

Auckland Transport Alignment Project

Recommended Strategic Approach

September 2016





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Foreword



We are all familiar with the pressures that Auckland's population growth puts on the city's transport system. This growth is expected to continue in the foreseeable future, with Auckland expected to grow by around 700,000 people - or more than half of New Zealand's total expected population growth - over the next 30 years.

It is essential that the Government and Auckland Council are on the same page when it comes to how we can best plan for and meet the growing transport demand that flows directly from population growth. This is why we decided to set up the Auckland Transport Alignment Project (ATAP).

The completion of ATAP means we have a common understanding of how and where Auckland is likely to grow, what the transport priorities are and when they need to be addressed.

ATAP has recommended we focus on getting more throughput on the existing network because this is where most growth in travel demand will happen. It has also concluded we need to better target what we invest in. ATAP has identified the following priorities for additional funding over the next decade:

- New and upgraded roads to unlock land for housing in the northwest, the south and the north
- The first phase of the Northwestern Busway from Westgate to Te Atatu to provide for growth, increased access into the city centre and help tackle congestion on the Northwestern Motorway
- Motorway improvements to address congestion and provide for ongoing growth in the northwest, south and southwest
- Upgraded access to Auckland Airport from the east to address congestion and improve journey reliability of bus services and safety for cyclists
- Ongoing investment to improve Auckland's rail network for both passengers and freight, including more electric trains and extending electrification to Pukekohe.

ATAP has also found that Auckland needs to capitalise on the very real opportunities emerging transport technologies present - both in terms of the network itself and how it is used - for meeting the city's transport needs.

Lastly, ATAP has concluded that to achieve a step-change in the performance of Auckland's transport system we need to begin laying the groundwork to move towards smarter pricing.

I look forward to working with the Mayor of Auckland and Auckland Council on how we can best implement this ambitious strategic approach, and address the funding implications.

*Hon Simon Bridges,
Minister of Transport*

A handwritten signature in black ink, appearing to read 'S Bridges'.



When Auckland's eight local authorities amalgamated in 2010, much was expected of the new, unified Auckland. One expectation was that Auckland would engage in more fruitful collaborations with Government. The Auckland Transport Alignment Project delivers on that expectation.

Since the new Auckland was formed, employment has grown by 190 thousand people, or 30 percent. We need a transport system that gets these people from where they live, to where they work, with as little time lost to congestion as possible. That is why the Government and Auckland Council agreed - improving access to employment was a primary objective.

ATAP also aims to improve public transport use. We are already seeing an unprecedented increase. Public transport is growing faster than any other major transport mode, up by 36 percent over the last six years. The stand-out is rail, where we have doubled patronage.

Auckland's growth throws us many challenges. The biggest constraint is not lack of people wanting to use our roads, trains, buses, ferries and cycleways. It is our ability to prioritise and fund additional capacity.

ATAP is a major step forward. Through ATAP, we have agreed Auckland's transport priorities and a 30 year investment prioritisation programme. Now we need a sustainable funding track. Auckland will pay its way, but that should not mean an increasing share of costs to be carried by ratepayers. We need a fairer, more efficient funding system. That is why I welcome the focus on road pricing.

Road pricing offers a mechanism that can manage demand and fill the funding gap, while delivering the optimal programme. Our next challenge is to design a system that gets this balance right and is acceptable to Aucklanders.

Auckland is more than ready for that conversation. We have spent five years preparing for it and building a broad consensus. We have a programme, now let's fund it and give growing successful Auckland the transport system it needs to be the world's most liveable city.

Len Brown,
Mayor of Auckland





Executive Summary

- i. As joint transport funders with a shared interest in a successful Auckland, the Government and Auckland Council have worked together to identify an aligned strategic approach for the development of Auckland's transport system. This report presents joint officials' recommended strategic approach. It builds on work reported in two previous documents: the *Foundation Report* (February 2016) and the *Interim Report* (June 2016).
- ii. A sharp recent increase in Auckland's population is placing significant pressure on our transport networks, and this will be compounded by substantial projected population growth over the next 30 years. While a very significant programme of infrastructure investment is under way and committed, we will need to do things differently to effectively address this challenge.
- iii. We identified four critical transport challenges that need to be the focus of our efforts over the next decade:
 - Enabling a faster rate of housing growth, particularly in new greenfield growth areas
 - Addressing projected declines in access to jobs for people living in large parts of the west, and some parts of the south
 - Addressing increasing congestion on the motorway and arterial road network, particularly at inter-peak times
 - Increasing public transport mode share on congested corridors.
- iv. We considered a range of options for addressing Auckland's transport challenges to see how we could get better returns than from current plans.
- v. Changing the mix of investment would deliver improvements in some areas, but it cannot deliver a step-change in performance across the region, and would struggle to keep pace with projected demand growth.
- vi. We also looked at options to substantially increase or bring forward new infrastructure investment, or to shift to a greater focus on influencing demand. We concluded that neither of these approaches alone is sufficient to address Auckland's transport challenges.
- vii. Instead, we need to better balance transport demand with the capacity of our infrastructure and services. This requires a fundamental shift to a greater focus on influencing travel demand through smarter transport pricing, and accelerating the uptake and implementation of new technologies, alongside substantial ongoing transport investment, and getting more out of our existing networks.
- viii. Our recommended strategic approach therefore contains three integrated elements, as illustrated in *Figure 1*.
- ix. Implementing this approach will provide much better returns than current plans, delivering better access to employment, reduced congestion, and increased public transport mode share. This does, however, rely on the three elements being progressed in an integrated manner. In particular, the main benefits will not be realised until we shift to smarter transport pricing.

Recommended Strategic Approach

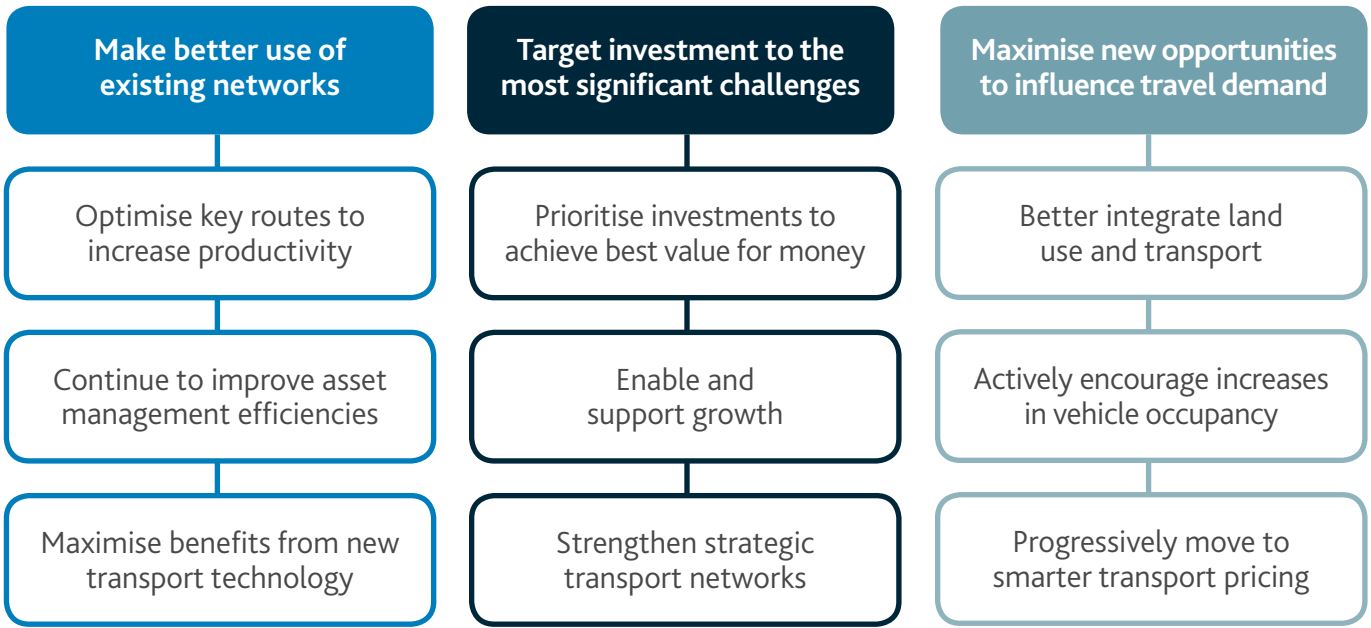


Figure 1.

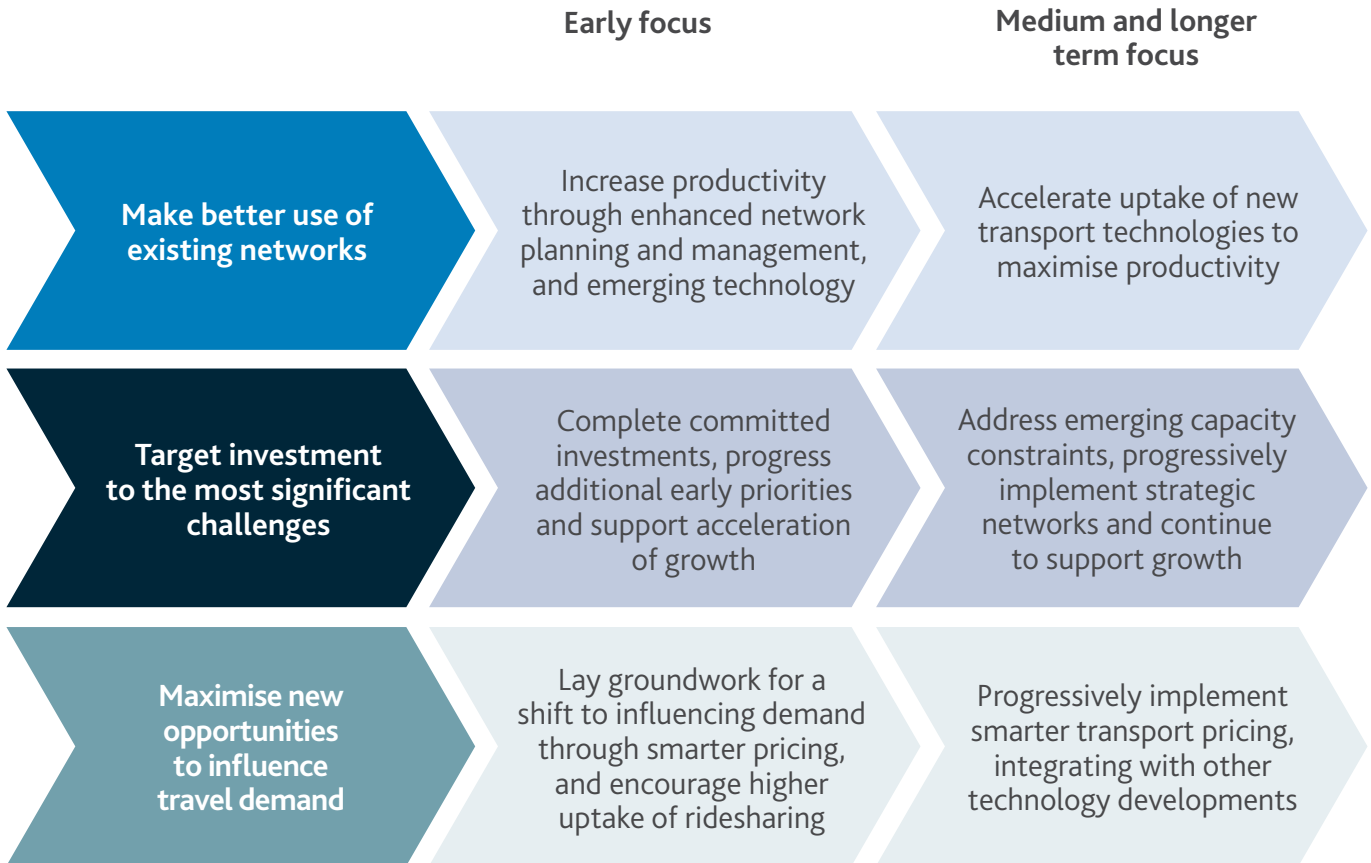


Figure 2.

- x. The recommended strategic approach will need to be progressively delivered through infrastructure investment, policies and services over the next 30 years. To give an indication of how the approach could be applied, we developed an indicative package of the types of interventions likely to be needed, as well as the overall scale and sequencing of investment. Our broad approach is shown in *Figure 2*.
- xi. The indicative package is not an investment programme, as individual projects need to go through statutory processes to proceed. However, it provides an illustration of the type and quantum of investment that is likely to be required to implement the strategic approach.
- xii. We have placed greater emphasis on the first 10 years because many of our current assumptions about the location of housing and employment growth and the timing and impacts of technological change become less accurate after this period. The estimated expenditure in the first decade, from 2018-2028, is around \$24 billion. Over the 30-year period, estimated expenditure totals \$83 billion, nearly half of which represents capital expenditure, with the remainder a combination of asset renewals, maintenance and operational costs.
- xiii. The expenditure identified for the first decade exceeds the funding expected to be available from current funding plans by around \$4 billion. Auckland Council and the Government will need to consider options to address this gap, ahead of the next round of statutory funding decisions in 2018.
- xiv. The indicative package outlines interventions for the three decades from 2018. This does not mean that we can wait until 2018. A number of actions can be taken now to set us along the path towards our recommended strategic approach. The sooner we start, the sooner we can expect the benefits.

Recommendations

We recommend the Government and Auckland Council adopt the recommended strategic approach, which contains the following key components:

- a. Make better use of existing networks
- b. Target investment to the most significant challenges
- c. Maximise opportunities to influence travel demand.

To implement the strategic approach, we also recommend:

- a. Government, Auckland Council, Auckland Transport and the NZ Transport Agency incorporate the strategic approach into their statutory strategic documents
- b. Government and Auckland Council work together to consider options and agree on an approach to address the funding gap by mid-2017, to inform statutory funding documents
- c. Early establishment of a dedicated project to progress smarter transport pricing, with a view to implementation within the next 10 years
- d. Review of investment processes to ensure they align with the strategic approach
- e. Government and Auckland Council consider whether statutory changes are required to support ongoing joint strategic transport planning
- f. Complete work on identified priority actions as soon as possible.

The Auckland Transport Alignment Project

1. As joint transport funders with a shared interest in a successful Auckland, the Government and Auckland Council agreed in August 2015 to work together on the Auckland Transport Alignment Project, to identify an aligned strategic approach for the development of Auckland's transport system that delivers the best possible outcomes for Auckland and New Zealand.
2. This report has been jointly prepared by officials from the six agencies involved in the project¹, and presents our recommended strategic approach. It includes an indicative package of measures, covering the broad timing and scale of interventions, and estimates of costs and benefits, together with the nature, scale and timing of the funding gap for the recommended strategic approach. It also sets out recommended implementation actions.
3. This report marks the completion of the Auckland Transport Alignment Project, and builds on the work reported in two previous documents: the *Foundation Report* (February 2016) and the Interim Report (June 2016). A companion document, *Auckland Transport Alignment Project: Supporting Information* presents the background information to support this report.
4. In a number of areas, including safety and active modes (walking and cycling), the views of central and local government are already well aligned on the priorities and likely level of future funding. We have therefore taken as given, the initiatives that are already underway in these areas, including the *Safer Journeys Action Plan*, the *Auckland Road Safety Plan*, and the *Urban Cycleways Programme*.
5. While the focus of this report is on the transport system within Auckland, it is important that this is considered within its broader inter-regional context, particularly the linkages between Auckland and the Upper North Island. We note and support the initiatives that are currently underway to strengthen the strategic connections to Northland, Waikato and the Bay of Plenty, including the Auckland to Northland corridor initiatives ('Connecting Northland') and the Waikato Expressway.

Project Objectives

The focus of the Auckland Transport Alignment Project is to test whether better returns from transport investment can be achieved in the medium and long-term, particularly in relation to the following objectives:

- i. To support economic growth and increased productivity by ensuring **access to employment/labour improves** relative to current levels as Auckland's population grows
- ii. To **improve congestion results**, relative to predicted levels, in particular, travel time and reliability in the peak period and to ensure congestion does not become widespread during working hours
- iii. To **improve public transport's mode share**, relative to predicted results, where it will address congestion
- iv. To ensure any increases in the financial costs of using the transport system **deliver net benefits to users** of the system



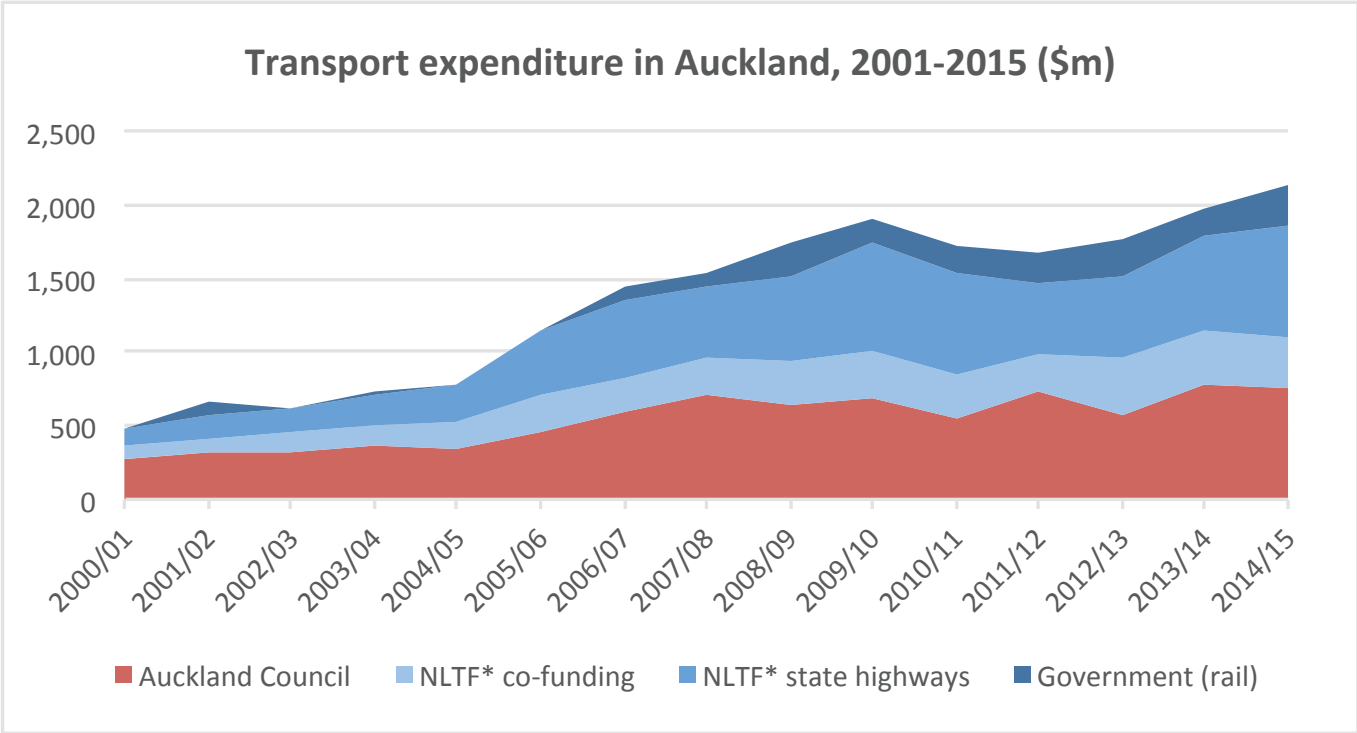
¹ Ministry of Transport, Auckland Council, NZ Transport Agency, Auckland Transport, The Treasury, and the State Services Commission.

Auckland's Transport Challenges

6. Auckland is growing quickly: the city's population is projected to increase by 45% to 2.2 million over the next 30 years, accompanied by a 40% increase in jobs to over 850,000. Continued strong growth in visitor numbers is also expected. This growth places pressure on transport networks, reducing performance and increasing congestion. Left unaddressed or without alternatives for travel, congestion will reduce the opportunities that Auckland's growth can provide.
7. The most significant projected transport challenges over the next decade are:
 - Enabling a faster rate of housing growth, particularly in Special Housing Areas and greenfield areas live-zoned² in the Auckland Unitary Plan.
 - Addressing projected declines in access to jobs for people living in large parts of the west, and some parts of the south.
 - Addressing increasing congestion on the motorway and arterial road network during peak periods, and increasingly at other times of the day, which adversely affects the efficient movement of freight and services.
 - Increasing public transport mode share, particularly along high volume, congested corridors.
8. In addition to these focus areas, there is a need to continue to make improvements to road safety and active modes (walking and cycling).
9. Transport is Auckland Council's largest and central Government's fourth largest investment area. A combination of catching up on past under-investment and accommodating Auckland's growth has resulted in transport expenditure in Auckland increasing from \$500m per year in 2000 to \$2.1 billion in 2015³, as illustrated in the following graph.
10. Overall, the challenge for Auckland's transport system is to support the city's growth in a way that is affordable and provides value for money, while also delivering benefits to Auckland and New Zealand as a whole.

² "Live-zoning" means a residential or business zone where development can occur, rather than a future urban zone where structure planning is required.

³ Includes all public expenditure on land transport, including capital and operations, but excludes debt servicing.



*NLTF denotes funding from National Land Transport Fund.



Strategic Choices

11. In common with most cities in the world, the response to growing travel demand in Auckland has been to increase road capacity and to provide public transport, walking and cycling infrastructure and services. Relatively little attention has been paid to influencing that demand.
12. This has involved a substantial increase in investment over the past 15 years, which has delivered significant benefits through the expansion of Auckland’s motorway network, the modernisation of the rail network and the construction of the Northern Busway. This approach is continuing through a programme of committed and agreed investments in projects such as the Waterview Connection, the City Rail Link, the Auckland-Manukau Eastern Transport Initiative (AMETI), the Puhoi-Warkworth extension of the Northern Motorway, the Accelerated Motorway Package and the East-West Link.
13. While these investments will make a positive difference, our analysis shows that Auckland’s fast rate of growth and challenging physical geography mean congestion and access to employment are unlikely to improve in the next decade from recent levels⁴. In particular, access challenges are expected to become most significant in the west and some parts of the south due to lengthening travel times and a relative lack of local employment.
14. We examined options for changing the mix of what we invest in (spending the same amount as current plans but on different priorities) to consider whether this could achieve better returns. This would generate improvements in some areas, but not a step-change in performance across the region, and will struggle to keep pace with projected demand growth.
15. To achieve that step-change in performance we need a different approach. We looked at two future pathways:

Mainly focus on building more transport infrastructure	A greater focus on influencing transport demand
This pathway substantially increases or brings forward our investment in transport infrastructure to respond to demand, and to support growth.	This pathway shifts to a greater focus on influencing transport demand through taking advantage of new transport technologies, making full use of network capacity, and using a smarter transport pricing system.

16. Our analysis has shown we cannot rely solely on either approach.
17. Simply increasing investment to build our way out of the problem is unlikely to be cost-effective in the long run and will struggle to deliver significant access and congestion improvements. In part, this is because providing new transport infrastructure in existing urban areas is increasingly expensive due to costly land acquisition or tunnelling. It can also have significant amenity impacts.

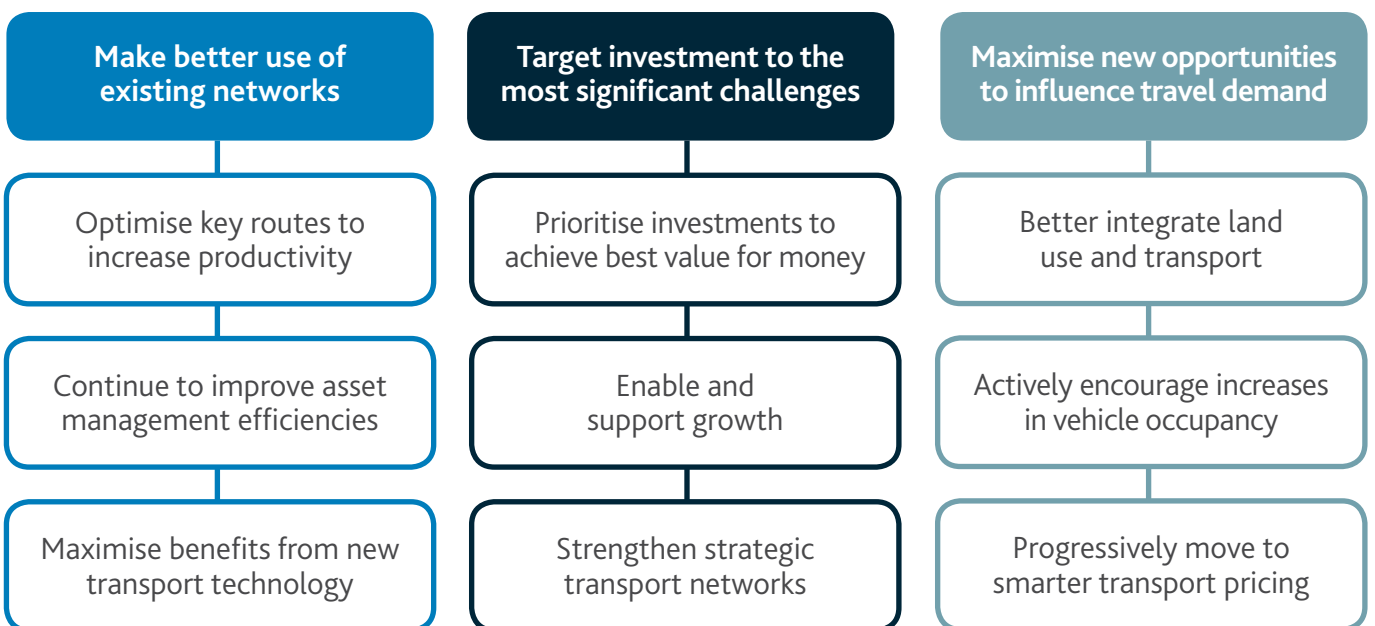
⁴ Our base year for analysis is 2013. Since 2013 Auckland has experienced rapid population growth and increased congestion, with average peak time travel speeds on the State highway network declining by 9% (from 61 to 56 km/h).

18. Conversely, Auckland's substantial projected growth, current challenges and uncertainties about the timing and effects of new technologies mean we cannot solely rely on influencing travel demand either.
19. Instead, we need to better balance transport demand with the capacity of our infrastructure and services. This requires a fundamental shift to a greater focus on influencing travel demand through smarter transport pricing and accelerating the uptake and implementation of new technologies, alongside substantial ongoing transport investment, and getting more out of our existing networks.



Recommended Strategic Approach

- 20. To address Auckland’s transport challenges and get better returns from the transport system, we need to better balance transport demand with the capacity of our infrastructure and services. Over time, this means influencing travel demand patterns through smarter transport pricing and accelerating the uptake and implementation of new technologies.
- 21. Our recommended strategic approach contains three integrated elements, each with three key components, as outlined below.
- 22. Our analysis shows that implementing this approach will provide better returns than current plans, and deliver positive results against the key objectives of access to employment, congestion, and public transport mode share. This does, however, rely on the three elements being progressed in an integrated manner. In particular, the main benefits will not be realised until we shift to smarter transport pricing.



Make better use of existing networks

23. The vast majority of Auckland's future transport footprint already exists today. Most growth in travel demand will need to be accommodated on the existing networks, meaning we need to be much smarter about how we use them.
24. Developing transport technology provides exciting new opportunities to get more out of our existing networks by increasing vehicle throughput and occupancy levels. Maximising these benefits will require optimising key routes to increase their productivity.

Optimise key routes to increase productivity

25. Parts of Auckland's existing transport network have crucial national, city-wide and local functions to enable the efficient movement of people, goods and services.
26. Much of Auckland's motorway network carries significantly higher traffic volumes than anywhere else in New Zealand, and parts of the arterial network carry traffic volumes greater than most State highways elsewhere in New Zealand. For these roads significant through-movement is of primary importance.
27. Many arterial roads also have a variety of other, potentially competing uses, including providing access to local centres. Many Aucklanders live along these roads, which are the focus of substantial future growth.
28. We need a stronger focus on network-level strategic planning to identify and manage these routes. This includes clear criteria to help balance different user requirements, and to address conflicts between through-movement and amenity. While there has been substantial progress in identifying these key routes and developing a framework to help resolve competing issues, this work needs to be completed with urgency.
29. Once the framework has been finalised, some difficult decisions will need to be made to enable increased productivity, such as removing on-street parking, upgrading intersections, extending bus lane operating hours, or introducing freight priority measures. There will also need to be an increase in accompanying investment to enable these changes.

Continue to improve asset management efficiencies

30. Over half of Auckland's future transport investment will need to be on maintaining, operating and renewing existing and future assets. This has implications for the amount of funding available for investment in new transport infrastructure.
31. A relatively large proportion of local roads maintenance and renewals expenditure is not currently co-funded from the National Land Transport Fund. Agreement is needed on appropriate levels of service and required funding for asset management. While progress has been made through the "One Network Roads Classification" process, it is important that this agreement is reached as soon as possible.
32. Our analysis has also highlighted the need for ongoing improvements in asset management efficiencies, including greater use of technology to remotely monitor assets to help inform the optimal timing for intervention. We consider there are opportunities for further efficiency improvements in this area, with the potential for substantial overall savings.

Maximise benefits from new transport technology

33. We are on the cusp of a paradigm shift in transport technology. Emerging transport and related technology has the potential to significantly improve the performance of Auckland's transport network over the next 30 years. The outcome could be much more efficient use of existing transport infrastructure, vehicles and services and better value for money from future infrastructure and service investments. However, it is unclear when we will be able to implement new technologies in Auckland and what their real-world impacts will be.
34. In the short-term, increasing our use of intelligent network management presents significant opportunities to get more out of our transport networks through additional throughput. Focus areas include more comprehensive real-time understanding of network use, better data processing capability to support network management decisions and more effective travel demand management tools (e.g. adaptive traffic signals, dynamic lanes and traveller information provision). Specific funding provision for these types of activities in the next round of statutory funding plans would help to highlight their importance.
35. In the medium to longer-term, connected and autonomous vehicles, combined with ride-sharing, have the potential to help increase vehicle throughput (particularly on motorways), reduce traffic accidents, and improve travel time reliability. This could present opportunities to defer or avoid future investment in additional road capacity. These benefits will take some time to materialise, especially if there are institutional, regulatory or infrastructure barriers to their adoption. A coordinated work programme is needed to identify and remove unnecessary barriers and facilitate the uptake of connected and autonomous vehicles.



Target investment to the most significant challenges

36. To ensure the best possible returns from transport investment, we need to focus on addressing Auckland's most significant challenges in providing safe and efficient access to employment, addressing road and public transport congestion and supporting growth. We have identified strategic priorities for investment over the next 30 years, and where efforts should be focused in the short-term (early priorities, 2018-28).

Prioritise investments to achieve best value for money

37. Our framework for identifying early priorities is set out below. It provides a basis for assessing the extent to which different investment options will effectively target the most significant first decade challenges (as outlined in paragraph 7), and the extent to which an investment is likely to deliver value for money. The key assessment measures are the impact on throughput of people, goods and services, travel speeds, and enabling growth.

		Potential to deliver value for money in first decade		
		High	Medium	Low
Extent to which the investment targets the most significant first decade challenges	High	Highest priority to be progressed in the first decade	Secondary priority to be progressed in the first decade	Unlikely to be first decade priority
	Medium	Secondary priority to be progressed in the first decade	Unlikely to be first decade priority	Not a first decade priority
	Low	Unlikely to be first decade priority	Not a first decade priority	Not a first decade priority

38. Achieving best value for money requires identifying the right solution in the right part of the network at the right time. This means that investments should recognise the strengths of each part of the network:

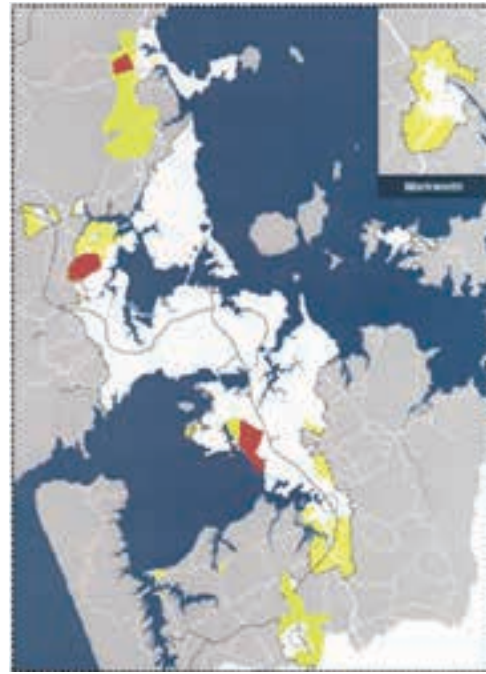
- Public transport: access to concentrated activity centres (e.g. the city centre, major employment areas) where there is little or no capacity to take additional vehicle traffic.
- Roads: access for people, goods and services to wide transport catchments with diverse trip origins and destinations.
- Rail: providing a dual function of high capacity public transport backbone and strategic freight connections, especially to/from the Ports of Auckland and Tauranga.
- Walking and cycling: serving higher intensity areas, short-to-medium length trips and extending the reach of strategic public transport corridors.

Recommended Strategic Approach

39. As we move towards a greater focus on influencing patterns of demand, investment will also be required to assist the take-up of new technologies that improve vehicle throughput and occupancy rates, and to support the implementation of smarter transport pricing. It will also be important to ensure that investments will continue to stack up in a future with much greater use of transport technology.

Enable and support growth

40. New urban growth areas in the north, west and south will need substantial investment in transport infrastructure before significant development can occur. Some of this investment is required to 'open up' land for development, alongside larger scale improvements needed to better connect these areas to the rest of Auckland.
41. Transport investment within the existing urban area is also necessary to unlock growth, by improving access and making redevelopment more market attractive.
42. We have identified a number of potential transport investments to support and enable growth. Early investment is needed in areas 'live-zoned' by the Auckland Unitary Plan and through Special Housing Area processes, and to protect routes and secure land for longer-term networks.



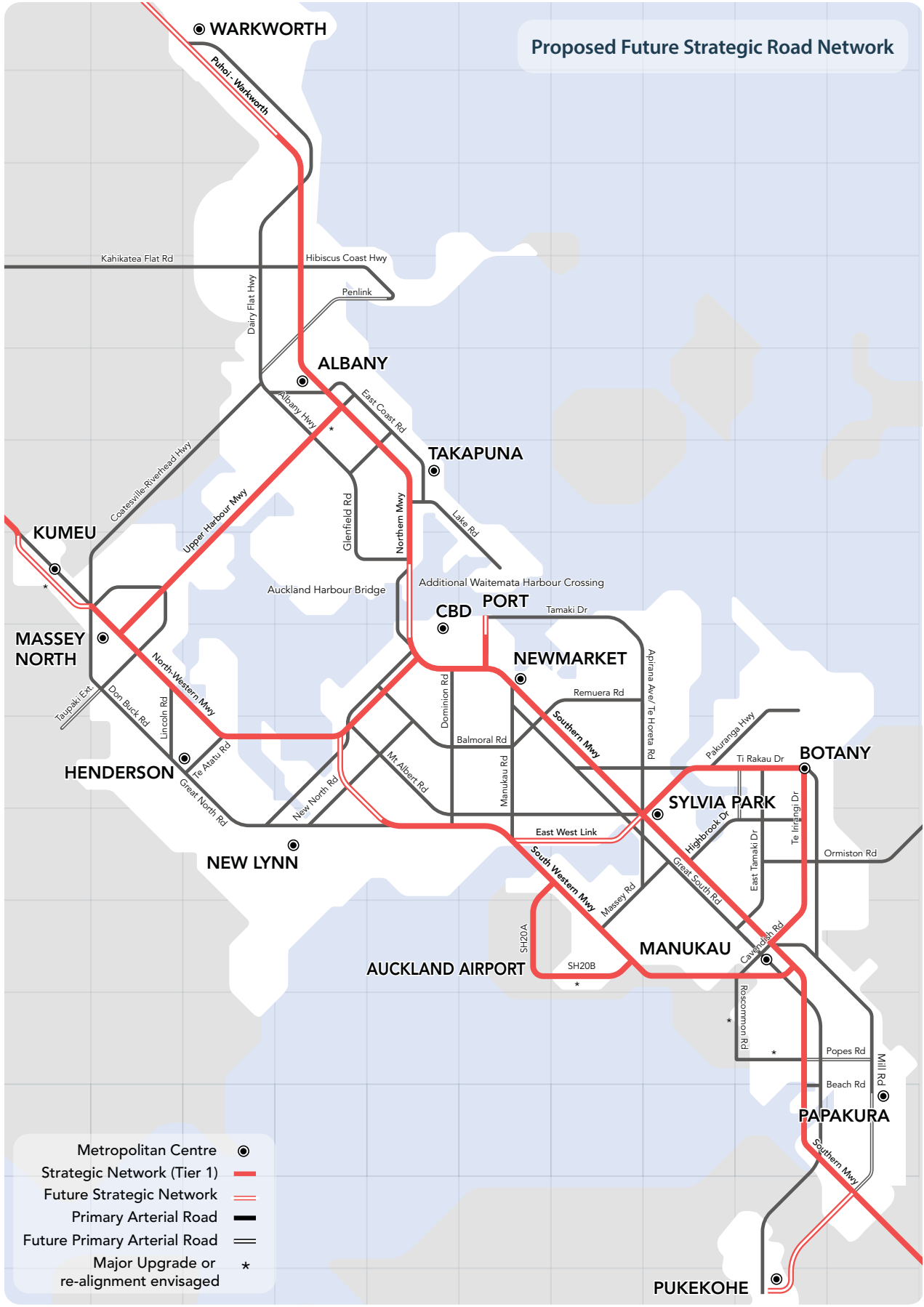
■ New future urban land
■ New "live zoned" urban areas

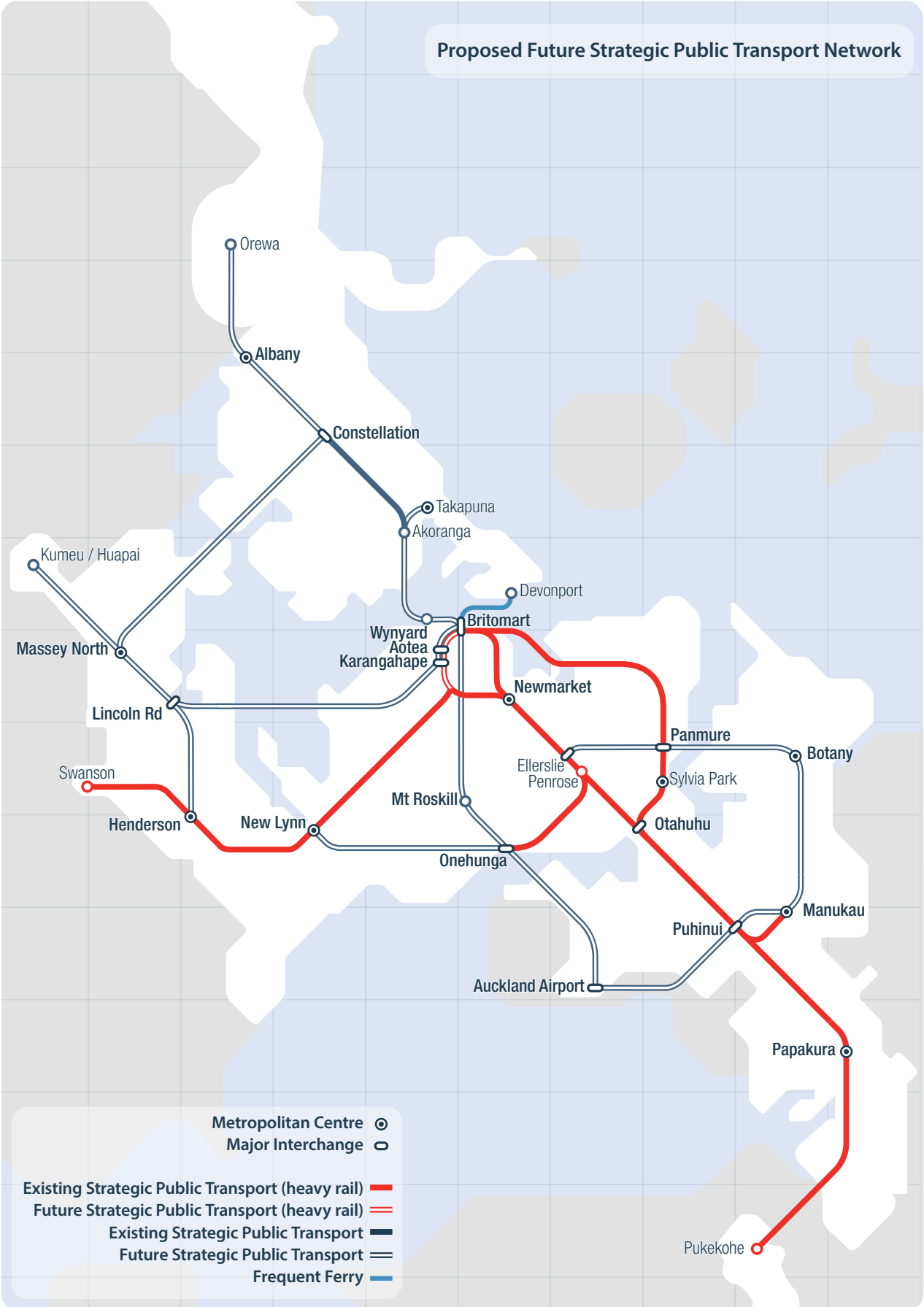
Strengthen strategic transport networks

43. Auckland's strategic road, rail and public transport networks are the most critical elements of the city's transport system. It is essential to maintain and develop strong, safe and resilient strategic networks that can cope with increased demand.
44. Although there are some opportunities to add new corridors, options are limited in existing urban areas. A targeted investment approach is required to address the impacts of growth and to ensure that these core parts of the network have sufficient capacity to operate effectively.
45. Our recommended approach to the development of the strategic road and public transport networks is summarised in the following table, although further work is required to determine which parts of the primary arterial road network should have strategic functions. The maps that follow illustrate our agreed view on how these networks will need to develop over the next 30 years.

	Strategic Road Network	Strategic Public Transport Network
Description	<ul style="list-style-type: none"> • Backbone of the road network, providing for a wide variety of travel and the highest traffic volumes. • Core links between major parts of Auckland and the rest of NZ, carries heaviest freight volumes and provides access to Port and Airport. • Through-movement of people and goods is primary consideration and access is limited or controlled. 	<ul style="list-style-type: none"> • Backbone of the public transport network, providing for high volumes of travel to major employment centres, especially into the central area. • Frequent, high capacity services operating along corridors separated from private vehicles and unaffected by road congestion. • Passenger rail network shares corridor with freight.
Approach	<ul style="list-style-type: none"> • Primarily focus on improving the efficiency of existing corridors by better balancing demand and capacity. • Provide new corridors in greenfield areas to support growth and improve connections to existing urban areas. • Focus additional capacity primarily on outer parts of the network, along the Western Ring Route and improving Port and Airport access. • Maximise benefits from new technology to increase vehicle throughput and occupancy levels. 	<ul style="list-style-type: none"> • Two key drivers for prioritising development of the strategic public transport network: <ul style="list-style-type: none"> ◦ Addressing emerging capacity constraints as demand increases ◦ Expanding the network to improve overall corridor efficiency and throughput. • Mode choice for strategic network improvements should be driven by capacity requirements to meet forecast demand, integration with the wider network and achieving value for money.

Recommended Strategic Approach





Maximise new opportunities to influence travel demand

46. A stronger focus on improving the balance between transport demand and the capacity of our infrastructure and services is critical to achieve a step-change in the performance of our transport system.
47. Stronger land-use and transport integration is required to reduce the need for longer trips during peak times. Auckland's rapid growth makes this challenging, but also presents opportunities to better match housing and employment locations to transport capacity and send more consistent signals to the market about the timing and location of development.
48. New and emerging technologies also provide opportunities to influence travel demand in ways that have not previously been possible. In particular, this includes moving over time to a smarter transport pricing system, which varies charges according to time and location. There are a number of challenges that will need to be addressed to take advantage of these opportunities, but the sooner we are able to start, the earlier we can expect to see the benefits.

Better integrate land use and transport

49. Land use lies at the heart of travel demand patterns. The location of Auckland's households, employment, education facilities, port, airport, factories, distribution centres, hospitals, shops and recreation opportunities determines trip origins and destinations. Imbalances between the location of household and employment growth will increase pressure on the transport system.
50. Integrating land use and transport is necessary to:
 - Fully realise the economic benefits from population and employment growth
 - Ensure the transport network can continue to operate effectively as Auckland grows
 - Ensure value for money and good utilisation of new infrastructure and services
51. We can improve transport network efficiency through land use decisions. These decisions should aim to:
 - Encourage housing growth in areas with better access to employment and more transport options, such as around the strategic public transport network and on the isthmus.
 - Encourage employment growth where transport connections and options are strongest and where additional jobs would reduce reliance on long commutes across major transport bottlenecks, such as in the west and south.
 - Enable the consolidation of freight movements, minimise amenity impacts and ensure efficient connections to the strategic network
52. The Auckland Unitary Plan, adopted in August 2016, provides the legal planning framework for enabling growth, including future changes in land use. The Unitary Plan provides sufficient development capacity to meet Auckland's growth requirements for the next 30 years, enabling around 65% of future growth to be accommodated within the existing urban area, with greater intensification in and around centres, transport nodes and corridors. It also provides significant capacity for employment growth, particularly in major centres.

53. The balance of growth that the Unitary Plan enables between existing and future parts of Auckland matches the land-use assumptions that we have used in the project reasonably well. The main difference relates to the potential acceleration of some greenfield development in the north, but we have reflected this difference in our indicative early investment priorities.
54. Realising the Unitary Plan's capacity in a way that supports our desired land use and transport outcomes is an ongoing task that requires:
 - A more flexible and responsive approach to the planning, funding and staging of infrastructure and services to better integrate with the location and timing of development. (This includes supporting the market attractiveness of residential development and successful centres through early investment in enabling infrastructure).
 - Making sure that transport funding processes take account of the broader social and economic benefits of enabling growth.

Actively encourage increases in vehicle occupancy

55. Increasing private vehicle occupancy rates through ridesharing, carpooling and other emerging shared mobility opportunities such as shared taxis and taxi buses can help improve the transport system's performance.
56. Past efforts to increase private vehicle occupancy levels have had limited success. However, emerging technologies, particularly based around smartphone applications, provide new opportunities to overcome these challenges, by instantly connecting users with similar travel demands. When combined with the introduction of autonomous vehicles, shared mobility has the potential to fundamentally reshape the way transport is provided and consumed.
57. The private sector has led most recent advances in this area, and we would expect this to continue in future. However, public sector agencies will need to continue to encourage these initiatives by better understanding and reducing barriers, ensuring regulation enables innovation in this area, promoting pilot schemes, ensuring open access to data, and exploring opportunities to allocate road space to encourage ridesharing where it will result in greater overall throughput.

Progressively move to smarter transport pricing

58. The use of our roads is not free. The current system of charging for motor vehicle use (through petrol taxes, road user charges and vehicle registration fees) is based on the cost of providing and maintaining roads, but does not reflect differences in the true cost of travel for the individual user by time, location and mode. This "flat-rate" approach under-prices some trips, resulting in congestion, while over-pricing others. A progressive move to a pricing system that reflects the actual costs of each trip has the potential to result in much more efficient use of our existing road network, and provide better information on where investment in new capacity is required.
59. Developing technologies enable more sophisticated pricing systems than currently exist. This includes whole of network dynamic systems (the focus of our analysis) that can vary the price of travel by time and location. A system that applies across Auckland's entire road network offers the greatest potential to influence demand in a way that delivers step-change improvements in accessibility, congestion and public transport mode share. Applying charges across the whole network also reduces the likelihood of unintended consequences resulting from diverting traffic, as prices can be fine-tuned across the network to support desired outcomes.

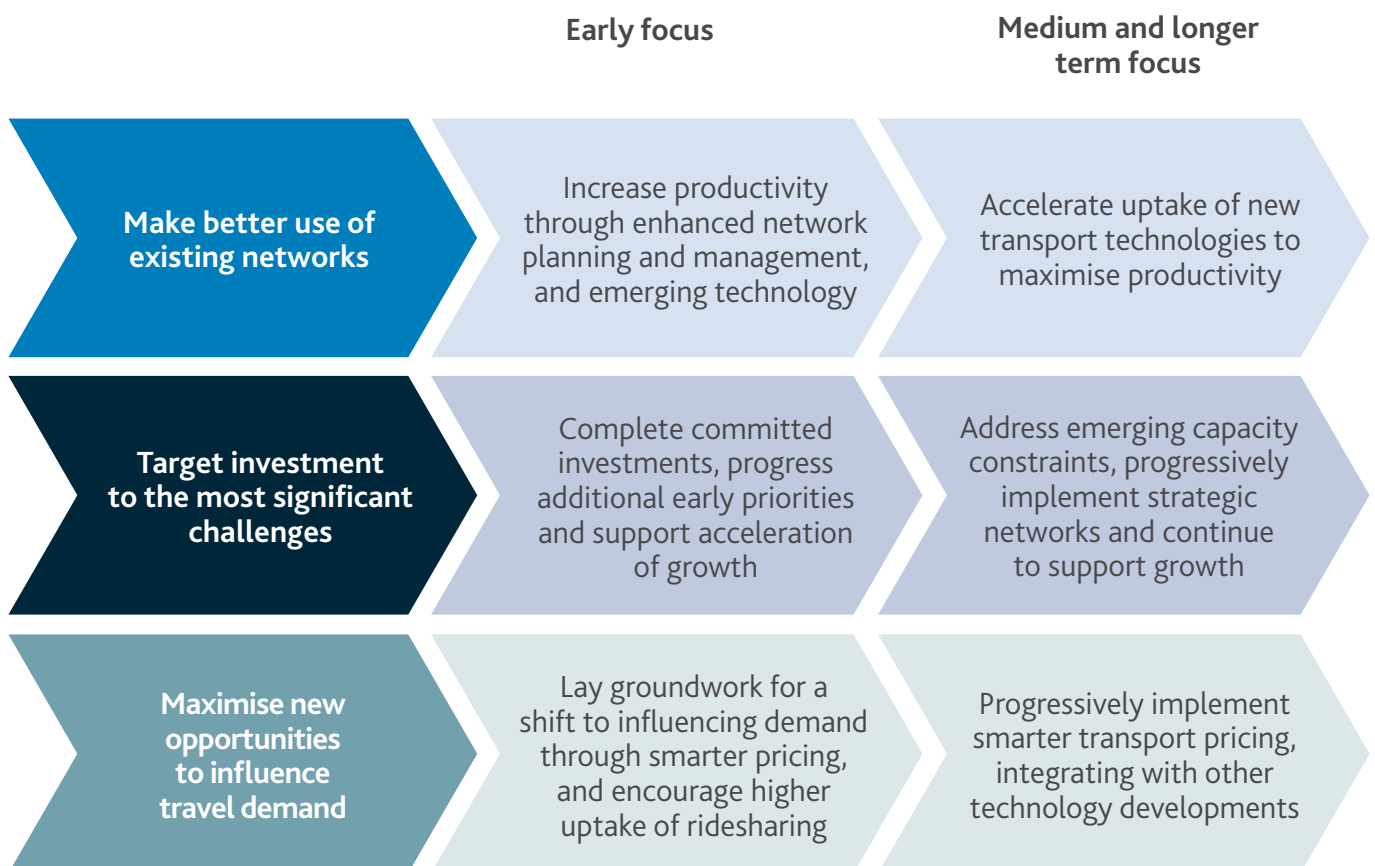
Recommended Strategic Approach

60. A shift to smarter transport pricing would increase the cost of travel for some and reduce it for others, depending on the time and location of travel. In further work to develop smarter pricing, it will be important to fully understand where travel cost increases occur so that equity impacts can be assessed. This will require consideration of the affordability of travel, the impact of pricing on access to jobs, education and services, and any necessary mitigation, particularly for lower income residents who face long commutes.
61. Our focus has been on smarter pricing as a means of influencing demand, rather than as a revenue-raising tool. Full implementation of such a system will take some time due to its complexities, the developing nature of its supporting technology, and the need to gain community awareness and support. However, as smarter pricing is key to delivering a step-change in Auckland's transport performance, we should start laying the groundwork now, with a view to implementation within the next decade.



Delivering the Strategic Approach

62. The strategic approach will need to be progressively delivered through infrastructure investment, policies and services over the next 30 years. To give an indication of how the approach could be applied, we have developed an indicative package of the types of interventions likely to be required, as well as the overall scale and sequencing of investment.
63. We have focused on identifying early priorities, which roughly correspond to the 10 years from 2018 onwards when new transport and Auckland Council funding plans need to be in place; and medium to longer term priorities, which would be delivered beyond the first decade. The broad approach of the package, showing earlier and medium/longer interventions is outlined below:



Key focus areas

64. The indicative package includes a significant amount of investment in maintaining and operating the existing transport system, and in continuing to make improvements in safety and active modes through ongoing investments in these areas. In addition to these investments, we have identified six key areas where major interventions will be required to deliver the strategic approach. These are:
- Supporting greenfield growth.
 - Addressing motorway capacity constraints.
 - Strengthening central area access.
 - Improving Airport access.
 - Enabling rail passenger and freight growth.
 - Shifting to a greater focus on influencing travel demand.
65. The following sections briefly outline the key drivers and potential timing of these major interventions. Early priorities (for the first decade) and medium to longer term priorities (beyond the first decade) are highlighted.

Supporting greenfield growth

66. Investment is needed to open up land for development and to address the impact of increased travel demands to and from new urban areas.
67. The Unitary Plan identifies over 12,000 hectares of “future urban” zoned land, as well as a number of locations where land currently used for rural activities has been “live zoned” to enable urbanisation in the near future. In total, the Unitary Plan enables around 150,000 dwellings of feasible capacity outside the existing urban area.

Early priorities	Medium and longer term priorities
<ul style="list-style-type: none"> • Early investment to enable growth in areas that have been ‘live zoned’ in the Unitary Plan, as well as in Special Housing Areas. • Route protection, land purchase and early works to ensure future opportunities are not built out and to minimise land costs. • Progress the Northwestern Busway to increase access to and from the northwest greenfield area and increase throughput along the congested Northwestern Motorway corridor. 	<ul style="list-style-type: none"> • Progressive implementation of future transport networks in greenfield areas, depending on the timing and rate of development. <ul style="list-style-type: none"> ◦ Some investments may be needed ‘up front’ to unlock growth capacity, help shape land use and support the establishment of successful town centres. ◦ Other investments can be provided later, once growth has occurred, in response to capacity constraints. • Ongoing monitoring of the impacts of greenfield growth on travel patterns and refinement of when interventions are required.

Addressing motorway capacity constraints

68. Parts of Auckland’s motorway network experience substantial congestion, both at peak times and increasingly throughout the day. Completion of the Western Ring Route, through the Waterview Connection and other committed motorway upgrades, will ease pressure on State Highway 1 and improve network resilience by providing an alternative north-south route. However, projected growth in travel means the motorway network will remain under significant pressure.
69. The inner part of Auckland’s motorway network has the highest traffic volumes in the country, but is physically constrained – particularly along State Highway 1 between Takapuna and Mt Wellington where the motorway pushes up against high intensity and high value development, coastlines and other major infrastructure (such as railway lines). Limited capacity additions on this part of the network can provide some local benefits, but appear to shift bottlenecks and congestion points, rather than address them. Conversely, increasing capacity along entire corridors involves significant land acquisition, extremely high costs and potentially major amenity impacts.
70. A major new eastern strategic corridor would provide significant access and congestion benefits, but its extremely high costs suggest this will not be cost-effective in the next 30 years. However, given Auckland’s ongoing growth it is prudent to retain existing route protection.
71. The Auckland Harbour Bridge forms a critical part of the motorway network as the main connection between the North Shore, the city centre and locations further south. Growth in freight, private vehicle and public transport use of the bridge will create a number of future challenges, particularly as providing an additional harbour crossing will involve very high costs. It is important to continue the work currently underway to protect the route for a new harbour crossing in a way that integrates potential future road and public transport requirements.

Early priorities	Medium and longer term priorities
<ul style="list-style-type: none"> • Ensure maximum network-wide benefits from completion of the Western Ring Route by providing for capacity upgrades at each end to address bottlenecks, optimising its performance and ensuring it integrates with the East-West Link. • Public transport investments, including the City Rail Link, extending the Northern Busway and accelerating the Northwestern Busway, to assist in taking pressure off the motorway network at peak times, especially for trips heading to the city centre. • Upgrades to outer parts of the motorway network, particularly to the northwest and the south, to enable and support growth. 	<ul style="list-style-type: none"> • Ongoing targeted widening in outer parts of the network to enable and support growth. • Support developing vehicle technologies, increasing vehicle occupancy rates and smarter transport pricing to enable existing motorways to be used far more efficiently. • Progress cross-harbour improvements in a way that provides enduring benefits along the broader north-south corridor, integrates with public transport, and provides value for money. • Maintain existing route protection for an additional north-south corridor which may be needed beyond the 30-year timeframe.

Strengthening central area access

72. The city centre and its surrounds (including Newmarket) is New Zealand’s largest employment hub and is projected to grow strongly over the next 30 years to reach nearly a quarter of a million jobs. This growth, expected to be largely driven by highly productive service-sector jobs, will be accompanied by a substantial projected increase in tertiary student numbers and continued household growth.
73. Access to this area is physically constrained, and there is competition for limited street-space between vehicles, pedestrians, cyclists and public amenity. This means it is imperative over time to move more people in fewer vehicles. This requires a continued modal shift towards public transport, walking and cycling.
74. Although bus efficiency improvements can help cope with increased demand in the short term, there are limits to the extent to which such improvements can continue to provide sufficient capacity. A mass transit solution will be required in the medium term. Key criteria for determining the best long-term solution should be the ability to meet projected demand in a way that integrates with the broader strategic network, provides for and stimulates ongoing growth along these corridors and in the city centre, and delivers value for money.
75. The Port of Auckland is located on the edge of the central area and is a significant freight origin and destination including for high-value imports that travel by both road and rail to and from other parts of Auckland and New Zealand. Consistent with the conclusions from Auckland Council’s recent Port Future Study, we have assumed the Port will remain in its current location within the 30-year period of this project. In the meantime, strong growth in freight demand which is competing with general traffic congestion, needs to be addressed. Connections between the Port and the strategic road network could be improved, and growth in demand for rail passenger and freight services will progressively impact on the efficient operation of the Port.

Early priorities	Medium and longer term priorities
<ul style="list-style-type: none"> • City Rail Link and associated further rail improvements will cater for a substantial proportion of increased trip demand into the central area over the next decade and beyond. • Bus efficiency improvements on city centre corridors serving the north, northwest and central isthmus will provide additional capacity to address growth demands over the next decade. • Port access improvements focused on improved efficiency between the Port and the motorway network. • Improvements to the core rail network to enable passenger and freight to operate reliably together. 	<ul style="list-style-type: none"> • Invest in additional mass transit capacity to relieve demand pressures on bus corridors serving the isthmus; followed by those serving the North Shore. • Improvements to Port access from the motorway network.

Improving Airport access

76. The Airport area is nationally significant. It is New Zealand’s primary international gateway, the country’s third largest port by value of goods and a major and growing employment centre. Substantial employment growth in the broader Airport area, combined with growing passenger and freight flows, is projected to result in an increase in daily trips to and from the area from 63,000 currently to around 140,000 over the next 30 years.
77. Providing for this growth in travel demand is challenging due to the Airport’s location in the southwest corner of Auckland’s urban area, the limited number of access points, the dispersed nature of trip origins and destinations within the broader Airport area, and the long average length of inbound and outbound trips.
78. Substantial access improvements are currently underway to extend the motorway from the north to the Airport’s edge and future-proof the route for a higher capacity public transport mode. This is expected to ease congestion on the northern access corridor for some time. Capacity improvements are also required on the eastern access route, to address congestion and improve access from the east and south. These initiatives need to be supplemented with ongoing improvements in public transport services.
79. Over time, space constraints within the Airport area and capacity challenges on the broader road network make it increasingly difficult to serve the Airport area’s transport demands through road and bus service improvements alone. This will require investment in mass transit, and route protection to enable this needs to be an early priority.

Early priorities	Medium and longer term priorities
<ul style="list-style-type: none"> • Complete access improvements from the north to extend the motorway to the Airport’s edge. • Increase capacity of the strategic road network from the east (including provision for public transport), which will also improve access from the south. • Increase bus services and frequencies (especially for employees in the area), and extend bus lanes to improve reliability. • Protect the routes for future mass transit corridors linking the Airport with the north and the east. 	<ul style="list-style-type: none"> • Implement mass transit following consideration of: <ul style="list-style-type: none"> ◦ Required capacity to meet demand generated by Airport passenger and employee growth ◦ Integration with the strategic public transport network (especially isthmus mass transit to the north) ◦ Timing of major improvements to the Airport’s internal road network.

Enabling rail passenger and freight growth

80. Auckland’s rail network, combined with the Northern Busway, forms the core of the city’s strategic public transport network. Investment over the past 15 years has resulted in impressive growth in passenger numbers, with rail accounting for a growing proportion of public transport trips. The network also plays a key role in the movement of freight, particularly to and from the Ports of Auckland and Tauranga. Continued strong growth in passenger trips and freight carried by rail is forecast over the next 30 years.
81. Ongoing investment will be needed to provide an integrated and resilient rail network that can effectively provide for projected growth in passenger and freight demand and Auckland’s planned passenger service patterns. Auckland Transport and KiwiRail have developed a 30-year indicative Rail Development Plan that identifies the investments needed to deliver this.

Early priorities	Medium and longer term priorities
<ul style="list-style-type: none"> • The City Rail Link will provide benefits for rail passengers through significant reductions in travel times, particularly from the west, improved access to the city centre and increased capacity by removing the current Britomart bottleneck. • Other key short term improvements likely to be required include: <ul style="list-style-type: none"> ◦ Additional infrastructure including a third track to address key capacity constraints and enable passenger and freight services to operate reliably ◦ Additional trains to cater for growing passenger numbers ◦ Removal of some road/rail level crossings to better manage safety risks and address road congestion ◦ Extension of electrification to Pukekohe to serve growth in the south. 	<ul style="list-style-type: none"> • Depending on demand, longer term improvements are likely to include: <ul style="list-style-type: none"> ◦ Providing a fourth track between Wiri and Westfield ◦ Further extension of triple-tracking to Papakura and potentially Pukekohe ◦ Potential extension of the fourth main to Papakura ◦ Further tranches of additional trains and a second depot ◦ Ongoing level crossing removal programme.

Shift to a greater focus on influencing travel demand

- 82. Shifting to a greater focus on influencing travel demand should commence with early work to develop a pathway for moving to smarter pricing. This includes developing a basis for assessing the potential impacts on different users of the transport system, including affordability and equity considerations, and how access to jobs, education and services could best be met under such a system.
- 83. Work will also be needed to address the implications for the current national system of charging for transport use, the case for legislative change to enable charging for use of existing roads, the technology options, and ultimately the development of a work programme for implementation.

Early priorities	Medium and longer term priorities
<ul style="list-style-type: none"> • More detailed assessment of the benefits and impacts of smarter pricing, particularly net user effects, affordability, equity and any necessary mitigation. • Develop an implementation pathway that includes consideration of technology, national implications, legislative requirements, staging and trials; and progress priority actions. • Investment in intelligent transport systems to enable increased productivity, and smarter pricing. • Increased use of non-pricing demand management measures, such as high-occupancy lanes. 	<ul style="list-style-type: none"> • Full implementation of smarter transport pricing. • Increased capacity of the public transport system where necessary to accommodate shifts in demand as a result of smarter pricing.

Indicative investment package

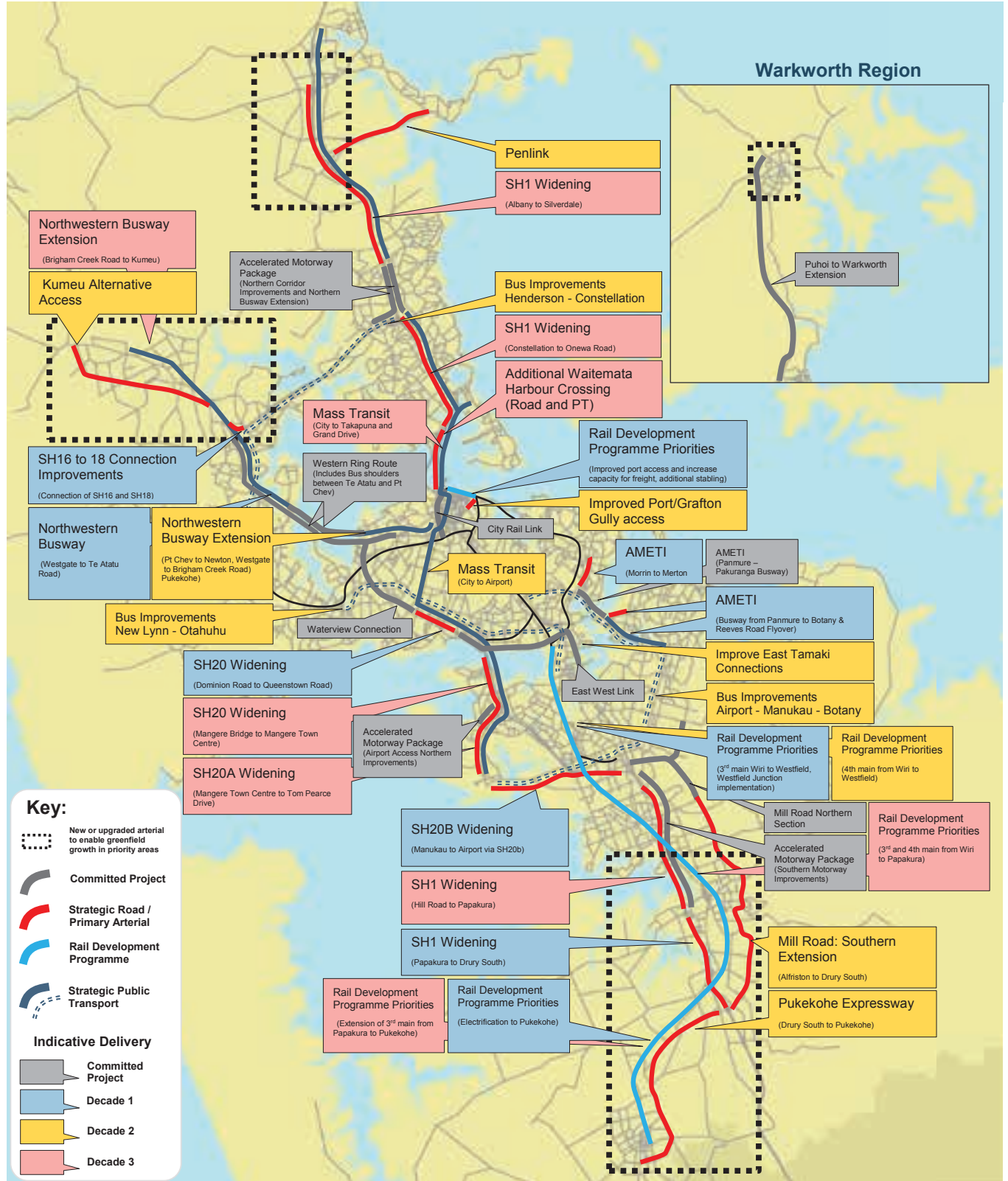
84. The indicative package illustrates how the strategic approach could be implemented over time. It is not an 'investment programme', as neither the Government nor Auckland Council are able to commit to funding over 30 years and all transport investments need to go through business case approval and statutory processes to proceed. We have placed greater emphasis on the first 10 years (2018 to 2028) because of considerable uncertainty about the rate and location of housing and employment growth, and the timing and impacts of technological change beyond this period.
85. Committed infrastructure investments form a key part of the indicative package in the first decade. The largest committed investments are listed below, with estimated expenditure incurred during the first decade, 2018-2028⁵:
- City Rail Link (\$2 billion).
 - Puhoi to Warkworth extension of the Northern Motorway (\$500 million).
 - East-West Link (\$1,500 million).
 - Accelerated motorway package (\$500 million), which includes:
 - Northern corridor improvements and Northern Busway extension
 - Southern Motorway improvements.
 - Airport access (northern) improvements.
 - Mill Road northern section (partly committed, \$290 million).
 - Panmure-Botany Busway and roading improvements (AMETI) (partly committed, \$700 million).
86. We used the prioritisation framework in paragraph 37 to assess potential new investments beyond these current commitments (including the uncommitted elements of Mill Road and AMETI). This included an assessment of the extent to which they address the most significant early transport challenges, and may provide value for money in the next decade. The indicative sequencing of major new investments is outlined in the following map and table.
87. The large scale of most of these investments means that they have long lead times (seven years or more for planning, design, procurement and construction). This highlights the need to commence work on these projects at an early stage. To reflect this, we have allocated 10% of the capital cost of projects listed as medium priorities for the first decade.
88. In addition to these major investments, the indicative package also includes a significant amount of expenditure on safety programmes, walking and cycling, and minor road and public transport improvements. It also includes provision for maintaining and operating the transport system and asset renewals, and an allowance for additional expenditure as a consequence of growth in the asset base and user demand.

⁵ Does not include costs incurred up to 2018. Puhoi to Warkworth reflects estimated Public-Private Partnership costs during 2018-28.

Indicative priorities for major new investments

Early priorities (completion in decade 1)	Medium term priorities (completion in decade 2)	Longer term priorities (completion in decade 3)
<ul style="list-style-type: none"> • Northwestern Busway (Westgate to Te Atatu section). • Address bottlenecks on Western Ring Route (SH20 Dominion Rd to Queenstown Rd) and Southern Motorway (Papakura to Drury). • New or upgraded arterial roads to enable greenfield growth in priority areas. • Protect routes and acquire land for greenfield networks. • Complete SH16 to SH18 connection. • Early Rail Development Plan priorities (see paragraph 81). • Upgraded eastern Airport access (SH20B). • Investments to enable smarter pricing. • Increased investment in Intelligent Network Management. • Progress advance works on medium-term priorities. 	<ul style="list-style-type: none"> • Continued investment to enable greenfield growth. • New strategic roads to Kumeu and Pukekohe. • Implementation of mass transit on isthmus and then to the Airport. • Bus improvements Airport – Manukau – Botany. • Improved access to Port/ Grafton Gully. • Northwestern Busway extensions. • Improve connection between East-West link and East Tamaki. • Penlink. • Medium-term Rail Development Plan priorities. 	<ul style="list-style-type: none"> • Continued investment to enable greenfield growth. • Southern Motorway improvements south to of Manukau. • Southwest Motorway (SH20) improvements and improved northern Airport access. • Northern Motorway widening. • Waitematā Harbour crossing improvements, including mass transit upgrade of Northern Busway. • Longer term Rail Development Plan priorities.

ATAP Indicative Package: Major Interventions, all decades



Expected outcomes

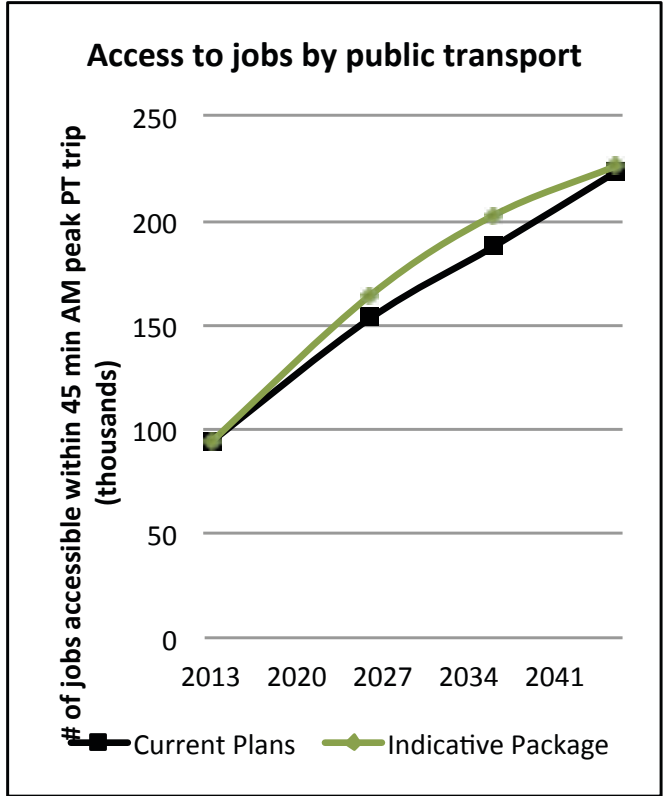
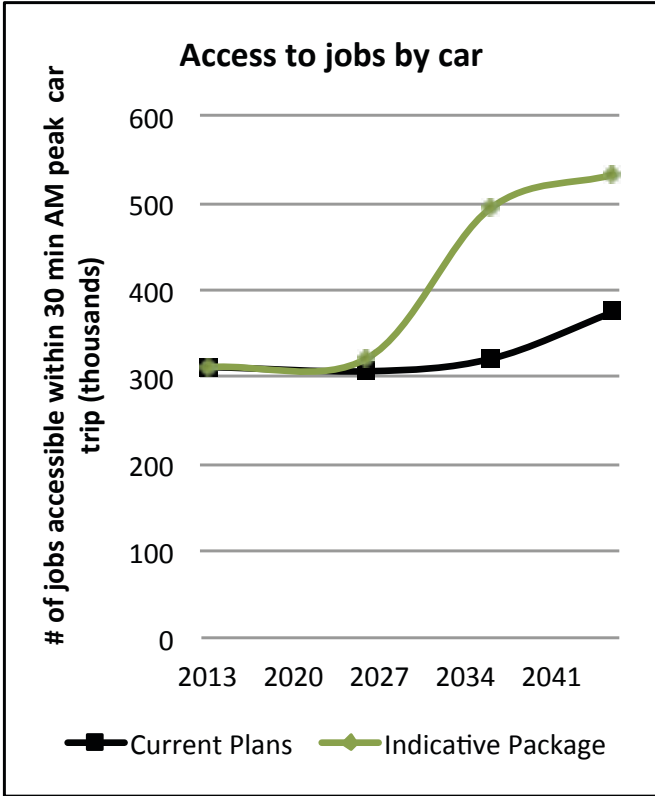
89. The indicative package is projected to deliver substantially better outcomes against the key project objectives of access to employment, congestion and public transport mode share, when compared to the current plan⁶. In combination, this will make a positive contribution to regional and national economic growth and productivity. The graphs below outline the projected performance of both the indicative package and the current plan, using strategic transport modelling outputs for 2013, 2026, 2036 and 2046.
90. The use of a 2013 base year means that the model results need to be treated with some caution. Monitoring shows a significant recent increase in traffic volumes, and a decrease in average peak motorway speeds of 9% between 2013 and 2016. This suggests that the congestion and accessibility results in 2016 will already be significantly worse than indicated in the graphs below.
91. Our analysis shows that implementing this approach will provide better returns than the current plan. The most significant gains are increases to accessibility by car and reductions in peak congestion levels. It is important to emphasise that the 'step-change' in performance against these objectives is largely driven by the introduction of smarter transport pricing, which is assumed to be fully implemented in the second decade⁷.



⁶ For the "current plan", we used the 30-year investment proposals that were developed for the 2015-25 Auckland Regional Land Transport Plan and Long-term Plan. This is referred to as the "Auckland Plan Transport Network", or APTN.

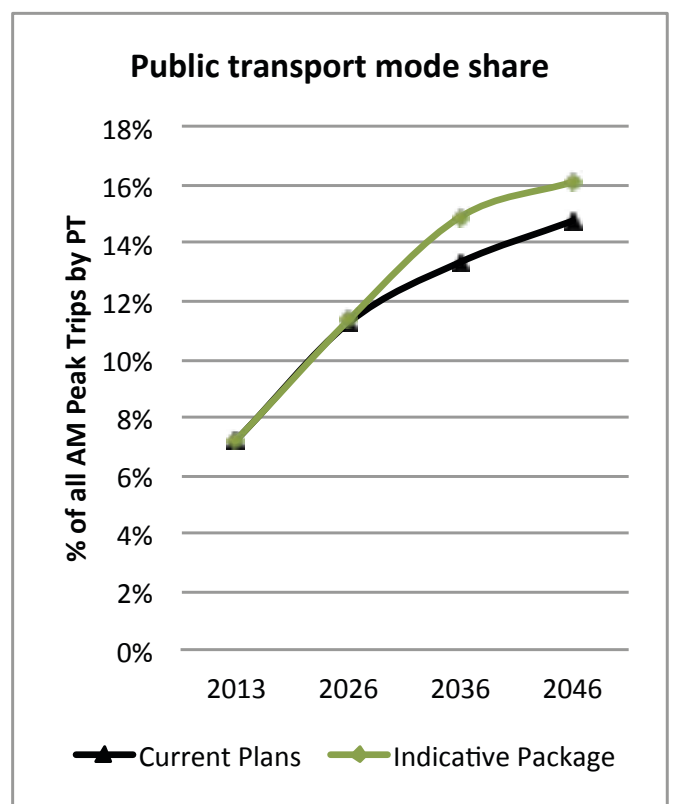
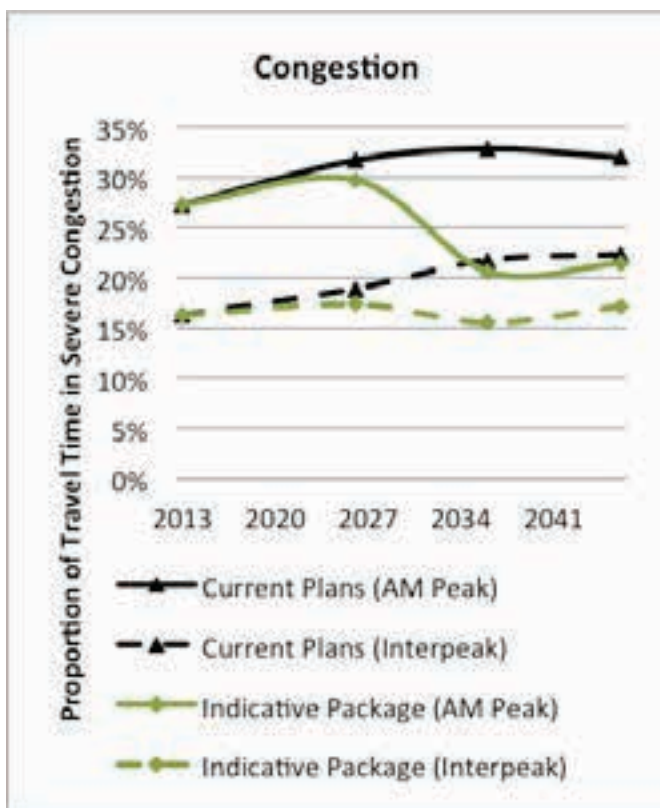
⁷ For modelling purposes, we tested prices ranging from 2.25 cents to 30 cents per kilometre, depending on time period, location and road type. We assumed that these charges would replace existing fuel taxes and road user charges for light vehicles (approximately 6 cents per kilometre).

92. **Access to employment**⁸: The average number of jobs accessible within 30 minutes by car in the morning peak increases sharply between 2026 and 2036, reflecting the less congested network as a result of smarter pricing. Public transport accessibility improves under both the current plan and the indicative package, so that the number of jobs accessible within 45 minutes doubles by 2036. This reflects the stronger focus on the strategic public transport network under both the current plan and, more particularly, the indicative package.



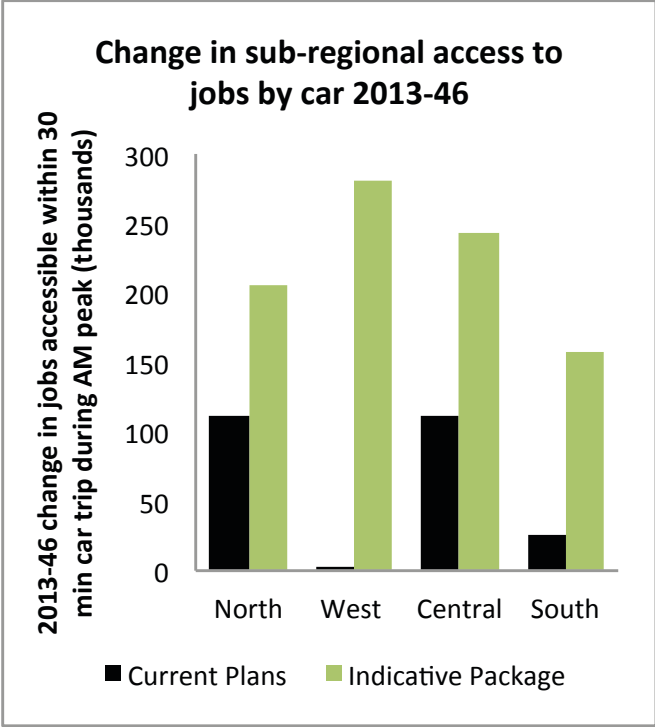
⁸ Accessibility is measured as travel time rather than travel costs and therefore for this purpose does not assess the additional financial costs users face from pricing. A 30-minute car trip roughly corresponds to average journey to work time in Auckland. A 45-minute public transport trip includes walk and wait times.

93. **Congestion:** The proportion of travel time spent in severe congestion during the morning peak period is projected to increase from 27% in 2013 under the current plan to 32% by 2026. The indicative package performs slightly better than the current plan over this period (30%), but congestion remains higher than 2013 levels until the introduction of smarter pricing, assumed to be in the second decade. By 2036, the time spent in peak congestion falls to 21%, which is significantly better than 2013. Inter-peak congestion also shows improvement.
94. **Public transport mode share:** Both the current plan and the indicative package project a strong increase in public transport mode share, from 7% in 2013 to 11% by 2026. This equates to a doubling in total annual public transport tripover that period, to around 146 million by 2026. Further improvements are projected under the indicative package, with mode share increasing to 16% by 2046 (276 million passengers).



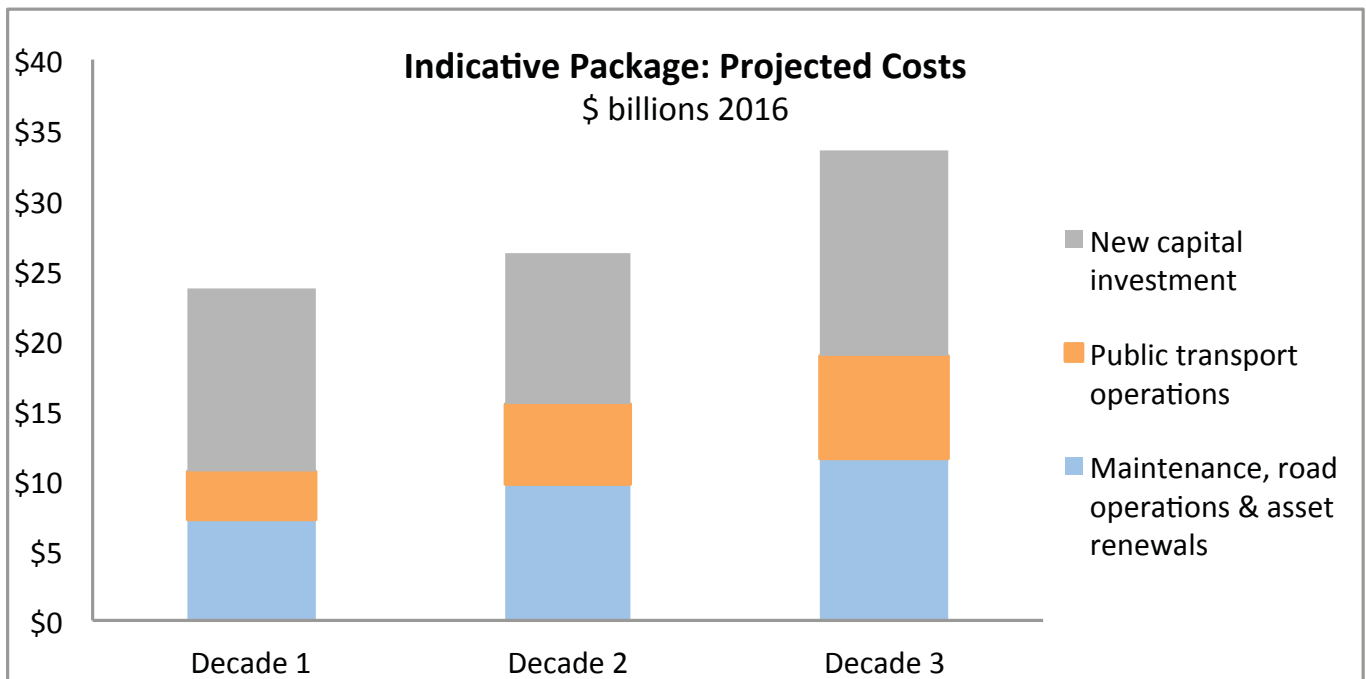
Recommended Strategic Approach

- 95. The indicative package also addresses some of the key sub-regional challenges facing Auckland.
- 96. Under the current plan, access to employment from West Auckland by a 30-minute car trip is projected to barely change over the next 30 years, despite Auckland’s employment growth. However, under the indicative package the west achieves the greatest improvement in employment access, with around 280,000 more jobs being accessible compared to the current plan in 2046. In the south, the indicative package provides access to around 130,000 more jobs within a 30-minute peak trip by car than the current plan.



Cost estimates

97. The estimated expenditure to implement the indicative package in the first decade (2018 to 2028) is \$23.7 billion (at 2016 prices). This includes \$7.2 billion on maintenance, road operations and asset renewals, \$3.4 billion on public transport operations (net of fare revenue), and \$13.0 billion on new capital investment. The graph below summarises the cost estimates for these three components of the indicative package over the next three decades. A total of \$84 billion of investment would be required over the 30-year period, of which \$38.6 billion, or 46%, represents new capital expenditure.



98. The cost estimates show significant projected growth in expenditure on maintenance, operations and asset renewals. This reflects:

- the increased demands of a rapidly growing asset base
- a strong increase in projected expenditure on local road renewals in the first decade, targeted at achieving a consistent and appropriate level of service across the network⁹
- increased public transport operating costs as a result of additional services and projected growth in passenger volumes.

99. Given the strategic nature of the project, there has been limited opportunity to fully scrutinise these cost estimates, and they should be therefore treated with some caution. In some cases, there will be opportunities to make savings, but conversely, some investments may cost more than has been estimated.

⁹ Subject to review and agreement on appropriate levels of service and required funding.

Value for money

100. The project's terms of reference require consideration of the costs and benefits of alternative combinations of interventions and whether better returns can be achieved from transport investment than current plans. Value for money is normally assessed through cost benefit analysis, which measures society's willingness to pay for the various benefits that arise from an investment.
101. Before funding is committed all transport investments require a rigorous investment process to demonstrate value for money, based on robust value for money estimates as part of individual business cases.
102. We used Auckland's existing regional transport models to understand the differences in performance against our key objectives, reported above. Our analysis has shown that the recommended strategic approach will deliver better region-wide outcomes than current plans. Furthermore, our analysis showed that the indicative package would deliver significantly better results than a larger investment package that did not include smarter pricing. This suggests that the inclusion of smarter pricing is key to achieving value for money.
103. The existing modelling tools have limitations in providing detailed information on all the economic benefits that would be expected from a mix of large and complex interventions, such as those tested as part of the indicative package. For this reason, we have not relied on a package-wide benefit cost assessment based on modelling outputs.
104. Instead, we have focused on ensuring that the identified 'early priorities' are likely to provide value for money if they are implemented over the next decade. A number of these priorities have existing value for money assessments, which indicate they deliver benefits that exceed their costs.
105. Beyond these early priorities, it becomes more challenging to assess value for money, as uncertainties relating to project costs and the impacts of smarter pricing and new technologies become increasingly significant. Our most substantial uncertainty relates to large, longer-term infrastructure investments. The timing and scope of these investments should be monitored over time, particularly with regard to whether they provide value for money as we shift to a greater focus on influencing demand.
106. These caveats emphasise the need to consider the package and the implied funding gap as 'indicative'.

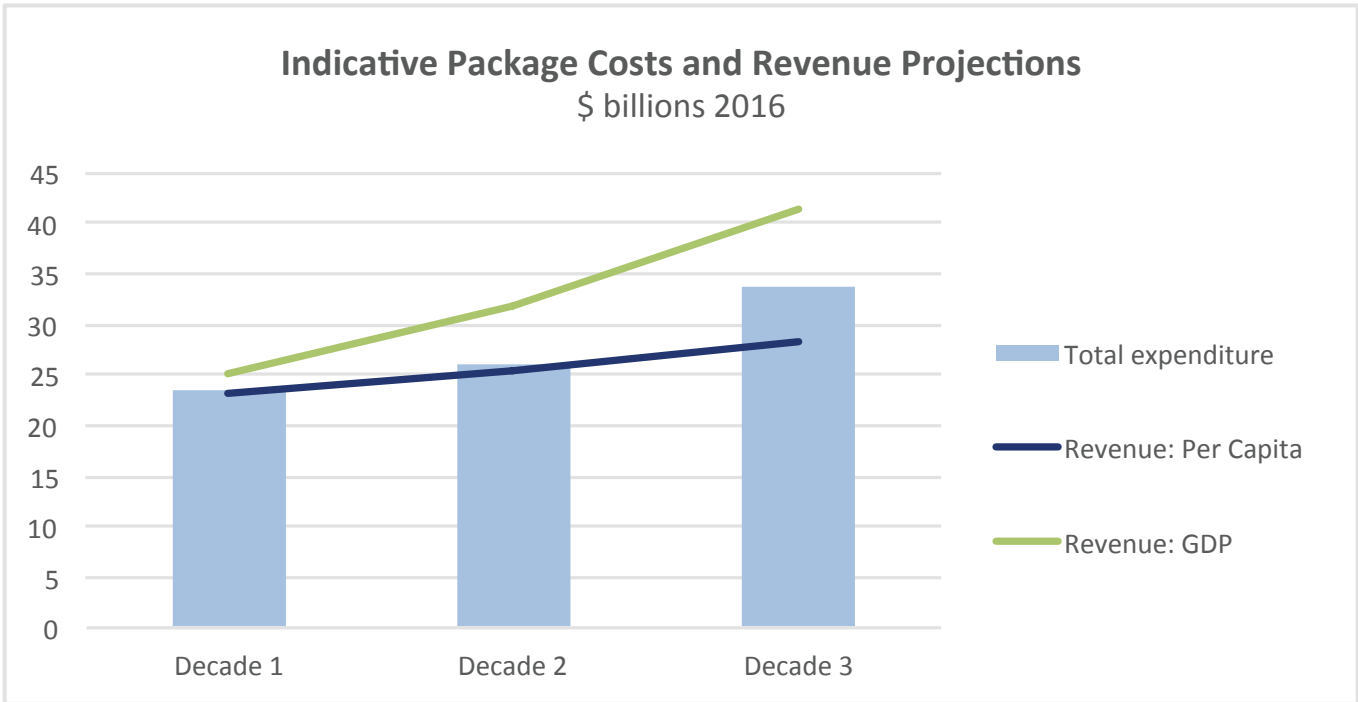


Funding Implications

107. A key task for the project is to provide advice on “the nature, scale and timing of any funding gap for the recommended strategic approach and its alternatives”.
108. Funding for transport in Auckland comes from a variety of sources, most collected by either the Government or Auckland Council. These include fuel excise duty, road user charges, motor vehicle licensing, rates, taxes, public transport fares, parking charges, development contributions, and tolling. Under current funding policies, different types of projects have different funding sources. These are broadly outlined below:
- State highways are fully funded by the Government through the National Land Transport Fund (NLTF)
 - rail network infrastructure (tracks, signals, electrification etc.) is fully funded by the Government from general taxation (except the City Rail Link, which is subject to separate negotiations)
 - local roads, public transport operations (net of fares) and public transport infrastructure are jointly funded by Auckland Council and the Government, through the NLTF
 - some local roads and public transport infrastructure is solely funded by Auckland Council, either because it is not eligible for NLTF funding (e.g. street cleaning or footpath renewals) or is not prioritised for co-funding from the NLTF.
109. The current funding plans (Auckland Transport’s 2015-25 Regional Land Transport Plan informed by Auckland’s Council’s 2015-25 Long-term Plan and the NZ Transport Agency’s 2015-18 National Land Transport Programme provided us with a seven-year funding estimate for 2018 to 2025. We extrapolated this out to 2028 to provide an estimate of funding from Auckland Council and the NLTF for the first decade (2018-2028).
110. The estimate of total funding available also needs to include rail network funding. Our estimate is based on the expectation that the Government will fund half the City Rail Link, and that it will also continue to fund the network infrastructure component of future rail development in Auckland, subject to business cases. The indicative package includes an estimated cost of \$470 million for rail network infrastructure in the first decade, which we assume is able to be funded by the Government and is therefore not included in funding gap calculations.
111. Based on these assumptions, we estimate that the total transport funding available to Auckland is likely to be around \$19.8 billion in the first decade.
112. The difference between the \$23.7 billion estimated cost of the indicative package and the funding available from current plans indicates a first decade funding gap in the order of \$4 billion. The actual size of the gap, and the shares that can be attributed to the Council and the NLTF will vary depending on the assumptions made, especially in relation to:
- The total size of the investment programme, including the amount spent on maintenance, operations and asset renewals.
 - Whether the share of investment between Auckland Council and the NLTF follows recent trends, or changes over time.

Recommended Strategic Approach

- 113. Further work will be needed to understand the implications of these different assumptions on the quantum of additional funding that will be needed from the Council and the NLTF, and to determine the options that are available for the Council and the Government to address the funding gap.
- 114. We have not calculated a funding gap beyond the first decade, due to greater uncertainty about the timing of longer-term interventions and the lack of any current funding plans against which to compare the package.
- 115. However, we developed two scenarios to understand the potential funding that could be available in the longer term to help understand the potential affordability of the indicative package.
- 116. Taking 2012-2015 expenditure levels as a baseline, our scenarios were:
 - A “Per Capita” scenario, where future transport expenditure increases in line with Auckland’s population (i.e. the amount invested per Aucklander remains the same, but the total continues to increase in line with Auckland’s population growth).
 - A “GDP” scenario, where future transport expenditure increases in line with Auckland’s economic growth (i.e. transport investment as a proportion of the Auckland region’s Gross Domestic Product, or GDP, is maintained over time by increasing investment in line with economic growth)
- 117. Under the “Per Capita” scenario approximately \$75 billion would be available for transport investment over the next 30 years compared with approximately \$96 billion under the “GDP” scenario. However, in the first decade the difference between the two scenarios is only approximately \$2 billion.
- 118. The graph below compares total expenditure estimates for the indicative package across the three decades with the revenue available under the “Per Capita” and “GDP” scenarios. In each decade, total expenditure would be higher than the “Per Capita” revenue, but less than the share of “GDP” revenue.



Recommendations

119. Putting the strategic approach into practice will require a number of key decisions in the next few months.

We recommend that the Government and Auckland Council:

- **Adopt the recommended strategic approach, which contains the following key components:**
 - a. **Make better use of existing networks**
 - b. **Target investment to the most significant challenges**
 - c. **Maximise opportunities to influence travel demand**
- **Implement the recommended strategic approach by:**
 - a. **Reflecting the strategic approach in statutory documents**
 - b. **Considering options for addressing the funding gap**
 - c. **Laying the groundwork for smarter transport pricing**
 - d. **Ensuring supportive investment processes**
 - e. **Taking steps to maintain ongoing alignment**
 - f. **Completing work on priority actions as soon as possible**

120. Reflecting the strategic approach in statutory strategic documents (the next Government Policy Statement for land transport and the forthcoming refresh of the Auckland Plan) will ensure future policy and investment decisions are aligned with this approach. These documents give guidance to statutory funding and planning documents prepared by Auckland Transport, Auckland Council and the NZ Transport Agency.¹⁰

We recommend the Government, Auckland Council, Auckland Transport and the NZ Transport Agency incorporate the strategic approach into their statutory strategic documents.

121. Our estimates suggest an indicative funding gap of around \$4 billion in the first decade. To implement the strategic approach, this gap needs to be bridged. A number of options are available.

122. Additional funding could be provided, by either increasing funding available for transport from current funding sources or through introducing new funding tools. The merits of these options need to be jointly considered in a timely manner, so that clarity is provided to the 2018 funding plans.

123. Both the Council and Government will need to consider what this means for their current funding arrangements, and to identify future options for joint consideration.

We recommend the Government and Auckland Council work together to consider options and agree on an approach to address the funding gap by mid-2017, to inform statutory funding documents.

¹⁰ Auckland Transport's Regional Land Transport Plan and Regional Public Transport Plan, NZ Transport Agency's National Land Transport Programme and Auckland Council's Long-term Plan.

124. Progressively shifting to smarter transport pricing is crucial to achieve a step-change in the performance of Auckland's transport system. We believe that preparatory work on smarter pricing should be progressed with urgency, to develop an ambitious but feasible programme for implementation. The first key step along this pathway is to establish a dedicated smarter pricing project that leads to:

- more detailed assessment of the benefits and impacts of smarter pricing, particularly net user effects, equity and any necessary mitigation
- development of an implementation pathway that includes consideration of national implications, legislative requirements, technology, staging and trials.

We recommend the early establishment of a dedicated project to progress smarter transport pricing with a view to implementation within the next 10 years.

125. Transport investment processes need to ensure the best performing interventions are prioritised for funding, regardless of type. Funding arrangements would benefit from greater consistency, particularly across the strategic networks. This includes moving to consistent and integrated decision-making for rail.

We recommend investment processes are reviewed to ensure they align with the strategic approach.

126. Achieving an aligned strategic approach through this project has demonstrated the value of establishing an agreed set of objectives, measures, problem definitions and assumptions. A continuation of this collaborative approach is recommended as ongoing review will be important as land use and population growth projections are adjusted.

127. The requirement for six-yearly reviews of the Auckland Plan provides a possible opportunity to incorporate a review of the strategic approach. The Government and Auckland Council should further consider how we review the strategic approach over time, including whether statutory changes are required.

We recommend the Government and Auckland Council consider whether statutory changes are required to support ongoing joint strategic transport planning.

128. We have identified a number of high priority actions that should progress over the next 12 months to support the strategic approach. These are set out in the following schedule.

We recommend that the identified priority actions be completed as soon as possible.

Action	Responsibility
<ul style="list-style-type: none"> • Agree the location of key routes where through-movement should be prioritised, as well as a target for improved productivity on these routes. • Complete and implement a framework for managing competing uses on these routes, through traffic management actions and investment priorities. 	Auckland Transport and NZ Transport Agency (with Auckland Council).
<ul style="list-style-type: none"> • Agree appropriate asset management levels of service, associated funding requirements and provide improved visibility of the trade-offs from different levels of asset management investment. 	Auckland Transport and NZ Transport Agency.
<ul style="list-style-type: none"> • Develop a shared work programme to facilitate the uptake of new transport technologies, including intelligent network management, connected and autonomous vehicles, and shared mobility; with a focus on enabling regulation, supporting infrastructure and trials. 	Ministry of Transport, NZ Transport Agency and Auckland Transport.
<ul style="list-style-type: none"> • Consider how government transport funding processes should reflect the benefits of enabling growth. 	Ministry of Transport and NZ Transport Agency (with Auckland Council and Auckland Transport).
<ul style="list-style-type: none"> • Complete business cases for each of the high priority interventions identified in this report, to enable early decisions on funding, timing and route protection to proceed as soon as possible. 	Auckland Transport and NZ Transport Agency.

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