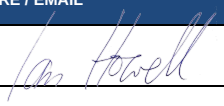
Business Case

Karanga-a-Hape Neighbourhood Network Improvements Single Stage Business Case

16 November 2022 - Version 2.2

Change History and Approval

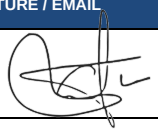
As **Representative of the Senior Management Team**, I confirm this Business Case addresses the problem or opportunity identified. An assessment of the benefits has been carried out and they are realistic and achievable.

ROLE:	NAME:	SIGNATURE / EMAIL	DATE
For SMT	Ian Howell		25-11-2022

As **Senior Supplier**, I endorse this Business Case. I agree the proposal is aligned with existing policy, the resource implications are noted and the estimates on cost and time are realistic and achievable.

ROLE:	NAME:	SIGNATURE / EMAIL	DATE
Senior Supplier	Suresh Patel		24/11/2022

As **Project Sponsor**, I approve this Business Case. I confirm it is a fair and realistic representation of the opportunity, requirements and benefits. It accurately identifies resources, known risks and impacts that need to be taken into account in order to move to Project Execution phase.

ROLE:	NAME:	SIGNATURE / EMAIL	DATE
Project Sponsor	Christian Messelyn		24/11/2022

Revision Status

REVISION NUMBER:	IMPLEMENTATION DATE:	SUMMARY OF REVISION
V0.1	June 2022	Single stage business case
V0.2	September 2022	Post preliminary peer review – some abbreviation, TERP added, some refinement of numbers
V0.3	October 2022	Post AT internal review/WK review – reduction in volume, use of appendices
V2.0	November 2022	Revised post peer review and AT internal review

Contents

Executive Summary

The Karangahape neighbourhood is a major business and hospitality destination in the Auckland city centre. It has a unique history rich in culture, heritage, art and fashion. As an attractive destination Karangahape is also a pedestrian haven, a focal point for many frequent bus routes and the junction for major cycleways. The addition of the new City Rail Link (CRL) Karanga-a-Hape Station will bring significant benefits to the area. It will create a completely new way for thousands of people to reach the Karangahape neighbourhood. One that provides a fast, frequent, efficient and affordable alternative to car travel from many parts of the city.

This business case recommends a series of local improvements in the vicinity of the new Karanga-a-Hape Station to complement and extend the works. There is an opportunity to further improve conditions for pedestrians, cyclists, public transport passengers and the community in the wider neighbourhood, beyond the limited extent of the CRL contracted works. The local improvements proposed include closing the northern part of Mercury Lane, introducing more pedestrian, cycle and public transport priority and enhancing the public realm. These changes will have a marked effect on crashes. They will provide more space for pedestrians, in particular the significant growth expected from new CRL passengers, to move about safely and transfer between modes. The improvements will also connect important cycleways and improve bus operations for the Western Express bus services. In addition, the area will be safer with better amenity for the community and create greater potential for desirable development and strengthening of the local identity.

Background

Karanga-a-Hape Station is being constructed in the southern part of the Auckland city centre between Maungawhau (Mt Eden), and Te Waihorotiu (Aotea) stations, as part of the 3.45km CRL. The underground station will be 33m deep with two entrances, one on Mercury Lane and the other on Beresford Square, see image below. This station is anticipated to open as part of CRL in 2024/25.

The location of Karanga-a-Hape Station and entrances (Source: CRLL)

The CRL will greatly improve travel times on rail routes serving the city centre from both the west and south. Karanga-a-Hape Station will bring significant benefits to the adjoining neighbourhood. It will create a completely new way for thousands of people to reach the Karangahape neighbourhood - one that provides a fast, frequent, efficient and affordable alternative to car travel from many parts of the city. Local improvements can provide the 'last kilometre' connections complementing this strategic change.

The opportunity

The CRL works provide an opportunity for significant redevelopment, including land around the station that has been used for staging the construction of the station and tunnels. This is already shown by the many new developments underway along Albert Street between Britomart Station and Wyndham Street, where the CRL roading and urban realm works are completed. Redevelopment opportunities may include new residential developments, particularly the over-site development and surrounding potential changes on Mercury Lane and on Beresford Square. This would see an increase in the residential population of the Karanga-a-Hape Station neighbourhood. Significant investment in private development and greater economic and social activity should also be anticipated around Karanga-a-Hape Station as the surrounding land uses and community respond to the opening of this significant transport hub.

The station is expected to become a popular start and end point for journeys on the rail network as well as a major interchange to the bus and cycle networks. Within 10 years approximately 20,000 boardings and alightings are forecast per day at Karanga-a-Hape Station (Auckland Forecasting Centre forecast for 2031).

To accommodate such change the station must become a well-integrated part of the neighbourhood. It must enable customers to easily move between this portal to the expansive train network, and the

surrounding businesses, join the cycle network, and on to buses to connect with places the train cannot take them. This business case proposes a series of local improvements to the Karangahape neighbourhood to support this goal.

Three problem statements were adopted in response to the need to address these challenges. They are listed here followed by a more detailed discussion of the transport issues:

- Problem One. High concentrations of people, inefficient[1] allocation of street space and poor road design and geometry will result in increased harm for vulnerable transport users in the Karanga-a-Hape Station neighbourhood.
- Problem Two. Existing and future transport system deficiencies and inadequate connections within and to the Karanga-a-Hape Station neighbourhood reduce the potential for desirable mode shift.
- Problem Three. Poor quality spaces (amenity) and a perceived lack of personal safety will limit the social and economic potential of the Karanga-a-Hape Station neighbourhood.

A high volume of people will enter and exit the two station entrances putting pressure on existing and reinstated footpaths and links to the main business areas. The CRL extent of works was restricted to the immediate station vicinity which greatly limited that project's ability to respond to this issue. Pedestrian thoroughfares need to be able to accommodate high footfall and be safe and inviting to encourage use. Both the two new station entrances are located on relatively high-volume roads (over 3,000 vehicles per day) with narrow footpaths that will need to cater for over 9,000 pedestrians per day. There are no crossing points immediately outside the Mercury Lane entrance, and at the Beresford Square entrance, a busy footpath is shared with cyclists and other active modes. Neither situation is ideal or safe for people on foot. The recommendations of this project are to close the northern part of Mercury Lane to traffic in the first instance and provide separated active mode lanes on Pitt Street in the second. These arrangements make the area significantly safer for all users.

It was identified through the CRL design review process for the station that the major Karangahape Road-Pitt Street-Mercury Lane intersection between the two station entrances will struggle to accommodate the increased volume of pedestrians crossing during busy times. The proposed closure of the northern segment of Mercury Lane will decrease the number of turning movements through the intersection. Further, the separation of the cycle lanes connecting from the existing ones on Karangahape Road through to Pitt Street could result in changes to the cycle time for traffic signals enabling more space for pedestrians to wait safely.

Removing the need for some turning movements also allows for some road lanes on Pitt Street to be removed or re-allocated for other use. For this project the removal of a single traffic lane on Pitt Street enables the installation of separated and dedicated cycle lanes. These cycle lanes will provide an essential connection between existing cycle facilities on adjacent roads.

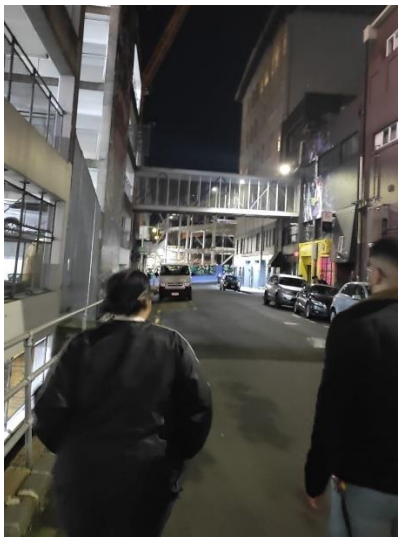
[1] ie with space not allocated according to need and priority

Google street view image of Entrance to Mercury Lane from the intersection of Pitt Street and Karangahape Road

A new public space created through the proposed closure of Mercury Lane will stimulate further improvements to the area. Stakeholders are excited by the prospect to draw more people into the area and the opportunity to extend the character of the precinct beyond the main Karangahape Road. Wayfinding is likely to be easier and more instinctive with more attractive routes linking to the main destinations.

By the time CRL opens there will have been over four years of temporary road management on Pitt Street – which has reduced five lanes of traffic down to a single lane in each direction. While the impact on traffic was notable at the outset, drivers have since adapted by either taking other routes or avoiding driving through the area altogether. The impact of Covid-19, the decrease in demand from people driving into the city centre and the gradual shift to other modes, has meant the two lanes of traffic operate without negative impact on the wider network. The opportunity exists to further re-prioritise use of the original road space. Bus lanes in each direction can easily be added while retaining a single lane for general traffic in each direction. These bus lanes provide a vital missing link on a Rapid Transit corridor and will connect existing bus priority on adjoining streets. Once CRL streetscape works are complete this street returns to being the prime route into the city centre for bus services from West Auckland. A new Western Express rapid bus service from West Auckland will also be added to the corridor prior to CRL opening, broadening the Rapid Transit Network and creating strong connections with the train network.

People are less likely to venture into places where they feel their personal security might be at risk. The area outside the Mercury Lane station entrance is commonly seen as a less desirable part of the Karangahape precinct. There is little activation of the surrounding streets with few businesses or residences facing onto the streets for passive surveillance. Cross Street, lower Mercury Lane and Canada Street are bordered by carparks, parking buildings, rear access into buildings facing on to main roads, and the Auckland Motorway. Poor lighting creates a sense of isolation and unease at night. Through community involvement in the design stage the project aims to make the approach to this station entrance more attractive and provide a catalyst for further investment and development to activate the neighbourhood.



Looking west along Cross Street at night

The preferred option

A standard process was followed to develop the preferred option. This started with identifying and agreeing problems (as above) at a workshop with a large number of AT and related stakeholders; working through options with a similar group; identifying a short list through multi-criteria analysis; and then testing the short-listed options using economic evaluation and an Appraisal Summary Table (AST).

At the same time many engagements were undertaken with the local community, including potentially affected businesses. Costs were assessed independently and checked by the project team.

Successful delivery of the project requires completion prior to CRL opening and adopting a 'dig-once' approach to coordinated construction with CRL. Coordination of the work with Link Alliance (LKA) – the CRL contractors has therefore been a key consideration.

A shortlist of two options was developed:

- the Emerging Preferred Option (EPO) and,
- the Minimum Viable Product (MVP).

Both options could be delivered in the timeframes required, coordinated with CRL construction. In the unexpected event that the expected finance does not fully eventuate, the proposal is that the MVP option could be delivered for the Regional Land Transport Plan (RLTP) budget, discussed below.

Each option includes tactical elements for the side streets, in recognition of the fact that the wider area will likely be subject to (potentially significant) private development following the construction of Karanga-a-Hape Station. This means permanent construction of urban realm improvements could well prove to be abortive if delivered now and would be better designed and constructed following, or as part of and in response to private developments.

Discussions with multiple parties revealed the enthusiasm for the preferred option (the EPO) and the likelihood of additional funding beyond a provisional allocation in the RLTP.

The preferred package of works – estimated to cost $14.6m – can be accommodated within budget amounts of: $6M AT ($7.3M allocated in the RLTP, less $1.3M incurred to date), AT Cycling Contribution: $5M, Council City Centre Targeted Rate: $4.5M, totalling $15.5m. Funding from these other streams is being pursued in parallel and assurance has been given by the parties that their commitment will be dependent on the endorsement of the SSBC. In the unexpected event that the sums do not fully eventuate, the MVP option could be delivered for the RLTP budget.

The preferred solution has been widely endorsed by both internal and external stakeholders, with a very clear preference over the MVP option. Engagement with the community will continue, particularly relating to the intended closure of Mercury Lane to general traffic. In these further stages some refinement may occur, but there is strong support for the overall direction of the proposals.

The chosen solution has an overall ranking of 4 within the Waka Kotahi prioritisation approach, as it has a Government Policy Statement (GPS) alignment ranking of High, a Scheduling ranking of High and an efficiency rating of Medium (mid-point BCR 3.1).

Given the uncertainty around rail patronage sensitivity testing was used that confirmed the preferred option was economically efficient even with substantially fewer passengers at the opening of the CRL.

Preliminary design render for Pitt Street at the intersection of Karangahape Road

Preliminary design render for Mercury Lane looking towards the future station building

Strategic alignment

The business case is strongly aligned strategically. Design of the transport network is guided by Auckland Transport's Future Connect priorities, the Auckland Network Operating Plan (ANOP) and the principles of Access for Everyone (A4E). For the city centre walking, cycling and public transport are the priorities along with loading and servicing for the many businesses. Other traffic is channelled to recommended corridors and filtered away from the major places where there is high people-activity.

Justification for the reallocation of road space for sustainable modes is strengthened by Auckland's goals to reduce the region's transport emissions 64 per cent by 2030, in line with Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan. The Transport Emission Reduction Pathway (TERP) explains how Auckland will get there. It aims to encourage those who can, to use public transport, walk, use micro mobility options or even not travel, and for transport agencies to provide opportunities and infrastructure to enable people to change how they get around.

To achieve these benefits, however, requires more investment and change in the local network than is currently committed. This project provides the opportunity to address the problems that have been identified through reviews of the CRL designs and assessment of the effect of the station on the wider neighbourhood. All of the proposed changes are aligned with the main strategies, policies, plans and guidelines for transport and land-use in Auckland and in this precinct.

Glossary

Abbreviation Name	Term (in full)
A4E	Access for Everyone
ACCAB	Auckland City Centre Advisory Board
AFC	Auckland Forecasting Centre
ANOP	Auckland Network Operating Plan
AST	Appraisal Summary Table
AT	Auckland Transport
ATAP	Auckland Transport Alignment Project
BCR	Benefit cost ratio
CCMP	City Centre Master Plan
CCRG	City Centre Residents' Group
CCTR	City Centre Targeted Rate
CERF	Climate Emergency Response Fund
CLG	Community Liaison Group
CRL	City Rail Link
CRLL	City Rail Link Limited
DPO	Development Programme Office
DRP	Design Review Panel
DSIs	Deaths and serious injuries
ECI	Early Contractor Involvement
EoW	Extent of Works
EPO	Emerging Preferred Option
GPS	Government Policy Statement on Land Transport
ILM	Investment logic map
KBA	Karangahape Business Association

KPI	Key performance indicator
LKA	Link Alliance
LOS	Level of service
MCA	Multi-criteria analysis
MHCV	Medium to heavy commercial vehicle
MPT	Macro Passenger Transport
MVP	Minimum Viable Product
NLTF	National Land Transport Fund
NLTP	National Land Transport Programme
NPV	Net present value
ONRC	One Network Road Classification
PBC	Programme business case
PHR	Project Highlight Report
PIP	Project Implementation Plan
PoE	Point of Entry
PT	Public Transport
PWG	Project Working Group
RASF	Roads and Streets Framework
RLTP	Regional Land Transport Plan
RSA	Road safety audit
RTN	Rapid transit network
SiD	Safety in Design
SME	Subject Matter Expert
SSBC	Single-stage business case
TCC	Traffic Control Committee
TDM	Transport Design Manual (Auckland Transport)

Waka Kotahi	Waka Kotahi NZ Transport Agency

1 Background

This section introduces the Karanga-a-Hape neighbourhood network improvements project. It covers how this project came to be, the transport landscape of the neighbourhood and how this project relates to local and national strategic plans.

1.1 Background (problem/opportunity)

Karanga-a-Hape Station is being constructed in the southern part of the Auckland city centre between Maungawhau (Mt Eden), and Te Waihorotiu (Aotea) stations, as part of the 3.45km City Rail Link (CRL). The underground station will be 33m deep with two entrances, one on Mercury Lane and the other Beresford Square. This station is anticipated to open as part of CRL in 2024/25. Figure 1 and Figure 2 show design images of what the two station entrances will look like.

Figure 1: Beresford Square station entrance

Figure 2: Mercury Lane station entrance

Karanga-a-Hape Station will increase access to and connectivity of the adjoining neighbourhood. It will improve travel times for rail customers to this part of the city centre from both the west and south. About 20,500 boardings and alightings are forecast per day (Auckland Forecasting Centre (AFC) forecast for 2031[2]). The station is anticipated to become a popular start and end point for journeys on the rail network as well as a major interchange to the bus and cycle networks. Figure 3 shows the location of the station entrances and the surrounding streets.

[2] It is noted that considerable uncertainty applies to this forecast. As the effects of COVID 19, rail disruption and so on pan out this figure may be reached later. Equally, wider transport policies for congestion charging, for example, may have a counter-effect. The economic analysis for this business case therefore applies sensitivity tests with a wide variation in the patronage.

Figure 3: The location of the station and entrances

In addition to the improved transport connection to the Karanga-a-Hape Station neighbourhood, the CRL works provide an opportunity for significant redevelopment, including on land around the station that has been used for staging the construction of the station and tunnels. Redevelopment opportunities may include new residential developments, particularly the over-site development and surrounding potential changes on Mercury Lane and on Beresford Square, which would see an increase in the residential population of the neighbourhood. Significant investment in private development and greater economic and social activity should be anticipated as the surrounding land uses and community respond to the opening of this major transport hub.

To achieve these benefits, however, requires more investment and change in the local network than is currently committed.

1.1.1 Project context

Karanga-a-Hape Station is at the heart of a mixture of medium density commercial uses and entertainment activities, as well as recent apartment buildings. Karangahape Road, between the two station entrances, is internationally known[3] with a colourful day and night cultural and entertainment zone, accommodating restaurants, bars, clubs and art galleries as well as a range of creative businesses. The station is located near Myers Park, Symonds Street Cemetery and Western Park. Figure 4 shows the vibrant outdoor dining on Karangahape Road next to the recently constructed separated cycle lane.

[3] https://www.stuff.co.nz/travel/destinations/nz/auckland/129711017/aucklands-karangahape-road-named-one-of-the-worlds-coolest-streets

Figure 4: Karangahape Road cycleway

Link Alliance (LKA) is the consortium constructing Karanga-a-Hape Station. As part of the above ground works, they are contracted to reinstate and enhance the roads around the station entrances.

However, the extent of LKA construction is limited to the immediate area outside the station entrances. The constrained nature of this scope will not provide the improvements needed to create a good quality of customer experience for people moving to and from the station. Further investment beyond the LKA boundary is required to upgrade the local streets to support the new station and help deliver the full potential of the CRL. Figure 5 below shows the LKA extents and the extents for this business case.

There is a timing imperative to have agreed on the necessary works before LKA has to implement its design. If an alternative is not agreed by the end of 2022, then it is highly unlikely that an alternative could be constructed given the understandable resistance of the community to further disruption and the substantial impact on the reputation of the various partner organisations.

Accordingly, the Karanga-a-Hape Station neighbourhood network improvements project was initiated by Auckland Transport (AT) to respond urgently to this opportunity. The scope of the project focuses on the roads around the two station entrances at Beresford Square and Mercury Lane (but excluding Karangahape Road itself except at the intersection with Pitt Street and Mercury Lane). Outcomes of the project are to deliver transport network improvements around Karanga-a-Hape Station for Day One operations that improve safety, connectivity, and amenity through reduction and management of traffic.

The project aims to provide better support for the opening of the Karanga-a-Hape Station by redeveloping the local streets to provide a safer, more integrated transport network and improved customer experience that prioritises people walking, cycling and using public transport (PT). These priorities are in-line with policies established by Auckland Council (Council) and AT in the City Centre

Master Plan (CCMP)[4] and Access for Everyone (A4E)[5] as well as Government plans. It aligns with the Transport Emissions Reduction Pathway (TERP) with its emphasis on changing how Aucklanders travel.

Ongoing construction, adjacent roading changes and Covid 19 have contributed to a significant reduction in traffic volumes through the area and changed traffic behaviour. The project proposes to capitalise on this by making better use of available road space to provide bus priority, safe cycle facilities and better pedestrian amenity.

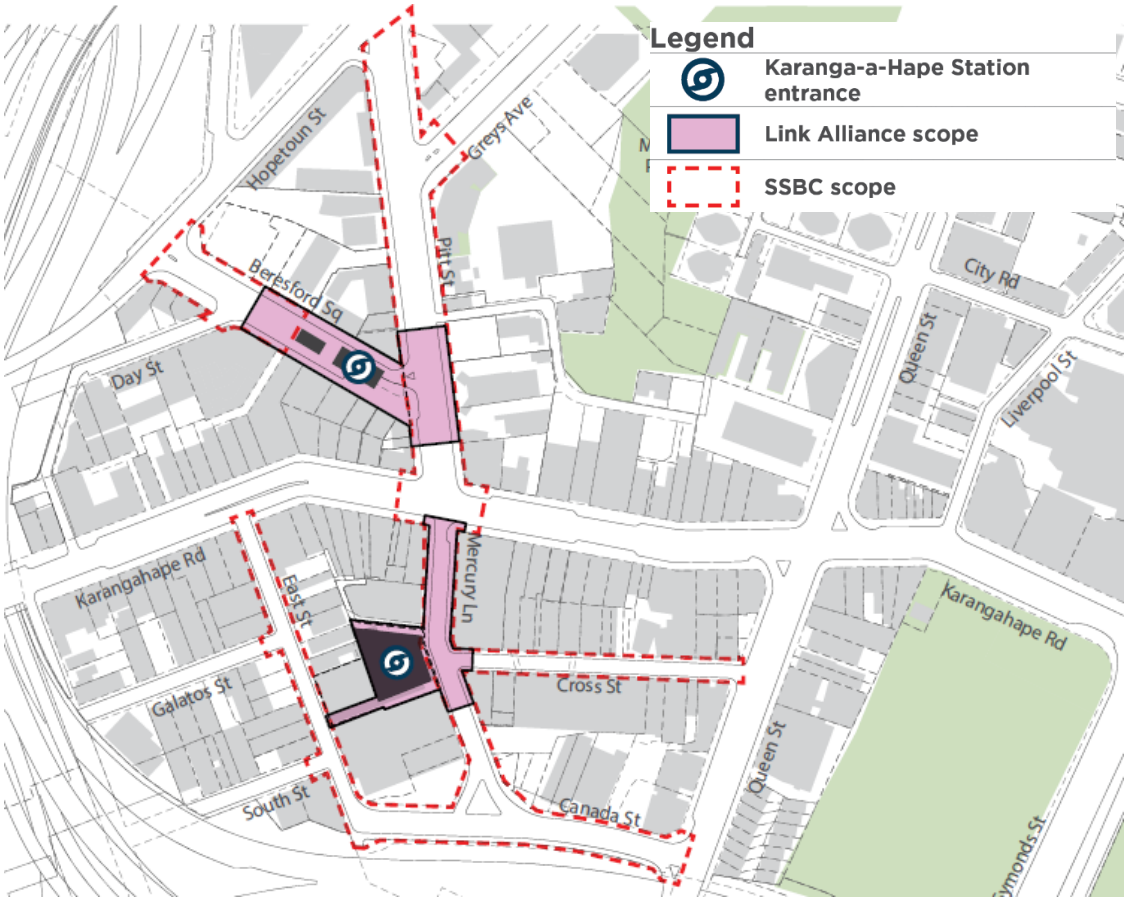


Figure 5: The extent of the CRL Karanga-a-Hape Station neighbourhood network project scope

Transport area concept plans were developed for the new CRL stations. Investigation of options to meet transport users' needs within a 250m radius of each station identified potential provisions for infrastructure and opportunities to address gaps and risks. This resulted in the development of the Key Moves Report[6], strategically aligned with CCMP and other policies and strategies.

The proposals and their justification are now being re-visited through this business case.

[4] City Centre Master Plan (CCMP) Auckland Council 2020 (aucklandccmp.co.nz)
[5] Access for Everyone (A4E) section of CCMP, Auckland Council 2020
[6] CRL Karangahape Precinct Feasibility Study, Final Report, MRCagney for AT, December 2021

AT has many interests in the neighbourhood, in particular to facilitate bus movements at the city centre end of the Northwest Busway, to implement the Parking Strategy and to pursue active mode upgrades, within the A4E context. Other local government agencies, notably Eke Panuku, are investigating development opportunities in the area. These differing interests are taken into account in the business case.

1.2 Point of entry

The Point of Entry (PoE) for the business case was approved under delegation by Waka Kotahi NZ Transport Agency (Waka Kotahi). In the PoE it was established that the requirement was for an SSBC – suitably right-sized and focused on what is important for a relatively contained, lower cost project.

The development of the SSBC was identified as urgent given the timing pressure to have committed to the works before LKA implements its design. It was agreed in the PoE that the SSBC must demonstrate that there are problems that can be expected to arise with the LKA design that justify additional investment.

Taking account of the work previously carried out, the scope of the SSBC was agreed as:

- Define the anticipated problems – cause and effect
- Provide the evidence for the expected problems and their timing
- Define the expected benefits from addressing the problems
- Ensure that a suitable set of Key Performance Indicators (KPIs) is adopted,
- Document earlier related work that demonstrates that strategic alternatives and options have been explored
- Review and revisit the work in the feasibility study to test if the tactical options identified are the most effective against the problems and the best way to deliver the benefits, through use of a multi-criteria analysis (MCA) drawing on the KPIs
- Ensure the design and costings are adequate to allow a confident move to the next phase
- Test the emerging preferred option and modify as necessary through tools such as a safety audit, a Safe System Assessment (SSA) and an independent peer review
- Fully scope the emerging preferred option to check that it is sufficiently specified and can be delivered (that there is finance available, that it can be procured in the timeframe, including necessary consents, that satisfactory management and governance will be in place (noting the involvement of CRLL/LKA) through developing the Financial, Commercial and Management cases in conjunction with partner organisations.

Subsequently, AT's Investment Committee resolved that[7]:

- The SSBC needs to provide an option that can be delivered within the constraints of the current available RLTP budget ($7.3M, including for the business case and design) while ensuring at least delivery of the original scope, outcomes and benefits.

[7] Minutes from the Investment Committee meeting, 2.2 20220711 CRL Road-side (Project K)

- Options with additional scope and cost can be explored however would only be considered if additional sources of funding are identified. Any increase in scope and cost needs to show a clear linkage to the additional benefits it would provide.

- The scope of all options needs to include the elements required to achieve the expected outcomes and benefits of the project. These include technology, safety, wayfinding, streetscaping and lighting with a clear focus on customer experience benefits.

These requirements are primarily addressed in Sections 6, 7, and 8 of the business case.

1.3 Investment logic mapping

An investment logic mapping workshop was held on 30 May 2022 with a wide representation across AT, Council, Eke Panuku, Waka Kotahi and LKA.

Following initial drafting, receipt of feedback and editing the Investment Logic Map (ILM) was confirmed. It is included as Appendix A, along with the meeting notes and attendees.

The problems and their weightings as adopted were:

- Problem One. High concentrations of people, inefficient[8] allocation of street space and poor road design and geometry will result in increased harm for vulnerable transport users in the Karanga-a-Hape Station neighbourhood. (35%)

- Problem Two. Existing and future transport system deficiencies and inadequate connections within and to the Karanga-a-Hape Station neighbourhood reduce the potential for desirable mode shift. (35%)

- Problem Three. Poor quality spaces (amenity) and a perceived lack of personal safety will limit the social and economic potential of the Karanga-a-Hape Station neighbourhood. (30%)

The adopted benefits/opportunities were:

- Benefit One. Reduced harm to vulnerable transport users. (35%)

- Benefit Two. Better use of existing and future public transport and active mode infrastructure and investments in the city centre. (30%)

- Benefit Three. Helping the community to thrive through improving the desirability of the Karanga-a-Hape neighbourhood as a place for economic, cultural and social activities. (20%)

- Benefit Four. Increased sense-of-place in the Karanga-a-Hape neighbourhood through expressing the unique character and identity of the area in the streetscape. (15%).

1.4 Activity context (transport)

This section describes the transport options in the Karanga-a-Hape neighbourhood that currently exist and the strategic networks for the various transport modes.

[8] ie. with space not allocated according to need and priority

1.4.1 Vehicle circulation

The vehicle circulation through the neighbourhood reflects the transport legacy of the area as both a route to the motorway network and a major east-west connection. This historic focus on vehicle movements has led to a network with few restrictions to vehicle movements, wide roads and additional lanes to facilitate all turning movements.

The CRL construction works and associated disruptions response at Beresford Square and around Mercury Lane in place since 2019, have impacted vehicle circulation and will continue to do so until the station opens. These changes include:

- Narrowing the southern end of Pitt Street to one lane in each direction
- Changing the one-way direction of Cross Street to be west to east
- Making East Street one-way northbound between Canada Street and Galatos Street to incorporate a separated bi-directional cycle lane.

The Karangahape Enhancements project completed in 2020 resulted in the reduction of traffic lanes and parking on Karangahape Road to cater for cycling and bus priority. The combination of that work, Covid-19 and the CRL construction has reduced the traffic in the neighbourhood. It could be expected that traffic levels could return to higher levels although the adopted AT policies (and external factors such as increased working from home and a possible lower rate of population growth) and this project should limit this effect.

1.4.2 Bus routes

The major bus routes passing through the study area use Karangahape Road and Pitt Street – which is classified as an arterial road in the One Network Road Classification (ONRC) system. Future Connect categorises Pitt Street as part of the Rapid Transit Network, being important for the Northwest Busway, in particular, and as a Connector route on the cycle network. Figure 6 shows the bus routes that will pass through the Karanga-a-Hape Station neighbourhood once CRL is compete.

Once CRL construction is complete, Albert Street will return to being a major north-south corridor for buses in the city centre carrying services to and from western Auckland via Karangahape Road, Pitt Street and Vincent Street. Part of Pitt Street will continue to be used by the City Link bus.

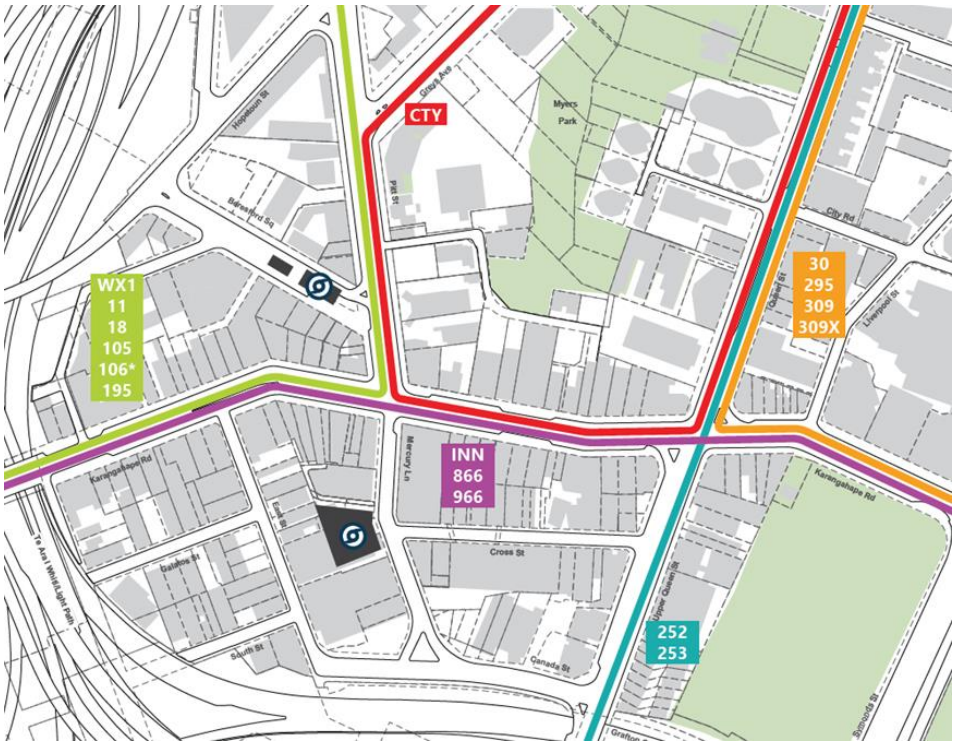


Figure 6: Bus routes using Pitt Street and Karangahape Road post CRL opening

1.4.3 Cycling

Important cycle routes, including the 'Light Path' Te Ara I Whiti adjoin or pass through the area. Pitt Street is identified in Future Connect (see Figure 7 below) as a connector cycle route between Karangahape Road and Vincent Street. It provides a less steep connection between the Karangahape ridgeline and downtown using Vincent Street and Federal Street, compared to the route via Queen Street. Greys Avenue – which connects to Pitt Street - has been identified in the AT Cycling and Micromobility Programme Business Case (PBC) as an important future cycling link.

Figure 7: Future Connect cycle network in the Karangahape Precinct

In May 2021, the Karangahape Enhancements project formally opened, providing uni-directional cycle lanes on both sides of Karangahape Road.

AT counts for the peak two-hour inbound morning period for cycling into the city centre show an average of 700 cyclists crossing the Upper Queen Street overbridge during the morning two-hour period in March 2021. The temporary cycle lane installed on East Street as part of the CRL disruptions response provides an alternative cycle connection.

Canada Street is identified in Future Connect for the regional cycle link along the southern side of the street. Figure 8 shows the location of Canada Street within the Karangahape Precinct.

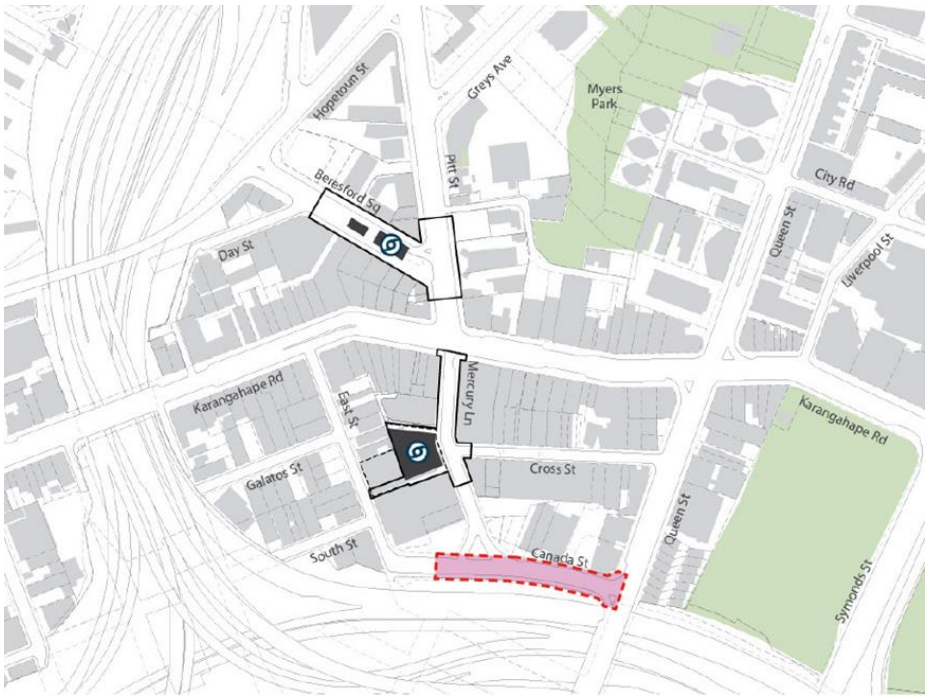


Figure 8: Location of Canada Street within the Karanga-a-Hape Neighbourhood

Further information on cycle movements is included under Problem Two (Section 2.3).

1.4.4 Walking

The numbers of pedestrians in the neighbourhood will change markedly with the opening of the station. From 2023 the Western Express bus service should also bring more customers to the area.

The central forecast is for approximately 20,500 passengers exiting and entering the station in a day, by 2031[9], noting the uncertainties discussed earlier.

The anticipated morning peak two-hour pedestrian exit flows to and from the Karanga-a-Hape Station are summarised below in Figure 9. The evening peak two-hour period volumes are expected to be lower but have the equivalent origins and destinations. Therefore, the morning peak is expected to see the highest pedestrian numbers on all of the surrounding streets.

[9] AFC's 2031 RLTP i11.6 landuse MPT model

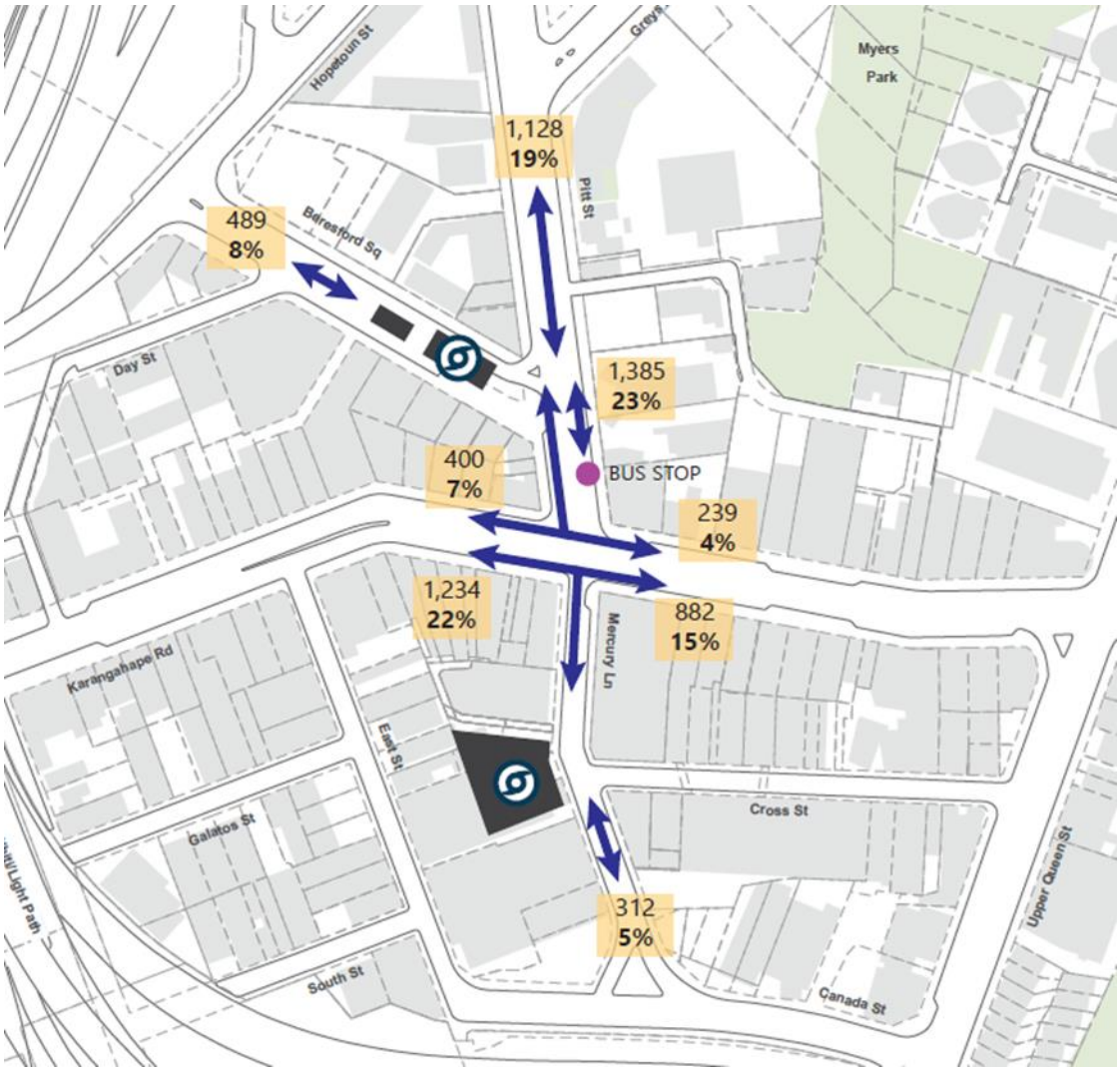


Figure 9: Two-hour AM peak passenger station boarding and alighting volumes with origin and destination directions (AFC Macro Passenger Transport (MPT) modelling 11 Jul 2022, and LKA Stage D Pedestrian Modelling)

Note that despite a bus stop being shown on the eastern side of Pitt Street in Figure 9, the LKA designs do not include a bus stop there. The bus stops passengers will be transferring to/from will be further north on Pitt Street or around the corner on Karangahape Road (east of Pitt Street).

Key features of the pedestrian exit movements from Karanga-a-Hape Station include:

- Bus transfers are expected to make up 23% of passengers using the station in the morning peak two-hour period. Most will need to cross Pitt Street.
- Almost half of passengers arrive from or head towards Karangahape Road with 29% to/from the west, and 19% to/from the east.

Passenger movements associated with the Karanga-a-Hape Station during the morning peak two-hour period are similar between alighting passengers (57%) and boarding passengers (43%).

Strategic Walking Network

AT has identified a Strategic Walking Network, shown in Figure 10 below. This walking network is sourced from Future Connect and was developed based on the main pedestrian attractors.

Figure 10: Strategic Walking Network

The network includes Pitt Street, Beresford Square, East Street, Mercury Lane and Canada Street as part of the primary strategic walking network.

1.5 Strategic overview

This section provides the strategic context for the project.

Over-arching plans and strategies of the Council and Government are critical scene-setters for understanding the context and priorities. They include plans relating to climate change and improving road safety, as well as the Government Policy Statement on land Transport (GPS 2021).

Several strategies are specifically highlighted below but the project aligns extremely well with many other important strategies. These strategies, their relevant objectives and connections to this business case are listed in Appendix B.

1.5.1 Road to Zero

Road to Zero is New Zealand's Road Safety Strategy 2020-2030. It articulates the vision and guiding principles for how to design New Zealand's Road network and how to make road safety decisions, as well as providing targets and outcomes for 2030. It sets out the five areas to focus on over the next decade. Focus area one - Improve road safety in cities and regions through infrastructure improvements and speed management – is especially important for this business case.

1.5.2 Future Connect

Future Connect is the AT planning tool that sets out a vision for Auckland's strategic transport network for the next 10 years. Future Connect combines land use and transport elements to provide a comprehensive tool to understand the strategic transport network of Auckland. It helps guide understanding of the transport network to better align investment with the objectives of the RLTP.

Future Connect outlines the current and first decade corridors for:

- Cycle and micromobility
- Public transport
- Freight
- General traffic
- Walking.

Future Connect is a major determinant of the priorities for this business case.

1.5.3 Network Operating Plan

The Network Operating Plan (NOP) shows how the strategic goals for the transport network can be managed and operated for different modes, by day of the week and time of day. To meet the long-term challenge of population growth and road user demands, a shift towards more sustainable and efficient transport modes is deemed necessary.

The NOP takes into consideration the relative people-movement efficiency of each mode at each location. In a similar way, it also considers the movement of goods and services themselves.

The problems and benefits sought for the Karanga-a-Hape neighbourhood support the following principles for the Auckland's transport network as outlined in the NOP:

- Promote walking in high pedestrian areas
- Promote cycle links to activity centres and on designated routes
- Promote high priority on key bus routes
- Promote safe outcomes
- Promote 'places' and activity centres.

1.5.4 Roads and Streets Framework

The Roads and Streets Framework (RASF) provides a systematic and consistent methodology for identifying the different functions of roads and streets in Auckland. This approach reflects the needs and catchment of the adjoining land use as well as the movement of people, goods and services.

Within the Karanga-a-Hape neighbourhood network roads such as Karangahape Road, Pitt Street, Beresford Square, Canada Street and Mercury Lane are rated as P3/M3 which gives them each a high rating for place (P) and for movement (M), while others, including Cross Street, East Street and Galatos Street are P3/M2. These ratings demonstrate the challenge in the area where both place and movement are important.

1.5.5 City Centre Masterplan 2020

The CCMP 2020 outlines eight transformational moves which would be supported by possible changes to the public realm around the Karanga-a-Hape Station. They include:

- Māori outcomes: For an area steeped in Māori history, mana whenua will be engaged to celebrate this.
- Transformational move 5 – Transit oriented development: Visible connections between destinations and public transport facilities and the cycle network on and around Karangahape Road will support transit-oriented development.
- Transformational move 6 – The Green Link: Improving connections to green space for those living, working and moving through the neighbourhood could allow greater harmony of the natural and built environment, and provide open space for residents in the densifying city centre.
- Transformational move 7 – City to villages: The city centre of Auckland is surrounded by the central motorway junction, which has reduced the connectivity between the city centre and the surrounding suburbs. More attractive connections from Ponsonby, Grafton and Newton to the new Karanga-a-Hape Station will support walking and cycling to and from the station.

1.5.6 Access for Everyone

A4E is the coordinated response to transforming how Auckland's city centre operates as set out in the CCMP. It coordinates how transport in the city centre could be managed to create a more liveable city centre which is safer to walk and cycle in, has greater public space and is more accessible for everyone.

Key concepts of A4E which are intrinsic to this business case include:

- Limiting motorised through-traffic
- Prioritising access to city centre destinations
- Creating new spaces
- Improving access for servicing, freight and delivery
- Favouring public transport, walking and cycling.

A4E proposes to organise the central city into low traffic zones (shown in Figure 11) with limited through traffic as shown in Appendix B. The Karangahape area is one of these zones. Under A4E,

access to the zone is provided for all transport modes, but access from the Karangahape zone into other city centre zones would be limited to walking, cycling, public transport, and commercial vehicles (at certain times of the day).

While work continues on the implementation plan for A4E, this business case follows its principles, working closely with the A4E team.

Figure 11: A4E City Centre zones (Source: City Centre Masterplan 2020)

The A4E PBC investigated a set of preliminary interventions in the Karangahape Road and Pitt Street zone to improve public transport journeys, the public realm, safety, and support urban regeneration. These interventions would include the following:

- Pedestrian priority and low traffic areas around the Karanga-a-Hape Station entries
- Separated cycle lanes on Pitt Street and Greys Avenue
- A restricted access section on Karangahape Road between Pitt Street and Queen Street, which would allow access for transit and service and delivery vehicles only. Kerbside space on Karangahape Road and on Canada Street would be prioritised for service and delivery vehicles.

These interventions are seen as early opportunities in the A4E PBC to support the opening of the Karanga-a-Hape Station which is also the focus of this business case. The A4E PBC also acknowledges the increased importance of high-quality pedestrian environments and circulation planning that facilitate safe, efficient movement to and from the stations. These interventions are expected to have a minor positive impact towards climate change mitigation (through mode shift and reduction in traffic and VKT).

These interventions from A4E are well-aligned to the problems identified in this business case and help to identify possible options in Section 6.

1.5.7 Karangahape Road Plan 2014-2044

In November 2014, the Waitematā Local Board adopted The Karangahape Road Plan 2014-2044. In this document, six key moves are identified with which this business case is aligned:

1. Showcase the Karangahape Road area as the creative, edgy fringe of the city centre.
2. Protect, enhance and celebrate Karangahape Road's historic and cultural heritage, biodiversity and vibrancy.
3. Provide safe and convenient connections in and through the Karangahape Road area.
4. Improve and develop an integrated network of civic and public open spaces in the Karangahape Road area.
5. Create a safe and enjoyable environment to live, work and play in Karangahape Road.
6. Promote the City Rail Link station at Karangahape Road as the catalyst for new investment and growth in the area.

1.5.8 Transport Emissions Reduction Pathway (TERP)

TERP outlines a pathway for transport emissions to reduce 64 per cent by 2030 as required by the Council plan, Te Tāruke-ā-Tāwhiri (see Appendix B). TERP acknowledges that the transport sector is Auckland's largest source of emissions (over 40%). The pathway details the transformation required to meet the emissions reduction target in eight years' time.

The main transformations required are:

- Reduce reliance on cars and support people to walk, cycle and use public transport
- Rapidly adopt low-emissions vehicles
- Begin work now to decarbonise heavy transport and freight
- Empower Aucklanders to make sustainable transport choices.

TERP calls for transformational change rather than incremental change – otherwise the emissions reduction target will not be met. Critical to achieving the target is the need to reduce the distance travelled in light vehicles by about 50% by 2030.

This business case relates strongly to supporting walking, cycling and public transport and therefore aligns well to the first (and fourth) transformations.

1.5.9 Vision Zero

Vision Zero for Tāmaki Makaurau is Auckland's transport safety strategy and action plan to 2030. Its aim is to eliminate transport deaths and serious injuries in Tāmaki Makaurau:

"A Vision Zero network is about safety for all modes. This includes the most vulnerable road users, people travelling by foot or on two wheels. When people feel safe walking and cycling, more people will choose active modes and public transport."

The business case responds to Vision Zero with road safety being one of its priorities.

1.5.10 Other important strategies

There are many other strategies with which the project aligns and by which it is guided including: Road to Zero, Government Emissions Reduction Plan, Government Policy Statement on Land Transport (GPS), Auckland Transport Alignment Project (ATAP), Regional Land Transport Plan (RLTP), Future Connect, Roads and Streets Framework (RASF), Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan. These plans, policies and frameworks are referenced in Appendix B.

1.5.11 Stakeholder agreement

A workshop for external stakeholders was held online on Monday 25 July 2022. The objective was to understand their concerns and suggestions for network improvements to the Karanga-a-Hape Station neighbourhood based on the problem/benefit statement themes of safety, connection and amenity. While only a small number of stakeholders attended there were several strong desires:

- Remove through traffic on Mercury Lane as it is dangerous, adds congestion & destroys place potential for the area – but allow loading and servicing and local traffic access
- Reallocate traffic lanes on Pitt St to provide cycleways, wider footpaths, bus lanes and crossing points
- Improve the safety and amenity of Cross St – seen by many as an unattractive run-down and unsafe place with poor street lighting and tiny footpaths
- Trees and vegetation badly needed.

Focus group questions about the impact of suggested changes elicited many positive responses for social, economic and health benefits to the community. The proposed changes were seen as a catalyst for travel mode shift, attracting new business and redevelopment of the area. There was significant concern about the impact of **not** making changes, especially around missing the opportunity while CRL construction is underway and returning streets to how they were prior to construction with increased general traffic lanes.

A letter of strong support has been received from the Karangahape Business Association (Appendix C).

The City Centre Steering Group (Steerco) led by Eke Panuku, with AT, Council and Auckland Unlimited executives) in October 2022 endorsed (in principle) the aim of an enhanced urban realm upgrade to support the opening of the Karanga-a-Hape CRL station as a strategic priority (noting strong support for the high safety, connection, amenity, and climate action outcomes). This endorsement is subject to operational elements, future public engagement, and a transparent understanding of roles.

In addition, endorsement was provided for the City Centre Leadership Team to support the Karanga-a-Hape project team in a feasibility and funding exercise, reporting back to the Steerco prior to public engagement commencing.

Importantly, CRLL support the proposed improvements to the area. They recognise the benefits the improvements provide for users of the CRL and for the wider community. The timing of delivery of this project and the impact on the Link Alliance programme will need to be carefully managed.

More detail on stakeholders and their positions is provided in Section 4.

1.6 Current state

The Karanga-a-Hape Station, as part of the CRL, is due to be completed in 2024/2025.

Design of the CRL stations and surrounding urban realm is limited to the area within the CRL designation. While the CRL Business Case (2015) considers station investment areas and opportunities to unlock investment around the stations, the focus is primarily on activation of street frontages and oversite development opportunities rather than wider network connectivity. The CRL designation includes areas of the roadway directly affected by construction or to the nearest kerb line but no further. There is therefore limited interface with the wider transport network. Since CRL construction commenced in 2015, the strategic objectives for the city centre have changed significantly, as described in the strategic alignment section, along with changes to design standards with an increased focus on user safety and transport emissions reduction.

The CRL designs have been taken up to detailed design stage by the appointed CRLL (City Rail Link Limited) contractor, LKA, and early discussions with CRLL indicated a strong preference not to take on any additional scope or design changes at this stage. However, opportunities to make minor adjustments to CRL LKA designs are being explored through the business case process. Discussions with CRLL are continuing, see the Management Case in Section 12.

LKA design for the urban realm around the station meets their contractual requirements, although a regulatory and extensive design review process has highlighted several probable safety, connection and provision issues. Many issues arise from the limited area within the LKA brief. Several departures from minimum requirements have been approved to enable construction to continue as described in the problem section, below. However, the issues remain, and this business case addresses concerns for users of the transport network. It is vital that the safety and connectivity issues are investigated, and necessary improvements are made prior to station opening, to enhance safe use of the station, to minimise disruption and prevent rework after station opening.

1.7 History of project/work completed to date

Previous workstreams leading up to this project include:

- CRL Civil and Urban Realm Design Review process (2020 to present)
- Transport continuity management and network integration during CRL construction and reinstatement processes
- CRL Network integration involving assessment and readiness of transport network for Day One operations of CRL.

This work led to the preparation of the following reports and tasks for network integration projects, leading to the initiation of this project:

- Design feedback to change CRL designs to include essential bus infrastructure, cycle infrastructure, pedestrian crossings, mobility parking, and new road designs
- Transport Area Plans for all three CRL stations including Karanga-a-Hape developed a series of 'Key Moves' that could be implemented around the station entrances, building on and extending outside of the LKA extent of works.
- Feasibility study for Karanga-a-Hape Station precinct, building on the Key Moves.

These workstreams have highlighted network issues around the CRL stations. This business case defines the specific problems around Karanga-a-Hape Station and proposes solutions.

2 Problems, Opportunities and Constraints

This chapter demonstrates the case for change with the identified problems, opportunities for improvement and constraints. As noted in Section 1.1.1 above, the time constraint for this business case is particularly critical given the need for upgrading the Karanga-a-Hape neighbourhood's infrastructure to have occurred before the station is opened in 2024/25 and the timing of the works in the LKA contract.

The overall 'big picture' problems facing Auckland and the city centre (for example the need to address climate change and therefore prioritise public transport and active modes) are covered extensively in the strategic documents cited in Section 1.5 and are not canvassed here. In particular, the CCMP and A4E provide the wider context for the problems. The role of the works that may be agreed through this business case in contributing to reducing these large-scale problems should not be overlooked, as enhancing safety, providing more attractive environments and making public transport more accessible at the local level are critical adjuncts to more strategic investments. The works could be expected to help to realise the benefits of major projects such as CRL and the Northwestern Busway.

2.1 Problems and opportunities

The problems identified through the ILM process are:

- Problem One. High concentrations of people, inefficient allocation of street space and poor road design and geometry will result in increased harm for vulnerable transport users in the Karanga-a-Hape Station neighbourhood. (35%)
- Problem Two. Existing and future transport system deficiencies and inadequate connections within and to the Karanga-a-Hape Station neighbourhood reduce the potential for desirable mode shift. (35%)
- Problem Three. Poor quality spaces (amenity) and a perceived lack of personal safety will limit the social and economic potential of the Karanga-a-Hape Station neighbourhood. (30%).

They are discussed, in turn, below with the associated evidence.

2.2 Problem one

High concentrations of people, inefficient allocation of street space and poor road design and geometry will result in increased harm for vulnerable transport users in the Karanga-a-Hape Station neighbourhood.

This problem relates to the increased risk of harm for vulnerable transport users in the Karanga-a-Hape Station neighbourhood as more pedestrians, cyclists and micromobility users travel to and through the neighbourhood after the opening of the Karanga-a-Hape Station.

Micromobility users are included where walking and cycling and pedestrians and cyclists are referred to. While specific design responses will be required for people walking, cycling and using micromobility, there are substantial overlaps in the needs of these users.

The evidence for the problem is presented below for the three parts of the cause – high concentrations of people, inefficient allocation of road space and poor road design and geometry, then for the effect – increased harm.

2.2.1 High concentrations of people – especially vulnerable road users

As a result of the Karanga-a-Hape Station opening, new and improved bus services and continuing growth in activity, there will be high numbers of pedestrians and cyclists (including public transport passengers) using the area, which coupled with still relatively high traffic volumes creates higher risk of conflict.

Bus users

AT HOP data for May 2021 showed in the morning weekday two-hour peak there were **1,100** passengers boarding and alighting across the Karanga-a-Hape neighbourhood area and, in the afternoon, two-hour peak there were **1,500**. These numbers will increase once Pitt Street reopens for inbound bus services, the WX1 Western Express bus service commences in 2023, and as more people return to the city centre (including international students, workers, and overseas visitors).

Pedestrians

In the five years up to December 2019, there was an average of **15,000** pedestrians counted each weekday on Karangahape Road between Pitt Street and Queen Street (some of these pedestrians will also be counted as bus passengers).

After the opening of the CRL, there will be additional pedestrians using the station. LKA pedestrian modelling extracted from the AFC's MPT model suggests by 2031 there will be **20,500** passengers boarding and alighting at the Karanga-a-Hape Station each day, with **6,100** in the morning peak two-hour period. These pedestrian volumes will be largely in addition to existing numbers. With doubts around rail use after the pandemic and with major service disruption - but also with policies that may encourage use of public transport - there is extra uncertainty around these forecasts. The economic analysis therefore includes appropriate sensitivity tests.

With Mercury Lane as the direct link for pedestrians between the station entrance and the main business area, there are particular concerns for safety of vulnerable road users. Previously there had been no major destination along Mercury Lane to attract pedestrians. When the station opens there will now be over 9,000 pedestrians per day competing with over 3,000 vehicles per day. High volumes of pedestrians will have to navigate narrow footpaths and no crossing points within 80 metres of the Mercury Lane entrance.

Table 1 shows the predicted travel routes, based on the LKA pedestrian modelling, by train passenger entering and exiting the two station entrances during the AM peak. While a large proportion of passengers head to and arrive from Karangahape Road, many travel to and arrive from other directions such as Beresford Square, northern Pitt Street and Canada Street.

Table 1: Passenger precinct origins (Karangahape Precinct Pedestrian Modelling Analysis Technical Memo (v6))

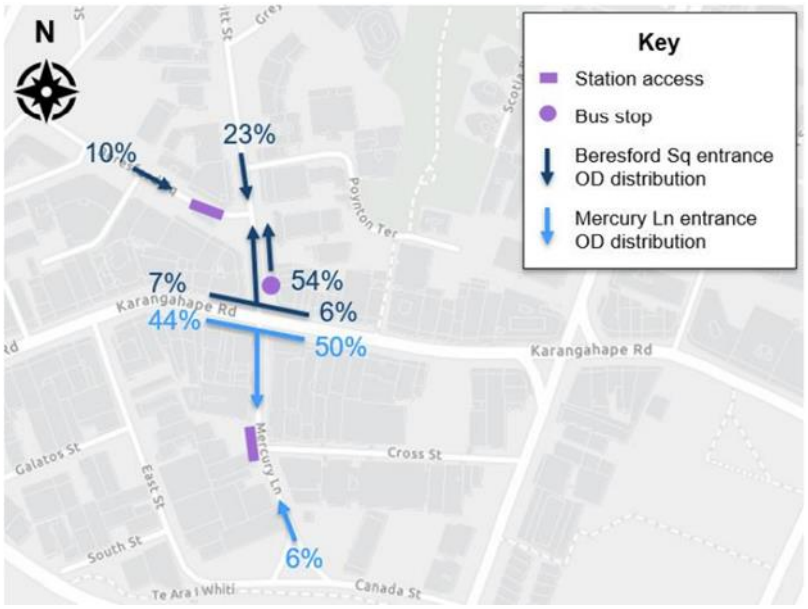
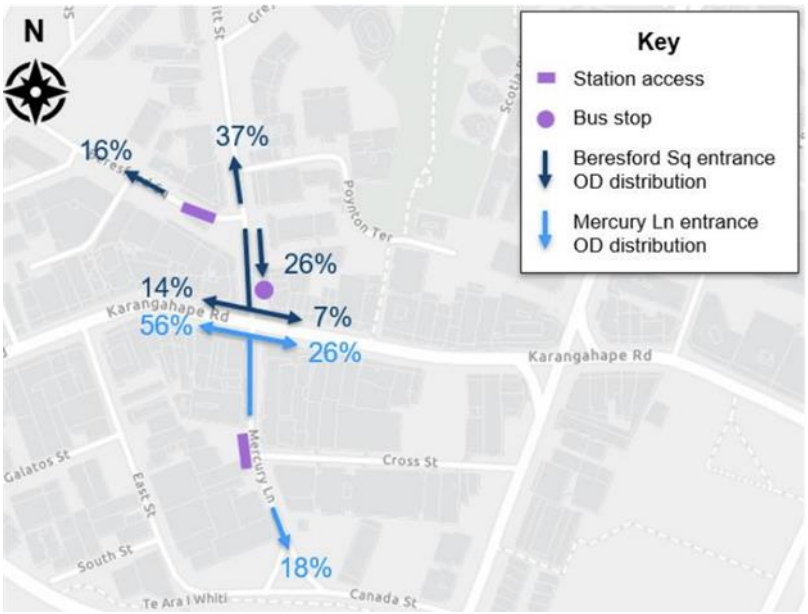
AM Peak Passenger Precinct Origins – Station Entries	
AM Peak Passenger Precinct Destinations – Station Exits	

Table 2 gives the full passenger number predictions for 2031 from AFC's 2031 RLTP i11.6 landuse scenario. This model does not include the impact of potential light rail projects.

Table 2: Link Alliance modelling for station patronage from AFC's 2031 RLTP i11.6 landuse MPT model

Boarding/Alighting at Karanga-a-Hape Station	Period	Boarding	Alighting	Total
2031	AM	2,600	3,500	6,100
	Inter Peak	900	1,000	1,900
	PM	2,600	1,900	4,500
	Daily	9,800	10,600	20,500

Cyclists

In 2019, there were approximately **1,400** per day cyclists heading into or out of the city centre around the edge of the Karanga-a-Hape neighbourhood. As further cycleways are developed, the number of cyclists in the area is expected to continue to increase.

Vehicles

Before CRL construction works began in the area, peak hour traffic flows at the Karangahape Road/Mercury Lane/Pitt Street intersection were almost **2,000** vehicles per hour (or approximately 25,000 per day) (based on SCATS data). Through the construction process, road capacity has been reduced on Pitt Street. Peak hour traffic volume is now closer to 600 vehicles, however, without action, it could be expected that traffic volumes would increase again. See Table 3 in Section 2.2.4 to understand the future anticipated pedestrian and cyclist numbers that could be in conflict with these vehicle volumes.

A key pedestrian link once the Karanga-a-Hape Station opens is the northern end of Mercury Lane between Cross St and Karangahape Road. See Table 3 in Section 2.2.4 for anticipated future all-day pedestrian numbers on Mercury Lane.

The photograph in Figure 12 below shows how constricted the entrance is to Mercury Lane and the high potential for pedestrian/vehicle conflict with the great increase in pedestrian numbers that is expected.

Figure 12: Entrance to Mercury Lane from the intersection of Pitt Street and Karangahape Road

Summary

While the different data sources provide different measures of transport activity, it can be seen from the data presented in this section that the neighbourhood is anticipated to be extremely busy for all modes of transport. As evidenced above upwards of 30,000 pedestrians, 3,000 cyclists and 25,000 vehicles per day may be expected with multiple points of interaction.

2.2.2 Inefficient allocation of road space

According to the AT Transport Design Manual (TDM) cars are the least efficient mode for movement of people as shown in Figure 13. Where a lane of general traffic can carry up to 1,800 people per hour and a lane of mixed car and bus traffic can carry 2,800, cycle lanes can carry 7,500, bus lanes 8,000 and footpaths 9,000 people per hour. Whilst car traffic has an important role in many locations, where space is restricted and taking account of the NOP allocation of space to pedestrians, in particular, requires prioritisation.

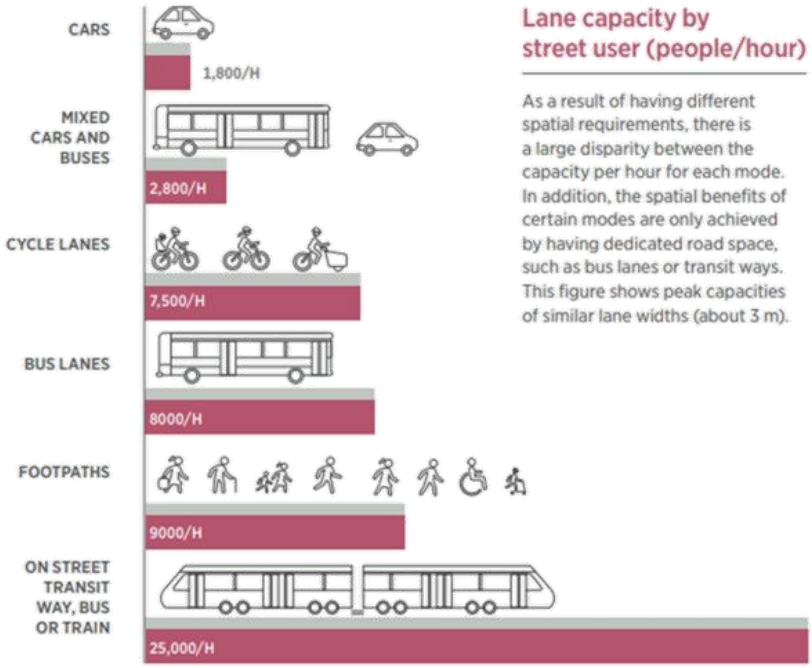


Figure 13: Capacity of different modes of transport (AT TDM)

Streets in the Karanga-a-Hape Station neighbourhood are currently and planned to retain most space for cars (see Figure 14 and Figure 15).

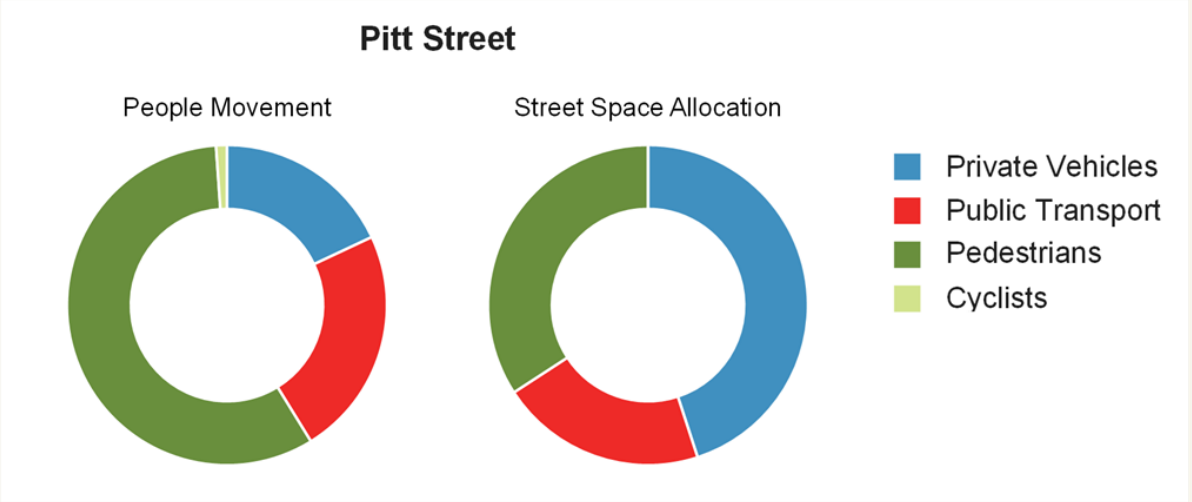


Figure 14: Pitt Street estimated people movement by mode in 2028 compared to the CRL planned street space allocation

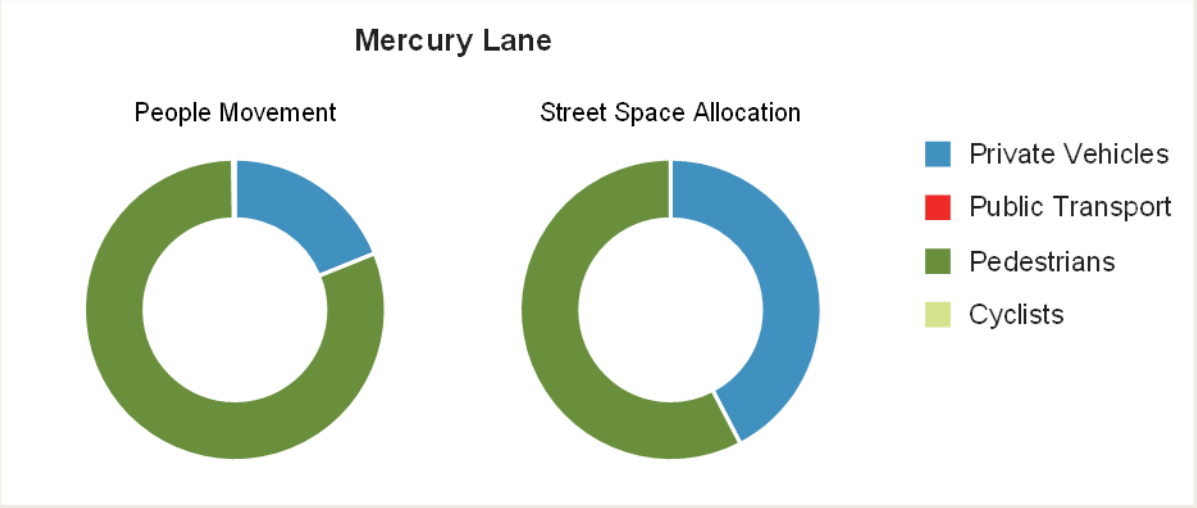


Figure 15: Mercury Lane estimated people movement by mode in 2028 compared to the CRL planned street space allocation

With the opening of the station, and the patronage numbers stated earlier, the proportion of people arriving by public transport will be notably higher in the future. However, the receiving environment is not being changed with street space allocation not responding to the changing demands.

In the base case LKA has limited extents of work – extending only 50m from each of the station entrances/exits as shown in Figure 16 below. This meant their work has a limited ability to influence the allocation of road space in the area. So, despite the large investment for CRL, inefficient road space allocation is being reinstated on Pitt Street and Mercury Lane.

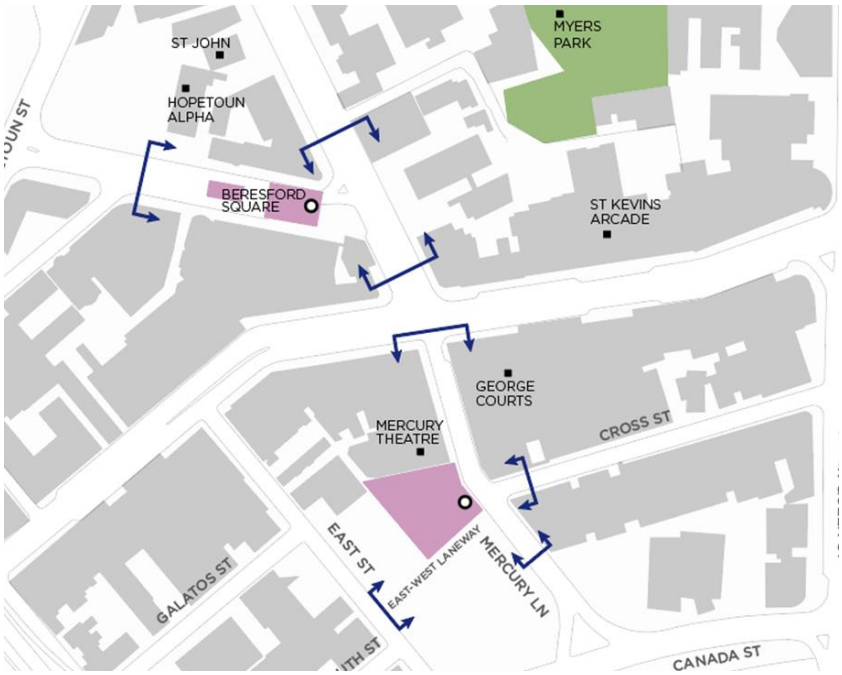


Figure 16: Link Alliance extent of works indicated by blue arrows

2.2.3 Poor road design and geometry

Poor road design and geometry contribute to safety risks for all road users. For this project these include inadequate space for pedestrians, a lack of crossing facilities, and general poor road geometry leading to higher vehicle speeds.

Inadequate space for pedestrians

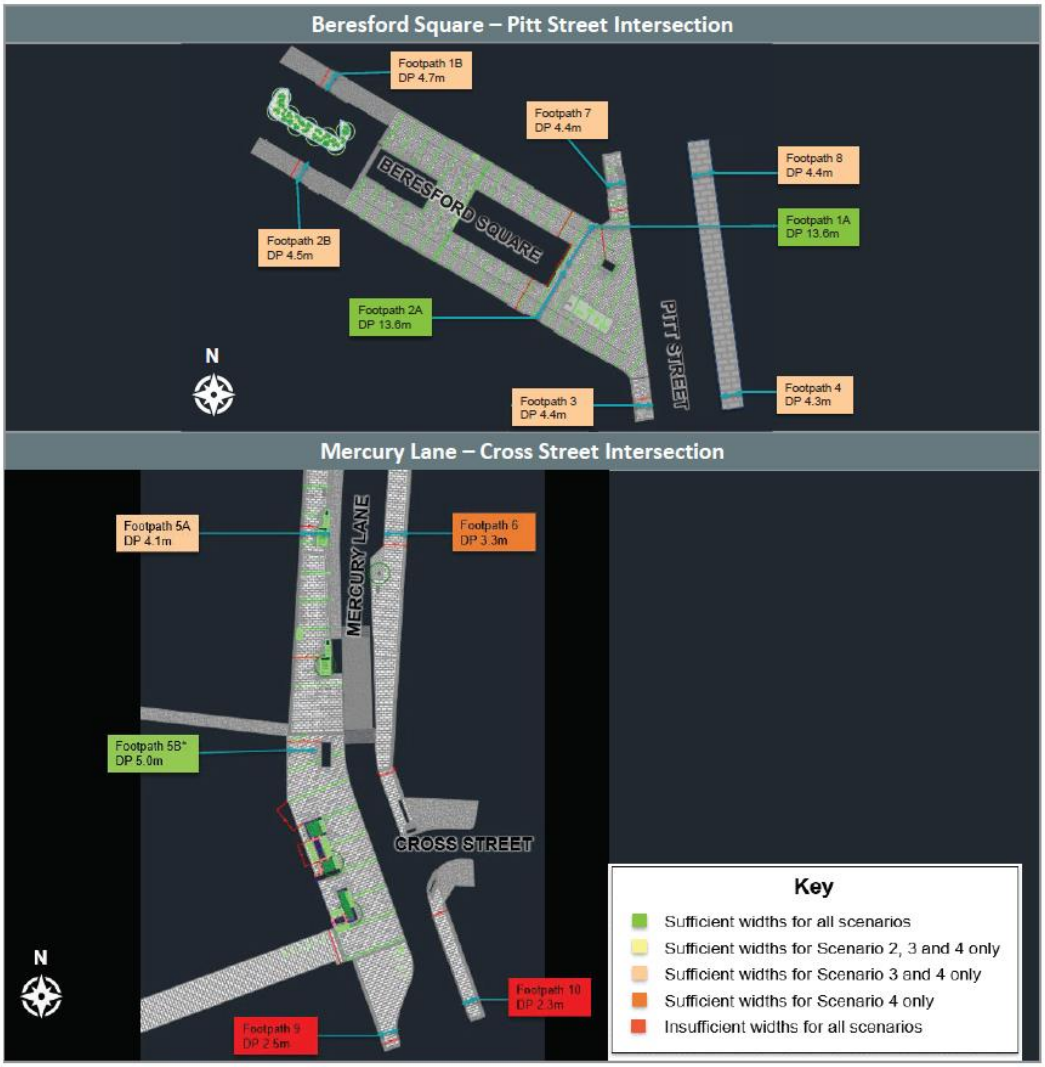
In pedestrian modelling by LKA the footpath widths around the station entrances were assessed against the AT Code of Practice (ATCoP) standards and using the Fruin Level of Service (LOS). It was established that a LOS of C must be achieved for bus interchange and public spaces between the interchange area and up to the waiting area for pedestrian crossings. However, that has not been possible leading to the likelihood that pedestrians will spill into the carriageway with clear safety risk. Section 2.2.4 describes the future vehicle, pedestrian, and cyclist numbers on Pitt Street and Mercury Lane that result in this safety risk.

Figure 17 shows a photo of the narrow footpath width on the eastern side of Mercury Lane at the corner of Cross Street.

Figure 17: Narrow point on the footpath on the eastern side of Mercury Lane

AT replaced ATCoP with the TDM in 2018. The minimum standards in ATCoP for a city centre footpath, widths are 5.35 m +, the TDM's Engineering Design Code - Footpaths and the Public Realm V1 specifies a minimum standard of 6.05 m + for city centres.

The majority of the footpath widths around the station entrances within and outside the LKA extent of works will not achieve even the ATCoP minimum standards. This is illustrated in Figure 18 below, from LKA Stage D pedestrian modelling note, July 2021. This image combines a map of the location of 10 footpath segments assessed around the two station entrances and a summary table. The summary table lists four scenarios, Scenario 1 is the ATCoP minimum standards for a central city footpath width. Scenarios 2 through 4 all have departures from the ATCoP minimum standards. As illustrated in Figure 18 only three footpath sections meet the minimum requirements these are shown in green on both the map and table. Consequently, under the do minimum design most footpaths around the station entrances will not cater for the projected pedestrian volumes resulting in crowding and safety concerns.


Beresford Square – Pitt Street Intersection
Footpath 1B
DP 4.7m
Footpath 7
DP 4.4m
Footpath 8
DP 4.4m
Footpath 1A
DP 13.6m
Footpath 2B
DP 4.5m
BERESFORD SQUARE
Footpath 2A
DP 13.6m
PITT STREET
N
Footpath 3
DP 4.4m
Footpath 4
DP 4.3m
Mercury Lane – Cross Street Intersection
Footpath 5A
DP 4.1m
Footpath 6
DP 3.3m
MERCURY LANE
Footpath 5B*
DP 5.0m
CROSS STREET
N
Footpath 10
DP 2.3m
Footpath 9
DP 2.5m
Key
Sufficient widths for all scenarios
Sufficient widths for Scenario 2, 3 and 4 only
Sufficient widths for Scenario 3 and 4 only
Sufficient widths for Scenario 4 only
Insufficient widths for all scenarios

Required width (m)	Footpath segment												
	1A	1B	2A	2B	3	4	5A	5B*	6	7	8	9	10
Scenario 1	5.4	5.4	5.4	5.4	5.4	5.4	5.4	-	5.4	5.4	5.4	5.4	5.4
Scenario 2	4.8	4.8	4.8	4.8	4.8	4.8	4.8	-	4.8	4.8	4.8	4.8	4.8
Scenario 3	4.1	4.1	4.1	4.1	4.1	4.1	4.1	-	4.1	4.1	4.1	4.1	4.1
Scenario 4	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Through-route (Fruin Los C)	1.5	0.4	2.1	0.4	2.2	1.6	1.4	1.4	0.8	0.9	1.1	0.3	0.3
Design Provision	13.6	4.7	13.6	4.2	4.7	4.3	4.1	6.0	3.4	4.4	4.4	2.5	2.3
Demand (pax/min)													
Average peak 15-min demand	61	15	86	17	87	64	56	56	31	61	20	11	12

Red text indicates footpath segments where DP width is insufficient

**Indicates only the through-route is assessed as this section of the footpath is adjacent to station entrances, i.e. only Scenario 4 needs to be considered*

Figure 18: Extract of footpath width checks from the LKA Stage D pedestrian modelling report

The LKA pedestrian modelling also included consideration of the pedestrian waiting areas at the Karangahape Road/Pitt Street/Mercury Lane intersection. It was shown that the pedestrian waiting areas will not cater for the volumes of pedestrians, leading to further safety issues.

Lack of crossing facilities

There is a lack of crossing facilities for both pedestrians and cyclists along main desire lines both around the neighbourhood and to access the station entrances. Vital links that are missing include:

- A formal connection from Te Ara I Whiti on Canada Street directly across to Mercury Lane
- A formal connection from the East-West Laneway to East Street
- A formal connection at the Mercury Lane/Cross St intersection; the do minimum (LKA) design includes a raised table but does not give pedestrians priority
- A separate cycle crossing adjacent to the mid-block crossing on Pitt Street.

Figure 19 and Figure 20 show the lack of crossing facilities on Mercury Lane and Pitt Street respectively.

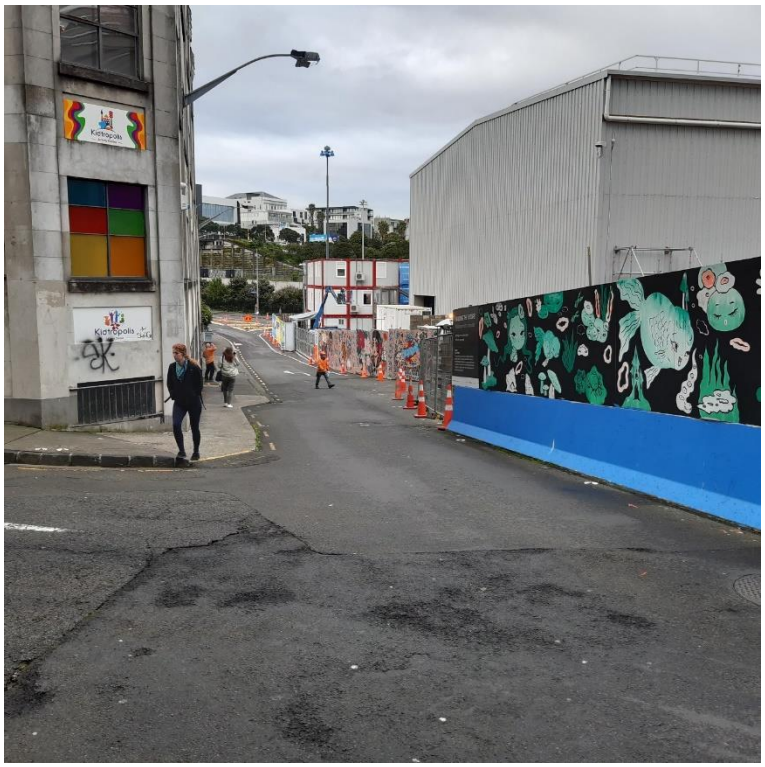


Figure 19: Looking south along Mercury Lane from the intersection of Cross Street

Figure 20: Looking south along Pitt Street from just south of the Greys Avenue intersection

Poor road geometry

The road geometry on side streets around the station entrances reflects the historical transport legacy of the area as both a route to the motorway network and a major east-west connection. Beresford Square, Mercury Lane and Canada Street (shown in Figure 21) in particular have features which

prioritise car movements while making the street environment inhospitable to people walking and cycling.

Beresford Square is extremely wide, with a road reserve of 27.5m, and up to 18.0m between kerbs. The width of the carriageway coupled with the steepness of the street (13% gradient) encourages high speed and means much of the space available is for traffic movement, to the detriment of the safety of people walking and cycling and the urban realm. The turning radii of the Beresford Square/Hopetoun Street intersection are large, allowing high turning speeds and resulting in a crossing distance for a person walking along Hopetoun St of 22.1m. Although there is a small refuge island halfway across, crossing Beresford Square is hazardous and unpleasant.

The intersection of Mercury Lane and Canada Street has wide slip lanes with right of way for southbound traffic from Mercury Lane to Canada Street eastbound around a sweeping curve. The design of this intersection prioritises high speed through traffic, leaving people walking and cycling exposed to risk of serious road trauma. There is no safe and convenient means of walking along the northern side of Canada Street as the footpath does not continue through the intersection.

Canada Street is very wide at 22.0m (12.8m between kerbs), with parallel parking on most of the southern side of the street and a short section of the northern side (pre-CRL construction). East of the Mercury Lane intersection, there are two eastbound lanes. These features mean that speeds much higher than the 30km/h posted limit occur. Crossing the street on foot or by cycle is difficult and unsafe as there is no crossing facility connecting to Mercury Lane or Te Ara I Whiti. Further the southern footpath is a shared path catering for cyclists and pedestrians which can lead to cyclist/pedestrian conflicts.

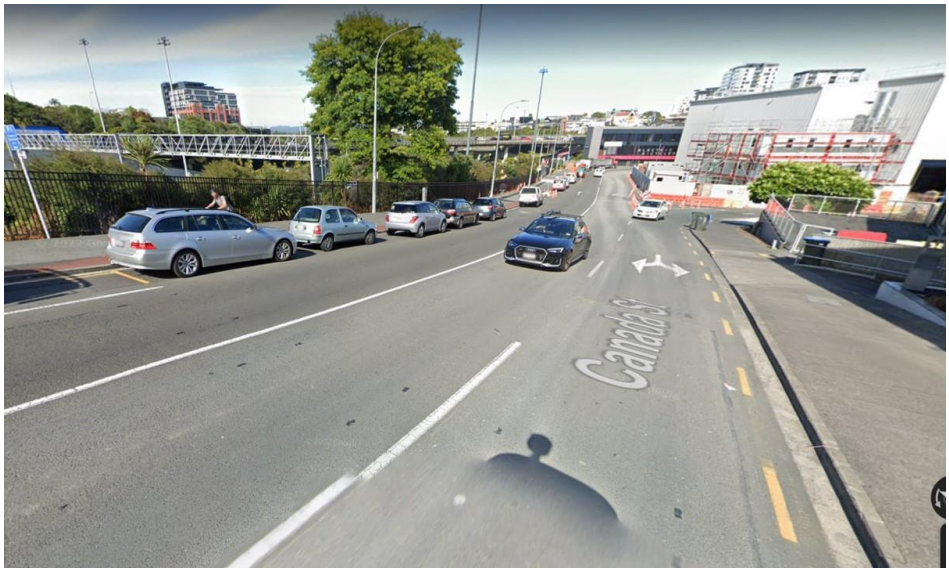


Figure 21: Canada Street looking west towards the intersection of Mercury Lane

A speed activated warning sign has been installed on Canada Street to slow vehicles heading downhill towards Mercury Lane and East Street. Speed recordings between 1 June and 12 June 2022 captured 73% of vehicles travelling above the 30 km/h speed limit, 23% travelling at 40 km/h or more, and four vehicles have been recorded at over 65 km/h.

Figure 22 shows the distribution of vehicle speeds from the speed radar.

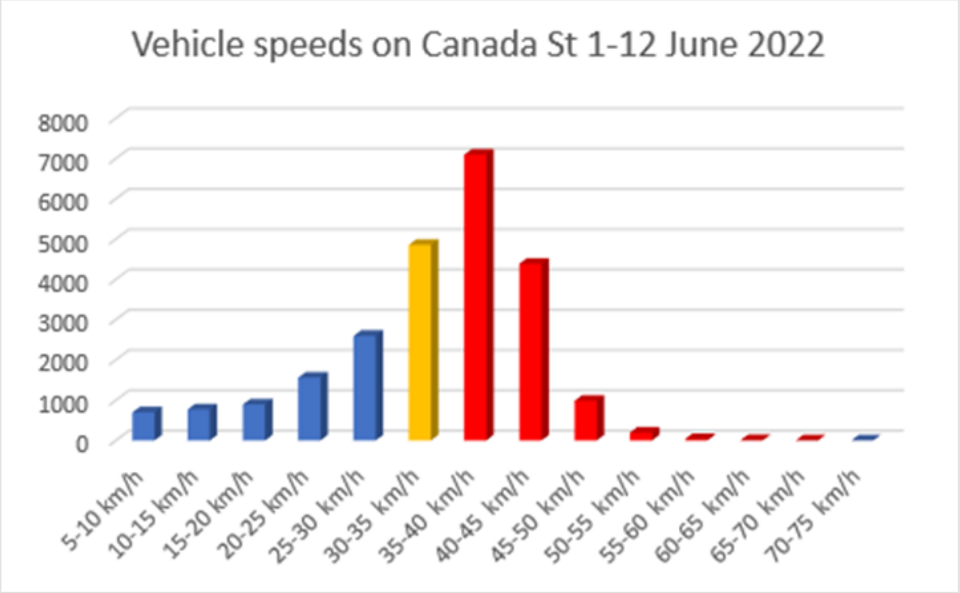


Figure 22: Distribution of vehicle speeds on Canada Street captured by speed radar

2.2.4 Increased harm for vulnerable transport users

Conflicting street user volumes

As discussed in Section 2.2.1 there are expected to be higher numbers of pedestrians and cyclists on Pitt Street and Mercury Lane in the future. If vehicle volumes on Pitt Street and Mercury Lane remain near where they were in 2019 there will be a high risk of conflict between vehicles and people walking or cycling. Conflict risk will be highest at peak travel times when there are the highest concentrations of vehicles, pedestrians, and cyclists.

Table 3 below presents the estimated daily volumes of vehicles, pedestrians and cyclists on Pitt Street and Mercury Lane.

Table 3: Estimated daily volumes post CRL completion

Street	Vehicles[10]	Pedestrians[11]	Cyclists[12]
Pitt Street (Karangahape Road to Greys Avenue)	21,000	14,000	800

[10] Assumes vehicle volumes in the do minimum will be similar to 2020 Mobile Road estimates
[11] Estimated based on AT screenline counts and Heart of the City pedestrian counters
[12] Estimated based on AT screenline counts, AT cycle counters and East Street cycleway monitoring data

Mercury Lane (Karangahape Road to Cross Street)	3,100	9,000	70

Crash history

Over the five-year period from April 2015 to March 2020 (to avoid covid restrictions) the neighbourhood has been the site of at least 19 injury causing crashes. A Crash Analysis System (CAS) inquiry shows that 5 of these crashes resulted in minor injuries to active mode users. This is shown in Table 4. Although this five-year period shows no deaths and serious injuries (DSIs), in September 2020 a pedestrian was killed at the intersection of Karangahape Road and Pitt Street.

Table 4: Extraction from CAS for DSIs in the Karanga-a-Hape Station neighbourhood for 2015-2020

Casual types	Fatalities	Serious Injuries	Minor injuries
Cyclists	0	0	1
Drivers	0	0	6
Motorcycle pillions	0	0	0
Motorcycle riders	0	0	6
Passengers	0	0	2
Pedestrians	0	0	4
Other	0	0	0
Total	0	0	19

A heat map (Figure 23) of the injury crashes shows areas of higher risk. As the analysis period ends in 2020, this heat map does not show the potential safety benefits resulting from the Karangahape Enhancements project. Nevertheless, the overall picture is that intersections have high concentrations of injury crashes – in line with where pedestrians are more likely to cross the road and interact with vehicles. Particular focus areas include Pitt Street/Mercury Lane and Greys Avenue. A cluster of crashes is also seen on Pitt Street between Beresford Square and Karangahape Road.

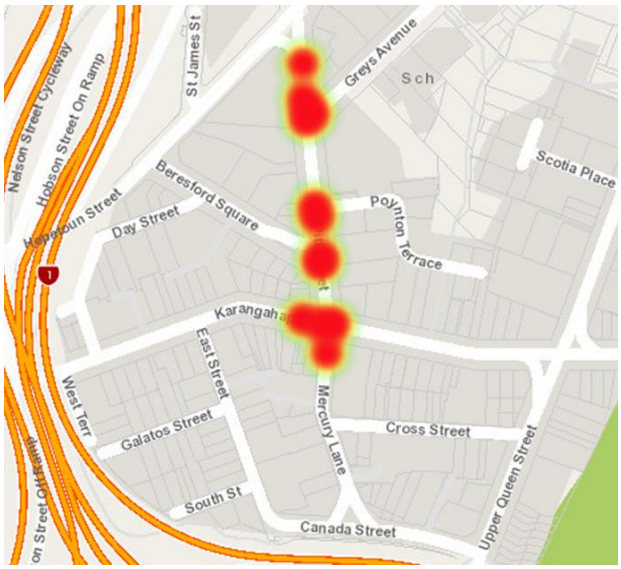


Figure 23: Heat map of injury crashes 2015-2020 (CAS)

In the majority (56%) of crashes, poor observation was cited as a crash factor. Failure to give way or stop was a contributing factor in 44% of crashes while alcohol (25%) was the third most common crash factor (note: multiple crash factors can be listed for a single crash). Speed is difficult to prove as a contributing factor is often excluded from crash reports – however, it is well-proven that faster vehicle speeds increase the severity of any crash that occurs.

With more passengers in the Karanga-a-Hape neighbourhood post-CRL opening, there will be increased numbers of pedestrians exposed to the type of risks that have led to these injury crashes.

Auckland Urban Central is identified as High Risk for cyclists in the Communities at Risk Register.

Site visit observations

Project team observations have added to the road safety concerns. Potentially unsafe driving, walking, cycling and scooting behaviour has been observed, including:

- Illegal right turns from Karangahape Road into East Street despite a raised median on Karangahape Road designed to prevent this movement, leading to these drivers both driving on the wrong side of the road and crossing the cycleway unexpectedly
- Pedestrians crossing Mercury Lane at Karangahape Road when the crossing light is red leading to a potential conflict between these pedestrians and vehicles crossing the intersection to head south on Mercury Lane
- Scooters travelling too fast on crowded footpaths and near bus stops
- Vehicles travelling at an unsafe speed down Mercury Lane.

2.2.5 LKA Design Review Record safety concerns

As part of the CRL design process, the civil works and urban realm drawings produced by LKA went through a comprehensive review process. As a result of the reviews, design changes were made to reach more appropriate design solutions. Not all issues could be fully addressed, however.

In Table 5 below four issues from the civil works Design Review Record (DRR) are described that have safety implications that could be better addressed, including with a wider scope of works.

Table 5: Design Review Record – civil works

Item (numbering is from the DRR)	Comment
8, 21 consideration of inadequate footpath widths on Mercury Lane	Footpath widths on Mercury Lane have not been able to be increased sufficiently in the LKA designs to meet standards owing to the retention of access for general traffic (see Figure 24).
30 – sight distances on Mercury Lane SISD and CSD failure	Safe intersection sight distance (SISD) on Mercury Lane and Crossing Sight Distance (CSD) for Cross Street are non-compliant. These are issues that are caused by existing buildings on Mercury Lane, and a parking lane on Cross Street (see Figure 25).
53 – shared path on Pitt Street	Concern was noted that the existing shared path north of LKA's extent of works would encourage people to continue cycling past the point the shared path officially ends and past the Beresford Square station entrance, causing conflict with pedestrians.

The inability of the design to meet the standards for SISD generates a heightened risk profile for pedestrians and cyclists. The sight distance for a driver on the major road to observe a vehicle or other users from a minor road moving into a collision situation and to decelerate to a stop before reaching the collision point is not met. CSD is calculated on the basis of sensitive pedestrian walking speed, using the 85th percentile vehicle approach speed for all facilities. The inability for the design to cater for this standard requirement compromises the safety of individuals whose walking speed is at the lower end of the spectrum. Minimum footpath widths lead to conflict between users of the same facility which may lead to pedestrians utilising the carriageway.

Based on experience in similar situations it should be possible to achieve approximately a 50% reduction across all modes with appropriate designs (see Section 7).

Figure 24: Looking south along Mercury Lane towards the intersection of Cross Street

Figure 25: Looking east along the kerb on the southern side of Cross Street

2.3 Problem two

Existing and future transport system deficiencies and inadequate connections within and to the Karanga-a-Hape Station neighbourhood reduce the potential for desirable mode shift.

This problem identifies that to create mode shift to public transport networks active modes must be well-connected to allow users to undertake their whole journey on safe infrastructure. Connections must adequately provide for transfers between the train and buses and bicycles.

This section provides evidence for the two causes of the problem, transport deficiencies and inadequate connections then for the effect, reduced potential for mode shift.

2.3.1 Existing transport deficiencies

Walking and cycling connections

The Karangahape Road Plan 2014-2044 Plan identifies routes for improved cycling and pedestrian connections:

- Mercury Lane
- Canada Street
- East Street
- Galatos Street
- West Terrace.

Canada Street has a shared path running along the southern side of the street, and East Street currently has a temporary bi-directional cycleway connecting to Galatos Street, which is potentially to be removed once the CRL construction is complete. The rest of these streets are planned to have no improved cycling facilities and the only improvements for pedestrians are for the northern section of Mercury Lane as far as the Cross Street intersection where footpath widening, and a raised table intersection are planned as part of the LKA works.

Mercury Lane, Canada Street and East Street will serve a strategic function for walking and cycling once the Karanga-a-Hape Station opens, yet do not act as suitable connections with adequate infrastructure to support higher pedestrian or cycling volumes. Currently, these streets are also used as through streets for motor vehicles travelling between downtown Auckland and inner suburbs like Mount Eden. This competition between strategic purpose and current use makes the current layouts of these streets not fit for purpose and this will be exacerbated by the station opening.

The images below in Table 6 from 2018 Google Street View imagery show the lack of cycling connections on these streets and lack of pedestrian connections. Without intervention from this business case, this is how these streets will look once the Karanga-a-Hape Station opens.

Table 6: 2018 Google Street View images of streets lacking cycling and walking connections

East Street looking south	Canada Street looking east
	
East Street looking west from Canada Street	**Mercury Lane looking north from Canada Street**
	

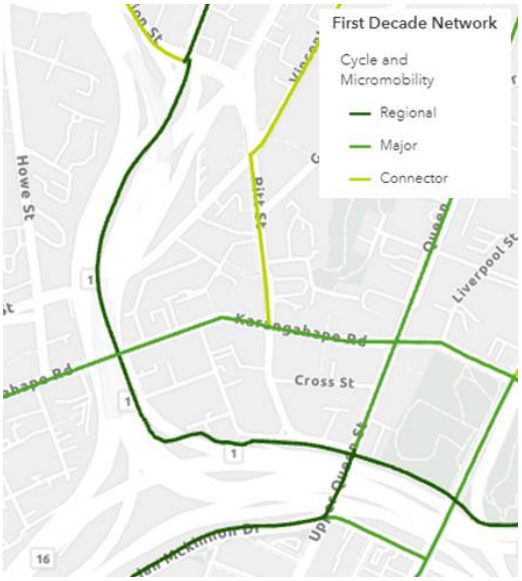
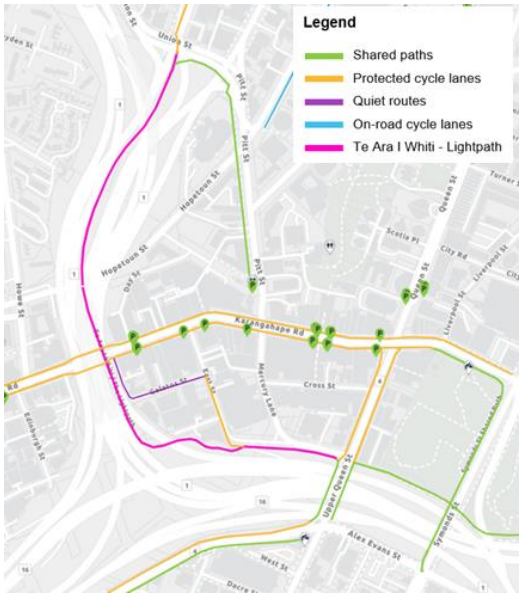
2.3.2 Future Connect

Cycling deficiencies

Future Connect identifies the planned network for cycling across Auckland with a hierarchy of importance that applies to each link. Table 7 shows the network through the station neighbourhood, with a regional link through Canada Street connecting Upper Queen Street to Te Ara I Whiti, a major link along Karangahape Road, and a connector link along Pitt Street and on to Vincent Street.

Table 7 shows the importance of streets through the neighbourhood as part of the cycling network. Comparing this map of existing cycleways to the first decade planned cycleways shows several gaps. Existing infrastructure, such as the shared path on Pitt Street, is not fit for its strategic importance. Further investment is planned to upgrade the cycleways on Vincent Street and Federal Street. Pitt Street then becomes the missing link for cycleways from Karangahape Road to the waterfront.

Table 7: Future Connect first decade cycling network and Auckland Transport existing cycling network

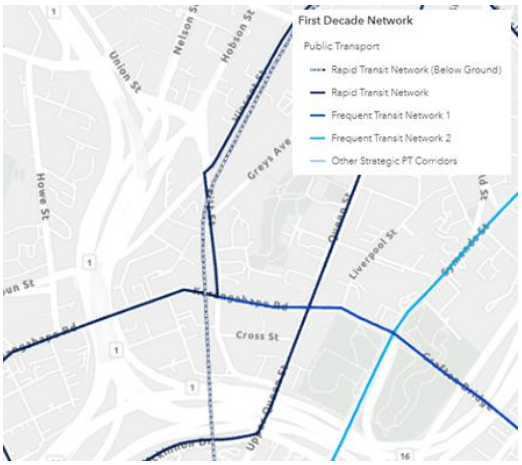
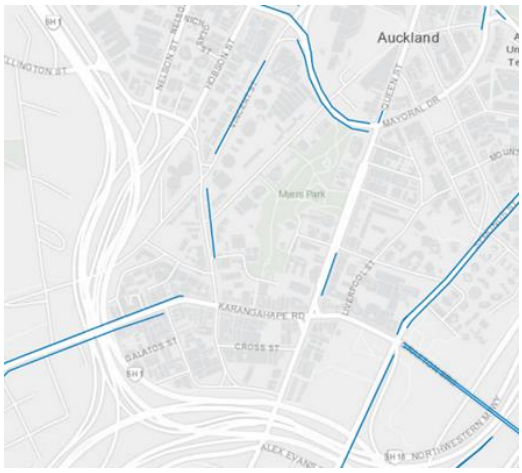
Future Connect first decade cycling network	Auckland Transport existing cycling network
	

Public transport deficiencies

Future Connect identifies the first decade strategic public transport network hierarchy (see Table 8). Karangahape Road, Pitt Street, Vincent Street and Albert Street are part of a Rapid Transit Network (RTN) corridor for buses heading into the city centre from western Auckland. This route becomes even more important once the Western Express bus service begins in 2023. AFC's MPT modelling from 22 November 2021 gives an indication of anticipated public transport transfer volumes once CRL is complete. For transfers between buses and trains at the Karanga-a-Hape Station, the models suggest by 2028 there could be around 400 transfers in the AM peak 2-hour period and about 300 transfers in the PM peak 2-hour period. These numbers do not include transfers between different train lines nor between different bus routes.

RTN is the highest classification of public transit network in Auckland meaning the services on these routes should be the most frequent and reliable services. When comparing the first decade strategic network to the existing provision of transit lanes through the neighbourhood, there is a gap on the northbound side of Pitt Street – which is not addressed through the LKA plans.

Table 8: Future Connect first decade public transport network and transit lanes for the Karanga-a-Hape Station neighbourhood

Future Connect first decade public transport network	Auckland Transport existing transit lanes
	

The LKA design for Pitt Street does not provide for northbound bus lanes, advance bus signals or additional priority measures at the mid-block crossing. There is a risk that without such infrastructure it will be too difficult for buses to cross multiple lanes on Pitt Street to prepare for the right turn into Vincent Street.

Relying on general traffic allowing buses to merge will delay them and cause the buses to back up at the bus stops and on to Karangahape Road.

Once CRL works are complete, a significant number of buses from the western parts of Auckland will use Pitt Street. In 2025, there will be 41 buses northbound in the morning peak hour, and 44 buses southbound in the evening peak hour[13]. With 41 buses an hour heading north on Pitt Street by 2025, the lack of bus priority is a concern for providing a RTN level of service.

2.3.3 LKA designs

Connections to and from the station entrances on Pitt Street and Mercury Lane are important for encouraging mode shift to public transport. This includes for those walking, cycling, scootering and busing to the station. Transfers are important for expanding the rider catchment of the station and providing access for those not within walking distance from a train station.

Cycling to station

LKA plans include bike parking at both station entrances. Bike parking is anticipated to be used by those cycling to the train station to catch a train service, but also by those visiting the Karangahape Road area itself. Therefore, secure long-term and short-term bike parking is needed. The LKA plans provide common short-term style bike parking but lack secure long-term bike parking.

[13] Bus Reference Case 2020 prepared for Auckland Transport by MRCagney

The LKA plans also do not cater for reaching the station entrances by bike. Mercury Lane is proposed to remain one-way southbound for general traffic post-CRL meaning that cyclists travelling between the cycleway on the overbridge on Upper Queen Street or Te Ara I Whiti have no safe way of cycling to or from Mercury Lane to connect to the station entrance and bike parking there. Also, there are no cycling facilities to connect cyclist between the Mercury Lane station entrance and the separated cycle lanes on Karangahape Road.

The situation is similar at the Beresford Square entrance, no cycleways are proposed to pass the station entrance reducing the accessibility of bike parking outside the station entrance.

Cyclists arriving from the south will need to dismount and wheel their cycles from the cycleway on Karangahape Road (if able to), or cycle on the footpath on Pitt Street. Those arriving from the north will use the existing shared path on the western side of Pitt Street to cycle to the station. However, the shared path stops short of the station creating potential safety issues. Both of these options are inadequate once the station opens, and significantly more pedestrians are using these footpaths.

2.3.4 Reduced potential for desirable mode shift

There is good evidence that the quality of provision of public transport, walking and cycling has a strong impact on people's mode choice. Preferences for public transport are impacted by service reliability, speed, and comfort. Safety has a strong influence on whether people choose to walk and cycle. Existing conditions include pinch points for public transport operations and gaps in the walking and cycling networks. These are missed opportunities to foster mode shift at a critical network interchange point, with impacts far beyond the study area.

Multiple studies demonstrate that public transport patronage responds to various service improvements. For example, perceptions of travel quality have a critical influence on travel behaviour[14]. Features that can substantially affect travel decisions include the degree of separation from traffic impacts, safety from accidents and security from crime and walking accessibility to services.

For cycling, evidence suggests a strong network effect and that safety is critical to mode shift. When new high-quality connections are made between existing separated cycleways, the network of cycleways comfortable for those less confident cyclists grows, so cyclist numbers increase. As Figure 26 shows, once separated cycleways were connected at Upper Queen Street, the number of cyclists on Upper Queen Street itself grew by 400%[15].

[14] Currie, G & Wallis, I (2008) Effective ways to grow urban bus markets – a synthesis of evidence. Journal of Transport Geography 16 pp. 419–429.
[15] Whilst acknowledging the small base from which the figures are extrapolated.

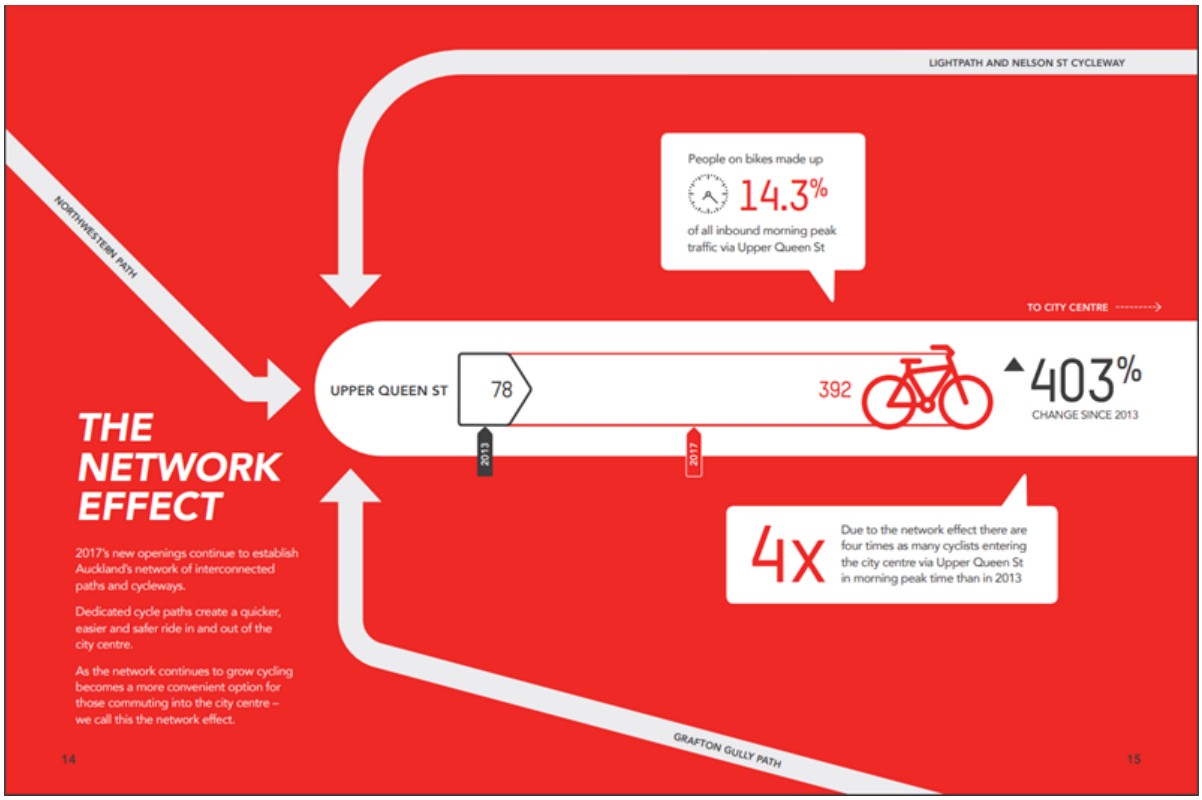


Figure 26: Increase in cyclist numbers on Upper Queen Street (The 2017 Auckland Cycling Account, AT)

In a Waka Kotahi research report[16] safety is noted as a key barrier for cycling, with infrastructure helping to create a safe environment for both cyclists and non-cyclists. Of the barriers to cycling, the most cited (with 41% of respondents) was "I don't feel safe because of how people drive". Infrastructure can increase this perception of safety, with people feeling safest in parks/domains, on quiet local roads, or on public roads with separated cycle lanes.

A second research report into mode shift to micromobility (including e-bikes), demonstrates that building safer infrastructure, including separated paths and shared paths, will help to improve the uptake of micromobility[17]. A mode shift of over 2% from cars and an increase in public transport patronage of up to 7% could be expected in major city centres and fringes where there is both a high density of public transport routes and high availability of micromobility.

Barriers to walking

Fewer barriers to walking are noted in the research, but perceived travel time and safety in the dark were raised. Higher quality walking connections can reduce waiting time at intersections and improve safety in the dark where formal pedestrian crossing points are established.

A particular issue may be conflict with cyclists. Therefore, any measures to benefit cyclists through dedicated facilities should also be viewed through the lens of also benefiting pedestrians. Walking is likely to be the primary mode of travel to and from this station and must be provided for well.

[16] Waka Kotahi NZ Transport Agency (2021) Understanding attitudes and perceptions of cycling & walking
[17] Waka Kotahi NZ Transport Agency (2021) Mode shift to micromobility – research report 674

Pedestrians will be vital to the success or otherwise of this environment both economically and socially.

Measures such as providing better quality surfaces and occasional seating can also be important where there are steeper grades and for older people, those with disabilities and where pedestrians may be encumbered with small children or packages.

2.4 Problem three

Poor quality spaces (amenity) and a perceived lack of personal safety will limit the social and economic potential of the Karanga-a-Hape Station neighbourhood.

As for the earlier problems, this section provides evidence for the two causes – poor quality spaces and perceived lack of personal safety - then the implication, limiting the social and economic potential.

2.4.1 Poor quality spaces (amenity)

Evidence for the poor quality of many of the public spaces comes from a systematic PERS-style review and from the community.

2.4.2 Pedestrian Environment Review System (PERS) style analysis.

This business case makes use of a PERS-style assessment to better understand the pedestrian environment of the do minimum (ie with the LKA design in place)[18]. Two types of pedestrian environments were assessed – links and public spaces.

- Links are sections of footpaths and focus on the movement aspect
- Public spaces vary in size but include the “time in space” aspects of pedestrian spaces. For this assessment all links were assessed as public spaces given the city centre context.

There are 18 different assessment attributes (12 link attributes and six space attributes). PERS uses a seven-quality scale from worst (-3) to best (+3) to score each of the attributes where 0 is considered neutral or adequate. The scoring is not against a universal baseline and is a relative measure.

Overall, the PERS-style assessment showed significant deficiencies in the pedestrian environment in the Karanga-a-Hape Station neighbourhood. Particular streets, such as Cross Street and East Street have very poor pedestrian environments. The full assessment can be found in Appendix E.

Link assessment

All the sections outside the LKA extent of works, on average, scored below zero across most of the range of link assessment attributes. Table 9 details the PERS-style link assessment. Streets have been ranked in order from worst- to best-performing.

On Pitt Street and Mercury Lane within the LKA extent of works, effective width received a score of -2 and -1 respectively. This is owing to the large number of additional pedestrians expected on these streets during peak hours once the station opens. Since the do minimum retains the same number of traffic lanes on Pitt Street and Mercury Lane, footpath widening is minimal despite the anticipated increase in pedestrian volumes.

[18] https://content.tfl.gov.uk/pedestrian-environment-review-system-factsheet.pdf

Table 9: PERS-style link assessment of do minimum

PERS Link Attributes	Effective width	Dropped kerbs	Gradient	Obstructions	Permeability	Legibility	Lighting	Personal security	Surface quality	User conflict	Quality of environment	Maintenance
Cross Street	0	0	0	-1	-1	-3	-2	-3	-1	-2	-2	-1
Pitt Street (Mid-block crossing to Vincent Street)	-1	-1	-1	1	-3	-2	0	0	-2	-1	-3	-1
East Street	2	-1	-3	0	-2	-3	0	-2	-1	-2	-2	0
Mercury Lane (Cross Street to Canada Street)	1	-3	-2	2	-1	-1	-2	-2	-1	0	-3	0
Beresford Square (outside of EoW)	3	-1	-2	0	-2	-2	-2	-1	0	-2	-1	1
Canada Street	3	-3	-3	2	-2	-2	1	-1	1	-1	-2	1
Pitt Street (Karangahape Road to mid-block crossing)	-2	1	0	1	1	2	2	1	0	-1	1	0
Mercury Lane (within EoW, Karangahape Road to Cross St)	-1	1	1	2	1	2	3	2	3	-2	2	3
Beresford Square (within EoW)	3	2	3	2	2	1	3	1	2	1	0	3

Space assessment

All assessed sections outside the LKA extent of works scored below zero across almost all attributes. East Street and Cross Street scored worst in this assessment. All the streets outside the planned works suffer from a lack of safe crossing points, lighting, passive surveillance, landscaping and active frontages leading to poor space outcomes. Table 10 gives the PERS-style space assessment. Figure 27 shows the southern of Pitt Street prior to CRL construction works commencing in the area.

Table 10: PERS-style space assessment of do minimum

PERS Space Attributes	Moving in the space	Interpreting the space	Personal safety	Feeling comfortable	Sense of place	Opportunity for activity
East Street	-2	-3	-2	-3	-2	-3
Cross Street	-3	-2	-3	-3	-1	-1
Canada Street	-2	-2	-1	-2	-3	-3
Mercury Lane (Cross Street to Canada Street)	-1	-3	-2	-2	-2	-2
Beresford Square (outside of EoW)	-2	-2	-2	-2	-2	-2
Pitt Street (Mid-block crossing to Vincent Street)	-2	-2	0	-2	-3	-2
Pitt Street (Karangahape Road to mid-block crossing)	1	1	-1	0	1	1
Beresford Square (within EoW)	3	1	0	0	1	2
Mercury Lane (within EoW, Karangahape Rd to Cross Street)	1	2	2	1	2	1

Figure 27: Looking north along Pitt Street from the intersection of Pitt Street and Karangahape Road

2.4.3 Key stakeholder opinion

Several early engagements and high-level consultations with key stakeholders representing the community have expressed a desire for better quality public spaces, especially linked to pedestrian and cycle use. The sources include the members of the Auckland City Centre Advisory Board (ACCAB), Waitemata Local Board, nearby emergency services, and the Karangahape Business Association. Table 11 summarises the feedback received.

Table 11: Stakeholder opinions

Comment	Source
General agreement to investigate pedestrianising Mercury Lane between Karangahape Road and Cross Street. A Mercury Lane Pedestrian Mall would be consistent with the CCMP, A4E, the Karangahape Road Precinct Plan and general best-practice urban realm and public transport integration. Station expected to have a five-figure passenger capacity so needs to prioritise pedestrians.	Karanga-a-Hape Station precinct working group* 14/04/21 **Small working group comprising staff from AT (network operations, integration, engineering, customer experience), AT (Development Programme Office, Urban Design Unit), & MRCagney consultants*
Exciting opportunity to open up laneways. Pedestrianise Mercury Lane and Cross Street. Strong emphasis on improvements for pedestrians, and pedestrian links to nearby destinations. There are expectations of improved active mode connections and associated facilities, not just for train users. Request art features around all precincts, particularly incorporating a Māori cultural focus and tying in with nearby features. The opportunities for regeneration around stations is enormous, especially Te Waihorotiu and Karanga-a-Hape.	ACCAB, May 2021
Will consider changes if they don't prevent access or increase emergency services response times	FENZ & St Johns meetings, Aug 21
More & better cycle parking needed, support closing streets and reducing road lanes where necessary	Waitematā Local Board 29/3/22
There is a missing section of pedestrianisation between Canada Street and Cross Street	Karangahape Business Association (KBA) Board Committee 21/4/22

2.4.4 Perceived lack of personal safety

Community opinion

Consultation by LKA helped reveal the personal safety/security issues[19]:

- Security is a big concern. The area should include CCTV, safe lighting levels and bollards.
- While greenery is important, the proposed tree grove area will invite anti-social behaviour and potentially become dangerous. While the design of the grove was changed, the comment indicates the concern.

In meetings with the Karangahape community the need for better lighting was also emphasised as a means to deter anti-social activity.

Figure 28 and Figure 29 show photos of Mercury Lane and Cross Street at night.

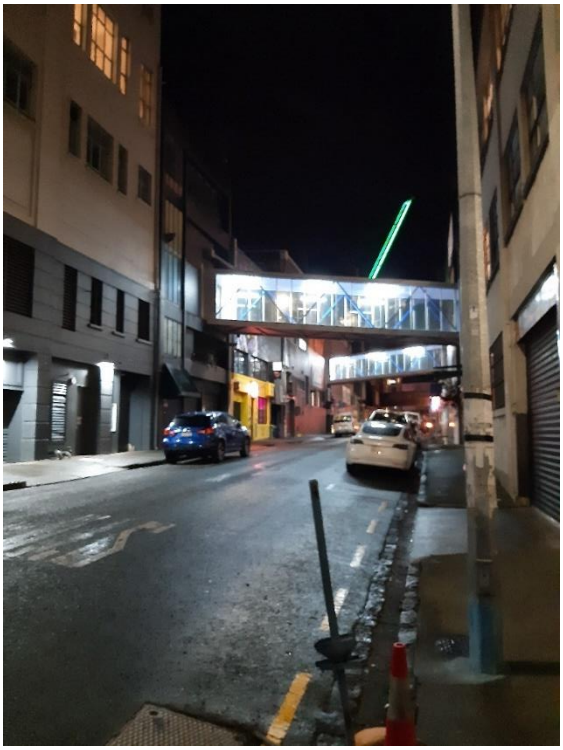


Figure 28: Looking east along Cross Street at night

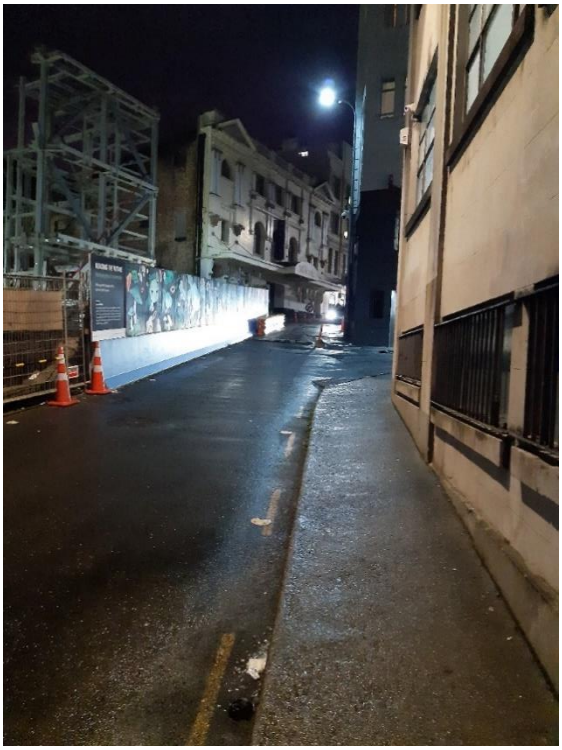


Figure 29: Looking north along Mercury Lane towards the intersection with Cross Street

[19] Karangahape Station and Public Realm Reinstatement LKA 22 December 2021

Karangahape Community Liaison Group (CLG)[20]

- Mercury Lane is a hot spot for drug dealing and drug use, post bar closing fights and other anti-social behaviour. We would like to understand what, if any, measures are being put in place through design to ensure the new station entrance and alleyway do not exacerbate this, in particular when the station is closed at night. The issues are most noticeable between about midnight and 7.30am - worst between 3am and 6am.

2.4.5 Limitation of the social and economic potential

The potential

Multiple parties and plans have identified the potential for beneficial development to help unlock the neighbourhood's potential. For example, the local business association, saw an "exciting opportunity to open up laneways" with a need to "ensure optimised development density" linked to the pedestrianisation of Mercury Lane and Cross St". It was stated that having quieter streets with the only vehicles going through the area for businesses or residents would be "better for businesses"[21].

In the CCMP 2020 the development opportunities identified include that CRL is expected to be the catalyst for significant ongoing regeneration and redevelopment around Karangahape Road over the life of the masterplan. This activity would be concentrated on the back streets on either side of the Karangahape Road ridgeline. It would renew and elevate the importance of this historic shopping street and town centre. This activity, however, has not happened. By contrast development has been booming at Te Waihorotiu (Aotea), in particular[22].

Reasons for lack of development at Karanga-a-Hape.

At the Eke Panuku ILM workshop looking at developing sites both at Karanga-a-Hape and Maungawhau (CRL Maungawhau & Karanga-a-Hape Precincts PBC ILM Workshop of 3 August 2021) the problems which required addressing for development to happen included:

- Unsafe areas around Karanga-a-Hape Station. Busy in evenings, scary at night and quiet in mornings
- Karanga-a-Hape Station entrance requires pedestrian access prioritised over roads
- Disjointed connections and there is a lack of a well-connected network for walking and cycling.

2.4.6 Evidence from multiple case studies - better street spaces leading to higher activity

As noted in many comments from community representatives, design reviewers and others, the LKA design does not include as much dedication of space to active modes and improved public realm as is seen to be desirable.

Numerous case studies have shown that a higher quality of street, with more safe space for people, generally leads to greater social and economic activity. Local examples include Fort Street and Elliott

[20] ibid
[21] Karanga-a-Hape Station precinct working group 14/04/21
[22] PwC, 2018 https://www.stuff.co.nz/business/property/109110497/city-rail-link-drives-auckland-development-boom-as-thousands-of-dwellings-planned

Street in the city centre[23],[24] (fully funded by Auckland Council Streetscape Programme) and on Karangahape Road itself[25].

2.5 Opportunities

The opportunities from the project relate to the benefits identified in the ILM but should also be seen in the context of the wider plans for the city centre, including the Karanga-a-Hape neighbourhood.

Over the next ten years, the city centre through the Council group and partnership with mana whenua, business and our communities, will be planned in a way that:

- Expects and is adaptable to change - This will be particularly important in areas such as the retail and commercial mix, residential communities, the way we move around the city, how we respond to social and climate challenges.

- Embraces our city as a destination – the city centre cannot survive as an economic hub alone if it is to be a resilient place. It will provide a central experience for visitors and a neighbourhood for residents.

- Resilience and sustainability at the core of our city - Our city centre is vulnerable to shocks as we will plan in a way that creates a more economically, socially, environmentally resilient and sustainable city centre. This means focusing on mitigating climate change and supporting the development of residential neighbourhoods and communities.

- Change the way we move - Mobility and transport will shift. We will plan for the ways our city will work over the next 20 years and ensure that our movement functions support our city centre experience. This means continuing to deliver on A4E and supporting investment in public transport, wider footpaths and safe cycleways. Investment in this area also contributes to delivering on Aotearoa's emissions reduction plans.

- Retain and expand our public and green spaces – the future of our city centre is likely to focus on taller buildings and residential development. This makes our green and public spaces even more important. Ensuring that there is adequate space for play, rest, recreation is crucial for the success of the city centre.

The core opportunities are, therefore:

- Reduced harm to vulnerable transport users. A critical requirement of the business case is that, through extending the area where pre-station opening treatment will occur, that there is a lower risk of injury to the large number of rail customers who will be pedestrians, cyclists and micro-mobility users. This in turn should provide greater confidence for travellers encouraging more use of the public transport network.

[23] Auckland Design Manual. Share the Wealth -Shared Spaces Make Great Business Places. http://content.aucklanddesignmanual.co.nz/resources/case-studies/street_fort_street_precinct/Documents/ADM%20Case%20Study%20Fort%20Street%20Precinct%20Auckland.pdf

[24] https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/place-based-plans/Documents/city-centre-masterplan-2012-print-version.pdf

[25] https://ourauckland.aucklandcouncil.govt.nz/news/2021/09/karangahape-road-records-retail-high-before-bracing-for-lockdown/

- Better use of existing and future public transport and active mode infrastructure and investments in the city centre. AT and its partners are investing heavily in infrastructure to support increased use of public transport and active modes. This includes flagship projects such as CRL and the Northwestern Busway as well as many more modest projects supporting these modes to and through the city centre. By paying attention to detailed requirements for travellers originating, terminating and transferring in the Karanga-a-Hape neighbourhood synergistic effects should be expected and the benefits of the major projects fully realised.

- Improved desirability of the Karanga-a-Hape neighbourhood as a place for economic, cultural and social activities.

- The massive change in accessibility of the neighbourhood, complemented by local investment to increase safety and improve the amenity should create spin-offs in terms of the level of desirable activity in the neighbourhood. While expected developments have not yet occurred to the extent anticipated, the business case is targeting measures to catalyse the changes desired by the community and more widely.

- Increased sense-of-place in the Karanga-a-Hape neighbourhood through expressing the unique character and identity of the area in the streetscape.

- The design of the station with its strong mana whenua references, which are taken further within the area for which LKA is responsible, demonstrates some of the possibilities to enhance the sense of place. At various community meetings there has been the desire for further work to reinforce the character, for example with art works from local creators.

2.6 Risks, issues and constraints

The major issues and constraints identified are:

- Time – risk that the business case process and detailed design work are not completed in time to commence delivery of any improvements to coincide with or supersede CRLL reinstatements and achieve a “dig once” solution.

- Budget – the budget constraints on AT are severe. As noted in Section 1.2, AT’s Investment Committee requires an option to be developed which fits within the budget allocation of $7.3m – including the costs for developing this business case and detailed design which is challenging. (This issue is effectively addressed with the options short-listed.)

- Opposition – risk that the local community or other stakeholders do not support recommendations or object to any increased disruption that may be caused. (However, note that strong support currently exists – see Section 4 below).

- Consistency within AT. As this business case has to be developed (and any findings implemented) ahead of related initiatives (for example, A4E) there is a risk of a lack of congruity. This risk is being addressed through close liaison with responsible officers and may require tactical, as opposed to permanent, interventions.

- Implementation – risk that CRLL/LKA are reluctant to change their urban realm designs to accommodate any change.

3 Outcomes

Section 3 outlines the strategic outcomes sought from the business case and maps the four investment objectives to the benefits sought and the measures/KPIs for understanding success.

3.1 Strategic outcomes

The strategic outcomes sought from the business case and the options to be evaluated relate to AT's priorities as expressed in the RLTP:

- Travel choices – Provide and accelerate better travel choices for Aucklanders
- Climate change and the environment – Improve the resilience and sustainability of the transport system and significantly reduce the GHG emissions it generates
- Access and connectivity – Better connect people, places, goods and services
- Safety – Make Auckland's transport system safe by eliminating harm to people
- Growth – Enable and support Auckland's growth through a focus on intensification in brownfield areas and with some managed expansion into emerging greenfield areas.

3.2 Performance measures

Table 12 summarises the objectives and KPIs for the business case.

Table 12: Objectives and KPIs

Investment objective/Project benefit	Waka Kotahi Benefit Category	Measure/KPI
Reduce harm to vulnerable transport users	Impact on social cost of deaths and serious injuries and perceptions of safety and security. Impact of air emissions, noise and vibration on health	Crashes by severity
		Deaths & serious injuries and collective risk
		Access - Perception
		Ambient air quality
		Noise level
Make better use of existing and future public transport and active mode infrastructure and investments in the city centre	Changes in mode use	People throughput (& spatial coverage of cycle and PT infrastructure)
		Travel time reliability for freight, service & delivery
Improved desirability of the Karanga-a-Hape neighbourhood as a place for economic, cultural and social activities.	Changes in access to social and economic opportunities and the liveability of the Karanga-a-Hape neighbourhood	Townscape: Allocation of space for social and cultural activities
		Amenity value – built environment
		Townscape: Vehicle volumes
Increased sense-of-place in the Karanga-a-Hape neighbourhood through expressing the unique character and identity of the area in the streetscape.	Changes in community views on the neighbourhood.	Pedestrian delay & Perception of access
		Townscape: Allocation of space for social and cultural activities (as above)

Targets are noted and defined in Section 14.2.2 which addresses monitoring.

4 Stakeholders

Stakeholders for this business case have been identified through the numerous previous iterations of related projects, including for the LKA design.

4.1 Internal stakeholders

- SteerCo (City Centre steering group)
- Traffic Engineering (AT)
- Maintenance (AT)
- Road Safety (AT)
- Operations (AT)
- Walking & Cycling (AT)
- Parking (AT)
- AT Metro (AT)
- Network Services Development (AT)
- Travel Demand Management (AT).

4.2 External stakeholders

- Waitematā Ward Councillor
- Waitematā Local Board
- Auckland City Centre Advisory Board
- City Rail Link Limited
- Link Alliance
- Central Mana Whenua Forum
- Karangahape Business Association
- City Centre Residents Group
- Bike Auckland
- Generation Zero
- Greater Auckland
- Fire & Emergency New Zealand
- St Johns Ambulance

4.3 Communication and consultation approach

A detailed Communications and Engagement Plan has been prepared and will be kept current[26].

Formal public consultation is planned to be carried out post SSBC approval. AT will seek feedback on:

- Public support for implementing the proposals planned for the neighbourhood
- Suggested changes regarding the size, applicability, and restrictions of the zone
- Any other comments or suggestions on improving the Karanga-a-Hape Station neighbourhood.

[26] Karanga-a-Hape Communications and Engagement Plan, April 2022.

AT will manage community expectations during the consultation phase of the project. Messaging will reflect the goals of the project, as well as the historical and wider context, while not giving inaccurate or incomplete information.

It is noted that related projects such as the Parking Strategy are likely to be consulting on their projects in a similar timescale to this business case. The consultations will therefore be closely aligned or combined so far as possible.

4.3.1 Communications plan

Table 13 summarises the communications plan for the project.

Table 13: Communications plan

Tool/Strategy	Purpose	Timing
Contact details (for the project team)		
External project email address: Projects@AT.govt.nz	The project email addresses will provide a channel for the community and stakeholders to contact the project team.	Programme commencement
AT contact number 09 355 3553	This will provide a channel for the community and stakeholders to contact the project team.	Programme commencement
Online accessible information		
Project webpage	Dedicated webpage with information/updates on project progress. To include: Programme and site-specific information Project updates Feedback form (online and freepost) Contact details Published community information	Programme commencement and on-going updates, as required
Social media	Use of the existing AT Facebook and Twitter account. Community members will be directed to the website for project updates.	Programme commencement and on-going updates, as required

Tool/Strategy	Purpose	Timing
Collateral (material created to support engagement)		
Media release	A media release will be published at key programme milestones. Media can be print, broadcast or online.	Programme commencement and on-going updates, as required
Targeted local advertisement	To update public about investment decisions and to promote engagement opportunities. Advertisements can be print, broadcast or online.	Programme commencement and on-going updates, as required
Key messages and FAQs	A question-and-answer booklet with up-to-date key messages will provide the project team with answers for the community including key information and standard responses to frequently asked questions. These will be kept up to date as the programme progresses. A selection of FAQs may be posted on the webpage on the AT website.	Programme commencement and on-going updates, as required
Briefing	Briefing packs will be prepared to provide an overview of the programme, site specific information and next steps so to build support for what is being done. This will be tailored depending on the stakeholder. These briefing packs may include: • Cover letter / memo • information brochure • FAQ document.	Programme commencement and on-going updates, as required
Notifications, emails and letters	Letters and notifications will be released in association with programme milestones or to request feedback/ involvement or to update on oncoming construction activities.	As required
Information boards	Developed to support stakeholder and community events and will provide an overview of the programme and include site-specific information. To be made available online, through key stakeholders and emailed to interested parties.	As required

Tool/Strategy	Purpose	Timing
Translation services	As required, we may wish to use translation services to create materials in multiple languages.	As required
Factsheet/flyer	To provide an overview of the programme, site specific information and ongoing updates. Hardcopies will be sent to local properties and local libraries / community venues.	As required
Working with accessibility groups	We will work with accessibility groups to increase their knowledge of the project and to make it easier to contribute to it.	As required
Face to face engagement		
Hui	To work with Mana Whenua on developing solutions for the problems identified that provide the best possible outcomes.	As required
Meetings	To gather key insights that may impact the programme. We are working closely with the Karangahape Rd Business Association to be visible and available to stakeholders. Meetings with property owners commenced on 23 August 2022.	Underway
Pedestrian count surveys	This will help identify who uses the crossing, how often and where they are going from and to.	As required
Community events – local pop ups and drop in café conversations	An opportunity for community and stakeholders to have discussions about the programme and site-specific locations. Key information including graphics, maps of the design, alternative options and delivery details will be made available.	As required
Project controls/ record keeping		
Communication and engagement register	All interactions and engagement are recorded through a communication and engagement register. This will also include all public enquiries and complaints.	Ongoing
Executive Leadership Team (ELT) updates	Internal AT reporting to provide leadership with oversight of engagement approach and collateral.	As required

4.4 External stakeholder views

Feedback about the proposed improvements from stakeholders has generally been positive. There are some concerns about how the closure of the upper part of Mercury Lane to vehicles will make it harder for drivers to access car parks on Cross Street, but importantly there has so far been little opposition to the proposed closure.

Improvements for safety are understood and well-accepted. Footpath enhancements have been welcomed. Recommendations for dedicated lanes and priority for buses and cycles are either well supported or no comments made. Notably there is no opposition to these proposals though there is occasional negative feedback about cycle lanes in general. Cycle lanes are generally well received but concerns about clashes with pedestrians and cars have been raised.

Frequent comments are made about preserving the unique character and vibe of the area.

Initial thinking from both Fire and Emergency New Zealand (FENZ) and St Johns is that if the proposal were to include closing part of Mercury Lane that would have a significant impact on their operations. They use this route to get to the Eden Terrace / Dominion Rd area and any detour would increase response time.

The way to address these concerns is covered in the management case, Section 12. Including involving such entities in a project working group and a series of structured design workshops.

A detailed list of who has been engaged with to date and the key points from the discussion can be found in Appendix D.

5 Māori engagement

Māori Engagement will be taking place throughout the organisation, from the various levels of management through to each phase of each project.

The project team is working closely with AT's Māori Engagement team, who are the conduit to the Central Mana Whenua forum. This forum holds a space for consultation and advice from representatives from iwi in the central isthmus.

The Karanga-a-Hape Station Neighbourhood project was presented at the AT Mana Whenua hui on 12 October. There was support for the project because it aligns well with the Mana Whenua values.

With regards to narrative, at the hui it was decided:

- To gain agreement from the AT Mana Whenua Forum, including those who were not at this hui, on using the existing CRL cultural narratives for the Karanga-a-Hape neighbourhood project. Information about these narratives was presented to the wider group
- If agreement is gained, to then approach the CRL Mana Whenua Working Group for permission to utilise the CRL narratives
- A Mana Whenua Working Group for the Karanga-a-Hape Station Neighbourhood Project will be set up to work with the project team through the design and construction stages of the project.

6 Option Assessment

Section 6 describes the process of optioneering undertaken for this business case. The business case evaluated four long list options against the do minimum. The analysis resulted in two short list options that were further assessed to result in a single preferred option.

6.1 Alternatives analysed

As noted in Section 1.2, the PoE expected a 'right-sized' single-stage business case, drawing on previous work. For the consideration of alternatives within the Waka Kotahi hierarchy (Figure 30 below) the relevant earlier work is the A4E programme business case.

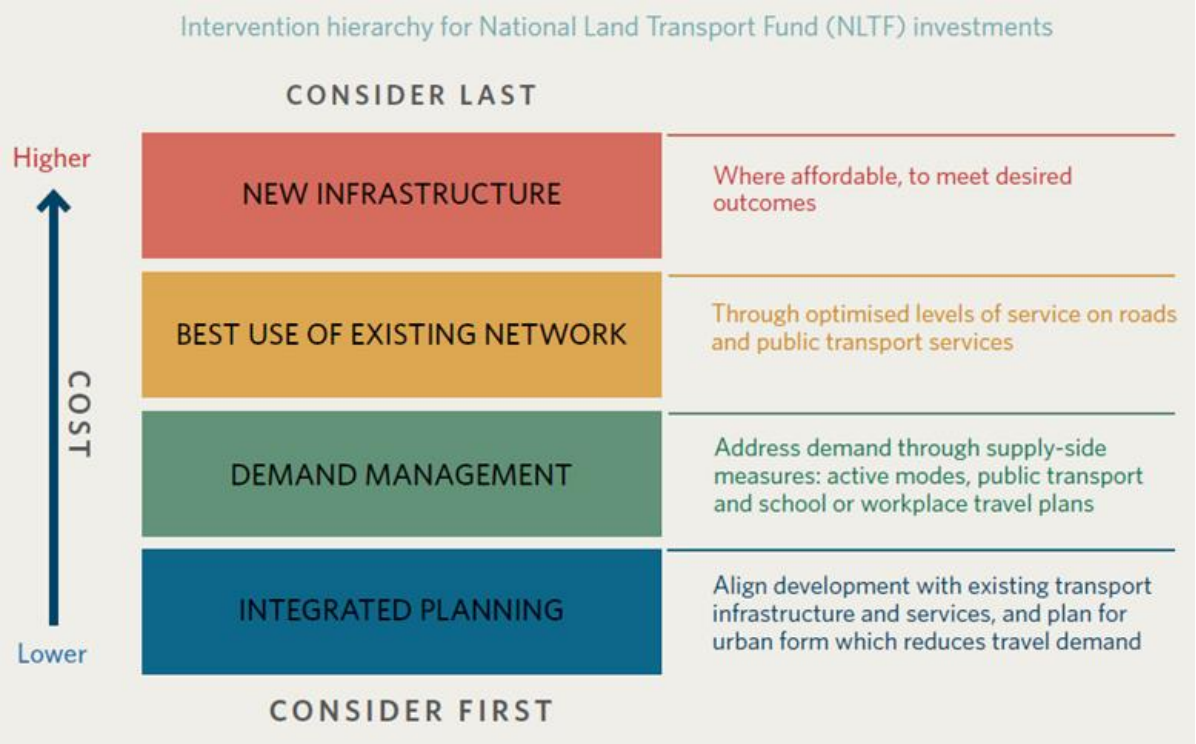


Figure 30: Intervention hierarchy for National Land Transport Fund (NLTF) investments

In the A4E business case it was identified that for **Integrated Planning** *"Tāmaki Makaurau has consistently applied integrated planning across the city, including with the Auckland Plan. The CCMP is an example of such planning. No further opportunities exist to address the problems through planning. A4E is the way to implement the plans".*

Demand Management *was expected to provide some benefits but would not significantly address the problems on its own. Without significant physical changes within the city centre there was minimal overall impact expected for public realm or safety, but both would benefit from a reduction in traffic volumes.*

Best Use of Existing Network with a Traffic Circulation Plan *"would significantly address most problem statements. Public and active transport capacity and accessibility would significantly improve, with equivalent car trips becoming more circuitous. The enabled space reallocation would allow*

significant improvements in public realm and reduce vehicle volumes. The reduction in through traffic would lead to a reduction in the exposure to harm in high conflict areas. Service and delivery movements were expected to become more challenging with more circuitous circulation patterns. This option was expected to have a low cost with minimal construction, but feasibility challenges exist".

New Infrastructure e.g. grade separation: *"grade separation options were expected to be high cost and disruptive options, with high complexity and limited feasibility".*

A **public transport option** infrastructure option *"would address the problems (by reducing vehicle volumes, creating space for active modes and providing high quality public transport access), but not to a degree to justify the costs".*

A general traffic option was *"expected to induce higher vehicle volumes – and have negative outcomes against several project objectives, most notably safety and amenity. The enabled reuse of space for buses and active modes was not expected to offset these impacts".*

Increased public transport services *"would have limited overall benefits towards the problem statements but would be critical to support any option that would increase the difficulty of city centre access".*

The business case concluded that some form of a traffic circulation plan, allowing for road space to be reallocated and with significant public realm improvements was preferred. This direction is similarly appropriate for the current consideration of one of the CCMP/A4E intervention areas – 8 Karangahape Road – Pitt Street station area circulation changes.

This thinking was tested at the initial options generation workshop (see below) where participants were challenged to identify different approaches to address the problems, and none were put forward.

6.2 Long list options analysed

Four variations of the traffic circulation plan intended to address the problems and objectives of this business case were developed through a combination of the team's earlier work (see Section 1.7) and an options generation workshop.

The workshop, held on 25 June 2022 included many participants from across AT as well as LKA, Waka Kotahi, Council and Eke Panuku as well as business case team members (see Appendix F for the workshop minutes). As noted above the participants were initially challenged to suggest alternatives to a traffic circulation plan, which did not produce any proposals. Then, through two iterations – ideas generation and ideas refinement – four concepts were produced. These were subsequently further developed by the team using their understanding from earlier work to end with four reasonably developed long list options. Given the earlier work and agreed rapid identification of possible traffic circulation plans the Waka Kotahi EAST assessment tool was not required.

These options were focused on the high-level provision of infrastructure for different transport modes. Specific street layouts, such as general traffic lane and bus lane positions and extents, footpath widths, kerb-zone uses, and uni/bi-directional nature of cycleways, were considered after the preferred general circulation and modal priorities had been confirmed.

6.3 Long list option description

The do minimum and four options are described and shown in the four following subsections below. Figure 31 shows the legend for the drawings.

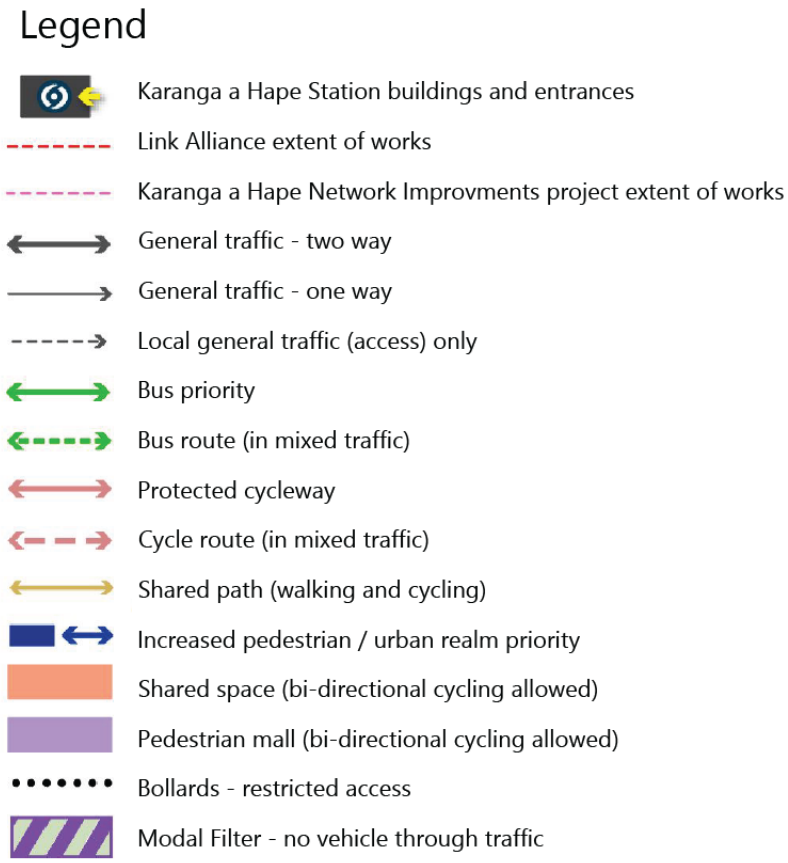


Figure 31: Legend for the do minimum and long list option drawings

6.3.1 Do minimum option: LKA design

Figure 32 and Table 14 depict and describe the do minimum option.

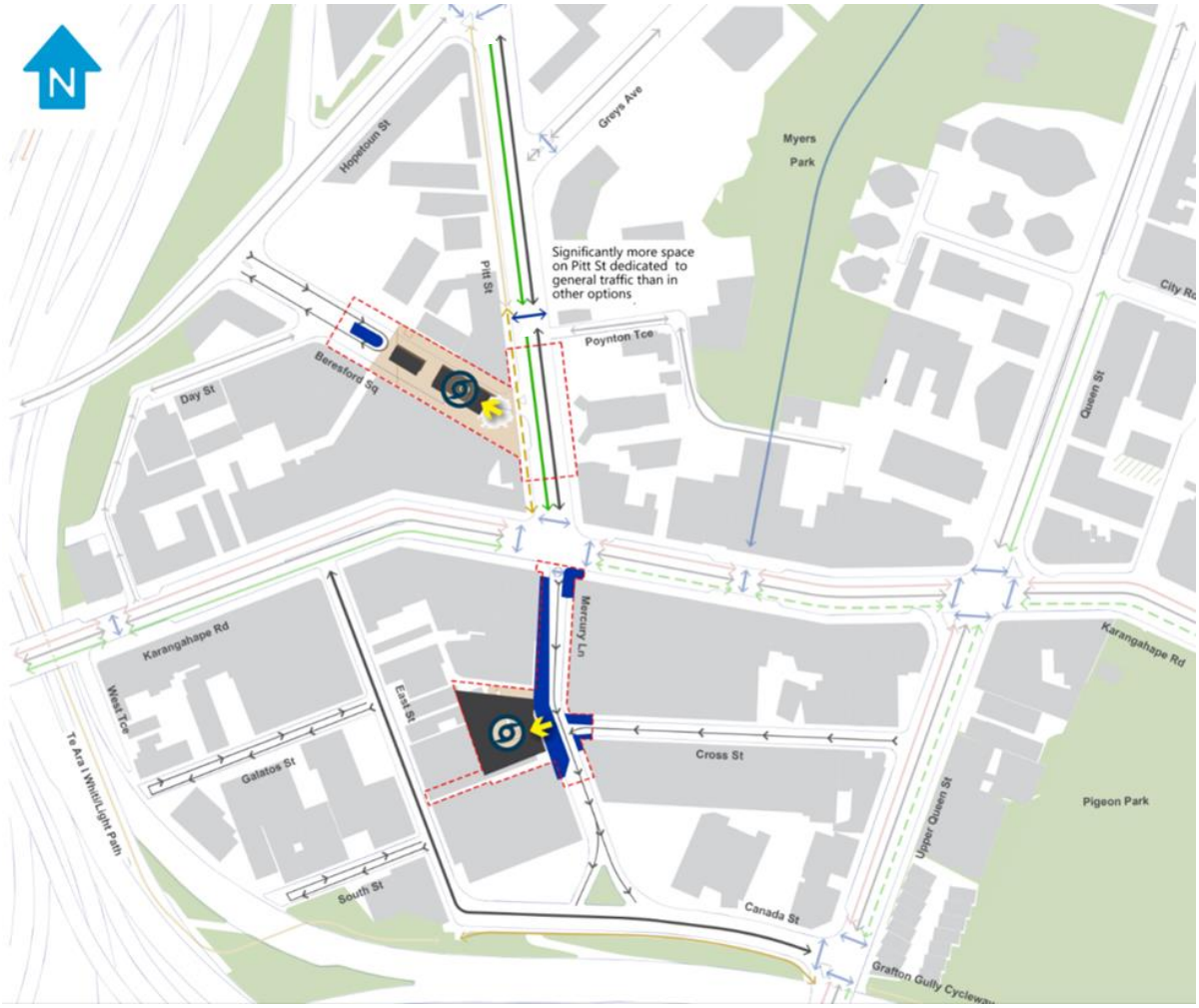


Figure 32: High-level visualisation of the do minimum option

Table 14: Summary of the do minimum option

Feature	Current: July 2022	Do Minimum: Link Alliance design
Vehicle circulation	Through traffic is permitted in both directions along each of the arterials, Pitt Street, Karangahape Road and Queen Street. Pitt Street south of Poynton Terrace has operated with a single lane in each direction for several years due to the CRL station construction. Local through streets in the neighbourhood only support one-way through traffic; Mercury Lane is southbound, Cross Street is eastbound, East Street is northbound. Canada Street provides for two-way traffic only between Upper Queen Street and Mercury Lane.	Vehicle circulation throughout the neighbourhood would revert to pre-CRL construction layout; the direction of Cross Street would be reversed such that traffic flows eastbound from Upper Queen Street to Mercury Lane, and East Street would be re-instated to two-way general traffic.
Pedestrian circulation	Footpaths are generally provided on both sides of each street, although some are narrow. Exceptions to this, providing for pedestrians on just one side, are Cross Street, as well as Mercury Lane, Beresford Square and along Pitt Street due to CRL construction. Shared paths operate on Canada Street between Upper Queen Street (Northwestern Cycleway) and Te Ara I Whiti as well as on Pitt Street between Hopetoun Street and opposite Poynton Terrace.	Localised footpath widening and traffic calming would be undertaken on the northern end of Mercury Lane, between Cross Street and Karangahape Road, and around the Cross Street intersection. Footpaths extents similar to those prior to CRL construction would be re-instated on the western side of Pitt Street outside Beresford Square. A mid-block pedestrian crossing would be added across Pitt Street, near Poynton Terrace. All other footpaths would remain unchanged throughout the neighbourhood.
Cycle circulation	In addition to the shared paths on Canada Street and Pitt Street, there are separated cycleways along Karangahape Road, as well as Upper Queen Street south of Karangahape Road. A cycleway has also been installed along East Street, Galatos Street and West Terrace for the duration of CRL construction works. Notable is the 80m gap between the Karangahape Road cycleway and Pitt Street shared path.	The East Street cycleway would be removed. The current shared path on Pitt Street between Hopetoun Street and opposite Poynton Terrace would be retained, and the 80m (non-shared) footpath through Beresford Square and up to Karangahape Road cycleways would be re-instated. This is indicated as a dashed shared path line on the plan, as despite not formally being a shared path, it is recognised that in practice it would operate as one.

Feature	Current: July 2022	Do Minimum: Link Alliance design
Further street-specific detail	**Pitt Street:** Pitt Street is the site of significant CRL construction work. To allow for this, it was reduced to one traffic lane in each direction in 2019 and has operated as such since that time.	**Pitt Street:** Pitt Street would be reinstated to approximately its former layout, however with a continuous bus lane from Greys Avenue to Karangahape Road southbound, being installed in place of general lanes. In addition to these, three general lanes would be re-instated between Karangahape Road and Greys Avenue, and five between Greys Avenue and Vincent Street. **Beresford Square:** Beresford Square west of the LKA extent of works would be largely reinstated similar to its former layout, but with the addition of a short, wide median between Day Street and Beresford Square.

6.3.2 Long list option 1: Basic enhancements to 'do minimum'

Figure 33 and Table 15 depict and describe long list option 1.

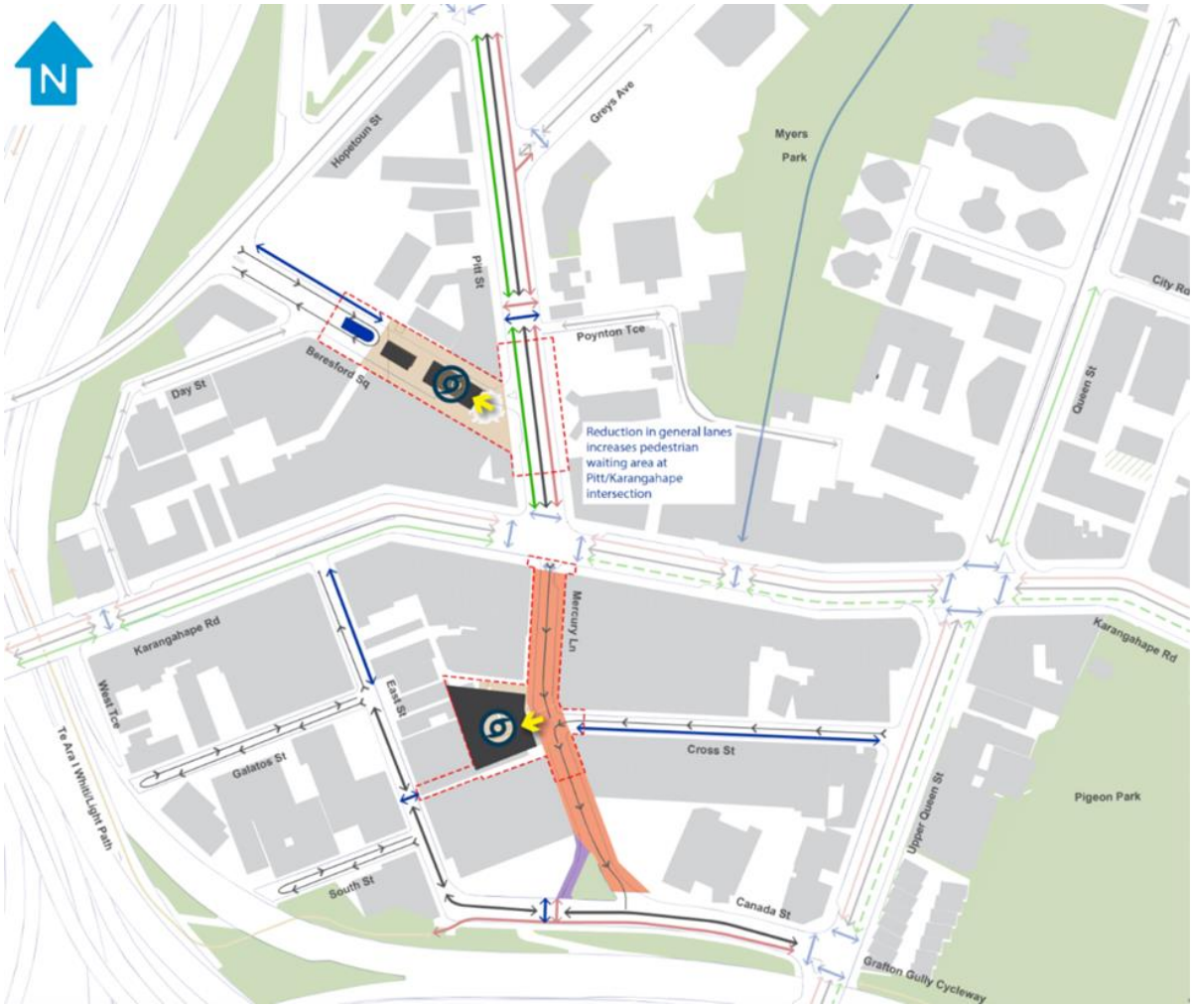


Figure 33: High-level visualisation of long list option 1

Table 15: Summary of long list option 1

Feature	Option 1: Basic enhancements to 'do minimum'
Vehicle circulation	Changes to vehicle circulation from current (July 2022) would include reversing the direction of Cross Street to make it westbound (back to pre-CRL construction direction and same as in do minimum option). East Street would revert to two-way vehicle traffic, apart from becoming one way between Galatos Street and Karangahape Road, to reduce through traffic and free-up space for other uses such as improved pedestrian facilities.
Pedestrian circulation	Pedestrian and local amenity would be improved by converting Mercury Lane to a shared space for its entire length, as well as improving pedestrian facilities on Cross Street, the northern side of Beresford Square (to be re-instated) and the northern-most block of East Street. Mid-block crossings would be added to Canada Street and East Street to improve access, in addition to that proposed for Pitt Street in the do minimum option. Slip lanes would be removed at the intersection of Mercury Lane and Canada Street, such that there is one lane out of the shared space onto Canada Street; ensuring safe speeds and increasing available space for local amenity and pedestrian space.
Cycle circulation	The East Street cycleway would be removed, however replaced with two-way cycle access on the Mercury Lane shared space. Separated cycle facilities would also be added to Pitt Street and Canada Street.
Further street-specific detail	**Pitt Street:** Pitt Street would feature one general lane in each direction, plus bus lanes and separated cycle facilities. The reduction in traffic lanes would lead to increased pedestrian space around the Karangahape/Pitt intersection. **Beresford Square:** The footpath on the northern side would be re-instated wider than what existed pre-CLR construction. Same as do minimum, a short median would be added to Beresford Square, but otherwise the pre-CRL construction layout would be re-instated.

6.3.3 Long list option 2: One-way circulation system

Figure 34 and Table 16 depict and describe long list option 2.

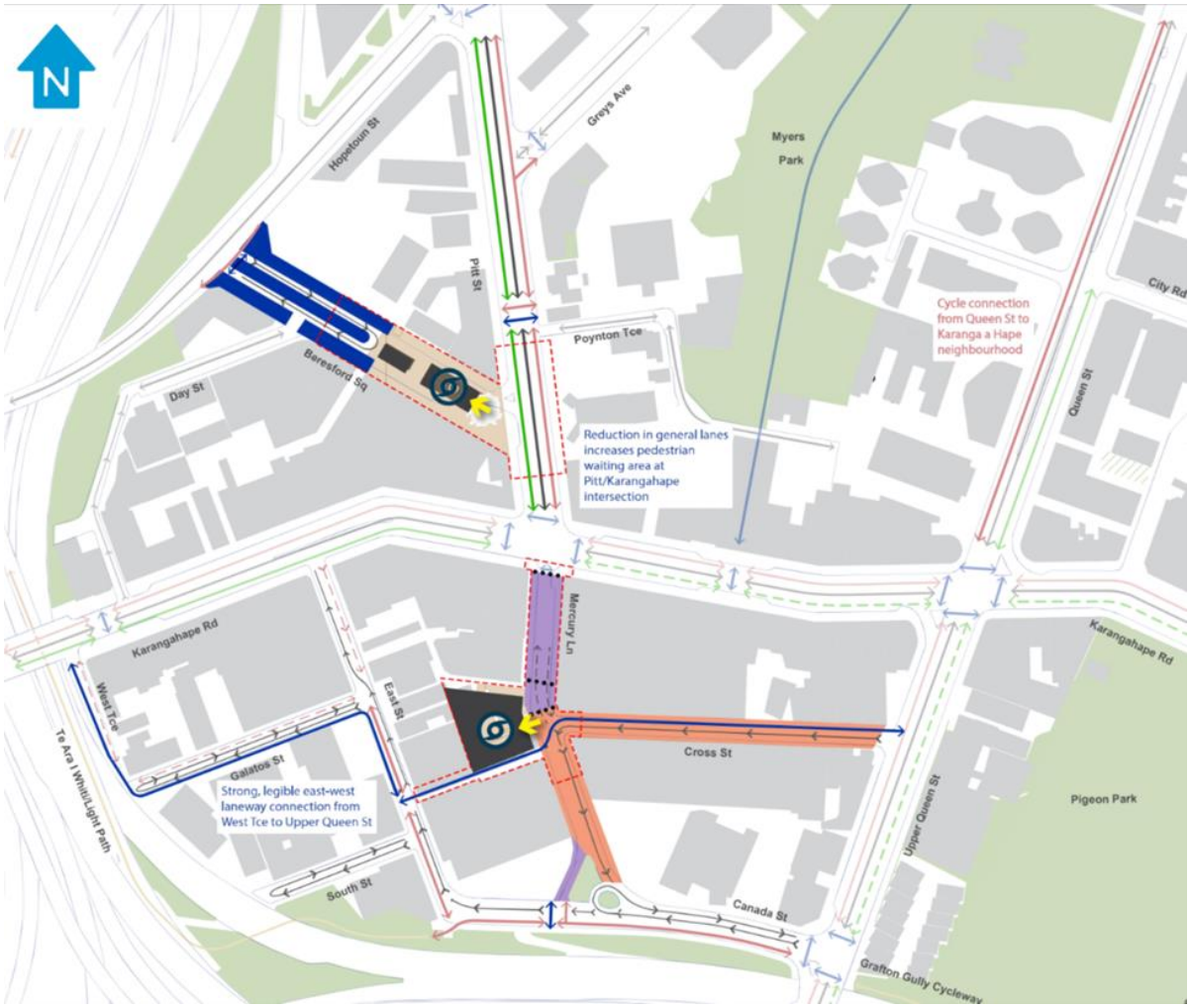


Figure 34: High-level visualisation of long list option 2

Table 16: Summary of long list option 2

Feature	Option 2: One-way circulation system
Vehicle circulation	Traffic through local streets would be generally limited through use of a one-way circulation system and traffic calming. This one-way system allows for narrow, slow-speed carriageways which free up street space for other uses. Pick up and drop off to the Mercury Lane area is encouraged (through design) to be in via Canada Street, around a turning circle at Northern end of Mercury Lane and out via Canada Street. Same as proposed in option 1 and the do minimum option, this option would reverse the direction of Cross Street to make it westbound.
Pedestrian circulation	Development of a legible and high-amenity east-west pedestrian laneway route between West Terrace and Upper Queen Street via Cross Street is proposed. Pedestrian and local amenity would be particularly improved around the Mercury Lane station entrance by the shared spaces and pedestrian mall. Mid-block crossings would be installed in the same locations as in option 1.
Cycle circulation	This option retains a cycleway through East Street. Additionally, a cycle connection is proposed along Queen Street to better connect the Karanga-a-Hape neighbourhood. Separated cycleways would be added to Pitt Street and Canada Street, as in option 1.
Further street-specific detail	**Pitt Street:** Pitt Street design would be the same as option 1. **Mercury Lane:** Pedestrian mall would feature controlled access to its two vehicle entrances from the intersection with Cross Street, simplifying phasing and increasing space at the signalised intersection at the northern end. **Beresford Square:** Beresford Square would feature a full-length median and pedestrian space improvements on both sides.

6.3.4 Long list option 3: Traffic cells and modal filters

Figure 35 and Table 17 depict and describe long list option 3.

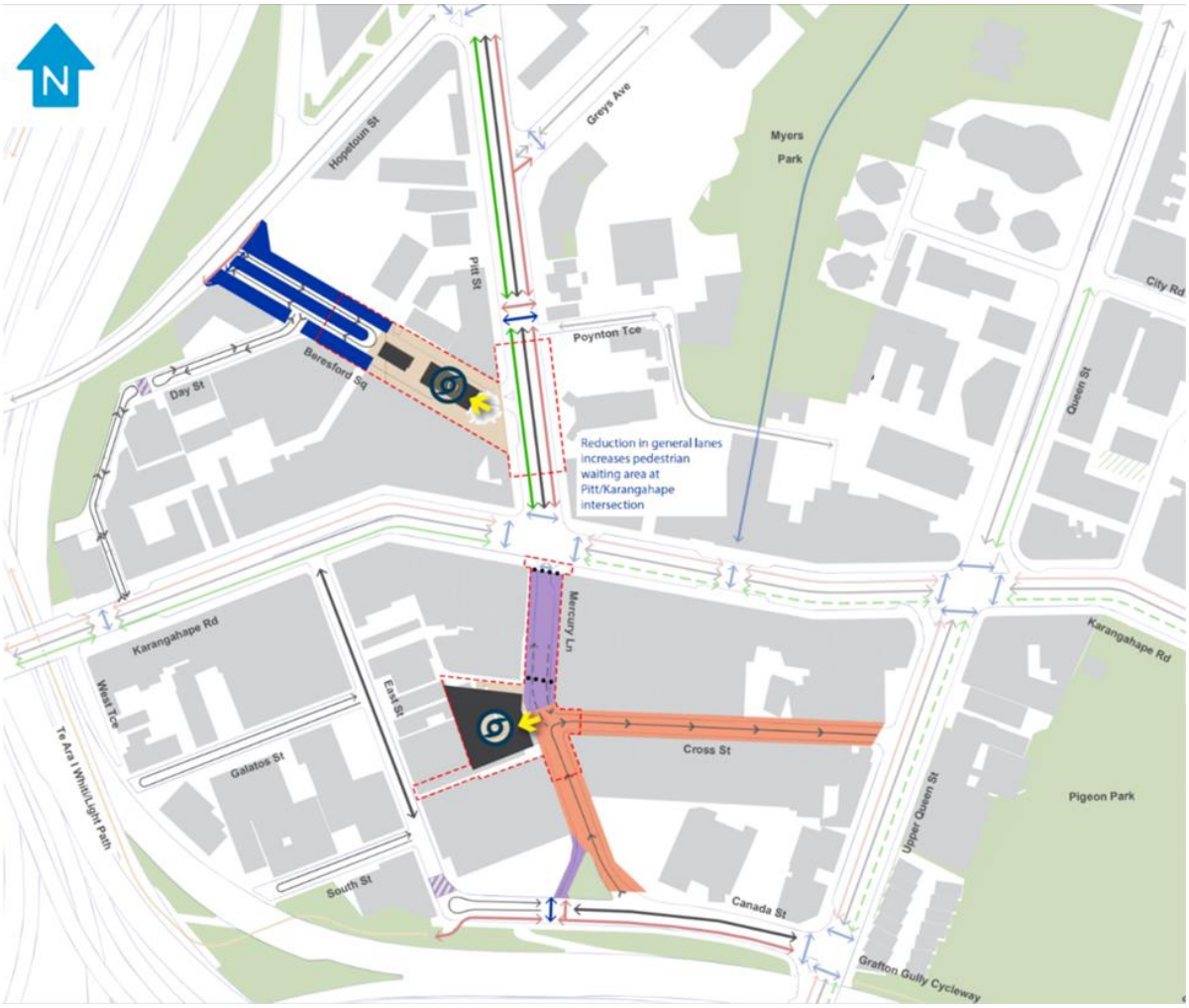


Figure 35: High-level visualisation of long list option 3

Table 17: Summary of long list option 3

Feature	Option 3: Traffic cells and modal filters
Vehicle circulation	Through traffic on local streets would be removed through use of modal filters; one each between Canada and East Streets, and one on Day Street. Vehicle turnaround provisions are made at each modal filter. The general traffic direction of Cross Street differs from all other options, instead flowing eastbound, the same as current (July 2022).
Pedestrian circulation	Similar to option 2, pedestrian and local amenity would be significantly improved around the Mercury Lane station entrance. The following are the same as Option 2: • Mercury Lane north of Cross Street would become a pedestrian mall. • Cross Street and the southern block of Mercury Lane would become shared spaces. • A mid-block crossing would be installed on Canada Street.
Cycle circulation	The East Street cycleway would be removed in this option, however cycling on-street would be improved due to the removal of all through traffic from East Street. The following are the same as option 2: • Cycling will be permitted in both directions on the pedestrian mall and shared spaces • A Separated cycleway would be added to Canada Street and Pitt Street.
Further street-specific detail	**Pitt Street:** Pitt Street design would be the same as option 1 & 2. **Beresford Square:** Beresford Square would be the same as in option 2

6.3.5 Long list option 4: Pedestrian focused neighbourhood

Figure 36 and Table 18 depict and describe long list option 3.

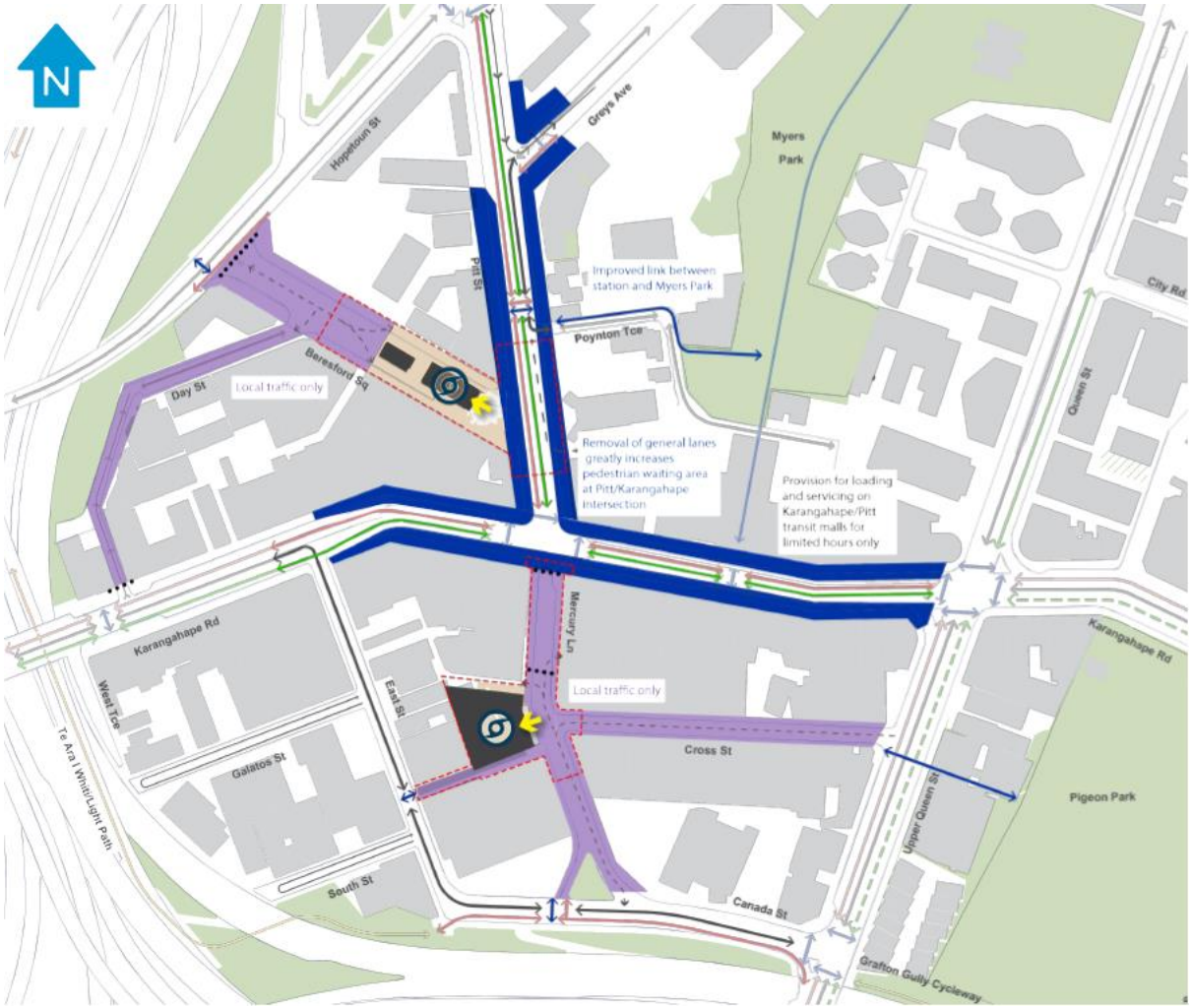


Figure 36: High-level visualisation of long list option 4

Table 18: Summary of long list option 4

Feature	Option 4: Pedestrian focused neighbourhood
Vehicle circulation	General traffic is proposed to be removed entirely from Karangahape Road, between East Street and Queen Street, as well as from the southern end of Pitt Street. Access for public emergency services would be retained, while goods and service vehicles would be permitted during the early morning. General through traffic would be diverted from Karangahape Road onto East and Canada Streets, while the block of Pitt Street between Vincent Street and Greys Avenue would become one way for general traffic. General traffic access on Pitt Street south of Greys Street would only be to Poynton Terrace and vehicle entrances. Vehicle access to local properties on pedestrian malls would be controlled, with limited entry points to prevent through traffic.
Pedestrian circulation	Significantly more space would be made available for pedestrians throughout the Karanga-a-Hape neighbourhood, including substantially wider footpaths on both Karangahape Road and Pitt Street, and pedestrian malls on Mercury Lane, Cross Street, and Beresford Square. Additionally, pedestrian links between the Karanga-a-Hape neighbourhood and Myers and Pigeon parks would be strengthened and made more legible.
Cycle circulation	Cycling would be permitted in both directions on the pedestrian malls, providing local access as well as for connections between Canada Street and Karangahape Road. The same as proposed in options 1, 2 and 3, separated cycle facilities would be added to Pitt Street as well as Canada Street.
Further street-specific detail	**Pitt Street:** Significant reduction in traffic lanes would greatly increase pedestrian space around the Karangahape Road/Pitt Street intersection. Cycling facilities are proposed for Pitt Street similar to options 1, 2 and 3. **Beresford Square:** Beresford Square and Day Street would be re-constructed as a pedestrian mall, with controlled access to vehicles for local access only.

6.4 Assessment of long list

These options were assessed using multi-criteria analysis (MCA), first by the team, then with review and checking at a long list options analysis workshop on 1 August 2022 (see Appendix G for workshop notes), again attended by the wide range of participants. The workshop was followed by some individual discussions with Subject Matter Experts (SMEs) to check that appropriate options had been considered and that an option that was likely to fall within the initial budget would progress to the short list.

The MCA used, as developed by the business case team with input from workshop participants is shown below:

Investment objectives	KPIs		Do Min	Option 1	Score	Option 2	Score	Option 3	Score	Option 4	Score
		Measure		**Basic enhancements to 'do minimum'**		**One-way circulation system**		**Traffic cells and modal filters**		**Pedestrian focused neighbourhood**	
			All 0s	**Brief commentary on choice of score for option 1.**		**Brief commentary on choice of score for option 2.**		**Brief commentary on choice of score for option 3**		**Brief commentary on choice of score for option 4**	
IO1: Reduce harm to vulnerable transport users (35%)	K1. Deaths and serious injuries	K1. Total DSIs	0	Protected cycleways on Pitt St and Canada St improve cycling safety. However, there are some safety concerns around vehicle through traffic in the shared space on Mercury lane. Conflict on shared space could be worse than in the do minimum as pedestrians might feel they have priority.	0	Vulnerable transport users are safer through the prevention of rat runs and the creation of a shared space and pedestrian mall. Thought to be an improvement over Option 1 - but not as good as other options.	1	Vulnerable transport users are safer through the prevention of rat runs and the creation of a shared space and pedestrian mall. Modal filters could reduce vehicle traffic even more than in Option 2, further reducing vehicle conflicts. But two-way vehicle movements on East Street and interaction of Day Street with mid-block signals could increase conflict with pedestrians.	2	Pedestrian priority, removes vehicle conflict. May impact East St but not significant ped & cycling route. Still might need traffic calming measures to reduce harm for street users, especially for East Street and Canada Street which become the new vehicle through-route. This option could introduce more personal safety concerns than other options as removal of vehicle traffic before adjacent land uses improve could leave pedestrians on empty streets.	2
	K2. Access – perception	K2. Perception of safety and ease of walking and cycling.									
	K4. Harmful emissions	K4. PM, NOX and noise (traffic vol change as proxy)									
IO2: Make better use of existing and future public transport and active mode infrastructure and investments in the city centre (30%)	K3. People – throughput of pedestrians, cyclists and public transport boardings	K3. Total volumes	0	Better provision of pedestrian movement. More consistent with other CRL/City Centre locations. Good bus and train connections but not seen as being good as Option 2/3.	1	Same connectivity as Option 1 but with an additional east-west link via Cross St, through to West Tce. Recognise the continued presence of cars in the area, but still represents an improvements over Option 1.	2	Same connectivity as Option 1. Walking connections are not improved as much as Option 2, nor is there a cycling connection on East Street so fewer options for cycling.	1	Supports bus movement better, East St signalisation may detract. In line with CCMP. Wider footpaths. Provides an alternative through route for vehicles (East/Canada), and while providing for pedestrians and cycling connections on the core streets, but these connections would no longer be possible on East Street and Canada Street.	3
	K4. CO_2 emissions	K4. As above									
	K5. People – mode share	K5. Mode share by public transport and active mode.									

IO3: Improve the desirability of the Karanga a Hape Station neighbourhood as a place for economic, cultural and social activities (20%)	K2. Access – perception K5. Amenity value – natural and built environment	K2. As above K5. PERS lite Note: “user to describe”. Can be taken as ‘Making the community thrive’.	0	Existing heritage buildings/frontages don't lead to space activation. Cross St has more potential for new use.	1	Improvements to Beresford Sq, general traffic reduction, and the upper Mercury Ln pedestrian mall create potential for new use. The reduction in vehicle through movements improves the desirability of the area and is an improvement over Option 1.	2	Improvements to Beresford Sq, general traffic reduction, and the upper Mercury Ln pedestrian mall create potential for new use. Modal filters also provide space for activation that can increase the desirability of the area.	2	Lots of potential for new use through pedestrian malls. Potential that pedestrian malls could hinder economic activity in the short term compared to the do minimum and that the pedestrian mall treatment does not provide as much desirability when the adjacent land uses are not also changed.	2
IO4: Increased sense-of-place in the Karanga a Hape Station neighbourhood through expressing the unique character and identity of the area in the streetscape (15%)	K5. Amenity value – natural and built environment	As above. Note “user to describe”	0	Not enough of a difference compared to 'do min'. Closing the right turn slip lane from Mercury Ln onto Canada St creates some space - an opportunity to use this space (e.g. for a pocket park).	0	Provides public space off Karangahape Rd (Beresford Sq, Cross St to Galatos St Connection). It provides more public space than Option 1 but more could be done.	1	Provides public space off Karangahape Rd (Beresford Sq, Cross St). Removing vehicle traffic alone increases the sense of place.	1	Provides a significant amount of public space north and south of Karangahape Rd. Built form may have more of a sway on the desirability of the area than pedestrianisation. Risk of overstating the ability of pedestrian malls to improve a place ahead of improvements to the adjacent land uses.	2

Critical Success Factors											
Potential Deliverability	Can the option be successfully delivered through all the statutory requirements?	What is the level of consenting complexity/difficulty? (Design, Consenting & Construction)	0	Consenting relatively in line with 'do min'.	-1	Pedestrian mall/interface with property owners. Shared space along Cross St (Carpark)	-2	Pedestrian mall/interface with property owners. Shared space along Cross St (Carpark)	-2	Pedestrian mall implementation is harder and also wider footpaths.	-3
Potential Achievability	Is the option workable?	What are the technical or practical considerations – e.g. traffic circulation. Alignment with A4E.	0	Very little change to existing. Pitt St lane config interface. Dependent on materials and interaction with LKA works.	-1	Shared space extents reducing through traffic volumes. Could be some issues with community push back on pedestrian malls or consenting issues for property access, but technically not difficult.	-2	Shared space extents reducing through traffic volumes	-2	Traffic re-routing. May align w/ A4E. Already aligns with CCMP. Aligns well with the strategic direction for the future, but technically much more demanding than the other options and likely more pushback from stakeholders.	-3
Community acceptability		Degree to which community support (or opposition) may be expected.	0	Likely combination of preferences, issues.	0	Removal of parking on Cross St. Pedestrianised space, investment in Cross St to Galatos St link.	0	Removal of parking on Cross St. Pedestrianised space.	0	For and against support. Likely to not be supported by key stakeholders.	-3
Impact on loading and servicing			0	Reduction in LZs on Pitt & Cross St.	-1	Shared space can assist in providing loading and service space but some reduction compared to 'do min'.	-1	Shared space can assist in providing loading and service space but some reduction compared to 'do min'.	-1	All loading and servicing removed.	-3
Potential affordability		Including impact on commercial arrangement w/ CRL	0	Basic enhancement of 'do min'.	-1	Full road rebuild on Cross St and Mercury Ln and increased urban realm priority on Beresford Sq..	-2	Full road rebuild on Cross St and Mercury Ln and increased urban realm priority on Beresford Sq.	-2	Highest level of intervention.	-3
Supplier capacity and capability			0	Same as 'do min'.	0	Same as 'do min'.	0	Same as 'do min'.	0	Same as 'do min'.	0
Scheduling/programming		When the alternative/option could be delivered and other timing requirements. Including impact on commercial arrangement w/ CRL	0	Same as 'do min'. This could be harder than the do minimum. Very contingent on LKA.	-1	To deliver all by CRL opening would be a challenge, but the opportunity to stage the interventions can relieve some of this pressure.	-1	Additional physical works required by CRL.	-1	Not able to be delivered prior to station opening.	-3
Opportunity to stage		Can construction be staged?	0	Beresford, Cross could occur later.	3	Some interlinked elements provide less ability to stage compared to Option 1, but still some potential.	2	Some interlinked elements provide less ability to stage compared to Option 1, but still some potential.	2	Many design elements are interlinked, e.g. the Karangahape Rd transit mall would likely be delivered in tandem with the Pitt St transit mall.	1

Opportunities and impacts											
Climate Change mitigation (mandatory)			0	Encourages mode shift to public transport and active modes, but overall general traffic is unlikely to change measurably.	1	Encourages better mode shift to public transport and active modes, but overall general traffic is unlikely to change measurably.	1	Encourages better mode shift to public transport and active modes, but overall general traffic is unlikely to change measurably.	1	Encourages better mode shift to public transport and active modes, and there is potential for a reduction in overall general traffic.	2
Climate change adaptation			0	N/A	-	N/A	-	N/A	-	N/A	-
Cumulative impacts		Favourable for things like urban intensification, transit oriented development.	0	Slightly more opportunity than Option 1 due to improved active modes and public transport provisions.	1	The urban realm priority at Beresford Sq and Cross St creates potential for new development.	2	The urban realm priority at Beresford Sq and Cross St and Cross St pedestrian mall creates potential for new development.	2	Creates a neighbourhood environment, leads to additional business activity, active mode improvements.	3
Impacts on Te Ao Māori (Mandatory)			0	Limited new space to work with for UD, but more than 'do min'.	1	Larger 'canvas' to work with for UD.	2	Larger 'canvas' to work with for UD.	2	A lot of new space and opportunities to work with for UD.	3
Property impacts		Number or scale of impact (not including property access - this is covered in the loading and servicing CSF?)	0	No properties affected.	0	No properties affected.	0	No properties affected.	0	No properties affected.	0
Project-specific critical success factors											
Capital cost (not to be scored)			0		$		$$		$$		$$$
Impacts on operating costs (not scored)			0		$		$$		$$		$$$

6.5 Short list

As a result of the workshop and additional discussions, two options were included in the short list. They were:

- the Emerging Preferred Option (EPO) and,
- the Minimum Viable Product (MVP).

The rationale for the choice of the EPO elements is outlined in Appendix G. It was agreed by the wider group that an option based on the best elements of long list options 2 and 3 should be developed. While option 4 scored highly in terms of performance against objectives, its high cost and achievability challenges ruled it out, at this time. Critically, it could not be delivered in the tight timeframe required. Ideally, however, the preferred option should not rule out eventual progress towards the concept of option 4.

Long list option 1 provided the basis for the MVP, as initial costing indicated that it would be likely to fit within the RLTP budget of $7m (including business case and design).

Figure 37 shows high-level schematics of the do-minimum and Emerging Preferred Option side-by-side. Preliminary design drawings of the two short list options are included in Appendix H.

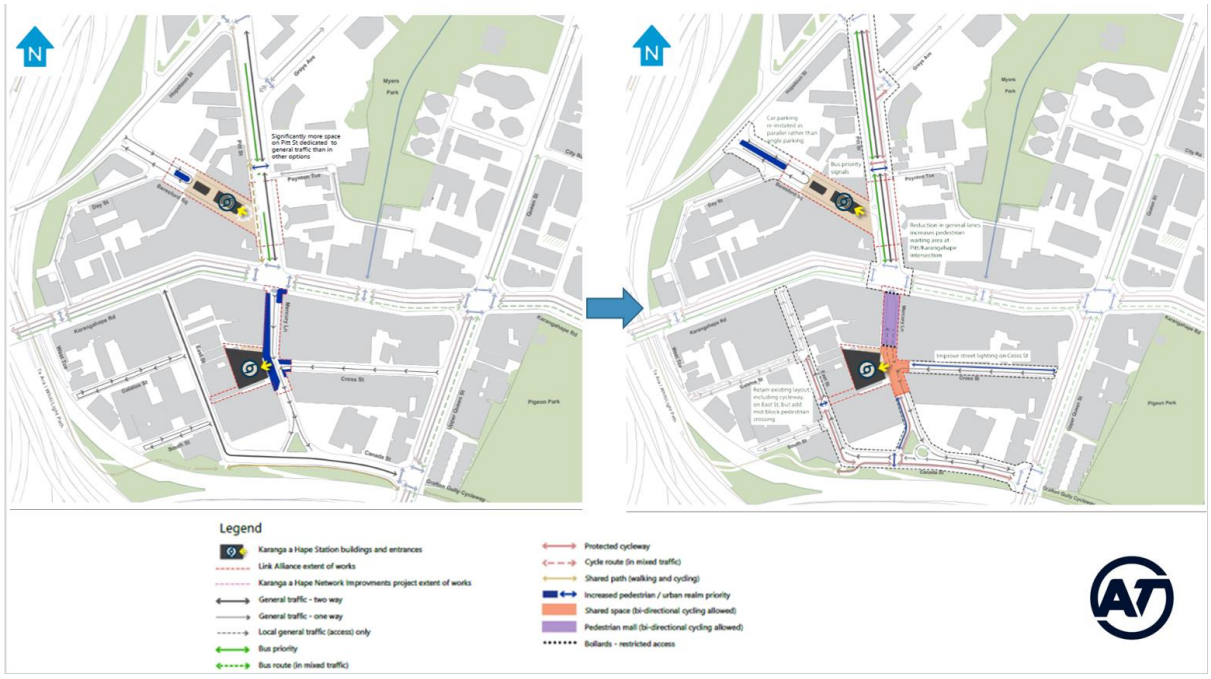


Figure 37: High-level visual comparison of do-minimum against Emerging Preferred Option (EPO)

Appendix G includes a table that explains in detail the decisions and trade-offs in selecting items from the long-list options to be included in the short list option referred to as the emerging Preferred option or EPO.

6.5.1 Short list option EPO

Table 19 summarises the interventions and rationale for the short list option EPO. Preliminary design drawings for the EPO are located in Appendix H which can aid with understanding the design.

Table 19: Summary of the short list option EPO by street section

Street or street segment	Emerging Preferred Option (EPO)	Description and rationale
Pitt St – Karangahape Rd to Greys Ave	Reallocate pre-CRL construction road lanes for: Signalised mid-block pedestrian and cycle crossing with bus advance signals Northbound and southbound bus lanes Separated cycle lanes (uni-directional) Single lane of general traffic in each direction New tree pits. Southwestern corner kerb build-out for double-decker bus clearance. Kassel kerbs and Kassel drains.	Three southbound lanes of traffic on Pitt St can be reduced to two with removal of through-movement into Mercury Lane Retain single lane of general traffic in each direction that has been in place for four years Internal and external support to reallocate road lanes to provide for bus lanes and separated cycle lanes. Separated cycle lanes reduce ped-cycle conflict from LKA shared zone on western footpath
Pitt St – Greys Ave to Vincent St	Continuation of bus priority southbound and separated cycle lanes **Short term intervention:** Concrete cycleway separators.	Consideration of future reallocation of road lanes to provide for connection of bus infrastructure and cycle lanes. There is no need for a northbound bus lane north of the mid-block crossing – the bus advance will help the buses pull across from the kerb side to right turn lane to access Vincent, a bus lane wouldn't work. Uncertainty of future interventions and coordination with other planned works (cycle, bus) point towards interim tactical solution

Street or street segment	Emerging Preferred Option (EPO)	Description and rationale
Mercury Lane – Karangahape Rd to Cross St & laneway	Pedestrian mall with bollards from Karangahape Rd to George Ct building carpark Extend raised table from intersection into Cross St to incorporate new mobility parking and extend south along Mercury Lane to incorporate LKA laneway access New lighting.	Both internal & external feedback support reduction of traffic through Mercury Lane and removal of all through-traffic. Shared zone on Mercury Lane with both high number of through vehicles and high number of pedestrians deemed unsafe and less safe than LKA design. Pedestrian mall seen as safest option – also provides a new "public space" for the area.
Mercury Lane – Cross St/laneway to Canada St	Narrowed carriageway for traffic (southbound only) – possible vertical speed treatment Right-turn slip lane into East St/Canada St removed Reallocate previous parking on western kerb to separated bidirectional cycle path **Short-Term, Tactical Intervention**	Support to reduce speed and traffic movements through Cross St and Mercury Lane to improve safety and amenity for pedestrians. Opposition to making these a Shared zoned as little street activation or surveillance from adjacent properties. Narrowed traffic lane & removal of parking will provide road space for bi-directional cycle connection from Canada St to Mercury Lane station entrance.
Cross St – Upper Queen St to raised table by Mercury Lane	Return to traffic movement in westbound direction (ie from Upper Queen St towards Mercury Lane) Additional footpath space, either through widened footpath on northern side or footpath extensions on both sides of Cross Street – including adding in a 'tactical' footpath past the Wilson Parking building where there currently is no footpath.	Westbound traffic direction will be reinstated by LKA at the end of their works. This was temporarily changed during CRL construction in consultation with the community. Wide consensus to improve safety and amenity of Cross St for pedestrians Mobility parking & Loading & Servicing spaces to be worked through in Developed Design stage

Street or street segment	Emerging Preferred Option (EPO)	Description and rationale
Canada St – Upper Queen St to East St	Remove right-turn slip lane from Mercury Lane Must have safe crossing for pedestrians and cyclists across Canada St towards Mercury Lane – toucan crossing Separated bi-directional cycleway on the southern side to connect to Te Ara I Whiti / Lightpath, toucan crossing and East St cycle facility Narrow carriageway to make slow speed local traffic road Pick-up and Drop-off (PUDO) and Loading spaces along northern kerbline of Canada St between Mercury Lane & Upper Queen St Turnaround at intersection of Canada St and Mercury Lane to enable access to PUDO/LZ spaces	Currently seen as a wide, high-speed road and morning peak rat-run from Upper Queen St through East St to Karangahape Rd. Speed radar & speed sign recently installed to reduce traffic speeds. Currently high volume of active modes travelling at high speed and sharing footpath with pedestrians. Reallocate road space to cycle lanes and traffic calming. PUDO & Loading & Servicing spaces to be worked through in Developed Design stage
East St – Canada St to Karangahape Rd	Retain current layout, ie one-way northbound between Canada St and Galatos St with bi-directional cycleway Add safe pedestrian & cycle crossing across East St to connect with LKA east-west laneway – specific type of crossing and design to be determined Measures to make slow speed local traffic road.	Mobility parking & Loading & Servicing spaces to be worked through in Developed Design stage. Loading zones on Mercury Lane and Pitt Street will need to be relocated, as well as the mobility park outside the station on Mercury Lane. Equivalent lengths of loading zones and mobility parking can be provided nearby. If we want a narrowed carriageway, we could widen the cycleway buffer, or buildout the eastern kerb (both at a cost). Note, the existing driving lane on East Street is 4 m wide (which might be to allow for manoeuvrability out of driveways)
Beresford Sq – Hopetoun St to cul-de-sac	Widen centre median and narrow carriageway to make slow speed local traffic road	PUDO & Loading & Servicing spaces to be worked through in Developed Design stage

Street or street segment	Emerging Preferred Option (EPO)	Description and rationale
		Ideas considered but out-of-scope for project: • Changes to Day St • Changes to Upper Queen St (eg cycle facilities) • Changes to Galatos St

6.5.2 Short list option MVP

Table 20 summarises the interventions and rationale for the short list option MVP. Note as overall the MVP provides the same functionality as the EPO instead of repeating those details this table summarises the key differences and rationale. No preliminary design drawings were created specifically for the MVP because this option is based on removing elements from the EPO design. Preliminary design drawings for the EPO are located in Appendix H which can still aid with understanding the MVP design.

Table 20: Summary of the short list option MVP by street section

Street or street segment	Minimum Viable Product (MVP) description and rationale
Pitt St – Karangahape Rd to Greys Ave	The majority of the EPO items are required for the MVP to address the safety and connectivity issues: Reallocate pre-CRL construction road lanes for: Signalised mid-block pedestrian and cycle crossing with bus gates on signals Northbound and southbound bus lanes Separated cycle lanes (uni-directional) Single lane of general traffic in each direction Minimum / short term intervention SW corner kerb build out for DD clearance. Kassel kerbs and Kassel drains Soft landscaping – shallow pits, low level planting
Pitt St – Greys Ave to Vincent St	Nothing – no shorter-term cost-effective interventions were identified
Mercury Lane – Karangahape Rd to Cross St & laneway	Same functionality as EPO, but achieved with minimal change to LKA design, extension of raised concrete table north to Karangahape Rd to create a level ped mall area. Extend raised table from intersection into Cross St to incorporate new mobility parking and extend south along Mercury Lane to incorporate LKA laneway access
Mercury Lane – Cross St/laneway to Canada St	Same as EPO – needed to address the major safety and amenity issues.

Street or street segment	Minimum Viable Product (MVP) description and rationale
Cross St – Upper Queen St to raised table by Mercury Lane	MRC Option A Short Term Could reduce scope to suit budget available, depending on funder & funder's requirements / priorities. Lighting – there may be a cheaper option than catenary lighting. The existing parking could still be reallocated to more loading and mobility parking even under the short-term arrangement would just need a ramp for the latter.
Canada St – Upper Queen St to East St	Same as EPO – largely needed to address significant safety issue on Canada St. Could reduce scope to suit budget available, depending on funder & funder's requirements / priorities.
East St – Canada St to Karangahape Rd	Do nothing, instruct LKA / CRLL to leave temporary cycle lane etc in place. No alternative effective lower cost intervention was identified.
Beresford Sq – Hopetoun St to cul-de-sac	Do nothing. No alternative effective lower cost intervention was identified.

6.6 Short list to preferred option MCA

Table 21 shows the MCA table that summarises the analysis of the two short list options.

Table 21: Short list MCA

Investment objectives	KPIs	Measure	Do Min	Minimum Viable Product (MVP)	Score	Emerging Preferred Option (EPO)	Score
			All 0s	**Brief commentary on choice of score for MVP.**		**Brief commentary on choice of score for EPO.**	
IO1: Reduce harm to vulnerable transport users (35%)	K1. Deaths and serious injuries	K1. Total DSIs	0	Vulnerable transport users are safer as a result of both the new traffic circulation which reduces through traffic on local streets and, the creation of the pedestrian mall on Mercury Ln.	2	In addition to MVP pedestrian safety is further improved through provision of a crossing on East St at a key desire line created by the CRL laneway and, improvements to Beresford Sq reducing crossing distances and calming traffic.	3
	K2. Access – perception	K2. Perception of safety and ease of walking and cycling.					
	K4. Harmful emissions	K4. PM, NOX and noise (traffic vol change as proxy)					
IO2: Make better use of existing and future public transport and active mode infrastructure and investments in the city centre (30%)	K3. People – throughput of	K3. Total volumes	0	Improved consistency with other CRL/City Centre locations. Provides greater connectivity for cycling and walking throughout the neighbourhood and additional bus priority on Pitt St resulting in reduced delays for these users. The cycle lanes on Pitt St are only between Greys Ave and Karangahape Rd.	2	Similar to the MVP the main addition is that this option provides cycle lanes for the full length of Pitt St. The EPO also has added permanence of the materials and landscaping used.	3
	pedestrians, cyclists and public	K4. As above					
	transport boardings	K5. Mode share by public transport and active mode.					
	K4. CO_2 emissions						
	K5. People – mode share						
IO3: Improve the desirability of the Karanga-a-Hape Station neighbourhood as a place for economic, cultural and social activities (20%)	K2. Access – perception	K2. As above	0	The additional space created on Mercury Ln, Cross St and Canada St provides opportunities for the communities to activate and use the area increasing the desirability of the neighbourhood including the attractiveness for people to spend time there.	2	In addition to MVP benefits the EPO provides enhanced urban realm through additional landscaping and materials with longer lifespans further encouraging people to spend time and money in the area. This includes additional opportunities for community placemaking through the EPO improvements to Beresford Sq.	3
	K5. Amenity value – natural	K5. PERS lite					
	and built environment	Note: “user to describe”.					
		Can be taken as ‘Making the community thrive’.					
IO4: Increased sense-of-place in the Karanga-a-Hape Station neighbourhood through expressing the unique character and identity of the area in the streetscape (15%)	K5. Amenity value – natural	As above.	0	Removing through vehicle traffic increases the sense of place. Provides more public space off Karangahape Rd for the community to use (Mercury Ln, Cross St, Canada St).	2	In addition to the MVP benefits the EPO improves Beresford Sq and includes significant landscaping improvements to upper Mercury Ln pedestrian mall and Pitt Street. These will contribute to the sense of place by providing more public space and an opportunity for the community to express the unique character of the area in these locations.	3
	and built environment	Note “user to describe”					

Critical Success Factors							
Potential Deliverability	Can the option be successfully delivered through all the statutory requirements?	What is the level of consenting complexity/difficulty? (Design, Consenting & Construction)	0	The pedestrian mall interface on Mercury Ln with property owners is the key area for focus.	-1	The pedestrian mall interface on Mercury Ln with property owners is the key area for focus.	-1
Potential Achievability	Is the option workable?	What are the technical or practical considerations – e.g. traffic circulation. Alignment with A4E.	0	The more tactical materials proposed on Canada, Cross and lower Mercury Ln will be faster to implement as these are no dig options.	1	The more permanent materials used throughout will require a longer construction period but will reduce future disruption that may occur from upgrading the tactical materials proposed in the MVP	0
Community acceptability		Degree to which community support (or opposition) may be expected.	0	Acceptability around reduction in on street parking, relocation of loading and servicing and new traffic circulation to access the area to be worked through. Increase economic and community opportunities from better access for a range of transport modes and increased public space. Community largely supportive but prefers EPO.	1	Same as MVP	1
Impact on loading and servicing			0	Provides the potential for the same amount of loading and servicing as the Do Min in a different arrangement.	0	Provides the potential for the same amount of loading and servicing as the Do Min in a different arrangement.	0
Potential affordability		Including impact on commercial arrangement w/ CRL	0	The option can be provided within current budget allocation.	3	The option falls outside current confirmed budget, but additional funding has been strongly indicated.	0
Supplier capacity and capability			0	Same as 'Do min'	0	Same as 'Do min'	0
Scheduling/programming		When the alternative/option could be delivered and other timing requirements. Including impact on commercial arrangement w/ CRL	0	Changes to the work required by CRL but this would not be additional work for them more a change in scope.	-1	More coordination required with CRL but still would not require them to do additional work	-2
Opportunity to stage		Can construction be staged?	0	Staging potential - Cross St could occur later	1	Staging potential - Beresford Sq, East St and Cross St could occur later	2

Opportunities and impacts (insert N/A if not relevant)							
Climate Change mitigation (mandatory)			0	Encourages better mode shift to public transport and active modes, but overall general traffic is unlikely to change measurably.	1	Encourages better mode shift to public transport and active modes, but overall general traffic is unlikely to change measurably.	1
Climate change adaptation			0	n/a	0	n/a	0
Cumulative impacts		Favourable for things like urban intensification, transit-oriented development.	0	Increased connectivity and urban realm resulting in TOD and higher intensification opportunities in the neighbourhood	2	Similar to the MVP but with more extensive opportunities relating to the addition of Beresford Sq and the added permeance of the materials and landscaping used.	3
Impacts on Te Ao Māori (Mandatory)			0	Opportunities and agreement in principle to use the CRL station positive Te Ao Māori narrative	1	Larger 'canvas' to work with than MVP	2
Property impacts		Number or scale of impact (not including property access - this is covered in the loading and servicing CSF?)	0	No properties affected		No properties affected	
Project-specific critical success factors							
Capital cost (not to be scored)			0	$5.6m	$	$7.1m	$$
Impacts on operating costs (not scored)			0	1.7m NPV	$	$4.3m NPV	$$

6.7 Economic Assessment

Section 6.6 describes the economic assessment carried out to assess the benefits and costs of the two short list options and presents the results from this assessment.

6.7.1 Introduction

The purpose of the economic assessment is to provide insight into whether the benefits of each option outweighs the costs. This section also considers the incremental benefit of the EPO against the MVP, to test if the additional benefits from this option outweigh the additional costs.

As noted in Section 6.3.1, the do minimum is the LKA design plans, which represents what LKA would reinstate following completion of station construction.

Each option was assessed by individual street or street section using the sections in Table 22. Table 22 also describes the interventions for each option and the quality of the finish where more than the do minimum is proposed. The quality of finishes influences the lifetime of the improvements for the benefit estimates.

Tactical elements have been used for the side streets in the short-list options, in recognition of the fact that the wider area will likely be subject to (potentially significant) private development following the construction of Karanga-a-Hape Station. This means permanent construction of urban realm improvements could well prove to be abortive if delivered now and would be better designed and constructed following, or as part of and in response to private developments.

The full economic assessment is provided in Appendix I and the preliminary design drawing set is found in Appendix H.

Table 22: Assessed street sections with proposed improvements

Street section	Do min	MVP	EPO
Pitt Street (between Karangahape Road and mid-block crossing)	Signalised mid-block crossing Southbound bus lane Three southbound lanes, two northbound lanes	Narrowed carriageway at signalised mid-block crossing Northbound and southbound bus lanes Two southbound and northbound lanes Separated uni-directional cycle lanes **Long-term**	MVP, plus: Longer-lasting finish and more landscaping improvements **Long-term**
Pitt Street (between mid-block crossing and Hopetoun Street)	Southbound bus lane	Same as do min	Do min, plus: Separated uni-directional cycle lanes **Medium-term**
Mercury Lane (Karangahape Road to Cross Street)	Narrowed carriageway Widened western footpath Additional streetlights	Pedestrian mall with a mixture of materials, textures and finishes *some* landscaping improvements **Long-term**	Pedestrian mall with a consistent material palette and finish *significant* landscaping and placemaking improvements **Long-term**
Mercury Lane (Cross Street to Canada Street)	Reinstate to pre-CRL disruption state with car parking on western side of the street	Separated cycleway Widened footpath One southbound traffic lane **Medium-term**	Same as MVP **Medium-term**
Canada Street	Reinstate to pre-CRL disruption state	Separated cycleway Shared mid-block crossing for pedestrians and cyclists	Same as MVP **Medium-term**

Street section	Do min	MVP	EPO
		Two-way traffic between Mercury Lane and Upper Queen Street, one-way westbound between Mercury Lane and East Street **Medium-term**	
Cross Street	Reinstate to pre-CRL disruption state with westbound traffic flow	Do min, plus Widen and add footpaths Add traffic calming Improve lighting and landscaping **Short-term**	MVP, plus: Longer-lasting treatments **Medium-term**
East Street	Remove temporary cycleway	Retain temporary cycleway **Short-term**	MVP, plus: Add raised zebra crossing **Short-term**
Beresford Square	Raised table cul-de-sac with planted island	Same as do min	Do min, plus Median extended to Hopetoun Street **Medium-term**

6.7.2 Economic parameters

This assessment used the following parameters, in line with the Monetised Benefits and Costs Manual, v1.5 (MBCM) from Waka Kotahi. The economic parameters are:

- Time zero: 30 June 2023[27]
- Update factors for benefit values: 2021 values
- Discount rate: 4%
- Evaluation period: 40 years
- Benefit period: differs by street section depending on the type of improvement; benefit periods are 10, 20 or 40 years for each street section (see Section 6.7.4 for details)
- Average value of time: $15.23/hour (MBCM Table 14 for value of time by trip purpose, MBCM Table A50 for trip purpose for 'all periods' of the day, and MBCM update factors).

6.7.3 Costs

The Alta Consulting cost estimates were used for streets or street segments as appropriate – see Appendix K for costing details.

For Pitt Street south of the mid-block crossing and upper Mercury Lane long-term finishes are proposed which come at a higher cost. For the other street sections, where improvements are proposed more tactical finishes are to be used, which come at a lower cost. These more tactical finishes fall into two categories depending on the street section – either short-term or medium-term. Short-term interventions are expected to last around 10 years, while medium-term interventions should last 20 years, based on different quality and materials.

Tactical elements have been used for the side streets in the short-list options, in recognition of the fact that the wider area will likely be subject to (potentially significant) private development following the construction of Karanga-a-Hape Station. This means permanent construction of urban realm improvements could well prove to be abortive if delivered now and would be better designed and constructed following, or as part of and in response to private developments.

No full renewal costs have been included as the interventions are assumed to no longer produce benefits past their useful life. Annual maintenance costs are incurred in line with how long each type of intervention lasts and are assumed to be 2% of the construction costs.

Table 23 shows the estimated costs for each option. Costs are stated as P50 and P95 estimates, which have a 50% and 95% likelihood of not being exceeded, respectively.

[27] The base year is defined (in the MBCM) as the year in which the business case is submitted for funding. Even if this were to be varied, the BCR would not be impacted.

Table 23: Range of cost estimates for each option

Cost type	MVP		EPO	
	P50	P95	P50	P95
Construction cost for Pitt Street and Mercury Lane (Karangahape Road to Cross Street)	$4.4m	$5.5m	$12.0m	$15.0m
Construction cost for other streets	$1.2m	$1.5m	$2.1m	$2.6m
Total construction cost	$5.6m	$7.0m	$14.1m	$17.6m
Annual maintenance cost	$110,000	$140,000	$280,000	$350,000
Present value of construction and maintenance costs	$7.0m	$8.8m	$17.5m	$21.9m

Constructions costs for all options are assumed to fall in the 2024 financial year. Benefits are then realised (and maintenance costs incurred) from the 2025 financial year.

6.7.4 Benefits

Table 24 provides a summary of the types of benefits that are included and monetised in the economic assessment of each of the options.

Benefits are realised over different time periods depending on the lifespan of the improvements:

- 40 years for more permanent long-term interventions
- 20 years for more tactical medium-term interventions
- 10 years for more tactical short-term interventions

Table 24: Summary of benefits estimated

Benefit type	Description
Pedestrian realm	Improvements to the pedestrian environment, such as adding street trees and plantings and widening footpaths, provide benefits to pedestrians and attract more pedestrians.
Pedestrian travel time	Travel time benefits for pedestrians come from changes to the timing of traffic signals (reducing the delay at signals) and from adding new mid-block crossings (so pedestrians don't have to walk to the nearest alternative crossing).
Cycling facility improvement	Cyclists get benefits from improved facilities, such as shared paths or separated cycle lanes, compared to cycling on the road. These relate to the attractiveness of the cycling facility. Pedestrians also benefit as conflict with cyclists is removed.
Cyclist travel time	Travel time benefits for cyclists mostly come from changes to the timing of traffic signals that impact the delay for cyclists.
Bus travel time	The Karanga-a-Hape Station neighbourhood is a critical area for buses. The options have been designed to provide some travel time efficiencies for buses travelling through the area.
Safety	Multiple changes within the options contribute to a safer environment for all road users, including pedestrians, people on bikes, and people in cars.

6.7.5 Pedestrian demands

Pedestrian volumes and movements throughout the study area were estimated from surveyed data scaled by 10% to estimate 24-hour counts and with appropriate assumptions as to distribution.

For 2028, the pedestrian demands in the area are the baseline estimates plus the estimated boardings and alightings from the CRL station. Assumptions about how the CRL passengers distribute across the Karanga-a-Hape neighbourhood are based on the LKA Design Package Report.

To estimate the annual pedestrian demands on each street, an annualisation factor of 362 was applied to the daily estimates.

6.7.6 Pedestrian realm impact

Waka Kotahi has provided interim guidance for how to monetise pedestrian realm benefits, through the *Impact on Urban Amenity in Pedestrian Environments* (March 2020) technical paper. This benefit in 'minutes' of willingness to pay is multiplied by the economic value of time to give a benefit value.

The types of improvements that can be monetised include:

- Improvements with 'medium' confidence in benefit values:

- Reduction in traffic volumes next to walking spaces
- Reduced traffic speeds next to walking spaces
- Widening footpaths, especially if they are crowded (which is likely to be the case in this area after CRL opens)
- Providing level crossings or dropped kerbs, so all people can easily move between footpaths and road crossings
- Providing lighting or CCTV to make spaces feel safer
- Providing seating opportunities along walking routes

- Improvements with 'low' confidence in benefit values:
  - Improving the pavement condition and quality (eg smoothing cracks and providing attractive/high quality paving)
  - Removing conflict with cyclists (ie separating pedestrians and cyclists)
  - Providing street trees or plantings on or next to the footpath.

The 'medium' confidence benefits were included in the default assumptions for the economic assessment, while the 'low' confidence benefits were included as a sensitivity test.

A three-level scale has been used to generalise the impacts on pedestrian realm across all the types of improvement listed above. The three-level scale is:

- No improvement
- Some improvement
- Substantial improvement.

Table 25 summarises the general willingness to pay scoring for each of the options relative to the do minimum.

Table 25: Improvement of pedestrian realm amenities relative to the do minimum

Street or street segment	MVP	EPO
Pitt Street (between Karangahape Road and mid-block crossing)	Substantial improvement	Substantial improvement
Pitt Street (between mid-block crossing and Hopetoun Street)	No improvement	Substantial improvement
Mercury Lane (Karangahape Road to Cross Street)	Substantial improvement	Substantial improvement
Mercury Lane (Cross Street to Canada Street)	Substantial improvement	Substantial improvement
Canada Street	Substantial improvement	Substantial improvement
Cross Street	Some improvement	Some improvement
East Street	Some improvement	Some improvement
Beresford Square	No improvement	Some improvement

6.7.7 Travel time impact

Travel time savings for pedestrians come from adding new mid-block zebra crossings and from changes to the timing of traffic signals that impact the delay for pedestrians crossing. These travel time savings were monetised by calculating the amount of time saved by all pedestrians and multiplying it by the average value of travel time savings (MBCM).

The number of people crossing the road at each intersection was estimated as a proportion of people from the connecting streets.

For each option, the travel time benefit is the difference in the total pedestrian delay at each crossing between the option and the do minimum, multiplied by the value of travel time savings.

The present value of pedestrian travel time benefits for each option are estimated to be:

- MVP: $9.9m
- EPO: $10.1m.

6.7.8 Cyclists

This project also proposes to extend the cycling network in the area and improve cycling facilities on some streets. There are benefits to cyclists from having better facilities to use and from travel time savings. A third type of benefit to cyclists, which is not monetised, is the network effect of providing

links between other cycling infrastructure. There are also benefits to pedestrians that are not quantified.

Cycling demands

Cycling volumes in the Karanga-a-Hape Station neighbourhood were estimated using a similar methodology as for pedestrians.

Estimating future demands for each street

For 2038 the same growth rates as for pedestrians were used. The estimated numbers can be found in Appendix I.

For 2028, the methodology for pedestrians is not applicable for cyclists (as it is based on CRL boardings and alightings). Instead, the growth rate for 2018 to 2028 is the same as from 2028 to 2038 (15%, from MSM estimates).

Annualising daily cycling counts

To estimate the annual volumes of cyclists on each street, an annualisation factor of 321 was applied to the cycling estimates.

Facility improvement benefits

The MBCM recognises that improved cycling facilities add value to users based on the quality of the facility. The benefit of the cycling facility improvements is the difference in the 'cost of travel' between the do minimum and the option.

The present value of cycling facility improvements for each of the options were estimated to be:

- MVP: $1.12m
- EPO: $1.13m

Travel time benefits

The present value of cycling travel time benefits for each option are estimated to be $330,000 for both the MVP and EPO.

6.7.9 Buses

Estimates of bus patronage came from MSM models that have been run for the future transport network. A future scenario representing the RLTP was run for 2031, while several future years have been modelled for the ATAP.

To estimate the annual bus passenger demands, the average daily demands were scaled by a factor of 320, derived by comparing the number of public transport journeys from a base 2016 MSM model to Auckland Transport's reported annual public transport boardings for 2016.

Bus travel time benefits

The present value benefit of bus travel time improvements is estimated to be $2.8m for both the MVP and EPO.

6.7.10 Safety

The options incorporate a range of improvements to make the Karanga-a-Hape Station neighbourhood safer for people travelling by all modes. By providing more dedicated space for pedestrians and people on bikes, and making it clear who should use what space, people will be less likely to experience conflicts with each other.

The present value of the safety benefit for each option was estimated as:

- MVP: $4.9m
- EPO: $5.5m

6.7.11 Private vehicles

The MVP and EPO both include some changes to traffic capacity and traffic circulation relative to the do minimum. The main changes are:

- Reducing Pitt Street from 2-3 mixed traffic lanes per direction to 1 general traffic lane and 1 bus lane per direction
- Closing Mercury Lane north of Cross Street to through traffic
- Retaining East Street south of Galatos Street (and Canada Street west of Mercury Lane) as one-way for northbound traffic only (East Street has been operating like this since late 2020 due to CRL works)
- Changing the direction of traffic on Cross Street to be westbound (as it was prior to CRL construction)

The default assumptions in the economic assessment excluded car travel time impacts. The Traffic Assumptions for the Economic Assessment memo (attached as an appendix to the short list economic assessment in Appendix I) details how the impacts of car travel time should be considered in this assessment.

The travel time disbenefit for people in cars has been estimated for use in sensitivity testing. The possible sense of scale for this disbenefit has been estimated using the available traffic models with an adjustment factor.

The present value of disbenefit to people in cars is the same for the MVP and EPO, and may be up to -$6.8m to -$15.0m.

6.7.12 Potentially-monetised benefits

This economic assessment has included monetised benefits where possible. However, there are additional benefits that have not been monetised, mostly because of uncertainty in the assumptions for these benefits, network effects for cycling, mode shift impacts and emissions, local air and noise pollution and land value uplift. Accordingly, the benefit cost ratios are described as 'partial' recognising that there are other benefits that could have been included especially if the quality of the traffic models were greater. In this instance, the calculated ratios are such that the time and cost needed to identify these additional monetised benefits were not justified.

6.7.13 Results

Table 26 shows the results of the economic assessment for the range of P50 to P95 cost estimates with the default benefit assumptions. A set of default assumptions have been made for each benefit type, based on the data currently available and the option designs. This provides a partial benefit cost ratio (BCR), comparing all the benefits that can be monetised against all of the costs. There are additional, non-monetised benefits.

Table 26: Economic assessment of the short list options (all present value results)

Element	MVP	EPO
Costs (present value)		
Construction cost	$5.2m - $6.5m	$13.0m - $16.3m
Maintenance cost	$1.8m - $2.3m	$4.5m - $5.6m
Total cost	**$7.0m - $8.8m**	**$17.5m - $21.9m**
Benefits (present value)		
Pedestrian travel time benefit	$9.9m	$10.1m
Pedestrian realm benefit	$33.1m	$39.0m
Cyclist travel time benefit	$0.3m	$0.3m
Cyclist facility benefit	$1.1m	$1.1m
Bus user travel time benefit	$2.8m	$2.8m
Safety benefits	$4.9m	$5.5m
Total benefit	**$52.2m**	**$58.8m**
Cost benefit assessment		
Partial BCR	5.9 - 7.4	2.7 - 3.4
First year rate of return	21% - 26%	10% - 12%

The economic assessment with these default assumptions suggests that both the MVP and EPO are economically efficient and that both options provide benefits that outweigh the costs of providing them.

The pedestrian realm benefits are the most significant benefit (at 63% of the total benefits for the MVP and 66% for the EPO). This is to be expected given the nature of the project in targeting pedestrians. The other most significant benefits also make sense given what the options prioritise. These are pedestrian travel time benefits (at 19% for the MVP and 17% for the EPO) and safety benefits (at 9% for both the MVP and EPO).

6.7.14 Sensitivity tests

Sensitivity tests compare the economic assessment with the default benefit assumptions and P50 cost estimates.

Pedestrian realm benefit

The default assumptions for the economic assessment only includes the pedestrian realm benefit types that have a 'medium confidence'. It is also the most significant benefit type in the assessment, so is important to understand the range of expected benefit values for the pedestrian realm benefit. Some sensitivity tests are described here:

- The first set of tests scaled down the pedestrian realm benefits:
    - If the pedestrian realm benefits are reduced by 50% the partial BCRs become 5.1 for the MVP and 2.2 for the EPO
    - If the pedestrian realm benefits are reduced by 90% the partial BCRs are 3.2 for the MVP and 1.4 for the EPO
- If the 'low confidence' benefit types are included, the partial BCRs become 8.7 for the MVP and 5.0 for the EPO.

Impact of CRL patronage

The pedestrian demand estimates use CRL rail patronage estimates as an input. There is considerable uncertainty in the CRL patronage projections, given in particular the long-term impacts of COVID-19 and changes in working habits. Two sensitivity tests were used to provide insight into how rail patronage impacts the benefits of this project:

- If rail patronage is 20% lower than forecast, the BCR of the MVP reduces to 6.5 and of the EPO drops to 2.9
- If rail patronage is 40% lower than forecast, the BCR of the MVP is 5.6, while the BCR of the EPO is 2.5.

Possible scale of traffic disbenefits

The disbenefit to people in private vehicles is uncertain, however given the models available allowed the testing of a range of possible disbenefits, to give a sense of scale:

- Using a high adjustment factor on the traffic model outputs creates an estimated disbenefit to private vehicles of -$6.8m, which brings the partial BCR of the MVP to 6.4 and of the EPO to 3.0

- Using a lower adjustment factor on the traffic model outputs creates an estimated disbenefit to private vehicles of -$15.0m, which brings the partial BCR of the MVP to 5.3 and of the EPO to 2.5.

Taking a 'dig-once' approach to construction and tying in with the CRL construction programme is vital to the project. The project aligns perfectly with A4E objectives. As the A4E network designs are still in progress this project has been working closely with the leaders of the A4E strategic design and delivery work.

6.7.15 Incremental benefit cost ratio

The incremental BCR can be useful to assess whether the additional benefits of an option outweigh the additional costs, relative to another option. The incremental BCR of the EPO relative to the MVP is 0.6 under the economic assessment with default assumptions.

However, the main differences between the MVP and the EPO relate to pedestrian realm benefits, and in particular the types of pedestrian realm benefits that have a 'low confidence' benefit value in the interim guidance. These benefits have been excluded in the economic assessment with default assumptions and include removing conflict with cyclists, improving pavement quality, and increasing street trees and planting. When these 'low confidence' pedestrian realm benefits are included in the assessment (as per the final sensitivity test), the incremental BCR increases to 2.5. If all pedestrian realm benefits are reduced by 50% (while still including the 'low confidence' benefits), the incremental BCR is still 1.3.

6.7.16 Summary

Both the MVP and EPO are economically efficient options. Given the default benefit assumptions and the range of cost estimates, the partial BCR estimates are 5.9-7.4 for the MVP and 2.7-3.4 for the EPO.

Under the default assumptions for this economic assessment, the incremental BCR for the EPO compared to the MVP is 0.6. However, when the 'low confidence' pedestrian realm benefits are included, the incremental BCR is 2.5. This indicates that the additional benefits of the EPO likely outweigh its additional costs relative to the MVP, but the types of additional benefits are more difficult to monetise.

The key uncertainties in this economic assessment relate to the pedestrian realm benefits and possible private vehicle disbenefits. A range of sensitivity tests have been included, which yielded partial BCRs of 2.7-8.7 for the MVP and 1.1-5.0 for the EPO.

6.8 Appraisal Summary Tables

Appraisal Summary Tables (ASTs) of the two short list options are included in Appendix J. They provide the detailed appraisals of the two options against the do minimum – the default LKA design. The principal differences are that the EPO provides enhanced urban realm through additional landscaping and materials with longer lifespans than the MVP option and includes additional opportunities for community placemaking through the EPO improvements to Beresford Square. The EPO will be more likely to achieve the full set of the Investment objectives. Discussions with other government agencies and the community revealed the enthusiasm for the EPO as the preferred option.

6.9 Overall evaluation

The crucial difference between the options rests with their enduring benefits to transport users, especially pedestrians against the higher costs. Differences in deliverability and local operational factors are significant, but not a major factor. At an Options Assessment Workshop, with representatives from AT and Waka Kotahi, the additional, longer-lasting benefits relating to the EPO resulted in it being selected as the recommended option. This option aligns with all technical and strategic requirements identified for the project.

The economic assessment shows that the EPO is a viable cost-effective investment. Taking into account all the benefits available to pedestrians – the main target group – the EPO has incremental benefits that outweigh the incremental costs. Section 7.2, below fully discusses the trade-offs.

All major stakeholders have endorsed the EPO, provided that it is affordable.

These include the Karangahape Business association and the City Centre Steering Group led by Eke Panuku with AT, Council and Tātaki / Auckland Unlimited executives. At the AT Mana Whenua hui on 12 October 2022 there was strong support for the project because it aligns well with the Mana Whenua values. In the short-term, if there are funding constraints, the MVP provides a fall back, interim solution. The affordability is addressed in the Financial Case.

7 Preferred Option

Section 7 describes the preferred option – the Emerging Preferred Option – and explains the trade-offs made in choosing this option over the Minimum Viable Product.

7.1 Preferred option description

The preferred option is the EPO as in the short-list. It best delivers outcomes for safety and good connection for prioritised modes within the expected funding envelope from RLTP, active mode budgets and Council contributions to urban realm placemaking elements from City Centre Targeted Rate – see Financial Case.

Key features of the preferred option focus on better connecting the station entrances to the wider neighbourhood, creating a safer pedestrian experience, enabling good connections for public transport, and filling in essential missing cycle links while trying to retain the existing character of the Karangahape precinct. Please refer to in Appendix H for the full set of preliminary design plans.

Pivotal to the enablement of the proposed transport network changes is the closure of the upper section of Mercury Lane to traffic. The upper section of Mercury Lane becomes significantly safer for the increased number of pedestrians with the removal of high traffic volumes and provides the opportunity for this space to become a new public space. The closure provides the opportunity to remove turning movements from Karangahape Road and the straight-through movement from Pitt Street. Eliminating these movements reduces the cycle time for the signals at the Karangahape Road-Pitt Street-Mercury Lane intersection and means pedestrians have a shorter wait time and more frequent opportunity to cross. Removal of the straight-through movement from Pitt Street also allows one general traffic lane on Pitt Street to be reallocated for other priorities.

As a result of this one key change, the area becomes prioritised for local traffic and active modes rather than through traffic.

7.2 Trade-offs

Assuming that the indicated funds are able to be fully drawn upon, the preferred option is outlined as the EPO in Section 6.9 above. The benefits and trade-offs of this option compared to the MVP are:

7.2.1 Pitt Street – Greys Avenue to Vincent Street

This section of Pitt Street will not see any changes in the Minimum Viable Product option. The preferred design extends the uni-directional cycle lanes on both sides of the road between the mid-block crossing and the Vincent Street-Hopetoun Street-Pitt Street intersection, rather than having a shared footpath on the western side only. There is an extended bus lane between Vincent Street and the mid-block crossing in the southbound direction.

The trade-off is that an island buildout is required for bus passenger boarding and alighting at the southbound stop between Vincent Street and Greys Avenue. As there is insufficient space for a shelter on the island, passengers will have to use the existing shelter on the footpath and cross the cycleway to get to the bus.

To provide continuous cycle connectivity the zebra crossing on Greys Avenue will be changed to a paired crossing.

Fire and Emergency NZ (FENZ) will be engaged to work out the exact design and operation of a cycle lane outside the main Fire Station entrance and the working of access through Mercury Lane.

7.2.2 Pitt Street – Karangahape Road to Greys Avenue

The function of both short-list options is the same; however the preferred option provides a longer-lasting solution and enables low-growing vegetation to be added along some of the separation islands. There is an allowance for a few larger trees to be included but this will depend on designs that provide for user visibility for safety and clearance for bus movements. For cycle lane separation permanent concrete materials will be used for the preferred option rather than cheaper interventions.

Bus advance signals to prioritise movement of buses over general traffic are a feature of both options.

7.2.3 Mercury Lane – Karangahape Road to Cross Street and station laneway

This upper section of Mercury Lane becomes a pedestrian mall with controlled access through a combination of fixed and retractable bollards, which is the approach used for both the preferred option and the minimum viable option. Although the transport function of this area will be the same in both instances, the cheaper option extends a raised speed table along the length of the redundant traffic lane to create a flush surface across the width. The extended table would however have a different look and feel to the surrounding basalt-paved footpath delivered by CRL and would create a “ghost road” patchwork effect.

The preferred design would instead use a consistent concrete design for the whole section to eliminate the inconsistent look and allow more vegetation and public realm features to be added through a co-design process. Using concrete throughout is likely to allow considerably quicker construction than the installation of individual basalt pavers and a kerbed roadway, however a “ready for construction” design for the minimum viable option largely already exists.

In the preferred option streetlighting for this section of Mercury Lane re-evaluates the use of traditional spaced streetlight poles and considers feature lighting to create ambience to this new public space. Once again, streetlighting has already been designed and approved for the minimum option.

7.2.4 Mercury Lane – new east-west station laneway to Canada Street

In both options the carriageway of this lower section of Mercury Lane allows for southbound only traffic and is narrowed with possible added vertical speed treatment to slow traffic. The right-turn slip lane into East Street/Canada Street is removed to reallocate space for a separated bi-directional cycle path against the western kerb and a wider western footpath for pedestrians. The difference between the two options comes down to the materials used to create the separation and urban realm features that can be added. While both options are an (expected) short-term tactical intervention, the preferred option would create a safer and more pleasant experience for all users and would be more likely to last for many years with less maintenance. With a new train station next-door there is a high likelihood that the adjacent empty site at the corner of Mercury Lane and Canada Street will be developed so it is not considered prudent to invest in a permanent solution in this location.

7.2.5 Canada Street – Upper Queen Street to East Street

As with the lower section of Mercury Lane the difference between the two short-list options is the quality of materials used and urban realm features added. Both options are again short-term tactical interventions with the preferred option again creating a lasting, safer and more pleasant experience with less maintenance. As the empty site along the northern edge of Canada Street between Mercury Lane and East Street will be redeveloped, investment in a permanent solution is not appropriate.

The main features of both options are a narrowed roadway created by adding a fully separated bi-directional cycleway on the southern side of Canada Street which connects into Te Ara I Whiti / Lightpath and cycle lanes on Upper Queen Street. From this cycleway a new crossing facility will be installed to provide a safe crossing point across Canada Street to Mercury Lane for pedestrians and cyclists providing a connection to the new station entrance.

Parking spaces for loading and servicing, mobility users and pick-up and drop-off along the northern kerb line also help to narrow the road and create a slow speed environment.

Traffic will only be able to travel in the westbound direction into East Street, a measure that was installed for safety during the CRL construction period.

7.2.6 East Street – Canada Street to Karangahape Road

East Street will continue to be northbound only from Canada Street to Galatos Street, north of that two-way traffic is still allowed.

The only difference between the two short-list options is the addition of a raised table zebra crossing and associated lighting in the preferred option. This crossing traverses East Street and aligns as closely as possible to the exit from the new east-west station laneway that will provide a new link between Mercury Lane and East Street.

In both options the bi-directional cycleway installed during CRL construction on East Street between Canada Street and Galatos Street is retained. The cycleway acts as another link between Te Ara I Whiti / Lightpath and Karangahape Road and helps to narrow the carriageway on East Street to slow traffic to speeds appropriate for local streets.

At the top end of East Street parking spaces will be re-designed for loading, servicing and mobility parking.

7.2.7 Cross Street – Upper Queen Street to raised table by Mercury Lane

As they exit the Mercury Lane station entrance, users of the new Karanga-a-Hape Station will face directly out into Cross Street. For many people, Cross Street is viewed as a less-desirable pathway to

other destinations due to lack of footpaths on the side bordered by a high-rise carpark, ubiquitous rubbish bins along the available narrow footpath, a wide carriageway with cars parked along both sides, low passive surveillance from the few businesses facing onto the street, and very few other people walking along this car-dominated street.

The intention of the project is to make Cross Street more appealing to walk along by providing more pedestrian space and improving the feeling of personal security, especially at night, through improved lighting. The preferred option will enable the lighting issue to be addressed and a provide longer-lasting street level interventions than the minimum viable option. The gritty nature of Cross Street is seen as appealing by some and frequently used as a backdrop for filmsets and advertisements. It is therefore important to work closely with the community to design outcomes that will encourage better use of the space while retaining its distinct character. Tactical on-street interventions are considered appropriate for this space as they are low-cost and can be easily changed if needed. However, investment in lighting, CCTV and other features that improve the sense of personal security are likely to be more permanent and costly.

During CRL construction LKA changed the direction of traffic movement in Cross Street from westbound to eastbound. Once CRL construction is complete traffic movement will be reversed to westbound. This will affect the design of the intersection with Upper Queen Street, which was also reconfigured by the subsequent installation of cycle lanes on Upper Queen Street. This project will include safe design and operation of this intersection.

7.2.8 Beresford Square – Hopetoun Street to Beresford Square cul-de-sac

Prior to CRL, Beresford Square provided a connection between Hopetoun Street and Pitt Street and has a very wide 17m carriageway. When Beresford Square becomes a cul-de-sac at the rear of the station entrance the preferred option is to widen the centre median and narrow the carriageway to create a slow speed area for the whole length of Beresford Square from the back of the station building to Hopetoun Street, while the minimum option would leave the road width untouched. With on-street pick-up and drop-off, mobility parking and a greater number of people accessing the station on foot and micro-mobility from many approaches, making this street as safe as possible for these vulnerable users is important.

7.3 Recommended option: evaluation

7.3.1 Assessment against objectives

Table 27: Evidence for how the recommended option will achieve the investment objectives

Investment objectives	Evidence of how outcomes will be achieved
Reduce harm to vulnerable transport users	The analysis in the economic assessment shows the impact on the social cost of deaths and serious injuries and perceptions of safety and security. As in the AST, there is expected to be a 45% reduction in vehicle crashes; 60-70% reduction in pedestrian crashes; 45-50% reduction in cyclist crashes. The impact of air emissions, noise and vibration on health is less easily quantified. It is expected that there will be significant local benefits where traffic is separated from pedestrians, such as on Mercury Lane.
Make better use of existing and future public transport and active mode infrastructure and investments in the city centre	The option encourages mode shift to public transport and active modes, with the potential for a greater reduction in overall general traffic than the MVP. It is strongly supportive of the investment in the CRL, existing nearby cycle facilities and Northwest bus improvements.
Improved desirability of the Karanga-a-Hape neighbourhood as a place for economic, cultural and social activities.	Improvements to Beresford Square, general traffic reduction, and the upper Mercury Lane pedestrian mall create potential for new use. The reduction in vehicle through movements improves the desirability of the area and is an improvement over MVP.
Increased sense-of-place in the Karanga-a-Hape neighbourhood through expressing the unique character and identity of the area in the streetscape.	Provides public space off Karangahape Rd (Beresford Square, Cross Street to Galatos Street Connection). Provides more improved public space than MVP. Larger 'canvas' to work with for community input into urban design.

8 Preferred Option – Assessment

Section 8 assesses the performance of the recommended option against four key criteria:

- The project outcomes
- Implementability assessment
- Assessment of option
- Cost optimisation.

8.1 Implementability

The recommended option is not considered complex, though it has multiple components, none is unusual or different from what has been delivered in Auckland and elsewhere on many occasions.

The principal challenge is timing and alignment with LKA works. These issues are addressed in the Commercial and Management cases.

8.1.1 Constructability

There are no notable constructability issues.

8.1.2 Key Risks

The key risks relate to the timing and interface with the LKA works, as discussed in the Commercial and Management cases.

8.1.3 Mitigation measures

The principal mitigation measure likely to be required is maintaining access through Mercury Lane for emergency services. Continued dialogue to resolve any issues is planned. There is a risk that the proposed changes to permitted vehicle circulation could increase the number of illegal manoeuvres by motorists in the area. The detailed design and signage will need to limit such risks as much as possible.

8.1.4 Operability

There are only minor operability measures as the recommended option is consistent with AT practice in many locations. The introduction of car-free areas has occurred in multiple locations across the city centre.

8.1.5 Travel behaviour change

Travel behaviour change is inherent in the investment as it is intended to encourage greater use of public transport and active modes.

8.1.6 Statutory requirements

The main requirement relates to the closure of part of Mercury Lane to general traffic. This requires the Auckland Transport Traffic Control Committee (TCC) to approve a submission for a Statement of Proposal to change the status of a section of Mercury Lane from a road to a Pedestrian Mall or Shared Zone. Approval of the submission enables the project to formally and publicly consult on the proposed road change and address concerns before the road status can be legally changed.

8.1.7 Resource consents

Resource consent is required to work in the heritage area around Karanga-a-Hape Station. This is explained further in the Commercial Case and a Consent Strategy is included in Appendix L.

8.1.8 Land acquisition

No land is to be acquired.

8.1.9 Property impacts

No direct property impacts result from the recommended option. Access to properties for loading and servicing is a significant consideration that was taken into account in option selection and which will continue to be addressed at subsequent stages.

8.1.10 Wider project impacts

The most important wider impact of the project is, potentially, the ability to implement A4E proposals over time. As these have not yet been fully developed, the project team has liaised closely with those responsible for A4E, confirming that no conflict is anticipated.

8.1.11 Environmental impact

Environmental impacts were one of the criteria used in the MCA leading to option choice.

8.1.12 Social impact

Social impacts in terms of the effect on the local community, were one of the criteria used in the MCA leading to option choice.

8.1.13 Public participation

Communication and community input into urban design are covered in Section 4 of the Strategic Case.

8.1.14 Urban design

Urban design issues have been inherent in developing and selecting the preferred option, see Section 6.

8.1.15 Peer review

An independent Peer Review of the draft of this Business Case was carried out by Resolve Group, attached at Appendix S. The valid issues raised have been addressed in this updated version of the business case, as noted in the appendix.

8.1.16 Safety audits

A Road Safety Audit and Non-Motorised User Audit of the EPO was carried out by Stantec, attached at Appendix M. The responses are covered in the management case, Section 12.

8.1.17 Traffic modelling

The available traffic modelling and its use are discussed in the appendix to the economic assessment report (Appendix I). Strategic transport model results were used for the growth rates to apply. Local models are of a fixed matrix type so could not represent the likely reduction in overall traffic expected as a result of this project and AT's wider programme of investment and its policies.

8.1.18 Asset management

Future maintenance costs are taken into account in the economic evaluation and budget, see the Economic and Financial cases.

8.1.19 Levels of Service

The major issue for level of service relates to the inadequate level of service that would have been provided for pedestrian movement under the LKA design with insufficient space for pedestrians leading to substantial safety risks. The recommended option addresses this failing.

8.1.20 Outstanding issues

The outstanding issue relates to emergency service access, which is being addressed.

9 Economic Appraisal

Section 9 summarises the economic assessment of the recommended option – the Emerging Preferred Option - EPO.

9.1 Economic summary of project

As the EPO is also the final Preferred Option the economic evaluation in Section 6.6 also relates to the option recommended to proceed (subject to confirmation of budget – see Section 10 Financial Case). Table 28 summarises the economic elements of the EPO.

Table 28: Economic summary table

Element	NPV
Construction cost	$13.0m - $16.3m
Maintenance cost	$4.5m - $5.6m
Total cost	**$17.5m - $21.9m**
Pedestrian travel time benefit	$10.1m
Pedestrian realm benefit	$39.0m
Cyclist travel time benefit	$0.3m
Cyclist facility benefit	$1.1m
Bus user travel time benefit	$2.8m
Safety benefits	$5.5m
Total benefit	**$58.8m**
Partial BCR	2.7 - 3.4
First year rate of return	10% - 12%

10 Financial Case

The financial case summarises the affordability and cashflow, funding arrangements and financial planning for the project.

10.1 Project cost and cashflow

The Engineer's P50 CAPEX cost estimates of the EPO Preliminary Design are summarised in Table 29. Copies of the Engineer's estimates, prepared by independent quantity surveyors Alta Consulting Ltd, can be found in Appendix J.

It should be noted that, due to the fast-tracked nature of the business case process, design development continued in parallel with the writing of the SSBC. Concept design cost estimates used for the Economics Assessment were updated based on Preliminary Design later in the process. The updated cost estimates have increased by a small amount, in the order of 3%, which would make a marginal difference to the calculated BCR, but has a significant positive impact on the confidence level.

Table 29: Engineer's P50 cost estimates of the EPO Preliminary Design (rounded)

Street	SSBC	Design	Construct	Total
"Permanent" Interventions				
Pitt St Upper: K Rd - Mid-block Xing		825,000	6,420,000	7,245,000
Mercury Ln Upper: K Rd - Cross		392,000	4,915,000	5,307,000
"Tactical" (Medium-Term) Interventions				
Mercury Ln Lower: Cross - Canada		32,000	260,000	292,000
Cross St		44,000	355,000	399,000
Canada St		88,000	700,000	788,000
East St		30,000	245,000	275,000
Beresford Sq		30,000	242,000	272,000
Sub-Total	**1,300,000**	1,441,000	13,137,000	14,578,000
AT Admin Charge (5.7%)	74,100	82,137	748,809	830,946
Total	**1,374,100**	1,523,137	13,885,809	15,408,946
				16,783,046

Based on an elemental split of elements where costs can be allocated across functions, overall splits across the EPO are summarised in Table 30. It should be noted that there are overlaps between the

functions. For example, elements flagged as for 'cycle' often also contribute to pedestrian comfort and safety by removing conflicts, urban realm elements also largely benefit pedestrians, etc.

Table 30: Split of costs across different functional elements

Cycle	Pedestrian	Safety	Bus	Urban Realm
Pitt Street: Hopetoun Street to Greys Avenue				
89%		4%	8%	
Pitt: Greys Ave to K Rd				
29%	14%	4%	10%	42%
Mercury Ln (upper)				
0%	38%	14%	0%	48%
Canada St				
44%	44%	12%	0%	0%
Total Averages				
32%	**21%**	**8%**	**5%**	**33%**

10.1.1 Timing assumptions

Successful delivery of this work requires project completion prior to CRL Karanga-a-Hape Station opening and adopting a 'dig-once' approach to coordinated construction.

The work therefore needs to coordinate with CRL urban realm construction programme, which CRLL has advised as: construction start mid-2023, construction completion mid-2024.

The key phasing milestones are therefore:

- Pre-Implementation (Design, Consents & Approvals): Dec 2022 - Jun 2023
- Implementation (Procurement & Construction): Jul 2023 – Jun 2024.

The below Table 31 provides cashflow for the EPO (P50 estimate) based on the above timing.

Table 31: Cashflow for the EPO (P50 estimates)

Cashflow - P50 Cost Forecast	Year Ending 30 June		
	2023	2024	Total
Pre-Imp	2,894,613		2,894,613
Imp		13,877,604	13,877,604
Total	2,894,613	13,877,604	16,772,217

Cashflow - Funding	Year Ending 30 June		
	2023	2024	Total
RLTP	900,000	6,400,000	7,300,000
Cycling (TBC)	300,000	4,200,000	4,500,000
CCTR (TBC)	300,000	4,200,000	4,500,000
Total	1,500,000	14,800,000	16,300,000

Variance (Funding - Cost Forecast)	-1,182,864	710,646	-472,217

10.1.2 Risk assessment

The above P50 estimates are based on preliminary designs which included 3D grading designs, assessment of underground utility relocations and desktop coordination with Link Alliance designs.

In reaching the P50 and P95 estimates, the following contingencies have been applied to the base estimates. These are aligned with post-completion project review data held by AT from previous projects.

- P50 estimates: base estimate +30%
- P95 estimates: base estimate +50%.

10.2 Overall affordability

The overall P50 capex cost estimate of approximately $14.6M is affordable based on the following sources of funding, as further described in Section 10.3:

- AT RLTP: $6.0M ($7.3M allocated in RLTP, less $1.3M incurred to date)
- AT Cycling Contribution (Climate Emergency Response Fund (CERF) - TBC): $4.5M
- Council (City Centre Targeted Rate (CCTR) - TBC): $4.5M

In the event that either AT Cycling CERF contribution or Council CCTR funds are not secured, the scope of the project can be reduced based on prioritising MVP elements that can be delivered within the allocated funding to meet objectives for the project.

The MVP would deliver a lower-cost, lower-quality option that would enable the desired function for the transport network. In the absence of additional funding being made available through other contributions, this is the option that would be recommended for implementation.

10.2.1 Whole of life costs

The proposed whole of life cost (P50) of the project is $26M. This is based on operating life for short, medium and long-term interventions as shown in Table 32 below.

Table 32: Operating life for the project interventions by street segment

Street Segments	MVP	EPO
Pitt Street (Karangahape Rd to Greys Ave)	40	40
Pitt Street (Greys Ave to Vincent St)	0	20
Mercury Lane (Karangahape Rd to Cross St/laneway)	40	40
Mercury Lane (Cross St/laneway to Canada St)	20	20
Beresford Square	0	10
Cross Street	10	20
East Street	10	10
Canada Street	20	20

Annual maintenance costs have been assumed at 2% of the construction costs of the improvements that are still within their operational life for each year.

Table 33 shows annual maintenance cost incurred each year based on the P50 estimate for the EPO over the asset life durations.

Table 33: Annual maintenance costs for the EPO (P50 estimates)

Year range	OPEX per annum
2025-2034	$282,255
2035-2044	$274,700
2045-2064	$180,866

Other assumptions:

- Constructions costs for all options are assumed to fall in the 2024 financial year.
- Benefits are realised from the 2025 financial year.
- A 4% discount rate has been used.

10.3 Funding availability

Funding availability covers the three targeted sources of funding and any other sources of money that could be used to fund this project.

10.3.1 RLTP and NLTF

AT will be the main funding agency (local share), with Waka Kotahi funding assistance through the NLTF.

The current RLTP 2021-2031 identifies $7.3M funding allocated to CRL Day 1 Roadside projects, which is to be utilised for this project.

Originally it was expected the RLTP funding for the CRL Day 1 Roadside projects would be split across several small low-cost, low risk projects for the three new CRL stations. For low-risk projects under $2M, local share would provide the full contribution.

Now that Karanga-a-Hape Station has been identified as the station with the greatest need and opportunity, all of the funding has been re-directed to this project. A variation will therefore need to be made through Waka Kotahi with an expected NLTF share in the funding.

10.3.2 City Centre Targeted Rate (CCTR)

Auckland Council have advised there is up to $17.5M for CAPEX earmarked in the City Centre Targeted Rate (CCTR) for “Karangahape Rd Quarter Programme” FY24-FY29 which would be available for urban realm and place-making aspects of the project. There is also $1.8M available for OPEX allocated through the CCTR.

Council has verbally confirmed commitment to supporting the project with required funding. Discussions are underway regarding the preparation of a Group Services Agreement (GSA) to confirm funding allocation, risk apportionment, project governance, and controls. The GSA would be

confirmed following SSBC approval, in parallel with Waka Kotahi funding application, anticipated February / March 2023.

Council has proposed some principal aspects to be covered by the GSA, based on lessons learned from previous projects:

- Objectives /scope:
    - Clearly defined shared outcomes for the project
    - Include consideration of sustainability outcomes (agreement on key areas)
    - Governance – Council and Eke Panuku to be included in PCG and Working Group
- Financial considerations:
    - Clearly define allocation of financial risk (scope and cost management). Consider whether there should be a funding cap on all or some elements. Consider risk allocation appropriate to works element and funding source.)
    - Accounting treatments – provision to ensure assets are not capitalised twice, by Council and AT
    - Consider arrangement for transferring funds – Purchase Order with monthly invoicing or inter-agency journalling
- Management considerations:
    - Reporting requirements
    - Contract management expectations
    - Asset ownership
    - Operational maintenance
- Implementation / Delivery Considerations:
    - Mana Whenua engagement
    - Community involvement in design process.

Many of the above items have been considered during the preparation of this SSBC. Following endorsement of the SSBC, a priority task will be the agreement and execution of the GSA.

10.3.3 Cycling / active modes funding

Within AT, the Head of Cycling, Manager for Strategic Cycle Programme and Manager Active Modes Planning all agree the active mode elements of the project are vital for the active mode user experience, safety and connection between existing facilities. Together, with confirmation of construction by July 2024, they have agreed to seek $4.5M-$5M in funding from the “Transport Choices” package of the Government CERF. CERF funding has now been approved by Waka Kotahi and now needs to be signed off by AT Investment Committee. A strong case was put forward for funding for missing links in the cycle network, including Canada Street and Pitt Street, part of the Karanga-a-Hape network improvements. This has been recognised and supported by our funders.

Funds received through this channel will be used to deliver active mode outcomes on Pitt St and Canada St where the greatest proportion of improvements are specifically targeted for this mode.

Cycling and Active Mode managers recognise that when completed this project will improve active mode journeys for thousands of people each day, contributing to the first goal of the Transport Emissions Reduction Pathway - “supercharge walking and cycling”. It also fits perfectly with the ‘dig once’ approach while CRL is under construction, minimising future disruption to business in the precinct.

10.3.4 Other funding

Other avenues for additional funding will continue to be explored while this SSBC proceeds through the review and approvals processes.

Where the options between a minimum viable product and the preferred option have been discussed feedback is unanimous from both internal and external stakeholders that the more extensive and longer-lasting option should be delivered.

The Eke Panuku led Steering Committee endorsed (in principle) the preferred option for an enhanced urban realm upgrade to support the opening of the Karanga-a-Hape CRL station as a strategic priority. The committee has advised it will consider reallocating budget from other projects if there is insufficient funding to deliver the urban realm upgrade for the preferred option.

Funding arrangements - as the cost for the preferred option is greater than the RLTP allocation a cost split has been done for contribution from stakeholders particularly between placemaking elements (Eke Panuku/Auckland Council), active mode elements and other transport related works/outcomes.

Project inclusion in the National Land Transport Programme (NLTP) and RLTP – This project was initially part of the Low-Cost, Low-Risk Programme, but the final activity/preferred option to be confirmed by the SSBC Phase as noted in the PoE, changes the status of this project. The Implementation phase of this activity (detailed design/construction) will be requested as a variation to the NLTP.

AT local share for the design phase of this activity in Council’s Long-Term Plan (LTP) – The activity is within the $11.37 billion capital investment for Transport (volume 2, page 71) of the LTP. However, the business case should demonstrate the comparison of costs allowed for in the ATAP programme ($7M noted in next bullet point) against the current cost. The costs are based on Preliminary Design. Several assessments of the design have been made including RSA, NMUA and through the AT Design Review Process for Gate 1-Concept Design approval.

Project identification within the ATAP for construction and during which period – refer to Page 7 of ATAP 2021-2031 Investment programme - includes this project as CRL Day One – Roadside Projects with proposed allocation of $7.3M.

10.4 Parallel cost estimates

The Engineer’s Estimates were prepared by independent QS Alta and reviewed by the project team, including Beca, LandLab and MRCagney. As the project estimate is under $20m a parallel estimate has not been required.

10.5 Capitalisation of assets

Asset capitalisation process will be in accordance with AT’s Enterprise Project Management Framework (EPMF) section 8.8 Operational/Asset Handover and AT’s Asset Capitalisation Guideline.

10.6 Joint working opportunities

The project has kept Auckland Council and Eke Panuku informed and involved throughout the planning process prior to and during the business case phase.

There is strong recognition for the project from the wider council-family. Auckland Council Development Programme Office (DPO) and Eke Panuku are fully supportive of the project. Eke Panuku have been impressed with the project approach and in collaboration with this project are using the same approach for improvements around Maungawhau Station.

Expertise from Council and Eke Panuku is being drawn upon for “place-making” aspects of the project and community input into design. This will ensure the project makes the best use of the available City Centre Targeted Rates funding.

The Karangahape Business Association has enthusiastically endorsed the project in writing and the general manager has been actively involved in workshops and arranging meetings with community stakeholders. As a major and influential stakeholder in the area they will continue to be kept closely involved.

A presentation made to the AT Mana Whenua hui received strong support for proposed outcomes and improvements and alignment of values. They were pleased to see the proposal to continue with the CRL Mana Whenua narrative for the area. Mana Whenua will be involved as partners in the project (minutes of the hui appended)

At a workshop with the Auckland City Centre Advisory Board (ACCAB) in 2021, prior to any planning or designs, attendees were asked what they saw as a vision for the area around Karanga-a-Hape Station, if there were an opportunity to make changes. The strong themes that came through were to make pedestrian connections, including to pedestrianise Mercury Lane and Cross St, create laneways, add greenery, include artwork and creativity, provide for cycling, and to engage early with the community. Where designs can be influenced, community input into design will be brought into the project.

Initial meetings have been held with Vector and AT’s Business Technology team to understand their needs and works planned within the project area. Collaboration will continue to deliver a ‘dig once’ approach to minimise costs and impact on the community and deliver the best outcomes for all parties.

Working with CRLL and LKA is critical to the success of this project. Discussions have commenced with CRLL regarding coordination of the design and construction and are proceeding positively, as described in Section 11.2.

11 Commercial Analysis

Section 11 covers the commercial viability of the proposal. It covers timing and staging, commercial and programme risks, the consenting strategy and the procurement strategy.

11.1 Introduction

The Commercial Case outlines the programming, consenting and procurement considerations for the project.

The two potential options that have been developed (EPO and MVP) could both be delivered in the timeframes required, coordinated with CRL construction.

Both options consist of tactical elements for the side streets, in recognition of the fact that the wider area will likely be subject to (potentially significant) private development following the construction of Karanga-a-Hape Station. This means permanent construction of urban realm improvements could well prove to be abortive if delivered now and would be better designed and constructed following, or as part of and in response to private developments.

Successful delivery of the project requires completion prior to CRL opening and adopting a 'dig-once' approach to coordinated construction with CRL. Coordination of the work with LKA has therefore been a key consideration.

The project works can be categorised into three distinct works packages for implementation:

- Works within CRL designation, where changes are proposed to the current CRL/LKA designs
- Construction of permanent changes to Pitt Street and Mercury Lane beyond the extent of CRL designation
- Tactical 'no dig' interventions on Cross Street, East Street, Canada Street, Beresford Square.

11.2 Timing and staging

Successful delivery of this work requires project completion prior to Karanga-a-Hape Station opening and adopting a 'dig-once' approach to coordinated construction.

The work therefore needs to coordinate with CRL urban realm construction programme, which CRLL has advised as: construction start mid-2023, construction completion mid-2024.

The critical phasing milestones are therefore:

- Pre-Implementation (Design, Consents & Approvals): Dec 2022 - Jun 2023.
- Implementation (Procurement & Construction): Jul 2023 – Jun 2024.

A detailed gantt chart is included in Appendix N and key milestones are described in Section 12.4.

Preserving the ability to coordinate construction with CRL will require several work streams to run concurrently as part of the pre-implementation phase, including public consultation, Resource Consents, Traffic Control Committee approvals and detailed design including community design input, which introduces risks that will require close management by the project team.

The key timing and sequencing of commercial activities are shown in Figure 38 below.

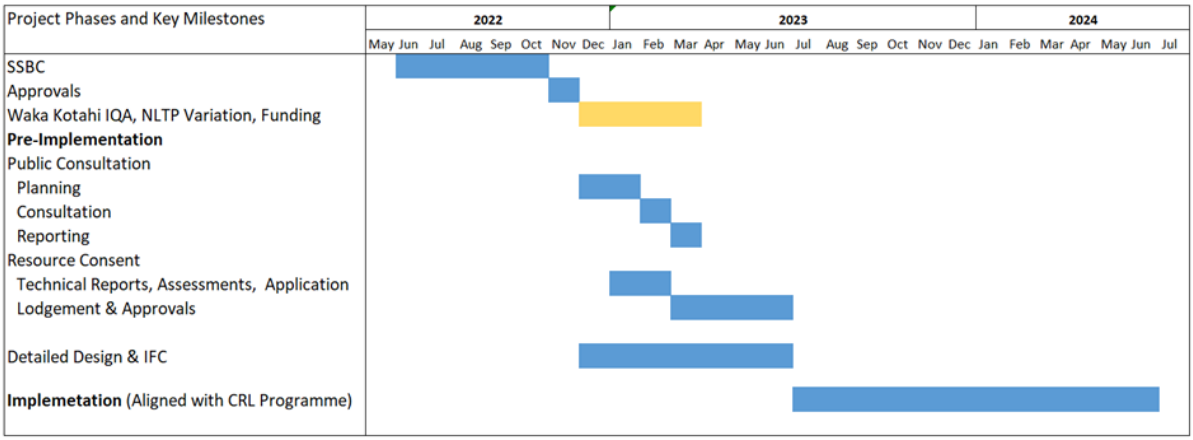


Figure 38: Key timing and sequencing of commercial activities

11.3 Commercial and programme risks

The condensed timeline and parallel activities during pre-implementation create some significant risks to project delivery that are described below:

- Pre-Implementation activities are required to commence in parallel with Waka Kotahi funding approval process, including detailed design, co-design process, public consultation and resource consent application. This work would be carried out at AT's risk until WakaKotahi funding is approved.

- Public Consultation will be an important part of the next phase. This should be a genuine consultation and could result in changes to the design. Whilst much of the engagement with key stakeholders to date has indicated very positive support for the EPO, concerns have been raised by some stakeholders particularly relating to servicing and loading and the closure of Mercury Lane to traffic. Depending on the nature of feedback received through Public Consultation, the design of the preferred option may need to be adjusted and there is a risk that the process could become prolonged which would impact ability to commence construction in alignment with CRL/LKA programme.

- Special Consultative Procedure for the establishment of a Pedestrian Mall on Mercury Lane will be an important part of the next phase. This should be a genuine consultation and could result in the proposal not being accepted, or changes being required to the method of restricting access through Mercury Lane. There is a risk that any significant appeals or a prolonged consultation process will impact ability to commence construction in alignment with CRL/LKA programme.

- Resource Consent lodgement – Resource Consent application is scheduled to be lodged in March 2023, immediately following public consultation. Any changes to the design flowing from the consultation would delay the lodgement of Resource Consents, which would likely then impact ability to commence construction in alignment with CRL/LKA programme.

- Resource Consent approval process – four months have been allowed, which is on the critical path. Any prolongation will impact ability to commence construction in alignment with CRL/LKA programme.

The interface with CRL construction is a key requirement and AT would be commercially responsible for the consequences of any delays to LKA construction work resulting from the implementation of this project, including delays resulting from the risks outlined above. A method of mitigating the risk of delaying CRL could be to have key gateway milestones leading up to the end of Detailed Design. Should the project become delayed beyond the point of being able to be constructed in alignment with CRL works, the project could be stopped and LKA would proceed to construct their current agreed scope and designs.

11.4 Consenting strategy

A Consenting Strategy is attached at Appendix L.

The project is likely to require Resource Consent as a Discretionary Activity overall. In summary, the following consents are likely to be required Procurement Strategy:

- Modifications to Historic Heritage extent of place (Restricted Discretionary Activity). A number of historic heritage extents of place extend out into the road reserve of Pitt Street. Any modifications to scheduled extents of place require resource consent.
- Tree trimming or alteration or works within the protected root zone of street trees (Restricted Discretionary Activity). The works may require alteration or works within the protected root zone of three street trees. An Arboricultural Assessment will be required to confirm the consenting requirements for works in proximity to these trees.
- Potential removal of two street trees outside the Auckland Methodist Central Parish (Restricted Discretionary Activity). If tree removal is confirmed following public consultation, the removal of these trees will require resource consent as they are greater than four metres in height.
- Earthworks from 10m2 to 2500m2 and from 5m3 to 2500m3 in the Historic Heritage Area overlay (Restricted Discretionary Activity). The majority of the proposed works area is covered by the Karangahape Road Historic Heritage Area (2739). There are also a number of Historic Heritage buildings along the alignment that extend into the road reserve, this includes the Pitt Street Wesleyan Church (former), the Pitt Street buildings and Central Fire Station. Earthworks in these areas will require resource consent.
- Installation of network utilities in a Historic Heritage Area not otherwise provided for (Discretionary Activity). The road network activity upgrades are not specifically provided for in the Historic Heritage Area overlay. The works therefore require consent.

The Consenting Strategy recommends the most straight-forward consenting pathway will be to seek new resource consents for all the works, rather than using the existing designation held by CRLL and applying for the resource consents required for works that fall outside of the designation.

11.5 Procurement strategy

In considering the procurement options and preferred strategies for the project, the relevant considerations are quite distinct for two spatial extents of the works:

- Works within CRL designation and extent of works - changes proposed to the current CRL/LKA designs
- Works beyond the CRL designation

The procurement considerations for each of these areas are separately considered below.

11.5.1 Works within CRL designation, changes proposed to the current CRL/LKA designs

Initial discussions have been held with CRLL regarding options for the design and construction of elements within the CRL designation that would change as a result of this project.

The options, respective pros and cons and recommended approach as discussed with CRLL are outlined in Table 34 and Table 35 below.

Table 34: Pros and cons of detailed design under different arrangements

Detailed Design	Pros	Cons	Recommendation
By LKA (to requirements specified by AT)	LKA understanding of CRL design requirements / constraints at station entrances.	Expensive design costs through the Alliance. AT lose ownership of design. Design consultation & approvals risk falls to CRL/LKA.	Not recommended.
By AT-appointed design team	AT retain ownership of design development and associated consultation and approvals. Council and community input (co-design) managed by AT.	Interfaces and CRL design requirements / constraints need to be managed - careful design coordination between AT & CRLL/LKA. Any delays to design delivery, consents, approvals and issue IFC designs would impact construction programme – programme coordination and management will be critical.	Recommended

Table 35: Pros and cons of the construction under different arrangements

Construction	Pros	Cons	Recommendation
By LKA	LKA well placed to deliver adjusted / additional construction scope. Construction interfaces (and associated risks) minimised. CRLL/LKA ownership of delivery of station entrance and works essential for station opening.	Adding scope to LKA contact likely not the most efficient method of delivery – contract mechanism - not appropriately sized for these relatively small-scale urban realm works. Would incur cost premium, and loss of AT control of delivery of the works.	Not recommended.
By AT-appointed Contractor	Likely less expensive.	Delivery interface risks. CRL / LKA may not want to lose control of the areas immediately outside station entrances, required for access	Not recommended
Split scope – minimise changes to LKA scope – remove scope and deliver by AT where designs changing. LKA construct to top of pavement, AT supply & install furniture, fixtures, landscaping	LKA well placed to deliver core construction to top of pavement where these are not changing. Construction interfaces (and associated risks) minimised and controlled. CRLL/LKA ownership of delivery of station entrance and works essential for station opening. Costs and additional scope to LKA minimised to the items LKA best placed to deliver.	Delineation (3D) between LKA scope and AT Separate Contractor scope needs to be carefully defined, agreed, and managed.	Recommended.

Under all options, AT will fund reasonable additional delivery costs (delta increase to current LKA cost position) of any changes to the current CRL / LKA designs. Costs would be agreed between AT and CRLL.

11.5.2 Construction of elements beyond the CRL designation

The works outside of the CRL designation/extent of works consist partially of permanent construction (on the northern section of Pitt Street) and beyond that predominantly of tactical or short – medium term interventions. This is in recognition of the fact the wider area is anticipated to benefit from private development following the CRL project, which would make it a waste of money to invest in permanent materials now given the level of anticipated construction and changes that could follow that.

Tactical elements under either the MVP or EPO could be installed after the CRL is open but would result in construction disruption adjacent to the station entrance and ongoing, prolonged disruption to the neighbourhood.

It is therefore proposed that the tactical and permanent works outside of CRL designation would be most effectively delivered by a single main contractor appointed directly to AT, to lead, manage and coordinate all works and the interface with CRL construction. This is the same approach that has been adopted for the Wellesley Street Bus Improvements project, which is also partially within CRL designation and partially outside.

Given the importance of construction planning, coordination of construction phasing, traffic management, and construction interfaces with CRL / LKA, Early Contractor Involvement (ECI) has potential to add substantial value and mitigate interface risks. ECI procurement is recommended as most likely to achieve the best overall outcome for this project, subject to market engagement to gauge contractor appetite.

This contract delivery model would use a Pre-construction Services Agreement followed by a NZS3910:2013 physical works contract.

Pre-construction services agreement

The following activities should be considered for the ECI period:

1 Planning construction stage methodology, phasing, logistics & traffic management.

2 Coordination of construction planning and programming with interfacing contractors and projects, in particular Vector and CRLL / LKA.

3 Attend interactive design meetings with the design team

4 Provide advice on the constructability of designs and design detailing to suit for construction methodology and phasing.

5 Review design drawings and report to provide their feedback comments and recommendations.

6 Participate in any value engineering and innovation ideas.

Construction contract

Subject to a satisfactory outcome from the pre-construction services phase and following the completion of the detailed design, AT would enter negotiation for the construction contract with the ECI contractor. The price will be negotiated, potentially via Open Book Acceptable Price for the Construction Contract. Award NZS3910:2013 contract subject to satisfactory completion of the Pre-Construction services and sub-contractor pricing.

12 Management Case

Section 12 assesses the deliverability of the proposal. This includes the project roles and governance, resources needed for the project, key milestones and assumptions, constraints and dependencies.

12.1 Project plan and schedule

As described in Section 12.2 above, project implementation is required to be coordinated with CRL urban realm construction. The key phasing milestones are therefore:

- Pre-Implementation (Design, Consents & Approvals): Dec 2022 - Jun 2023
- Implementation (Procurement & Construction): Jul 2023 – Jun 2024.

A detailed gantt chart for pre-implementation and implementation phases is include at Appendix N.

12.2 Project roles and governance

The proposed management and governance structures for the project pre-implementation (consultation, design, consenting) and implementation (construction) phases is set out below.

12.2.1 Project Control Group (PCG)

Given the funding contributions from Council (City Centre Targeted Rate) for urban realm improvements, it is recommended that representatives from Council and Eke Panuku are included in the PCG membership. Given the involvement of three agencies in the PCG, establishment of clear Terms of Reference will be important to ensure expectations, shared outcomes, roles and responsibilities are agreed and understood by all. The funding structure and risk allocation between the parties that will be established in a Group Services Agreement (refer Section 10.3.2) will need to be reflected in the Terms of Reference such that reporting lines and decision-making authorities at PCG level are defined and appropriate.

Table 36 lists the members of the PCG and their job titles.

Table 36: Project Control Group members and job titles

PCG members	Job title
Chair: Christian Messelyn	GM Public Transport Development
Client (Senior User): Ian Howell	Network Integration & Operations Manager – PT Dev
Melanie Alexander	Group Manager Network Management
Nalisha Kesha	Manager Strategic Projects (North & West)
Natalie Steegstra	Funding Manager - Funding and Analysis

PCG members	Job title
Stephen Rainbow	Head of Community Engagement
Eric van Essen	Programme Director – Strategic Programmes
Andrew Mein	Senior Transport Planner – A4E
Tarun Ahuja	Delivery Manager Investigation & Design
Luke Donald	Investigation & Design Manager - Central
Adrian Lord (or delegate)	Head of Cycling
Liz Nicholls (or delegate)	Auckland Council – Development Programmes Office (DPO)
Kate Cumberpatch (or delegate)	Eke Panuku - Priority Location Director

It is proposed that the PCG would report up to the City Centre Steering Group at the portfolio level, which comprises membership from Eke Panuku, Council, Auckland Transport and Auckland Unlimited.

12.2.2 Project management and governance structure

Table 37 lists those involved in the ongoing management and governance of the project.

Table 37: Project management and governance team members

Role	Name and job title/department
Project Sponsor	Christian Messelyn GM Public Transport Development
Senior User (Client) AT	Ian Howell & Suresh Patel CRL Network Integration
Senior Client Auckland Council	Liz Nichols Manager Investment Programmes, DPO
Senior Supplier	Luke Donald Delivery Manager Investigation & Design

Project Manager	Sophia Wang – AT Principal Project Manager, supported by Andrew Taylor (ATCL)

12.2.3 Project delivery team

Table 38 lists those in the project delivery team.

Table 38: Project delivery team members

Role	Name
Project Sponsor	Christian Messelyn GM Public Transport Development
Senior User (Client)	Ian Howell & Suresh Patel CRL Network Integration
Senior Supplier	Luke Donald Delivery Manager Investigation & Design
Project Manager	Sophia Wang – AT Principal Project Manager, supported by Andrew Taylor (ATCL)
Communication Specialist & Mana Whenua Engagement	Ed Newbigin
Community Design / Co-Design Consultant	TBC
Planning & Consent Specialist	Lloyd Johnson
Customer Experience	Kavita Campbell, Elena Arduini
Public Transport	Pete Moth, Chaya Mohit
Network Operations	Miguel Menezes
Road Safety	Irene Tse

An organagram of the project team, showing roles, responsibilities and lines of communication is attached at Appendix O.

12.2.4 Project Working Group (PWG)

A Project Working Group (PWG) should be established and would be responsible for contributing to the delivery of the project design and implementation. The main aim of the PWG is to shape the development of the design based on input from the range of key affected parties and stakeholders. This group should meet regularly and will be involved in a series of structured workshops.

Membership of the PWG may change and evolve as the project advances through its lifecycle but will likely consist of:

- Relevant internal AT SMEs
- Auckland Council specialists (DPO and Urban Design Unit)
- Eke Panuku representative(s)
- Mana Whenua representatives (possibly through their own Project Working Group)
- Local community, representatives from local businesses and residents
- KBA and City Centre Residents' Group (CCRG) representatives
- FENZ and St Johns Ambulance representatives

12.2.5 Roles and responsibilities

Table 39 lists and describes the key roles for the project.

Table 39: Project roles and descriptions

Role	Responsibility
Project Manager	The Project Manager is responsible for delivering the project and leads and manages the project team with the authority and responsibility to manage a project on a day-to-day basis, in accordance with Section 4.9.2 of the EPMF.
Project Sponsor	The sponsor has appropriate delegation for the project and guides the strategic direction of the project, in accordance with key responsibilities outlined in Section 4.9.1 of the EPMF.
Project Control Group (PCG)	PCG is the decision-making body that will ensure the right activities are taking place, undertaken correctly and are in alignment with investment outcomes and project objectives. The PCG provides a forum for senior management to better understand the scope, benefits and financial and contractual status of projects, enabling informed decisions to be made and ensuring a high level of communication with stakeholders. The PCG will discuss any key issues, project interfaces and potential delivery risks that may have adverse implications for the project and Auckland Transport in terms of time and cost; or being of high public profile/politically sensitive nature whilst ensuring a zero-harm focus on project delivery is maintained. Given the funding contributions from Council (City Centre Targeted Rate) representatives from Council and Eke Panuku will be included in the PCG.

12.3 Resources

This section covers what resources will be needed to deliver the project covered in this SSBC.

12.3.1 Project management

AT's project delivery team 'IN project delivery' will provide delivery support to 'IN PT development'.

Successful project implementation to meet the CRL timeline requires a fast-track approach to pre-implementation, with multiple activities running in parallel (design, public consultation, community liaison, resource consents, TCC approvals, etc). This will require a dedicated and experienced full-time internal AT project manager to coordinate all activities and manage the pro-active engagement with all stakeholders.

Sophia Wang will be the lead Project Manager, supported by Michael Wong and Andrew Taylor.

12.3.2 Communications and engagement

Community support is vital to get wider buy-in for the project over the consultation and delivery period, as well as in the coming years after implementation when the zone will be in place.

The team will use the IAP2 (International Association of Public Participation) framework for engagement, which involves assessing and communicating with stakeholders to the appropriate level.

AT Communications and Engagement Team will lead the engagement with all external stakeholders as well as public consultations process.

A Communications and Engagement Strategy is attached at Appendix P.

12.3.3 Community design / co-design

The nature and character of changes to the urban realm and placemaking components of the design will benefit greatly from community input. A specialist facilitator will be appointed to work with the project team and manage and lead the approach to community engagement in the design process.

12.3.4 Resource consents

Resource Consent application and supporting documents including Assessment Environmental Effects and specialist assessments and reports will be prepared by the design consultants, Beca.

AT's Principal Planner will oversee the preparation, lodgement and approval of resource consents on behalf of AT and the project team.

12.4 Milestones

Table 40 lists the milestones for the project going forward through funding, pre-implementation, and implementation.

Table 40: Summary of future project milestones

Milestone	Start Date	Finish Date
Funding		
Waka Kotahi IQA, Funding Approval, NLTP Variation	Early Dec 2022	Mid Mar 2023
Confirm CCTR Funding and Execute AT/Council GSA	Early Dec 2022	End Feb 2023
Pre-Implementation		
Public Consultation	Early Feb 2023	Mid Mar 2023
TCC Special Consultative Procedure for Pedestrian Mall	Early Feb 2023	Mid Mar 2023
Community input into design	Early Feb 2023	Early May 2023
Detailed Design	Early Feb 2023	End Jun 2023
Resource Consents	Mid Mar 2023	End Jun 2023
Commercial Variation Agreement with CRL/LKA	Mid Mar 2023	Mid Jun 2023
Gateway: Confirm Approval to Proceed to Implementation	Mid Jun 2023	
Implementation		
Permanent Construction with CRL Designation	Jun 2023	Jun 2024
Permanent Construction beyond CRL Designation	Jun 2023	Jun 2024
Tactical Interventions – construct / install	Jun 2023	Sep 2023
Tactical Interventions – review & respond (optimise)	Sep 2023	Jun 2024

12.5 Next steps

Following approval of the SSBC, the first part of Pre-Implementation phase will be critical to the successful design and delivery of the project. Further engagement with partners and stakeholders will determine any changes to the preferred option. Consultation will include:

- Mana Whenua project partners, through a Mana Whenua Project Working Group
- Local community and external stakeholders through public consultation on the preferred option and potential co-design workshops
- TCC Special Consultative Procedure.

These consultative processes will lead to refinement of the designs for the preferred option. Significant elements of the design will need to be agreed prior to lodgement of Resource Consents in March. This work is therefore programme-critical and will require close management.

Whilst the outcomes of engagement and consultation could influence many aspects of the design, the following key elements have been identified focus areas:

- Means of controlling access to Mercury Lane pedestrian mall: whilst automated bollards are recommended in the preferred option, some other preferred mechanism of controlling and enforcing restricted access to Mercury Lane upper could result from the consultations.
- Sizes and locations of new trees and low-level planting, plus selection of appropriate species.
- Types and locations of furniture and other urban realm / placemaking elements, particularly on Mercury Lane, Cross Street and Beresford Square.
- Design of amenity and feature lighting, particularly on Mercury Lane and Cross Street.

12.6 Project assumptions

This key project assumptions are:

- Council-family support for proposed changes - From early on in the investigation and background research prior to the business case commencing there has been involvement from key teams within AT (Network Operations / CCNO) and from the Council DPO and Eke Panuku. As a result of multiple workshops, meetings and discussions, there is widespread internal AT support and from the wider government family (Auckland Council, Eke Panuku, Kainga Ora, Auckland Unlimited, Waka Kotahi) for the proposed changes. It is acknowledged and applauded that the proposed changes to the transport network within the area of scope are in line with current plans, policies and strategies. It is expected this support will continue.
- Public support for proposed changes - engagement with key stakeholders in the area so far have shown general support for the project. The active Business Association, major landlords, several large business owners and the local board have expressed support for the functional changes and opportunities for improvements to amenity in the area. As a result, it is expected there will be wider public support for the proposed changes to the transport network within the area of scope and for the elements of the project that cannot be changed through the co-design process.

- CRLL and LKA support for proposed changes – without support and a fixed agreement with CRLL and LKA in place these changes cannot occur as they are entirely dependent on what can be done within the CRL consent conditions and LKA construction programme. Discussions commenced early with CRLL representatives to agree the principles of working together and how the works may be coordinated and delivered in an integrated way, acknowledging and mitigating the associated risks to both AT and CRLL. Further work is required to agree a joint construction programme, key milestones and hold points. To date these engagements have been positive.

- Construction programme and timing - An essential aim of this project is to complete construction of all proposed changes prior to the opening of the CRL for Day One operations. The majority of the changes will not involve digging beneath the existing road surface with the many simple tactical interventions sitting atop the existing road surface. As a consequence, few aspects of the project will require extensive or lengthy construction activity.

- Funding for project - That previously allocated RLTP funding will be approved to deliver at least the MVP and that funding is approved from different budgets sources for any agreed further improvements before these commence. This includes that additional funding for place-making has been confirmed by Council through the City Centre Targeted Rates and for cycling improvements by the AT Active Mode teams. Funding to deliver all components of the EPO is still being pursued.

- Designs are accepted - Project designs take into account AT design and standards requirements, are regularly discussed with relevant teams within AT. It is expected that key12.6) technical stakeholders are available when required to attend meetings and workshops and to provide feedback. Through pre-consultation with SMEs it is therefore expected designs will be approved through the AT Design Review Panel without delay.

- TCC (Transport Control Committee) approves the Statement of Proposal to change the status of the upper section of Mercury Lane from a road to a Pedestrian Mall or Shared Zone (as a potential alternative should the Pedestrian Mall not receive sufficient support). The TCC approval is required in order to commence public consultation for feedback on the proposed change.

- Impacts on emergency services, maintenance and waste collection can be managed - the closure of the upper section of Mercury Lane does not have a detrimental effect on the activity of nearby emergency services and that deliveries, maintenance, and access to adjacent properties is accommodated with the approved design.

- Future access to Mercury Lane – if bollards or a similar type of intervention are used to control access to the closed section of Mercury Lane, then an operational plan for access to the area will be created with and accepted by affected parties.

- Project resourcing - That AT and its consultants can successfully resource and deliver the project. Planning and reviewing of the project capabilities and status is ongoing. Required resources and staff resourcing is identified well ahead of time and where an AT resource cannot fill a need an external alternative is quickly found. This process enables the project to continue without delay.

- Development Response - prior to construction commencing a Development Response plan and resource will be put in place. Discussions have already commenced with AT senior leaders and Auckland Council in this department. Development Response will work in

conjunction with the LKA Development Response team in the area and continue throughout the construction period.

12.7 Constraints

The main constraints to the project are:

- Existing consent conditions for the CRL project - at this stage, a single resource consent application to cover the entire scope of works appears to be the more straight-forward and simpler consenting pathway. AT will engage with CRLL to work through how the designation may be used and the requirements around this to further understand the potential risks and opportunities of this option. A Consenting Strategy has been developed for this project in conjunction with relevant AT staff.

- Funding – the project will only be able to deliver what is possible within the approved funding envelope. As there are currently three sources of funding, costs for the project have been roughly divided according to the attribution to each funding stream. If a funding source is no longer able to commit to the project elements will have to be removed and only elements for the minimum viable option will be delivered. If RLTP funding is not approved the project will not continue.

- Time – the project must be completed prior to the opening of the CRL (currently January 2025). Ideally the project will be constructed in conjunction with the LKA streetscape works in Pitt Street, Mercury Lane, Beresford Square and Canada Street.

- Impact on transport network during construction and Temporary Traffic Management Plans (TMPs) - to minimise ongoing construction disruption to the surrounding community the project aims to work alongside LKA within the CRL designation to deliver the proposed changes. This will depend on agreement from LKA and a clear plan for how side-by-side construction could occur. There are two significant benefits to this option, firstly it would be seen by the community as one piece of work and secondly there would be savings through using a single TMP, which is often a significant part of construction cost.

- Heritage – the project team will engage with Heritage New Zealand Pouhere Taonga (NZHPT) on the project to determine whether there are requirements to obtain an Archaeological Authority for the works. CRLL are likely to have an Archaeological Authority in place for the works area, which may be able to be used for the project. The project will also engage with Auckland Council Heritage team to discuss the level of information and assessment required to support the resource consent application. A consenting strategy has been developed for this project in conjunction with relevant AT staff.

- Mana whenua design - interested Mana Whenua groups are being engaged for the project design. It is understood that significant engagement has previously been undertaken by LKA for the Karanga-a-Hape Station and surrounding areas. Engagement on this project will build on this previous engagement and allow opportunities for Mana Whenua to partner on design elements where possible. Agreement to continue using the CRL mana whenua narrative is being discussed by individual iwi.

12.8 Dependencies

Table 41 summarises the identified project dependencies and their potential impacts.

Table 41: Project dependencies and their potential impacts

Dependency For / On	Potential Impact
ON: the change in road status for upper Mercury Lane from road to Pedestrian Mall	Scope of the project may have to change or the project may not go ahead at all if this is not approved.
ON: CRLL and LKA allowing the project to construct at the same time as LKA deliver streetscapes	If the project has to deliver after LKA complete their works then there will be a delay to project commencement. This will result in prolonged disruption to the community, the cost for increased development response, and potentially a delay to the opening of a CRL station entrance.
ON: a written agreement between AT and CRLL & LKA on the changes to design and scope to LKA programme and construction	Scope of the project may have to change or the project may not go ahead at all if this is not agreed.
ON: Resource consents and changes to CRL consent conditions being granted	Scope of the project may have to change or the project may not go ahead at all if this is not agreed.
FOR: The Northwest Bus Improvements project and the Vincent St cycle lane to be connected to nearby infrastructure	This project provides connections between adjacent bus and cycle priority on Karangahape Rd and Vincent St.

12.9 Project assurance

The following section outlines the project controls that should be adopted during the pre-implementation and implementation phases of the project. The EPMF should be adhered to as the key guiding document in association with various frameworks and policies referenced within the EPMF.

12.9.1 Project Implementation Plan

A Project Implementation Plan (PIP) will be developed at the start of the next phase to guide the project execution and project controls. The intent of the plan is to outline the approach to be used by the project team to deliver the intended project management scope of the project and to ensure a successful outcome to the project.

12.9.2 Safety

Safety is vital in the successful planning, design and delivery of this project. Safety management will be planned for, implemented and monitored throughout the project life cycle. This will be undertaken through Safety in Design (SiD) processes, consideration of operational requirements, road safety audits, health and safety during construction and health and safety and wellbeing in the workplace.

A Safe System Assessment was completed (see Appendix Q) to inform the SSBC options assessment.

Safety in Design workshops will be held through the detailed design phase. A SiD register will be prepared by the design team and reviewed and updated as required through the phases. As the project will be constructed within a live operating environment, specific hazards will need to be carefully managed through effective planning by the appointed ECI contractor and designer during Pre-Implementation.

A Road Safety Audit (RSA) and a Non-Motorised User Audit (NMUA) were carried out on the Preferred Option for the SSBC. They are attached at Appendix M, with the issues raised being addressed, including:

- Pitt Street tie-in at Hopetoun Street: retain the paired crossings at the Pitt Street / Hopetoun Street intersection, investigate Barnes' Dance at the intersection, terminate the uni-directional separated cycleway along western Pitt St some 25m before the intersection.
- Cycle lanes at Pitt Street bus stops and past Beresford Sq: area in front of Beresford Square will be treated as a shared area, the full length from Karangahape Road to the northern side of the new Pitt Street mid-block pedestrian crossing. At all other bus stops cycle paths will be raised (ie flush with the adjacent bus stop buffer and footpath).
- Pitt Street mid-block signalised pedestrian crossing: operational planning and consultation with ATOC and FENZ to explore integration of the mid-block signals with emergency greenwave for FENZ. Crossing will be a paired (toucan) crossing, raised, with suitable ramp gradients for bus operations.
- Upper Queen Street cycleway at Cross Street: Add coloured surfacing, continuation lines and speed humps on either side of the cycleway across Cross Street intersection. Extend broken yellow lines alongside the two additional proposed concrete separators to maximise intervisibility between cyclists and motorists.

Through the next phases it is expected that project team will apply the Vision Zero/Safe System approach throughout the project life cycle. The Vision Zero/Safe System approach places greater responsibility on the people who plan, design and operate the transport system to provide a safe system that prioritises safety, not a system that puts other measures ahead of human life. This is a core responsibility for project managers who are known as system designers.

12.9.3 Community input into design

A series of structured design workshops with various combinations of the following project partners and key stakeholders will be held to address specific design elements in a collaborative and open manner. Workshops attendees and agenda will be designed and tailored to suit the particular design topic, ensuring those with particular expertise or interest in each design element are included in the relevant conversations

- Mana Whenua

- Internal stakeholders and SMEs
- Fire and Emergency NZ and St John's Ambulance
- Local community and key external stakeholders
- Council's DPO and Urban Design Unit.

12.9.4 AT Design Review Panel

The proposed designs will follow AT Design Review Panel (DRP) process. Given the tight timeframes, proactive engagement with the DRP to structure the review process and ensure effectively and timely approvals is required.

12.9.5 Project controls

The following key project controls will be adopted, following EPMF

- Monthly Project Highlight Reports will be prepared by the AT project manager and submitted to the Project Sponsor for review by other PCG members
- At least monthly updates of the project risk register, issues register, time schedule and cashflow forecast on Edison 365
- Monthly PCG Update Memos, with meetings to discuss items or confirm approvals, as required
- Fortnightly progress meetings will be held with the design team and ECI contractor.

12.9.6 Risk management

In order to mitigate the risks that emerge through a project, a Risk Management Plan will be prepared and implemented.

A risk workshop was held as part of the SSBC process on 27 September 2022 and the risk register is attached as Appendix R.

Through the pre-implementation and implementation phases, the Risk Management Plan will include measures to:

- Hold risk workshops with key stakeholders at appropriate stages
- Update the existing Risk Register monthly and following risk workshops
- Allocate risk owners and manage risk management in accordance with controls and mitigations identified in the Risk Register.

12.9.7 Issue management

In order to identify and address issues that emerge during the delivery of the project, a project issues register will be established and maintained throughout the project lifecycle. This will be reviewed monthly and key issues included in the monthly Project Highlight Report (PHR).

12.9.8 Project tolerances

The Project Manager will notify the Project Sponsor via the monthly project status report of any changes that sit outside accepted tolerances. Any change to the project scope and deliverables, or departure from the project requirements will require a formal Project Change Request which must be authorised by the Project Control Group. Guidelines for criteria that would be specifically addressed are as follows. (It should be noted that the following criteria are specifically recommended for this project and they will take precedence over the recommendation of Section 5.3 PMF2015).

As the current project time/cost estimates are based on preliminary drawings, there is a degree of uncertainty surrounding the estimation of the cost and timeframes. In the event of a variation to the agreed scope / time / cost, the following criteria will be applied,

Scope

Any change in scope by the client, end user, or other party will be assessed first by the project manager by completing a scope change request application. The time/ cost impact of the requested scope change will be presented to the Sponsor for approval before implementation. The outcome of the Sponsor's decision should be reported in the monthly PHR.

The scope change will not be implemented until the project manager has the written approval of the Business owner.

Budget

If the design phase budget is forecast to exceed the approved budget, then the project manager will initiate the variation to the budget process for consideration by the Sponsor. Approved variations will be reported in the monthly PHR. For Waka Kotahi subsidised projects, a copy will also be sent to the Funding team to initiate a Cost Scope Adjustment (CSA) to help offset the additional cost of the project.

The project manager cannot commit additional budget until it is approved by the appropriate financial delegation. The project manager will realistically reforecast the total expected cost of the project on a monthly basis within SAP system.

Programme

If the design phase project schedule baseline date for completion is likely to extend by one month or more, the project manager will assess the cost implications of the extension of time and present to the Sponsor for approval. The outcome of the Sponsor's decision will be reported in the monthly PHR.

Risk/issues

Any significant risks or issues that arise and have not been identified or sufficiently allowed for and which affects budget and time by the criteria above, will be assessed by the project manager. If the risk level changes due to new situation, it will be presented to the Sponsor through PHR for resolution.

12.9.9 Quality management

Quality Management covers the activities and tasks that determine the delivery of products and services to the required quality standards. Any specific quality levels will be established during project planning and specified within the Project Implementation Plan. The Project Implementation Plan will contain specific quality practices, resources, client expectations and sequence of activities relevant to the delivery of the product or service.

Quality Plans will be required to be produced by all consultants and contractors appointed to the project, to describe specified quality standards will be met, how the project will be designed in accordance with best practice and with the principles that have been established by AT.

The project shall maintain standard quality standards appropriate for AT, specifically:

- AT Code of Practice (Traffic Design Manual).
- Safe systems approach
- Urban Design Framework
- Standard Engineering Detail (S.E.D)
- Development Code NZ & Auckland
- CPTED (Crime Prevention Through Environmental Design)
- Accessibility Standards

Any deviation from the standards will require approval and the project manager will be responsible for initiating and completing the AT standard departure process.

13 Assessment Profile

Section 13 summarises the results alignment, appropriateness and efficiency of the proposal.

13.1 Prioritisation of the Proposed Investment

The priority for the potential investment has been assessed in accordance with the Waka Kotahi Method for the 2021-24 National Land Transport Programme[28].

The Method requires the assessment of three factors – GPS alignment, Scheduling and Efficiency.

13.2 GPS alignment

The method requires that 'one relevant criterion' be selected related to each expected benefit and the rating for the activity is assigned based on the highest expected contribution to a single GPS strategic priority[29].

In this case under **Better travel options** (Benefit: Impact on access to opportunities) the rating is **High** as the recommended option introduces new walking/cycling links which form part of a large or major urban area network.

13.3 Scheduling

Scheduling in the Method relates to two either of two factors: interdependency and criticality. In this case the dominant factor is criticality – the new works must be coordinated with the LKA works and complete before the Karanga-a-Hape Railways Station is open.

This makes the scheduling factor **High**.

13.4 Efficiency

The investment has a calculated BCR of 3.1 (mid-point) giving a **Medium** rating.

13.5 Overall priority

The overall priority for the whole investment is therefore **4**.

[28] Investment Prioritisation Method for the 2021-24 National Land Transport Programme, Waka Kotahi December 2020
[29] ibid, p.11

14 Lessons Learned and Post-Implementation Monitoring

Section 14 summarises how lessons learned throughout the project implementation process will feed into a continuous improvement process. It also outlines how post implementation monitoring will be carried out to check whether the project achieves its intended outcomes.

14.1 Lessons learned

Lessons learned from all phases help shape how we make continuous improvement throughout the project. Frequently this is done through reflection during team meetings and discussions and after receiving feedback from the many stakeholders. It has been done through speaking with staff involved with recent, similar projects, specifically the Downtown project, the Queen Street changes, the Karangahape Road Enhancements, Wellesley Street Bus Improvements project, and the Federal Street Stage 2 project. These are daily, informal interactions that continually influence and guide the approach to the project. They provide valuable and timely learnings.

There will be traditional and formal Lessons Learned sessions as well. At the end of the project a dedicated session will be held where input will be sought from many different stakeholders and those involved with the project. As part of the AT Project Management requirements the record of this Lessons Learned session will be uploaded to the Edison project site. A budget has not been assigned for this as the cost is usually to people's time and this has been catered for in the overall budget.

The Project Lead and Project Manager will be responsible for making the formal sessions take place. Everyone in the project working group is responsible for assessing and reflecting on the daily progress of the project. A culture of openness, and encouraging discussion is fostered in the group. It is likely there will be fewer formal Lessons Learned sessions upon completion of the Business Case stage and at the end of the public consultation and co-design stage.

14.2 Post implementation monitoring - approach and schedule

This post implementation monitoring section contains information to guide the activities required to monitor progress with respect to achieving the Karanga-a-Hape Station neighbourhood transport network improvements.

Benefits realisation is based on the Investment Logic Map (ILM) assigning baseline measures and targets to each benefit.

The approach should be revalidated throughout the course of the project in order to incorporate new information and changes in assumptions or dependencies, which may require revision to the plan.

14.2.1 Benefits, measures & KPIs

Benefits and possible measures were derived and refined through workshops with stakeholders and specialists during the SSBC in accordance with the Waka Kotahi's updated land transport benefits framework and management approach guidelines. These are summarised in Table 42.

Table 42: Objectives, benefits and KPIs

Investment Objectives/Project benefit	Waka Kotahi Benefit	Measure/ KPI
Reduce harm to vulnerable transport users	Impact on social cost of deaths and serious injuries and perceptions of safety and security. Impact of air emissions, noise, and vibration on health	Crashes by severity
		Deaths & serious injuries and collective risk
		Access - Perception
		Ambient air quality
		Noise level
Make better use of existing and future public transport and active mode infrastructure and investments in the city centre	Changes in mode use	People throughput & spatial coverage of cycle and PT infrastructure)
		Travel time reliability for freight, service & delivery
Improved desirability of the Karanga-a-Hape neighbourhood as a place for economic, cultural and social activities.	Changes in access to social and economic opportunities and the liveability of the Karanga-a-Hape neighbourhood	Townscape: Allocation of space for social and cultural activities
		Amenity value – built environment
		Townscape: Vehicle volumes
Increased sense-of-place in the Karanga-a-Hape neighbourhood through expressing the unique character and identity of the area in the streetscape.	Changes in community views on the neighbourhood.	Pedestrian delay & Perception of access
		Townscape: Allocation of space for social and cultural activities (as above)
		Noise level

The following three KPIs were subsequently identified as representative good indicators of progress for the three problems, and the different measures in the business case.

- KPI 1: Crashes by severity
- KPI 2: People throughput & spatial coverage – public transport and cycling
- KPI 3: Amenity value – built environment.

14.2.2 Monitoring and evaluation

Performance measures

The recommended performance measures (chosen from Waka Kotahi's standard list) are shown in Table 43.

Table 43: Performance measures

Outcome Class	Investment Benefit	Measure	Baseline	Target	Application	Monitoring
Safety	Safety – improve/ maintain (reduce deaths and serious injuries)	Deaths and serious injuries	Reported vehicle crashes: 16 minor, 74 non-injury (when multiplied by under-reporting rates: 44 minor, 518 non-injury)	50% reduction in vulnerable users DSIs one year after completion (compared to assessed do minimum)	Within the specified Karanga-a-Hape Station neighbourhood	Standard Waka Kotahi/AT data base
Network Performance and Capability	People throughput & spatial coverage – public transport and cycling	People throughput	N/A	At least 30,000 pedestrians per day when CRL 2028 level forecast patronage levels are reached*	Within the specified Karanga-a-Hape Station neighbourhood	AT five-yearly monitoring and reporting
		Spatial coverage – public transport and cycling	See Section 2.3	As in Future Connect network	Within the specified Karanga-a-Hape Station neighbourhood	Measurement of as-built

Outcome Class	Investment Benefit	Measure	Baseline	Target	Application	Monitoring
		Spatial coverage – cycle lanes & paths	See Section 2.3	As in Future Connect Network	Within the specified Karanga-a-Hape Station neighbourhood	Measurement of as-built
Environment	Amenity value – increase/maintain	Amenity value – built environment.	PERS assessment of do minimum (LKA design). See section 2.4	PERS assessments of change in public urban realm – average one level increase on all streets and sub-sections	Within the specified Karanga-a-Hape Station neighbourhood	Assessment of effects of project – one-off AT monitoring one year after completion

*This is therefore a measure to show the success of the Karanga-a-Hape Station neighbourhood works, not of CRL itself. i.e, once the CRL patronage is occurring, does the Karanga-a-Hape Station area reach its potential?

Appendix A Investment Logic Map

Appendix B Strategic Overview

Appendix C KBA Letter of Support

Appendix D Stakeholder Feedback

Appendix E PERS Assessment

Appendix F Options Development Workshop

Appendix G Options Assessment Workshop and EPO development table

Appendix H Preliminary Designs

Appendix I Short List Economic Assessment

Appendix J Short list ASTs

Appendix K Cost Estimates

Appendix L Consenting Strategy

Appendix M RSA and NMUA

Appendix N Programme

Appendix O Organogram

Appendix P Communications Strategy

Appendix Q Safe System Assessment

Appendix R Risk Register

Appendix S SSBC Peer Review

Appendix T New Travel Routes & Options