sits over the existing pedestrian crossing therefore is an obstruction to pedestrians
- Bus stop on Luxford St is popular so should be retained
- Bus stop on Rintoul in front of the church; questions possibility of relocating north to free up space around the church.
- No need for the existing taxi stand - alternative parking provision possible
- Accidents happening between vehicles and cyclists at the corner of Adelaide Rd and Luxford St heading south. Traffic calming welcomed, suggested flashing lights and camera.
- Alternative parking opportunities or time allocated resident parking to avoid long term parking by those that live in outer suburbs using Berhampore as a 'Park and Ride stop.

Project scope queries

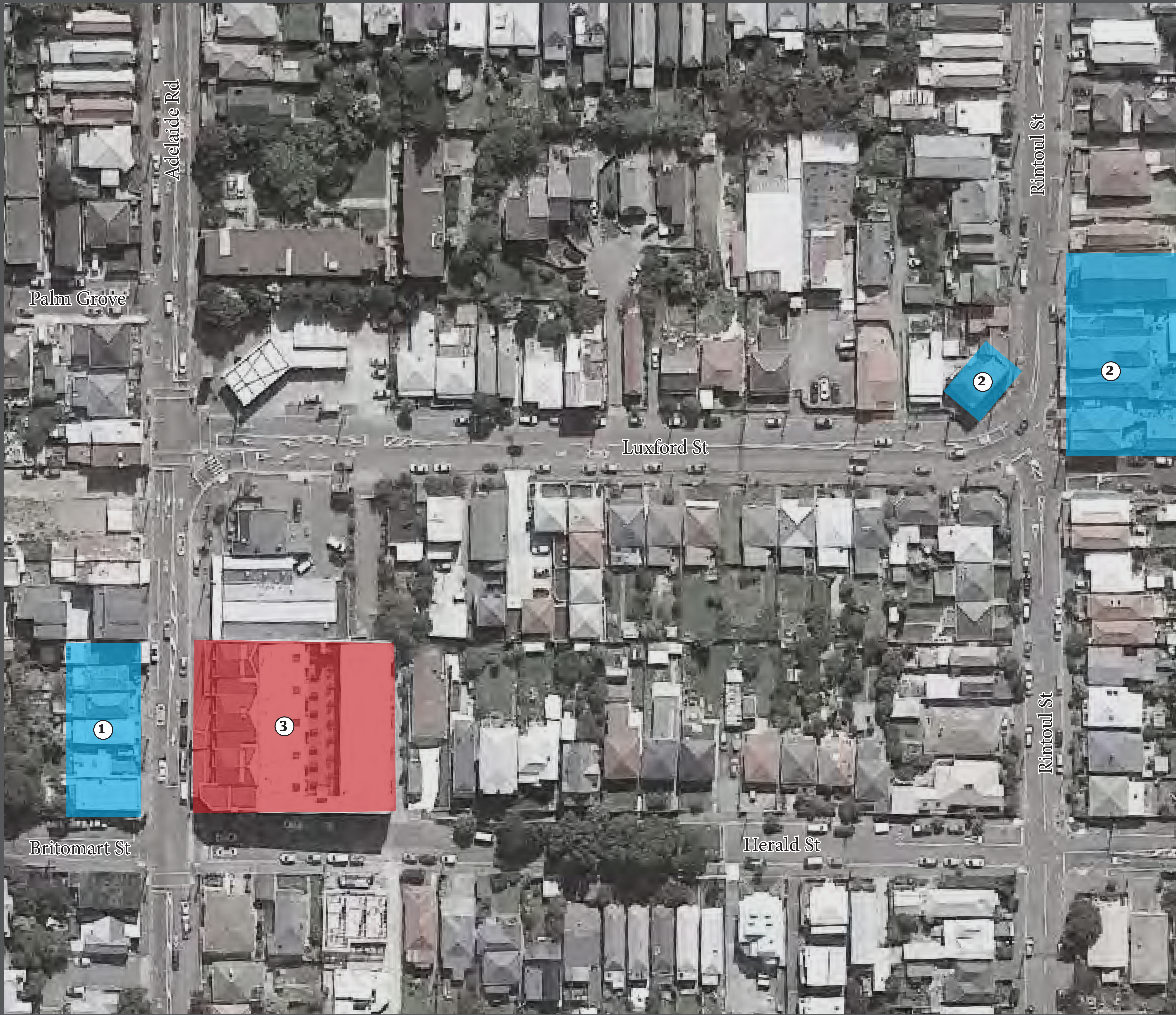
- Extend the village scope to include Chika crossing, extend 30km limit
- Extend scope to include Britomart St
- Berhampore school access on Adelaide road, additional pedestrian crossing and extend school slow zone. (school access from Adelaide Rd, Stanley St and Britomart St)

Appendix 1:

Berhampore Village Upgrade; workshop 1 analysis maps:

Berhampore village project

Workshop 1: collation of feedback



Heritage and character

Character and heritage buildings we want to protect or enhance

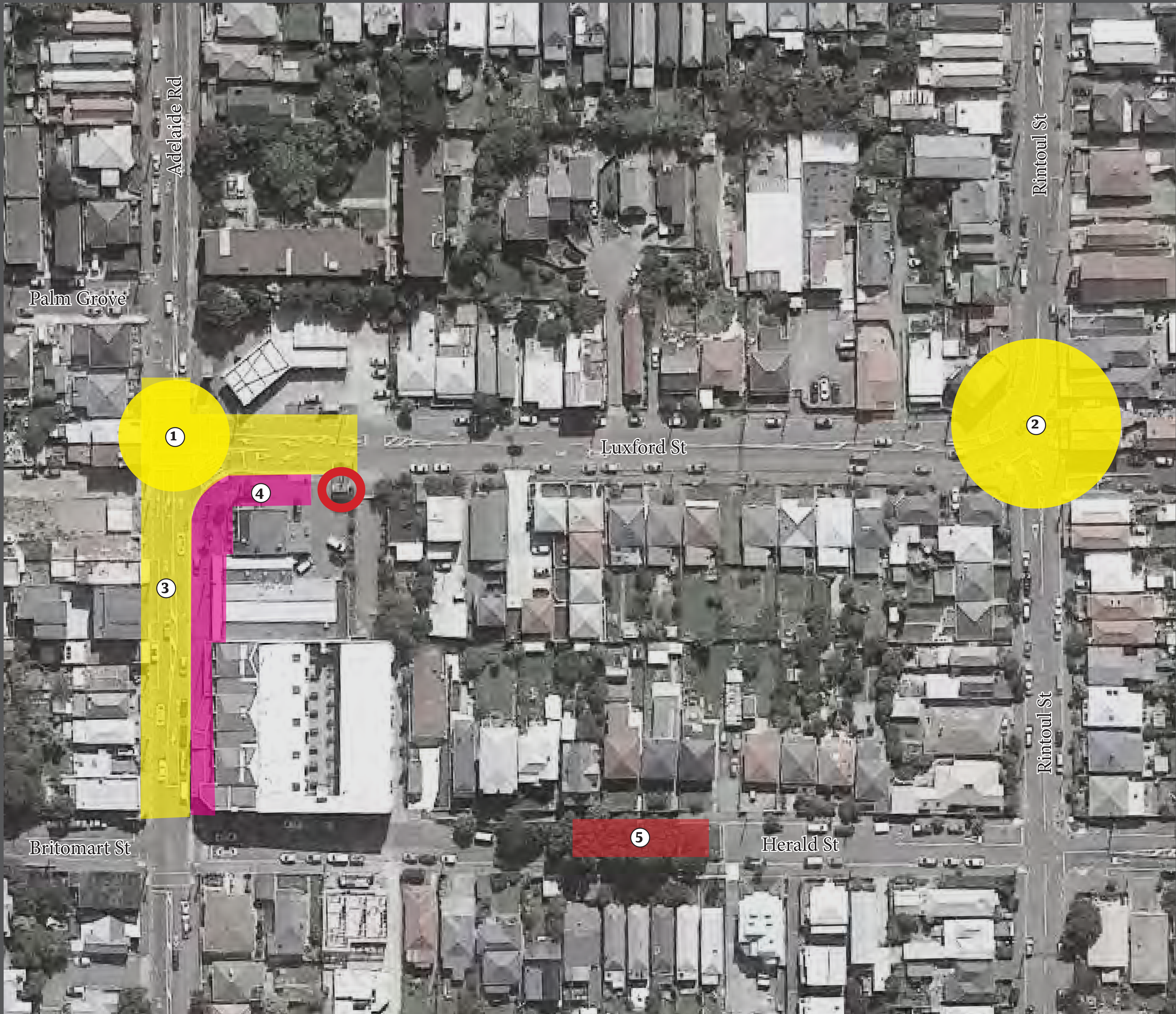
1 Adelaide Rd townhouses, some converted into business premises

2 Shopping centre Heritage Area 1896-1900. Includes shops, verandas and buildings. Rintoul St 193, 195, 199, 201, 207, 218.

3 Building could be used better. Open up building front and verandah upgrade Enhance character of building exterior

Berhampore village project

Workshop 1: collation of feedback



Pedestrian accessibility

Many pedestrians move through Berhampore as a main route to a variety of schools in the area, which calls for more pedestrian and child friendly streets

1 2

Issues

People who are elderly or have prams and young children have difficulty crossing here.

- Visibility of pedestrians
- Inconsistent traffic signage
- provision of seating/community areas

Opportunities

- Traffic light phasing
- Safer pedestrian crossings

3

Issues

Difficulty crossing the street

Opportunities

Enhance pedestrian connection between Britomart and Luxford St

4

Issues

Provision of public amenity, seating/ community areas

Opportunities

- Sprig & Fern public space interface
- Community noticeboard
- Street furniture (seating)
- Greening

5

Issues

Antisocial behaviour

Opportunities

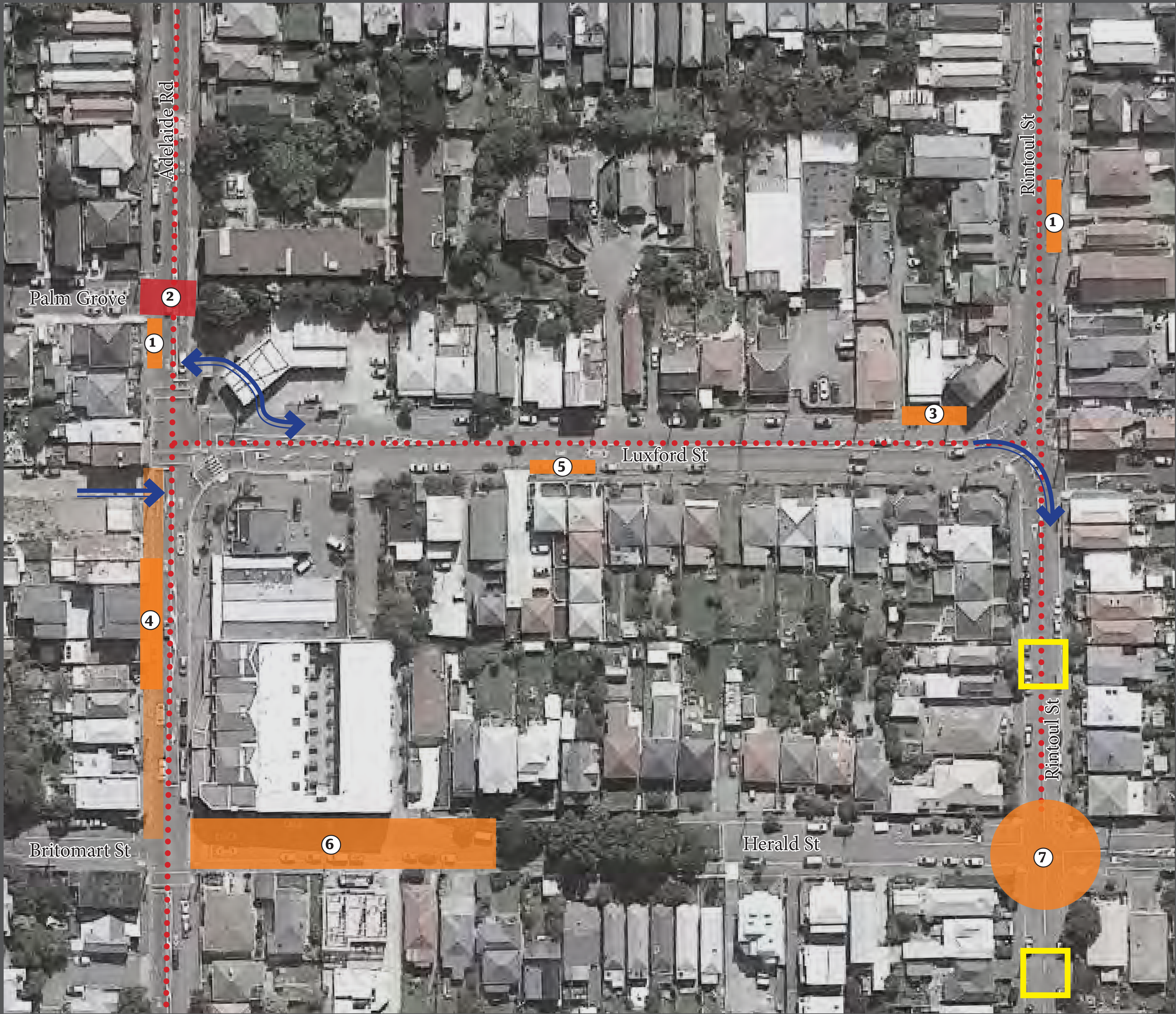
Gardens maintainance and visibility

Public toilets are well used.

Opportunities

Integrate with street scape design

Berhampore village project
Workshop 1: collation of feedback



Traffic & movement

Issues

- Traffic moves fast through Berhampore village
- Ease congestion on Adelaide Rd
- Bus stops in wrong locations

1 Bus stops and traffic congestion

2 Traffic congestion at intersection with Palm Grove and Adelaide Rd

3 This bus stop serves people from Rintoul St south

4 Parking arrangements contribute to traffic congestion on Adelaide Rd

5 Parking allocation on Luxford St

6 Herald St west is not utilised well

7 Hill obstructs visibility of pedestrians crossing this intersection.

Traffic movements affecting existing traffic issues:
- BP used as a cut through to skip lights;
- Additional vehicle exit from new residential block development.
- Right turn from Luxford St into Rintoul is problematic

Opportunities

- No stopping zone on Adelaide Rd near Palm Grove
- Consider locations for on street parking - Herald St
- Allow for safer cycling connections

Consider provision of traffic calming :
- Adelaide Rd between Chilka St and Waripori St
- Length of Luxford St
- Rintoul St between Waripori St and Herald St

Traffic calming on Rintoul St. No longer a bus route

Appendix 2:

Berhampore Village Upgrade; Problem definition and Vision Statement:

Problem definition

A key traffic network between south and central Wellington moves through Berhampore Village, prioritising vehicle movement in this area;

The centre of Berhampore is dispersed across several locations which are not connected or contributing to the village character

Vision Statement

Key principles are:

1) Enhance Berhampore’s identity

2) Improve public space amenity

3) Create places for people

4) Enable family/child friendly connections through the village

5) Create a sense of vibrancy

6) Accommodate the growth potential in the area

3. General Business

BROOKLYN ROAD BIKE LANE TRIAL

Purpose

1. This report asks the Pūroro Āmua | Planning and Environment Committee to progress to formal consultation for a permanent bike lane up Brooklyn Road based on the experiences and feedback gathered through the trial engagement.
2. This report also summarises and reports back on the experiences and feedback received during the trial.

Summary

3. Through Waka Kotahi NZ Transport Agency's Innovating Streets Fund the Council received 90% financial assistance to install a 1.3-kilometre uphill trial bike lane on Brooklyn Road.
4. The project installed the trial protected bike lane between Nairn Street and just north of Tanera Crescent, for evaluation from 11 June 2021 to 31 July 2021.
5. This project is part of the Council's Cycleway Masterplan – a plan to develop a connected, citywide bike network. It also fits with the Council's and Let's Get Wellington Moving's plans to move more people with fewer vehicles, and the Council's Te Atakura goal to be net zero carbon capital by 2050.
6. Across the month of July there was a 6% increase in the number of people riding on Brooklyn Road on weekdays and a 10% increase on weekends, compared to July 2020.
7. The 85th percentile speed on southbound on Brooklyn Road dropped 8%, from 56 km/h before the trial to 51.7 km/h during the trial.
8. 59% of people found their experience on the trial layout positive while 64% of people thought that they trial made travelling between the city and Brooklyn safer for all users.

Recommendation/s

That the Pūroro Āmua | Planning and Environment Committee:

1. Receive the information.
2. Agree to formally consult on implementing permanent infrastructure between south of the intersection of Victoria Street/Karo Drive (SH1) and the intersection of Ohiro Road/Todman Street.

3. Agree that upgraded pedestrian facilities will be investigated as a part of this work.

Background

9. Perception of safety for people on bikes was identified as an issue on Brooklyn Road, especially travelling uphill towards Brooklyn shops due to significant speed differentials.

10. Through Waka Kotahi NZ Transport Agency's Innovating Streets Fund the Council took the opportunity to deliver projects via a less traditional method called tactical urbanism.

11. Tactical urbanism is founded on the principle of implementing temporary trial interventions to test living, breathing versions of designs in real time. Where permanent infrastructure requires a traffic resolution to install, these trial interventions were installed under a traffic management plan (TMP) to test possible permanent solutions.

12. On 4 November 2020 the Council's Brooklyn Road trial uphill bike lane was approved for the 90% financial assistance rate by Waka Kotahi NZ Transport Agency.

13. Through the tactical urbanism model the Council held an initial co-design meeting on 9 February with members of the community that had previously registered interest in the Brooklyn Road COVID-19 response project.

14. After co-design, engagement and technical review, the initial trial bike route was implemented in May 2021 and opened for use on 11 June 2021.

15. Seven changes were made to the design while the trial was in place to test different solutions and inform the design of the permanent solution, if approved.

16. The trial ran until 31 July 2021 and will be left in place pending the outcome of the Pūroro Āmua decision.

Discussion

17. Two main factors were used to evaluate the trial.
    - People riding their bikes uphill on Brooklyn Road
    - Vehicle speeds on Brooklyn Road

18. Several other factors were used as part of the monitoring of the trial. These included:
    - Vehicle travel times up Brooklyn Road
    - Vehicle counts on Brooklyn Road
    - Parking occupancy on Brooklyn Road

19. All these factors were baselined before the trial implementation and then repeated while the trial was in place.

20. For the duration of the trial a public survey received 768 responses.

21. Existing and historical data collected by Council has also been used and included where appropriate.

People riding bikes

22. Overall, there was a slight increase in the number of people riding bikes up Brooklyn Road. On average there were 156 people riding up Brooklyn Road on weekdays in 2020, this increased to 164 people in 2021, a 6% increase.

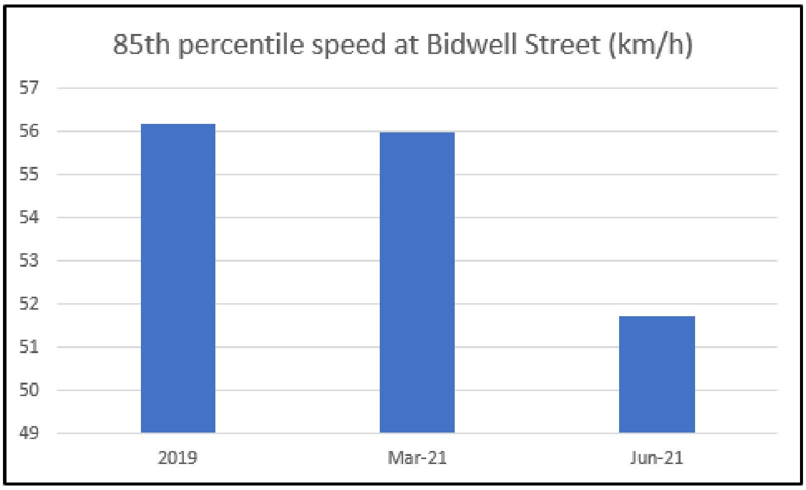
23. The number of people riding bikes on the weekend increased on average by 10%. In July 2020, on average, there were 68 people riding their bike up Brooklyn Road on a weekend day compared to 75 per weekend day in July 2021.

24. About 70% of people were using the bike lane at the point where the counter was installed. Officers observed why people were not riding in the bike lane at this point and most people not using the bike lane here were avoiding the ramps over the pedestrian build out. Most people re-joined the bike lane after the build out.

25. More detail on the number of people riding bikes can be found in **Attachment 1.**

Vehicle speeds

Speed @ Bidwell Street (km/h)			
	Speed	% change	Actual change
2019	56.2	N/A	N/A
Mar-21	56	-0.36%	-0.2
Jun-21	51.7	-7.68%	-4.3



26. Where the overtaking lane was removed there was a reduction in vehicle speed. The 85^{th} percentile speed dropped from 56km/h before the trial was implemented to 51.7km/h when the bike lane was operational. The speed limit for Brooklyn Road is 50 km/h.

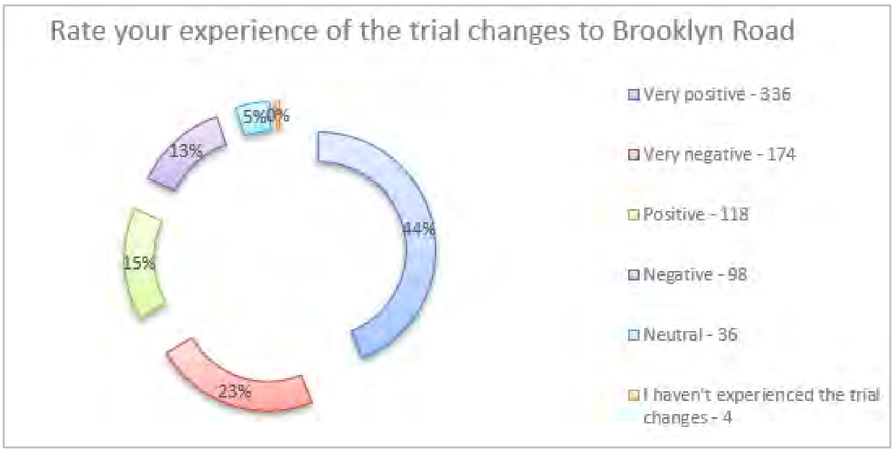
27. Using the figure from the speed monitoring, with a real value drop of 4.3km/h the International Transport Forum figures suggests an expected 15% drop in the number of

total injuries on Brooklyn Road (https://www.itf-oecd.org/sites/default/files/docs/speed-crash-risk.pdf).

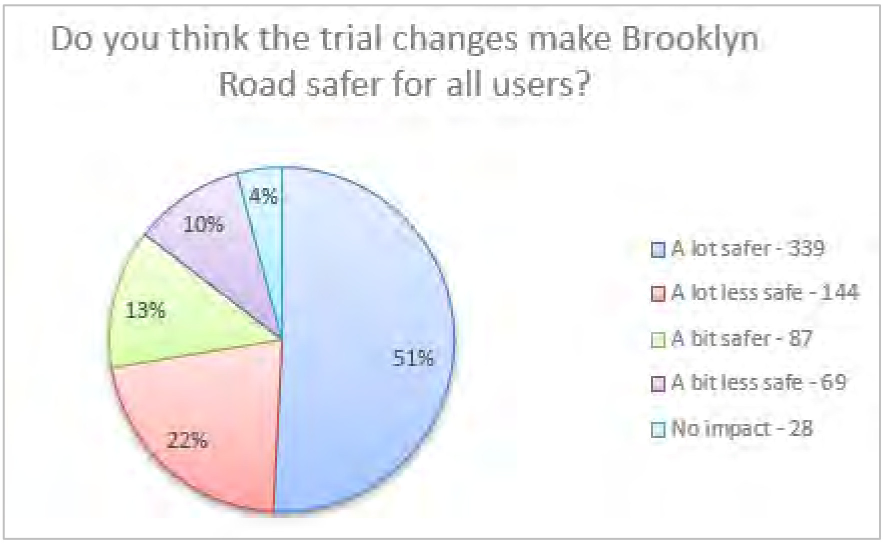
28. Regardless of the cause of a crash the severity of injuries resulting from a crash is directly related to the impact speed of the vehicle. For example, the probability of a pedestrian dying from a crash doubles when the vehicle is travelling 50km/h as opposed to 40km/h (nzta.govt.nz).

Public survey

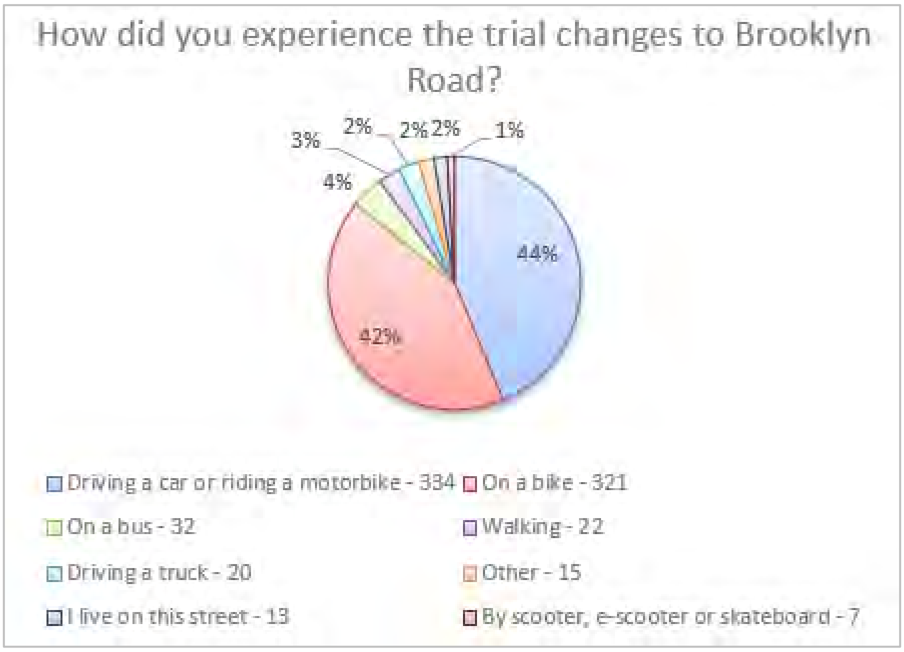
29. The focus of the public survey was on people's experience of the trial. Rather than ask about what people think based on plans or pictures, the questions aimed to capture the experience of using the trial layout.



30. Overall, 59% of people found the experience of using the trial positive, while 36% of people found the experience negative.



31. 64% of people thought that the trial improved safety for all users compared to 32% of people that thought the trial made it less safe for all users.



32. Most people experienced the trial route by car/motorbike (44%) or bicycle (42%). Some targeted engagement was attempted with bus passengers and truck drivers however officers could not get the numbers higher than presented.

33. For both 'rate your experience' and 'do you think the trial changes make Brooklyn Road safer for all' people on bikes were most likely to answer positively and people driving vehicles were most likely to answer negatively.

34. 67% of women rated their experience of the Brooklyn Road trial as positive and 68% of women think the trial made it safer for all users. Generally, women are less likely to ride their bikes than men (Heesch, K.C., Sahlqvist, S. & Garrard, J. Gender differences in recreational and transport cycling) so positive experiences through the trial for women is an encouraging sign.

35. Nine of the 13 people that responded that had a home fronting the street rated their experience as negative. The concerns from the residents centred around car parking and the Washington Avenue bus stop where the bike lane mounted the footpath. It is proposed that the Washington Avenue bus stop feedback will be addressed if officer recommendations are resolved.

36. Part of the process was also asking people what they would like changed through the trial and being adaptive to that. There were a lot of suggestions, some of which the project was able to react to and some that were not feasible as part of the project.

37. The comments collected from the survey were broken in to two categories, general comments, and suggested improvements.

38. The most mentioned general comments were:

General comments	Mentions
Overall support	264
Improves safety	159
Concerns about traffic flow	67
Cycle lane unnecessary	57
Overall against	43

39. The most suggested improvements were:

Suggested improvements	Mentions
Improve connections to and from	99
More gentle turning at intersections	71
Remove the bike lane	69
Reduce bike lane width/widen car lane	66
Remove ghost markings	54

40. From the general comments the most mentioned themes were supporting the trial overall and comments on the improved safety provided. Following that there were concerns for the traffic flow and general non-support for the trial.

41. The most requested improvement from the survey was to improve the connections to and from the trial lane. This is reflected in the officer recommendation. Research shows that a universal approach to bicycle-friendly infrastructure will be required to achieve sufficient growth to meet strategic goals (Macmillan et al. 2014). The officer recommendation is a step towards this complete network.

42. Through the trial adaption the project was able to adjust some bollards at intersections to provide wider turning at intersections, particularly Washington Avenue and officers continue to monitor this.

43. The remaining improvements (including those outside the top five) will be considered if officer recommendations are resolved.

44. Through the trial there were three near misses reported, all involved people riding bikes, scooters, or skateboards downhill in the trial bike lane. Officers were unable to compare this number to a before statistic.

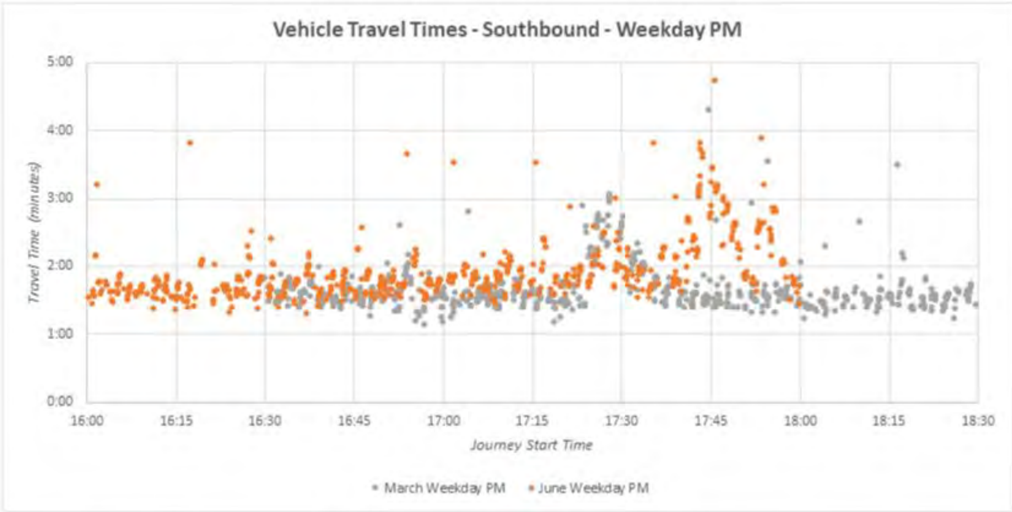
45. There were several suggested improvements through the trial, where possible officers tried to accommodate the suggestions, but most suggestions will be considered if the trial is made permanent.

46. A full summary of the trial survey can be found in **Attachment 2.**

Vehicle travel times

Average travel time between Nairn St and Brooklyn Terrace (seconds)					
		Mar-21	Jun-21	% change	Actual change
Friday	7am - 9am	97	111	14.43%	14
	4pm - 6.30pm	99	116	17.17%	17
Saturday	10am - 12pm	93	105	12.90%	12

47. The average trip of a person driving between Nairn Street and Brooklyn Terrace is between 12 and 17 seconds longer depending on time and day. This is consistent with the reduction in speed. This, combined with the slight drop in vehicles counted (below), suggests there has been no increase in congestion caused by the trial.



48. The only significant difference between the baseline and trial monitoring for travel times was the appearance of a second peak in travel times around 5:45pm on a weekday for less than 15 minutes.

49. The full report on vehicle travel times can be found in **Attachment 3.**

Vehicle counts

7 day average daily traffic @ Bidwell Street					
				March to June	
	2019	Mar-21	Jun-21	% change	Actual change
Total	6699	7114	6833	-3.95%	-281
Non HCV	6063	6588	6191	-6.03%	-397
HCV	636	526	642	22.05%	116
HCV %	9.49%	7.39%	9.40%	27.07%	
Non HCV kgCO2e/day	2088.70	2269.57	2132.80	-6.03%	-136.77

50. From March to June 2020 there was a 6% decrease in the average number of non-heavy commercial vehicle's (HCV) counted travelling southbound on Brooklyn Road.

51. Overall, there was an almost 4% decrease in average total vehicles counted travelling south however included in this number is a 22% increase in HCVs counted.

52. More information on vehicle counts is available on request.

Parking occupancy survey

53. Through the trial there were approximately 63 car parks repurposed for the bike lane, a 35% reduction in parking within the boundary of the trial.

Overall average parking occupancy in trial area (%)			
	Mar-21	Jun-21	Change
Weekday	35%	41%	6%
Weekend	54%	39%	-15%

54. Overall, the parking occupancy in the trial area remains low, indicating that there is excess parking. There are some areas of interest where parking interventions may need to be considered. These are explained in the next points.

55. Zone diagrams are available in **Attachment 3.**

Parking occupancy zones of note				
		Mar-21	Jun-21	Change
Zone 6	Weekday	66%	145%	79%
	Weekend	79%	130%	51%
Zone 12	Weekday	79%	100%	21%
	Weekend	82%	123%	41%
Zone 14	Weekday	100%	88%	-12%
	Weekend	96%	102%	6%

56. Zone 6, outside the substation – parking was rotated ≈ 90 degrees to avoid vehicles reversing out of angled parks into the bike lane. Average occupancy of this zone has increased to 145% on a weekday and 130% on the weekend indicating that people are still parking at an angle.

57. Zone 12, outside 10 Brooklyn Road – parking occupancy has increased, presumably because of the removal of the parking on the opposite side of the road.

58. Zone 14, outside central park lower entrance – parking occupancy remains constantly high across both monitoring periods.

59. In general, occupancy of car parks remains relatively low in the area and in time a new parking scheme will need to be implemented in line with the Council's parking policy, which sets the desired occupancy rate for parking at no lower than 50% on average and up to 85%.

60. Due to the high availability of parking in the area, if the recommended options are resolved, officers will investigate removing the parking in zone 5 of the parking occupancy report and reinstalling the flush median.

61. The full report on parking occupancy and zones can be found in **Attachment 3.**

Options

62. There are several options available to the Council. Some of these options are outlined below and are followed up with more information for each. The options are:

    A. **Extend and progress to installation of a permanent cycleway (preferred):** Progress to formal consultation for a permanent solution on the 1.3-kilometre trial section and extend at both ends to improve the connections from south of the intersection of Victoria Street/Karo Drive (SH1) to the beginning of the trial lane and from the end of the trial lane to the intersection of Ohiro Road/Todman Street. The trial bike lane would remain in place while this work is undertaken.

    B. **Confirm trial and progress to installation of a permanent cycleway:** Progress to formal consultation on a permanent solution for the 1.3km section that has been part of the trial. The trial bike lane would remain in place while this work is undertaken.

    C. **Remove:** Do not progress to formal consultation on the trial bike lane, remove the trial bike lane. Note, with this option officers would still need to review the overtaking lane as the original layout on Brooklyn Road no longer meets the best practice guidance set out by Waka Kotahi NZ Transport Agency.

63. Option A is officers preferred option. Based on the results of the trial outlined and the Councils desire to create a connected network to realise the full benefit of improved infrastructure. A map of the proposed area to be covered can be found in **Attachment 4.**

64. Option A will also integrate with previous changes approved to the Ohiro Road/Todman Street intersection (11 August, Regulatory Process Committee).

65. Option B is not recommended. Whilst this would be an improvement the safety issues both north and south of the trial lane would remain and likely need to be consulted on later regardless.

66. Option C is not recommended. Evidence from the trial suggests that the trial has made a positive impact on the transport network. However, if this option is agreed then officers will commence work to remove the trial bike lane.

Next Actions

67. If option A or B are resolved, officers will prepare the traffic resolution consultation material. For Option A the results of the traffic resolution consultation would be presented to the Pūroro Āmua early in 2022**.** For Option B the results of the traffic

resolution consultation would be presented to the Pūroro Āmua on 8 December 2021. For both of these options, the trial bike lane would remain in place and maintenance will be ongoing through the process.

68. If Option C is resolved officers will begin work to remove the trial bike lane and re-instate a road layout with no uphill bike lane.

Attachments

Author	Hugh Wilson, Transport Project Engineer
Authoriser	Vida Christeller, Manager City Design & Place Planning Liam Hodgetts, Chief Planning Officer

SUPPORTING INFORMATION

Engagement and Consultation

With the tactical urbanism approach there has been engagement with the community through the process. This includes:

- Mailouts to every house in Brooklyn as well as parts of Mount Cook, Aro Valley, Mornington, Kingston, Happy Valley and Ōwhiro Bay. A total of 8734 properties.
- Information sessions at the Brooklyn Community Centre and Central Park Flats scheduled around other activities such as after school activities, mid-week classes, resident catch ups and community markets.
- Regular communication in the Brooklyn Tattler, school newsletters and social media pages
- Come and try day session once trial installed
- Targeted messaging and visits to bus drivers and truck drivers
- Face to face meetings with residents (inc. on Brooklyn Road), businesses and sports clubs. These included:
    - The Renouf Centre
    - Brooklyn Fire Brigade
    - Central Vet Hospital
    - AA Wellington

This paper asks Pūroro Āmua to further this engagement by undertaking formal consultation.

Treaty of Waitangi considerations

Initial discussions were held with mana whenua, who supported the trial of the bike lane. Conversations on all Innovating Streets projects remain ongoing.

Financial implications

Provision for the pathway to permanence of this project has been made in the cycling budget for 2021-22.

Policy and legislative implications

The recommendation contributes towards the goals laid out in transport, parking, and climate change policies.

Risks / legal

The Council’s legal team have been briefed when appropriate during the project. This will continue to happen if the officer’s recommendations are resolved.

Climate Change impact and considerations

Supporting more Wellingtonians to use cycling to get around town is a key part of our Te Atakura implementation plan. Shifting how people move to low- and zero-carbon options is one of the key parts of how Wellington will achieve its net zero carbon by 2050 goal, and the interim goal of 43% reduction by 2030. It is anticipated that the recommended option will help the Council's goals laid out in the climate change response policies.

Communications Plan
If officer recommendations are resolved a communications plan for the Traffic resolution consultation will be developed.

Health and Safety Impact considered
All health and safety outcomes from this paper will be managed through the Council's standard planning and operating methods.

June - people on bike counts

Date	2019	2020	2021		% Change 2019 to 2020	% Change 2020 to 2021	Actual Change 2019 to 2020	Actual Change 2020 to 2021
1-Jun	46	38			-17%		-8	
2-Jun	19	165			768%		146	
3-Jun	40	166			315%		126	
4-Jun	156	103			-34%		-53	
5-Jun	79	122			54%		43	
6-Jun	152	71			-53%		-81	
7-Jun	123	77			-37%		-46	
8-Jun	60	165			175%		105	
9-Jun	53	188			255%		135	
10-Jun	188	187	Counter not working due to construction & calibration		-1%		-1	
11-Jun	139	164			18%		25	
12-Jun	150	140			-7%		-10	
13-Jun	103	57			-45%		-46	
14-Jun	151	79			-48%		-72	
15-Jun	61	157			157%		96	
16-Jun	64	120			88%		56	
17-Jun	179	155			-13%		-24	
18-Jun	149	78			-48%		-71	
19-Jun	151	104			-31%		-47	
20-Jun	160	44			-73%		-116	
21-Jun	104	31			-70%		-73	
22-Jun	70	149			113%		79	
23-Jun	37	180	164		386%	-9%	143	-16
24-Jun	133	165	162		24%	-2%	32	-3
25-Jun	173	160	110		-8%	-31%	-13	-50
26-Jun	144	147	36	COVID-19 Alert level 2	2%	-76%	3	-111
27-Jun	158	70	29		-56%	-59%	-88	-41
28-Jun	117	31	152		-74%	390%	-86	121
29-Jun	52	140	83		169%	-41%	88	-57
30-Jun	61	153	146		151%	-5%	92	-7
Total	3272	3606	882		10%	-76%	334	-2724

July - people on bike counts				%		Actual	
				Change 2019 to 2020	Change 2020 to 2021	Change 2019 to 2020	Change 2020 to 2021
Date	**2019**	**2020**	**2021**				
1-Jul	127	127	165	0%	30%	0	38
2-Jul	146	86	161	-41%	87%	-60	75
3-Jul	129	138	91	7%	-34%	9	-47
4-Jul	146	76	82	-48%	8%	-70	6
5-Jul	104	43	186	-59%	333%	-61	143
6-Jul	28	119	164	325%	38%	91	45
7-Jul	46	172	160	274%	-7%	126	-12
8-Jul	145	137	191	-6%	39%	-8	54
9-Jul	184	125	170	-32%	36%	-59	45
10-Jul	128	137	57	7%	-58%	9	-80
11-Jul	149	86	42	-42%	-51%	-63	-44
12-Jul	102	47	202	-54%	330%	-55	155
13-Jul	83	114	180	37%	58%	31	66
14-Jul	23	188	174	717%	-7%	165	-14
15-Jul	148	180	158	22%	-12%	32	-22
16-Jul	107	154	99	44%	-36%	47	-55
17-Jul	123	174	58	41%	-67%	51	-116
18-Jul	127	70	30	-45%	-57%	-57	-40
19-Jul	110	63	175	-43%	178%	-47	112
20-Jul	47	178	191	279%	7%	131	13
21-Jul	45	134	139	198%	4%	89	5
22-Jul	177	150	124	-15%	-17%	-27	-26
23-Jul	140	207	142	48%	-31%	67	-65
24-Jul	167	166	99	-1%	-40%	-1	-67
25-Jul	153	85	90	-44%	6%	-68	5
26-Jul	136	71	131	-48%	85%	-65	60
27-Jul	75	182	167	143%	-8%	107	-15
28-Jul	50	186	197	272%	6%	136	11
29-Jul	183	180	184	-2%	2%	-3	4
30-Jul	182	200	161	10%	-20%	18	-39
31-Jul	117	154	123	32%	-20%	37	-31
Total	3627	4129	4293	14%	4%	502	164

	Pre switch	Bike lane usage % Bike lane	Road	% in bike lane	
23-Jun	5	141	18	89%	
24-Jun		121	41	75%	
25-Jun		63	47	57%	
26-Jun		13	23	36%	
27-Jun		16	13	55%	
28-Jun		113	39	74%	
29-Jun		54	29	65%	
30-Jun		112	34	77%	
1-Jul		126	39	76%	
2-Jul		111	50	69%	
3-Jul		54	37	59%	
4-Jul		45	37	55%	
5-Jul		142	44	76%	
6-Jul		133	31	81%	
7-Jul		122	38	76%	
8-Jul		138	53	72%	
9-Jul		115	55	68%	
10-Jul		38	19	67%	
11-Jul		27	15	64%	
12-Jul		152	50	75%	
13-Jul		130	50	72%	
14-Jul		138	36	79%	
15-Jul		107	51	68%	
16-Jul		69	30	70%	
17-Jul		32	26	55%	Counter blocked from storm issues
18-Jul		14	16	47%	
19-Jul		126	49	72%	
20-Jul		114	77	60%	
21-Jul		65	74	47%	
22-Jul		62	62	50%	
23-Jul		66	76	46%	
24-Jul		41	58	41%	
25-Jul		38	52	42%	
26-Jul		78	53	60%	
27-Jul		90	77	54%	
28-Jul		122	75	62%	
29-Jul		109	75	59%	

30-Jul		75	86	47%	
31-Jul		45	78	37%	
Total	5	3357	1813	65%	

Brooklyn Road Trial – Innovating Streets

Public survey summary

Survey summary

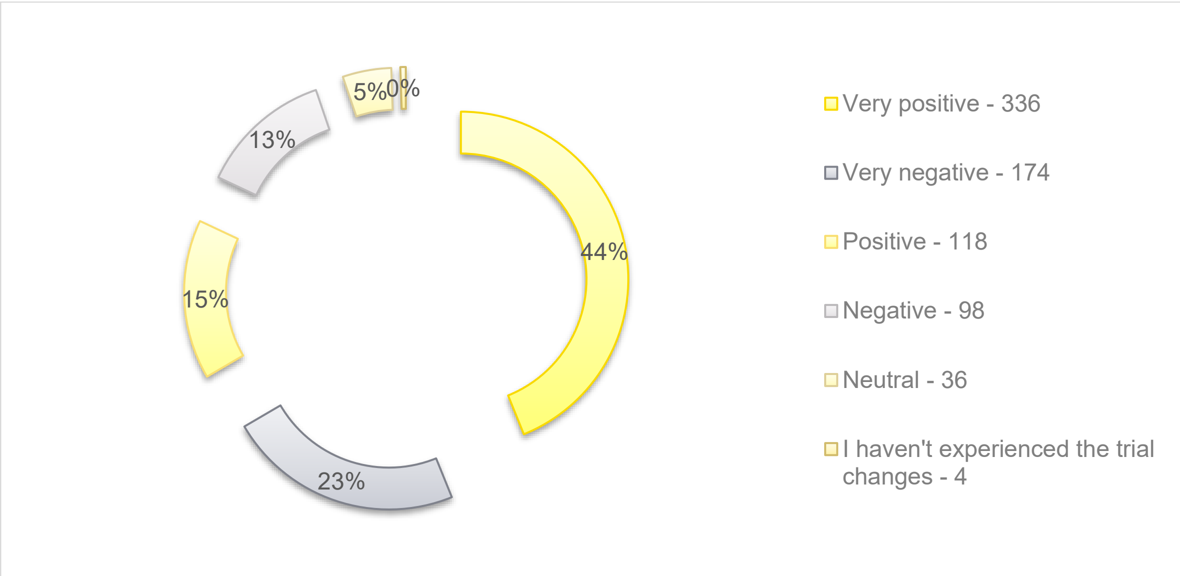
For the duration of the trial a public survey was open for people to give the project team feedback about their experience using the new road layout. The questions asked were:

1. Rate your experience of the trial changes to Brooklyn Road
2. How did you experience the trial changes to Brooklyn Road?
3. Tell us what you think about the trial changes (open text, displayed on website)
4. Do you think the trial changes make Brooklyn Road safer for all users?
5. Thinking about the different ways people use Brooklyn Road, how do the trial changes rate when people are:
    I. Walking
    II. Using the bus
    III. Riding bikes
    IV. Driving vehicles / on motorbikes
    V. Parking vehicles on Brooklyn Road
    VI. Living on / near Brooklyn Road
    VII. Working / owning a business on / near Brooklyn Road
    VIII. Living with mobility or accessibility issues
6. How could your experience or the experience of others be improved on Brooklyn Road regarding the trial changes?
7. Name, email, suburb, age, gender

All the questions asked were optional so people could pick and choose which questions to answer if they wanted to.

In total there were 768 responses to the survey – a summary of all the questions asked is below.

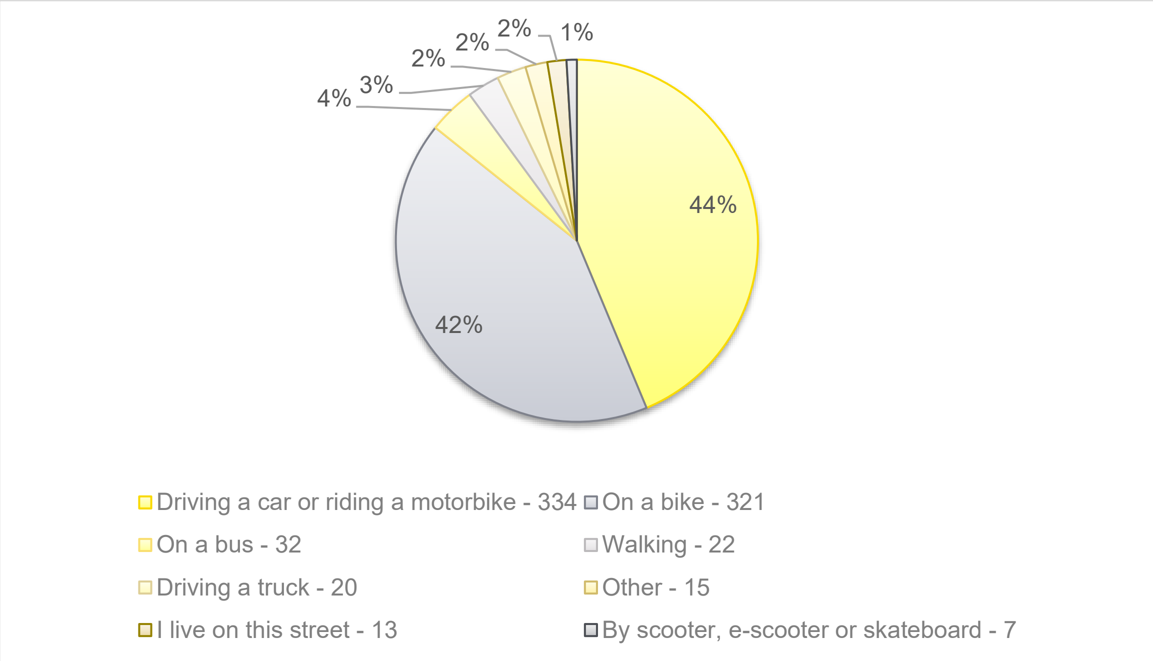
Question 1 – Rate your experience of the trial changes to Brooklyn Road



44% (336 out of 766) of people found their experience very positive compared with 23% (174 out of 766) very negative. People riding their bikes said their experience was very positive most often (226 out of 336). People driving said their experience was very negative most often (117 out of 174). There was a reasonable number of people who drove up Brooklyn Road who rated their experience as very positive (88 out of 336).

People walking and people riding scooters or skateboards were more positive of their experience however people using the bus, driving a truck, and living on the street were more negative of their experience.

Question 2 – How did you experience the trial changes to Brooklyn Road?



People driving combined with people riding their bikes made up most people giving feedback, 86% or 655 out of 764.

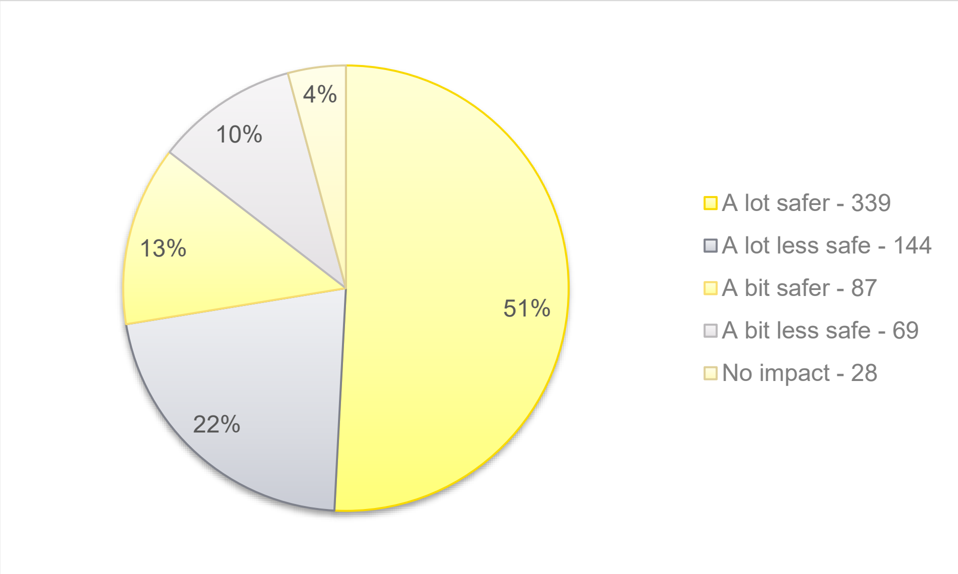
Question 3 – Tell us what you think about the trial changes

Theme	Mentions
Overall support	263
Improves safety	159
Concerns about traffic flow	66
Cycle lane unnecessary	56
More gentle turning at intersections	54
Improve connections to and from	50
Overall against	43
Reduce bike lane width/widen car lane	39
Remove ghost markings	37
Not as safe	26
Reinstate overtaking lane	23
Smooth ramps	21

Improve Washington Ave bus stop	20
Enforce new parking setup	16
More car parking needed	15
Put back median	15
Remove parking protected section	14
Better protection for bike lane	14
Bike lane layout confusing	12
Downhill cycle lane support	12
Ensure lane remains clear from debris	13
Concerns about driver behaviour	12
Concerns about pedestrian safety	9
Improve pedestrian crossings	8
Improve signage	7
Educate public on use and benefits of bike lanes	6
Improve access to Bidwell St bus stop	5
Improve lighting along route	4
Install permanent footpath	4
Reduce speed limit	4
Remove driveway bumps	4
Revert substation parking	3
Separate all users	3
Unhappy with/improve co-design process	3
Bus stops dangerous	2
Improve drainage	2
Improve installation signage	2
Remove in line bus stops	2
Unrelated	2
Widen turn area into Ohiro Rd	2
Add more hit sticks	1
Consult more boradly	1
Improve merge from side streets	1

Installation process improvements	1
Move bus stops from intersections	1
Replace pedestrian build outs	1
Widen bike lane	1

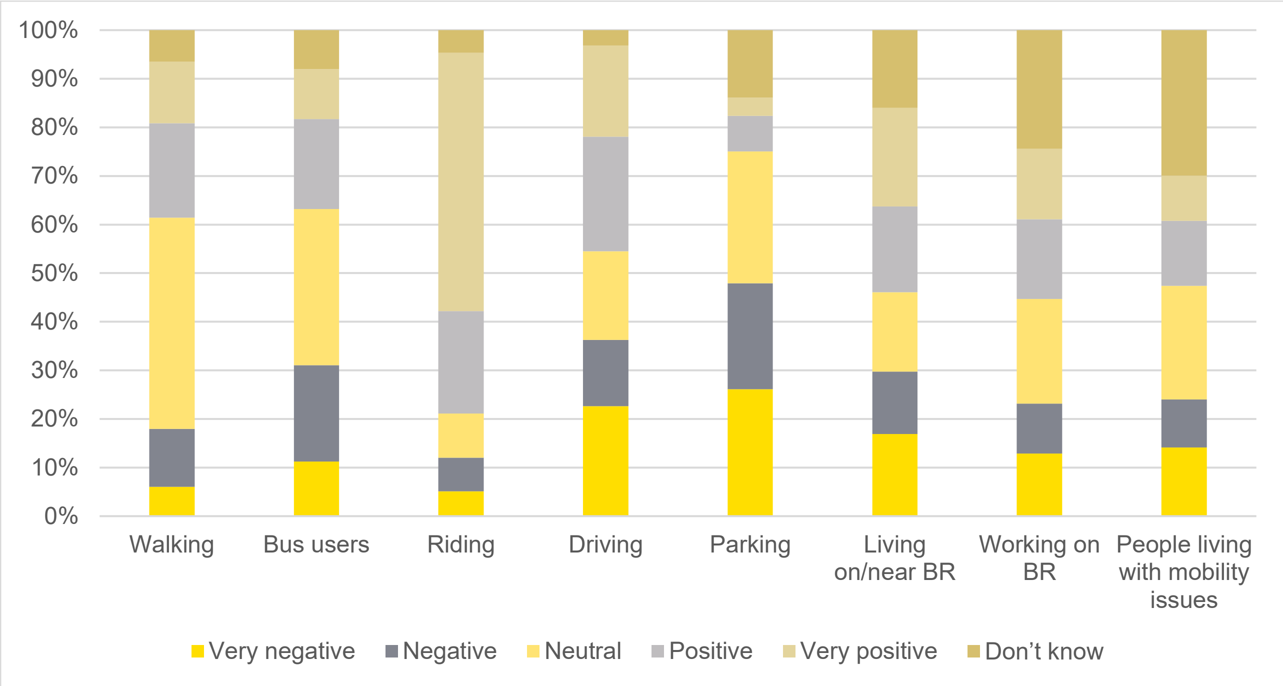
Question 4 – Do you think the trial changes make Brooklyn Road safer for all users?



The majority (64%) of people felt that the trial made it safer for all users compared with 32% of people who felt it didn't make it safer for all users. There was no big difference in safety between genders however the split between users was like the breakdown in question 1. People riding their bike said they trial was safer for all users the most and people driving said the trial was not as safe for all users the most. Again, there was a portion of people driving that thought the trial made it safer for all users.

All the other modes, except driving a truck, were split 50:50 on whether they thought it was safer or not as safe. Of the 18 truck drivers that provided feedback 15 though it was not as safe as before for all users.

Question 5 – Thinking about the different ways people use Brooklyn Road, how do the trial changes rate when people are:



Most people thought that the trial was positive for people riding while thinking that it had a neutral impact on people walking and using the bus. More people thought it was positive for people driving compared to negative, however people thought the car parks removal as part of the project impacted people trying to park negatively. People are split 50:50 on how the changes rate for people living or working on or near Brooklyn Road and people living with mobility or accessibility issues.

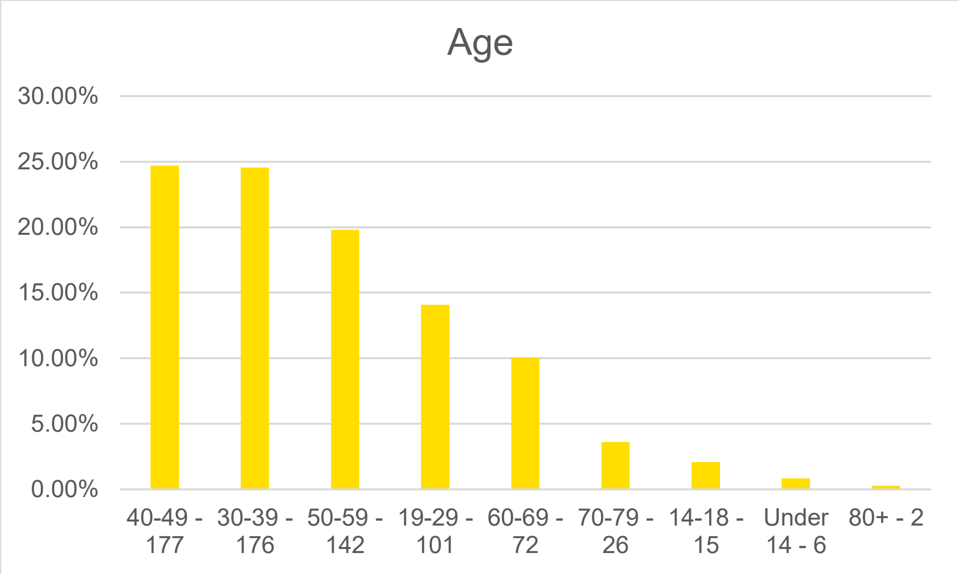
Question 6 – How could your experience or the experience of others be improved on Brooklyn Road regarding the trial changes?

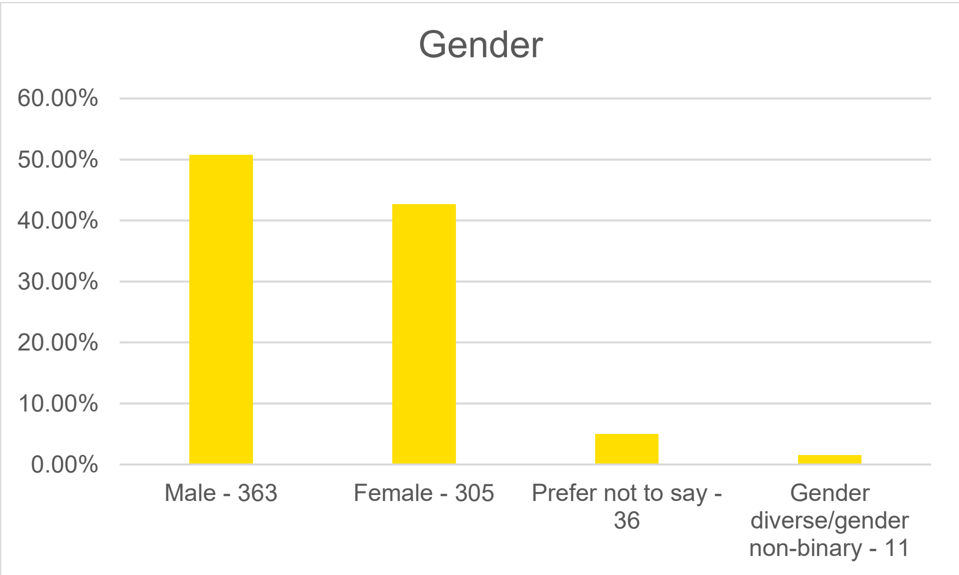
Theme	Mentions
Remove the bike lane	69
Improve connections to and from	49
No improvement suggested	42
Enforce new parking setup	27
Reduce bike lane width/widen car lane	27

Improve pedestrian crossings	24
Improve shared bus stop	24
Improve signage	24
Out of scope improvement	23
Smooth ramps	23
Better protection for bike lane	23
Other cycle lane location	19
More gentle turning at intersections	17
Remove ghost markings	17
Reinstate overtaking lane	16
Downhill cycle lane support	15
Ensure lane remains clear from debris	15
More car parking needed	13
Educate public on use and benefits of bike lanes	12
Install permanent footpath	10
Separate all users	9
Improve access to Bidwell St bus stop	7
Put back median	7
Remove parking protected section	6
Unhappy with/improve co-design process	6
Consult more boradly	4
Reduce speed limit	4
Remove in line bus stops	4
Bus stops dangerous	3
Improve installation signage	3
Installation process improvements	2
Remove driveway bumps	2
Urban design improvements	2
Add driveway mirror	1
Add stop signs	1
Bus lanes PM peak	1

Concerns about pedestrian safety	1
Concerns about traffic flow	1
Cycle lane unnecessary	1
Grade separate bike lane	1
Improve lighting along route	1
Install physical buffer for parking protected section	1
Move bus stops from intersections	1
Overall support	1
Remove parking to make space	1
Residents only parking	1
Stop bike lane sooner	1
Widen bike lane	1
Widen turn area into Ohiro Rd	1

Question 7 – Suburb, age, gender


Age
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
40-49 - 177
30-39 - 176
50-59 - 142
19-29 - 101
60-69 - 72
70-79 - 26
14-18 - 15
Under 14 - 6
80+ - 2


Gender
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Male - 363
Female - 305
Prefer not to say - 36
Gender diverse/gender non-binary - 11

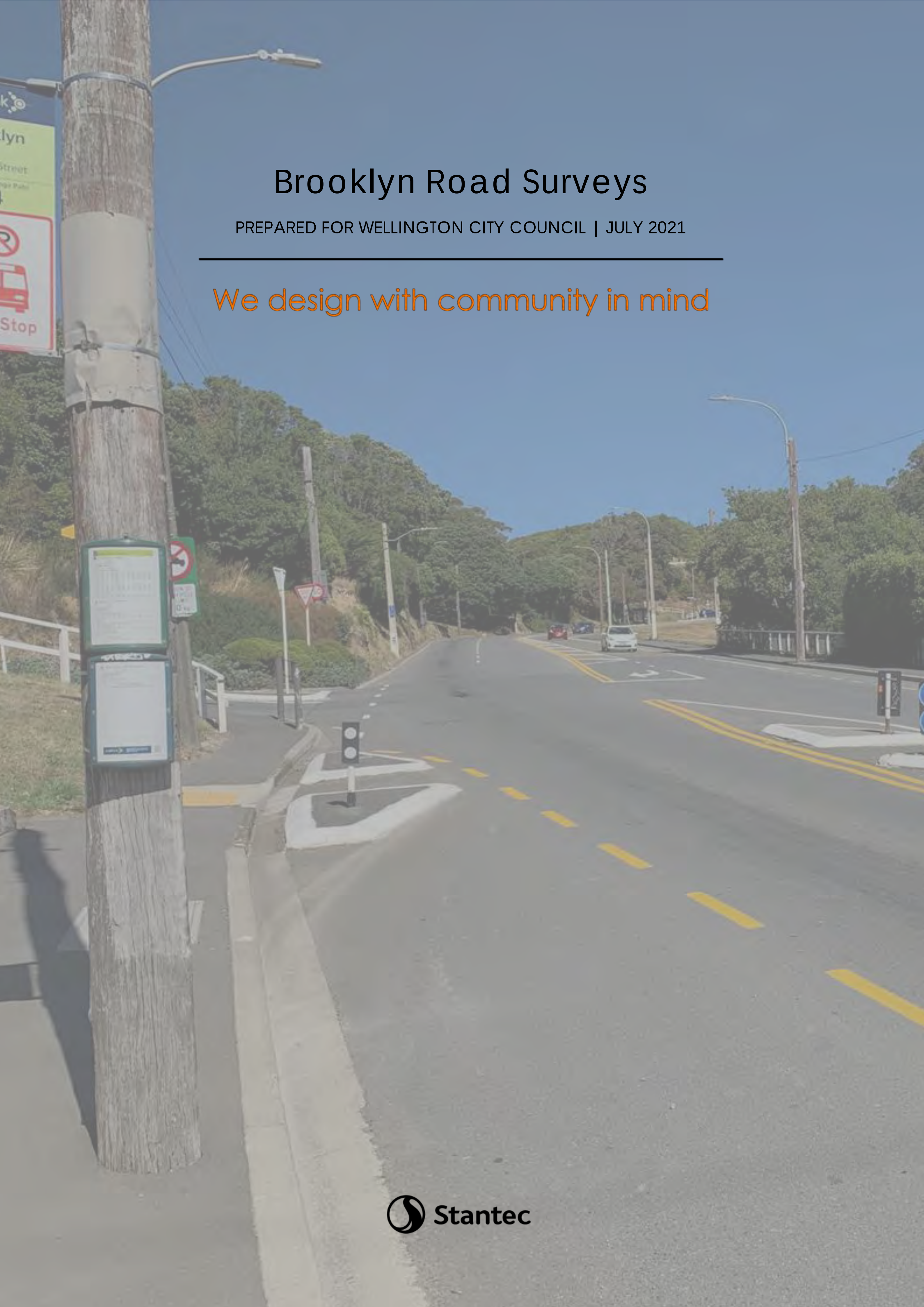
Question 3 and 6 combined

General comments	Mentions		Suggested improvements	Mentions
Overall support	264		Improve connections to and from	99
Improves safety	159		More gentle turning at intersections	71
Concerns about traffic flow	67		Remove the bike lane	69
Cycle lane unnecessary	57		Reduce bike lane width/widen car lane	66
Overall against	43		Remove ghost markings	54
More car parking needed	28		Improve Washington Ave bus stop	44
Downhill cycle lane support	27		Smooth ramps	44
Not as safe	26		Enforce new parking setup	43
Out of scope improvement	23		No improvement suggested	42
Bike lane layout confusing	12		Reinstate overtaking lane	39
Concerns about driver behaviour	12		Better protection for bike lane	37
Concerns about pedestrian safety	10		Improve pedestrian crossings	32
Bus stops dangerous	5		Improve signage	31
Unrelated	2		Ensure lane remains clear from debris	28
			Put back median	22
			Remove parking protected section	20
			Other cycle lane location	19
			Educate public on use and benefits of bike lanes	18
			Install permanent footpath	14
			Improve access to Bidwell St bus stop	12

			Separate all users	12
			Unhappy with/improve co-design process	9
			Reduce speed limit	8
			Remove in line bus stops	6
			Remove driveway bumps	6
			Consult more broadly	5
			Improve installation signage	5
			Improve lighting along route	5
			Widen turn area into Ohiro Rd	3
			Revert substation parking	3
			Installation process improvements	3
			Urban design improvements	2
			Widen bike lane	2
			Improve drainage	2
			Move bus stops from intersections	2
			Install physical buffer for parking protected section	1
			Add more hit sticks	1
			Replace pedestrian build outs	1
			Bus lanes PM peak	1
			Add driveway mirror	1
			Add stop signs	1
			Grade separate bike lane	1
			Stop bike lane sooner	1
			Remove parking to make space	1
			Residents only parking	1
			Improve merge from side streets	1

The table above is a combination of both open field questions sorted into general comments and suggested improvements. The improvements highlighted in yellow were the changes able to make during the trial. A lot of the other suggestions will be considered and included in the traffic resolution consultation, pending committee decision.

The project was unable to react to several suggestions due to the significant changes they would have made to the traffic management plan (TMP). The timing of the TMP’s used for trial bike lanes has been one of the big learnings for the Council in this process and will be incorporated into any future tactical urbanism project.



Brooklyn Road Surveys

PREPARED FOR WELLINGTON CITY COUNCIL | JULY 2021

We design with community in mind

Stantec

Revision Schedule

Rev No.	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
1	15/4/21	Pre-Implementation	Will Roper	Christopher Hendrickson	Christopher Hendrickson	Mark Georgeson
2	13/7/21	Post-Implementation	Will Roper	Christopher Hendrickson	Mark Georgeson	Mark Georgeson

Quality Statement

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PROJECT MANAGER	PROJECT TECHNICAL LEAD
Mark Georgeson	Will Roper

PREPARED BY Will Roper		13 / 07 / 2021
CHECKED BY Christopher Hendrickson		15 / 07 / 2021
REVIEWED & APPROVED FOR ISSUE BY Mark Georgeson		20 / 07 / 2021

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STATUS FOR ISSUE | Project No 310204603

Table of Contents

1.0 INTRODUCTION

This report outlines parking occupancy and travel time surveys carried out by Stantec on Brooklyn Road. These surveys took place before and after the construction of an uphill cycle lane, in March and June 2021 respectively. The results from the surveys provide information on occupancy, vehicle types and duration of stay of parking, vehicle trip times and volumes.

1.1 CLIENT BRIEF

As part of the innovating city streets programme, an uphill cycling lane on Brooklyn Road from Webb Street to Ohiro Road was proposed and subsequently constructed by Wellington City Council (WCC). In response, WCC was interested in understanding how vehicles parking along the road may interact with this cycling lane, and how vehicles trip times travelling from Webb Street to Ohiro Road (uphill) may be affected.

A baseline survey (pre cycle lane implementation) was undertaken in March 2021 and repeated in June 2021 to understand the cycle lane's effect on vehicle behaviour on Brooklyn Road.

1.2 SURVEY DATES

1.2.1 March – Pre cycle lane construction

Surveys monitoring parking occupancy were undertaken from Thursday 25 to Sunday 28 March in 2021, for 14 hours between 7:00am and 9:00pm.

A travel time survey was undertaken on Friday 26 March at 7:00am – 9:00am and 4:30pm – 6:30pm, and Saturday 27 March at 10:00am – 12:00pm.

Fine weather was recorded on all survey days in March.

1.2.2 June – Post cycle lane construction

Surveys monitoring parking occupancy were undertaken from Thursday 17 to Sunday 20 June in 2021, for 14 hours between 7:00am and 9:00pm.

A vehicle travel time survey was undertaken on Friday 18 June at 7:00am – 9:00am and 4:00pm – 6:00pm, and Saturday 3 July at 10:00am – 12:00pm, scheduled pre and post the COVID-19 Alert Level 2 which was in place from Wednesday 23 June to Tuesday 29 June. Note that the evening peak period was revised in the June survey as agreed with WCC.

Isolated showers occurred on the Thursday and Friday (17/18 June), and fine weather was recorded on Saturday 3 July.

2.0 PARKING OCCUPANCY SURVEY

2.1 METHODOLOGY

Four surveyors conducted the parking surveys from the Thursday to Sunday periods of March and June from 7:00am – 9:00pm by recording partial number plates of vehicles parked within the survey area using tablets.

The survey area was initially divided into 24 zones based on parking type and location. These zones were reconfigured following the removal of parks due to the construction of the uphill cycle lane as shown in Table 2-1. Vehicles parked in each zone were recorded every 30 minutes.

As not all of the zones from the original March survey are relevant to the June survey, parking zones highlighted yellow in Table 2-1 have been focused on for the figures below as they are comparable across both survey periods. Parks with orange strikethrough represent parking spaces that have been removed/changed.

Appendix A includes maps showing the zones pre and post cycle lane implementation.

As the majority of parking along Brooklyn Road is unmarked, the total available length of parking was measured, and the approximate number of spaces calculated and used for analysis. When calculating the amount of parking occupied, a nominal vehicle parking space of 6.0m was used. Note that due to this assumption, it is possible for occupancies exceeding 100% to be observed as vehicles may take up less space that the assumed nominal length.

It is also worth noting that while the marked spaces in zone 6 changed from 10 diagonal parks to 4 parallel parks, surveyors noted that motorists were still parking diagonally after this change, resulting in high occupancy percentages in this zone for the June surveys.

Results from the surveys were used to determine parking behaviour on Brooklyn Road within each zone to the nearest beat interval (30 minutes), by tracking each individual vehicle using the partial number plates recorded in the survey throughout the day.

2.2 SURVEY RESULTS AND ANALYSIS

Parking occupancy survey results for March and June have been tabulated and graphed below as follows, based on all unique vehicles recorded.

- Table 2-2: Overall parking occupancy in March and June;
- Figure 2-1 and Figure 2-2: Graphical representations of Table 2-2, showing overall parking; occupancy in March and June for weekdays and weekends respectively, for zones where comparisons are available;
- Table 2-3: Overall coupon usage in March and June;
- Table 2-4: Types of vehicles parked in March and June; and
- Table 2-5/Figure 2-3 and Table 2-6/Figure 2-4: Duration of stay for weekdays and weekends respectively in March and June, again for zones where comparisons are available.

Raw data from the surveys and the following tables can be found tabulated in the accompanying spreadsheet.

Table 2-1 Survey zone locations, park types and capacities

Side of Road	Zone	Park Type	Location: ~~Pre cycle lane~~ - Post cycle lane	Type	Length	Capacity	
						Current (June)	Change
Northern End	1	~~Unmarked roadside parking~~	~~Outside 3 Brooklyn Road~~	~~Coupon~~	~~30m~~	0	-4
	2	~~Unmarked roadside parking~~	~~Between 3 Brooklyn Road & 21 Brooklyn Road apartments entrance~~	~~Coupon~~	~~60m~~	0	-10
	3	~~Unmarked roadside parking~~	~~Outside 21 Brooklyn Road apartments~~	~~Coupon~~	~~15m~~	0	-2
	4	~~Unmarked roadside parking~~	~~Outside 21 Brooklyn Road apartments~~	~~P5~~	~~30m~~	0	-5
Brooklyn Road, Uphill (Southbound) Lane	5	~~Unmarked roadside parking~~ Marked parking (between road & cycle lane)	~~Between Central Park bus stop & Diagonal parking outside substation~~ Between Central Park bus stop & tapering off before substation	Coupon	~~200m~~ 140m	17	-16
	6	~~Diagonal parking~~ Marked roadside parking	~~Diagonal Parking area outside substation~~ Outside substation.	Coupon	35m	4	-6
	7	~~Unmarked roadside parking~~	~~Between Diagonal parking & bus stop~~	~~Coupon~~	~~20m~~	0	-3
	8	~~2-Lane section (no parks)~~	~~Beginning Nairn St & finishing after Bidwell St~~	~~Lane~~	~~250m~~	0	0
	9	Shoulder (NBD)	Following 2-lane section, ending near "concealed" road sign	Temporary	40m	0	0
	10	~~Unmarked roadside parking~~	~~Between shoulder & coupon parking zone end~~	~~Coupon~~	~~55m~~	0	-9
Southern End	11	~~Unmarked roadside parking~~	~~Between Washington Avenue bus stop & taper finish~~	~~Unrestricted~~	~~50m~~	0	-8
Northern End	12	Marked Park	Marked carpark outside Central Vet Hospital	P30	8m	1	0
	13	Unmarked roadside parking	Between P30 park & pedestrian crossing point	Coupon	60m	~10	0
	14	Unmarked roadside parking	Between pedestrian crossing point & Central Park Entrance	Coupon	40m	~7	0
	15	Unmarked roadside parking	Between Central Park bus stop & Seido Karate	Coupon	160m	~26	0
	16	Off-street marked parks	Delineated parks at Seido Karate	Coupon	-	4	0
Brooklyn Road, Downhill (Northbound) Lane	17	Unmarked roadside parking	Between Seido Karate & Renouf Centre Entrance	Coupon	50m	~9	0
	18	Unmarked roadside parking	Between Renouf Centre Entrance & Nairn Road bus stop	Coupon	30m	~5	0
	19	Unmarked roadside parking	Between Nairn Road bus stop & Bidwell St bus stop (taper finishes earlier)	Coupon	90m	~15	0
	20	Shoulder (SBD)	Shoulder on RHS of right-hand curve, with yellow dashed road markings	Shoulder	10m	-	0
	21	Shoulder (SBD)	Shoulder on RHS of right-hand curve, between yellow dashed road marking & safety barrier	Shoulder	40m	-	0
	22	Shoulder (SBD)	Shoulder on RHS of left-hand curve, between safety barrier & narrowing of shoulder	Shoulder	60m	-	0
	23	Shoulder (SBD)	Shoulder on RHS of left-hand curve, between narrowing of shoulder & yellow dashed road markings	Shoulder	60m	-	0
Southern End	24	Unmarked roadside parking	Between yellow dashed road markings following Washington Avenue bus stop, & Ohiro Road	Unrestricted	90m	~15	0
						113	-63

Table 2-2. Brooklyn Road occupancy between 7:00am & 9:00pm

Side of Road	Zone	Park Type	Type	Capacity (Before →After)	March: Total Number of Unique Vehicles Recorded		March: Average Occupancy		June: Total Number of Unique Vehicles Recorded		June: Average Occupancy	
					Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Uphill Lane	1	Unmarked roadside parking	Coupon	4 → 0	24	41	83%	111%				
	2	Unmarked roadside parking	Coupon	10 → 0	28	33	66%	67%				
	3	Unmarked roadside parking	Coupon	2 → 0	22	19	84%	88%				
	4	Unmarked roadside parking	P5	5 → 0	19	27	27%	60%				
	5	Marked parking (between road & cycle lane)	Coupon	33 → 17	70	142	22%	72%	48	58	49%	40%
	6	Marked roadside parking	Coupon	10 → 4	20	35	66%	79%	24	24	145%	130%
	7	Unmarked roadside parking	Coupon	3 → 0	0	7	0%	36%				
	8	2-Lane Section of road (no parks)	Illegal	0 → 0	1	10						
	9	Shoulder (NBD)	Shoulder	0→ 0	0	0						
	10	Unmarked roadside parking	Coupon	9 → 0	1	1	1%	0%				
	11	Unmarked roadside parking	Unrestricted	8 → 0	17	9	35%	30%				

Side of Road	Zone	Park Type	Type	Capacity (Before → After)	March				June			
					Total Number of Unique Vehicles Recorded		Average Occupancy		Total Number of Unique Vehicles Recorded		Average Occupancy	
					Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Down hill Lane	12	Marked Park	P30	1 → 1	27	10	79%	82%	27	13	100%	123%
	13	Unmarked roadside parking	Coupon	10 → 10	31	36	48%	50%	44	23	44%	37%
	14	Unmarked roadside parking	Coupon	7 → 7	57	56	100%	96%	51	43	88%	102%
	15	Unmarked roadside parking	Coupon	26 → 26	122	205	37%	81%	99	99	38%	42%
	16	Off-street marked parks	Coupon	4 → 4	39	33	66%	49%	37	25	56%	42%
	17	Unmarked roadside parking	Coupon	9 → 9	34	68	25%	60%	30	40	21%	27%
	18	Unmarked roadside parking	Coupon	5 → 5	4	19	2%	12%	1	2	2%	8%
	19	Unmarked roadside parking	Coupon	15 → 15	3	19	1%	6%	9	6	2%	1%
	20	Shoulder (SBD)	Shoulder	0 → 0	0	0			2	2		
	21	Shoulder (SBD)	Shoulder	0 → 0	2	0			1	1		
	22	Shoulder (SBD)	Shoulder	0 → 0	22	0			0	0		
	23	Shoulder (SBD)	Shoulder	0 → 0	11	4			4	3		
	24	Unmarked roadside parking	Unrestricted	15 → 15	22	14	26%	12%	31	34	38%	29%
Overall				*176 → 113*	*576*	*788*	35%	54%	408	373	41%	39%

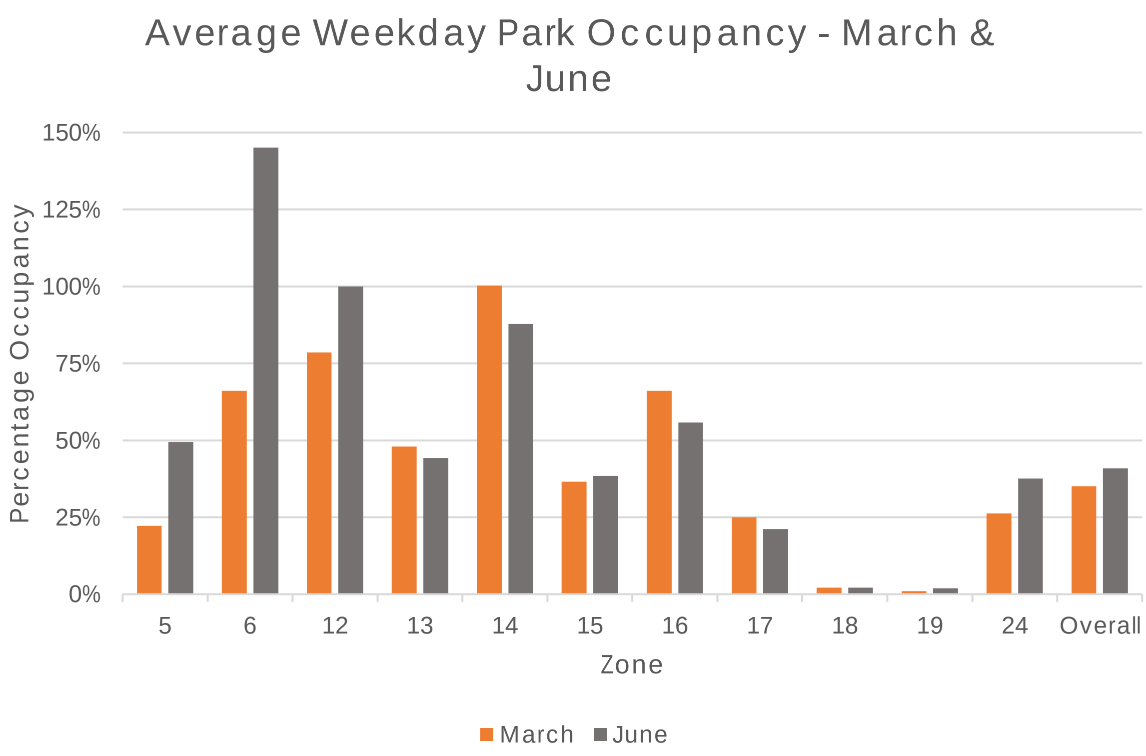


Figure 2-1. Average park occupancy during Weekdays on Brooklyn Road.

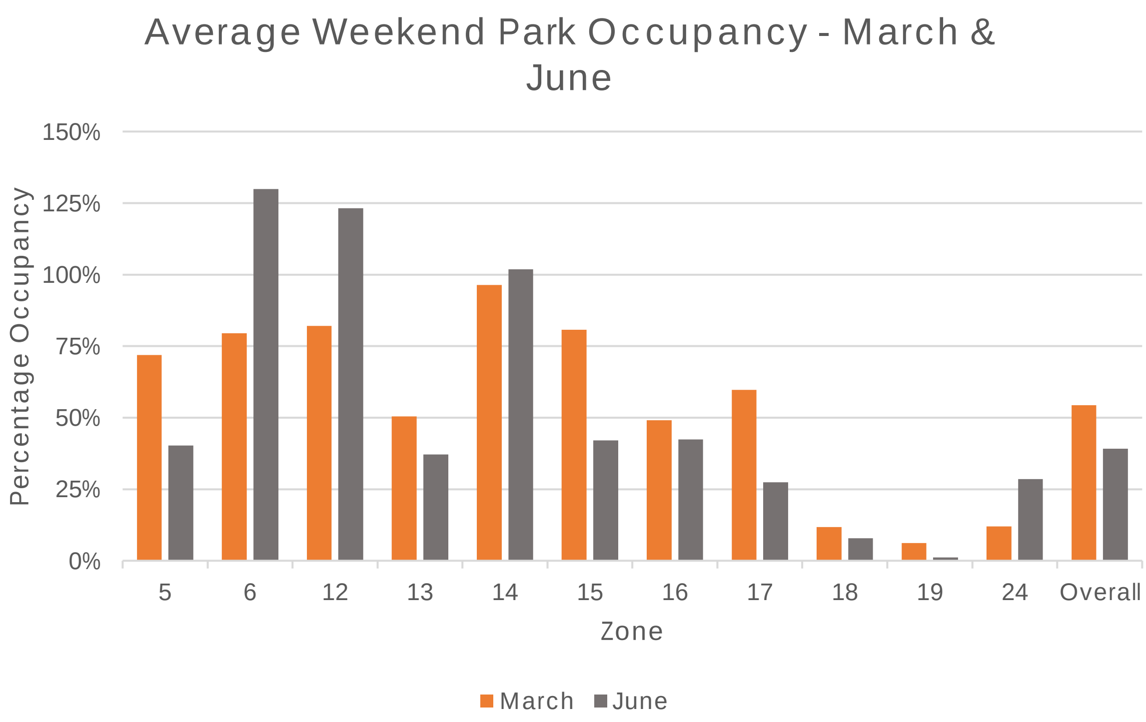


Figure 2-2. Average park occupancy during Weekend on Brooklyn Road.

Table 2-3. Brooklyn Road coupon parking percentages*

Side of Road	Zone	Park Type	Type	Capacity (Before →After)	March				June			
					Total Number of Unique Vehicles Recorded		% Vehicles displaying Coupons		Total Number of Unique Vehicles Recorded		% Vehicles displaying Coupons	
					Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Uphill Lane	1	Unmarked roadside parking	Coupon	4 → 0	24	41	6%	5%				
	2	Unmarked roadside parking	Coupon	10 → 0	28	33	49%	17%				
	3	Unmarked roadside parking	Coupon	2 → 0	22	19	12%	9%				
	5	Marked parking (between road & cycle lane)	Coupon	33 → 17	70	142	57%	34%	48	58	19%	6%
	6	Marked roadside parking	Coupon	10 → 4	20	35	84%	60%	24	24	29%	11%
	7	Unmarked roadside parking	Coupon	3 → 0	0	7	-	1%				
	10	Unmarked roadside parking	Coupon	10 → 4	1	1	0%	0%				
Down hill Lane	13	Unmarked roadside parking	Coupon	10 → 10	31	36	59%	58%	44	23	64%	39%
	14	Unmarked roadside parking	Coupon	7 → 7	57	56	56%	48%	51	43	18%	30%
	15	Unmarked roadside parking	Coupon	26 → 26	122	205	19%	8%	99	99	25%	27%
	16	Off-street marked parks	Coupon	4 → 4	39	33	0%	0%	37	25	1%	0%
	17	Unmarked roadside parking	Coupon	9 → 9	34	68	42%	8%	30	40	0%	0%
	18	Unmarked roadside parking	Coupon	5 → 5	4	19	0%	0%	1	2	0%	0%
	19	Unmarked roadside parking	Coupon	15 → 15	3	19	0%	0%	9	6	0%	0%
Overall				*147 → 97*	*455*	*714*	37%	27%	343	320	25%	18%

**As vehicles can also apply for coupon parking using a smartphone app, not all vehicles that have coupon parking have been captured in this survey. The coupon zone applies from Monday to Friday, 8:00am to 6:00pm (excluding public holidays). Vehicles can park free for 2 hours without coupons.*

Table 2-4. Brooklyn Road parking occupancy by vehicle type

Side of Road	Zone	Park Type	Type	Capacity (Before → After)	March								June							
					Weekday				Weekend				Weekday				Weekend			
					Light vehicles	Vans	Trucks	Articulated Trucks	Light vehicles	Vans	Trucks	Articulated Trucks	Light vehicles	Vans	Trucks	Articulated Trucks	Light vehicles	Vans	Trucks	Articulated Trucks
	1	Unmarked roadside parking	Coupon	4 → 0	85%	15%	0%	0%	78%	15%	7%	0%								
	2	Unmarked roadside parking	Coupon	10 → 0	82%	16%	2%	0%	93%	7%	0%	0%								
	3	Unmarked roadside parking	Coupon	2 → 0	88%	12%	0%	0%	100%	0%	0%	0%								
	4	Unmarked roadside parking	P5	5 → 0	89%	11%	0%	0%	99%	1%	0%	0%								
	5	Marked parking (between road & cycle lane)	Coupon	33 → 17	81%	16%	3%	0%	95%	5%	0%	0%	100%	0%	0%	0%	98%	2%	0%	0%
Uphill Lane	6	Marked roadside parking	Coupon	10 → 4	93%	7%	0%	0%	99%	1%	0%	0%	100%	0%	0%	0%	93%	6%	1%	0%
	7	Unmarked roadside parking	Coupon	3 → 0	-	-	-	-	100%	0%	0%	0%								
	8	2-Lane Section of road (no parks)	Illegal	0 → 0	-	-	-	-	100%	0%	0%	0%								
	9	Shoulder (NBD)	Shoulder	0→ 0	-	-	-	-	-	-	-	-								
	10	Unmarked roadside parking	Coupon	9 → 0	100%	0%	0%	0%	-	-	-	-								
	11	Unmarked roadside parking	Unrestricted	8 → 0	100%	0%	0%	0%	100%	0%	0%	0%								

Side of Road	Zone	Park Type	Type	Capacity (Before → After)	March								June							
					Weekday				Weekend				Weekday				Weekend			
					Light vehicles	Vans	Trucks	Articulated Trucks	Light vehicles	Vans	Trucks	Articulated Trucks	Light vehicles	Vans	Trucks	Articulated Trucks	Light vehicles	Vans	Trucks	Articulated Trucks
Down hill Lane	12	Marked Park	P30	1 → 1	79%	19%	2%	0%	100%	0%	0%	0%	98%	1%	1%	0%	100%	0%	0%	0%
	13	Unmarked roadside parking	Coupon	10 → 10	89%	11%	0%	0%	100%	0%	0%	0%	95%	5%	0%	0%	100%	0%	0%	0%
	14	Unmarked roadside parking	Coupon	7 → 7	95%	5%	0%	0%	98%	2%	0%	0%	97%	3%	0%	0%	100%	1%	0%	0%
	15	Unmarked roadside parking	Coupon	26 → 26	88%	11%	1%	0%	92%	8%	0%	0%	98%	2%	0%	0%	87%	13%	0%	0%
	16	Off-street marked parks	Coupon	4 → 4	83%	16%	1%	0%	92%	9%	0%	0%	99%	1%	0%	0%	95%	5%	0%	0%
	17	Unmarked roadside parking	Coupon	9 → 9	86%	14%	0%	0%	95%	5%	0%	0%	90%	0%	10%	0%	99%	1%	0%	0%
	18	Unmarked roadside parking	Coupon	5 → 5	0%	67%	0%	33%	93%	7%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%
	19	Unmarked roadside parking	Coupon	15 → 15	71%	29%	0%	0%	97%	3%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%
	20	Shoulder (SBD)	Shoulder	0 → 0	-	-	-	-	-	-	-	-	100%	0%	0%	0%	100%	0%	0%	0%
	21	Shoulder (SBD)	Shoulder	0 → 0	100%	0%	0%	0%	-	-	-	-	0%	100%	0%	0%	0%	100%	0%	0%
	22	Shoulder (SBD)	Shoulder	0 → 0	7%	3%	0%	90%	-	-	-	-	-	-	-	-	-	-	-	-
	23	Shoulder (SBD)	Shoulder	0 → 0	29%	43%	7%	21%	100%	0%	0%	0%	89%	0%	0%	11%	0%	0%	0%	100%
	24	Unmarked roadside parking	Unrestricted	15 → 15	67%	33%	0%	0%	55%	45%	0%	0%	70%	24%	5%	0%	81%	13%	7%	0%
Overall				*176 → 113*	86%	13%	1%	1%	94%	6%	0%	0%	94%	5%	1%	0%	93%	6%	1%	0%

Table 2-5. Brooklyn Road average duration of stay on weekdays

Zone	Park Type	Type	March				June			
			Average duration of stay (hours)	Percentage of vehicles staying:			Average duration of stay (hours)	Percentage of vehicles staying:		
				2 hours or less	2-8 hours	8 hours or more		2 hours or less	2-8 hours	8 hours or more
1	Unmarked roadside parking	Coupon	2.9	50%	3%	47%				
2	Unmarked roadside parking	Coupon	4.3	41%	12%	46%				
3	Unmarked roadside parking	Coupon	1.8	72%	0%	28%				
4	Unmarked roadside parking	P5	1.9	71%	0%	29%				
5	Unmarked roadside parking	Coupon	2.7	62%	3%	35%	3.9	55%	27%	18%
6	Diagonal parking	Coupon	4.5	35%	9%	56%	6.2	29%	32%	39%
7	Unmarked roadside parking	Coupon	-	-	-	0%				
8	2-Lane Section of road	Illegal Park	0.5	100%	0%	0%				
9	Shoulder (NBD)	Temporary	-	-	-	0%				
10	Unmarked roadside parking	Coupon	-	-	-	0%				
11	Unmarked roadside parking	Unrestricted	3.6	27%	0%	73%				
12	Marked Park	P30	0.9	96%	0%	4%	1.3	86%	14%	0%
13	Unmarked roadside parking	Coupon	4.0	31%	6%	64%	3.5	61%	21%	18%
14	Unmarked roadside parking	Coupon	3.5	43%	4%	53%	2.5	69%	24%	7%
15	Unmarked roadside parking	Coupon	2.2	61%	0%	39%	2.5	64%	32%	4%
16	Off-street marked parks	Coupon	2.0	73%	0%	27%	3.3	59%	35%	6%
17	Unmarked roadside parking	Coupon	1.8	74%	0%	26%	2.6	65%	27%	8%
18	Unmarked roadside parking	Coupon	0.8	100%	0%	0%	3.9	60%	20%	20%
19	Unmarked roadside parking	Coupon	1.1	75%	0%	25%	1.2	100%	0%	0%
20	Shoulder (SBD)	Temporary	-	-	-	-	0.5	100%	0%	0%
21	Shoulder (SBD)	Temporary	2.8	50%	0%	50%	0.5	100%	0%	0%
22	Shoulder (SBD)	Temporary	0.6	100%	0%	0%	-	-	-	-
23	Shoulder (SBD)	Temporary	0.5	100%	0%	0%	2.8	50%	50%	0%
24	Unmarked roadside parking	Unrestricted	5.0	23%	0%	77%	3.9	50%	32%	18%
Overall			2.7	58%	3%	40%	3.2	59%	28%	12%

Table 2-6. Brooklyn Road average duration of stay on weekends.

Zone	Park Type	Type	March				June			
			Average duration of stay (hours)	Percentage of vehicles staying:			Average duration of stay (hours)	Percentage of vehicles staying:		
				2 hours or less	2-8 hours	8 hours or more		2 hours or less	2-8 hours	8 hours or more
1	Unmarked roadside parking	Coupon	2.7	48%	0%	52%				
2	Unmarked roadside parking	Coupon	4.0	35%	10%	55%				
3	Unmarked roadside parking	Coupon	2.4	52%	0%	48%				
4	Unmarked roadside parking	P5	2.6	52%	0%	48%				
5	Unmarked roadside parking	Coupon	3.8	32%	2%	66%	3.2	55%	33%	12%
6	Diagonal parking	Coupon	4.3	24%	4%	72%	4.1	50%	29%	21%
7	Unmarked roadside parking	Coupon	3.4	50%	0%	50%				
8	2-Lane Section of road	Illegal Park	0.5	100%	0%	0%				
9	Shoulder (NBD)	Temporary	-	-	-	-				
10	Unmarked roadside parking	Coupon	0.5	100%	0%	0%				
11	Unmarked roadside parking	Unrestricted	4.0	41%	0%	59%				
12	Marked Park	P30	2.3	40%	0%	60%	3.5	25%	75%	0%
13	Unmarked roadside parking	Coupon	3.9	42%	0%	58%	2.8	63%	28%	10%
14	Unmarked roadside parking	Coupon	3.4	41%	0%	59%	2.6	67%	24%	9%
15	Unmarked roadside parking	Coupon	2.9	49%	0%	51%	3.3	56%	33%	11%
16	Off-street marked parks	Coupon	1.7	79%	0%	21%	4.5	50%	25%	25%
17	Unmarked roadside parking	Coupon	2.1	61%	0%	39%	2.7	70%	15%	15%
18	Unmarked roadside parking	Coupon	1.6	76%	0%	24%	3.3	40%	60%	0%
19	Unmarked roadside parking	Coupon	2.2	73%	5%	23%	2.0	50%	50%	0%
20	Shoulder (SBD)	Temporary	0.5	100%	0%	0%	0.5	100%	0%	0%
21	Shoulder (SBD)	Temporary	-	-	-	-	0.5	100%	0%	0%
22	Shoulder (SBD)	Temporary	-	-	-	-	-	-	-	-
23	Shoulder (SBD)	Temporary	0.6	100%	0%	0%	-	-	-	-
24	Unmarked roadside parking	Unrestricted	4.7	30%	5%	65%	3.5	58%	23%	19%
Overall			3.1	46%	1%	53%	3.2	58%	29%	13%

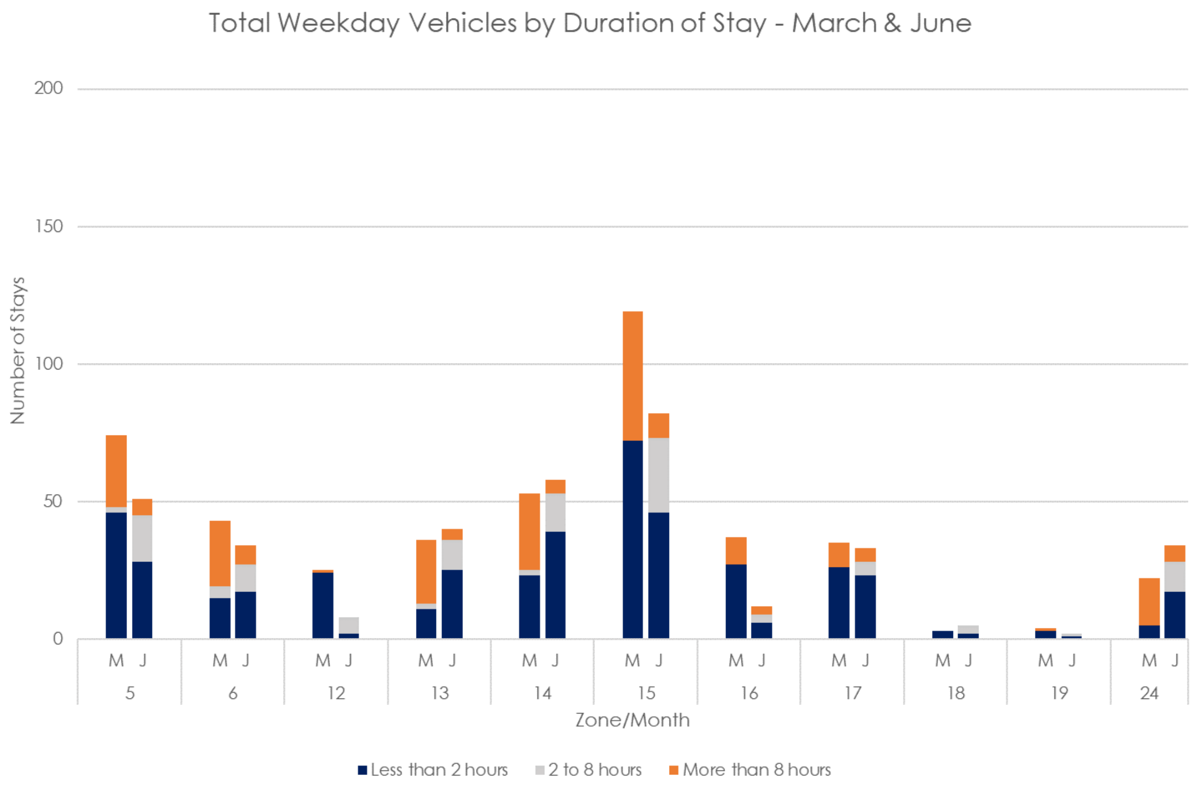


Figure 2-3. Duration of stay of Parked cars on Brooklyn Road on weekdays

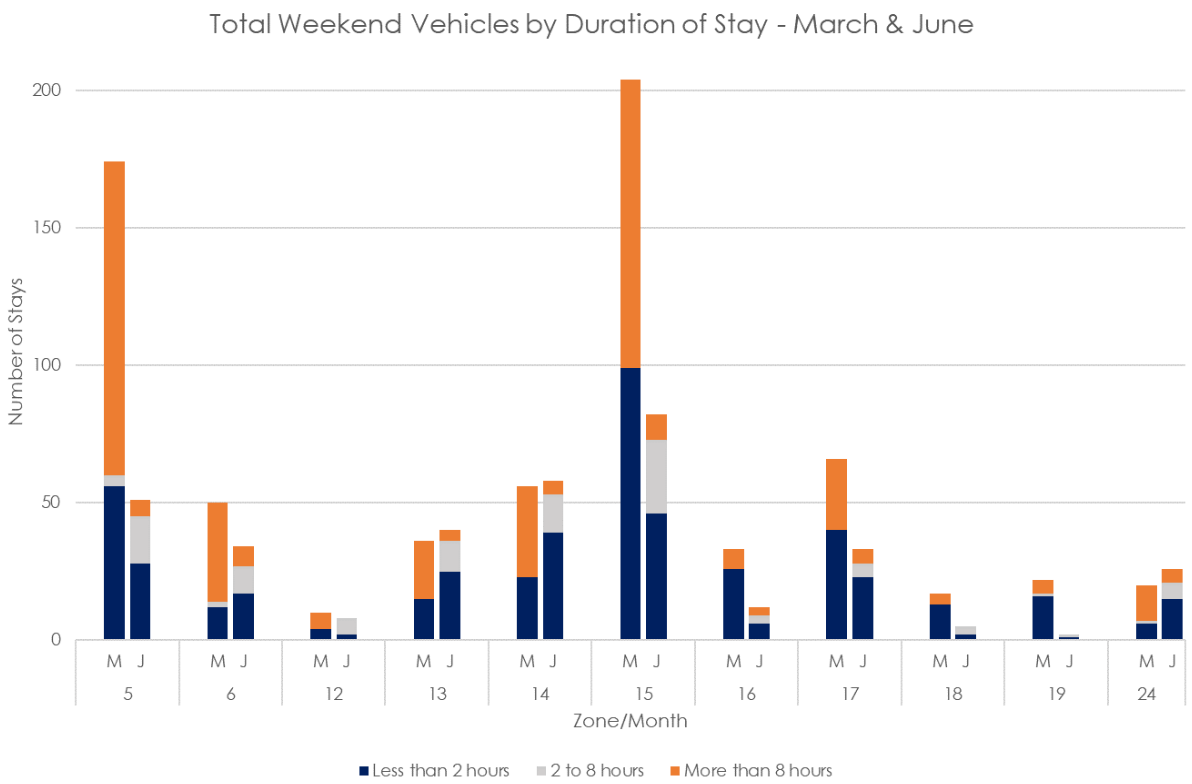


Figure 2-4. Duration of stay of Parked cars on Brooklyn Road on weekend

3.0 VEHICLE TRIP TIME SURVEY

3.1 METHODOLOGY

Cameras were set up along Brooklyn Road at approximately 15 Nairn Street and 140 Ohiro Road to capture vehicle travel times and volumes.

Pre cycle lane construction, the cameras recorded vehicle travel times in March on Friday 26 at 7:00am – 9:00am and 4:30pm – 6:30pm, and on Saturday 27 at 10:00am – 12:00pm.

Post cycle lane construction, the cameras recorded vehicle travel times in June on Friday 18 at 7:00am – 9:00am and 4:00pm – 6:00pm and in July on Saturday 3 at 10:00am – 12:00pm.

Appendix B includes a map showing the camera locations.

3.2 SURVEY RESULTS AND ANALYSIS

Travel time survey results have been tabulated and graphed below as follows:

- Table 3-1: Travel time statistics
- Figure 3-1: Weekday AM Peak travel times
- Figure 3-2: Weekday PM Peak travel times
- Figure 3-3: Weekend AM Peak travel times
- Figure 3-4: Travel time distributions

Raw travel time data can be found tabulated in the accompanying spreadsheet.

Note the irregularity in the data between 11:15 am and 11:30 am during the weekend survey seen in Figure 3-3. The sudden increase in travel times suggests this delay was caused by some event that blocked southbound traffic for ~10 minutes. While this data is included in Figure 3-3, it has been removed from the remaining analysis.

Table 3-1 Brooklyn Hill peak hour travel time summary statistics.

<table>
<tr><th rowspan="2">Day</th><th rowspan="2">Time</th><th rowspan="2" colspan="2">Metric</th><th colspan="2">Survey Date</th><th rowspan="2">Difference</th></tr>
<tr><th>March</th><th>June</th></tr>
<tr><td rowspan="18">Friday</td><td rowspan="9">AM
7:00am -
9:00am</td><td colspan="2">Number of vehicles</td><td>364</td><td>411</td><td>+12.9%</td></tr>
<tr><td colspan="2">Average travel time</td><td>0:01:37</td><td>0:01:51</td><td>+14.5%</td></tr>
<tr><td colspan="2">Max travel time</td><td>0:03:17</td><td>0:04:33</td><td>+38.6%</td></tr>
<tr><td colspan="2">Timestamp of max travel time</td><td>8:14:08</td><td>8:53:00</td><td></td></tr>
<tr><td colspan="2">Min travel time</td><td>0:01:07</td><td>0:01:16</td><td>+38.2%</td></tr>
<tr><td colspan="2">Timestamp of min travel time</td><td>7:23:28</td><td>7:32:16</td><td></td></tr>
<tr><td rowspan="3">Vehicle Type</td><td>Light</td><td>79.9%</td><td>77.4%</td><td>-2.6%</td></tr>
<tr><td>Heavy</td><td>16.5%</td><td>17.8%</td><td>+1.3%</td></tr>
<tr><td>Bus</td><td>3.6%</td><td>4.9%</td><td>+1.3%</td></tr>
<tr><td rowspan="9">PM
4:30pm -
6:30pm
(March)

4:00pm –
6:00pm
(June)</td><td colspan="2">Number of vehicles</td><td>795</td><td>809</td><td>+1.8%</td></tr>
<tr><td colspan="2">Average travel time</td><td>0:01:39</td><td>0:01:56</td><td>+16.8%</td></tr>
<tr><td colspan="2">Max travel time</td><td>0:04:18</td><td>0:04:43</td><td>+9.7%</td></tr>
<tr><td colspan="2">Timestamp of max travel time</td><td>17:44:40</td><td>17:45:48</td><td></td></tr>
<tr><td colspan="2">Min travel time</td><td>0:01:08</td><td>0:01:18</td><td>+14.7%</td></tr>
<tr><td colspan="2">Timestamp of min travel time</td><td>16:56:51</td><td>16:37:06</td><td>-</td></tr>
<tr><td rowspan="3">Vehicle Type</td><td>Light</td><td>96.9%</td><td>96.7%</td><td>-0.2%</td></tr>
<tr><td>Heavy</td><td>1.1%</td><td>2.1%</td><td>+1.0%</td></tr>
<tr><td>Bus</td><td>2.0%</td><td>1.2%</td><td>-0.8%</td></tr>
<tr><td rowspan="9">Saturday</td><td rowspan="9">AM
10:00am -
12:00pm</td><td colspan="2">Number of vehicles</td><td>422</td><td>524</td><td>+24.2%</td></tr>
<tr><td colspan="2">Average travel time</td><td>0:01:33</td><td>0:01:45</td><td>+12.5%</td></tr>
<tr><td colspan="2">Max travel time</td><td>0:02:49</td><td>0:03:57</td><td>+40.2%</td></tr>
<tr><td colspan="2">Timestamp of max travel time</td><td>11:00:58</td><td>10:27:43</td><td></td></tr>
<tr><td colspan="2">Min travel time</td><td>0:01:15</td><td>0:00:56</td><td>-25.3%</td></tr>
<tr><td colspan="2">Timestamp of min travel time</td><td>10:19:05</td><td>10:01:24</td><td></td></tr>
<tr><td rowspan="3">Vehicle Type</td><td>Light</td><td>94.1%</td><td>91.4%</td><td>-2.7%</td></tr>
<tr><td>Heavy</td><td>4.0%</td><td>6.5%</td><td>+2.5%</td></tr>
<tr><td>Bus</td><td>1.9%</td><td>2.1%</td><td>+0.2%</td></tr>
</table>

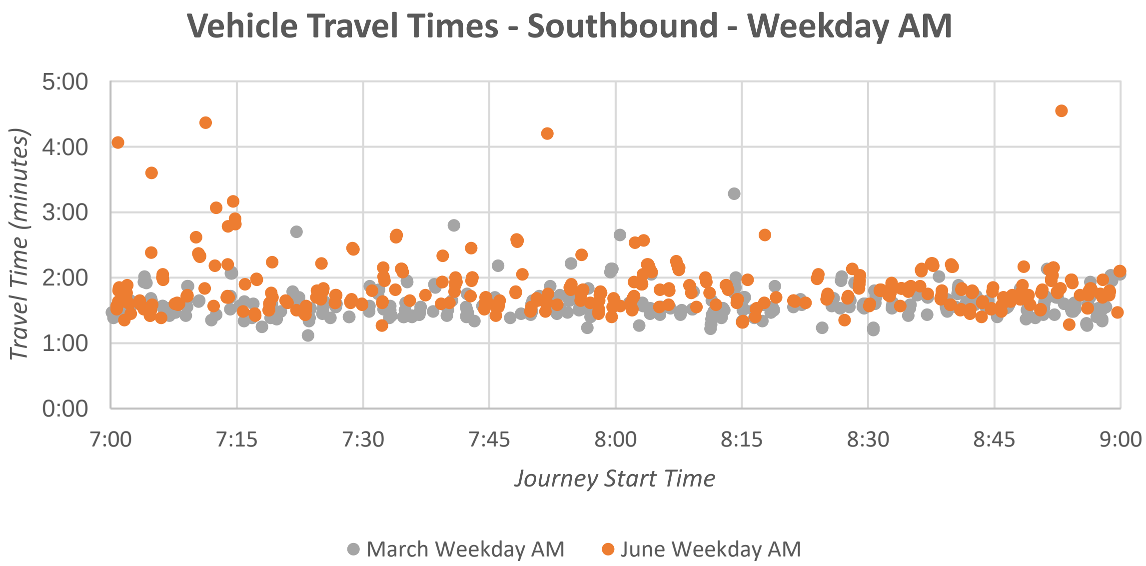


Figure 3-1 Vehicle travel times during AM peak on weekday

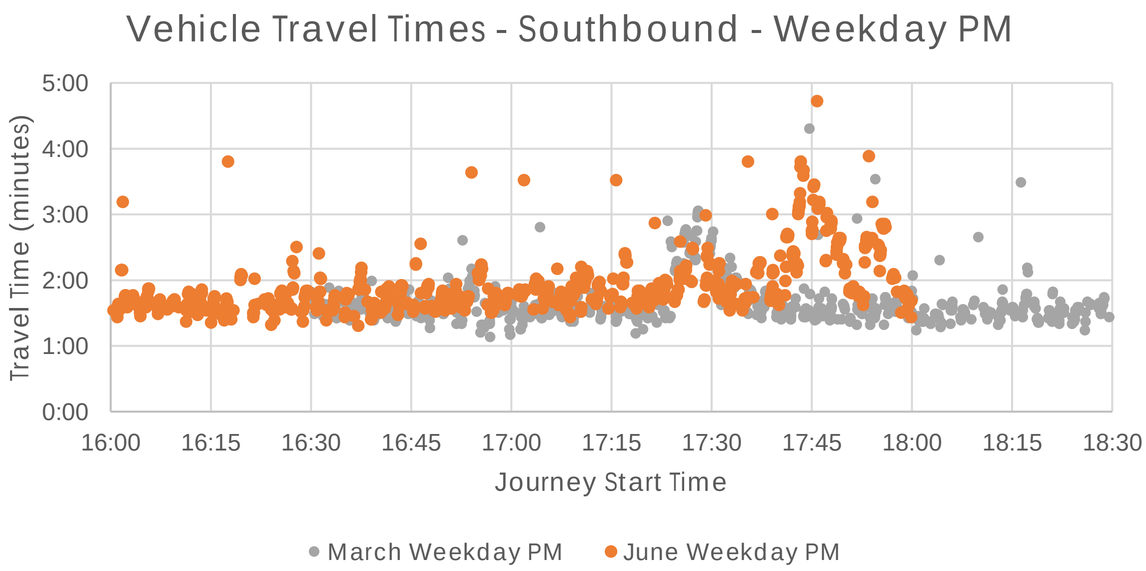


Figure 3-2 Vehicle travel times during PM peak on weekday

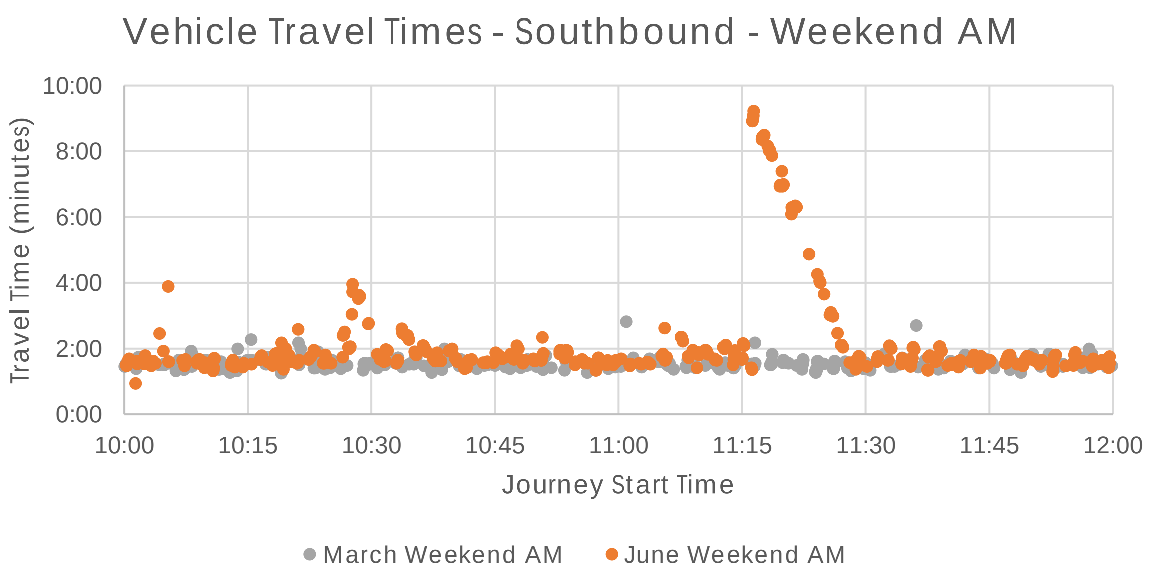


Figure 3-3 Vehicle travel times during AM peak on weekend

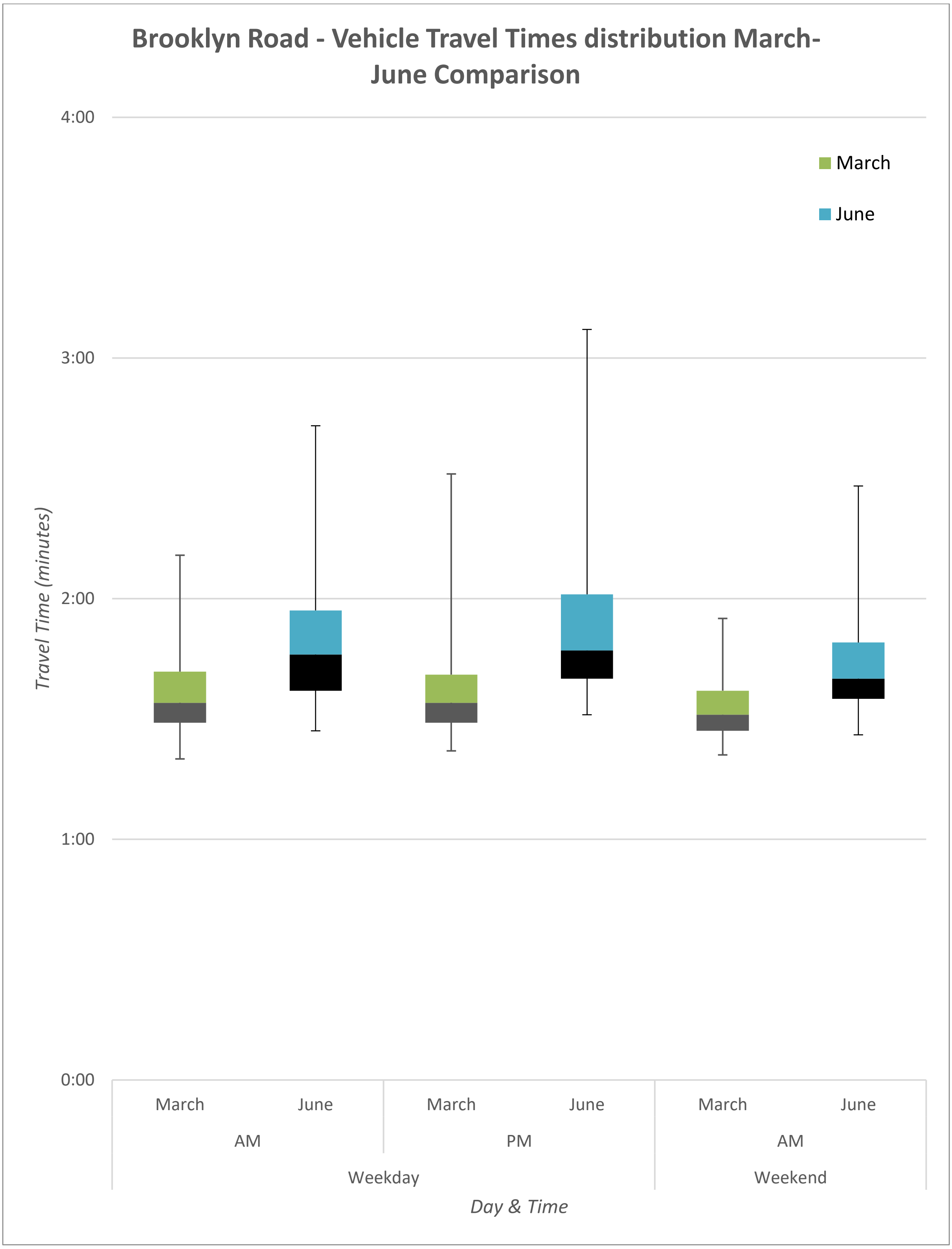


Figure 3-4 Box and Whisker plot: Vehicle travel times distribution by day, peak time and direction.

This Box and Whisker plot uses the 5th, 25th, 50th, 75th and the 95th percentile values.

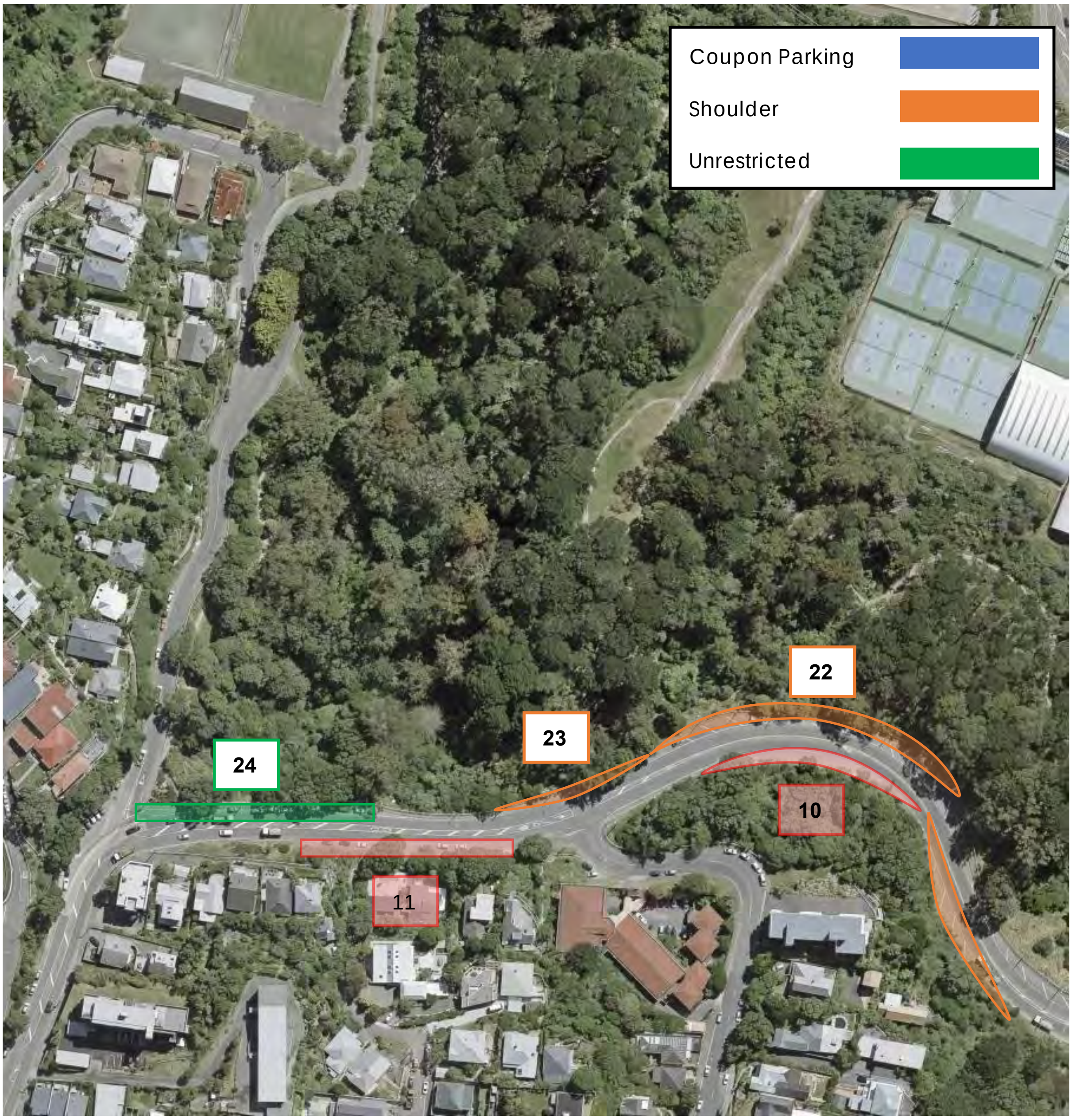
APPENDICES

We design with community in mind

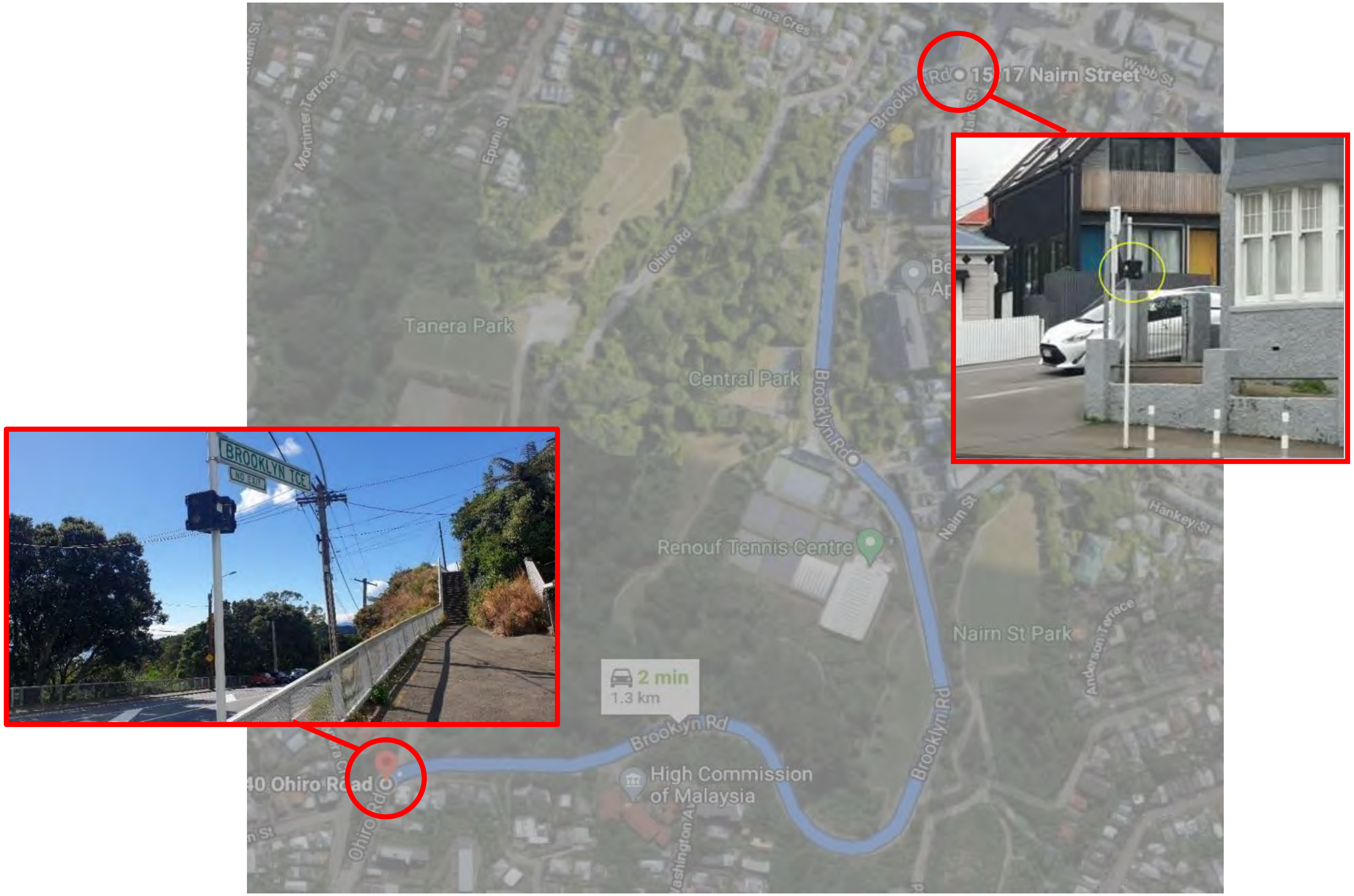
Appendix A SURVEY ZONES

Survey Zone Locations – updated post cycle lane construction (parks in red have been removed)


16
17
6
7
18
19
8
21
20
9
Coupon Parking
Shoulder


Coupon Parking
Shoulder
Unrestricted
22
23
24
10
11

Appendix B VEHICLE TRAVEL TIMES – CAMERA LOCATIONS



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Victoria Street
Webb Street
Brooklyn Road
Ohiro Road
Proposed TR scope

LET'S GET WELLINGTON MOVING - CITY STREETS - INDICATIVE BUSINESS CASE

Purpose

1. This report asks the Pūroro Āmua | Planning and Environment Committee to approve the Let's get Wellington Moving (LGWM) – City Streets, Indicative Business Case (IBC).
2. Partner approval from both Wellington City and Greater Wellington Councils is required before seeking approval from the Waka Kotahi Board to the business case and release of funding from the national land transport fund for subsequent phases.

Summary

3. City Streets is an important package within the LGWM Programme, it sets out to develop a package of public transport, walking, cycling, and amenity improvements to complement and support the larger elements of the LGWM programme such as MRT and SHI – with a focus on the central city and key multi-modal corridors connecting the central city with sub-urban centres. City Streets has a key role in driving mode shift and moving more people with less vehicles.
4. A team, utilising partner resource has undertaken significant network analysis to identify and prioritise corridors for investment.
5. The strategic case for the IBC sets out the problems we are trying to fix and list the investment objectives and how these link back to the wider programme objectives.
6. The wider LGWM programme envisages a spend of $350m on the City Street package, the team have identified a list of projects/corridors that provides the best overall fit with the investment objectives for the funding available.
7. The recommended programme sets out tranches of activities to ensure that those projects with the greatest benefits are assured of being constructed ahead of those with slightly less return.
8. In addition to recommending a programme for investment, the business case sets out the details for the next phase, it is envisaged that the planning activity be undertaken utilising a single stage business case(SSBC) that is right sized for the degree of complexity. In order to prioritise routes significant analysis has already been undertaken on all corridors and in many cases, there is unlikely to be complex optioneering required.
9. In additional to the technical analysis required at the next phase, community engagement will be significant, as the next phase will include all necessary approvals of parking and lane use restrictions needed.
10. The partnership agreement for the programme requires that all business cases gain partner approval, the LGWM Board have endorsed the IBC. Approval of the recommendations of this report will meet this requirement.

Recommendation/s

That the Pūroro Āmua | Planning and Environment Committee:

1. Receive the information.
2. Approve the Let's get Wellington Moving– City Streets, Indicative Business Case
3. Note that Wellington City Councils partner share of costs to undertake the work in the next phase has been allowed for in the 2021-2031 Long Term Plan

Background

11. LGWM is a joint initiative between Wellington City Council (WCC), Greater Wellington Regional Council (GWRC), and Waka Kotahi New Zealand Transport Agency (NZTA), together with Mana Whenua partners Taranaki Whānui ki Te Upoko o Te Ika and Ngāti Toa .
12. The focus of the LGWM programme is from Ngauranga Gorge to Miramar including the central city, the Wellington Urban Motorway, access to the port, and connections to Wellington Hospital and the airport. A number of core multi-modal corridors connecting the central city with suburbs to the north, south, east, and west are also covered by parts of the programme. This area has an important role for both local and regional journeys.
13. A draft LGWM programme business case was completed in 2018, which identified a Recommended Programme of Investment (RPI).
14. Discussions with central government about funding, financing, and staging led to the announcement of an Indicative Package (IP) with central government funding in May 2019.
15. On 26 June 2019, Council endorsed the LGWM long term vision and RPI, welcomed the government funding announcement as part of the IP, and agreed to move to the next stage of investigations (Council 26 June 2019). GWRC similarly endorsed the LGWM vision in June and the Waka Kotahi Board subsequently endorsed the programme's next steps.
16. On December 11 2019, Council (SPC) agreed the funding and partnering approach for the next phase (Strategy and Policy Committee 11 December 2019). GWRC and Waka Kotahi similarly endorsed the funding and partner agreement.
17. The LGWM programme includes substantial investment in public transport, walking, cycling and amenity/place making to provide enhanced travel choice with a strong focus on the central city and effective and efficient connections between the central city and key sub-urban centres. This investment is collectively known as the City Streets programme.
18. In mid-2019 Wellington City Council and Greater Wellington Regional Council jointly undertook a planning exercise to collaboratively deliver a package of bus priority measures to improve reliability and travel times for bus users. The resulting Bus Priority Action Plan (BPAP) was endorsed by both Councils in December 2019 and agreed that it would be folded into the LGWM City Streets package for implementation.
19. Over the last 18 months the programme has developed an IBC that defines the City Streets package and sets out the case for investment along with the economic assessment of a recommended package of options and an indicative implementation strategy for the next steps.

Discussion

Objective

20. The City Streets IBC sets out to develop a package of public transport, walking, cycling, and amenity improvements to complement and support the larger elements of the LGWM programme such as MRT and SHI – with a focus on the central city and key multi-modal corridors connecting the central city with sub-urban centres.

21. A number of complementary investigations and analysis completed by the partners have been brought together in this IBC to develop the recommended package. This includes WCC's Place and Movement Framework, Network Operating Framework, and the Bus Priority Action Plan (BPAP).

Partner Involvement

22. Unlike other packages within the LGWM programme, the City Streets package has used partner resource for much of its development, including the WCC's Transport Planning Manager seconded into the programme to lead the package development. Other partner staff included those from GWRC Metlink Group, Economic, Transport and GIS analysist from within WCC Transport planning team.

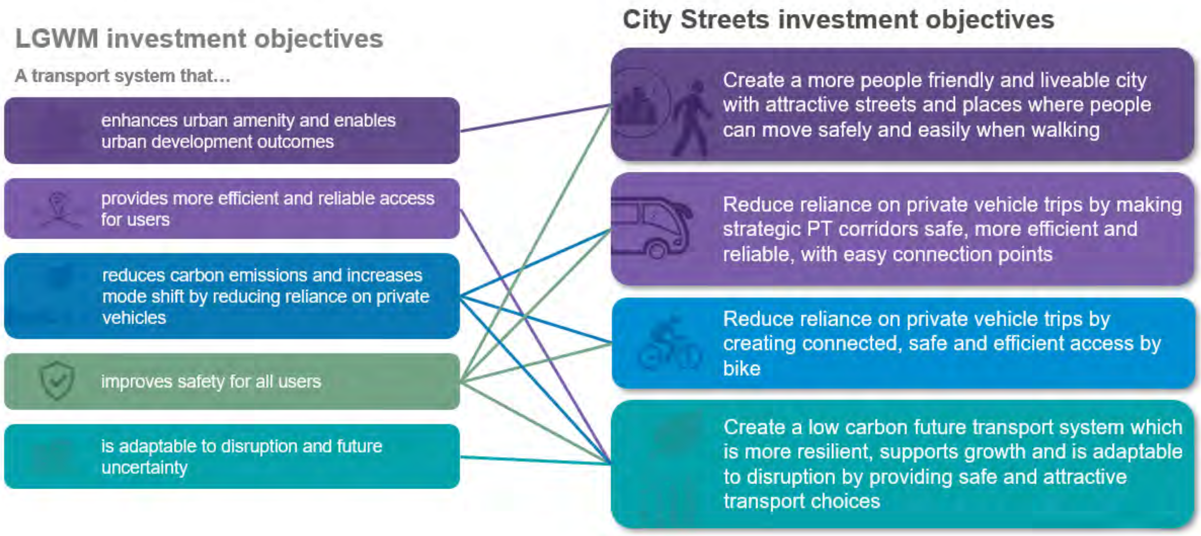
23. Each of the partner organisations provide subject matter experts that form a technical advisory group (TAG), in addition to officers that were imbedded into the programme, the TAG members have provided valuable input to the development of the IBC including recently completing a comprehensive review of the completed document.

Strategic Case

24. City Streets investment objectives have been developed to be well aligned with the wider LGWM programme objectives but adapted to reflect of the unique contribution that City Streets will make to the wider programme. This includes a strengthened focus on the connection between liveability/place and walking as shown below1.

25. Recently the LGWM programme undertook an exercise with partners to review the investment object weightings, this exercise updated some of the wording and strengthen the need to reduce car reliance and associated reduction in carbon. The City Streets team has not formally reviewed the strategic case in light of the changes, however our advice is that in resetting the objectives and weighting it is only likely to strengthen the case for investment in City Streets and will have no material difference in the recommended package for investment.

26. The diagram below reflects the updated programme investment objectives and how they relate to the City Streets investment objectives:



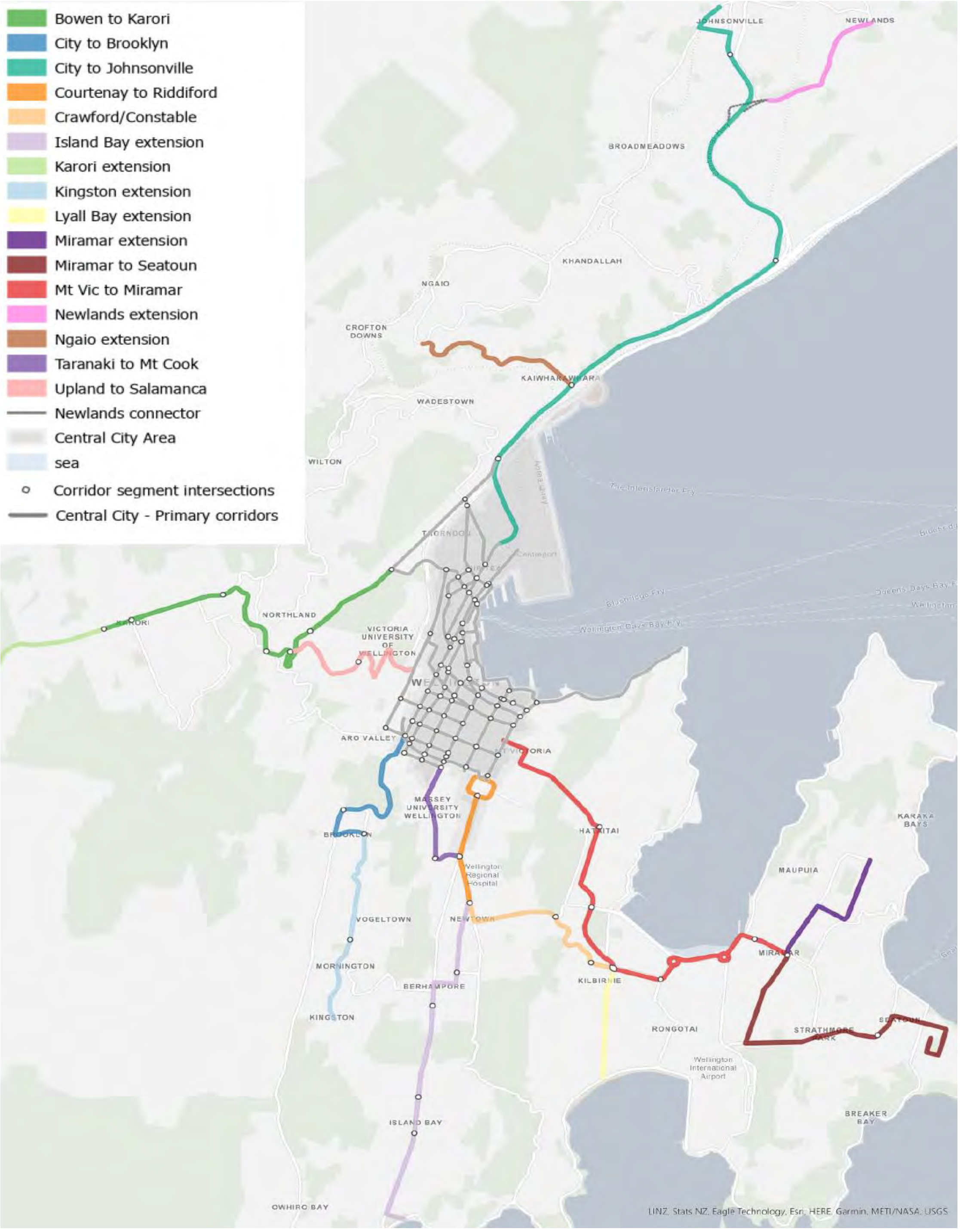
Identifying corridors for investment

27. The City Streets IBC sets out the case for investment in an optimal city wide, multi-modal package of interventions to maximise a shift away from single occupancy vehicles and provide an indicative implementation strategy for the next phases.

28. Work undertaken as part of the BPAP to identify where the greatest opportunity to improve bus travel times and reliability identified 8 key corridors, generally these integrated well with the wider LGWM Programme with the exception of Johnsonville, Ngauranga, Karori, Berhampore and Island Bay.

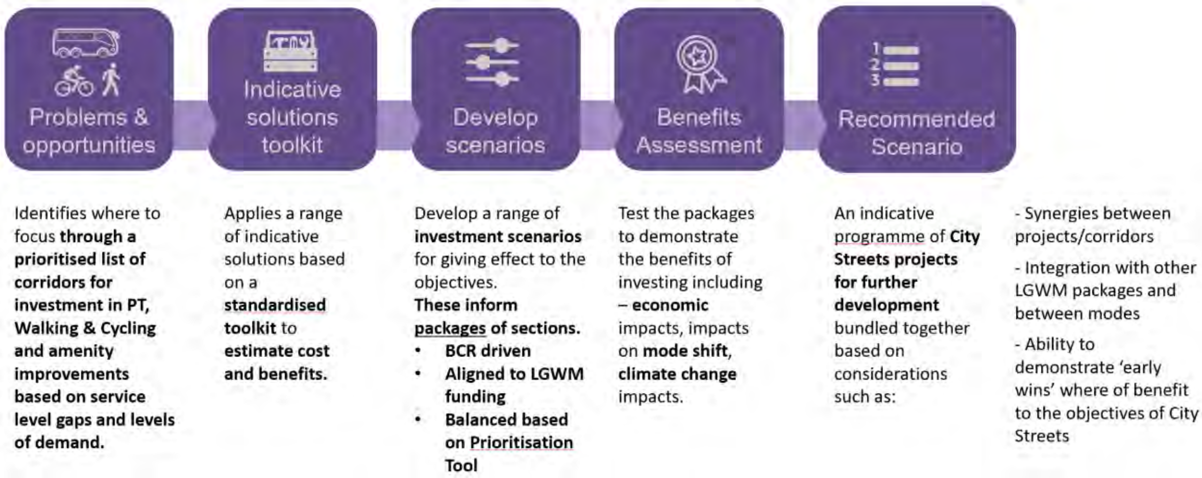
29. The wider City Streets geographical scope also encompasses the Wellington City Councils strategic cycling network.

30. The map below shows the geographical scope of the corridors investigated for investment by City Streets.



Methodology

31. The high-level five stage methodology adopted for City Streets IBC is shown below. In broad terms, the methodology is based on assessing current levels of service against aspirational levels of service for walking, cycling, public transport, placemaking and safety. Investment is prioritised towards the areas with the largest levels of service gap which have the potential to influence the largest number of people.



32. While it was relatively easy to identify how bad corridors are for each user type and to calculate the overall existing performance by corridor it is more difficult at a high level to assess benefits without undertaking full option assessment on each corridor (to be completed as part of the next phase). The team has developed what it has referred to as the indicative solution toolkit.

33. The toolkit sets out a theoretical solution on those corridor sections that demonstrate poor performance. Actual interventions for specific projects will need to be investigated more thoroughly at the detailed business case phase. The cost of the solution is calculated, including an allowance for the engineering difficulty. From this we can quantify the likely benefits and likely cost of the theoretical solution.

34. The solutions are grouped into five categories of interventions with broad sub-categories and options below them:

Bus priority interventions	**Pedestrian interventions**
• Bus stop improvements • In-lane bus priority measures • Corridor improvements • Signal improvements	• Footpath improvements • Intersections • Midblock crossings • Signal improvements • Accessways
Cycle interventions	**General safety interventions**
• Midblock cycling facilities • Intersections • Midblock crossings • Signal improvements • Accessways	• Traffic calming • Intersections
Amenity improvements	
• Pedestrian facility upgrades • Amenity upgrades for transport users	

35. Network performance of each corridor has been assessed against six criteria:
- Public Transport
- Walking
- Safety
- Amenity/place

- Cycling
- Growth

36. The factors considered in the tool are shown in the table below

Prioritisation criteria	Factors considered On key suburban corridors	 In the city centre
Public transport level of service	• Bus travel time delay • Bus travel time variability • Bus patronage	
Cycling level of service	• Cycling level of service • Gradient • Cyclist volumes	• Cycling level of service • Cycle permeability (one-way streets) • Cyclist volumes
Walking level of service	• Walking level of service for pedestrians accessing bus stops • Bus boarding and alighting volumes	• Pedestrian delay • Pedestrian severance • Pedestrian permeability (lack of pedestrian connections between streets) • Current and aspirational place values • Pedestrian volumes
Amenity and place	• Aspirational place values for town centres	• Current and aspirational place values
Safety	• Collective and Personal Risk ratings • Social cost of injuries • Number of vulnerable user crashes	
Access to support growth	• Planning for Growth estimated population growth served by the corridor	

37. To enable an assessment of the Amenity and Place criteria the team used place scores from the December 2019 Place and Movement Framework. This framework needs to be developed further, WCC and LGWM are working collaboratively to create a framework that can be used for future phases of both LGWM and WCC projects to ensure that we work towards a common view of amenity and place.

38. Currently Gehl Architects are developing a Public Space Public Life Study, this work is being funded from the City Streets package as it benchmarks the corridors and is expected to provide valuable insights that will then be used to develop the aspirations that will feed into the updated place and movement framework.

Developing Scenarios

39. Using the network section scores from the six criteria, the toolkit solution and indicative cost, a range of investment scenarios were developed. Scenarios were tested by applying different combinations of weightings to the six prioritisation criteria scores.

40. Irrespective of the scenario, the indicative toolkit solutions identified on the corridor segments remain the same, they take a multi-modal approach to addressing the most appropriate issues across all modes based on wider levels of service considerations.

41. The purpose of developing the scenarios through the prioritisation process is to provide a consistent and systematic basis on which to compare competing multi-modal and place-based issues. The scenarios are guides that will inform the overall prioritisation of activity for the City Streets IBC and assist in identifying a package of works that optimally delivers against the City Streets investment objectives. However, the prioritisation process is not a black box that dictates the overall prioritisation. There are

other considerations that cannot be systemised but will inform the final priorities and, therefore, the final scenario package.

42. Seven investment scenarios were used to test different weightings and focuses, and then refined and optimised the best performing scenario to develop the recommended package

Recommended Package

43. The resulting recommended package is made up of 19 projects with a programme capital cost estimate (including contingency) of $350m and a BCR of 2.4 in conjunction with supporting studies and a programme of targeted improvements.

44. The recommended package proposes to treat 50% of the central city network and 46% of the public transport network in scope for City Streets. This covers parts of the network that currently have a ten-year social cost of injuries of around $300m. The recommended programme is envisaged to lead to around 3,000 new daily cycle users and, through improvements to PT reliability, over 4,000 new daily bus trips leading to mode share uplifts of 3.7% for trips from Wellington city to the central city and a reduction in transport related CO_2 emissions of over 1,000 tonnes per annum. City Streets has a key role in driving mode shift and moving more people with less vehicles.

45. The City Streets IBC has been developed as a stand-alone business case except for work being undertaken on the Golden Mile, Thorndon Quay and Hutt Road. Many of the corridors identified for inclusion in the City Streets recommended package are also being considered as corridors for Mass Rapid Transit. At a wider LGWM Programme level integration between different packages is important and is being managed at that programme level. In some cases, corridors will not be progressed by City Streets but will be addressed by the MRT/SHI teams, in other cases it may be prudent for City Streets to provide a lower cost interim solution particularly for bus priority, cycling, walking and road safety until such time that MRT/ SHI mobilise the final corridor solution.

46. Integration outside of the programme is also important, City Streets is at the heart of Wellington City's Strategic Cycle Network and will provide many of the active mode and PT changes envisaged as part of the Te Atakura blueprint (2019)

47. The Te Atakura blueprint (2019) and implementation plan (2020) - commits WCC to ensuring Wellington City becomes a net zero carbon city by 2050 – including making the most significant reductions by 2030. Transport emissions are responsible for over half of Wellington's emissions – thus is a key action area. Further, Wellington City Council has directed officers to prepare a report investigating a Wellington Fossil-Fuel Free Central City by 2025 to be reported back to Councillors later in 2021.

Tranches

48. Funding allocated to the City Streets package is done so on an envelope basis, i.e. that it is capped at $350m with an expectation that we maximise the benefits that can be delivered from within the envelope.

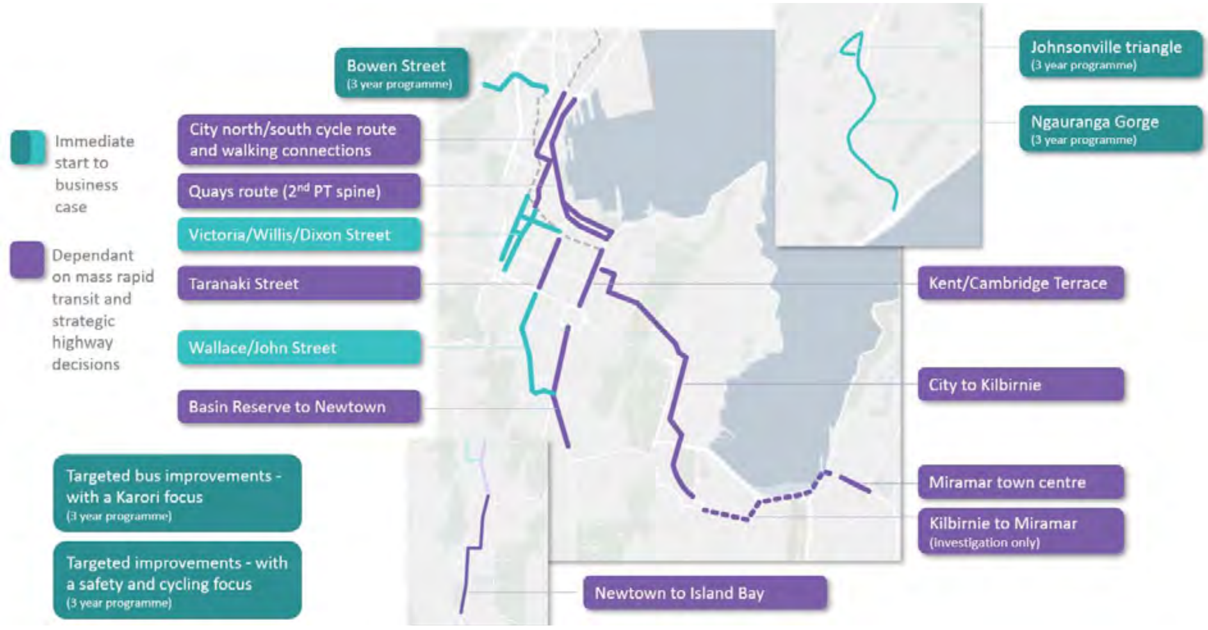
49. The recommended package has been divided into tranches. Projects in the first tranche address higher priority sections in the network. Addressing these priority sections first will provide partners with the security that those projects with the greatest benefits stand the best chance of being completed within the budget envelope.

50. The estimate for those projects in the first tranche is $180m (including contingency/expected estimate, P50), however this will change once we understand the impact of the final MRT/SHI route and scope early next year.

51. The business case calls for a review at the end of the first tranche planning activities to check that the assumptions used to select projects for the second tranche are still valid.

52. Appended to this report is a table with the recommended City Streets package with trance 1 and 2 activities including a high-level scope and estimate of next phase costs and overall construction estimate, noting that the overall package cost differs as it includes costs attributed to the wider programme.

53. The diagram below sets out activities that form Tranche 1. The colours denote those that can be progressed immediately and those that are dependant of MRT/SHI decisions



Targeted Improvement

54. It is acknowledged that all the project partners wish to move quicker towards delivery, however the next phase activities of planning and engagement will still need 12-18 months each before seeking approval to move towards design and then construction.

55. It is proposed in the interim to provide funding to allow for a roll out of targeted improvements on the city streets corridors. This will be incorporated into the LGWM 3-year programme.

56. It is proposed to have two dedicated funds:
- The first will be targeted to Bus Priority and will pick up many of the “quick wins” identified in the Bus Priority Action Plan. This will be focused on those corridors that won’t be addressed in the first tranche, for example, the Karori Corridor. We could expect the following types of interventions:
  - o Targeted bus priority at intersections
  - o bus stop rationalisation (removal of some stops)
  - o Hours of operation of clearways/bus lanes
- The second fund will be targeted to Walking/Cycling, amenity, and safety. The following activities could be expected:

- Timing changes at traffic lights
- Hours of operation of clearways
- Minor pedestrian improvements
- Minor safety at high-risk intersections
- Interim cycle lanes
- Cycle parking

57. It is thought that the experience gained in the recent Waka Kotahi led Innovating Streets projects will be employed as part of the roll out of these targeted improvements, given that in many cases they are an interim solution on the pathway to permanence.

Reviews and Approvals

58. Standard practice for any business case of this size is that it undergoes an independent peer review and an internal investment quality assurance (IQA) review.

59. Internally the IBC has been reviewed by the partner TAG group, and endorsed by the Programme Director and by the LGWM Board at their meeting of 3 August 2021.

Next Phases

60. Subject to business case approval and funding release the package will move into the next phase. It is recommended that the detailed planning and engagement for each of the corridors/projects be undertaken through a single stage business case (SSBC) and in some instances a single stage business case-lite (SSBC-lite).

61. Work is underway to engage suitable professional services for the next phase of developing single stage business cases for each project. This will mean that that work can start as soon as funding is approved.

62. In the next phase it is expected that as part of completion of the SSBC/SSBC-lite that we have an explicit rationale for why change is needed, an understanding of the size of the benefits (and any disbenefits), who is going to be affected, the cost to make changes and approval to all necessary traffic and parking changes (Traffic Resolutions).

63. The next phase will require a high level of community engagement embedded alongside the technical analysis for each corridor to ensure that approvals of the necessary changes at the end of the business case are provided in a timely manner to enable smooth progress towards delivery.

64. The next phase also includes the work to better understand integration opportunities and risk, including decisions to implement interim solutions on those corridors that may be significantly changed because of MRT/ SHI decisions.

65. We need to ensure that at a corridor level of investigation that we are fully integrated with other activities happening or being planned in that area for example we need to ensure planning in the Johnsonville area is integrated with the Johnsonville master planning exercise that is underway being led by Wellington City.

66. At a corridor level we also need to ensure that planning is integrated with the Wellington City Council cycleways programme, planning for growth and carbon reduction proposals.

67. Work in corridors also needs to ensure that there is good connection back to the GWRC Metlink team. Changes in bus stop location or removal will need to be incorporated into the Metlink system. It is expected that the step change improvement

in travel time and reliability of the Wellington Bus Network will provide an opportunity to review the bus network in terms of number of buses, timetables and potential review routes to maximise the return on sections of the network that have increased bus priority.

68. The consequential review of the bus network is outside of the scope of City Streets and sits with GWRC as it is their core business, however an allowance has been made within City Streets for the programme to support this work financially as required.

69. The Council partners have included funding for the next phases of work expected over the next few years in their long-term plans using their existing rating tools.

70. The first three years of the City Streets package is expected to be $42.8m across all three partners.

71. Waka Kotahi is expected to fund the central government share from the NLTF for the next phase of work. This funding requirement is expected to be included in the National Land Transport Programme (NLTP).

72. Whilst there is an explicit LGWM programme work stream to provide funding partners with analysis to assist them in agreeing a more enduring agreement for cost allocation, for the next phases (SSBCs & targeted improvements) of the City Streets package the interim agreed funding arrangement, documented in schedule 5 of the 2020 LGWM Relationship and Funding agreement (RFA) to allocate cost shares to funding partners, will be used.

73. The table below shows the P50[1] cost estimate for the recommended programme in base year values ($2020) and do not account for inflation or discounting.

Cost source	Total expected project cost ($)
SSBC	**$24,050,000**
Main Consultancy/Contract	$16,600,000
Additional Design (from Pre-imp)	$1,370,000
Reviews & Audits (Safety, Peer, Cost)	$520,000
Engagement / Consultation	$3,060,000
City Streets internal management costs PM's etc	$2,500,000
Pre-Implementation	**$21,895,000**
Main Consultancy/Contract	$18,242,500
Reviews & Audits (Safety, Peer, Cost)	$632,500
Engagement / Consultation	$530,000
City Streets internal management costs PM's etc	$2,490,000
Implementation	**$238,055,000**
Main Consultancy/Contract	$234,530,000
City Streets internal management costs	$3,525,000

[1] P50 used due to contingency applied to the cost estimate

Cost source	Total expected project cost ($)
PM's etc	
Contingency Property	**$3,000,000**
Programme Contingency	**$63,000,000**
Total Programme Cost	**$350,000,000**

Options

74. The City Streets team have followed a robust methodology to determine a package of improvements that delivers on the agreed investment objectives in the best possible way to ensure we are maximising our return on investment.

75. While there is significant opportunity to influence options and outcomes though the work being undertaken in the SSBC phase, there is limited ability to make changes to the current business case. Adding or removing projects at this stage will require significant rework and will require going back to define new objectives or scope for the business case.

76. Sequencing of the first tranche of projects can be altered, however at this stage we are expecting to have to review these because of other decisions being made early next year as part of Mass Rapid Transit and Strategic Highway Investment. The final sequencing can then be assessed at that time.

Next Actions

77. Approval from the Council partners is being sought from WCC on 25 August and GWRC on 9 September. Subject to these approvals the IBC will then be presented to Waka Kotahi for their approval. It is expected that the IBC and corresponding requests for funding for the next phase will be presented to the Waka Kotahi Board at their September Board meeting.

78. Professional services suppliers are being sought to undertake the work required to complete the business cases, contracts are expected to be ready to execute on approval of funding for the next phase.

79. First Tranche activities that the programme believes can be undertaken promptly and have limited community impact have been identified to form part of the 3-year programme. The planning will remain with City Streets; however, the design and delivery will move to the 3-year programme and be reported on from there. These activities are:
    - Bus Priority - Targeted improvements – Business Case approval to be sought in early 2022
    - Other – Targeted improvements - Business Case approval to be sought in early 2022
    - Johnsonville & Ngauranga Business Case approval to be sought in early 2023
    - Bowen Street Business Case approval to be sought in mid 2022

80. The proposals for MRT/ SHI are expected to be published later this year seeking wider community feedback. The feedback will enable partners to guide the programme team towards a preferred option that will then be used to complete the combined Indicative Business Case for those packages.

81. The City Streets schedule of corridors will be reassessed once decisions have been made on the MRT/SHI packages. It is likely that the number of and timing of all projects outside of the 3-year projects will change. These changes will be confirmed through the LGWM Board and communicated to partners, stakeholders, and the wider community early in the new year.

Attachments

Author	David Dunlop, Programme Director (Acting), Let's Get Wellington Moving
Authoriser	Liam Hodgetts, Chief Planning Officer

SUPPORTING INFORMATION

Engagement and Consultation

The matters requiring decision in this report have been considered by officers against the requirements of Part 6 of the Local Government Act 2002 (the Act).

Officers considered the significance (as defined by Part 6 of the Local Government Act 2002) of the matters, taking into account Council's Significance and Engagement Policy and Decision-making Guidelines. Officers recommend that the matters are of low significance.

The decisions sought through this report are an interim step as there will be comprehensive public and stakeholder engagement as part of each corridor in the next phase to complete the SSBC.

The corridors considered for City Streets and the approach are consistent with the broader LGWM programme that was developed using feedback from its own comprehensive engagement.

Treaty of Waitangi considerations

LGWM is working in partnership with iwi as part of the programme. An iwi partnerships working group has been established to help the programme appropriately consider mana whenua perspectives and support broader iwi engagement. Taranaki Whānui ki te Upoko o te Ika and Ngāti Toa have had briefings on how this IBC has been developed.

The next phase will of project development will provide significantly more opportunity to consider mana whenua perspectives.

Financial implications

Funding has been included in the Long-term plan based on initial estimates. This is in line with the cost estimate in the Indicative Business case. These estimates will be reviewed as the programme progresses and any budget changes will come to council for approval.

Policy and legislative implications

N/A

Risks / legal

Section 30 of the busines case there is a table that presents key risks (High and Critical) for the next phase of the project. A more detailed risk register is included in the IBC Appendix.

Climate Change impact and considerations

Consideration of climate change is one of the key areas of focus for both LGWM and City Streets, the outcomes sought through the resultant projects will all contribute to addressing the transport related greenhouse gas emissions, by providing alternatives to private motor vehicles

Communications Plan

Each project in the next phase will need to develop its own communications plan that cascades from the broader programme communication plan. It is expected that stakeholders, adjacent businesses and/or residents and wider interest groups be informed ahead of the start of any planning and be provided an opportunity to stay connected as plans are being developed. Final plans will require formal consultation ahead of decision making.

In advance of this paper being published, key stakeholders have been briefed, material made available on the LGWM website, with social media posts and a broad media advisory. Until the business case has been approved by all three partner it remains in a draft state. Un updated advisory will be undertaken once approved and funding released for the next phase.

Health and Safety Impact considered

There are no health and safety considerations at this time.

Project	Next Phase	Phase Estimate ($k)	Construction Estimate ($m)	High level scope
Tranche 1 – Immediate Start with partner desire to commit to construction start within 3 Years				
Johnsonville Ngauranga Gorge	Johnsonville – Ngauranga PT Improvements SSBC	600	19.9	Bus route improvements between the Johnsonville Bus Hub and Hutt Road with associated cycling enhancements, Walking to improve bus stop access and safety improvements.
Targeted Improvements	BPAP Targeted Improvements SSBC lite	75	0.75 p.a.	Take the Bus Priority Action Plan recommendations regarding Bus Stop improvements and develop this into a cohesive programme with identified costs and benefits with a focus on commencing in Karori. The SSBC lite will: - confirm which stops to rationalise (ensuring best strategic outcome is achieved and integration with wider LGWM and WCC/GW programmes has been considered) - identify options to be assessed at each stop – will include bus stop relocation/rationalisation, bus stop enhancements (including geometry or customer experience improvements), pedestrian access enhancements - Indicative costs and benefits of the programme - Costed delivery programme SSBC lite to provide the basis of funding for pre-imp (define the final solutions) and implementation of the costed programme.
	Other Targeted Improvements SSBC lite	75	3.0 p.a.	Identifies a package of transport system targeted improvements which improve PT, Walking/Cycling, amenity and safety. The activities forming the package should be low cost, easily implementable with benefits known to outweigh costs. Activities to be considered include, amongst others: - timing changes at traffic lights - Bus phase / queue jumps at traffic lights - Hours of operation of clearways/bus lanes - Minor pedestrian improvements - Minor safety at high-risk intersections - Cycle parking The SSBC lite will: - confirm the range of measures forming the targeted programme (ensuring best strategic

Project	Next Phase	Phase Estimate ($k)	Construction Estimate ($m)	High level scope

				outcomes are achieved and integration with wider LGWM and WCC/GW programmes has been considered)
				- identify the scale of opportunity for improvement for each activity type and demonstrate the confirmed benefits associated with an activity type, setting out the necessary conditions for those benefits to be guaranteed to be realised
				- provide indicative pre-implementation and and implementation costs for each activity type
				- provide a 3, 6 and 10 year recommended programme of activity types taking into consideration:
				  - partners and sectors capacity to deliver
				  - activity type benefits and benefit realisation risk
				  - wider integration with City Streets, LGWM and WCC programmes
				
				SSBC lite will provide the basis of a funding application for pre-imp (define the final location and solution) and implementation of the costed targeted programme.

City to Karori Tunnel	Bowen Street SSBC	250	9.3	PT, walking and cycling improvements along Bowen Street to align with WCC Kerb and Channel renewals scheduled for 2022.
Tranche 1 – SSBC Immediate Start				
Taranaki St to John St	Taranaki St to John St SSBC	750	16.7	Identify PT and cycling enhancements to include: - Bus stop improvements - Walking improvements to improve access to bus stops Targeted PT, Walking and Cycling improvements at key intersections
Willis/Victoria Walking/Cycling Connection Ghuznee Walking/Cycling Connection	South-West CBD Improvements SSBC	1,200	22.4	Provide a network of safety PT, walking, cycling and place improvements in the South-West CBD. Taking a network approach and using WCC's network hierarchy, identify the most appropriate user priorities and correlating corridor treatments to provide appropriate levels of service

Project	Next Phase	Phase Estimate ($k)	Construction Estimate ($m)	High level scope
Dixon Walking/Cycling Connection				
City to Kilbirnie (via Hataitai)	Shelly Bay Road to Troy St PT Improvements SSBC	250	2.4	Low impact bus priority measures city bound between Shelly Bay Road and Troy Street
Bus network & operational Improvements	A specialist contract covering analysis and assessment of bus network and operational improvements as inputs into Tranche 1 SSBCs	500	-	This is a complementary activity to the programme of SSBCs to be owned and scoped by Greater Wellington in support of any bus planning activities that GW may require to undertake to inform the SSBC's. Bus network and operational expertise is a specialist service best sat outside of our traditional multidisciplinary consultants. All CS SSBC's should, as part of the options analysis process, consider network and operational improvements as well as engineering enhancements. Engineering enhancements could also have unconsidered knock-on consequences for the PT network and operations. This support contract provides enhances GW's work in this area as part of necessary inputs into the Tranche 1 SSBCs.
Quays Route (including second PT spine) Featherston Walking/Cycling Connection	Progress Feasibility testing of the Northern CBD Network Operating Plan	250	-	LGWM has been developing the MRT and Golden Mile as separate projects and City Streets identifies Featherston Street as a key walking and cycling connection also. WCC has developed a Network Operating Hierarchy for the Northern CBD however, there has not been any network testing of the hierarchy in practice. This commission aims to: - Model the network operating hierarchy with current LGWM findings to understand how the network operates. Identifying any challenges and proposing modal solutions to address these. - Identify at a high level any engineering constraints on achieving the network hierarchy/LGWM outcomes proposing alternatives and options to achieve a balanced transport system
Tranche 1 – Conditional on form and route of MRT being confirmed				
Basin to Newtown	South Central SSBC	1,500	44.5	PT, walking and cycling improvements on the north end of Taranaki St, Kent/Cambridge and Adelaide and Riddiford Street. Scale of improvements to align to WCC network operating

Project	Next Phase	Phase Estimate ($k)	Construction Estimate ($m)	High level scope
Kent/Cambridge and Basin Taranaki				hierarchy and be consistent with the confirmed MRT route and mode.
Miramar Town Centre City to Kilbirnie (via Hataitai)	City to Miramar Town Centre SSBC	1,000	13	PT, walking and cycling improvements between Kent/Cambridge and Miramar town centre with a focus on: - City to Kilbirnie: Elizabeth St, Brougham St, Pirie St, Hataitai Bus Tunnel, Waitoa Rd, Moxham Ave, Kupe St/Hamilton Rd and Kilbirne Crescent - Miramar Town Centre: Miramar Ave between Shelly Bay Road and Park Rd/Hobart St. Scale of improvements to align to WCC network operating hierarchy and be consistent with the confirmed MRT route and mode.
Newtown to Berhampore	Newtown to Berhampore SSBC	600	26.3	Includes the bus route from Newtown town centre to Island Bay including Rintoul St, Luxford St and Adelaide Road between Luxford St and Dee St. Improvements to include PT and cycling enhancements, walking improvements to improve bus stop access, safety & operational improvements at key intersections. Scale of improvements to align to WCC network operating hierarchy and be consistent with the confirmed MRT route and mode.
Quays Route (including second PT spine)		-	-	Scope to be incorporated into MRT following outcome of mode/route confirmation

Project	Next Phase	Phase Estimate ($k)	Construction Estimate ($m)	High level scope
Featherston Walking/Cycling Connection	SSBC	1,500	13.7	Scope to be informed by the WCC network operating hierarchy, confirmed MRT route and mode, Golden Mile investigations and City Streets Network Operating Hierarchy work indertaken as part of Tranche 1. Currently envisaged to include: - cycling and walking enhancements along Featherston street between Mulgrave Street and Hunter Street - walking improvements for pedestrians crossing Featherston St. - safety improvements at key intersections Scope excludes side connections linking the Golden Mile to the waterfront which are expected to be taken forward by either the Golden Mile or MRT projects.
Tranche 2 – Subject to future funding approvals considering progress on Tranche 1 and programme review				
The Terrace	Terrace SSBC	750	22.2	Includes consideration of bus, cycling and walking improvements including pedestrian crossing improvements and safety improvements at key intersections. Geographic scope covers the Terrace between Bowen Street and Ghuznee Street, and Ghuznee Street between The Terrace and Willis Street.

Project	Next Phase	Phase Estimate ($k)	Construction Estimate ($m)	High level scope
Karori Tunnel to Karori	Karori Tunnel to Karori SSBC	1,200	37.6	Includes the bus route from Karori Tunnel to the Karori town centre (Chaytor Street and Karori Road between Chaytor Street and Chamberlain Road). To include the long-term future options for the Tunnel although improvements beyond operational enhancements are presently outside the scope of activities to be delivered by City Streets. Identified improvements include: - PT and cycling enhancements along the route - Walking improvements to improve bus stop access - Safety improvements at key intersections
Vivian Walking/Cycling Connection	Vivian/Tory Precinct SSBC	750	4.9	Geographic scope includes Vivian Street between Taranaki Street and Kent / Cambridge Terrace, and Tory Street between between Vivian Street and Courtenay Place and includes consideration of connections to Jessie Street, College Street, Lorne Street, and Tennyson Street. The SSBC purpose is to take a network approach and, by using WCC's network hierarchy, identify the most appropriate user priorities and correlating corridor treatments to provide appropriate levels of service and provide a safe and connected east-west cycling and walking network. The project builds from the earlier Ghuznee and Dixon walking / cycling connections to provide a connected network. Improvements include: - Cycling and walking enhancements along the route - Safety improvements at key intersections - Amenity improvements
City to Karori Tunnel	Bowen Street to Karori Tunnel SSBC	300	39.3	PT, walking and cycling improvements from Tinakori Road at Bowan Street, along Glenmore Street to Karori Tunnel.

12 August 2021

City Streets

Indicative Business Case

Document control record

Document prepared by NB Consulting Ltd

Document control

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Current revision	**0**					

Approval

Author signature		Approver signature	
Name	Neil Cree	Name	
Title		Title	

Executive Summary

Overview

Let's Get Wellington Moving (LGWM) is a joint initiative between Wellington City Council (WCC), Greater Wellington Regional Council (GWRC), and Waka Kotahi NZ Transport Agency (Waka Kotahi). The vision for LGWM is to build **a great harbour city, accessible to all, with attractive places, shared streets, and efficient local and regional journeys**. To realise the vision, the LGWM partners are working together to deliver a transformational city-shaping transport investment programme focused on enabling efficient and effective movement by moving more people with fewer vehicles.

The Programme Business Case (PBC), published in June 2019, identified Mass Rapid Transit and Strategic Highways as key components of the recommended a programme of improvements. Complementing and supporting those is a substantial programme of investment in public transport, walking, cycling and amenity/place making to provide enhanced travel choice with a strong focus on the central city and effective and efficient connections between the central city and key sub-urban centres. This package of public transport, walking, cycling, and amenity improvements is collectively known as City Streets.

WCC and GWRC has undertaken a substantial number of complementary investigations and analysis which are closely linked to City Streets and have been brought together in this IBC to develop the recommended package. This includes WCC's Place and Movement Framework, draft Network Operating Framework, and the Bus Priority Action Plan (BPAP).

This Indicative Business Case (IBC) recommends a $350m investment (including contingency) in a package of public transport (bus), active mode, amenity and safety projects which is predicted to increase PT patronage and cycling by 4,000 and 3,000 trips per day respectively, reduce CO_2 emissions by 1,000 tonnes per year and improve over 12km of walking infrastructure. The package also has the potential to reduce the ten-year social cost of injuries by $296m. Overall, the recommended City Streets package is envisaged to increase PT and cycling commute mode share from Wellington City to the central area from 33.5% to 37.2% and increase the mode share for PT and cycling commuting within Wellington City from 19.8% to 22.4%.

Geographic Scope

The map shown outlines the geographical scope for City Streets. The scope is based on the LGWM programme area but expanded to include key strategic public transport corridors coming into and through the central city and the revised Central City area emerging from Planning for Growth. The geographic extent is consistent with the Wellington City Bus priority action plan and reflects the significant overlap between bus priority corridors, the strategic cycling network, and a potential mass rapid transit route. However, the geographic extent is larger than that approved by Waka Kotahi as shown.

The extension of the geographic scope to include additional Strategic Public Transport Corridors and extensions to the start/end of the routes is to ensure that we give effect to the overarching objective of City Streets and the LGWM programme of moving more people in fewer cars. By including key opportunities for mode shift in our long list we are not precluding potential opportunities emerging by limiting ourselves to a geographic scope based solely on the BPAP which had a single mode focus.

Any proposed investment outside of the Waka Kotahi approved scope as part of IBC funding approvals will require further approval.

City Streets geographic scope relative to Waka Kotahi approved scope

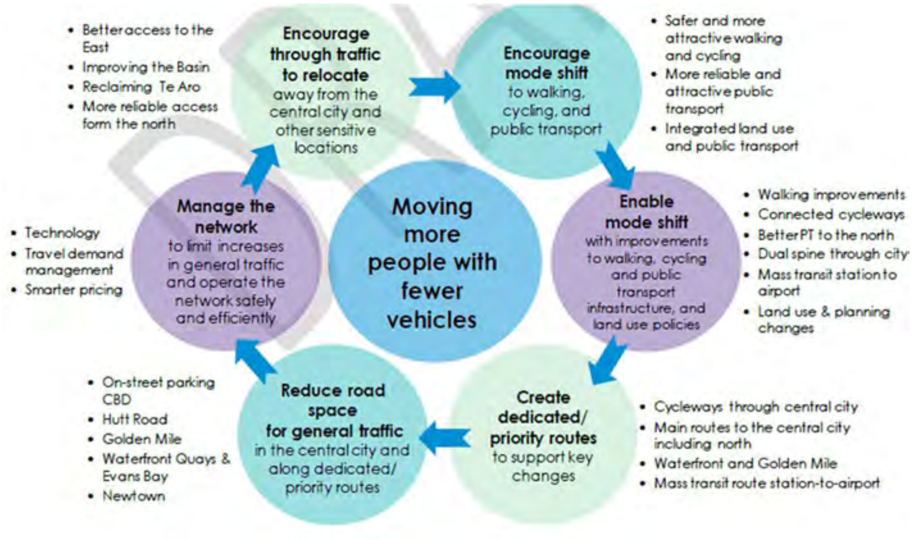
Strategic Context

To deliver on the vision of LGWM five programme objectives have been agreed as shown below.

What outcomes are we seeking?				
Liveability	Access	Carbon emissions and mode shift	Safety	Resilience
What are our objectives? A transport system that …				
Enhances urban amenity and enables urban development outcomes	Provides more efficient and reliable access for users	Reduces carbon emissions and increases mode shift by reducing reliance on private vehicles	Improves safety for all users	Is adaptable to disruption and future uncertainty

LGWM investment objectives

The LGWM PBC identified the need to consider and improve Wellington's streets particularly in relation to journeys to, from, within, and through the central city and City Streets forms part of a suite of proposed integrated and holistic transport system improvements as shown below.



LGWM recommended programme summary

Critical to the vision and objectives of LGWM is an approach focussed on moving more people with fewer vehicles. Whilst Wellington already has a high number of people who use public transport and active modes when travelling into the central city the opportunity presented by LGWM and the City Streets package is to encourage even more people to travel via buses and active modes.

To improve access in, to and through the central city, the LGWM PBC identified approximately $350 million of investment towards the City Streets package[1], as part of the indicative package. The indicative City Streets package and investment was subsequently endorsed by central and local government partners for further investigation through the business case process.

[1] LGWM PBC (21 June 1029) Table 18

The problems and opportunities which City Streets aims to address have been investigated and prioritised and, to provide focus for the City Streets package three specific but complementary problem statements have been identified:

- Journeys are slow and less predictable, due to modes competing for space in constrained corridors, which is hindering the uptake of multimodal options further exacerbating poor safety and health outcomes along with declining transport levels of service.
- Wellington's future transport system and places will become less accessible and attractive with growing demand for travel through, from, and in the central city threatening Wellington's position as a great harbour city and the economic and cultural heart of the region.
- The attractiveness of public transport, walking and cycling relative to the private car is not yet sufficient to stimulate a step change in mode shift away from private vehicles.

Whilst the City Street business case is primarily focused on addressing these problems and improving the levels of service for public transport and active modes, as well as placemaking, as the package is implemented, there are several opportunities to integrate City Street solutions with the wider LGWM programme and other investment priorities of partner agencies, to deliver a holistic and multimodal transport system. These opportunities include:

- progressing City Street improvements ahead of major disruption from the LGWM Mass Rapid Transit and Strategic Highways packages, to ensure quality travel choices are available during construction of these major system upgrades.
- developing interim bus improvements along the agreed MRT route until the MRT is built to help improve the efficiency and attractiveness of bus journeys accessing the city. This will need to be carefully investigated as this can be problematic when it comes to reconfiguring such facilities for MRT with the associated need to potentially relocate a significant number of bus services.

- supporting improvements to the Golden Mile by providing additional public transport access within the central city via a second public transport spine parallel to the Golden Mile
- leveraging City Streets opportunities to support and enhance LGWM travel behaviour change package e.g., improved bus and cycling levels of service delivered through city streets and will support travel behaviour change efforts to reduce car use.
- aligning delivery with WCC Network Operating Framework to optimise the network for all users.
- other major infrastructure services works/planned upgrades in affected corridors to minimise disruption, optimise construction efficiencies and project benefits e.g., planned pipe upgrades by Wellington Water on Kent / Cambridge; PT or cycling improvements planned by WCC outside of the scope of City Streets.
- Continuing to re-build public trust and confidence in the City's bus services post Covid-19 and the network changes from 2018.

Over time, the City Streets package will enable Wellington's streets to be an even more integral part of the city — to safely connect people, places, and businesses, and provide character — as well as being spaces that people can enjoy and interact within as part of their everyday lives.

Supporting policies and strategies

In addition to LGWM there are four 'vision' level strategic influences on the future form of Wellington city and the transport system that supports it. These are:

- Wellington Regional Land Transport Plan 2015 (RLTP)[2] – which highlights the need to deliver "*a safe, effective and efficient land transport network that supports the region's economic prosperity in a way that is environmentally and socially sustainable*" and includes a whole of system regional target seeking a 40 percent increase in public transport and active mode share, a 35 percent reduction in transport generated carbon emissions, and a 40 percent reduction in deaths and serious injuries on our roads by 2030.
- Our City Tomorrow (2017)[3] – Developed by WCC with five city goals that have come from engagement with the community, and which headline all city strategies - Compact, Resilient, Vibrant and Prosperous, Inclusive and Connected, and Greener.
- Wellington City Spatial Plan (2020)[4] – A work in progress by WCC that provides direction and actions to the future shape of the city providing for projected growth. The emerging WCSP has been integrated into City Streets thinking in a manner which is consistent with the rest of the LGWM programme. The WCSP will also complement the Regional Growth Framework (RGF), which focusses on the wider Wellington region and the Horowhenua District, and is at an early stage of development, with a range of options being currently developed and assessed, before being tested with the wider community.
- Te Atakura blueprint (2019) and implementation plan (2020) - commits WCC to ensuring Wellington City becomes a net zero carbon city by 2050 – including making the most significant reductions by 2030. Transport emissions are responsible for over half of Wellington's emissions – thus is a key action area. Further, Wellington City Council has directed officers to prepare a report investigating a Wellington Fossil-Fuel Free Central City by 2025 to be reported back to Councillors in September 2021.
- The City Streets goals of reducing single car occupancy, providing attractive walking, cycling and public transport alternatives and enhancing liveability of places are well aligned to the transport system outcomes and strategic priorities sought by Government Policy Statement and Waka Kotahi's associated strategies and plans, in particularly, Aratkai and Keeping Cities Moving: A plan for mode shift. The City Streets programme is explicitly

[2] http://www.gw.govt.nz/assets/Transport/Regional-transport/RLTS/RLTS2010-docs/WRLTS-2010-2040-Doco-WEB.pdf

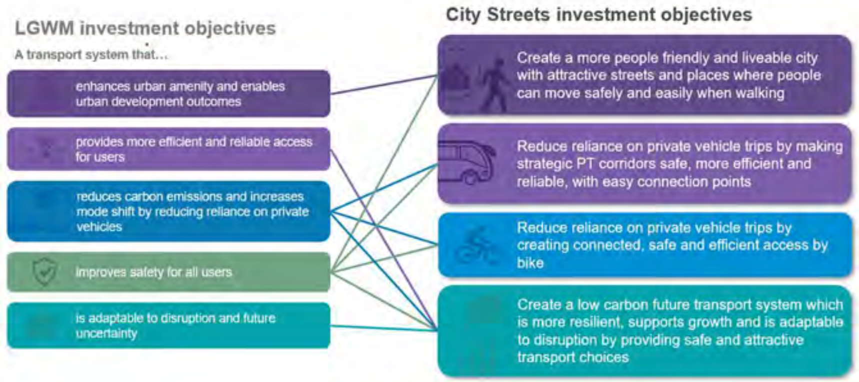
[3] https://wellington.govt.nz/your-council/projects/planning-for-growth/our-city-tomorrow

[4] https://planningforgrowth.wellington.govt.nz/spatial-plan

referenced as a focus area in the Waka Kotahi Wellington regional mode shift plan.

Investment Objectives

The City Streets package has four investment objectives which are aligned to the overarching programme objectives. The investment objectives and alignment to the programmes are shown in the figure below.



Connections to the City Streets investment objective

Methodology

The five-stage methodology adopted for the City Streets IBC is summarised below. In broad terms, the methodology is based on assessing current levels of service against aspirational levels of service for walking, cycling, public transport, placemaking and safety. Different scenarios have then been developed which prioritises investment towards different areas of focus based on the scale of level of service gap and the potential people affected.

Overall City Streets Methodology

To develop different investment scenarios in a systematic way the study area was divided into 163 network sections and over 40,000 data points collected from over 15 data sources to build an assessment tool which considered levels of service for:

- Public Transport
- Walking
- Safety
- Cycling
- Amenity/place
- Growth

The factors considered in the tool are shown in the table below.

Summary of factors considered for each of the prioritisation criteria

Prioritisation criteria	Factors considered	
	On key suburban corridors	In the city centre
Public transport level of service	• Bus travel time delay • Bus travel time variability • Bus patronage	
Cycling level of service	• Cycling level of service • Gradient • Cyclist volumes	• Cycling level of service • Cycle permeability (one-way streets) • Cyclist volumes
Walking level of service	• Walking level of service for pedestrians accessing bus stops • Bus boarding and alighting volumes	• Pedestrian delay • Pedestrian severance • Pedestrian permeability (lack of pedestrian connections between streets) • Current and aspirational place values • Pedestrian volumes
Amenity and place	• Aspirational place values for town centres	• Current and aspirational place values
Safety	• Collective and Personal Risk ratings • Social cost of injuries • Number of vulnerable user crashes	
Access to support growth	• Planning for Growth estimated population growth served by the corridor	

Once collated and brought together in the prioritisation tool, the data — through a series of weightings — has been combined for each of the six key dimensions and assigned a score between 0 to 100, with 0 representing the lowest priority (no to minimal problems / opportunities on the segment) and 100 representing the highest priority (the most problems / opportunities relative to other locations in the City Streets scope). This ensured that the scores for all six of the criteria used the same scale, where the location with the highest priority under that criterion had a score of 100.

Accompanying the prioritisation tool, a solutions toolkit has been developed. The purpose of the toolkit is to provide a template solution for deriving costs and benefits for the purposes of the IBC. Actual interventions for specific projects will need to be investigated more thoroughly at the detailed business case phase.

The solutions are grouped into five categories of interventions with broad sub-categories and options below them:

Bus priority interventions	**Pedestrian interventions**
• Bus stop improvements • In-lane bus priority measures • Corridor improvements • Signal improvements	• Footpath improvements • Intersections • Midblock crossings • Signal improvements • Accessways
Cycle interventions	**General safety interventions**
• Midblock cycling facilities • Intersections • Midblock crossings • Signal improvements • Accessways	• Traffic calming • Intersections
Amenity improvements	
• Pedestrian facility upgrades • Amenity upgrades for transport users	

By bringing together the prioritisation tool and solutions toolkit the outcome is a populated baseline prioritisation tool which has level of service gap data and indicative interventions with associated costs for each of the 163 network sections included in the City Streets geographical scope.

Using the prioritisation tool, seven investment scenarios have been investigated:

- Balanced options (A-C) – treating all levels of service gaps broadly equally with three scenarios considered to test the sensitivity of the tool to incremental changes in the balanced weightings.
- Public transport corridor focus – sections prioritised based on PT LoS gaps
- Walking / cycling corridor focus - sections prioritised based on walking/cycling LoS gaps only.
- LGWM indicative funding – a package built bottom up based on the indicative modal funding envelopes arising from the PBC. Two scenarios were tested:
  - Public transport corridors first – where the worst performing public transport sections were selected first up to an indicative $250m level of investment and then from the remaining sections the combined worst performing walking and cycling sections to an indicative investment level of $100m.
  - Walking/cycling corridors first – where the worst performing walking and cycling sections in the central city were selected up to $100m with the remaining sections being prioritised on the basis of the worst public transport levels of service up to $250m.

Irrespective of the weightings given to any dimension City Streets takes a multi-modal approach to addressing the most appropriate issues across all modes.

When comparing the balanced options A-C, it was found the weightings for Options A-C had a relatively minor impact on the overall prioritisation of sections and so only one (Balanced option C) was taken forward. Similarly, when comparing the two LGWM indicative funding scenario options (PT first versus walking/cycling first) there was no fundamental difference in overall priorities observed. On that basis the LGWM indicative funding scenario with PT first was taken forward to more detailed analysis thus reducing the number of scenarios taken forward to a more detailed assessment to four.

The four scenarios taken forward to more detailed assessment and modelling against two funding thresholds of $250m and $400m were:

- Scenario 1 – Balanced C
- Scenario 2 – PT corridor focus
- Scenario 3 – Walking/Cycling corridor focus
- Scenario 4 – PBC aligned – PT first.

The result of a multi-criteria assessment for the four shortlisted scenarios is outlined below.

For each scenario, an indicative upper and lower bound package has been developed to inform the assessment of performance of each package. The upper and lower limits have been developed to indicative levels of investment of $250m at the lower end and $400m at the upper to align to the LGWM PBC for City Streets. Differences between scenarios have occurred due to the bundling of projects and the project costs, drawn from the toolkit, not precisely matching the upper and lower bound limits. The table highlights the best performing scenarios in both the high and low scenarios separately.

Shortlisted scenario multi-criteria assessment

		Scenario 1: Balanced (C)		Scenario 2: PT corridors		Scenario 3: W&C corridors		Scenario 4: PBC Aligned – PT	
		Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Costs and benefits	Scenario cost ($m):	237	376	246	390	239	399	249	400
	Scenario BCR:	2.2	1.5	1.7	1.2	2.0	1.4	1.9	1.5
	$m per km of investment:	8.7	8.5	7.7	8.2	9.9	8.9	7.0	8.1
% of City Streets base network improved	PT network:	37%	61%	55%	82%	31%	61%	52%	67%
	Central city network:	50%	66%	21%	42%	47%	67%	49%	74%
	Total network:	37%	60%	43%	64%	33%	61%	48%	67%
City Streets investment objectives	**MCA sub-criteria**								
Create a more people friendly and liveable city with attractive streets and places where people can move safely and easily when walking	Urban Amenity (Length of streets with amenity improvements, km)	15	20	10	13	12	17	12	18
	Walking benefits (Quality of facility and delay reduction benefits $m)	240	283	132	165	215	265	213	292
	Pedestrian levels of service (km of streets with improved walking infrastructure)	12	17	4	8	12	17	12	19
Reduce reliance on private vehicle trips by making strategic PT corridors safe, more efficient, and reliable, with easy connection points	Average ratio of travel times between PT and car on strategic routes (Do minimum = 2.3)	2.0	1.9	1.8	1.8	2.1	1.8	1.9	1.8
	PT network reliability ($m)[1]	20.5	25.4	31.9	34.4	17.6	27.9	24.9	32.3
	Additional daily bus trips	2,700	3,500	4,500	5,000	2,400	4,000	3,400	4,600
Reduce reliance on private vehicle trips by creating connected, safe, and efficient access by bike	Cycling level of service (km of streets with improved cycling infrastructure)	18	29	16	29	19	32	20	32
	Forecast new daily cycle users	3,000	3,000	2,500	2,600	2,800	2,900	2,600	3,000
Create a low carbon future transport system which is more resilient, supports growth and is adaptable to disruption by providing safe and attractive transport choices	Injury reduction potential - Ten-year social cost of injuries in treated sections ($m)	289	400	278	381	219	358	307	409
	PT and cycling commute mode share uplift from Wellington city to central area (base mode share =33.5%)	+2.9%	+3.3%	+3.4%	+3.8%	+2.7%	+3.7%	+2.8%	+3.6%
	PT and cycling commute mode share uplift within Wellington City (base mode share =19.8%)	+2.2%	+2.4%	+2.6%	+2.8%	+2.0%	+2.6%	+2.2%	+2.8%
	Transport related CO_2 emissions (tonnes saved p.a.)	960	1030	970	1020	890	1050	950	1130

- Best performing sub-criteria at lower bound   - Best performing sub-criteria at upper bound

Present value of benefits estimated at 38% of direct PT user benefits through Bus Priority Action Plan PBC.

Recommended Package

Following the multi criteria assessment the PT corridor focussed package was selected but with refinement.

The MCA shows that all scenarios contribute to the outcomes of City Streets but with emphasis given to differing modes. The PT corridor focussed package performs well across several criteria at both lower and upper bound funding levels. This package is estimated to make the most significant overall contribution to total mode shift with the largest total predicted uptake of new bus users of around 4,500 - 5,000 per day. However, with the focus on enhancing the key public transport corridors into and through the central city for public transport and cycling, the scenario performs the weakest in terms of overall benefits to walking (in terms of total kilometres treated) with the Balanced scenario generally performing best against City Streets liveability goals. All scenarios perform similarly in relation to their potential to improve safety and is not a distinguishing factor.

The balanced scenario and PBC aligned scenario perform similarly with the balanced scenario performing better at lower funding levels than the PBC aligned scenario. Economically, the balanced scenario performs best overall.

At the level of analysis undertaken it is difficult to differentiate between the packages on the relative reduction of transport CO_2 emissions, although it is clear the more investment in public transport, walking and cycling the greater and more significant the reduction in CO_2 emissions is.

Scenario 2 makes the largest contribution to mode-shift which is central to the goals of LGWM programme and targets investment to the key movement corridors in the city which connects existing suburbs and future growth nodes of Wellington with the central city. The analysis demonstrates there is significant scope to enhance these corridors to drive greater mode shift to cycling and public transport.

As noted, a drawback of Scenario 2 as that the focus for investment in the Central City for walking and amenity is limited to the critical movement corridors only, many of which overlap with wider proposed activities in the LGWM programme, in particularly MRT. This is reflected in the MCA through the marked reduction in walking benefits for Scenario 2 relative to the other scenarios. To address these deficiencies, Scenario 2 has been further developed to:

- Enhance the overall walking and cycling outcomes achieved by the package by including:
    - east-west walking and cycling connections within the Central City
    - Enhance walking improvements to key people-moving corridors.
- improve the overall value for money of the package by removing lower priority enhancements on the outer fringes of the bus network.
- Include relevant and high-priority integration considerations arising from delivery of the other LGWM components.
- Amalgamate corridor sections to form coherent ‘projects’.

The resulting recommended programme consists of 19 projects supplemented by supporting studies and a programme of targeted improvements. The package has a mid-point (P50) total cost of $284m (including business cases, pre-implementation and implementation costs) and high-cost estimate of $471.9m.

At the mid-point cost, the package has a BCR of 2.4. The midpoint cost differs marginally in comparison to the MCA analysis due to the decision to exclude the Quays route from the City Streets package at this time given its significant co-dependence on MRT decisions. The programme, along with proposed next steps following endorsement of the IBC are outlined in the table below divided into First Tranche and Second Tranche activities.

Those projects identified for delivery as part of the first tranche are further divided into:

- Projects for which there is a desire by the partners to commit to construction start in the first three years.

- Projects whose start would be conditional on final decisions around mode and route of MRT being confirmed.

For the purpose of the IBC activities have been defined as SSBC/SSBC-lite. Clarity on the level of detail required at the next stage, and hence the most appropriate business case pathway, will be determined during the scoping stage and engagement with project partners.

The recommended package is of a sufficient scale that it is considered to best manage partners' cost risk associated with the package and minimise potential adverse stakeholder feedback if programme components become unaffordable.

The recommended package proposes to treat 50% of the central city network and 46% of the public transport network in scope for City Streets. This covers parts of the network that currently have a ten-year social cost of injuries of around \$300m. The recommended programme is envisaged to lead to around 3,000 new daily cycle users and, through improvements to PT reliability, over 4,000 new daily bus trips leading to mode share uplifts of 3.7% for trips from Wellington city to the central city and a reduction in transport related CO_2 emissions of over 1,000 tonnes per annum.

The table below demonstrates how City Streets contributes to the objectives of the wider LGWM programme using from the MCA process.

Indicative performance of recommended City Streets package against the LGWM investment objectives

LGWM Investment Objectives **A transport system that …**	**City Streets MCA measure**	
enhances urban amenity and enables urban development outcomes	% of central city network treated	50%
	Length of streets with amenity improvements (km)	12
	Walking benefits (Quality of facility and delay reduction benefits (\$m)	452.2
provides more efficient and reliable access for users	Pedestrian levels of service - km of streets with improved walking infrastructure	12
	Cycling level of service (km of streets with improved cycling infrastructure)	24
reduces carbon emissions and increases mode shift by reducing reliance on private vehicles	Average ratio of travel times between PT and car on strategic routes (Do minimum = 2.3)	1.9
	PT network reliability (\$m)	29.2
	Additional daily bus trips	4,095
	Forecast new daily cycle users	3,000
	PT and cycling commute mode share uplift from Wellington city to central area (base mode share =33.5%)	3.7%
	PT and cycling commute mode share uplift within Wellington City (base mode share =19.8%)	2.6%
	Transport related CO_2 emissions (tonnes saved p.a.)	1,080
improves safety for all users	Injury reduction potential - Ten-year social cost of injuries in treated sections (\$m)	296
is adaptable to disruption and future uncertainty	% of City Streets base network improved (total network)	43%

Recommended City Streets package

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope
Tranche 1 – Immediate Start with partner desire to commit to construction start within 3 Years					
Johnsonville Ngauranga Gorge	Johnsonville – Ngauranga PT Improvements SSBC/SSBC-lite	1.62	20.0	32.7	Bus route improvements between the Johnsonville Bus Hub and Hutt Road with associated cycling enhancements, Walking to improve bus stop access and safety improvements.
Targeted Improvements	BPAP Targeted Improvements SSBC lite	0.15	2.25	-	Take the Bus Priority Action Plan recommendations regarding Bus Stop improvements and develop this into a cohesive programme with identified costs and benefits with a focus on commencing in Karori. The SSBC lite will: - confirm which stops to rationalise (ensuring best strategic outcome is achieved and integration with wider LGWM and WCC/GW programmes has been considered) - identify options to be assessed at each stop – will include bus stop relocation/rationalisation, bus stop enhancements (including geometry or customer experience improvements), pedestrian access enhancements - Indicative costs and benefits of the programme - Costed delivery programme SSBC lite to provide the basis of funding for pre-imp (define the final solutions) and implementation of the costed programme. Whilst an indicative estimate of $2.25m has been assumed for the IBC, this could change as an outcome of the SSBC lite if it is found that there is a better value proposition in investing more targeted improvements.
	Other Targeted Improvements SSBC lite	0.15	9.0	-	Identifies a package of transport system targeted improvements which improve PT, Walking/Cycling, amenity and safety. The activities forming the package should be low cost, easily implementable with benefits known to outweigh costs. Activities to be considered include, amongst others: - timing changes at traffic lights - Bus phase / queue jumps at traffic lights - Hours of operation of clearways/bus lanes - Minor pedestrian improvements - Minor safety at high-risk intersections

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope

					- Cycle parking
					
					The SSBC lite will:
					- confirm the range of measures forming the targeted programme (ensuring best strategic outcomes are achieved and integration with wider LGWM and WCC/GW programmes has been considered)
					- identify the scale of opportunity for improvement for each activity type and demonstrate the confirmed benefits associated with an activity type, setting out the necessary conditions for those benefits to be guaranteed to be realised
					- provide indicative pre-implementation and and implementation costs for each activity type
					- provide a 3, 6 and 10 year recommended programme of activity types taking into consideration:
					  - partners and sectors capacity to deliver
					  - activity type benefits and benefit realisation risk
					  - wider integration with City Streets, LGWM and WCC programmes
					
					SSBC lite will provide the basis of a funding application for pre-imp (define the final location and solution) and implementation of the costed targeted programme.
					
					Whilst an indicative estimate of $9.0m has been assumed for the IBC, this could change as an outcome of the SSBC lite if it is found that there is a better value proposition in investing more targeted improvements.

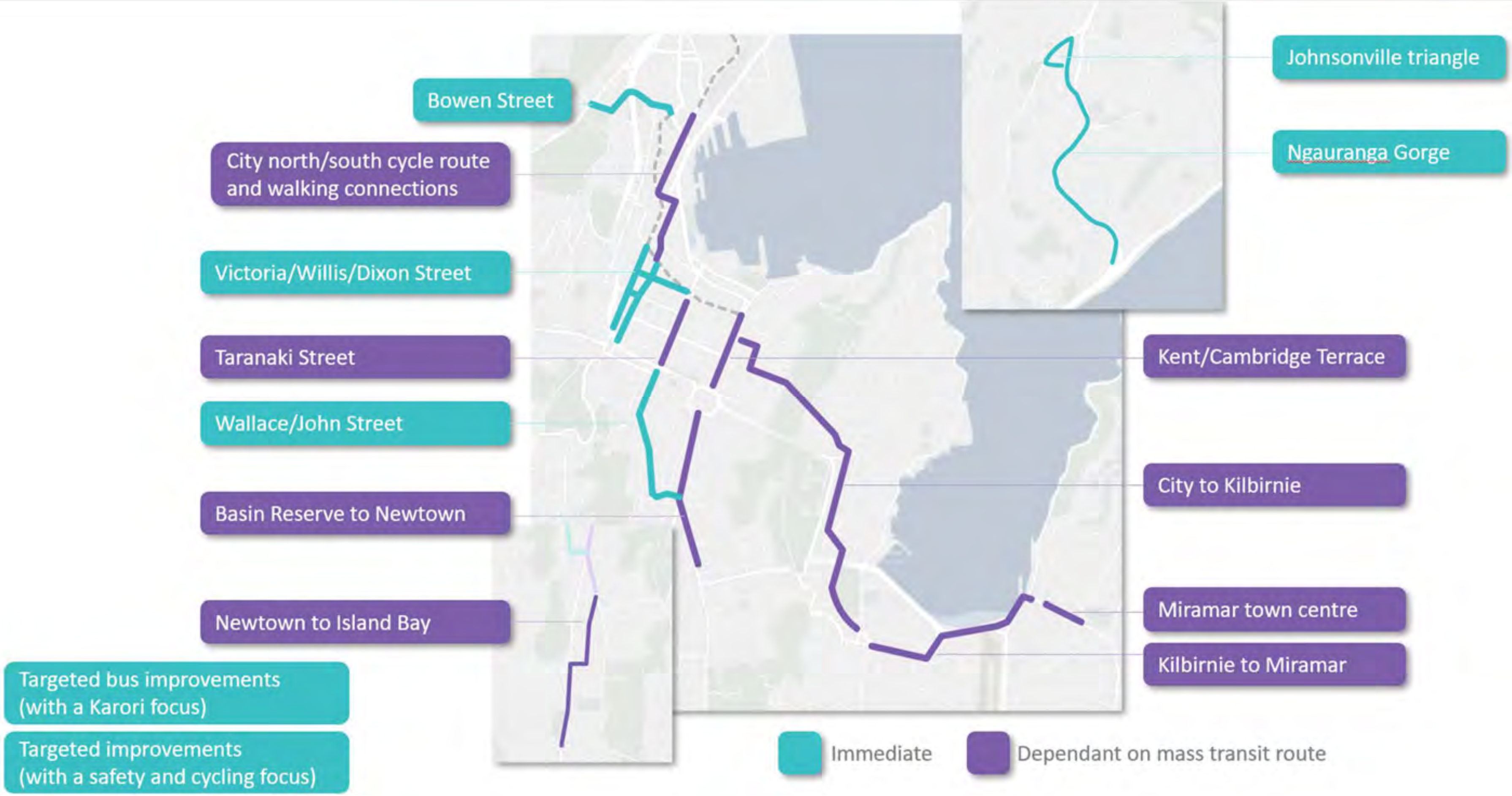
City to Karori Tunnel	Bowen Street SSBC/SSBC-lite	0.69	9.0	16.1	PT, walking and cycling improvements along Bowen Street to align with WCC Kerb and Channel renewals scheduled for 2022.
Tranche 1 – SSBC Immediate Start					
Taranaki St to John St	Taranaki St to John St SSBC/SSBC-lite	1.60	17.0	28.1	Identify PT and cycling enhancements to include: - Bus stop improvements - Walking improvements to improve access to bus stops

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope
					Targeted PT, Walking and Cycling improvements at key intersections
Willis/Victoria Walking/Cycling Connection Ghuznee Walking/Cycling Connection Dixon Walking/Cycling Connection	South-West CBD Improvements SSBC/SSBC-lite	2.38	22.0	38.1	Provide a network of safety PT, walking, cycling and place improvements in the South-West CBD. Taking a network approach and using WCC's network hierarchy, identify the most appropriate user priorities and correlating corridor treatments to provide appropriate levels of service. The scope will need to take cognisance of the Golden Mile improvements, the potential impact of future MRT stations in the vicinity and Wellington City Council's commitment to the Pōneke Promise (https://wellington.govt.nz/your-council/projects/the-poneke-promise) actions for Te Aro Park.
Kilbirnie to Miramar cutting*	Shelly Bay Road to Troy St PT Improvements SSBC/SSBC-lite	0.33	2.0	11.3	Low impact bus priority measures city bound between Shelly Bay Road and Troy Street ** Included in the package to address a known PT reliability improvement in a high priority bus route servicing the airport.*
Bus network & operational Improvements	A specialist contract covering analysis and assessment of bus network and operational improvements as inputs into Tranche 1 SSBCs	500	-	-	This is a complementary activity to the programme of SSBCs to be owned and scoped by Greater Wellington in support of any bus planning activities that GW may require to undertake to inform the SSBCs. Bus network and operational expertise is a specialist service best sat outside of our traditional multidisciplinary consultants. All CS SSBCs should, as part of the options analysis process, consider network and operational improvements as well as engineering enhancements. Engineering enhancements could also have unconsidered knock-on consequences for the PT network and operations. This support contract provides enhances GW's work in this area as part of necessary inputs into the Tranche 1 SSBCs.
Quays Route (including second PT spine)	Progress Feasibility testing of the Northern CBD Network Operating Plan	250	-	-	LGWM has been developing the MRT and Golden Mile as separate projects and City Streets identifies Featherston Street as a key walking and cycling connection also. WCC has developed a Network Operating Hierarchy for

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope
Featherston Walking/Cycling Connection					the Northern CBD however, there has not been any network testing of the hierarchy in practice. This commission aims to: - Model the network operating hierarchy with current LGWM findings to understand how the network operates. Identifying any challenges and proposing modal solutions to address these. - Identify at a high level any engineering constraints on achieving the network hierarchy/LGWM outcomes proposing alternatives and options to achieve a balanced transport system
Tranche 1 – Conditional on form and route of MRT being confirmed					
Basin to Newtown Kent/Cambridge and Basin Taranaki	South Central SSBC/SSBC-lite	3.29	45.0	72.6	PT, walking and cycling improvements on the north end of Taranaki St, Kent/Cambridge and Adelaide and Riddiford Street. Scale of improvements to align to WCC network operating hierarchy and be consistent with the confirmed MRT route and mode.
Miramar Town Centre City to Kilbirnie (via Hataitai)	City to Miramar Town Centre SSBC/SSBC-lite	2.13	13.0	28.9	PT, walking and cycling improvements between Kent/Cambridge and Miramar town centre with a focus on: - City to Kilbirnie: Elizabeth St, Brougham St, Pirie St, Hataitai Bus Tunnel, Waitoa Rd, Moxham Ave, Kupe St/Hamilton Rd and Kilbirne Crescent - Miramar Town Centre: Miramar Ave between Shelly Bay Road and Park Rd/Hobart St. Scale of improvements to align to WCC network operating hierarchy and be consistent with the confirmed MRT route and mode.
Newtown to Berhampore	Newtown to Berhampore SSBC/SSBC-lite	1.90	26.0	41.4	Includes the bus route from Newtown town centre to Island Bay including Rintoul St, Luxford St and Adelaide Road between Luxford St and Dee St. Improvements to include PT and cycling enhancements, walking improvements to improve bus stop access, safety & operational improvements at key intersections.

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope
					Scale of improvements to align to WCC network operating hierarchy and be consistent with the confirmed MRT route and mode.
Quays Route (including second PT spine)	-	-	-	-	Scope to be incorporated into MRT following outcome of mode/route confirmation
Featherston Walking/Cycling Connection	Featherston Walking/Cycling Connection SSBC/SSBC-lite	2.09	14.0	21.7	Scope to be informed by the WCC network operating hierarchy, confirmed MRT route and mode, Golden Mile investigations and City Streets Network Operating Hierarchy work indertaken as part of Tranche 1. Currently envisaged to include: - cycling and walking enhancements along Featherston street between Mulgrave Street and Hunter Street - walking improvements for pedestrians crossing Featherston St. - safety improvements at key intersections Scope excludes side connections linking the Golden Mile to the waterfront which are expected to be taken forward by either the Golden Mile or MRT projects.
Tranche 2 – Subject to future funding approvals considering progress on Tranche 1 and programme review					
The Terrace	Terrace SSBC/SSBC-lite	1.63	22.0	37.2	Includes consideration of bus, cycling and walking improvements including pedestrian crossing improvements and safety improvements at key intersections. Geographic scope covers the Terrace between Bowen Street and Ghuznee Street, and Ghuznee Street between The Terrace and Willis Street.

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope
Karori Tunnel to Karori	Karori Tunnel to Karori SSBC/SSBC-lite	2.72	38.0	61.4	Includes the bus route from Karori Tunnel to the Karori town centre (Chaytor Street and Karori Road between Chaytor Street and Chamberlain Road). To include the long-term future options for the Tunnel although improvements beyond operational enhancements are presently outside the scope of activities to be delivered by City Streets. Identified improvements include: - PT and cycling enhancements along the route - Walking improvements to improve bus stop access - Safety improvements at key intersections
Vivian Walking/Cycling Connection	Vivian/Tory Precinct SSBC/SSBC-lite	0.95	5.0	8.0	Geographic scope includes Vivian Street between Taranaki Street and Kent / Cambridge Terrace, and Tory Street between between Vivian Street and Courtenay Place and includes consideration of connections to Jessie Street, College Street, Lorne Street, and Tennyson Street. The SSBC purpose is to take a network approach and, by using WCC's network hierarchy, identify the most appropriate user priorities and correlating corridor treatments to provide appropriate levels of service and provide a safe and connected east-west cycling and walking network. The project builds from the earlier Ghuznee and Dixon walking / cycling connections to provide a connected network. Improvements include: - Cycling and walking enhancements along the route - Safety improvements at key intersections - Amenity improvements
City to Karori Tunnel	Bowen Street to Karori Tunnel SSBC/SSBC-lite	1.71	39.0	62.4	PT, walking and cycling improvements from Tinakori Road at Bowan Street, along Glenmore Street to Karori Tunnel.


Bowen Street
City north/south cycle route and walking connections
Victoria/Willis/Dixon Street
Taranaki Street
Wallace/John Street
Basin Reserve to Newtown
Newtown to Island Bay
Targeted bus improvements (with a Karori focus)
Targeted improvements (with a safety and cycling focus)
Johnsonville triangle
Ngauranga Gorge
Kent/Cambridge Terrace
City to Kilbirnie
Miramar town centre
Kilbirnie to Miramar
Immediate
Dependant on mass transit route

Financing the recommended package

Whilst the LGWM programme has completed a comprehensive inventory of funding tools in use across the world, no decisions about any potential new funding tools have been taken and it is expected further investigations into new funding tools will occur ahead of the start of construction of higher cost components of the LGWM programme (which could include some City Streets components) as part of clarifying the level of spend the funding partners can commit to.

The Council partners have included funding for the next phases of work expected over the next few years in their long-term plans using their existing rating tools.

Waka Kotahi is expected to fund the central government share from the NLTF for the next phase of work. This funding requirement is expected to be included in the National Land Transport Programme (NLTP).

Whilst there is an explicit LGWM programme work stream to provide funding partners with analysis to assist them in agreeing a more enduring agreement for cost allocation, for the next phases (SSBCs & targeted improvements) of the City Streets package the interim agreed funding arrangement, documented in schedule 5 of the 2020 LGWM Relationship and Funding agreement (RFA) to allocate cost shares to funding partners, will be used.

The table below shows the P50 cost estimate for the recommended programme in base year values ($2020) and do not account for inflation or discounting.

Pre-Implementation / Implementation costs for recommended programme

Cost source	Total expected project cost ($)
SSBC	**$24,050,000**
Main Consultancy/Contract	$16,600,000
Additional Design (from Pre-imp)	$1,370,000
Reviews & Audits (Safety, Peer, Cost)	$520,000
Engagement / Consultation	$3,060,000
City Streets internal management costs PM's etc	$2,500,000
Pre-Implementation	**$21,895,000**
Main Consultancy/Contract	$18,242,500
Reviews & Audits (Safety, Peer, Cost)	$632,500
Engagement / Consultation	$530,000
City Streets internal management costs PM's etc	$2,490,000
Implementation	**$238,055,000**
Main Consultancy/Contract	$234,530,000
City Streets internal management costs PM's etc	$3,525,000
Contingency Property	**$3,000,000**
Programme Contingency	**$63,000,000**
Total Programme Cost	**$350,000,000**

Commercial considerations

The City Streets programme is reasonably generic in nature and comparable to other PT, cycling, walking and amenity improvements that have been delivered in Wellington and across the country in urban environments. As such no capability constraints are envisaged. There could be market constraints within Wellington if activities are not programmed and procured within the wider LGWM context or without regard to wider sectors' procurement activities. It is anticipated that expertise will be required for City Streets in the areas of:

- Public engagement and communications
- Multi-modal design in constrained corridors

Whilst the activities forming the City Streets package are relatively standard in nature several approaches have been considered for procuring professional services for the next stages of development. As part of an initial procurement options assessment for delivery of the SSBCs in Tranche 1, four professional service delivery options have been considered with the conclusion that a bi-procurement approach is preferrable as it is the optimal balance of

- Speed to procure
- Quality
- Value
- Market capacity to respond
- LGWM ability to procure
- LGWM ability to manage
- Attractiveness to market

The bi-procurement approach involves selecting two suppliers for 2 predefined packages of work with the 'winning' supplier being awarded the main package and the runner up being awarded the second package. Both with the ability to vary in additional SSBCs (e.g., Tranche 2) dependent upon performance.

The final procurement approach will be confirmed in the City Streets procurement plan.

Next steps in delivery

Management of the City Streets programme will fall under the wider programme governance, management, funding and delivery arrangements of the LGWM programme.

Presently, many of those arrangements are in a state of flux as actions in response to the programme Health Check are resolved and embedded.

The next stage of the programme is the Tranche 1 SSBCs, studies and Targeted Improvements package with an internal team of Package Lead, Project Managers and technical specialists (providing internal advice across the programme) to be established.

Supporting the package lead and project managers will be a Technical Advisory group made up of technical expert representatives from partner organisations whose role is to provide guidance to the team as projects evolve.

The City Streets Package Lead will be accountable for the immediate next steps to progress to the SSBC stage of City Streets as outlined below.

Setting up the next phase of City Streets

Activity	Completion Date
IBC & Funding Approvals	
IQA	July 2021
Council & Waka Kotahi IBC Approvals and Endorsement	August - October 2021
Funding Approval	October 2021
Tranche 1 Scoping and Procurement	
Targeted Improvements SSBC Lite procured & project commenced	July 2021
LGWM SSBC Process defined	August 2021
SSBC Scoping complete	August 2021
City Streets Procurement Plan & RFP approved	September 2021
Tender Period	September/October 2021
Tender Evaluation Period	October 2021
Naming of Preferred Tenderer	Late October 2021
Award of Contract	November 2021
City Streets Team Establishment	
Wider City Streets Team resources confirmed and appointed	October 2021

In conjunction with IBC approvals/endorsement it is desirable to obtain funding approvals to allow Tranche 1 activities to progress. This includes funding for all Tranche 1 SSBCs and for the implementation funding for the Targeted Improvements. The cost breakdown for the funding request is as follows:

- SSBC Development - $17.1m
- Targeted Improvements Pre-Implementation - $1.6m
- Targeted Improvements Implementation - $9.4m
- Contingency - $6m (21%)

Assessment against the Investment prioritisation method
Investment prioritisation is the basis for including an activity or combination of activities in the NLTP. Depending on the amount of funding available for an activity class, activities with a priority order above an investment threshold in that activity class are included in the NLTP. The Waka Kotahi Board sets the investment threshold based on the funds available for the activity class and the value and priority order of all proposed activities.

The Investment Prioritisation Method (IPM) for 2021–24 NLTP has three factors, namely:

- GPS Alignment
- Scheduling
- Efficiency

The City Streets Programme has been assessed by the project team against the IPM and it is recommended that the programme be given a profile of: H/H/L with an overall priority of 5 as outlined below.

- GPS Alignment – High – The package is envisaged to lead to between a 3% and 6% uplift in cycling and public transport usage.
- Scheduling – High – City Streets forms part of an agreed programme with delivery required to advance the objectives of the programme.
- Efficiency – Low – The BCR is estimated to be 2.4.

Table of contents

Table of figures

List of tables

1. Project introduction

1.1. Overview

Let’s Get Wellington Moving (LGWM) is a joint initiative between Wellington City Council (WCC), Greater Wellington Regional Council (GWRC), and Waka Kotahi NZ Transport Agency (Waka Kotahi). The vision for LGWM is to build **a great harbour city, accessible to all, with attractive places, shared streets, and efficient local and regional journeys**. To realise the vision, the LGWM partners are working together to deliver a transformational city-shaping transport investment programme focused on enabling efficient and effective movement by moving more people with fewer vehicles.

The Programme Business Case (PBC), published in June 2019, identified Mass Rapid Transit and Strategic Highways as key components of the recommended a programme of improvements. Complementing and supporting those is a substantial programme of investment in public transport, walking, cycling and amenity/place making to provide enhanced travel choice with a strong focus on the central city and effective and efficient connections between the central city and key sub-urban centres. This package of public transport, walking, cycling, and amenity improvements is collectively known as City Streets.

1.2. Purpose of this report

This Indicative Business Case (IBC) defines geographic areas of focus for public transport (bus), active mode, amenity and safety interventions for further development and delivery as part of City Streets. The IBC sets out the case for investment along with the economic assessment of example solutions along with an indicative implementation strategy for the next steps. The IBC does not go as far as undertaking detailed investigations to confirm shortlisted or recommended options which will need to occur at the next stage of the business case process.

WCC and GWRC has undertaken a substantial number of complementary investigations and analysis which are closely linked to City Streets and have been brought together in this IBC to develop the recommended package. This includes WCC’s Place and Movement Framework, draft Network Operating Framework, and the Bus Priority Action Plan (BPAP).

In parallel to City Streets, LGWM have been developing business cases for complementary work packages for Golden Mile, Hutt Road and Thorndon Quay, Mass Rapid Transit, Strategic Highways and Travel Demand Management. This business case outlines components of the City Streets package which support and integrate with the wider LGWM package, with those synergies factored into the recommended implementation strategy.

In preparing the strategic case, emphasis has been placed on conciseness and avoiding duplication or repetition of existing material, with references to supporting information provided, as necessary.

Strategic case

2. Strategic context

The strategic case aims to:

- set out the strategic context for City Streets.
- confirm the problems, opportunities, and benefits that the City Streets package is aiming to address and the supporting evidence base.
- confirm the investment objectives of the City Streets package.

2.1. Let's Get Wellington Moving programme

To deliver on the vision of LGWM[5] of **a great harbour city, accessible to all, with attractive places, shared streets, and efficient local and regional journeys**, five programme objectives have been agreed (see Figure 1).

The PBC[6] outlined the resultant *Recommended Programme of Investment* (RPI), which is made up of a series of integrated transport improvements and interventions that create a whole system transformation with a strong focus on people and the desire to enable an improved quality of life. Significant public and stakeholder engagement was undertaken to inform the programme and ensure that the transport outcomes are well integrated with land use and urban development outcomes. The programme is intended to act as a catalyst for quality and sustainable urban renewal and growth for the region.

A summary of the strategic approach applied to deliver the LGWM programme and respond to the investment and programme objectives is included in Figure 2. The approach to move more people with fewer vehicles is critical to the City Streets IBC as Wellington already has a high number of people who use public transport and active modes when travelling into the central city. The opportunity via LGWM and the City Streets package is to encourage even more people to travel via buses and active modes.

What outcomes are we seeking?				
Liveability	Access	Carbon emissions and mode shift	Safety	Resilience
What are our objectives? A transport system that …				
Enhances urban amenity and enables urban development outcomes	Provides more efficient and reliable access for users	Reduces carbon emissions and increases mode shift by reducing reliance on private vehicles	Improves safety for all users	Is adaptable to disruption and future uncertainty

Figure 1: LGWM objectives

5 https://lgwm.nz

6 https://lgwm.nz/assets/Documents/Programme-Business-Case/LGWM-PBC-Report-21-June-2019-Draft.pdf

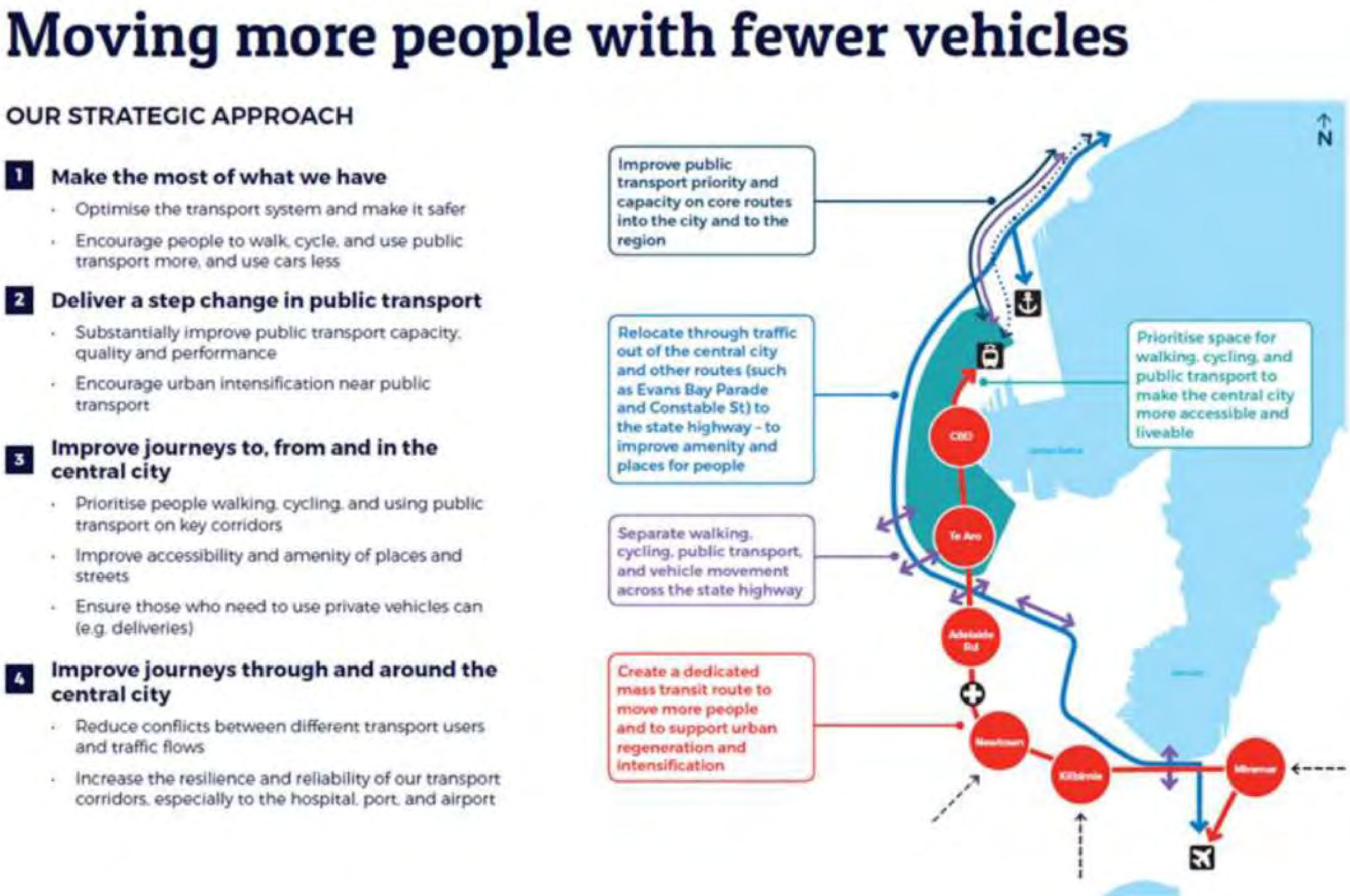


Figure 2: LGWM Strategic approach and recommended programme of investment

To achieve the LGWM outcomes and vision, the programme is split into four main packages, supplemented by early delivery projects, and other supporting investment proposals (see Figure 3).

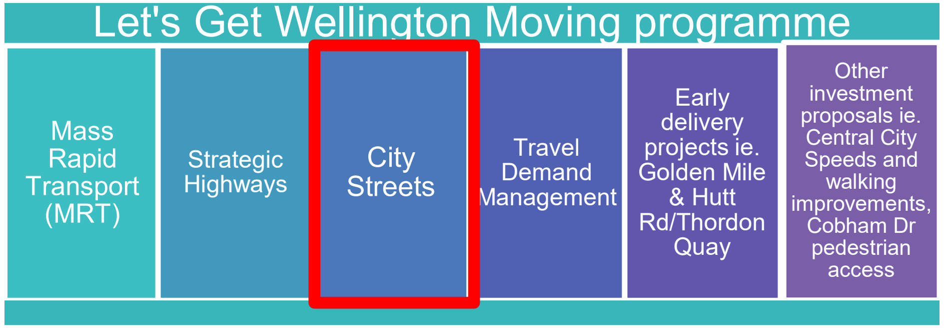


Figure 3: LGWM programme components

Each component of the programme will enable or support transformational change in the way people live and move through and within Wellington. The optimal City Streets package will support and integrate with the other LGWM components, while also being a standalone package in terms of supporting and improving multi-modal access.

2.2. City Streets in the LGWM PBC

Wellington's streets are a critical component of the LGWM vision. The streets form an essential part of the city, connecting people, places, and businesses; enabling character; and providing spaces for people to interact with and enjoy.

The LGWM PBC identified the need to consider and improve Wellington's streets particularly in relation to journeys to, from, within, and through the central city. The LGWM recommended programme of investment (RPI) is based on integrated and holistic transport system improvements as shown in Figure 4.

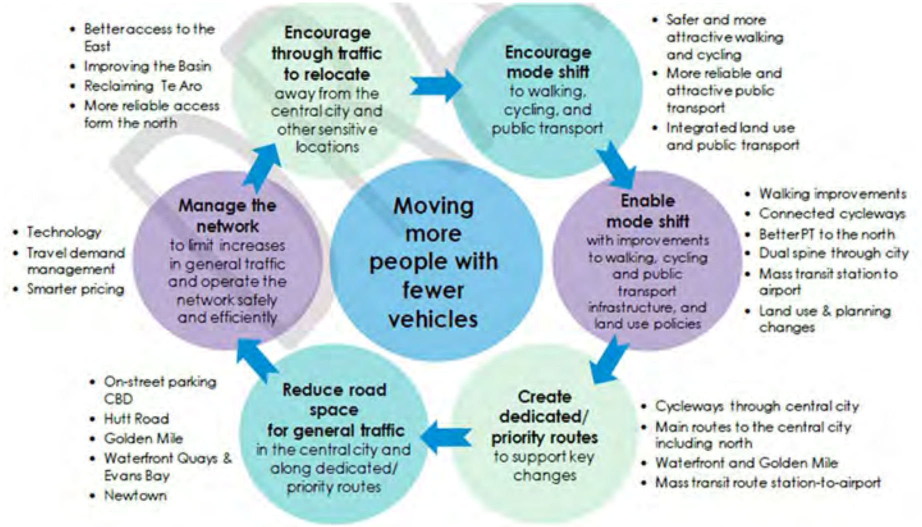


Figure 4: LGWM recommended programme summary

From the RPI, the core parts of the LGWM programme relevant to City Streets are:

- Better and safer walking access in the central city
- A connected and safe cycle network to/through the central city
- Better public transport priority to and through the central city
- Supporting destination place making where connected to transport related improvements

To improve access in, to and through the central city, the LGWM PBC identified approximately $350 million of investment towards the City Streets package[7], as part of the indicative package. The indicative City Streets package and investment was subsequently endorsed by central and local government partners. Given the high-level nature by which the City Streets components were investigated in the PBC, the

[7] LGWM PBC (21 June 1029) Table 18

indicative investment provided should be viewed as an indicative starting guide for further investigation through the business case process, noting it was broadly attributed towards:

- public transport ($250m) to and through the city to improve public transport mode share.
- a walkable city ($70m) – Accessibility and amenity improvements, setting safer speeds for vehicles, and walking improvements.
- connected cycleways ($30m) – Including cycleways on Featherston Street, Thorndon Quay, Courtenay Place, Dixon Street, Taranaki Street, Willis Street, Victoria Street, Kent and Cambridge Terraces and Bowen Street

The map shown, at Figure 5, outlines the geographical scope for City Streets. The scope is based on the LGWM programme area but expanded slightly to include key strategic public transport corridors coming into and through the central city and the revised Central City area emerging from Planning for Growth. The slightly modified geographic extent is consistent with the Wellington City Bus priority action plan and reflects the significant overlap between bus priority corridors, the strategic cycling network, and a potential mass rapid transit route. However, the geographic extent is larger than that approved by Waka Kotahi as shown in Figure 6.

The extension of the geographic scope to include additional Strategic Public Transport Corridors and extensions to the start/end of the routes is to ensure that we give effect to the overarching objective of City Streets and the LGWM programme of moving more people in fewer cars. By including key opportunities for mode shift in our long list we are not precluding potential opportunities emerging by limiting ourselves to a geographic scope based solely on the BPAP which had a single mode focus.

The quality of the first and last mile is as important in influencing mode shift to public transport as the public transport journey itself. Whilst the PBC only included place making within the Central City linked to transport enhancements the IBC has extended this to consider placemaking at both ends of the public transport journey as part of our long-list process.

The City Streets IBC does not explore place-making beyond where it is connected to transport related improvements, nor include scope items beyond transport related improvements. However, it does recognise, through consideration of partners placemaking priorities, that LGWM partners have broader complementary placemaking aspirations which need to be considered at subsequent stages of project development and delivery including, wider place making scope, benefits and agreeing where costs lie. The extent of the actual potential scale of costs and benefits of placemaking (and their apportionment to transport related benefits versus wider city shaping benefits) will only become clear on conclusion of the more detailed SSBCs/SSBC-lites subsequent to this IBC with any necessary funding approvals obtained at that time.

Figure 5: City Streets geographic scope

Figure 6: City Streets geographic scope relative to Waka Kotahi approved scope

2.3. City Streets – opportunities for integration

The City Street business case is primarily focused on improving the levels of service for public transport and active modes, as well as placemaking, to help move more people with fewer vehicles. The indicative and prioritised package of interventions will help enhance the safe and accessible mode choices for people travelling into, from, and through Wellington. As the package is implemented, there are several opportunities to integrate City Street solutions with the wider LGWM programme and other investment priorities of partner agencies, to deliver a holistic and multimodal transport system. These opportunities include:

- progressing City Street improvements ahead of major disruption from the LGWM Mass Rapid Transit and Strategic Highways packages, to ensure quality travel choices are available during construction of these major system upgrades.
- developing interim bus improvements along the agreed MRT route until the MRT is built to help improve the efficiency and attractiveness of bus journeys accessing the City. This will need to be carefully investigated as this can be problematic when it comes to reconfiguring such facilities for MRT with the associated need to potentially relocate a significant number of bus services.
- supporting the Golden Mile improvements by providing additional public transport access within the central city via a second public transport spine parallel to the Golden Mile
- leveraging City Streets opportunities to support and enhance LGWM travel behaviour change package e.g., improved bus and cycling levels of service delivered through city streets and will support travel behaviour change efforts to reduce car use.
- aligning delivery with WCC Network Operating Framework to optimise the network for all users.
- other major infrastructure services works/planned upgrades in affected corridors to minimise disruption, optimise construction efficiencies and project benefits e.g., planned pipe upgrades by WCC on Kent / Cambridge; PT or cycling improvements planned by WCC outside of the scope of City Streets.
- Continuing to re-build public trust and confidence in the City's bus services post Covid-19 and the network changes from 2018.

Over time, the City Streets package will enable Wellington's streets to be an even more integral part of the city — to safely connect people, places, and businesses, and provide character — as well as being spaces that people can enjoy and interact within as part of their everyday lives.

2.4. Relevant regional/local policies and strategies

In addition to LGWM there are four 'vision' level strategic influences on the future form of Wellington city and the transport system that supports it. These are:

- Wellington Regional Land Transport Plan 2015 (RLTP)[8] - Developed by the Wellington Regional Transport Committee which highlights the need to deliver "*a safe, effective and efficient land transport network that supports the region's economic prosperity in a way that is environmentally and socially sustainable*". In developing the draft 2021 RLTP, the Wellington Regional Land Transport Committee has recently agreed whole of system regional targets seeking 40 percent increase in public transport and active mode share, a 35 percent reduction in transport generated carbon emissions, and a 40 percent reduction in deaths and serious injuries on our roads by 2030.
- Our City Tomorrow (2017)[9] – Developed by WCC with five city goals that have come from engagement with the community, and which headline all city strategies - Compact, Resilient, Vibrant and Prosperous, Inclusive and Connected, and Greener.
- Wellington City Spatial Plan (2020)[10] – A work in progress by WCC that provides direction and actions to the future shape of the city providing for projected growth. The Wellington City Spatial Plan (WCSP) draws on the National Policy Statement on Urban Development 2020 and Wellington City's commitment to be the first carbon zero city in Australasia (i.e., Te Atakura – First to Zero, 2019). The Spatial

8 http://www.gw.govt.nz/assets/Transport/Regional-transport/RLTS/RLTS2010-docs/WRLTS-2010-2040-Doco-WEB.pdf

9 https://wellington.govt.nz/your-council/projects/planning-for-growth/our-city-tomorrow

10 https://planningforgrowth.wellington.govt.nz/spatial-plan

Plan once finalised will inform the District Plan review and other implementation planning layers. The emerging WCSP has been integrated into City Streets thinking in a manner which is consistent with the rest of the LGWM programme.

- Te Atakura blueprint (2019) and implementation plan (2020) - commits WCC to ensuring Wellington City becomes a net zero carbon city by 2050 – including making the most significant reductions by 2030. Transport emissions are responsible for over half of Wellington's emissions – thus is a key action area. Further, Wellington City Council has directed officers to prepare a report investigating a Wellington Fossil-Fuel Free Central City by 2025 to be reported back to Councillors in September 2021.

The WCSP will complement the Regional Growth Framework (RGF), which focusses on the wider Wellington region and the Horowhenua District. The RGF aims to create a spatial plan that will describe a 30-year long-term vision for how the region will grow, change, and respond to key urban development challenges and opportunities. The RGF is at an early stage of development, with a range of options being currently developed and assessed, before being tested with the wider community.

2.5. Relevant national policies and strategies

There are a number of key national policies and strategies which City Streets is well aligned to through its focus on providing enhancements to a suite of modes and places in order to provide greater travel choices and influence the level of trip making in single occupancy vehicles. These policies and strategies include:

- Transport Outcomes Framework and Government Policy Statement on land transport 2021[11]: guides transport investment in the land transport network. The Government sees that the purpose of the transport system is to improve people's wellbeing, and the liveability of places. It does this by contributing to five key outcomes:
  - Inclusive access: Enabling all people to participate in society through access to social and economic opportunities, such as work, education, and healthcare.
  - Economic prosperity: Supporting economic activity via local, regional, and international connections, with efficient movements of people and products.
  - Healthy and safe people: Protecting people from transport-related injuries and harmful pollution and making active travel an attractive option.
  - Environmental sustainability: Transitioning to net zero carbon emissions, and maintaining or improving biodiversity, water quality, and air quality.
  - Resilience and security: Minimising and managing the risks from natural and human-made hazards, anticipating, and adapting to emerging threats, and recovering effectively from disruptive events.

The GPS 2021 proposes to prioritise transport investment in safety; better travel options in our towns and cities; greenhouse gas emission reductions and improved freight connectivity.

Supporting the GPS investment priorities, Waka Kotahi have outlined additional detail through other strategies and plans such as:

- *Arataki*[12] – is the Waka Kotahi ten-year view of what is needed to deliver on the Government's current priorities with a focus on improving urban form, transforming urban mobility and significantly reducing harms as well as tackling climate change and supporting regional development.
- *Keeping Cities Moving: A plan for mode shift*[13] – is the Waka Kotahi plan to deliver on social, environmental, and economic outcomes by growing the share of travel by public transport, walking and cycling. As a key deliverable of this national plan, Waka Kotahi has recently led the development of a Wellington regional mode shift plan, with input from key central and local government partners.

The City Streets goals of reducing single car occupancy, providing attractive walking, cycling and public transport alternatives and enhancing liveability of places are well aligned to the transport system outcomes and strategic priorities sought by Government. The City Streets programme is explicitly referenced as a focus area in the Waka Kotahi Wellington regional mode shift plan.

[11] https://www.transport.govt.nz/multi-modal/keystrategiesandplans/gpsonlandtransportfunding/gps-2021/

[12] https://www.nzta.govt.nz/planning-and-investment/planning/arataki

[13] https://www.nzta.govt.nz/walking-cycling-and-public-transport/keeping-cities-moving/

3. Problems, opportunities, and constraints

The following section sets out the case for investment in City Streets. It confirms the specific problems and opportunities which City Streets is aiming to address and frames them within the wider LGWM PBC problems and opportunities.

3.1. LGWM Programme problems, opportunities, and constraints

The LGWM PBC identified several problems based on various causes, effects, consequences, and opportunities relating to Wellington's transport system as shown in Table 1. The problems and opportunities identified through the PBC helped frame the strategic responses that were assessed and included in the RPI.

Table 1: Let's Get Wellington Moving problems and opportunities

Problems – causes	**Problems - effects**
• Growing demand for travel to, from, through, and within the central city • Transport modes competing for limited space on constrained corridors • Cross-directional movement creating conflicts between movements and modes	• Poor and declining levels of service • Increasing congestion and unreliable journey times • Safety issues especially for active modes
Problems – consequences	**Opportunities**
• Reduced amenity (e.g., noise, pollution, and severance) for people living, visiting, and working in the central city • Lack of transport system capacity, particularly on rail and bus services, constraining Wellington's growth[14] • Slower and less predictable travel time for journeys to, from, within, and through the central city • Increase in disrupted journeys for people and freight and slower recovery • Deaths and serious injuries, especially for pedestrians and cyclists	• Enhance travel choice for access to, from, within, and through the central city • Make city streets more attractive and safer places to be • Shape urban growth and activate urban regeneration • Support increased productivity • Improve community health and wellbeing • Support enhanced environmental outcomes

[14] Since adopting the LGWM PBC in 2019, the evidence base continues to evolve, resulting in a more nuanced understanding of the problems, particularly with respect to bus capacity. Subsequent analysis suggests bus capacity issues centre primarily around physical capacity constraints on the Golden Mile, as noted under Problem Two in the Strategic Case.

3.2. City Streets problems, opportunities, and constraints

While the LGWM PBC problems, opportunities, and investment objectives act as a rationale for the overarching programme, how they apply to the specific context of City Streets needs to be considered, particularly as the evidence base for the programme as a whole, and the related packages, continues to evolve.

To provide focus for the City Streets package, the PBC problem statements have been refined to be specific to City Streets. The problem statements developed for the City Streets IBC are shown in Table 2.

Table 2: City Streets problem statements and rationale

City Streets problem statements	Rationale
Problem 1 Journeys are slow and less predictable, due to modes competing for space in constrained corridors, which is hindering the uptake of multimodal options further exacerbating poor safety and health outcomes along with declining transport levels of service.	The problem statement reflects the priority cause of competing space, the top two effects of unreliable journey times and declining LoS, and the primary consequence of slower and less predictable travel time. The relative breadth of this problem enables us to address declining levels of service in the widest sense including aspects such as PT capacity and safety.
Problem 2 Wellington's future transport system and places will become less accessible and attractive with growing demand for travel through, from, and in the central city threatening Wellington's position as a great harbour city and the economic and cultural heart of the region.	The problem talks explicitly to the amenity and place components of the LGWM vision which are embedded in the PBC, enabling the exploration of amenity and place within the central city while acknowledging the potential of the future transport system. The future opportunity that LGWM provides in terms of transformational change and leveraging off other core components (i.e., MRT, SH activities) will be delivered through the City Streets IBC.
Problem 3 The attractiveness of public transport, walking and cycling relative to the private car is not yet sufficient to stimulate a step change in mode shift away from private vehicles.	The quality of the PT journey and walking and cycling experience is included in this problem, in a way that is not captured in the previous two problem statements. The quality of the experience is in addition to the tangible journey time and reliability issues identified in Problem One. The breadth of 'attractiveness' relative to the listed modes enables a broad exploration of potential solutions.

3.3. Problem 1: Slow, unpredictable, and unsafe multimodal journeys in constrained corridors

Journeys are slow and less predictable, due to modes competing for space in constrained corridors, which is hindering the uptake of multimodal options further exacerbating poor safety and health outcomes along with declining transport levels of service.

Due to Wellington's harbour and hill topography, the transport corridors accessing the central city and key regional destinations are limited in number. While Wellington's compact urban form has helped to encourage relatively high use of public transport, walking, and cycling as modes of travel, this also means that all modes share the same constrained corridors as shown in Figure 8[15]. Many of these corridors are operating at or above capacity.

Further exacerbating the impacts of a constrained transport system, Wellington's transport networks have minimal built-in resilience for planned and unplanned events such as crashes, vehicle break downs, roadworks, rail service outages, and extreme weather events.

3.3.1. Bus journeys are slow and unpredictable due to modes competing for space

Buses are a critical component of Wellington's transport system to enable people to move and access social and economic opportunities within Wellington City as shown below.[16]

[15] Combined modes in the Wellington City Network operating framework (NOF).
[16] Bus journeys shown are pre covid-19 levels, and routes have been updated to reflect Metlink's bus amendments of 25 October 2020. Infographic reference: Bus Priority Action Plan, 2019.

Figure 7 shows travel times by public transport relative to driving for origin / destination pairs across the region. This highlights that:

- in a very few instances taking public transport is slightly faster than driving or takes about the same amount of time. However, in all these instances, this is by train rather than bus.[17]
- for nearly all journeys, taking the bus is slower than driving.
- for around 50 percent of journeys, the bus is at least twice as slow as driving.

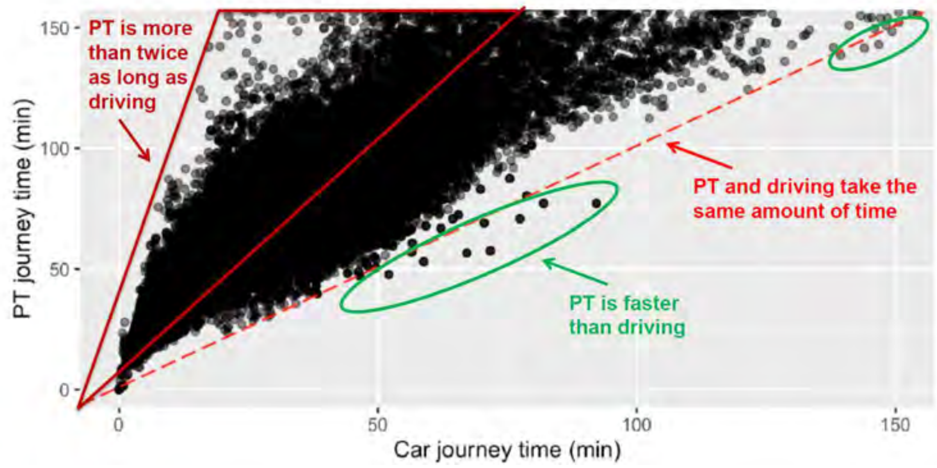


Figure 7: PT journey times relative to driving[18]

Analysis undertaken as part of the recently completed BPAP identified slow and variable bus travel times on several bus corridors. As an example, Figure 9 and Figure 10 show average bus speeds and peak time variability for the morning peak (7-9am) March 2019.

[17] During off-peak, the lower frequency of train services can extend the duration of door-to-door journeys and reduce the comparative advantage of train travel.
[18] Wellington transport strategic model outputs, 2013

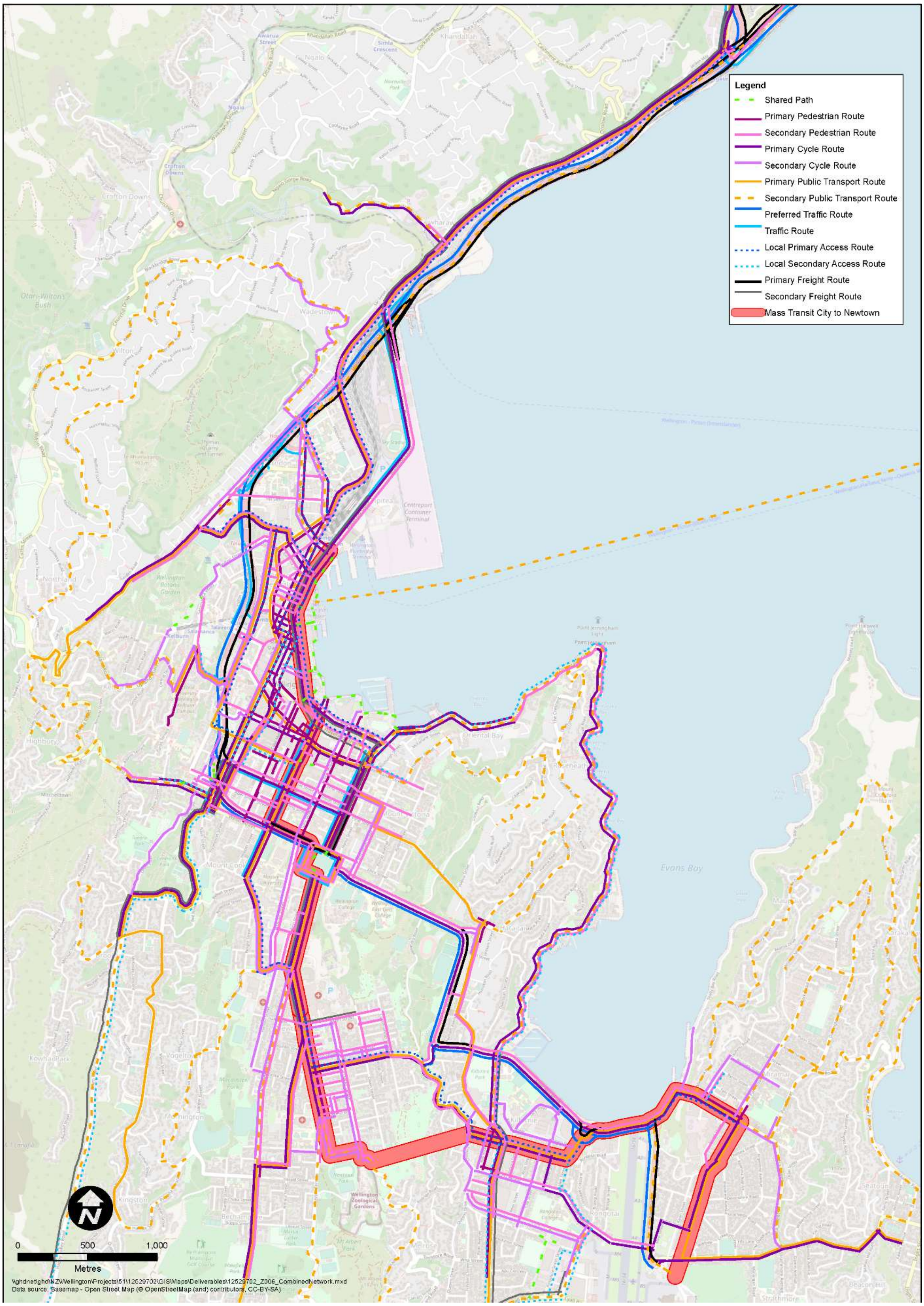


Figure 8: Wellington City's main transport corridors

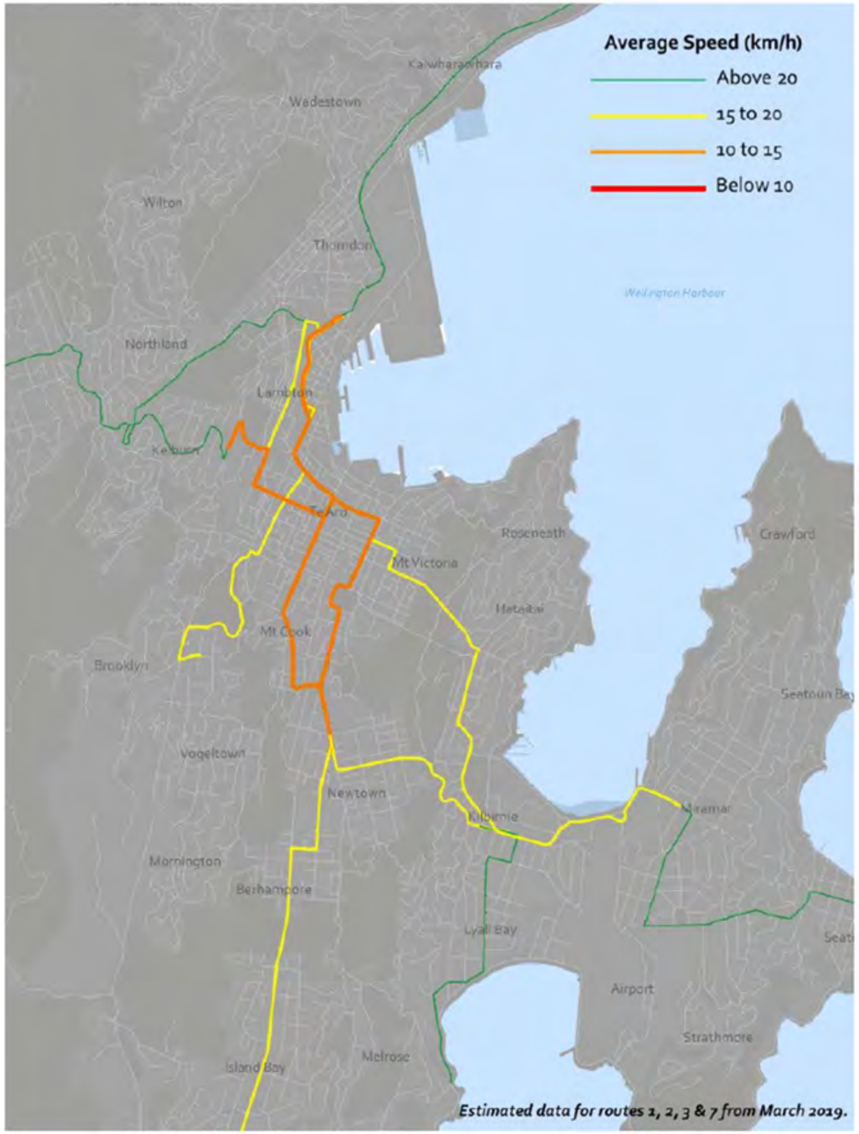


Figure 9: Average bus speeds – morning peak (7-9am)

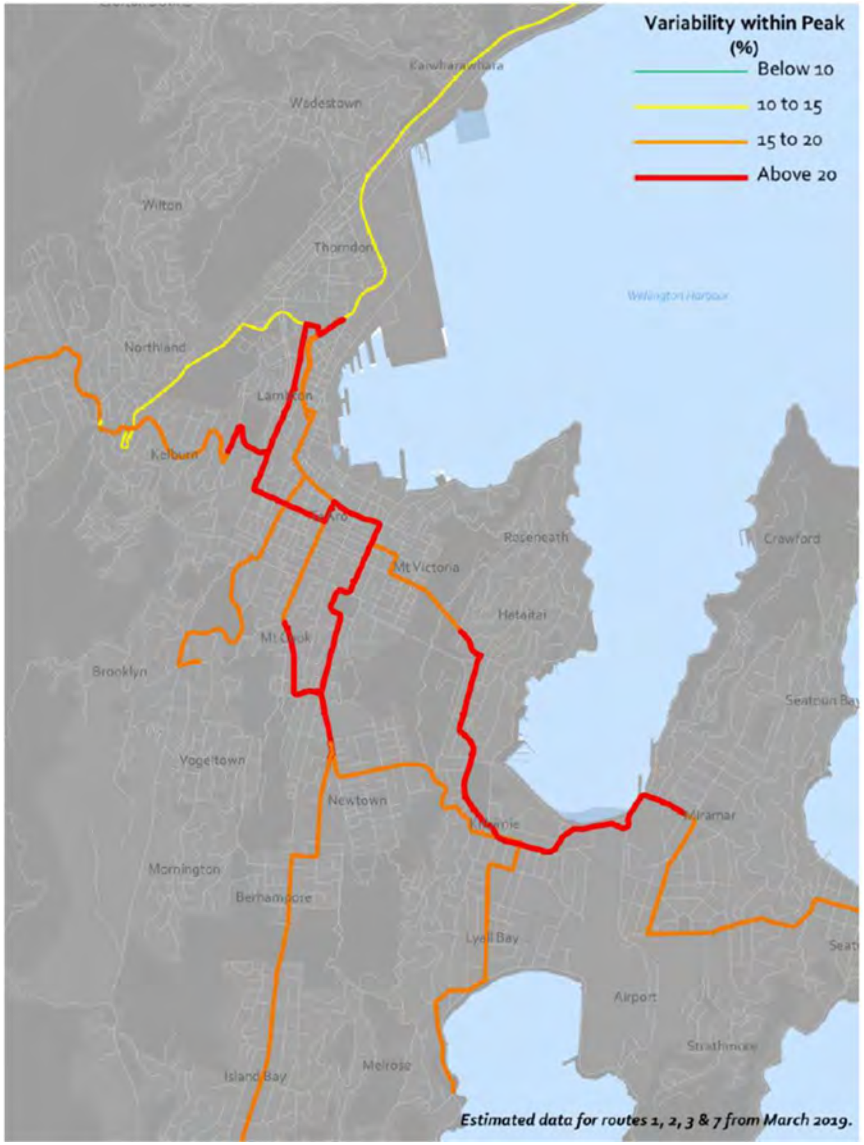


Figure 10: PT travel variability - morning peak (7-9am)

As shown in Table 3[19], key reason for delayed and slow bus journeys relate to traffic congestion, delays through intersections and when re-entering general traffic lanes from stops and the frequency of bus stops. While these issues are not unique to Wellington, they are symptomatic of Wellington's constrained corridors and the competition for road space with few bus lanes available.

Table 3: Why buses are typically delayed

Category	Delay cause	Description
Bus stops	Bus stop spacing	Some bus stops are so close there are overlapping walking catchment. Buses stop more frequently with minimal benefits to passengers
	Re-entry	Buses are delayed when waiting to re-enter from a bus stop
	Long dwell times	At some bus stops, buses stop for longer than is ideal to allow passengers to get on and off
Traffic lights	Traffic and pedestrian lights	Buses are delayed at traffic lights and signalised pedestrian crossing
	Queues	Buses are delay in queues at traffic lights
On-road	General traffic	Buses are delayed by mid-block traffic congestion and on-street parking
	Road layout	Narrow lanes and/or on-street parking limit the speed at which buses can travel safety

Work undertaken by WCC and GWRC for the BPAP and the 2019 Bus Network Review[20] found that while there are 70,000 bus journeys taken each day, improving bus reliability and travel times would help enhance public transport journeys and encourage more people to use public transport, particularly at peak times.

Currently, average lateness of buses in the morning peak is around 3 minutes with day-to-day variation averaging 7 minutes (see Table 4[20]). In addition, the variability in journeys times —particularly for journeys to and from Karori and Seatoun— can be significant, affecting travel time predictability.

Table 4: Bus data for key journeys

INBOUND	Newtown to city	Karori to city	Seatoun to city	Mt Cook to city	Kelburn to city	Kilbirnie to Newtown	Brooklyn to city	Ngauranga to J'ville
Daily passengers	5500	2700	2600	3500	2500	2000	1500	3700
Average speed (km/h)	13.1	22.6	19.3	12.5	19.7	14.0	15.3	24.5
Average travel time (mins)	11	17	27	10	7	9	10	9
Minimum travel time (mins)	7	12	22	6	5	5	7	7
Maximum travel time (mins)	15	30	35	15	9	11	14	13
Length (km)	2	6	9	2	2	2	3	4
Number of stops	8	21	30	8	5	7	10	4
Slowest weekday hour	4-5pm	8-9am	8-9am	4-5pm	8-9am	8-9am	8-9am	8-9am

OUTBOUND	Newtown to city	Karori to city	Seatoun to city	Mt Cook to city	Kelburn to city	Kilbirnie to Newtown	Brooklyn to city	Ngauranga to J'ville
Daily passengers	5300	3000	2800	3100	4200	2100	2000	4000
Average speed (km/h)	12.2	21.5	19.6	13.0	20.3	16.8	14.7	34.8
Average travel time (mins)	12	17	27	10	7	7	11	6
Minimum travel time (mins)	9	14	23	6	5	5	7	5
Maximum travel time (mins)	15	24	33	13	8	9	15	9
Length (km)	2	6	9	2	2	2	3	4
Number of stops	7	20	30	7	5	7	10	5
Slowest weekday hour	5-6pm	5-6pm	3-4pm / 5-6pm	5-6pm	5-6pm	5-6pm	5-6pm	5-6pm

Statistics are based on May 2019 data

Improving bus reliability would be one key factor in making bus travel an attractive alternative to the car, encouraging more people to travel via bus. This in turn will reduce congestion and carbon emissions and contribute to the vision of LGWM.

[19] Wellington Bus Priority Programme IBC, 2019 prepared by Wellington City Council, and Greater Wellington Regional Council

[20] https://www.metlink.org.nz/our-metlink-journey/our-metlink-bus-journey/bus-network-review/

3.3.2. Constrained corridors cause poor levels of service for active users

With many of Wellington's constrained corridors operating at or near capacity, cyclists (and some pedestrians) compete for space with other road users. As such, existing cycling and walking LOS are considered relatively poor across the city as shown in Figure 11 and Figure 12.

City Streets has utilised the Danish LOS Method[21] to assess current levels of services for cyclists on routes within the scope of City Streets (ref Appendix D: Prioritisation methodology). Many of the routes have high LOS gaps of 80 (see Figure 11[22]) or more demonstrating overall poor LOS for cyclists, and a general lack of connectivity. High volume pedestrian inner city routes have also been assessed to gauge current levels of service for walking. Factors such as delay, severance, permeability, and amenity have been considered in assessing the levels of service for walking. Figure 12 shows many pedestrian routes have average to low levels of service (i.e., gap scores of 50 or higher). The poor walking LOS often relate to where footpath quality is poor or inaccessible, with long signalised intersection delays, and in some cases footpath congestion.

Poor provision for people on bikes and pedestrians creates an unsafe and unappealing environment, in both perception and reality, particularly for those less confident. The role of perceptions of active travel and public transport are considered further under Problem 3 (Section 3.5).

Figure 11: Current cycle levels of service

[21] The Danish CLOS tool has been utilised across the LGWM programme to provide consistency of approach and is also commonly used by WCC. Factors considered include vehicle volumes and speeds, on street parking, existing cycle facility type and width and adjacent land use.

[22] Levels of service are not shown in the Mt Victoria tunnel which is part of the Strategic Highways package. The connection between Hataitai and the inner city is an off-road track, via Mt Victoria.

Figure 12: Current central city walking levels of service gap

3.3.3. Poor safety outcomes

Figure 13 shows safety related LOS gaps, based on personal risk (the risk to the individual of fatal or serious casualties per million vehicle kilometres travelled), collective risk (the number of fatal and serious casualties over a distance) and actual crash rates. Poor safety outcomes are most evident on Willis Street, between Mercer and Dixon streets, where pedestrian and road traffic volumes are high (as shown by the line width), and different transport users are competing for space in constrained corridors.

Walking and cycling is a key component of Wellington's Streets and ensuring that people are safe and feel safe when walking or cycling is a key consideration. Crash data recorded in Wellington over the last five years shows that safety issues exist for users of active modes, with a disproportionate number of crashes involving pedestrians and cyclists.

Between 2015 and 2019, there were 7,281 recorded crashes in Wellington City, giving an average of 1500 crashes per year. Of these crashes, 332 were serious and fatal crashes over the five-year period. About 12 percent of all crashes over this period involves a cyclist or pedestrian in Wellington City[23] as shown in Figure 14. More concerning is the proportion of active mode users involved in serious and fatal crashes. Approximately 50 percent of serious and fatal crashes in Wellington City involved users of active modes which is disproportionate to the mode share of active modes.

[23] This figure may be higher, given the propensity for under-reporting cyclist and pedestrian accident rates (refer https://www.nzta.govt.nz/resources/research/reports/289/index.html)

Figure 13: Levels of service gaps for safety

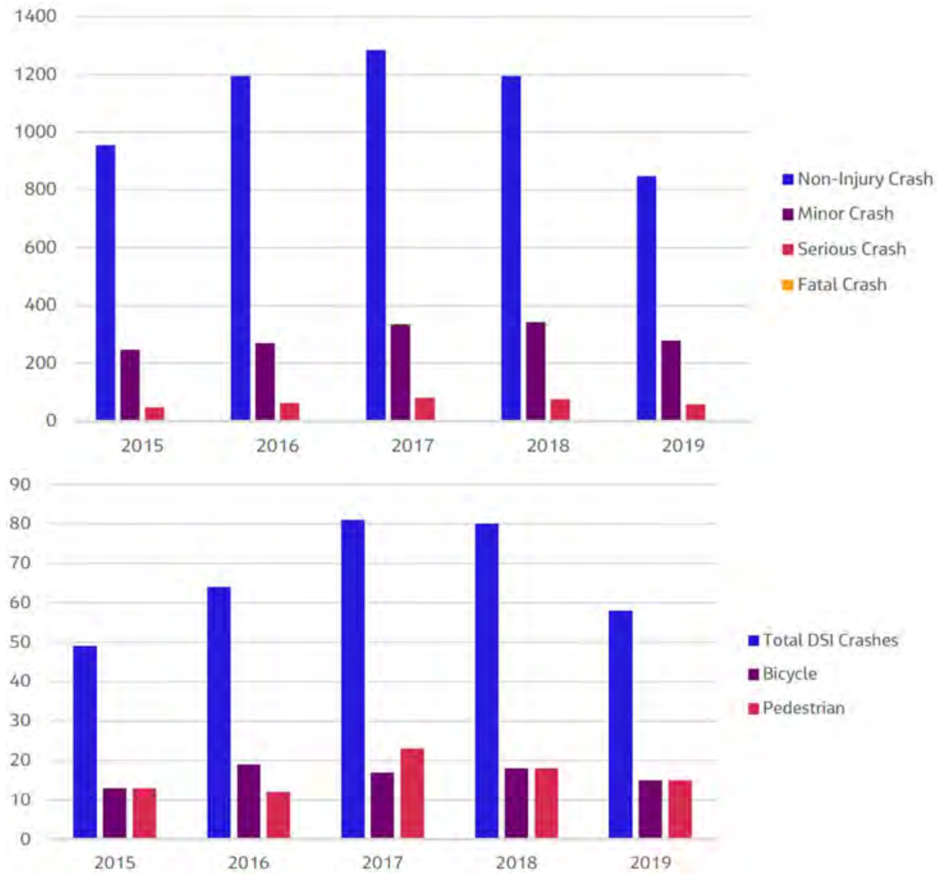


Figure 14: Total crashes by severity (top) and DSI crashes involving active mode users, 2015 – 2019

In the five years between 2015 and 2019, 376 crashes involving buses were reported, with 20 crashes causing death or serious injury as shown in Figure 15. Most of the death and serious crashes are concentrated around the Golden Mile public transport spine, which has the greatest potential for conflict between pedestrians and buses. Confidence in the safety of public transport system can diminish because of the quite visible and publicised bus vs pedestrian crashes, which can affect people's willingness to use active modes (particularly cycling) in these corridors.

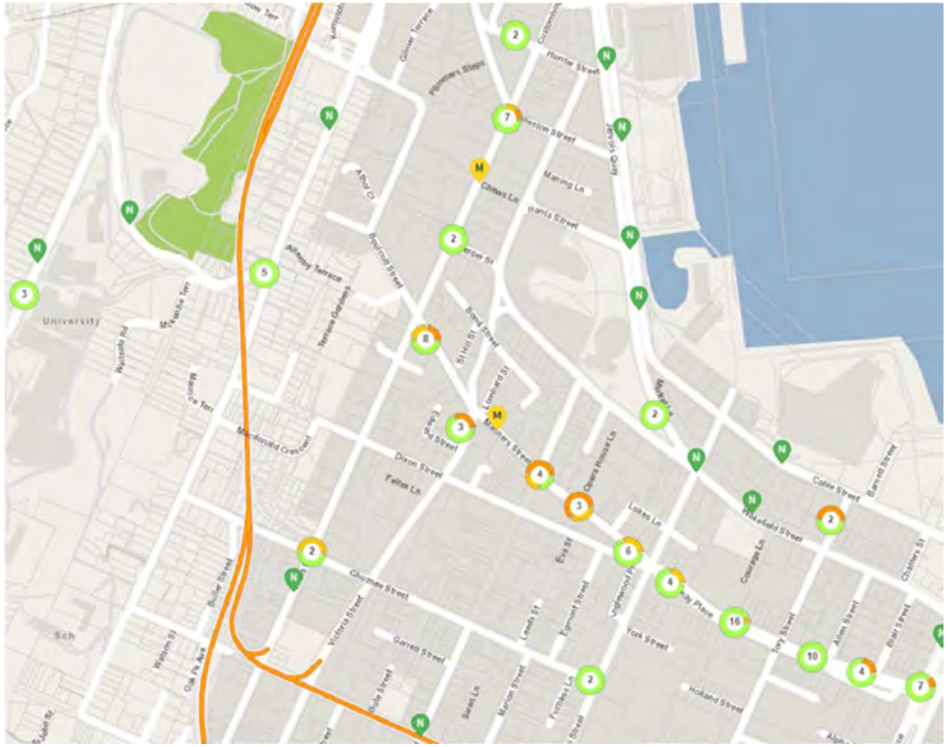


Figure 15: Wellington City crashes involving buses - Courtenay Place, 2015 - 2019

There are significant opportunities to be gained in addressing the identified LOS and safety gaps for public transport and active users, together with safety perceptions. Doing so will help improve the attractiveness of these modes as part of a safe and resilient transport system.

3.4. Problem 2: Future growth will further increase congestion affecting Wellington City's attractiveness

Wellington's future transport system and places will become less accessible and attractive with growing demand for travel through, from, and in the central city threatening Wellington's position as a great harbour city and the economic and cultural heart of the region.

Land use, urban form and economic activity are the primary drivers of demand for transport services in the Greater Wellington region and in the central city area. To be economically and socially successful small cities, such as Wellington, need to stand out in terms of what it can offer, particularly in terms of quality of life and quality of jobs in order to attract skilled populations to support growth.

Wellington has a reputation as a liveable city due to its quality of life, its harbour and topography, a highly skilled population, high incomes, healthy communities, and supporting creative and quality events. Ensuring Wellington continues to grow both in terms of population and economic activity and remains an attractive destination in both national and international contexts, is critical to the success of the City and the wider Wellington region.

Wellington City of the future will need to be:

- resilient and capable of supporting intensified land uses.
- attractive and compact and be more sustainable, accessible, and safe.
- attract high value jobs and opportunities.
- well-designed with walkable neighbourhoods connected by a smart transport system.
- growing and dynamic with world-class, inclusive place-making

The LGWM programme will play a critical role in helping achieve these aspects necessary for Wellington City and the Wellington Region to be sustainable.

3.4.1. Future growth - Population

The Wellington regional population was estimated at around 525,000 people in 2018. The estimate was made up of 212,000 people residing in Wellington City, and the remaining 313,000 people dispersed in the surrounding areas of Lower Hutt, Upper Hutt, Porirua, Kapiti and Wairarapa.

The LGWM are, with regional partners, in the process of revising regional population projections to 2036. Table 5 shows the latest indicative future projections prepared in November 2019 for the IBC phases of the wider programme. These updated estimates were prepared by Population.ID in collaboration with the regional territorial authorities.

Based on these projections, growth is expected to occur in the Wellington CBD, the inner-city suburbs such as Te Aro, Thorndon, Mt Victoria, and in the Northern suburbs. As growth occurs in these areas, the transport system will need to adapt to cater for the additional demand for active mode use within the city, and public transport to, within, and from the city.

The population projections are subject to further refinement, as city and region wide planning initiatives progress, and as scheduled updates are prepared and adopted. While the population projections are indicative, they remain reflective of the latest general direction being taken.

Table 5: Indicative population projections by area / Territorial Authority

	2013 Base	2018 Estimate	2036 Old (PBC)		2036 New (IBC)	
			Abs	% Diff	Abs	% Diff
CBD	19,400	22,100	32,500	47%	29,600	34%
Inner Suburbs	24,400	26,900	31,000	15%	32,200	20%
Eastern	36,800	38,000	40,100	6%	40,300	6%
Southern	30,300	31,200	33,800	8%	34,000	9%
Western	25,300	25,700	26,600	4%	26,600	4%
Northern	64,100	67,600	77,600	15%	78,100	16%
Wellington City	**200,300**	**211,500**	**241,600**	**14%**	**240,800**	**14%**
Lower Hutt	101,100	107,600	107,300	0%	116,600	8%
Upper Hutt	41,400	45,300	47,400	5%	47,300	4%
Porirua	53,700	58,700	62,600	7%	79,400	35%
Kapiti	50,700	55,400	59,600	8%	62,600	13%
Wairarapa	42,400	46,700	44,200	-5%	50,900	9%
Region	**489,600**	**525,200**	**562,700**	**7%**	**597,600**	**14%**

3.4.2. Future growth - Employment

Wellington City is the main employment centre for the Wellington region, in part because of the concentration of the public sector. Over 40 percent of the current 252,000 jobs in the Wellington region are based in the central city. The high concentration of employment in the central city attracts commuters from the wider Wellington region.

Employment projections show regional employment growing by 13 percent between 2018 and 2036. Around 50 percent of the future growth in employment is forecast to be in the central city, potentially increasing the number of jobs there from 96,400 in 2018, to over 112,000 by 2036[24].

While the COVID 19 pandemic is expected to generate some shorter-term changes to the rate of the City's economic and population growth, the medium to long term outlook remains positive.

The Waka Kotahi *Arataki update report* notes that "Wellington is expected to be protected from the worst effects of the slowdown because of the scale of the public sector and major professional services. This may result in an increase in internal migration because of employment opportunities in the public sector"[25].

The Waka Kotahi analysis also suggests that changes to the nature of work for professional services could see a reduction in peak trips to Wellington city centre, because of more people working remotely. While it is difficult at this stage to gauge the longer-term impacts on commuter behaviour, national trends show the number of people travelling to work across New Zealand is continuing to recover steadily but remains about 10 percent lower than pre COVID alert levels in February 2020[26].

3.4.3. Implications of future growth

In recent years, the growth in travel demand into, from, and within the central city has been accommodated mainly by people choosing to:

- walk, cycle, and/or use public transport; and
- travel earlier or later to avoid peak congestion on the road network.

Access via private vehicle within the central city has been held in check by the constraints in road corridor capacity, traffic congestion on the approaches to the central city, and the relatively high cost of commuter car parking within the central city itself.[27]

Continued residential growth in the outer suburbs and wider region with commercial intensification of the inner City will lead to a strong demand for travel into the central city. This coupled with intensification of housing within the central city and inner suburbs will put further pressure on the transport system.

How land-use develops in the future will have a significant impact on the way people travel in the future. Greater intensification of the inner suburbs and central city provides the opportunity to substitute long distance private vehicle commute trips with shorter distance public transport, walking and cycling options.

Figure 16 shows that, regardless of any intervention, the demand for travel to and from the city centre by public transport is expected to grow by between 35- 50 percent. The higher increase is for a scenario where recent trends in the uptake of public transport and active travel modes continues. The corresponding increases in demand for driving into the city centre are forecast to be between 10-12 percent.[28]

[24] LGWM, 2019. RPI and Indicative Package Modelling Report
[25] Waka Kotahi Arataki, Version 2 – Wellington https://www.nzta.govt.nz/assets/planning-and-investment/arataki/docs/regional-summary-wellington-august-2020.pdf
[26] https://www.nzta.govt.nz/assets/resources/covid-19-impacts-on-transport/waka-kotahi-nzta-covid-19-tracking-core-report-wave-21-20200929.pdf
[27] Mass Rapid Transport Strategic Case - draft June 2020, Let's Get Wellington Moving
[28] Ibid

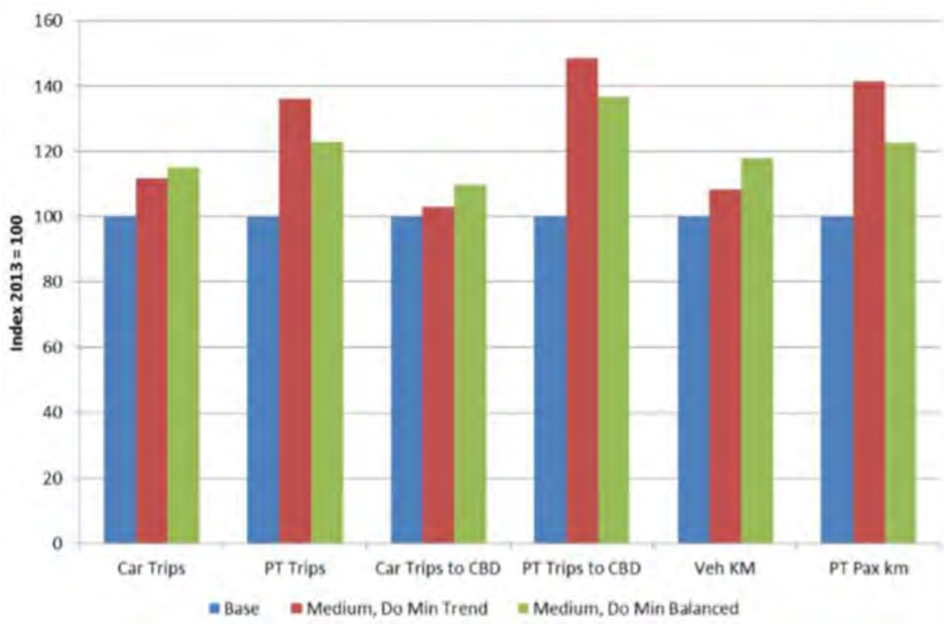


Figure 16: Modelled change in PT and car metrics, 2013 base, 2036 do minimum trend, 2036 do minimum balanced[29]

In future years, continuously increasing travel demand in the already constrained transport system will exacerbate many of the issues outlined in Problem One, and further reduce levels of accessibility because of congestion, delay, and reduced journey time predictability. Based on modelling, the journey travel time for private vehicles between key destinations and bus services between key destinations are expected to increase as shown in Table 6 and Table 7.

Absolute differences in travel times between these two modes of transport is also anticipated to increase, making travel by public transport a less attractive option.

Table 6: Predicted increase in vehicle travel time and travel time reliability for key routes 2016-2026[30]

Route description	Morning Peak (7am-9am)	
	Average travel time (percent increase)	Estimated 95th percentile travel time (percent increase)
Airport to Ngauranga Gorge (via SH1)	15 - 25 percent	25 - 35 percent
Ngauranga Gorge to airport (via SH1)	15 - 25 percent	25 - 35 percent
Newtown to Johnsonville (via Basin Reserve, waterfront, Hutt Road)	10 - 15 percent	15 - 25 percent
Johnsonville to Newtown (via Hutt Road, waterfront, Hutt Road)	15 - 25 percent	25 - 35 percent

Table 7: Indicative percentage increases in bus travel times 2016-2026[30]

Bus route	Predicted increase in peak travel time
Island Bay to Wellington Railway Station	10 - 25 percent
Miramar to Wellington Railway Station	5 - 25 percent
Karori to Lyall Bay	10 - 20 percent
Kingston to Wellington Railway Station	10 - 20 percent
Newlands to Courtenay Place	5 - 10 percent

29 Mass Rapid Transport Strategic Case - draft June 2020, Let's Get Wellington Moving. To be updated following revised do minimum modelling outputs.

30 LGWM, Nov 2017, Case for Change Report. Retrieved 27 May 2020, from https://lgwm.nz/assets/Uploads/Sml-LGWM-Case-for-Change.pdf

The Golden Mile is expected to be a significant constraint on the ability to grow Wellington's regional bus network and support increasing demand for short trips within Wellington City. The Golden Mile is the main route for buses travelling through the central city — with up to 90 buses travelling along the Golden Mile per hour in the peak (8am-9am). Over the next 30 years the demand for travel to and from the city centre by public transport is expected to grow by between 35 percent and 50 percent.[31]

With the Golden Mile already near capacity for buses[32], investigations recently completed as part of the LGWM Golden Mile Improvements package have confirmed that the Golden Mile will reach capacity for buses within the next ten years and that a second bus corridor through the city could provide a significant opportunity to grow bus capacity across the wider network and improve accessibility via bus. The second spine could form part of the City Streets package dependent on the outcome of MRT investigations.

3.4.4. Economic impact of congestion

Analysis undertaken for the PBC[33] estimated that on a typical weekday in 2016 road congestion is estimated to impose a cost of $680,000 per weekday (in 2017 prices). Of this, 71 percent of the cost was associated with car traffic, 26 percent with buses, and 3 percent with trucks. 74 percent of the cost was attributed to the cost imposed on people due to longer travel time, 17 percent to people having to rearrange their day to reduce their exposure to road congestion, and 9 percent due to higher vehicle operation costs associated with longer travel time.

Although the bulk of this congestion cost is associated with commuting (39 percent of the daily cost is associated with morning peak time travel and 46 percent with afternoon peak time travel) there remains 16 percent of congestion costs associated with travel delays during the middle of the day.

These estimates imply an annual congestion cost of $133 million with a one standard deviation margin around this central estimate of between $98m and $168m. Modelling concluded that with no change in the Wellington transport network, the annual cost of road congestion could increase to $180m by 2026, with a one standard deviation band of $133m to $226m.

3.4.5. Impact of growth and congestion on attractiveness and liveability of the City

As the inner city grows, and roads and footpaths become increasingly congested the ability to enhance the liveability of the city and create street environments that are attractive – through measures such as reducing traffic, slowing traffic speeds, improving pedestrian levels of service and enhancing street level amenity, will become increasingly challenging. Further population growth and congestion will also worsen carbon emissions if this growth feeds into more fossil fuelled cars on the road.

Wellington City residents are becoming increasingly dissatisfied with road congestion, with a clear majority now signalling that peak traffic volumes are unacceptable, as shown in Figure 17.

[31] LGWM Golden Mile Improvement Project https://lgwm.nz/our-plan/our-projects/golden-mile/
[32] i.e., adding more buses to accommodate growing demand will impact bus reliability as services become increasingly affected by bus-on-bus congestion and crowding at bus stops.
[33] https://lgwm.nz/assets/Uploads/Estimates-of-costs-of-road-congestion-in-Wellington-Report-v1.pdf

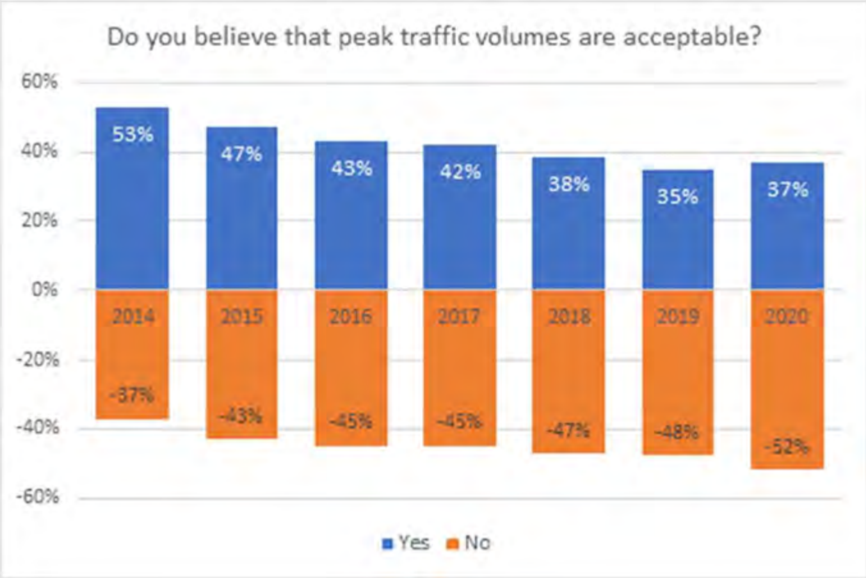


Figure 17: WCC residents' views on peak traffic volumes (2014-2020)[34]

As part of LGWM, partners have developed a preliminary Place and Movement Framework[35] which aims to establish a 'common language' to describe both peoples' movement needs across the street network and the role of streets as places where people want to spend time. The Framework aims to:

- Collectively understand the relative importance of place and movement functions and modal priorities for Central City streets
- Establish street types based on a place and movement hierarchy and modal priorities.
- Guide the level of service and road space allocation for future design decisions.

As a preliminary framework not all of the City Streets geographic scope has been covered by the framework (which was focussed on a sub-set of Central City Streets) and so a qualitative approach, guided by stakeholder representatives with particular expertise in the area of placemaking and liveability was applied. The outcome of the Place and Movement Framework and supplementary work carried out by City Streets was to map (Figure 18) where there is/will be an imbalance between place and movement as a consequence of the desire to provide a vibrant and attractive city for people to stay and enjoy, versus the increasing demands on moving people into and through the Central City.

Proactively responding to these place and movement challenges as part of City Streets will not only improve the accessibility of the city by bike and foot, improving travel choice and reducing reliance on vehicle travel; it will also help to enhance the attractiveness of the city as a place to live, work and play.

Improving the quality of the City's Street environment also helps achieve the growth aspirations for the Central City and inner suburbs by supporting a more compact, sustainable regional form.

[34] Wellington City Council – Residents Monitoring Survey 2020

[35] LGWM Wellington Place and Movement Framework, Central City (17 December 2019)

Figure 18: Amenity Gap Score

3.5. Problem 3: Public transport, walking and cycling is not attractive compared to private vehicles

The attractiveness of public transport, walking and cycling relative to the private car is not yet sufficient to stimulate a step change in mode shift away from private vehicles.

Wellington's compact urban form has contributed to relatively high rates of public transport and active mode use in the city and wider region (refer Figure 19[36]), with an increasing number of people choosing to travel into the Wellington CBD during the morning peak by public transport, bike and by foot. Conversely, its steep topography and weather patterns can also act as a barrier to regular or increasing cycling and walking. Despite these barriers there remain potential increases in walking, cycling and public transport use that can be enabled by the City Streets package.

Figure 20 shows the results of an annual survey to capture the number of people (by mode) crossing a cordon encircling Wellington CBD. Over the five years from 2013 to 2018 the number of people crossing the cordon using non car modes increased from 47 percent to 52 percent, with cycling and pedestrian cordon crossings increasing by 15 percent and 8 percent respectively[37].

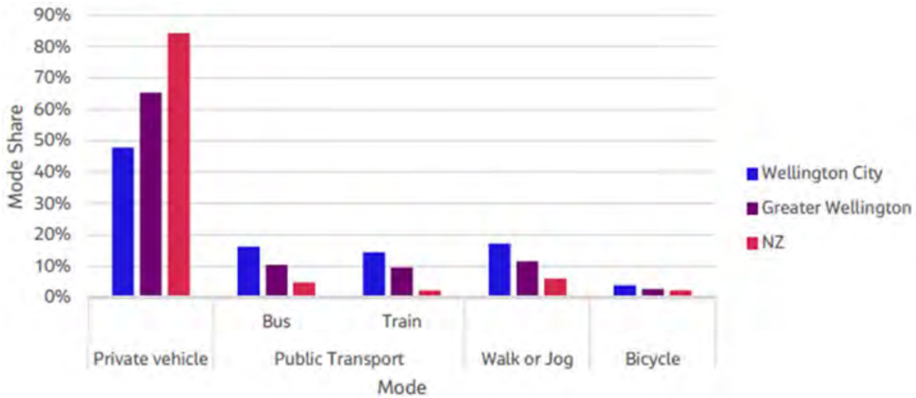


Figure 19: Journey to work mode share (2018)

[36] Mass Rapid Transport Strategic Case - draft June 2020, Let's Get Wellington Moving

[37] Greater Wellington Regional Council, RLTP 2021-24 Pressures, Trends, Issues and Opportunities report, June 2019.

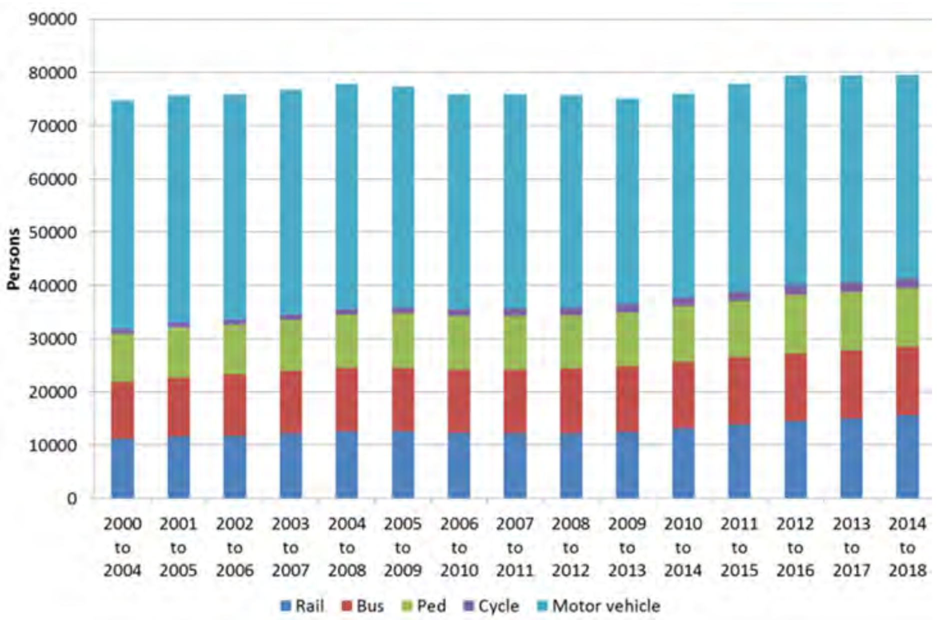


Figure 20: Wellington CBD Cordon Crossing Volumes, 2001-2018, 5yr rolling average, 7am-9am inbound

Anecdotal evidence suggests that there has been significant peak spreading from the north particularly by car and some public transport over the last 5 years at peak times with limited growth in car trips 7am to 9am with marked growth pre 7am.

Whilst recent growth in the use of shared and active transport modes has been trending upwards, significantly more people will need to use public transport and active modes when travelling to, from, and within the city centre if the objectives of the LGWM programme are to be realised.

As outlined under Problem 1 (refer §3.3), the current levels of service for shared and active modes are relatively low across the City Streets network. The low levels of service have a considerable impact on the attractiveness of these modes and serve as a deterrent for potential users. To drive significant mode shift, the programme must aim to achieve high levels of service for buses, cycling, and walking across Central Wellington and on key public transport spines leading into and out of the city, addressing both the actual and perceived levels of service for these modes. Without substantial improvements to the quality and quantity of shared and active mode facilities to improve user experience, the objectives of LGWM programme and wider regional mode shift aspirations may not be achieved.

3.5.1. Public transport

The bus network is currently the only public transport option for much of Wellington City (apart from the northern suburbs), and it plays a critical role in mode shift given the capacity to move large numbers of people through, to and from the central city. As noted in Waka Kotahi's Regional Mode Share Plan for Wellington, buses will be increasingly important to support public transport mode share in key growth areas, particularly in those areas that are not well served by public transport or where bus mode share is low.

Metlink's customer satisfaction survey (Gravitas, November 2019) suggests there are several areas where improvements to bus services could encourage greater use. Improvements relevant to City Streets include reduced travel times, improved service reliability and improved bus stop amenity.

Public transport service reliability issues were also evident in the 2018 Quality of Life Survey, with only 57 percent of respondents agreeing that public transport in their local area was reliable (noting this survey was conducted before the bus network changes in mid-2018).

3.5.2. Active modes

Cycling and walking can make a substantial contribution to mode shift, particularly for short and medium length trips, and perception surveys suggest improvements could be made to encourage more people to bike or walk.

Only 30 percent of Wellington City respondents in the 2019 Greater Wellington Regional Council Transport Perception Survey[38] rated the levels of service for cyclists as good, with strong support for lowering traffic speeds and providing dedicated cycleways to help cyclists feel safer and encourage cycling (regardless of whether or not they cycled

[38] http://www.gw.govt.nz/assets/Transport/Regional-transport/Regional-Transport-Analysis/Transport-Perceptions-survey-report-August-2019-FINAL.pdf

themselves). Just over 40 percent of Wellington City respondents thought cycling was a good option for making trips to work or study, regardless of whether they cycled themselves, implying the potential for latent demand, given steady increases in cycling over recent years (off a low base).

As presented in the 2015 Wellington Regional Land Transport Plan and Wellington City Council's Cycle Network Programme Business case, there is a strong correlation between the public perception of safety and uptake of cycling and poor perceptions that cycling is unsafe and inconvenient is limiting the potential to increase cycle mode share further.

Whilst Wellington is often considered one of New Zealand's walkable cities, only 54 percent of Wellington City respondents in the 2019 Greater Wellington Regional Council Transport Perception Survey thought the level of service was good or very good. Level of service was defined to mean getting around by foot on the region's roads and footpaths is easy, safe and pleasant; streets are well lit at night; there are sufficient places to safely cross busy roads and sufficient shelter for pedestrians where it's needed.

4. Investment objectives

This section sets out the outcomes sought from the recommended City Streets package. It shows the linkage between the wider LGWM PBC investment outcomes and how the City Streets package support the achievement of these outcomes. The outcomes of the LGWM programme cannot be achieved by City Streets alone and City Streets is particularly dependent upon the implementation of the Demand Management Programme being developed as part of LGWM as a complementary component to influencing mode-shift.

4.1. LGWM programme objectives

The outcomes and investment objectives sought for all the LGWM programme, as presented in the PBC are outlined below.

What outcomes are we seeking?				
Liveability	Access	Carbon emissions and mode shift	Safety	Resilience
What are our objectives? A transport system that …				
Enhances urban amenity and enables urban development outcomes	Provides more efficient and reliable access for users	Reduces carbon emissions and increases mode shift by reducing reliance on private vehicles	Improves safety for all users	Is adaptable to disruption and future uncertainty

Figure 21: LGWM moving investment objectives

4.2. City Streets investment objectives

City Streets investment objectives have been developed to be well aligned with the wider LGWM programme objectives but adapted to reflect the unique contribution that City Streets will make to the wider programme. This includes a strengthened focus on the connection between liveability/place and walking as shown in Figure 22.

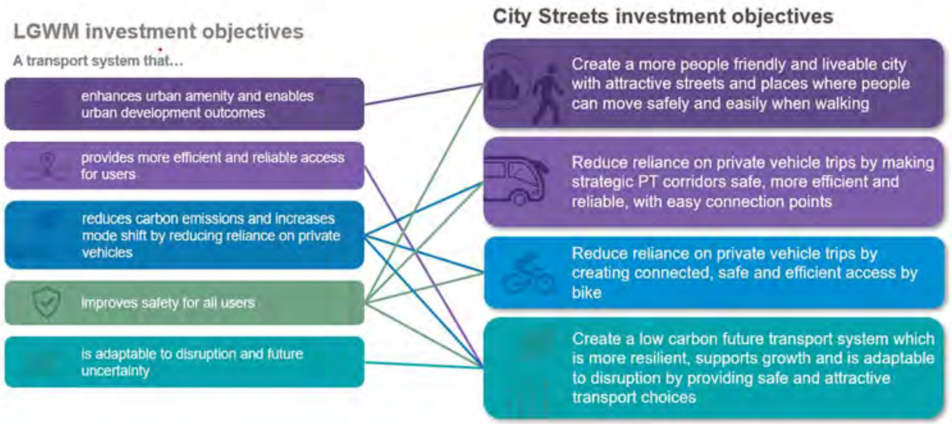


Figure 22: Connections to the City Streets investment objective

Table 8 below outlines the investment objectives and the key performance indicators that will be used to help determine the success of the recommended City Streets package when implemented.

Relevant KPIs have been selected to align with those adopted for the Strategic Highways and Mass Rapid Transit business cases to maximise consistency across the programme.

Table 8: City Streets investment objectives and key performance indicators

Investment objectives	Key performance indicators	Measurement
1. Create a more people friendly and livable city with attractive streets and places where people can move safely and easily when walking.	KPI 1.1: Urban Amenity	LGWM Amenity Index (monitor)
	KPI 1.2: Pedestrian level of service	Pedestrian travel time crossing intersections / on key routes
		Perceptions of levels of service for pedestrians (monitor)[39]
2. Reduce reliance on private vehicle trips by making strategic PT corridors safe, more efficient, and reliable, with easy connection points	KPI 2.1 Travel time reliability	Travel time reliability for public transport (buses) across the Wellington region, and on key strategic bus routes.
	KPI: 2.2 Comparative travel times between modes	Travel time (median) for key modes and routes
	KPI: 2.3 PT network reliability	To be confirmed – will be drawn from model assessment based on real-time bus network data. Percentage of scheduled bus services that actually ran as tracked by Metlinks' RTI and Snapper systems (monitor) Percentage of scheduled Metlink bus services that depart from origin, leaving between one minute early and five minutes late (monitor)
3. Reduce reliance on private vehicle trips by creating connected, safe, and efficient access by bike	KPI: 3.1 The quality of cycling infrastructure	Infrastructure Level of Service (Danish method) along and around the corridor (Percent Cycle network LoS A-C, Percent Cycle network LoS D-F)
	KPI: 3.2 Forecast new cycle users	Transport modelling
4. Create a low carbon future transport system which is more resilient, supports growth and is adaptable to disruption by providing safe and attractive transport choices	KPI: 4.1 Opportunities for urban development and value uplift	Quantitative assessment where possible – qualitative assessment to confirm whether value uplift is potentially relevant
	KPI: 4.2 DSIs for all transport users (by mode)	Analysis of Crash Analysis System (CAS) data using crash estimation compendium methods
	KPI: 4.3 Mode share in the central city	Number of people travelling across the central city screenline (north, south, east and west) by mode
	KPI: 4.4 Mode share across the region	Person kilometres travelled by mode around the region
	KP 4.5 Transport related $CO_{2\text{-}e}$ emissions (city and region)	$CO_{2\text{-}e}$ emissions (city and region) (based on transport model outputs and actual traffic data and/or $CO_{2\text{-}e}$ emissions (city and region) per person kilometre travelled.

[39] Based on Wellington City respondents in GWRC annual transport perception surveys

Economic case

5. Economic case - overview

This economic case identifies and recommends a preferred way forward for the City Streets package. A range of options for investing in the city both by location and mode are considered and assessed against City Street's investment objectives to inform an overall recommendation.

The remainder of this section:

- Provides an overview of the methodology adopted – supported by more detailed appendices and references.
- Outlines the long list of streets considered for investment, the rationale for their inclusion and data used to support it.
- Outlines the shortlisted packages and their assessment.
- Revises and presents a final recommended package of investment demonstrating how it gives effect to City Streets Investment Objectives

6. Methodology overview

As noted in Section 1.2, the City Streets IBC sets out the case for investment in an optimal city wide, multi-modal package of interventions to maximise a shift away from single occupancy vehicles and provide an indicative implementation strategy for the next phases.

The high-level five stage methodology adopted for City Streets IBC is shown in Figure 23. In broad terms, the methodology is based on assessing current levels of service against aspirational levels of service for walking, cycling, public transport, placemaking and safety. Investment is prioritised towards the areas with the largest levels of service gap which have the potential to influence the largest number of people. Further explanation of the methodology and aspirational levels of service is outlined in the remainder of this chapter and Appendix D. Importantly, aspirational levels of service have only been used to identify priority corridors. Indicative solutions and their cost have not been identified which meet those aspirations (ref. §8).

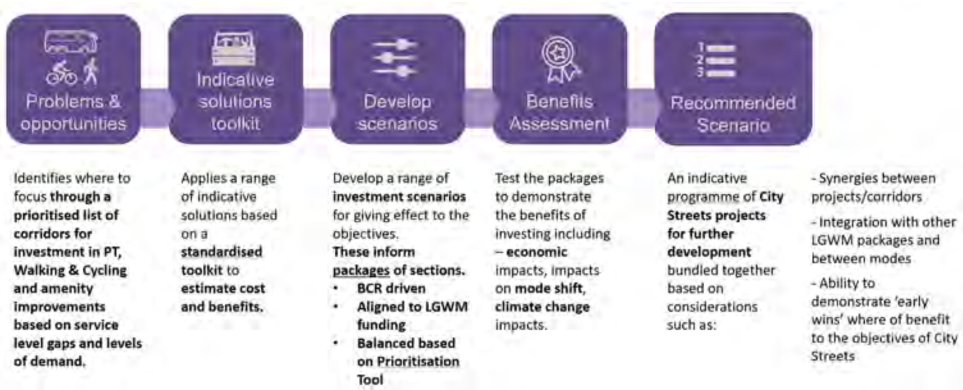


Figure 23: Overall City Streets Methodology

7. Stage one – developing the network prioritisation tool

The geographic scope of the City Streets IBC is defined in Section 2.2 and shown in Figure 5 on page 6. The scope contains all streets in the Central City coupled with the bus priority corridors as defined by GWRC.

To develop an in-depth understanding of the system the study area was divided into 163 network sections. A network section being made up of a street between intersections or a collection of streets with similar characteristics such as levels of demand or geometry. There are 120 sections covering the central city for which data was available and 43 sections covering the strategic bus network outside of the central city.

The levels of service data for the streets analysed (and had available data) in the Central City are shown in Figure 24. The analysis for the IBC did not include a primary data collection exercise for secondary streets with no levels of service data. These streets will be examined further if the neighbouring core corridors, examined in the IBC, are taken forward to the recommended package. A full list of sections in the Central City and bus priority corridors are included in Appendix B and Appendix C.

For each of the sections relevant existing data was collated and used to describe six key dimensions which City Streets has the potential to influence:

- Public transport
- Cycling.
- Walking - Walking levels of service have only been defined for the Central City as per the scope of City Streets IBC and because there was limited data on walking for the bus priority corridors. Outside of the city centre bus boardings and alightings were used as a proxy for pedestrian demand.

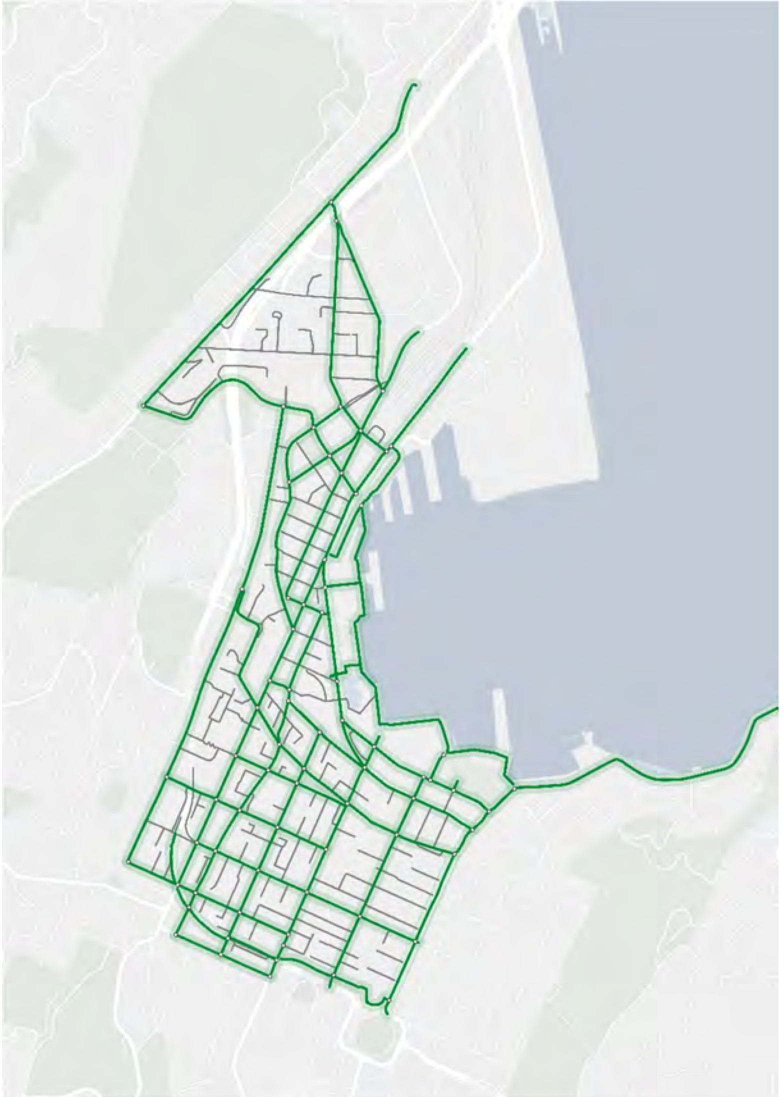


Figure 24: Central City Sections

- Amenity/place
- Safety
- Growth

The factors considered are shown in Table 9 below. For each factor data has been collated and brought together into a City Streets prioritisation tool which is made up of over 40,000 data points drawn from more than 15 different data sources.

Table 9: Summary of factors considered for each of the prioritisation criteria

<table>
<tr><th rowspan="2">Prioritisation criteria</th><th colspan="2">Factors considered</th></tr>
<tr><th>On key suburban corridors</th><th>In the city centre</th></tr>
<tr><td>Public transport level of service</td><td colspan="2">• Bus travel time delay
• Bus travel time variability
• Bus patronage</td></tr>
<tr><td>Cycling level of service</td><td>• Cycling level of service
• Gradient
• Cyclist volumes</td><td>• Cycling level of service
• Cycle permeability (one-way streets)
• Cyclist volumes</td></tr>
<tr><td>Walking level of service</td><td>• Walking level of service for pedestrians accessing bus stops
• Bus boarding and alighting volumes</td><td>• Pedestrian delay
• Pedestrian severance
• Pedestrian permeability (lack of pedestrian connections between streets)
• Current and aspirational place values
• Pedestrian volumes</td></tr>
<tr><td>Amenity and place</td><td>• Aspirational place values for town centres</td><td>• Current and aspirational place values</td></tr>
<tr><td>Safety</td><td colspan="2">• Collective and Personal Risk ratings
• Social cost of injuries
• Number of vulnerable user crashes</td></tr>
<tr><td>Access to support growth</td><td colspan="2">• Planning for Growth estimated population growth served by the corridor</td></tr>
</table>

Once collated and brought together in the prioritisation tool, the data — through a series of weightings — is combined for each of the six key dimensions to form an overall 'dimension score/level of service gap score' which is normalised to be between 100 and 0. The worst performing sections and dimensions scoring 100 and the best scoring 0. From the scores, level of service maps have been developed to demonstrate the level of service gap (by colour) and, where appropriate, levels of demand through the thickness of lines. Examples of these level of service maps are shown in Figure 11, Figure 12, Figure 13 and Figure 18 of the Strategic Case. The full set of level of service maps are included in Appendix E.

All six prioritisation criteria were assigned a score between 0 to 100, with 0 representing the lowest priority (no to minimal problems / opportunities on the segment) and 100 representing the highest priority (the most problems / opportunities relative to other locations in the City Streets scope). This ensured that the scores for all six of the criteria used the same scale, where the location with the highest priority under that criterion had a score of 100.

The scores for the six prioritisation criteria were calculated using the following process:

1. Input data was collated and matched to each corridor segment.
2. Input data was analysed to calculate scores for the six prioritisation criteria. For some criteria, sub-criteria scores needed to be calculated first. The sub-criteria scores were then combined to calculate the final prioritisation score; this process varied for each of the six prioritisation criteria.
3. Where required, the prioritisation criteria scores were normalised to a scale of 0 to 100, so that the highest score was scaled to 100.

A summary of this process for calculating the prioritisation criteria scores is outlined in Figure 25 with further information contained in Appendix D.

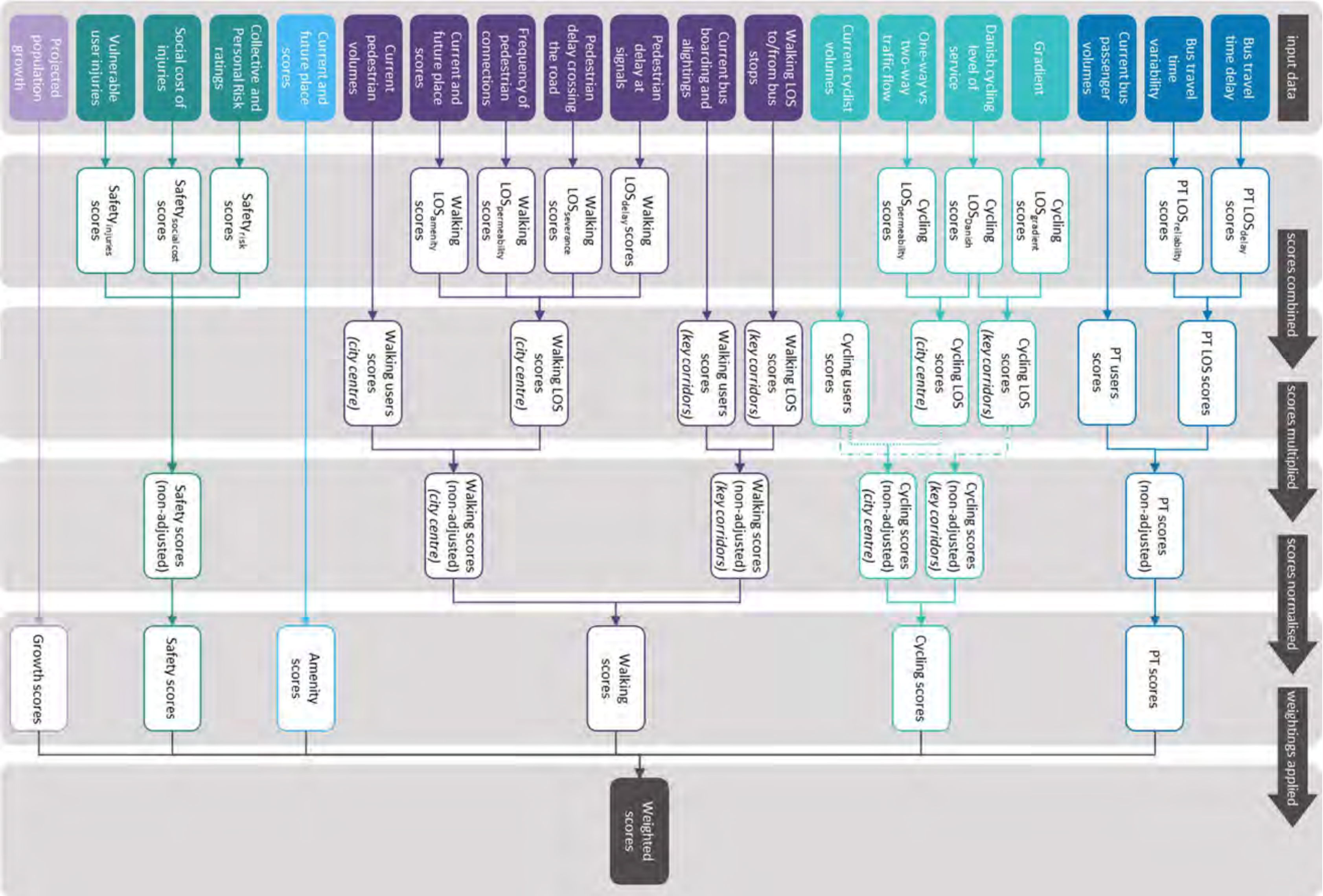


Figure 25: Process for calculating the prioritisation criteria scores

8. Stage two – solutions toolkit

Accompanying the prioritisation tool, a solutions toolkit has been developed (ref. Appendix D). The purpose of the toolkit is to provide a template solution for deriving costs and benefits for the purposes of the IBC. Actual interventions for specific projects will need to be investigated more thoroughly at the detailed business case phase.

The solutions are grouped into five categories of interventions with broad sub-categories and options below them:

Bus priority interventions	**Pedestrian interventions**
• Bus stop improvements • In-lane bus priority measures • Corridor improvements • Signal improvements	• Footpath improvements • Intersections • Midblock crossings • Signal improvements • Accessways
Cycle interventions	**General safety interventions**
• Midblock cycling facilities • Intersections • Midblock crossings • Signal improvements • Accessways	• Traffic calming • Intersections
Amenity improvements	
• Pedestrian facility upgrades • Amenity upgrades for transport users	

In addition, traffic mitigation measures have been considered where there is judged to be an unacceptably significant and adverse impact on vehicles, interventions which mitigate may be required. Mitigation examples include:

- Traffic lanes
- Parking management

The interventions are expected to be applied inside the road corridor (defined as the building-to-building width) or on cycle and / or pedestrian accessways. In some cases, delivering interventions may entail minor road widening or creating new accessways.

Although the City Streets project is designed as a multi-modal package of improvements, the intervention toolbox is defined in a mode-specific way. Multiple interventions have been overlaid on corridors to achieve multi-modal outcomes.

8.1. Application of the toolkit

The BPAP defined three levels of intervention to provide infrastructure on the bus priority corridors from 'Fix everything' to 'Fix the worst problems' down to 'Minimal interventions'. The BPAP analysis concluded that fixing the worst problems was the most economically beneficial package.

Given the high-level nature of the City Streets toolkit, the project team has adopted a similar approach in the application of the toolkit to identify the most appropriate intervention at the IBC level. The project team, for the purpose of the IBC, has taken a 'Fix the worst problems' approach with options applied from the toolkit where they:

- are effective at addressing the most appropriate problems that have been identified on the corridor.
- are technically feasible.

For each network section, the most appropriate opportunities have been selected using a three-stage screening process to move from level of service gap to toolkit selection, as outlined in Figure 26.

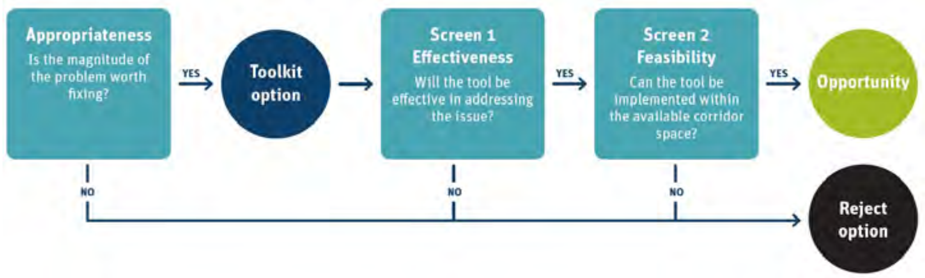


Figure 26: Approach to applying the Toolkit

It should be noted that the toolkit approach does not guarantee that desired levels of service will be met, rather it identifies at this stage, the most appropriate toolkit solution to apply. At the next phase of project development, a broader consideration of options will need to be undertaken to identify the best specific option to implement reflective of the unique characteristics of the street/journey being investigated and value for money of delivering levels of service. This options analysis should also include interventions not forming part of the IBC toolkit such as bus service enhancements, ticketing improvements, or general traffic lane reconfigurations (e.g., one-way streets, street closures etc). Depending on the circumstances there could be the opportunity to trial options (such as tactical urbanism, parking removal, side street closures etc) with suitable monitoring of impacts prior to adopting more permanent changes.

The outcome of completing stages one and two is a populated baseline prioritisation tool which has level of service gap data and indicative interventions with associated costs for each of the 163 network sections included in the City Streets geographical scope.

9. Stage three – develop investment scenarios

Stage three involves developing and testing an initial range of investment scenarios to inform the identification of a preferred package of projects to investigate in more detail as part of delivering against the investment objectives of City Streets. These projects should provide value for money, integrate well with the wider LGWM programme, and form a coherent programme of activity.

The prioritisation tool, developed in Stage 1, allows the weighting given to each of the six key dimensions[40] to be varied to enable the testing of different areas of focus for potential investment. For example, giving greater emphasis to public transport would elevate network sections with the highest PT LoS gap score to the top of the priority list, while emphasising safety would elevate the highest safety risk network sections to the top.

Irrespective of the weightings given to any dimension CS takes a multi-modal approach to addressing the most appropriate issues across all modes.

Seven investment scenarios have been investigated:

- Balanced option – treating all levels of service gaps broadly equally with three scenarios (A-C) considered to test the sensitivity of the tool to incremental changes in the balanced weightings.
- Public transport corridor focus– sections prioritised based on PT LoS gaps
- Walking / cycling corridor focus - sections prioritised based on walking/cycling LoS gaps only.
- LGWM indicative funding – a package built bottom up based on the indicative modal funding envelopes arising from the PBC. Two scenarios were tested:
  - Public transport corridors first – where the worst performing public transport sections were selected first up to an indicative $250m level of investment and then from the remaining sections the combined worst performing walking and cycling sections to an indicative investment level of $100m.
  - Walking/cycling corridors first – where the worst performing walking and cycling sections in the central city were selected up to $100m with the remaining sections being prioritised on the basis of the worst public transport levels of service up to $250m.

The weightings attributed to each of key factors for these scenarios is shown in Table 10 and Levels of Service maps for each scenario shown in Appendix F.

Table 10: Prioritisation scenario weightings

Scenario	Weighting					
	PT	Cycling	Walking	Amenity	Safety	Growth
Balanced option A	20%	20%	10%	10%	20%	20%
Balanced option B	17%	17%	17%	17%	16%	16%
Balanced option C	25%	25%	15%	10%	15%	10%
PT corridor focus*	100%	0%	0%	0%	0%	0%
Walking and cycling corridor focus	0%	50%	50%	0%	0%	0%
LGWM indicative funding scenarios - PT*						
LGWM indicative funding scenario – walking/cycling*						

* LGWM Indicative Funding Scenarios based on a combination of PT corridor and Walking & Cycling corridor focussed scenarios and respective weightings.

[40] Public transport, cycling, walking, amenity/place, safety and growth

9.1. Long list to short list

9.1.1. Option refinement

When comparing the balanced options (refer Appendix F), it was found the weightings for Options A-C had a relatively minor impact on the overall prioritisation of sections. On this basis, 'Balanced option C' was taken forward as this was felt to provide a greater overall balance between central city level of service issues (reflected through walking, amenity and in part growth dimensions) with sub-urban corridor issues captured in the main by public transport and walking levels of service.

Similarly, when comparing the two LGWM indicative funding scenario options (PT first versus walking/cycling first) there was no fundamental difference in overall priorities observed. On that basis the LGWM indicative funding scenario with PT first was taken forward to more detailed analysis.

9.1.2. Indicative funding ranges

As noted in the strategic case section, funding estimates for implementation of City Streets activities were developed very broadly as part of the LGWM PBC and as advised by Waka Kotahi, are indicative only. This reflects the degree of certainty around the level of investigation and analysis of the City Streets related activities as part of the PBC, but also future uncertainty regarding funding availability over the anticipated duration of the City Streets delivery programme.

For the IBC, it is necessary to have a view on the potential investment window in order to define and test indicative programmes, demonstrate the potential costs and benefits of investment, as well as provide a common benchmark against which to compare prioritisation scenarios.

Based on the PBC indicative cost for City Streets of $350m, we have defined our indicative window of investment for the City Streets package as between $250m at the lower and $400m at the upper bounds. This range is used for defining which sections are included in each scenario and for assessing each package.

Based on these indicative ranges the sections for each prioritisation scenario have been defined and are shown in Appendix G.

9.1.3. LGWM indicative funding scenarios

Four scenarios have been taken forward to more detailed assessment and modelling against two funding thresholds of $250m and $400m:

- Scenario 1 – Balanced C
- Scenario 2 – PT corridor focus
- Scenario 3 – Walking/Cycling corridor focus
- Scenario 4 – PBC aligned – PT first.

10. Stage four – shortlist assessment

The four shortlisted investment scenarios (ref. Appendix G) have been taken forward and assessed in greater detail through a multi-criteria assessment reflective of City Streets investment objectives utilising either available data drawn from the prioritisation tool or new modelling undertaken specifically for City Streets.

10.1. Cost / benefits modelling approach

The City Streets project is expected to deliver benefits for users of multiple transport modes hence multiple models and evaluation methods have been used to capture benefits (or disbenefits) for different modes.

For economic evaluation, the do-minimum scenario for City Streets has been taken as the existing state with the inclusion of committed/in-progress projects (e.g., Cobham Drive cycleway). This is different to the do-min for MRT and SHI, as these projects include City Streets as part of their reference case. This means that City Streets economic analysis has excluded Golden Mile and Thorndon Quay/Hutt Road projects thus avoiding any double counting.

The following table summarises the approach used to model transport demands and value user benefits (or disbenefits) arising from the scenarios. A more detailed description of methods is provided in Appendix H.

Table 11: Demand and benefit modelling approach for indicative short-list scenario

Mode	Demand modelling approach	Benefit valuation approach
Public transport (bus)	*Bus priority programme model* Changes in demand due to travel time improvements modelled using an elasticity model based on guidance in MBCM Appendix A14	Travel time improvements modelled using a model of bus speeds on suburban corridors that was developed for the Bus Priority Programme, based on methods outlined in the Transport Capacity and Quality of Service Manual User benefits are assessed using MBCM parameters
Cycling	*Wellington cycle model* Changes in demand due to facility improvements modelled using a discrete choice (nested logit) model of cycle mode and route choice	User benefits and health benefits arising from improved facilities and increased cycling activity are assessed using demand model outputs and MBCM parameters. Safety benefits are not assessed during Stage 4 but will use MBCM parameters and Crash Analysis System data
Walking	*Active modes tool* Current walking activity within the city centre is estimated by interpolating between counting sites; future activity projected based on land use change and increased PT volumes. Model does not capture demand uplift due to walking facility improvements	User benefits arising from improved facilities are assessed using NZTA interim guidance on the impact of urban amenity in pedestrian environments[41] User benefits from faster/more direct routes and safety enhancements are valued using MBCM parameters
General traffic	*Traffic counts and adjustment from above models* Current traffic count data used to estimate volumes. Mode shift from improvements to public transport, cycling, etc is subtracted off existing volumes	Network-wide decongestion benefits from mode shift to PT assessed using simplified procedure approach for indicative analysis. Indicative assumptions about traffic disbenefits from intersection and priority lane changes have also been incorporated. Option to use Aimsum model to validate results, or test other

[41] https://www.nzta.govt.nz/assets/planning-and-investment/docs/impact-on-urban-amenity-in-pedestrian-environments-march-2020.pdf

Mode	Demand modelling approach	Benefit valuation approach
		network changes (e.g., significant reallocation of road capacity) User benefits/disbenefits will be valued using MBCM parameters
Road safety	*Crash Analysis System* CAS data is used to identify existing fatal and injury crashes in the study area. Crashes are categorised according to the travel mode of injured people, the severity of injuries, and whether the crash occurred at or near an intersection.	Crash reduction benefits are not assessed in Stage 4, although simplified procedure drawing upon NZTA's Crash Estimation Compendium was considered. Experience shows that safety benefits are difficulty to robustly assess without detailed analysis of the cause of crashes.

10.1.1. Key benefit valuation assumptions

Valuation parameters and assumptions are drawn from NZTA's *Economic Evaluation Manual* (EEM) and/or its replacement, the *Monetised Benefit and Cost Manual* (MBCM). These assumptions include project period and discount rates (used to calculate the present value of whole-of-life costs and benefits) and parameters for valuing travel time benefits, active mode benefits, and crash cost reduction benefits.

The following table summarises some key assumptions and/or sources of assumptions.

Table 12: Standard valuation and benefit assumptions

Assumption	Value / source
Evaluation period	Start year: 2020 Project period: 40 years
Discount rate	Central: 4% Sensitivity test: 6%
Value of travel time savings	Equity value of time by trip purpose from EEM Table A4.1(b) Trip purpose split for individual modes based on Household Travel Survey data Travel time savings for public transport users are sensitivity tested using a higher, 'crowded' value of PT travel time.
Walking and cycling health benefits	Per-kilometre benefit values and annual capped benefits per user drawn from the *Health and Active Modes Impacts* paper that updates current EEM values[42]
Crash cost reduction benefits	Benefits for reduced fatal/injury/non-injury crashes could be valued. Indicative crash reduction factors based on *Crash Estimation Compendium parameters*[43]
Footpath and pedestrian realm benefits	Benefit parameters for improved footpaths and pedestrian facilities are drawn from the *Impact on Urban Amenity in Pedestrian Environments* paper prepared for the EEM review[44]

In addition, because underlying demand models and demand estimation procedures are generally based on a 2019/2020 base year, it is necessary to make assumptions about baseline growth in demand and benefits. For consistency with other planning assumptions, transport demands (and hence demands for individual modes) are expected to grow in line with Forecast.ID population growth assumptions, plus gradual underlying mode shift based on past observed trends or future forecasts. Demand growth assumptions have been sensitivity tested. User benefits are expected to grow at a similar rate as demands, with sensitivity testing for higher rates of public transport benefit growth due to rising congestion.

42 https://www.nzta.govt.nz/assets/planning-and-investment/docs/health-and-active-modes-impacts-march-2020.pdf

43 https://www.nzta.govt.nz/assets/resources/economic-evaluation-manual/economic-evaluation-manual/docs/crash-risk-factors-guidelines-compendium.pdf

44 https://www.nzta.govt.nz/assets/planning-and-investment/docs/impact-on-urban-amenity-in-pedestrian-environments-march-2020.pdf

10.1.2. Additional benefits

Additional operational benefits are envisaged to accrue to Metlink in two ways:

1. faster journeys reducing operating costs directly by reducing the time it takes to operate a given service. If journey times are substantially improved, it may also be possible to achieve the desired headways using fewer vehicles, resulting in further operating cost savings above and beyond what would be expected based on reduced journey times alone.
2. faster journeys can be expected to result in an increase in patronage. If increased peak loads result in a need for additional bus services, this will increase day-to-day operating costs and may also incur costs associated with purchasing additional vehicles. Increased patronage will also result in increased revenue for the transport operator, which will not impact the social cost benefit analysis but will reduce the net cost to government.
3. More reliable bus travel times can be expected to deliver wider network benefits beyond the specific corridor where an intervention is carried out. The Metlink bus network is interconnected and buses that operate on one corridor will often continue either in-service or out- of- service onto other corridor services. As a result, delays and unreliability in one part of the network can propagate through to impact the wider bus network. This means for example that improvements to reliability on one section of the PT network such as through Newtown will deliver wider network benefits to services across the city, especially to the Northern suburbs where many buses currently through-route between northern and southern destinations. However, City Streets could have two separate and offsetting impacts on operating costs:
   - If faster/more reliable journey times attract more passengers at peak times, it may require Metlink to run more buses to avoid severe crowding (thereby increasing PVR, service-km, and service-hrs, and increasing costs)
   - Faster/more reliable journey times may reduce service-hrs (by allowing drivers to complete existing bus runs faster) and/or reduce peak vehicle requirements (by allowing buses to finish their runs early and start a second run during the peak period), in turn reducing operating costs.

   Experience suggests that it is difficult to get a realistic understanding of operating cost savings from faster/more reliable journey times without a highly granular assessment of existing bus schedules. This is because small reductions matter in some locations and for some routes, but not others. Specialist software like HASTUS is needed to calculate this which was out of scope for the IBC.

There are potential additional walking benefits generated by City Streets not accounted for in the analysis which is induced extra demand uplift in walking due to walking facility improvements.

At this stage of the business case process, it is difficult to quantify these additional benefits with any certainty without wider public transport operational reviews or pedestrian modelling and analysis. Consequently, such additional benefits have not been incorporated into the economic analysis undertaken for the IBC although they could be expected to accrue to public transport investment scenarios and walking investment scenarios respectively.

10.2. Multi-criteria assessment of the shortlisted scenarios

The result of a multi-criteria assessment for the four shortlisted scenarios is outlined in Table 13.

For each scenario, an indicative upper and lower bound package has been developed to inform the assessment of performance of each package. The upper and lower limits have been developed to indicative levels of investment of $250m at the lower end and $400m at the upper to align to the LGWM PBC for City Streets. Differences between scenarios have occurred due to the bundling of projects and the project costs, drawn from the toolkit, not precisely matching the upper and lower bound limits. The table highlights the best performing scenarios in both the high and low scenarios separately.

Each scenario has been assessed against the four City Streets investment objectives utilising metrics available either from the prioritisation tool and underlying data or modelling data utilising the same information used for the benefits assessment (reference §10.1).

Table 13: Shortlisted scenario multi-criteria assessment

		Scenario 1: Balanced (C)		Scenario 2: PT corridors		Scenario 3: W&C corridors		Scenario 4: PBC Aligned – PT	
		Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Costs and benefits	Scenario cost ($m):	237	376	246	390	239	399	249	400
	Scenario BCR:	2.2	1.5	1.7	1.2	2.0	1.4	1.9	1.5
	$m per km of investment:	8.7	8.5	7.7	8.2	9.9	8.9	7.0	8.1
% of City Streets base network improved	PT network:	37%	61%	55%	82%	31%	61%	52%	67%
	Central city network:	50%	66%	21%	42%	47%	67%	49%	74%
	Total network:	37%	60%	43%	64%	33%	61%	48%	67%
City Streets investment objectives	**MCA sub-criteria**								
Create a more people friendly and liveable city with attractive streets and places where people can move safely and easily when walking	Urban Amenity (Length of streets with amenity improvements, km)	15	20	10	13	12	17	12	18
	Walking benefits (Quality of facility and delay reduction benefits $m)	240	283	132	165	215	265	213	292
	Pedestrian levels of service (km of streets with improved walking infrastructure)	12	17	4	8	12	17	12	19
Reduce reliance on private vehicle trips by making strategic PT corridors safe, more efficient, and reliable, with easy connection points	Average ratio of travel times between PT and car on strategic routes (Do minimum = 2.3)	2.0	1.9	1.8	1.8	2.1	1.8	1.9	1.8
	PT network reliability ($m)[45]	20.5	25.4	31.9	34.4	17.6	27.9	24.9	32.3
	Additional daily bus trips	2,700	3,500	4,500	5,000	2,400	4,000	3,400	4,600
Reduce reliance on private vehicle trips by creating connected, safe, and efficient access by bike	Cycling level of service (km of streets with improved cycling infrastructure)	18	29	16	29	19	32	20	32
	Forecast new daily cycle users	3,000	3,000	2,500	2,600	2,800	2,900	2,600	3,000
Create a low carbon future transport system which is more resilient, supports growth and is adaptable to disruption by providing safe and attractive transport choices	Injury reduction potential - Ten-year social cost of injuries in treated sections ($m)	289	400	278	381	219	358	307	409
	PT and cycling commute mode share uplift from Wellington city to central area (base mode share =33.5%)	+2.9%	+3.3%	+3.4%	+3.8%	+2.7%	+3.7%	+2.8%	+3.6%
	PT and cycling commute mode share uplift within Wellington City (base mode share =19.8%)	+2.2%	+2.4%	+2.6%	+2.8%	+2.0%	+2.6%	+2.2%	+2.8%
	Transport related CO_2 emissions (tonnes saved p.a.)	960	1030	970	1020	890	1050	950	1130

- Best performing sub-criteria at lower bound (blue)   - Best performing sub-criteria at upper bound (green)

[45] Present value of benefits estimated at 38% of direct PT user benefits through Bus Priority Action Plan PBC.

10.2.1. Sensitivity tests

Conducting a cost benefit analysis and deriving a BCR requires making assumptions and predictions about the future. Due to the inherent uncertainty involved in predicting the future it is important to test the sensitivity of the assumptions and predictions that underlie the analysis through sensitivity testing.

The parameters adopted for the baseline and two sensitivity tests undertaken are outlined in Appendix I with the results shown in Table 14.

Table 14: BCR sensitivity tests

Scenario	Investment Level	Lower Bound	Central	Upper Bound
Scenario 1: Balanced (C)	Lower Bound	1.0	**2.2**	3.1
	Upper Bound	0.7	**1.5**	2.2
Scenario 2: PT corridor focus	Lower Bound	0.7	**1.7**	2.9
	Upper Bound	0.5	**1.2**	2.0
Scenario 3: W&C corridor focus	Lower Bound	0.9	**2.0**	2.8
	Upper Bound	0.6	**1.4**	2.1
Scenario 4: PBC Aligned – PT first	Lower Bound	0.8	**1.9**	2.9
	Upper Bound	0.7	**1.5**	2.3

The sensitivity tests suggest that all four scenarios respond relatively similarly to changes to input parameters and underlying assumptions with no single scenario showing any particularly adverse response to changes in the baseline assumptions. At the lower funding levels, all scenarios perform at or close to a BCR of 1.0 under the lower bound assumptions. At the higher funding levels, it becomes questionable whether any scenario would achieve a BCR greater than one.

An area of current uncertainty is in relation to the impact of COVID-19 on the transport sector. Waka Kotahi, through Arataki v2 has presented their best and most current view of the challenges and opportunities facing the land transport system over the next decade. Within the Wellington context Waka Kotahi foresee:

- no significant changes in the nature, scale, and location of transport demand over the medium to long-term given the relative resilience of the Wellington economy.
- the 10-year outlook remaining largely unchanged.
- work to ensure the effective integration of land-use and transport remaining a priority, to support mode-shift and reductions in greenhouse gas emissions. This includes sequencing of development, ensuring growth areas are serviced with active mode and PT infrastructure and services, and linking housing to employment and essential services.
- there will be an ongoing need for transport services to support COVID recovery by improving access to employment and essential services for vulnerable communities.

10.2.2. Incremental analysis

An incremental analysis of the upper band scenarios has been undertaken relative to each scenario's lower bound as shown in Table 15.

In accordance with Waka Kotahi Monetised Benefits and Cost Manual (2020) the target BCR for incremental analysis is 1.0. None of the scenarios achieve this which suggests that there is no economic justification for investing in the Upper Bound relative to the Lower Bound indicative packages.

Table 15: Incremental Analysis

Scenario	Additional costs of upper bound ($m)	Benefits accrued ($m)	Incremental BCR
Scenario 1: Balanced (C)	156.6	56.6	0.4
Scenario 2: PT focus	162.7	38.9	0.2
Scenario 3: W&C focus	181.2	98.8	0.5
Scenario 4: PBC Aligned – PT first	170.7	135.8	0.8

10.3. Conclusion from Stage 4

On reviewing the MCA, economic analysis, and make up of each scenario, Scenario 2: PT corridor focus has been chosen to be taken forward for further refinement and detailed assessment (ref. Figure 27).

The MCA shows that all scenarios contribute to the outcomes of City Streets although, each gives emphasis to differing modes to various degrees. The PT corridor focussed package performs well across several criteria at both lower and upper bound funding levels. This package is estimated to make the most significant overall contribution to total mode shift with the largest total predicted uptake of new bus users of around 4,500 - 5,000 per day. However, with the focus on enhancing the key public transport corridors into and through the central city for public transport and cycling, the scenario performs the weakest in terms of overall benefits to walking (in terms of total kilometres treated) with the Balanced scenario generally performing best against City Streets liveability goals. All scenarios perform similarly in relation to their potential to improve safety and is not a distinguishing factor.

The balanced scenario and PBC aligned scenario perform similarly with the balanced scenario performing better at lower funding levels than the PBC aligned scenario. Economically, the balanced scenario performs best overall.

At the level of analysis undertaken it is difficult to differentiate between the packages on the relative reduction of transport CO_2 emissions, although it is clear the more investment in public transport, walking and cycling the greater and more significant the reduction in CO_2 emissions is.

Scenario 2 makes the largest contribution to mode-shift which is central to the goals of LGWM programme and targets investment to the key movement corridors in the city which connects existing suburbs and future growth nodes of Wellington with the central city. The analysis demonstrates there is significant scope to enhance these corridors to drive greater mode shift to cycling and public transport.

As noted, a drawback of Scenario 2 as that the focus for investment in the Central City for walking and amenity is limited to the critical movement corridors only, many of which overlap with wider proposed activities in the LGWM programme, in particularly MRT. This is reflected in the MCA through the marked reduction in walking benefits for Scenario 2 relative to the other scenarios. To address these deficiencies, Scenario 2 has been further developed and enhanced as outlined in the following section.

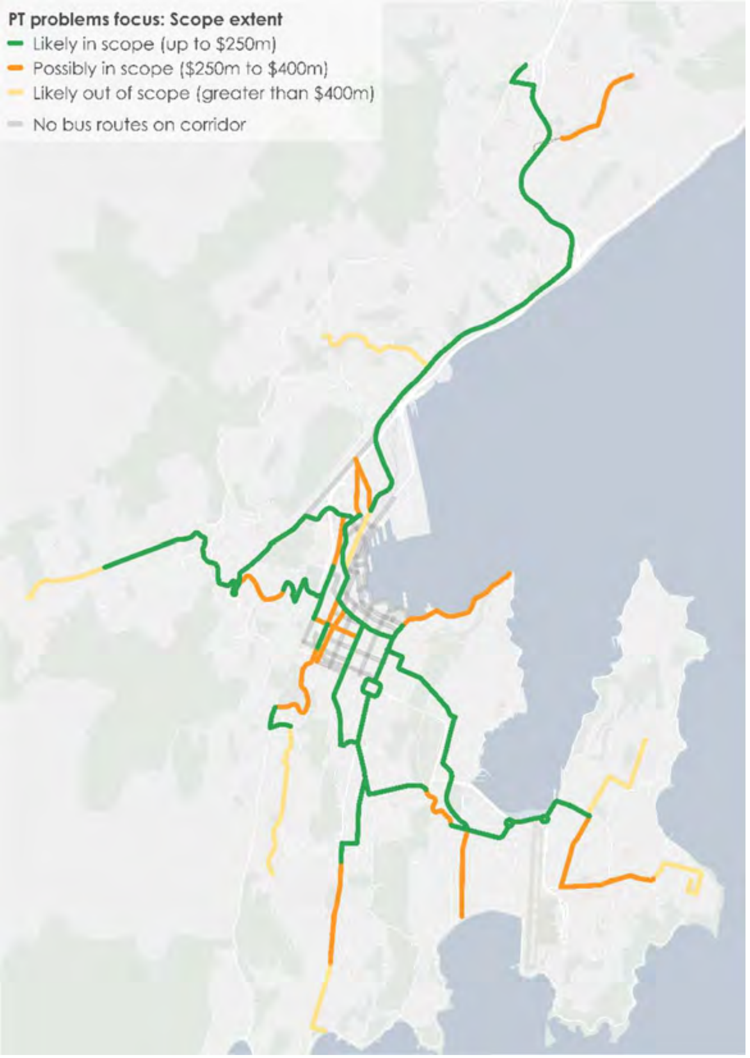


Figure 27: Recommended scenario for refinement and analysis

11. Stage five – recommended package

11.1. Refining the preferred scenario

Further analysis was undertaken to refine Scenario 2: PT Corridor focus to form a final recommended City Streets package Refinement included:

- Enhancing the overall walking and cycling outcomes achieved by the package by including:
  - east-west walking and cycling connections within the Central City.
  - Enhancing walking improvements to key people-moving corridors
- improving the overall value for money of the package by removing lower priority enhancements on the outer fringes of the bus network
- Including any relevant and high-priority integration considerations arising from delivery of the other LGWM components
- Amalgamating corridor sections to form coherent 'projects'.

The resulting 'baseline' package for further analysis is made up of 18 projects, some of which have been further divided into sub-projects to reflect the differing nature and scale of issues in some project areas. For example, the route from Miramar to Kilbirnie was identified as one project. However, the section from Kilbirnie to the Miramar cutting is relatively low priority, while the section through the Miramar town centre is high priority. Therefore, the project was divided into two sub-projects. The projects and associated components that make up the baseline package are shown in Table 16[46], with further details in Appendix I.

[46] There is no implication of timing in the order of project components.

Table 16: Baseline Programme (un-prioritised)

Project	Sub-Project
Quays Route	Quays Route (including second PT spine)*
City to Newtown	Basin to Newtown*
	Kent/Cambridge and Basin*
City to Mount Cook	Taranaki*
	Taranaki St to John St
Hutt Road to Johnsonville and Newlands	Ngauranga Gorge
	Johnsonville
	Newlands
North-South Walking/Cycling Connection	Featherston Walking/Cycling Connection*
	Willis/Victoria Walking/Cycling Connection
City to Kilbirnie (via Hataitai)	City to Kilbirnie (via Hataitai)*
City to Karori	City to Karori Tunnel
	Karori Tunnel to Karori
The Terrace	The Terrace
Kilbirnie to Miramar	Kilbirnie to Miramar cutting*
	Miramar Town Centre*
Newtown to Kilbirnie	Newtown to Kilbirnie
Newtown to Berhampore	Newtown to Berhampore*
City to Kelburn	City to Kelburn
East-West Walking/Cycling Connection	Ghuznee Walking/Cycling Connection
	Dixon Walking/Cycling Connection
	Vivian Walking/Cycling Connection
Tory Precinct	Tory Precinct
Whitmore	Whitmore
City to Brooklyn	Brooklyn Hill
	Brooklyn Town Centre
Cuba Precinct	Cuba Precinct
Molesworth/Murphy/Mulgrave	Molesworth
	Mulgrave/Murphy

** - scope subject to outcome of wider MRT investigations*

11.2. Optimising the programme

It is important that the City Streets package demonstrates best value for money and balances the optimal contribution to the objectives of City Streets and the LGWM programme with the cost of the programme. To assess this, two variants were developed in addition to the full baseline programme presented above.

To develop the variants, the baseline programme sub-projects were prioritised using the six prioritisation criteria weighted as follows:

- Public transport: 50%
- Cycling: 15%
- Walking: 10%
- Amenity and place: 5%
- Safety: 15%
- Access to support growth: 5%

These weightings maintained a focus on public transport as a key trigger for multi-modal investment while giving weighting to the other prioritisation criteria.

This led to the highest priority components forming a significantly smaller programme, Variant 1, targeting only the highest priority corridors, with Programme Variant 2 striking a middle ground between the full baseline programme and only the very highest priority projects of Variant 1. The resulting prioritised list of sub-projects in each variant is shown in Table 17.

Table 17: Prioritised Project List and Programme Variant

Sub-Project	Key Drivers for Investment	Baseline	Variant 1	Variant 2
Quays Route (including second PT spine)	PT, Cycling, Walking, Safety & Growth	✓	✓	✓
Basin to Newtown	PT, Cycling, Amenity & Safety	✓	✓	✓
Kent/Cambridge and Basin	PT, Cycling, Amenity, Safety & Growth	✓	✓	✓
Taranaki	PT, Cycling, Walking, Amenity, Safety & Growth	✓	✓	✓
Miramar Town Centre	PT, Cycling, Amenity & Safety	✓	✓	✓
Taranaki St to John St	PT, Amenity & Safety	✓	✓	✓
Featherston Walking/Cycling Connection	Cycling, Walking, Safety & Growth	✓	✓	✓
Willis/Victoria Walking/Cycling Connection	Cycling, Walking, Safety & Growth	✓	✓	✓
Johnsonville	PT, Amenity, Safety & Growth	✓	✓	✓
Ngauranga Gorge	PT, Cycling & Growth	✓	✓	✓
The Terrace	PT, Walking, Safety & Growth	✓	×	✓
Karori Tunnel to Karori	PT & Cycling	✓	×	✓
City to Karori Tunnel	PT, Cycling & Growth	✓	×	✓
Ghuznee Walking/Cycling Connection	Cycling, Amenity, Safety & Growth	✓	×	✓
Dixon Walking/Cycling Connection	Cycling, Walking, Safety & Growth	✓	×	✓
Vivian Walking/Cycling Connection	Cycling, Walking, Safety & Growth	✓	×	✓
Tory Precinct	Cycling, Walking, Amenity, Safety & Growth	✓	×	✓
City to Kilbirnie (via Hataitai)	PT	✓	×	✓
Newtown to Berhampore	PT & Cycling	✓	×	✓
Newtown to Kilbirnie	PT & Safety	✓	×	×
Whitmore	Cycling & Amenity	✓	×	×
City to Kelburn	PT	✓	×	×
Brooklyn Town Centre	PT, Cycling & Amenity	✓	×	×
Brooklyn Hill	Safety	✓	×	×
Newlands	PT & Safety	✓	×	×
Kilbirnie to Miramar cutting	PT	✓	×	×
Cuba Precinct	Walking, Amenity & Growth	✓	×	×
Mulgrave/Murphy	Walking & Amenity	✓	×	×
Molesworth	Safety	✓	×	×

11.3. Variant assessment

The baseline City Streets package and variants have been assessed using the MCA framework adopted for Stage 4[47] and shown in Table 18 below.

Table 18: Prioritised Project List and Programme Variant MCA

		Baseline	Variant 1	Variant 2
Costs and benefits+	Undiscounted capital cost ($m):	403	149	307
	NPV Whole of life costs ($m)	456.0	168.9	347.4
	Scenario BCR:	2.0	3.5	2.4
	$m per km of investment:	9.2	8.5	9.7
% of City Streets base network improved+	PT network:	65%	24%	46%
	Central city network:	57%	35%	50%
	Total network:	59%	24%	43%
City Streets investment objectives+	**MCA sub-criteria**			
Create a more people friendly and liveable city with attractive streets and places where people can move safely and easily when walking	Urban Amenity (Length of streets with amenity improvements, km)	15	9	12
	Walking benefits (Quality of facility and delay reduction benefits $m)	490.1	381.3	452.2
	Pedestrian levels of service (km of streets with improved walking infrastructure)	14	8	12
Reduce reliance on private vehicle trips by making strategic PT corridors safe, more efficient, and reliable, with easy connection points	Average ratio of travel times between PT and car on strategic routes (Do minimum = 2.3)	1.8	2.1	1.9
	PT network reliability ($m)	34.0	13.1	29.2
	Additional daily bus trips	4,882	1,836	4,095
Reduce reliance on private vehicle trips by creating connected, safe, and efficient access by bike	Cycling level of service (km of streets with improved cycling infrastructure)	32	12	24
	Forecast new daily cycle users	3,000	2,000	3,000
Create a low carbon future transport system which is more resilient, supports growth and is adaptable to disruption by providing safe and attractive transport choices	Injury reduction potential - Ten-year social cost of injuries in treated sections ($m)	372	211	296
	PT and cycling commute mode share uplift from Wellington city to central area (base mode share =33.5%)	4.0%	1.9%	3.7%
	PT and cycling commute mode share uplift within Wellington City (base mode share =19.8%)	2.9%	1.4%	2.6%
	Transport related CO_2 emissions (tonnes saved p.a.)	1160	610	1080

+ *Excludes the costs and benefits of the targeted improvements package which will be demonstrated through Targeted Improvement SSBCs as part of the next phase of City Streets*

[47] Key differences in comparing the baseline metrics with Scenario 2 metrics from Stage 4 are attributable to ongoing model refinement and methodology updates to provide a robust economic analysis for the recommended package. This does not undermine the analysis from Stage 4 as the comparisons were made on a relative and not actual basis.

In addition to the MCA, an incremental analysis and analysis of benefits has been undertaken of the package options as shown below.

In accordance with Waka Kotahi Monetised Benefits and Cost Manual (2020) the target BCR for incremental analysis is 1.0. The incremental analysis of the baseline package is 0.5 which suggests that there is no economic justification for investing in the baseline package relative to sub-package 2.

Table 19 – Incremental analysis

Scenario	Total Costs ($m)	Total Benefits ($m)	BCR	Additional costs of upper bound ($m)	Benefits accrued ($m)	Incremental BCR
Variant 1	168.9	596.6	3.5	-	-	-
Variant 2	347.4	832.3	2.4	178.5	235.7	1.3
Baseline	456.0	891.3	2.0	108.6	59.0	0.5

+ *Excludes the costs and benefits of the targeted improvements package which will be demonstrated through a Targeted Improvement SSBCs as part of the next phase of City Streets*

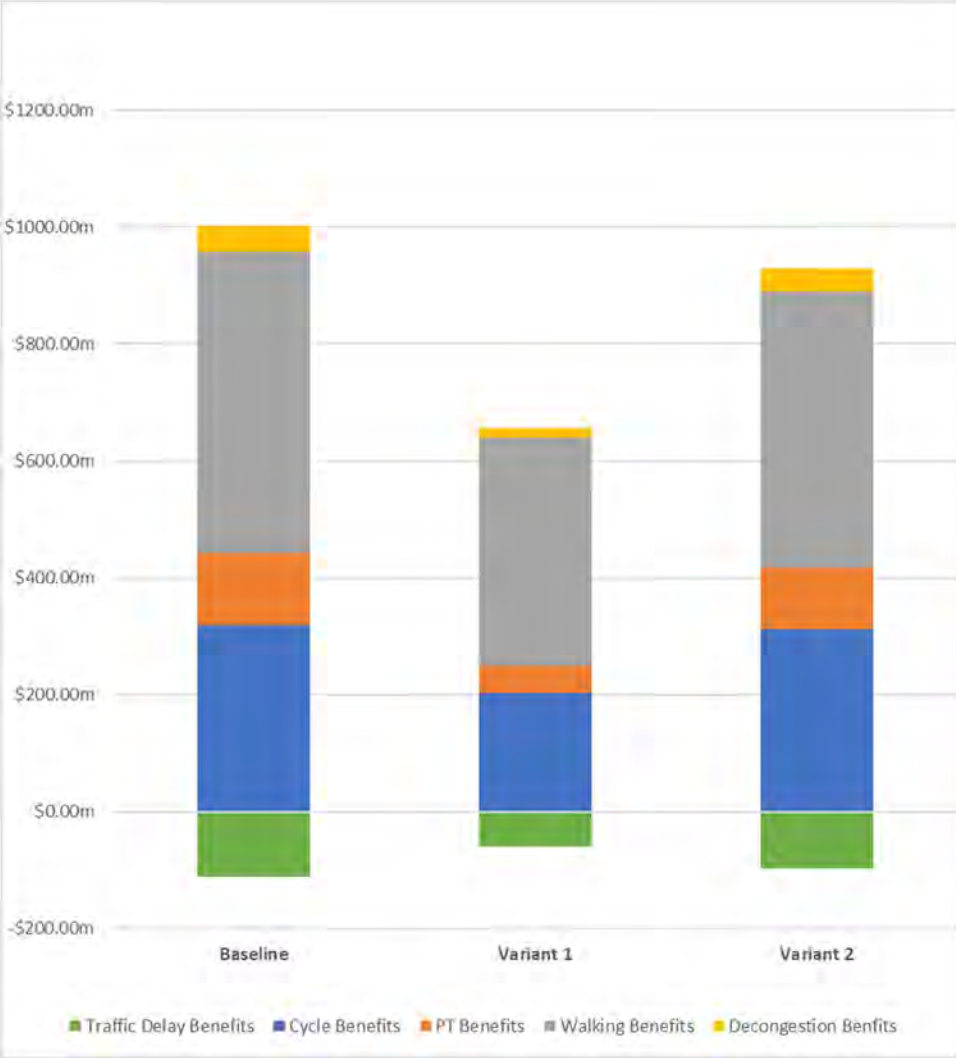


Figure 28: Distribution of Benefits

12. Recommended City Streets Package

The recommended City Streets Package is Variant 2 based on a number of considerations including:

- managing partners' cost risk associated with the package and minimising potential adverse stakeholder feedback if programme components become unaffordable.
- significant levels of walking ($452m) and public transport reliability benefits ($29m) are achieved relative to the baseline and Variant 1.
- no additional cyclists are forecast in the baseline scenario over and above Variant 2 along with relatively few additional kilometres of pedestrian (+2km) or amenity improvements (+3km).
- mode shift gains (3.7% in Variant 2 versus 4.0% for baseline) are marginal relative to each other and the additional cost of the baseline.
- Variant 2 targets $296m of injury costs, which is almost 80% of the baseline of $372m.
- potential CO_2 emission reduction from Variant 2 is predicted to be 1080 tonnes per annum (just 80 tonnes below that predicted for the baseline).
- recognising that in adopting Variant 2, City Streets would forego approximately $50m of additional walking benefits and around $5m of public transport user benefits.
- recognising that the baseline forecasts approximately 780 additional daily bus users over and above Variant 2 which would be foregone in adopting Variant 2.
- whilst still economically beneficial, the economic return on investment of the additional projects in the full baseline falls off when compared with Variant 2.

The recommended programme consists of 19 projects with a mid-point (P50) cost of $284m (including business cases, pre-implementation and implementation costs) and high-cost estimate of $471.9m.

For most interventions, WCC provided lower and upper end unit rates (ref. Appendix D). The midpoint cost has been calculated using midpoint rates multiplied by the relevant quantity estimates, with 42% applied for overheads and an extra 20% for project contingency.

The high cost (pseudo-P95) estimate has used the upper end rate provided by WCC. Where an upper cost has not been provided 44% has been added to the midpoint rate (the average increase from the mid-point to the upper rates for all interventions where we had lower and upper bounds). In addition, the same 42% for overheads and 20% contingency has then been applied.

At the mid-point cost, the package has a BCR of 2.4. The midpoint cost differs marginally in comparison to the MCA analysis due to the decision to exclude the Quays route from the City Streets package at this time given its significant co-dependence on MRT decisions. The programme, along with proposed next steps following endorsement of the IBC are outlined in Table 20 below divided into First Tranche and Second Tranche activities. The first tranche is shown in Figure 29.

Those projects identified for delivery as part of the first round of projects are further divided into:

- Projects for which there is a desire by the partners to commit to construction start in the first three years.
- Projects whose start would be conditional on final decisions around mode and route of MRT being confirmed.

For the purpose of the IBC activities have been defined as SSBC/SSBC-lite. Clarity on the level of detail required at the next stage, and hence the most appropriate business case pathway, will be determined during the scoping stage and engagement with project partners. Further details on next steps are contained in the Commercial, Financial and Management Cases.

Table 20 – Recommended City Streets Package

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope
Tranche 1 – Immediate Start with partner desire to commit to construction start within 3 Years					
Johnsonville Ngauranga Gorge	Johnsonville – Ngauranga PT Improvements SSBC/SSBC-lite	1.62	20.0	32.7	Bus route improvements between the Johnsonville Bus Hub and Hutt Road with associated cycling enhancements, walking to improve bus stop access and safety improvements.
Targeted Improvements	BPAP Targeted Improvements SSBC lite	0.15	2.25	-	Take the Bus Priority Action Plan recommendations regarding Bus Stop improvements and develop this into a cohesive programme with identified costs and benefits with a focus on commencing in Karori. The SSBC lite will: - confirm which stops to rationalise (ensuring best strategic outcome is achieved and integration with wider LGWM and WCC/GW programmes has been considered) - identify options to be assessed at each stop – will include bus stop relocation/rationalisation, bus stop enhancements (including geometry or customer experience improvements), pedestrian access enhancements. - Indicative costs and benefits of the programme - Costed delivery programme. SSBC lite to provide the basis of funding for pre-imp (define the final solutions) and implementation of the costed programme. Whilst an indicative estimate of $2.25m has been assumed for the IBC, this could change as an outcome of the SSBC lite if it is found that there is a better value proposition in investing more targeted improvements.
	Other Targeted Improvements SSBC lite	0.15	9.0	-	Identifies a package of transport system targeted improvements which improve PT, Walking/Cycling, amenity and safety. The activities forming the package should be low cost, easily implementable with benefits known to outweigh costs. Activities to be considered include, amongst others: - timing changes at traffic lights - Bus phase / queue jumps at traffic lights. - Hours of operation of clearways/bus lanes - Minor pedestrian improvements - Minor safety at high-risk intersections

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope

					- Cycle parking
					
					The SSBC lite will:
					- confirm the range of measures forming the targeted programme (ensuring best strategic outcomes are achieved and integration with wider LGWM and WCC/GW programmes has been considered)
					- identify the scale of opportunity for improvement for each activity type and demonstrate the confirmed benefits associated with an activity type, setting out the necessary conditions for those benefits to be guaranteed to be realised.
					- provide indicative pre-implementation and implementation costs for each activity type.
					- provide a 3, 6 and 10 year recommended programme of activity types taking into consideration:
					  - partners and sectors capacity to deliver.
					  - activity type benefits and benefit realisation risk
					  - wider integration with City Streets, LGWM and WCC programmes
					
					SSBC lite will provide the basis of a funding application for pre-imp (define the final location and solution) and implementation of the costed targeted programme.
					
					Whilst an indicative estimate of $9.0m has been assumed for the IBC, this could change as an outcome of the SSBC lite if it is found that there is a better value proposition in investing more targeted improvements.

City to Karori Tunnel	Bowen Street SSBC/SSBC-lite	0.69	9.0	16.1	PT, walking and cycling improvements along Bowen Street to align with WCC Kerb and Channel renewals scheduled for 2022.
Tranche 1 – SSBC Immediate Start					
Taranaki St to John St	Taranaki St to John St SSBC/SSBC-lite	1.60	17.0	28.1	Identify PT and cycling enhancements to include: - Bus stop improvements - Walking improvements to improve access to bus stops.

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope
					Targeted PT, Walking and Cycling improvements at key intersections
Willis/Victoria Walking/Cycling Connection Ghuznee Walking/Cycling Connection Dixon Walking/Cycling Connection	South-West CBD Improvements SSBC/SSBC-lite	2.38	22.0	38.1	Provide a network of safety PT, walking, cycling and place improvements in the South-West CBD. Taking a network approach and using WCC's network hierarchy, identify the most appropriate user priorities and correlating corridor treatments to provide appropriate levels of service. The scope will need to take cognisance of the Golden Mile improvements, the potential impact of future MRT stations in the vicinity and Wellington City Council's commitment to the Pōneke Promise (https://wellington.govt.nz/your-council/projects/the-poneke-promise) actions for Te Aro Park.
Kilbirnie to Miramar cutting*	Shelly Bay Road to Troy St PT Improvements SSBC/SSBC-lite	0.33	2.0	11.3	Low impact bus priority measures city bound between Shelly Bay Road and Troy Street ** Included in the package to address a known PT reliability improvement in a high priority bus route servicing the airport.*
Bus network & operational Improvements	A specialist contract covering analysis and assessment of bus network and operational improvements as inputs into Tranche 1 SSBCs	500	-	-	This is a complementary activity to the programme of SSBCs to be owned and scoped by Greater Wellington in support of any bus planning activities that GW may require to undertake to inform the SSBCs. Bus network and operational expertise is a specialist service best sat outside of our traditional multidisciplinary consultants. All CS SSBCs should, as part of the options analysis process, consider network and operational improvements as well as engineering enhancements. Engineering enhancements could also have unconsidered knock-on consequences for the PT network and operations. This support contract provides enhances GW's work in this area as part of necessary inputs into the Tranche 1 SSBCs.
Quays Route (including second PT spine)	Progress Feasibility testing of the Northern CBD Network Operating Plan	250	-	-	LGWM has been developing the MRT and Golden Mile as separate projects and City Streets identifies Featherston Street as a key walking and cycling connection also. WCC has developed a Network Operating Hierarchy for

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope
Featherston Walking/Cycling Connection					the Northern CBD however, there has not been any network testing of the hierarchy in practice. This commission aims to: - Model the network operating hierarchy with current LGWM findings to understand how the network operates. Identifying any challenges and proposing modal solutions to address these. - Identify at a high level any engineering constraints on achieving the network hierarchy/LGWM outcomes proposing alternatives and options to achieve a balanced transport system
Tranche 1 – Conditional on form and route of MRT being confirmed					
Basin to Newtown Kent/Cambridge and Basin Taranaki	South Central SSBC/SSBC-lite	3.29	45.0	72.6	PT, walking and cycling improvements on the north end of Taranaki St, Kent/Cambridge and Adelaide and Riddiford Street. Scale of improvements to align to WCC network operating hierarchy and be consistent with the confirmed MRT route and mode.
Miramar Town Centre City to Kilbirnie (via Hataitai)	City to Miramar Town Centre SSBC/SSBC-lite	2.13	13.0	28.9	PT, walking and cycling improvements between Kent/Cambridge and Miramar town centre with a focus on: - City to Kilbirnie: Elizabeth St, Brougham St, Pirie St, Hataitai Bus Tunnel, Waitoa Rd, Moxham Ave, Kupe St/Hamilton Rd and Kilbirne Crescent - Miramar Town Centre: Miramar Ave between Shelly Bay Road and Park Rd/Hobart St. Scale of improvements to align to WCC network operating hierarchy and be consistent with the confirmed MRT route and mode.
Newtown to Berhampore	Newtown to Berhampore SSBC/SSBC-lite	1.90	26.0	41.4	Includes the bus route from Newtown town centre to Island Bay including Rintoul St, Luxford St and Adelaide Road between Luxford St and Dee St. Improvements to include PT and cycling enhancements, walking improvements to improve bus stop access, safety & operational improvements at key intersections.

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope
					Scale of improvements to align to WCC network operating hierarchy and be consistent with the confirmed MRT route and mode.
Quays Route (including second PT spine)	-	-	-	-	Scope to be incorporated into MRT following outcome of mode/route confirmation
Featherston Walking/Cycling Connection	Featherston Walking/Cycling Connection SSBC/SSBC-lite	2.09	14.0	21.7	Scope to be informed by the WCC network operating hierarchy, confirmed MRT route and mode, Golden Mile investigations and City Streets Network Operating Hierarchy work undertaken as part of Tranche 1. Currently envisaged to include: - cycling and walking enhancements along Featherston street between Mulgrave Street and Hunter Street - walking improvements for pedestrians crossing Featherston St. - safety improvements at key intersections Scope excludes side connections linking the Golden Mile to the waterfront which are expected to be taken forward by either the Golden Mile or MRT projects.
Tranche 2 – Subject to future funding approvals considering progress on Tranche 1 and programme review					
The Terrace	Terrace SSBC/SSBC-lite	1.63	22.0	37.2	Includes consideration of bus, cycling and walking improvements including pedestrian crossing improvements and safety improvements at key intersections. Geographic scope covers the Terrace between Bowen Street and Ghuznee Street, and Ghuznee Street between The Terrace and Willis Street.

Project	Next Phase	Phase Estimate ($m)	Mid-point Total Estimate ($m)	High-point Total Estimate ($m)	High level scope
Karori Tunnel to Karori	Karori Tunnel to Karori SSBC/SSBC-lite	2.72	38.0	61.4	Includes the bus route from Karori Tunnel to the Karori town centre (Chaytor Street and Karori Road between Chaytor Street and Chamberlain Road). To include the long-term future options for the Tunnel although improvements beyond operational enhancements are presently outside the scope of activities to be delivered by City Streets. Identified improvements include: - PT and cycling enhancements along the route. - Walking improvements to improve bus stop access. - Safety improvements at key intersections
Vivian Walking/Cycling Connection	Vivian/Tory Precinct SSBC/SSBC-lite	0.95	5.0	8.0	Geographic scope includes Vivian Street between Taranaki Street and Kent / Cambridge Terrace, and Tory Street between Vivian Street and Courtenay Place and includes consideration of connections to Jessie Street, College Street, Lorne Street, and Tennyson Street. The SSBC purpose is to take a network approach and, by using WCC's network hierarchy, identify the most appropriate user priorities and correlating corridor treatments to provide appropriate levels of service and provide a safe and connected east-west cycling and walking network. The project builds from the earlier Ghuznee and Dixon walking / cycling connections to provide a connected network. Improvements include: - Cycling and walking enhancements along the route - Safety improvements at key intersections - Amenity improvements
City to Karori Tunnel	Bowen Street to Karori Tunnel SSBC/SSBC-lite	1.71	39.0	62.4	PT, walking and cycling improvements from Tinakori Road at Bowan Street, along Glenmore Street to Karori Tunnel.

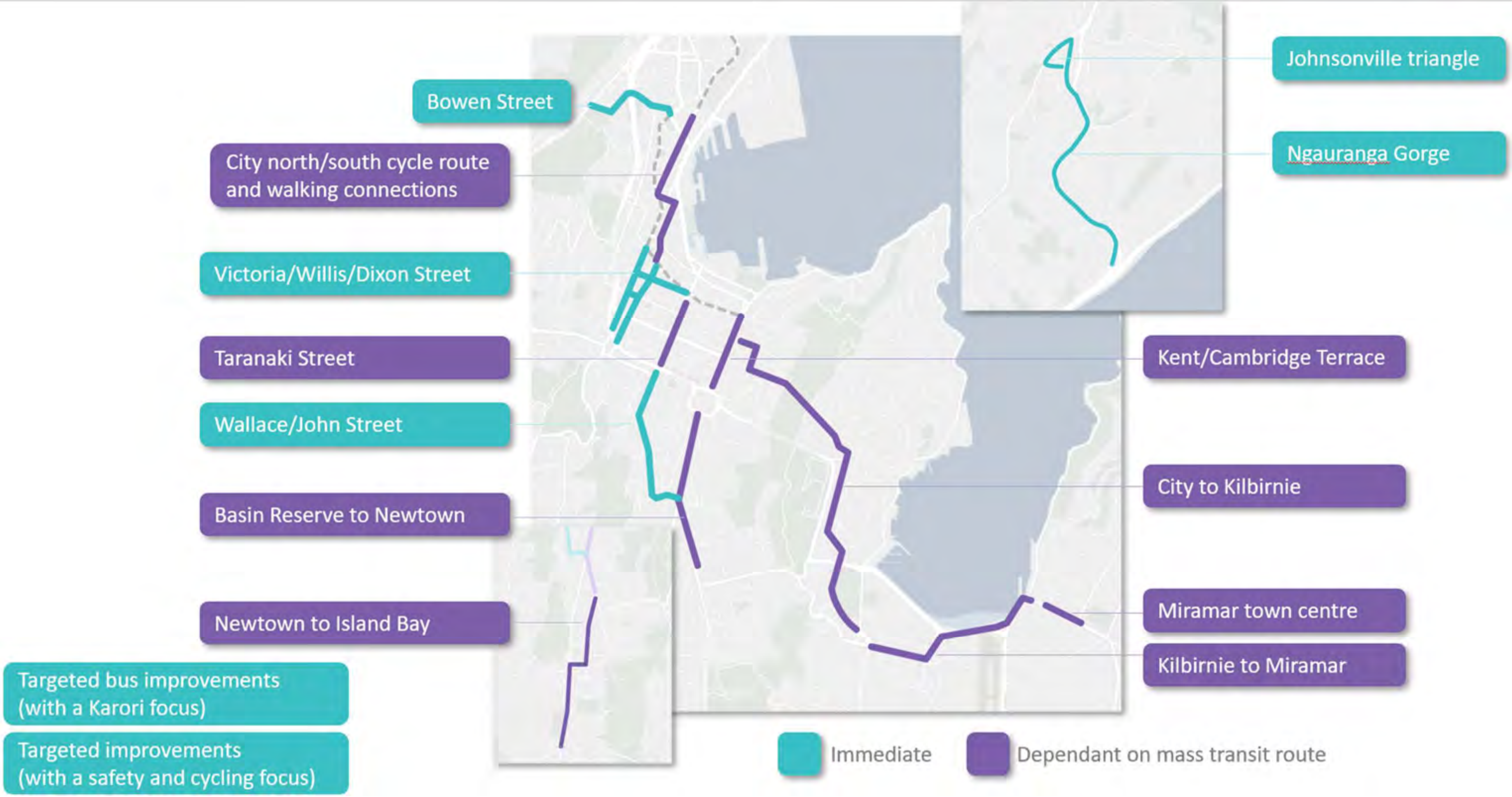


Figure 29: City Streets Tranche 1

12.2. Contribution to LGWM programme objectives

Table 21 below demonstrates how the City Streets contributes to the objectives of the wider LGWM using the measures used in the MCA process.

Table 21 – Indicative performance of recommended City Streets package against the LGWM investment objectives

LGWM Investment Objectives A transport system that …	**City Streets MCA measure**	
enhances urban amenity and enables urban development outcomes	% of central city network treated	50%
	Length of streets with amenity improvements (km)	12
	Walking benefits (Quality of facility and delay reduction benefits ($m)	452.2
provides more efficient and reliable access for users	Pedestrian levels of service - km of streets with improved walking infrastructure	12
	Cycling level of service (km of streets with improved cycling infrastructure)	24
reduces carbon emissions and increases mode shift by reducing reliance on private vehicles	Average ratio of travel times between PT and car on strategic routes (Do minimum = 2.3)	1.9
	PT network reliability ($m)	29.2
	Additional daily bus trips	4,095
	Forecast new daily cycle users	3,000
	PT and cycling commute mode share uplift from Wellington city to central area (base mode share =33.5%)	3.7%
	PT and cycling commute mode share uplift within Wellington City (base mode share =19.8%)	2.6%
	Transport related CO_2 emissions (tonnes saved p.a.)	1,080
improves safety for all users	Injury reduction potential - Ten-year social cost of injuries in treated sections ($m)	296
is adaptable to disruption and future uncertainty	% of City Streets base network improved (total network)	43%

Financial case

13. Financial Case – LGWM programme wide context

This section outlines:

- the financial context to the wider LGWM programme including highlighting the approach to clarifying the affordability of the programme as a whole and what elements are to be funded by the partnering organisations.
- cost assumptions including the capital expenditure and operating assumptions used.
- City Streets package costs and cashflow

13.1. Funding - Partner Affordability

LGWM is a step change in transport for Wellington and represents a major investment for all three funding partners. Due to the scale of the programme and other financial pressures facing the partners affordability will need to be reassessed at each phase as the programme progresses, including the City Streets component.

The IP anticipated detailed business cases would be developed and made a range of assumptions which would need to be explored in more detail through the subsequent phases including:

- A cost share of 60% central government 40% local government
- The central government share was anticipated to come from the NLTF.
- Financing was anticipated for the rapid transit project.
- NLTF funding projections included petrol excise duty and road user charge increases broadly in line with inflation over 30 years.

The following sections set out the agreed approach to the key LGWM programme wide financial arrangements, including City Streets activities, as the City Streets programme prepares to move to the next phase.

13.1.1. Financing

The LGWM programme is not the only funding pressure partners have and therefore partners will need to make wider decisions about their cashflow and financing.

For the projects within the 3-year programme, of which City Streets is part, a central financing mechanism operated by LGWM programme is not intended to be used. This may be revisited as the programme progresses through later phases.

Therefore, the cash funding required of each funding partner will be provided and it will be up to that partner to determine the financing arrangements for their own cashflow management, if any.

It is expected Councils will debt fund the next phase and Waka Kotahi use the NLTF on a ‘paygo’ basis.

13.1.2. Funding

The LGWM programme has completed a comprehensive inventory of funding tools in use across the world. This includes funding tools which fall under the broad categories of “value capture” and “user charging”.

Any use of new funding tools would need to go through the appropriate approvals and in some cases legislative change. No decisions about any potential new funding tools have been taken and it is expected further investigations into new funding tools will occur ahead of the start of construction of higher cost components of the LGWM programme (which could include some City Streets components) as part of clarifying the level of spend the funding partners can commit to.

The Council partners have included funding for the next phases of work expected over the next few years in their long-term plans using their existing rating tools. The City Streets package has also been included in the Wellington RLTP and identified alongside other LGWM activities as a significant activity, Priority 6.

Waka Kotahi is expected to fund the central government share from the NLTF for the next phase of work. This funding requirement is expected to be included in the National Land Transport Programme (NLTP).

13.1.3. Funding partner cost shares

Project costs need to be allocated to funding partners including each local Council (which was not determined at the IP stage). This allocation sets out what each funding partner must fund and over what period. Cost shares may vary by phase (business case development, implementation and operational costs).

The final decision on cost allocation, across the programme, has not yet been made.

There is an explicit LGWM programme work stream to provide funding partners with analysis to assist them in agreeing the more enduring agreement for cost allocation. That analysis and partner agreement is expected to be developed once preferred options have been identified and using the analysis from subsequent City Streets SSBCs.

This cost allocation is expected to consider the implications for various groups including who benefits and who should bear costs.

For the next phases (SSBCs & targeted improvements) of the City Streets package the interim agreed funding arrangement, documented in schedule 5 of the 2020 LGWM Relationship and Funding agreement (RFA) to allocate cost shares to funding partners, will be used.

13.2. Capital cost assumptions

A high-level cost estimation approach has been adopted for the IBC. This approach is based on:

- Unit cost estimates for individual interventions included in the intervention toolbox (ref. Appendix F)
- 42% of unit costs for project to represent overhead costs such as detailed design, communications and engagement, and traffic resolutions.

This approach entails:

- Identifying the quantity (number, distance, etc) of each intervention included in each scenario.
- Multiplying quantities by unit cost rates to obtain total estimated costs.
- Adding project overhead costs.

Actual costs are likely to vary from these indicative cost estimates for a variety of reasons, including hard-to-predict local cost factors like utility relocation and decisions to implement a non-standard design. As a result, a low-high range of unit cost rates is provided to provide an indication of the potential degree of variation between locations. Mid-point cost estimates are used in the indicative cost benefit analysis, with sensitivity testing based on the high end of the cost range.

The following sub-sections summarise the basic approach with actual unit cost rates included within the intervention toolbox. In general, unit cost rates are drawn from recent projects undertaken in Wellington, with an allowance for recent cost inflation where relevant.

13.2.1. Intervention costs

Various sources of data were used to develop cost estimates for the intervention including:

- *Bus Priority Indicative Business Case*
- ViaStrada's draft Facility Cost Estimate Tool developed for the Waka Kotahi Cycling Network Guidance.[48]
- Other LGWM projects
- Wellington City Council sourced unit cost rates from recent projects

These estimates are summarised in Appendix D.

13.2.2. Other costs

Whilst in general it has been assumed that the package can be developed to largely fit within the road reserve some limited property acquisition contingency has been allowed for as shown in Table 22. Further, given the indicative nature of interventions forming the IBC to inform investment priorities a programme contingency of $63m is proposed at this point in time.

[48] https://www.nzta.govt.nz/walking-cycling-and-public-transport/cycling/cycling-standards-and-guidance/cycling-network-guidance

13.2.3. Project revenues

The fare implications of City Streets on increased mode share by public transport have not been estimated for the IBC.

13.3. Cost estimate

The recommended City Streets programme has a forecast P50 capital cost estimate of $284m. We have also estimated the potential upper limit cost of the programme based on the upper bound cost estimate of all potential interventions at $471.9m. This has been estimated using the upper limit cost of toolkit interventions for the recommended programme as presented in Appendix D.

Table 22 shows the capital cost estimate (P50) for the recommended programme in base year values ($2020) and do not account for inflation or discounting.

13.4. Cost Certainty

Cost estimates are indicative and based on multiple existing sources, such as WCC-sourced unit cost rates with limited adjustments for site-specific known issues. There are therefore risks associated with the indicative/preliminary cost estimates adopted for the IBC. These have been tested via sensitivity testing reported in Section 10.2.1.

13.5. Cashflow forecast

An indicative forecast for the City Streets Programme is shown in Table 23. This is based on the timing of activities as presented in the Economic Case (Chapter 12, Table 20) and indicative programme included in the Management Case (Chapter 17, Figure 31).

Table 22 – Pre-Implementation / Implementation costs for recommended programme

Cost source	Total expected project cost ($)
SSBC	**$24,050,000**
Main Consultancy/Contract	$16,600,000
Additional Design (from Pre-imp)	$1,370,000
Reviews & Audits (Safety, Peer, Cost)	$520,000
Engagement / Consultation	$3,060,000
City Streets internal management costs PM's etc	$2,500,000
Pre-Implementation	**$21,895,000**
Main Consultancy/Contract	$18,242,500
Reviews & Audits (Safety, Peer, Cost)	$632,500
Engagement / Consultation	$530,000
City Streets internal management costs PM's etc	$2,490,000
Implementation	**$238,055,000**
Main Consultancy/Contract	$234,530,000
City Streets internal management costs PM's etc	$3,525,000
Contingency Property	**$3,000,000**
Programme Contingency	**$63,000,000**
Total Programme Cost	**$350,000,000**

Table 23 – City Streets draft cashflow forecast by NLTP period ($m) (P50 excluding contingencies)

NLTP Period July 2021 – June 2024													
	Jul-21	Oct-21	Jan-22	Apr-22	Jul-22	Oct-22	Jan-23	Apr-23	Jul-23	Oct-23	Jan-24	Apr-24	Total
SSBC	1.15	1.19	2.85	2.85	2.74	2.15	1.26	1.26	0.40	0.40	0.40	0.40	**17.06**
Pre-Implementation	-	0.59	0.59	0.23	0.36	0.91	2.11	2.11	2.37	1.05	1.05	-	**11.37**
Implementation	-	-	0.93	2.45	2.45	2.45	2.92	2.92	3.97	10.12	10.12	14.94	**53.28**
TOTAL	1.15	1.78	4.38	5.54	5.56	5.51	6.29	6.29	6.74	11.56	11.56	15.34	**81.71**

NLTP Period July 2024 – June 2027													
	Jul-24	Oct-24	Jan-25	Apr-25	Jul-25	Oct-25	Jan-26	Apr-26	Jul-26	Oct-26	Jan-27	Apr-27	Total
SSBC	-	-	1.30	1.30	1.30	1.30	0.90	0.90	-	-	-	-	**7.00**
Pre-Implementation	0.36	0.36	0.36	-	-	-	0.55	0.55	2.03	1.48	1.48	1.48	**8.62**
Implementation	14.01	14.01	14.01	8.47	6.45	6.45	12.00	7.18	7.18	10232	4.68	4.68	**109.40**
TOTAL	14.36	14.36	15.66	9.77	7.76	7.76	13.45	8.63	9.21	11.71	6.16	6.16	**124.97**

NLTP Period July 2027 – June 2030													
	Jul-27	Oct-27	Jan-28	Apr-28	Jul-28	Oct-28	Jan-29	Apr-29	Jul-29	Oct-29	Jan-30	Apr-30	Total
SSBC	-	-	-	-	-	-	-	-	-	-	-	-	
Pre-Implementation	-	-	-	-	-	-	-	-	-	-	-	-	
Implementation	9.85	5.17	5.17	5.17	5.17	5.17	5.17	8.63	8.63	8.63	8.63	-	**75.41**
TOTAL	9.85	5.17	5.17	5.17	5.17	5.17	5.17	8.63	8.63	8.63	8.63	-	**75.41**

Commercial case

14. Commercial case - overview

This section provides a high-level assessment of the potential for professional services and contractors to deliver the infrastructure improvements associated with the City Streets package. A programme procurement strategy has been developed and a City Streets procurement plan will be completed prior to funding be requested.

14.1. Commercial considerations

The City Streets programme is reasonably generic in nature and comparable to other PT, cycling, walking and amenity improvements that have been delivered in Wellington and across the country in urban environments. As such no capability constraints are envisaged. There could be market constraints within Wellington if activities are not programmed and procured within the wider LGWM context or without regard to wider sectors' procurement activities. It is anticipated that expertise will be required for City Streets in the areas of:

- Public engagement and communications
- Multi-modal design in constrained corridors

14.2. Procurement approach – next phase

Whilst the activities forming the City Streets package are relatively standard in nature there are several approaches which could be adopted to the procurement of professional services for the next stages of development.

In developing the proposed packages and programme for the next phase of SSBCs (as outlined in the Economic Case - Chapter 12, Table 20) an initial procurement options assessment for delivery of the SSBCs in Tranche 1 has been undertaken which considered four professional service delivery options against seven criteria.

14.2.1. Delivery options

Four delivery options have been considered:

- Individual tender – Professional services for each individual SSBC are procured independently.
- Panel – A panel of suppliers is appointed on a generic scope basis and project assigned to them subsequent to appointment with further work dependent upon supplier performance.
- Bi-procurement – Two suppliers are selected for 2 predefined packages of work with the 'winning' supplier being awarded the main package and the runner up being awarded the second package. Both with the ability to vary in additional SSBCs (e.g., Tranche 2) dependent upon performance.
- Alliance - The alliance delivery model is a relationship-style arrangement, that brings together the client and one or more parties to work together to deliver the project, sharing project risks and rewards. Collaborative procurement methods are usually used for highly complex or large infrastructure projects that would be difficult to effectively scope, price and deliver under a more traditional delivery model.

14.2.2. Procurement considerations

Each of the delivery options has been considered against seven criteria:

- Speed to procure.
- Anticipated quality of the deliverable
- Likely value for money of the arrangement to the LGWM partners
- The markets capacity to respond to the approach.
- The LGWM programmes capacity to run the procurement approach efficiently and effectively.
- The LGWM programmes ability to deliver the projects under that procurement approach effectively and efficiently.
- The likely attractiveness of the approach to the market

Table 24 below shows the outcome of the assessment of the delivery options. The assessment suggests that a bi-procurement approach is preferable currently. The final procurement approach will be confirmed in the City Streets procurement plan.

Table 24 – Delivery options draft assessment

	Individual tender	Panel	Bi-Procurement	Alliance
Speed to procure	×	✓✓	✓✓	×
Quality	✓✓✓	✓✓	✓✓	✓✓✓
Value	✓✓✓	✓✓	✓✓	×
Market capacity to respond	✓	✓✓	✓✓	✓✓
LGWM ability to procure	×	✓✓	✓✓	×
LGWM ability to manage	✓	✓	✓✓	✓✓
Attractiveness to Market	×	✓	✓✓	✓✓✓
Score	5	12	14	7
Rank	**4**	**2**	**1**	**3**

Management case

15. Management case – Overview

Management of the City Streets programme will fall under the wider programme governance, management, funding and delivery arrangements of the LGWM programme.

Presently, many of those arrangements are in a state of flux as actions in response to the programme Health Check are resolved and embedded. It is within that context that, the management case below should be considered which presents our best estimate of the governance structures, project team and timelines moving forward.

16. Governance structure and project roles

The next phases of City Streets (Tranche 1) are being delivered by the LGWM programme with LGWM governance and decision-making process being applicable. The next stage of the programme is the Tranche 1 SSBCs/SSBC-lites, studies and Targeted Improvements package. Figure 30 below outlines the team and governance structure envisaged to deliver that next stage of City Streets with decisions on recruitment and filling roles still to be taken.

Supporting the package leads and project managers is a Technical Advisory group made up of technical expert representatives from partner organisations whose role is to provide guidance to the team as projects evolve. This structure is based on our current understanding of deceision making within the LGWM programme which is still evolving as actions are taken in response to the LGWM programme health check. The final decision making and governance structure for the City Streets Tranche 1 activities would align to the LGWM programme wide governance and delegated decision making frameworks as they are adopted.

16.1. Integration across City Streets

Integration across City Streets will be maintained through the close working of the City Streets project managers who will oversee the whole package along with a consistent package support team. Consistency of external advice across City Streets will be provided through the Technical Advisory Group which will be consistent across all activities. In addition, the LGWM programme is currently working on a preferred way forward for overall programme integration to provide further direction and guidance to City Streets and other programme components on how they will integrate with each other.

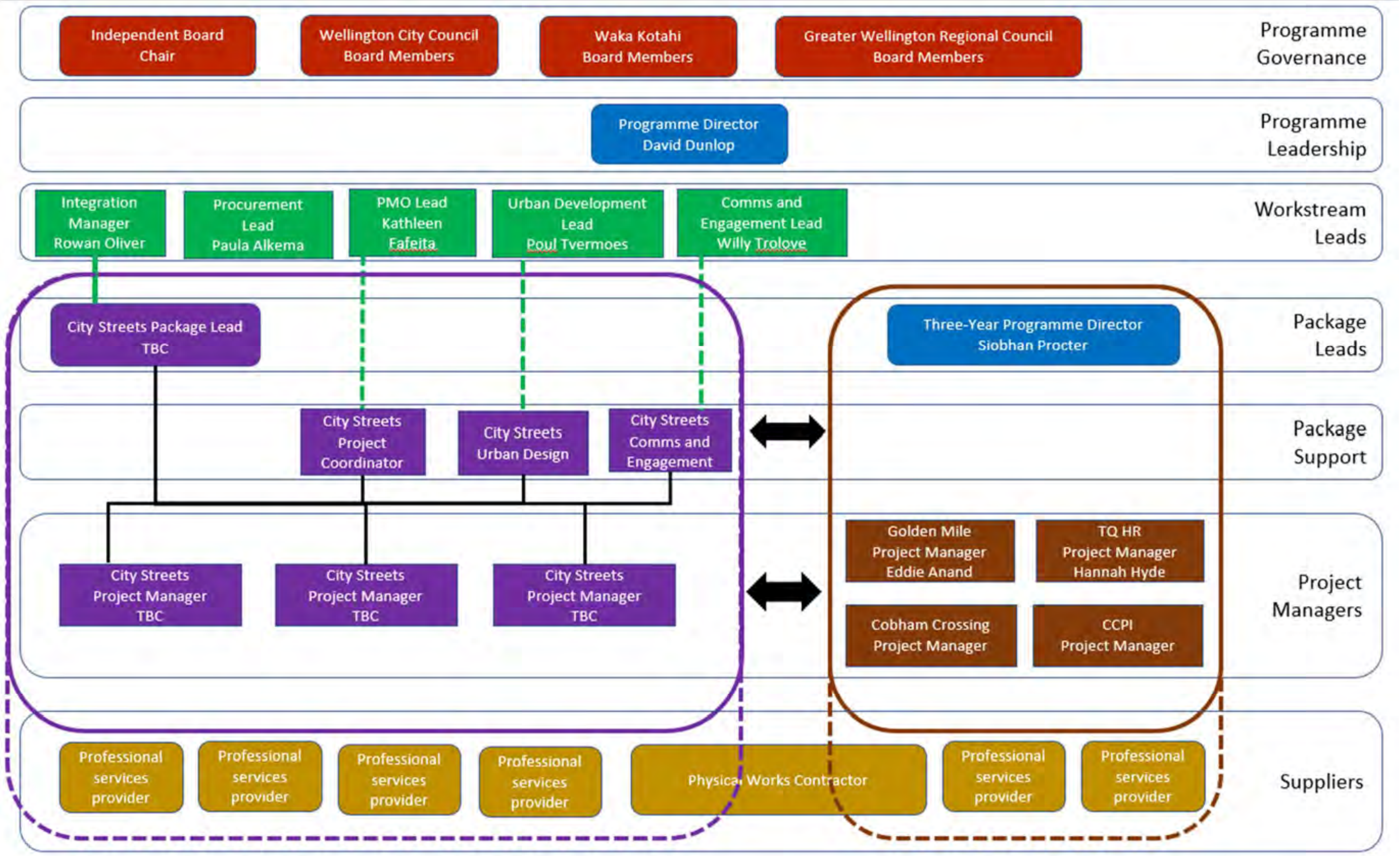


Figure 30: City Streets Tranche 1 Team Structure

17. Indicative programme and next steps

An indicative programme for Tranche 1 of City Streets has been developed for the as shown in Figure 31.

The City Streets Package Lead will be accountable for the immediate next steps to progress to the SSBC stage of City Streets is outlined in Table 23 below.

Table 25 – Setting up the next phase of City Streets

Activity	Completion Date
IBC & Funding Approvals	
IQA	July 2021
Council & Waka Kotahi IBC Approvals and Endorsement	August - October 2021
Funding Approval	October 2021
Tranche 1 Scoping and Procurement	
Targeted Improvements SSBC Lite procured & project commenced	July 2021
LGWM SSBC Process defined	August 2021
SSBC Scoping complete	August 2021
City Streets Procurement Plan & RFP approved	September 2021
Tender Period	September/October 2021
Tender Evaluation Period	October 2021
Naming of Preferred Tenderer	Late October 2021
Award of Contract	November 2021
City Streets Team Establishment	
Wider City Streets Team resources confirmed and appointed	October 2021

17.1.1. Tranche 1 funding request

In conjunction with IBC approvals/endorsement it is desirable to obtain funding approvals to allow Tranche 1 activities to progress. This includes funding for all Tranche 1 SSBCs/SSBC-lites and for the implementation funding for the Targeted Improvements. The cost breakdown for the funding request is as follows:

- SSBC Development - $17.1m
- Targeted Improvements Pre-Implementation - $1.6m
- Targeted Improvements Implementation - $9.4m
- Contingency - $6m (21%)

Figure 31: City Streets Tranche 1 Indicative Programme

	City Streets	*Next Phase Activity*	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Tranche 1 – Immediate Start with partner desire to commit to construction start within 3 Years	Johnsonville Ngauranga Gorge	Johnsonville – Ngauranga PT Improvements SSBC											
		Pre-Implementation											
		Implementation											
	Targeted Improvements (10-year programme)	BPAP Targeted Improvements SSBC lite											
		Pre-Implementation											
		Implementation											
		Other Targeted Improvements SSBC lite											
		Pre-Implementation											
		Implementation											
	City to Karori Tunnel	Bowen Street SSBC											
		Pre-Implementation											
		Implementation											
Tranche 1 – SSBC Immediate Start	Taranaki St to John St	Taranaki St to John St SSBC											
		Pre-Implementation											
		Implementation											
	Willis/Victoria Walking/Cycling Connection Ghuznee Walking/Cycling Connection Dixon Walking/Cycling Connection	South-West CBD Improvements SSBC											
		Pre-Implementation											
		Implementation											
	City to Kilbirnie (via Hataitai)	Shelly Bay Road to Troy St PT Improvements SSBC											
		Pre-Implementation											
		Implementation											
	Bus network & operational Improvements	A specialist contract covering analysis and assessment of bus network and operational improvements as inputs into Tranche 1 SSBCs											
	Quays Route (including second PT spine) Featherston Walking/Cycling Connection	Progress Feasibility testing of the Northern CBD Network Operating Plan											

	City Streets	Next Phase Activity	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Tranche 1 – Conditional on form and route of MRT being confirmed	Basin to Newtown Kent/Cambridge and Basin Taranaki	South Central SSBC											
		Pre-Implementation											
		Implementation											
	Miramar Town Centre City to Kilbirnie (via Hataitai)	City to Miramar Town Centre SSBC											
		Pre-Implementation											
		Implementation											
	Newtown to Berhampore	Newtown to Berhampore SSBC											
		Pre-Implementation											
		Implementation											
	Quays Route (including second PT spine)												
	Featherston Walking/Cycling Connection	SSBC											
		Pre-Implementation											
		Implementation											
Tranche 2 – Subject to future funding approvals considering progress on Tranche 1 and programme review	The Terrace	Terrace SSBC											
		Pre-Implementation											
		Implementation											
	Karori Tunnel to Karori	Karori Tunnel to Karori SSBC											
		Pre-Implementation											
		Implementation											
	Vivian Walking/Cycling Connection	Vivian/Tory Precinct SSBC											
		Pre-Implementation											
		Implementation											
	City to Karori Tunnel	Bowen Street to Karori Tunnel SSBC											
		Pre-Implementation											
		Implementation											

18. Role of Network Operating Framework

WCC and partners have developed a Network Operating Framework (NOF) for Wellington which recognises the diverse needs of road users. With a strategic and collaborative approach, stakeholders and network user groups have input into the development of a framework to understand the needs of users in the existing network to support a focus on future schemes that provide for the needs and demands of users.

The NOF provides guidance on how to respond to land use and transport network interactions in the road network through enabling trade-off decisions between modes on the network. As such, at the next phase of implementation of CS, the NOF should be adopted as the reference case for defining modal priorities for the purpose of developing DBC's and assessing options.

It should be noted that the network aspirations in the NOF reflect a 20-year land use context with necessary assumptions around MRT routes as identified by the LGWM PBC. Subsequent investigations will need to review these baseline assumptions and significance of any changes on the agreed NOF as part of subsequent investigations.

19. Adapting to change

In the immediate future it will be necessary to review the Tranche 1 activities in the recommended City Streets programme at the time that the MRT form and route is confirmed. This is recognised in that the SSBC development of these activities is proposed to be held until MRT is confirmed with funding release conditional on a review of the scope / need for those components considering any MRT decision. This activity is anticipated to occur between October 2021 and March 2022.

Further, over the 9-year timeframe estimated for the City Streets programme it is highly likely some of the assumptions the programme is based upon will change — particularly in relation to costs and benefit realisation. Where material change occurs, the City Streets programme will need to be appropriately adjusted to reflect the materiality of the change(s) that have occurred.

Through ongoing monitoring and reporting of the key performance indicators (KPIs) and other measures included in the benefits realisation, the City Streets project team will be able to provide advice to the LGWM partners to consider what adjustments are necessary to achieve the programme outcomes, and their significance including advice around expanding or reducing the programme. It is recommended that the programme undergo a formal review every 3-years as a precursor to subsequent RLTPs.

20. Stakeholder engagement

LGWM is preparing to engage with the public in late 2021 on the longer-term elements of the programme including mass rapid transit, strategic highway improvements, urban development and travel demand management.

The City Streets project team will provide information to support this engagement. It is envisaged that the wider City Streets package will be published as part of the public engagement to show how it contributes to the overall programme vision and objectives.

Before this public engagement, we intend to inform stakeholders and the community about the preferred corridors in the city streets package.

As each SSBC goes through its detailed development phase, targeted engagement with stakeholders and communities will occur. This will include formal consultation on preferred options for each corridor. Feedback from the consultation will help guide design decisions for each project.

21. Iwi Partnerships

LGWM is working in partnership with iwi as part of the 20–30-year programme. Iwi with interests in Wellington are:

- Taranaki Whānui ki te Upoko o te Ika represented by the Port Nicholson Block Settlement Trust; and
- Ngāti Toa represented by Te Rūnanga o Toa Rangatira

An iwi partnership working group, comprising members of Taranaki Whānui ki te Upoko o te Ika and Ngāti Toa, has been established to help the programme appropriately consider mana whenua perspectives and support broader iwi engagement.

Both iwi also participate in the governance of the programme as members of the Let's Get Wellington Moving Governance Reference Group. As each City Streets SSBC/SSBC-lite goes through its detailed development phase, close engagement with iwi will occur to ensure that the businesses cases appropriately consider and provide for mana whenua perspectives. Of particular interest will be how the SSBCs/SSBC-lites incorporate the mana whenua values that have been provided to LGWM. This may include, for example, how mana whenua values are incorporated into the design of particular improvements and how pre-European history of place can be better expressed. Other opportunities and issues will be navigated in partnership with iwi during the detail development phase for each individual SSBC/SSBC-lite.

22. Project management

22.1. Cost management

Financial management shall be undertaken in accordance with the relevant LGWM procedures.

22.2. Change control and issues management

A change control and issues register shall operate as an extension to the risk register and track issues as they arise.

Change control and issues management will be undertaken in accordance with:

- LGWM / Partner organisations' Significance Policy
- LGWM / Partner organisations' Corporate Risk Management Policies
- Conditions of contract for project specific issues

23. Key Risks

Table X below presents key risks (High and Critical) for the next phase of the project. A more detailed risk register is included in Appendix.

Table 26 – Critical/High Risks

Risk Description (include whether this is a threat or an opportunity)	Risk Cause(s)	Risk Consequence(s)	Current Risk Likelihood	Current Risk Consequence	Consequence Category	Current Controlled Risk Level	Planned Risk Trmt Actions	Residual (Target) Risk Likelihood	Residual (Target) Risk Consequence	Residual (Target) Risk Level
CS outcomes misaligned due to changes in other components of the LGWM programme not being realised.	Other LGWM components are in the process of being developed and scope uncertainty remains	CS elements may not optimally integrate with the City or LGWM programme.	Likely	Severe	Delivery	Critical	The CS projects have been staged around key decisions of other LGWM components such as MRT route and mode decisions, also programme reviews are proposed to revisit the optimal package at key milestones	Possible	Moderate	Medium
Partners/stakeholders desired levels of service from CS components may exceed what was envisaged by the IBC and allowed for in the indicative budget.	Partner and stakeholder expectations of "Gold Standard" quality for all investments raised as a result of other high-profile projects such as Golden Mile.	Undermined social licence if expectations not managed and/or project costs escalate in response to expanded scope either reducing the programme overall or increasing total programme costs	Likely	Moderate	Cost	High	1. Ongoing communication with stakeholders and partners on the key assumptions underlining the CS package and risks of scope creep 2. The scope of the SSBC/SSBC-lite will be transparent about the LoS assumptions underpinning the IBC and expectations around moderate solutions up front.	Possible	Moderate	Medium
Upon commencing SSBCs/SSBC-lite the envisaged improvements cannot be fitted into the road reserve.	No physical design has been undertaken as part of the prioritising of corridors for the IBC. Indicative assumptions about modal improvements have been made which might not be feasible when investigated at the next phase	There may need to be level of service compromises or modal priority decisions taken which could delay projects or reduce the outcomes realised.	Likely	Moderate	Delivery	High	1. The project will be guided by the Network Operating Framework in resolving modal priorities 2. The SSBC scoping process will aim to consider this risk in setting out its requirements.	Likely	Minor	Medium

Risk Description (include whether this is a threat or an opportunity)	Risk Cause(s)	Risk Consequence(s)	Current Risk Likelihood	Current Risk Consequence	Consequence Category	Current Controlled Risk Level	Planned Risk Trmt Actions	Residual (Target) Risk Likelihood	Residual (Target) Risk Consequence	Residual (Target) Risk Level
Pursuing Tranche 1 other components of the CS/LGWM programme become compromised.	Individual CS projects do not check-in with the wider package or programme to ensure alignment and overall programme optimisation	Outcomes are undermined and quality of downstream projects is compromised	Likely	Moderate	Delivery	High	1. CS taken forward as a package with professional services procured in such a way that a package and best for LGWM programme approach is a requirement.	Unlikely	Moderate	Medium
CS activities are not integrated with WCC/Utility providers improvements	The package does not engage with infrastructure partners to understand their improvement programmes and outcomes to seek win-win value opportunities	Potential rework and additional cost in remedying projects or integrating projects at a late stage with suboptimal outcomes	Likely	Severe	Delivery	Critical	LGWM and CS liaise closely with stakeholders and partners on respective plans as projects progress.	Possible	Moderate	Medium
Project partners confidence in delivery of CS is undermined through slow delivery	Partners perceive delivery to date as suboptimal and have expectations of this improving following a programme review	If partners continue to perceive delivery as slow or poorly aligned to their organisational goals, they could choose to invest in their own activities undermining collaborative transport system planning delivering sub-optimal outcomes for Wellington.	Likely	Moderate	Stakeholders	High	Establish a realistically resourced CS package team and baseline programme and engage with partners on a regular basis on progress.	Likely	Moderate	High

Risk Description (include whether this is a threat or an opportunity)	Risk Cause(s)	Risk Consequence(s)	Current Risk Likelihood	Current Risk Consequence	Consequence Category	Current Controlled Risk Level	Planned Risk Trmt Actions	Residual (Target) Risk Likelihood	Residual (Target) Risk Consequence	Residual (Target) Risk Level
Partners/stakeholder desired levels of investment in non-transport related outcomes compromise the programme outcomes	There is ongoing misalignment between partners on the role of place-making and the level of investment in placemaking the LGWM should make. This was unresolved in the IBC.	Undermined social licence if expectations not managed and/or project costs escalate in response to place making expectations either reducing the programme overall or increasing total programme costs	Likely	Severe	Cost	Critical	SSBCs will identify and monetise the place-making costs and benefits so that these can be appropriately apportioned and used as a basis for evidence-based discussions between partners.	Likely	Moderate	High
Poor social licence for the programme compromises programme delivery	Public confidence in the CS package is undermined due to quality expectations set by Golden Mile and/or wider engagement experiences of the public.	Projects are delayed by engagement or are unable to progress due to lack of buy-in to the solutions by the public and stakeholders.	Likely	Severe	Public/ Media	Critical	Comms and engagement strategy to be developed to proactively engage with the public on the purpose of CS and its outcomes.	Possible	Severe	High
Slower than desired delivery of the CS programme due to LGWM/industry resource constraints.	There are existing pressures on the industry making it difficult to compete on attracting the right level of capability and skill both within the programme and professional services market	Under resourced programme or consultancy team could lead to delay, churn and rework undermining the cs package and partner/stakeholder confidence.	Likely	Moderate	Delivery	High	1. Commence LGWM project team recruitment early 2. Develop a procurement strategy which takes cognisance of market pressures amongst other considerations to minimise the risk	Possible	Moderate	Medium

Risk Description (include whether this is a threat or an opportunity)	Risk Cause(s)	Risk Consequence(s)	Current Risk Likelihood	Current Risk Consequence	Consequence Category	Current Controlled Risk Level	Planned Risk Trmt Actions	Residual (Target) Risk Likelihood	Residual (Target) Risk Consequence	Residual (Target) Risk Level
Consultation on the CS programme (alongside LGWM consultation) could be confusing and inconsistent to stakeholders and the public	With a number of projects ongoing both in the LGWM programme and across partner organisations the public/stakeholders could become confused reducing the impact of key messaging	CS projects could be delayed due to the need to re-engage with the public/stakeholders to ensure messaging gets through and appropriate levels of involvement have occurred.	Likely	Moderate	Public/ Media	High	Comms and engagement strategy developed and managed centrally from within the LGWM programme to ensure optimal coverage and penetration of LGWM messaging and consistency with partner programmes.	Possible	Moderate	Medium
Risk that CS improvements are not futureproofed for future PT network changes and growth	SSBCs lack a future focus and are heavily biased towards infrastructure solutions	CS projects lack futureproofing and are not adaptable to growth or change in PT network services reducing the overall long-term benefits of the CS package.	Likely	Moderate	Delivery	High	1. The SSBCs have a requirement to consider the full range of interventions and include GWRC as a partner in terms of input in relation to future patronage growth and service adaptation. 2. A specific project is included in the CS package to support GWRC PT service analysis and advice to CS	Unlikely	Moderate	Medium
Indicative solutions in IBC significantly under scoped when investigated during SSBC phase meaning IBC costs unrealistic	The IBC has used a desk based 'sample' solution approach rather than detailed investigation of solutions with 'typical' unit costs provided by WCC.	The cost of projects is significantly underestimated leading to reduced scope or increased cost of the CS package.	Possible	Severe	Delivery	High	1. Significant contingency allowed for at the project and package level within the IBC	Possible	Moderate	Medium

Risk Description (include whether this is a threat or an opportunity)	Risk Cause(s)	Risk Consequence(s)	Current Risk Likelihood	Current Risk Consequence	Consequence Category	Current Controlled Risk Level	Planned Risk Trmt Actions	Residual (Target) Risk Likelihood	Residual (Target) Risk Consequence	Residual (Target) Risk Level
Outcomes delivered by Tranche 1 or WCC early projects don't meet public/stakeholder expectations undermining support for later components of the CS programme **[Same as Risk 3?]**	Partner and stakeholder expectations of "Gold Standard" quality for all investments raised as a result of other high-profile projects such as Golden Mile.	Undermined social licence if expectations not managed and/or project costs escalate in response to expanded scope. This could lead to either increased scope and cost to deliver to expectations or projects not commencing	Likely	Severe	Delivery	Critical	1. Ongoing communication with stakeholders/partners and public on the key assumptions and outcomes underlining the CS package	Possible	Severe	High
Changing partner priorities impact the timing and sequencing of delivery, undermining delivery of the optimal programme	Issues of the day become a focus for partners due to stakeholder/public pressures	Regular re-sequencing of the CS package could undermine the optimal delivery of the programme costing money and time and reducing package outcomes	Likely	Moderate	Delivery	High	1. Gain support from partners early on the programme and seek to 'lock it in'?????	Possible	Moderate	Medium
SSBC/SSBC-lite take longer than anticipated delaying delivery	Projects become over scoped, or scope changes occur mid-business case or supplier capability is insufficient for the job at hand	Delay and/or cost and/or sub-optimal business cases with additional risk passed to the pre-implementation phases	Likely	Moderate	Delivery	High	1. Well scoped SSBCs with buy in of partners locked in at the start 2. Clear change processes defined within the LGWM programme 3. Procurement focussed on quality of consulting teams	Possible	Minor	Medium
CS enhancements need to go through a traffic resolutions process which is outside LGWM control. If council disagree with the proposal, they could	LGWM is not accountable for the traffic resolutions process. If WCC do not like CS projects they can use the resolutions process	CS projects are not implemented or implemented in the form proposed by LGWM	Possible	Severe	Delivery	High	Early and regular engagement with partners on the scope of CS projects	Unlikely	Moderate	Medium

Risk Description (include whether this is a threat or an opportunity)	Risk Cause(s)	Risk Consequence(s)	Current Risk Likelihood	Current Risk Consequence	Consequence Category	Current Controlled Risk Level	Planned Risk Trmt Actions	Residual (Target) Risk Likelihood	Residual (Target) Risk Consequence	Residual (Target) Risk Level
not approve the changes	to stop implementation.									
An inconsistent benefits realisation framework for CS makes it difficult to consistently measure and articulate the outcomes delivered by the package.	The benefits framework for the LGWM programme has not been established to provide a consistent basis against which to measure the benefits delivered by the programme elements	The outcomes delivered by CS cannot be told in a consistent manner and/or resources not made available for the appropriate monitoring due to lack of an overarching benefits realisation plan for the programme.	Likely	Moderate	Legal/ Compliance	High	Programme to establish an overarching benefits realisation framework and costed and funded monitoring programme to demonstrate the outcomes developed by the LGWM programme and its components.	Unlikely	Moderate	Medium
CS outcomes for the Central City will be dependent upon the effectiveness of Golden Mile improvements	The CS central city improvements are closely integrated with Golden Mile and MRT from a transport system perspective	The outcomes of CS, Golden Mile and MRT are undermined through lack of integration and best-for-transport-system perspective being applied to synergistic activities	Possible	Severe	Delivery	High	Overarching LGWM programme integration team to have oversight of LGWM components and provide guidance and direction as necessary	Possible	Moderate	Medium
Opportunity to work with other partners (e.g., Wellington Water) to seek co-funding where appropriate	Across the city and utility partners there is significant works planed over the duration of the City Streets package	Significant potential for mutual cost savings and disruption minimisation to the public.	Likely	Moderate	Delivery	High	Programme to close liaise with partners to identify opportunities to combine programmes and negotiate appropriate cost shares where opportunities arise.	Possible	Minor	Medium

24. Benefits realisation and lessons learnt

An indicative monitoring regime to assess the benefits of the City Streets Package is set out in Table 27. Further work is required to be undertaken by the LGWM programme to develop a programme benefits realisation framework which brings together all components of the programme to provide a consistent framework and monitoring regime. This would ensure that LGWM activities outcomes are measured consistency and provide efficiencies to the programme in terms of resources and costs associated with the ongoing monitoring regime. Monitoring might also evolve throughout the package delivery as technology options for monitoring and operations are refined.

Lessons learned reviews will be undertaken at agreed times throughout the respective contracts and as part of the close-out reports for the project. It will be the responsibility of the LGWM project managers to complete these reviews with the respective suppliers.

Table 27: City Streets benefits realisation

Investment objectives	Key performance indicators	Measurement	Potential monitoring regime
1. Create a safer, more accessible, connected, and livable central city with attractive streets and places for people to enjoy	KPI 1.1: Urban Amenity	LGWM Amenity Index (monitor)	Periodic – Programme wide
	KPI 1.2: Pedestrian level of service	Pedestrian travel time crossing intersections / on key routes	Annual assessment
		Perceptions of levels of service for pedestrians (monitor)	Periodic – Programme wide
2. Reduce reliance on private vehicle trips by making strategic PT corridors safe, more efficient, and reliable, with easy connection points	KPI 2.1 Travel time reliability	Travel time reliability for public transport (buses) across the Wellington region, and on key strategic bus routes.	Ongoing through in bus data
	KPI: 2.2 Comparative travel times between modes	Travel time (median) for key modes and routes	Annual – programme wide
	KPI: 2.3 PT network reliability	To be confirmed – will be drawn from model assessment based on real-time bus network data. Percentage of scheduled bus services that actually ran as tracked by Metlinks' RTI and Snapper systems (monitor) Percentage of scheduled Metlink bus services that depart from origin, leaving between one minute early and five minutes late (monitor)	Ongoing through in bus data
3. Reduce reliance on private vehicle trips by creating connected, safe, and efficient access by bike	KPI: 3.1 The quality of cycling infrastructure	Infrastructure Level of Service along and around the corridor relative to target LoS	Annual assessment of cycle facilities as part of WCC customer satisfaction survey
	KPI: 3.2 New cycle trips	Automatic pedestrian / cycle counters.	Ongoing
4. Create a low carbon future transport system which is more resilient, supports growth and is adaptable to disruption by providing safe and attractive transport choices	KPI: 4.1 Opportunities for urban development and value uplift	Market assessment of key transport corridors	Periodic
	KPI: 4.2 DSIs for all transport users by mode	Analysis of Crash Analysis System (CAS) data using crash estimation compendium methods	Annual - programme wide
	KPI: 4.3 Mode share in the central city	Number of people travelling across the central city screenline by mode	Ongoing - Automatic pedestrian / vehicle / cycle counters.
	KPI: 4.4 Mode share into and within the central city	Person kilometres travelled by mode into and within the central city	Ongoing - Automatic pedestrian / vehicle / cycle counters. Periodic travel to work surveys
	KP 4.5 Transport related CO_{2e} emissions in the city and region	$CO_{2\text{-}e}$ emissions (City and region) based on fuel sales data (regional) or through vehicle data counts for specific routes.	$CO_{2\text{-}e}$ emissions (city and region) based on transport model outputs and actual traffic data and/or $CO_{2\text{-}e}$ emissions (city and region) per person kilometre travelled.

Appendix A: Glossary of initialisations

Item	Description
DMS	Document Management System
DBC	Detailed Business Case
EA	Early Assessment
GWRC	Greater Wellington Regional Council
H&S	Health & Safety
IBC	Indicative Business Case
IO	Investment Objective
IP	Indicative Package (from PBC)
KPI	Key Performance Indicator
LGWM	Let's Get Wellington Moving
LOS	Level of Service
LS	Lump Sum
MCA	Multi-Criteria Analysis
MRT	Mass Rapid Transit
PBC	Programme Business Case

Item	Description
PS	Provisional Sum
RPI	Recommended Programme of Investment (from PBC)
SH	State Highway
TBD	To be determined
TWG	Technical Working Group (from project partners NZTA, WCC and GWRC)
WAU	Wellington Analytics Unit
WBS	Work Breakdown Structure
WHS	Workplace Health and Safety
WCC	Wellington City Council
WTA	Wellington Tunnels Alliance
Client	Let's Get Wellington Moving
Contracting Authority	Waka Kotahi NZ Transport Agency

Appendix B: Central City sections

ID	Segment
CC-001	Abel Smith St - Cuba St -> Victoria St
CC-002	Abel Smith St - Willis St -> The Terrace
CC-003	Abel Smith St - Taranaki St -> Cuba St
CC-004	Abel Smith St - Victoria St -> Willis St (Dead End)
CC-005	Barnett St - Cable St -> Waterfront (Dead End)
CC-006	Boulcott St - Willis St -> The Terrace
CC-007	Bowen St - Lambton Quay -> The Terrace
CC-008	Bowen St - The Terrace -> Tinakori Rd
CC-009	Bunny St - Featherston St -> Lambton Quay
CC-010	Bunny St - Waterloo Quay -> Featherston St
CC-011	Cable St - Barnett St -> Chaffers St
CC-012	Cable St - Chaffers St -> Oriental Pde
CC-013	Cable St - Jervois Quay -> Taranaki St
CC-014	Cable St - Taranaki St -> Tory St
CC-015	Cable St - Tory St -> Barnett St
CC-016	Chaffers St - Cable St -> Waterfront (Becomes Private)
CC-017	City to Sea Harris - Cable St -> Waterfront
CC-018	Courtenay Pl - Taranaki St -> Tory St
CC-019	Courtenay Pl - Cambridge Tce -> Tory St
CC-020	Cuba St - Abel Smith St -> Arthur St
CC-021	Cuba St - Arthur St -> Webb St
CC-022	Cuba St - Dixon St -> Ghuznee St
CC-023	Cuba St - Ghuznee St -> Vivian St
CC-024	Cuba St - Manners St -> Dixon St
CC-025	Cuba St - Vivian St -> Abel Smith St
CC-026	Cuba St - Wakefield St -> Manners St

ID	Segment
CC-027	Customhouse Quay - Hunter St -> Jervois Quay
CC-028	Customhouse Quay - Willeston St -> Hunter St
CC-029	Customhouse Quay - Jervois Quay -> Whitmore St
CC-030	Dixon St - Cuba St -> Victoria St
CC-031	Dixon St - Taranaki St -> Cuba St
CC-032	Dixon St - Victoria St -> Willis St
CC-033	Featherston St - Bunny St -> Whitmore St
CC-034	Featherston St - Mulgrave St -> Bunny St
CC-035	Featherston St - Whitmore St -> Hunter St
CC-036	Ghuznee St - Cuba St -> Taranaki St
CC-037	Ghuznee St - The Terrace -> Willis St
CC-038	Ghuznee St - Victoria St -> Cuba St
CC-039	Ghuznee St - Willis St -> Victoria St
CC-040	Hunter St - Lambton Quay -> Jervois Quay
CC-041	Jervois Quay - Harris St -> Hunter St
CC-042	Jervois Quay - Hunter St -> Post Office Sq.
CC-043	Jervois Quay - Post Office Sq. -> Customhouse Quay
CC-044	Jervois Quay - Taranaki St -> Cable St
CC-045	Jervois Quay - Cable St -> Harris St
CC-046	Karo Drive Cycleway - Willis St -> Buller St West (Dead End)
CC-047	Karo Drive Cycleway - Taranaki St -> Cuba St
CC-048	Karo Drive Cycleway - Basin -> Tory St
CC-049	Karo Drive Cycleway - Tory St -> Taranaki St
CC-050	Karo Drive Cycleway - Cuba St -> Victoria St
CC-051	Karo Drive Cycleway - Victoria St -> Willis St

ID	Segment
CC-052	Kent/Cambridge Tce - Pirie St -> Basin
CC-053	Kent/Cambridge Tce - Courtenay Pl -> Pirie St
CC-054	Kent/Cambridge Tce - Wakefield St -> Courtenay Pl
CC-055	Lady Elizabeth Lane (PRIVATE) - Waterloo Quay -> Jervois Quay
CC-056	Lambton Quay - Bowen St -> Bunny St
CC-057	Lambton Quay - Stout St -> Bowen St
CC-058	Lambton Quay - Willis St -> Stout St
CC-059	Manners St - Cuba St -> Victoria St
CC-060	Manners St - Taranaki St -> Cuba St
CC-061	Manners St - Victoria St -> Willis St
CC-062	Mercer St - Willis St -> Victoria St
CC-063	Molesworth St - Lambton Quay -> Murphy St
CC-064	Molesworth St - Murphy St -> Tinakori Rd
CC-065	Mulgrave St - Molesworth St -> Thorndon Quay
CC-066	Oriental Pde - Cable St -> Herd St
CC-067	Oriental Pde - Herd St -> Evans Bay Pde
CC-068	Oriental Pde - Wakefield St -> Cable St
CC-069	Queens Wharf (PRIVATE) - Jervois Quay -> Waterfront (Dead End)
CC-070	Stout St - Lambton Quay-East -> Whitmore St
CC-071	Stout St - Whitmore St -> Bunny St
CC-072	Taranaki St - Karo Dr -> Webb St
CC-073	Taranaki St - Cable St -> Wakefield St
CC-074	Taranaki St - Waterfront (Dead End) -> Cable St
CC-075	Taranaki St - Ghuznee St -> Vivian St
CC-076	Taranaki St - Manners St -> Ghuznee St

ID	Segment
CC-077	Taranaki St - Abel Smith St -> Karo Dr
CC-078	Taranaki St - Vivian St -> Abel Smith St
CC-079	Taranaki St - Wakefield St -> Manners St
CC-080	The Terrace - Bowen St -> Boulcott St
CC-081	The Terrace - Ghuznee St -> Abel Smith St
CC-082	The Terrace - Boulcott St -> Ghuznee St
CC-083	Thorndon Quay - Mulgrave St -> Moore St
CC-084	Tinakori Rd - Hutt Rd -> Molesworth St
CC-085	Tinakori Rd - Molesworth St -> Bowen St
CC-086	Tory St - Cable St -> Wakefield St
CC-087	Tory St - Courtenay Pl -> Vivian St
CC-088	Tory St - Vivian St -> Karo Dr
CC-089	Tory St - Wakefield St -> Courtenay Pl
CC-090	Victoria St - Abel Smith St -> Karo Dr
CC-091	Victoria St - Dixon St -> Ghuznee St
CC-092	Victoria St - Hunter St -> Mercer St
CC-093	Victoria St - Karo Dr -> Webb St
CC-094	Victoria St - Manners St -> Dixon St

ID	Segment
CC-095	Victoria St - Mercer St -> Manners St
CC-096	Victoria St - Vivian St -> Abel Smith St
CC-097	Victoria St - Ghuznee St -> Vivian St
CC-098	Vivian St - Cuba St -> Victoria St
CC-099	Vivian St - Kent Tce -> Tory St
CC-100	Vivian St - Taranaki St -> Cuba St
CC-101	Vivian St - Tory St -> Taranaki St
CC-102	Vivian St - Victoria St -> Willis St
CC-103	Wakefield St - Cuba St -> Victoria St
CC-104	Wakefield St - Kent Tce -> Tory St
CC-105	Wakefield St - Taranaki St -> Cuba St
CC-106	Wakefield St - Tory St -> Taranaki St
CC-107	Waterfront - Bunny St -> Herd St
CC-108	Waterloo Quay - Bunny St -> Hinemoa St
CC-109	Waterloo Quay - Whitmore St -> Bunny St
CC-110	Webb St - Cuba St -> Victoria St
CC-111	Webb St - Taranaki St -> Cuba St
CC-112	Whitmore St - Featherston St -> Customhouse Quay

ID	Segment
CC-113	Whitmore St - Lambton Quay-East -> Stout St
CC-114	Whitmore St - Stout St -> Featherston St
CC-115	Willis St - Manners St -> Dixon St
CC-116	Willis St - Dixon St -> Ghuznee St
CC-117	Willis St - Ghuznee St -> Vivian St
CC-118	Willis St - Mercer St -> Manners St
CC-119	Willis St - Vivian St -> Abel Smith St
CC-120	Willis St - Lambton Quay -> Mercer St

Appendix C: Strategic bus route sections

ID	Segment
KC-01	Newtown: Adelaide Rd - John St to The Basin
KC-02	Island Bay extension: Berhampore Town Centre
KC-03	Island Bay extension: Berhampore Town Centre to Riddiford St
KC-04	Brooklyn: Brooklyn Town Centre
KC-05	Brooklyn: Brooklyn Hill - Ohiro Rd to Karo Dr (to City Centre)
KC-06	Kelburn: Upland Rd to The Terrace (to City Centre)
KC-07	Karori: Chaytor St - Karori Rd to Karori Tunnel
KC-08	Kilbirnie: Constable St - Crawford Rd to Riddiford St
KC-09	Karori: Glenmore St - The Rigi to Bowen St (to City Centre)
KC-10	Miramar: Hataitai Tunnel to Kent Tce (to City Centre)
KC-11	Johnsonville: Hutt Rd - Ngauranga Gorge to Kaiwharawhara Rd
KC-12	Island Bay extension: Reef St to Island Bay Town Centre
KC-13	Island Bay extension: Island Bay Town Centre
KC-14	Mt Cook: John St - Adelaide Rd to Wallace St
KC-15	Johnsonville: Johnsonville Triangle
KC-16	Johnsonville: Hutt Rd - Kaiwharawhara Rd to Thorndon Quay
KC-17	Karori extension: S Karori Rd to Karori Town Centre
KC-18	Karori extension: Karori Town Centre
KC-19	Karori: Karori Town Centre to Chaytor St
KC-20	Karori: Glenmore St - Karori Tunnel to The Rigi
KC-21	Kelburn: Upland Rd - Glenmore St to Glasgow Rd
KC-22	Kilbirnie: Kilbirnie Town Centre
KC-23	Miramar: Kilbirnie Town Centre to Wellington Rd
KC-24	Kilbirnie: Crawford Rd - Kilbirnie Town Centre to Constable St
KC-25	Kingston extension: Kingston to Mornington
KC-26	Lyall Bay extension: Lyall Pde to Kilbirnie Town Centre

ID	Segment
KC-27	Miramar extension: Miramar North
KC-28	Miramar: Miramar Town Centre
KC-29	Miramar: Miramar Town Centre to Rongotai Rd
KC-30	Kingston extension: Mornington to Brooklyn Town Centre
KC-31	Newlands extension: Newlands Rd
KC-32	Newtown: Newtown Town Centre
KC-33	Kaiwharawhara extension: Ngaio Gorge
KC-34	Johnsonville: Ngauranga Gorge
KC-35	Johnsonville: Ngauranga Gorge South
KC-36	Miramar: Troy St to Kilbirnie Town Centre
KC-37	Miramar: Seatoun to Seatoun Tunnel
KC-38	Miramar: Seatoun Tunnel to Miramar Town Centre
KC-39	Island Bay extension: Island Bay Town Centre to Berhampore Town Centre
KC-40	Newtown: The Basin (to City Centre)
KC-41	Johnsonville: Thorndon Quay - Hutt Rd to Moore St (to City Centre)
KC-42	Mt Cook: Wallace St - John St to Webb St (to City Centre)
KC-43	Miramar: Wellington Rd to Hataitai Tunnel

Appendix D: Prioritisation methodology

This technical note outlines the process used to identify potential investment scenarios to deliver a package of works that deliver the optimal outcomes against the City Streets investment objectives. The note covers the following topics:

1. Overall process for developing scenarios.
2. Description of data sources
3. Defining the corridor segments
4. Identifying problems and opportunities to assess the prioritisation criteria on each segment.
5. Identifying indicative toolkit solutions for each segment
6. Developing investment scenarios to form potential packages of work.

1. Overall process for developing scenarios

This note details the approach for developing possible scenarios for the suggested City Streets package of works. The scenario identification process is as follows:

1. Step 1: Assess all corridor segments within the City Streets geographical scope to identify problems and opportunities within the corridors and assess the six prioritisation criteria.
2. Step 2: Define the City Streets toolkit (i.e., interventions that could be applied to address the identified problems for public transport, cycling, walking, and safety)
3. Step 3: Identify indicative solutions for each corridor segment by matching indicative toolkit interventions to the identified problems.
4. Step 4: Calculate the estimated cost for the indicative solutions on each corridor segment.
5. Step 5: Develop a range of investment scenarios by adjusting the weightings of the prioritisation criteria.

2. Description of data sources

The analysis is based on the following sources of data, which have been used to identify current problems and opportunities across the City Streets geographical scope:

Historical Data:

- Traffic volumes from asset management (RAMM) data (obtained July 2020)
- Surveyed traffic, cyclist, and pedestrian volumes at selected points along corridors (note: traffic counts take place periodically, so survey dates are not the same for all sites)
- Snapper data on boardings and alightings, which is used to estimate passenger loadings on buses, and to create origin-destination matrices showing the number of people travelling between stops, broken down by time period (May 2019)
- Real Time Information on bus journey times between stops, which is used to identify delays along the route and infer causes of delays (data from May 2019)
- Cyclist and pedestrian volumes from the Active Mode Model (November 2017)
- Signal timing data from SCATS
- Place scores from the Wellington Place and Movement Framework (December 2019)
- 10-year injury road crash data from Waka Kotahi's Crash Analysis System (2010–2019)
- Information on the location and characteristics of features within the corridor segments, including bus stop data (ex. taper lengths), bus infrastructure (ex. location and time restriction of priority lanes), cycle infrastructure (ex. location of cycle lanes), pedestrian infrastructure (ex. location of formalised crossings), and traffic lanes (ex. lane widths)

Future Forecasts:

- Road safety risk ratings from the Safer Journeys Risk Assessment Tool (MegaMaps) (obtained July 2020)
- Population growth estimates for WCC's Draft Spatial Plan (provided September 2020)

The analysis for the IBC did not include a primary data collection exercise for any missing data or for secondary streets with limited data. These streets will be examined further if the neighbouring core corridors examined in the IBC are taken forward for further consideration.

3. Defining the corridor segments

The geographical scope of the City Streets IBC is defined as follows:

- In the central city area, all Collector, Principal, and Arterial roads, motorways, and key local roads and routes identified as important links for the walking and cycling networks.
- Outside of the central city area, all high frequency bus corridors identified through the Wellington Bus Priority Programme (BPP), identified as key suburban corridors, noting that some of these overlap with wider routes under consideration for the Mass Rapid Transit project
- Outside of the central city area, the addition of key public transport corridors beyond the BPP scope to ensure adequate coverage of the City Streets scope; these corridors are also identified as key suburban corridors.

Since the geographical scopes of the other LGWM projects are not yet confirmed, this analysis has been broadened to include these streets for the problem identification step.

The streets within the scope were identified in ArcGIS based on asset management (RAMM) data. Key suburban corridors and city centre streets were divided into 43 and 120 corridor segments, respectively, to allow data to be matched and aggregated up in a flexible manner. Background data was spatially matched to the corridor segments.

The map in Figure 32 shows the location of the corridor segments analysed for City Streets.

Figure 32: City Streets geographic scope

4. Step 1: Identifying problems and opportunities

To evaluate the current problems and opportunities within the City Streets geographic scope, assessment categories were identified. The categories were selected to align with the City Streets investment objectives and the GPS strategic priorities. These categories were evaluated across each of the 163 corridor segments in the City Streets scope.

The six assessment categories serve two purposes:

1. Identifying the existing type and scale of problems and opportunities on the corridor segments
2. Providing a set of prioritisation criteria that can be scored and used to identify the priority locations for City Streets investment

4.1. Selecting the prioritisation criteria

The following six assessment categories were selected:

- Public transport level of service
- Cycling level of service
- Walking level of service
- Amenity and place
- Safety
- Access to support growth

Scores were assigned for all six of the assessment categories on each of the corridor segments. These scores provide a set of prioritisation criteria that aim to assess the scale of a particular problem (or opportunity) and the extent to which an investment solution could effectively improve the transport system in a manner that aligns with the City Streets investment objectives. The criteria can be compared and weighted to determine the relative level of priority for each of the corridor segments. Table 28 shows the alignment between the City Streets investment objectives, the GPS strategic priorities, and the criteria.

Table 28: Alignment of City Streets investment objectives, GPS, and prioritisation criteria

City Streets investment objectives	GPS Strategic Priority				Relevant prioritisation criteria
	Safety	Better Travel Choices	Better Freight Connections	Climate Change	
Create a safer, more accessible, connected, and liveable central city with attractive streets and places for people to enjoy	✓	✓		✓	• Walking • Amenity and place • Safety
Reduce reliance on private vehicle trips by making strategic PT corridors safe, more efficient, and reliable, with easy connection points	✓	✓		✓	• Public transport • Safety
Reduce reliance on private vehicle trips by creating connected, safe, and efficient access by bike	✓	✓		✓	• Cycling • Safety
Create a low carbon future transport system which is more resilient, supports growth and is adaptable to disruption by providing safe and attractive transport choices	✓	✓	✓	✓	• Public transport • Cycling • Walking • Amenity and place • Safety • Growth

This section outlines how the scores have been assessed. Section 8 of this appendix outlines how weightings are applied to the prioritisation criteria scores to identify priority areas.

4.2. Scoring the prioritisation criteria

All six prioritisation criteria were assigned a score between 0 to 100, with 0 representing the lowest priority (no to minimal problems / opportunities on the segment) and 100 representing the highest priority (the most problems / opportunities relative to other locations in the City Streets scope). This ensured that the scores for all six of the criteria used the same scale, where the location with the highest priority under that criterion had a score of 100.

The scores for the six prioritisation criteria were calculated using the following process:

4. Input data was collated and matched to each corridor segment. Table 29 summarises the input data that was considered under each of the prioritisation criteria.
5. Input data was analysed to calculate scores for the six prioritisation criteria. For some criteria, sub-criteria scores needed to be calculated first. The sub-criteria scores were then combined to calculate the final prioritisation score; this process varied for each of the six prioritisation criteria.
6. Where required, the prioritisation criteria scores were normalised to a scale of 0 to 100, so that the highest score was scaled to 100.

A summary of this process for calculating the prioritisation criteria scores is outlined in Figure 33. The rest of this section provides further details on how each score was calculated. The process of applying weightings to the prioritisation criteria scores to develop scenarios (the final stage represented in Figure 33) is described in Section 8 of this appendix.

Table 29: Summary of factors considered for each of the prioritisation criteria

<table>
<tr><th rowspan="2">Prioritisation criteria</th><th colspan="2">Factors considered</th></tr>
<tr><th>On key suburban corridors</th><th>In the city centre</th></tr>
<tr><td>Public transport level of service</td><td colspan="2">• Bus travel time delay
• Bus travel time variability
• Bus patronage</td></tr>
<tr><td>Cycling level of service</td><td>• Cycling level of service
• Gradient
• Cyclist volumes</td><td>• Cycling level of service
• Cycle permeability (one-way streets)
• Cyclist volumes</td></tr>
<tr><td>Walking level of service</td><td>• Walking level of service for pedestrians accessing bus stops
• Bus boarding and alighting volumes</td><td>• Pedestrian delay
• Pedestrian severance
• Pedestrian permeability (lack of pedestrian connections between streets)
• Current and aspirational place values
• Pedestrian volumes</td></tr>
<tr><td>Amenity and place</td><td>• Aspirational place values for town centres</td><td>• Current and aspirational place values</td></tr>
<tr><td>Safety</td><td colspan="2">• Collective and Personal Risk ratings
• Social cost of injuries
• Number of vulnerable user crashes</td></tr>
<tr><td>Access to support growth</td><td colspan="2">• Estimated population growth served by the corridor</td></tr>
</table>

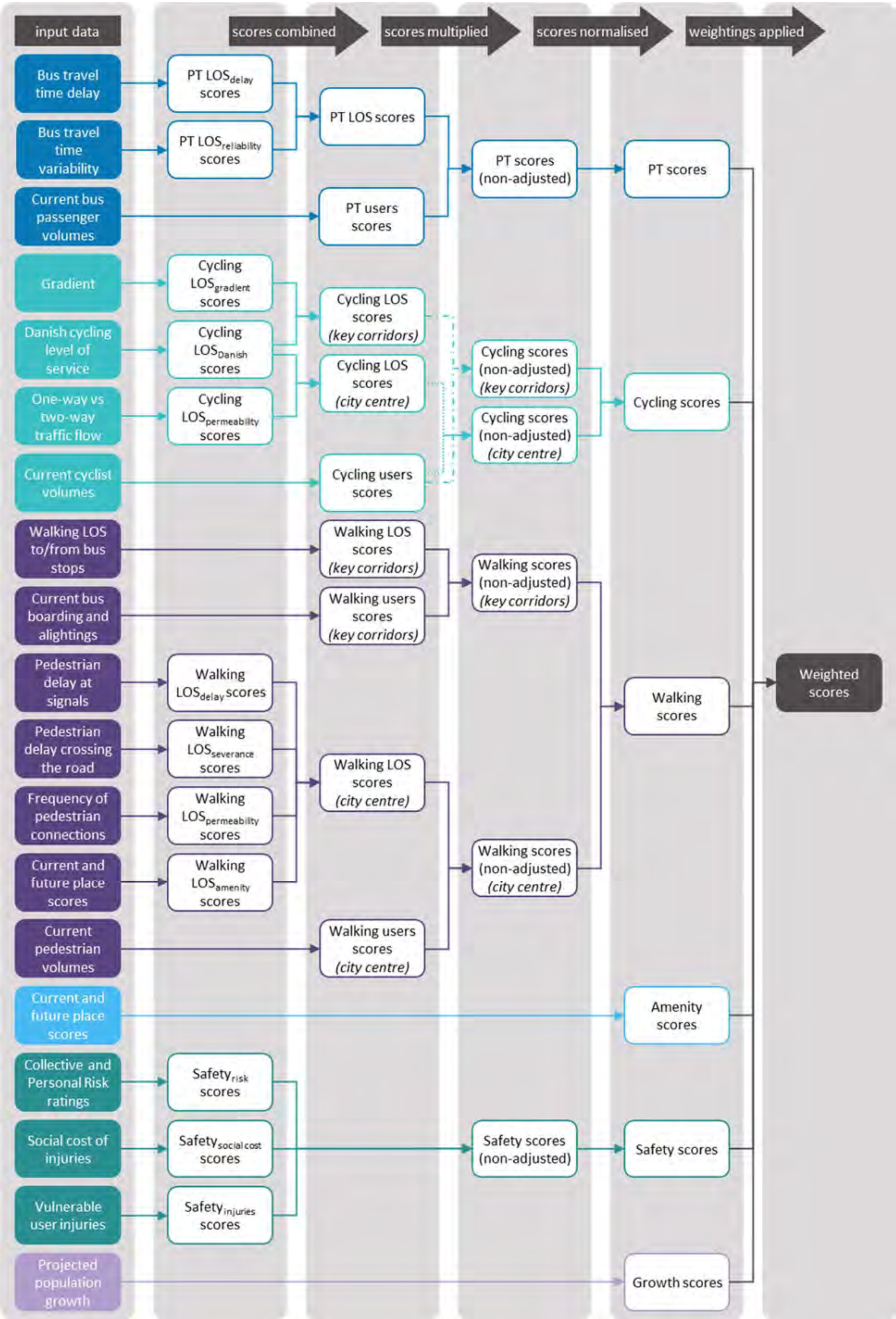


Figure 33: Process for calculating the prioritisation criteria scores

4.2.1. Public transport

The public transport score is based on the bus level of service gap and is weighted by the number of bus patrons affected, as follows:

$$PT\ score = PT\ LOS\ score \times PT\ users\ score$$

The resulting scores were then normalised to a scale of 0 to 100, so that the highest score was scaled to 100.

4.2.1.1. Level of service score

The level of service score for public transport is representative of the gap between the current level of service and the aspirational level of service: the higher the score, the larger the gap between the current situation and the aspiration.

The level of service is assessed based on two factors: bus travel time delay (delay) and bus travel time variability (reliability). The combined level of service score for public transport was calculated as the average of these two scores:

$$PT\ LOS\ score = {}^{1}/_{2}\left(PT\ LOS_{delay}\ score\ + PT\ LOS_{reliability}\ score\right)$$

4.2.1.2. Delay

Bus delay was assessed by comparing the average bus travel time against the unimpeded running time rate for buses on the corridor segment. The average bus travel time is representative of the current level of service, and the unimpeded running time rate is representative of the aspirational level of service.

The bus travel time values were rescaled to obtain scores of 0 to 100, using the following rescaling values:

$$1 \times ideal\ running\ rate\ (min/km) = PT\ LOS_{dela}\ \ score\ of\ 0$$

$$\geq 3 \times ideal\ running\ rate\ (min/km) = PT\ LOS_{delay}\ score\ of\ 100$$

The methods used to calculate the bus travel time and the unimpeded running time are detailed in the Wellington Bus Priority Programme (BPP).

4.2.1.3. Reliability

Bus reliability was assessed using the bus travel time variability, which is representative of the current level of service. The aspirational level of service on all segments is that there is no variability in bus travel times. The bus travel time variability was calculated using methods described in the BPP.

The travel time variability values were rescaled to obtain scores of 0 to 100, using the following rescaling values:

$$0\ \ min/km = PT\ LOS_{reliability}\ score\ of\ 0$$

$$\geq 1.5\, min/km = PT\ LOS_{reliability}\ score\ of\ 100$$

4.2.1.4. Users score

The users score for public transport is based on the current daily bus passenger volumes on the corridor. The bus passenger volumes were normalised to obtain scores of 0 to 100, where:

$$no\ bus\ passengers = PT\ users\ score\ of\ 0$$

$$highest\ volume\ of\ bus\ passengers = PT\ users\ score\ of\ 100$$

4.2.2. Cycling

The cycling score is based on the cycling level of service gap and is weighted by the number of cyclists affected, as follows:

$$Cycling\ score = Cycling\ LOS\ score \times Cycling\ users\ score$$

The resulting scores were then normalised to a scale of 0 to 100, so that the highest score was scaled to 100.

4.2.2.1. Level of service score

The level of service score for cycling is representative of the gap between the current level of service and the aspirational level of service: the higher the score, the larger the gap between the current situation and the aspiration.

The cycling level of service score is calculated using different methods for segments in the key suburban corridors and segments in the city centre.

On the key suburban corridors, the level of service gap is based primarily on the Danish cycling level of service with an adjustment factor for the gradient of the road:

$$Cycling\ LOS\ score = Cycling\ LOS_{Danish}\ score - Cycling\ LOS_{gradient}\ score$$

In the city centre, the level of service gap is primarily based on the Danish cycling level of service with an adjustment factor for whether the traffic flow is one or two-way (an indication of permeability for cyclists through the city centre):

$$Cycling\ LOS\ score = Cycling\ LOS_{Danis}\ \ score - Cycling\ LOS_{permeability}\ score$$

On both the key suburban corridor and city centre segments, the minimum *Cycling LOS score* a segment could be assigned was 0. Where the above equations resulted in a negative score, a score of 0 was assigned.

Danish cycling level of service

The Danish methodology for calculating the cycling level of service returns level of service ratings from A to F, with A representing a good level of service and F representing a poor level of service. This method is calculated based on the following factors:

- Motor vehicle volumes and speeds
- Number of traffic lanes and lane width
- Bike path/lane width and buffer width(s)
- Footpath location and pedestrian volumes
- Presence of on-street parking and buses on the street
- Type of adjacent land use

The aspirational level of service rating is A. The cycling level of service ratings were converted to scores ranging between 0 and 100 as outlined in Table 30.

Table 30: Danish cycling level of service scores

Danish cycling LOS rating	*Cycling LOS$_{Danish}$ score*
A	0
B	20
C	40
D	60
E	80
F	100

Gradient

The Danish method for calculating the cycling level of service does not factor in the gradient of the road. Given that some of the key suburban corridors have significant grades that impact on the level of service for cyclists, an adjustment factor has been included for the average gradient on the corridor segment. The average gradient values were rescaled to obtain scores of 0 to 10, using the following rescaling values:

$$\leq 3\% = Cycling\ LOS_{gradient}\ score\ of\ 0$$

$$\geq 7\% = Cycling\ LOS_{gradient}\ score\ of\ 10$$

The road gradient is an unalterable characteristic of the road and, therefore, it affects the aspirational cycling level of service. The achievable level of service on a road with a steep gradient will be lower than that on a flat road. To account for this, the gradient adjustment factor was subtracted from the *Cycling LOS$_{Danish}$ score* to indicate a smaller gap between the current and aspirational levels of service on steep roads.

This adjustment factor was used for the segments on the key suburban corridors only, as the corridor segments in the city centre are relatively flat.

Permeability

The Danish method for calculating the cycling level of service is based on the road cross section and does not consider the wider network connections for cyclists. Permeability and direct routes are important elements for providing a high level of service for cyclists within the city centre. Permeability scores were assigned based on the type of flow on the corridor segment as follows:

$$one\text{-}way\ street = Cycling\ LOS_{permeability}\ of\ 0$$

$$two\text{-}way\ street = Cycling\ LOS_{permeability}\ score\ of\ 10$$

The permeability adjustment factor is subtracted from the *Cycling LOS$_{Danish}$ score* to indicate that one-way streets have a larger gap in the cycling level of service than two-way streets.

This adjustment factor was used for the segments in the city centre only. This is because the focus for the key suburban corridors is to improve access specifically to and from the city centre, which does not require a permeable network.

4.2.2.2. Users score

The users score for cycling is based on the current daily volume of cyclists travelling along the corridor. The cyclist volumes were normalised to obtain scores of 0 to 100, where:

$$no\ cyclists = Cycling\ users\ score\ of\ 0$$

$$highest\ volume\ of\ cyclists = Cycling\ users\ score\ of\ 100$$

4.2.3. Walking

The walking score is based on the walking level of service gap and is weighted by the number of pedestrians affected, as follows:

$$Walking\ score = Walking\ LOS\ score \times Walking\ users\ score$$

The resulting scores were then normalised to a scale of 0 to 100, so that the highest score was scaled to 100.

4.2.3.1. Level of service score

The level of service score for walking is representative of the gap between the current level of service and the aspirational level of service: the higher the score, the larger the gap between the current situation and the aspiration. The level of service for walking is calculated using different methods for segments in the key suburban corridors and segments in the city centre.

On the key suburban corridors, the level of service is based on the walking level of service for pedestrians walking to and from bus stops.

In the city centre, the level of service is based on four factors: pedestrian delay when travelling along the corridor (delay), pedestrian delay when crossing the corridor (severance), the frequency of pedestrian routes that connect to adjacent streets (permeability), and the deficiency in the place value (amenity). The combined level of service score for walking was calculated as the average of these four scores:

$$Walking\ LOS\ score =$$

$$\tfrac{1}{4}\begin{pmatrix} Walking\ LOS_{delay}\ score\ + Walking\ LOS_{severance}\ score + \\ Walking\ LOS_{permeability}\ score + Walking\ LOS_{amenity}\ score \end{pmatrix}$$

Bus stop access

On the key suburban corridors, the level of service is based on a qualitative analysis of the walking level of service for pedestrians walking to and from bus stops. The qualitative LOS ratings were converted to scores of 0 to 100 as outlined in Table 31.

Table 31: Walking level of service scores on the key suburban corridors

Qualitative walking LOS assessment	*Walking LOS score*
No gaps in walking LOS for bus users	0
Some minor deficiency in walking LOS for bus users	20
Minor to medium deficiency in walking LOS for bus users	40
Medium deficiency in walking LOS for bus users	60
Medium to major deficiency in walking LOS for bus users	80
Major deficiency in walking LOS for bus users	100

Delay

In the city centre, walking delay was assessed as the average delay experienced by pedestrians when walking along the corridor segment. The delay is calculated as the average delay experienced at signalised intersections, expressed in sec/km.

The pedestrian delay at individual signalised intersections was calculated using Pretty's Method[49]:

$$d = \frac{(C - w)^2}{2C}$$

where:
C = cycle length, s
w = walk time (pedestrian green time), s

The pedestrian delay time corresponds to level of service ratings, from A to F, based on the level of service ratings for pedestrians crossing in Waka Kotahi's *Pedestrian Planning and Design Guide, 2009*, provided in Table 32.

Table 32: Levels of service for pedestrians crossing

Average pedestrian delay (sec)	LOS
<5	A
5 – 10	B
10 – 15	C
15 – 20	D
20 – 40	E
>40	F

The pedestrian delay values for individual intersections were converted to delay represented as min/km. To calculate this, an assumption of eight signalised intersections per kilometre in the city centre was used (typical spacing of 125m between signalised intersections in the central city). Assuming this spacing, the delay per intersection for each level of service rating, A to F, was converted to delay in sec/km, with corresponding scores of 0 to 100, as per Table 33.

Table 33: Walking delay scores

Pedestrian delay (sec/km)	*Walking LOS_{delay} score*
0 – 40	0
40 – 80	20
80 – 120	40
120 – 160	60
160 – 320	80
≥320	100

Severance

In the city centre, walking severance was assessed as the delay experienced by pedestrians crossing the corridor segment.

On segments where controlled pedestrian crossings[50] were located less than 100m apart (i.e., a pedestrian would never need to walk further than 50m to the nearest controlled crossing), the crossing delay was taken as the pedestrian delay at the controlled crossings. For signals, this delay was assessed using the method described under the Delay section, above.

On segments where controlled pedestrian crossings were located more than 100m apart, the delay was calculated as the mid-block pedestrian crossing delay using the method outlined in Waka Kotahi's *Guidelines for the Selection of Pedestrian Facilities*.

The pedestrian delay time corresponds to level of service ratings, from A to F, based on the level of service ratings for pedestrians crossing in Waka Kotahi's *Pedestrian Planning and Design Guide, 2009*. The delays were converted to scores ranging between 0 and 100, corresponding to the level of service ratings, as outlined in Table 34.

[49] The University of North Carolina Highway Safety Research Center, "Recommended Procedures, Chapter 13 "Pedestrians," of the Highway Capacity Manual," United States Department of Transportation Federal Highway Administration, McLean, VA, Tech Rep. FHWA-RD-98-107, 1988

[50] Controlled crossings include zebra crossings, mid-block signalised crossings, and signalised intersections.

Table 34: Levels of service for pedestrians crossing and walking severance scores

Average pedestrian delay (sec)	LOS	*Walking $LOS_{severance}$ score*
<5	A	0
5 – 10	B	20
10 – 15	C	40
15 – 20	D	60
20 – 40	E	80
>40	F	100

Permeability

In the city centre, walking permeability was assessed as the frequency of pedestrian connections to parallel routes. This was calculated as the average spacing between side pedestrian connections, which included all streets and pedestrian accessways.

The values for the average spacing were rescaled to obtain scores of 0 to 100, using the following rescaling values:

$$\leq 100m = Walking\ LOS_{permeability}\ score\ of\ 0$$

$$\geq 250m = Walking\ LOS_{permeability}\ score\ of\ 100$$

Amenity

In the city centre, the amenity score was assessed using the method described under Section 4.2.4 below.

4.2.3.2. Users score

Boarding and alighting volumes

On the key suburban corridors, the users score for walking is based on the current daily volume of bus boardings and alightings on the corridor segment per kilometre. The boarding and alighting volumes were normalised to obtain scores of 0 to 100, where:

$$no\ bus\ boardings\ and\ alightings = Walking\ users\ score\ of\ 0$$

$$highest\ volume\ of\ boardings\ and\ alightings = Walking\ users\ score\ of\ 100$$

Although the bus boarding and alighting volumes are used only for walking scores on the key corridors, the volumes were scaled using the volumes of boardings and alightings across the entire City Streets network. This was to weight the number of bus passengers affected by the walking deficiency on the key suburban corridors relative to the city centre.

Pedestrian volumes

In the city centre, the users score for walking is based on the current daily volume of pedestrians travelling along the corridor. The pedestrian volumes were normalised to obtain scores of 0 to 100, where:

$$no\ pedestrians = Walking\ users\ score\ of\ 0$$

$$highest\ volume\ of\ pedestrians = Walking\ users\ score\ of\ 100$$

4.2.4. Amenity

The amenity score is based on the deficiency in the place value of a location, assessed as the difference between the current and aspirational place values. The current and future place values were taken as the values assessed in the *Wellington Place and Move Framework* (2019). Amenity scores from 0 to 100 were assigned as per Table 35.

Table 35: Amenity scores

		Current place value		
		1	2	3
Future place value	1	0	0	0
	2	50	0	0
	3	100	50	0

The geographic scope of the locations assessed in the *Wellington Place and Move Framework* is limited to the city centre and a minimal number of locations on the key suburban corridors (limited to a select few corridors in Mount Cook and Newtown). For segments on the key suburban corridors where place values were not available, indicative amenity score were assigned as follows:

$$segment\ passes\ through\ a\ town\ centre = Amenity\ score\ of\ 100$$

$$all\ other\ segments = Amenity\ score\ of\ 0$$

4.2.5. Safety

The safety score is an assessment of safety on the corridor segment based on three factors: Collective Risk and Personal Risk ratings (risk), the social cost of injury crashes (social cost), and the number of vulnerable user injuries (injuries). The combined score for safety was calculated as the average of these three scores:

$$Safety\ score =$$

$$1/_3\left(Safety_{risk}\ score\ + Safety_{social\ cost}\ score + Safety_{injuries}\ score\right)$$

The resulting scores were then normalised to a scale of 0 to 100, so that the highest score was scaled to 100.

4.2.5.1. Risk ratings

The safety risk rating scores were assessed based on the Collective Risk and Personal Risk ratings for each corridor segment. Collective Risk is a measure of the total number of deaths and serious injuries per kilometre that can be expected on a road segment over a five-year period, while Personal Risk is a measure of the risk of an individual dying or being seriously injured on a road corridor.

The Collective and Personal Risk ratings were taken as the ratings from the Safer Journeys Risk Assessment Tool (MegaMaps). Where a City Streets corridor segment crossed two or more Collective and/or Personal Risk ratings in the MegaMaps tool, the weighted average rating was taken. To calculate the weighted average rating, the rating categories of Low to High were converted to values of 1 to 5 and weighted based on the length of the segment at each rating.

[51] As per the Ministry of Transport's *Social cost of road crashes and injuries 2018* update, the social cost estimates used for minor and serious injuries have been scaled up to account for non-reported cases.

The Collective and Personal Risk ratings were then converted to scores from 0 to 100 as per Table 36.

Table 36: $Safety_{risk}$ scores

		Collective risk rating				
		Low	Low Medium	Medium	Medium High	High
Personal risk rating	Low	0	10	25	40	55
	Low Medium	10	25	40	55	70
	Medium	25	40	55	70	85
	Medium High	40	55	70	85	100
	High	55	70	85	100	100

4.2.5.2. Social cost

The social cost scores were assessed based on the social cost of injury crashes in a corridor segment on a per kilometre basis. This was calculated as the estimated total social cost of all injury crashes that occurred in the corridor segment over the past 10-year period (2010-2019). The estimated social cost applied to each injury type were sourced from the Ministry of Transport's *Social cost of road crashes and injuries 2018 update* (2019), as per Table 37.

Table 37: Social cost per injury

Injury type	Social cost estimate[51]
Minor	$107,000
Serious	$926,000
Fatal	$4,369,700

Where an injury crash occurred at the intersection of two or more City Streets corridor segments, the social cost of that crash was equally divided between all segments.

The total social cost was divided to determine the social cost per kilometre. The social cost values were then normalised to obtain scores of 0 to 100, where:

$$no\ social\ cost = Safety_{social\ cost}\ score\ of\ 0$$

$$largest\ social\ cost\ value = Safety_{social\ cost}\ score\ of\ 100$$

4.2.5.3. Vulnerable user injuries

The vulnerable users scores were assessed based on the number of vulnerable user injuries in a corridor segment on a per kilometre basis. This was calculated as the total number of vulnerable user injuries that occurred in the corridor segment over the past 10-year period (2010-2019). Vulnerable users include pedestrians, cyclists, motorcyclist, and moped drivers.

Where an injury crash occurred at the intersection of two or more City Streets corridor segments, the injury was equally divided between all segments (for example, where one injury occurred at the intersection of two segments, half an injury was attributed to each segment).

The total number of vulnerable user injuries was divided to determine the injuries per kilometre. The vulnerable user injury values were then normalised to obtain scores of 0 to 100, where:

$$no\ vulnerable\ user\ injuries = Safety_{injuries}\ score\ of\ 0$$

$$largest\ vulnerable\ user\ injury\ value = Safety_{injuries}\ score\ of\ 100$$

4.2.6. Growth

The growth score is based on the degree to which a corridor segment is aligned with expected future urban growth. The scores were calculated based on the total projected increase in population that would be served by the corridor segment to access the city centre.

For the key suburban corridors and bus routes within the city centre, this was based on the projected population growth in suburbs served by the bus route, aggregating as the route moves towards the city centre. As an example, the projected population growth served by corridor segments in Island Bay accounts for population growth in Island Bay only, whereas the projected population growth for corridor segments in Berhampore accounts for population growth in both Berhampore and Island Bay.

For all other streets in city centre—those without bus routes—the population growth served by the corridor was taken as the projected population growth of the suburbs in which the corridor segment is located.

The values for the total projected population growth served by the corridor segments were normalised to obtain scores of 0 to 100, where:

$$no\ population\ growth = Growth\ score\ of\ 0$$

$$highest\ population\ growth = Growth\ score\ of\ 100$$

5. Step 2: Building the intervention toolkit

An appropriate mix of interventions can provide improvements for public transport and active modes, as well as placemaking and general safety for road users. This section outlines possible interventions that could be implemented to deliver against the outcomes of the City Streets programme. They are grouped into five categories of interventions:

- Bus priority interventions
- Cycle interventions
- Pedestrian interventions
- General safety improvements
- Amenity and place improvements

In addition, mitigation measures have been considered. These measures may be applicable where there is judged to be an unacceptably significant impact on vehicles, and it may be required to implement interventions that mitigate against that impact.

The interventions are expected to be applied inside the road corridor (defined as the building-to-building width) or on cycle and / or pedestrian accessways. In some cases, delivering interventions may entail minor road widening or creating new accessways.

Although the City Streets project is designed as a multi-modal package of improvements, the intervention toolbox is defined in a mode-specific way. Multiple interventions will be overlaid on corridors to achieve multi-modal outcomes.

5.1. Bus priority interventions

The intervention toolbox for bus priority improvements has been identified based on the intervention toolkit in the Wellington Bus Priority Programme. Table 38 outlines the potential bus priority interventions that may be implemented under the City Streets programme. These measures can be grouped into four broad locations:

- Bus stops
- Midblock
- Intersections
- Signals

Operational improvements to the bus network were not considered in the City Streets toolkit, including increasing bus frequency, improving ticketing efficiency, or changing the type of buses used. These interventions are out of scope for the project.

Table 38: Bus priority improvements

Location	Intervention	How it works	Where it's useful
Bus stops	Bus stop rationalisation	Reducing the number of bus stops reduces acceleration / deceleration / dwell time losses, reducing bus travel times.	• Where bus stops are close together, resulting in overlapping walking catchments; this causes the bus to stop frequently without substantially increasing access to bus stops
	Entry / exit tapers	At off-line bus stops, the road layout can prevent the bus from kerbing properly, requiring passengers to step into the road to board or alight. Entry / exit tapers assist buses in manoeuvring into and out of bus stops, allowing the bus to kerb easily.	• At bus stops where the road layout prevents buses from manoeuvring into bus stops
	Lengthening bus stop	An increased number of stopping bays allows multiple buses to use the bus stop at the same time, reducing bus-bus congestion at bus stops.	• At bus stops where high frequency of buses and / or long dwell times (at bus interchanges) cause bus-bus congestion
	In-line bus stops	Kerb extensions align the bus stop with the traffic lane, creating an in-line bus stop. This enables buses to stop at the kerb line without needing to make large lateral shifts.	• Where merging into traffic from off-line bus stops creates re-entry delays • Where passenger volumes require a larger dedicated waiting area than is available on the footpath • Where there are conflicts at bus stops with people on bikes
Midblock	Peak-hour transit lanes	Dedicated traffic lanes for buses reduce conflicts with general traffic at peak times only.	• When high v/c ratios are causing mid-block congestion at peak times and there is a high need / demand for parking outside peak times

Location	Intervention	How it works	Where it's useful
	24-hour transit lanes	Dedicated traffic lanes for buses reduce conflicts with general traffic at all times.	• When high v/c ratios are causing mid-block congestion across the day and there is a not a high need / demand for parking or corridor widening is feasible
	Peak-hour clearways	Parking is restricted at peak times to allow for wider lanes and shoulders and facilitate manoeuvring in and out of bus stops.	• When narrow traffic lanes (>3.2m) and / or high amounts of side friction from parked vehicles cause delays for buses and there is a high need / demand for parking outside peak times
	Widened traffic lane	Traffic lanes are widened, either through removing parking or through corridor widening.	• Where narrow traffic lanes (>3.2m) cause delays for buses • Where high amounts of side friction from parked vehicles cause delays for buses
Intersections	Minor intersection redesign	Improvements will vary from site to site. They may include a redesign of signal phases, a reduction in allowed turning movements, and / or traffic lane reconfiguration.	• At signalised intersections where buses are experiencing moderate delays and / or there are safety issues
	Major intersection redesign	Improvements will vary from site to site. They are likely to include major reconfiguration of traffic lanes and turning movements.	• At signalised intersections where buses are experiencing significant delays and / or there are safety issues
Signals	Increased green phase	By giving the bus direction of travel an increased share of the cycle time, the average delay at an intersection is reduced and the share of buses being delayed is reduced.	• At signalised intersections where there are significant delays in the bus direction of travel
	Queue jump	Approaching buses exit the general traffic lane and enter the queue jump lane, allowing buses to bypass queued vehicles.	• At traffic signals where there are long queues of vehicles, causing long queue service times. • At traffic signals where buses must change lanes or turn at the intersection and would benefit from traffic being held
	Bus phase	Approaching buses in a bus / queue jump lane receive a 'B' signal phase before general traffic gets a green.	• At traffic signals where transit vehicles must manoeuvre between lanes or make movements that general traffic does not (ex. into a bus depot) • When a bus stop immediately precedes a traffic signal and buses can get a head start through the intersection

5.2. Cycle interventions

The intervention toolbox for cycle improvements focuses on interventions that can be delivered within road corridors and/or cycle accessways and which are intended to primarily benefit people cycling. The cycle toolbox is largely based on Waka Kotahi's *Cycling network guidance*[52]. Table 39 outlines a suite of interventions that can be used to improve cycling safety and user experience. These measures can be grouped into five broad locations:

- Midblock
- Intersections
- Midblock crossings
- Signals
- Accessways

Some cycle interventions are appropriate in some contexts but not others. Separation from motor traffic is more important in high-traffic or high-speed environments. As a result, shared roadway solutions, such as neighbourhood greenways or shared zones, may deliver an acceptable level of service on low-traffic, low-speed streets, but separated cycleways may be necessary to deliver an acceptable level of service on high-traffic, high-speed streets.

Other cycle improvements considered out of scope for City Streets relate to education and bike share schemes.

Table 39: Cycle improvements

Location	Intervention	How it works	Where it's useful
Midblock	Shared zone	In shared zones there is no segregation between road users (pedestrians, cyclists, and motor vehicles). Typical street elements are removed, including footpaths, line markings, and kerbs. This results in an intentional level of ambiguity so that drivers proceed with caution and at slow speeds.	• On streets where low vehicle volumes and low speeds (20km/h) can be achieved • On intensely developed shopping streets or in town centres
	Shared path	A shared path is separated from motor vehicles and is shared by pedestrians, cyclists, and other wheeled recreational users.	• On roads with high vehicle volumes and speeds with low pedestrian and / or cycling volumes

52 Waka Kotahi, *Cycle Network Guidance*: https://www.nzta.govt.nz/walking-cycling-and-public-transport/cycling/cycling-standards-and-guidance/cycling-network-guidance/

Location	Intervention	How it works	Where it's useful
	Neighbourhood greenway	Streets with low volumes of motor traffic travelling at low speeds create a pleasant cycling environment without requiring specific cycle facilities. They incorporate low speed limits and physical measures to ensure low speed environments. Some measures that can be used to achieve a neighbourhood greenway environment include: • sharrows • signage • traffic calming measures • reducing vehicle access by restricting turning or through movements for motor vehicles while maintaining access for pedestrians and cyclists	• On local roads where low vehicle volumes (ideally no higher than 1,500–3,000 vehicles/day maximum, and 150-200 vehicles in the peak hour) and low speeds (30km/h or slower) can be achieved
	Cycle lanes	Cycle lanes are painted lines within the carriageway that provide dedicated but unprotected space for cyclists.	• On roads with modest vehicle volumes and speeds, ideally located kerbside (i.e., not next to on-street parking)
	Separated cycleway	Separated cycleways provide an exclusive cycling facility situated on or adjacent to the carriageway and includes some sort of physical separation from vehicles. Separation can be achieved through a number of measures, including: • vertical separation, such as a raised kerb • horizontal separation, such as a wide buffer space • physical barriers, such as bollards	• On roads with high vehicle volumes and speeds
Intersections	New intersection type	Choosing an alternative intersection type may improve safety for cyclists travelling through the intersection. Intersection types to consider include: • priority-controlled intersections • signalised intersections • roundabouts	• At intersections where there is evidence of cyclist safety issues
	Upgraded cycle facilities through the intersection	Improvements at existing intersections can improve safety for cyclists travelling through the intersection. Safety improvements can include: • marking cycle facilities continuously through the intersection • addressing conflicts between cyclists and left-turning vehicles. • realigning roundabouts and adjust visibility to decrease vehicle entry speeds	• At intersections where there is evidence of cyclist safety issues
	Cycle waiting facilities	Cycle waiting facilities at signalised intersections provide opportunities for cyclists to wait at signalised intersections and can facilitate safer movements for cyclists through the intersection. Waiting facilities can include: • advanced stop boxes • advanced stop lines • hook-turn boxes	• At traffic signals where there is evidence of cyclist safety issues or severance for turning cyclists

Location	Intervention	How it works	Where it's useful
Midblock crossings	New or upgraded unsignalised crossing	An unsignalised crossing is a facility where provision is made for cyclists and/or pedestrians to cross the road; priority is not given without the use of traffic signals. The range of facilities available includes: • kerb extensions • median refuges • raised platforms • kea crossings • pedestrian crossings (zebra) • cycle crossings, including dual crossings	• Where there is evidence of cyclist safety issues or severance and where there are sufficient user volumes to benefit from a formalised crossing
	New or upgraded signalised crossing	A signalised crossing improves cyclist safety by providing priority for crossing cyclists and/or pedestrians through the use of traffic signals in a midblock location. A signalised crossing may reduce cyclist delays times if cyclists are prioritised in the phasing plan.	• Where there is evidence of cyclist safety issues or severance and where there are sufficient user volumes to benefit from a signalised crossing
	New or upgraded grade-separated crossing	A grade-separated crossing improves cyclist safety by providing a spatial separation from motor vehicles. These crossings are generally implemented at busy intersections or across major roads and take the form of an overpass (bridge) or underpass (tunnel). A grade-separated crossing may reduce cyclist delay times if the alternative is a signalised intersection.	• Where there is evidence of cyclist safety issues or severance and where there are sufficient user volumes to benefit from a grade-separated crossing
Signals	Signal phasing	Specific signals for cyclists can be installed to provide temporal separation of cyclists from turning drivers at signalised intersections. Cycle signals may include: • protected movements for cyclists • head starts for cyclists • all-red extensions for cyclists	• At signals with cyclist delay (applicable only where separated cycle facilities are provided)
	Increased green phase	By giving the cyclists direction of travel an increased share of the cycle time, the average delay at an intersection is reduced.	• At signalised intersections where there are significant delays in the cycle direction of travel
	Cycle detection	Specific cycle detection can be used at signalised intersections or crossings to improve cyclist safety and priority.	• Where a movement used by cyclists is called on demand only • Where an all-red phase extension is required for cyclists to safely finish crossing the intersection • Where cyclists are prioritised and can be detected ahead of time (providing time to switch to a green cycle phase for when the cyclist arrives)
Accessways	New cycle accessways	New cyclist links or accessways provide access between destinations and increase permeability for cyclist through-movement.	• Where street networks do not currently provide direct cycle links between destinations or along key desire lines

5.3. Pedestrian interventions

The intervention toolbox for pedestrian improvements focuses on interventions that can be delivered within road corridors and/or pedestrian accessways and which are intended to primarily benefit people walking for transport as opposed to people who are 'lingering'. However, some interventions are likely to provide ancillary benefits for 'lingering' users and surrounding land uses. The pedestrian toolbox has been identified based on a review of several sources of guidance on pedestrian facilities[53,54]. Table 40 summarises these interventions into five broad locations:

- Midblock
- Intersections
- Midblock crossings
- Signals
- Accessways

Table 40: Pedestrian improvements

Location	Intervention	How it works	Where it's useful
Midblock	Widened footpath	Footpaths are widened to accommodate high pedestrian volumes without pedestrian congestion delay or user discomfort.	• Where there are high (peak) pedestrian volumes on footpaths with constrained widths (either due to narrow footpaths or footpath clutter)
	Widened shared path	Shared paths are widened and /or divided into separate paths to accommodate high pedestrian and / or cyclist volumes without congestion delay or user discomfort.	• Where there are high (peak) pedestrian and / or cyclist volumes on shared paths with constrained widths
	Accessibility enhancements	Accessibility improvements enhance the quality of experience and usability for people with limited mobility. Improvements may include: • improved surfaces • tactile paving • new or improved pedestrian ramps • street decluttering	• On footpaths that lack accessibility features
Intersections	Addition of missing pedestrian leg(s) at intersections	Intersections that are missing one or more pedestrian leg(s) increases the number of crossing some pedestrians need to make. This may include missing legs pedestrian signals at signalised intersections or missing crossing aids at unsignalized intersections (for example, kerb ramps). Adding in missing pedestrian legs reduces pedestrian delay and improves accessibility.	• At intersections that are missing one or more pedestrian leg(s)

[53] Global Designing Cities Initiative, *Pedestrian Toolbox*: https://globaldesigningcities.org/publication/global-street-design-guide/designing-streets-people/designing-for-pedestrians/pedestrian-toolbox/
[54] Waka Kotahi, *Impact on Urban Amenity in Pedestrian Environments*: https://www.nzta.govt.nz/assets/planning-and-investment/docs/impact-on-urban-amenity-in-pedestrian-environments-march-2020.pdf

Location	Intervention	How it works	Where it's useful
	Localised footpath widening	Footpaths are built out at intersections to narrow the roadway, shorten crossing distances, and provide sufficient space for pedestrians to wait to cross without impeding through-movement.	• At intersections and crossings where there are high (peak) pedestrian crossing volumes • Where long crossing distances cause safety or accessibility issues
	Upgraded crossings at unsignalised intersection	Unsignalised intersections can be upgraded to improve pedestrian safety and priority. Upgrades can include: • kerb extensions • median refuges • courtesy crossings (i.e., raised platforms or a change in road surfacing to indicate pedestrian priority) • kea crossings • zebra crossings • new signals	• Where there is evidence of pedestrian safety issues or where there are sufficient user volumes to benefit from an improvement
Midblock crossings	New or upgraded unsignalised crossing	An unsignalised crossing is a facility where provision is made for pedestrians to cross the road; priority is not given without the use of traffic signals. The range of facilities available includes: • kerb extensions • median refuges • courtesy crossings (i.e., raised platforms or a change in road surfacing to indicate pedestrian priority) • kea crossings • zebra crossings	• Where there is evidence of pedestrian safety issues or severance and where there are sufficient user volumes to benefit from a formalised crossing
	New or upgraded signalised crossing	A signalised crossing improves pedestrian safety by providing priority for crossing pedestrians through the use of traffic signals in a midblock location. A signalised crossing may reduce pedestrian delays times if pedestrians are prioritised in the phasing plan.	• Where there is evidence of pedestrian safety issues or severance and where there are sufficient user volumes to benefit from a signalised crossing
	New or upgraded grade-separated crossing	A grade-separated crossing improves pedestrian safety by providing a spatial separation from motor vehicles. These crossings are generally implemented at busy intersections or across major roads and take the form of an overpass (bridge) or underpass (tunnel). A grade-separated crossing may reduce pedestrian delay times if the alternative is a signalised intersection.	• Where there is evidence of pedestrian safety issues or severance and where there are sufficient user volumes to benefit from a grade-separated crossing
Signals	Increased pedestrian green phase (including Barnes Dance crossing)	Increasing the length of the pedestrian phase reduces average delay while crossing the street and indirectly improves safety by reducing demand to cross during the vehicle phase.	• Where average pedestrian delay is larger than a certain threshold • Where there are sufficient user volumes to benefit from an improvement

Location	Intervention	How it works	Where it's useful
	Beg button replaced with automatic pedestrian phase	Replacing push buttons reduces average delay while crossing the street and indirectly improves safety by reducing demand to cross during the vehicle phase.	• Where there are sufficient user volumes to benefit from an improvement • Where the pedestrian phase does not impact on signal sequencing
	Countdown timers	At traffic signals, countdown timers alert pedestrians crossing to how much time is available to cross the road. Pedestrians can decide for themselves whether to proceed or wait for the next phase.	• At midblock crossings • At Barnes Dance crossings
Accessways	New pedestrian accessways	New pedestrian links or accessways provide access between destinations and increase permeability for pedestrian through-movement. Pedestrian accessways can include laneways or stairs.	• Where street networks do not currently provide direct pedestrian links between destinations or along key desire lines
	Upgraded pedestrian accessways	Improving existing pedestrian laneways or stairs can increase pedestrian safety and user comfort. Improvements may include: • improved surfaces • non-slip surfaces • lighting	• Existing pedestrian accessways that are designed in a way that is unsafe due to trip/slip hazards and / or CPTED concerns

5.4. General safety improvements

There are other interventions that are not particular to any of the modes but provide general safety improvements for multiple road users. Table 41 summarises these interventions into two broad locations:

- Midblock
- Intersections

Other safety improvements considered out of scope for City Streets relate to education and enforcement. For example, advertising campaigns or red-light cameras.

Table 41: General safety improvements

Location	Intervention	How it works	Where it's useful
Midblock	Speed humps and cushions	Speed humps and cushions provide vertical deflection and encourages motorists to drive slowly and carefully. Speed humps can have adverse effects on cyclists, so may not be desirable on primary cycle routes.	• On local roads where low speeds are desirable
	Chicanes and pinch point	Where chicanes / pinch-points are implemented, the road narrows to one-way flow or remains two-way and requires vehicles to slightly divert their direction or travel. Vehicles are required to slow down and give way to each other, reducing travel speeds and encouraging courtesy.	• On local roads where low volumes and low speeds are desirable • On neighbourhood greenways

Location	Intervention	How it works	Where it's useful
	Speed limit reduction	Formal reduction of the speed limit.	• Where there is a high level of people walking and being • Ideally done on a network level or through a town centre
Intersections	Upgraded priority-controlled intersection	Upgrading an intersection that is currently priority-controlled (with a Give Way or Stop sign) to better enable different turning movements and crossing pedestrians. Upgrades can include: • speed reduction • signals • roundabout • 4-way stop	• At crossroads and T-junctions to help manage movements to and from side roads • At intersections with operating speeds of 40kmph or higher • At intersections where there is a high number of crashes (although signals can create an increase in risk in other types of crashes, so they should be installed sparingly)
	Upgraded signalised intersection	Upgrading of existing signalised intersections will generally be to fully control the right turn phase to eliminate right turn filtering and/or removal of shared straight through and turning lanes. This reduces conflict between different turning vehicles and crossing pedestrians. However, this often means that intersections need to be wider to accommodate different turning movements.	• At intersections with a high turning-crash record. • Where opposing multi-lane approaches conflict with right-turning vehicles.
	Side road treatment (for example, hatched no-stopping markings)	Where low volume side roads meet busy arterial roads, other intersection treatments such as signals, roundabouts, or 4-ways stops may not be appropriate. Should be considered in particular where bus lanes or clearways are.	• On arterial roads with relatively high-volume side streets or driveways • Where there are a lot of crashes due to turning movements in and out of side streets, to which people riding bikes and motorbikes are particularly vulnerable
	Sightline adjustment	If sightlines are too far or too close, this can create safety issues. Sightlines that are too far can encourage speed, while sightlines that are too close mean that people put themselves into a risky position in order to make the movement they need to. Sightlines can be improved by doing things such as trimming vegetation or removing car parks. Sightlines can be reduced by doing things such as planting trees or other vegetation, or shading traffic lights.	• To be judged on a site-by-site basis

5.5. Amenity improvements

There are other improvements that are not particular to travel but improve the environment for road users. Table 42 outlines some of these amenity improvements that may be considered under the City Streets programme.

Table 42: Amenity improvements

Location	Intervention	How it works	Where it's useful
Pedestrian facility upgrades	Pavement quality upgrade	Footpath surfaces are upgraded (ex. stone pavers vs asphalt) to improve quality of experience for users.	• Where footpaths have basic surfaces (i.e., asphalt) and where there are sufficient user volumes to benefit from an improvement
	Awnings, verandas, or canopies	Awning, verandas, or canopies provide shade and shelter from the weather and improve quality of experience for users.	• Where footpaths in urbanised areas (i.e., not in parks) lack shade or shelter and where there are sufficient user volumes to benefit from an improvement
Amenity upgrades for all users	Lighting and / or CCTV	Lighting and / or CCTV improves perceived safety and reduces the risk of crime or antisocial behaviour.	• Where walking and / or cycling routes lack lighting, CCTV, or passive surveillance from nearby buildings and land uses
	Seating or resting opportunities	Seating improves quality of experience for users and provides resting places for people with limited mobility.	• Where walking and / or cycling routes lack seating, where there is space to provide seating without constraining space for through movement, and where there are sufficient user volumes to benefit from an improvement
	Signage, wayfinding, and place interpretation	Signage and wayfinding increase people's ability to reach their destinations efficiently, especially when they are infrequent users or tourists.	• Where walking and / or cycling routes are not clearly signposted • Where signage and place interpretation may improve people's ability to use corridors
	Street trees and / or low plantings	Street trees and plantings improve quality of experience for users and improve safety by providing physical separation from traffic.	• Where walking and / or cycling routes lack plantings and where there is space to provide them without constraining space for through movement or requiring large-scale relocation of underground utilities

5.6. Mitigation interventions

Where there is judged to be an unacceptably significant impact on vehicles, it may be required to implement interventions which mitigate against that impact. These should only be implemented as mitigation interventions, rather than interventions in their own right.

Table 43: Mitigation interventions

Location	Intervention	How it works	Where it's useful
Traffic lanes	All-vehicle clearways	At peak times, remove parking to allow another general traffic lane.	• In areas of high congestion but where HOV or bus lanes are not justified
	HOV lanes	At peak times, remove parking to allow allocate a traffic lane for buses and other high occupancy vehicles. Could also be used by freight. Example: T2 lanes (vehicles must have at least two occupants)	• In areas of high congestion but where bus lanes are not justified
Parking management	Residents or coupon parking schemes	Create space in suburban areas where only residents can park at certain times of the day, or where residents are exempt from paying a coupon fare.	• In suburban areas where parking is in high demand for commuters and visitors, such that residents find it difficult to park their car near their home
	Provision of off-street parking	Construction of an off-street surface parking lot or a parking building.	• To alleviate the loss of supply due to implementation of bus or cycle lanes or other street upgrades
	Adjust parking pricing	Adjust the price of parking to reduce demand for parking in areas where supply is reduced.	• To alleviate the loss of supply due to implementation of bus or cycle lanes or other street upgrades
	Convert parking use	Convert current parking use (ex. turning parking spaces into loading zones, car share spaces or mobility parking spaces) to make better use of remaining parking spaces so that they serve a more useful function. Car share spaces in particular may have the added benefit of reducing the demand for car ownership.	• In areas of high demand for parking and loading zones.
	Cycle parking	Provision of end of journey cycle facilities including replacement of car parks with mass cycle parking	• In areas of potential high demand for cycle parking

6. Step 3: Identifying indicative solutions

This section outlines the methodology used to identify indicative toolkit solutions for the City Streets corridors. A three-stage process was undertaken to identify indicative solutions on each of the corridor segments. On every segment, interventions were screened at each location—every bus stop, midblock segment, crossing, and intersection—to determine:

- The corresponding toolkit intervention(s) based on the type and scale of the documented problem(s)
- Any logical adjustments to the assigned intervention(s) to reconcile conflicting interventions and to ensure consistent treatment between adjoining midblock segments where required.
- Whether it would be technically feasible to implement the intervention(s) identified at each location and the enabling works required to do so

In each corridor segment, the interventions that passed both screening criteria were considered the indicative solution for the package of works.

The aim of this exercise is to indicatively match interventions to problem areas and to ensure that interventions are scaled appropriately to address problems. The outcome of this step is a set of location-specific interventions that can be packaged up into scenario packages.

The matched interventions are indicative only and have been selected to assist in indicative cost estimate and cost benefit analysis, rather than a final prioritised programme. Further detailed assessment will be required at a later stage to identify the best-fit intervention solutions.

6.1. Assumptions for integration with other LGWM projects

The City Streets geographic scope overlap with many of the other projects under the LGWM programme. These projects are still under development, running in a parallel process to the City Streets IBC, and they do not yet have identified solutions. To identify interventions for corridor segments under the City Streets programme at this stage, we have made high-level assumptions on which works would be delivered under City Streets, and which fall under other LGWM project scopes. The assumptions used to identify interventions that would be delivered as part of the City Streets package are outlined in Table 44.

Table 44: Intervention assumptions for integration with the wider LGWM programme

LGWM project	Affected corridor segments	Assumption
Golden Mile	Courtenay Pl – Cambridge Tce to Tory St	For segments on the Golden Mile, we have assumed that any changes to the corridor fall under the Golden Mile scope. However, the Golden Mile project has identified a need for a second public transport spine to relieve the capacity constraints of the Golden Mile. The second spine is the only intervention identified for segments on the Golden Mile.
	Courtenay Pl – Tory St to Taranaki St	
	Lambton Quay – Willis St to Stout St	
	Lambton Quay – Stout St to Bowen St	
	Lambton Quay – Bowen St to Bunny St	
	Manners St – Taranaki St to Cuba St	
	Manners St – Cuba St to Victoria St	
	Manners St – Victoria St to Willis St	
	Willis St – Lambton Quay to Mercer St	
	Willis St – Mercer St to Manners St	
State Highway	Miramar: Wellington Rd to Hataitai Tunnel	The bus route from Wellington Road to the central city (through Hataitai) does not align with the strategic cycle route into the central city (on SH1, Ruahine Street). The strategic cycle route falls within the State Highway geographic scope. We have assumed that it falls under the State Highway scope to provide an improved level of service for cyclists on this route. Cycle improvements have not been allowed for under City Streets on this segment.

LGWM project	Affected corridor segments	Assumption
Mass Rapid Transit	Bunny St – Waterloo Quay to Featherston St	As described above, the Golden Mile project has identified the need for a second public transport spine. The anticipated location of the second spine runs along the potential Mass Rapid Transit route. The assumption for the second spine under City Streets is that it would be implemented as an interim solution in preparation for future mass rapid transit. We have assumed that this route would run between Kent/Cambridge Terrace and the Wellington Station bus hub on Lambton Quay, travelling on Wakefield Street/Cable Street, the waterfront quays, and Bunny Street.
	Bunny St – Featherston St to Lambton Quay	
	Cable St – Jervois Quay to Taranaki St	
	Cable St – Taranaki St to Tory St	
	Cable St – Tory St to Barnett St	
	Cable St – Barnett St to Chaffers St	
	Cable St – Chaffers St to Oriental Pde	
	Customhouse Quay – Jervois Quay to Whitmore St	
	Jervois Quay – Taranaki St to Cable St	
	Jervois Quay – Cable St to Harris St	
	Jervois Quay – Harris St to Hunter St	
	Jervois Quay – Hunter St to Post Office Sq	
	Jervois Quay – Post Office Sq to Customhouse Quay	
	Oriental Pde - Wakefield St to Cable St	
	Wakefield St – Cambridge Tce to Tory St	
	Wakefield St – Tory St to Taranaki St	
	Waterloo Quay – Whitmore St to Bunny St	
Thorndon Quay & Hutt Road	Johnsonville: Hutt Rd – Ngauranga Gorge to Kaiwharawhara Rd	We have assumed that any work on these segments falls under the Thorndon Quay & Hutt Road project scope. No interventions or costs have been identified for these segments under City Streets.
	Johnsonville: Hutt Rd – Kaiwharawhara Rd to Thorndon Quay	
	Thorndon Quay – Mulgrave St to Moore St	

6.2. Step 1: Identifying corresponding toolkit interventions

The first step to identifying indicative solutions for each of the corridor segments was applying high-level rules to determine the appropriate indicative toolkit interventions. The rules were applied based on the suitability of an intervention at addressing the type and scale of the documented problems and opportunities identified. Interventions were assessed at the following locations:

- At bus stops
- In the corridor midblock
- At intersections and crossings

The resulting corresponding interventions were considered effective at addressing the problems and were carried through to the next step. The interventions are considered indicative only and have been identified based on limited information and analysis. The indicative solutions have been identified to assist in in preparing indicative cost estimates and a cost-benefit analysis. They are likely to change following further assessment and should not be considered a final prioritised programme.

The following sections outline the rules applied to determine the indicative interventions at each of the locations.

6.2.1. Bus stops

Interventions were considered at bus stop locations to improve bus operations and to address safety concerns for road users operating near the bus stops (particularly bus passengers and passing cyclists). Many of the interventions were matched to bus stops based on the outputs from the Wellington Bus Priority Programme (BPP). On segments that fall outside of the BPP geographic scope, rules were applied consistent with the level of intervention identified in the BPP. The rules used for identifying suitable interventions at bus stops are outlined in Table 45.

Table 45: Interventions at bus stops

Intervention	Where it was considered for the indicative solution
Bus stop rationalisation	• Where bus stops are spaced closer than 300m, excluding stops that serve unique walking catchments (aligned with the BPP methodology)
Bus stop converted to in-line stop	• At bus stops within the BPP scope: Where a stop was identified through the BPP to be converted from off-line to in-line (where the re-entry delay is greater than 0.05 min/stop, as per the BPP) • At bus stops outside of the BPP scope: Converting off-line bus stops to in-line stops was not considered as the delay on these routes were not significant enough to warrant the intervention
Entry / exit tapers	• At off-line bus stops that are missing an entry taper, an exit taper, or both tapers (aligned with the BPP methodology)
Bus stop lengthened	• At bus stops where the box is shorter than 15m (aligned with the BPP methodology)
Bus stop bypass	• Where a bus stop falls within a corridor segment for which painted cycle lanes or separated cycle lanes were identified as an indicative intervention (refer Section 6.2.2 below)

6.2.2. Midblock

Interventions were considered in the corridor midblock to improve journeys for bus passengers, cyclists, and pedestrians and to address safety concerns for road users. The bus-specific interventions (transit lanes and widened traffic lanes) were matched to segments based on the outputs from the Wellington Bus Priority Programme (BPP). For all other interventions, rules were applied to suitably match the interventions to corridor segments. The rules used for identifying suitable interventions in the corridor midblock are outlined in Table 46.

Table 46: Interventions in the corridor midblock

Intervention	Where it was considered for the indicative solution
Transit lane	• On corridors within the BPP scope: Where transit lanes were identified through the BPP (where midblock congestion delay is greater than 1.0 min/km, as per the BPP) • On corridors outside of the BPP scope: Transit lanes were not considered as the delay on these routes were not significant enough to warrant the intervention
Widened traffic lane	• On corridors within the BPP scope: Where widening corridors were identified through the BPP (where road geometry causes a reduction of free-flow speed greater than 0.4 min/km, as per the BPP) • On corridors outside of the BPP scope: Widened traffic lanes were not considered as the delay on these routes were not significant enough to warrant the intervention
Separated cycle lane	• Where the current cycling LOS rating is D or worse and the motor vehicle speeds and volumes correspond to physical segregation of cyclists from motor vehicles, as per Figure 34
Painted cycle lane	• Where the current cycling LOS rating is D or worse and the motor vehicle speeds and volumes correspond to cycle lanes, as per Figure 34
Neighbourhood greenway	• Where the current cycling LOS rating is D or worse and the motor vehicle speeds and volumes correspond to a shared carriageway, as per Figure 34
Shared zone	• On a case-specific basis, where a shared zone may be appropriate given the road environment and the volumes of motor vehicles, cyclists, and pedestrians
Off-road cycle path	• On a case-specific basis, where separated cycle lanes are appropriate and there is suitable off-road space for a path
Widened footpath or shared path	• On a case-specific basis, where footpath widths are known to be constrained for the pedestrian demand

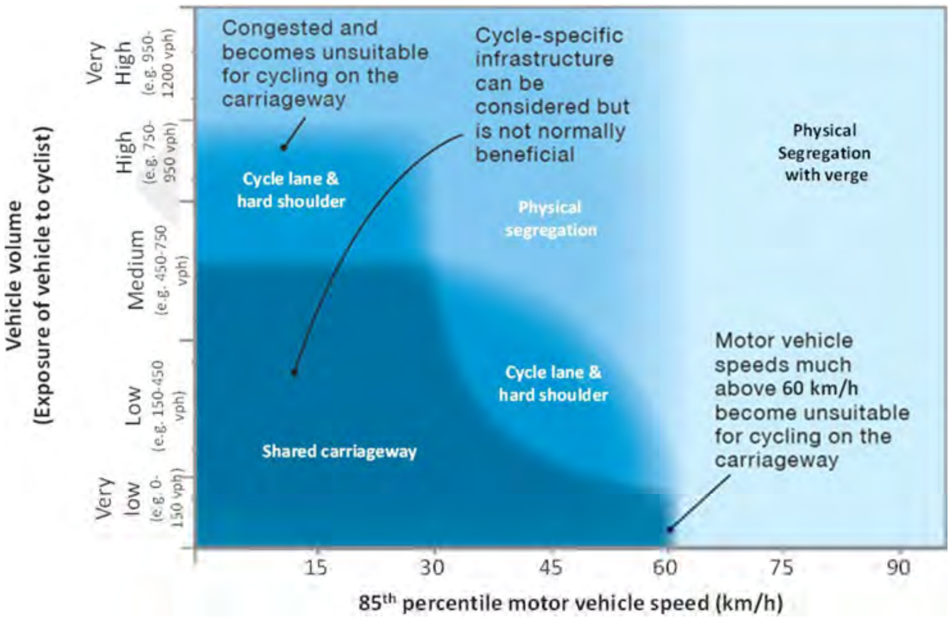


Figure 34: Guidance on the separation of cyclists and motor vehicles[55]

6.2.3. Intersections and crossings

Interventions were considered at intersections and crossings to improve journeys for bus passengers, cyclists, and pedestrians and to address safety concerns for road users. The bus-specific interventions (such as signal improvements, queue jumps, etc.) were matched to segments based on the outputs from the Wellington Bus Priority Programme (BPP). For all other interventions, rules were applied to suitably match the interventions to intersections and crossings. The rules used for identifying suitable interventions at intersections and crossings are outlined in Table 47.

Table 47: Interventions at intersections and crossings

Intervention	Where it was considered for the indicative solution
Signal phase adjustments	• On corridors within the BPP scope: Where signal phase adjustments were identified through the BPP (where the queue service delay is greater than 10s and the control delay is 20–35s, as per the BPP) • On central city corridors: Where pedestrian delay is 10–40s
Addition of missing pedestrian leg at an intersection	• At intersections where one or more formalised pedestrian crossing points are missing (i.e., kerb ramps at unsignalized intersections or a signalised pedestrian leg at signalised intersections)
Minor intersection works (additions to an intersection without redesign)	• At intersections where there have been 4–9 injury crashes over the 10-year data period • At intersections where there is a demonstrated need or opportunity for minor additions to the intersection without needing significant redesign (for example, cycle waiting facilities, cycle detection, pedestrian countdown timers, localised footpath widening, etc.)
Minor intersection redesign	• On corridors within the BPP scope: Where minor intersection redesign was identified through the BPP (where the control delay is 35–55s, as per the BPP) • On central city corridors: Where pedestrian delay is greater than 40s • At intersections where there have been 10–15 injury crashes over the 10-year data period
Major intersection redesign (major reconfiguration of the intersection)	• On corridors within the BPP scope: Where major intersection redesign was identified through the BPP (where the control delay is greater than 55s, as per the BPP) • At intersections where there have been 16 or more injury crashes over the 10-year data period

[55] Sourced from Austroads' *Cycling Aspects of Austroads Guides* (Third Edition, 2017)

Intervention	Where it was considered for the indicative solution
Courtesy crossing (new)	• On central city corridors: Where the severance delay for pedestrians is 10–20s On key suburban corridors: Where there is an identified need to improve bus stop access for pedestrians, assigned as per • Table 48 below
Zebra crossing (new or upgraded from existing courtesy crossing)	• On central city corridors: Where the severance delay for pedestrians is 20–40s, or where severance delay is greater than 40s and the existing formal crossing points are spaced closer than 200m apart On key suburban corridors: Where there is an identified need to improve bus stop access for pedestrians, assigned as per • Table 48 below
Signalised crossing (new or upgrade from existing unsignalized crossing)	• On central city corridors: Where the severance delay for pedestrians is greater than 40s and the existing crossing points are spaced further than 200m apart On key suburban corridors: Where there is an identified need to improve bus stop access for pedestrians, assigned as per • Table 48 below
New grade-separated crossing	• On a case-specific basis, where a new grade-separated crossing is appropriate given vehicle volumes and pedestrian crossing demand

Table 48: Crossing upgrades on key suburban corridors

Walking LOS score[56]	New courtesy crossing	New zebra crossing	New signalised pedestrian crossing
20	0	0	0
40	1 every 4 bus stops	1 every 8 bus stops	0
60	1 every 2 bus stops	1 every 4 bus stops	0
80	1 per bus stop	1 every 8 bus stops	1 every 8 bus stops
100	1 per bus stops	1 every 4 bus stops	1 every 8 bus stops

6.3. Step 2: Applying logical principles

Through the methodology outlined in Step 1, indicative interventions were identified for every corridor segment. While this process identified toolkit solutions for each segment, a second process was undertaken to reconcile any conflicting interventions and to ensure consistent treatment between adjoining midblock segments.

Interventions needed to be reconciled where two or more assigned interventions for the same location conflicted. Where this occurred, the more significant intervention was prioritised, and the other intervention(s) was removed from the indicative solution. For example, if an intersection was assigned a minor intersection redesign due to pedestrian delay and assigned a major intersection redesign due to the number of injury crashes, the intersection was ultimately assigned a major intersection redesign only.

To ensure coherent treatment between adjoining midblock segments, consideration was given to the consistency of interventions that are implemented along the length of the corridor (such as bus lanes or cycle lanes). Where identified interventions varied between adjoining corridor segments, consideration was given to adjusting the assigned interventions on one or more of the adjoining segments. For example, if one corridor segment within the central city was identified for a neighbourhood greenway, but adjacent segments of the same corridor on either side were identified for cycle lanes, it would be more logical for all sections to be allocated cycle lanes to provide a consistent facility. However, if one corridor segment within the central city was identified for a cycle lane, but adjacent segments of the same corridor on either side were identified for a

[56] Refer Section 4.2.3.1 for further details on the qualitative walking LOS scores.

separated cycle lane, changes are not required for coherent treatment. Consistency can be achieved between painted and separated cycle lane treatments.

6.4. Step 3: Assessing the technical feasibility

The previous two steps identified interventions that could be applied to address problems that arise within the City Streets study area. However, some interventions may not be mutually compatible (for example, due to the fact that there is not sufficient space within road corridors, and the sum total of all possible interventions may not be affordable within the project budget).

Once interventions were identified, their space requirements were checked against corridor geometries to determine if the interventions could be physically accommodated within the available corridor space. If corridor widening would be required to deliver the intervention, it was assumed that this would be undertaken if it could be achieved by acquiring four or less properties and through retaining wall construction. If corridor widening required the acquisition of more than four properties or required earthworks above and beyond retaining wall construction, the intervention was removed from the packages.

This technical feasibility assessment was indicative only and was undertaken to assist in indicative cost estimate and cost benefit analysis, rather than a final prioritised programme. Further detailed assessment will be required at a later stage to identify the feasibility of any solutions.

7. Step 4: Cost estimates

A high-level cost estimation approach was used to identify indicative costs for the corridor segments. This approach is based on unit cost estimates for individual interventions included in the intervention toolbox, unit costs for enabling works, and an additional percentage for project overhead costs and contingency. Allowances for other location-specific costs, such as property acquisition where it is needed to address specific issues, are also included.

This approach entails:

- Identifying the quantity (number, distance, etc.) of each intervention included on each corridor segment.
- Quantifying the enabling works required to implement the interventions on each corridor segment.
- Multiplying quantities by unit cost rates to obtain total estimated costs; where interventions were identified at the intersection of two or more City Streets corridor segments, the cost of that intervention was equally divided between all segments.
- Adding a percentage mark-up for project overhead costs (42%) and contingency to account uncertainty in assigned interventions and/or for interventions not included in the indicative solutions at this stage (20%)

Actual costs are likely to vary from these indicative cost estimates for a variety of reasons, including hard-to-predict local cost factors like utility relocation and decisions to implement a non-standard design. As a result, a low-high range of unit cost rates is provided to provide an indication of the potential degree of variation between locations. Mid-point cost estimates are generally used for the cost estimate.

The unit cost estimates are summarised in the following tables. In general, unit cost rates are drawn from recent projects undertaken in Wellington.

Table 49: Estimated costs for City Streets interventions

Location	Intervention	Unit	Assumptions		Costs per unit		Days of construction[57]		Total cost		
			Low	High	Low	High	Low	High	Low	Mid-point	High
Bus stops	Existing bus stop removed	Stop	Remove signs and markings	Remove signs, markings, and shelter	$2,000	$6,000	2	4	$5,000	$10,300	$15,600
	New bus stop	Stop	Includes signs and markings	Includes signs, markings, and shelter	$1,000	$30,000	5	10	$8,500	$31,250	$54,000
	New double length bus stop	Stop	Includes shelter and seating	Includes shelter and seating	$60,000	$80,000	10	15	$75,000	$95,500	$116,000
	Bus stop converted to in-line stop	Stop	No drainage work	Move one sump, move RTI sign, and add shelter	$10,000	$75,000	5	12	$17,500	$60,650	$103,800
	Entry / exit tapers	Stop	--	--	$500	$1,000	1	2	$2,000	$3,900	$5,800
	Bus stop lengthened	Stop	--	--	$500	$1,000	1	2	$2,000	$3,900	$5,800
	Bus stop bypass	Stop	--	--	$60,000	$90,000	10	14	$75,000	$99,300	$123,600
Midblock	Transit lane (one direction)	km	No relocation of significant items	Relocation of some centre islands	$65,000	$100,000	3	60	$69,500	$156,750	$244,000
	Second public transport spine[58]	LS	--	--	--	--	--	--	$1,059,476	$1,995,034	$2,930,592
	Widened traffic lane	km	Parking removed only, change signs and markings	Kerb realignment required, and change signs and markings	$1,000	$800,000	5	60	$8,500	$476,250	$944,000

[57] Refer Table 50 for traffic management rates.
[58] Refer Table 51 for breakdown of estimated costs for the second public transport spine.

Location	Intervention	Unit	Assumptions		Costs per unit		Days of construction [57]		Total cost		
			Low	High	Low	High	Low	High	Low	Mid-point	High
	Separated cycle lane (one direction)	km	Kerb-separated cycleway at road level, no drainage work	Kerb-separated cycleway at footpath level, drainage work	$523,200	$5,000,000	105	158	$680,700	$3,029,350	$5,378,000
Midblock	Painted cycle lane (one direction)	km	White paint only	White paint with green paint at intersections and major driveways	$25,000	$125,000	5	60	$32,500	$150,750	$269,000
	Neighbourhood greenway	km	Signs and markings	Signs and markings, and kerb buildouts with trees	$60,000	$125,000	15	45	$82,500	$157,750	$233,000
	Shared zone	m^2	Signs and markings, kerb realignment, street furniture, trees, asphalt surface	Signs and markings, kerb realignment, street furniture, trees, brick pavers	$404	$690	0.2	0.6	$704	$1,417	$2,130
	Off-road cycle path	km	--	--	$100,000	$500,000	105	158	$257,500	$567,750	$878,000
	Widened footpath or shared path	m^2	Resurface with asphalt	Resurface with concrete	$100	$200	0.05	0.05	$175	$254	$332
Intersections and crossings	Signal phase adjustments	Intersection or crossing	No physical works	Minimal physical works (new signals and/or markings)	$5,000	$10,000	--	--	$5,000	$7,500	$10,000
	Addition of missing pedestrian leg at signalised intersection	Leg	--	--	$10,000	$20,000	5	10	$17,500	$30,750	$44,000

Location	Intervention	Unit	Assumptions		Costs per unit		Days of construction[57]		Total cost		
			Low	High	Low	High	Low	High	Low	Mid-point	High
	Minor intersection works (additions to an intersection without redesign)[59]	Intersection or crossing	--	--	--	--	--	--	$11,500	$30,550	$49,600
Intersections and crossings	Minor intersection redesign	Intersection	Upgrades to crossings at unsignalised intersection	Upgrade to signalised intersection (ex, traffic lane reconfiguration)	$50,000	$300,000	14	60	$71,000	$257,500	$444,000
	Major intersection redesign (major reconfiguration of the intersection)	Intersection	Upgrade unsignalised intersection to signalised	Reconfiguration of traffic lanes at large/complex intersection	$1,000,000	$3,000,000	60	180	$1,090,000	$2,261,000	$3,432,000
	Upgraded unsignalised crossing	Crossing	Zebra crossing with kerb extensions and median refuge	Raised zebra crossing with flood lights, requires drainage works	$20,000	$50,000	5	10	$27,500	$50,750	$74,000
	Unsignalised crossing upgraded to signalised	Crossing	Upgrade to signalised crossing	Upgrade to dual pedestrian and cycling signalised crossing with mast arms	$190,000	$250,000	10	20	$205,000	$251,500	$298,000
	New unsignalised crossing	Crossing	Kerb extensions and median refuge	Raised zebra crossing with flood lights, requires drainage	$15,000	$50,000	5	10	$22,500	$48,250	$74,000

[59] Refer Table 52 for breakdown of estimated costs for minor intersection works.

Location	Intervention	Unit	Assumptions		Costs per unit		Days of construction [57]		Total cost		
			Low	High	Low	High	Low	High	Low	Mid-point	High
	New signalised crossing	Crossing	New signalised crossing	New dual pedestrian and cycling signalised crossing with mast arms	$190,000	$210,000	10	15	$205,000	$225,500	$246,000
	New grade-separated crossing	Crossing	Pedestrian overpass	Pedestrian and cycle overpass	$400,000	$500,000	30	60	$445,000	$544,500	$644,000

Table 50: Estimated costs for enabling works

Enabling works	Unit	Assumptions		Costs per unit		Days of construction		Total cost		
		Low	High	Low	High	Low	High	Low	Mid-point	High
Remove sump and install new	each	Connect to adjacent existing lead	Connect to existing lead within 10m	$4,000	$7,000	1	3	$5,500	$9,850	$14,200
Realign kerb	km	Complete kerb and channel rebuild	Complete kerb and channel rebuild	$250,000	$800,000	60	60	$340,000	$642,000	$944,000
Remove road markings and repaint	km	Minimal, simple line markings	Extensive line marking and hatching	$1,000	$50,000	5	5	$8,500	$35,250	$62,000
Relocate sign	each	--	--	$500	$750	0	0	$800	$1,135	$1,470
Remove traffic island	m^2	Does not include reinstatement of the road	Includes reinstatement of the road	$50	$75	1	1	$1,550	$2,013	$2,475
Remove tree	each	Small tree	Large tree	$500	$2,000	1	1	$2,000	$3,200	$4,400
Relocate RTI sign	each	Existing pole easy to relocate	Difficulty in finding a suitable location around services	$10,000	$15,000	1	1	$11,500	$14,450	$17,400
Relocate electricity pole	each	Existing pole easy to relocate	Difficulty in finding a suitable location around services	$25,000	$30,000	2	3	$28,000	$32,600	$37,200
Relocate signal pole	each	Existing pole easy to relocate	Difficulty in finding a suitable location around services	$25,000	$30,000	2	3	$28,000	$32,600	$37,200
Remove signal pole and replace with signal on mast arm	each	Existing pole easy to remove	Difficulty in finding a suitable location around services	$20,000	$30,000	2	3	$23,000	$30,100	$37,200
Construct retaining wall	m^2 face area	Less than 2m high	More than 2m high	$3,000	$6,100	0	0	$3,300	$5,060	$6,820
Construct new pedestrian staircase	stair flight	--	--	$40,000	$60,000	5	10	$47,500	$65,750	$84,000
Relocate electricity substation	each	--	--	$50,000	$100,000	2	4	$53,000	$81,300	$109,600
Traffic management	day	--	--	$1,500	$2,400	--	--	$1,500	$1,950	$2,400

Table 51: Estimated cost for second public transport spine (parallel to the Golden Mile)

Element	Quantity	Unit	Costs per unit (incl. traffic management)		Total cost ($)		
			Low	High	Low	Mid-point	High
Transit lane	4.6	km	$69,500	$244,000	$317,476	$716,034	$1,114,592
Double length bus stop	8	stop	$75,000	$116,000	$600,000	$764,000	$928,000
Minor intersection redesign	2	intersection	$71,000	$444,000	$142,000	$515,000	$888,000
				Total:	**$1,059,476**	**$1,995,034**	**$2,930,592**

Table 52: Estimated costs for minor intersection works

Intervention	Costs per unit ($)		Days of construction		Traffic management costs ($)		Total cost ($)		
	Low	High	Low	High	Low	High	Low	Mid-point	High
Cycle detection	$2,000	$4,000	1	2	$1,500	$4,800	$3,500	$6,150	$8,800
Push button replaced with automatic pedestrian phase	$2,000	$4,000	1	2	$1,500	$4,800	$3,500	$6,150	$8,800
Localised footpath widening	$2,000	$4,000	3	5	$4,500	$12,000	$6,500	$11,250	$16,000
Cycle waiting facilities (advanced stop boxes, advanced stop lines, hook-turn boxes)	$5,000	$10,000	2	4	$3,000	$9,600	$8,000	$13,800	$19,600
Countdown timers	$10,000	$40,000	1	4	$1,500	$9,600	$11,500	$30,550	$49,600

8. Step 5: Developing scenarios

The outcome from the first four steps in the prioritisation process was identifying the following across all 163 corridor segments:

- Scores for six prioritisation criteria
- Indicative toolkit intervention(s)
- Indicative costs to implement the identified intervention(s)

Using these outputs, a range of investment scenarios were developed. Scenarios were tested by applying different combinations of weightings to the six prioritisation criteria scores. The output for each investment scenario is the list of the 163 corridor segments, prioritised according to the applied weightings.

This output provides us with the priority order of the list, but it is necessary to have a view on the potential investment window in order to define and test indicative programmes and demonstrate the potential costs and benefits of investment. Based on the PBC indicative cost for City Streets of $350m, we have defined our indicative window of investment for the City Streets package as between $250m and $400m at the lower and upper bounds. This range is used for defining which segments are included in each scenario and for assessing each package.

Three groups of investment scenarios were tested:

- Balanced
- Mode-targeted
- LGWM PBC-funding-aligned

Irrespective of the scenario, the indicative toolkit solutions identified on the corridor segments remain the same: they take a multi-modal approach to addressing the most appropriate issues across all modes based on wider levels of service considerations.

The purpose of developing the scenarios through the prioritisation process is to provide a consistent and systematic basis on which to compare competing multi-modal and place-based issues. The scenarios are guides that will inform the overall prioritisation of activity for the City Streets IBC and assist in identifying a package of works that optimally delivers against the City Streets investment objectives. However, the prioritisation process is not a black box that dictates the overall prioritisation. There are other considerations that cannot be systemised but will inform the final priorities and, therefore, the final scenario package.

8.1. Balanced scenarios

Three balanced scenarios were tested, for which the six prioritisation criteria were broadly weighted equally. Multiple options were considered to test the sensitivity of the prioritisation criteria to incremental changes in the weightings.

The weightings applied to the prioritisation criteria for the three balanced options, A to C, are outlined in Table 53.

Table 53: Prioritisation criteria weightings for the balanced scenarios

Option	Prioritisation criteria					
	Public transport	Cycling	Walking	Amenity	Safety	Growth
A	20%	20%	10%	10%	20%	20%
B	17%	17%	17%	17%	16%	16%
C	25%	25%	15%	10%	15%	10%

8.2. Mode-targeted scenarios

Two mode-targeted scenarios were tested: a public-transport-targeted scenario, and a walking-and-cycling-targeted scenario. Under each of these scenarios, weighting was placed fully on the corresponding prioritisation criteria for the relevant mode(s). These options tested the benefits of addressing the largest level of service gaps for a particular mode or modes.

The weightings applied to the prioritisation criteria for the three balanced options, A to C, are outlined in Table 54.

Table 54: Prioritisation criteria weightings for the mode-targeted scenarios

Option	Prioritisation criteria					
	Public transport	Cycling	Walking	Amenity	Safety	Growth
Public transport targeted	100%	--	--	--	--	--
Walking and cycling targeted	--	50%	50%	--	--	--

8.3. LGWM PBC-funding-aligned scenarios

The LGWM PBC-funding-aligned scenarios were built based on the indicative modal funding envelopes identified in the PBC for City Streets: $250m of investment for public transport, and $100m for walking and cycling in the city centre. The modal-targeted scenarios were used as the foundation to build the PBC-funding-aligned scenarios. The public-transport-targeted scenario provided the priority order for targeting public transport investment funding, and the walking-and-cycling-targeted scenario provided the priority order for targeting walking and cycling investment funding (in the city centre only).

Two scenarios were tested using this approach:

- Public transport funding allotted first.
- Walking and cycling funding in the city centre allotted first.

To identify packages for the lower and upper bounds of the investment window ($250m and $400m), the following process was used:

- Public transport funding allotted first:
    - Step 1: Allot $180m to the top prioritised segments from the public-transport targeted scenario.
    - Step 2: Allot $70m to the top prioritised segments in the city centre from the walking-and-cycling-targeted scenario, excluding any segments already identified under Step 1; Steps1 and 2 combined form the $250m lower bound package.
    - Step 3: Allot $105m to the remaining top prioritised segments from the public-transport targeted scenario.
    - Step 4: Allot $45m to the remaining top prioritised segments in the city centre from the walking-and-cycling-targeted scenario; Steps 1 to 4 combined for the $400m upper bound package.
- Walking and cycling funding in the city centre allotted first:
    - Step 1: Allot $70m to the top prioritised segments in the city centre from the walking-and-cycling-targeted scenario.
    - Step 2: Allot $180m to the top prioritised segments from the public-transport targeted scenario, excluding any segments already identified under Step 1; Steps1 and 2 combined form the $250m lower bound package.
    - Step 3: Allot $45m to the remaining top prioritised segments in the city centre from the walking-and-cycling-targeted scenario.
    - Step 4: Allot $105m to the remaining top prioritised segments from the public-transport targeted scenario; Steps 1 to 4 combined for the $400m upper bound package.

Appendix E: Level of service maps


Level of service for public transport
Level of service gap score
1-20 (Low)
21-40
41-60
61-80
80-100 (High)
No bus routes on corridor
Average weekday bus patronage
295
27,750

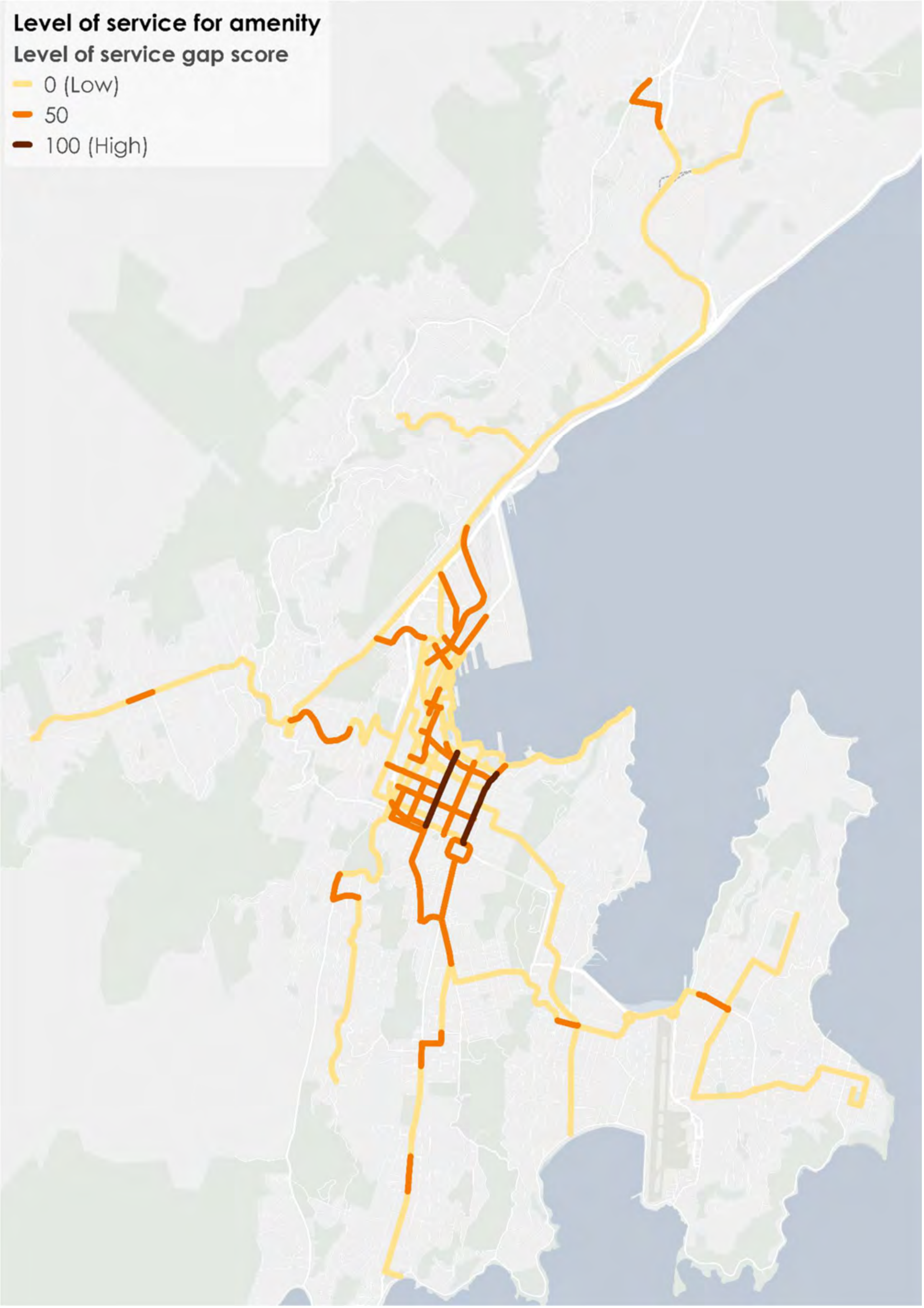

Level of service for public transport
Level of service gap score
1-20 (Low)
21-40
41-60
61-80
80-100 (High)
No bus routes on corridor
Average weekday bus patronage
295
27,750


Level of service for cycling
Level of service gap score
0-20 (Low)
21-40
41-60
61-80
81-100 (High)
No cycling on corridor
Average weekday cyclists
30
1,560


Level of service for cycling
Level of service gap score
0-20 (Low)
21-40
41-60
61-80
81-100 (High)
No cycling on corridor
Average weekday cyclists
30
1,560


Level of service for pedestrians accessing bus stops on the key corridors
Level of service gap score
0-20 (Low)
21-40
41-60
61-80
81-100 (High)
Average weekday bus boardings & alightings
(per km)
0
5,030

Level of service for pedestrians in the city centre
Level of service gap score
0-20 (Low)
21-40
41-60
61-80
81-100 (High)
Average weekday pedestrians
100
16,340


Level of service for amenity
Level of service gap score
0 (Low)
50
100 (High)


Level of service for amenity
Level of service gap score
0 (Low)
50
100 (High)


Level of service for safety
Level of service gap score
0-20 (Low)
21-40
41-60
61-80
81-100 (High)


Level of service for safety
Level of service gap score
0-20 (Low)
21-40
41-60
61-80
81-100 (High)


Projected population growth
Projected increase in population served by the corridor
0-20 (Low growth)
21-40
41-60
61-80
81-100 (High growth)


Projected population growth
Projected increase in population served by the corridor
0-20 (Low growth)
21-40
41-60
61-80
81-100 (High growth)

Appendix F: Prioritisation scenarios


Balanced weightings: Priority list (Option A)
1-33 (highest priority)
34-66
67-99
100-132
133-163 (lowest priority)


Balanced weightings: Priority list (Option A)
1-33 (highest priority)
34-66
67-99
100-132
133-163 (lowest priority)


Balanced weightings: Priority list (Option B)
1-33 (highest priority)
34-66
67-99
100-132
133-163 (lowest priority)

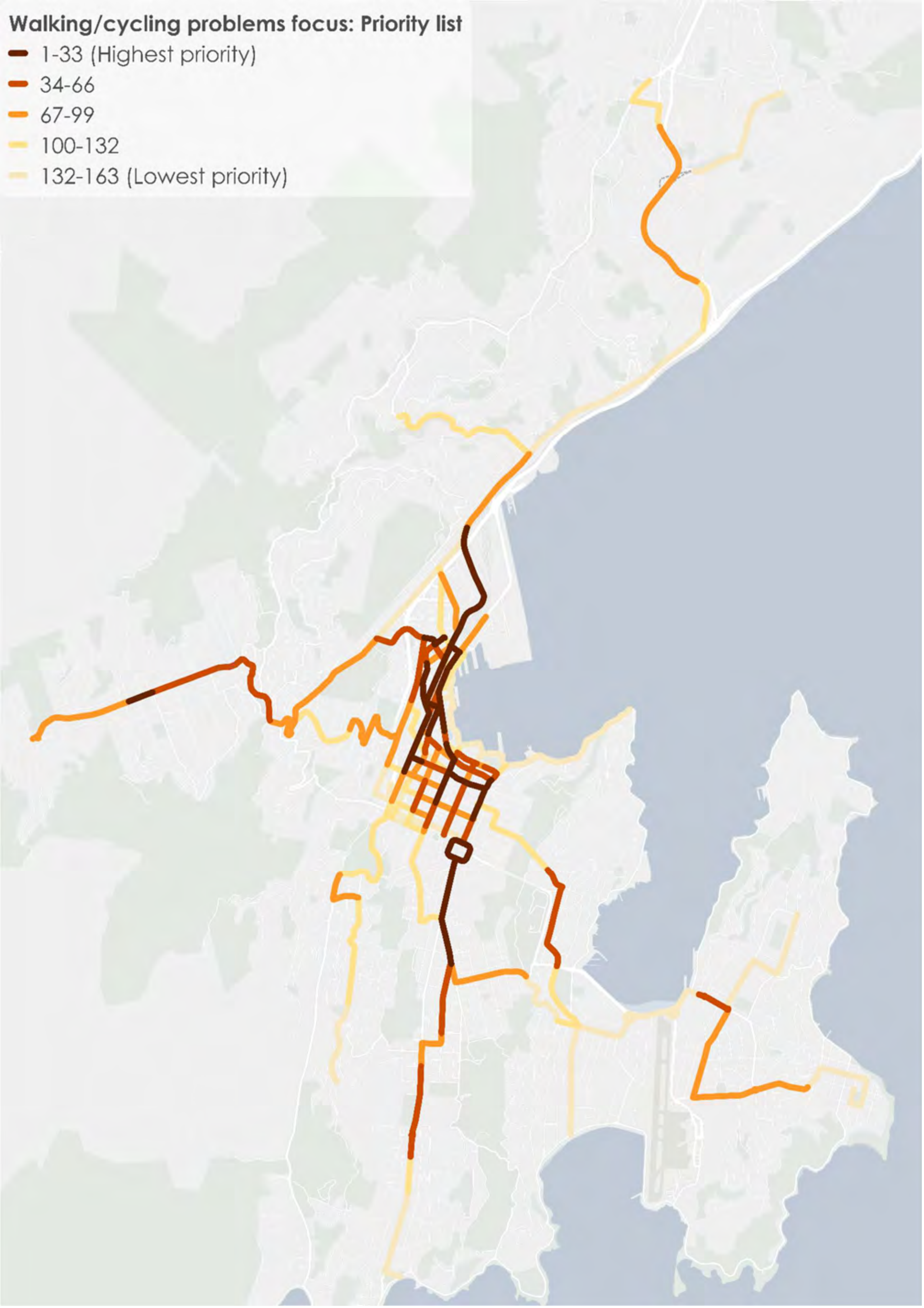

Balanced weightings: Priority list (Option B)
1-33 (highest priority)
34-66
67-99
100-132
133-163 (lowest priority)


Balanced weightings: Priority list (Option C)
1-33 (highest priority)
34-66
67-99
100-132
133-163 (lowest priority)

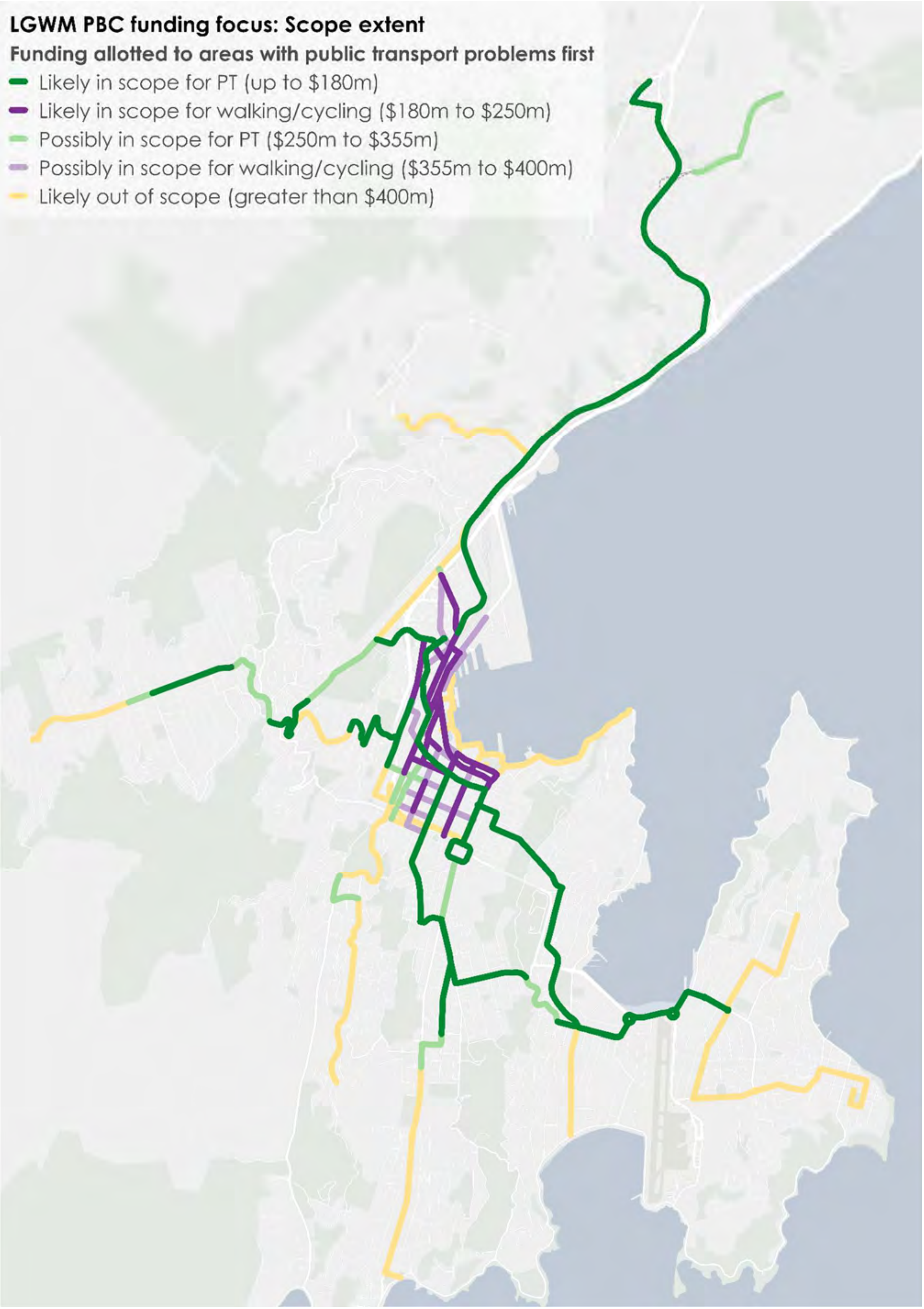

Balanced weightings: Priority list (Option C)
1-33 (highest priority)
34-66
67-99
100-132
133-163 (lowest priority)

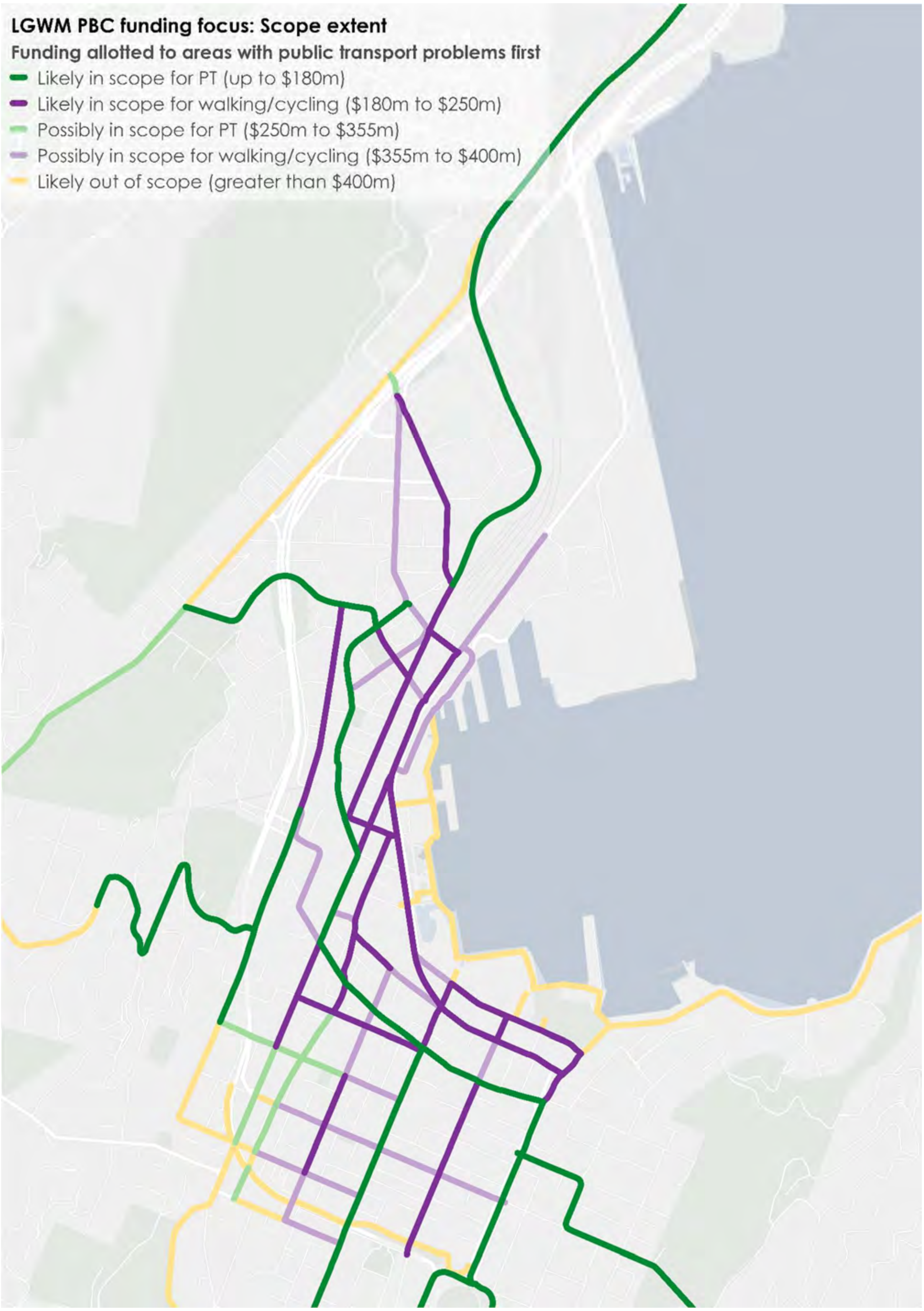

PT problems focus: Priority list
1-33 (Highest priority)
34-66
67-89 (Lowest priority)
No bus routes on corridor

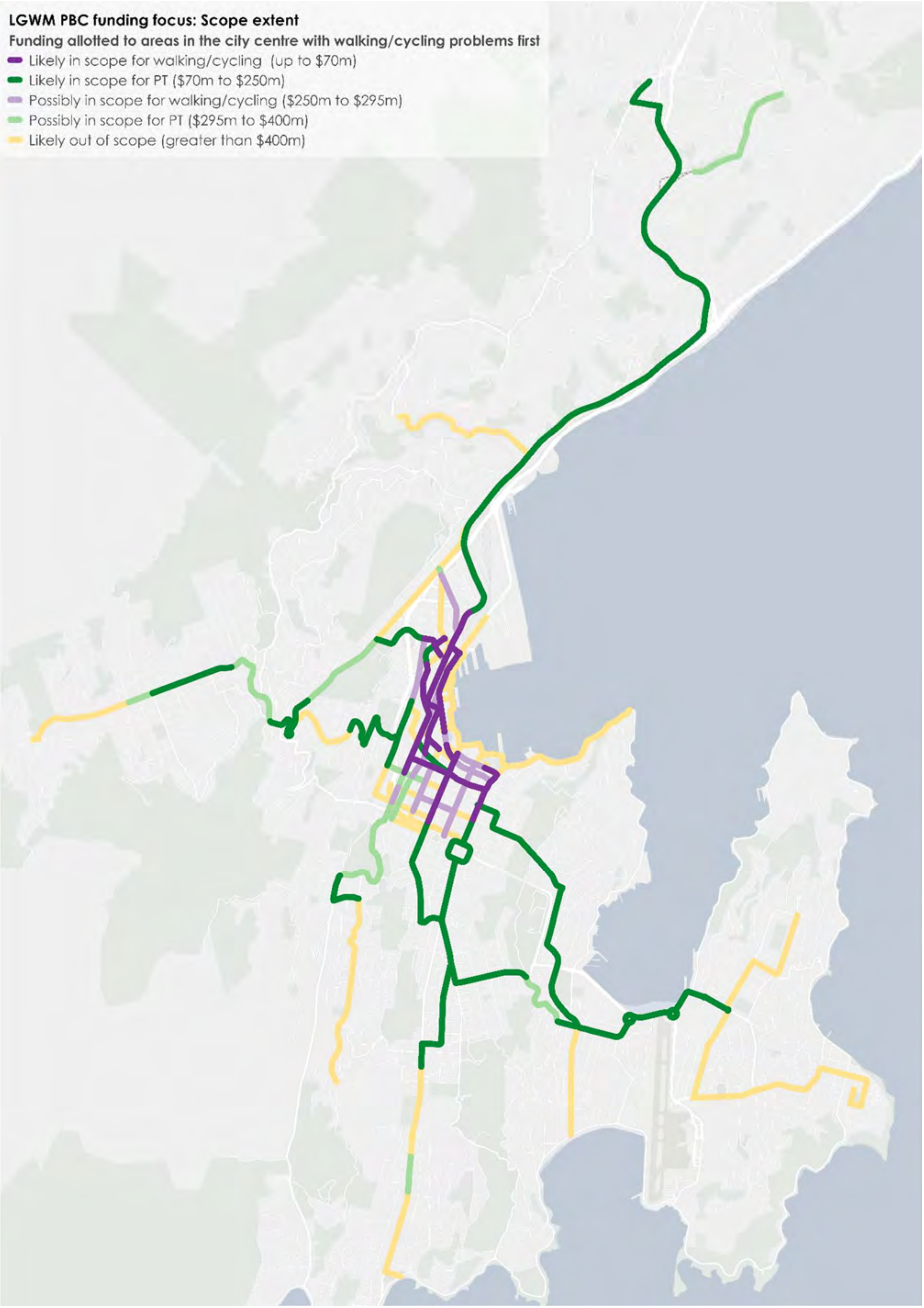

PT problems focus: Priority list
1-33 (Highest priority)
34-66
67-89 (Lowest priority)
No bus routes on corridor

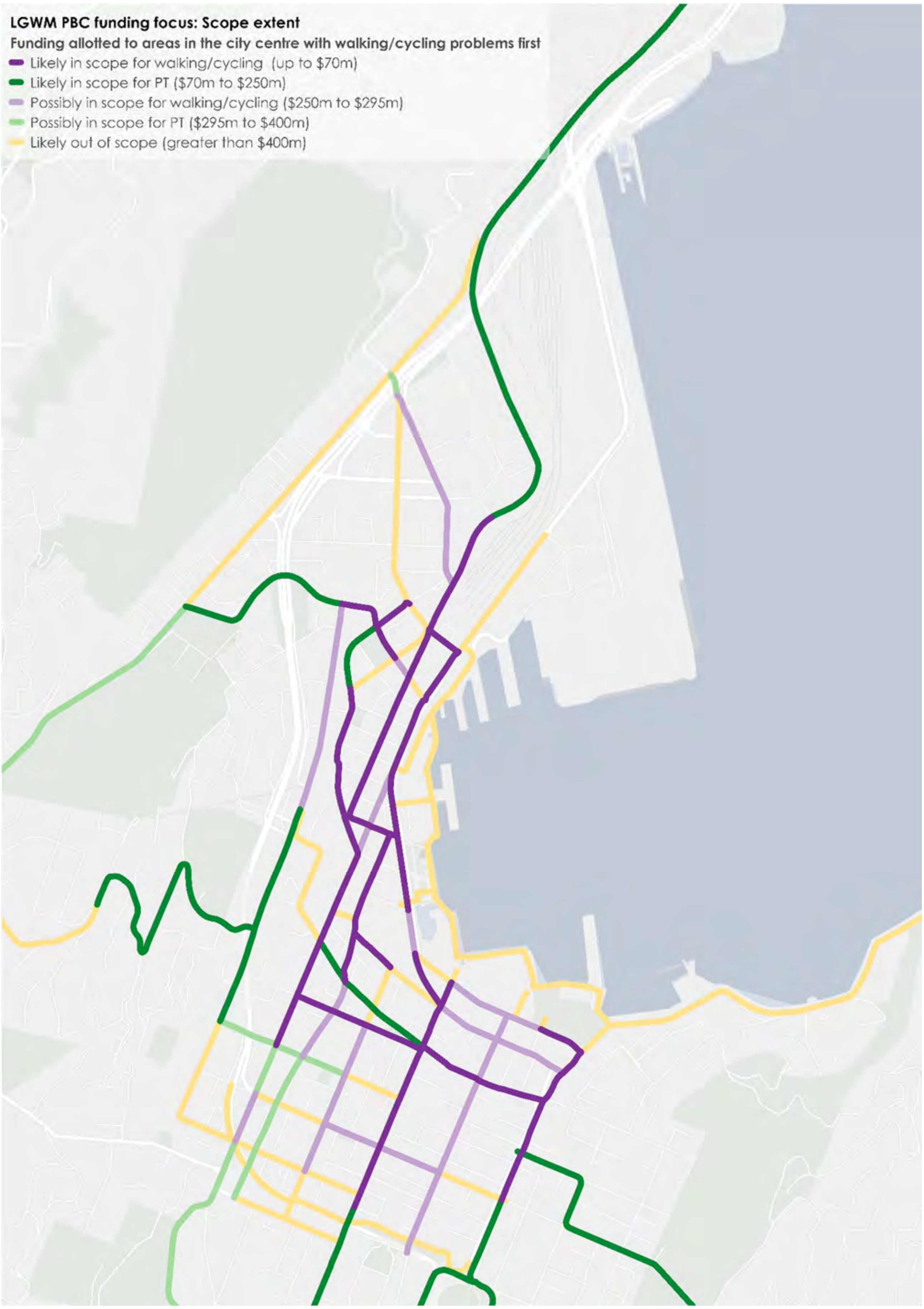

Walking/cycling problems focus: Priority list
1-33 (Highest priority)
34-66
67-99
100-132
132-163 (Lowest priority)


Walking/cycling problems focus: Priority list
1-33 (Highest priority)
34-66
67-99
100-132
132-163 (Lowest priority)

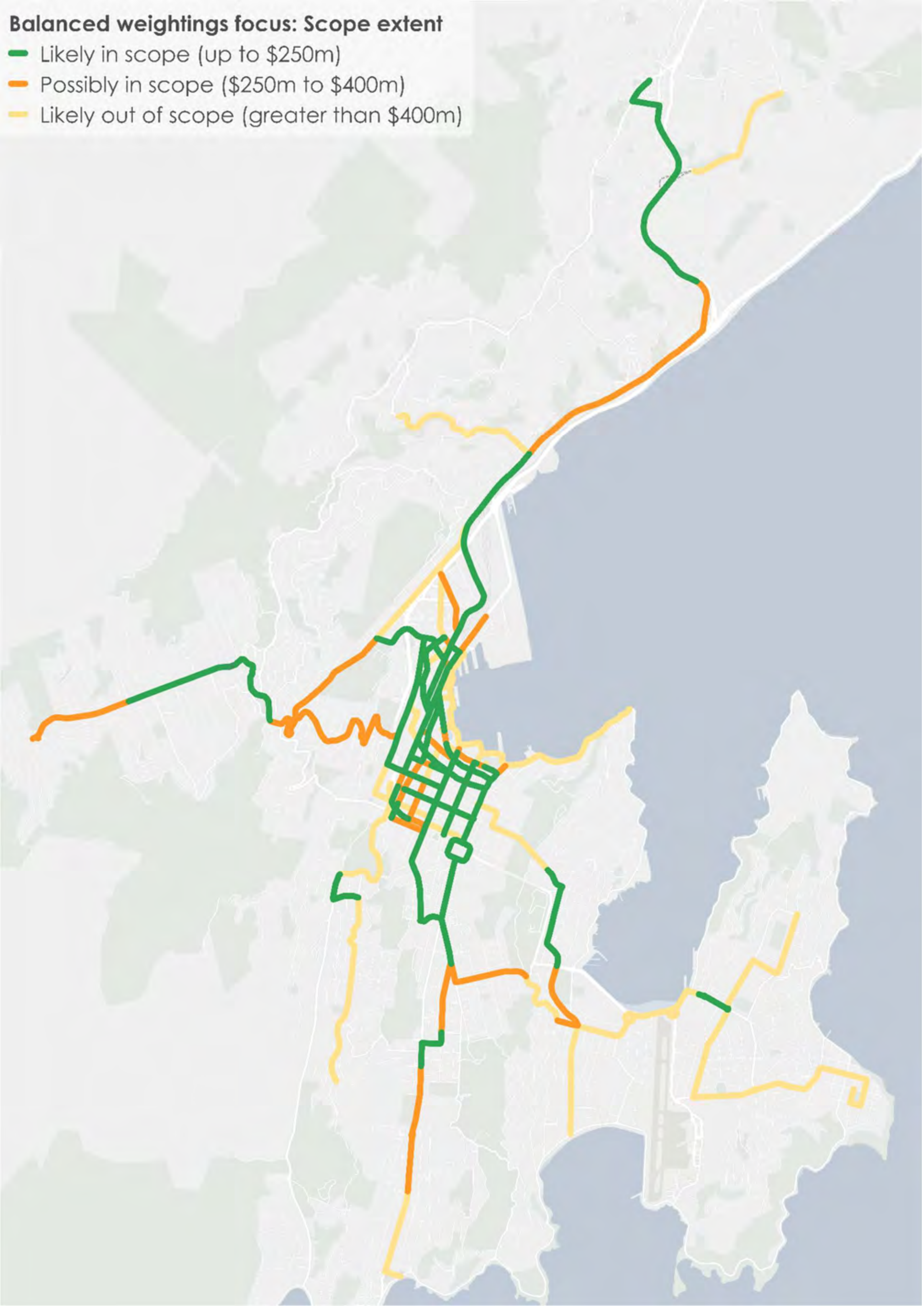

LGWM PBC funding focus: Scope extent
Funding allotted to areas with public transport problems first
Likely in scope for PT (up to $180m)
Likely in scope for walking/cycling ($180m to $250m)
Possibly in scope for PT ($250m to $355m)
Possibly in scope for walking/cycling ($355m to $400m)
Likely out of scope (greater than $400m)


LGWM PBC funding focus: Scope extent
Funding allotted to areas with public transport problems first
Likely in scope for PT (up to $180m)
Likely in scope for walking/cycling ($180m to $250m)
Possibly in scope for PT ($250m to $355m)
Possibly in scope for walking/cycling ($355m to $400m)
Likely out of scope (greater than $400m)

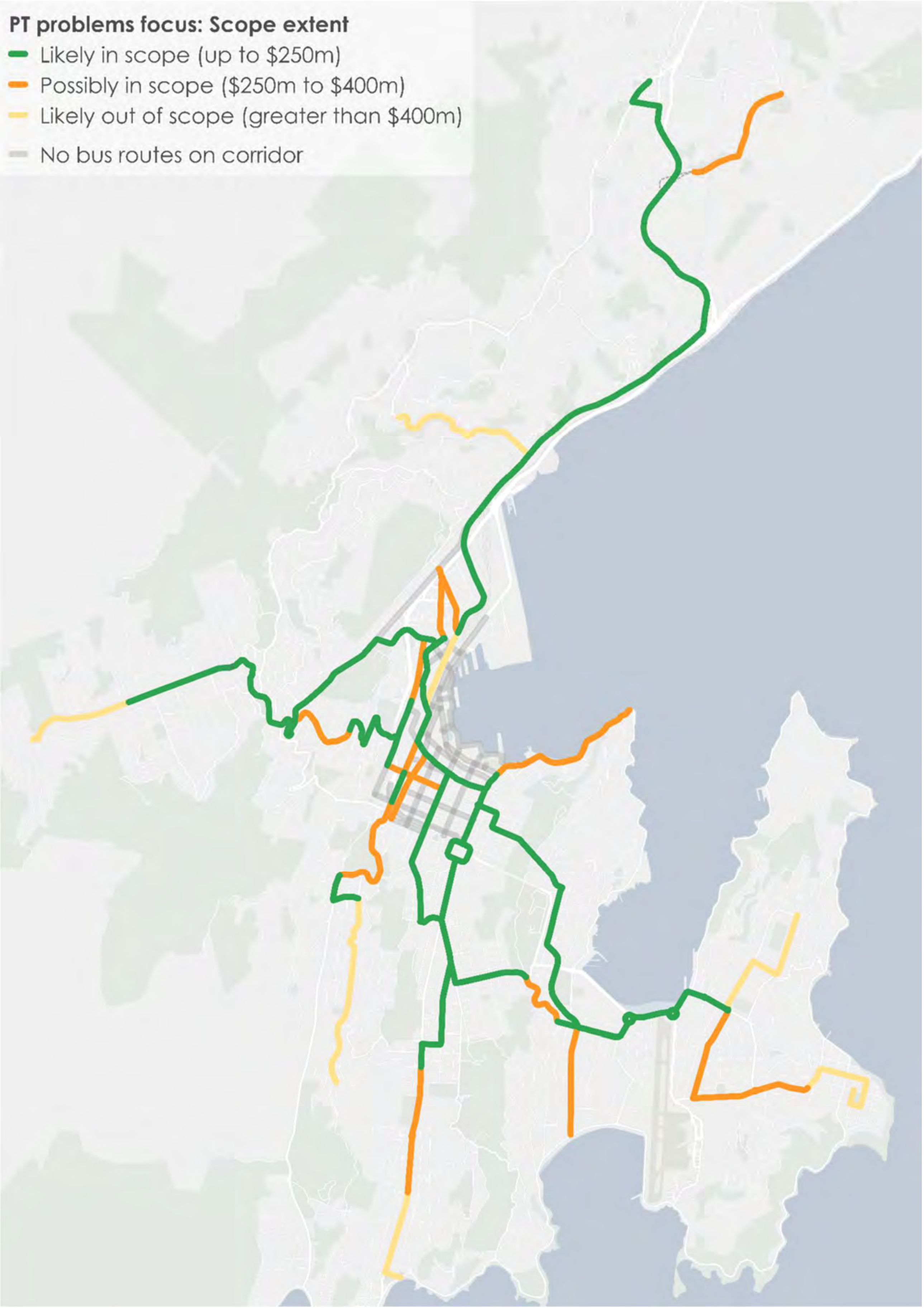

LGWM PBC funding focus: Scope extent
Funding allotted to areas in the city centre with walking/cycling problems first
Likely in scope for walking/cycling (up to $70m)
Likely in scope for PT ($70m to $250m)
Possibly in scope for walking/cycling ($250m to $295m)
Possibly in scope for PT ($295m to $400m)
Likely out of scope (greater than $400m)


LGWM PBC funding focus: Scope extent
Funding allotted to areas in the city centre with walking/cycling problems first
Likely in scope for walking/cycling (up to $70m)
Likely in scope for PT ($70m to $250m)
Possibly in scope for walking/cycling ($250m to $295m)
Possibly in scope for PT ($295m to $400m)
Likely out of scope (greater than $400m)

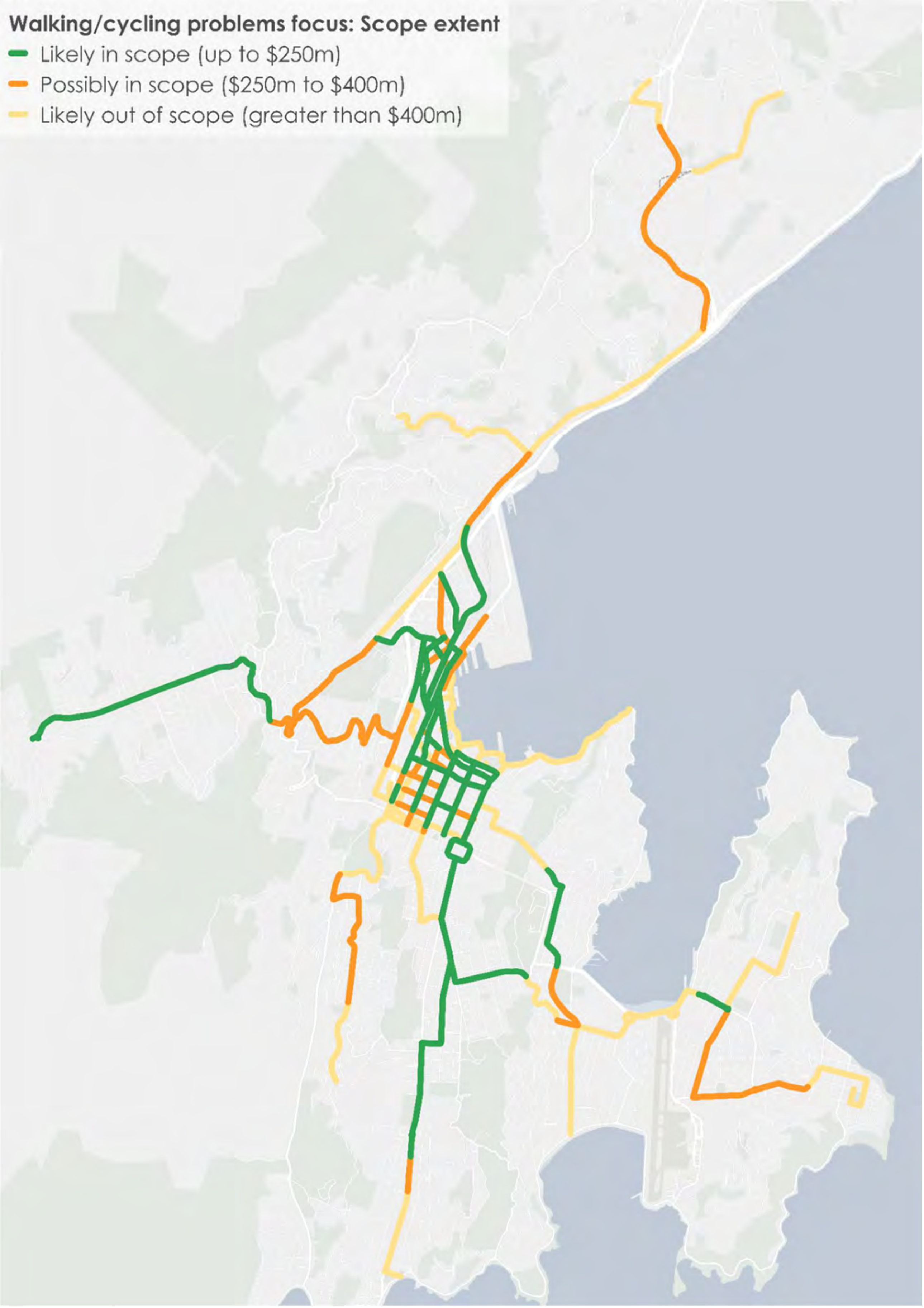
Appendix G: Shortlisted Scenarios – Prioritised against funding levels


Balanced weightings focus: Scope extent
Likely in scope (up to $250m)
Possibly in scope ($250m to $400m)
Likely out of scope (greater than $400m)

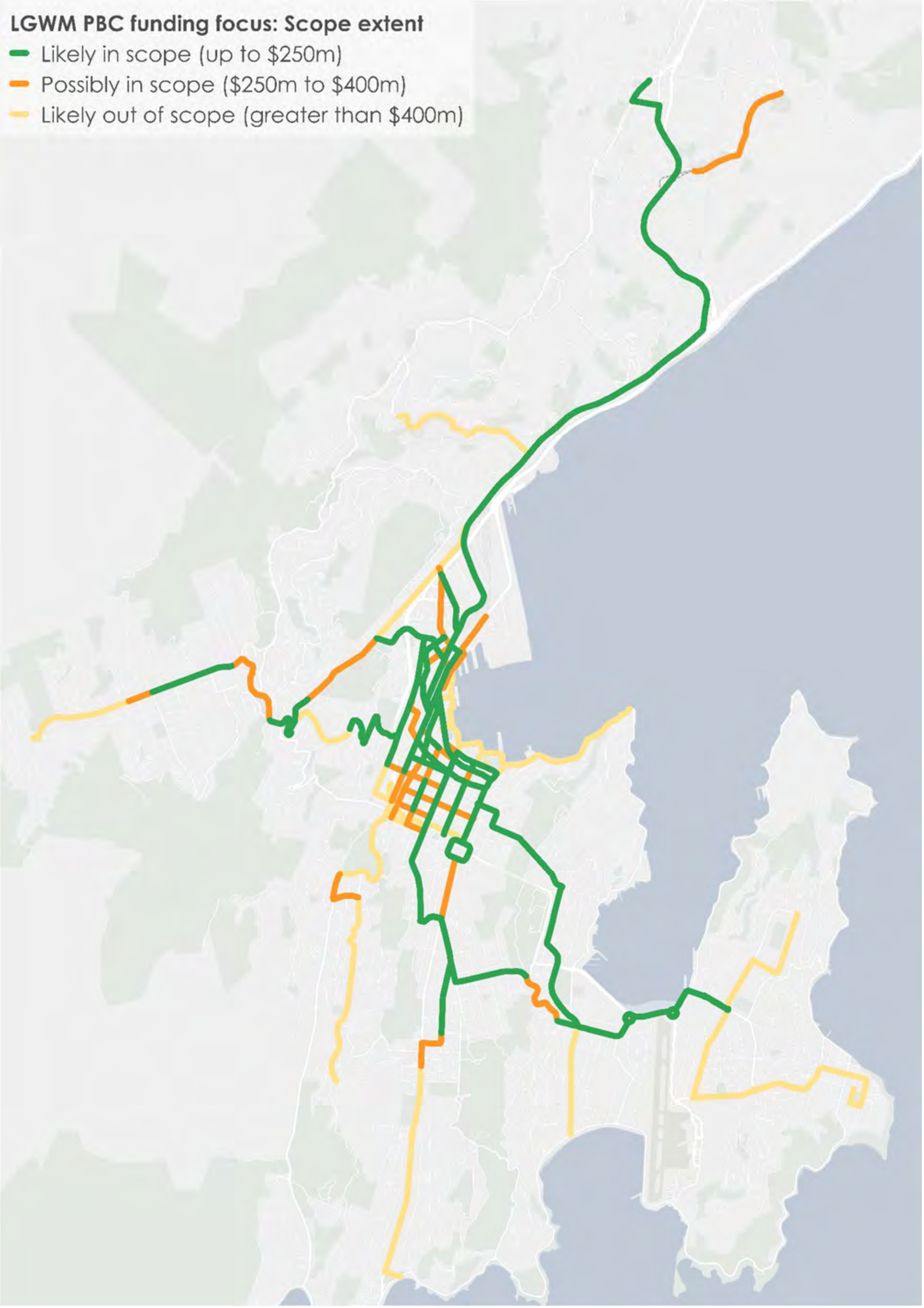

Balanced weightings focus: Scope extent
Likely in scope (up to $250m)
Possibly in scope ($250m to $400m)
Likely out of scope (greater than $400m)


PT problems focus: Scope extent
Likely in scope (up to $250m)
Possibly in scope ($250m to $400m)
Likely out of scope (greater than $400m)
No bus routes on corridor


PT problems focus: Scope extent
Likely in scope (up to $250m)
Possibly in scope ($250m to $400m)
Likely out of scope (greater than $400m)
No bus routes on corridor


Walking/cycling problems focus: Scope extent
Likely in scope (up to $250m)
Possibly in scope ($250m to $400m)
Likely out of scope (greater than $400m)


Walking/cycling problems focus: Scope extent
Likely in scope (up to $250m)
Possibly in scope ($250m to $400m)
Likely out of scope (greater than $400m)


LGWM PBC funding focus: Scope extent
Likely in scope (up to $250m)
Possibly in scope ($250m to $400m)
Likely out of scope (greater than $400m)


LGWM PBC funding focus: Scope extent
Likely in scope (up to $250m)
Possibly in scope ($250m to $400m)
Likely out of scope (greater than $400m)

Appendix H: City Streets IBC cost benefit analysis methodology – Technical note

1. Overview

This appendix outlines a methodology for cost benefit analysis (CBA) of options for the City Streets Indicative Business Case (IBC). It covers the following topics:

- How demands and benefits for different types of transport users are modelled and valued.
- How option costs are estimated
- How results are expected to be reported

Attachments provide supplementary technical information about specific issues, such as benefit modelling methods.

This appendix should be read in conjunction with other sections of the City Streets IBC that outline:

- How the project area was defined and how spatial-specific input data was sourced for the prioritisation tool and cost benefit analysis
- The intervention toolkit that was developed to identify location-specific interventions that could be applied to address the issues identified in the strategic case.
- How sites in the project area were prioritised to address the issues identified in the strategic case, and how this analysis supported the development of indicative options to understand the implications of higher or lower investment levels and the implications of programmes that target different issues.
- How interventions from the toolbox were applied to those sites.

The basic philosophy behind the indicative option analysis is that the benefits of interventions will depend upon both the type of intervention and the location where it is implemented. For instance, the benefits of a bus lane will vary depending upon whether it is implemented in a location with high public transport demand and significant congestion affecting bus travel speeds, or in a location with low public transport demand and minimal congestion delay. As a result, the benefits of interventions must be considered at a reasonably fine-grained level of detail.

2. Modelling transport demands and benefits

The City Streets project is expected to deliver benefits for users of multiple transport modes. Multiple models and evaluation methods are needed to capture benefits (or disbenefits) for different modes, as no single model adequately captures impacts on all affected modes, including walking, cycling, public transport, and other road users.

The approach used in this analysis is therefore to:

- Undertake an indicative assessment of public transport, cycling, and walking benefits, with high-level/indicative assessment of traffic impacts, at the short-list option stage. This results in relative BCRs that can be used to compare the impacts of different investment scenarios.
- Use Aimsun traffic modelling as a check on the traffic impacts of a 'preferred' option or option variant.

The following table summarises the approach used to model transport demands and value user benefits (or disbenefits) arising from alternative options. A more detailed description of methods is given below, and in technical reports for the underlying models that are attached to this document.

All benefits are valued using guidance from the NZ Transport Agency's Monetised Benefits and Costs Manual (MBCM) plus supplementary guidance published as part of NZTA's Investment Decision Making Framework review.[60]

Table 55: Demand and benefit modelling approach for indicative short-list option assessment

Mode	Demand modelling approach	Benefit valuation approach
Public transport (bus)	*Bus Priority Programme Model* Changes in demand due to travel time improvements modelled using an elasticity	Travel time improvements modelled using a model of bus speeds on suburban corridors that was developed for the 2019 Bus Priority Programme, based on methods outlined in the Transport

[60] Available online at https://www.nzta.govt.nz/resources/monetised-benefits-and-costs-manual/ and https://www.nzta.govt.nz/planning-and-investment/planning/investment-decision-making-framework-review/

	model based on guidance in Section 4 of the MBCM	Capacity and Quality of Service Manual User benefits are assessed using MBCM parameters
Cycling	*Wellington Cycle Model* Changes in demand due to facility improvements modelled using a discrete choice (nested logit) model of cycle mode and route choice	User benefits and health benefits arising from improved facilities and increased cycling activity are assessed using demand model outputs and MBCM parameters. Safety benefits could be valued using MBCM parameters and Crash Analysis System data (see below)
Walking	*Active Modes Tool* Current walking activity within the city centre is estimated by interpolating between counting sites; future activity projected based on land use change and increased PT volumes. Model does not capture demand uplift due to walking facility improvements	User benefits arising from improved facilities are assessed using NZTA interim guidance on the impact of urban amenity in pedestrian environments[61] User benefits from faster/more direct routes and safety enhancements are valued using MBCM parameters
General traffic	*Traffic counts and adjustment from above models* Current traffic count data used to estimate volumes. Mode shift from improvements to public transport, cycling, etc is subtracted off existing volumes	Network-wide decongestion benefits from mode shift to PT assessed using simplified procedure approach for indicative analysis. User benefits/disbenefits will be valued using MBCM parameters
Road safety	*Crash Analysis System* CAS data is used to identify existing fatal and injury crashes in the study area. Crashes are categorised according to the travel mode of injured people, the severity of injuries, and whether or not the crash occurred at or near an intersection.	Safety benefits have not been estimated at this stage due to uncertainty about the ability to deliver generalised reductions in specific locations.

2.1. Key benefit valuation assumptions

Valuation parameters and assumptions are drawn from NZTA's *Monetised Benefit and Cost Manual*. These assumptions include project period and discount rates (used to calculate the present value of whole-of-life costs and benefits) and parameters for valuing travel time benefits, active mode benefits, and crash cost reduction benefits.

The following table summarises some key assumptions and/or sources of assumptions.

Table 56: Standard valuation and benefit assumptions

Assumption	Value / source
Evaluation period	Start year: 2020. Project period: 40 years
Discount rate	Central: 4% Sensitivity test: 6%

[61] https://www.nzta.govt.nz/assets/planning-and-investment/docs/impact-on-urban-amenity-in-pedestrian-environments-march-2020.pdf

Value of travel time savings	Equity value of time by trip purpose from MBCM Table A4.1(b) Trip purpose split for individual modes based on Household Travel Survey data Resulting value of travel time savings are summarised in Table 57
Walking and cycling health benefits	Per-kilometre benefit values and annual capped benefits per user drawn from the *Health and Active Modes Impacts* paper that updates current MBCM values[62]
Crash cost reduction benefits	Benefits for reduced fatal/injury/non-injury crashes based on MBCM values. Crash reduction factors based on *Crash Estimation Compendium* parameters – note that these benefits are not calculated for relative BCRs between options[63]
Footpath and pedestrian realm benefits	Benefit parameters for improved footpaths and pedestrian facilities are drawn from the *Impact on Urban Amenity in Pedestrian Environments* paper prepared for the MBCM review[64]

Table 57: Average value of travel time savings by mode

Mode	Average VOT	Notes
Public transport	$12.48 / person-hour	Based on 2015-2017 Household Travel Survey (HTS) data for Wellington region indicating trip purpose shares of: 47% commuting to work/education, 48% other non-work purposes, 5% work travel purposes
Cycling	$13.69 / person-hour	Based on 2015-2017 HTS data for Wellington region indicating trip purpose shares of: 41% commuting to work/education, 50% other non-work purposes, 10% work travel purposes
Walking	$12.71 / person-hour	Based on 2015-2017 HTS data for Wellington region indicating trip purpose shares of: 24% commuting to work/education, 69% other non-work purposes, 7% work travel purposes
Car (drivers + passengers	$16.80 / vehicle-hour	Based on 2015-2017 Household Travel Survey (HTS) data for Wellington region indicating trip purpose shares of: 15% commuting to work/education, 78% other non-work purposes, 8% work travel purposes, and average vehicle occupancy of: 1.3 for commuting, 1.4 for other non-work purposes, and 1.1 or work travel purposes

Notes: Based on VOT estimates by trip purpose from MBCM Table 15 ($7.80/hr for commuting, 6.90/hr for other non-work purposes, and $23.85/hr for work travel purposes in 2002 NZ dollars) updated to 2019 NZ dollars using the benefit update factor of 1.54 from MBCM Table A12.3.

Because underlying demand models and demand estimation procedures are generally based on a 2019/2020 base year, it is necessary to make assumptions about baseline growth in demand and benefits. For consistency with other planning assumptions, transport demands (and hence demands for individual modes) are expected to grow in line with Forecast.ID population growth assumptions plus a degree of underlying mode

[62] https://www.nzta.govt.nz/assets/planning-and-investment/docs/health-and-active-modes-impacts-march-2020.pdf
[63] https://www.nzta.govt.nz/assets/resources/economic-evaluation-manual/economic-evaluation-manual/docs/crash-risk-factors-guidelines-compendium.pdf
[64] https://www.nzta.govt.nz/assets/planning-and-investment/docs/impact-on-urban-amenity-in-pedestrian-environments-march-2020.pdf

shift based on past observed trends. User benefits are expected to grow at a similar rate, with consideration of higher rates of benefit growth due to rising congestion. Lower and higher benefit growth rates are sensitivity tested.

2.2. Public transport demand and benefits

Public transport demands and benefits are modelled using an approach developed for the 2019 *Bus Priority Programme*. This model has three key elements:

- First, Greater Wellington's real-time information is analysed to identify average travel times on bus corridors, to identify delays relative to 'optimal' conditions, and to identify the causes of delay in different parts of bus corridors.
- Second, bus priority interventions are applied to bus corridors. These interventions reduce delays arising from specific causes – for instance, bus priority lanes reduce delays due to general traffic but not delays due to signal timing or bus stop spacing.
- Third, an elasticity model is applied to predict changes in patronage for journeys through the bus network, based on modelled changes in journey times between origin and destination stops (including walk times to access stops). This elasticity model is based on parameters in MBCM Section 4.

Outputs are used to calculate changes in patronage and public transport user benefits. Demands and benefits are annualised using information on peak and all-day demands and peak and all-day bus delays, respectively. Mode shift from car to public transport is estimated by applying diversion rates from MBCM Section 4 to modelled bus patronage changes. This is used to estimate traffic reduction benefits such as emission reductions and reduced congestion delay for other road users.

Calculations and modelling assumptions are described in Appendix 2 to the Bus Priority Indicative Business Case, which is attached to this methodology note.

2.3. Cycling demand and benefits

Cycling demands and benefits are modelled using the Wellington Cycle Model, which was originally developed in 2014 to support the development of the Wellington cycling programme and which was recently updated and expanded to cover the entirety of Wellington City. This model has three elements:

- First, a base origin-destination trip matrix is defined based on 2013 Census commuting flow data.
- Second, a strategic cycling network is defined, including all routes that have been identified for potential cycle facilities, all main arterial roads (whether or not they are expected to receive cycle facilities), and key connectors to and between these corridors. Routes between all origins and destinations in the model are defined using this network.
- Third, a nested logit model is used to predict changes in cycle mode and route choice in response to changes to cycle facilities. Key parameters of this model are estimated based on a 2014 stated choice survey, and the model is calibrated against observed cycling mode share.

Outputs are used to calculate changes in cycling activity and cycling user benefits related to health benefits of active modes and improved quality of experience. Mode shift from car to cycling, which is used to estimate emission reduction benefits, is again estimated based on diversion rates in MBCM Appendix A14.[65]

Calculations and modelling are described in a separate draft technical note, *Wellington Cycle Model update, November 2020*, which is attached to this methodology note. Several levels of cycle facility improvements were modelled, depending upon option specification.

2.4. Walking demand and benefits

Walking volumes are estimated using a mix of approaches. The *Active Modes Tool* developed in 2017 as an input to LGWM modelling is used to estimate walking volumes on primary corridors in the city centre and immediate fringe areas. Walking volume data is less available outside of the city centre, and hence public transport boardings and alightings on high frequency bus corridors are used as a (partial) indicator of walking volumes.

The *Active Modes Tool* estimates base year (2016) weekday walking flows by interpolating between pedestrian count sites, and projects future growth in walking flows based on underlying growth in public transport boardings / alightings and active mode trip generation from nearby land uses. Future year projections rely upon outputs from WTSM, the regional strategic transport model. Future projects reflect growth in walking

[65] Health benefit parameters already include an allowance for emission reductions, and hence estimated emission reductions are not added to total benefits.

activity due to land use change or new public transport stations but do not account for uplift due to improved walking amenity/accessibility. The *Active Modes Tool* technical note is attached to this methodology note.

Benefits for walking users are assessed using a spreadsheet-based approach. Two main streams of benefits are considered:

- Reduced walking journey times due to improvements to crossing facilities, including provision of new pedestrian facilities and changes to traffic signal timing to reduce pedestrian delay. These benefits are assessed using a simple average wait time formula.
- Quality of facility benefits arising from footpath amenity improvements like paving upgrades, street trees and plantings, shelter, lighting, etc. An indicative assessment is undertaken using guidance on the Impact *on Urban Amenity in Pedestrian Environments* recently published by NZTA.

Key assumptions for estimating the magnitude of these benefits are briefly described here.

2.4.1. Assumptions used to estimate walking user benefits

Walking user benefits are first calculated in terms of minutes of delay avoided (for interventions that reduce walking journey times) or minutes of willingness to walk further to access improved facilities (for quality of facility benefits). These benefits are then monetised using the average value of travel time savings parameter from Table 57.

For a given intervention, total benefits scale in line with user volumes. This means that interventions in high-volume locations are more likely to generate positive net benefits.

The following table summarises the approach used to estimate pedestrian benefits from five interventions that are expected to reduce walking journey times.

Table 58: Estimation of reduced walking journey time benefits

Intervention	Summary of approach	Key parameters / assumptions
New pedestrian and cyclist overbridge / underpass	1. Calculate current average delay crossing road based on gap acceptance formula 2. As overbridges / underpasses deliver unimpeded crossing opportunities, benefits are equal to average delay 3. Benefits are assumed to apply to 50% of pedestrians using the street segment	Values from Tables 3 and 4 in NZTA's *Guidelines for the Selection of Pedestrian Facilities* are used to estimate average pedestrian delay based on observed traffic volumes and road width.[66]
New midblock signalised crossing	1. Calculate current average delay crossing road based on gap acceptance formula. 2. Calculate average crossing delay using simple average delay formula for signalised intersections [Avg delay = Cycle time * (1-ped green time ratio)^2 / 2] 3. Calculate reductions in delay based on difference between current delay and signal delay 4. Benefits are assumed to apply to 50% of pedestrians using the street segment	Values from Tables 3 and 4 in NZTA's *Guidelines for the Selection of Pedestrian Facilities* are used to estimate average pedestrian delay based on observed traffic volumes and road width. Pedestrian signal cycle time and green time ratios are based on the existing Wallace St pedestrian signal (cycle time = 114 seconds, pedestrian green time = 16 seconds)
New zebra crossing	1. Calculate current average delay crossing road based on gap acceptance formula. 2. Calculate average zebra crossing delay based on formula from	Values from Tables 3 and 4 in NZTA's *Guidelines for the Selection of Pedestrian Facilities* are used to estimate average pedestrian delay based on

[66] https://www.nzta.govt.nz/assets/resources/pedestrian-planning-guide/docs/guidelines-selection-of-pedestrian-facilities.pdf

	section B10 in the Australasian Pedestrian Facility Selection Tool, which calculates average delay based on vehicle flows [Avg delay = 0.311 + 0.004*Avg hourly vehicle flow, capped at 7 seconds][67] 3. Calculate reductions in delay based on difference between current delay and zebra delay 4. Benefits are assumed to apply to 50% of pedestrians using the street segment	observed traffic volumes and road width.
Add missing pedestrian leg(s) to existing signalised intersection	1. Adding missing pedestrian legs is assumed to reduce average delay per pedestrian by around 10 seconds 2. Benefits are assumed to apply to 50% of pedestrians using the street segment	Delay reduction benefits are assumed to be higher, on average, than for reduced cycle times as spreadsheet analysis of delay suggests that adding missing legs has large benefits for diagonal or multi-leg crossings [68]
Increase pedestrian green time at existing signalised intersection	1. Increasing pedestrian green time is assumed to reduce average delay per pedestrian by around 5 seconds 2. Benefits are assumed to apply to 50% of pedestrians using the street segment	Delay reduction estimate is based on Sidra modelling undertaken for selected city centre intersections, which indicates average walk time benefits in the range of 2 to 11 seconds from increasing pedestrian green time or reducing signal cycle length [69]

The following table summarises the approach used to estimate pedestrian benefits from three interventions that are expected to improve the quality of the walking experience.

Table 59: Estimation of quality of facility benefits

Intervention	Summary of approach	Key parameters / assumptions
Shared space	1. Willingness to pay for improved facility (denoted in willingness to walk additional time to obtain an improved facility) is estimated using the method outlined in NZTA's *Impact on Urban Amenity in Pedestrian Environments* guidance 2. Time spent walking on new facility calculated based on the assumption that the average user walks half the distance of the road	A willingness to pay value of 0.81 (implying willingness to walk an additional 0.81 minutes per minute walked in order to access the improved facility) is derived by summing together values for increased footpath width in uncrowded conditions (0.14), half of the value of improved pavement quality (0.04), dropped kerbs (0.02),

[67] https://austroads.com.au/__data/assets/pdf_file/0028/104968/AP-R472A-18_User_Guide_Pedestrian_Facility_Selection_Tool.pdf

[68] See MRCagney, 2017. *Measuring Pedestrian Delay*. A report for Auckland Council.

[69] See Tables 1-3 in the Executive Summary of *Let's Get Wellington Moving: Central City Pedestrian Improvements Quick Wins Investment Proposal, October 2020*.

	segment and that they walk at an average speed of 4.5 km/hr 3. Benefits per user obtained by multiplying together results from the above two steps	lighting/CCTV (0.06), street trees/plantings (0.2), seating (0.01), a 2000-vehicle reduction in AADT (0.1), and an 8km/hr reduction in vehicle speed (0.24).
Widened footpath	1. Willingness to pay for improved facility (denoted in willingness to walk additional time to obtain an improved facility) is estimated using the method outlined in NZTA's *Impact on Urban Amenity in Pedestrian Environments* guidance 2. Time spent walking on new facility calculated based on the assumption that the average user walks half the distance of the road segment and that they walk at an average speed of 4.5 km/hr 3. Benefits per user obtained by multiplying together results from the above two steps	A willingness to pay value of 0.14 (implying willingness to walk an additional 0.14 minutes per minute walked in order to access a wider/more comfortable footpath) is based on the value for a 1 metre footpath widening in crowded conditions.
Improvements to bus stop walking access	1. Level of intervention is coded from 1 (little change) to 5 (dropped kerbs on all approaches) 2. Willingness to pay for improved facility (denoted in willingness to walk additional time to obtain an improved facility) is estimated using the method outlined in NZTA's *Impact on Urban Amenity*	Willingness to pay values of between 0.005 and 0.02 are assigned to different levels of intervention. The maximum value is based on the benefit parameter for dropped kerbs (0.02).
	in Pedestrian Environments guidance 3. Time spent walking on new facility calculated based on the assumption that the average person boarding / alighting at the bus stop walks around 200m and that they walk at an average speed of 4.5 km/hr 4. Benefits per user obtained by multiplying together results from the above two steps	

2.5. General traffic demand and benefits

Current general traffic volumes are estimated based on traffic count data matched to RAMM road segments. The mode shift impact of City Streets options will be captured in bus and cycling modelling described above.

Mode shift is likely to lead to some decongestion benefits, while extensive reallocation of road space may lead to disbenefits for general traffic if it is not sufficiently mitigated by other changes in travel demand. In future stages of City Streets traffic modelling with Aimsun should be undertaken to assess these impacts.

These issues are addressed as follows:

- First, undertake an indicative assessment of public transport, cycling, and walking benefits, with high-level/indicative assessment of traffic impacts, at the short-list option stage. This results in relative BCRs.
- Second, use Aimsun traffic modelling as a check on the traffic impacts of a 'preferred' option or option variant. This would entail calculating benefits/disbenefits to general traffic based on Aimsun model outputs and adding these to benefits for users of other transport modes.

The disadvantage of using Aimsun modelling is that it models traffic conditions based on a fixed vehicle trip matrix. This means that it is likely to over-estimate traffic disbenefits by neglecting the potential for users to respond by changing modes, time of travel, choice of destination, or choice about whether to travel. As a result, two modifications to the base Aimsun approach are suggested:

- First, for the preferred option scenario, adjust the trip matrix based on modelled mode shift to public transport and cycling. This will ensure consistency between mode-specific models and Aimsum modelling.
- Second, after running Aimsun over the preferred option, adjust the trip matrix using an elasticity-based approach to account for other travel demand responses to changes in car travel times. This is proposed as a sensitivity test in the event that large-scale changes to the road network result in significant traffic disbenefits. The aim of this sensitivity test is to account for the common experience of 'disappearing traffic' in response to road space reallocation or road closures. A technical note on this topic ('Adjusting Aimsun demand matrices in response to road capacity changes') is attached.

2.6. Crash reduction benefits

In future phases of City Streets crash reduction benefits from safety-related interventions, such as intersection upgrades, should be estimated using data from NZTA's *Crash Analysis System*, parameters and assumptions from the MBCM, and crash risk reduction assumptions from the *Crash Estimation Compendium*.

Crash reduction benefits have not been calculated for City Streets indicative options, although it is reasonable to expect some of the toolbox interventions to result in safety improvements. There are two reasons for this.

First, a realistic analysis of crash reduction benefits would require a detailed analysis of the circumstances of crashes. For instance, improvements to an intersection may not result in significant benefits if most crashes occur when vehicles are turning in to driveways.

Second, experience with other projects shows that design details can have a significant impact on the magnitude and even direction of crash reduction impacts. Because City Streets indicative options are being evaluated based on high-level concept interventions it is difficult to accurately calculate impacts.

3. Estimating indicative costs

A high-level cost estimation approach was used as an input to indicative cost benefit analysis. This approach is based on unit cost estimates for individual interventions included in the intervention toolbox, plus unit costs for project overhead costs such as detailed design, communications and engagement, and traffic resolutions. Allowances for other location-specific costs, such as property acquisition where it is needed to address specific issues, are also included.

This approach entails:

- Identifying the quantity (number, distance, etc) of each intervention included in each short-list option.
- Multiplying quantities by unit cost rates to obtain total estimated costs.
- Adding project overhead costs.

Following this process, the SSBC and project overhead costs were revised based on the latest experiences relating to Golden Mile and TQHR leading to increases for some projects.

The following sub-sections summarise the basic approach and initial unit cost estimates used prior to moderation. In general, unit cost rates were drawn from recent projects undertaken in Wellington, with an allowance for recent cost inflation where relevant.

3.1. Project overhead costs

The *Bus Priority Indicative Business Case* provides estimates of corridor-level overhead costs. These estimates are summarised in the following table. As these costs scale according to length of corridor treated or number of projects, they can easily be applied across the programme.

Table 60: Project overhead cost estimates

Cost item	Units	Cost ($)		
		Low	Mid-point	High
Communications and engagement	Annual per project	1,000,000	1,500,000	2,000,000
Traffic resolutions	Kilometre treated	15,000	17,500	20,000

Cost item	Units	Cost ($)		
Draft engineering design	Kilometre treated	100,000	150,000	200,000
Detailed engineering design	Kilometre treated	100,000	150,000	200,000
Contract management	Kilometre treated	50,000	75,000	100,000

Appendix I: Sensitivity test parameters

Parameter	Baseline	Lower Bound	Upper Bound
Valuation Assumptions			
Discount Rate	4%	6%	4%
Evaluation Period (years)	40	40	40
Construction start year	2021	2021	2021
Start year for benefits	2024	2024	2024
End year for benefits	2100	2100	2100
Cross-modal assumptions			
Construction cost sensitivity	P50	P95	P50
Demand growth assumptions	Central	Low	High
Cycling benefit assumptions			
Cycling user benefit calculation approach	Logsum	EEM Params	Logsum
Diversion rate from car to cycling (for GHG impacts)	Central	Low	High
Calibration of opt out utility	Exactly	Exactly	Exactly
Public transport benefit assumptions			
Growth in PT delay without intervention	Central	Low	High

Parameter	Baseline	Lower Bound	Upper Bound
Elasticity of PT demand wrt travel time	Central	Low	High
Diversion rate from car to PT	Central	Low	High
Public transport VOT	Central	Central	High
Road traffic reduction benefit parameter	Central	Low	Central
Annualisation ration for PT user benefits	Inbound + outbound 8	Inbound + outbound 8	Inbound + outbound 8
Include weekend benefits in annualisation?	False	False	False
Assumptions about unquantified impacts			
Include proxy for unquantified benefits?	True	True	True
Reliability benefits as % of PT user benefits	38%	38%	38%
Traffic delay as % of decongestion benefits	-50%	-50%	-50%
Traffic delay as % of walking delay reduction benefits	-50%	-50%	-50%

Appendix J: Risk Register

Risk Description (include whether this is a threat or an opportunity)	Risk Cause(s)	Risk Consequence(s)	Current Risk Likelihood	Current Risk Consequence	Consequence Category	Current Controlled Risk Level	Planned Risk Trmt Actions	Residual (Target) Risk Likelihood	Residual (Target) Risk Consequence	Residual (Target) Risk Level
The potential for CS to be impacted by and impact on historic heritage and archaeological values	No historic heritage or archaeological values work considered in developing the IBC as risk and relevance to developing the programme is considered low.	Potential to delay CS projects or significantly impact scope and cost through need for consents or impacts on statutory archaeological and RMA listed historic heritage requirements.	Possible	Moderate	Environmental	Medium	LGWM are undertaking a programme level Heritage Landscape Assessment. This will be referenced in subsequent SSBCs/SSBC-lites and requirement to consider historic heritage and archaeological values will be included in the scope.	Unlikely	Moderate	Medium
CS outcomes misaligned due to changes in other components of the LGWM programme not being realised.	Other LGWM components are in the process of being developed and scope uncertainty remains	CS elements may not optimally integrate with the City or LGWM programme.	Likely	Severe	Delivery	Critical	The CS projects have been staged around key decisions of other LGWM components such as MRT route and mode decisions, also programme reviews are proposed to revisit the optimal package at key milestones	Possible	Moderate	Medium
Partners/stakeholders desired levels of service from CS components may exceed what was envisaged by the IBC and allowed for in the indicative budget.	Partner and stakeholder expectations of "Gold Standard" quality for all investments raised as a result of other high-profile projects such as Golden Mile.	Undermined social licence if expectations not managed and/or project costs escalate in response to expanded scope either reducing the programme overall or increasing total programme costs	Likely	Moderate	Cost	High	1. Ongoing communication with stakeholders and partners on the key assumptions underlining the CS package and risks of scope creep 2. The scope of the SSBC/SSBC-lite will be transparent about the LoS assumptions underpinning the IBC and expectations around moderate solutions up front.	Possible	Moderate	Medium

Upon commencing SSBCs/SSBC-lite the envisaged improvements cannot be fitted into the road reserve.	No physical design has been undertaken as part of the prioritising of corridors for the IBC. Indicative assumptions about modal improvements have been made which might not be feasible when investigated at the next phase	There may need to be level of service compromises or modal priority decisions taken which could delay projects or reduce the outcomes realised.	Likely	Moderate	Delivery	High	1. The project will be guided by the Network Operating Framework in resolving modal priorities 2. The SSBC scoping process will aim to consider this risk in setting out its requirements.	Likely	Minor	Medium
Pursuing Tranche 1 other components of the CS/LGWM programme become compromised.	Individual CS projects do not check-in with the wider package or programme to ensure alignment and overall programme optimisation	Outcomes are undermined and quality of downstream projects is compromised	Likely	Moderate	Delivery	High	1. CS taken forward as a package with professional services procured in such a way that a package and best for LGWM programme approach is a requirement.	Unlikely	Moderate	Medium
CS activities are not integrated with WCC/Utility providers improvements	The package does not engage with infrastructure partners to understand their improvement programmes and outcomes to seek win-win value opportunities	Potential rework and additional cost in remedying projects or integrating projects at a late stage with suboptimal outcomes	Likely	Severe	Delivery	Critical	LGWM and CS liaise closely with stakeholders and partners on respective plans as projects progress.	Possible	Moderate	Medium

Expectations of CS activities with respect to supporting climate change aspirations cannot be met	Climate change has become a significant priority for partners with ambitious targets. Whilst CS can contribute to those targets it is unlikely to achieve them on its own given the wider objectives of the package.	Undermined social licence if expectations not managed and/or project costs escalate in response to expanded climate change response either reducing the programme overall or increasing total programme costs	Possible	Moderate	Delivery	Medium	1. Establish climate change goals as a priority for the package early in the SSBC process with clear documentation of the climate change benefits of the package required to support stakeholder/partner engagement. 2. Programme to establish/provide environmental sustainability guidelines to support the CS package 3. Climate change measures considered early in the optioneering process to avoid costly rework	Unlikely	Minor	Low
Project partners confidence in delivery of CS is undermined through slow delivery	Partners perceive delivery to date as suboptimal and have expectations of this improving following a programme review	If partners continue to perceive delivery as slow or poorly aligned to their organisational goals, they could choose to invest in their own activities undermining collaborative transport system planning delivering sub-optimal outcomes for Wellington.	Likely	Moderate	Stakeholders	High	Establish a realistically resourced CS package team and baseline programme and engage with partners on a regular basis on progress.	Likely	Moderate	High
Partners/stakeholder desired levels of investment in non-transport related outcomes compromise the programme outcomes	There is ongoing misalignment between partners on the role of place-making and the level of investment in placemaking the LGWM should make. This was unresolved in the IBC.	Undermined social licence if expectations not managed and/or project costs escalate in response to place making expectations either reducing the programme overall or increasing total programme costs	Likely	Severe	Cost	Critical	SSBCs will identify and monetise the place-making costs and benefits so that these can be appropriately apportioned and used as a basis for evidence-based discussions between partners.	Likely	Moderate	High
Poor social licence for the programme compromises programme delivery	Public confidence in the CS package is undermined due to quality expectations set by Golden Mile and/or	Projects are delayed by engagement or are unable to progress due to lack of buy-in to the solutions by the public and stakeholders.	Likely	Severe	Public/ Media	Critical	Comms and engagement strategy to be developed to proactively engage with the public on the purpose of CS and its outcomes.	Possible	Severe	High

	wider engagement experiences of the public.									
Changes in partner affordability compromise programme delivery	Partner budgets are constrained and there are significant pressures on partners affordability of new infrastructure	There is limited scope for additional funding meaning scope of CS projects needs to be contained or programme reduced if cost escalation emerges.	Unlikely	Severe	Cost	Medium	Limited scope to influence partners affordability	Unlikely	Severe	Medium
Slower than desired delivery of the CS programme due to LGWM/industry resource constraints.	There are existing pressures on the industry making it difficult to compete on attracting the right level of capability and skill both within the programme and professional services market	Under resourced programme or consultancy team could lead to delay, churn and rework undermining the cs package and partner/stakeholder confidence.	Likely	Moderate	Delivery	High	1. Commence LGWM project team recruitment early 2. Develop a procurement strategy which takes cognisance of market pressures amongst other considerations to minimise the risk	Possible	Moderate	Medium
Consultation on the CS programme (alongside LGWM consultation) could be confusing and inconsistent to stakeholders and the public	With a number of projects ongoing both in the LGWM programme and across partner organisations the public/stakeholders could become confused reducing the impact of key messaging	CS projects could be delayed due to the need to re-engage with the public/stakeholders to ensure messaging gets through and appropriate levels of involvement have occurred.	Likely	Moderate	Public/ Media	High	Comms and engagement strategy developed and managed centrally from within the LGWM programme to ensure optimal coverage and penetration of LGWM messaging and consistency with partner programmes.	Possible	Moderate	Medium
Risk that CS improvements are not futureproofed for future PT network changes and growth	SSBCs lack a future focus and are heavily biased towards infrastructure solutions	CS projects lack futureproofing and are not adaptable to growth or change in PT network services reducing the overall long-term benefits of the CS package.	Likely	Moderate	Delivery	High	1. The SSBCs have a requirement to consider the full range of interventions and include GWRC as a partner in terms of input in relation to future patronage growth and service adaptation. 2. A specific project is included in the CS package to support GWRC PT service analysis and advice to CS	Unlikely	Moderate	Medium

Targeted improvements undermine the overall outcomes envisaged by the CS package	Incremental improvements through targeted improvements ignores wider outcomes of the CS package which then cannot be attained as they offer poor value for money when pursued in isolation	The overall outcomes envisaged from the CS package are not attained	Possible	Moderate	Delivery	Medium	Targeted improvements package scoping to be clear on the types of intervention and eligibility criteria for inclusion in the package.	Unlikely	Minor	Low
Indicative solutions in IBC significantly under scoped when investigated during SSBC phase meaning IBC costs unrealistic	The IBC has used a desk based 'sample' solution approach rather than detailed investigation of solutions with 'typical' unit costs provided by WCC.	The cost of projects is significantly underestimated leading to reduced scope or increased cost of the CS package.	Possible	Severe	Delivery	High	1. Significant contingency allowed for at the project and package level within the IBC	Possible	Moderate	Medium
Delivery and funding of CS activities beyond 3-year commitments not agreed, delaying delivery of outcomes	Partner discussions on financial share and affordability are ongoing.	Delay in commissioning subsequent phases of CS projects	Possible	Moderate	Delivery	Medium	LGWM project office to continue discussions with partners to resolve long term funding contributions approach	Unlikely	Moderate	Medium
Outcomes delivered by Tranche 1 or WCC early projects don't meet public/stakeholder expectations undermining support for later components of the CS programme **[Same as Risk 3?]**	Partner and stakeholder expectations of "Gold Standard" quality for all investments raised as a result of other high-profile projects such as Golden Mile.	Undermined social licence if expectations not managed and/or project costs escalate in response to expanded scope. This could lead to either increased scope and cost to deliver to expectations or projects not commencing	Likely	Severe	Delivery	Critical	1. Ongoing communication with stakeholders/partners and public on the key assumptions and outcomes underlining the CS package	Possible	Severe	High
Changing partner priorities impact the timing and sequencing of delivery, undermining delivery of the optimal programme	Issues of the day become a focus for partners due to stakeholder/public pressures	Regular re-sequencing of the CS package could undermine the optimal delivery of the programme costing money and time and reducing package outcomes	Likely	Moderate	Delivery	High	1. Gain support from partners early on the programme and seek to 'lock it in'?????	Possible	Moderate	Medium

SSBC/SSBC-lite take longer than anticipated delaying delivery	Projects become over scoped, or scope changes occur mid-business case or supplier capability is insufficient for the job at hand	Delay and/or cost and/or sub-optimal business cases with additional risk passed to the pre-implementation phases	Likely	Moderate	Delivery	High	1. Well scoped SSBCs with buy in of partners locked in at the start 2. Clear change processes defined within the LGWM programme 3. Procurement focussed on quality of consulting teams	Possible	Minor	Medium
CS enhancements need to go through a traffic resolutions process which is outside LGWM control. If council disagree with the proposal, they could not approve the changes	LGWM is not accountable for the traffic resolutions process. If WCC do not like CS projects they can use the resolutions process to stop implementation.	CS projects are not implemented or implemented in the form proposed by LGWM	Possible	Severe	Delivery	High	Early and regular engagement with partners on the scope of CS projects	Unlikely	Moderate	Medium
Partners cannot agree SSBC/SSBC-lite scope delaying commencement of the next phase	Misalignment between partners on necessary scope items versus nice to have of relevance to completing the business cases leads to protracted scoping process	Delay and cost implications for SSBC and SSBC-lite.	Possible	Moderate	Delivery	Medium	Scoping process clearly developed with LGWM programme scope approvals/escalation processes defined	Possible	Minor	Medium
Where targeted road widening required there could be potential consenting risks	The IBC has used a desk based 'sample' solution based on improvements being within the road reserve. Optimal outcomes could require widening with potential earth works or retaining walls and associated environmental approvals.	Delay and additional cost to projects	Possible	Moderate	Delivery	Medium	Project and package contingency allowed for.	Possible	Minor	Medium

An inconsistent benefits realisation framework for CS makes it difficult to consistently measure and articulate the outcomes delivered by the package.	The benefits framework for the LGWM programme has not been established to provide a consistent basis against which to measure the benefits delivered by the programme elements	The outcomes delivered by CS cannot be told in a consistent manner and/or resources not made available for the appropriate monitoring due to lack of an overarching benefits realisation plan for the programme.	Likely	Moderate	Legal/ Compliance	High	Programme to establish an overarching benefits realisation framework and costed and funded monitoring programme to demonstrate the outcomes developed by the LGWM programme and its components.	Unlikely	Moderate	Medium
The outcomes envisaged from the CS package care not realised because complementary behavioural change components of LGWM are not delivered	Behavioural change activities are necessary to complement CS to achieve the desired outcomes	Mode-shift goals of the CS programme are not achieved.	Possible	Moderate	Delivery	Medium	1. Partner commitment and funding to a demand management package confirmed.????	Unlikely	Minor	Low
CS outcomes for the Central City will be dependent upon the effectiveness of Golden Mile improvements	The CS central city improvements are closely integrated with Golden Mile and MRT from a transport system perspective	The outcomes of CS, Golden Mile and MRT are undermined through lack of integration and best-for-transport-system perspective being applied to synergistic activities	Possible	Severe	Delivery	High	Overarching LGWM programme integration team to have oversight of LGWM components and provide guidance and direction as necessary	Possible	Moderate	Medium
Opportunity to work with other partners (e.g., Wellington Water) to seek co-funding where appropriate	Across the city and utility partners there is significant works planed over the duration of the City Streets package	Significant potential for mutual cost savings and disruption minimisation to the public.	Likely	Moderate	Delivery	High	Programme to close liaise with partners to identify opportunities to combine programmes and negotiate appropriate cost shares where opportunities arise.	Possible	Minor	Medium

TRAFFIC RESOLUTION - TR94-21 COURTENAY PLACE

Purpose

1. This report asks the Pūroro Āmua | Planning and Environment Committee to consider TR94-21 Courtenay Place that is recommended for approval. The traffic resolution is attached to this report. These recommendations support the achievement of the Council's transport strategic outcomes of safety, accessibility, efficiency and sustainability.

Summary

2. TR94-21 Courtenay Place was issued for consultation between Monday 28 June 2021 and Sunday 11 July 2021.
3. All feedback received during the consultation period has been included in the traffic resolution report attached to this document and, where appropriate, officers' responses have been included.
4. Officers are confident that the attached Traffic Resolution, if approved, will improve the transport network in terms of transport safety, accessibility, efficiency and sustainability.

Recommendation/s

That the Pūroro Āmua | Planning and Environment Committee:

1. Receive the information.
2. Approve the following amendment to the Traffic Restrictions, pursuant to the provisions of the Wellington City Council Consolidated Bylaw 2008:
   a) TR94-21 Courtenay Place, Te Aro - P30 time limited parking

Background

5. TR94-21 Courtenay Place was publicly advertised in the Dominion Post on 28 June 2021, alongside 14 other traffic resolutions. Copies were either hand delivered or posted to all properties in the affected area and electronic copies were sent to local Ward Councillors, and residents and business associations. Electronic copies were also available on the Wellington City Council website.
6. At the 11 August 2021 Pūroro Hātepe | Regulatory Processes Committee, the decision on TR94-21 Courtenay Place was referred to the Pūroro Āmua | Planning and Environment Committee meeting.

Discussion

7. A summary report for the 15 traffic resolutions recommended to Pūroro Hātepe | Regulatory Processes Committee on 11 August 2021 can be found in the attachments. TR94-21 Courtenay Place is included in this. The summary contains:

   a) the proposed traffic resolution report including map(s) as advertised for public feedback, or subsequently modified as a result of public feedback

   b) all feedback received, and

   c) where appropriate, Council officers' responses to the feedback.

Options

Next Actions

8. If approved, the proposal will be installed within the following three months.

Attachments

Attachment 1.	TR94-21 Courtenay Place, Te Aro - P30 Time Limited Parking ⇩	Page 312
Attachment 2.	Table of Traffic Resolutions Legal Description - Regulatory Processes Committee 11 August 2021 ⇩	Page 319

Author	Wendy Ferguson, Project Coordinator
Authoriser	Soon Teck Kong, Transport Engineering and Operations Manager Mike Mendonca, Acting Chief Infrastructure Officer

SUPPORTING INFORMATION

Engagement and Consultation
Recommendations have been publicly advertised.

Treaty of Waitangi considerations
Not applicable.

Financial implications
The work required is contained in a range of Operating Project budgets Policy and legislative implications.

Policy and legislative implications
The recommendations comply with the legal requirements for amendments to traffic restrictions as laid down in the Bylaws. Where possible and where appropriate, the Council's transport hierarchy approach is considered and applied, noting that not all resolutions result in improved outcomes for pedestrians and other active modes specifically.

Risks / legal
None identified.

Climate Change impact and considerations
We need to move more people with fewer vehicles in Wellington, especially at peak travel times. We are looking at ways to give buses more priority while making sure walking, cycling and other transport options are not unduly affected. The benefits of the bus related resolution will be realised by more people using public transport, less traffic and therefore reduced greenhouse gas emissions.

Communications Plan
Not required.

Health and Safety Impact considered
We have considered the safety impacts of these proposals with the aim to improve safety of all road users.

We are proposing a change in your area

Absolutely Positively **Wellington** City Council
Me Heke Ki Pōneke

Kia ora,

This leaflet is to let you know about a change we are proposing to make in your neighbourhood.

Proposal:

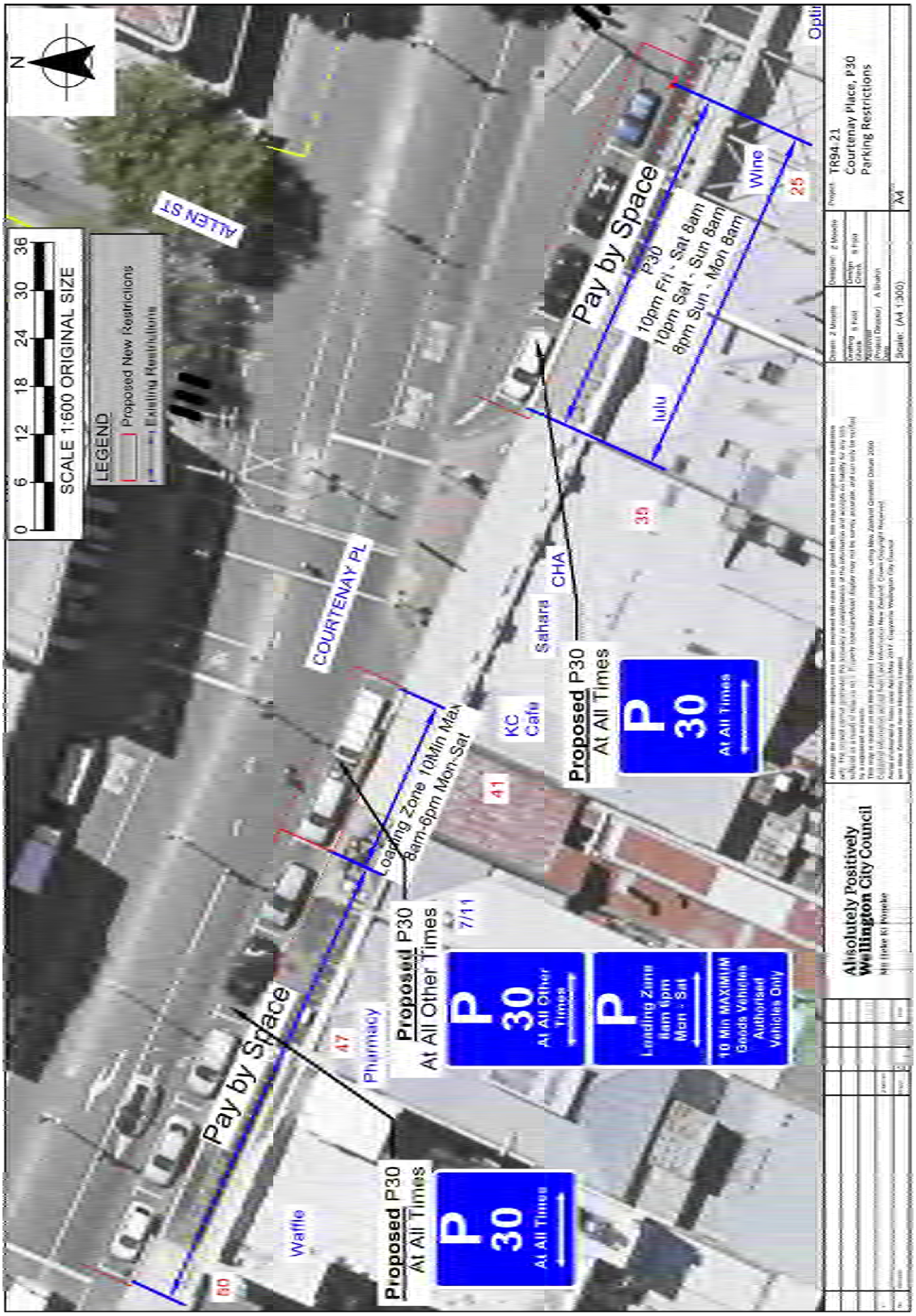
Reference	TR94-21 Courtenay Place, Te Aro - P30 time limited parking
What we'd like to do	• Install P30 time limited parking restrictions on Courtenay Place At All Times.
Why we are proposing the change	• Following the feedback received and the Committee discussion on the TR83-21 Courtenay Place Taxi Stand, the businesses along the southern side of Courtenay Place have requested an extension of the time period for the short term P30 parking restrictions.
Location – where we propose to make the change	• Courtenay Place, Te Aro – outside no.25 to no.50
Impact	• Improves safety and accessibility for the public during the weekend. • Net parking impact - alteration of nine Pay By Space parking spaces to P30 Parking Restrictions At All Times. • The existing loading zone restrictions will remain, and a P30 parking restriction will apply At All Other Times. • Pedestrian impact – positive, safety will be improved as double parking and queuing for parking will be reduced due to parking turnover and availability of parking will be increased. • Monthly revenue impact – approximate decrease in revenue of $7,200.
How this relates to the parking policy	• Introduce time restrictions to prioritise short-stay parking and to increase turnover of parking spaces. • Support business growth in the city centre.
Additional Information	• Average daily traffic count – 8,468. • To view the legal description for this Traffic Resolution, an electronic copy of the report will be available on the Council's website from 9.00am Monday 28 June 2021 at www.wellington.govt.nz/haveyoursay or you can call (04) 499 4444 and we will send one out to you. • This TR also looks to formally legalize agreed to changes following TR83-21.
Feedback	• If you would like to provide us with specific feedback, you can do so by filling out an online submission form, downloading a printable submission form on www.wellington.govt.nz/haveyoursay or emailing us at trfeedback@wcc.govt.nz . **Please note if you are giving feedback the consultation period opens 9.00am Monday 28 June 2021 and finishes 5.00pm Sunday 11 July 2021.** • What we do with your personal information: All submissions (including name, but not contact details) are provided in their entirety to elected members and made available to the public at our office and on our website.

	Personal information (including contact details) will also be used for the administration of the consultation process including informing you of the outcome of the consultation. All information collected will be held by Wellington City Council, 113 The Terrace, Wellington, with submitters having the right to access and correct personal information.
Next Steps	1. Feedback collated by Monday 12 July 2021. 2. The proposal will go to the Regulatory Processes Committee on Wednesday 11 August 2021. 3. If approved, the proposal will be installed within the following 3 months.

We are proposing a change in your area

Absolutely Positively **Wellington** City Council
Me Heke Ki Pōneke

Traffic Resolution Plan: TR94-21 Courtenay Place, Te Aro - P30 time limited parking



Legal Description:

<u>Delete</u> from Schedule F (Metered Parking) of the Traffic Resolutions Schedule

Column One	*Column Two*	*Column Three*
Courtenay Place	*P120 Maximum, Monday to Thursday 8:00am - 6:00pm, Friday 8:00am - 8:00pm, Saturday and Sunday 8:00am - 6:00pm*	*Southwest side, following the kerbline 73 metres Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a south-easterly direction for 22 metres. southwest of its intersection with Tory (4 parallel carparks)*
Courtenay Place	*P120 Maximum, Monday to Thursday 8:00am - 6:00pm, Fri 8:00am - 8:00pm, Saturday and Sunday 8:00 - 6:00pm*	*Southwest side, commencing 14 metres southeast of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m), and extending in a south-easterly direction following the kerbline for 28.5 metres. (5 parallel carparks)*

<u>Delete</u> from Schedule A (Time Limited) of the Traffic Resolutions Schedule

Column One	*Column Two*	*Column Three*
Courtenay Place	*P15, 8pm Fri - 8am Sat, 6pm Sat - 8am Sun, 6pm Sun - 8am Mon*	*Southwest side, following the kerbline 73 metres Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a south-easterly direction for 22 metres. southwest of its intersection with Tory (4 parallel carparks)*

<u>Add</u> to Schedule A (Time Limited) of the Traffic Resolutions Schedule

Column One	**Column Two**	**Column Three**
Courtenay Place	*P30 At All Times*	*Southwest side, following the kerbline 73 metres (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a south-easterly direction for 22 metres. (4 parallel carparks) southwest of its intersection with Tory Street*
Courtenay Place	*P30 At All Times*	*Southwest side, following the kerbline 13 metres southeast of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m), and extending in a south-easterly direction for 28.5 metres. (5 parallel carparks)*

Courtenay Place	*P30 At All Other Times*	*Southwest side, following the kerbline 42.5 metres southwest of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a south-easterly direction for 11 metres.*

Delete from Schedule B (Class Restricted) of the Traffic Resolutions Schedule

Column One	*Column Two*	*Column Three*
Courtenay Place	*Taxi Stand, 8pm Fri - 8am Sat, 6pm Sat - 8am Sun, 6pm Sun - 8am Mon*	*Southwest side, commencing 161 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a southeasterly direction following the Southern kerbline for 16 metres. (3 parallel carparks)*
Column One	*Taxi Stand, 8pm Fri - 8am Sat, 6pm Sat - 8am Sun, 6pm Sun - 8am Mon*	*Southwest side, commencing 110 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a southeasterly direction following the Southern kerbline for 45 metres. (8 parallel carparks)*
Column One	*Taxi Stand, 8pm Fri - 8am Sat, 6pm Sat - 8am Sun, 6pm Sun - 8am Mon*	*Southwest side, commencing 73 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a southeasterly direction following the Southern kerbline for 22 metres. (4 parallel carparks)*

Add to Schedule B (Class Restricted) of the Traffic Resolutions Schedule

Column One	*Column Two*	*Column Three*
Courtenay Place	*Taxi Stand, 10pm Fri -8am Sat, 10pm Sat -8am Sun, 10pm Sun -8am Mon*	*Southwest side, commencing 161 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a southeasterly direction following the Southern kerbline for 16 metres. (3 parallel carparks)*

Column One	*Taxi Stand, 10pm Fri -8am Sat, 10pm Sat -8am Sun, 10pm Sun -8am Mon*	*Southwest side, commencing 110 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a southeasterly direction following the Southern kerbline for 45 metres. (8 parallel carparks)*
Column One	*Taxi Stand, 10pm Fri -8am Sat, 10pm Sat -8am Sun, 10pm Sun -8am Mon*	*Southwest side, commencing 73 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a southeasterly direction following the Southern kerbline for 22 metres. (4 parallel carparks)*

Add to Schedule F (Metered Parking) of the Traffic Resolutions Schedule

Column One	*Column Two*	*Column Three*
Courtenay Place	*P120 Maximum, 8am - 10pm Fri - Sat 8am - 8pm Sun - Thurs*	*Southwest side, following the kerbline 114 metres southeast of its intersection with Tory (Grid coordinates x= 1749136.8 m, y= 5427129.6 m), and extending in a south-easterly direction for 44.5 metres. (8 parallel carparks)*
Courtenay Place	*P120 Maximum, 8am - 10pm Fri - Sat 8am - 8pm Sun - Thurs*	*Southwest side, following the kerbline 70.5 metres southeast of its intersection with Tory (Grid coordinates x= 1749136.8 m, y= 5427129.6 m), and extending in a south-easterly direction for 28 metres. (5 parallel carparks)*
Courtenay Place	*P120 Maximum, 8am - 10pm Fri - Sat 8am - 8pm Sun - Thurs*	*Southwest side, following the kerbline 164 metres southwest of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a south-easterly direction for 17 metres. (3 parallel carparks)*

Prepared By:	Zackary Moodie	**(Transport Engineer)**
Approved By:	Amin Shahin	**(Team Leader Transport Engineer)**
Date:	26/07/2021	

Feedback Received:

Name: **Mike Mellor**
Suburb: **Wellington**
Agree: **No**

This is a very odd proposal. As part of LGWM, Council has agreed that private vehicles will be removed from the Golden Mile, of which Courtenay Place is part, improving safety and accessibility for the public, and supporting business growth in the city centre. Yet this proposal does precisely the opposite, increasing private car traffic through increasing parking turnover and availability of parking. This is a glaring inconsistency, a short-term proposal that is designed to achieve precisely the opposite of the agreed multi-agency longer-term plan. In addition, we cannot see how it could be positive for pedestrians, as the proposal claims. We submit that this proposal must be withdrawn.

Officer's response:

The proposed parking changes are an interim solution for the current high parking demand in an area where public safety is a high priority throughout the day. Reducing double parking and generating parking turnover in this area will alleviate current frustration for businesses operating in this area and their patrons.

Table of Traffic Resolutions Legal Description RPC 11 August 2021

a.	**Park Road, Miramar (TR59-21) No Stopping At All Times**		
	Add to Schedule D (No Stopping) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Park Road	*No Stopping At All Times*	*West side, commencing 21 metres north of its intersection with Revans Street (Grid coordinates X=1,752,573.04m Y=5,425,589.99m) and extending in a northerly direction following the western kerb line for 16 metres.*
b.	**Ohiro Road, Todman Street, Cleveland Street Intersection, Brooklyn (TR84-21) Signal improvements; various parking changes (Amended)**		
	Delete from Schedule A (Time Limited) of the Traffic Restrictions Schedule		
	Column One	***Column Two***	***Column Three***
	Ohiro Road	*P10, At All Times*	*East side, commencing 23 metres east of its intersection with McKinley Crescent and extending in a northerly direction following the eastern kerbline for 10 metres.*
	Todman Street	*P60, Monday to Saturday, 8:00am - 6:00pm*	*North side, commencing 12.5 metres west of its intersection with Ohiro Road and extending in a westerly direction following the northern kerbline for 16.0 metres (angle parking 6 spaces).*
	Delete from Schedule B (Class Restricted) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Ohiro Road	*Bus Stop At All Times*	*East side, commencing 115.5 metres south of its intersection with Bretby Crescent and extending in a southerly direction following the eastern kerbline for 28.5 metres*
	Todman Street	*Bus Stop At All Times*	*South side, commencing 41 metres west of its intersection with Ohiro Road and extending in a westerly direction following the southern kerbline for 12 metres.*
	Delete from Schedule D (No Stopping) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Ohiro Road	*No Stopping At All Times*	*East side, commencing 144 metres east of its intersection with Bretby Crescent and extending in a southerly direction following the eastern kerbline for 14 metres to its intersection with Cleveland Street.*
	Ohiro Road	*No Stopping At All Times*	*West side, commencing 4 metres north of its intersection with Todman Street and extending in a northerly direction following the western kerbline for 21 metres.*
	Ohiro Road	*No Stopping At All Times*	*East side, commencing 100.5 metres east of its intersection with McKinley Crescent and extending in a northerly direction following the eastern kerbline for 13.5 metres.*

	Ohiro Road	*No Stopping At All Times*	*East side, commencing 80.5 metres east of its intersection with McKinley Crescent and extending in a northerly direction following the eastern kerbline for 13 metres.*
	Ohiro Road	*No Stopping At All Times*	*East side, commencing 60.5 metres east of its intersection with McKinley Crescent and extending in a northerly direction following the eastern kerbline for 5.5 metres.*
	Ohiro Road	*No Stopping At All Times*	*East side, commencing 33 metres east of its intersection with McKinley Crescent and extending in a northerly direction following the eastern kerbline for 18 metres.*
	Ohiro Road	*No Stopping At All Times*	*East side, commencing from its intersection with McKinley Crescent and extending in a northerly direction following the eastern kerbline for 23 metres.*
	Todman Street	*No Stopping At All Times*	*North side, commencing 12 metres east of its intersection with Ohiro Road and extending in an easterly direction following the northern kerbline for 6.5 metres.*
	Todman Street	*No Stopping At All Times*	*South side, commencing 14 metres west of its intersection with Ohiro Road and extending in a westerly direction following the southern kerbline for 6.5 metres.*
	Todman Street	*No Stopping At All Times*	*South side, commencing at a point adjacent to the driveway of property number 5 and 11 Todman Street (Grid coordinates x= 1747585.2 m, y= 5425816.2 m), and extending in a westerly direction following the southern kerbline for 7 metres.*
	Cleveland Street	*No Stopping At All Times*	*North side, commencing 12 metres east of its intersection with Ohiro Road and extending in an easterly direction following the northern kerbline for 6.5 metres.*
	Add to Schedule A (Time Limited) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Todman Street	*P60, 8am-6pm, Monday-Sunday*	*North side, commencing 13.5 metres west of its intersection with Ohiro Road (Grid coordinates X= 1,747,605.2 m, Y= 5,425,847.2 m) and extending in a westerly direction following the northern kerb line for 12 metres (parallel parking 2 spaces).*
	Todman Street	*P180, 8am-6pm, Monday-Friday*	*South side, commencing 4.5 metres south west of its intersection with Ohiro Road (Grid coordinates X= 1,747,608.6 m, Y= 5,425,832.2 m) and extending in a south westerly direction following the southern kerb line for 22 metres (parallel parking 4 spaces).*

	Ohiro Road	*P60, 8am-6pm, Monday-Friday*	*East side, commencing 22 metres south of its intersection with Cleveland Street Crescent (Grid coordinates X= 1,747,623.5m, Y= 5,425,839.736 m) and extending in a southerly direction following the eastern kerb line for 10 metres (parallel parking 2 spaces).*
	Ohiro Road	*P180, 8am-6pm, Monday-Friday*	*East side, commencing 41 metres south of its intersection with Cleveland Street Crescent (Grid coordinates X= 1,747,623.5m, Y= 5,425,839.736 m) and extending in a southerly direction following the eastern kerb line for 22 metres (parallel parking 4 spaces).*
	Add to Schedule B (Class Restricted) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Ohiro Road	*Bus Stop At All Times*	*East side, commencing 101.5 metres south of its intersection with Bretby Crescent (Grid coordinates X=1,747,649.7 m, Y= 5,426,016.2m) and extending in a southerly direction following the eastern kerb line for 26 metres.*
	Add to Schedule D (No Stopping) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Ohiro Road	*No Stopping At All Times*	*East side, commencing 92.5 metres south of its intersection with Bretby Crescent (Grid coordinates X=1,747,649.7 m, Y= 5,426,016.2m) and extending in a southerly direction following the eastern kerb line for 9 metres.*
	Ohiro Road	*No Stopping At All Times*	*East side, commencing 127.5 metres south of its intersection with Bretby Crescent (Grid coordinates X=1,747,649.7 m, Y= 5,426,016.2m) and extending in a southerly direction following the eastern kerb line for 37 metres to its intersection with Cleveland Street.*
	Ohiro Road	*No Stopping At All Times*	*East side, commencing at its intersection with Cleveland Street (Grid coordinates X= 1,747,623.5m, Y= 5,425,839.7 m) and extending in a southerly direction following the eastern kerb line for 22 metres.*
	Ohiro Road	*No Stopping At All Times*	*East side, commencing 32 metres south of its intersection with Cleveland Street Crescent (Grid coordinates X= 1,747,623.5m, Y= 5,425,839.7 m) and extending in a southerly direction following the eastern kerb line for 9 metres.*
	Ohiro Road	*No Stopping At All Times*	*East side, commencing 63 metres south of its intersection with Cleveland Street Crescent (Grid coordinates X= 1,747,623.5m, Y= 5,425,839.7 m) and*

			extending in a southerly direction following the eastern kerb line for 57 metres to its intersection with McKinley Crescent.
	Ohiro Road	*No Stopping At All Times*	*West side, commencing at its intersection with Todman Street (Grid coordinates X=1,747,605.2m, Y=5,425,847.2m) and extending in a northerly direction following the western kerb line for 34 metres.*
	Todman Street	*No Stopping At All Times*	*South side, commencing at its intersection with Ohiro Road (Grid coordinates X= 1,747,608.6 m, Y= 5,425,832.2 m) and extending in a south westerly direction following the southern kerb line for 4.5 metres.*
	Todman Street	*No Stopping At All Times*	*South side, commencing 28.5 metres west of its intersection with Ohiro Road (Grid coordinates X= 1,747,608.6 m, Y= 5,425,832.2 m) and extending in a south westerly direction following the southern kerb line for 6 metres.*
	Todman Street	*No Stopping At All Times*	*North side, commencing at its intersection with Ohiro Road (Grid coordinates X= 1,747,605.2 m, Y= 5,425,847.2 m) and extending in a westerly direction following the northern kerb line for 13.5 metres.*
	Todman Street	*No Stopping At All Times*	*North side, commencing 25.5 metres from its intersection with Ohiro Road (Grid coordinates X= 1,747,605.2 m, Y= 5,425,847.2 m) and extending in a westerly direction following the northern kerb line for 9.0 metres.*
	Cleveland Street	*No Stopping At All Times*	*North side, commencing at its intersection with Ohiro Road (Grid coordinates X= 1,747,621.9, Y= 5,425,854.9 m) and extending in an easterly direction following the northern kerb line for 18.5 metres*
	Cleveland Street	*No Stopping At All Times*	*South side, commencing at its intersection with Ohiro Road (Grid coordinates X= 1,747,623.5m, Y= 5,425,839.736 m) and extending in an easterly direction following the southern kerb line for 9.0 metres*
c.	**Arlington Street, Mount Cook (TR89-21) No Stopping At All Times**		
	Add to Schedule D (No Stopping) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Arlington Street	*No Stopping At All Times*	*South side, commencing 150 metres west of its intersection with Hopper Street (grid coordinates X=* 1748488.56, 5426465.53*m) and extending in a westerly direction following the southern kerb line for 18.0 metres.*
	Arlington Street	*No Stopping At All Times*	*North side, commencing 78.5 metres west of its intersection with Torrens*

			Terrace (grid coordinates X=1748424.80m, Y=5426501.05m) and extending in a westerly direction following the northern kerb line for 4.5 metres.
d.	**Lyall Parade, Lyall Bay (TR92-21) new mobility parking space**		
	<u>Add</u> to Schedule B (Class Restricted) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Lyall Parade	*Mobility parking - displaying an operation mobility permit only, At All Times*	*South side, commencing 108 metres west of its intersection with Onepu Road (Grid coordinates X=1,750,240.43m Y=5,423,141.74m) and extending in a westerly direction following the southern kerb line for 8 metres.*
e.	**Wadestown Road, Wadestown (TR93-21) No Stopping At All Times**		
	<u>Delete</u> from Schedule D (No Stopping) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Wadestown Road	*No Stopping, At All Times*	*West side, commencing 54 metres south of its intersection with Wade Street east and extending in a southerly direction following the western kerb line for 52 metres.*
	<u>Add</u> to Schedule D (No Stopping) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Wadestown Road	*No Stopping, At All Times*	*West side, commencing 12 metres south of its intersection with Wade Street (Grid coordinates X=1,748,926.24m Y=5,430,287.07m) and extending in a southerly direction following the western kerb line for 100 metres.*
f.	**Courtenay Place, Te Aro (TR94-21) P30 time limited parking**		
	<u>Delete</u> from Schedule F (Metered Parking) of the Traffic Resolutions Schedule		
	Column One	**Column Two**	**Column Three**
	Courtenay Place	*P120 Maximum, Monday to Thursday 8:00am - 6:00pm, Friday 8:00am - 8:00pm, Saturday and Sunday 8:00am - 6:00pm*	*Southwest side, following the kerbline 73 metres Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a south-easterly direction for 22 metres. southwest of its intersection with Tory (4 parallel carparks)*
	Courtenay Place	*P120 Maximum, Monday to Thursday 8:00am - 6:00pm, Fri 8:00am - 8:00pm, Saturday and Sunday 8:00 - 6:00pm*	*Southwest side, commencing 14 metres southeast of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m), and extending in a south-easterly direction following the kerbline for 28.5 metres. (5 parallel carparks)*
	<u>Delete</u> from Schedule A (Time Limited) of the Traffic Resolutions Schedule		
	Column One	**Column Two**	**Column Three**
	Courtenay Place	*P15,*	*Southwest side, following the kerbline 73 metres Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and*

		8pm Fri - 8am Sat, 6pm Sat - 8am Sun, 6pm Sun - 8am Mon	*extending in a south-easterly direction for 22 metres. southwest of its intersection with Tory (4 parallel carparks)*
	Add to Schedule A (Time Limited) of the Traffic Resolutions Schedule		
	Column One	**Column Two**	**Column Three**
	Courtenay Place	*P30 At All Times*	*Southwest side, following the kerbline 73 metres (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a south-easterly direction for 22 metres. (4 parallel carparks) southwest of its intersection with Tory Street*
	Courtenay Place	*P30 At All Times*	*Southwest side, following the kerbline 13 metres southeast of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m), and extending in a south-easterly direction for 28.5 metres. (5 parallel carparks)*
	Courtenay Place	*P30 At All Other Times*	*Southwest side, following the kerbline 42.5 metres southwest of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a south-easterly direction for 11 metres.*
	Delete from Schedule B (Class Restricted) of the Traffic Resolutions Schedule		
	Column One	**Column Two**	**Column Three**
	Courtenay Place	*Taxi Stand,* 8pm Fri - 8am Sat, 6pm Sat - 8am Sun, 6pm Sun - 8am Mon	*Southwest side, commencing 161 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a southeasterly direction following the Southern kerbline for 16 metres. (3 parallel carparks)*
	Column One	*Taxi Stand,* 8pm Fri - 8am Sat, 6pm Sat - 8am Sun, 6pm Sun - 8am Mon	*Southwest side, commencing 110 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y=5427129.6 m) and extending in a southeasterly direction following the Southern kerbline for 45 metres. (8 parallel carparks)*
	Column One	*Taxi Stand,* 8pm Fri - 8am Sat, 6pm Sat - 8am Sun, 6pm Sun - 8am Mon	*Southwest side, commencing 73 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a southeasterly direction following the Southern kerbline for 22 metres. (4 parallel carparks)*
	Add to Schedule B (Class Restricted) of the Traffic Resolutions Schedule		
	Column One	**Column Two**	**Column Three**
	Courtenay Place	*Taxi Stand,* 10pm Fri -8am Sat, 10pm Sat -8am Sun, 10pm Sun -8am Mon	*Southwest side, commencing 161 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a southeasterly direction*

			following the Southern kerbline for 16 metres. (3 parallel carparks)
	Column One	*Taxi Stand,* 10pm Fri -8am Sat, 10pm Sat -8am Sun, 10pm Sun -8am Mon	*Southwest side, commencing 110 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y=5427129.6 m) and extending in a southeasterly direction following the Southern kerbline for 45 metres. (8 parallel carparks)*
	Column One	*Taxi Stand,* 10pm Fri -8am Sat, 10pm Sat -8am Sun, 10pm Sun -8am Mon	*Southwest side, commencing 73 metres east of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y=5427129.6 m) and extending in a southeasterly direction following the Southern kerbline for 22 metres. (4 parallel carparks)*
	<u>Add</u> to Schedule F (Metered Parking) of the Traffic Resolutions Schedule		
	Column One	**Column Two**	**Column Three**
	Courtenay Place	*P120 Maximum, 8am - 10pm Fri - Sat 8am - 8pm Sun - Thurs*	*Southwest side, following the kerbline 114 metres southeast of its intersection with Tory (Grid coordinates x= 1749136.8 m, y= 5427129.6 m), and extending in a south-easterly direction for 44.5 metres. (8 parallel carparks)*
	Courtenay Place	*P120 Maximum, 8am - 10pm Fri - Sat 8am - 8pm Sun - Thurs*	*Southwest side, following the kerbline 70.5 metres southeast of its intersection with Tory (Grid coordinates x= 1749136.8 m, y= 5427129.6 m), and extending in a south-easterly direction for 28 metres. (5 parallel carparks)*
	Courtenay Place	*P120 Maximum, 8am - 10pm Fri - Sat 8am - 8pm Sun - Thurs*	*Southwest side, following the kerbline 164 metres southwest of its intersection with Tory Street (Grid coordinates x= 1749136.8 m, y= 5427129.6 m) and extending in a south-easterly direction for 17 metres. (3 parallel carparks)*
g.	**Wanaka Street Waitohi Community Hub car park, Johnsonville (TR95-21) Electric vehicle parking**		
	<u>Delete</u> from Schedule B (Class Restricted) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Wanaka Street Waitohi Community Hub Car Park	*P120, Monday to Sunday 8:00am - 6:00pm. Angle parking*	*West side, commencing at its intersection with the Northern kerb line of Wanaka St (Grid X= 1,751,223.49 m, Y= 5,434,913.23 m) and extending in a northerly direction for 44 metres.*
	<u>Add</u> to Schedule B (Class Restricted) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Wanaka Street Waitohi Community Hub Car Park	*Electric vehicles only parking, P120 Maximum, At All Times. 4 Angle parking spaces*	*West side, commencing 8 metres from its intersection with the Northern kerb line of Wanaka St (Grid X= 1,751,223.49 m, Y= 5,434,913.23 m) and extending in a northerly direction*

			for 11 metres. (4 Angle parking spaces)
	<u>Add</u> to Schedule A (Time Limited) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Wanaka Street Waitohi Community Hub Car Park	*P120, Monday to Sunday 8:00am - 6:00pm. 9 Angle parking spaces*	*West side, commencing 19 metres from its intersection with the Northern kerb line of Wanaka St (Grid X= 1,751,223.49 m, Y= 5,434,913.23 m) and extending in a northerly direction for 25 metres. (9 Angle parking spaces)*
h.	**Toi Pōneke Arts Centre Parking, Te Aro (TR96-21) Various parking restrictions (Amended)**		
	<u>Delete</u> from Schedule B (Class Restricted) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Wellington Arts Centre Car Parking Area	*No Stopping Except for Authorised Vehicles, At All Times.*	*Eastern side of the Arts Centre Building at 65-69 Abel Smith Street, commencing 24 metres south of its intersection with Abel Smith Street and extending in a southerly direction following the western building line for 14 metres. (3 angle parked spaces)*
	Wellington Arts Centre Car Parking Area	*No Stopping Except for Authorised Vehicles, At All Times.*	*Southern end of the Arts Centre Building at number 61-63 Abel Smith Street commencing 2.5 metres west of its intersection with Footscray Avenue and extending westwards for 16 metres. (3 carparks)*
	Wellington Arts Centre Car Parking Area	*No Stopping Except Vehicles Displaying Operation Mobility Permits At All Times.*	*West side, commencing at a point 46.5 metres south of its intersection with Abel Smith Street and extending in a southerly direction for 3.5 metres (1 space)*
	Wellington Arts Centre Car Parking Area	*No Stopping Except Vehicles Displaying Operation Mobility Permits At All Times.*	*Southern boundary commencing 10 metres north of a point 15 metres from the western property boundary and extending in a northerly direction for 3.5 metres. (1 carpark)*
	<u>Delete</u> from Schedule F (Metered Parking) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Wellington Arts Centre Car Parking Area	*Pay and Display, 8:00am – 6:00pm, Monday – Saturday.*	*Southern end of the Arts Centre Building at number 61-63 Abel Smith Street commencing 37 metres west of its intersection with Footscray Avenue and extending westwards for 5 metres. (1 carpark)*
	Wellington Arts Centre Car Parking Area	*Pay and Display, 8:00am – 6:00pm, Monday – Saturday.*	*Eastern side of the Arts Centre carpark commencing at its south-eastern boundary and extending in a northerly direction for 14 metres. (5 angle carparks)*
	Wellington Arts Centre Car Parking Area	*Pay and Display, 8:00am – 6:00pm, Monday – Saturday.*	*Western property boundary line, commencing 50 metres south of its intersection with Abel Smith Street and extending in a southerly direction*

			following the western boundary line for 7.5 metres. (3 spaces)
	Wellington Arts Centre Car Parking Area	*Pay and Display, 8:00am – 6:00pm, Monday – Saturday.*	*Southern boundary commencing 10 metres north of a point 15 metres from the western property boundary and extending in a northerly direction for 10 metres. (8 angle carparks)*
	Add to Schedule B (Class Restricted) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Footscray Ave	*Authorised Vehicles Only Parking, At All Times*	*Toi Pōneke Arts Centre Car Park, ten parking spaces, (spaces 1 to 16 on plan)*
	Footscray Ave	*Mobility Parking, Displaying an Operation Mobility Permit Only At All Times.* *P600 Maximum, Mon-Fri 8:00am-8:00pm, $4/h, $15 Max*	*Toi Pōneke Arts Centre Car Park, one parking spaces, (space 17 on plan)*
	Add to Schedule F (Metered Parking) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Footscray Ave	*Metered Parking P600 Maximum, Mon-Fri 8:00am-8:00pm, $4/h, $15 Max*	*Toi Pōneke Arts Centre Car Park, thirteen parking spaces, (spaces 18 to 30 on plan)*
i.	**Hanson Street, Newtown (TR97-21) Resident parking**		
	Delete from Schedule E (Resident Parking) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Hanson Street	*Monday to Friday 8:00am – 6:00pm, except for vehicles displaying an authorised resident's vehicle parking permit.*	*West side, commencing 13.5 metres north of its intersection with Hall Street (Grid coordinates, x= 1748643.7m, y= 5425274.6m) and extending in a northerly direction following the western kerbline for 12 metres.*
	Add to Schedule E (Resident Parking) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Hanson Street	*Resident Parking,At All Times, Displaying an Authorised Resident Vehicle Parking Permit Only*	*West side, commencing 13.5 metres north of its intersection with Hall Street (Grid coordinates, x= 1748643.7m, y= 5425274.6m) and extending in a northerly direction following the western kerbline for 12 metres.*
j.	**Main Road, Tawa (TR99-21) P10 Time limited parking**		
	Add to Schedule A (Time Limited) of the Traffic Restrictions Schedule		
	Column One	**Column Two**	**Column Three**
	Main Road	*Time Limited Parking,P10. Mon – Fri 7:30am to 4:00pm*	*East side, commencing 296 metres south ofits intersection with Tawa Street (Grid Coordinates X= 1,753,101.0227 m, Y= 5,440,145.907 m) and extending in a southerly*

			direction following the eastern kerb line for 10.5 metres.

ACTION TRACKING

Purpose

1. This report provides an update on the past actions agreed by the Pūroro Āmua | Planning and Environment Committee at its previous meetings.

Summary

2. This report lists the dates of previous committees and the items discussed at those meetings.
3. Each clause within the resolution has been considered separately and the following statuses have been assigned:
   - No action required: Usually for clauses to receive information or note information, or actions for committee members rather than council officers.
   - In progress: Resolutions with this status are currently being implemented.
   - Complete: Clauses which have been completed.
4. All actions will be included in the subsequent monthly updates, but completed actions and those that require no action will only appear once.

Recommendation/s

That the Pūroro Āmua | Planning and Environment Committee:

1. Receive the information.

Background

5. At the 13 May 2021 Council meeting, the recommendations of the Wellington City Council Governance Review (the Review Report) were endorsed and agreed to be implemented.
6. The Review Report recommended an increase focus on monitoring the implementation of Council resolutions and delivery of the work programme. A monthly update at each committee meeting on its previous decisions is part of the implementation of this recommendation.

Discussion

7. Of the 66 resolutions of the Pūroro Āmua | Planning and Environment Committee in June 2021:
   - 25 require no action from staff.
   - 29 are in progress.
   - 12 are complete.
8. Of the 22 resolutions of the Pūroro Āmua | Planning and Environment Committee meeting of 4 August 2021:

- 13 require no action from staff.
- 4 are in progress.
- 5 are complete.

9. Further detail is provided in Attachment One.

Attachments

Author	Hedi Mueller, Senior Democracy Advisor
Authoriser	Liam Hodgetts, Chief Planning Officer

SUPPORTING INFORMATION

Engagement and Consultation

N/A

Treaty of Waitangi considerations

N/A

Financial implications

N/A

Policy and legislative implications

Timeframes and deliverables are reliant on organisational resourcing and priorities.

Risks / legal

N/A

Climate Change impact and considerations

N/A

Communications Plan

N/A

Health and Safety Impact considered

N/A

Date	Meeting	Item	Clause	Status
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.4: Thorndon Quay Parking Changes - Traffic Resolution	2. Approve the following amendments to the Traffic Restrictions, pursuant to the provisions of the Wellington City Council Consolidated Bylaw 2008: TR53-21 Thorndon Quay Pipitea – Convert angled parking to parallel parking (amended)	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.4: Thorndon Quay Parking Changes - Traffic Resolution	3. Agree that the four new P10 parks operate between 3pm and 6pm in the evening.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	6. Agree that officers will report on the implementation of the Spatial Plan and the supporting Action Plan on an annual basis, or more regularly as required.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	12. Agree to seek advice on the establishment of inclusionary zones in the inner city, CBD and around key public transport routes and instruct officers to report back on how these zones might be implemented as part of the District Plan review work through the Pūroro Āmua | Planning and Environment Committee.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	14. Agree that Council will seek to get the agreement of Kāinga Ora to develop at least one Specified Development Project through under the Urban Development Act 2020 to facilitate more affordable and sustainable housing.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	15. Request officers to provide a report by September 2021 to identify underutilised sites across the city that are close to major public transport routes; including land that is: a) vacant or occupied by derelict buildings; or b) used largely or solely for car parking, or storage of cars or machinery; or c) occupied by lower quality 1-3 storey commercial buildings that do not contribute to streetscape or do not have heritage value.”	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	16. Propose measures to prioritise and significantly increase the rate of realisation of residential and mixed-use development capacity on underutilised sites over the next three,	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	17. Instruct officers to investigate options and tools for encouraging/incentivising contributions through developments to city outcomes, such as affordability, accessibility, seismic resilience, open green space and low carbon buildings through the District Plan review and report back to the Pūroro Āmua Committee and Council for decision making on	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	18. Note the design scheme for the Newtown Character area from the Newtown community and agree that council officers will recommend it to Kainga Ora for consideration as part of their planning work. Agree that consideration will be given to prioritizing the needs of healthcare workers in this area in any work that the council undertakes in this area.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	22. Agree to change the ‘Type 4: Enable 6 storeys’ housing typology in the proposed final Spatial Plan maps and text to ‘Type 4a: Up to 6 storeys’ and ‘Type 4b: Enable at least 6 storeys’, consistent with the Draft Spatial Plan.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	23. Remove the unlimited heights proposal in Central City and Te Aro and revert broadly to the heights proposed in the Draft Spatial Plan.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	24. Increase the walking catchment from all rapid transit stops to 10 minutes.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	25. Request officers include best practice universal design principles in the review of the Wellington Design Manual and development of District Plan design guides.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	26. Seek to increase stock of accessible housing by encouraging accessible units on the ground floor of new multi-unit developments.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	27. Include a stream network map which shows above and underground streams to complement the Green Network Plan, as part of the District Plan review and on the Spatial	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	28. Report back to Council how to daylight more of our underground streams.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	29. Request officers report back on the capacity to implement the National Policy Statement on Indigenous Biodiversity once it is released, as well as options for incentivising maintenance of Significant Natural Areas (SNAs), such as a rates rebate on the percentage of private land designated as a Significant Natural Area.	In progress

Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	31. Support whenua Māori (Māori Land) exemption from national SNA designation under the National Policy Statement on Indigenous Biodiversity.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	32. Request that officers change Our Place engagement to city wide engagement to be focused on young people, renters, disabled people, and other communities that Council has less engagement with, about their future housing needs that can be enabled through the	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	33. Implement the pre-1930s character sub-areas as proposed in the draft spatial plan released in August 2020 and remove the general character overlay.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	34. Request officers identify incentives such as enabling more height if developments include a percentage of affordable housing, outdoor shared space, community gardens, green roofs as part of the District Plan review.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	35. Request officers to report back to the District Plan Review Councillor Working Group on the benefits of quality building design on mental health and wellness indicators as part of the District Plan review.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	36. Request officers to investigate incentives for developers to enable more common space, and space for community gardens, composting solutions, and green roofs.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	37. Request officers include provision for more vegetable/community gardens and composting systems throughout the central and inner suburbs in the Green Network plan.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	39. Note that staff will need to conduct a cost benefit analysis related to exempting character precincts from the National Policy Statement on Urban Development as part of the section 32 reports for the District Plan.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	42. Request officers prepare additional evidence as part of the draft District Plan to support the extension of the 10 minute walking catchment where it extends beyond that approved for the Medium Density Residential Area in Johnsonville.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	43. Request officers review the provision of open and green space in Johnsonville as part of the District Plan review.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	44. Increase the walking catchment for the central city to 15 minutes.	In progress
Thursday, 24 June 2021	Pūroro Āmua | Planning and Environment	3.2: Approval of 30-year Spatial Plan	45. Request officers to report back within three months on the ability and capacity of the Johnsonville train line to support the planned potential population growth along the Johnsonville/Onslow corridor taking into account the Regional Council's planned future	In progress
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.1 Approval of Submission to the Select Committee Inquiry on the Exposure Draft of the Natural and Built	1. Receive the information	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.1 Approval of Submission to the Select Committee Inquiry on the Exposure Draft of the Natural and Built Environments Bill	2. Approve the submission, as set out in Attachment 1, to the Environment Select Committee	Complete
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.1 Approval of Submission to the Select Committee Inquiry on the Exposure Draft of the Natural and Built Environments Bill	3. Agree to delegate authority to the Chair and Deputy Chair of Pūroro Āmua and the Chief Executive to finalise the submission consistent with any amendments made by the Committee.	Complete
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.1 Approval of Submission to the Select Committee Inquiry on the Exposure Draft of the Natural and Built Environments Bill	4. Appoint Mayor Foster, Councillor Pannett and Councillor Paul to speak to the submission at the Environment Select Committee.	In progress
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.1 Approval of Submission to the Select Committee Inquiry on the Exposure Draft of the Natural and Built Environments Bill	5. Include the following changes to the submission: a) Agree to support the inclusion of a precautionary approach and the definition with the addition of preventing irreversible harm to human beings as a result of threats or harm to the natural environment. c) Agree to emphasise the ecological emergency and therefore the urgent need to protect the natural environment. e) Agree to emphasise that environmental limits should be tightly defined and enforced through regulatory mechanisms.	Complete

Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	1. Receive the information.	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	2. Agree to the amended new Traffic and Parking Bylaw 2021 as per Attachment Three.	Complete
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	3. Agree to recommend to Council that the new Traffic and Parking Bylaw 2021 is adopted and the current Part 5: Traffic of the Wellington Consolidated Bylaw 2008 is revoked.	In progress
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	4. Agree to review, and if required, amend the definitions pertaining to active transport and micro-mobility, and if necessary, clause 13 Shared paths and cycle paths, when the Government has finalised and adopted the new Accessible Streets Regulatory Package.	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	5. Note the changes to align the Traffic and Parking Bylaw 2021 with the Parking Policy 2020 will result in new or amendments to existing traffic resolutions and changes to the eligibility criteria, the fees and use of certain types of existing parking permits.	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	6. Note signage is required to enforce the restriction on heavy motor vehicles parked on the street for longer than 7 days in specific problem roads or parts of roads. An operational decision is needed to use this provision or the proposed clause 24.1(b) to introduce a parking restriction or prohibition for a different type of vehicle class to a specific parking area.	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	7. Note, if required, the Council can provide supplementary guidance on when and how to apply for prior written permission to drive, ride or park a motor vehicle on a beach, such as for events.	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	8. Note, the Council will actively engage with all types of users, the local community, land and property owners and others with an interest in the South Coast/Red Rocks unformed legal road before proposing a traffic resolution to control motor vehicle access on that road.	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	9. Note the provision of parking in the central city should include a consideration of suitable spaces for cargo bicycles as well as more motorcycle parking.	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	10. Note a traffic resolution and new technology is required to allow motorcycles to park in standard size parking spaces.	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	11. Note the staged approach recommended for gathering evidence and data on any engine braking disturbance on Ohiro Road and Brooklyn Road, followed by liaison with the truck drivers and industry, with regulatory and Police intervention as a last resort.	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	12. Note the feasible approaches to managing pedestrian and vehicle access and parking on narrow streets where parking on the footpath has been commonplace; the planned communications and education campaign to increase awareness that parking on footpaths is an offence; and the roll-out of engineering and other changes to support this will prioritise those streets with access issues for emergency vehicles and high risk to pedestrians. The implementation will be over time based on resource availability.	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	13. Request officers report back to the Infrastructure Committee, within six months, on the implementation of changes in the Traffic Bylaw, including but not limited to introduction of new signage to prevent parking beyond seven days, improving design of shared use zones for pedestrian safety, enforcement of parking on footpaths and berms, and the potential need for more broken yellow lines on narrow streets, near bus stops and within six metres of intersections.	In progress

Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	14. Delegate to the Chief Executive and the Chair of Planning and Environment Committee the authority to amend the Bylaw to include any amendments agreed by the Committee and any minor consequential edits.	Complete
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.2 Traffic and Parking Bylaw Review	15. Request officers add to the work programme to request engine braking noise monitoring by Waka Kotahi NZ Transport Agency on Brooklyn Hill Rd and Ohiro Road due to the high number and frequency of trucks that travel to and from the three landfills. Officers to commence engagement with waste operators to explore voluntary measures to reduce engine braking noise disturbance.	In progress
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.3 Forward Programme	1. Receive the information.	No action required
Wednesday, 4 August 2021	Pūroro Āmua | Planning and Environment	2.4 Action Tracking	1. Receive the information.	No action required

FORWARD PROGRAMME

Purpose

1. This report provides the Forward Programme for the Pūroro Āmua | Planning and Environment Committee for the next two meetings.

Summary

2. The Forward Programme sets out the reports planned for Pūroro Āmua | Planning and Environment Committee in the next two meetings that require committee consideration.
3. The Forward Programme is a working document and is subject to change on a regular basis.

Recommendation/s

That the Pūroro Āmua | Planning and Environment Committee:

1. Receive the information.

Discussion

4. Thursday 23 September 2021:
   - Cycleways Programme Update (Chief Planning Officer)
   - Te Ngākau Civic Precinct Framework (Chief Infrastructure Officer)
   - Cobham Drive Speed Limit Hearing (Chief Strategy and Governance Officer)
5. Wednesday 20 October 2021:
   - Draft District Plan Approval for Consultation (Chief Planning Officer)

Attachments

Nil

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Authoriser	Liam Hodgetts, Chief Planning Officer

SUPPORTING INFORMATION

Engagement and Consultation

N/A

Treaty of Waitangi considerations

N/A

Financial implications

N/A

Policy and legislative implications

Timeframes and deliverables are reliant on organisational resourcing and priorities.

Risks / legal

N/A

Climate Change impact and considerations

N/A

Communications Plan

N/A

Health and Safety Impact considered

N/A