

Auckland Transport Alignment Project

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STATE SERVICES COMMISSION
Te Komihana O Ngā Tari Kāwanatanga



THE TREASURY
Kaitiaki Take Kōwhiri

Ministry of Transport
TE MANATŪ WAKA

Auckland Council
Te Kaunihera o Tamaki Makaurau

Auckland Transport
An Auckland Council Organisation

KiwiRail

NZ TRANSPORT AGENCY
WAKA KOTAHĪ



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Foreword



I welcome the advice provided by the Auckland Transport Alignment Project (ATAP). The ATAP package is a transformative transport programme. Investment in transport shapes our city's development and is a key contributor to economic, social and environmental goals. The direction signalled in this update is shared by Government and Auckland Council and demonstrates our commitment to working together for a better Auckland.

Auckland is facing unprecedented population growth, and over the next 30 years a million more people will call Auckland home. Growth brings opportunities but when combined with historic under-investment in infrastructure the strain on the Auckland transport system is unrelenting. Existing congestion on our roads costs New Zealand's economy \$1.3b annually.

We need to do things differently to what has been done in the past.

Auckland needs a transport system that provides genuine choice for people, enables access to opportunities, achieves safety, health and environmental outcomes and underpins economic development. Our aspiration must be to make sure Auckland is a world class city. Auckland's success is important not just for Aucklanders, but for our country's long-term growth and productivity.

The Government and Auckland Council have agreed to a transformative and visionary plan. ATAP is a game-changer for Auckland commuters and the first-step in easing congestion and allowing Auckland to move freely.

I believe this ATAP package marks a significant step in building a modern transport system in Auckland. ATAP accelerates delivery of Auckland's rapid transit network, with the aim of unlocking urban development opportunities, encourages walking and cycling, and invests in public transport, commuter and freight rail and funds road improvements.

The projects in ATAP will be integrated with this Government's work on Kiwibuild, infrastructure financing, and the Urban Growth Agenda. Transport investment should drive Auckland's urban form and not follow it.

I recognise that while this work has focused on investment in capital projects it needs to be complemented by work and new thinking on service levels, land-use planning and demand management tools.

The ATAP package recommended is fully funded through current funding sources. However, I am also actively exploring new financing tools that will enable us to bring forward additional projects and better enable Auckland to pay for the infrastructure it needs.

The partnership between Government and Auckland Council through ATAP is essential to progressing a transformative transport programme for Auckland. I am pleased with the point we have reached and look forward to continuing to work with the transport agencies and stakeholders to build a 21st century transport system for Auckland.

Hon Phil Twyford
Minister of Transport



Auckland is growing by 3% adding another 45,000 people to our city each year. Auckland is projected to receive 55% of New Zealand's total growth over the next decade and will reach 2 million people by 2028.

Yet for decades we have not been building infrastructure to cope with that growth. After years of underinvestment, Auckland is rapidly becoming more congested and facing gridlock.

That congestion undermines the quality of our lives as Aucklanders and imposes a huge productivity cost of billions of dollars on New Zealand.

New Zealand needs Auckland to be its successful international city. To achieve that, both Government and Council need to invest adequately in its infrastructure.

Council funds for infrastructure come from rates and from borrowing. With rapid increase in investment in infrastructure, Auckland is limited in how much it can borrow by a tight debt to revenue ratio which it has almost reached. That is why the regional fuel tax is so critical to Auckland's future, allowing it to increase spending on transport infrastructure by over \$4 billion over the next decade.

The Auckland Transport Alignment Project represents Council and Government's agreement to spend around \$28 billion over the 2018-2028 period. A lot of that is the cost of running and renewing our existing transport system. Money still has to be spent on roads, opening up new as well as more intensive brownfields housing developments and building and improving major arterial routes and new transport corridors.

This ATAP is also transformational. It reflects the fact that a global city can't just keep adding more cars to the roads. It needs an effective and accessible public transport system, new busways and bus lanes, a city rail link and a third rail track, better ferry services and a light rail system to provide mass transit across the city.

We need more cycle and walkways to reduce congestion, for health and environmental reasons and to provide alternatives to travel by car, including for children getting to school.

Reducing our rapidly rising death and serious injury road toll and optimizing use of our existing transport networks are also critical objectives.

The new ATAP document represents a significant increase in long term investment in Auckland's transport system. More will still have to be done to find innovative ways to secure additional investment.

ATAP's aim is not just to reduce congestion but to create a world class transport system. It sets out to make travel safer, more accessible and more environmentally friendly, with more choice in transport modes.

It aims to support an accelerated rate of housing construction and help create a vibrant and inclusive city.

Phil Goff
Mayor of Auckland



Executive Summary

Introduction

Over the past three years Auckland Council and the Government have developed an aligned strategic approach on transport through the Auckland Transport Alignment Project (ATAP).

This report provides advice on¹ recommended transport investment priorities (called the "ATAP Package") for the 2018-2028 decade to reflect the Government's and Auckland Council's shared direction for transport in Auckland. The ATAP Package guides statutory planning processes, including the Regional Land Transport Plan (RLTP) and the National Land Transport Programme (NLTP).

The ATAP direction is set out in the project's Terms of Reference and further detailed in the draft Government Policy Statement on land transport (GPS) and the draft Auckland Plan. It places greater weight on public transport (especially rapid transit), walking and cycling, improving safety, and realising environmental, health and growth outcomes.

Context

Auckland is a rapidly growing city with a population approaching 1.7 million. Over the next 30 years Auckland is projected to grow by up to another million people, while in the next decade nearly 55 per cent of New Zealand's population growth is expected to be in Auckland.

To unlock the benefits of this growth, Auckland needs a transport system that provides safe, reliable and sustainable access. This means transport that:

- Easily connects people, goods and services to where they need to go
- Provides high quality and affordable travel choices for people of all ages and abilities
- Seeks to eliminate harm to people and the environment
- Supports and shapes Auckland's growth
- Creates a prosperous, vibrant and inclusive city.

The role of transport in enabling and shaping the way Auckland grows is also critical to addressing our housing challenges.

The ATAP Package takes a significant step towards achieving a safe, reliable and accessible transport system that supports and shapes Auckland's development. However, optimising existing infrastructure, making the most of new technologies, and policies such as road pricing, are also critical.

The ATAP package has been developed by assessing project-specific information, transport modelling and considering possible land use responses to investment in rapid transit corridors.

ATAP Package

The ATAP package is a significant step towards a transformative programme for Auckland’s transport system.

The ATAP package contains around \$28 billion of investment in Auckland’s transport over the next decade. This is based on planned and assumed funding, including an expected increase of \$4.6 billion on previous funding plans from the following sources:

- An additional \$2.8 billion from the National Land Transport Fund
- \$1.5 billion from the proposed Regional Fuel Tax
- \$360 million from Crown Infrastructure Partners.

This level of funding enables substantial progress towards improving Auckland’s transport system. Key investment priorities have been identified and available funding has been broadly allocated (assuming a flexible approach to funding arrangements) across major investment areas. This will help guide the Regional Land Transport Plan (RLTP).

Major projects included in the ATAP Package are:

Committed Projects	
<ul style="list-style-type: none"> • City Rail Link • Puhoi-Warkworth motorway • Additional electric trains • Manukau-Papakura motorway widening • Northern corridor improvements and Northern busway extension to Albany. 	
New Projects	
<ul style="list-style-type: none"> • Light rail (City-Airport and Northwest corridor), initial investment to leverage further funding • Eastern busway (Panmure-Botany) • Airport-Puhinui state highway upgrade, bus/rail interchange and bus priority improvements (part of the broader Airport-Botany rapid transit corridor) • Lower cost East West Link • Pukekohe electrification, third main Westfield-Wiri and further new electric trains • Papakura-Drury motorway widening • Mill Road (first phase) • Penlink toll road and Albany-Silverdale bus improvements • Significant safety programme • Enhanced walking and cycling, bus priority and network optimisation programmes • New infrastructure to enable greenfield growth. 	

The ATAP package seeks an appropriate balance that supports transformational change while also addressing the critical transport challenges Auckland faces today. The allocation of funding is summarised below:

The ATAP Package		
Investment Area		Cost (inflated to year of spend)
Operational costs (net of revenue)		\$8.1 billion
Asset renewals		\$3.3 billion
New projects	Rapid transit (busway, rail & light rail)	\$8.4 billion
	Strategic & local road network	\$3.8 billion
	Greenfield transport infrastructure	\$1.3 billion
	Safety programmes	\$0.9 billion
	Walking, cycling & local board priorities	\$0.9 billion
	Bus & ferry improvements	\$0.7 billion
	Optimisation & technology	\$0.7 billion
Total		\$28.0 billion

Light rail is potentially well suited to leverage funding and financing arrangements. Therefore, the ATAP package allocates around \$1.8 billion of funding (within the "rapid transit" total in the table above) that will be used to leverage funding and financing and progress the city-airport and northwest corridors over the next decade.

While the ATAP work has focused on capital improvements, it is important these improvements are complemented by supportive regulatory, land-use and operational policies. Rapid transit needs land use policies that unlock growth around the transit corridors and investment in public transport infrastructure needs to be complemented by service improvements to encourage ridership growth.

The highest priority future investments that should be progressed as funding becomes available are:

- Further bus priority improvements. These are considered the highest priority for additional funding
- More investment for walking and cycling, a more extensive optimisation programme, increased funding for greenfield growth and further rail network upgrades.

To help fund these initiatives, a specific workstream should be established to consider transport funding and financing options. Planning and investigation work into these projects will continue in the meantime.

Outcomes

The key outcomes we expect from this investment include:

- Enhancing the potential for significant housing growth in key rapid transit corridors, especially where these are now being accelerated or being provided with a higher capacity and more permanent mode. Realising this growth potential will be critical to ensure the whole transport network can function effectively as Auckland's population reaches two million around 2028
- Initial support to enable greenfield development, where around 30 per cent of growth is forecast to occur
- Increasing public transport and cycling mode-share, with flow-on benefits for health, safety, the environment and congestion
- Improved access as a result of the provision of more congestion-free alternatives for travel and changes in land use enabled by rapid transit investment
- A 60 per cent reduction in deaths and serious injuries on Auckland's transport network, from 813 in 2017 to no more than 325 by 2027
- Improved environmental outcomes through the provision of lower carbon alternatives for travel and by encouraging less single-occupant vehicle travel.

The ATAP package focuses on capital improvements. Achieving a substantial improvement in outcomes also requires complementary measures such as road pricing and making the most of developing transport technologies.

Conclusions and next steps

The ATAP package provides a clear direction for transport investments in Auckland with an emphasis on public transport (especially rapid transit), walking and cycling, improving safety and broader environmental, health and urban growth outcomes.

The immediate next step is to align statutory documents, including the Regional Land Transport Plan and National Land Transport Programme, with the direction of this report.

Other areas of further work are:

- Establishing a joint Government-Council workstream to consider transport funding and financing options
- Considering what changes may be required to transport planning and funding processes and project evaluation tools to achieve the Government and Council's direction for transport in Auckland
- Developing plans to communicate key goals and targets
- Streamlining business case processes to better recognise the strategic direction provided through ATAP
- Investigating opportunities to maximise the growth and city-shaping benefits of investment in rapid transit.

1. Background

The Auckland Context

Since 2010, Auckland's population has increased by over 250,000. In recent years, annual growth has exceeded 40,000 people per year, one of the fastest growth rates in the developed world. While this very high rate of growth may tail off over time, Statistics NZ projections suggest that over the next 30 years, up to a million more people may call Auckland home.

Ongoing growth brings great opportunities and much progress has been made over the past 10-15 years to support Auckland's evolution into a modern, world-class city. This includes a sustained increase in investment for transport and a willingness of Aucklanders to change the way they live and travel. Use of public transport has tripled since the mid-1990s, the city centre is New Zealand's fastest growing residential neighbourhood and, most recently, Aucklanders are rapidly taking up cycling where quality infrastructure is provided.

Despite this progress, the sheer scale and pace of growth, a history of under-investment and insufficient housing construction means that Auckland still faces significant transport and housing challenges.

The transport challenge is not just one of congestion, but also:

- Poor travel choice beyond private vehicles, especially in lower income areas
- A near doubling of deaths and serious injuries on roads since 2012
- The need to reduce the transport system's environmental impact
- Enabling and supporting a rapid acceleration in the rate of housing construction
- The need for streets to play a growing role in creating vibrant and inclusive places.

Vision

Through the Government Policy Statement (GPS) on land transport and the Auckland Plan, the Government and Auckland Council both recognise the critical role of transport in delivering a successful Auckland. This report reflects a view shared by Government and Auckland Council that transport investment decisions must deliver broad economic, social, environmental and cultural benefits to Auckland and New Zealand by providing safe, reliable and sustainable access to opportunities. This means:

- Easily connecting people, goods and services to where they need to go
- Providing high quality and affordable travel choices for people of all ages and abilities
- Seeking to eliminate harm to people and the environment
- Supporting and shaping Auckland's growth
- Creating a prosperous, vibrant and inclusive city.

The Auckland Transport Alignment Project (ATAP)

Over the past three years, Auckland Council and the Government have worked together to develop an aligned strategic approach to the development of Auckland's transport system for the next 30 years. In 2016 a recommended strategic approach was agreed, based on three integrated components:

- Making better use of existing networks
- Targeting new investment to the most significant challenges
- Maximising new opportunities to influence travel demand.

An indicative package of investment was developed in 2016 to deliver this strategic approach. This package identified the timing of major projects over the next 30 years, but particularly focused on improving the road network to ease congestion and improving public transport along congested corridors in the first decade (2018-28).

In 2017 the indicative package was updated to reflect faster than expected population growth. This was the starting point for the 2018 ATAP work.



2. ATAP 2018 Investment Priorities

Introduction

In late 2017 the new Government requested an update to ATAP. Around the same time, Auckland Council approved the draft Auckland Plan, which reflects the long-term strategic approach of the 2016 ATAP, but with a greater and earlier focus on improving travel choices and reducing harm to people and the environment.²

The 2018 ATAP package ensures transport investment priorities reflect the aligned transport vision of both the Government and Auckland Council. The project's Terms of Reference directed the development of a ten year investment package that places greater weight on the following priorities:

- Accelerating the development of Auckland's rapid transit network, particularly to unlock housing and urban development opportunities
- Encouraging walking and cycling and making these active modes safer for Aucklanders
- Delivering improvements in health, safety, the environment and access, including disability access
- Ensuring the indicative package delivers the best possible value for money, including broader non-monetary costs and benefits.

While transport investment priorities are an essential part of achieving transformational change, they need to be complemented by a series of other interventions.

These include:

- Updating land-use plans to enable and foster growth around key rapid transit corridors and housing developments, including those led by the public sector.
- Implementing road pricing to manage travel demand, make better use of existing infrastructure and encouraging a modal shift to public transport, walking and cycling. Road pricing is being investigated as part of the Congestion Question project.³
- Improving safety by placing greater emphasis on minimising harm in project design and evaluation, and through policy decisions such as regulation and enforcement.
- Continuing to update design standards to better reflect Auckland's unique Māori identity, ensuring access for people of all ages and ability, and placing greater weight on creating safe and attractive pedestrian environments.

Approach

The project's key task was to translate the aligned direction of the Government and Auckland Council into an updated set of investment priorities for the next ten years. Potential investments were reviewed, tested and reprioritised to develop the best transport package within current funding levels.

Further investments were also identified as "future priorities". These are the highest priority projects beyond the ATAP package. Delivering these projects within the next decade depends on additional funding, which could come from existing or new sources.

The ATAP Package was developed using following information and tools:

- Auckland Transport's project prioritisation tool (with updated weighting)
- Strategic transport modelling tools (initial versions of the package were modelled and then refined)
- Project specific analysis and information, including from business cases
- Information on dependencies between different investments (e.g. aligning with timing of greenfield growth areas).

A group of stakeholders provided valuable input to the process (see Appendix A for a list of participating stakeholders).

In developing this work individual projects and programmes were considered, the interaction between projects as well as the needs of the total regional system. For example, developing the rapid transit network cannot be considered in isolation from improvements to bus services or to walking and cycling networks.

Revenue Assumptions

The ATAP package contains around \$28 billion of investment in Auckland's transport over the next decade. This is based on planned and assumed funding from the following sources:

Funding Source		Funding Amount (inflated to year of spend)
Auckland Council	Rates, development contributions and borrowing	\$8.45 billion
	Regional Fuel Tax	\$1.5 billion
Government	National Land Transport Fund	\$16.3 billion
	Crown contribution to City Rail Link	\$1.4 billion
	Crown Infrastructure Partners (repaid by landowners through funding agreements)	\$0.36 billion
Total		\$28.0 billion

This revenue is around \$4.6 billion more than what was available in previous funding plans. The sources of this additional revenue are:

- A further \$2.8 billion contribution from the National Land Transport Fund, reflecting an assumed share of the funding signalled in the draft Government Policy Statement on land transport that may be allocated to Auckland
- \$1.5 billion from the proposed Regional Fuel Tax
- \$364 million from Crown Infrastructure Partners.

The \$16.3 billion of National Land Transport Fund (NLTF) revenue is a reasonable assumption based on the draft GPS. It is, however, subject to the "on merit" allocation process of the National Land Transport Programme.

Further assumptions have also been made that NLTF revenue can be allocated to the best performing projects, including rail network upgrades. This would require changes to current funding arrangements, including a more flexible approach to GPS activity class limits, and funding assistance rates (FARs).

The only Crown rail funding we have included is the Government's 50 per cent contribution to the City Rail Link (CRL). The Government has signalled an interest in developing a sustainable funding pathway for other rail network upgrades, which will affect how these investments are funded into the future. A Ministry of Transport-led review of rail and an update to the Government Policy Statement on land transport over the next year will provide more clarity on rail funding.

ATAP 2018 has assumed rail network upgrades (aside from CRL) will be fully funded from the NLTF.

ATAP Package Summary

The ATAP Package represents the mix of investment, within current funding levels for Auckland over the next decade, which best meets the direction set in the ATAP 2018 Terms of Reference. It is aimed at delivering broad economic, social, environmental and cultural benefits to Auckland and New Zealand by providing safe, reliable and sustainable access to opportunities.

The ATAP Package		
Investment Area		Cost (inflated to year of spend)
Operational costs (net of revenue)		\$8.1 billion
Asset renewals		\$3.3 billion
New projects	Rapid transit (busway, rail & light rail)	\$8.4 billion
	Strategic & local road network	\$3.8 billion
	Greenfield transport infrastructure	\$1.3 billion
	Safety programmes	\$0.9 billion
	Walking, cycling & local board priorities	\$0.9 billion
	Bus & ferry improvements	\$0.7 billion
Optimisation & technology		\$0.7 billion
Total		\$28.0 billion

The following section provides an explanation of the ATAP Package's key components.



3. ATAP Package Detail

Rapid transit

Funding allocated in ATAP Package	\$8.4 billion
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Introduction

Rapid transit forms the backbone of Auckland’s public transport network, providing fast, frequent, high capacity services along corridors that are separated from general traffic and therefore unaffected by road congestion.

Rapid transit can also have a particularly significant impact on shaping urban form and development. The speed and reliability of rapid transit delivers a long-lasting step-change in the accessibility of an area. For example, the City Rail Link reduces travel times from locations along the Western Line to much of the city centre by up to 20 minutes. This will mean, for instance, that travel times from New Lynn to the city centre will be reduced to match current travel times from Mt Eden station.

A decade ago, Auckland had a very limited rapid transit network, but sustained investment has increased annual boardings on the Northern Busway and the rail network from 6.8 million in 2008 to 26 million today. However, major parts of Auckland are still not served by the rapid transit network, while existing parts of the network need substantial capacity improvements to meet current and future demand.

City Rail Link, an extension to the Northern Busway and the purchase of additional electric trains are already committed or underway. Key benefits from these committed projects are summarised below:

The ATAP Package	
Committed Projects	Key Benefits
City Rail Link	<ul style="list-style-type: none"> • More than doubles the rail network’s potential capacity by removing the Britomart bottleneck, allowing an increase in train frequencies • Brings more of the city centre within easy walking distance of the rail network • Reduces rail travel times to the city centre, particularly from the west.
Northern Busway extension (Constellation Station to Albany)	<ul style="list-style-type: none"> • Reduces travel times and improves reliability for bus travel between Constellation Station and Albany • Supports growth in Albany and areas further north.
New electric trains	<ul style="list-style-type: none"> • Allows six car trains to operate on the western, southern and eastern lines at peak time, reducing overcrowding • Maximises the rail network’s capacity prior to City Rail Link completion.

The most appropriate timing and funding sources for projects that further expand Auckland’s rapid transit network was then considered in detail to identify investments for inclusion in the ATAP Package, and those that are future priorities as funding becomes available.

ATAP Package continued	
New Projects	
Light rail (City-Airport and Northwest corridors)	Detailed in pages 21-24
Eastern busway (Panmure-Botany)	
Airport to Botany (Airport-Puhinui section)	
Rail network upgrades (Pukekohe electrification, third main rail line, rail level crossing and pedestrian crossing improvements)	
New electric trains	

Future Priorities	
Further rail network upgrades to enable express and inter-city trains	Detailed in pages 24-25
North Shore (Orewa to City, including Takapuna connection)	
Upper Harbour (Westgate to Albany)	
Cross Isthmus (New Lynn to Onehunga)	



These investment priorities are highlighted in the map below and discussed further in this section.



Light rail

Light rail is proposed on two major rapid transit corridors over the next decade:

- Airport-City
- Northwest

Delivering light rail on these corridors will require significant investment, but also provides a substantial opportunity to explore third party funding and financing arrangements. As a result, an allocation of \$1.8 billion is proposed that will be used to leverage funding and financing to progress both corridors over the next decade.

Airport-City Corridor

Introducing light rail on the Airport to City corridor is expected to:

- Alleviate current and forecast bus capacity constraints in the city centre. A substantial increase in public transport capacity and efficiency is required. Without this, increased travel times to and around the city centre will negatively impact Auckland’s productivity
- Improve access to growing employment areas, particularly at and around Auckland Airport. Without a major increase in the number of people accessing the airport by public transport, the road network will not be able to function effectively and the success of this critical employment area will be placed at risk
- Unlock significant growth potential along the corridor, especially around Mangere, Onehunga and Mt Roskill. Providing a step-change in improved access along this corridor will encourage redevelopment, particularly of major public landholdings, and assist in addressing Auckland’s housing challenges
- Provide an attractive and reliable “one seat journey” between the city centre and airport for travellers. While a relatively small proportion of trips along this corridor (approximately four per cent in the morning peak) are projected to be passengers accessing the airport terminals, rapid growth in airport passengers (from 14 million in 2014 to nearly 20 million in the year to January 2018) is placing substantial pressure on the transport network which serves the airport.

Auckland Transport and NZ Transport Agency board decisions in early 2017 confirmed the long-term mode for the Airport to City Corridor as light rail. Finalisation of exact timing, alignment and technical specifications will occur as design work progresses.

Investigation and design work on the Mt Roskill to City section of the route is the most advanced. Ongoing growth in public transport demand means this section of light rail should be progressed as quickly as possible.

Investigation and design for the Mt Roskill to Airport section is less advanced. The route is currently planned to follow State Highway 20 and State Highway 20A but is yet to be confirmed. It will be important for the next stages of investigation and planning to find the best balance between travel times, support for growth and urban development opportunities, and cost. Some sections of this route overlap with an existing rail designation, requiring careful design to ensure both forms of rail can be accommodated.

Overall, there are significant benefits from delivering the whole Airport to City route in the first decade – especially to enable growth and shape Auckland’s urban form. The greater focus placed on the role of rapid transit in supporting growth outcomes has also been a major contributor to confirming the choice of mode as light rail.

Northwest

The Northwest rapid transit corridor follows State Highway 16 between the city centre and Kumeu/Huapai and was identified in 2015 funding plans as a second decade project. The 2018 ATAP Package has brought this forward, to be completed within the next ten years. This acceleration aims to:

- Support substantial growth along the corridor and in the broader northwest part of Auckland
- Address the projected decline in employment access in the west
- Provide an opportunity for travellers to avoid projected congestion along State Highway 16 and to improve the productivity of this corridor
- Improve the poor public transport in this part of Auckland
- Support a more efficient overall public transport system in this part of Auckland.

Auckland Transport and the NZ Transport Agency have been progressing investigation work over the past couple of years, considering options for mode (busway or light rail) and the sequencing of different sections. Key findings are:

- Light rail is likely to cost more than a busway (especially in the short-term as it requires delivery of the whole corridor), but would provide a longer-term solution to bus congestion in the city centre and is likely to support stronger land-use change
- A busway is easier to stage over time, utilising existing motorway shoulder lanes and on-street bus lanes. This can substantially reduce first decade investment requirements while still significantly improving public transport travel times and reliability along the corridor. However, staging the delivery of a corridor over decades results in longer-term disruption and does not provide the same level of benefits and community certainty.

There are a range of options of how rapid transit could be staged, such as completing sections of light rail infrastructure used by buses in the interim while the rest of the corridor is completed. It is recommended that Auckland Transport and the NZ Transport Agency undertake further investigation to inform decisions on how to best develop the corridor.

Eastern Busway (Panmure-Botany)

Formerly known as AMETI (the Auckland-Manukau Eastern Transport Initiative), the Eastern Busway is a long planned critical project that expands Auckland's rapid transit network from Panmure to Botany. This will improve travel choices to a part of Auckland that is highly dependent on private vehicles.

The provision of an urban busway that allows buses to avoid congestion will improve travel times, reliability and corridor throughput along Ti Rakau Drive, through Pakuranga town centre and then over the Panmure bridge. The busway also provides an excellent opportunity to unlock significant growth potential, particularly at Botany (a metropolitan centre in the Auckland Unitary Plan), Pakuranga and Panmure (both town centres with significant growth potential).

Investigation work is well advanced, particularly for the Panmure to Pakuranga section, enabling an early start on this critical piece of Auckland's rapid transit network.

Airport to Botany via Manukau

Rapid transit from the Airport to Manukau, and on to Botany, links together southern and eastern Auckland and will provide an important connection to the rail network at Puhinui.

A fast, frequent and reliable rapid transit service would deliver the following benefits:

- Improve access to southern Auckland's two major employment areas (Manukau and the airport)
- Provide a link for air passengers to the city centre and the south via a transfer to rail at Puhinui
- Improve transport options for the highly car dependent southeast Auckland
- Support major growth opportunities at key locations along the route, particularly around Manukau, Puhinui and Botany.

Auckland Transport and NZ Transport Agency investigations have identified that the corridor's highest priority section is between the airport and a major new interchange at Puhinui train station. The planned State Highway 20B upgrade will deliver this section by providing additional lanes dedicated to buses, high-occupancy vehicles and freight. These improvements should be accelerated so they can be completed by the time Auckland hosts major events in 2021, including APEC and the America's Cup.

This investment will need to be complemented by upgrades to the transport network within the airport (which is owned and operated by Auckland International Airport Ltd.).

Extending this immediate upgrade further east to connect Puhinui, Manukau and Botany is a future priority. Some targeted bus priority measures in the nearer term should be progressed to provide fast and reliable travel.

Projected demand levels and fewer space constraints on this corridor mean bus rapid transit appears to be the most appropriate mode – at least for the next 30 years.



Rail network upgrades

The most critical rail network upgrades are focused on realising the benefits of the City Rail Link, providing for growing freight demand and extending rail electrification to Pukekohe. These improvements are essential to accommodate increased train frequencies and reduce conflicts between passenger and freight services.

Major investments in this programme include:

- Extending rail electrification to Pukekohe to support growth, improve network efficiency and reduce train travel times
- Track upgrades between Wiri and Quay Park, including a third main rail line, upgrades to Westfield junction and access improvements to the Port
- Rail network resilience improvements
- Britomart station remodelling
- Rail level crossing and pedestrian crossing improvements

These network upgrades have a combined cost of \$940 million. When combined with around \$500 million of investment in new trains and stabling, this means approximately \$1.4 billion will be invested in Auckland's rail network (in addition to City Rail Link) over the next decade.

Future Priorities

The above investments would complete much of Auckland's rapid transit network over the next decade.

Further improvements, over the medium to longer term are also expected to be required in the following corridors:

- Further rail network upgrades to enable express and inter-city trains
- North Shore (Orewa to City, including Takapuna connection, upgrade of the Northern Busway and new harbour crossing)
- Upper Harbour (Westgate to Albany)
- Cross Isthmus (New Lynn to Onehunga).

The most important of these future priorities is the need for further upgrades to Auckland's rail network. These upgrades should focus on enabling rail to play a much greater role in meeting the current and future travel needs of the south, where substantial greenfield growth is planned and where public transport use has been historically low.

This will require a range of improvements to better match the public transport network with the travel patterns in Auckland's south, including improved access to the rail network and a major reduction in travel times along the southern rail line through the introduction of express services that can overtake trains servicing all stations.

KiwiRail has advised that fully supporting express rail services would require around \$800 million of investment in track upgrades. This investment would deliver the following projects:

- Fourth main rail line between Westfield and Wiri
- Third and ultimately Fourth Main between Wiri and Papakura
- Third Main between Papakura and Pukekohe.

As further funding becomes available, investigating the acceleration of these investments into the first decade should be a priority. By helping to accommodate a larger number of trains and different stopping patterns, these improvements will:

- Increase employment access for growing areas in the far south of Auckland's urban area by reducing journey times on express services
- Create a stronger connection between areas served by the rail network and Auckland Airport (via an interchange at Puhinui)
- Support the progressive implementation of inter-regional rail passenger services between Auckland and the Waikato, which will also help to unlock growth opportunities around the rail network in the Waikato.

Other rapid transit improvements address challenges that are projected to emerge in the medium and longer term, or are relatively undeveloped concepts. These include:

- **The North Shore corridor**, which is being enhanced over the next decade through committed projects extending the Northern Busway from Constellation to Albany, providing bus shoulder lanes between Albany and Orewa and making bus priority improvements on Fanshawe Street in the city centre. Projected future demand on this corridor is high and detailed investigation by Auckland Transport suggests upgrading the Northern Busway to a higher capacity mode (likely to be light rail) may be required by the mid-2030s, earlier than previously anticipated. This would require a new rapid transit crossing of the Waitemata Harbour on an alignment that connects with the City-Airport light rail corridor at Wynyard Quarter. There is an urgent need to confirm the rapid transit corridor's future mode and alignment, including how it integrates with a potential future road crossing.
- **The Upper Harbour corridor**, which will be improved over the next decade through the construction of rapid transit stations and service improvements to align with the timing of growth. Projected demand along this corridor is relatively low, meaning further work is required to understand the optimal timing and scale of future investment.
- **The Cross Isthmus corridor**, which is relatively undeveloped but connects a number of major growth areas across the southern isthmus: New Lynn, Avondale, Mt Roskill, Three Kings, Royal Oak and Onehunga. Developing this corridor further, with a particular focus on how it can support growth and integrate with the City-Airport corridor, is a key priority.

The combination of first decade and future priorities provides more clarity about how Auckland's long-term rapid transit network may develop, with exact routes and modes to be confirmed through business case processes. An indication of how the rapid transport network may develop is shown in the map below:



Strategic road network

Funding allocated in ATAP Package	\$3.8 billion
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Introduction

With the completion of the Waterview Connection, the main components of Auckland's road network are largely in place. Committed projects are focused on optimising the Western Ring Route or extending the motorway further north.

Looking ahead, investment will need to focus on:

- Improving the safety and efficiency of existing corridors
- Targeting key bottlenecks
- Improving network resilience and inter-regional freight movements
- Supporting greenfield growth areas by diverting through traffic away from town centres to improve their amenity.

The ATAP package prioritises projects which address the most critical challenges and can be progressed cost effectively.

ATAP Package	
Committed Projects	Key Benefits:
Northern Corridor improvements	<ul style="list-style-type: none"> • Completes the final section of the Western Ring Route by providing a new, continuous motorway route between the Northern Motorway (SH1) and the Upper Harbour Motorway (SH18) • Reduces through-traffic from local roads in the North Harbour industrial estate area.
Southern Corridor improvements	<ul style="list-style-type: none"> • Optimises the southern end of the Western Ring Route by addressing a major bottleneck where the Southwestern Motorway (SH20) meets the Southern Motorway (SH1) • Widens the Southern Motorway between Manukau and Papakura to address existing bottlenecks and improve reliability and safety.
Lincoln to Westgate (SH16)	<ul style="list-style-type: none"> • Widens the Northwestern Motorway as part of the Western Ring Route improvement to provide more reliable travel times and get the most out of other investments to the corridor • Provides a dedicated bus shoulder lane on the motorway to improve bus travel times.
Puhoi to Warkworth (SH1)	<ul style="list-style-type: none"> • Extends the Northern Motorway by 18 kilometres to improve travel reliability and safety • Provides a bypass of Warkworth, addressing a major bottleneck.
New Projects	
Eastern Airport Access (State Highway 20B)	Detailed in pages 30-31
East West Link (revised)	
Southern Motorway widening (Papakura to Drury)	
Mill Road (phase one)	
Penlink	

Future Priorities	
State Highway 16/18 interchange upgrade	Detailed on page 32
Additional Waitemata Harbour Crossing	
Improved access to Port / Grafton Gully	
Capacity improvements on outer parts of the motorway network	
New strategic roads to Kumeu and Pukekohe	
Mill Road (phase two)	



The location of these projects is shown in the map below:



Eastern Airport Access (State Highway 20B)

The State Highway 20B corridor, which provides access to Auckland Airport from the east, currently experiences severe congestion. A lack of bus lanes means that buses experience substantial delays and poor reliability. Significant development is also planned in the area the corridor passes through.

This upgrade will provide an additional lane in each direction between Puhinui and the Airport, which is likely to be a bus/carpool/freight lane to maximise the corridor's productivity and provide reliable travel for the most critical users. An upgrade to the Puhinui Road interchange (SH20/SH20B) is also likely to be required.

It is important for improvements along this corridor to be progressed as quickly as possible. Integration with the planned Puhinui bus/rail interchange is important to provide for reliable travel to and from the airport for parts of Auckland served by the rail network.

East West Link

The Government is reviewing East West Link. While the exact form of this investment is not yet known, it will generally focus on addressing the most significant congestion and freight access problems in the area in a way that better optimises existing infrastructure.

The ATAP Package has assumed approximately \$800 million will be invested in this corridor, representing a reduction of around \$950 million from the earlier proposal.

Southern Motorway Widening (Papakura to Drury)

Widening the Southern Motorway between Papakura and Drury is one of few locations where additional capacity will generate enduring benefits. The upgrade passes through a large greenfield growth area and will help ensure Auckland's key link with the Waikato can continue to function effectively as this area urbanises and travel demand on the Southern Motorway increases.

Transport modelling highlighted the importance of both the Southern Motorway and the Mill Road corridor in providing access to employment across a broad part of southern Auckland. This reinforced the recommendation to include this project in the ATAP Package and to progress the most important parts of the Mill Road corridor.

The NZ Transport Agency's investigation work has identified a long-term need to upgrade the motorway all the way to the Bombay Hills, but the first decade priority should be on the section between Papakura and Drury.

Mill Road

The proposed Mill Road corridor provides an additional strategic north-south corridor for southern Auckland, connecting Manukau and Drury to the east of the Southern Motorway. It connects future residential development in the south with employment in the north, particularly around Manukau. Once complete, it will also improve access to new employment opportunities in Drury South.

Even with the public transport network absorbing around 20 per cent of new trips and the Southern Motorway widening discussed above, major forecast increases in car travel are expected to create chokepoints on roads around Papakura and Drury unless there is investment in the Mill Road corridor.

Added capacity along the Mill Road corridor also helps other key routes in this part of Auckland:

- Less pressure on the Southern Motorway allows it to be the key route for inter-regional freight movements and other longer trips
- Less pressure on Great South Road assists plans to reallocate existing road space to bus lanes.

It is clear that some improvements need to be made along the Mill Road corridor over the next decade, to improve the resilience of Auckland's transport system and to support growth areas along the route. While further work needs to be done to identify where these improvements should be targeted, key priority areas for investment include:

- Improve intersections to address the most severe congestion
- Improve parts of the northern end to address the most severe safety issues
- Construct sections that pass directly through former Special Housing Areas at the time these areas grow
- Construct the new Drury South interchange
- Undertake route protection and land purchase of the southern section.

Auckland Transport has advised that these improvements will cost around \$500 million.

Penlink

The Penlink project provides a new connection between the Northern Motorway and the Whangaparāoa Peninsula, bypassing the constrained Silverdale interchange. It was signalled as a second decade project in 2015 funding plans as well as in some of the earlier ATAP work.

Faster than expected growth and major planned development around the Silverdale interchange has accelerated the need to progress Penlink. The project is suitable for a toll road, as it provides significant time savings for users and an alternative route exists. Transport modelling suggests that with a toll in place, Penlink has sufficient capacity as a two-lane road to meet foreseeable future demand, although it will be designed in such a way that is future proofed for four lanes.

The project should be complemented by public transport improvements (for example the planned bus shoulder lanes between Albany and Orewa) to encourage mode shift in the area and avoid adding more vehicles to congested parts of the Northern Motorway.

Future priorities

The above investments would continue the targeted development of Auckland's strategic road network by the early 2030s. Key remaining corridors include:

- Upgrade to the State Highway 16 and State Highway 18 interchange
- Additional Waitemata Harbour Crossing
- Improved access to Port / Grafton Gully
- Capacity upgrades on outer parts of the motorway network
- New strategic roads to Kumeu and Pukekohe
- Mill Road (phase two).

These corridors address future challenges:

- An upgrade to the interchange between the Northwestern (SH16) and Upper Harbour (SH18) motorways, providing for direct motorway-to-motorway links in all directions. It also includes a new motorway interchange at Northside Drive, improving access to Westgate – a major growth node. Completing the motorway interchange will remove through-traffic from local roads and help to improve the amenity and liveability of Whenuapai, a major greenfield growth area. Auckland Transport and the NZ Transport Agency have been investigating this project alongside Northwest rapid transit investigations. There are opportunities for components of the projects to be progressed together through consenting and delivery.
- Current investigation work into an additional Waitemata Harbour Crossing needs to be completed to provide more certainty about the optimal timing, modal mix, configuration and operation of the crossing. Consistent with earlier ATAP work construction is not anticipated to commence until at least the late 2030s. The Auckland Harbour Bridge forms a critical part of the national transport network as the main connection between the North Shore, the city centre and locations further south, meaning an additional crossing would improve network resilience. The structural capacity of the Auckland Harbour Bridge has also been maximised, with projected growth meaning future heavy vehicle restrictions are likely to be required. In determining optimal timing, these restrictions will need to be weighed against the very high cost of an additional road crossing. Further development of this project should ultimately enable delivery of a multi-modal corridor across the harbour, with flexibility for rapid transit and road to potentially be delivered in separate tunnels at separate times.
- Access to the Port of Auckland through Grafton Gully is a significant bottleneck. The ATAP Package allocates some funding for targeted road improvements, while the rail network upgrades will support a higher share of freight travelling to and from the Port by rail. A more substantial upgrade of road access to the Port will be a challenging project as it passes through a geographically constrained part of the city. Any major roading upgrade also needs to be informed by decisions around the long-term location of the Port.
- Ongoing projected growth in travel means the motorway network will remain under significant pressure and targeted upgrades to outer parts of the motorway network are likely to be required over time to relieve bottlenecks as they emerge. While inner parts of Auckland's motorway network have the highest traffic volumes in the country and are projected to experience the most congestion, these areas are physically constrained and capacity additions generally appear to shift bottlenecks and congestion points rather than address them.
- New strategic roads to Kumeu and Pukekohe are likely to be required in the second decade to direct through-traffic away from newly urbanising areas, improving their liveability and amenity. Current investigation to protect the routes for these projects should be completed.

Greenfield transport infrastructure

Funding allocated in ATAP Package	\$1.3 billion
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Introduction

Over the next decade around 32,000 new homes housing up to 100,000 people are expected to be built in major greenfield growth areas to the north, northwest and south.⁴

Significant investment in transport infrastructure will be needed to enable this growth, encourage the use of public transport and active modes, and to provide a reasonable level of service to future residents. Investment falls into three broad areas:

- Local and collector roads and footpaths. These roads are constructed and funded by developers and are built at the time of development. The costs are not included in the analysis because there is no public funding requirement.
- Major projects or upgrades of strategic transport networks to better connect growth areas with the rest of Auckland (e.g. Pukekohe rail electrification, Northwest rapid transit, Penlink, Mill Road etc.) These investments have been discussed earlier in this report.
- Arterial roads and footpaths (including bus and cycle lanes where required) and public transport stations within greenfield growth areas. Wherever possible, agencies seek to ensure that the public cost of these projects is the net cost between the collector road a developer would build and fund, and the arterial road considered necessary to meet future demand.

This section relates to investments that fall within the third category (iii) above.

Most locations where greenfield growth will occur over the next 30 years are zoned "Future Urban" in the Auckland Unitary Plan, with the timing of their development sequenced in the Future Urban Land Supply Strategy.⁵ More detailed planning for some of these areas is currently underway but actual development may take a number of years. However, some greenfield growth areas in the north, northwest and south were "live zoned" in the Unitary Plan, meaning that development can occur in the near future. Supporting growth in "live zoned" areas must be the priority for investment and route protection work.

The ATAP Package

Available funding for greenfield projects in the ATAP Package includes:

- The \$510 million Local Residential Growth Fund,⁶ which is predominantly raised from development contributions and directed to new development areas in smaller dispersed locations
- Around \$360 million from Crown Infrastructure Partners for projects around Silverdale and Drury, which will be repaid by landowners through funding agreements
- A \$300 million greenfield transport infrastructure “seed fund” that is aimed at unlocking private funding to support greenfield growth
- \$190 million for committed projects, route protection work and the Matakana Link Road.

This level of funding will not be able to fully support all projects required in major greenfield growth areas. Additional developer funding, an expansion of the Crown Infrastructure Partners programme or the creation of other new funding mechanisms will therefore be required.

This is considered appropriate because the benefits of investing to enable and support greenfield growth are largely enjoyed by landowners in the form of higher value land, as it can be urbanised. Further analysis, often on a case-by-case basis, will be required to agree the funding arrangements for these investments between landowners and the general public.

The level of growth and key investment priorities (in addition to the major strategic corridors discussed in earlier sections) for each major greenfield area are:

- In Warkworth, around 4,600 new homes are expected to be built over the next 30 years, of which 1,000 are expected over the next decade. Key investments include the Matakana Link Road and the Western Collector.
- In Silverdale-Dairy Flat, around 15,000 new homes are expected to be built over the next 30 years, with 6,000 of these built over the next decade. Key investments include the Argent-Curley Ave extension and the Wilks Road to Penlink arterial.
- In the Northwest, around 30,000 new homes are expected to be built over the next 30 years, with 13,600 of these built over the next decade. Key investments include Northside Drive East, an upgrade to Fred Taylor Drive, a new arterial road network in Redhills and rapid transit stations along State Highway 18.
- In the South, around 25,000 new homes are expected to be built over the next 30 years, with 11,300 of these built over the next decade. Key investments include an upgrade to Rangī Road that removes road/rail level crossings in Takanini, an extension to Bremner Road and new southern train stations.

The allocation to strategic and local improvements above also includes investments such as Glenvar Road in Long Bay and Hill St in Warkworth that contribute to enabling greenfield growth.

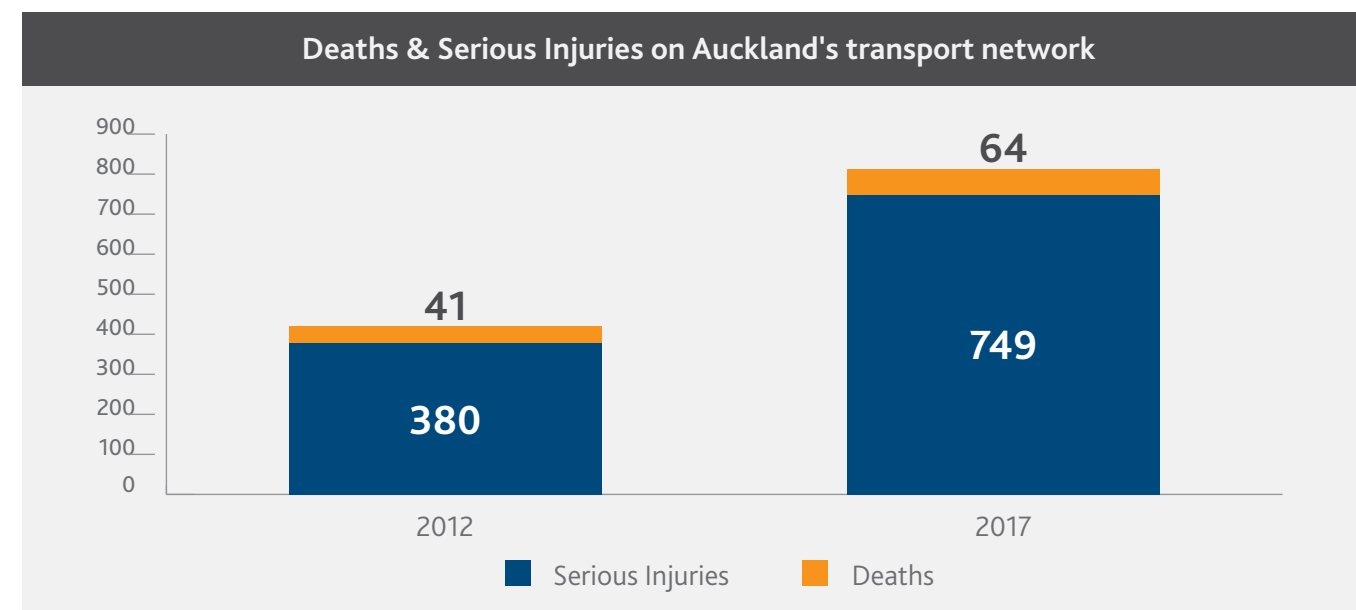
Safety programmes

Funding allocated in ATAP Package

\$900 million

Introduction

There has been a near-doubling in deaths and serious injuries on Auckland’s transport network over the past 5 years, from 421 in 2012 (the lowest point in many decades) to 813 in 2017. This far outweighs growth in population and vehicle kilometres travelled over the same period, a substantial reversal of what had previously been a long-term improvement in road safety. 2017 was the worst year for road safety in Auckland since 1996.



The economic and social cost of road deaths and serious injuries is around \$1.14 billion per year – broadly equivalent to the cost of congestion.⁷ Around 70 per cent of transport related deaths and serious injuries over the last two years took place in 50 km per hour zones with pedestrians, cyclists and motorcyclists disproportionately at risk.⁸

Every element of the transport system has an important role in improving safety, therefore reversing this trend will require a combination of interventions, including:

- Increased investment into dedicated safety projects
- Greater emphasis on safety in project design and evaluation processes, and in general street design standards
- Regulatory changes (for example, investigating targeted speed limit reductions in centres, around schools or on dangerous roads)
- Appropriate enforcement
- Ongoing education and public awareness campaigns.

Investment options

The level of funding dedicated to road safety improvements has been relatively low in recent years. Auckland Transport has developed a series of options for increasing investment in road safety initiatives, targeted to address high-risk intersections and corridors, speed management, and creating safe communities. Increased investment in this area has the potential to substantially reduce deaths and serious injuries and help to reverse the recent increase.

The ATAP Package proposes a substantial increase of investment into safety-related projects and programmes. This investment will be targeted to:

- Upgrading 10-12 high-risk intersections and 200 kilometres of high risk routes per year through improvements like high friction surfacing, new roundabouts, edge treatments, road realignment, reducing high speeds at intersections, traffic signal improvements and placemaking in town centres.
- Providing more safe crossing opportunities and making progress on a programme of removing road/rail level crossings, including some grade separations
- Improving rural road safety through improvements such as better signage, surface improvements and markings
- A roll-out of speed management changes across 10 per cent of the network, including lower speed limits, gateway treatments and safety cameras (speed cameras and red light cameras).



Walking, Cycling and Local Board Priorities

Funding allocated in ATAP Package

\$900 million

Walking

Walking journeys account for 14 per cent of the trips taken in Auckland.⁹ A poor quality and frequently unsafe pedestrian environment is the key barrier to increasing the number of walking trips. Efforts should be focused on encouraging walking for short journeys: for people who live close to the city centre or are near public transport stations, for school journeys, and for trips to local centres.

To date, walking improvements have typically been delivered as part of other investments – including general street upgrades and safety programmes. A dedicated walking programme would enable a more proactive approach to targeting improvements. Current approaches are generally reactive and constrained by a very small budget of around \$4 million a year for new footpaths. Increased investment would support:

- Higher quality environments in town centres that create safe and attractive places for people to sit, gather, visit local businesses, connect with their neighbours and partake in recreational and cultural activities
- More trips being made to local centres on foot, easing pressure on the road network and reducing the need for valuable land to be used as parking
- Increased numbers of children walking to school through targeted pedestrian safety improvements, particularly through providing safe places to cross busy roads.

The draft Government Policy Statement on land transport places a higher priority on encouraging walking, including supporting projects previously funded outside transport budgets (e.g. town centre upgrades). Further work is required to understand the financial implications of these changes.

Ensuring our street design standards focus on providing safe and attractive facilities for pedestrians is also key to improving walkability. These standards have been updated recently to place greater priority on pedestrians, but now need to be fully integrated into business-as-usual activities like road maintenance and renewals if they are to truly drive change and create more walkable environments.

Cycling

Over the past few years investment into cycling (including the Urban Cycleway Fund) has increased substantially, from under \$20 million a year in 2013 to around \$40 million in both 2016 and 2017. Most investment has focused on providing safe and protected cycling infrastructure, which previously only existed along a very limited number of corridors in Auckland (e.g. the Northwestern Cycleway next to State Highway 16).

Despite this recent increase, Auckland's safe cycling network is still very undeveloped and will take sustained investment and effort to be completed. International evidence shows that many American, Canadian and European cities with historically low levels of cycling have been able to dramatically increase ridership through sustained investment in high quality infrastructure.¹⁰

A number of investment areas will contribute to implementing this network over time, including dedicated cycling improvements and those built as part of other projects. The investment levels discussed in this section relate to dedicated cycling infrastructure delivered by either Auckland Transport or the NZ Transport Agency.

A programme business case to guide the next 10 years of investment in cycling was approved by Auckland Transport and the NZ Transport Agency in 2017. The analysis undertaken as part of this work emphasised the need to provide complete networks and improve cycling infrastructure in an area-focused way to achieve the greatest gains. This work fed into developing the ATAP Package.

Some significant cycling investments along state highway corridors have been included in the ATAP Package. These include SeaPath, SkyPath and a new walking and cycling crossing of the Manukau Harbour between Onehunga and Mangere Bridge.

Overall, around \$640 million of investment in cycling infrastructure has been included in the ATAP Package.

The business case work also suggests additional investment in cycling continues to provide strong value for money. Substantial further increases in cycling investment may create delivery and affordability challenges, but the business case highlights how accelerating the implementation of Auckland's cycling network provides value and is worth progressing if these challenges can be overcome.

It is recommended that as further funding becomes available, strong consideration be given to increasing the cycling programme.

Local board priorities

The ATAP Package includes around \$240 million of investment over ten years for local board priorities, a significant increase from previous funding plans. The projects to be funded by this investment are determined by Auckland's 21 local boards, who work with Auckland Transport to develop and implement their priorities. Historically most of this funding has been used for walking, cycling and safety improvements.

Bus and Ferry Improvements

Funding allocated in ATAP Package	\$700 million
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Bus

Buses make up just over 70 per cent of public transport boardings in Auckland. Although the share of public transport trips made by rail and light rail will increase over time, the majority of public transport trips are likely to continue to be made by bus.

Beyond providing new or upgraded bus rapid transit corridors (discussed in earlier sections), the major area of proposed investment to improve the speed, reliability and efficiency of the bus network is through bus priority measures. These include bus lanes, T2 / T3 transit lanes and providing buses with a "head start" at intersections. They provide a number of benefits, including:

- Enhanced overall network throughput
- Improved bus network reliability
- Improved bus travel times and punctuality
- Reduced operational costs.

A comprehensive bus priority programme of around \$450 million will enable comprehensive 'whole of route' bus priority improvements for 30 frequent bus routes across Auckland, including 75 kilometres of corridor upgrades. This investment will help realise operational savings through more efficient bus operations and increased ridership and fares.

In addition, a series of city centre bus investments are required to address current and future bus congestion on corridors that serve areas outside the rail network and planned light rail network. Other targeted investments to improve bus facilities around Auckland are also included in the ATAP Package.

Ferry

Ferries make up around seven per cent of public transport ridership in Auckland and will also continue to play an important niche role in the public transport system, particularly in serving locations where travel by sea is much shorter (or in the case of Waiheke the only option) than travel by land.

Auckland Transport is in the process of completing a ferry strategy that will guide the long-term approach to developing Auckland's ferry network. In the meantime, the most critical ferry investment is an upgrade of the downtown ferry terminal, to address current passenger delays and enable wider changes to Auckland's waterfront.

Park and ride

Expanding Auckland's park and ride network in appropriate locations is an important part of increasing the use of public transport. Park and rides are most suitable in outer urban areas where access to public transport via walking, cycling or feeder bus services is less viable and land is also cheaper. The ATAP Package supports some new or expanded park and ride facilities in outer urban areas, particularly in the eastern part of Auckland where few facilities currently exist.

Network optimisation and technology

Funding allocated in ATAP Package	\$700 million
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Introduction

Making better use of existing networks is critical in meeting the transport needs of a fast-growing city and is one of the three key components of the ATAP strategic approach. A combination of high land costs and severe community impacts make large-scale corridor widening less feasible to meet growing travel demand.

Alongside a strong shift to public transport, walking and cycling, it will be increasingly important to take all possible steps to optimise existing networks through small-scale initiatives that can be implemented quickly and can be shown to have a high return on investment. Demand management measures, such as road pricing, are also integral to optimising the existing network.

Network optimisation

Optimisation initiatives are likely to include traffic light optimisation, dynamic lanes – as recently implemented on Whangaparāoa Road – freight lanes and other priority measures, intersection improvements such as roundabout metering, and improvements to support bus priority or higher vehicle occupancy, such as T2 and T3 lanes.

Planning is underway to guide a more comprehensive approach to network optimisation and needs to be completed urgently. This work will detail where and how investment should be targeted to maximise benefits for all transport network users. Alongside the planned increase in investment, a successful network optimisation programme will require support for initiatives that often deliver substantial benefits but can be controversial within some local communities (e.g. removing on-street parking).

There is potential for substantial gains to be achieved through increased investment in network optimisation and it is recommended a much greater focus on these projects be considered.

Technology

Maximising the benefits of new and emerging technologies has the potential to generate significant improvements to the performance of Auckland's transport system. However there remains substantial uncertainty about the timing, nature and full effects of these changes.

In the short term, increased investment in intelligent transport systems offers the potential to more effectively and dynamically manage traffic. In the longer term, connected and autonomous vehicles have the potential to help increase vehicle throughput (particularly on motorways), reduce traffic accidents, and improve travel time reliability. Work to investigate and remove barriers to the uptake of these technologies should continue.

Operational costs and asset renewals

Funding allocated in ATAP Package (net of revenue)	\$8.1 billion (op cost)
	\$3.3 billion (asset renewals)

Operational costs (\$8.1 billion)

The main areas of operating costs are public transport services and maintaining roads and other assets. Key cost drivers are:

- The amount of public transport service provided
- The extent to which public transport fares and other charges (e.g. parking charges) cover the cost of providing services
- The size of the overall asset base (which determines maintenance costs over time).

The ATAP work has largely focused on changes to the capital investment programme rather than service-based improvements. One example of this is public transport operating costs. Currently around \$340 million (net of fares) is invested into public transport operations annually. Over the next decade this level of investment is projected to grow, to ensure service provision meets growing demand.

Additional investment into public transport could be used to either increase services or reduce fares. International best practice suggests additional investment should generally be targeted to improving services.¹¹ High priorities for increased investment in public transport services include:

- Improving services on new and existing rapid transit routes to maximise benefits from capital investment
- Expanding the frequent public transport network (where services operate at least every 15 minutes at most times) to more routes
- Increasing service frequencies to address overcrowding
- Increasing off-peak and weekend rail frequencies so the rail network can fulfil its required role as a core part of the frequent public transport network.

A larger capital investment programme will also translate into increased consequential operating costs.

Further work is needed to refine additional operational cost estimates in light of government intentions to accelerate public transport services and increase mode share.

Asset renewals (\$3.3 billion)

Renewing existing assets efficiently and effectively is a key non-discretionary area of transport investment. The level of expenditure required for renewals is guided by detailed asset management planning.

In previous versions of ATAP agreement on the appropriate level of investment in renewals had not yet been reached, meaning that not all of Auckland Transport's investment in this area received NZTA co-funding. Since that time substantial progress towards reaching agreement has occurred and funding levels will be finalised in the next few months.



4. Expected outcomes

Introduction

The ATAP Package will deliver a substantial improvement to Auckland’s transport system over the next decade.

This includes:

- Enabling and supporting Auckland’s growth
- Improving travel choice
- Congestion and access
- Safety, health and the environment
- Value for money.

Enabling and supporting Auckland’s growth

Transport and growth are inextricably linked. Transport investment is essential to enabling urbanisation of greenfield areas and encouraging redevelopment of existing urban areas. Similarly, where and when growth occurs determines the location and scale of future travel demand and therefore the investment required to meet that demand.

Growth around rapid transit

Auckland’s transport history has shaped the city’s growth over time, initially through trams in the early 20th century and then through motorways after the Second World War. More recently, redevelopment to higher densities has often been focused around rail stations and key bus corridors. This mirrors what has happened in a number of successful cities around the world, which have used rapid transit to shape their urban form over recent decades.¹²

Given the large scale of investment required to build and operate high quality rapid transit corridors, it is critical to support this investment through land-use policies that enable and encourage substantial growth around these corridors.

To help understand the scale of potential growth in areas within reasonable walking distance of the City-Airport, Airport-Botany and Northwest rapid transit corridors, we undertook a high-level analysis of their existing Auckland Unitary Plan capacity¹³ as well as an initial consideration of possible interventions to both realise this existing capacity and potentially increase the capacity further.

The key finding of this work was confirmation that substantial capacity exists under the current Unitary Plan in residential, business mixed use and centre zones along these corridors:

Growth in City-Airport, Airport-Botany & Northwest corridors

Current number of dwellings	107,600
Assumed dwelling growth in transport model over next 30 years	124,000
Capacity for extra dwellings in Unitary Plan	531,000

ATAP has used Auckland Council growth projections, which already assume the number of homes within walking distance of these rapid transit corridors to more than double over the next 30 years. Within current Unitary Plan provisions a much greater amount of growth is possible – with up to 531,000 more dwellings. Further rezoning or master planning of key strategic areas could increase these figures further, but the main intervention to unlock growth in these rapid transit corridors will be to realise capacity that already exists.

Beyond these three corridors, there are also opportunities around most stations on the rapid transit network for development – particularly along the Western railway line.

Fully unlocking housing and urban growth opportunities will require more interventions than just changing Unitary Plan provisions. The Government and Council have both taken more active roles in urban development in recent years and this process will need to continue and accelerate to truly unlock the benefits of large-scale investment in rapid transit.

Supporting greenfield growth

The ATAP Package helps to unlock funding that will enable around 30,000 more homes to be built over the next decade in major greenfield growth areas to the north, northwest and south.

Major Growth Area	Projected Growth
Warkworth	1,000 more homes
Silverdale/Dairy Flat	6,000 more homes
Northwest	13,600 more homes
South	11,300 more homes

These investments will also seek to provide each area with travel choices, so they grow in ways that are not highly dependent on private vehicles.

Improving travel choice

Fast, frequent and reliable public transport will be extended into many parts of the city and significant progress be made towards creating a connected and safe cycling network.

These improvements are expected to support a substantial increase to the share of travel by public and active transport modes, from around a quarter of all morning peak trips at the moment to approximately a third of trips by 2028. Public transport ridership is expected to grow substantially, increasing from 93 million annual boardings to around 170 million by 2028.

Congestion and access

Access to employment is projected to improve, by both car and public transport. This means that Auckland's growth is translating into better access to employment opportunities, which is a critical factor in improving economic productivity.

The proportion of travel in congested conditions during the morning peak by car is projected to remain around 2016 levels, despite population growth of around 300,000 people. The level of congestion faced by public transport users is expected to decline as an increased proportion of services operate either in the own right-of-way (for busways, rail and light rail) or with bus lanes that separate them from general traffic.

The proportion of interpeak travel in congestion is also projected to remain around 2016 levels despite Auckland's growth. Ensuring interpeak congestion does not worsen is critical to supporting the efficient movement of goods and services around Auckland, which makes an important contribution to Auckland and New Zealand's economic success.

For Auckland to be a truly accessible city, people of all ages and abilities including people with reduced mobility levels, need to be able to go about their daily lives and get from one place to another easily, affordably and safely. This will depend on continued improvements to street design standards.

Safety, health and the environment

Safety

The increase in road deaths and serious injuries in recent years is projected to be reversed by the ATAP Package and associated regulatory, enforcement and promotional activities. Together, these initiatives are expected to deliver a 60 per cent reduction in deaths and serious injuries from 813 in 2017 to no more than 325 in 2027.¹⁴

Improving real and perceived safety is also key to increasing the use of active transport modes, especially in encouraging more walking and cycling to school.

Health

The transport system affects health outcomes in two main ways:

- Harmful vehicle emissions contribute to respiratory diseases
- Physical activity can help prevent a number of chronic diseases.

Strategic modelling tools can be used to estimate total discharge of various vehicle emissions. These projections are based on estimated levels of travel, how much of that travel is in congested conditions and a series of assumptions about future engine efficiency levels.

Modelling suggests that most harmful pollutants are expected to decline over the next decade, predominantly from improved vehicle standards, supported by modal shift to public transport, walking and cycling.

A substantial increase in active transport modes (walking and cycling) is anticipated to generate at least \$500 million of health and environmental benefits, which makes up around a third of total benefits from investment in cycling infrastructure.¹⁵

Environment

A combination of vehicle engine efficiency improvements and a greater mode shift to public transport, walking and cycling means that fuel consumption by private vehicles is projected to decrease slightly over the next decade, despite population growth. Some changes to vehicle technology, like the rate of electric vehicle uptake, is challenging to forecast and is not included in these projections. If the proportion of the vehicle fleet that is electric greatly increases, fuel consumption and therefore total emissions would decrease.

Most growth in future transport emissions are from heavy vehicles, trips that are less able to shift to another mode and where engine efficiency gains are projected to be less significant. Reducing emissions from heavy vehicles will need to be an area of focus to achieve substantial progress in this area.

Value for money

The ATAP Package's total estimated cost of \$28 billion represents a substantial public investment into improving Auckland's transport system. Ensuring value for money is obtained from every part of this investment will require ongoing work and rigorous analysis as the funding for each project is considered. The Terms of Reference for the project required consideration of both monetary and broader non-monetary costs and benefits. To do this, value for money was considered through the outcomes discussed above as well as through benefit-cost analysis.

A weighted average benefit cost ratio (BCR) was developed that draws on existing project business cases (where a BCR was available) and weights these by the cost of the project. A BCR for the ATAP Package has been calculated at around 2.6. This suggests it will deliver good value for money.

Investment-specific value for money analysis will be required to confirm whether specific components of the updated package provide sufficient value to warrant public investment.



5. Next steps

The ATAP package provides a clear direction for transport investment in Auckland with an emphasis on public transport (especially rapid transit), walking and cycling, improving safety and broader environmental, health and urban growth outcomes. It is central to a transformational programme that, over time, will include:

- An urban development plan
- Making the most of new technologies
- Successfully implementing demand management initiatives like road pricing.

Immediate next steps are to align statutory documents, including the Regional Land Transport Plan and the National Land Transport Programme, with the direction of this report.

The following areas of further work also need to be progressed:

- Establishing a joint Government-Council workstream to consider transport funding and financing options
- Considering what changes may be required to transport planning and funding processes and project evaluation tools to achieve the Government and Council's direction for transport in Auckland
- Developing plans to communicate key goals and targets
- Streamlining business case processes to better recognise the strategic direction provided through ATAP
- Investigating opportunities to maximise the growth and city-shaping benefits of investment in rapid transit.

Appendix A – ATAP development

The ATAP work was given direction through the Terms of Reference agreed by Hon Minister Twyford, Hon Minister Robertson, Mayor Goff, Deputy Mayor Cashmore and Councillor Darby.

The advice was developed by a cross-agency project team with governance oversight provided by a group of Chief Executives and senior officials.

Stakeholders provided valuable input to the work with the following groups participating:

Auckland Business Forum	Landcare Research
Auckland International Airport	National Road Carriers
Auckland Regional Public Health Service	New Zealand Automobile Association
Bike Auckland	New Zealand Council of Trade Unions
Campaign for Better Transport	NZ Property Council – Auckland Branch
Child Poverty Action Group	Ports of Auckland
Employment Manufacturers Association	Road Transport Forum
Environmental Defence Society	Tourism Industry Association Aotearoa
Generation Zero	Walk Auckland
Greater Auckland	
Infrastructure New Zealand	



Endnotes:

- 1 This advice was put together by a cross-agency project team with a governance group comprising the chief executives of the Ministry of Transport, Auckland Council, NZ Transport Agency, Auckland Transport and KiwiRail, and deputy secretaries of Treasury and the State Services Commission.
- 2 Draft Auckland Plan: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/auckland-plan/Pages/default.aspx>
- 3 Congestion Question Project: <https://www.transport.govt.nz/land/auckland/the-congestion-question/>
- 4 Auckland Council Growth Projections
- 5 Future Urban Land Supply Strategy: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/topic-based-plans-strategies/housing-plans/Pages/future-urban-land-supply-strategy.aspx>
- 6 The Local Residential Growth Fund (LRGF) provides Auckland Transport the ability to respond quickly to evolving growth and development needs in Auckland. The LRGF supports infrastructure cost sharing arrangements and is predominantly funded through development contributions
- 7 NZTA Crash Analysis System, (MoT2016), Social costs of road crashes and injuries 2015 update
- 8 Data obtained from Crash Analysis System, 29 March 2018. <https://opendata-nzta.opendata.arcgis.com/datasets/crash-analysis-system-cas-data/data>
- 9 Auckland Transport walking and cycling memo
- 10 <http://www.cityclock.org/urban-cycling-mode-share/> For example:
 - Washington DC increased from 0.5% to 4.1% between 2000 and 2012,
 - Seattle increased from 1.1% to 4.1% between 2000 and 2012
 - Seville increased from 2% to 6% between 2007 and 2012
 - Portland increased from 1.8% to 6.1% between 2000 and 2012
 - Stockholm increased from 1% to 10% between 2001 and 2006
 - Helsinki increased from 6% to 11% between 2003 and 2013
- 11 Jarrett Walker “Should we cut fares or increase service, an advocacy parable” <http://humantransit.org/2013/12/should-we-cut-fares-or-increase-service-a-portland-parable.html>
- 12 Robert Cervero (1998) The Transit Metropolis: a global enquiry
- 13 The Auckland Unitary Plan guides the level of additional growth that is likely to be possible on a particular site through a series of provisions, generally based on different “zones”
- 14 Auckland Transport
- 15 <https://at.govt.nz/media/1974191/item114-auckland-cycling-programme-for-investmentfinal.pdf>



Image supplied by City Rail Link.

Find out more:
transport.govt.nz/atap
aucklandcouncil.govt.nz/atap