

Cycling and Micromobility Programme Business Case

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Change History and Approval

ROLE	NAME	SIGNATURE	DATE
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Led by: Project Manager			
Recommended by: Project Sponsor			
Recommended by: Delivery Manager			
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Revision Status

As this template is intended to be updated at each phase of delivery. Include previous phases here.

REVISION NUMBER:	IMPLEMENTATION DATE:	PHASE:	SUMMARY OF REVISION
Part A – V3	28 June 2021	Consultant draft	Initial
Part A – V5	2 December 2021	Final draft	Internal reviews complete
Part B and C			

Purpose of Document

This Business Case must be updated prior to each new phase of the project and approved by the sponsor.

The Project Manager allocated to the project is responsible for the development the Business Case through the project lifecycle, working with the relevant areas within Auckland Transport and externally as needed.

The Auckland Transport infrastructure programme and project management process allows for the development of a project Business Case through the project life cycle. The Business Case is used to make stop-go decisions at decision points or Approval Gateways (points where decisions are made whether to advance from one phase to another) in the project life cycle (represented by the vertical red lines in Figure 1). It is also used to support investment decisions through funding applications.

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Glossary

Acronym	Term
2017 PBC	Auckland Cycling Programme Business Case (2017)
A2B	Airport to Botany
A4E	Access for Everyone
AC	Auckland Council
ACM	Auckland Cycle Model
AT	Auckland Transport
BCR	Benefit Cost Ratio
CAM-PBC	Auckland Cycling and Micromobility Programme Business Case
CAPEX	Capital Expenditure
CC2M	City Centre to Māngere (Light Rail)
CO₂e	Carbon dioxide equivalent
DSI	Deaths and Serious Injury
EAST	Early Assessment Sieving Tool (Waka Kotahi)
ECI	Early Contractor Involvement
EGM	Executive General Manager (Auckland Transport)
FTE	Full-Time Equivalent
GHG	Greenhouse Gas
GPS	Government Policy Statement on Land Transport 2021-2031
ILM	Investment Logic Map
IPSG	Investment Portfolio Steering Group (Auckland Transport)
KPI	Key Performance Indicator
LAN	Local Area Network
MAMP	Manager Active Modes Planning (Auckland Transport)
MBCM	Monetised Benefits and Costs Manual
MCA	Multi-Criteria Analysis
MoT	Ministry of Transport
NLTF	National Land Transport Fund
NLTP	National Land Transport Plan
NZUP	New Zealand Upgrade Programme
OPEX	Operational Expenditure
PCG	Project Control Group
PgCG	Programme Control Group
PgM	Programme Manager
PM	Project Manager
RLTP	Regional Land Transport Land 2021-2031
RTN	Rapid Transit Network
SSBC	Single-Stage Business Case
TDM	Transport Design Manual
TERP	Transport Emissions Reduction Plan

Executive Summary




Background

There is approximately 165km of safe cycling facilities being delivered across Tāmaki Makaurau - Auckland over the next 10 years through the 2021-31 Regional Land Transport Plan (RLTP), which will encourage more people to use bikes and micromobility for more of their trips. This excludes the \$306 million allocated to the ongoing cycling programme - the focus of this Programme Business Case. However, to support the transition to a safer, healthier and low emission future, substantial mode shift from private vehicles to cycling is required, particularly for short to medium distance trips. This requires much higher levels of investment in cycling and micromobility than currently available through the RLTP, as well as significant external policy and legislative changes.

The Cycling and Micromobility Programme Business Case (CAM-PBC) seeks endorsement of an investment strategy¹ to identify a programme for network development, cycle parking and customer growth initiatives investment. This allows delivery to be quickly scaled up should additional funding become available beyond the \$306 million allocated in the RLTP. It also makes a case for policy changes, and other projects to be fast tracked to enable outcomes to be realised.

An estimated programme of \$2 billion in cycling investment is recommended as a minimum, to help meet the aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, of which \$1 billion is expected to feasibly be delivered over the next 10 years under existing procurement settings.

The forecast delivery rate of the \$1 billion CAM-PBC programme is double the do-minimum scenario through more road space reallocation, building in flexibility to respond to changes through prioritisation and procurement, and utilising faster delivery approaches like semi-permanent infrastructure and single stage business cases using the 'lite' criteria.

\$1 billion Investment	150km of safe cycling on strategic connections + 7 focus areas + 3,000 cycle parks + customer growth initiatives such as bike hubs and activation events.	\$	Twice the value for money of similar scale road projects ²
 1.9% mode share by distance ³	 At least 22,000 tonnes reduced emissions		healthier people with 5 times more cycle trips
			40% of population with 15min cycle access to social opportunities (e.g. employment)

The strategic context has changed over the last five years with a greater focus on climate change, intensification, wellbeing, and safety (Vision Zero). The general context includes:

- Auckland's weather and terrain are considered barriers to riding but are similar to successful bike cities around the world. Electric bikes and scooters are reducing terrain barriers and increasing riding distances.
- Other barriers to cycling include personal security, trip chaining, cost, and employment.
- Shared mobility has improved access to bikes and micromobility devices for many.
- Transport demand across Auckland's urban area will grow strongly as we transition out of COVID-19 related restrictions.
- Climate change mitigation is urgent.
- Wellbeing and safety objectives are now written into strategic documents such as Vision Zero and the 2021 GPS, which calls for "*making active travel an attractive option*".
- Transport disadvantaged groups include low-income communities, women, elderly, children, and people with disabilities.
- Competing demands for limited road space.
- Cycling plays a limited role in Auckland's transport system but has high potential for uptake given short average trip lengths.

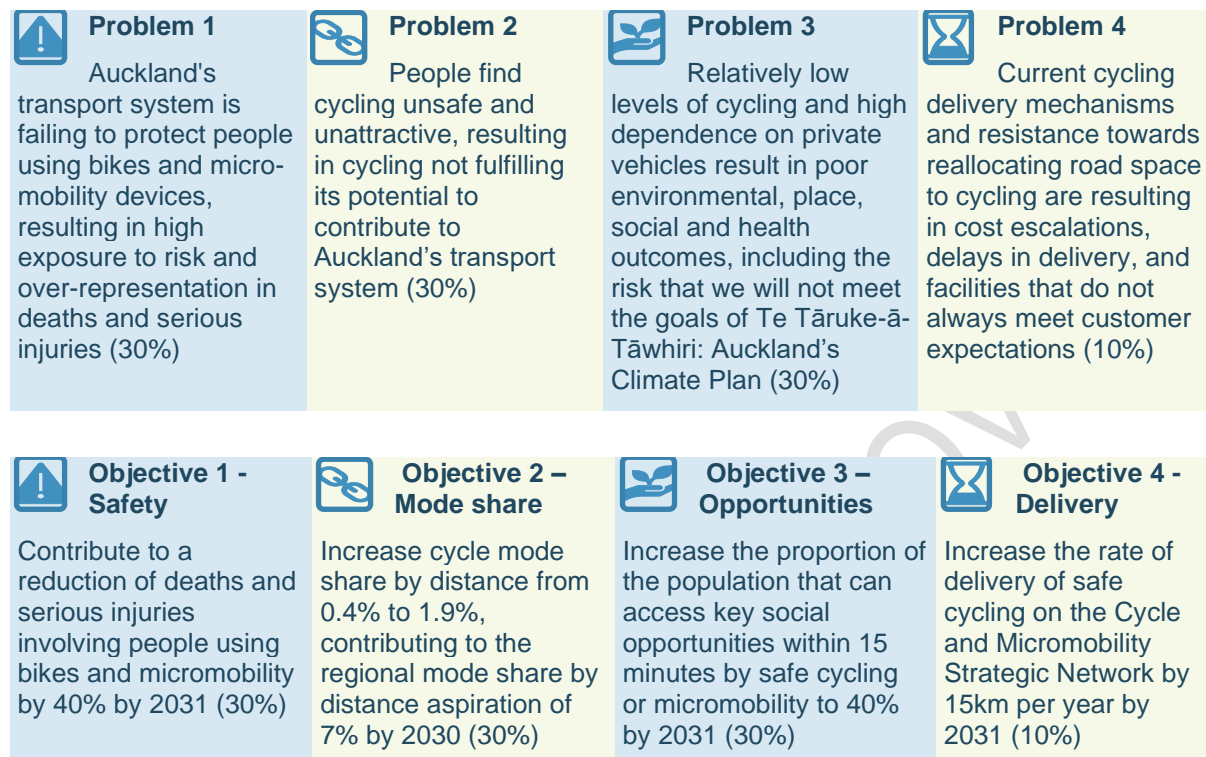
¹ Investment strategy being the prioritisation process and delivery approach.

² Motorway projects of \$1 billion or more such as Waterview tunnel and the Waikato Expressway have reported BCRs of less than 1.5, half that of the CAM-PBC BCR for the same funding amount.

³ Policy changes and fast-tracking other projects are essential to meeting the Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan emission reduction aspiration of 65% by 2030, which assumes a 7% mode share by distance for cycling.

Problems and objectives

The CAM-PBC problems and objectives reflect the strategic context related to safety and climate action and responds to lessons learnt related to the delivery of cycle facilities.



Option development and assessment

Early in the development of the CAM-PBC, it was identified that a combination of network development, cycle parking and customer growth (behaviour change) initiatives, as well as significant policy changes would all be necessary to maximise the uptake of cycling and help meet our ambitious regional cycle mode share aspirations. Developing a safe, connected cycle and micromobility network was the key focus of the options development and assessment process given the lack of safe facilities is the biggest barrier for people choosing to cycle Tāmaki Makaurau - Auckland.

Longlist options were based on different philosophies for developing the cycle and micromobility network. Four longlist options scored well in the longlist and shortlist assessments and were shown to have merit. These options included: regional and major connections; rapid transit network (RTN) access; school access; and metropolitan centres and satellite towns.

The four options were then combined as a blended programme option with approximately \$3.5 billion worth of cycle connections and focus areas. The next step was to assess each connection (and focus area) individually to develop an ordered list of potential projects that deliver the best value for money with available (and additional) funding. The prioritisation criteria focused on safety, connectivity, number of connections types and the potential cost of delivery, which are in Figure 1 below.

Further refinement of these connections and areas were undertaken resulting in a list of prioritised projects. The prioritised list of projects reflects the importance of building a safe, connected network that caters for multiple different connection types, while also recognising the need to reduce cost and speed up delivery by reallocating road space.

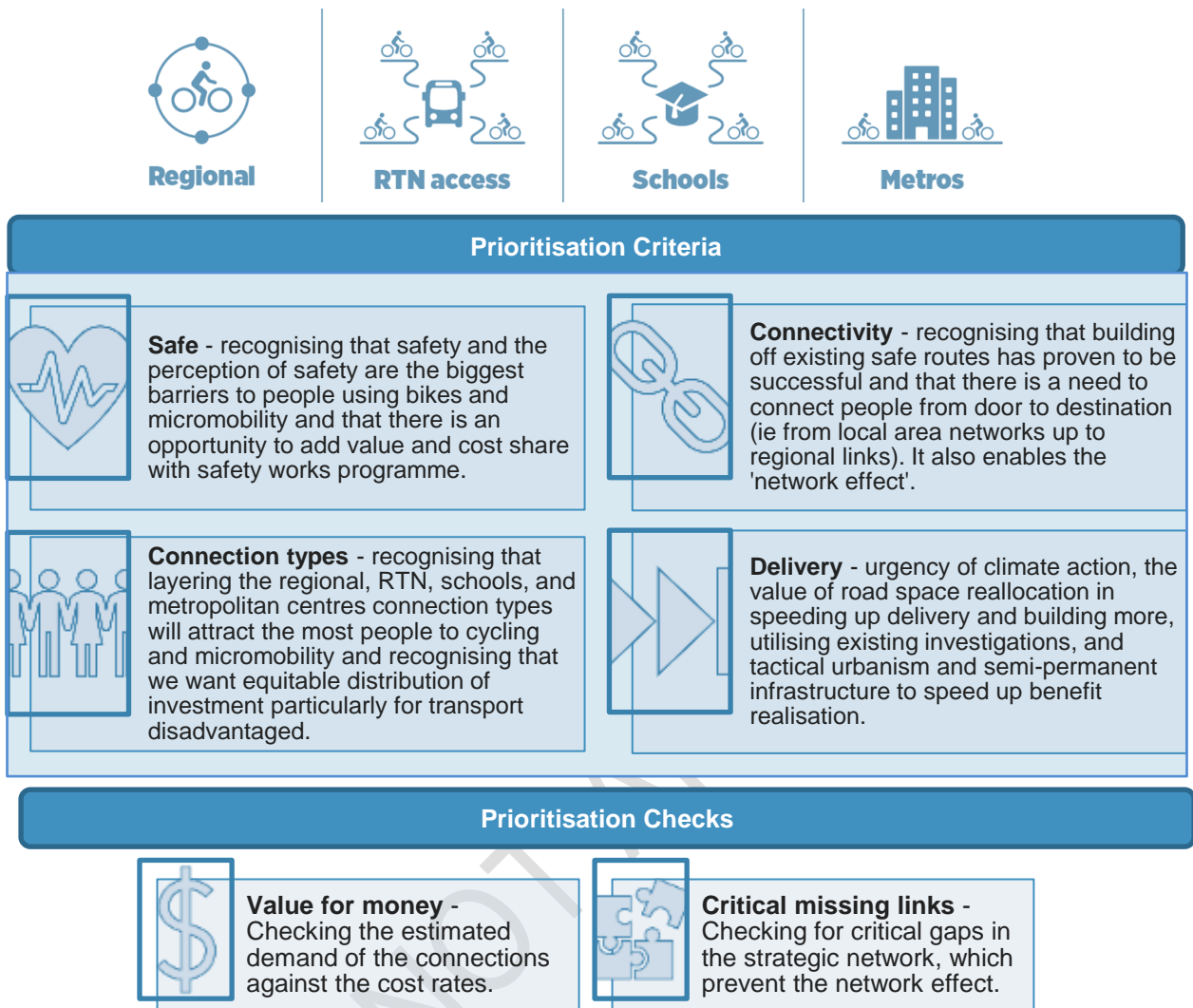


Figure 1 Prioritisation Criteria

The preferred programme

The CAM-PBC seeks endorsement of the investment strategy and prioritisation process for network infrastructure, cycle parking and customer growth initiatives to ensure the programme can be scaled up should additional funding become available beyond the \$306 million allocated in the RLTP. The CAM-PBC also seeks endorsement of policy recommendations that AT will need to advocate for and fast-tracking of other projects delivering cycling and micromobility (e.g., Airport to Botany, Connected Communities, City Centre to Māngere⁴).

A CAM-PBC investment level of \$2 billion, together with policy changes and fast-tracking of cycling investment of other projects and programmes, is estimated to be the minimum needed to make a contribution to reaching the 7% cycle mode share by distance aspiration. However, delivering \$1 billion of cycling infrastructure over the next 10 years is what is considered feasible based on current internal resourcing and industry capacity, subject to funding availability.

\$1 billion prioritised list of infrastructure, cycle parking and customer growth initiatives							
	1.9% Mode share by distance		At least 22,000 tonnes reduced emissions		Healthier people with 5 times more trips	Value for money BCR of 2-3.4	Investment prioritisation score of 3

⁴ A2B (the Airport to Botany Mass Rapid Transit project), CC2M (the City Centre to Māngere light rail project), and Connected Communities are all delivering significant kilometres of safe cycling but are not funded for completion within the next decade.

The following investment scenarios demonstrate the scale of what could be delivered.

Table 1 Delivery outputs and benefit cost ratio for each investment scenario

Investment scenarios	Kilometres of strategic connections delivered by 2030	Number of focus areas delivered by 2030 ⁵	Scale of cycle parking and customer growth initiatives ⁶	Benefit Cost Ratio (BCR)
Non-PBC cycling investments (currently funded in RLTP)	165km total			
\$306 million CAM-PBC programme (currently funded in RLTP)	45km total (\$175 million)	4 focus areas (\$110 million)	\$21 million	2.2 to 3.7
\$1 billion CAM-PBC programme (\$700m currently unfunded)	150km total (105km additional) (\$746 million)	7 focus areas (3 additional) (\$185 million)	\$70 million	2.0 to 3.4
\$2 billion CAM-PBC programme (\$1.7b currently unfunded)	260km total (110km additional) (\$1.5 billion)	14 focus areas (7 additional) (\$360 million)	\$140 million	2.0 to 3.4

As demonstrated above, the preferred programme includes:

- **Network development** of strategic cycleways, low traffic areas, and low speed neighbourhoods. The prioritised list of connections can be reprioritised if conditions change using the endorsed process.
- **Cycle parking and customer growth initiatives** such as activation events, behaviour change initiatives, and bike hubs that are fundamental to achieving benefits and gaining public buy-in. Approximately 7% of the funding is allocated to these initiatives.

The preferred programme also advocates for the following unfunded components:

- **Policy changes** that contribute toward realising CAM-PBC investment objectives by affecting mode share, safety, or funding. Recommendations include changes to funding conditions, land-use policy, organisational changes, vehicle regulations and road user charges e.g., congestion charging. The success of the preferred programme relies on significant policy changes to improve funding available and boost the number of people using bikes and micromobility for their everyday journeys. Policy changes are essential because using infrastructure alone to reach 7% mode share will likely be unaffordable, difficult to deliver within 10 years, and may not be successful.
- Fast tracking \$20 billion investment in **other projects and programmes** that positively contribute to realising CAM-PBC investment objectives, such as Connected Communities, A2B, and CC2M⁷, noting that the vast majority of this investment is attributable to the CC2M light rail project.

The preferred programme has been developed such that it can be adapted to available funding levels. The following map shows the network development prioritised within the \$1 billion investment level.

⁵ Focus areas will include additional kilometres of strategic and supporting connections

⁶ Schemes to improve access to bicycles, promotion, activation and events, digital experience improvements, marketing, communications.

⁷ A2B is the Airport to Botany mass rapid transit project, and CC2M is the City Centre to Mangere light rail project.

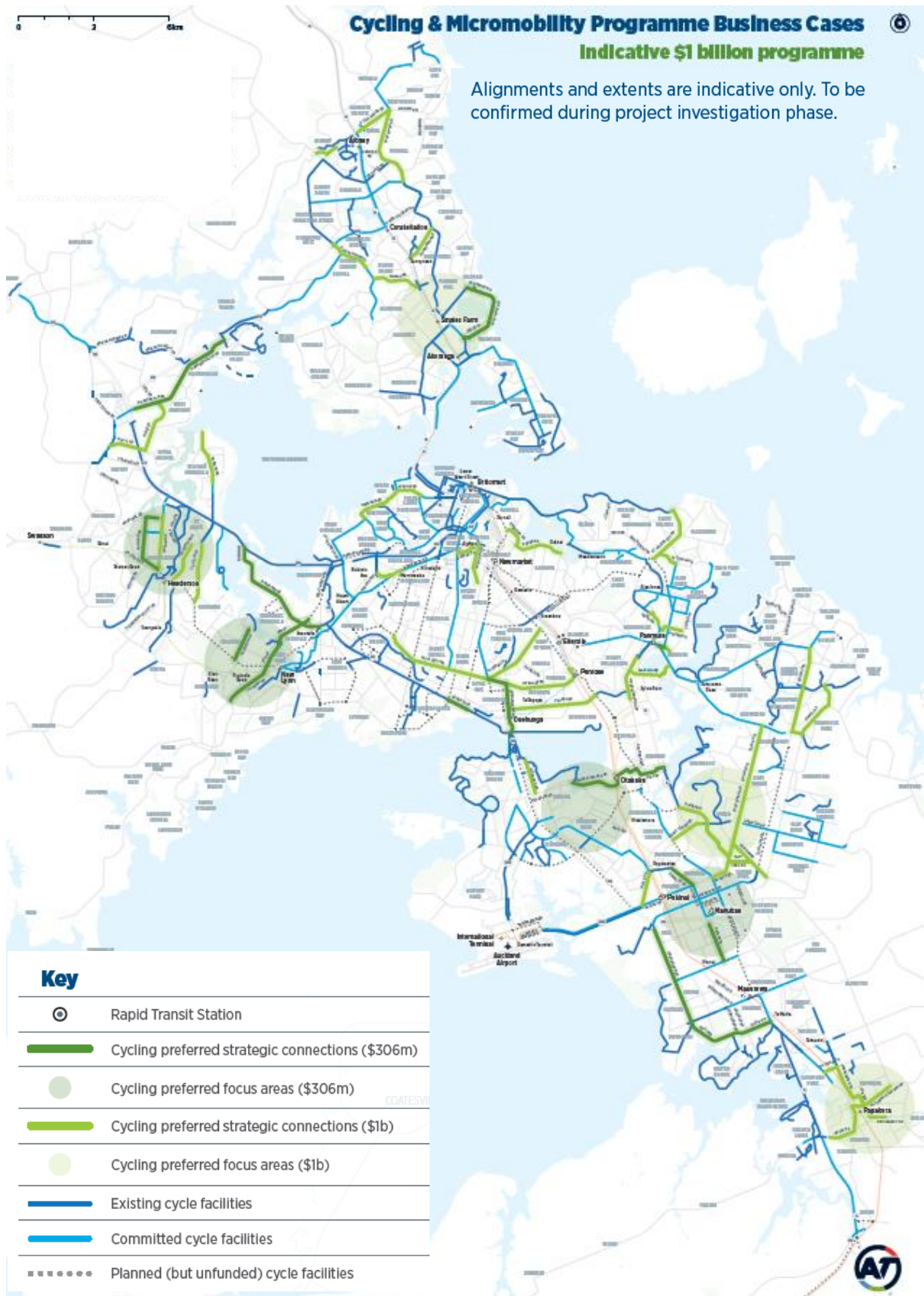


Figure 2 Indicative \$1 billion programme

Commercial, Financial and Management Cases

Significant additional funding is required to deliver the preferred programme despite measures being taken by AT to reduce the cost of delivery (e.g. through more road space reallocation). This is because substantial investment is needed to meet the aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan. There is also insufficient funding in the existing National Land Transport Fund (NLTF) for the quantity of projects needing funding in the walking and cycling activity class.

It is likely that at least half of the preferred programme will need to rely on new funding sources, which could include revenue from road user charges e.g. congestion charging, new taxation such as targeted rates, or new Crown funding for emission reduction initiatives.

Changes to investigation, design, and procurement processes are required to accelerate delivery. The CAM-PBC has prioritised SSBC lites for connections less than \$15 million, identified opportunities for road space reallocation, and recommends bundling the procurement of investigation and design phases where practical. Changes outside the remit of Auckland Transport could improve delivery, such as a streamlined investment pathway for cycling, which Waka Kotahi is currently investigating.

Management and delivery improvements are already being implemented by AT including the rollout of the AT Transport Design Manual; dedicated support of cycling design specialists; the establishment of the Design Review Panel to clarify designs and approve departures from standards in a transparent and efficient way; and development of a strategic communications plan. Further management improvements proposed within the CAM-PBC include:

- Prioritisation and change management, to enable quicker adaptation to external changes (e.g. other projects) or internal project changes (e.g. increased complexity of a cycle project resulting in a pivot to the project).
- Programme level departure on design standards to ensure cycling facilities can achieve objectives cost effectively and reduce the need for SSBCs to individually seek departures. Note: that the approval process for this is likely to extend beyond the CAM PBC approval.
- Seeking co-delivery opportunities with other programmes.
- Advocating for policy changes.

Risks the preferred programme will need to manage and mitigate are:

- Public buy-in e.g., removal of parking. Customer growth initiatives like activation events are included and AT is currently developing a strategic communications plan to aid getting public buy in. AT is also making changes to its Parking Strategy to simplify the removal of parking on its Strategic Transport networks including the Strategic Cycling Network.
- Industry capacity to deliver the preferred programme. Procurement will be tested with the industry to determine supplier capacity. The industry has been very receptive to bundling of connections (e.g., Connected Communities) and this approach will be tested further.
- Funding risk with the significant shortfall in funding, not just for the CAM-PBC but also for other projects delivering cycling and micromobility infrastructure (e.g., A2B and Connected Communities). Policy changes to increase alternative funding sources are essential and the preferred programme has been developed so that it can quickly respond to funding changes.
- Policy not contributing to mode shift. If policy does not contribute, then the CAM-PBC will need to deliver more to reach 7% mode share by distance. The CAM-PBC can quickly adapt if more funding becomes available. Modelling shows infrastructure could get Auckland to almost 6% mode share by distance but would require all streets to be safe for cycling.
- Other risks include dependency with other projects affecting delivery, and complexity being greater than estimated.

The preferred programme proposes new prioritisation and delivery processes (e.g. bundling procurement, SSBC lites, and extensive road space reallocation) that will be tested over the next

three years with the industry. Monitoring of the preferred programme over the next three years will enable the cost estimates, economics, and deliverability levels to be refreshed with the latest values from subsequent SSBCs and SSBC lites. This on-going update will enable the CAM-PBC to seek additional funding in subsequent RLTP updates should the current assumptions around deliverability, industry capacity, and cost be found to be conservative (e.g. Additional investment beyond \$1 billion will be sought in subsequent RLTP updates if the industry has a higher capacity than assumed in this CAM-PBC).

Next steps

It is the recommendation of this business case that:

- The CAM-PBC is endorsed as an investment strategy⁸ and preferred programme for approved funding, to make a contribution to reaching the aspiration of a 7% cycling mode share by distance by 2030.

Noting that achieving this mode share would require:

- An increase in funding from \$306 million in the 2021-2031 Regional Land Transport Plan (RLTP) to at least \$2 billion for strategic cycling connections, focus areas, cycle parking, and customer growth initiatives;
- Implementation of the current cycling and multi-modal projects of the RLTP;
- Currently unfunded projects such as Connected Communities and A2B have their strategic cycling connections prioritised for investment in this decade;
- A significant portion of the CAM-PBC's policy recommendations being implemented by AT, its partners, Government and other parties; and
- Additional OPEX is included in the next Long-Term Plan to enable delivery of the full suite of recommended customer growth initiatives.

The CAM-PBC will go to the AT and Waka Kotahi Boards for endorsement of the full PBC, with a particular focus on the future investment strategy. Endorsement of the future investment strategy by both Boards will enable the CAM-PBC to capitalise on any funding opportunities and accelerate investigation and design phases for projects identified through the CAM-PBC prioritisation method. Subsequent business cases (i.e. SSBC-lites and SSBCs), having demonstrated the case for investment, will then seek approval for funding pre-implementation and implementation.

⁸ Investment strategy being the prioritisation process and delivery approach.

PART A – STRATEGIC CASE

1 Background

In 2017, the Auckland Cycling Programme Business Case (2017 PBC) established a case for investment in a programme of cycling facilities and initiatives for Tāmaki Makaurau - Auckland. It made the case for \$635 million across the ten-year period 2018-2028 and based on an assumption that cycling facilities cost around \$3 million per km. This was the first time Tāmaki Makaurau - Auckland had set out a cycling programme in one document.

The Auckland Regional Land Transport Land 2021-2031 (RLTP) has allocated \$306 million for the Auckland cycling and micromobility programme (under the budget line called 'On-going Cycling Programme'). This forms part of a \$1.4 billion investment in cycling and micromobility⁹ spread across many cycling and multi-modal projects and programmes in the RLTP, which together, will deliver over 200km of safe cycling facilities across in the region. These include (but are not limited to):

- Urban Cycleways Programme;
- Connected Communities;
- Eastern Busway; and
- Minor Cycling and Micromobility Programme (includes AT's pop-up cycleway programme).

Since the 2017 PBC was produced, significant changes have occurred that have changed the context of cycling within Tāmaki Makaurau - Auckland. These fall into two broad categories, which are outlined in Table 1-1 below and include:

- Increasing strategic need for cycling and micromobility; and
- Lessons learnt related to the cost and complexity challenges of delivering safe cycle facilities.

Since 2017, AT has also developed and published Future Connect, and Auckland's Integrated Transport Plan. Included in Future Connect is the Cycle and Micromobility Strategic Network, which is AT's new planning tool that outlines what corridors cycling is most important in Tāmaki Makaurau - Auckland and where the most people are expected to cycle¹⁰. This is where AT wants to prioritise available investment over time to create a high level of service for people on bikes or micromobility devices over the long term. AT has also developed a Cycle and Micromobility Supporting Network, which includes more localised connections. The full Cycle and Micromobility Network creates opportunities to seek to:

- Improve cycle safety and the safety perception, which remains the biggest barrier to people choosing to bike for some / more of their trips;
- Fill more of the gaps in the immature / incomplete Auckland cycle network;
- Reallocate road space for cycle facilities; and
- Work on behaviour change initiatives that further support uptake in the number of trips made by bicycle and via micromobility.

Table 1-1 summarises how the strategic need for cycling and micromobility has increased since 2017, and the delivery challenges that have been uncovered since 2017.

⁹ Micromobility includes e-bikes, e-scooters, e-mopeds, electric mobility devices, and other powered personal mobility devices.

¹⁰ <https://at.govt.nz/about-us/transport-plans-strategies/future-connect-auckland-transport-network-plan/>

Table 1-1 Key changes in the strategic context

Increasing strategic need



Climate change. The Climate Change Commission emphasises the need to shift the way we travel and support better infrastructure for active transport to reduce emissions. Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan presented a cycle mode share by distance aspiration of 7% by 2030, significantly higher than the current 0.4% and that sought by the 2017 PBC.



Liveability and wellbeing are recognised in the Government Policy Statement on Land Transport 2021-2031 (GPS), which seeks "A transport system that improves wellbeing and liveability" and calls for "making active travel an attractive option". There is also recognition of the impact active modes can play on reducing the burden on the public health system.



Micromobility and shared mobility have increased substantially, making travel by active modes more accessible to people who do not know how to ride a bike, do not feel comfortable cycling, do not have access to a bike, or do not have space to store a bike.



Electric bikes and scooters have increased the distances people are willing and able to ride, and reduced barriers to riding such as fitness required to ride up hilly terrain or the need to shower at the end of a journey.

Delivery challenges



More extensive / safer design standards resulting from changes such as Vision Zero and catering all ages and abilities has slowed delivery and meant more costly projects.



Less funding was provided through the RLTP than sought in the 2017 PBC.



Lack of flexibility to respond to other projects such as the New Zealand Upgrade Programme (NZUP) and a lack of agility to respond to external changes (e.g. COVID-19) means benefits are not being realised as much or as quickly as possible.



New delivery mechanisms such as tactical urbanism have not been considered as much as their potential meaning benefits are not being realised as quickly as possible and value for money may not be optimised. However, its recognised a path to permanence is critical for public buy-in.



Increased competition for funding within the walking and cycling activity class because more types of projects require funding from this activity class (eg low cost low risk and footpath improvements) and there are more active mode projects being developed because of the strong active mode focus within the GPS.

The full Investment Logic Map (ILM) technical note can be found in Appendix A

1.1 Activity context

The general geographic, economic, social and environmental context is similar to 2017. However, there is a much greater emphasis on climate change and Brownfields development in comparison to 2017, increasing the strategic need for mode shift to sustainable modes of transport, including cycling and micromobility.

- **Transport demand across the Tāmaki Makaurau - Auckland urban area will grow strongly despite COVID-19 impacts.** Auckland's population is expected to grow by 47% over the 2018-2051 period. Jobs in Tāmaki Makaurau - Auckland are projected to increase from 680,000 to more than 850,000 over the next 30 years.¹¹
- **Growth in employment is expected to be concentrated in and around key business areas, such as the city centre and fringe area and metropolitan areas**¹². Growth will place pressure on existing networks and open up opportunities for cycling to play a more important role in meeting transport demands, particularly in and around key business areas.
- **Housing supply and residential density.** There is significant brownfields growth expected in areas with a high proportion of Kāinga Ora holdings. Implementation of the National Policy Statement on Urban Development and the passing of the Resource Management (Enabling Housing Supply and Other Matters) Bill could see significantly more housing supply and higher residential densities, as well as the funding for new business cases such as the AT Brownfields business case. Providing safe cycling and micromobility connections in these locations will help to reduce overall car dependency.
- **Greenfields areas.** It is expected that cycling and micromobility design standards (of Auckland Transport's Transport Design Manual) are adhered to in greenfields areas. Further, it has been identified that better quality area / structure planning is required to facilitate this further and should include a fine-grained level of transport network planning to support improved transport outcomes. For example, by introducing measures such as filtered permeability / modal filters at desirable locations and not simply setting out the strategic connections.
- **Transport disadvantaged groups are still experiencing transport poverty.** As in 2017, these groups include low-income groups, women, children, elderly, and those with physical disabilities. By planning and designing for the most transport disadvantaged groups, we are effectively planning and designing for all ages and abilities.¹³
 - **Tāmaki Makaurau - Auckland's low-income communities with transport equity and accessibility issues remain.** The Central isthmus is well served by public transport and has relatively high-income levels compared to other parts of Tāmaki Makaurau - Auckland. In contrast, areas south of the Māngere Inlet (Māngere, Papatoetoe, Manurewa, down into Papakura), to the west of the Isthmus, in a band to the west of the Waitemātā Harbour (from Avondale to Massey), and to the south and east of the Isthmus in Glen Innes and Onehunga have high social deprivation. Cycling can play a role in increasing transport accessibility and equity for low-income communities by providing a relatively low-cost transport option.
 - **Women typically choose to use more public transport and active modes than men**¹⁴ **but are less likely to be in the 'confident and fearless' group of users that are happy cycling on-road in traffic.** The lack of cycling and micromobility infrastructure in Tāmaki Makaurau - Auckland exacerbates transport inequity across the genders.

¹¹ <https://www.nzta.govt.nz/assets/planning-and-investment/arataki/docs/arataki-covid-19-economic-projections-update-final-report-may-2021.pdf>

¹² Auckland Forecasting Centre – Auckland Plan Land Use Scenario i11.6

¹³ <https://www.transport.govt.nz/assets/Uploads/Report/EquityinAucklandsTransportSystem2.pdf>

¹⁴ <https://www.ehinz.ac.nz/indicators/transport/main-mode-of-transport-to-work/#women-and-1519-year-olds-used-more-active-and-public-transport>

- **Elderly and children often have less transport choice than other groups and are more vulnerable to injury on our roads.** Safe cycling and micromobility facilities can play a particularly important transport accessibility role for people who have less access to transport choice and are more vulnerable on our roads. Encouraging children to cycle also means that they will be more likely to use bicycles throughout their adult life, by instilling active mode travel behaviour at an impressionable age.
- **People with physical disabilities** may need to use specialist cycling and micromobility devices that have wider space requirements than conventional devices or may find some gradients and other environmental conditions more challenging.
- **Barriers to cycling and micromobility uptake.** These include (but are not limited to): impatience and / or threatening driver behaviour or a general lack of care or willingness to share road space with people on bikes, lack of safe cycle facilities, frequent rainfall events, lack of bicycle security at destinations, time taken for showering, upfront cost and lack of access to bicycles and micromobility devices.
- **Electric bicycles and scooters have reduced some barriers but also created new issues.** Terrain-related and distance barriers have been reduced with the increase in electric bicycles and scooters use. Auckland's frequent rainfall events are a deterrent to cycling uptake, compared to areas with lower rainfall however, significantly higher cycling uptake has been achieved in cities with similar rainfall and as described in the 2017 PBC. However, use of electric devices on footpaths has led to perceived and real safety issues especially for the elderly and vulnerable road users. The legality of scooter use in cycle lanes and bicycles on footpaths is being investigated in a separate piece of work - Accessible Streets.
- **Competition for limited road space.** On average, Tāmaki Makaurau - Auckland has half or less the density of streets and intersections as most Australian and European cities¹⁵. This makes it more difficult to reallocate space to cycling and thus reduces connectivity and accessibility for many cycling journeys. The lack of a grid road network in Auckland also reduces opportunities to spread transport demands across parallel corridors. This increases competition for limited road space, as multiple modes must share the same corridor. These conflicts are expected to increase as transport demands increase.
- **Cycling still plays a limited role in Tāmaki Makaurau - Auckland's transport system but has potential for greater uptake given the relatively short average trip lengths.** Cycling accounts for only 1% of journeys to work and 1.6% of journeys to education¹⁶. However, many household transport trips are short-medium distance trips (less than 7km) that could be by bike or micromobility device¹⁷. This represents an opportunity for increased cycling uptake, given that most Aucklanders (59%) either already cycle, could cycle more, or do not currently cycle but would consider cycling¹⁸. The growth of micromobility could also lead to an increase in first and last leg trips to public transport - also increasing public transport patronage by up to 7% in urban areas and 9% in suburban area¹⁹.

Although the activity context has remained much the same as in 2017, there has been shifts in the strategic context (Section 1.2), active mode technology and in the delivery of cycling and micromobility facilities within Tāmaki Makaurau - Auckland, as described in the Background Section of this CAM-PBC. These shifts have brought about the need for a substantial review of the 2017 PBC and requirement to develop a new Auckland cycling and micromobility Programme Business Case (CAM-PBC).

¹⁵ On average, Auckland has only 12.7 kilometres of streets and 72.9 intersections per square kilometre, which is half or less the rate as most Australian and European cities.

<https://mirror.unhabitat.org/pmss/listItemDetails.aspx?publicationID=3513&AspxAutoDetectCookieSupport=1>

¹⁶ Source: NZ Household Travel Survey

¹⁷ There are some barriers to cycling that may mean these short trips cannot be undertaken by cycling such as mobility impairment. Most barriers are not insurmountable but will require careful consideration particularly of customer growth initiatives.

¹⁸ Source: https://at.govt.nz/media/1977266/tra_at_activemodes_publicrelease-1.pdf

¹⁹ Source: <https://www.nzta.govt.nz/assets/resources/research/reports/674/674-Mode-shift-to-micromobility.pdf>

The scope of the CAM-PBC is cycling and micromobility across the Tāmaki Makaurau - Auckland Region including consideration of options in rural as well as urban areas. This is in contrast to the 2017 PBC that only considered the urban and future urban areas. All cycling and micromobility users, including recreational trips, are considered in the assessment of options.

1.2 Strategic overview

The strategic context has changed substantially since 2017, Table 1-2 summarises the changes to the strategic context since 2017.

Table 1-2 Strategic context

Organisation	Strategic change	Impact
NZ Government	<i>Climate Change Response (Zero Carbon) Amendment Bill</i>	Greater urgency for cycling and micromobility Cycling and micromobility play an important role in reducing transport emissions, particularly for short to medium trips. There is a need to deliver a safe and connected cycle network faster to encourage mode shift from cars to more sustainable modes.
	<i>National Policy Statement on Urban Development</i>	Greater strategic need for cycling and micromobility Encourages intensification to allow more people to live in areas with good public and active transport links, to reduce reliance on cars for transport. There is a need for the CAM-PBC to consider intensification in areas of high demand and access by active and public transport.
	<i>New Zealand Upgrade Programme (NZUP)</i>	Need to re-examine cycling and micromobility options The 2017 PBC recommended programme needs to be updated to reflect the evolution of NZUP. There is a need to consider allocating a portion of funding to enable the CAM-PBC to be agile and respond to change and to align planned cycle investment between AT and Waka Kotahi. This could extend to other organisations such as Auckland Council (AC), Kāinga Ora and developers.
	<i>Inquiry into congestion pricing in Auckland</i>	Greater strategic need for cycling and micromobility AC's Transport and Infrastructure Committee is looking into implementing congestion pricing (better referred to as emissions pricing) in Tāmaki Makaurau - Auckland to manage demand on the road network. Depending on scheme design, congestion pricing could contribute to increase the uptake of cycling and micromobility.
Ministry of Transport (MoT)	<i>Government Policy Statement on Land Transport 2021-2031 (GPS)</i>	Greater strategic need for cycling and micromobility Liveability and wellbeing are now recognised in the GPS, which seeks "A transport system that improves wellbeing and liveability" and specifically calls for "making active travel an attractive option". The GPS also recognises climate change and the impact transport has.
	<i>Road to Zero: New Zealand's Road Safety Strategy 2020–2030</i>	Greater strategic need for improving safety Sets an initial target to reduce deaths and serious injuries (DSI) on New Zealand's transport network by 40% over the next ten years. Road to Zero adopts Vision Zero, a vision where everyone, no matter their age and ability, can get around safely and the transport network improves people's health and wellbeing. This has had impacts to the design standards of cycle infrastructure.

Organisation	Strategic change	Impact
Waka Kotahi NZ Transport Agency (Waka Kotahi)	<i>Arataki Version 2</i>	Greater strategic need for cycling and micromobility: Areas of focus for Tāmaki Makaurau – Auckland in the 2021-31 period include delivering walking and cycling infrastructure improvements for safety and health improvements and delivering other interventions that could boost cycling uptake such as working with AC to encourage actively manage carparking to increase uptake of walking and cycling.
	<i>Toitū Te Taiao – Our Sustainability Action Plan</i>	Greater strategic need for Cycling and Micromobility: Seeks acceleration of mode shift to low carbon, active, and/or shared mobility.
	<i>Tactical urbanism - Streets for People</i>	New delivery approach: Tactical urbanism provides a new approach to delivering temporary cycle infrastructure and to realise benefits sooner.
Auckland Council (AC)	<i>Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan</i>	Greater strategic need for cycling and micromobility: The plan sets a goal to halve regional emissions by 2030, with a modelled scenario of increasing cycling mode share by distance from the current 0.4% to 7% ²⁰ . This is significantly higher than that sought by the 2017 PBC and is close to the Netherlands 8% mode share by distance for cycling. ²¹
	<i>City Centre Masterplan (CCMP)</i>	Greater strategic need for cycling and micromobility: The plan sets the strategic direction for the city centre for the next 20 years. It includes the concept of Access for Everyone, which aims to limit motorised through-traffic into the city centre and prioritises the use of active modes and public transport.
Auckland Transport (AT)	<i>Regional Land Transport Plan 2021-2031 (RLTP)</i>	More funding is needed to deliver a safe, connected cycle and micromobility network: The RLTP, through its various projects and programme, is estimated to deliver 200km of safe cycle facilities. However, there is still a funding shortfall to deliver a safe, connected network. AT and its investment partners need a more cost-effective approach to delivering safe cycle facilities by utilising different methods of planning, design, consultation and construction to minimise costs.
	<i>Future Connect</i>	Improved planning tool The Cycle and Micromobility Network in Future Connect provides a blueprint for cycle network planning, ensuring that individual connections are considered as part of the broader connected network.
	<i>Parking strategy</i>	AT's parking strategy is currently being reviewed. This has the potential to strengthen the mandate around car parking removal on strategic networks, supporting reallocation of space to cycling facilities.

1.3 Current state

As a result of the 2017 PBC, four area-based cycling Single-Stage Business Cases (SSBCs) are in development. These include the areas of:

- City Centre and Fringe, Central Isthmus and Sandringham;

²⁰ The mode share by distance goals published in Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan are modelled scenarios and are not legally binding. However, Auckland Council and Auckland Transport need to demonstrate how the target of a 50% reduction (on 2016) on the region's emissions by 2030 could be met.

²¹ Source: <https://english.kimnet.nl/binaries/kimnet-english/documents/publications/2020/11/03/cycling-facts-new-insights/KiM+e-book+Cycling+facts-ENG.def.pdf>

- Henderson;
- Māngere East; and
- Manukau.

The delivery of these area-based SSBCs has taken longer than originally anticipated, with no construction underway for any of the 22 focus areas of the 2017 PBC, despite an estimate of early construction between 2018-2021 of four areas. However, the 2017 PBC was not aligned to the funding in the 2018 RLTP. The majority of the 2018 RLTP spend was phased after the completion of the Urban Cycleways Programme from 2021 onwards.

The Urban Cycleways Programme has been implementing regional cycling facilities during this same period and has delivered projects such as Section 1 of the Glen Innes to Tāmaki Drive Shared Path - Te Ara Ki Uta Ki Tai. While Urban Cycleways Programme projects have developed localised improvements, the broader operating conditions for much of the Tāmaki Makaurau - Auckland cycle network remains unsafe and unappealing for people on bikes.

1.3.1 Change history





There have been a number of key changes in the strategic context and delivery costs and timelines related to cycling and micromobility. The CAM-PBC responds to those changes outlined in the Strategic Assessment Report and the Investment Logic Map included in Appendix A.

DRAFT NOT APPROVED

2 Problems, Opportunities and Constraints

2.1 Problems and opportunities

Three problems were identified in the 2017 PBC. These have been revised to better align with current strategic context. A fourth problem has been added that focuses on delivery challenges.

 <p>Problem 1 - Safety Auckland's transport system is failing to protect people using bikes and micro-mobility devices, resulting in high exposure to risk and over-representation in deaths and serious injuries (30%)</p>	 <p>Problem 2 - Contribution to transport system People find cycling and micromobility unsafe and unattractive, resulting in these modes not fulfilling their potential to contribute to Auckland's transport system (30%)</p>
 <p>Problem 3 - Environmental, place, social and health Relatively low levels of cycling and micromobility and high dependence on private vehicles result in poor environmental, place, social and health outcomes, including the risk that we will not meet the goals of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan (30%)</p>	 <p>Problem 4 - Delivery Current cycling delivery mechanisms and resistance towards reallocating road space to cycling infrastructure are resulting in cost escalations, delays in delivery, and facilities that do not always meet customer expectations (10%)</p>

The importance and urgency of these problems have increased since 2017, with very little regional mode shift away from single occupancy vehicles occurring in the last four years and an increasing urgency to address climate change.

2.1.1 Problem 1 – Safety

Auckland's transport system is failing to protect people using bikes and micromobility devices, resulting in high exposure to risk and over-representation in deaths and serious injuries.

This problem responds to the relatively high frequency of road crash deaths and serious injuries (DSI) for people using bikes. The primary cause of this problem is poor system-wide performance in meeting the needs of people using bikes and driver skill and / or behaviour towards people of bikes. This includes poor infrastructure provision, and road user behaviour. The evidence in support of this problem is summarised in Table 2-1 below.

Table 2-1 Problem 1 evidence - Safety

<p>People on bikes are overrepresented in road crash statistics</p>	<ul style="list-style-type: none"> • Cycle-related crashes account for around 7% of total recorded DSI injury crashes in Tāmaki Makaurau - Auckland, excluding crashes on motorways, despite cycle trips only making up 0.4% of total transport trips²².
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²² <https://at.govt.nz/driving-parking/road-safety/monthly-crash-statistics-road-deaths-and-serious-injuries/>

	<ul style="list-style-type: none"> • People on bikes were at fault for 21% of crashes that resulted in a DSI²³, with the remaining not the fault of the person on the bike. This suggests that the design of transport facilities, road rules and enforcement, and driver conflict / the vulnerable nature of people on bikes, rather than negligence of people on bikes, is a primary cause of the crash statistics for people using bikes in Tāmaki Makaurau - Auckland.
Provision of protected facilities can lead to an increase in cycling and micromobility while reducing deaths and serious injuries	<ul style="list-style-type: none"> • Between 2000 and 2015, cycle commute mode share (trips) in Portland, Oregon rose from 1.8% to 7%, or a fourfold increase. Further, the five-year rolling average of cycle deaths fell from 1.8 to 1.4 per year²⁴. • Between 2005 and 2015, the number of cycle commuters in New York City rose from 16,500 to 45,000, a nearly threefold increase. Over the same time period, the five-year rolling average of cycle crash deaths fell from 18.0 to 16.4 per year.
Auckland roads do not operate at safe speeds for people on bikes or micromobility devices	<ul style="list-style-type: none"> • Higher vehicle speeds exacerbate the effect of crashes between vehicles and people on bikes, as they increase the likelihood of DSI. The risk of DSI rises fourfold as car speeds rise from 30km/hr to 50km/hr.²⁵ • At present, average free flow vehicle speeds on Auckland urban roads are above the standard speed limit of 50km/hr and during the past ten years have been consistently higher than in other main urban centres in New Zealand (Shaw et al 2015).

Addressing this problem has strong support from the Cycle Safety Panel (2014) report, which summarised their recommendations as follows:

“The number one priority that will do the most towards achieving the ultimate vision, and in the shorter term reduce the incidence of cycling crashes, is providing improved cycling infrastructure, particularly in urban areas where the great majority of crashes occur.”

2.1.2 Problem 2 – Contribution to Auckland’s transport system

People find cycling and micromobility unsafe and unattractive, resulting in these modes not fulfilling their potential to contribute to Auckland’s transport system.

This problem speaks to the low number of trips people make by bike due to safety and perception of safety. Evidence in support of Problem 2 is summarised in Table 2-2 below.

Table 2-2 Problem 2 evidence - contribution to transport system

Cycling currently plays a minor role in meeting Aucklanders’ transport needs	<ul style="list-style-type: none"> • Between 2015-2018, Aucklanders’ annual travel time included 1.2% mode share by cycling, approximately 80% in a motor vehicle, 9.2% walking and 6.3% on public transport. In contrast, Christchurch has a cycle mode share of 3.6% (three times higher than Auckland) and international evidence shows cycle mode share has higher potential to increase with the right infrastructure and initiatives²⁶.
People find cycling unsafe and unattractive	<ul style="list-style-type: none"> • People who do not currently cycle identify ‘lack of safety’ as the primary barrier to cycling. Access to a bike, upfront costs, inconvenience, and societal aversion are also barriers to cycling. • Cycle facilities with physical separation between traffic and people on bikes generally overcome safety concerns. Analysis of demand uplift

²³ <http://www.transport.govt.nz/assets/Uploads/Research/Documents/Cycling-2016.pdf>

²⁴ <https://bikeportland.org/resources/bikesafety>

²⁵ <http://www.saferjourneys.govt.nz/assets/Safer-journeys-files/Cycling-safety-panel-final-report.pdf>

²⁶ AT/ TRA Active Mode Survey 2019.

accompanying recent cycling network investment in Tāmaki Makaurau – Auckland confirms that delivery of protected cycle facilities has resulted in increased cycling activity.²⁷

Cycling and micromobility have potential to contribute to a more effective and efficient regional transport system

- Household travel survey data (2015-2018) shows that the average household trip length is 7.6km, suggesting a substantial proportion of these trips are a cycling distance.²⁸ Currently, cycling makes up just 0.6% of household trips of less than 5km.
- Cycling also has greater potential for first-leg / last-leg trips²⁹ of longer public transport journeys. 730,000 people live within a short cycling distance of Auckland’s Rapid Transit Network (RTN) stations (over 52% of the region’s total population in 2013)³⁰.
- Cycling can also play a role in contributing to a more effective regional transport system by increasing total transport capacity on corridors. When cycle facilities are well utilised, they can enable more people to access key destinations without requiring significantly large space for travel or parking.
- The representation and success of sports cycling by New Zealand athletes at an international level in events such as the Olympics, presents an opportunity to encourage cycling more generally.

Where investment in the cycle network has been made, there have been increases in cycle movements, demonstrating the opportunity to increase cycle mode share. For example, over the past ten years, the Northwestern Shared Path has been extended and local connections added. Following these improvements, cycle movements along the shared path have increased as shown in Figure 2-1, demonstrating the ‘network effect’ when safe cycle facilities are connected and extended.

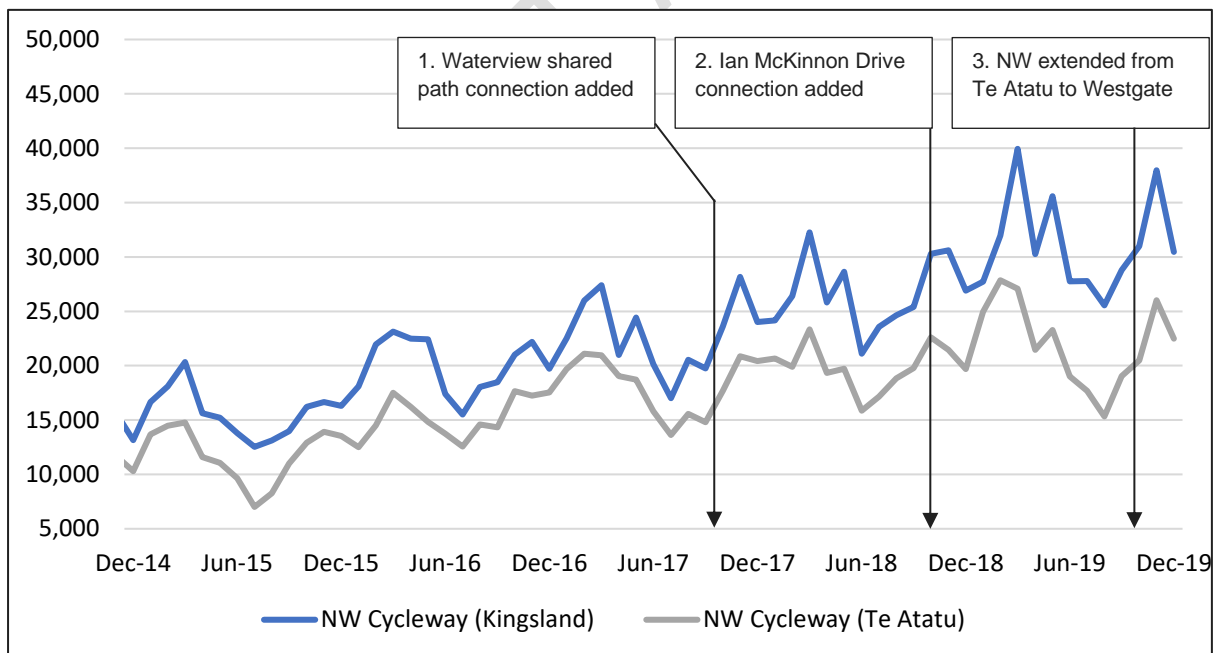


Figure 2-1 Monthly cycle count data on the Northwestern Cycleway (AT data)

This lens of building off and connecting the existing (or committed) network was a key criterion used in the development of the preferred programme, outlined in Section 5.2.4.

²⁷ 2017 Auckland Cycling Programme Business Case (Supplementary Material, Section 1.2)

²⁸ Ministry of Transport Household Travel Survey 2015-2018

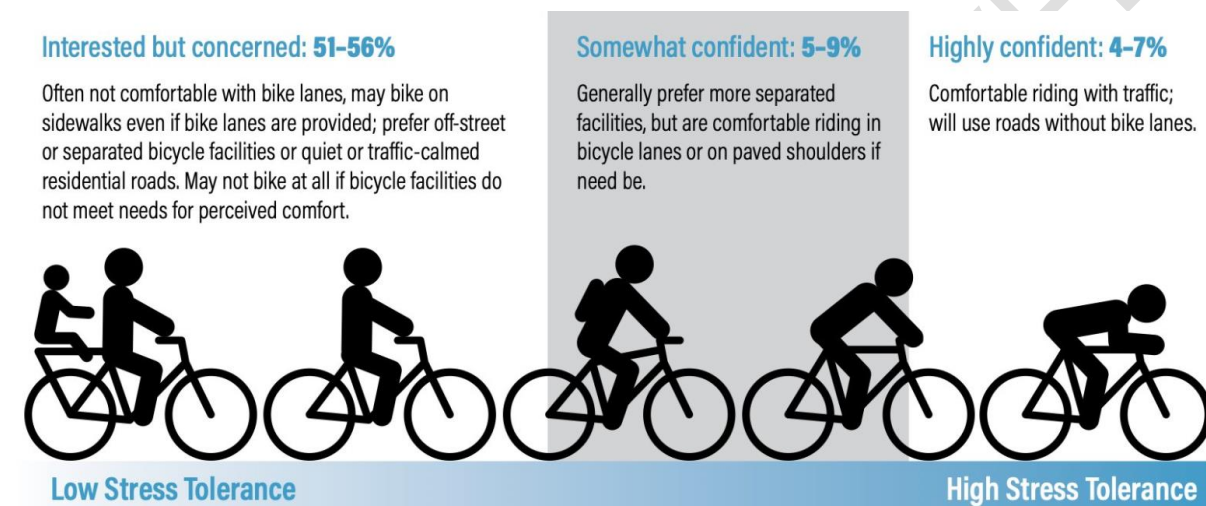
²⁹ First leg – last leg are the trips to and from a public transport station, which could be short trips (<3km) made by active mode

³⁰ 2017 Auckland Cycling Programme Business Case

Since 2017, AT has been targeting ‘all ages and abilities’. This means that new cycle facilities should be attractive and comfortable for all users to cycle on, including providing for users who:

- are less experienced or confident; and
- may use larger forms of wheeled devices, such as cargo bikes, bikes with trailers and mobility devices.

Local and international research show that the ‘interested but concerned’ user group are where the potential for greatest mode shift exists³¹. ‘Interested but concerned’ users represent those who could cycle for everyday journeys but are discouraged by feeling unsafe, often due to the lack of protected cycle facilities. A definition of ‘interested but concerned’ users is provided in Figure 2-2 below.



Note: The percentages of total population above reflect only adults who have stated an interest in bicycling.

Figure 2-2 User confidence levels and mode shift potential³²

Targeting less confident users is anticipated to result in the greatest uptake for cycling, particularly once there is greater network connectivity across the region. It also supports the concept of ‘safety in numbers’. However, addressing other issues such as ‘equity’ require a different lens to targeting.

2.1.3 Problem 3 – Environmental, health, social and place

Relatively low levels of cycling and micromobility and high dependence on private vehicles result in poor environmental, health, social and place outcomes, including the risk that we will not meet the goals of Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan.

Adverse environmental and health impacts from transport related activities are well documented and include air and land pollution exposures, road traffic injuries, physical inactivity, obesity and non-communicable disease, noise, and land use and transport-related impacts (on health, well-being and social capital and equity). The core reason for this problem is the Auckland transport system’s dependence on (primarily single occupancy) private vehicles. Increasing uptake of cycling and micromobility presents an opportunity to reduce the negative impacts of Auckland’s transport system on these outcomes. The evidence in support of this problem is summarised in Table 2-3 below.

Table 2-3 Problem 3 evidence - Environmental, health, social, and place

Significant dependence on	<ul style="list-style-type: none"> • On-road transport is the largest source of emissions in the Tāmaki Makaurau - Auckland region, generating about 38.5% of all emissions in
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³¹ Auckland research shows 66% of Aucklanders self report as ‘not confident’ or ‘neutral confidence’ about riding a bike in Auckland. 50% of Aucklanders report feeling unsafe because of how people drive and 29% report not enough cycleways or separated routes as being barriers to cycling (TRA Active Modes Survey 2021).

³² Bikeway Selection Guide, Federal Highway Administration (February 2019).

private vehicle use has poor outcomes	<p>2018. Between 2009 and 2018, the total emissions produced by Auckland's on-road transportation sector increased by about 11%. While for Auckland as a whole, total emissions increased by 7% over the same period.³³</p> <ul style="list-style-type: none"> • Air pollution causes approximately 300 premature deaths in Auckland each year, and results in more inactivity, increased number of hospital visits and higher usage of medications.³⁴ • Studies have found that most traffic and vehicle related water and soil pollution hot-spots are related to vehicle workshops, fuel stations, and road junctions³⁵. • Emission, noise, and severance issues from high volume roads impact health and enjoyment of the surrounding environments.
Active travel, such as cycling has positive impact on health	<ul style="list-style-type: none"> • Only 44% of the Auckland population is sufficiently physically active³⁶. Studies show that 16% of early mortality in New Zealand could be avoided if everyone was sufficiently active³⁷. Data from the NZ Household Travel Survey show that Aucklanders spend over six working weeks per year travelling in private motor vehicles. It has been calculated that moving 5% of short urban car trips to bike trips would save 117 deaths annually³⁸.
Social connectedness can improve with active travel	<ul style="list-style-type: none"> • People using bikes and micromobility to commute in Auckland reported improved social interaction including the ability to talk to other people, and increased affection for the neighbourhood when compared to commuting by car³⁹.
Active travel can improve economic well-being	<ul style="list-style-type: none"> • Poor access and unaffordable transport options will reduce people's ability to access work and education/training, which in turn can affect health, quality of life, and social equity⁴⁰. • Evidence suggests that when higher road user charges or traffic congestion exist there is improved transport productivity due to a collective effort to move goods more effectively and due to people using more public transport and active modes for more of their trips over less productive modes such as single occupancy vehicles⁴¹. • Evidence has also shown that cities that prioritise active transport benefit from better economic and quality of life outcomes⁴².

³³ Auckland Region Transport Strategic Case 2021.

³⁴ Sridhar, S., Wickham, L and Metcalfe, J (2014). Future trends in motor vehicle emissions in Auckland. Prepared by Emission Impossible Ltd for Auckland Council. Auckland Council technical report, TR2014/028.

³⁵ Hamzeh, M.A., Aftabi, A. and Mirzaee, M., 2011. Assessing geochemical influence of traffic and other vehicle-related activities on heavy metal contamination in urban soils of Kerman city, using a GIS-based approach. *Environmental Geochemistry and Health*, 33(6), p.577.

³⁶ Ministry of Health. 2018. Regional Data Explorer 2014–17: New Zealand Health Survey [Data File].

³⁷ Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT; Lancet Physical Activity Series Working Group. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet*. 2012 Jul 21;380(9838):219-29.

³⁸ Lindsay, G., Macmillan, A. and Woodward, A. (2011), Moving urban trips from cars to bicycles: impact on health and emissions. *Australian and New Zealand Journal of Public Health*, 35: 54-60. <https://doi.org/10.1111/j.1753-6405.2010.00621.x>

³⁹ Wild K, Woodward A. Why are cyclists the happiest commuters? Health pleasure and the e-bike. *Journal of Transport & Health* 2019;14:1-7

⁴⁰ Rose, E., Witten, K. and McCreanor, T., 2009. Transport related social exclusion in New Zealand: Evidence and Challenges. *Kōtuitui: New Zealand Journal of Social Sciences Online*, 4(3), pp.191-203.

⁴¹ Litman, T., 2014. The mobility-productivity paradox: exploring the negative relationships between mobility and economic productivity. Victoria Transport Policy Institute – a paper for presentation at the International Transportation Economic Development Conference I-TED 2014

⁴² Litman, T., 2020. Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development.

- Improved cycling and micromobility transport choices is not only healthy and supportive of cohesive urban societies but also cost effective. Studies of Latin American cities note the large greenhouse gas mitigation potential (25%) and relatively low cost (US\$30/tonne CO₂ reduced) for a package of bus rapid transit, pedestrian upgrades and cycleways⁴³.

2.1.4 Problem 4 – Delivery

Current cycling delivery mechanisms and resistance towards reallocating road space to cycling infrastructure are resulting in cost escalations, delays in delivery, and facilities that do not always meet customer expectations.

The delivery of safe cycle facilities has been slower and has found to be more expensive than anticipated in 2017. The problem is somewhat further exacerbated by the delay of the Urban Cycleways Programme, which was programmed for completion in 2018 and is now expected to be completed in 2024.

The cost of delivering safe cycle facilities in Tāmaki Makaurau - Auckland has increased greatly since 2015, from approximately \$4 million per kilometre to between \$8-11 million per kilometre⁴⁴ (with facilities implemented through challenging terrain and / or under or over Strategic Transport Corridors such as State Highways having far higher per kilometre rates). The key factors that have contributed to the overall cost increase include:

- The initial cost estimate for the 2017 PBC was completed when there was limited experience in cycle infrastructure delivery, limited feasibility work, and these were based on now superseded design standards.
- The adoption of Vision Zero and the release of the AT Transport Design Manual (TDM), which have had implications on the design standards for safe cycle facilities.
- Challenges with regard to reallocating road space on corridors with multiple strategic demands, resulting in kerb movements to fit in safe cycle facilities, while also providing for public transport, general traffic and/or freight (e.g. Karangahape Road). Such kerb movement has subsequent cost impacts due to the need to relocate / rebuild stormwater, traffic signals, other utilities, bus stops and footpaths, for example;
- The increase in scope of cycle projects, beyond the cycle facility itself, such as stormwater upgrades, bus stop upgrades, streetscaping, footpath upgrades, to deliver better overall placemaking / community outcomes through a 'dig once' approach; and
- The need to treat intersections to ensure safe cycle provision through intersections, which pose a greater safety risk to people on bikes.

Evidence in support of Problem 4 is in Table 2-4 below.

Table 2-4 Problem 4 evidence - delivery

Challenges with regard to reallocating road space	<ul style="list-style-type: none"> • Auckland lacks a grid-pattern roading network meaning that roads that need cycling infrastructure often need provision for public transport and freight. Therefore, competing demands result in significant challenges in reallocating space for cycle and micromobility use. This is evident on the Future Connect Integrated Network Plan. • There can be resistance from business associations relating to the removal of parking outside retail and commercial areas. There can also be resistance to removal of residential parking. However, evidence shows
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⁴³ Wright, L. and Fulton, L., 2005. Climate change mitigation and transport in developing nations. *Transport Reviews*, 25(6), pp.691-717

⁴⁴ Average cost rate of Urban Cycleway Programme projects delivered between 2015 and 2020, and therefore does not include escalation post 2020.

improvement to cycling positively impact consumer spending e.g. changes in the Auckland city centre that reduced vehicle volumes and encouraged cycling led to a 429% increase in hospitality spending.⁴⁵

- Public perception of cycling has at times been negative, which has slowed or derailed delivery of cycling improvement projects. One such example is the recent Henderson Innovating Streets Scheme, which has been largely removed in response to vocal public opposition.

Design standards and general cost escalations

- Design standards for bike safe cycle and micromobility facilities infrastructure (including a focus on 'all ages and abilities,' and providing the ability for faster users to pass other slower users), higher community expectations around placemaking, requests for additional works related to road safety, dovetailing in utilities upgrades to projects, and public transport and pedestrian improvements are increasing the scope of cycling projects and have therefore contributed to increasing costs. For example, when recent cycle projects have passed through town centres, approximately two thirds of the total infrastructure cost is apportioned to improving non-cycling infrastructure and moving kerbs.
- Protected cycling and micromobility facilities can be delivered at a significantly reduced cost when coupled with road space reallocation. For example, Project WAVE, a trial in downtown Auckland, which turned one lane of traffic into a 450m bidirectional cycleway was delivered at a cost of \$1.06 million (\$2.35 million per kilometre).
- The construction industry has been experiencing a very busy period over the last few years and more recently shipping issues and skilled labour shortages, as a result of COVID-19 impacts, has driven up infrastructure costs by an estimated 10 to 20%.

Investigation delays

- Of the nine 'Early Start' priority areas of the 2017 PBC, the Henderson Cycling SSBC is the most advanced but has been developing for over two years, with the Māngere East and Manukau Cycling SSBCs only starting in 2021. The 2017 PBC focused on broad focus areas, leaving subsequent SSBCs the much bigger task of developing the detailed local networks within those areas.

Design and consenting delays

- The experience from the Urban Cycleways Programme is that community expectation of cycling projects (and associated placemaking improvements) is very high, which can lead to design stalemates and unanticipated delay e.g., through community engagement.

Governance and management challenges

- Lessons learnt from the Urban Cycleways Programme identified the need to improve the effectiveness of programme and project governance groups, as well as assess current project approval structures and consider how these can be streamlined and simplified to facilitate faster approvals and decision making⁴⁶.

Track record has shown that delivery of cycling infrastructure has been slower and more costly than anticipated in 2017.

2.2 Issues and Constraints

Issues and uncertainties (i.e. key financial, economic, policy, social, environmental, transport related and technological changes that could influence the programme outcomes and outputs), are listed in Table 2-5 below.

⁴⁵ Auckland Council (ND) Share the Wealth: Shared Spaces Make Great Business Places. Retrieved from: www.aucklanddesignmanual.co.nz/resources/case-studies/street_for_street_precinct

⁴⁶ Urban Cycleways Programme Lessons Learned Review; Internal Audit Report, July 2021.

Table 2-5 Issues and Uncertainties

Issue / Uncertainty	Description	Potential impact on CAM-PBC
Funding levels	The Climate Change Commission has recommended a substantial increase in the share of central government funding for active transport to displace private vehicle use. The government will release its Emissions Reduction Plan by the end of 2021 in response to the Commission's advice.	The CAM-PBC has considered ways to take advantage of potential additional funding for active transport over the next few years. The CAM-PBC will also provide recommendations to ensure there is a pipeline of cycling and micromobility projects that can be delivered more efficiently when as funding is available.
Road pricing	The government and AT are investigating road pricing in Auckland to manage demand on the road network.	Depending on the design of the scheme, road pricing has the potential to increase cycling mode share.
Customer Growth Initiatives	The implementation of new cycling and micromobility facilities perform better with initiatives designed to support and activate the physical works.	The CAM-PBC includes funding and discussion around Customer Growth Initiatives. This is an important operational expenditure component that is not funded in the RLTP and NLTF at present, so represents a risk for the CAM-PBC.
Policy changes	Policy changes can affect regionwide behaviour change. Both ensuring benefits and mode share is maximised.	The CAM-PBC includes discussion around a suite of policy recommendations. AT and its partners will need to work hard to gain buy-in from the various statutory authorities to implement various policy changes.
Public support	Currently the trade-offs with cycling and micromobility often leads to resistance to funding and delivering related projects e.g., resistance to road space reallocation, and aggressive driver behaviour towards people on bikes. At the other extreme AT and its partners experience pressure to deliver more cycle facilities for less.	The CAM-PBC will need to be accompanied by a regionwide – cross agency communication and engagement strategy. A high-profile political champion is also highly recommended.
Transport Emissions Reduction Plan (TERP)	AC and AT are jointly developing a plan to deliver on the climate goals of Te Tāruke-ā-Tāwhiri (64% transport emissions reduction by 2030). The plan will likely include recommendations for a much higher and faster rollout of cycling and micromobility facilities.	The CAM-PBC will consider how safe cycling and micromobility facilities can be delivered more efficiently and ensure that the investment programme goes well beyond the dollar commitment of the RLTP so that AT and Waka Kotahi can respond quickly should additional funding become available. The mode share modelling scenarios require a cultural shift beyond the influence of the CAM-PBC (i.e. substantial policy change is required).

Issue / Uncertainty	Description	Potential impact on CAM-PBC
Other transport projects	Other transport projects, such as: Connected Communities, 20Connect, Airport to Botany (A2B), light rail, Supporting Growth, and those associated with the Brownfields PBC, may deliver less cycling infrastructure than planned.	This may result in gaps in the network that the CAM-PBC did not anticipate and an inability to achieve the investment objectives.
Technological changes	The quality of e-bikes and e-scooters with has improved significantly since the 2017 PBC and there are a significant more of them on the network now. As 5G is rolled out we will see more autonomous vehicles on the network.	These technological changes have led to users being able to make longer and more frequent trips. This in turn has impacts on options.
Mobility as a service	Service providers, such as Lime and Jump, with public transport services (e.g. ability to use AT HOP card to book and pay for all modes and make travel between micromobility and public transport seamless) would likely increase mobility and integration as users move between transport modes.	Demand forecasts have been made without these changes in the 2021-2031 period, changes may increase attractiveness of cycling While services such as e-scooters that use the footpath increase mobility, if they are not used responsibly, they do increase the safety risk to other footpath users and themselves, especially for those with accessibility impairments and the elderly.
Integration with public transport	The existing public transport infrastructure and services are currently not ideal for integration with cycling (e.g. insufficient cycle parking at stations and bicycles are not allowed on buses).	Limits the impact of CAM-PBC and requires CAM-PBC to bridge the gap in places (e.g. provide for cycle parking at stations).

Constraints are those things that limit the scope of the CAM-PBC and are summarised below.

Table 2-6 Constraints

Constraint	Description	How it restricts impact of PBC
2021-2024 National Land Transport Plan (NLTP) funding	Funding for the 2021-2024 period is mostly locked in with limited scope to reallocate funding.	This limits the amount and ways initiatives can be funded up to 2024.
Statutory powers	The statutory powers of AT and Waka Kotahi are limited to impacts on the transport network. Most policy alternatives, such as tax changes must be delivered by central government.	Ability to pursue some policies, such as road code changes or fringe benefit tax exemptions for expenditures on cycle commuting relies on support from other agencies (i.e. central government).
Land-use policy	The cost and time required to progress major plan changes and other land use policy affecting change on the ground may limit the land use change possible within 10 years.	Land use may be slow to change over this period (2021-2031) and will require quick shift in policy and backing from central government to enact significant change. Therefore, it is important that new development provides high quality cycling experiences from day one.

<p>Public transport network</p>	<p>AT has rolled out the New Network, the development of the City Rail Link to unlock capacity in Auckland's rail network, and the delivery of supporting infrastructure such as public transport interchanges at Ōtāhuhu and Panmure.</p>	<p>The broad structure of Auckland's public transport network is unlikely to be substantially revised during the 2021-2031 period. This provided some certainty to the CAM-PBC and to enable bike and micromobility to support public transport.</p>
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3 Outcomes

3.1 Strategic outcomes

Strategic outcomes that the CAM-PBC seeks to support:

- The GPS (as outlined above).
- Net zero emissions by 2050 and in response to the Climate Change Response (Zero Carbon) Amendment Bill.
- Reduction of DSI involving people on bikes and scooter riders with the CAM-PBC’s contribution to the regional goal of a 40% reduction by 2030 and in response to Road to Zero strategy for 2020-2030.
- A 50% reduction in regional emissions by 2030 target (64% reduction in transport emissions modelling scenario), with an increase in mode share by distance for cycling from 0.4% to 7% by 2030 to align with the aspiration of Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan⁴⁷.
- Increase cycle trips and increase kilometres of safe cycling facilities in accordance with the 2021-2031 RLTP.

3.2 Programme Outcomes

The investment objectives have been updated, from those of the 2017 PBC, to align with the Strategic outcomes, such as Road to Zero and Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan. The CAM-PBC Investment Objectives are set out in Table 3-1 below.

Table 3-1 Investment objectives

Investment objectives ⁴⁸
Investment Objective 1: Contribute to a reduction of deaths and serious injuries involving people using bikes and micromobility by 40% by 2031 (30%)
Investment Objective 2: Increase cycle mode share by distance from 0.4% to 1.9%, contributing to the regional mode share by distance aspiration of 7% by 2030 (30%) ⁴⁹
Investment Objective 3: Increase the proportion of the population that can access key social opportunities within 15 minutes by safe cycling or micromobility to 40% by 2031 (30%)
Investment Objective 4: Increase the rate of delivery of safe cycling facilities on the Cycle and Micromobility Strategic Network by 15 km per year by 2031 (10%)

3.3 Performance Measures

Key performance Indicators (KPIs) for the CAM-PBC are listed in Table 3-2 along with references to Waka Kotahi’s Benefits Framework. Full descriptions of the KPIs and methods for measuring them are included in the Benefits Realisation Plan technical note (Appendix J).

⁴⁷ Mode share modelling scenarios were derived using the C40 endorsed CURB model, which calculated the overall emissions reduction required for all sectors in order to meet the 2030 regional emissions reduction target. Individual mode share modelling scenarios were calculated to give effect to the 64% reduction in transport emissions required to achieve the overall target of reducing greenhouse gases in Auckland by 50%.

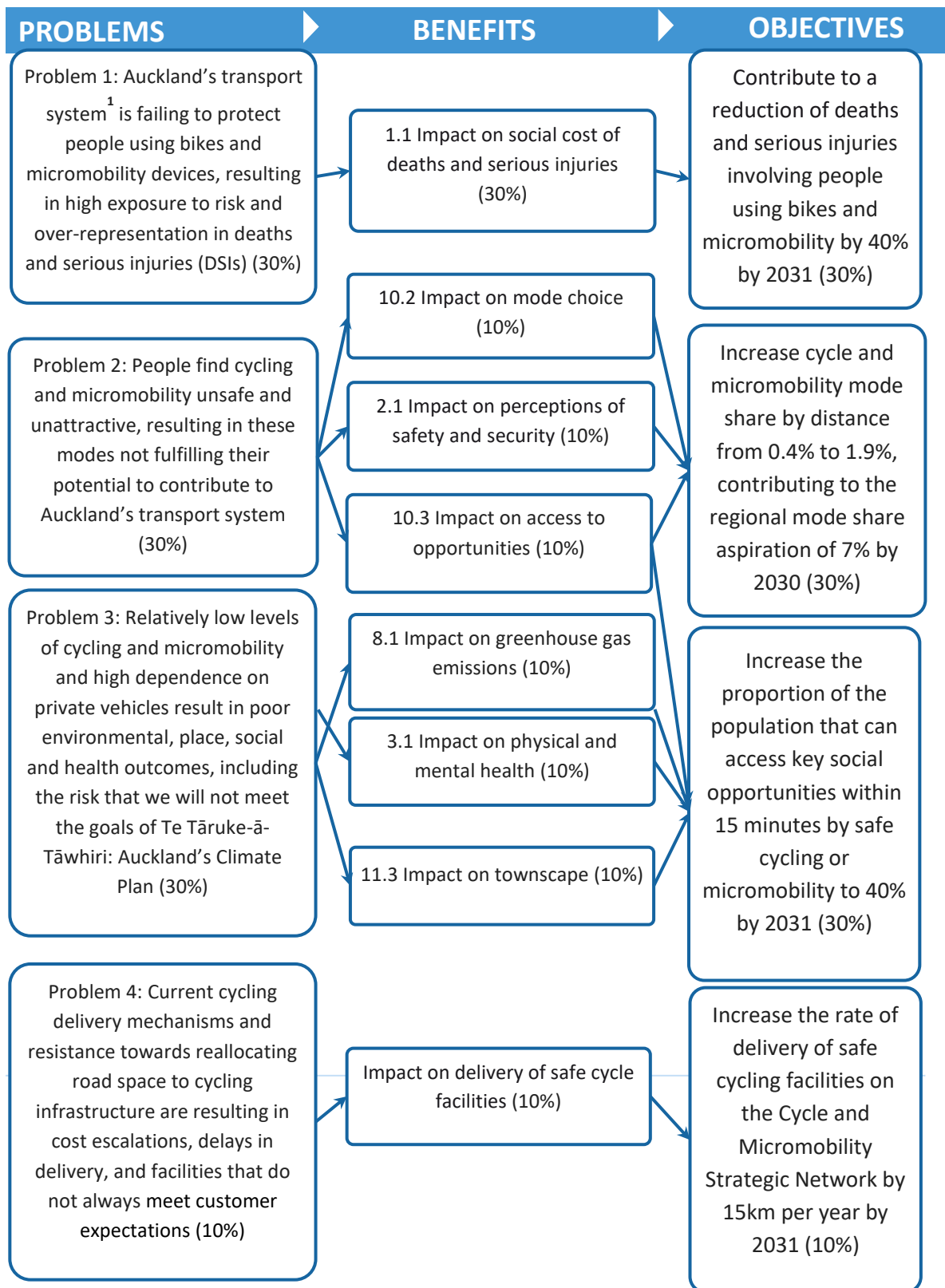
⁴⁸ Investment objectives are based on a \$1 billion funding scenario outlined in Section 6. The targets outlined in the investment objectives will change based on the funding acquired.

⁴⁹ 7% cycle mode share by distance cannot be achieved through the CAM-PBC alone. The CAM-PBC is expected to contribute to this 7% cycle mode share by distance together with other projects and policy changes.

Table 3-2 Key performance indicators and links to the Benefits Framework

Programme Benefit	Key Performance Indicators	Waka Kotahi Benefits Framework
Impact on social cost of deaths and serious injuries (30%)	KPI 1: Number of DSIs involving people on bikes or micromobility per kilometre travelled.	1.1
Impact on mode choice (10%)	KPI 1: Cycle mode share (by distance) increase.	10.2
Impact on perceptions of safety and security (10%)	KPI 1: Perceptions of safety and ease of cycling improved.	2.1
Impact on access to opportunities (10%)	KPI 1: Proportion of population living within 15 minutes of key social opportunities by safe cycling or micromobility.	10.3
Impact on greenhouse gas emissions (10%)	KPI 1: Tonnes of CO ₂ equivalent emissions avoided.	8.1
Impact on physical and mental health (10%)	KPI 1: Physical health benefits from an increased rate of cycling and micromobility activity	3.1
Impact on delivery of safe cycle facilities (10%)	KPI 1: Kilometres of safe cycle facilities delivered on the Cycle and Micromobility Strategic Network.	10.2

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1. The Transport System, as it relates to this Problem Statement, includes any road, path, or cycling facility that people can ride a bike or micromobility device on.
2. Includes employment, education, retail, recreation and community

Figure 3-1 Investment logic map

Part B of the CAM-PBC follows and covers the optioneering and economic phases.

PART B - DEVELOPING THE PROGRAMME

Part B presents the preferred programme and reasons for programme option decisions.

Cycling and micromobility need substantial investment to be equitable with other modes and meet the mode shift aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan. Additional investment in cycling and micromobility improvements is justified because of the positive health and emissions outcomes and the strong return on investment, which is twice that of similar scale roading projects.

Some key findings discovered during programme development, that are presented and discussed further in Part B are:

- **Cycle network development, customer growth initiatives, cycle parking and policy changes will all be required** to maximise the uptake of cycling and micromobility.
 - **Option assessment is centred on developing safe and connected cycle and micromobility network infrastructure** as not feeling safe because of how people drive remains the biggest barrier to cycling in Auckland.
 - **Customer growth initiatives (e.g. behaviour change initiatives) are fundamental** to realising outcomes especially in areas of high transport and social deprivation. They are also critical to getting community buy-in. Research shows initiatives that blend network development, customer growth initiatives, and policy changes have the greatest impact on uptake of people using bicycles and micromobility devices.
 - **Policy changes (not delivered by the CAM-PBC) such as congestion pricing and land use changes are critical to achieving** Auckland's cycling and micromobility mode share modelling scenarios to support reduction of greenhouse gas emissions and providing alternative funding sources.
- **There are other projects and programmes funded through the RLTP, which will deliver approximately 165km of safe cycling facilities over the next 10 years.** There is a further \$306 million allocated to the Ongoing Cycling Programme. The CAM-PBC identifies how best to spend this and any other funding that may arise.
- **Prioritisation of strategic connections and focus areas will help AT get the best value for money with available and additional funding:**
 - **Connectivity of the cycle network** is critical, with connected networks shown to be more successful than isolated cycling infrastructure, by enabling the 'network effect'.
 - **A blend of connection types** (regional connections, rapid transit access, school access, and metropolitan centres and growth areas) can maximise benefits by prioritising connections that serve multiple user types.
 - **Cost of delivery** is important, with road space reallocation presenting an opportunity to reduce costs and construction risks, helping to speed up and increase delivery. However, there are critical links that will require more complex construction.
 - **Safety** is the biggest barrier to people using bicycles and micromobility and there is an opportunity to add value and cost share with safety works programmes.

- **In order to drive the greatest mode shift, facilities need to be optimised for those users who would like to cycle but are not confident enough to cycle on road - 'interested but concerned' users.**
- **There are opportunities to deliver faster, and at a lower cost.** Proposed minimum standards for separated cycle facilities have been developed by AT for projects delivered through the CAM-PBC and will inform a programme level departure, which will enable more road space reallocation to cycle and micromobility facilities.
- **There are still ongoing challenges associated with the reallocation of road space, which will need to be managed,** such as multi-modal priorities and public acceptability of car parking removal at certain locations.
- **Investment in cycling improvements has a good return on investment,** approximately double that of similar scale motorway projects, with no diminishing returns up to \$2 billion.
- **The preferred programme for the \$306 million funding level⁵⁰ identified in the RLTP, delivers:**
 - 45km of protected cycle facilities on the Cycle and Micromobility Strategic Network.
 - 4 focus areas of concentrated investment to provide local connections (Note: this will add further kilometres to the network).
 - 7% capital expenditure funding allocation for cycle parking and customer growth initiatives.
- **To support Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan** and enable Auckland to meet its climate commitments, substantial mode shift away from car trips to cycling is required, particularly for short to medium distance trips. This requires much higher levels of investment than currently available through the RLTP, as well as significant policy and legislative changes, beyond what AT can deliver.

The preferred programme seeks endorsement of the investment strategy⁵¹ for future business cases, and the prioritisation methodology to ensure the investment can be quickly scaled up should additional funding become available beyond the \$306 million allocated in the RLTP. It also seeks endorsement of policy recommendations that AT will need to advocate for.

The following sections within Part B present the stakeholders involved, the options development and assessment process, the preferred programme, and the assessment of the preferred programme against investment objectives, value for money, and equity.

⁵⁰ Additional operational expenditure is required to enable delivery of the full suite of recommended customer growth initiatives.

⁵¹ Investment strategy being the prioritisation delivery approach

4 Partners and Stakeholders

AT has led the development of the CAM-PBC with support from Waka Kotahi and AC as key transport partners. A Project Working Group and Project Control Group was established and included members from all three organisations.

Four reference groups were established to support CAM-PBC and for its engagement process. The groups included: a Mana Whenua group, a Political Reference Group, a Technical Reference Group, and the Subject Matter Experts. All groups were taken through each business case stage via three workshops. The Political Reference Group had a fourth workshop.

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5 Alternative and Option Assessment

The process for the alternatives, options development, and assessment is shown below in Figure 5-1.

Option assessment is centred on developing cycle and micromobility network infrastructure given that the majority of Auckland’s cycle and micromobility network is incomplete and because not feeling safe because of how people drive remains the biggest barrier to cycling in Auckland.

Infrastructure options for cycle and micromobility network development were taken through a longlist and shortlist assessment process. Customer growth initiatives and policy recommendations were developed and refined to optimise benefits of the infrastructure investment, including increasing cycle and micromobility mode share. Infrastructure components within the preferred programme were then prioritised based on a set of criteria, which included an analysis of potential benefits, deliverability and affordability. The preferred programme was then assessed against the investment objectives with consideration of how policy changes, and other projects play a part in meeting the investment objectives across Tāmaki Makaurau - Auckland.

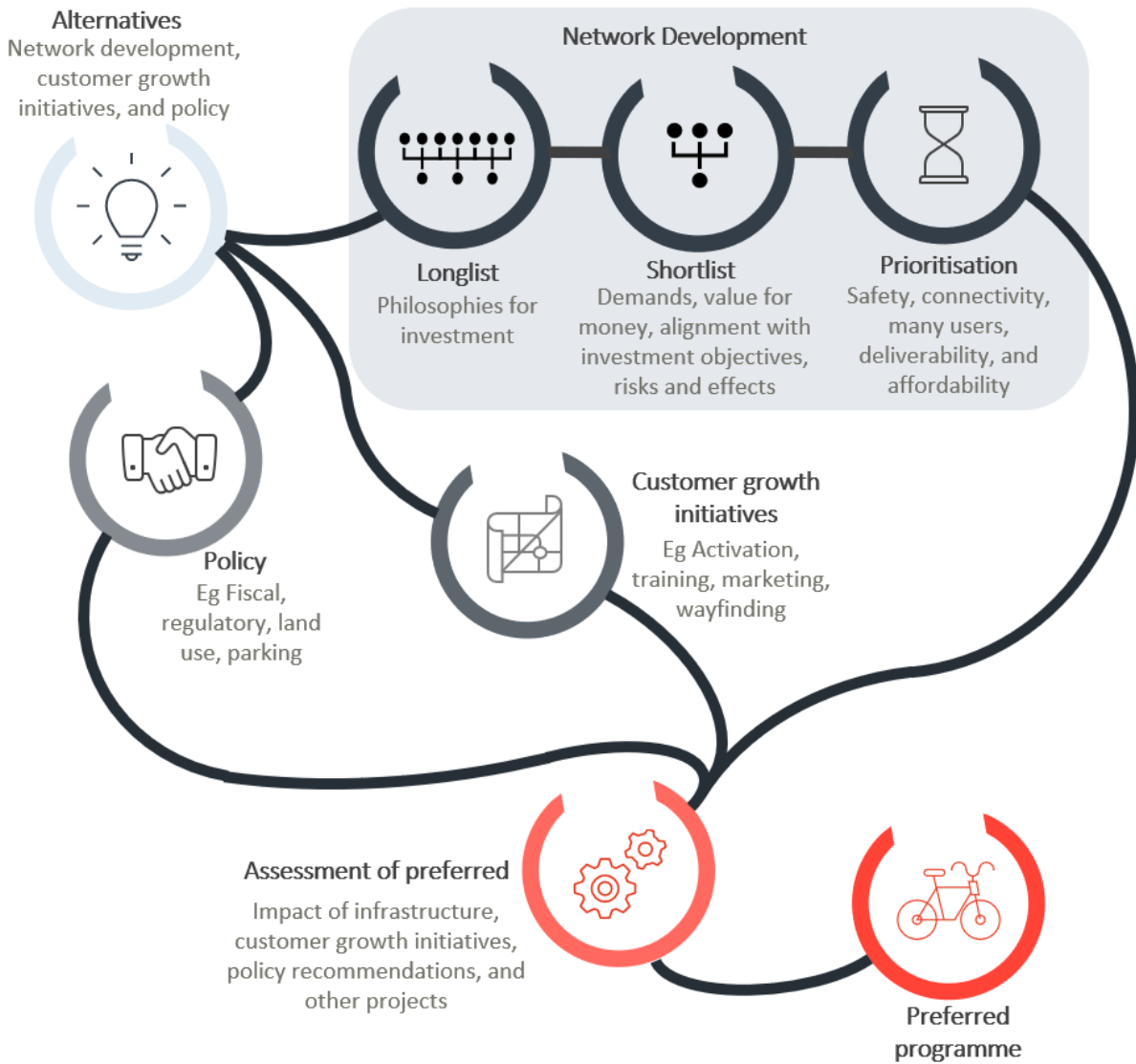


Figure 5-1 Programme development approach

5.1 Alternatives Analysed

Alternatives were considered across six categories:



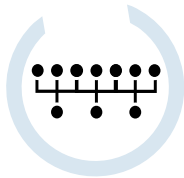
- Cycle network development (infrastructure), such as protected cycle facilities.
- Services, such as bicycle share, cycle skills training.
- Regulation, such as speed limit changes.
- Enforcement, such as speed and parking enforcement.
- Information, such as wayfinding.
- Fiscal, such as congestion charging.

All alternatives were found to have merit to contribute towards achieving the programmes investment objectives and analysis of the preferred option shows a combination of alternatives is essential to meeting investment objectives.

The alternatives have been further categorised into:

- Cycle network development, which has proceeded through the CAM-PBC option development and assessment as outlined in Section 5.2
- Cycle parking and customer growth initiatives to complement network development and are fundamental to realising the benefits anticipated from the network development options. Cycle parking and customer growth initiatives are discussed further in Section 6.1.2
- Policy recommendations are essential to achieving the investment objectives (particularly meeting cycle and micromobility mode share modelling scenarios). The majority of the identified policy recommendations need to be delivered by AC and central government agencies; these are discussed further in Section 6.1.3.

5.2 Network development options analysed



The following section summarises the network option development and assessment, with cycle parking and customer growth initiatives explored as part of the preferred programme refinement in sections 6.1.2 and 6.1.3.

The cycle network development changes considered include:

- Protected cycling facilities⁵²; and
- Local area networks (LANs), i.e. traffic calming, modal filters and street redesign.

Both options have the following potential delivery approaches, which were explored in detail for the preferred programme in Section 6 and in Part C:

- Tactical urbanism / semi-permanent infrastructure as a means of delivering benefits sooner and/or testing improvements at a lower cost;
- Permanent cycle infrastructure as per the AT TDM; and
- Permanent cycle infrastructure with approved departures from AT TDM standards to enable protected cycling facilities to be delivered within existing road space to (i.e. avoid kerb relocations) to reduce cost and speed up delivery, while maintaining Vision Zero safety standards.

⁵² Painted cycle lanes do not meet Vision Zero standards for safe cycling and are not included as part of network development.

5.2.1 Reference cases

There are a significant number of other projects delivering cycling and micromobility infrastructure throughout Auckland over the next 10-years.

Two reference cases have been used to assess the options:

- The first reference case is the do minimum, which includes all committed⁵³ projects that have funding for implementation included the RLTP e.g., part of the New North Road Corridor within Connected Communities (see Section 8.2.4 for a list of these projects).
- The second reference case includes the do minimum projects but also includes all planned (but unfunded) projects, which are those projects that have business cases separate to the CAM-PBC but do not yet have funding for implementation e.g., Airport to Botany Mass Rapid Transit (see Section 8.2.4 for a list of these projects).

Figure 6-2 and Figure 6-3 show the committed and planned (but unfunded) projects.

Policy changes have not been included in the reference cases, as they are not yet committed for implementation and they would be delivered externally to the CAM-PBC.

See Appendix M for further details of the reference cases as used within the Economic Assessment.



5.2.2 Longlist of options

The 2017 longlist of options was reviewed and refined to generate the longlist of options for the CAM-PBC. Amendments were made to the 2017 longlist of options following feedback from investment partners and reference groups and are detailed in the Longlist technical note (Appendix E). The notable changes since 2017 were:

- The trunk routes option was combined with the long-distance connections option and extended into the city centre. It was renamed the 'Regional Routes and Connections' option to align with the Cycle and Micromobility Strategic Network in Future Connect.
- A metropolitan centres and satellite towns option was added following feedback from project reference groups. This longlist option has merit because it provides cycle facilities within high growth areas, enabling densification through the provision of more transport choice.

The longlist of options was assessed using the Waka Kotahi Early Assessment Sieving Tool (EAST). A summary is presented in Table 5-1, and the full EAST results can be found in Appendix E.

Table 5-1 Longlist assessment results summary

Option		Summary of decision made		
1	Regional routes and connections	Fills in the missing links in the regional routes including major connections to the regional routes.	Likely to have more technical and consenting issues than low traffic neighbourhoods because of more infrastructure and more outside roadway. Likely to be expensive but often serves critical links in the network (e.g. connecting employment to residential).	Progress to shortlist stage 
2	City Centre and central isthmus	Provides connections within 10km of the central city (increased from 7km in 2017 to account for e-bicycles)	Sieved out because works are being delivered by other projects (e.g. Connected Communities and A4E) that diminish the amount of benefits the option could deliver. Many of the connections are already captured	Discontinue 

⁵³ Although these projects have funding for implementation identified in the RLTP, it is recognised they are not committed for implementation and there is still a risk some do not proceed or are altered.

Option		Summary of decision made		
			within options 1-4. It is the least equitable option given the relatively higher incomes and good access to public transport within the central isthmus compared to other areas.	
3	Rapid transit station access	Provides connections and LANs near rapid transit stations (i.e. train and Northern Busway stations).	Likely to have some technical difficulties like option 1. Could target lower socio-economic areas.	Progress to shortlist stage ✓
4	Showcase demonstration neighbourhoods	Provides connections and LANs within a selection of 'demonstration neighbourhoods' that all currently have higher than average cycle mode share.	Discard for low Investment objective scores. Lower cost option than option 1 and easier technically to deliver (although some risk of public acceptance).	Discontinue ✗
5	Connections to schools	Provides connections and LANs around school clusters with a high collective roll.	Lower cost option than option 1 and easier technically to deliver.	Progress to shortlist stage ✓
6	Metropolitan centres and satellite towns	Enabling densification through provision of improved cycling and micromobility facilities within high growth areas.	Likely to have some technical difficulties like option 1. Could target lower socio-economic areas. Lots of cross over with other options (e.g. metro centres also on RTN).	Progress to shortlist stage ✓

5.2.3 Short list of options

Four shortlist options were refined and assessed:

1 Regional routes and connections



Fills in the missing links in the regional routes including major route connections to regional routes.

2 Rapid transit station access



Provides routes and local area networks near rapid transit stations (e.g. train stations and Northern Busway stations).

3 Enhance connections to schools



Provides routes and local area networks around clusters of schools with a high collective roll.

4 Metropolitan centres & satellite towns



Enabling densification through provision of improved cycling and micromobility within high growth areas.

Figure 5-2 Shortlist options

The shortlist of options was developed further from the longlist by:

- Selecting locations for investment (i.e. school clusters and RTN stations) based on likely demand (i.e. school roll, boardings, population density), missing links, and denser unitary plan zoning. As a result, a number of areas did not make it into the shortlist of options as they fell outside of the catchments around the identified RTN stations, school clusters and metropolitan centres, or did not provide an immediate major connection to a regional route. These areas include Torbay, Birkdale, Birkenhead, Glenfield, Swanson, Titirangi, Lynfield, Remuera, Meadowbank, Howick.
- Mapping the strategic and supporting network connections from the Cycle and Micromobility Network in Future Connect as indicative routes to cost up the options and calculate demands. Demands were calculated using:
 - The Auckland Cycle Model (ACM) for shortlist options 1 and 4;
 - Station boardings for Shortlist Option 2 with no ACM trips used (i.e. station trips only); and
 - School roll data for Shortlist Option 3 with no ACM trips used (i.e. school trips only).

The Shortlist technical note (Appendix F) details the option development process further. Based on the demands calculated for each option, interim benefits were generated, summarised in Table 5-2.

Table 5-2 Summary of benefits and costs of each shortlist option

		Option 1 Regional connections	Option 2 RTN access	Option 3 School access	Option 4 Metro Centres
Total (2038) ⁵⁴	Additional trips (daily)	26,682	20,213	12,818	22,730
	Additional cycle km (daily)	166,863	40,427	26,061	118,294
	Mode shift from vehicles (daily car km removed)	70,083	46,414	24,236	52,050
Per \$M PV ⁵⁵ spent	Additional trips (daily)	18	27	40	23
	Additional cycle km (daily)	116	54	81	123
	Mode shift from vehicles (daily car km removed)	49	62	75	54
Total PV Benefits (\$M)		1,910	566	290	1,351
Total PV Cost (\$M)		1,443	753	322	963
Interim Benefit Cost Ratio (BCR)		1.32	0.75	0.90	1.40

As shown above, Option 1 and Option 4 have the largest number of additional daily cycle kilometres per dollar spent, which is an indicator of health benefits (the main monetised benefit). However, the ACM is best set up for longer cycle trips between neighbourhoods, not within neighbourhoods so Option 2 and 3 daily cycle trips may be underestimated. All four options achieve relatively large emissions reductions per dollar spent, as indicated by mode shift from vehicles (daily car kilometres removed). This benefit has not been monetised at the shortlist stage.

All options have interim BCRs of around 1.0. However, cycle demands only include the one user type the option is targeting (i.e. trips to RTN stations and trips to schools respectively). Therefore, the BCRs are conservative. Once the cycle volumes are layered, the BCRs are likely to be above 1.0 across all options, and therefore all likely to be economically viable.

⁵⁴ While the Investment Objectives relate to years 2030 and 2031 (to align with the Auckland Climate Plan and Road to Zero), the modelled years (and as a result the economic assessment years) are in 2028 and 2038 years.

⁵⁵ PV indicates 'present value' i.e. value in current dollar terms

Economic value is not the only assessment tool used to consider shortlist options. The shortlist was also assessed using Waka Kotahi’s Multi-Criteria Analysis (MCA) tool. All assessment tools were weighed up using professional judgement (e.g. consideration of the limitations of the tools used such as the economics not being able to monetise all benefits). The shortlist MCA assessment can be found in Appendix F and is summarised in Table 5-3.

Table 5-3 Shortlist MCA assessment results summary

	Option 1 Regional connections	Option 2 RTN access	Option 3 School access	Option 4 Metro Centres
Interim MCA	4th	2nd	1st	2nd
Investment objectives	High Positive (8.8)	High Positive (8.4)	High Positive (8.8)	High Positive (8.0)
Critical success factors - risks	Moderate negative - high cost & complexity (-8)	Low negative - moderate cost & complexity (-2)	Low negative - low cost & complexity (-1)	Moderate negative - moderate cost & complexity (-5)
Opportunities and Impacts	Moderate positive (9)	Moderate positive (11)	Moderate positive (13)	Moderate positive (11)
Uncertainties	More benefit certainty than options 2 and 3 but greater costs per km and more complex design and construction	More uncertainty about demands than option 1 and 4. Need cycle parking	Strong ‘safety for kids’ messaging. Could encourage cycling later in life. School culture is important	More benefit certainty than options 2 and 3 but greater costs per km and more complex design and construction
Summary of decision made	Continue with regional and major links that pose a low delivery risk	Continue with RTN stations that overlay with other options to maximise benefits	Continue with school clusters that overlay with other options to maximise benefits	Continue with metropolitan centre links and LANs that pose a low delivery risk

5.2.4 A blended option and prioritisation

As shown in Table 5-3, all shortlisted options scored well against the investment objectives and were shown to have merit; however, they each had shortcomings that needed to be overcome. Namely, the cost and complexity of the regional routes and connections and metropolitan centres and satellite towns options, and the monetised benefits for the rapid transit access and school access options.

By taking the strategic connections and focus areas from all four shortlist options as a blended programme option, each connection could be assessed individually against a set of criteria (outlined in

Figure 5-3) to develop an ordered list of potential projects that deliver the best value for money with available and additional funding.

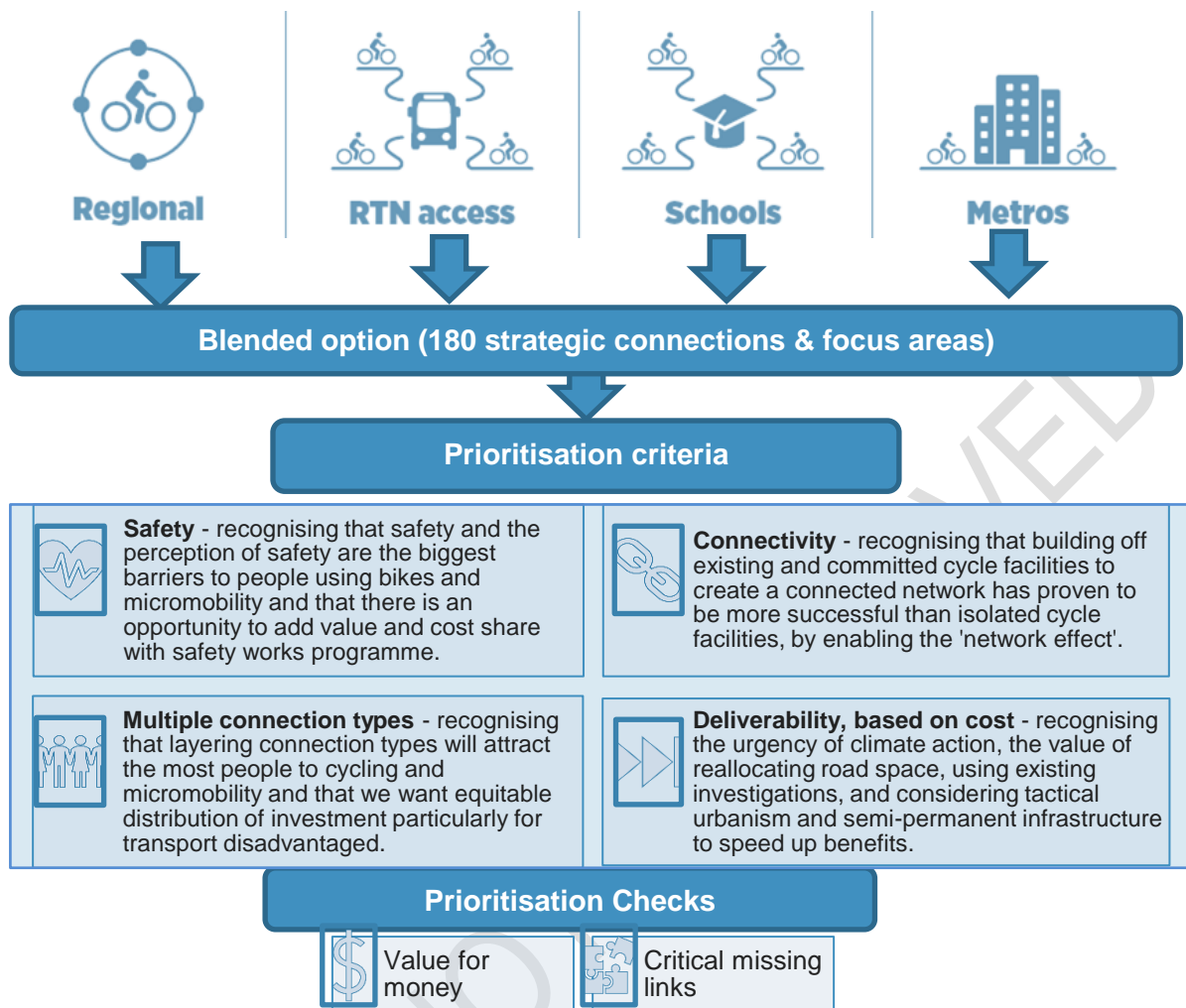


Figure 5-3 Prioritisation process

Bringing together the four shortlisted options resulted in a list of over 180 strategic connections⁵⁶, as well as focus areas where metropolitan centres, RTN stations and/or school clusters overlapped.

The prioritisation process resulted in an ordered list of potential projects that were prioritised in a way that recognises the importance of the building a safe, connected network that caters to multiple different connection types, while also recognising the need to improve deliverability (based on construction cost) through the potential to reallocate road space.

The prioritisation criteria included: connectivity to existing (or committed) protected cycle facilities, the number of connection types, targeting connections with lower physical works complexity (including avoiding / minimising moving kerbs) and targeting connections with a higher active road user safety risk. The criteria are shown in Table 5-4.

⁵⁶ Strategic connections are any routes on the Cycle and Micromobility Strategic Network that were part of the shortlist options, and therefore subject to the prioritisation process.

Table 5-4 Initial prioritisation criteria and scoring summary

Criteria	Categorisation	Value
Connectivity to existing or future cycle facilities (to establish a more connected Auckland CAM network)	Yes - Existing (Protected)	5
	Yes - Committed (Funded)	4
	Yes - Existing (Unprotected)	3
	Yes - Planned (Unfunded)	1
	No	0
Multiple connection types i.e. Regional, RTN, schools, metro and town centres	3 or 4 connection types	5
	2 connection types	3
	1 connection type	1
Deliverability based on construction cost and complexity	AT network - reallocate existing road space (\$2-3m/km)	5
	AT network - mid-range (\$5-6m/km)	3
	AT network - move kerbs (\$8-10m/km)	2
	Waka Kotahi network - off-road (\$20-25m/km)	1
Safety based on Active Road User Corridor Risk ⁵⁷	High	5
	Medium High	4
	Medium	3
	Low Medium	2
	Low	1

Further checks

The resulting prioritised list of strategic connections were checked using a proxy value for money metric based on the forecast number of users against the estimated cost of delivering the connection. This step helped to refine the prioritised list by demoting connections that had lower benefits relative to cost and promoting connections that had higher benefits relative to cost, using a manual 'prioritised order' score, based on bands of five (i.e. 5, 10, 15, 20 etc). Some examples include:

- Ash Street and Rata Street had prioritisation scores of 15 and 14 respectively out of 20, however they had very high proxy value for money scores, based on the demand forecasts generated. They were therefore given a higher ranking via a manual 'prioritised order' score.
- Bairds Road (southern end) had a prioritisation score of 18 out of 20 (top 5), however it had a lower proxy value for money score, based on the demand forecast generated. It was therefore given a lower ranking via the manual 'prioritised order' score.
- Note: Strategic connections that ranked well in the prioritisation score and proxy value for money score, but that sat within the extent of other cycle projects/programmes (e.g. Access for Everyone) or relied on a planned (but unfunded) cycle project (e.g. Skypath; some of the Connected Communities corridors) were manually demoted using the 'prioritised order' scoring. Some examples include Cook Street, Victoria Street West, Grafton Road, Fanshawe Street, Stokes Road and Epsom Road.

A visual inspection of the gaps in the Cycling and Micromobility Strategic Network in Future Connect was also undertaken. This ensured that strategic connections that completed a gap in the Strategic Network by linking two separate existing or committed cycle facilities but may not have scored well within the prioritisation process, were moved up the priority list, using the manual 'prioritised order'

⁵⁷ KiwiRAP Active Road User Corridor Risk 2014-2018, AT GIS accessed in 2021.

score. This was to reflect the importance of building a connected network and helped to shape the preferred programme. Some examples include:

- Walmsley Road, Favona Road, James Fletcher Road, Tui Street and Kaka Street together complete the east-west strategic connection in Māngere East.
- High Street, Trenwith Street, Station Road, Mason Ave and a section of Great South Road together complete the east-west strategic connection in Ōtāhuhu.
- Hobsonville Road and Buckley Avenue together complete the north-south strategic connection between Hobsonville and Westgate.

The visual checks also involved checking the infrastructure was delivered in an equitable manner – especially regarding social equity and transport disadvantaged groups. The result of these checks was minor reordering of the prioritised list, where marginally lower scoring high priority connections were prioritised over others (in locations where there is less transport choice with minimal/no safe cycle connections) to ensure the programme had regional spread and demonstrated equity.

Lastly, the high scoring strategic connections that were located within the Cycling SSBCs currently in development (i.e. Henderson, Māngere East and Manukau) were given the highest priority, to ensure investment is directed to these areas first. This was not only to reflect their identified high priority, but also to ensure they are scheduled first in the programme given they are further through the investigation phase and the community expectations built through previous and ongoing community consultation. If these connections are not prioritised, there is a risk that there is no pipeline for construction over the first years of the programme. Some examples include:

- Sections of Swanson Road and Great North Road were manually promoted in priority as this is the critical missing link between Rathgar Road and the Henderson town centre.
- Druces Road and Carruth Road in Manukau both had prioritisation scores of 14, with high proxy value for money scores, making them among the highest scoring strategic connections in Manukau. These connections were identified in the shortlist and emerging preferred option of the Manukau Cycling SSBC and therefore manually promoted.

The full prioritisation scoring is documented in Appendix I.

Prioritisation of focus areas

Focus areas were also prioritised and were allocated an additional portion of investment in addition to the amount allocated to the strategic connection identified within the area. Focus areas were prioritised based on the following:

- A Cycling SSBC for the focus area is currently in development – i.e. Henderson, Māngere East and Manukau. The additional funding allocation was seen as being critical to supporting the high scoring strategic connections identified in these areas by completing more local connections. Furthermore, these areas were seen as being important test cases for a 'just transition' given their lower than average cycle mode share, lack of a safe and connected cycle network and higher social deprivation. The Cycling SSBCs in these areas also have political and community support demonstrated through their respective engagements.
- The area represents an overlap of a metropolitan centre, RTN station and/or school cluster. Concentrated investment in the area (beyond the identified strategic connection) is required to deliver local networks between the strategic connection and key trip origins/destinations.

These areas were typically allocated \$20-\$30 million of investment to improve cycle connections to key destinations (e.g. schools, RTN station, town centre) that would be explored through the next stage business cases. Potential interventions include modal filters, traffic calming, intersection upgrades, and separated cycling facilities to create safe LANs adjacent to the strategic connection identified in the area. An indicative example of a focus area is outlined in Section 6.1.1.1.

It is important to note that a balance between delivering strategic connections and focus areas was a key consideration, which influenced the amount of investment allocated to focus areas. This was to acknowledge the added time and complexity of planning and delivering focus areas (which require a full SSBC) compared to strategic connections which can be delivered through SSBC lites if they fall below a whole-of-life \$15 million cost and risk profile. This is described in Part C of the CAM-PBC.

5.2.5 Sensitivity testing

The prioritisation list is intended to be able to be reprioritised should external or internal changes happen (e.g. planned but unfunded projects such as A2B are delivered earlier than expected, or investigation finds a connection will cost more to deliver than expected). As such, it is sensitive to change. Sensitivity tests were run to determine how sensitive connections were to each of the prioritisation criteria.

A summary of the sensitivity test results can be found in Appendix F. The strategic connections that scored well in the sensitivity tests but were excluded from the top 25 of the base prioritised list, was typically because of their high reliance on planned but unfunded projects.

The prioritised list was sensitive to the criteria used, so changing strategic priorities (and therefore criteria) would affect prioritisation, however, Table 5-5 shows the consistency of some connections.

Table 5-5 Strategic connections that scored well across sensitivity tests

Connections in base prioritised list	Number of times in top 25 of sensitivity tests
Hobsonville Road; Buckley Avenue	5
Ash Street	5
High Street; Trenwith Street	4
Kitchener Road; Hurstmere Road	4
Rathgar Road	3
Roscommon Road	3
Rata Street	3

Strategic connections in the top 25 of the base list that did not score well in the sensitivity tests were typically included because they bundle well with other high scoring strategic connections or are more progressed (i.e. are already being investigated through a SSBC, so can be delivered quicker than other connections). These are shown in Table 5-6.

Table 5-6 Reason for inclusion of strategic connections that did not score well in sensitivity tests

Connections in base list	Reason for inclusion
Swanson Road; Great North Road	Already in investigation (SSBC) phase. Great North Road is a critical link in Henderson. Swanson Road scored well across the prioritisation and sensitivity, just not in the top 25. It was prioritised in part because it is the most advanced connection with scheme design complete and completes the connection between Rathgar Road and the Henderson town centre and train station.
Walmsley Road; Favona Road	Already in investigation (SSBC) phase. Can be delivered quicker as part of the Māngere East Cycling SSBC compared to other connections. Scored well across the prioritisation and sensitivity tests, just not in the top 25.
Druces Road	Already in investigation (SSBC) phase. Can be delivered quicker as part of the Manukau Cycling SSBC compared to other connections. Scored well across the prioritisation and sensitivity tests, just not in the top 25.
Mahia Road	Bundles with Roscommon Road, which scores well, completing the connection to Great South Road (Regional network).
Archibald Road	Bundles with other connections in New Lynn area that scored well (e.g. Rata St and Ash St).

Connections in base list	Reason for inclusion
Titirangi Road	This connects into Rata St and Ash St, which both scored well – so it makes sense from a packaging of connections perspective.

The prioritised list identified priorities for investigation. Although proceeding to investigation, some connections may not proceed to design or construction based on findings in the investigation stage.

5.3 Development of customer growth initiatives and cycle parking

Cycle parking and customer growth initiatives, such as marketing, events, activations, cycle skills training and bike hubs, were developed in parallel with network development through discussions with AT subject matter experts, research into local and international initiatives, and discussions with the project working group, project control group, and reference groups.

Customer growth initiatives apply a behavioural science approach to enhancing the customer experience, removing barriers to uptake and driving mode shift. Customer growth initiatives play a central role in meeting Auckland's mode change goals. In order to optimise outcomes, customer growth initiatives must be delivered alongside the development of a safe cycling network.

Some key findings were:

- Customer growth initiatives are fundamental to realising outcomes. Research shows initiatives that blend network development, customer growth initiatives, and policy changes have the greatest impact on uptake of people using bicycles and micromobility devices.
- Customer growth initiatives such as marketing, events and activations can help to normalise cycling, mitigate bike-lash (anti-cycling sentiment) and build community capacity for cycling initiatives.
- Customer growth initiatives such as activation events and marketing can prime communities and gain buy-in to cycling and micromobility projects, which will be critical in locations where push back is anticipated e.g. where car parking removal is required.
- Customer growth initiatives can help customers to overcome individual, social and cultural barriers to riding that infrastructure alone cannot achieve. Barriers can include access to bicycles, bicycle security, cycling skills, or even locating the cycle network. These can be particularly important in areas of transport and social deprivation, where some of these barriers may be more prevalent than other areas.
- Community-run bike hubs at key locations provide a platform for enhanced community participation and collaboration in cycling projects, build community capacity for cycling as well as diverting bicycles from landfill, making them safe and redistributing them to local people who cannot afford to purchase bicycles.
- Some existing customer growth initiatives, such as cycle skills training in schools, only meet a small percentage of the demand (approximately 15% of students) due to funding constraints. This presents an opportunity to quickly deliver cycling initiatives should funding become available.
- Cycle parking is fundamental to the success of the programme because a lack of secure cycle parking is a barrier to some cycling trips.
- Cycle parking at public transport stations is critical to enabling more multi-modal trips, supporting public transport uptake and helped to achieve regional mode shift goals.

5.4 Development of policy recommendations

Policy recommendations were developed in parallel with network development by looking to local and international experience of policy interventions that would contribute to the investment objectives and discussing these with the project working group, project control group, and reference groups.

Some key findings were:

- The scale of change required to meet Auckland's cycling mode share and emissions reduction aspirations mean interventions are required at a national as well as regional level to speed up delivery and support uptake of bicycles and micromobility through regulatory and fiscal changes
- Policy changes are required to provide additional revenue sources to bridge the gap between available funding and funding required to meet investment objectives
- There are some existing policy changes underway, such as the revised AT Parking policy out for consultation, that will support CAM-PBC objectives.

DRAFT NOT APPROVED

6 Preferred programme

6.1 Preferred programme summary

The preferred programme includes a combination of:

- **cycle network infrastructure**, e.g. protected cycle facilities and LANs.
- **cycle parking and customer growth initiatives** that support network development, e.g. marketing, promotion, and bike hubs.
- **policy recommendations** (not delivered by the CAM-PBC) e.g. congestion charging, car parking restrictions, and speed limit reductions.

The CAM-PBC has been developed to quickly respond to changes in funding, with the preferred programme presented at various funding levels to demonstrate how it would respond.

Although presented at various funding levels, the CAM-PBC specifically recommends:

- Endorsement of the CAM-PBC as an investment strategy⁵⁸ and preferred programme for approved funding, which targets achieving the greatest uplift in mode share. Achieving a 7% cycling mode share by distance by 2030 would require:
 - i. An increase in capital funding from \$306 million in the 2021-2031 Regional Land Transport Plan (RLTP) to at least \$2 billion⁵⁹ for strategic cycling connections, focus areas, cycle parking, and customer growth initiatives;
 - ii. Implementation of the current cycling and multi-modal projects of the RLTP;
 - iii. Currently unfunded projects such as Connected Communities and A2B have their strategic cycling connections prioritised for investment in this decade;
 - iv. A significant portion of the CAM-PBC policy recommendations are explored and implemented by AT, its partners, Government and other parties; and
 - v. Additional operational expenditure (OPEX) included in the next Long-Term Plan to enable delivery of the full suite of recommended customer growth initiatives.

The reason for the recommendation above is shown in Figure 6-1, which illustrates the impact of the CAM-PBC investment on the cycling and micromobility mode share by distance in Auckland together with other projects and policy changes. It demonstrates the need for all components (CAM-PBC, other projects, and policy) in reaching the aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan.

⁵⁸ Investment strategy being the prioritisation process and delivery approach.

⁵⁹ While \$2 billion in capital funding is estimated to be the minimum needed to meet the mode share by distance aspiration, delivering \$1 billion of cycling infrastructure over the next 10 years is considered feasible, subject to funding availability, sufficient internal resourcing, and overall industry capacity.

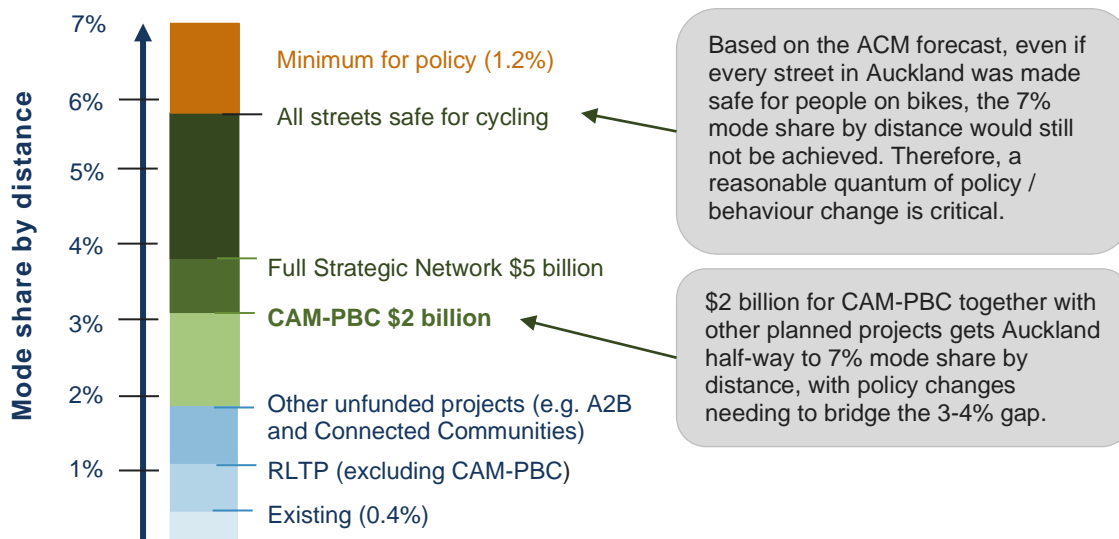


Figure 6-1 Reaching 7% cycle mode share by distance

The recommendation recognises that the \$306 million identified in the 2021-2031 RLTP for the Ongoing Cycling Programme is insufficient to meet the aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, as is any substantially larger investment programme that focuses solely on the delivery of physical infrastructure, as shown in Figure 6-1.

The CAM-PBC provides the first steps to delivering the full Cycling and Micromobility Strategic Network in Future Connect, estimated at over \$5 billion, which could be delivered beyond the 10-year period. The investment case for delivering this network will be tested through subsequent business cases, which may necessitate a change in the network, which will be managed via the Future Connect change management approach.

6.1.1 Prioritised list of projects

The prioritised list of projects reflects the importance of building a safe, connected network that caters to multiple different connection types, while also recognising the need to improve deliverability (based on construction cost) through the potential to reallocate road space. The prioritised list is made up of:

- **Strategic connections**, which are connections on the Cycle and Micromobility Strategic Network in Future Connect. Identified projects will typically be delivered through road space reallocation and SSBC lites provided they have an estimated whole-of-life cost less than \$10 million. In some instances, strategic connections will require kerb moving and a full SSBC, stepping through the Indicative and Detailed stages. This is discussed further in Part C.
- **Focus areas**, which will be delivered primarily through full SSBCs as they will need to confirm the local connections that link into the strategic connections and will therefore have more options to consider. The intention of the focus areas is to deliver a suite of interventions that create safe cycling environments in local streets. Interventions may include modal filters, traffic calming, speed reductions as well as protected cycle facilities. The suite of interventions in each area will be confirmed by the associated next stage business case and will depend on vehicle volumes and design speeds to ensure any provision is Vision Zero safe as per the AT TDM.
- **Cycle parking**, discussed further in Section 6.1.2
- **Customer growth initiatives**, which includes activation, marketing, training, wayfinding and bike hubs and are discussed further in Section 6.1.2

The full prioritised list of projects can be found in Appendix I. The projects for the \$306 million investment programme, which is allocated in the RLTP, is shown in Table 6-1 and Figure 6-2. A

dynamic programme was developed with a prioritisation methodology that is able to respond to changes in context (e.g. if another project comes online earlier than expected then connections that link into that project would score higher in the prioritisation). Strategic connections may also be put on hold or change, if through early investigation and design, the connection proves more complex (and therefore costly) than anticipated. This approach ensures that the programme maintains flexibility to respond to unforeseen risk and change. This reprioritisation process is described in Part C.

Table 6-1 Preferred programme projects to \$306 million

Location	Strategic connections	Focus areas	Investment
Henderson	<ul style="list-style-type: none"> Universal Drive, Rathgar Road, Swanson Road, Great North Road connection; \$18.2 million; 4km 	<ul style="list-style-type: none"> LANs; \$2 million 	\$20.2 million
Māngere East	<ul style="list-style-type: none"> James Fletcher Road, Tui Road, Kaka Street connection; \$5 million; 2km 	<ul style="list-style-type: none"> LANs and supporting connections; \$45 million 	\$50 million
Manukau	<ul style="list-style-type: none"> Druces Road, Carruth Road connection; \$18 million; 3km 	<ul style="list-style-type: none"> LANs and supporting connections; \$32 million 	\$50 million
Ōtāhuhu	<ul style="list-style-type: none"> Station Road, Mason Avenue, Great South Road connection; \$10.5 million; 2km High Street, Trenwith connection; \$3.5 million; 1km 	<ul style="list-style-type: none"> N/A 	\$14 million
Manurewa	<ul style="list-style-type: none"> Roscommon Road connection; \$12 million; 4km Mahia Road connection; \$12 million; 4km 	<ul style="list-style-type: none"> N/A 	\$24 million
Hobsonville	<ul style="list-style-type: none"> Hobsonville Road, Buckley Road connection; \$16 million; 5km 	<ul style="list-style-type: none"> N/A 	\$16 million
New Lynn	<ul style="list-style-type: none"> Ash Street, Rata Street connection; \$8 million, 3km Titirangi Road connection; \$16 million; 2km Archibald Road; \$5 million, 2km 	<ul style="list-style-type: none"> Supporting connections between residential areas, schools, metro centre and train station; \$25 million 	\$54 million
Avondale	<ul style="list-style-type: none"> Rosebank Road connection; \$24 million; 5km 	<ul style="list-style-type: none"> N/A 	\$24 million
Takapuna	<ul style="list-style-type: none"> Kitchener Road, Hurstmere Road connection; \$7 million 2km Anzac Street connection; \$9 million; 1km 	<ul style="list-style-type: none"> N/A 	\$16 million
Onehunga	<ul style="list-style-type: none"> Mt Smart Road; Onehunga Mall Road connection; \$9 million; 3km Hendry Drive; \$3 million; 1km 	<ul style="list-style-type: none"> N/A 	\$12 million
Total	<ul style="list-style-type: none"> 45km strategic connections; \$175 million 	<ul style="list-style-type: none"> 4 focus areas; \$110 million 	\$285 million
Cycle parking	<ul style="list-style-type: none"> Cycle parking at RTN stations and key destinations 		\$1 million
Customer growth initiatives⁶⁰	<ul style="list-style-type: none"> Schemes to improve access to bicycles Promotion, activation and events. Digital experience improvements Marketing Communications 		\$20 million
Total			\$306 million

⁶⁰ As outlined in Part C, customer growth initiatives will be included in the cost of projects rather than as a programme level line item as they are part of the capital cost.



Figure 6-2 Indicative \$306 million programme

An indicative scale of projects that could be delivered with \$1 billion is shown in Table 6-2 and Figure 6-3. Delivering \$1 billion of cycling infrastructure over the next 10 years is considered feasible, subject to funding availability, sufficient internal resourcing, and overall industry capacity.

Table 6-2 Indicative scale of projects with funding increase to \$1 billion

	Strategic connections	Focus areas	Investment
Projects listed under \$306 million	<ul style="list-style-type: none"> 45km strategic connections 	<ul style="list-style-type: none"> 4 focus areas 	\$285 million
Additional projects	<ul style="list-style-type: none"> 105km strategic connections 	<ul style="list-style-type: none"> 3 focus areas 	\$645 million
Total	<ul style="list-style-type: none"> 150km strategic connections; \$745 million 	<ul style="list-style-type: none"> 7 focus areas; \$185 million 	\$930 million
Cycle parking	<ul style="list-style-type: none"> Cycle parking at RTN stations and key destinations 		\$17 million
Customer growth initiatives	<ul style="list-style-type: none"> Schemes to improve access to bicycles Promotion, activation and events. Digital experience improvements Marketing Communications 		\$53 million
Total			\$1 billion

An indicative scale of projects that could be delivered with \$2 billion is shown in Table 6-3. Approximately \$2 billion is the minimum investment needed in cycling infrastructure, cycle parking, and customer growth initiatives to meet the aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan of 7% mode share by distance for cycling and micromobility. However, delivering \$2 billion over 10 years will be difficult because of the scale of construction and delivery management required.

Table 6-3 Indicative scale of projects with funding increase to \$2 billion

	Strategic connections	Focus areas	Investment
Projects listed under \$1 billion	<ul style="list-style-type: none"> 150km strategic connections 	<ul style="list-style-type: none"> 7 focus areas 	\$930 million
Additional projects	<ul style="list-style-type: none"> 110km strategic connections 	<ul style="list-style-type: none"> 7 focus areas 	\$930 million
Total	<ul style="list-style-type: none"> 260km strategic connections; \$1,500 million 	<ul style="list-style-type: none"> 14 focus areas; \$360 million 	\$1,860 million
Cycle parking	<ul style="list-style-type: none"> Cycle parking at RTN stations and key destinations 		\$34 million
Customer growth initiatives	<ul style="list-style-type: none"> Schemes to improve access to bicycles Promotion, activation and events. Digital experience improvements Marketing Communications 		\$106 million
Total			\$2 billion

Most of the strategic connections in the \$306 million, \$1 billion and \$2 billion programmes connect to existing or committed (RLTP funded) cycle facilities, with only 12%, 10% and 20% of each respective programme (based on investment value) connecting to planned but unfunded (or no) projects and therefore risk being stranded assets if unfunded projects are not delivered in the next ten years. However, these proportions drop significantly to less than 1% across all programmes, when connections that tie into other strategic connections in the programme are removed (assuming these are delivered as part of the investment programme and therefore complete connections are delivered). As discussed earlier in Section 6.1.1, the preferred programme is intended to be flexible, where strategic connections would be reprioritised to ensure assets are not stranded.

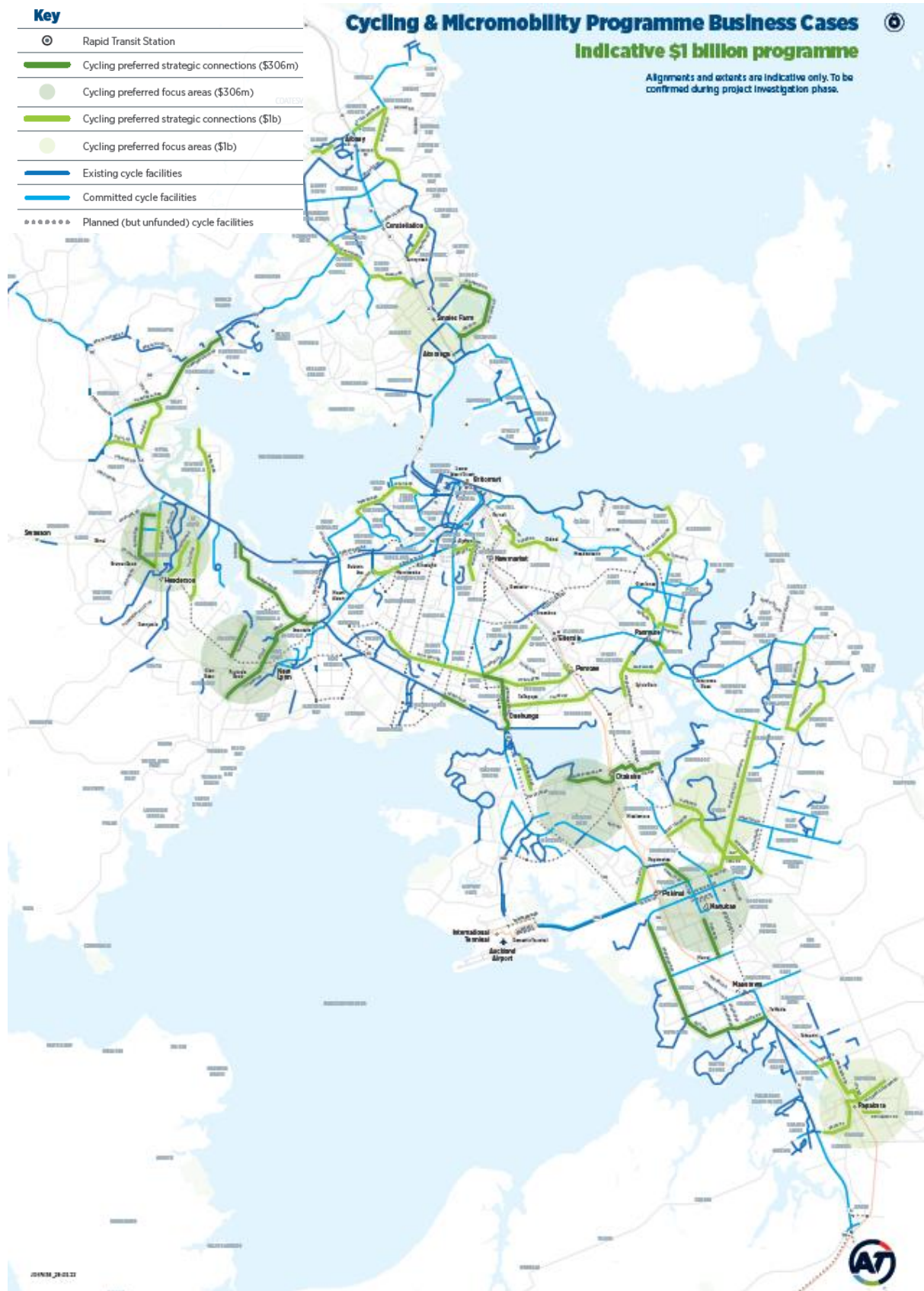


Figure 6-3 Indicative \$1 billion programme

The full prioritised list of projects can be found in Appendix I. Connections will be procured in packages for the investigation, design, and construction phases. Procurement and delivery of these projects are discussed in more detail in Part C.

6.1.1.1 Focus area indicative example

As shown in the tables above, the preferred programme includes added investment in several focus areas. These areas typically require \$20-\$30 million of investment and have multiple key destinations such as schools, RTN stations, metropolitan centres, and regional connections that the cycle and micromobility network needs to serve.

A hypothetical example is shown below, which shows potential interventions to improve cycle connections to key destinations that would be explored through the next stage business case (SSBC). Potential interventions include modal filters, traffic calming, intersection upgrades, and separated cycling facilities. They would be used to create safe LANs adjacent to the strategic connection identified in the area.

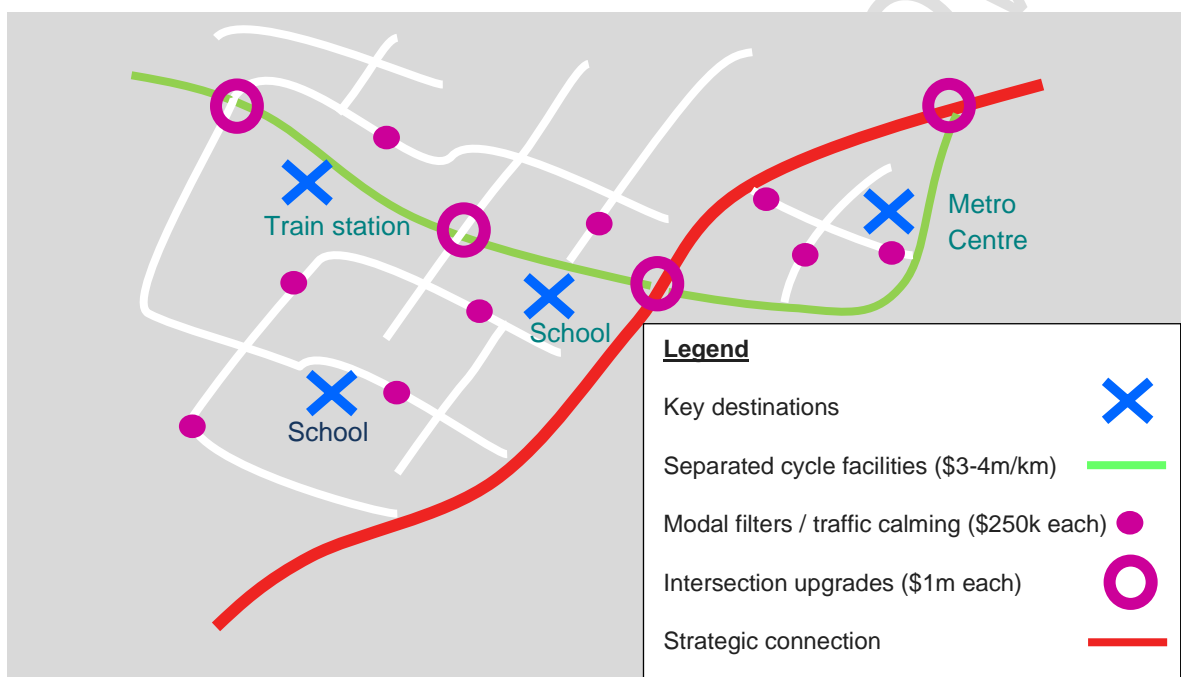


Figure 6-4 Focus area example

6.1.2 Cycle parking and customer growth initiatives

To maximise the benefits of cycle network development, a package of cycle parking and customer growth initiatives is required. These are essential to achieving the objectives of the CAM-PBC.

The package of cycle parking and customer growth initiatives include⁶¹:

- **Cycle parking** to be delivered by AT to support the uptake of cycling. Provide a combination of short-stay parking spaces targeting focal points for community interaction and long-stay parking spaces targeting rapid transit stations (on CAM-PBC strategic connections / focus areas).
- **Customer growth initiatives**, to be delivered by AT and partners:

⁶¹ Not all customer growth initiatives are able to be capitalised. Additional OPEX will be required to enable delivery of all the customer growth initiatives and for their associated ongoing costs.

- **Campaigns and promotional activity** to prime and increase positivity amongst residents in project areas, increase the support for the building of cycling infrastructure, and activate infrastructure on completion.
- **Marketing mode change and safety campaigns** to encourage the uptake of cycling and to increase the frequency and types of journeys taken by bicycle, increase the safety of people riding bicycles, and position active modes so that they are viewed as an equally viable transport choice.
- **Bike Hubs** at key locations across the region to provide a platform for enhanced community participation and collaboration in cycling projects, build community capacity for cycling initiatives, divert bicycles from landfill, carry out basic repairs, and distribute bicycles to local people who cannot afford to purchase bicycles.
- **Events and activations** in partnership with communities to promote safe cycling and activate the cycling network. Includes initiatives such as: Aotearoa Bike Challenge, Community-Led Initiatives, Guided Rides, Community Bike Fund, Gamification, Bike Burbs, Pit Stops.
- **Enhanced digital experience** through development of cycling and micromobility functions of AT Mobile, website and mapping.
- **Customer centred design approach** to understanding and improving customer journeys on the existing network. Includes ongoing issues such as user conflict on shared paths, addressing bicycle thefts, or threatening behaviour towards people on bicycles.
- **Cycle skills training** to teach adults and children how to ride bicycles.
- **E-scooter skills training** to teach basic training for adults to increase the uptake and safe use of the network.
- **School engagement** to promote active modes through AT's school engagement programme, Travelwise. Includes school travel planning, bike trains, ambassador workshops, events and activities.
- **Strategic communications** through the development and implementation of a strategic communications strategy that proactively conveys the vision and sets the scene for how AT will talk about cycling and micromobility.
- **Project communications** including project specific media and stakeholder activation and promotion.

The scope of cycle parking and customer growth initiatives will be specified as part of the next stage business cases. Part C identifies how these will be delivered.

The investment allocation for cycle parking and customer growth initiatives within each of the three funding levels is approximately 7% of the capital investment, which was based off local evidence. However, not all of the required customer growth initiatives can be delivered through capital expenditure (CAPEX) funding. In addition to what is set out in Table 6-4 below, additional OPEX is required to deliver elements of the customer growth initiatives, to help to achieve the CAM-PBC investment objectives. This is further detailed in Part C.

Table 6-4 Indicative CAPEX funding allocation for cycle parking and customer growth initiatives

Initiative	Description	\$306m investment	\$1 billion investment	\$2 billion investment
Cycle parking	At train stations and centres where network development is being implemented. The cycle parking funding within the \$306 million scenario is intended to fund some cycle parking at stations. It is not expected to be enough to meet full demand at stations and key destinations ⁶² .	\$1 million	\$17 million	\$34 million
Customer growth initiatives	To support project and programme level success, such as priming and activation events and initiatives before, during and after the delivery of safe cycle facilities to normalise cycling.	\$20 million	\$53 million	\$106 million
Total		\$21 million	\$70 million	\$140 million

6.1.3 Policy recommendations

Policy changes are not delivered by the CAM-PBC but are recognised as being critical to the success of achieving Vision Zero safety outcomes and Auckland’s cycling and micromobility mode share by distance goals to support a reduction in transport greenhouse gas emissions.

Bold policy changes could contribute to a 1-3% mode share by distance for cycling and micromobility primarily through reducing driving. They can also contribute to safety for people using bicycles and micromobility, health, and environmental and place outcomes.

The policy recommendations that the CAM-PBC has identified as likely to contribute the most to Auckland achieving cycling and micromobility objectives are summarised in Table 6-5 and further details are provided in Appendix H.

Table 6-5 External policy recommendations

Policy change	Potential Impact	Responsible party
Review and amend funding conditions (NLTF) including intervention toolkit for the walking and cycling activity class (streamlined investment pathway)	Delivery – quicker and more efficient delivery. Enable easier co-funding across activity classes and co-delivery opportunities	Waka Kotahi
Support RMA reform and NPS-UD for improved land-use transport integration and intensification	Mode change – making travel by bicycle and micromobility device easier. 1% mode share by distance for cycling estimated for CAM-PBC but varies considerably depending on level of change	AC and Central Government

⁶² Cycle parking is currently delivered by a variety of different teams and programmes within AT, including AT Metro (Public Transport facilities) and the Minor Cycling and Micromobility Programme. The CAM-PBC funding allocation is intended to provide some initial cycle parking to support projects delivered through the CAM-PBC. Other programmes and projects within AT already have a remit to deliver cycle parking across the network more generally. However, there may be some flexibility within the CAM-PBC to allocate more funding to cycle parking in certain locations.

Policy change	Potential Impact	Responsible party
Support cycling initiatives in <u>schools</u> such as: School Travel Plans in all schools, Bikes in Schools (or similar programmes), introduce or increase cycle parking, bike training and education, facilities and treatments outside of the school gate to improve cycle and scooter safety and usage.	Mode change - Strong evidence that cycling behaviour change programmes targeting schools have enduring influence	Ministry of Education, AC
Road rules changes recommended by Cycling Safety Panel (e.g. automatic liability for hitting people on bicycles and allowing people on bicycles contraflow down one-way roads).	Safety and mode share - Strong international evidence that road rules that specifically protect people on bicycles is an integral part of any policy package that seeks to deliver high bicycling mode share while reducing biking related DSIs	Central Government, Waka Kotahi
Investigate changes to <u>vehicle regulations</u> recommended by Cycling Safety Panel	Safety - Strong international evidence that trucks are greatly over-represented in incidents resulting in fatalities of people on bicycles.	Central Government, MoT, Waka Kotahi
Advocate for Waka Kotahi to expand their <u>mass marketing</u> (supporting Road to Zero Programmes) to include targeted safety campaigns for people on bicycles and encourage uptake of cycling and micromobility	Safety	Waka Kotahi
Increase <u>road user charges</u> for general traffic (e.g. congestion charging) and allocate revenue to funding sustainable transport improvements	Funding - Increased funding for cycling and micromobility improvements enabling more infrastructure and customer growth initiatives to be delivered. Mode change - Up to 1% mode share by distance increase for cycling based on international experience	Central Government
Taxation changes to disincentivise driving (e.g. introduce workplace parking levies, remove tax deductions for non-essential business vehicles) and incentivise cycling (e.g. removing fringe benefit tax for the purchase of bicycles)	Mode change – Strong international evidence that disincentives are an important part of intervention packages to achieve behaviour change. Funding – Where implemented overseas, workplace parking levies have generated significant funds that have then been invested in providing more sustainable transport choices.	Central Government, Inland Revenue
Public <u>subsidies</u> for individuals and businesses to purchase bicycles / establish or operate bicycles sharing schemes.	Mode change - Reduces cost of buying a bicycle or micromobility device, enabling more people to afford them. Potential for significant mode change based on international research and improved equity , especially if bicycles are free.	Central Government, AC, AT

AT internal policy recommendations

In addition to these external policy changes, AT will also need to review and refine internal organisational policies, processes and standards to ensure cross-organisational alignment with the CAM-PBC investment objectives (e.g. review policies around car restriction regulations and the design and delivery of Low Traffic Neighbourhoods). Some of this work is already underway, including an AT internal workstream that is proposing minimum standards for separated cycle facilities delivered through the CAM-PBC, which seeks to inform a programme level departure, to enable more road space reallocation to cycle and micromobility facilities.

6.1.3.1 Supporting other policies

There are policy changes currently being investigated as part of other workstreams that will also contribute to CAM-PBC objectives:

- Accessible streets regulatory package, delivered by Waka Kotahi, which has potential to improve safety, mode share and delivery rate for cycling and micromobility.
- Re-shaping streets by MoT, which makes recommendation that if delivered would improve delivery of cycling and micromobility investment.
- AT Parking Strategy refresh, which will improve road space reallocation opportunities.
- AT safe speeds programme, which supports safety objectives.
- Speed limit enforcement being delivered by NZ Police, which supports safety objectives.

In addition to policy changes, other funded AT investment programmes will also contribute to the CAM-PBC objectives, including programmes such as Safety, Network Optimisation and the Regional Public Transport Plan.

6.1.4 Requirements and exclusions

The scope of the preferred option is:





- **Design User:** the design user for CAM-PBC investment are the 'interested but concerned' group. Cycle facilities are optimised for users on standard sized bicycles, generally travelling at low-mid speeds.
In order to drive the greatest mode shift, facilities need to be optimised for those users who would like to cycle but are not confident enough to cycle on road, 'interested but concerned' users. In practice this means continuous protected facilities on higher volume and speed roads including both at mid-block and intersection locations. Given the funding constraints and road space reallocation direction within the CAM-PBC, pinch points and narrower facilities may mean confident users do not always opt to use the facility. Regardless of constraints, larger cycles/devices must still physically fit within facilities, however lower speeds and convenience can be accepted for these users in some locations.
- **Minimum Requirements:** that are expected from the project; these reflect the essential elements that must be successfully delivered.
 - Vision Zero safe protected cycle facilities and LANs
 - Wayfinding
 - Cycle parking and customer growth initiatives – as summarised in Section 6.1.2:
 - Cycle parking at all stations accessible by the connections and LANs delivered above
 - Customer growth initiatives to normalise cycling and improve safety.

- The CAM-PBC has identified connections that can be delivered through road space reallocation. Working within the existing carriageway space, projects are unlikely to fully meet the requirements of the cycling standards set in the AT TDM without departures from these standards. Proposed minimum standards for separated cycle facilities have been developed by AT concurrent to the CAM-PBC and are intended to inform a programme level departure for investment in road space reallocation projects delivered through the CAM-PBC.
- **Desirable Requirements:** to be met; these are the requirements that would add value and bring about additional benefits but are not essential to successful delivery.
 - Pedestrian improvements, such as new or improved safe crossing locations
 - General road user safety improvements, such as lower traffic speeds that improve safety for people in cars as well as people using bicycles
 - Adherence to the AT TDM across all elements, i.e. exceeding the minimum standards agreed for the programme. This includes improvements to the comfort levels of existing users e.g. through upgrading cycleway surface
- **Excluded from scope:**
 - Streetscape improvements – although desirable, they are specifically excluded from this scope. If desirable to include in a cycling and micromobility project, alternative funding sources should be sought.
 - Stormwater upgrades – moving kerbs is a good opportunity to improve stormwater storage, treatment and conveyance; however, the CAM-PBC focussed on road space reallocation and the expectation is that in these circumstances, stormwater infrastructure will not be improved unless it poses a substantial safety issue (such as catch pit grates that need to be made cycle friendly) or is funded external to the CAM-PBC.
 - Bus stop shelter upgrades - although desirable, they are specifically excluded from this scope. If desirable to include in a cycling and micromobility project, alternative funding sources should be sought.
 - CCTV at cycle parking locations - it is expected that stations already have sufficient CCTV coverage.
 - Street lighting upgrades - generally excluded from scope. Localised lighting upgrades will be considered where the cycleway crosses a collector road or above, to improve safety. If new pedestrian/cycle crossings are added, additional lighting may be required.
 - Utility upgrades - Full road lighting and utility upgrades are excluded from scope as road space reallocation is not expected to affect utilities. If the service cover is within the cycle facility, these will need approved coatings to be safe from slips.
 - Traffic signal upgrades - will not be delivered unless required to support CAM-PBC outcomes.

7 Preferred Programme – Assessment

7.1 Outcomes

Currently there is \$306 million allocated to the CAM-PBC programme over the next 10 years, but at least \$2 billion of investment is needed in the CAM-PBC to set Auckland on the trajectory to meet its 2030 emissions reduction goals. At least \$5 billion is needed to complete the full 1,015km of the Cycle and Micromobility Strategic Network in Future Connect, however this could be delivered over a longer time. The \$2 billion scale of investment over 10 years is comparable to other large-scale roading projects, but returns better value for money and better health, emissions, and social outcomes.

	Better value for money than other roading projects <ul style="list-style-type: none">• The first \$1 billion of investment in the CAM PBC has a BCR of 2-3, this is two to three times the return on investment for similar cost roading projects e.g. Waikato Expressway BCR of 1.4 for \$2 billion+, Waterview BCR of 1.1 for \$2 billion+ investment
	Enables emission reduction goals to be met <ul style="list-style-type: none">• At least \$2 billion is needed to enable Auckland to reach 7% mode share by distance for cycling to meet emission reduction goals by 2030. Bold policy change would also be needed such as congestion charging, parking removal, increased parking charges, land use changes, etc
	Provides substantial health benefits <ul style="list-style-type: none">• Increases daily bike trips by five times for first \$1 billion invested, providing substantial health benefits
	Increases social connections <ul style="list-style-type: none">• The first \$1 billion investment would increase the proportion of the Auckland population that can access major employment zones within 15 minutes by safe cycling from 24% to 40%. People who commute by bike in Auckland report improvements in social connection compared to commuting by car.

The preferred option was assessed against the reference cases, described in Section 5.2.1.

7.1.1 Investment objectives

The achievement against investment objectives of various funding levels of the CAM-PBC is summarised in Table 7-1.

These funding scenarios show the first 10 years of investment in delivering a network of cycle connections in Auckland. The CAM-PBC provides a pathway to delivering the full Cycle and Micromobility Strategic Network in Future Connect of at least \$5 billion, however the completion of this would be beyond the 10-year period. As shown in Table 7-1,

- Safety – The CAM-PBC will support the Safety PBC objective of a 40% reduction of active mode DSI's through provision of Vision Zero safe cycling infrastructure; however, attributing DSI reduction to the CAM-PBC at a PBC level is not practical – therefore measurement will take place at activity class level only.

- Mode share – the 1.9% mode share by distance is the minimum the CAM-PBC needs to contribute to the 7% Auckland mode share by distance goal for cycling and micromobility to meet the aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, with the remaining 5% being delivered by existing mode share, other cycling projects (e.g. Connected Communities) and policy changes. As shown in Table 7-1, \$1 billion investment in the CAM-PBC is needed to reach this objective.
- Social opportunities – is measured by the population within 15 minutes travel of employment zones with greater than 1000 jobs travelling at 15km/hr via safe cycling infrastructure. The 40% objective has been set to align with the mode share objective. As shown in Table 7-1, a \$1 billion investment in the CAM-PBC is needed to achieve this objective.
- Delivery rate – increasing the delivery rate of safe cycle facilities by 15km per year to a total of 31km per year is the minimum the CAM-PBC needs to deliver to achieve investment objectives 3 and 4. As shown in Table 7-1, a \$1 billion investment in the CAM-PBC is needed to achieve this, which is currently estimated to be the maximum investment scenario achievable within current AT procurement, delivery mechanisms, and contractor supply.

Table 7-1 Assessment against investment objectives

Investment objectives	Do minimum	\$306 million	\$1 billion	\$2 billion
IO 1: Contribute to reduction of deaths and serious injuries involving people using bikes and micromobility by 40% by 2031 (30%)	-	All investment amounts contribute to personal safety through provision of Vision Zero safe infrastructure (i.e., personal risk is expected to improve); however, the significant increase in the number of people using bikes and micromobility devices is expected to contribute to a higher collective risk. This is likely to result in very little change in the number of DSIs. Measurement will take place at activity business case level (i.e. SSBC level) as more detailed assessment based on specific infrastructure provided will be needed to more accurately forecast changes to DSIs.		
IO 2: Increase cycling and micromobility mode share by distance from 0.4% to 1.9%, contributing to the regional mode share aspiration of 7% ⁶³ by 2030 (30%)	1.0% ⁶⁴	1.3% (1.7% including other unfunded projects such as A2B and parts of Connected Communities)	1.9% (2.6% including other unfunded projects)	2.2% (2.9% including other unfunded projects) (~6% with 3% from policy ⁶⁵)
IO 3: Increase the proportion of the population that can access key social opportunities within 15 minutes by safe cycling or micromobility to 40% by 2031 (30%)	24% of Auckland population ⁶⁶	34% of population (i.e. 10% more of Auckland's population)	40% of population (i.e. 16% more of Auckland's population)	50% of population ~60% of population with other unfunded projects (i.e. 26% more of Auckland's population)
IO 4: Increase the rate of delivery of safe cycling facilities on the Cycle and Micromobility Strategic Network by 15km per year by 2031 (10%) ⁶⁷	16-17km per year ⁶⁸	21km per year (includes Do minimum)	31km per year (includes Do minimum) 2 times the existing rate	42km per year (includes Do minimum) 2-3 times the existing rate

The mode share by distance presented in Table 7-1 for the \$2 billion investment is conservative because it has been interpolated between modelling results for a \$1 billion option and a \$5 billion option. There is likely to be few diminishing returns between the first and second billion dollars spent

⁶³ Netherlands has 8% mode share by distance, so 7% is a significant change for Auckland

⁶⁴ 0.4% existing with 0.6% from RLTP excluding CAM-PBC

⁶⁵ 3% change will require bold policy changes (e.g. road user charges, land use, and parking changes).

⁶⁶ 12% for existing and 24% including RLTP

⁶⁷ The kilometres calculated for each investment level does not include the kilometres delivered by the focus area investment.

⁶⁸ Average per year based on the projects and programmes in the RLTP, which will deliver approximately 160km over the next 10 years (excluding CAM-PBC). This figure includes cycle facilities delivered by Waka Kotahi and Auckland Council.

because of similarity of projects in terms of demands generated and construction complexity for the first \$2 billion compared with increasing complexity after \$2 billion investment. Therefore, the \$2 billion option is likely to result in a higher mode share by distance than presented.

Table 7-2 shows the CAM-PBC mode share by distance and by trips. The 2017 PBC presented mode share by trips, but mode share by distance is used in the investment objectives to align with mode share reporting for Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan. Table 7-2 below demonstrates that mode share by distance is less than mode share by trips because cycling trips tend to be shorter distance than car and public transport trips.

Table 7-2 Assessment against mode share and trips

Mode share type	Existing	\$306 million investment + funded RLTP	\$1 billion investment + funded RLTP + unfunded projects ⁶⁹	\$2 billion investment + funded RLTP + unfunded projects
Mode share by distance	0.4%	1.3%	2.6%	2.9%
Mode share by trips	0.5%	1.8%	3.9%	4.4%
Daily cycle trips	24,000	125,000	260,000	300,000

7.1.2 Value for money



Economic analysis using the Waka Kotahi Monetised Benefits and Costs Manual (MBCM) shows the preferred programme provides good value for money with a Low-Medium BCR. As an sensitivity test, both low and high cost ranges as well as the accounting for the impact of local area networks have been analysed.

Table 7-3 Value for money

	Relative to what Do Min?	Low-range BCR (high cost, excludes LAN benefits)	Mid-range BCR (high cost, allowing for LAN benefits)	Mid-range BCR (lower cost, excludes LAN benefits)	High-range BCR (lower cost, allowing for LAN benefits)
RLTP + \$306 million	RLTP	2.17	2.62	2.87	3.72
RLTP + Planned ⁷⁰ + \$1 billion	RLTP + Planned	2.00	2.22	2.83	3.40
CAM Strategic Network (\$5+ billion) ⁷¹	RLTP + Planned	1.21			

The BCR for the CAM-PBC is approximately twice as high as similar scale motorway projects, providing better value for money⁷². The BCR remains at approximately 2-3 for the first \$2 billion spent,

⁶⁹ Unfunded projects (such as A2B and CC2M) contribute significantly to the mode share as shown by the difference between the \$306 million scenario which excludes these projects and the \$1 billion scenario that includes them.

⁷⁰ RLTP refers to those projects committed for implementation in the existing RLTP. Planned refers to other projects delivering cycling and micromobility infrastructure than are planned but do not currently have funding for implementation.

⁷¹ The full Cycle and Micromobility Strategic Network in Future Connect was assessed to determine scale of diminishing returns. The Strategic Network will be tested and refined by subsequent next stage business cases (ie SSBCs)

⁷² For example, Waterview Connection and Waikato Expressway both have reported BCRs of 1.0-1.5, which is half the BCR for the CAM-PBC for the same cost. A BCR of 2-3 is comparable to cycling network investments in other urban centres in NZ.

meaning investment can be scaled up as new funding becomes available with only small diminishing returns.

There are small diminishing returns up to approximately \$2 billion because the strategic connections up to \$2 billion have a similar mix of complexity (road space reallocation) and demands meaning value for money will likely be similar across the first \$2 billion. However, beyond \$2 billion, there may be steeper diminishing returns as the connection complexity increases and the value for money decreases to a BCR of 1.2

The MCBM value for CO₂ emissions per tonne are low by international standards. An increase in the value of CO₂ emissions will increase the BCR.

The full economic assessment can be found in Appendix M.

7.1.3 Emissions reduction



Analysis shows the \$2 billion programme has potential to contribute over 30,000 tonnes reduction of CO₂ equivalent (CO₂e) greenhouse gas (GHG) emissions. This represents approximately 0.7% of Auckland's annual road transport emissions⁷³. Generally, around 30% of new cycle trips predicted were estimated to replace a car trip.

Table 7-4 Reduction of CO₂ equivalent GHG (tonnes)

	Reduction of CO ₂ e (tonnes) 2028	Reduction of CO ₂ e (tonnes) 2038
RLTP (Reference Case 1)	n/a – the below are measured relative to this scenario	
RLTP + \$306m	3,200	3,000
RLTP + Planned ⁷⁴ + \$306m	13,000	12,000
RLTP + Planned + \$600m	18,000	16,000
RLTP + Planned + \$1,000m	22,000	20,000
RLTP + Planned + \$2,000m	~30,000	~30,000
CAM Strategic Network in Future Connect (\$5+ billion)	44,000	41,000

7.1.4 Equity

The preferred programme delivers cycling improvements that consider social and transport equity, with a significant proportion of the cycling improvements being delivered in lower socioeconomic communities with typically less transport choices. There appears to be latent demand for cycling in these communities. For example, in 2021 those identified as 'considerers' (people who do not currently ride bicycles, but who would consider it given the right circumstances) were statistically more likely to live in south Auckland⁷⁵, which is the area of Auckland experiencing some of the poorest social and transport equity.

The lack of success in past cycling projects in socially deprived areas can be explained by some of the additional barriers facing these communities. As an example, the Māngere East and Manukau Cycling SSBC community stakeholders identified additional barriers to cycling, including lower bicycle ownership rates, the cost of bicycle ownership, the practicalities of large families travelling by bicycle and storing bicycles, bicycle theft and societal norms.

To date, the Māngere East and Manukau Cycling SSBC projects have received strong support for improving cycling from their Community Partner Working Group, Mana Whenua and the Local Boards. Furthermore, there are at least four different local not-for-profit organisations providing

⁷³ Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan states "In 2016, Auckland's gross GHG emissions were 11.3 million tonnes of carbon dioxide equivalent (MtCO₂e)" with 44% from transport, and 86% of transport emissions being road based.

⁷⁴ Planned (but unfunded) investment in cycleways outside of the CAM-PBC (e.g. Airport to Botany and Connected Communities) contributes a high emission reduction because of the large investment in strategic cycle routes

⁷⁵ Source: TRA for Auckland Transport. June 2021. *Measuring and growing active modes of transport in Auckland*

bicycles to communities in south Auckland and running guided rides, including Time to Thrive (Māngere), the Ōtara Bike Burb, the Manukau Bike Burb and S Double S (Manukau).

Several components of the preferred programme as well as external changes are expected to improve success in areas of higher social deprivation by addressing the additional barriers these communities face and responding to lessons learnt from past projects. Examples are:

- The preferred programme includes:
 - Customer growth initiatives to improve bicycles access and ownership, safe cycling skills and culture change, such as creating and supporting community bike hubs. The Otara bike hub is showing success in changing cycling culture and supporting the community to use bicycles. A successful e-bike training trial was also undertaken in Māngere East in 2021.
 - More active engagement and participation of the community such as activation events as part of the customer growth initiatives to improve community buy-in to projects.
 - Secure cycle parking is included in the preferred programme, as it is a recognised barrier to cycle uptake.
 - Prioritisation of the network considers 'connectivity' of the network, ensuring that new infrastructure can build off existing infrastructure forming a connected network.
 - Policy recommendations (not delivered by the CAM-PBC) to advocate for reducing the cost of bicycle ownership and improve national and regional marketing of cycling and micromobility to help change societal norms.
- AT has changed the way it engages, with more community engagement at earlier stages of design and more collaborative design. The Māngere East and Manukau Cycling SSBCs have actively engaged with the community at early stages of the business case process. Other cycling projects like Connected Communities are undertaking collaborative design with the community.
- External changes like the increasing availability of cargo bikes and e-bikes (both private and shared) will make travelling by bicycle easier for families but still pose a cost barrier.

Over the next decade, AT will be delivering cycle facilities in a broad range of suburbs across the Auckland region, enabling more comparisons between cycle trips/growth and different interventions delivered to understand regional and local issues and opportunities. As detailed in Part C, feedback will be sought to understand perception of the project and the reasons for its success or underperformance. This information would help to establish the reason for success or underperformance in an area, such that underperformance can be rectified, opportunities can be maximised, or the programme adapted.

7.2 Implementability

7.2.1 Investigation and design phase

Implementability has been considered by prioritising connections that can be delivered through road space reallocation and SSBC lites. This aims to speed up implementation of business cases, design, and consultation. Furthermore, a Framework document has been produced (Appendix K) that guides SSBCs and SSBC Lites that sit below this CAM-PBC to ensure they can be undertaken as quickly as possible.

The main risks to implementability are:

- **More substantial design** identified at SSBC level than assumed at PBC level, such as kerb moving, or streetscape improvements (e.g. through consultation feedback or more detailed data). This could stall implementation of the projects as substantial road space changes, such as streetscape and stormwater upgrades are not anticipated in the funding allocated for each SSBC and SSBC lite. This will be mitigated through active governance and management, which will deprioritise connections where implementation costs escalate and reprioritise the next connections on the priority list, contained in Appendix I.
- **Community push back** on parking removal or other aspects of the design, which could delay implementation and increase implementation costs with redesign or more substantial consultation required.

7.2.2 Construction phase

The CAM-PBC preferred option has been selected with constructability considered. Connections that can be delivered with road space reallocation are prioritised over those that need kerb moving. Therefore, constructability of the preferred option is considered to have lower complexity than business as usual cycling delivery.

By prioritising road space reallocation opportunities, a smaller workforce will be required (i.e. projects can be delivered more simply).

A full risk register is in Appendix N and risk apportioning is discussed in Part C.

7.3 Operability

Customer growth initiatives (i.e. travel behaviour change) is the most significant aspect of operation for the CAM-PBC to address. There are other operational aspects to consider but they are minimal and can be undertaken as part of existing operations. An example of other operational considerations is monitoring of CCTV at station cycle parking. This is anticipated to be included in existing CCTV monitoring and not expected to substantial increase existing workloads.

7.3.1 Travel Behaviour Change

To maximise the benefits of cycle network development, funding for customer growth initiatives to address travel behaviour change has been allocated as part of the cycle parking and customer growth initiative's component of the preferred programme. Customer growth initiatives that support travel behaviour change are a fundamental part of getting more people on bikes and micromobility.

7.4 Asset management

New cycling infrastructure (e.g. protected cycle lanes) will require maintenance including:

- Sweeping of cycle facilities
- Maintenance of separators, cycle racks etc.

The proposed pseudo-permanent delivery method includes an expectation to upgrade elements of the cycleway as part of periodic maintenance e.g. improving cycleway surface. This may increase maintenance costs but is anticipated to be able to be undertaken within existing maintenance budgets.

7.5 Statutory requirements

Road space reallocation rather than working outside kerbs on roadway is the preferred way forward and connections have been identified that can achieve road space reallocation. This minimises the statutory requirements such as designation, consents, and land acquisition that will be needed. Statutory requirements will be investigated by the SSBCs and SSBC lites that sit below the CAM-PBC.

7.6 Property impacts

Road space reallocation rather than working outside roadway designation is the preferred way forward and connection have been identified that can achieve road space reallocation. This minimises property impacts. Property impacts will be investigated by the SSBCs and SSBC lites that sit below the CAM-PBC.

7.7 Wider project impacts

Business impacts and wider economic impacts have not been assessed, but recent experience of the use of e-bikes for delivery / freight journeys in the central city shows deliveries by e-bike can be undertaken quicker than vehicular freight journeys in congested areas with good cycling infrastructure. International and local case studies also show cycling infrastructure can increase retail spending.

There are likely to be wider impacts to other modes of transport through the delivery of cycle facilities on or adjacent to the road corridor. Next stage business cases will need to quantify this in more detail.

7.8 Environmental impact

Generally increasing people using bicycles and micromobility is expected to positively affect environmental outcomes by reducing emissions and other harmful impacts of single occupancy vehicle use (e.g. noise and severance).

Environmental impacts have been considered in the MCA and is one reason for the preferred option pursuing connections that can be implemented with road space reallocation. Road space reallocation rather than moving kerbs, means impermeable surfacing will not increase and trees are less likely to be affected – thereby minimising environmental impacts.

Environmental impacts will be investigated further by the SSBCs and SSBC lites that sit below the CAM-PBC.

7.9 Social impact

Increasing the number of people using bicycles and micromobility is expected to have positive social impacts by providing more travel choice and connecting people to social opportunities, such as schools and employment.

The preferred option has been selected in part to maximise positive social outcomes and equity of those outcomes.

7.10 Public Participation

No public consultation was undertaken during this refresh of the Auckland CAM-PBC. However, reference groups were consulted via workshops throughout the CAM-PBC development.

7.11 Urban Design

The preferred option has specifically looked at how cycling and micromobility improvements can support land use planning and growth within Auckland. This is specifically addressed through scoring connections to rapid transit stations and metropolitan centres and satellite towns - recognising the role cycling and micromobility play in enabling growth.

More detailed urban design will be considered at SSBC level.

7.12 Peer Review

An independent peer review of the CAM-PBC will be undertaken. Peer reviews will also be undertaken at activity class business case level.

7.13 Safety Audits

Safety audits will be undertaken at activity class business case level.

7.14 Traffic Modelling

Traffic modelling has been undertaken using the ACM produced by Flow Transportation specialists to determine cycle demands and economic benefits. Modelling of general traffic and other modes e.g. public transport will likely be required at activity business case level where data for the operation of those modes will be assessed. See Appendix M for further details.

7.15 Design standards

The CAM-PBC prioritises road space reallocation opportunities delivered as 'pseudo-permanent' facilities, where the facility is intended as permanent, but it is accepted that further investment may be required in future. For the majority of routes, it will not be possible or affordable to meet full AT TDM standards within existing kerb to kerb space, departures from standards will be required. Proposed minimum standards for separated cycle facilities have been developed by AT alongside the CAM-PBC and will inform a programme level departure to support faster, lower cost delivery for investment in road space reallocation projects delivered through the CAM-PBC. The key recommendations are summarised below.

These minimum standards are not proposed to apply to new roads or major projects where kerb realignment is necessary.

- The programme wide departure will cover:
- Cycle facility and separator width
- Separator material
- Cycle facility surface
- Safety treatments on side roads
- Lighting
- Use of shared paths at intersections where necessary. NB this is not recommended for a programme-wide departure but can be considered on a case-by-case basis. In the first instance, road space reallocation from general traffic should be considered.

PART C – Delivering and Monitoring the Programme

Part C presents the delivery and management of the preferred programme. The CAM-PBC seeks endorsement of the business case as an investment strategy and recommended programme that targets achieving the greatest uplift in mode share through accelerated delivery of cycling and micromobility infrastructure and customer growth initiatives.

Achieving the aspiration of a 7% cycling mode share by distance by 2030 will require:

- An increase in capital funding from \$306 million in the 2021-2031 Regional Land Transport Plan (RLTP) to \$2 billion for strategic cycling connections, focus areas, cycle parking, and customer growth initiatives;
- Implementation of the current cycling and multi-modal projects of the RLTP;
- Currently unfunded projects such as Connected Communities and A2B have their strategic cycling connections prioritised for investment in this decade;
- A significant portion of the of the CAM-PBC policy recommendations are explored and implemented by AT, its partners and other parties; and
- Additional OPEX included in the next Long-Term Plan to enable delivery of the full suite of recommended customer growth initiatives⁷⁶.

Noting that:

- The \$306 million identified in the 2021-2031 RLTP for the On-going Cycling Programme is insufficient to meet the aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, as is any substantially larger investment programme that focuses solely on the delivery of physical infrastructure.
- While \$2 billion in capital funding is estimated to be needed to meet the mode share by distance aspiration, delivering \$1 billion of cycling infrastructure over the next 10 years is considered feasible, over and above other RLTP investment, subject to funding availability, sufficient internal resourcing, and overall industry capacity.

Part C presents the \$306 million RLTP-committed funding allocation and a \$1 billion funding scenario across 10 years, recognising that alternative funding sources will be required for the \$1 billion scenario. Part C is split into three parts:

- Financial case – funding required and allocation of that funding across 10-years
- Commercial case – how the programme would be procured
- Management case – how AT would manage the programme including risks

AT are already responding to lessons learnt to improve delivery of cycling and micromobility, and the preferred programme builds on this to further speed up delivery.

The Financial Case shows significant additional funding is required to deliver the preferred programme despite measures being taken by AT to reduce the cost of delivery (e.g. through more road space reallocation). This is because there is inadequate funding in the existing RLTP or even the

⁷⁶ Some customer growth initiatives that are project specific can be undertaken as CAPEX, but some programme level customer growth initiatives are OPEX.

National Land Transport Fund (NLTF) for the quantity of projects needing funding from the walking and cycling activity class, and because substantial investment is needed to meet aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan.

Over half of the preferred programme will need new funding, which could include increasing funding within the walking and cycling activity class, revenue from road user charges e.g. congestion charging, new taxation such as targeted rates, or new Crown funding for emissions reduction.

Additional funding for operations (i.e. OPEX) is also required to deliver the full suite of recommended customer growth initiatives, but also additional Full-Time Equivalents (FTE) to deliver the end-to-end cycling programme (including project management delivery, design review and marketing, communications and consultation support).

The Commercial case presents how procurement will change to speed up delivery. This is achieved by the preferred programme with more road space reallocation projects, SSBC lites for connections less than \$15 million, bundling investigation and design phases, and bundling up connections.

Changes outside the CAM-PBC could also improve delivery such as a streamlined investment pathway for cycling to reduce the need for business cases, which Waka Kotahi is currently investigating.

The Management case presents how projects will be managed to speed up delivery and mitigate risks. Some improvements are already being implemented by AT including the rollout of the AT TDM, dedicated support of cycling design specialists and the establishment of the Design Review Panel to review designs and approve departures from standards in a transparent and efficient way. Further management improvements proposed within the CAM-PBC include a programme level departure on design standards to ensure cycling facilities can achieve objectives cost efficiently and reduce the need for SSBCs to each seek departures.

Key risks the preferred programme will need to manage and mitigate are:

- Public resistance e.g. of removal of parking and modal filters. The preferred programme includes customer growth initiatives like activation events and AT is currently developing a strategic communications plan to aid getting public buy-in. AT is also making changes to its Parking Strategy to simplify the removal of parking on its Strategic Transport networks – including the Strategic Cycling Network.
- Industry capacity to deliver preferred programme. Procurement will be tested with the industry to determine supplier capacity and procurement. The industry has been very receptive to bundling of connections (e.g. Connected Communities), but this approach will be tested further with the market.
- Funding risk with the significant shortfall in funding, not just for the CAM-PBC but also for other projects delivering cycling and micromobility infrastructure (e.g. A2B and Connected Communities). Policy changes to increase alternative funding sources are essential and the preferred programme has been developed so that it can quickly respond to changes in funding.

8 Financial Case

8.1 Financial summary

To make rapid progress towards investment objectives, the CAM-PBC recommends a \$2 billion investment⁷⁷, of which \$1 billion is considered deliverable over 10 years. While a \$1 billion programme exceeds available RLTP and NLTF funding, the CAM-PBC nevertheless seeks endorsement of this programme at this scale to ensure there is an agreed pipeline of projects if additional funding becomes available, for example from third parties, and to provide a basis for future bids to the NLTF.

Programme, rather than project, level endorsement and funding are essential to enable the CAM-PBC to quickly reprioritise investigation, design, and construction of connections should investigation and design identify delivery challenges that would substantially affect costs or delivery timeframes. This programme level funding would not be required for the full programme but as a minimum would be required for bundles of connections and delivery stages (i.e. bundles of projects and bundled investigation and detailed design phases) to enable reprioritisation to occur within the bundles.

The CAM-PBC also recommends:

- Cycling components of other projects in Auckland are funded for implementation within the 10-year period (2021-2031), including A2B, 20Connect, and Connected Communities
- Funding from alternative funding sources, such as targeted rates and congestion charging revenue be pursued and allocated towards the CAM-PBC to support achievement of Auckland emission reduction goals by 2030.

Currently there is \$306 million allocated to the CAM-PBC through the RLTP for the 2021-2031 period, but at least \$2 billion is required for the CAM-PBC to meet investment objectives especially mode share⁷⁸. This presents a funding shortfall of \$1.7 billion for the CAM-PBC. This funding shortfall will need to be met by either an increase in funding through future RLTPs and NLTFs, or new funding sources such as targeted rates, congestion charging revenue, and funding for emissions reductions. Furthermore, there is over \$20 billion required for other projects delivering cycling and micromobility improvements to meet the aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, which are currently unfunded in the RLTP.

Policy changes, such as congestion charging and parking changes, are also required to meet the region-wide mode shift aspiration of 7% mode share by distance for cycling and micromobility. Funding of these policy recommendations are not discussed in this financial case section as they are not funded as part of the CAM-PBC. Figure 8-1 shows there is over \$21 billion funding shortfall required to achieve cycling and micromobility mode share by distance of 7% for Auckland by 2030. However, \$15 million of this is for the City Centre to Māngere (CC2M) project (i.e., most of the shortfall is for multi-modal projects where cycling improvements cannot be delivered independent of the public transport upgrade. In some cases, these projects can deliver a component of cycling separate to other elements (e.g., CC2M includes \$26 million to deliver cycling on the surrounding network, which can be delivered before the light rail component).

⁷⁷ Endorsement of the \$2 billion of investment with allowance for reprioritisation is needed to meet the cycle mode share by distance aspiration, even if only \$1 billion is able to be delivered within current settings.

⁷⁸ \$5+ billion is needed to complete the full Cycle & Micromobility Strategic Network in Future Connect but this could be completed beyond 10-years.

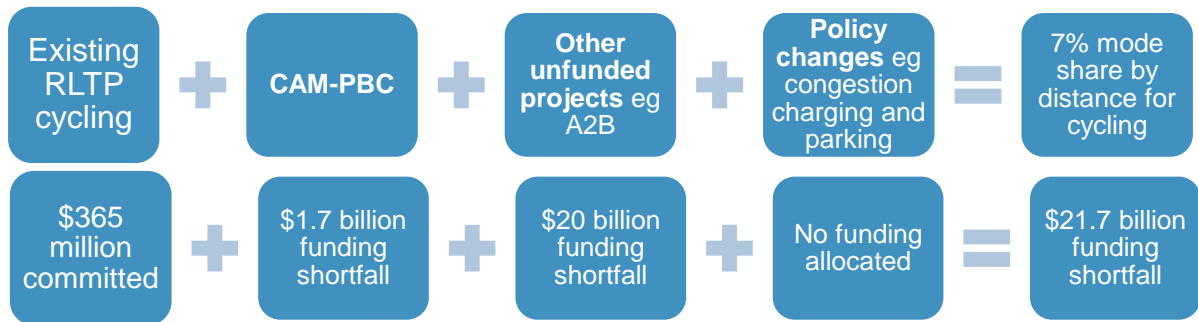


Figure 8-1 Funding required to meet 7% mode share by distance

This Financial Case section of the CAM-PBC presents:

- **Existing funding** allocated for the CAM-PBC (i.e. funding for the On-going cycling Programme within the RLTP).
- **Funding required** for the CAM-PBC investment and project cashflow, as well as funding required for other unfunded projects and programmes delivering cycling and micromobility improvements to meet the aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan.
- **Funding shortfall** for the CAM-PBC and other projects delivering cycling.
- **Maintenance and operational costs (OPEX).**
- **Comparison against previous cost estimates.**

8.2 Project Cost and Cashflow

8.2.1 Existing funding

The RLTP for the 2021-2031 period identifies funding allocated within the region for the next 10 years. The \$306 million that is allocated to delivering AT's **On-Going Cycling Programme** will be used solely for the CAM-PBC.

The cashflow over the next ten years as specified by the RLTP related to the Auckland Cycling Network is shown in Table 8-1.

Table 8-1 On-going cycling programme CAPEX summary (units: \$ million)

Project Name	Category	Funding source	Duration	21/22	22/23	23/24	24/25	25/26	26/27	27/28 – 30/31	10-year total
Ongoing Cycling Programme	1&3*	Local Share and NLTF RFT	2021/2022-2030/31	4.2	6.1	7.5	31.0	31.0	31.0	195.2	306.0

*1-Committed and Essential; 2-Prioritised; 3-Requires changes to current funding settings.

Table 8-2 On-going cycling programme Projects with Committed NLTF funding (units: \$)

Activity	Phase	2021-31 Total Cost	2021-31 NLTF Share	
Connected Communities - Cycling	Ongoing Cycling Programme - Central Isthmus & Sandringham	Detailed Business Case	\$697,587	\$355,769
	Ongoing Cycling Programme - City Centre & Fringe	Detailed Business Case	\$355,276	\$181,191
Ongoing Cycling Programme – Henderson	Detailed Business Case	\$169,120	\$86,251	
Ongoing Cycling Programme - Māngere East	SSBC	\$1,221,023	\$622,722	
Ongoing Cycling Programme – Manukau	SSBC	\$1,636,180	\$834,452	
Total		\$4,079,186	\$2,080,385	

8.2.2 Capital expenditure (CAPEX)

This section presents four CAPEX breakdown tables:

- Existing \$306 million RLTP breakdown by projects – to demonstrate the limitations this funding profile places on delivery of the CAM-PBC projects (Table 8-3),
- \$1 billion CAPEX breakdown by projects – to demonstrate a desirable project staging across the 10-years should additional funding become available (either from the NLTF or other funding sources), noting that additional investment beyond \$1 billion could be staged in a similar way (Table 8-4)
- A summary of the \$306 million CAPEX breakdown showing the desired NLTF allocation, administrative costs, and escalation impacts (Table 8-6)
- A summary of the \$1 billion CAPEX breakdown showing the desired NLTF allocation, administrative costs, and escalation impacts (Table 8-5).

Over the 10-year period (2021-2031) the CAM-PBC requires \$2 billion of funding to enable mode share aspirations of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan emission reduction to be met, expenditure for a \$2 billion scenario would be scaled up in a similar way to the \$1 billion scenario. The \$2 billion scenario is not likely to be deliverable within 10 years given current market constraints.

Existing \$306 million CAPEX Profile

As shown in Table 8-3 the profile of the \$306 million On-going Cycling Programme in the RLTP has most of the funding allocated in the second half of the decade. This reflects wider RLTP programme constraints, but restricts the CAM programme in the following ways:

- Generally, limits the first three years to investigation and design, with limited budget for customer growth initiatives (e.g. activation events⁷⁹), cycle parking and construction.
- The existing focus area projects started under the 2017 PBC (Henderson, Māngere East and Manukau) require all funding for the first five or so years, making it difficult to start the investigation of other projects until years five onwards.
- Larger annual funding (e.g. \$31 million) available in the second half of the decade will be difficult for AT to spend or gain Waka Kotahi co-funding because the associated new business cases will not be complete as there is no budget in earlier years for this investigation and design.
- Minimal cycle parking and customer growth initiatives can be undertaken at the same time as network development in the first 5 years, meaning the benefits will be reduced⁸⁰.
- The ability to bundle projects ready for the market is restricted, meaning benefits of procuring bundles of projects cannot be realised.
- There is a funding shortfall in years 3-5 with the existing expenditure profiles for Henderson, Māngere East, and Manukau – meaning these will not be able to be delivered to programme.

Table 8-3 AT CAPEX breakdown by project for \$306 million allocated RLTP funding

RLTP year		21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	Total
Project	Phase											
Henderson	INV	0.63										0.63
	DES	0.5	3.5	0.6								4.6

⁷⁹ Customer growth initiatives that are project specific (such as activation events for a connection) are able to be included in CAPEX but there are some that are not directly linked to connections, so are included in OPEX (see section 8.2.3)

⁸⁰ Cycle parking and customer growth initiatives will be implemented as part of the connection projects. However, delivery of these elements will be undertaken by separate teams within AT as discussed in the Management Case.

	CON			5.6	9	4.5						19.1
Māngere East	INV	1.4	0.7									2.1
	DES	0.2	0.6	1.7								2.45
	CON				13.2	13.5	3.8	3.8	5.0	5.0	3.5	47.75
Manukau	INV	1.4	0.7									2.1
	DES	0.15	0.58	1.8								2.53
	CON				13.2	13.45	3.8	3.8	5	5	3.5	47.75
Ōtāhuhu	INV						0.2					0.2
	DES						2	2				4
	CON								4.5	5.2		9.7
Manurewa	INV						0.3					0.3
	DES						1	6				7
	CON							8.2	8.2			16.4
Hobsonville	INV						0.2					0.2
	DES						0.6	4				4.6
	CON								11.2			11.2
New Lynn - regional connection	INV						0.6					0.6
	DES						1	3	4.1			8.1
	CON								6	7	7	20
New Lynn - other connections	INV						0.75					0.75
	DES								1.9	3		4.9
	CON									8	8	16
Avondale	INV						1					1
	DES								6.3			6.3
	CON									8.2	8.2	16.4
Takapuna	INV								0.4			0.4
	DES									3.2		3.2
	CON										12.27	12.27
Onehunga	INV								0.2			0.2
	DES									3.4		3.4
	CON										8.3	8.3
Cycle Parking								0.19	0.2	0.4	0.2	0.99
Customer growth		0.49	0.1				3.35	4	4	4.06	4	20
Total												
On-going Cycling Programme (\$M)		4.2	6.1	7.5	31.0	31.0	31.0	48.8	48.8	48.8	48.8	306.0
Funding Shortfall		1.7	1.6	3.9	6.1	2.1	-12.9	-16.0	7.1	2.0	4.4	0.0

Bringing forward some of the funding allocated in the second half of the decade will be essential to ensure there is an adequate pipeline of projects ready for construction and to ensure customer growth initiatives and cycle parking can be implemented effectively to support network development.

CAPEX Profile for \$1 billion

Additional funding obtained beyond the \$306 million, could be allocated in various ways depending on timing and source of the funding. Table 8-4 presents the \$1 billion investment level with new projects fast tracked and existing projects (Henderson, Māngere East and Manukau) remaining with current

CAPEX profiles, recognising that they have interdependences with other works (e.g. Kāinga Ora developments).

Allocation of funding beyond \$1 billion could be allocated in a similar way to the \$1 billion scenario (i.e. it would involve scaling up the delivery). However, it is likely to also require a change in OPEX, as AT would likely require additional staff to deliver the \$2 billion investment level. As shown in Table 8-4, projects that sit under the CAM-PBC are split into:

- Road space reallocation bundles. These are bundles of connections, with the SSBC lite investigation and design phases combined for procurement efficiency as discussed further in the Commercial Case Section; and
- Complex connections. These are connections or areas that require full SSBCs because of the level of risk/complexity and/or cost (i.e. connections that require kerb moving or more complex network assessment).

Figure 6-3 shows the indicative \$1 billion programme, including all the strategic connections that would be delivered as either road space reallocation bundles or more complex connections. The connections are evenly split between the two types.

The prioritisation list supplied in Appendix I gives an indication of the connections that fall under these two categories but as they are delivered later in the decade they may be reprioritised based on external and internal changes, as described in Section 10.3.

Table 8-4 CAPEX breakdown \$1 billion with fast tracking of new projects (units \$million)

RLTP year		21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	Total
On-going Cycling Programme (\$M)		4.2	6.1	7.5	31.0	31.0	31.0	48.8	48.8	48.8	48.8	306.0
Project	Phase											
Henderson	INV	0.6										0.6
	DES	0.5	3.5	0.6								4.6
	CON			5.6	9.0	4.5						19.1
Māngere East	INV	1.4	0.7									2.1
	DES		0.6	1.8								2.4
	CON				13.2	13.5	3.8	3.8	5.0	5.0	3.5	47.8
Manukau	INV	1.4	0.7									2.1
	DES	0.15	0.58	1.8								2.53
	CON				13.2	13.5	3.8	3.8	5.0	5.0	3.5	47.8
Ōtāhuhu	INV		0.1	0.1								0.2
	DES			2.0	2.0							4.0
	CON					9.8						9.8
Manurewa	INV			0.2	0.2							0.4
	DES				1.0	6.0						7.0
	CON					8.2	8.2					16.4
Hobsonville	INV		0.2									0.2
	DES			4.6								4.6
	CON				11.2							11.2
New Lynn - regional connection	INV		0.6									0.6
	DES			1.0	3.0	4.1						8.1
	CON					6.0	7.0	7.0				20.0
New Lynn - other connections	INV		0.8									0.8
	DES			1.9	3.0							4.9
	CON				8.0	8.0						16.0

RLTP year		21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	Total
On-going Cycling Programme (\$M)		4.2	6.1	7.5	31.0	31.0	31.0	48.8	48.8	48.8	48.8	306.0
Avondale	INV		1.0									1.0
	DES			3.2	3.2							6.4
	CON				8.2	8.2						16.4
Takapuna	INV					0.2	0.2					0.4
	DES						1.0	2.2				3.2
	CON								12.3			12.3
Onehunga	INV					0.1	0.1					0.2
	DES						1.0	2.4				3.4
	CON								8.3			8.3
Road space reallocation bundle(s)	INV			0.5	0.5	0.5	0.5	0.5	0.5			3.0
	DES				8.0	8.0	8.0	8.0	8.0	8.0		48.0
	CON						25.0	25.0	25.0	35.0	40.0	150.0
Complex connection(s)	INV				1.0	1.0	1.0	1.0	1.0			5.0
	DES						14.0	14.0	16.0	16.0		60.0
	CON						10.0	30.0	30.0	40.0	40.0	150.0
Cycle Parking (\$M)		0.5	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	16.5
Customer growth initiatives (\$M)		4.4	4.5	4.5	6.3	6.3	6.3	6.3	6.3	4.0	4.0	52.9
Total (\$M)		8.95	14.28	28.8	93.0	99.9	91.9	106	119.4	115	93	770.23
On-going Cycling Programme (\$M)		4.2	6.1	7.5	31.0	31.0	31.0	48.8	48.8	48.8	48.8	306.0
Funding required		4.75	8.18	21.3	62.0	68.9	60.9	57.2	70.6	66.2	44.2	464.23

CAPEX Summaries

The following tables summarise the \$306 million and \$1 billion scenarios CAPEX and include NLTF share, administration costs, and escalation. Most of the investigation costs are based on SSBC lites, which are expected to cost less than \$200,000 for each connection. There is uncertainty in this given AT has not delivered SSBC lites for cycling and micromobility projects before.

Table 8-5 CAPEX summary for \$1 billion funding scenario (units: \$million)

RLTP year		21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	Total
TOTAL	INV	3.4	4.1	0.8	1.7	1.8	1.8	1.5	1.5	0.0	0.0	16.60
	DES	0.65	4.68	16.9	20.2	18.1	24.0	26.6	24.0	24.0	0.0	159.13
	CON	0.0	0.0	5.6	62.8	71.7	57.8	69.6	85.6	85.0	87.0	525.1
Cycle Parking		0.5	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	16.5
Customer growth initiatives		4.4	4.5	4.5	6.3	6.3	6.3	6.3	6.3	4.0	4.0	52.9
Contingency (30%)		2.69	4.28	8.64	27.9	29.97	27.57	31.8	35.82	34.5	27.9	231.07
TOTAL (excluding escalation and admin)		11.64	18.56	37.44	120.90	129.87	119.47	137.80	155.22	149.50	120.90	1001.30
Admin (5.7%)		0.7	1.1	2.1	6.9	7.4	6.8	7.9	8.8	8.5	6.9	57.07
Escalation (6%)		0.7	1.1	2.2	7.3	7.8	7.2	8.3	9.3	9.0	7.3	60.08
TOTAL (including escalation and admin)		13.00	20.74	41.82	135.05	145.06	133.45	153.92	173.38	166.99	135.05	1118.45

RLTP year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	Total
NLT share (51%)	6.63	10.58	21.33	68.87	73.98	68.06	78.50	88.42	85.17	68.87	570.41

Table 8-6 CAPEX summary for \$306 million funding scenario (units: \$million)

RLTP year		21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	Total
TOTAL	INV	3.4	1.4	0.0	0.0	0.0	3.1	0.0	0.6	0.0	0.0	8.5
	DES	0.8	4.7	4.1	0.0	0.0	4.6	15.0	12.3	9.6	0.0	51.1
	CON	0.0	0.0	5.6	35.4	31.4	7.6	15.8	39.9	38.4	50.8	224.9
Cycle Parking		0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.4	0.2	0.99
Customer growth		0.5	0.1	0.0	0.0	0.0	3.4	4.0	4.0	4.1	4.0	20
Contingency (30%)		1.8	2.3	3.4	11.1	9.9	5.4	9.8	16.8	15.2	16.0	91.8
TOTAL (excluding escalation and admin)		7.64	10.05	14.76	48.17	42.98	23.60	42.68	72.71	66.06	69.15	397.79
Admin (5.7%)		0.4	0.6	0.8	2.7	2.5	1.3	2.4	4.1	3.8	3.9	22.7
Escalation (6%)		0.5	0.6	0.9	2.9	2.6	1.4	2.6	4.4	4.0	4.1	23.9
TOTAL (including escalation and admin)		8.54	11.22	16.48	53.80	48.01	26.36	47.67	81.22	73.79	77.24	444.34
NLT share (51%)		4.35	5.72	8.41	27.44	24.49	13.44	24.31	41.42	37.63	39.39	226.61

8.2.3 Ongoing Maintenance and Operations Costs (OPEX)

The most significant operational costs are those attributed to the customer growth initiatives (i.e. behaviour change initiatives); however, some minor additional maintenance of infrastructure is also anticipated, as well as additional full time equivalent (FTE) staff to deliver the end-to-end cycleway programme.

A list of key assumptions for the additional FTE estimates is found below. The OPEX costs and FTE breakdown are summarised in Table 8-7 for a \$1 billion funding scenario. The \$306 million scenario is not anticipated to require additional OPEX, but any investment levels above \$306 million but less than \$1 billion will need to be proportionally scaled up to the OPEX shown in Table 8-7.

- This view of FTE is integrated, including the end-to-end delivery of the cycleway programme, including FTE estimates for design/construction delivery as well as supporting functions in communications, marketing and consultation, and design review staff.
- Assume that a delivery programme of approximately \$100 million per year from 24/25 will require approximately 35 staff to oversee delivery. This includes 10 project management resource for design/construction of 2-3 cycleway projects each, approximately 14 communications and consultation staff to support 7 focus areas of the programme, and 10 additional design review staff.
- All business case resources are assumed to be outsourced and do not form part of FTE headcount estimates.
- At least half of the additional \$700 million requested to deliver the programme will come from outside funding sources (i.e. AC's TERP or central government emissions reduction funding). This means there may still be additional pressure on existing resources to deliver other projects in RLTP as funds are less likely to be reallocated.
- Bundling projects will be more appealing to the market and be more in line with industry capacity (assumption is to adopt an Early Contractor Involvement approach or similar)

- There may be further opportunities for economies of scale in resourcing if we can bundle certain projects in design phase (and possibly construction)
- SSBC lite approach to be used for all projects worth less than \$15 million. Assumed that at least 70% of SSBC lites would progress straight through to detailed design (no further consultation required)
- Waka Kotahi approve full programme life cycle to speed up delivery of cycling projects and avoid additional funding gateways.

Table 8-7 Operational and maintenance expenditure (units \$million) for \$1 billion scenario

RLTP year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31
Customer growth initiatives (OPEX)	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4
Maintenance	0	0	0	0.6	0.6	0.6	0.85	0.85	0.9	0.9
Total OPEX (excl. FTE)	16.4	16.4	16.4	17.0	17.0	17.0	17.25	17.25	17.3	17.3
% OPEX of total (CAPEX+ OPEX)	66%	47%	29%	11%	12%	13%	14%	17%	18%	22%

The administration cost varies from \$0.7 million to \$8.8 million per year for the \$1 billion scenario (see the CAPEX summary in Table 8-5). This administration cost is sufficient to support the additional FTEs required for the CAM-PBC, which will need to build up to an additional 35 FTEs during the 10-year programme⁸¹.

For maintenance funding is not being sought as part of the CAM-PBC, the maintenance values presented are for information only for economics and will form part of AT's standard maintenance programme.

AT will seek funding in the next NLTP period for the OPEX identified for Customer growth initiatives and a business uplift in OPEX allocated to the Customer growth initiatives.

The customer growth initiatives that require OPEX funding are summarised in Table 8-8.

Table 8-8 Customer Growth Initiatives OPEX activities

Customer Growth Initiative	Description
Marketing Mode Change and Safety	Campaigns and promotional activity to: <ol style="list-style-type: none"> 1. Encourage the uptake of cycling and to increase the frequency and types of journeys taken by bicycle 2. Increase the safety of people riding bicycles Position sustainable modes so that they are viewed as an equally viable transport choice
Cycling & Micromobility Comms Strategy	Develop and implement a cycling comms strategy that proactively conveys the vision for public street space in Auckland and sets the scene for how AT will talk about cycling.
Bike Hubs	Support the expansion of community bike hubs at key locations across the region to provide a platform for collaboration and codesign with communities, divert bicycle from landfill, carry out basic repairs to make them safe and distribute to local communities.

⁸¹ Hiring of FTEs will align with the build-up in CAM-PBC capital investment and the need to manage the additional work.

Customer Growth Initiative	Description
Events and Activations	Work in partnership with communities to deliver events and activities that promote safe cycling and activate the existing network. Includes initiatives such as: Aotearoa Bike Challenge, Community-Led Initiatives, Guided Rides, Community Bike Fund, Gamification, Bike Burbs, Pit Stops.
Bike Loan	A bike loan scheme delivered through schools, community bike hubs, and an e-bike loan scheme through businesses.
Customer Centred Design Approach	A human centred design approach to understanding and improving customer journeys on the existing network. Includes issues such as user conflict on shared paths, addressing bicycle thefts, or threatening behaviour towards people on bicycle.
Cycle Skills Training	Teaching adults and children how to ride bicycles through a cycle skills training programme in schools and communities.
E-Scooter Skills Training	Basic learn to scoot training sessions for adults and children.
Schools Engagement	Promotion of active modes through AT's school engagement programme, Travelwise. Includes school travel planning, bike trains, ambassador workshops, events and activities.

Funding for the OPEX component of the customer growth initiatives is separate to the CAPEX funding and will need to be sought through the next update of the Long-Term Plan. There is a risk that CAPEX funding is provided for customer growth initiatives but not OPEX. Infrastructure delivery and customer growth initiatives that are project specific will still be able to proceed with the CAPEX funding so most of the programme can go ahead without OPEX funding, but the programme may not realise the same level of benefits.

Several assets that will be delivered through CAM-PBC programme will require ongoing funding for maintenance and operations. Maintenance and operations include:

- Sweeping cycle lanes
- Repairing broken or vandalised assets, such as cycle parking and separators
- Complaints based enforcement of lanes

The cost associated with maintenance is relatively low compared to other costs because there is anticipated to be some offset of maintenance costs through lower pavement maintenance costs.

8.2.4 Total expenditure summary

Table 8-7 summarises the total expenditure (CAPEX and OPEX) for the \$1 billion investment scenario, which totals to \$1.2 billion with OPEX, escalation, contingency, and administration costs included.

Table 8-9 Total expenditure (units \$million) for \$1 billion scenario

RLTP year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31
CAPEX	11.64	18.56	37.44	120.90	129.87	119.47	137.80	155.22	149.50	120.90
OPEX	16.4	16.4	16.4	17.0	17.0	17.0	17.25	17.25	17.3	16.4
Admin (5.7%)	0.7	1.1	2.1	6.9	7.4	6.8	7.9	8.8	8.5	6.9
Escalation (6%)	0.7	1.1	2.2	7.3	7.8	7.2	8.3	9.3	9.0	7.3
Total Expend.	29.44	37.16	58.14	152.1	162.1	150.5	171.3	190.6	184.3	151.5
NLT share (51%⁸²)	6.63	10.58	21.33	68.87	73.98	68.06	78.50	88.42	85.17	68.87

⁸² AT will seek an uplift of OPEX for the customer growth initiatives in the next NLTP period. The OPEX for maintenance will form part of AT's standard maintenance programme. Therefore, the NLT share presented is for the CAPEX only.

8.2.5 Funding for other projects

It is recognised that this CAM-PBC alone will not be able to achieve the aspiration of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan of a 7% mode share by distance for cycling, and that other cycling programmes being implemented region-wide will also contribute.

Cycling projects that currently have funding identified for implementation in the RLTP are summarised in Table 8-10. These projects form part of the Do-Minimum scenario.

Table 8-10 Other cycling specific funded projects in RLTP

Project Name	Responsible Agency	Ten-Year CAPEX (\$ million)
Urban Cycleways Programme	AT	139
Glen Innes to Tāmaki cycleway – Stage Two	Waka Kotahi	19
New Footpaths Regional Programme	AT	49
Te Whau Pathway	AC	30
A4E Introductory Works	AT	30
Minor Cycling and Micromobility	AT	30
Meadowbank Kohimarama Connectivity Project	AT	22
Old Māngere Bridge Pedestrian & Cycling Link	Waka Kotahi	17
Māngere Cycleways (Airport Access)	AT	12
Tāmaki Drive/Ngāpipi Road Safety Improvements	AT	7
Walking and cycling – low cost, low risk	Waka Kotahi	6

There are other multi-modal projects and programmes that will be delivering cycle improvements, with committed funding for implementation in the RLTP (e.g. Connected Communities, Eastern Busway). These costs have not been included given the difficulty in separating out the cycling proportion of the investment.

The CAM-PBC has identified that there are currently unfunded cycling works within other projects that will require funding within the 10-year period to ensure Auckland meets the aspiration of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan of a 7% mode share by distance for cycling and micromobility, these are summarised in Table 8-11.

Table 8-11 Other projects requiring funding for implementation (total funding amount)

Activity delivering cycling improvement	Owner	2021-31 Total Cost to Design and Implement
A2B	AT	\$1.8 billion
Connected Communities	AT	Over \$1.2 billion
SH1 Shared Path - Drury South to Bombay	Waka Kotahi	TBC
20Connect	Waka Kotahi	\$2.6 billion
CC2M (Light Rail)	AT	\$26 million for cycling on surrounding network. Over \$15 billion for entire project
Total funding shortfall for other projects delivering cycling		Over \$20 billion

These other projects are assessed through their own business cases, external to the CAM-PBC and have an overall funding shortfall of over \$20 billion, with \$15 billion attributable to light rail.

The CAM-PBC and other cycling projects can be further supplemented by customer growth initiatives (including behaviour change campaigns) and policy changes from central government to maximise benefits. These non-infrastructure interventions could have a significant impact on cycling mode share within Auckland, such as through congestion charging which could affect both revenue available to funding CAM-PBC infrastructure but also discourage car use, thereby improving mode share for cycling.

8.3 Overall affordability

Table 8-12 sets out the funding required to progress the programme to the next stages.

Table 8-12 Affordability of \$1billion proposal

	CAPEX	OPEX	Total
CAM-PBC cost	\$1,000 million	\$32.3 million	\$1,032.3 million
Allocated funding	\$306 million	\$0	\$306 million
Funding shortfall for CAM-PBC	\$694 million	\$32.3 million	\$726.3 million
Funding shortfall for other projects delivering cycling and micromobility	Over \$20 billion		Over \$20 billion
Total funding shortfall (CAM-PBC + other projects)	Over \$21 billion	\$32.3 million	Over \$21 billion

8.4 Previous cost estimates

The 2017 PBC assumed that cycleways cost around \$3 million per km. More recently, cycling infrastructure projects have cost \$8-11 million per km. This increase in cost is a result of many factors, such as impacts of market increases, infrastructure upgrade add-ons such as complementary utility and safety upgrades, streetscape improvements, and the AT TDM requirements. Approximately 50-70% of the cost escalation since 2017 is attributable to kerb relocation and new dedicated paths such as Te Ara Ki Uta Ki Tai, and as outlined in Part B above the main rationale for the CAM-PBC building much of its Preferred Programme (of varying investment levels) around road space reallocation opportunities.

Cost escalation for cycling infrastructure is evident in several recent projects. Using information from the Henderson SSBC as an example, this cost escalation can be attributed as follows:

- 10-20% additional cost from general construction cost escalation (e.g. from supply shortages and other factors currently affecting industry).
- 10-20% cost increase resulting from change to standards beyond cycling standards (e.g. Vision Zero, Safe Systems, urban forest), which means construction of more raised traffic platforms etc. It could be argued that these should be funded by other activity classes such as the Road to Zero activity class.
- 50-70% from the need to move kerbs, which is in part attributable to the change in cycling standards requiring more width and in part attributable to the difficulty in reallocating road space. This indicates that if locations where road space will be easier to reallocate are identified and prioritised, the cost and speed of delivery could be improved.

The cost breakdown demonstrates there is more opportunity for co-funding across activity classes for cycling projects than was explored in the 2017 PBC and that the planning and design approach has resulted in cost increases as well as delays.

Examples of previous construction cost per km of cycle projects are summarised in Table 8-13.

Table 8-13 Construction cost rates for cycling projects

Route type	Source of cost rate
Regional - Waka Kotahi network	Northern Pathway (\$20-25/km)
Regional - AT network (assumes kerb moving)	Henderson (\$10-12/km) and Connected Communities (\$10-18/km)
Town centre / streetscape	Karangahape Road (\$20/km)
Major or Connector on PT route (assumes kerb moving)	Henderson (\$10-12/km)
Major or Connector no Public Transport (no kerb moving)	Project WAVE (\$2-3 million)

Although the cost of delivering cycling infrastructure has increased, the value or benefits that can be claimed for cycling improvements have also increased. This is because benefits for aspects such as pedestrian improvements can now be claimed. Procedures in the Monetised Benefits and Cost Manual have also been updated to have higher monetary values for cycling. This means the BCRs for cycling projects are still healthy and fundable (typically low-medium BCRs). There is also an increased recognition of the value of non-monetised benefits through the non-monetised benefits manual, which did not exist in 2017. Furthermore, there is increased urgency in regard to addressing climate change through documents such as Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, Hīkina te Kohupara, the MoT's discussion paper on transport emissions reduction and the latest GPS.

8.5 Programme revenues

There is no revenue expected for any elements of this programme, nor it's associated projects. However, the programme could affect other revenue streams, including:

- Parking revenue - the CAM-PBC focuses on the reallocation of space along several roads, which will likely require a review of parking pricing in areas affected that may affect revenue.
- Public transport revenue - Improved 'first and last leg' facilities and level of service to increase public transport patronage / fare box recovery.

8.6 Funding assumptions

The key funding assumption for the CAM-PBC comes from the \$306 million On-going Cycling Programme of the RLTP. However, the CAM-PBC makes the case for a proposal and pathway with different investment levels (that seek to lift Auckland's cycling and micromobility mode share and play its part in meeting the Investment Objective of 2% mode share by distance) if additional local funding becomes available (see Section 8.7 Alternative funding).

8.7 Alternative funding streams

The level of funding in the RLTP has a shortfall of \$0.7 billion over 10 years required to implement the \$1 billion programme.

There are several potential alternative funding sources that will need to be explored to bridge this funding gap, including:

- Further AC lending, although this would reduce AC's financial credit rating;
- A greater share of existing AC rates – however, there is already pressure on AC rates;
- New funding from a new rates scheme such as the recently consulted climate action targeted rate;
- New funding from central Government for climate change response;
- Road pricing revenue; and/or

- New funding from central government through other/new taxation sources e.g. taxation of carbon emitting vehicles

Section 8.8 sets out the joint working opportunities, which could also reduce the cost per kilometre to deliver cycling infrastructure.

8.8 Joint working opportunities

There are several opportunities for the CAM-PBC for joint work with other projects / programmes and other organisations and to maximise the benefits sought to both entities. Such opportunities to maximise benefits are outlined in Table 8-14.

Table 8-14 Joint working opportunities

Org.	Project/ workstream	Opportunities to maximise benefits with this PBC
AT	Renewals	Continue to check prioritisation against renewals plan as has been done for the current prioritisation. Ensure renewals team are aware of CAM programme so that they can also adjust their programme.
AT	Safety PBC	Work to align safety investment to support enhanced local connectivity to strategic connections delivered through the CAM-PBC and support safety along the identified corridors to reduce costs on the ongoing cycling programme.
AT	Network Optimisation PBC	Network Optimisation focuses on how to reallocate road space or working within kerbs. The framework developed by the Network Optimisation team can be used to identify where road space can be reallocated and where is more challenging and therefore more difficult to deliver cycling infrastructure.
AT	Public transport	Public transport improvements could be delivered with the cycling improvements, especially where kerbs are moved to ensure a dig once approach to investment.
AT	Brownfields PBC	The Brownfields PBC is delivering cycling infrastructure near brownfields developments throughout Auckland. Therefore, co-funding and co-delivery of improvements near these developments is possible and timing of improvement will also benefit from coordination
AT	Connected Communities	Connected Communities is delivering cycling infrastructure along several key strategic cycle routes in Auckland and delivering a Cycling SSBC in the central isthmus. Therefore, timing of routes that connect into Connected Communities will benefit from coordination.
AT	A2B	A2B is delivering cycling infrastructure along key strategic cycle routes in Auckland. Timing of routes that connect into A2B will benefit from coordination
Eke Panuku	Streetscape, cycle parking, end of trip facilities	Working with and co-funding with Eke Panuku could enable streetscape to be included within the CAM-PBC
Kāinga Ora	Housing developments	
Waka Kotahi	CC2M	CC2M is delivering cycling infrastructure along key strategic cycle routes in Auckland. Timing of routes that connect into CC2M will benefit from coordination
Waka Kotahi	20Connect	20Connect is delivering cycling infrastructure along key strategic cycle routes in Auckland. Timing of routes that connect into 20 Connect will benefit from coordination
Watercare	Stormwater	Watercare often need to move kerbs when upgrading water infrastructure; therefore, there is an opportunity to share kerb moving costs for cycle routes that require kerb moving.

9 Commercial Case

9.1 Commercial recommendations

This commercial case set out the recommendations for procurement of next stage investigations (e.g. business cases), design, and implementation to help speed up delivery.

For investment up to \$1 billion over 10-year period (2021-2031), the CAM-PBC proposes procurement is undertaken by bundling connections and combining investigation and detailed design phases. AT will test various sizes of SSBC lite bundles with the market in 2022, should additional funding be obtained for SSBCs / SSBC lites. Any learning from this bundling can then be used to adjust bundles in subsequent years. Construction of the SSBC lite connections will also be bundled for cost and time efficiencies and to attract more interest from contractors. Initial indications from the market are that an Early Contractor Involvement (ECI) approach with \$50 million annual value is the preferred approach. Those connections requiring full SSBCs (e.g. Focus areas and complex kerb moving connections) will progress in a more typical procurement model.

For investment beyond \$1 billion over 10 years, more significant changes to procurement will be required and additional AT staff will be required to manage the delivery of investment.

9.2 Implementation Strategy

There are two implementation approaches for next stages of the CAM-PBC, one for road space reallocation opportunities and one for more complex connections.

The implementation strategy for road space reallocation opportunities is to:

- Bundle connections to enable procurement of multiple connections at once; and
- Combine investigation phases and detailed design for road space reallocation opportunities. Procurement is likely to assume only a proportion (e.g. 80%) of investigations proceed to detailed design on the assumption investigation will identify challenges requiring some connections to be reprioritised or undertaken with full SSBC

These bundles would be procured with a two-stage tender process, most likely with different bundle sizes to test the market.

These changes to procurement are expected to minimise procurement phases, provide economies of scale for consultants and contractors undertaking the next stages of work - opening up the market for more contractors to undertake the work, and minimise risk of cost escalations between phases (i.e. more cost certainty from detailed design).

The implementation strategy for more complex connections is to:

- Minimise scope of investigation and provide clear scope, to ensure it can be undertaken as quickly as practical (this is set out in the SSBC Framework document in Appendix K)
- Bundle investigation (SSBC) and detailed design phases to minimise procurement – with a hold point in between to enable the SSBC to proceed through approvals prior to detailed design and to enable the contract to be ceased should there be underperformance in the investigation phase.

9.3 Sourcing and Contract Management

Procurement proposed for the CAM-PBC will follow practices already undertaken by AT (i.e. it is standard). Further details on procurement like contract length and quantity of work within each bundle will be determined in the next phase of the programme but initial indications from the market are that an ECI approach with \$50 million annual value is the preferred approach.

10 Management Case

10.1 Summary

AT has responded to lessons learnt by improving management of cycling and micromobility projects. Recent changes that have improved delivery of cycling and micromobility include the rollout of AT’s Transport Design Manual, dedicated support of experienced Walking & Cycling Design Specialists and the establishment of the Design Review Panel to clarify designs and approve departures from standards in a transparent and efficient way.

The CAM-PBC preferred programme builds on these changes to further improve delivery of cycling and micromobility. The management case presents how the CAM-PBC would be managed, including governance, change management, risk management, and benefits realisation.

AT will provide the CAM-PBC to support the 2024 RLTP development to seek an uplift in funding to the ongoing cycling programme.

10.2 Project Plan and Schedule

The following project plan/schedule summarises the major activities that will occur in the first three years to develop this CAM-PBC to the next phase under the current \$306 million CAPEX profile. As shown, only existing business case areas of Henderson, Māngere East, and Manukau can progress in the next three years because of funding limitations.

Key programme level tasks to be undertaken within the next year are:

- Approval of the CAM-PBC by last quarter on 2021/2022 RLTP year
- Design standards for road space reallocation projects to be agreed
- Market testing of procurement bundles

RLTP year	21/22		2022/23				2023/24				2024/25				2025/26				
Quarter	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Programme Mgmt.																			
CAM-PBC approval																			
Road space reallocation design standards																			
Procurement testing / set up																			
Henderson	INV																		
	DES																		
	CON																		
Māngere East	INV																		
	DES																		
	CON																		
Manukau	INV																		
	DES																		
	CON																		
Cycle Parking																			

RLTP year	21/22		2022/23				2023/24				2024/25				2025/26			
Quarter	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Customer growth																		

Figure 10-1 Project plan and schedule

10.3 Change Management

Management of the prioritisation of connections and review and approval of the next projects to get started is a crucial aspect of the management of this programme as it enables the programme to be agile to:

- External changes (e.g. another project such as CC2M being delivered earlier than expected), and
- Internal changes (e.g. investigation phase business case identifies costs will be higher or delivery will be more complex than assumed at PBC level, or there is a need to depart from agreed design standards)

Reprioritisation and changes to investigation, design, and construction funding allocations need Grow Active Modes Investment Portfolio Steering Group (IPSG) approval before proceeding, as shown in the change management process below.

In the event of an external change occurring that impacts the prioritisation of connections, the following change management process will take place:

1. Manager Active Modes Planning (MAMP) to arrange for connections to be re-evaluated in the Prioritisation Matrix
2. MAMP to notify IPSG of the impact of the external change on the prioritisation and request a course of action e.g. change prioritisation of projects not yet begun to free up implementation funding for the reprioritised connections or, or redirect funding for existing projects towards the reprioritised connection if practical to do so under contract conditions.
3. IPSG to approve reprioritisation

In the event of an internal change that materially affects scope, cost, complexity, or delivery timeframes (e.g. this could be because of road space reallocation assumptions not holding true, higher level of design, extra consultation, co-ordination with other works etc) the following change management process will take place:

1. Project Manager (PM) to notify Project Control Group (PCG) and CAM Programme Manager (PgM) of any issues identified in the investigation stage business case that will affect affordability (e.g. construction cost estimate exceeds funding allocation), delivery timeframes, complexity (e.g. road space reallocation connection required substantial kerb moving), or design standards (i.e. departing from agreed design standards)
2. PCG to notify CAM Programme Control Group (PgCG) of the change impact and a course of action for approval (whether part of the 30% programme contingency can be used, whether scope changes should be accepted (this may mean scaling up to a full SSBC), delays accepted, or alternatively the project itself de-prioritised within the programme and delivered at a later date with other projects brought forward in its place). It will be on the PgCG to approval the course of action or not.
3. CAM PgM to work with MAMP arrange for reprioritisation assessment to determine course of action e.g. cease project investigation stage business case work or design and reprioritise another connection for investigation and design or change of investigation stage business case from SSBC lite to SSBC.
4. CAM PgM to notify CAM PgCG of recommended course of action for approval.

- CAM PgCG to notify IPSG of reprioritisation of recommended course of action for approval.

The above change management is predicated on the CAM-PBC having programme level funding allocations, not project level funding. Should funding from Waka Kotahi be project specific, reprioritisation of connections and transfer of funding between projects will require Waka Kotahi approval.

10.4 Project Roles and Governance

The CAM-PBC requires management through a governance programme to ensure that the delivery of the project fits in with the wider network packages and goals such as regional cycle mode share aspirations, is cost-effective, can be used as a tool to require available funding, and will ensure that the programme will be delivered.

The main investment partnership for the delivery of the CAM-PBC is between AT and Waka Kotahi, which combined have a key role to play in planning, funding, and delivering components of the recommended programme. Successful governance and delivery of the programme also requires collaboration between partners, with other involved entities shown below.

The CAM-PBC sits within the Grow Active Modes Investment Portfolio, shown in Figure 10-2. An external cycle and micromobility steering group is being established, which will contain representatives from AT, Waka Kotahi, AC, and Kāinga Ora.

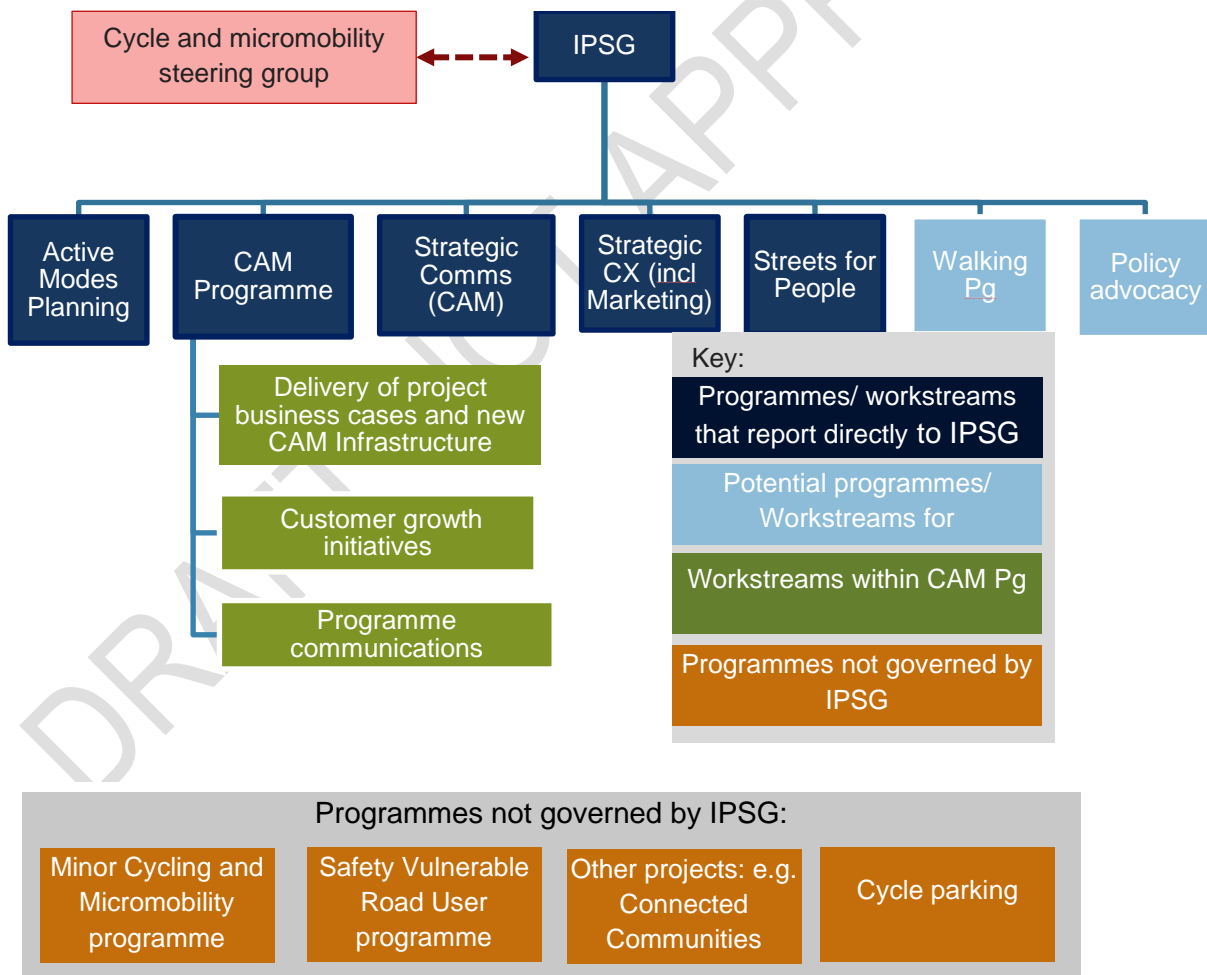


Figure 10-2 Grow active modes governance structure

Alignment and coordination with other programmes within the Grow Active Modes portfolio will be undertaken through the Investment Portfolio Steering Group (IPSG). Coordination with programmes

outside IPSP governance, such as Connected Communities, will be undertaken through ensuring a representative of the IPSP sits on the governance of these programmes.

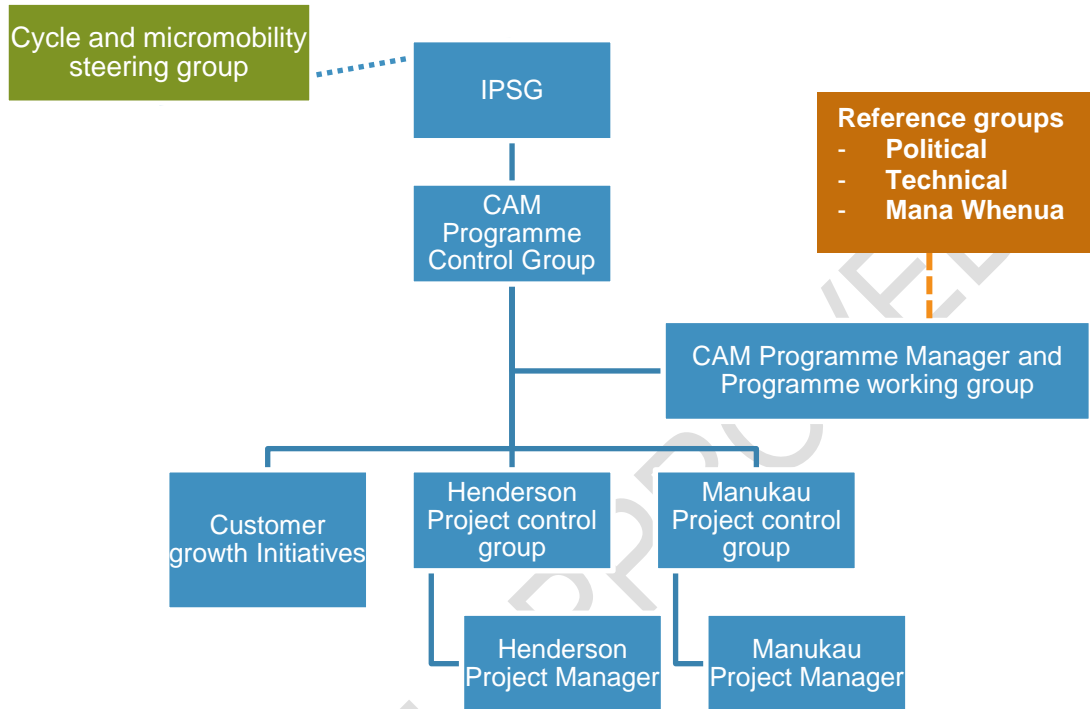


Figure 10-3 Cycle and micromobility programme governance structure

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Table 10-1 Roles and responsibilities

Role	Members	Responsibility
Cycle and micromobility steering group	Independent Chair with senior members from AT, WK (equal membership representation), Kāinga Ora, Auckland Council and Eke Panuku (plus advocacy groups)	Network Integrator across Auckland that reviews strategic direction of the cycling programme and its delivery progress. Escalations and reports on progress will flow from the IPSG and PgCG groups and are required to provide a full view of progress. These meetings would be held monthly to ensure programme benefits and delivery are on track.
IPSG	EGM Planning and Investment (Chair) EGM Integrated Networks, EGM Service Delivery, EGM Safety, EGM Customer Experience, EGM Stakeholder and Communities, other T3 and below.	Provide portfolio wide governance of its programmes and projects and wider active modes activities across AT in terms of investment, performance management and benefits realisation. The IPSG monitors trends and progress across all of its programmes/projects (including OPEX projects if they enable portfolio outcomes) and provides direction to ensure targeted outcomes continue to be aligned with strategic objectives , and to improve overall portfolio health & performance.
CAM programme control group (PgCG)	EGM Planning and Investment (Chair), EGM Integrated Networks, EGM Stakeholder and Communities, Programme Director Cycling, Portfolio Delivery Director Projects, Active Modes Planning Manager, Group Manager Strategic Projects, Strategic Communications Lead, Engagement Manager, Head of Marketing	Provide strategic leadership and coordination and oversight of all cycling and micromobility project business case and delivery initiatives by AT in an integrated and coordinated manner and linking and coordinating delivery of initiatives by organisations other than AT.
CAM project working group (PWG)	<ul style="list-style-type: none"> • CAM PM • Waka Kotahi representative • AC representative 	
CAM Programme Director (PgD)	AT – Cycling Programme Director	<ul style="list-style-type: none"> • Controlling programme level budget and contingency • Connection reprioritisation
Project control group (PCG)	Varies	<ul style="list-style-type: none"> • Provide an overall direction, guidance, and support to the project to ensure the successful delivery of expected outcomes within scope and budget. • Approval of changes within project funding allocations, complexity, and design standards (note, Project PCG must escalate changes that affect affordability, complexity, or design standards to the CAM-PBC PCG – see change management section)
Project Managers (PM)	AT - Person to be confirmed	<ul style="list-style-type: none"> • Controlling project level budget and contingency
Reference groups	TBC	

In addition to the governance structure shown, the following projects interact with the governance of the CAM-PBC:

- SSBCs that sit within the CAM-PBC:
 - Henderson Cycle Network SSBC
 - Manukau SSBC
 - Māngere East SSBC
- Other AT projects delivering improvements for people on bikes and micromobility:
 - Connected Communities – including the City Centre and Fringe, Central Isthmus and Sandringham Cycling SSBC
 - A2B
 - Eastern Busway
 - Minor Cycling and Micromobility (Pop-up cycleways)
 - Network Optimisation PBC
 - Road Safety PBC
 - Brownfields PBC
- Waka Kotahi projects delivering improvements for people on bikes and micromobility:
 - 20Connect SSBC
 - CC2M Indicative Business Case

10.5 Management of policy recommendations

Although most policy recommendations are not within AT’s remit to implement, AT will need to advocate for them. The actions AT will take to management policy recommendations are outlined below.

Table 10-2 External policy recommendations - AT actions

Policy change	Responsible party	AT action	AT owner	AT action deadline
Review and amend funding conditions (NLTF) including intervention toolkit for the walking and cycling activity class (streamlined investment pathway)	Waka Kotahi	Prepare advocacy material	Planning and Investment	June 2022
Support RMA reform and NPS-UD for improved land-use transport integration and intensification	AC, Central Government	Prepare advocacy material	Planning and Investment	June 2022
Support cycling initiatives in schools such as: School Travel Plans in all schools, Bikes in Schools, retrofitting of cycle parking, bike training and education, facilities and treatments outside the school gate	Ministry of Education, AC	Prepare advocacy material	Grow Active Modes Investment Portfolio Steering Group	Dec 2022
Road rules changes recommended by Cycling Safety Panel (e.g. automatic liability for hitting people on	Central Government, Waka Kotahi	Prepare advocacy material	Planning and Investment	Dec 2022

Policy change	Responsible party	AT action	AT owner	AT action deadline
bikes and allowing people on bikes contraflow down one-way roads).				
Investigate changes to vehicle regulations recommended by Cycling Safety Panel	Central Government, MoT, Waka Kotahi	Prepare advocacy material	Planning and Investment	Dec 2022
Advocate for Waka Kotahi to expand their mass marketing (supporting Road to Zero Programmes) to include targeted safety campaigns for people on bikes and encourage uptake of cycling and micromobility	Waka Kotahi	Prepare advocacy material	Grow Active Modes Investment Portfolio Steering Group	Dec 2022
Increase road user charges for general traffic (e.g. congestion charging) and allocate revenue to funding sustainable transport improvements	Central Government	Prepare advocacy material	Planning and Investment	Dec 2022
Taxation changes to disincentivise driving (e.g. introduce workplace parking levies, remove tax deductions for non-essential business vehicles) and incentivise cycling (e.g. removing fringe benefit tax for the purchase of bicycles)	Central Government, Inland Revenue	Prepare advocacy material	Planning and Investment	Dec 2022
Public subsidies for individuals and businesses to purchase bicycles / establish or operate bike sharing schemes.	Central Government, AC, AT	Prepare advocacy material	Planning and Investment	Dec 2022

AT internal policy recommendations

In addition to these external policy changes, AT will also need to review and refine internal organisational policies, processes and standards to ensure cross-organisational alignment with the CAM-PBC investment objectives (e.g. review policies around car restriction regulations and the design and delivery of Low Traffic Neighbourhoods). Some of this work is already underway, including an AT internal workstream that is proposing minimum standards for separated cycle facilities delivered through the CAM-PBC, which seeks to inform a programme level departure, to enable more road space reallocation to cycle and micromobility facilities.

Table 10-3 Internal policy recommendations - AT actions

Policy change	Responsible party	AT action	AT owner	AT action deadline
Review and refine AT organisational policies, processes, standards, and culture to ensure cross-organisational alignment with PBC investment objectives	AT	Review internal policies, process and standards and recommend refinements	Grow Active Modes Investment Portfolio Steering Group	2022/23

10.6 Management of customer growth initiatives

Delivery of customer growth initiatives will be managed by the Customer Experience division at AT, under the leadership of the Group Manager Brand, Customer Engagement and Sustainable Transport Education. The strategic alignment of the communications initiatives will be managed by the Strategic Communications and Engagement team, under the leadership of the Head of Strategic Communications.

Team Managers will be responsible for ensuring the customer growth initiatives align with the strategic positioning and are coordinated with delivery of the prioritised list of cycle infrastructure investment. This can be achieved through direct communications with the cycle project teams (e.g., Henderson SSBC team) but also through the governance that the projects share.

The majority of the proposed customer growth initiatives are initiatives that AT already undertake but will be scaled up with activity strategically aligned to meet the investment objectives of the CAM-PBC. Delivering these initiatives will not need different management practices than currently used by AT and increasing the strategic alignment is also achievable within these same practices. Delivery of customer growth initiatives will be reported to and governed by the existing Cycling and Micromobility Programme Control Group.

10.7 Milestones

Below is a high-level delivery plan, including approximate timings for the milestone delivery.

Table 10-4 Milestones for first 3 years

Milestone	Description	Start Date	Finish Date
Henderson – Investigation	Completion of SSBC		After Rathgar investigation
	Surveys (e.g. Rathgar parking survey, topography survey)	Start of March 2022	End of April 2022
Henderson – detailed design	Detailed design of Rathgar, Swanson, Universal, and Great North Road	April 2022	October 2022
Henderson -construction	TBC	2023	2025
Māngere East - completion of SSBC	SSBC Part 1 & 2	March 2021	SSBC Completion July 2022
Māngere East – detailed design of tranche 1	Board approvals Aug-Sep 2022		
Māngere East – construction of tranche 1	Detailed design of tranche 1	September 2022	2023/24
Manukau - completion of SSBC		2024/25	2025/26
Manukau – detailed design of tranche 1	SSBC Part 1 & 2	March 2021	SSBC Completion July 2022
Manukau – construction of tranche 1	Board approvals Aug-Sep 2022		

10.8 Constraints

The CAM-PBC is currently constrained by:

- existing funding allocation of \$306 million over 10 years, which is too little to deliver on programme objectives
- the profile of the \$306 million funding over the next 10 years, which is too small in the first three years to enable any new projects to begin or adequately build up a pipeline of work
- industry capacity to carry out the programme. The first \$1 billion of the CAM-PBC is considered deliverable given current constraints, but this will be monitored with a view to improve and speed up delivery should the industry capacity change and funding become available beyond \$1 billion.

10.9 Dependencies

The main dependencies of the CAM-PBC are other projects delivering cycling and micromobility. For example, there is little point in the CAM-PBC delivering connections that rely on another project e.g. connections into Pakuranga Road which rely on Connected Communities to deliver improvements on Pakuranga Road.

There are some dependencies with committed RLTP projects evident within the first \$1 billion of the CAM-PBC so should the committed projects within the RLTP change or get delayed there may be a need to reprioritize some of the first \$1 billion of the CAM-PBC. Dependencies with other projects are more critical for projects after the first \$1 billion, where some connections are reliant on uncommitted projects such as A2B.

The CAM-PBC prioritised list of projects has been set up such that it can be quickly reprioritised should other projects change.

10.10 Risk Management

The CAM-PBC is a large programme comprised of multiple projects, inherent with areas of uncertainty that transpire into risks and opportunities. To mitigate generic risks and project specific risks that emerge through a project, a Risk Management Plan will be prepared in the following manner:

- Hold risk workshops with key stakeholders at project milestones.
- Update the existing Risk Register that identifies both inherent and residual risks.
- Regular monitoring and updating of the Risk Register until project completion.
- Risk management in accordance with controls and mitigation identified in the Risk Register.

A risk register has been established and will be maintained throughout the life of the programme. This will be reviewed at each progress meeting and will be updated monthly. The top five key risks will be included in the monthly project health report.

The key risks for the delivery and implementation of the CAM-PBC have been identified in the risk register with proposed mitigation, as highlighted in Table 10-5 below.

Table 10-5 Risks

Risk	Implication	Proposed Mitigation
Alignment - Lack of alignment between organisations around the scope, resourcing, and findings	Delays to the CAM-PBC	Integrated project governance put in place and agreed project plan.

Risk	Implication	Proposed Mitigation
Complexity – Connection are more complex than anticipated in the CAM-PBC e.g. SSBC lite cost more than expected, more kerb moving is needed than assumed or more complex and costly intersection and crossing treatments required.	Higher cost per km and therefore fewer km / areas delivered. More costly investigation and design phases	CAM-PBC Business Case Framework and prioritisation tool enable next stage business cases to be halted if they identify routes are higher cost that anticipated and reprioritisation of routes. 30% contingency included in estimate given uncertainty.
Funding – additional CAPEX funding over the \$306 million On-going Cycling Programme of the RLTP does not become available. Additional OPEX funding does not become available.	The existing area projects of Henderson, Māngere East, and Manukau will take all available funding for the next five or so years, with no pipeline of work for subsequent years. Lack of OPEX would affect benefits realisation.	Start the investigation phases of other area and connection projects, so that when the larger quantities of funding are available in the later years of the On-going Cycling Programme (when more of the rear loaded funds are sequenced) projects are ready to move into design and construction phases; and with the associated business cases being completed, AT will be able to apply for Waka Kotahi co-funding (meaning RLTP funding is not lost, and the pipeline does not stall). Ensure CAPEX for customer growth initiatives are used to not rely too heavily on OPEX. Early warning of OPEX needed in long-term plan.
Capacity – Industry does not have capacity to undertake the work	CAM-PBC does not deliver as many km as anticipated	Bundle up connections to improve deliverability for the industry. Test procurement with the industry. Prioritise connections that the industry can deliver more easily should it become an issue.
Policy – not achieving 3% mode share by distance for cycling	If policy changes do not achieve 3% mode share by distance for cycling, then the CAM-PBC will need to deliver more to reach the 7% mode share by distance aspiration.	The CAM-PBC has been set up to enable it to quickly adapt if more funding becomes available. Modelling shows infrastructure could get Auckland to almost 6% mode share by distance but would require all streets to be safe for cycling.
Demand – cycle demands are not achieved especially in areas with social equity issues	Value for money and objectives not achieved	Monitor cycle demands. Post implementation feedback from community. Undertake additional customer growth initiatives to support uptake as/if required. Reprioritise connections if unable to improve demands.
Other projects – not being delivered and affecting delivery of CAM-PBC	Affect demand and benefits for some CAM-PBC connections (mostly affect programme after \$1billion investment)	Reprioritise connections if other project timeframes or scope changes

A full risk assessment will be completed on commencement of every SSBC. The risk register will be updated and reviewed monthly (the ultimate responsibility sitting with the programme director) and will be tabled at the quarterly meetings for oversight.

The funding to deliver the CAM-PBC will sit within the 'Grow Active Modes' Group, governed by the Portfolio Steering Group and Cycling & Micromobility Programme Control Group. This structure is shown in Section 10.4.

10.11 Monitoring and benefits realisation

It will be important to measure the success of the programme during programme delivery and post implementation, to understand whether the programme is as effective as predicted and enable AT to adapt or adjust delivery plans or respond to issues as they arise.

As an example, each connection will be monitored for cycle trips and growth and compared against other connections being delivered to understand if there are region wide or local issues or opportunities. Feedback will be sought to understand community perceptions of the project and the reasons for its success or underperformance. This information would help to establish the reason for success or underperformance such that underperformance can be rectified, opportunities can be maximised, or the programme adapted. Interventions could include:

- Provision of additional customer growth initiatives in the areas of underperformance to support growth, and then application of this approach to future connections in similar areas. This would also require revaluation of the cost and value for money of these connections, which may result in revision of the prioritisation.
- Deprioritise connections that are similar to underperforming connections if there are clear reasons for under performance that cannot be easily rectified by the programme.
- Prioritise connections that are like successful connections or that maximise opportunities e.g., If focus areas with modal filters rather than separated cycle facilities are being delivered faster and with better value for money, then the prioritisation process could look for similar connections to prioritise. Conversely, if focus areas are delivering worse outcomes than expected compared to connections delivered through separated cycle facilities, then they could be deprioritised.
- Inform Waka Kotahi and other key stakeholders of any relevant lessons learnt that they are best to implement.

It is important that the adopted programme is refreshed every three years to reflect any changes that could affect outcomes. This refresh is anticipated to be a simple reprioritisation, review of estimates/assumptions, and to check that it aligns with any revised/new strategies. The preferred programme proposes new prioritisation and delivery processes (e.g., bundling procurement, SSBC lites, and extensive road space reallocation) that will be tested over the next three years with the industry. Monitoring of the preferred programme over the next three years will enable the cost estimates, economics, and deliverability levels to be refreshed with the latest values from subsequent SSBCs and SSBC lites. This ongoing update will enable the CAM-PBC to seek additional funding in subsequent RLTP updates should the current assumptions around deliverability, industry capacity, and cost be found to be conservative (e.g., Additional investment beyond \$1 billion will be sought in subsequent RLTP updates if the industry has a higher capacity than assumed in this CAM-PBC).

Performance measures and targets are shown in Table 10-6 for a \$1 billion investment. The performance measures will need to be scaled to the actual level of investment provided. Part B presents achievement against investment objectives for \$306 million investment, \$1 billion investment, and \$2 billion investment enabling the objectives to be scaled to each level of investment. Some performance measures are measured at programme level only and others will be evaluated at project level (i.e. SSBC and SSBC lite) and amalgamated at programme level. Further details on monitoring and evaluation are presented in the Benefits Realisation Plan (Appendix J).

Monitoring mechanisms, frequencies and responsibilities will be confirmed in AT's Active Modes Monitoring Framework, which is currently in development and is due to be completed in mid-2022.

Table 10-6 Performance measures for \$1 billion investment

Objective	Measured at programme or project level	Ongoing Monitoring by AT in project specific areas of investment	Baseline	End of 10-year programme
Contribute to the reduction of deaths and serious injuries involving people using bikes and micromobility by 40% by 2031	Project level only, compiled at programme level	Annual cycling and micromobility DSI's per km travelled (to monitor improved personal risk) ⁸³	Baseline from project level analysis using CAS	No increase in cycling and micromobility DSI's per cycle-km
Increase cycle and micromobility mode share by distance from 0.4% to 1.9%, contributing to the regional mode share by distance aspiration of 7% by 2030	Programme level	Cycle and micromobility mode share by distance	0.4% mode share by distance existing increasing to 1.0% with RLTP ⁸⁴	4-5 times the existing mode share by distance compared to baseline (household travel survey)
	Project level, compiled at programme level	Perceptions of safety and ease of cycling	Baseline from project level survey prior to implementation. 50% of Aucklanders don't feel safe cycling ⁸⁵	Improvement from baseline
Increase the proportion of the population that can access key social opportunities within 15 minutes by safe cycling or micromobility to 40% by 2031	Programme level	Proportion of population living within 15 minutes of a key social destination by safe cycling or micromobility	12% of Aucklanders (from ACM) existing increasing to 24% with RLTP ⁸⁶	40% of population living within 15 minutes by safe cycling of employment zones with over 1,000 jobs compared with baseline
	Project level, compiled at programme level	Tonnes of CO ₂ equivalent emissions	Calculated from cycle trips below	Monitored using cycle trips (to calculate vehicle kilometres travelled reduction and therefore emissions)
	Project level, compiled at programme level	Physical health benefits from an increased rate of cycling and micromobility activity	Baseline from project level counts of cycle and micromobility trips prior to implementation. ACM data can provide an indicative baseline prior to surveys.	Ten times more cycle and micromobility trips than baseline
	Project level, compiled at programme level	Cycle and micromobility volumes in dense activity centres		
Increase the rate of delivery of safe cycling facilities on the CAM Strategic Network by 15km per year by 2031	Programme level only	Kilometres of safe cycle facilities on the Strategic Cycle and Micromobility Network	16-17km per year (on average between 2021-2031) ⁸⁷	31km per year

⁸³ It is recognised that significant increase in cycle trips may result in collective risk not improving but personal risk should improve based on Vision Zero safe facilities being provided

⁸⁴ 0.4% existing with 0.6% from RLTP excluding CAM-PBC

⁸⁵ '50% of Aucklanders don't feel safe cycling because of how people drive' Source: TRA 2020 'Measuring and growing Active Modes of transport in Auckland 2020 - A year in review'

⁸⁶ 12% for existing and 24% including RLTP excluding CAM-PBC

⁸⁷ Average per year based on the projects and programmes in the RLTP, which will deliver approximately 160km over the next 10 years (excluding CAM-PBC). This figure includes cycle facilities delivered by Waka Kotahi and Auckland Council.

10.12 Stakeholder engagement and communications plans

This CAM-PBC recommends taking a strategic approach to communications and engagement, creating an integrated platform that makes it easier for people to engage with cycling and micromobility (and active modes more broadly), easier for people to understand AT's actions and more likely to enable people to think favourably of the work delivered through the CAM-PBC.

- The strategic communications plan outlines this integrated approach and the benefits this approach delivers to the people of Tāmaki Makaurau, the improved communication and engagement with our stakeholders, governance and staff. This work has been developed and is being led by AT's Strategic Communication Lead.
- Aligned with this, is the AT Communications and Engagement Strategy and the AT Media Strategy. These documents outline the work being implemented that will deliver effective communications and engagement processes through greater efficiencies. This work has been developed and is led by AT's Head of Strategic Communications and AT's Head of Strategic Engagement.

The integrated platform is being presented concurrent to this CAM-PBC.

10.13 Partners and Key stakeholders

Partners and key stakeholders will be engaged prior to the general public, as coordination with partners and stakeholders is critical in ensuring successful implementation of the projects. Partners and key stakeholders include Waka Kotahi, Mana Whenua, AC, MoT, ACC, and the health sector.

Elected representatives are also key stakeholders and will be engaged early on with the projects within the programme. Local Board members have knowledge and insights valuable to the successful implementation of all components of the programme.

AT's Stakeholder, Communities and Communications team will facilitate the identification and engagement with these stakeholders.

10.13.1 General public

The people living in the community play a crucial role in shaping the implementation of these improvements. Where possible, AT will undertake public consultation where people can input into the project early and throughout the process. The customer growth initiatives include initiatives to aid engagement and build enthusiasm for cycling in communities before infrastructure is delivered.

The project information will be clear, accurate and disseminated widely so as many people as possible are aware of the public consultation. Not only will this help to improve the projects, but it will build excitement and anticipation for people who will see a vision of an Auckland with increased cycling uptake and safety.

11 Assessment profile

This programme sits within the ‘Walking and cycling improvements’ activity class. Based on the 2021-24 NLTP investment prioritisation method, the **priority order is 3-4** for the \$1 billion programme scenario, this is based on three factors:

- GPS alignment (Very high)
- Scheduling (Medium)
- Efficiency (Low)

11.1 GPS alignment

The GPS Alignment for the CAM-PBC is **very high**.

Table 11-1 GPS Alignment

Activity class	Rating
Better travel options	<p>Very high CAM-PBC results in improvement of access to major employment zones within 15mins by safe cycling connection, from 25% of Auckland population existing to 50% of Auckland population with a \$1 billion investment scenario. This represents a very high rating based on:</p> <ul style="list-style-type: none"> • >8% change in number of jobs accessed within 45 minutes by a given mode or modes (public transport, walking, cycling, driving) in the morning peak • >8% change in proportion of population within 15 minutes access of social opportunity (namely primary or secondary education, GP surgery or supermarkets) by a given mode or modes (public transport, walking, cycling, driving) in the morning peak
Climate change	<p>Medium-High: Full strategic network would deliver greater than 3% mode change, but \$1 billion funding scenario delivers less than 3% mode share by trips.</p> <ul style="list-style-type: none"> • Up to 3% change in share of private passenger vehicle-based trips to other modes* • Investment to support behaviour change (e.g. education, promotion) to improve mode shift outcomes

11.2 Scheduling

Scheduling for the CAM-PBC is rated **Medium**.

Table 11-2 Scheduling

Criteria	Rating and Explanation
Criticality	<p>Medium The CAM-PBC is a crucial component of the pathway to achieving aspiration of Te Tāruke-ā-Tāwhiri: Auckland’s Climate Plan for reducing emissions by 2030. Early investigation and design phases are critical to ensuring there is a pipeline of projects to be delivered and each project is critical to ultimately achieving objectives.</p>
Interdependency	<p>Medium There are other projects delivering cycling and micromobility investment that are interdependent with the CAM-PBC, including Airport to Botany MRT, 20</p>

Connect, Connected Communities, and City Centre to Mangere Light Rail. The benefits these projects can realise for cycling and micromobility is dependent on delivery of the CAM-PBC connections that surround these projects. The benefits that the CAM-PBC programme can realise is dependent on these other projects being delivered ⁸⁸ .

11.3 Efficiency

The programme is assessed as having a **Low** economic efficiency, based on an expected BCR of 2-3.

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⁸⁸ The first \$1 billion of CAM-PBC investment is not dependant on other projects and investment beyond \$1 billion can be reprioritised to adapt to delivery (or not) of other projects.

12 Lessons Learned and Post-Implementation Monitoring

12.1 Lessons Learned

The previous delivery of the cycling infrastructure linked to the 2017 PBC has had delays as a result of cost escalation and a change to the strategic context (e.g., greater focus on climate change and Vision Zero), impacting on the role of cycling and how we deliver cycling infrastructure.

A high-level summary of the lessons learnt which have changed the focus of this CAM-PBC are summarised below:

- There has been a lack of agility with the 2017 PBC to respond to changes, such as COVID-19 lockdowns or the NZUP programme. AT has been criticised by some external parties for not making the most of the opportunity that COVID-19 lockdowns provided for rapid implementation of trial cycle facilities.
- The targets within the 2017 PBC and funding available, are perceived as being inadequate to support current climate goals, such as those within Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, which requires cycling mode share by distance to increase from 0.4% to 7% by 2030.
- External levers, such as congestion charging and land use planning, could have a significant impact on cycling mode share but were not discussed or recommended within the 2017 PBC.
- There is potential to improve the messaging within the CAM-PBC to recognise the wider benefits of cycling and reduce the tendency for people to view cycling infrastructure as taking away space from other modes (e.g. safety, liveability, pedestrian and emissions benefits need more emphasis especially for neighbourhood work that have limited specific cycling infrastructure such as low traffic neighbourhoods).
- There has been a significant drop in cycle volumes on the traditional commuter routes into the city since the COVID-19 pandemic began. This can only partially be attributed to lockdowns. It is also likely to be because of the higher number of people working from home. This working from home trend may increase the volume of people making local village trips (that are not currently being counted) compared to commuter trips into the city, and therefore support the investment in LANs.
- Costs have escalated from the estimated \$3 million per km in the 2017 PBC to \$8-12 million per km in recently delivered projects (increasing to \$20 million a km for K Road). Section 8.4 summarises the reasons for this and the lessons learnt that have influenced the CAM-PBC.

This CAM-PBC has used these lessons to provide as an effective investment framework focused on efficiently delivering cycling infrastructure. These opportunities have been incorporated into this CAM-PBC in the following ways:

- This CAM-PBC has greater alignment with the RLTP ten-year cycle investment programme, coinciding with that of other investment programmes within AT (e.g. Connected Communities, Safer Speed Programme) and other agencies.
- There has been greater focus on utilising funding within existing programmes (e.g. safety) to deliver enhanced cycling outcomes.
- This CAM-PBC prioritises connection and bundles delivery of connections, enabling more flexibility to respond to changes in programme context that result in a critical need for cycle investment at a particular location.
- Deliverability, including through road space reallocation, has been a key prioritisation metric, which together with other cost-effective implementation approaches to cycle infrastructure

delivery included in the programme level design departure, will reduce delivery cost and timeframes.

- The preferred programme enables a faster approach to cycle network planning and delivery through the application of the Cycle and Micromobility Network in Future Connect as a blueprint; grouping of focus areas or corridors; and by developing a framework/methodology for SSBC development for consultants to follow.

The Lessons Learned from this project will be delivered back into the project development and delivery lifecycle. The CAM Programme Control Group is accountable for undertaking this review.

12.2 Post Implementation Monitoring - Approach and Schedule

The Auckland Cycling and Micromobility programme is monitored through a results-based performance management framework.

Various partners are responsible for setting up, monitoring and evaluation outcomes and performance measures. AT pulls this information together for an overall annual performance management report.

In addition, implementation performance measures will be managed through the Grow Active Modes IPSP to ensure that projects deliver the intended outcomes. This forms part of the Active Modes Monitoring Framework currently under development.

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13 Next Steps

It is the recommendation of this business case that:

- The CAM-PBC is endorsed as an investment strategy⁸⁹ and preferred programme for approved funding, working towards the aspiration of a 7% cycling and micromobility mode share by distance by 2030.

Noting that achieving this mode share would require:

- An increase in funding from \$306 million in the 2021-2031 Regional Land Transport Plan (RLTP) to at least \$2 billion for strategic cycling connections, focus areas, cycle parking, and customer growth initiatives;
- Implementation of the current cycling and multi-modal projects of the RLTP;
- Currently unfunded projects such as Connected Communities and A2B have their strategic cycling connections prioritised for investment in this decade;
- A significant portion of the CAM-PBC's policy recommendations being implemented by AT, its partners, Government and other parties; and
- Additional OPEX is included in the next Long-Term Plan to enable delivery of the full suite of recommended customer growth initiatives.

The CAM-PBC will go to the AT and Waka Kotahi Boards for endorsement of the full PBC, with a particular focus on the future investment strategy. Endorsement of the future investment strategy by both Boards will enable the CAM-PBC to capitalise on any funding opportunities and accelerate investigation and design phases for projects identified through the CAM-PBC prioritisation method. Subsequent business cases (i.e. SSBC-lites and SSBCs), having demonstrated the case for investment, will then seek approval for funding pre-implementation and implementation.

⁸⁹ Investment strategy being the prioritisation process and delivery approach.