

# Asset Management Plan

2015–2018





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# Asset Management Plan

2015-2018

# Foreword

## 2015 – 2018 Asset Management Plan

Auckland Transport (AT) manages the largest and most strategically important urban transport network in New Zealand, serving a city of 1.5 million people representing one third of New Zealand's population and 35 per cent of the national economy.

AT manages \$16.5 billion of mainly road and public transport assets and this Asset Management Plan demonstrates that these assets are being managed in a prudent, efficient and forward-looking manner.

The efficient management and growth of this network and its services is essential to the social and economic wellbeing of New Zealand's largest city and consequently is vitally important to the economic well-being of New Zealand as a whole.

For AT, it is not just a matter of optimising the value and efficiency of the networks and systems already in place, but also effectively managing the overall condition of the network and planning future services to meet the needs of Auckland's rapidly increasing population.

This document details the strategies and management systems deployed by AT and sets out the future renewals and maintenance investment required to continue building the assets, infrastructure and delivery systems of a transformational, sustainable and affordable urban transport service. It also addresses the shortfalls that will begin to accrue if budgets are not sustainable over the medium to long term.

This plan notes that the renewals funding required to maintain current levels of service from Auckland's transport assets over the coming 10 years has been assessed at \$3.44 billion, which is \$930 million more than the \$2.51 billion approved in Auckland Council's 2015-2025 Long Term Plan.

While this will be sufficient over the next three years, beyond that the situation will deteriorate and by 2025 more than nine per cent of assets will be in very poor condition, comparing unfavourably with the current situation where less than one per cent of assets that are in a very poor condition, made possible with renewals funding of \$3.44 billion.

The network maintenance and asset operations funding provided for the next 10 years is \$1.86 billion, which is aligned to historic levels of expenditure, but does not reflect the increasing demands of a growing city. It also does not reflect the increased requirement for maintenance that will arise from the reduced level of renewal investment from 2019 onwards.

Network maintenance and operational budgets should increase by about 1.5 per cent a year to keep pace with growth-led demand. Simultaneously, AT must ensure that this does not compromise the prudent management of on-going asset deterioration, considering that depreciation of the network is currently running at a rate of \$261 million a year (or \$715,000 a day).

Renewals and maintenance funding constraints will result in a lower quality transport network in the medium to long term. This will challenge the expectation of AT, and its intent, to proactively manage the network to an appropriate standard aligned to the outcome it is required to deliver and which is expected in one of the world's most liveable cities. It will also increasingly focus on what will become the growing maintenance needs of a deteriorating network.

To avoid AT precipitating an unsustainable deterioration in asset condition that will have to be addressed in the future (and possibly by future generations), AT will need to confront these issues in the 2018 - 2021 AMP and prudently manage any adverse effects that result.

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Three years is not a long time when managing assets with a lifespan of decades. Accordingly, AT has until 2018 to work with its funding partners Auckland Council and NZ Transport Agency to develop a sustainable Asset Management Plan, in which renewals and maintenance funding needs are clear, investment is optimised and the trade-offs between cost, risk and levels of service are transparent.

This plan sets out the issues and choices and provides the starting point from which to tackle the challenges and costs of maintaining AT's network assets for the benefit of current and future generations.

**Dr Lester Levy, CNZM**

Chairman  
Auckland Transport

**Dr David Warburton**

Chief Executive  
Auckland Transport

## Quality record

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<b>Asset management plan document set</b>	
Strategic summary	
Asset management plan – overview	(This document)
Asset class management plans (14)	
Asset risk management plan	

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## Executive summary

### Context

Auckland Transport (AT) was established in 2010 as a council-controlled organisation of Auckland Council. Its purpose is to provide an effective, efficient and safe land transport system for the Auckland region, in the public interest (1).

AT is responsible for \$16.5 billion of assets, including road and public transport assets with a replacement value of \$13.4 billion. These assets are summarised in Table 1<sup>1</sup>, and make up the essential transport infrastructure network that enables people and goods to move around Auckland.

Over the next 30 years (the timeframe covered by this plan), Auckland's population is expected to grow from 1.5 million to over 2.2 million people. This includes 237,000 new residents in the next 10 years, and a corresponding growth in jobs and businesses (2).

This growth will mean that the costs of renewing, maintaining and operating Auckland's transport network will increase, as new infrastructure is added to the network to accommodate increasing demand.

### Scope and purpose of this plan

This *Asset Management Plan 2015–2018* (AMP) sets out how AT will manage the assets that it is responsible for within Auckland's transport network over the next 3 years, looking forward 10 years in detail and 30 years in outline. A new AMP will be prepared in 2018.

AT uses asset management planning as a mechanism for managing and maintaining the transport assets it is responsible for.

Asset management planning:

- ensures that network assets continue to provide the essential transport services they were built for
- identifies the optimal maintenance, operations and renewals requirements for Auckland's transport assets to provide the agreed levels of service
- sets out a recommended approach for managing asset risks and resilience
- forecasts the consequential renewals and operations impact of urban growth and new transport investments
- recommends specifications for new assets so that they provide the best whole-of-life value.

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<sup>1</sup> Some transport assets are the responsibility of other agencies, and hence are not covered by this plan.. State highways are managed by the New Zealand Transport Agency, and rail tracks and signals by KiwiRail.

Table 1: Summary of transport assets

		Replacement value	Current value
	7,302 kilometres <b>roads</b>	\$6.910 billion	\$4.724 billion
	12,000 km <b>stormwater</b> channel, 75,481 catch pits	\$2.341 billion	\$1.524 billion
	6,959 kilometres of <b>footpaths</b> , 321 km of <b>cycleways</b>	\$0.865 billion	\$0.487 billion
	1,020 <b>bridges and major culverts</b>	\$0.819 billion	\$0.441 billion
	3,735 sea <b>walls</b> and retaining walls	\$0.318 billion	\$0.182 billion
	105,347 <b>streetlights</b>	\$0.194 billion	\$0.098 billion
	624 <b>signalised</b> intersections, road <b>signs and markings</b>	\$0.146 billion	\$0.080 billion
	<b>Corridor structures</b> including. 1,457 seats, 183km of fences and railings	\$0.171 billion	\$0.114 billion
	6 <b>parking</b> buildings 872 pay and display units	\$0.210 billion	\$0.184 billion
	41 active <b>rail stations</b> , associated stabling and depot	\$0.619 billion	\$0.478 billion
	57 electric <b>trains (EMUs)</b> , 10 Diesel Multiple Units	\$0.504 billion	\$0.496 billion
	21 ferry <b>wharves</b>	\$0.110 billion	\$0.058 billion
	6 Busway stations 2,432 bus shelters	\$0.060 billion	\$0.046 billion
	<b>AT HOP</b> ticketing system (inc software)	\$0.083 billion	\$0.060 billion
	41 <b>lifts and 16 escalators</b> (included in asset values above)		

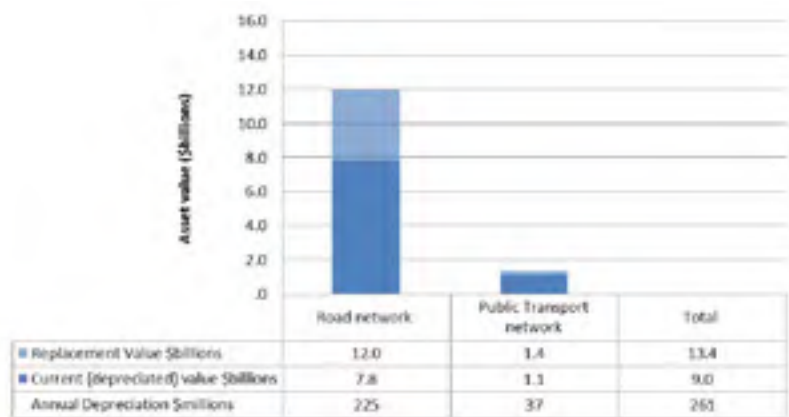
AT's asset management approach and recommended transport programme, as set out in this AMP, is a key input into the long term planning of AT and Auckland Council, and in particular to AT's *Auckland Regional Land Transport Plan 2015–2025*, which in turn informs:

- the transport content of Auckland Council's *Long-Term Plan 2015–2025* (the long-term plan), including the 30-year *Infrastructure Strategy*
- the Auckland content of the New Zealand Transport Agency's *National Land Transport Programme 2015–2018*.

## Network valuation

AT's transport network assets (excluding land) would cost \$13.4 billion to replace, and are depreciating by approximately \$261 million annually or \$715,000 per day. As shown in Figure 1, the current total depreciated value of the network is \$8.97 billion, which means that the network overall has used 33 per cent of its ability to deliver future economic benefit.

Figure 1: Network Valuation



Source: AT valuation reports 2014; AT *Annual Report 2013/14*; AT asset register as at 30 June 2014

## Levels of service

Levels of service set out what the public can expect from transport assets, in terms of their performance, condition and role in providing a safe, effective and efficient transport network.

The headline performance measure for levels of service is customer satisfaction; this is consistent with AT's strategic commitment to transforming and elevating customer focus and experience.

Customers are likely to be satisfied when the transport network is:

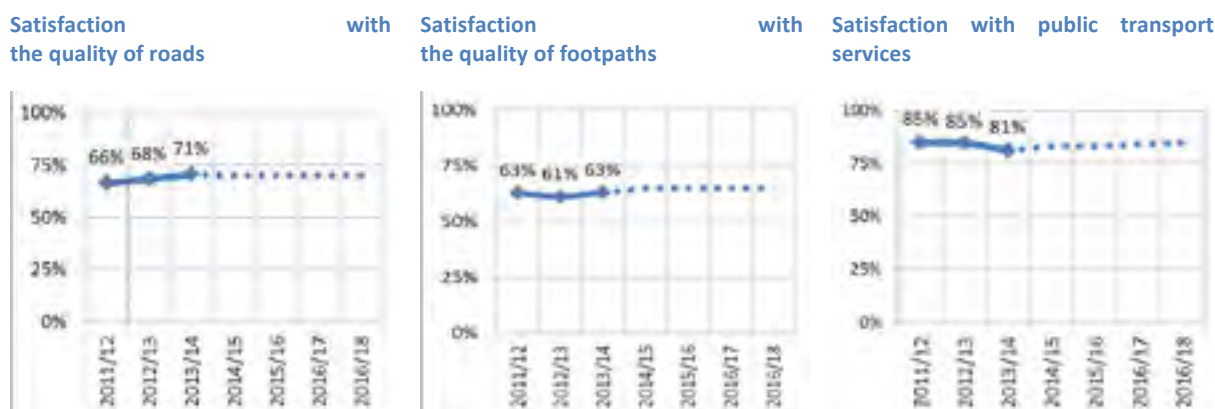
- **safe:** the network is safer, and feels safer for all users over time
- **accessible:** it is easy to access the network and get to your destination
- **convenient:** the network is easy to use and travelling is a pleasant experience
- **reliable:** travel times for people and freight are predictable and reliable
- **resilient:** when things go wrong, other travel options are available and access is quickly restored.

Generally Aucklanders are satisfied with the level of service provided by their transport network. Satisfaction with roads increased 2012-2014, and satisfaction with footpaths was

stable, as shown in Figure 2. Satisfaction with PT services is high, but declined in 2014 due to a range of factors including rapid patronage growth.

Future targets aim to maintain current satisfaction levels for roads and footpaths through to 2018 by ensuring that assets are maintained, operated and renewed as needed to deliver a fit for purpose level of service. AT has set a target to improve customer satisfaction with public transport from 81.4 per cent (its current level) to 85 per cent through a combination of asset and service improvements.

**Figure 2: Customer satisfaction trends and targets**



The customer satisfaction targets agreed between AT and Auckland Council through the 2015 AT Statement of Intent are set out in Table 2

**Table 2: Customer satisfaction targets**

Performance measure	Actual 2012/13	Actual 2013/14	Statement of intent/annual plan targets 2014/15	Long-term plan targets			
				2015/16	2016/17	2017/18	2018/19–2024/25
Customer satisfaction – roads	68%	71%	70%	70%	70%	70%	70%
Customer satisfaction – footpaths	61%	63%	65%	65%	65%	65%	65%
Customer satisfaction – public transport	New measure	81.4%	83%	83%	84%	85%	85%
Customer satisfaction – road safety		63%	New measure	60%	60–65%	60–65%	60–65%

Source: Auckland Council Long-Term Plan 2015–2025 (2), AT Statement of Intent 2015 (3)

Key technical performance measures that AT uses to monitor and support achievement of its customer satisfaction targets are shown in Table 3.

**Table 3: Technical level of service performance measures**

Performance measure	Actual 2012/13	Actual 2013/14	Statement of intent/annual plan targets 2014/15	Auckland Council long-term plan targets			
				2015/16	2016/17	2017/18	2018/19–2024/25
Change from the previous financial year in the number of fatalities and serious injury crashes on the local road network, expressed as a number		429 (year to 31 Dec 2013)	2.66% reduction from previous year	Reduce by at least 9	Reduce by at least 9	Reduce by at least 9	Reduce by at least 9

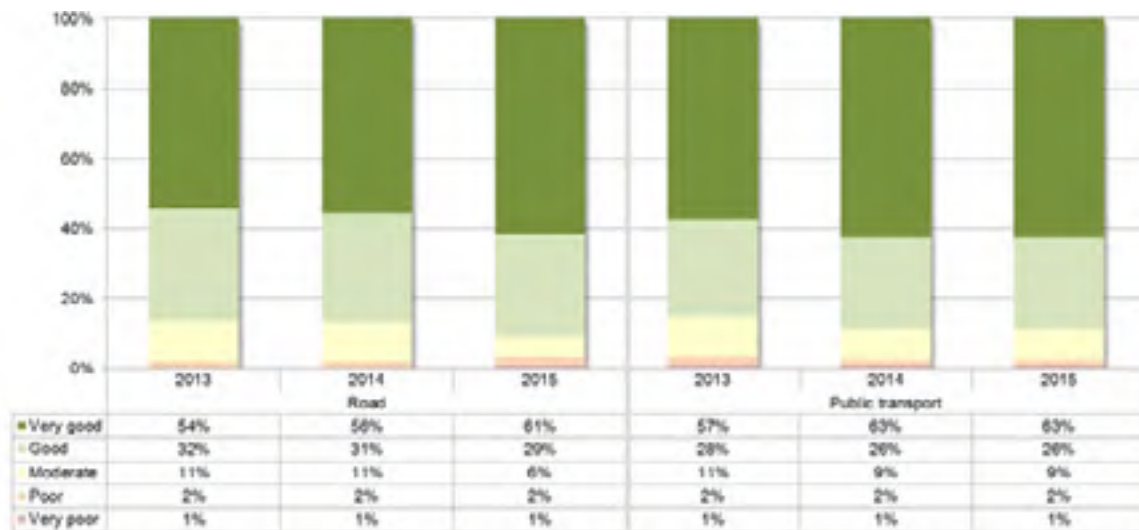
Performance measure	Actual 2012/13	Actual 2013/14	Statement of intent/	Auckland Council long-term plan targets			
Percentage of customer service requests relating to roads and footpaths that receive a response within specified time frames <sup>2</sup>	85%	85%		85%	85%	85%	85%
Road maintenance standards (ride quality), as measured by smooth travel exposure, for all urban and rural roads	Rural 95 Urban 85	Rural 95 Urban 85		Rural 93 Urban 83	Rural 92 Urban 82	Rural 91 Urban 81	Decreasing to Rural 87 Urban 77
Percentage of the sealed local road network that is resurfaced		7.6%	8%	8%	8%	8%	8%
Percentage of footpaths in acceptable condition (as defined in AT's AMP)	99%	99%		99%	99%	99%	98%

Source: Auckland Council Long-Term Plan 2015–2025 (2), AT Statement of Intent 2015/16 (3)

### Current condition of the network and recent trends

The condition of any asset will deteriorate with use and over time. Over the past three years, AT has invested close to \$200 million each year in asset renewals. At this level of investment, asset condition has been maintained overall, and the proportion of assets in very good, good or moderate condition is 97% as shown in Figure 3.

Figure 3: Road and public transport networks – current condition and trends



Source: AT renewals optimisation model (4)

Assets in very poor condition often present higher levels of risk and require more maintenance in order to provide suitable levels of safety and service.

The two asset classes with the highest proportion of assets in very poor condition are wharves (4.4 per cent of assets) and road pavement (3.2 per cent). These are also the two groups for which asset condition has improved the most over the past three years.

<sup>2</sup> As defined in Auckland Transport's customer service standards: two days for an incident investigation as a high priority; three days for an incident investigation as a normal priority; and one hour emergency response time.

## Identifying investment needs

The levels of investment required for transport assets, as identified in this AMP, derive from the lifecycle, level of service and risk outcomes that the assets are required to provide.

AT uses best practice asset management tools to set appropriate levels of maintenance and renewals activities for its assets, in order to deliver a safe network that meets customer expectations at the lowest whole-of-life cost.

Key drivers for the recommended investment in renewals and maintenance are:

- the need to protect the current investment in the network
- the need to manage and protect the service potential of the network
- new assets added to the road and PT networks each year to keep up with population and business growth
- changing travel modes, and the council's strategic aim of achieving a transformational shift in people's preferred travel modes to public transport
- the need to deliver the required levels of service at the lowest whole-of-life cost
- the need to manage risk for critical infrastructure.

Decisions about the actual level of investment that will be made in renewals, maintenance and operations are made by AT's two funders: Auckland Council and New Zealand Transport Agency.

Auckland Council is the major funder, and its long term plan drives AT's overall funding levels. The New Zealand Transport Agency also contributes funding to AT, with its decisions guided by the *Government Policy Statement on Land Transport 2015/2016–2024/2025*.

## Renewals investment needs

Renewals are essential, ongoing investments to replace assets before they fail. Timely renewal of the many assets that comprise the road and public transport networks is necessary, in order to protect the current investment in the network, and manage safety, service, financial and reputational risk.

AT's recommended renewals programme is based on:

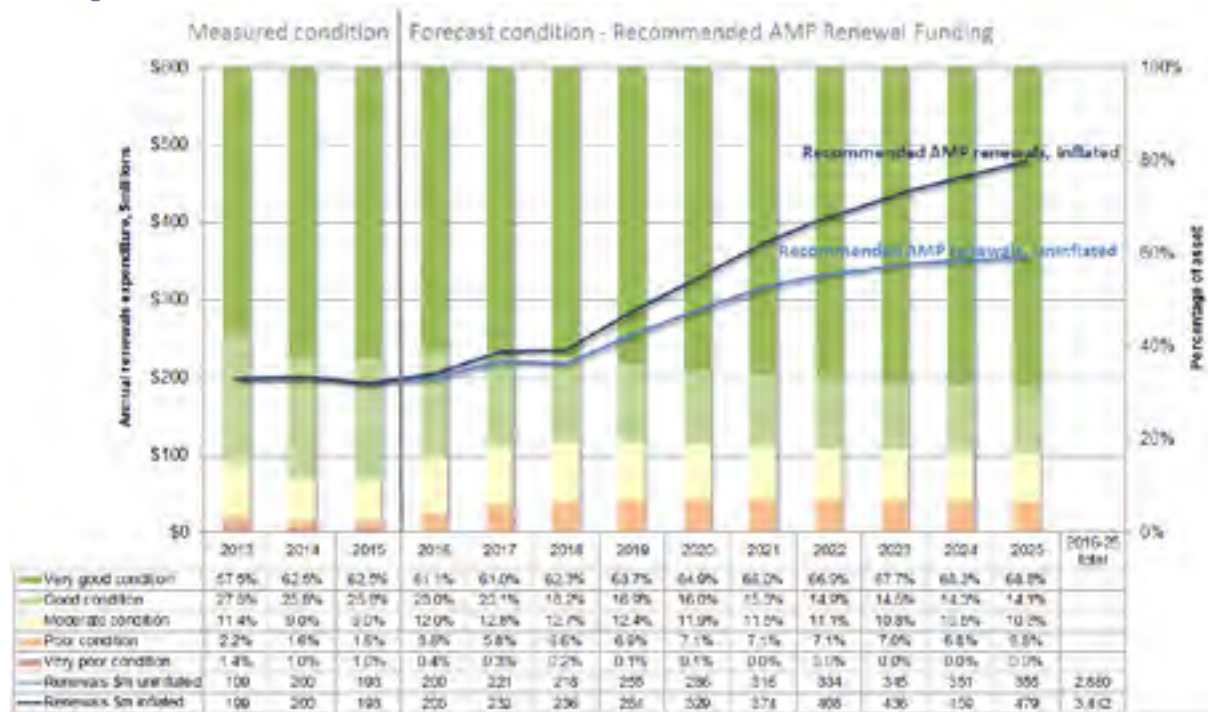
- optimising the benefits provided by assets, and minimising their whole-of-life costs, including maintenance and replacement costs
- delivering the required level of service, now and in the context of future growth
- reducing and managing the risk of asset failure.

The renewals programme recommended in this AMP describes the long-term investment needed to provide sustainable asset condition and levels of service across the network. Total renewals funding recommended over 10 years, excluding the specific projects listed above, is 2.88 billion in 2014/2015 dollars. Allowing for forecast inflation, the 10 year funding required is 3.44 billion.

The impact of implementing the recommended renewals programme would be to reduce the proportion of transport assets in very poor condition to less than 1 per cent, and to achieve a

gradual improvement in the condition profile of these assets as backlogs are reduced. Over the next 10 years, there would be an increase in the proportion of assets in very good condition – from 61 per cent in 2016, to 69 per cent in 2025, as shown in Figure 4.

**Figure 4: Asset condition, actual 2013-15 and forecast 2016-2025, recommended AMP renewals funding**



Source: AT renewals optimisation model (4)

## Renewals available funding

In its *2015 Long Term Plan*, Auckland Council adopted an accelerated transport programme which will maintain the momentum of transport improvements over the coming three years.

The Accelerated Transport Programme (ATP) includes funding for transport asset renewals at close to recommended levels for the first three years. However, from 2018/2019, renewals funding does not keep pace with need.

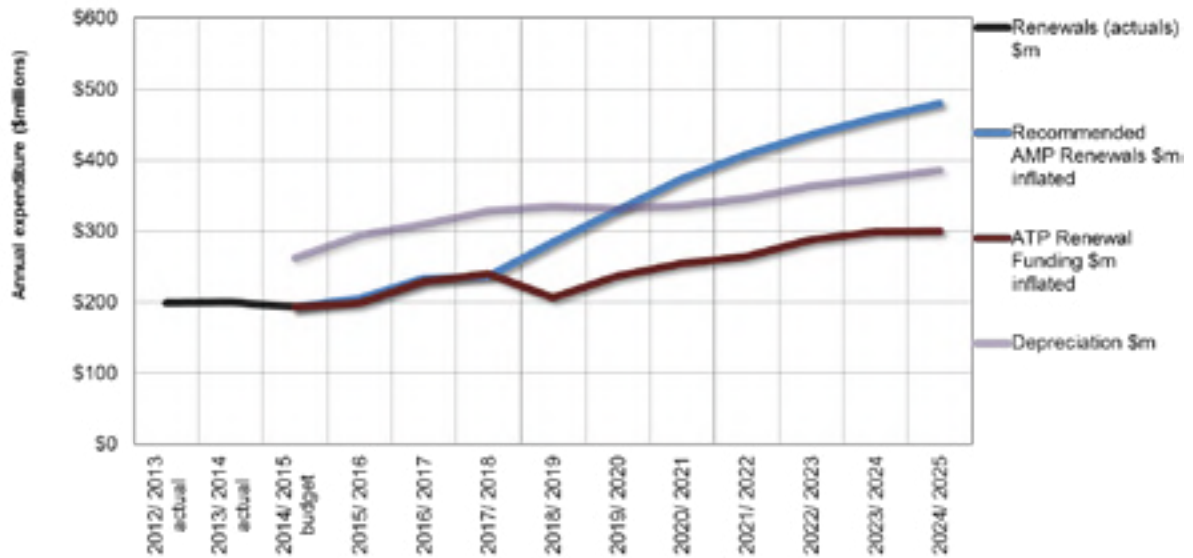
The following transport projects are classified as renewals in the Accelerated Transport Programme, and are additional to the core renewals programme set out in this AMP.

- Refurbishment of the 10 diesel trains used for the Pukekohe service in 2019/2020 (noting that the preferred option is the extension of electrification to Pukekohe, subject to Government funding)
- LED Streetlighting, which will reduce whole-of-life costs by installing more energy-efficient, longer lasting LED luminaires
- Seismic strengthening projects, including a seismic upgrade of the Quay St seawall
- Replacement of some assets from AT's revenue-generating parking activities
- General AT asset replacement/renewal (corporate and IT assets)

The costs of the projects listed above are not included in the investment needs and funding decisions set out in this AMP.

Figure 5 shows recommended renewals investment for the coming 10 years in the context of past investment, the funding levels proposed in Auckland Council’s long term plan and annual depreciation.

**Figure 5: Recommended AMP and approved ATP renewals programme**



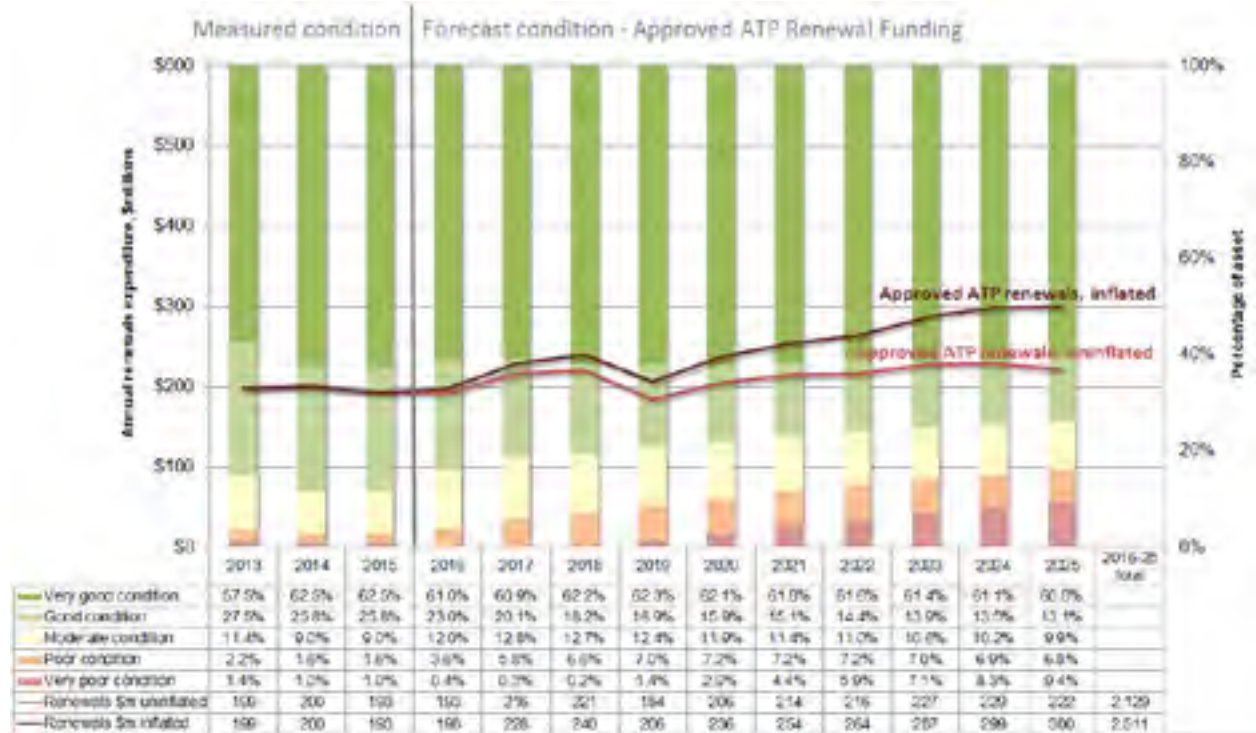
Source: Auckland Regional Land Transport Plan 2015–2025 (5), Auckland Council Long-Term Plan 2015–2025 (2)

The level of funding for renewals approved in Auckland Council’s 2015 Long-Term Plan aligns with the level recommended in this AMP for the first three years. After that, it falls short of the recommended level of funding based on asset needs.

Less spending on renewals means that assets will degrade over time, leading to long-term loss of asset condition and value. The consequences, in terms of both costs and condition, of the long-term plan renewals funding is shown in Figure 6.



Figure 6: Cost and condition impacts of the approved (ATP) 10-year renewals programme



Source: AT renewals optimisation model (4)

After 2018, the investment approved for renewals in the long-term plan is not sufficient to cover identified renewals needs, and this will lead to deterioration in the assets' condition. By the end of the 10 years covered by the plan, the proportion of assets in very poor condition will have increased from less than 1 per cent in 2016 to 9.4 per cent in 2025.

Having high levels of assets in very poor and poor condition for a sustained period will lead to reduced levels of service, and an increased risk of failure and safety issues. This, in turn, will require higher levels of network monitoring and reactive maintenance.

The 30-year outlook, as proposed in Auckland Council's *Auckland 30-year Infrastructure Strategy* (6), is for further restrictions on renewals funding in future decades, with a \$4 billion gap between the recommended and the approved renewals programme over the next 30 years.

### Maintenance investment needs

Maintenance and asset-based operations cover the routine activities that keep Auckland's road network, rail stations, bus stops and stations, and ferry wharves open for business. Maintenance and asset-based operations are the second largest item of AT operational expenditure each year, after public transport service contracts.

New transport assets, from whichever source, bring consequential operations, maintenance and renewals requirements. Based on past trends, around 1.5% more assets are added to the network each year, through a combination of vested assets in new developments and AT capital projects.

The financial impact of this is a corresponding increase in maintenance and operations funding requirements each year, just to keep up with growth in the asset base. Over the 10 years, consequential opex totals \$98.1 million as shown in Table 4.

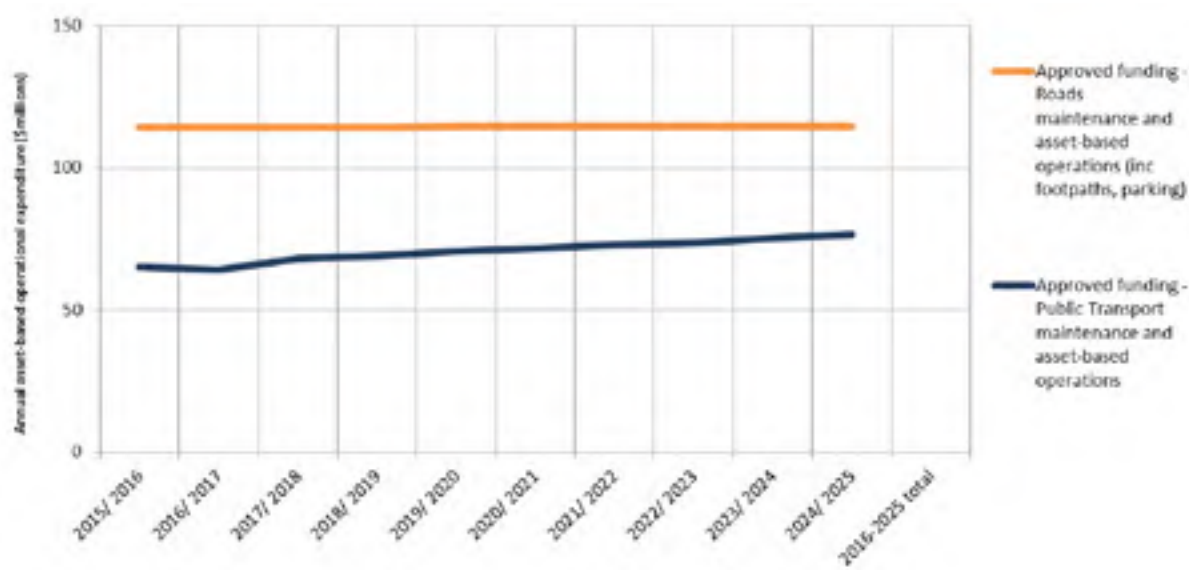
**Table 4: Estimated consequential maintenance and operations costs from asset growth**

(\$million)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016-2025 total
Consequential opex from asset growth	1.7	3.4	5.2	6.9	8.8	10.6	12.5	14.4	16.3	18.3	98.1

### Approved funding, maintenance and operations

Road maintenance budgets do not increase at all over the coming 10 years as shown in Figure 7 and Table 5. Public transport maintenance and asset-based operations budgets increase by around 1.9% each year, which is below the forecast rate of inflation.

**Figure 7 : Maintenance and operations 2015/2016 to 2024/2025, approved ATP funding**



**Table 5 : Approved ATP funding for maintenance and operations**

(\$million, inflated)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Roads maintenance and asset-based operations	114	114	114	114	114	115	115	115	115	115	1,145
PT maintenance and asset-based operations	65	64	68	69	71	72	73	74	75	77	708

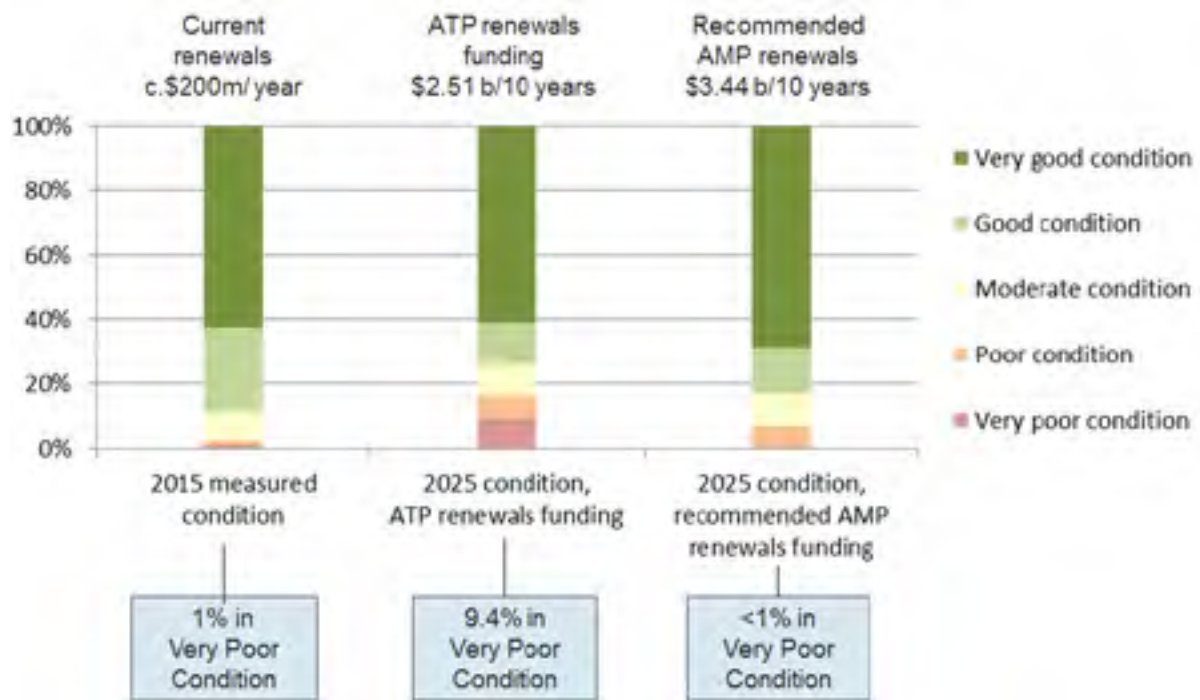
A widening gap will arise between maintenance budgets and asset needs, for the following reasons.

- inflation
- consequential opex from asset growth, estimated at 1.5% (compounding) each year
- additional costs associated with patronage growth (for public transport) and growth in vehicle, freight, cycle and pedestrian trips (for roads)
- The shortfall in renewals funding creating increased demand for maintenance. For example, if roads are resealed less often, then more pothole maintenance will be required as the pavement deteriorates.

## Funding gap and consequences

Figure 8 compares the impacts that the recommended (AMP) and approved (Accelerated Transport Programme, ATP) renewals funding levels will have on the proportion of poor and very poor assets in the network.

**Figure 8: Recommended and approved budgets – impacts on levels of poor and very poor assets**

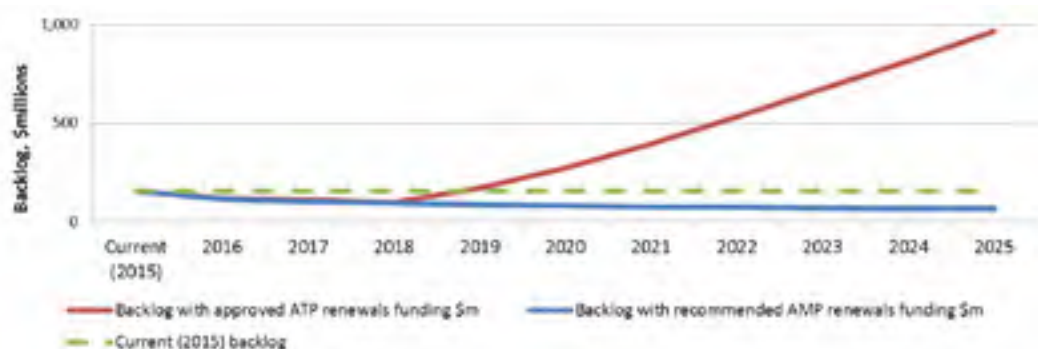


Source: AT renewals optimisation model (4)

Funding at the approved levels will increase the overall level of backlog in the network; that is, the proportion of assets that are in worse condition than their nominated renewal intervention point. The backlog liability that will arise from the two different levels of funding (recommended and approved) is shown in Figure 9.

At approved funding levels, backlog liability will increase from 2018/2019 as renewals budgets fail to keep pace with the rate of asset deterioration. More backlog liability will be created than the funding that is being saved by the constrained budgets, because provision is not being made so that renewals can occur at the optimal time. Whole of life asset costs increase because assets in poor condition have higher maintenance costs and deteriorate more quickly.

**Figure 9: Overview of backlog liability**



Source: AT renewals optimisation model (4)

## Addressing the funding gap from 2018

The next long term planning cycle, leading to publication of the 2018-2021 Asset Management Plan, provides an opportunity to address the significant issues raised by the proposed future shortfall in renewals funding from Year 4 of the ten-year Long Term Plan.

With limited funding, priority setting has an increasing role in asset management. This issue is not unique to Auckland. In response to concern about the long term affordability of road maintenance and renewals, the New Zealand Transport Agency and Local Government New Zealand have established the One Network Road Classification to better align asset management and funding decisions with network priorities. This classification will be used to inform asset management planning, investment choices, and maintenance and operational decisions throughout New Zealand and is especially relevant to the challenges faced in Auckland.

The New Zealand Transport Agency anticipates that it will use the One Network Road Classification as the basis for its funding allocations for road maintenance and renewal projects from 2018 onwards.

AT will apply the One Network Road Classification in order to better understand the links between cost, risk and levels of service and to ensure that maintenance, operational and investment decisions align with national and international best practice in asset management.

The asset management and risk mitigation tasks set out in Table 6 will ensure continuous improvement in Asset Management during the 2015-2018 period, and build the evidence base for a reassessment of renewals funding levels in the 2018 AMP.

**Table 6: Asset management issues and risks 2015-2018**

Issue/risk	Management/mitigation tasks
<ul style="list-style-type: none"> <li>Increased requirement for asset management planning</li> </ul>	<p>Fully integrate the One Network Road Classification into AT planning, management, financial and delivery processes</p> <p>Additional monitoring, risk management and reporting activities to manage higher levels of risk</p> <p>Annual updates of the AMP including key indicators such as customer satisfaction, health and safety issues, network condition and performance.</p>
<ul style="list-style-type: none"> <li>Approved maintenance and asset-based operations funding does not provide for the impacts of asset growth</li> <li>Approved renewals funding from 2018/2019 forward does not meet recommended renewals needs</li> </ul>	<p>Reprioritise work from lower to higher risk impact assets eg. defer renewals of lower volume local roads in order to prioritise regional and arterial roads</p> <p>Reduce maintenance standards for some assets</p> <p>Advise on of the consequences resulting from the level of funding proposed in the LTP, and the impact of the shortfall relative to the needs identified in the AMP</p> <p>Work closely with Auckland Council and the Transport Agency to ensure that AT's funding needs are clear, and that tradeoffs between cost, risk and level of service are transparent.</p>

Issue/risk	Management/mitigation tasks
<ul style="list-style-type: none"> <li>Levels of service for some assets cannot be sustained at current levels of funding</li> </ul>	<p>Re-assess investment needs and levels of service. Consult on any proposed significant changes.</p> <p>Revisit the agreed levels of service and funding envelope consequences in the 2018-21 funding round.</p> <p>Close monitoring of asset condition, network risk and customer satisfaction trends.</p> <p>Forecasting of the links between funding and trends in customer complaints and asset integrity.</p>

### Summary of key points

- AT's is responsible for transport assets with a replacement value of \$13.4 billion
- Current asset condition is good and customer satisfaction is high
- Growth adds approximately 1.5% more assets (and costs) to the network each year
- The recommended (AMP) budget provides for an optimal maintenance and renewals programme, balancing cost, risk and levels of service
- Approved LTP renewals funding has been approved at close to recommended levels for the first three years. However in the seven years from 2018/2019, renewals funding is set at a level significantly lower than the AMP recommendation. By the end of the decade, 9.4 per cent % of transport assets will be in very poor condition. As a result, AT will be managing a much higher level of risk.
- Maintenance budgets do not increase over time, which will lead to a widening gap between funding and asset needs, due to:
  - Inflation
  - New assets and increased demand
  - Increased maintenance costs, as a consequence of deferred renewals.
- **From 2018/19, AT does not have a sustainable funding model for maintaining and renewing its assets.**

The coming three years provide the opportunity to ensure that AT has taken all possible steps to achieve value for money, is delivering a fit for purpose level of service, and is managing risk appropriately. AT will engage with Council and will revisit the agreed levels of service and funding envelope consequences in the 2018-2021 funding round.

## Key elements of this plan

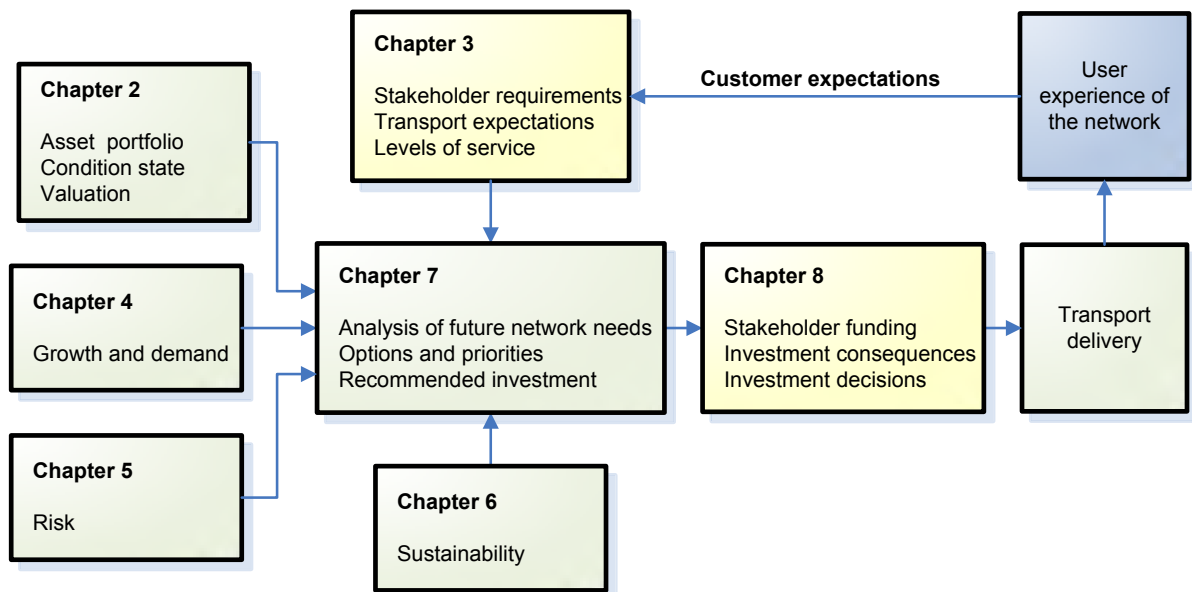
Figure 10 shows the chapters in this AMP and the key elements of AT's asset management planning practice that they cover.

**Figure 10: AMP chapters and the key elements of asset management planning they cover**

1 Infrastructure asset management	<ul style="list-style-type: none"> <li>• Purpose and key elements of asset management</li> <li>• Strategic context</li> <li>• Auckland Transport's approach to asset management</li> </ul>
2 The transport asset portfolio	<ul style="list-style-type: none"> <li>• Description of current assets and service activities</li> <li>• The scope, size and value of our network assets</li> <li>• Overview of the regional transport network</li> </ul>
3 Outcomes and levels of service	<ul style="list-style-type: none"> <li>• Understanding the needs of users and stakeholders</li> <li>• One Network Road Classification and levels of service</li> <li>• Links between assets and activities, and service outcomes</li> </ul>
4 Growth and demand	<ul style="list-style-type: none"> <li>• Growth implications for asset management</li> <li>• Strategic road and public transport networks</li> <li>• One Network Road Classification purpose and objectives</li> </ul>
5 Risk management	<ul style="list-style-type: none"> <li>• Risks and critical assets</li> <li>• Risk management options and monitoring</li> <li>• Network asset resilience and safety</li> </ul>
6 Sustainability	<ul style="list-style-type: none"> <li>• Active long-term environmental stewardship</li> <li>• Long-term social and economic management</li> <li>• Implementation of sustainable practices</li> </ul>
7 Asset investment requirements	<ul style="list-style-type: none"> <li>• Condition, age and operational needs of assets</li> <li>• Recommended renewals, maintenance and operations investment</li> </ul>
8 Funding and impacts	<ul style="list-style-type: none"> <li>• Funding sources</li> <li>• Proposed funding levels</li> <li>• Investment prioritisation within financial constraints</li> </ul>
Appendices	<ul style="list-style-type: none"> <li>• Legislative requirements</li> <li>• Notes, assumptions and limitations</li> <li>• Detailed financial tables</li> </ul>
Asset class management plans	<ul style="list-style-type: none"> <li>• Overview of each asset class</li> </ul>
Bibliography	

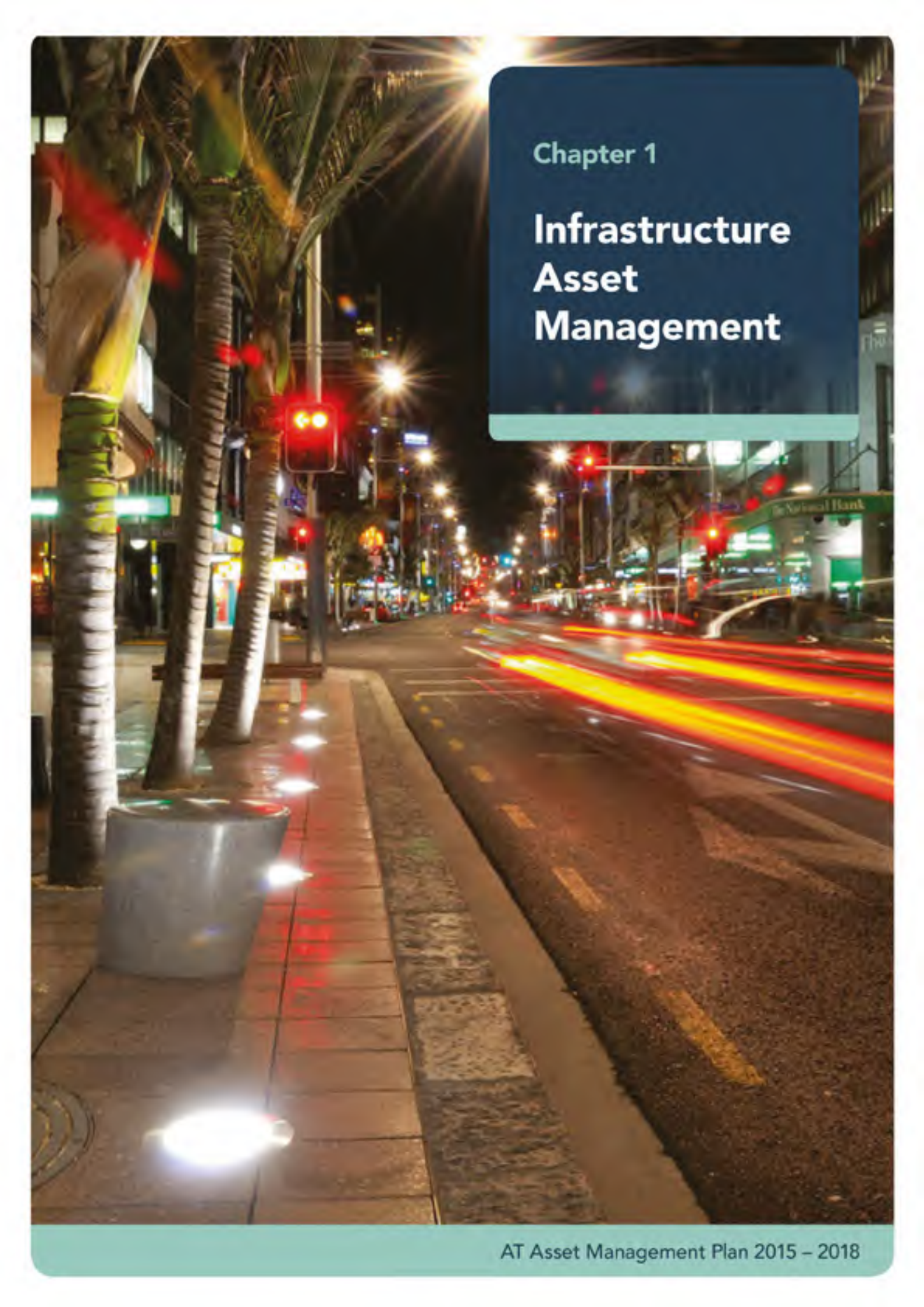
Each chapter of this plan relates to a key aspect of AT's asset management practice. Figure 11 shows how these elements fit together within AT's asset management approach.

**Figure 11: Overview of asset management approach**







A nighttime photograph of a city street. The scene is illuminated by streetlights and traffic lights. On the left, there is a sidewalk with several palm trees. A silver trash can is visible in the foreground. The road is dark, and there are long, bright light trails from moving vehicles, primarily in shades of yellow and orange. In the background, there are buildings and more streetlights. A dark blue rounded rectangle is overlaid on the right side of the image, containing white text.

## Chapter 1

# Infrastructure Asset Management



# 1. Infrastructure asset management

*This chapter outlines the purpose and role of asset management within AT. It provides an overview of the asset management practice standards that underpin this AMP, and identifies the broader context that this practice occurs within, including legislative requirements, and the requirements of Auckland Council and the New Zealand Transport Agency.*

## 1.1. Purpose of asset management

Infrastructure asset management is defined (7) as “the systematic and coordinated activities and practices of an organisation to optimally and sustainably deliver on its objectives through the cost-effective lifecycle management of assets”.

Auckland’s transport network is one of the largest in New Zealand and is the most visible, valuable and heavily used infrastructure network owned by Auckland Council. The transport network is made up of a range of diverse assets, including roads, footpaths, cycleways, parking facilities, bus and rail stations, and public transport infrastructure and systems. Transport network assets managed by AT have been developed through continuous investment by successive generations of Aucklanders, and have a replacement value of \$13.4 billion, excluding land.

This is the second AMP developed by AT, the first being in 2012. It was developed following the principles and practice guidelines in the *2011 International Infrastructure Management Manual (7)*, and with the guidance of the New Zealand Transport Agency and Local Government New Zealand.

The AMP supports AT’s strategic direction by:

- translating organisational objectives into technical and financial decisions that result in appropriate investment plans and delivery programmes
- providing a sound basis for the high-quality, long-term management of service levels, cost and risk that is required for critical infrastructure, such as the transport network
- providing asset management policies, guidance and direction that support and enable AT to deliver an effective, efficient, safe and sustainable transport network
- meeting legislative requirements, and those of Auckland Council and the New Zealand Transport Agency, in relation to network management, reporting and funding
- including a formal performance monitoring and reporting framework.

Funding for the management of transport assets is under continuous scrutiny, with increasing pressure from government and the public for transparency, accountability and more efficient use of the limited resources available.

This AMP is a key accountability mechanism, whereby AT sets out the basis of its investment decision-making, and of its approach to managing transport assets and customer satisfaction. This in turn encourages meaningful debate around investment options, levels of service, outcomes and risk.

## 1.2. Strategic context

AT is a Council Controlled Organisation of Auckland Council and is responsible for roads (excluding state highways), footpaths, cycling, parking and public transport in the Auckland region.

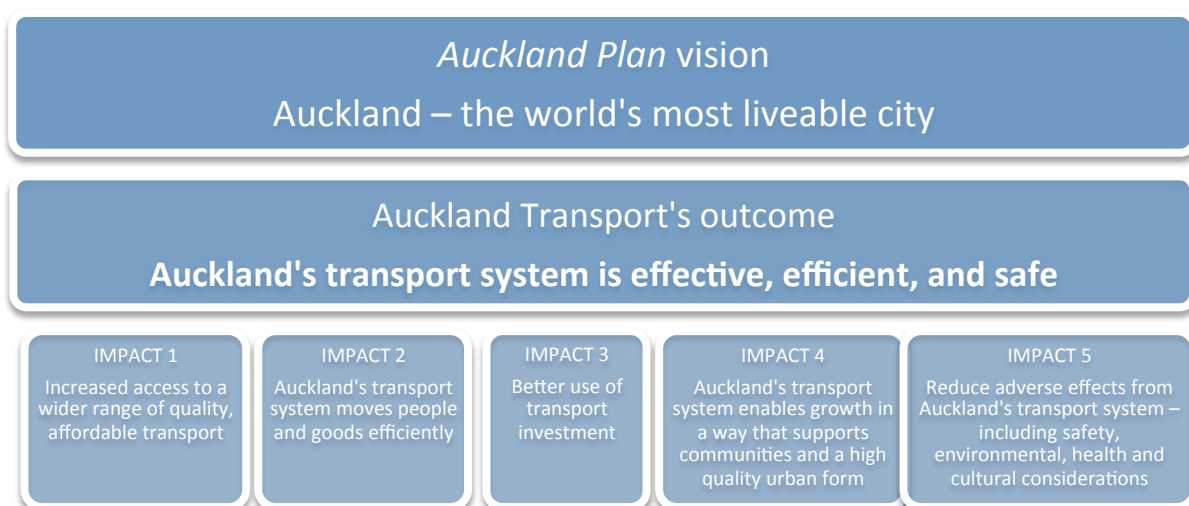
AT's long-term planning is guided by the *Auckland Plan* (8), which sets out a vision for Auckland to become the world's most liveable city.

The *Auckland Plan* anticipates that Auckland's population will grow from 1.4 million to over 2.1 million people, with 237,000 new residents in the next 10 years, and a corresponding growth in jobs and businesses (2).

AT's plans must also be consistent with the *Government Policy Statement on Land Transport 2015/16–2024/25* (9), which has a strong and continuing focus on economic growth and productivity, alongside safety and value for money.

AT has identified five impacts that are expected to be delivered from its transport interventions. These impacts are shown in Figure 12.

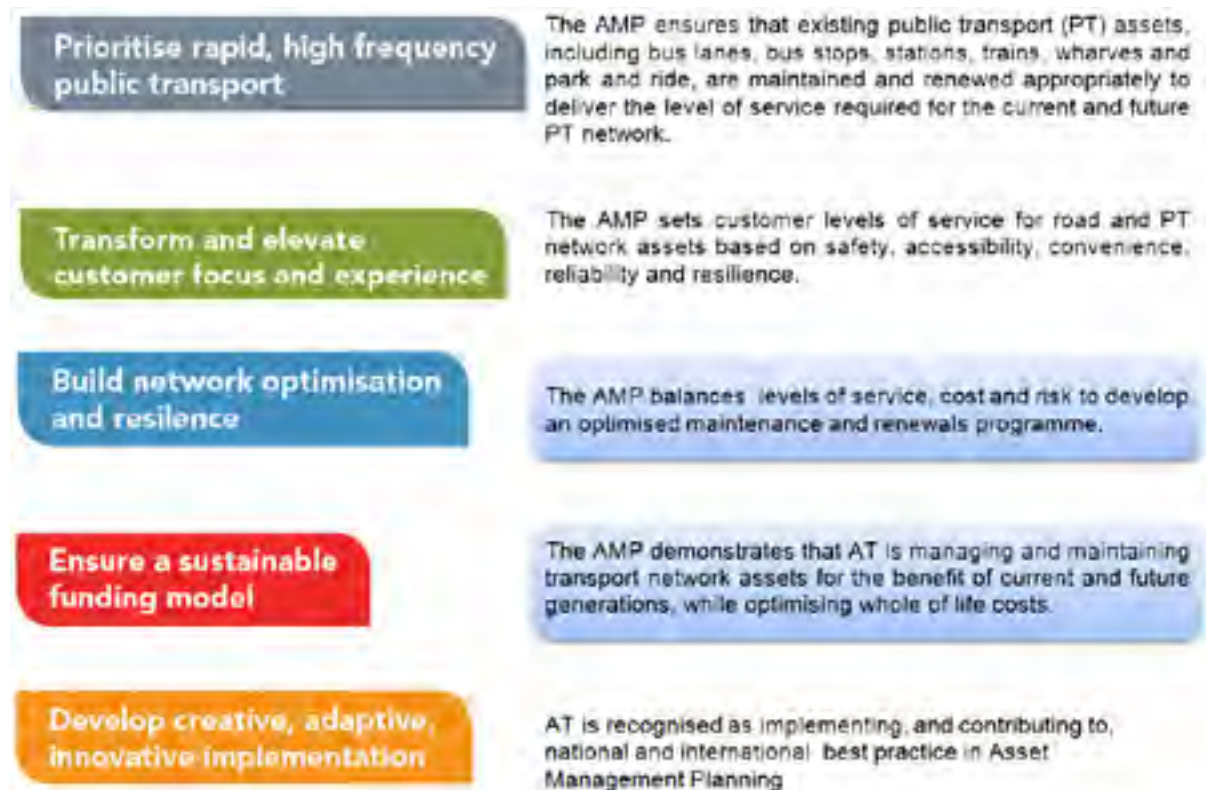
**Figure 12: Transport impacts supporting the *Auckland Plan* vision**



Source: *Auckland Plan* (9), *Auckland Regional Land Transport Plan 2015–2025* (5)

AT has identified five strategic themes to guide its actions and decisions. The AMP contributes to all five themes, and particularly to network optimisation and resilience and to ensuring a sustainable funding model as shown in Figure 13.

**Figure 13: AMP contribution to AT strategic themes**



### 1.3. AT's approach to asset management

AT's asset management approach incorporates a number of initiatives that together provide a sound basis for planning and managing the transport network.

- One System approach

Auckland's transport system is being planned and managed as a single system in conjunction with the New Zealand Transport Agency's state highways and KiwiRail's railway infrastructure. This One System approach prioritises and optimises competing transport uses, and allows an appropriate balance to be struck between transport movement needs on the one hand, and place-making needs on the other.

Details about the One System approach are included in the *Auckland Regional Land Transport Plan 2015–2025* (10).

- Optimisation of strategic planning and asset management

Transport investment decisions take into account both the public transport and road networks (as part of a One System approach), with the aim of achieving greater integration between different transport modes.

Public transport can move people more efficiently than private vehicles. The overall network efficiencies that can be gained by increasing public transport's mode share will help address growth in the Auckland region, and help meet increasing demand for freight and commerce transport on the road network.

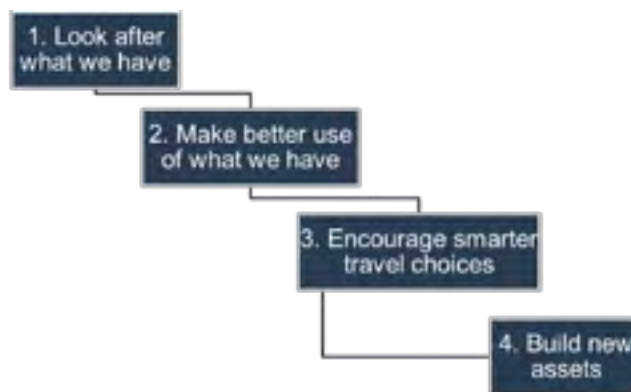
- Travel demand management

Travel demand management maximises the use of the existing road network’s capacity by managing demand. These measures aim to address traffic congestion in ways other than by increasing the road network’s capacity, ranging from walking school buses to traffic signal optimisation. .

- Funding prioritisation

Key AT priorities are to operate, maintain and renew infrastructure optimally; to manage demand efficiently and safely; and to make better use of networks. Protecting existing investment in the transport network is considered a higher priority than building additional capacity through investing in new infrastructure, services and technology, as shown in Figure 14.

**Figure 14: Four-stage intervention process**



Source: *Auckland Regional Land Transport Plan 2015–2025* (5)

- Whole-of-life cost optimisation

This approach involves minimising the total cost of ownership over the life of an asset for the levels of service provided. Typical areas of expenditure that are included in calculating the whole-of-life cost of owning an asset include maintenance, renewal and rehabilitation, depreciation and cost of finance, and replacement or disposal costs. AT uses optimised decision-making to minimise the total cost of asset ownership by providing an optimal balance between renewals and maintenance investment levels, levels of service and risk.

- Industry best-practice

AT uses the *2011 International Infrastructure Management Manual* (7) guidelines for asset management practice. During 2015, AT will also review the recently published ISO55000 series standards for asset management, and consider adopting them as part of its AMP improvement plan.

## 1.4. Associated documents

This AMP is a 30-year plan, with a focus on the first 10 financial years from 2015/2016 to 2024/2015. It helps inform AT’s strategic plans and new capital investment decisions, and sets out its proposed expenditure for operating, maintaining and renewing its existing assets.

The AMP is a key input into AT’s 10-year *Auckland Regional Land Transport Plan 2015–2025*, which in turn informs:

- the transport content of Auckland Council’s *Long-Term Plan 2015–2025* (the long-term plan)
- the Auckland content of the New Zealand Transport Agency’s *National Land Transport Programme 2012–2015 (NLTP)*.

This AMP is backed up at a technical level by 14 asset class management plans.

The asset class management plans provide guidance and information about specific asset classes within the road and public transport networks. They describe the agreed levels of service (and strategies to deliver them), investment options and consequences, and 30-year investment needs for each class of assets. Key elements of the asset class management plans are summarised in Appendix 4 of this AMP.

AT is also preparing an *Asset Risk Management Strategy*, which will set out how it is managing asset risk, and is closely involved with Auckland Council and other stakeholders in preparing emergency response and business continuity plans.

Figure 15 shows this plan’s relationship to these other documents.

**Figure 15: AMP and supporting documents**







## Chapter 2

# The Transport Asset Portfolio





## 2. The transport asset portfolio

*The transport network comprises a broad range of assets that underpin the delivery of transport services. This chapter identifies the range, extent, valuation and condition state of those assets, and their current suitability to deliver levels of service.*

### Key messages

- Auckland's road network supports 8 billion vehicle kilometres travelled each year, of which between 2% and 6% are trucks and other heavy commercial vehicles.
- Public transport network supported 79 million PT trips in 2014/2015
- The replacement value of transport infrastructure assets is \$13.4 billion.
- The transport network is depreciating by \$261 million annually, which is the equivalent of \$715,000 a day.
- The transport network has used approximately 33 per cent of its ability to deliver future economic benefit,
- Asset condition within the network is currently good, with only 1 per cent of assets in very poor condition.
- The road and public transport networks are growing and changing (see Chapter 4).

### 2.1. Asset overview

AT is one of the largest transport providers in New Zealand and manages the most complex and diverse network, including road and public transport networks.

AT's transport asset portfolio grows each year, as new assets are constructed through AT projects and by developers. Asset growth is considered in Section 4.4.

#### Road network

The road network enables the daily flow of people and commerce across the region through a portfolio of diverse assets including roads, footpaths, streetlights, signs, traffic signals, parking, cycleways, road drainage, kerbs and channels, bridges and retaining structures.

Each Aucklander uses the road network to make, on average, four trips (two return trips) each day. Of these trips, around half are as car driver, a quarter are as car passenger, and the remaining quarter are walking, public transport or cycling trips (in that order) (10).

The road asset network supports:

- 8 billion vehicle kilometres travelled each year (11)
- over 54 million tonnes of freight moved to, from and around Auckland each year (8)
- 3,650 customer requests for service each month
- 5,300 walking trips into the city centre during the morning peak
- 958,000 cycling trips in designated areas each year (3)

- Over 4,000 children walking to school each morning on over 400 walking school buses
- over 10,000 corridor access requests processed annually. (13)

## Public transport network

The public transport network supports the provision of public transport services by third party suppliers including bus, ferry and rail services.

The public transport network supports:

- 79 million public transport trips in 2014/2015, made up of:
  - 60 million passenger trips on bus services
  - 14 million passenger trips on rail
  - 5 million passenger trips on ferries
- 100,000 AT HOP cards issued
- 205 contracted services in place, including 28 school bus contracts.

## 2.2. Asset value and depreciation

AT assets in total have a value of \$16.5 billion, including land, corporate assets and intangible assets such as software. This AMP is concerned with AT's road and public transport network assets, which have a replacement value of \$13.351 billion, as shown in Table 7.<sup>3</sup>

The current (depreciated) value of AT assets is \$8.973 billion, indicating that the network has used approximately 33 per cent of its service potential.

Transport network assets are depreciating by approximately \$261 million annually, or \$715,000 a day.

**Table 7: Network valuation (\$ million)**

Network	Replacement value	Current (depreciated) value	Annual depreciation
Road network	11,974	7,835	225
Public transport network	1,376	1,138	37
Total	13,351	8,973	261

Source: AT valuation reports as set out in Appendix 2

<sup>3</sup> Further detail of valuation dates and assumptions is provided in Appendix 2.

## Road network

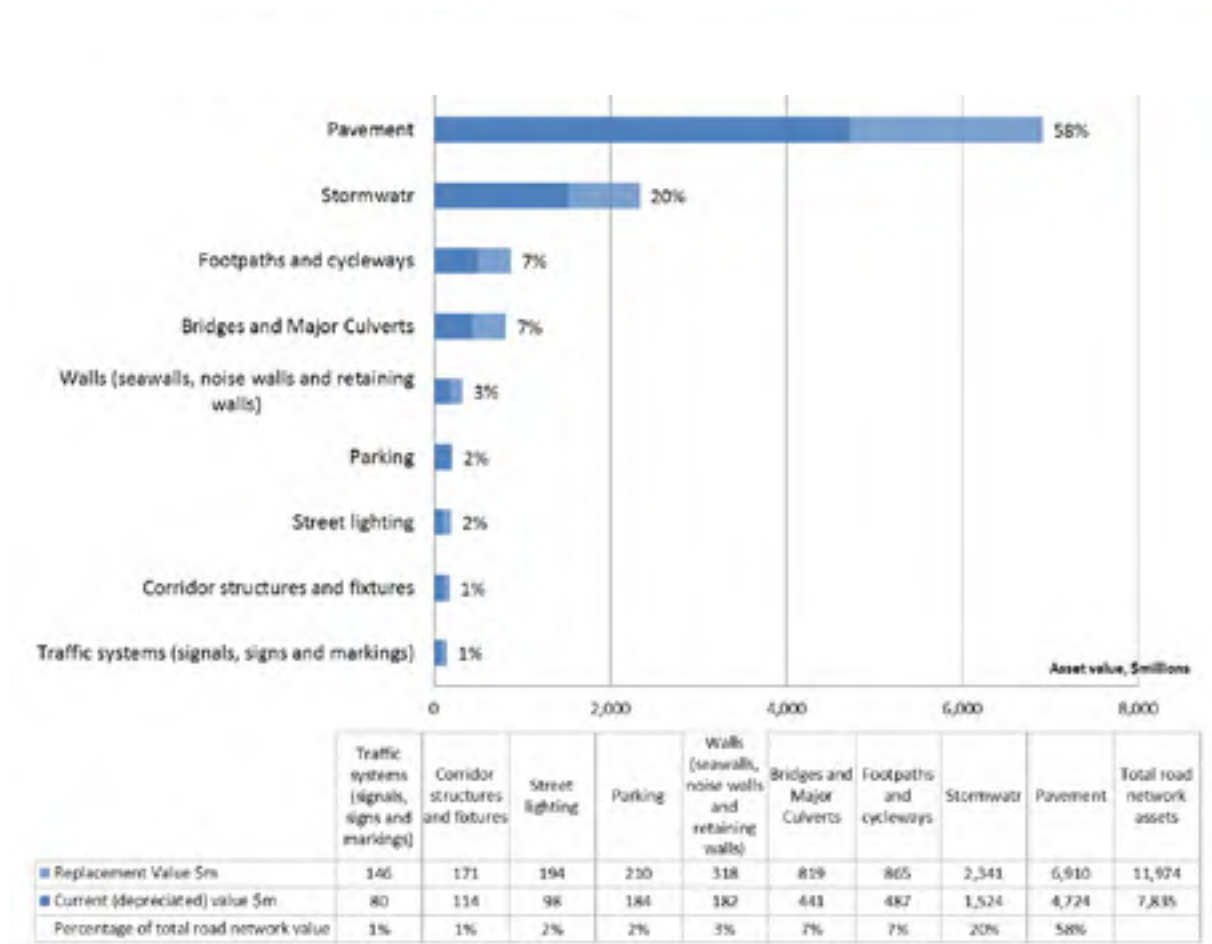
The road network has a total replacement value of \$11.97 billion. The network:

- has a depreciated value of \$7.83 billion, indicating that it has used approximately 35 per cent of its service potential
- uses 1.8 per cent of its service potential each year
- assets have an average of 55 years of overall service life
- assets have, on average, 36 years of remaining service life.

Road pavement represents 58 per cent of the total investment in the road network, followed by stormwater assets (including kerbs and channels, cesspits and culverts), which represent 20 per cent of the total, as shown in Figure 16.

Further details about AT's road assets are provided in the asset class management plans: see Appendix 4 for summaries.

Figure 16: Road network value



Source: AT valuation reports as set out in Appendix 2

## Public transport network

Over the period covered by this AMP, AT will be operating:

- 6 busway stations, including the new Silverdale station
- bus stops and bus shelters
- 41 existing rail stations with scheduled services, and a new station at Parnell
- 57 electric multiple units and 10 diesel multiple units, with the diesel trains dedicated to the Pukekohe to Papakura shuttle service
- an electric multiple units depot and maintenance facility at Wiri, and distributed stabling facilities
- 21 ferry wharves
- the AT HOP ticketing system, including ticketing and fare payment devices and software.

The total replacement value of AT's public transport assets is \$1,376 million, as summarised in Table 8.

**Table 8: Public transport network value (\$ million)**

Asset class	Optimised replacement cost	Optimised depreciated replacement cost
Rail stations and depots	620	478
Trains	504	496
Wharves	110	58
AT HOP	83	60
Bus network	60	46
Rail stations and depots	620	478
<b>Total public transport network assets</b>	<b>1,376</b>	<b>1,138</b>

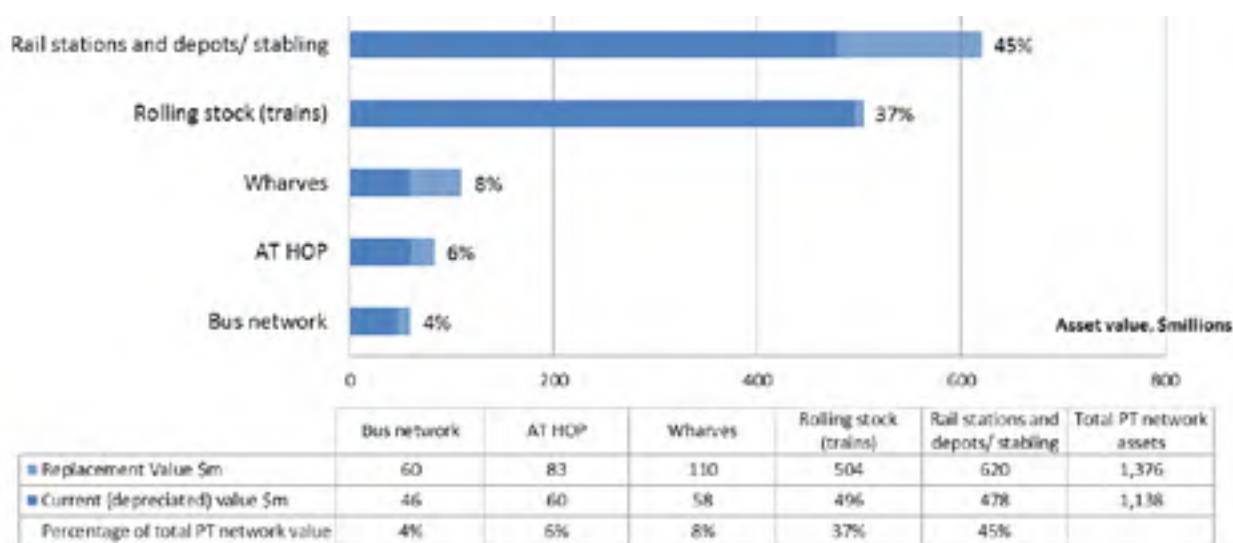
Source: AT valuation reports as set out in Appendix 2

Figure 17 shows that rail stations and depots represent 45 per cent of the total investment in the public transport network, followed by trains at 37 per cent.

This valuation indicates that, as a group, public transport assets have used approximately 17 per cent of their service potential. However, the electric trains, the AT HOP system and the rail stations are relatively new investments, which are expected to have many years of useful life remaining.

Further details about AT's public transport network assets are provided in the asset class management plans: see Appendix 4 for summaries.

**Figure 17: Public transport network value**



Source: AT valuation reports as set out in Appendix 2

## 2.3. Asset condition

Condition is the main indicator used to understand how transport assets are deteriorating. Unlike depreciation, which is a calculation based on the age and useful life of an asset, condition is a physical assessment of an asset's remaining service potential.

AT condition assessments use a formal condition grading system to assess an asset's condition, with a ranking from 1 (very good) through to 5 (very poor): see Table 9. This approach is used for all transport asset classes and is consistent with the *2011 International Infrastructure Management Manual* (7).

**Table 9: Condition grading system**

Condition rating	Description of condition
1	Very good condition: only cyclic maintenance required
2	Good condition: Minor maintenance required plus cyclic maintenance
3	Moderate condition: Significant maintenance required
4	Poor condition: Significant renewal/ upgrade required
5	Very poor condition: Unserviceable

Source: International Infrastructure Management Manual 2011

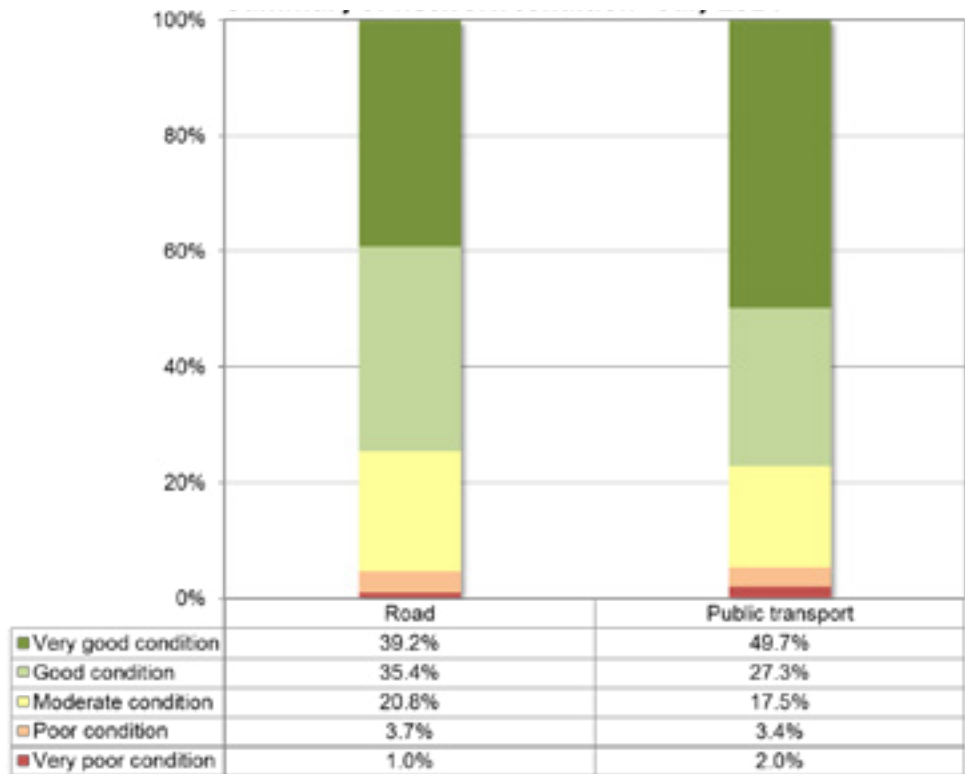
AT uses a rolling programme of comprehensive condition assessments to inform its maintenance and renewals decisions.

Detailed inspections are scheduled for critical assets, such as bridges, retaining walls, ferry facilities, bus shelters and rail assets, with the information gained from the inspections used as a key input into the asset management decision-making process.

Routine condition assessments are also undertaken for non-critical assets, at frequencies appropriate to each asset class.

Figure 18 summarises the asset condition profiles for the road and public transport networks. It shows that the proportion of assets that are currently in very poor condition is just over 1 per cent. This level of very poor assets can be effectively managed through AT’s existing inspection and maintenance regimes.

**Figure 18: Network condition profiles**



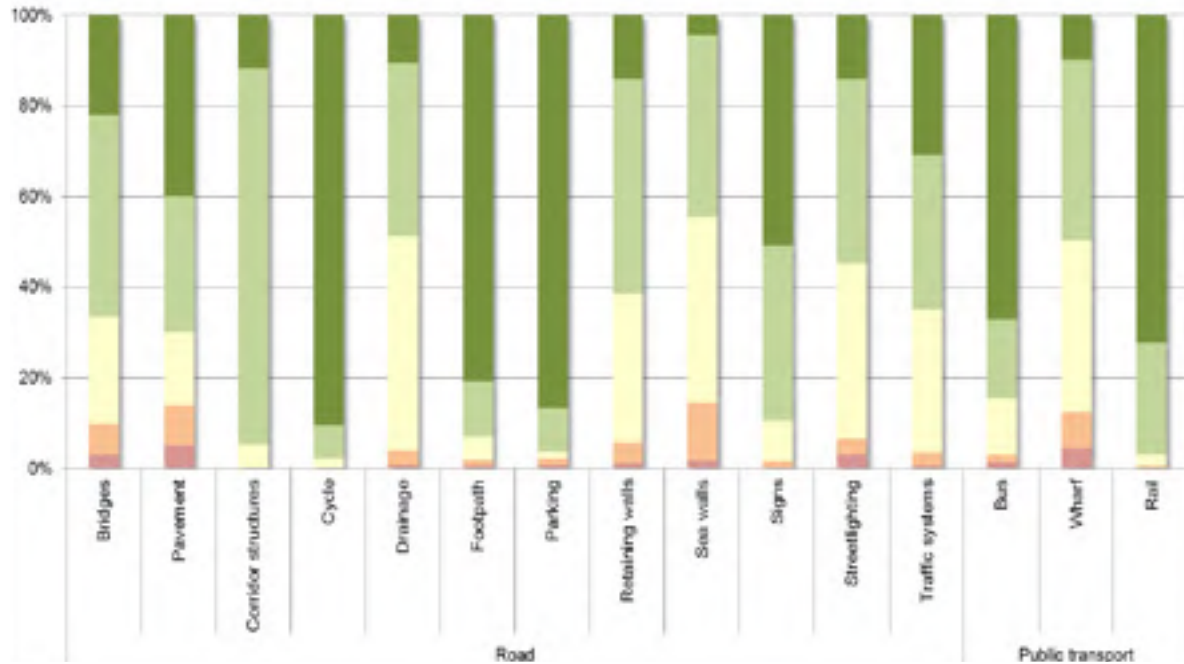
Source: AT’s RAMM and SPM databases



Figure 19 summarises the condition profile of the individual asset classes that make up the transport network. Detailed condition profiles for each asset class are contained in the asset class management plans, summaries of which can be found in Appendix 4.

Most AT assets are in good or very good condition and this holds true across all the asset classes. The proportion of assets in very poor condition is generally in the range of 0–2 per cent, although it is higher for wharves (4.4 per cent) and pavement (3.2 per cent).

**Figure 19: Summary condition profiles of asset classes**

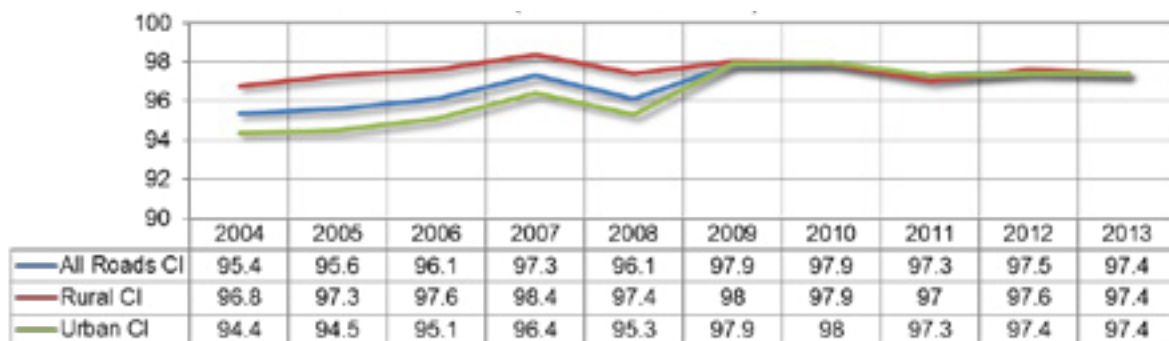


Source: AT's RAMM and SPM databases

## 2.4. Asset condition trends

The 10-year condition trend of AT's road pavement assets is shown in Figure 20. It shows that current levels of investment are maintaining the pavement to a consistently good standard. Consistent data for pavement is available from 2004, the longest time series of all the asset classes. Figure 20 shows that AT is managing its most valuable asset to a high standard.

**Figure 20: Pavement condition index (higher number represents better pavement condition)**

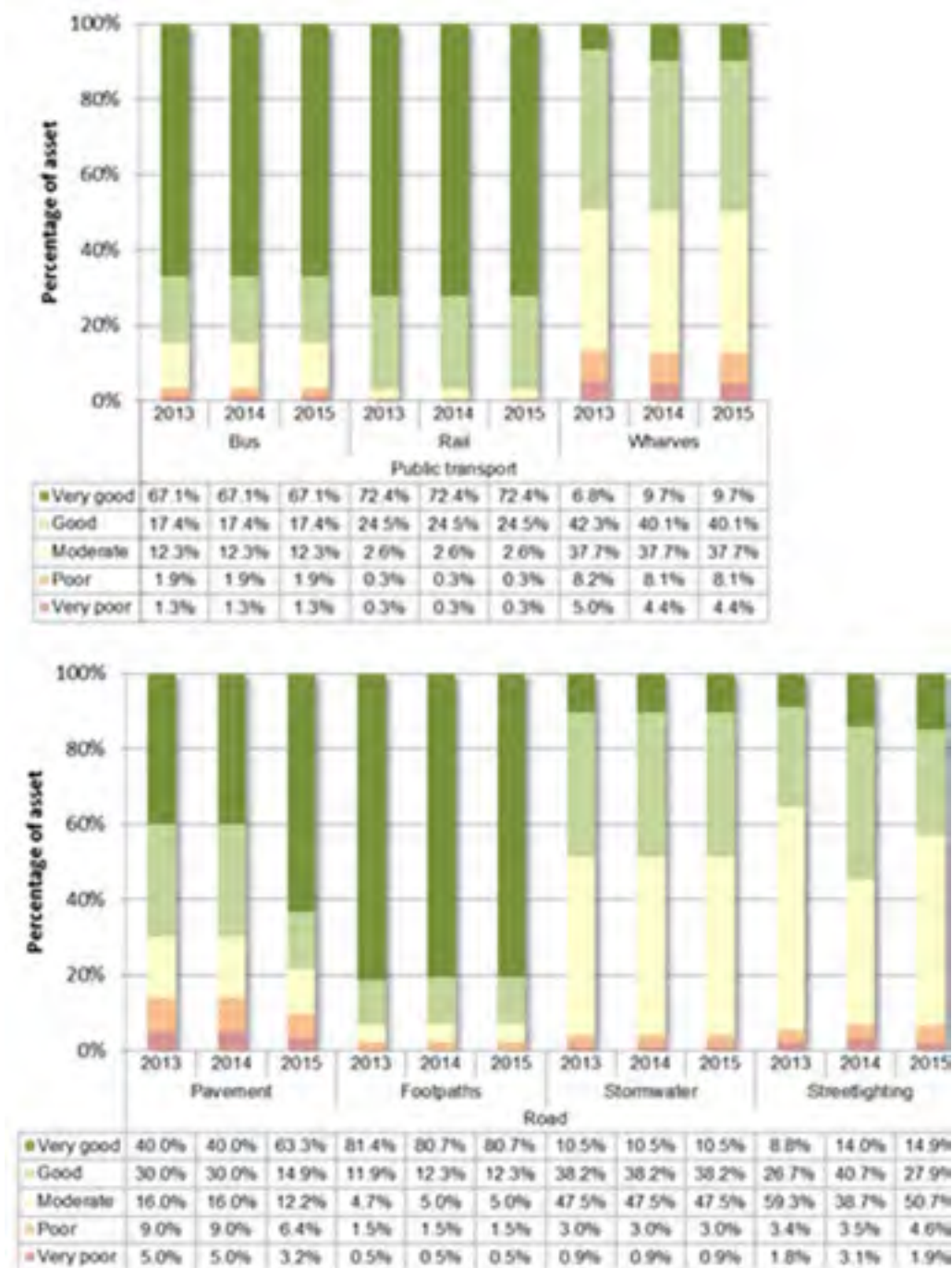


Source: New Zealand Transport Agency, October 2014

Figure 21 shows recent condition trends for selected key assets. Over the past three years, most assets have been maintained in a stable condition.

Wharves and pavement, which have the highest proportion of assets in very poor condition, also showed the greatest improvement over the 2012–2015 period. This is because AT’s renewals programme targets all very poor condition assets, restoring these to good or very good condition.

Figure 21: Condition trends for selected key assets



Source: AT’s RAMM and SPM databases

EXIT to Queen St



Toilets

## Chapter 3

# Outcomes and Levels of Service



## 3. Outcomes and levels of service

*The transport network is built and managed to provide value to its stakeholders, including its users and the broader community. This chapter identifies the transport stakeholders, their expectations of the network, the levels of service required to deliver to those expectations, and AT's current performance in meeting these expectations.*

### Key messages

Customer satisfaction and technical levels of service have improved in the areas of the network that AT has invested in, especially the rail network.

There has been little change over time in levels of service for the more business-as-usual areas of the network, such as footpaths and ferry services. There has been some increase in satisfaction with the quality of roads.

Customer perceptions of the network's safety have not changed materially. Actual trends in deaths and serious injuries show that the previous long-term trend of improved (reduced) road trauma has stalled and partly reversed in recent years.

AT's future targets are for:

- continued improvements in customer satisfaction with public transport services
- static satisfaction and declining technical levels of service for roads, in line with the impacts of constrained renewals budgets
- a return to the previous trend of steadily reducing road deaths and serious injuries.

### 3.1. Measuring network outcomes

This section sets out how AT defines and measures the suitability, performance, safety and condition of its transport assets.

Customers and other stakeholders expect that the transport network will continue to provide reliable and safe services, every day, year after year. To ensure that these expectations are met, AT manages its transport assets to:

- deliver the transport outcomes defined in Auckland Council's and its own strategies
- achieve customer levels of service, and their supporting technical levels of service
- manage risk (see Chapter 5)
- achieve value for money (see Chapter 7).

Levels of service describe the standards which AT delivers in its management and maintenance of the network. The result is transparency for the public and other stakeholders that the network can support lifestyle and business needs, and confidence in AT's management of the network.

## 3.2. Stakeholders and transport outcomes

Asset management aims, among other things, to meet stakeholders' expectations. This requires asset managers to have a good understanding of stakeholder values and drivers. Table 10 sets out an overview of stakeholder expectations of and requirements for the Auckland transport network.

**Table 10: Stakeholders and their transport expectations**

Stakeholders	Areas of interest and expectations	Consultation or feedback method used
Transport customers (residential)	<p>The main improvements suggested by:</p> <ul style="list-style-type: none"> <li>• residential road users: <ul style="list-style-type: none"> <li>○ smooth roads Auckland-wide</li> <li>○ quality roads in local area</li> <li>○ safety</li> </ul> </li> <li>• footpath users: <ul style="list-style-type: none"> <li>○ smooth footpaths</li> <li>○ more and continuous footpaths</li> <li>○ well-maintained footpaths</li> </ul> </li> <li>• cyclists: <ul style="list-style-type: none"> <li>○ more provision for cyclists</li> <li>○ wider cycle lanes</li> <li>○ safety</li> </ul> </li> <li>• public transport users: <ul style="list-style-type: none"> <li>○ more frequent services</li> <li>○ reduced fares</li> <li>○ improved punctuality and reliability (especially of trains).</li> </ul> </li> </ul>	Auckland Road User Satisfaction Survey - Residential (12) AT research panel findings (13).
Transport customers (commercial)	<p>The main improvements suggested by commercial road users:</p> <ul style="list-style-type: none"> <li>• improve traffic flow</li> <li>• improve public transport.</li> </ul>	Auckland Road User Satisfaction Survey - commercial (12)
Auckland residents and ratepayers	<p>Aucklanders:</p> <ul style="list-style-type: none"> <li>• want public transport, but it has to be convenient, reliable and quicker.</li> <li>• want to walk and cycle but it has to be safe.</li> <li>• want better transport but have mixed views on how to raise the additional investment required.</li> <li>• want current funding to be reallocated more favourably towards public transport, walking and cycling.</li> </ul>	Feedback on the draft <i>Long-Term Plan 2015–2025</i> as summarised in <i>Auckland Regional Land Transport Plan 2015–2025</i> (5)
Auckland Council	<p>Deliver the outcomes in the Auckland Plan and Unitary Plan.</p> <p>Provide value for money.</p>	AT's annual statement of intent (3). Elected member liaison team.
Local boards	<p>Generally support AT projects.</p> <p>Central local boards favour more walking and cycling projects.</p> <p>Outer (rural and semi-rural) local boards favour more sealing of unsealed roads (14).</p>	Elected member liaison team.

Stakeholders	Areas of interest and expectations	Consultation or feedback method used
Other council-controlled organisations	Integrated planning, including: <ul style="list-style-type: none"> <li>for the CBD, with Waterfront Auckland and Auckland Council Property Ltd</li> <li>for events, with Auckland Tourism, Events and Economic Development.</li> </ul>	Direct liaison. Joint working groups.
New Zealand Transport Agency	Deliver government policy statement outcomes. Provide value for money. Partnership projects, including the AT Operations Centre, and the One Network Road Classification.	Direct liaison. Non-voting member on AT's board. Memorandum of understanding (February 2012).
KiwiRail	AT rolling stock and station assets are well maintained and meet appropriate safety standards.	Direct liaison.
Ports of Auckland and Auckland International Airport Ltd	Arterial road efficiency and reliability for carrying freight. Integrated planning.	Liaison with industry groups.
Mana Whenua	Mana Whenua want to achieve: <ul style="list-style-type: none"> <li>A good relationship with AT</li> <li>AT to recognise Te Ao Māori (the Māori world view)</li> <li>A set of overarching principles for Te Ao Māori</li> <li>The Mauri Model method (Māori values) reflected in prioritisation</li> </ul>	Independent Māori Statutory Board; Tamaki Regional Mana Whenua Forum; Tamaki (Treaty Negotiations) Collective; AT Māori relationships team engagement with runanga, iwi and hapu authorities..
Industry and customer groups (including the Road Users Forum, Business Forum, and walking and cycling advocates)	Integrated planning. Network efficiency and reliability. Specific network improvements. Access to properties.	Direct liaison and through industry groups.
Utilities (e.g. Watercare, Telecom, Vector)	Corridor access. Programming.	Direct liaison and through industry groups.
Adjoining road corridor authorities	Network services alignment. Standards and protocols.	Direct liaison.
Transport operators	Customer service experiences. Travel time reliability, and bus priority. Public transport demand. Network performance. Scheduling, ticketing and information systems. Service subsidies.	Through commercial franchising model.

### 3.3. Level of service framework

AT performance indicators for asset management are aligned to the Auckland Plan goal of making Auckland the world's most liveable city. The level of service framework (Figure 22) shows how KPIs measure the effectiveness of AT's transport services and contribute to the outcomes in the *Auckland Plan*. The framework enables AT to focus its transport programmes to prioritise activities that contribute to strategic goals.

Figure 22: Level of service framework

<b>Auckland Plan</b>	Vision	Auckland, the world's most liveable city							
	Outcomes linked to transport	A well-connected and accessible Auckland				An Auckland of prosperity and opportunity			
	Strategic directions	Create better connections and accessibility within Auckland, across New Zealand and to the world				Develop an economy that delivers opportunity and prosperity for all Aucklanders and New Zealand			
	Transformational shifts	Move to outstanding public transport within one network / Radically improve the quality of urban living							
<b>AT Strategic Themes</b>	AT Strategic Themes	Prioritise rapid, high frequency public transport Transform and elevate customer experience						Build network optimisation and resilience	
	AT Impacts	Increased access to a wider range of quality, affordable transport choices						Auckland's transport network moves people and goods efficiently	
<b>Network Strategic outputs</b>	Strategic service values	Accessibility	Amenity	Convenience	Affordability	Movement			Resilience
	Strategic Levels of Service	Peoples access to jobs	Asset quality	AIFS usage	Transport affordability	Capacity of the transport system to meet demand			Increase resilience of the network
		Public transport access	Road customer satisfaction with network	PT mode transfer usage	Optimise 'whole of life cycle' asset management	Public transport patronage	Road VKT	Freight tonnage	
		Mode share	PT customer satisfaction with network		Arterial road network productivity	Public transport efficiency	TDM		
		Public transport am peak mode share			Value for money	Improve transport journey time reliability			
		Access to property			Economic sustainability	Public transport	General traffic	Freight	
		Parking				PT commute travel times	Transport delay	Strategic freight route mobility	
		Unitary Plan requirements implemented				Bus congestion	Road congestion		
<b>Assets &amp; services Tactical outputs (AMP focus)</b>	Tactical service values	Accessibility	Quality	Convenience	Affordability	Efficiency		Reliability	Resilience
	Tactical Levels of Service	Increase availability of travel options	Assets and services are fit for purpose	Improve signage and real-time information	Provide assets and services at least whole of life cost	Reduce road peak congestion		Improve or maintain road travel time reliability	Resolution rate for Requests for Service
		Manage parking opportunities	Assets are in good condition	Improve inter-modal links across public transport	Capital projects are managed within budget	Public transport capacity to match demand		Improve public transport travel time reliability	Response to incidents and failures
		Improve the freight network				Reduce or maintain journey time for public transport			
		Improve integration of utilities and access				Reduce or maintain road journey times			
		Improve availability of footpaths in the urban area				Improve capacity and efficiency of freight routes			
		Improve cycle networks							
Operational inputs	Programmes to deliver	Accessibility programmes	Quality programmes	Ease of use programmes	Economic efficiency programmes	Capacity programmes	Reliability programmes	Responsiveness programmes	



<b>Auckland, the world's most liveable city</b>							Vision	<b>Auckland Plan</b>
<b>A fair, safe and healthy Auckland</b>				<b>A green Auckland</b>			Outcomes linked to transport	
<b>Create a strong, inclusive and equitable society that ensures opportunity for all Aucklanders</b>				<b>Contribute to tackling climate change and increasing energy resilience</b>			Strategic directions	
<b>Move to outstanding public transport within one network / Radically improve the quality of urban living</b>							Transformational shifts	
<b>Ensure a sustainable funding model/develop creative, adaptive, innovative implementation</b>							AT Strategic Themes	<b>AT Strategic Themes</b>
<b>Auckland's transport system enables growth in a way that supports communities and a high quality urban form</b>				<b>Reduce adverse effects from Auckland's transport system – including safety, environmental, health and cultural considerations</b>			AT Impacts	
<b>Safety</b>				<b>Environmental</b>			Strategic service values	<b>Network Strategic outputs</b>
Road fatalities and serious injuries				Greenhouse gas emissions			<b>Strategic Levels of Service</b>	
Public transport safety and security				Air quality				
				Water quality				
				Fossil fuel energy consumption				
<b>Safe vehicle environment</b>	<b>Safe pedestrian environment</b>	<b>Safe cycle environment</b>	<b>Safe public transport</b>	<b>Support for community safety</b>	<b>Sustainability - resource use and climate</b>	<b>Sustainability - emissions and community</b>	Tactical service values	<b>Assets &amp; services Tactical outputs (AMP focus)</b>
Minimise fatal and serious injuries per 100 million VKT	Minimise pedestrian fatal and serious injuries	Minimise cycle fatal and serious injuries	Minimise PT fatal/serious injuries	Increase coverage of school travel programmes	Minimise carbon footprint	Minimise air pollution	<b>Tactical Levels of Service</b>	
Provide road safety programmes targeted to risk	Availability of pedestrian crossings	Increase cycle safety education programmes	Minimise PT safety and security incidents	Provide community safety programmes	Maximise the economic value of recycled materials	Minimise water pollution		
Increase road safety education programmes	Eliminate very poor condition footpaths	Provide targeted cycle safety projects	Provide PT safety and security programmes	Support emergency services		Minimise pollution of soil		
Increase police road safety liaison programmes		Eliminate very poor condition cycleways		Provide transport component for Civil Defence		Minimise noise and light pollution		
Minimise number of motorcycle fatal and serious injuries						Eliminate prosecutions for RMA non-compliance		
Manage temporary hazards and safety of road workers								
Vehicle safety programmes	Pedestrian safety programmes	Cycle safety programmes	Public transport safety programmes	Community safety programmes	Recycling programmes	Pollution control programmes	Programmes to deliver	<b>Operational inputs</b>

### 3.4. Customer levels of service

Stakeholders' expectations of the transport network are expressed by customer levels of service (which focus on the services customers experience) and technical levels of service (which provide information about the supporting technical requirements).

Customers are likely to be satisfied when the transport network is:

- **Safe:** the network is safer, and feels safer for all users over time
- **Accessible:** it is easy to access the network and get to your destination
- **Convenient:** the network is easy to use and travelling is a pleasant experience
- **Reliable:** travel times for people and freight are predictable and reliable
- **Resilient:** when things go wrong, other travel options are available and access is quickly restored

AT's activities aimed at achieving these things include:

- maintenance programmes, including smoothing pavements, marking roads, cleaning cesspits and managing vegetation
- renewals programmes, for example road reseals, streetlight replacements, bus station refurbishments and bridge bearing replacements
- design guidelines, so that roads, footpaths and public transport assets, whether built by AT or by developers, are fit for purpose and cost effective for the whole of their lives
- operational programmes, including managing bus, rail and ferry services, optimising traffic signals, delivering safety campaigns, and promoting walking and cycling.
- capital improvement projects

AT is accountable under its Statement of Intent for achieving the customer satisfaction targets shown in Table 11.

The targets represent an improvement in customer satisfaction with public transport, from the current level of 81.4 per cent to 85 per cent. Due to constrained funding, customer satisfaction with roads, footpaths and road safety is expected to stay about the same.

**Table 11: Statement of Intent performance measures of customer satisfaction**

Performance measure	Actual 2012/13	Actual 2013/14	SOI target	LTP Targets			
			2014/15	2015/16	2016/17	2017/18	2018/19-24/25
Customer satisfaction - Roads	68%	71%	70%	70%	70%	70%	70%
Customer satisfaction -Footpaths	61%	63%	65%	65%	65%	65%	65%
Customer satisfaction index- Public Transport	New measure	81.4%	83%	83%	84%	85%	85%
Customer satisfaction - Road Safety		63%	New Measure	60%	60-65%	60-65%	60-65%

Source: Auckland Council Long Term Plan (2)

More detailed customer levels of service, and their associated performance measures, monitor the extent to which the network is meeting customer expectations in terms of network safety, accessibility, amenity, reliability and resilience.

These measures are shown in Table 12.

**Table 12 Customer levels of service**

Asset or service	Key Result Area	LOS Statement	Measure	Current performance	2017/18 Target performance
Street lights	Amenity	Assets are in good condition and suitable for service	Customer satisfaction with quality of street lighting in Auckland region	73%	75%
Footpaths	Amenity	Assets are in good condition and suitable for service	Customer satisfaction with quality of footpaths in Auckland region	63%	No less than 75%
Traffic systems	Reliability	Reduce or maintain road journey times	Customer satisfaction with traffic flow	59%	75%
Signage	Amenity	Assets are in good condition and suitable for service	Customer satisfaction with quality of signage in Auckland region	71%	75%
Parking	Amenity	Assets are in good condition and suitable for service	Customer satisfaction with quality of parking buildings in Auckland region	68%	75%
	Accessibility	Provide appropriate levels of parking	All day parking off-street occupancy rates	52%	57%
Public transport services	Amenity	Assets are in good condition and suitable for service	Percentage of PT passengers satisfied with PT facilities	85%	87%
		Improve signage and real-time information	Customer satisfaction with quality of PT services information in Auckland region	73%	75%
	Safety	Improve safety of PT system	Public and customer safety and security incidents across PT network per 100,000 passenger boardings	0.115	0.09
Rail	Amenity	Improve signage and real-time information	Customer satisfaction with quality of rail services information in Auckland region	79%	75%
		Assets are in good condition and suitable for service	Customer satisfaction with quality of rail facilities in Auckland region	86%	87%

Asset or service	Key Result Area	LOS Statement	Measure	Current performance	2017/18 Target performance
			Customer satisfaction with quality of rail vehicles in Auckland region	92.9%	87%
Bus	Amenity	Improve signage and real-time information	Customer satisfaction with quality of bus services information in Auckland region	72%	75%
		Assets are in good condition and suitable for service	Customer satisfaction with quality of bus facilities in Auckland region	85%	87%
Ferry	Amenity	Improve signage and real-time information	Customer satisfaction with quality of ferry services information in Auckland region	76%	75%
		Assets are in good condition and suitable for service	Customer satisfaction with quality of ferry facilities in Auckland region	89%	87%

### 3.5. Technical levels of service

Technical levels of services are aligned to the core services AT delivers and the assets that support this delivery.

For the road transport network, AT's core services are:

- providing a suitable road corridor that allows people and goods to move efficiently and safely
- providing access to the road network for adjacent land-users, properties and businesses
- playing a central role in the management of parking in Auckland
- managing access to the road corridor for utilities to install and maintain their assets.

For the public transport network, AT's core services include:

- moving people efficiently and safely
- providing transport mode choices for people to travel around the region
- responding to current and future demand to reduce congestion

Technical levels of services use quantitative measures such as asset condition and performance, to measure how effective assets are in relation to delivering these services.

Headline performance measures for the technical levels of service, shown in Table 13, are defined at a national level by the Department of Internal Affairs (17). From 2015, members of the public will be able to compare the performance of AT with other local councils, as the same level of service measures will be common to all.

AT's constrained funding, as signalled in Auckland Council's Long-Term Plan 2015–2025, is reflected in the targets for the headline performance measures; the targets show a projected decline in road maintenance standards and, to a lesser extent, footpath maintenance.

Changes in standards will be targeted to particular areas, with higher levels of service being maintained for higher risk and higher impact assets. So, for example, arterial and collector roads will continue to be maintained to a high standard, but levels of service may need to be reduced for lower-volume local roads.

**Table 13: Headline measures of technical levels of service**

Performance measure	Actual 2012/13	Actual 2013/14	SOI/Annual Plan targets 2014/15	LTP targets			
				2015/16	2016/17	2017/18	2018/19-24/25
The change from the previous financial year in the number of deaths and serious injuries on the local road network, expressed as a number		+21%	2.66% reduction	Reduce by at least 9	Reduce by at least 9	Reduce by at least 9	Reduce by at least 9
Road maintenance standards (ride quality) as measured by smooth travel exposure (STE) for all urban and rural roads	Rural 95 Urban 85	Rural 95 Urban 85	Rural 94 Urban 84	Rural 93 Urban 83	Rural 92 Urban 82	Rural 91 Urban 81	Rural 87 Urban 77
Percentage of the sealed local road network that is resurfaced		7.6%	8%	8%	8%	8%	8%
Percentage of footpaths in acceptable condition (as defined in AT's AMP)	99%	99%	99%	99%	99%	99%	98%
Percentage of customer service requests relating to roads and footpaths which receive a response within the time frame specified in Auckland Council's Long-term Plan.	85%	85%	85%	85%	85%	85%	85%

More detailed Technical Level of Service measures are shown in Table 14.

**Table 14 Technical levels of service**

Asset or service	Key Result Area	LOS Statement	Measure	Current performance	2017/18 Target performance
Bridges & structures	Amenity	Assets are in good condition and suitable for service	% of asset in condition grade 5	1.7%	1.1%
			% bridges and major culverts on High Productivity Motor Vehicle routes and lifeline routes with weight and speed restrictions	0%	0%
Street lights	Amenity	Assets are in good condition and suitable for service	% of asset in condition grade 5	1.9%	1.1%

Asset or service	Key Result Area	LOS Statement	Measure	Current performance	2017/18 Target performance
Footpaths	Amenity	Assets are in good condition and suitable for service	% of northern area footpaths in condition grade 5	0.2%	0%
			% of central area footpaths in condition grade 5	0.7%	0%
			% of western area footpaths in condition grade 5	0.6%	0%
			% of southern area footpaths in condition grade 5	0.6%	0%
Drainage	Amenity	Assets are in good condition and suitable for service	% of catchpits in condition grade 5	0.5%	0%
			% of kerb & channel in condition grade 5	0.9%	0%
Traffic systems	Efficiency	Assets are in good condition and suitable for service	% of asset in condition grade 5	0.1%	0.1%
			% signal uptime	98%	99%
		Reduce or maintain road journey times	Percentage of arterial routes with signal optimisation in place	10% (2012)	>50%
Signage	Amenity	Assets are in good condition and suitable for service	% of asset in condition grade 5	0.4%	0.1%
Parking	Amenity	Assets are in good condition and suitable for service	% of parking building assets in condition grade 5	0.1%	0.3%
			Uptime of parking building ticket machines	96%	95%
	Accessibility	Provide appropriate levels of parking	All day parking off-street occupancy rates	52%	57%
Rail	Amenity	Assets are in good condition and suitable for service	% of rail station assets in condition grade 5	0.3%	0%
			% of rolling stock in condition grade 5	1%	0%
Bus	Amenity	Assets are in good condition and suitable for service	% of busway stations in condition grade 5	0%	0%
			% of bus shelters and bus stops in condition grade 5	0.6%	0%
Ferry	Amenity	Assets are in good condition and suitable for service	% of wharf assets in condition grade 5	5.9%	0%
		Assets are in good condition and suitable for service	% of ferry terminal assets in condition grade 5	2.1%	1.9%

### 3.6. Levels of service trends

Figures 23 to 37 show selected level of service areas that highlight key trends in network performance, asset condition and user satisfaction over the past few years.

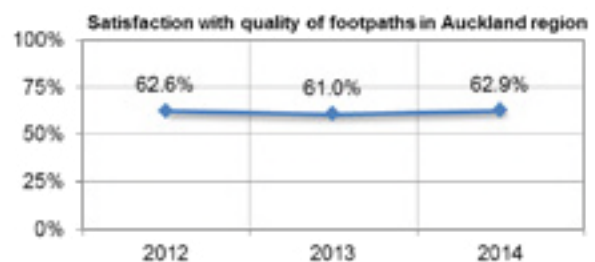
The figures indicate increasing satisfaction with road quality, but decreasing satisfaction with the time it takes to travel. Satisfaction with footpaths, cycleways and parking was stable. These trends align with AMP and regional land transport plan investment, which was generally maintained at historical rates during this period, and with technical measures such as pavement integrity and surface condition, which are high and stable.

For public transport, patronage has grown, driven particularly by a significant increase in the investment in rail. Customer satisfaction has fallen as customer numbers have grown, which indicates that level of service is perhaps more important to new than to existing customers.

Customer perceptions of safety have also not changed materially, although actual deaths and serious injuries on Auckland local roads increased in 2012/13 and again in 2013/2014, going against the long-term trend of safety improvements. This highlights the difficulties and risks in establishing causal relationships between technical performance measures and customer perceptions.



**Figure 23: Road user satisfaction**  
Source: IPSOS and AT road user satisfaction survey



**Figure 24: Footpath user satisfaction**  
Source: IPSOS and AT road user satisfaction survey

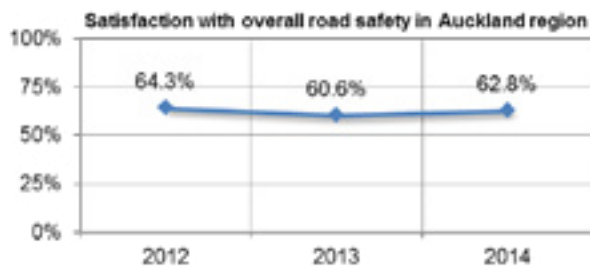


**Figure 25: Cycle user satisfaction**  
Source: IPSOS and AT road user satisfaction survey



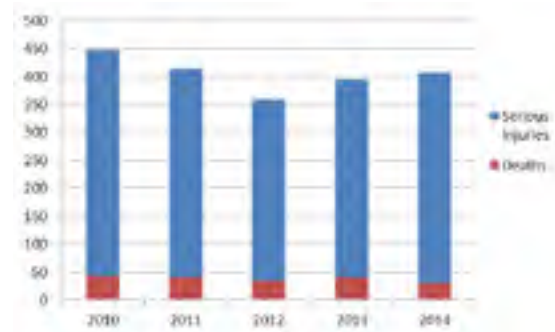
**Figure 26: Parking user satisfaction**  
Source: IPSOS and AT road user satisfaction survey

Figure 27: User satisfaction with road safety



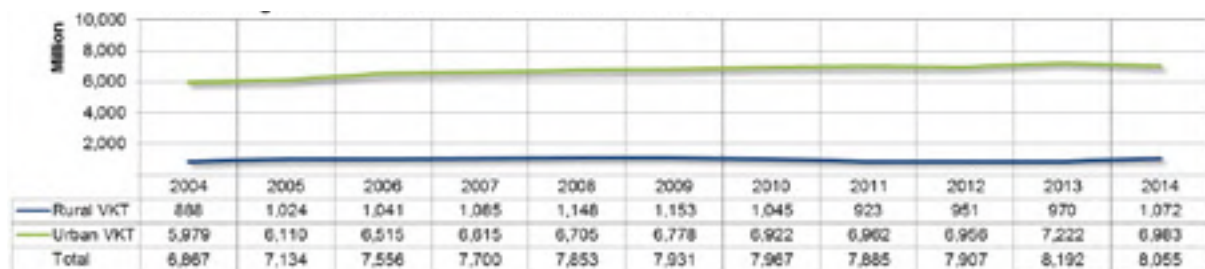
Source: IPSOS and AT road user satisfaction survey

Figure 28: Deaths and serious injuries on Auckland local roads



Source: New Zealand Transport Agency

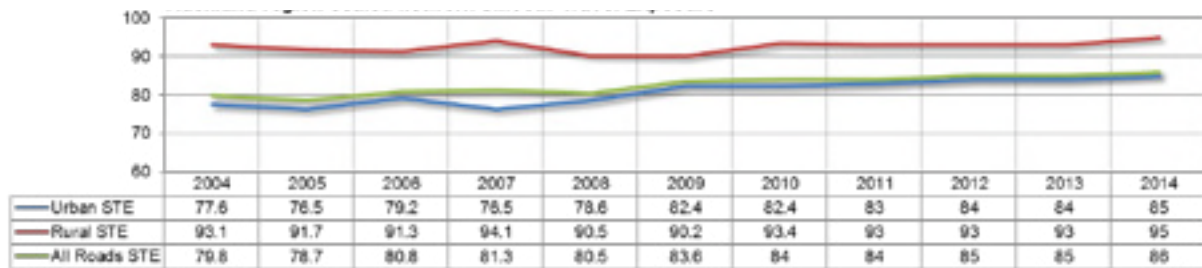
Figure 29: Sealed network



Source: New Zealand Transport Agency, March 2015

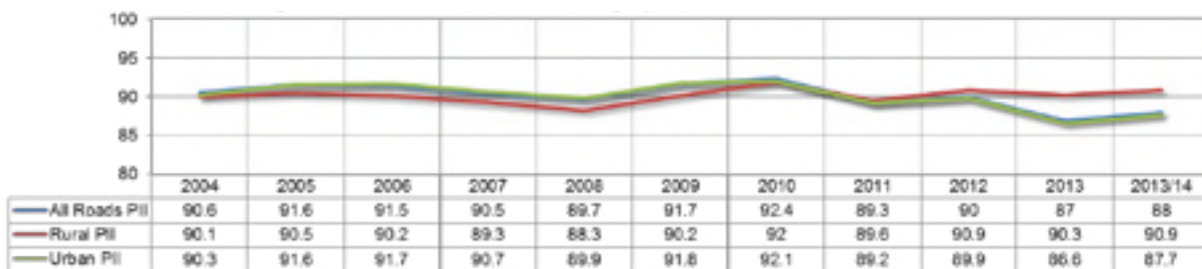


Figure 30: Smooth travel exposure



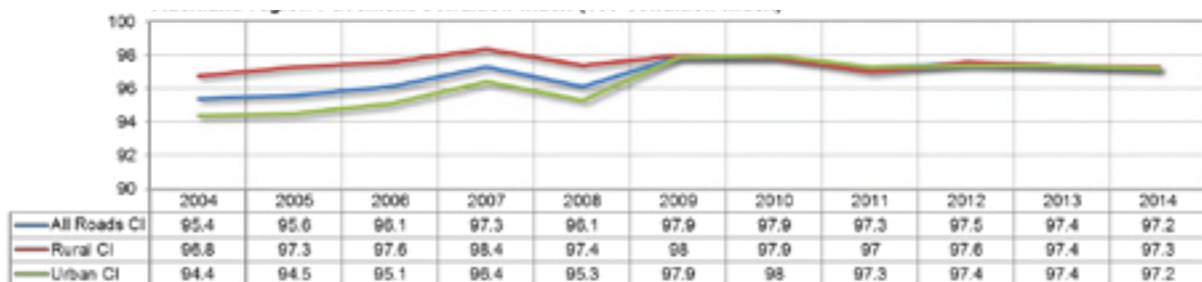
Source: New Zealand Transport Agency, March 2015

Figure 31: Pavement integrity index



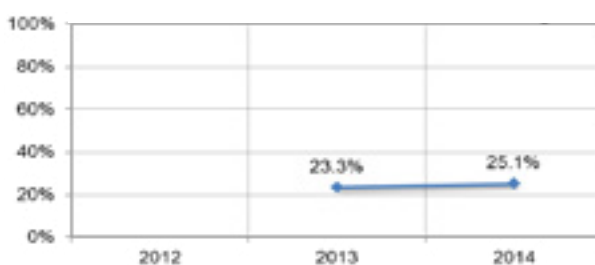
Source: New Zealand Transport Agency, March 2015

Figure 32: Pavement condition index



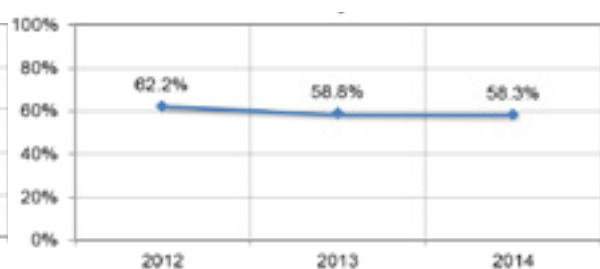
Source: New Zealand Transport Agency, March 2015

Figure 33: Satisfaction with traffic flow



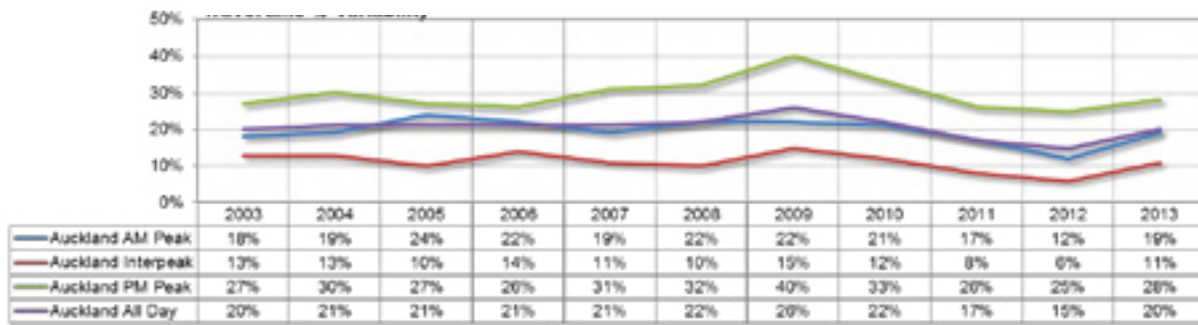
Source: IPSOS and AT road user satisfaction survey, May 2013

Figure 34: Satisfaction with travel time



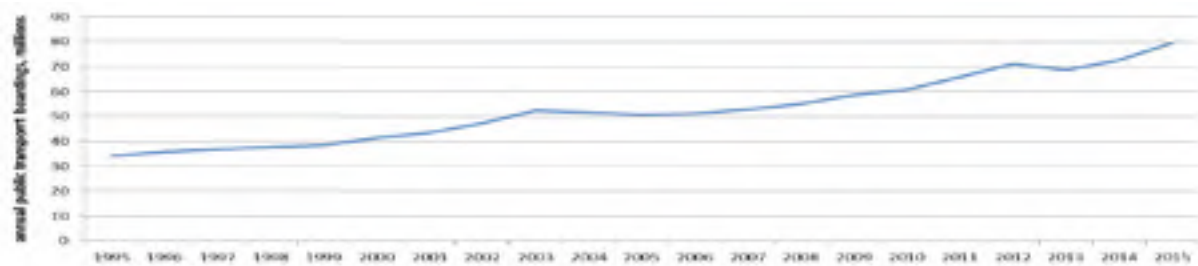
Source: IPSOS and AT road user satisfaction survey, May 2013

Figure 35: Travel time variability



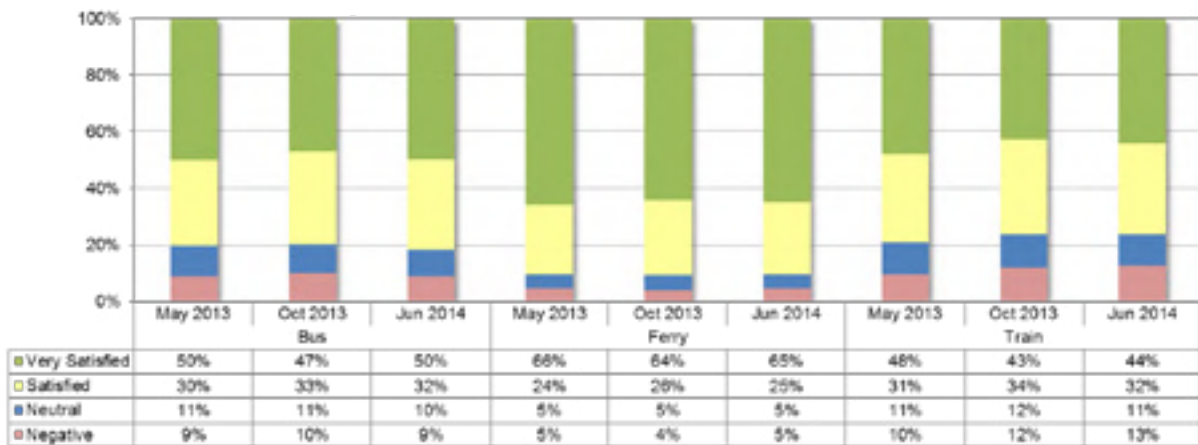
Source: AT and New Zealand Transport Agency annual congestion survey

Figure 36: Public transport use



Source: AT patronage data

Figure 37 Satisfaction with public transport



Source: AT public transport customer satisfaction surveys

### 3.7. Network priorities

With constrained funding and growing transport demand, AT must set priorities to develop those transport assets that are most crucial to the function of the whole transport network. These priorities inform new capital works, but also the standards set for customer levels of service and for maintenance, operations and renewals programmes.

AT's network planning takes into account:

- areas of housing and employment growth, including special housing areas
- key connecting routes for the city centre, metropolitan centres and town centres
- key freight generating and attracting areas, and Auckland's international gateways
- routes that maximise access to education and employment, which in turn informs both road and public transport network development
- geographic projects identified in the *Auckland Plan* (city centre and southern initiative)
- transport infrastructure that will be the most important in the event of an earthquake, volcano, tsunami or cyclone, as identified by the Auckland Lifelines Group.

The following maps show the various priority transport networks that AT has identified.

- heavy commercial vehicle routes on the regional freight network (Figure 38)
- the regional arterial road network (Figure 39)
- rapid and frequent transit infrastructure identified in the regional public transport network (Figure 40)
- category 1, 2 and 3 transport infrastructure as identified by the Auckland Lifelines group (Figure 41). Category 1 infrastructure includes the motorways, Britomart and Newmarket train stations, and the Auckland Traffic Operations Centre.

In this AMP, the networks listed above are used as part of the identification of asset risk, and to identify those assets which have an earlier renewals intervention point. In future AMPs, priority routes and assets will be given greater prominence in the development of maintenance and renewals work programmes.

Figure 38: Regional freight network



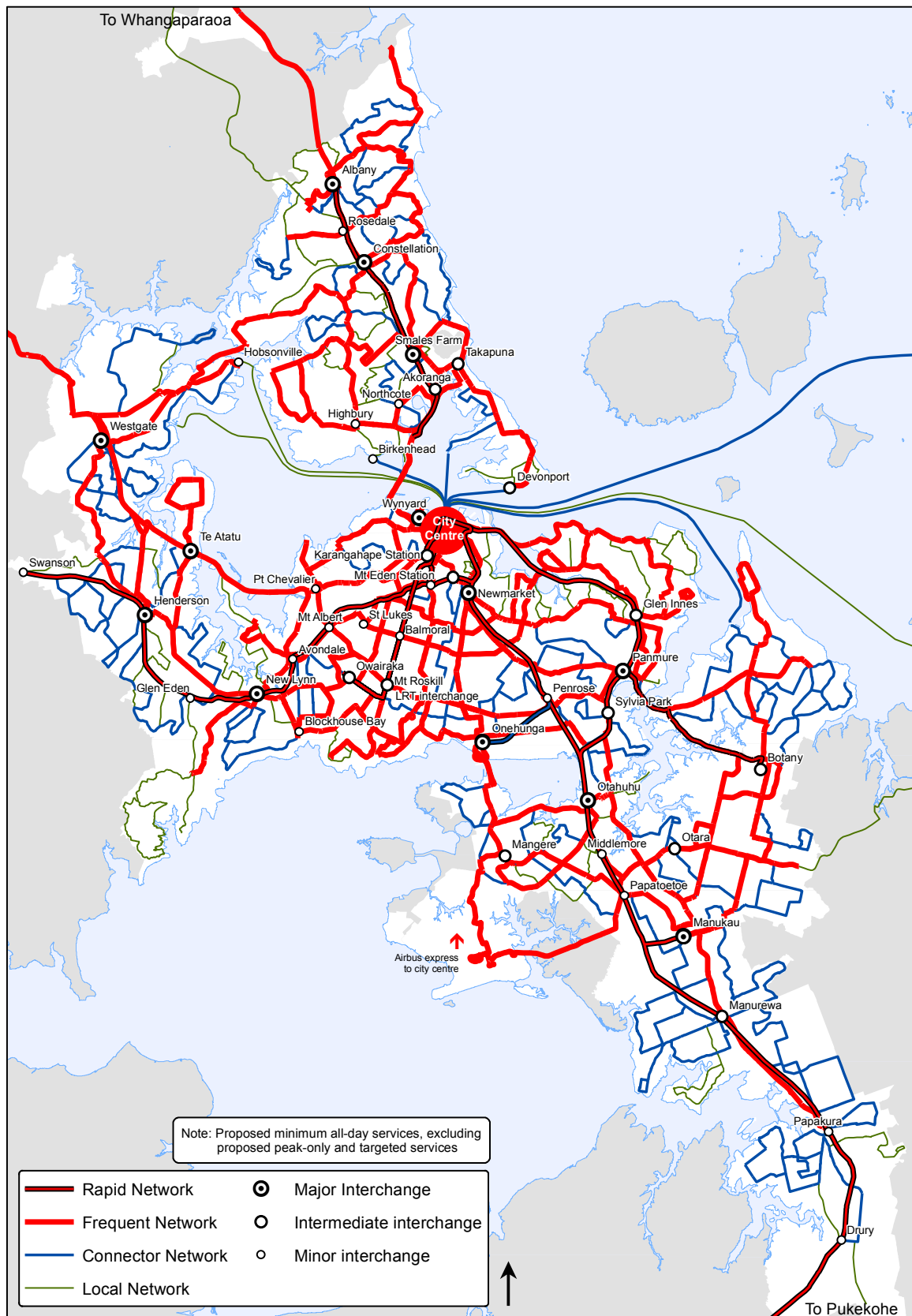
Source: Auckland Draft Regional Land Transport Plan 2015–2025 (5)

Figure 39: Auckland's regional arterial road network



Source: Auckland Draft Regional Land Transport Plan 2015–2025 (5)

Figure 40: Auckland's public transport network 2026 (following implementation of the *Regional Public Transport Plan*)



Source: *Regional Public Transport Plan (15)*, as updated in 2014

Figure 41: Critical transport infrastructure as defined by the Auckland Lifelines Group



Source: Auckland Lifelines Group (16)

### 3.8. One Network Road Classification

As a result of the 2012 government policy statement on land transport and of ministerial taskforce recommendations, a streamlined road classification system for New Zealand, known as the One Network Road Classification (ONRC), has been developed to inform how New Zealand’s road networks are operated, maintained and managed.

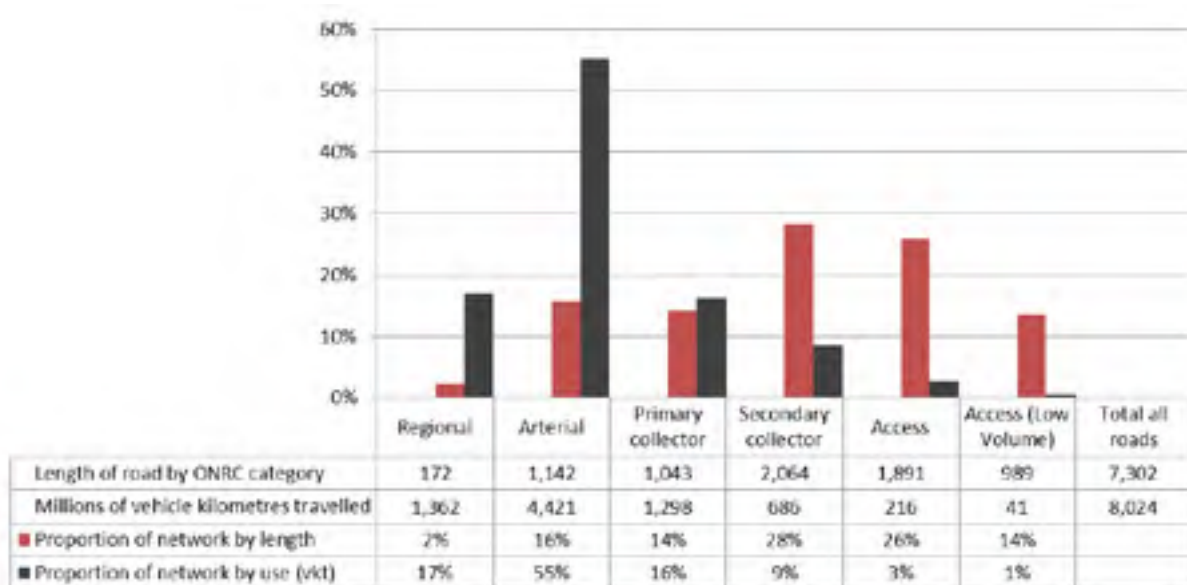
The ONRC helps transport authorities to set priorities by supporting a nationally consistent approach to classifying road networks and to identifying levels of service for them. The classification is a joint initiative of the New Zealand Transport Agency and Local Government New Zealand, and its development and implementation is being governed by the Road Efficiency Group.

The New Zealand Transport Agency expects that the ONRC will be used as the basis for funding allocations for road maintenance and renewals programmes from 2018 onwards, and that this will enable funding to be allocated more effectively and efficiently, based on the function of each road in the national road network (17).

The ONRC project has three elements. The first is classifying roads into categories based on their function in the national network. This task is complete, and a map of the AT roads classified as Regional and Arterial is shown in Figure 42. The pace of growth and change in Auckland means that the road classification will need to be regularly reviewed.

The ONRC shows the wide range of functions that roads serve in the Auckland and national networks. For example, arterial and regional roads make up 18 per cent of Auckland’s transport network by length, but carry 72 per cent of its traffic. At the other end of the scale, 40 per cent of the network by length is access roads, which carry only 4 per cent of the total traffic, as shown in Figure 43.

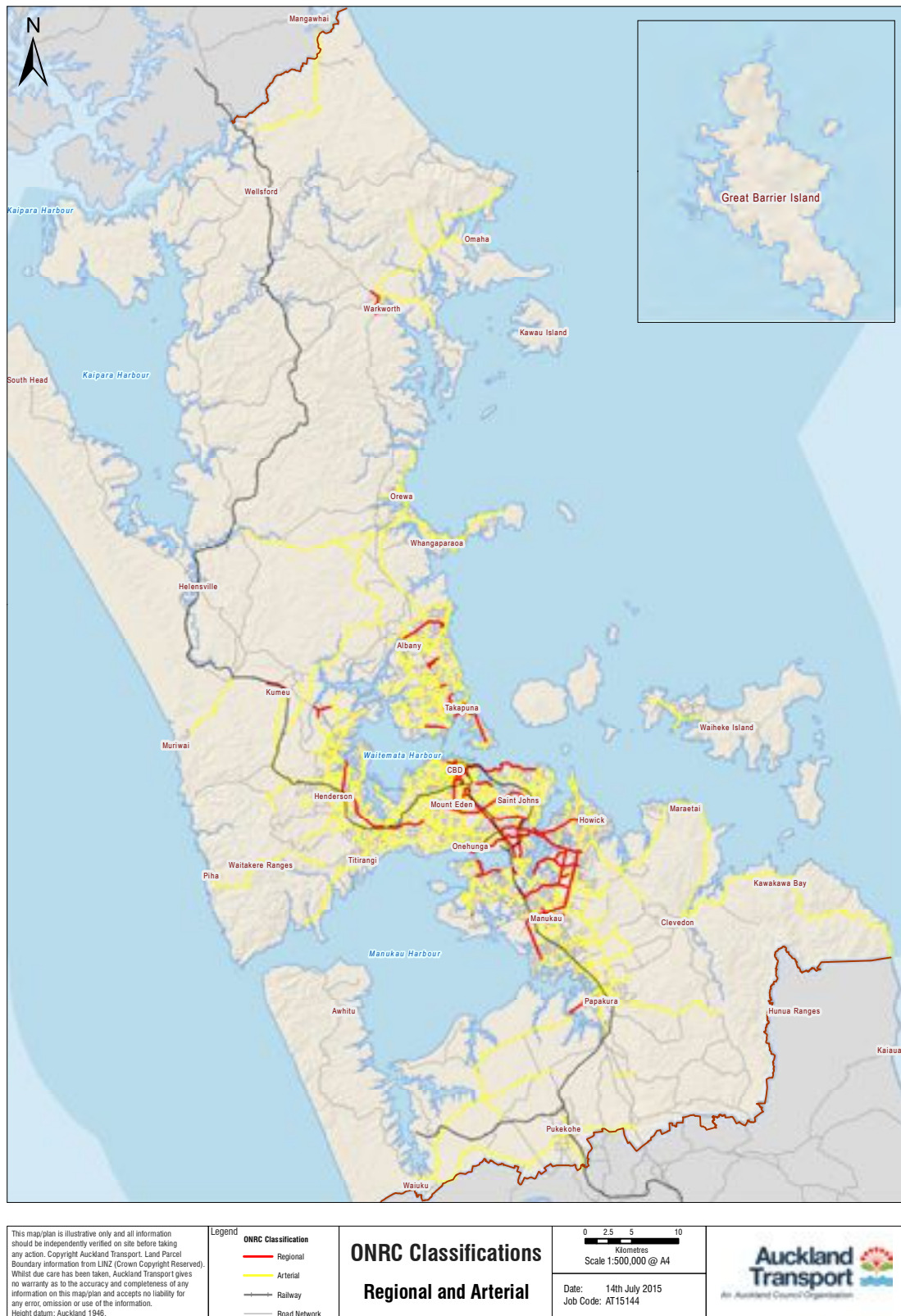
**Figure 42: One Network Road Classification categories by length and use (vehicle kilometres travelled (vkt))**



Source: AT One Network Road Classification, RAMM vkt data



Figure 43: One Network Road Classification: Regional and Arterial roads



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The second element of the ONRC is the development of performance measures and targets, which determine how the categories and customer levels of service translate into specific maintenance, operational and investment decisions. The new performance measures will significantly increase the level of detail that AT reports to the New Zealand Transport Agency about the impacts and outcomes of its road maintenance and renewals activities.

The third and final element of the ONRC is to provide nationally consistent customer levels of service. Customer levels of service define the fit-for-purpose outcomes expected for each category of road, in terms of mobility, safety, accessibility and amenity.

AT's current levels of service, as set out in Chapter 0, will be expanded to cover all of the outcomes identified by the ONRC, enabling the performance of Auckland's transport network to be benchmarked nationally and internationally.

The costs and risks of any changes to levels of service also need to be understood, and a programme to harmonise levels of service developed and adopted. This represents a significant improvement task that AT will address when developing its 2018 AMP.

## Chapter 4

# Growth and Demand





## 4. Growth and demand

*The transport network is growing in response to increased demand from population growth and land development. This chapter identifies the impacts of this network growth and the asset management investment implications for the transport asset portfolio.*

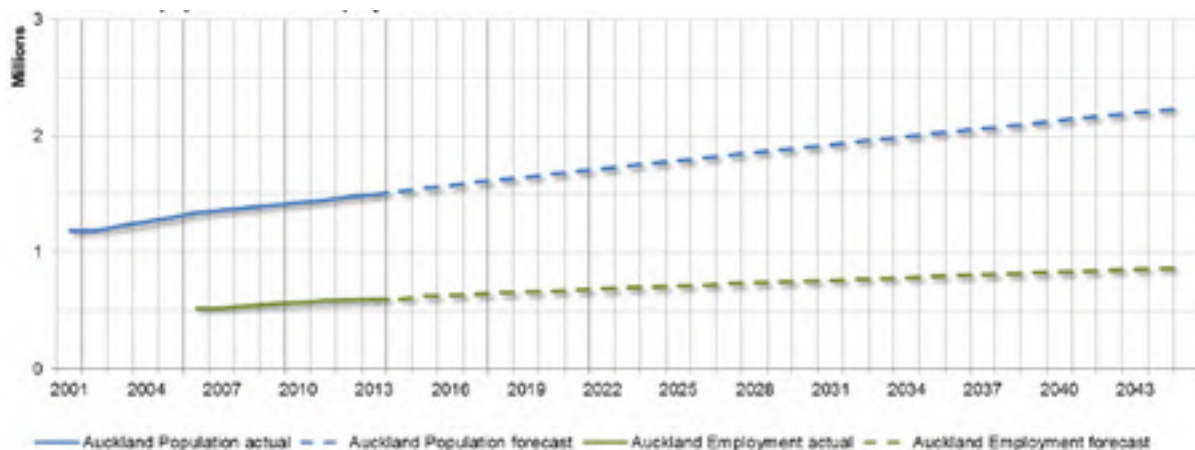
### Key messages

- Auckland will be home to 716,000 more people over the coming 30 years, with predicted population growth of 237,000 people in the first decade.
- The road and public transport asset networks need to be expanded to accommodate this growth. The public transport network needs to expand fastest, as demand for public transport travel is growing most rapidly.
- New transport assets, whether built by AT or by developers, will need to be maintained and, eventually, renewed. This is reflected in network growth factors for renewals, and is expected to add around 1.5% to road maintenance and operations costs annually.

### 4.1. Growth

Auckland is expected to grow by 716,000 people to a total of 2.24 million by 2045, as shown in Figure 44 (18). In the first decade of this AMP (to 2025), Auckland will grow by 237,000 people – almost the current population of Hamilton and Tauranga combined. Jobs are forecast to grow proportionately, with 89,000 additional jobs in the region by 2025 and 247,000 by 2045.

Figure 44: Auckland population and employment trends



Source: Actual = Statistics New Zealand (19); projected = Auckland Council (18)

This level of growth will place significant pressure on the capacity of existing infrastructure and create demand for new infrastructure. As well as growing in number, Auckland's population demographics is changing. For example, the fastest growing age group is the over-65 years group, and over one-third of Aucklanders will identify as Asian (19) by 2021.

## 4.2. Transport demand

Use of Auckland’s road and public transport networks is changing in response to demographic and other trends, at the same time as population and overall travel is increasing.

Vehicle travel on Auckland local roads is 8 billion vehicle kilometres per year, and has been at approximately this rate (in round figures) since 2006, as shown in Figure 45. Between 2% and 6% of this traffic is trucks and other heavy commercial vehicles.

Although more people are living in Auckland, each person is, on average, driving less. The trend is not specific to Auckland; car use per capita is declining nationally and in other developed countries (8).

**Figure 45: Trends in road travel 2001–2014**



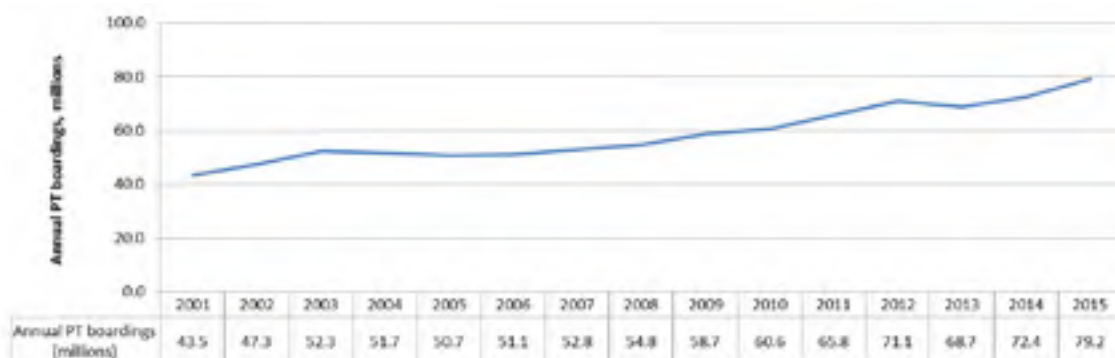
Source: Ministry of Transport (11)

Freight demand is a stronger driver of asset maintenance and renewal costs than total vehicle demand, as heavier vehicles do more damage to road surfaces. Not all freight is moved on heavy vehicles – smaller vehicles and rail also have a role in freight – but for the purposes of asset management planning, it is the trend in heavy vehicle movements that is most significant.

In 2012 around 62 million tonnes were moved by road within, to or from the Auckland region. Freight demand is forecast to grow more strongly in future, especially in the ‘golden triangle’ between and within Auckland, Hamilton and Tauranga (20).

Travel by public transport has grown very strongly in recent years, from 43.5 million trips in 2000/2001 to 79.2 million trips in 2014/2015, as shown in Figure 46.

**Figure 46: Trends in public transport travel 2001–2015**



Source: AT annual reports

### 4.3. Development

Auckland Council estimates that over 10,000 new dwellings are needed each year for the coming 30 years to cope with the predicted growth in population and with the long-term trend towards smaller households (18). The Auckland Housing Accord sets short-term targets to accommodate more dwellings by speeding up the development process, with a focus on new greenfield areas and brownfield sites (that is, significant residential developments on land formerly used for another purpose, for example, industrial sites). Longer-term development needs are identified in the *Unitary Plan*, and will be met through a combination of greenfield areas, brownfields developments, infill and intensification.

All new developments require investment in transport infrastructure and services to support that growth. Providing this infrastructure is a responsibility shared between Auckland Council, AT and developers.

Outside these identified growth areas, Auckland's population is still growing through intensification. Intensification occurs as more people choose to live in medium-density housing and apartments. This not only places increased capacity demands for movement along the transport corridors, but also means that the corridors themselves become important public space with more people shopping, socialising and relaxing within the road corridor.

Improving the quality, accessibility and safety of the street environment supports the economic success of businesses and the strength of local communities. This encourages further development of local centres, and ultimately has a strong effect on growth and the success of the *Auckland Plan* development strategy. The 'shared space' redesigns in Auckland city centre are an example of how transport investment can accommodate and support intensification.

The challenges of growth extend well beyond projects in growth areas designed to give access to new homes and businesses. New residents will want to travel all over Auckland, and new businesses will want to link to all Auckland's customers, suppliers and workforce. Auckland's rapid growth means there will be increased demand across the whole of the transport network, and not only for those parts of the network where specific growth projects are underway.

### 4.4. Growth in assets 2012–2015

Transport asset growth occurs through:

- AT capital projects
- Vested assets – generally roads and associated assets such as streetlights in new growth areas. These are generally built by developers but the responsibility for operating, maintaining and renewing these assets is transferred to AT
- State Highway projects which can result in roads being transferred to AT to manage and maintain as local roads. Cycleways and shared paths constructed by the Transport Agency are also transferred to AT to manage and maintain.

Table 15 shows key assets added to the network in the past three years, and forecast for the coming three years.

**Table 15: Asset growth summary 2013-2018**

Year	Vested assets (excl. land)	AT new capital	Major assets added to network:
2012/13	\$13 m	\$440 m	Manukau Carpark building, State Highways revoked
2013/14	\$39 m	\$518 m	Tiverton/Wolverton, EMU depot and first trains
2014/15	\$36 m	\$558 m	EMU trains, AMETI, Panmure and Manukau stations
2015/16	\$40 m	\$422 m	Otahuhu Bus Interchange
2016/17	\$40 m	\$493 m	Pukekohe Interchange, Te Atatu Road
2017/18	\$40 m	\$410 m	Albany Highway Upgrade

Further details of asset growth are provided in Table 16.

**Table 16: Details of asset growth 2012–2015**

Asset class	Sub-asset class	Unit	2012 AMP value	Change due to revocation of state highways	Change due to subdivision and asset growth	Change due to rectification of inventory discrepancies	2015 AMP value
<b>Road network</b>							
Pavement	Total	km	7,227	51	55.5	-32	7,302
	Sealed road	km	6,375	51	71.5	-82	6,416
Footpaths		km	6,879	0	76.5	4	6,959
Bridges and structures	Bridges and major culverts	no.	994	15	4	7	1,020
Streetlights	Luminaires	no.	100,677	631	900	3139	105,347
	Columns	no.	59,769	631	675	3946	65,021
Traffic systems	Signalised intersections	no.	536	22	49	17	624
Street signs	All types	no.	94,935	2,113	1,334	38,506	136,887
Drainage	Catch pits	no.	86,107	1,500	695	-12,821	75,481
Parking	Multi-storey carparks	no.	6				6
<b>Public transport network</b>							
Bus	Busway stations		5		1	0	6
Ferry	Public transport wharves	no.	21		2	-2	21
	Ferry terminals	no.	12		2	0	14



Asset class	Sub-asset class	Unit	2012 AMP value	Change due to revocation of state highways	Change due to subdivision and asset growth	Change due to rectification of inventory discrepancies	2015 AMP value
Rail	Rail stations (scheduled services)	no.	41				41
	Electric multiple units	no.	0		57		57
	Diesel multiple units	no.	19		-9		10
AT HOP	AT HOP integrated ticketing system	no.	0		1		1

#### 4.5. Growth factors and consequential operational expenditure

Consequential operational expenditure (opex) is the operations and maintenance cost of new assets. For example, for a new streetlight, the cost of electricity, replacement bulbs, and graffiti removal all contribute to the consequential opex associated with that new asset. These costs are incurred by AT in the future, regardless of whether the streetlight was initially constructed by AT as part of a capital project, or by a developer who then passed the streetlight to AT as a vested asset.

For road assets, a good estimate of the consequential opex required to operate and maintain the new assets is simply the existing operations and maintenance cost multiplied by the growth factor.

To calculate the growth factor, AT's 10-year forward works programme has been analysed for each class of road assets, along with the rate at which new road assets have been constructed by developers and vested in AT over the past six months. (This timeframe has been aligned with an increase in building activity, due to the housing accord between Auckland Council and central government, and other factors.)

This analysis has been used to derive the growth factors that are applied to each type of asset to estimate the annual growth in the asset base. The current growth factors are shown in Table 17.

**Table 17: Growth factors for road assets**

Network	Asset class	Asset	Growth factor
Road	Carriageway	Pavement base	1.50%
		Pavement surface	1.50%
	Footpath	Footpaths	1.10%
	Retaining walls	Retaining walls	1.50%
	Parking	Parking buildings and equipment	1.50%
		Off-street carparks	1.50%
	Signs	Signs	1.50%
	Drainage	Kerbs and channels	2.00%
		Catch pits	2.00%
		Drainage pipes	2.00%
Traffic systems	Traffic systems	1.50%	

Network	Asset class	Asset	Growth factor
	Sea walls	Sea walls	1.50%
	Cycle	Cycleways	1.10%
	Corridor structures	Corridor structures	1.50%
	Streetlights	Streetlights	2.40%
	Bridges and major culverts	Bridges	0.75%
		Culverts	0.75%
	Corridor fixtures	Corridor fixtures	1.50%

New transport assets, from whichever source, bring consequential operations, maintenance and renewals requirements. Around 1.5% more assets are added to the network each year, and consequently maintenance and operations funding requirements increase by 1.5% each year, just to keep up with growth in the asset base. Over the 10 years, consequential opex totals \$98.1 million as shown in Table 18.

**Table 18: Estimated consequential opex from asset growth**

(\$million)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016-2025 total
<b>Consequential opex from asset growth</b>	1.7	3.4	5.2	6.9	8.8	10.6	12.5	14.4	16.3	18.3	98.1

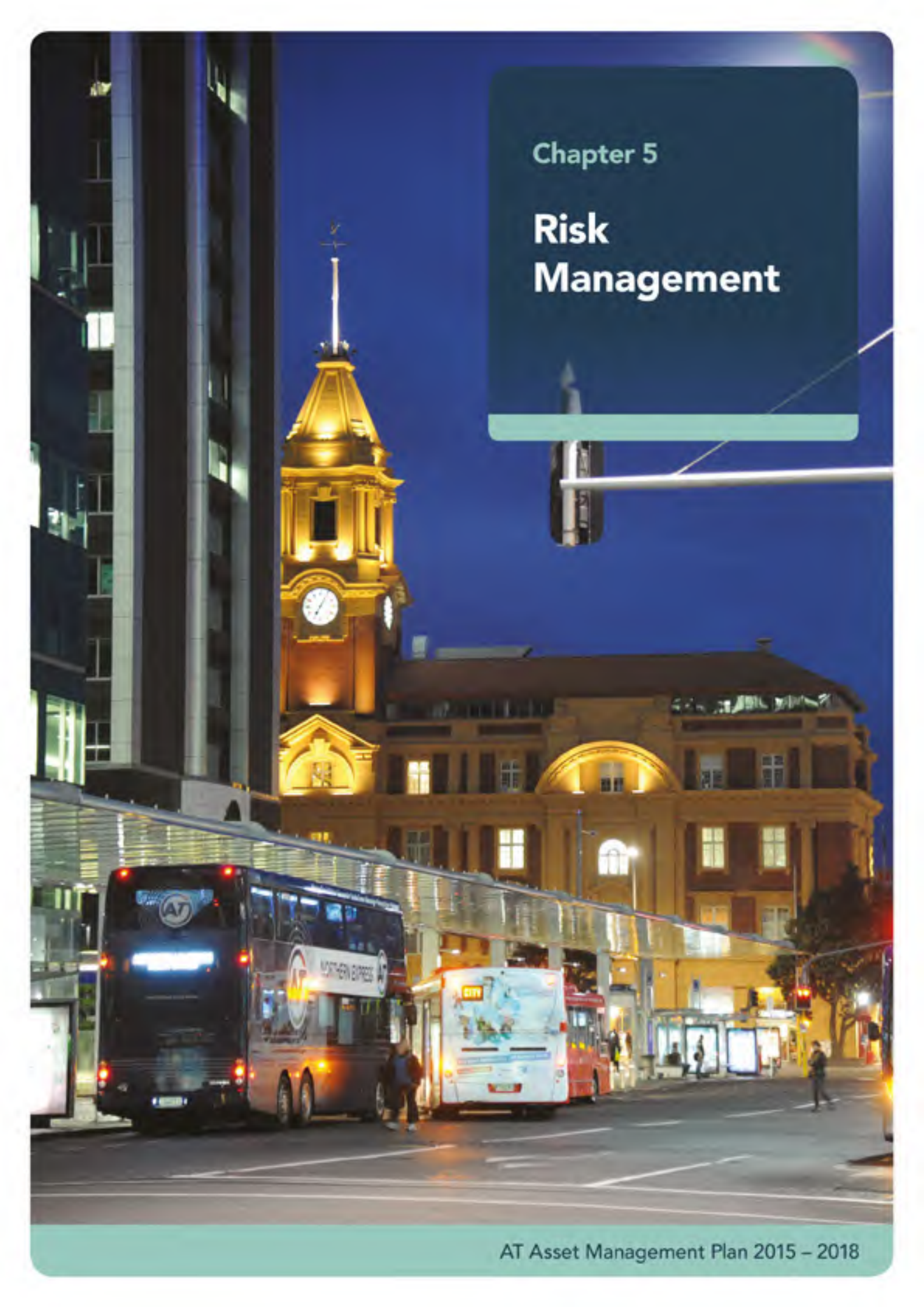
The rate of growth in transport assets will accelerate as Auckland's population continues to grow and as initiatives including Strategic Housing Areas increase the supply of new housing. Preliminary calculations suggest that this will increase consequential opex requirements by \$600 per dwelling per year. This suggests that the above consequential opex estimates, calculated based on past trends, could significantly underestimate the costs associated with connecting more than 10,000 new homes to the transport network each year, as envisaged by the Auckland Housing Accord.

Public transport assets also create a consequential opex cost, but calculating this cost using a growth factor does not work well for bus, rail and ferry infrastructure, for a number of reasons.

- Vested assets are not significant, as it is rare for developers to construct public transport assets.
- The maintenance and operations costs of a new public transport asset, such as a new rail and bus interchange, are best calculated separately. A growth factor based on the costs of existing assets would not be accurate.
- Service changes, for example increased hours of operation, can be as significant in terms of future costs as newly constructed assets.

As a result, in this AMP, the consequential opex component of future maintenance and operations budgets is itemised for road assets only, and not public transport assets.

Consequential opex from PT assets, not included in the estimates above, will include significant costs for maintenance and operations of the City Rail Link from 2023, and potentially a future Light Rail Transit system.

A nighttime photograph of a city street. In the background, a large, ornate building with a prominent clock tower is illuminated with warm yellow lights. The clock tower has a white clock face and a spire. To the left, a modern glass-fronted building is partially visible. In the foreground, a dark blue double-decker bus with 'AT' and 'NORTHERN EXPRESS' branding is stopped at a bus stop. A white bus with a map on its side is also visible. The street is lit by streetlights, and a few pedestrians can be seen. A dark blue semi-transparent box is overlaid on the right side of the image, containing the chapter title.

## Chapter 5

# Risk Management



## 5. Risk management

*One of AT's key roles is to manage and balance network risks against levels of service and whole-of-life costs. There are significant risks associated with operating and managing the transport network, which can lead to network failure, death and serious injuries, and other significant consequences. This chapter identifies those risks and how they are managed.*

### Key messages

- Transport asset risks include death and serious injury risks
- AT has identified its most critical assets, including lifeline routes and facilities.
- AT has identified the risks associated with key hazards, including unplanned events such as earthquakes and tsunamis, and has controls to mitigate the impact of these hazards.
- AT's road safety programmes aim to reduce deaths and serious injuries through engineering, education and enforcement.

### 5.1. Transport asset risks

The risks associated with AT's transport assets may lead to:

- injury or death to transport users, operators or members of the public
- reduced access for network users to travel options, including unavailable or reduced routes, services and facilities
- damage to other infrastructure or property
- reduced amenity of the transport network for users (including appearance, cleanliness, noise, comfort etc)
- reduced public transport patronage
- impacts on vehicle travel speeds (e.g. delays, congestion, roughness)
- increased operating costs (e.g. due to increased asset deterioration)
- increased costs to repair assets or restore services, potentially affecting AT's ability to fund services
- environmental impacts (e.g. pollution of waterways, air or soil).

AT has prepared an *Asset Risk Management Plan*, which identifies the key transport asset risks, and sets out how AT manages and controls them.

This chapter provides a brief overview of the *Asset Risk Management Plan*, including:

- the transport asset risk management context
- the transport asset risks, and how AT manages and controls them
- how AT defines its tolerance for asset risk in terms of asset criticality
- how AT monitors and reports on its asset risk profile

- the key improvements to the *Asset Risk Management Plan* that AT has planned for the next 12 to 18 months.

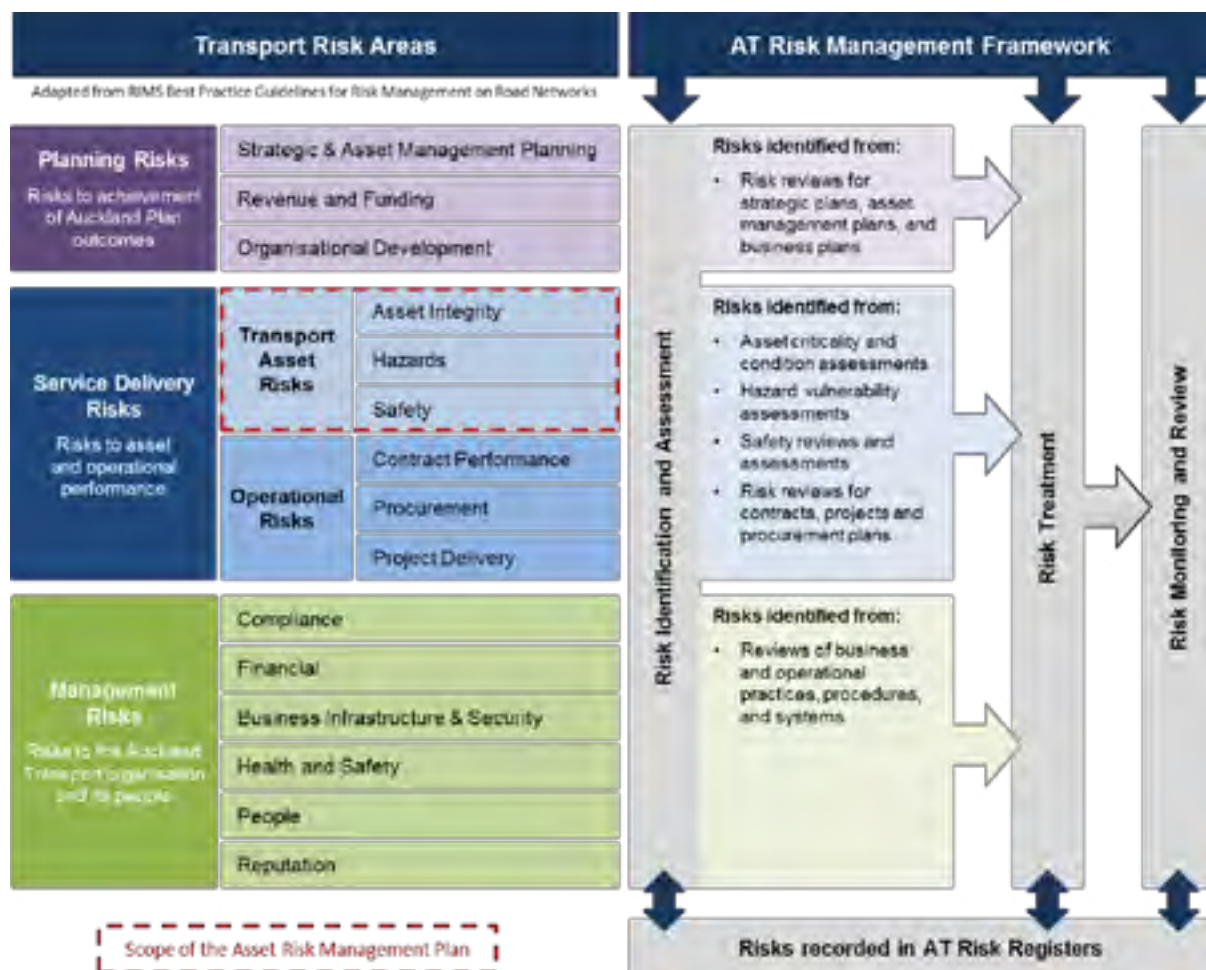
## 5.2. Transport asset risk management context

The following factors define the transport asset risk management context that AT operates within.

- The Auckland road and public transport networks, and the assets that constitute them, as summarised in this AMP
- The strategies and plans that AT has in place for developing and managing the transport networks, and the systems, processes, procedures and practices that implement those strategies and plans (including activities by both AT and contracted organisations)
- The AT risk management framework, which defines the overarching policies and procedures that AT uses to identify, assess, treat and monitor risk at an appropriate level of detail. The risk management process that AT has adopted follows the joint Australian–New Zealand international standard, *AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines*, tailored to suit AT’s specific requirements.

Transport asset risk is just one of a number of types of risk that AT manages on a day-to-day and long-term basis, in order to provide a safe, effective, and efficient transport system. Figure 47 illustrates these broader risks, and how transport asset risk fits amongst them.

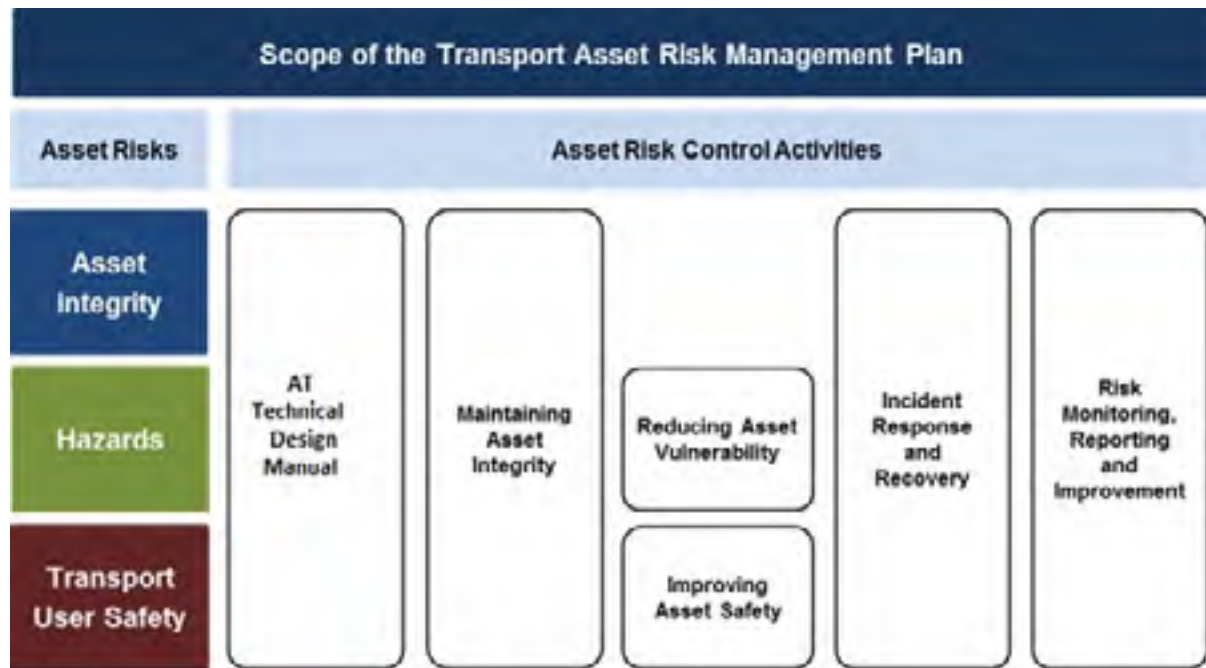
Figure 47: AT risk framework



### 5.3. Transport asset risks and controls

AT manages three main types of transport asset risk through a number of control activities, as shown in Figure 48.

Figure 48: Types of asset risks and associated control activities



The three main types of transport asset risk are described below.

- Asset integrity:** the risk of asset failure, disruption of function or reduced levels of service arising from deterioration of asset condition through age, general wear and tear, exposure to environmental conditions, and damage caused by vehicle crashes, contractors, or other events. Asset integrity risk is a function of asset age and condition (which reflects the likelihood of asset failure), and asset criticality (which reflects the importance of an asset within the transport network and the actual or potential consequences of the asset failing or not providing the required level of service). Integrity is a key risk factor for all network structures including bridges, wharves and gantries.
- Hazards:** the risk of damage or disruption to the transport network arising from unplanned events, including natural and anthropogenic hazards. The risk of unplanned events is a function of the transport network's exposure and vulnerability to hazards, and the network's capacity to respond effectively and return transport services to normal following an unplanned event. The combination of the network's vulnerability, and its capacity for response and recovery defines the network's resilience. Hazards may arise from a loss of asset integrity, e.g. structural failure, potholes etc. They also arise from mixing high-energy transport modes with low energy modes, such as the intersection of rail with vehicles and vehicles with cycles and pedestrians.
- Safety:** the risk of injury or death to transport users. Safety is a function of several factors including the road design and alignment, speed environment, safety

standards, the condition of transport assets, driving conditions, vehicle condition, and user behaviour (including drivers, pedestrians, and cyclists). The national *Safer Journeys Strategy to 2020* (21) sets out a plan to achieve a safe road system that is increasingly free of deaths and serious injuries, through safer roads and roadsides, safer speeds, safer vehicles and safer road use. The safer roads and roadsides component of this strategy relates closely to transport asset risk, including how transport assets may contribute to, or control, the risk of incidents and crashes occurring (e.g. surface skid resistance, guard rails, barriers, mode separation etc).

Risk controls include activities designed to avoid or prevent risks, or reduce the likelihood of risks occurring; activities that identify when risks have occurred or are likely to occur; and activities that respond to risks when they do occur. AT employs all these types of risk controls throughout its transport assets' lifecycles.

The key asset risk control activities that AT uses are as follows.

- **Applying the AT Code of Practice:** provides quality standards to ensure that the function, condition, operational cost and useful service life of transport assets is consistently achieved across the region. The *Code of Practice* is a key control that AT uses during asset design and construction.
- **Maintaining asset integrity:** this includes operational activities, maintenance, renewal, and asset condition monitoring and reviews. All these activities protect assets, slow down asset deterioration, rectify asset defects, identify actual and potential asset failures, and restore asset level of service.
- **Reducing asset vulnerability:** this includes identifying assets that may be vulnerable to certain hazards, and renewing or improving those assets to mitigate the risk.
- **Improving asset safety:** this includes identifying locations on the transport network where there is a high risk of vehicle crashes or other incidents that may impact on transport user safety, and renewing or improving the transport assets at these locations to mitigate the risk.
- **Planning for incident response and recovery:** this includes the plans and arrangements AT has in place to ensure there is an effective response to incidents and emergencies on the network, and that transport users are safeguarded and normal services restored following an incident. These plans and arrangements include the *Auckland Incident Management Plan* and the AT operations centres at Smales Farm and the downtown Ferry Building.
- **Monitoring, reporting on and improving asset risk management:** this includes the processes that AT's uses to monitor its asset risk profile at a strategic level, and to identify specific issues or risks in each risk area, as well as the management actions required to address these issues and risks.

In addition to the above risk control activities, AT carries insurance for loss of or damage to transport assets arising from certain insurable events.

Table 19, Table 20 and Table 21 provide more detailed summaries of the key controls that AT uses with respect to the key transport asset risks (i.e. asset integrity, hazards and safety).



**Table 19: Summary of asset failure modes, causes and controls**

Potential modes of asset failure (loss of integrity)	Causes of asset deterioration and failure	Key controls
<ul style="list-style-type: none"> <li>• Deterioration or failure of building fabric</li> <li>• Loss of structural integrity</li> <li>• Failure of supporting structures</li> <li>• Degradation of appearance or amenity</li> <li>• Component, equipment or core services failure</li> <li>• Loss of shape, skid resistance or surface integrity (pavement)</li> <li>• Blockage or missing lids or grates (stormwater systems)</li> <li>• Incorrect, non-compliant or non-visible signs or markings</li> </ul>	<ul style="list-style-type: none"> <li>• Third-party contractor damage</li> <li>• Age-related deterioration</li> <li>• Changes to requirements or standards</li> <li>• Collision or impact</li> <li>• Components or fixtures failure</li> <li>• Cumulative surfacing treatments</li> <li>• Cumulative traffic loading</li> <li>• Excess stormwater flows</li> <li>• Dirt, grime, rubbish build up</li> <li>• Fire (equipment failure, smoking, vehicle fire)</li> <li>• Incorrect bitumen content</li> <li>• Overpressure (retaining walls)</li> <li>• Over-weight vehicle loading</li> <li>• Scour (stormwater runoff)</li> <li>• Obstruction or blockage</li> <li>• Tanking failure</li> <li>• Seismic loading</li> <li>• Services outage (power, water, gas, telecoms)</li> <li>• Traffic systems software failure</li> <li>• Vandalism or theft</li> <li>• Vegetation growth or root penetration</li> <li>• Water penetration</li> <li>• Wave damage</li> <li>• Wind loading or damage</li> </ul>	<ul style="list-style-type: none"> <li>• <i>AT Code of Practice</i></li> <li>• AT communications (call centre and website)</li> <li>• AT operations centres</li> <li>• Corridor access request procedure</li> <li>• Over-weight and over-dimension requests</li> <li>• Routine inspections</li> <li>• Programmed condition assessments</li> <li>• Maintenance (preventative and reactive)</li> <li>• Renewal (reactive, preventative, predictive and proactive)</li> <li>• Incident response and recovery (managed by the AT operations centres)</li> <li>• AT asset risk registers</li> </ul>

**Table 20: Summary of key hazards, impacts and controls**

Hazard types	Potential impacts on transport assets	Key controls
<ul style="list-style-type: none"> <li>• Earthquake</li> <li>• Volcanic eruption (Auckland volcanic field or distant source)</li> <li>• Severe weather, including heavy rainfall, cyclones or tornadoes, causing wind damage, flooding, coastal inundation and wave damage, and rainfall-induced landslips</li> <li>• Tsunami</li> <li>• Fire, including building fire, vehicle fire or wildfire</li> <li>• Terrorism (including cyber-attack)</li> <li>• Failure of third party infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Structural damage to bridges and their abutments, retaining or sea walls, or wharves</li> <li>• Scouring around bridge abutments or piles</li> <li>• Structural or building fabric damage (public transport stations, parking buildings, or the AT operations centres)</li> <li>• Inundation or flooding of coastal assets (including Britomart Station and ferry terminals)</li> <li>• Carriageway damage or blockage (e.g. by debris, ash build up, washout or slip, downed power lines, signs or poles)</li> <li>• Damage or blockage of rail tracks (e.g. buckling or misalignment, washout or slip)</li> <li>• Blockage of stormwater systems by ash, sediment or debris, causing flooding or overland flow</li> <li>• Popped manholes creating a safety hazard</li> <li>• Power outages or short circuits affecting streetlights, traffic signals, CCTV, vehicle management systems, AT operations centres, rail signals and electric lines</li> <li>• Damage to public transport vehicles (ferries, buses, rolling stock)</li> <li>• Fire</li> </ul>	<ul style="list-style-type: none"> <li>• Identification of assets or locations with high hazard exposure</li> <li>• Identification of critical lifelines routes and facilities</li> <li>• Seismic screening programme (bridges, major culverts, retaining and sea walls, wharves, parking buildings)</li> <li>• Facility surveillance and security</li> <li>• Building fire detection and control systems and alarms</li> <li>• National Rural Fire Authority fire weather system</li> <li>• Auckland regional wildfire threat analysis</li> <li>• Auckland Lifelines Group</li> <li>• Auckland civil defence emergency alert service</li> <li>• Incident response and recovery (managed by the AT operations centres)</li> <li>• AT insurance coverage</li> <li>• Pumping systems</li> </ul>

**Table 21: Summary of high safety-risk locations, safety critical assets and controls**

Types of high-safety-risk locations	Types of safety critical assets	Key controls <sup>(1)</sup>
<ul style="list-style-type: none"> <li>• Intersections (including pedestrian crossings)</li> <li>• Schools</li> <li>• Speed advisory curves</li> <li>• Level crossings (vehicle or pedestrian)</li> <li>• Bridges</li> <li>• High-speed environments</li> <li>• Wharves</li> <li>• High cycle-volume areas</li> <li>• High pedestrian-volume public spaces</li> </ul>	<ul style="list-style-type: none"> <li>• Compulsory and warning signs</li> <li>• Markings and traffic signals</li> <li>• Pavement surfacing</li> <li>• Pavement alignment and camber</li> <li>• Lighting</li> <li>• Barriers, guard rails and fences</li> <li>• Fire detection and control systems</li> <li>• Emergency egress</li> </ul>	<ul style="list-style-type: none"> <li>• AT <i>Code of Practice</i></li> <li>• Maintaining asset integrity through operational, maintenance and renewal activities</li> <li>• Crash reduction studies</li> <li>• Safety Around Schools programme</li> <li>• Planned safety improvements</li> <li>• Urgent safety improvements</li> <li>• AT asset risk registers</li> <li>• Building Warrant of Fitness compliance</li> </ul>

Note:

1. Only includes engineering controls (planning, designing, constructing, operating, maintaining and renewing transport assets). Does not include policy, education or enforcement controls.

## 5.4. Asset criticality and risk tolerance

AT's key asset management principle is to meet service levels and to manage risk while minimising whole-of-life costs. This is achieved by optimising the timing of maintenance and renewal interventions. To provide guidance for asset maintenance and renewal decision-making, AT's tolerance for risk arising from the deterioration and failure of transport assets has been defined based on asset criticality.

Asset criticality reflects the importance of an asset within the transport network, and the actual or potential consequences of the asset failing (or failing to provide the required level of service). Asset criticality is determined based on a number of factors, including:

- the degree to which the failure of the asset would impact on the safe and efficient operation of the transport network (especially assets that are necessary for safety, regulatory or efficiency reasons)
- the asset's location or functional significance, taking into account road classification and traffic volumes (including vehicle, cycle and pedestrian traffic), critical lifelines routes, key public transport or freight routes, and public profile
- other factors, such as the potential, should the asset fail, for it to damage or disrupt other infrastructure or property, or damage the environment, and the cost of repairing the asset.

The higher the criticality of the asset, the lower AT's tolerance for risk in relation to it. Conversely, AT will tolerate greater risk in relation to less critical assets.

AT has defined three criticality grades that reflect its tolerance for asset risk. Corresponding maintenance and renewal intervention levels have been defined for each criticality grade and these are summarised in Table 22.

**Table 22: Transport asset criticality grades and corresponding intervention levels**

Asset criticality	Levels of service	Asset classes	Risk profile description
<p><b>High criticality assets</b></p> <p>Risk tolerance very low: minimum risk of failure is tolerated</p> <p>Maintenance service levels<sup>(1)</sup> 1, 2 and 3</p>	No assets in poor or very poor condition	<p>Exterior and interior fitout at:</p> <ul style="list-style-type: none"> <li>• Rail stations</li> <li>• Ferry terminals</li> <li>• Busway stations</li> </ul> <p>Wharves Bridges Traffic Signals AT HOP ticketing system</p>	<p>Front-of-house assets with significant public perception implications.</p> <p>Assets with significant safety risks or traffic movement implications.</p>
<p><b>Moderate criticality assets</b></p> <p>Risk tolerance low: some risk of failure is tolerated</p> <p>Maintenance service levels<sup>(1)</sup> 4, 5 and 6</p>	No assets in very poor condition	<p>Pavement base Pavement surface Footpaths Kerbs and channels Drainage pipes Catch pits Cycleways</p> <p>Structural and service assets at:</p> <ul style="list-style-type: none"> <li>• rail stations</li> <li>• ferry terminals</li> <li>• busway stations</li> </ul> <p>Corridor structures Streetlight poles, luminaires and brackets Signs Retaining walls Parking buildings and equipment Off-street carparks Sea walls Bus shelters</p>	<p>Assets with medium to low public perception and safety implications.</p>
<p><b>Low criticality assets</b></p> <p>Risk tolerance moderate: Greater risk of failure is tolerated</p>	Assets allowed to fall into very poor condition with risk of failure	None assigned	No assets are in this category

Source: AT renewals optimisation model (4)

Notes:

1. Maintenance service levels include specified response times to address identified asset defects and issues. These are defined in AT's maintenance contract specifications.
2. Renewal intervention levels are the target thresholds for determining when an asset should be renewed based on its condition or age. The condition grade of an asset is a proxy measure of the likelihood that the asset has failed or will fail to provide the required level of service in the future.

The above criticality profiles ensure that risk is incorporated into renewals assessments in two ways:

- by setting a condition-based level of service (the renewals intervention point) – this is a first response to risk and reflects the tolerance for risk for each asset
- by setting the time to address current and annually accruing backlog (backlog is the highest risk condition state for an asset). This reflects the tolerance for backlog risk over time for each asset and has an impact on cost and condition.

These factors in turn influence the recommended asset investment, as set out in Chapter 7.

## 5.5. Monitoring and reporting on transport asset risks

Regular monitoring, reviewing and reporting is an important part of the risk management process, as it ensures that new risks and changes to existing risks are identified and managed.

AT's management of transport asset risk will be monitored through the processes described in Table 23. These processes will be developed as part of the *Asset Risk Management Plan* improvement programme over the next 12 to 18 months.

**Table 23: Risk monitoring and management**

Monitoring processes	Description
<b>Monitoring and analysing trends in key risk indicators</b>	<p>Key risk indicators are metrics used to provide an early signal of increasing risk exposures across the enterprise. Unlike key performance indicators, which provide information about past performance, key risk indicators are leading indicators that provide information about changing risk factors or exposures, which may impact on future performance. Key risk indicators measure or provide information about events or trigger points that might signal issues that are developing internally or potential risks that are emerging from changes in the external context.</p>
<b>Liaison with Auckland Lifelines Group</b>	<p>AT's involvement with the Auckland Lifelines Group provides opportunities to review infrastructure-related risks at a cross-sector level.</p>
<b>Audits or reviews of existing controls</b>	<p>Audits or reviews of existing controls provide an opportunity to evaluate the effectiveness of those controls and to identify opportunities for improvement.</p>
<b>PESTELOM assessment undertaken during the preparation of the asset class management plans</b> (PESTELOM stands for: <ul style="list-style-type: none"> <li>• Political</li> <li>• Environmental</li> <li>• Social</li> <li>• Technological</li> <li>• Economic</li> <li>• Legal/legislative</li> <li>• Organisational</li> <li>• Media)</li> </ul>	<p>The preparation of the asset class management plans, which this AMP is based on, involves assessing the organisation's strategic context, and the potential impact of asset maintenance and renewal needs in relation to that context. This provides AT with opportunities to:</p> <ul style="list-style-type: none"> <li>• consider the implications of changes in the strategic context (e.g. objectives, levels of service, funding levels, priorities) with respect to asset risk profiles and controls</li> <li>• consider the asset-related risks with respect to implementation, including challenging key assumptions</li> <li>• identify whether changes to asset risk controls or additional controls are required.</li> </ul>
<b>Formal reviews of the Asset Risk Management Plan</b>	<p>AT's <i>Asset Risk Management Plan</i> may be formally reviewed on a periodic or ad-hoc basis, as required, to assess:</p> <ul style="list-style-type: none"> <li>• any changes to the strategic or operational context, which need to be taken into account, or which have resulted in changes to the risk landscape or tactical controls</li> <li>• trends in key risk indicators that need to be addressed</li> <li>• the results of audits or reviews of tactical controls that need to be addressed, or changes to tactical controls that have been planned or implemented as a result</li> <li>• progress with implementing risk management improvements and any additional improvement actions required.</li> </ul>

AT uses risk registers to record risk-related information. Asset risks, and their controls and treatments, are recorded in the risk registers and are assigned appropriate owners. Risks are reported to AT management, the executive leadership team, the chief executive, the Finance and Risk Committee, and the AT Board, in accordance with the risk escalation hierarchy defined in the AT risk management framework.

## 5.6. Road safety

One of AT's main objectives is to provide a safe transport system that is increasingly free of deaths and serious injuries. This supports the vision and plan of the National Road Safety Committee, as set out in the *Safer Journeys Strategy to 2020* (21).

To reduce the number of deaths and serious injuries on Auckland roads, footpaths, cycle paths and public transport services, AT collaborates with key stakeholders including the:

- New Zealand Police
- New Zealand Transport Agency
- Ministry of Transport
- Accident Compensation Corporation.

AT takes an evidence-based approach to safety, taking into account the risks to road users, public transport users, cyclists and pedestrians. Safety interventions use the 'three Es' of engineering, education and enforcement.

AT's asset safety framework is currently under development.

Table 24 summarises AT's current *Road Safety Action Plan*.

**Table 24: Road Safety Action Plan safety interventions**

Type of intervention	Key actions	Detailed activities
Engineering	Increase safety engineering	Develop a crash risk assessment rating and priority for all arterial roads and on local roads that have a high crash-risk  Implement a prioritised programme of safety engineering projects  Implement safety engineering measures at high-crash-risk locations  Use <i>Road Safety Action Plan</i> meetings to coordinate activities between AT and key stakeholders
	Improve speed management	Develop a regional speed management policy around safer and survivable speed  Use fixed safety cameras at intersections and other high-risk areas  Specify safe urban design and engineering measures for pedestrians, vehicle drives, cyclists and public transport users in and around town centres, schools and residential areas
	Improve intersection safety	Initiate safety audits and crash reduction studies at high-risk intersections  Implement engineering improvements at and around the intersections
	Improve pedestrian safety	Implement upgrades of pedestrian facilities  Improve safety measures around highly pedestrianised areas and shared zones

Type of intervention	Key actions	Detailed activities
	Improve cyclist safety	Implement safe cycle facilities for key cycle routes
	Improve public transport safety	Upgrade railway level crossings to make them safer Upgrade major arterials with priority bus routes Improve security at bus shelters, rail stations and ferry terminals
Education	Improve safety knowledge	Implement road safety education campaigns to raise awareness of road safety, public transport safety and pedestrian safety Implement enforcement campaigns to reduce the incidents and effects of road trauma Implement a school safety plan and programme Implement a walking and cycling safety plan and programme Encourage public transport operators to improve safety on the road, track and water Initiate a crash-reduction study to identify areas where there are clusters of crashes and investigate intersection crashes Initiate a fatal crash investigation study to investigate fatal crashes, and identify contributing factors and plan for improvements
Enforcement	Reduce drink- and drug-driving	Implement well-targeted police enforcement of illegal drink-driving (New Zealand Police)
	Improve speed management	Increase speed enforcement on high-risk arterial roads Introduce demerit points for safety camera infringements (New Zealand Police)
	Improve pedestrian safety	Increase alcohol-related enforcement measures, i.e. increase liquor ban zones (New Zealand Police) Improve presence of police patrols in local areas (New Zealand Police)





## Chapter 6

# Sustainability





## 6. Sustainability

*Sustainable infrastructure management meets the needs of the present without compromising the ability of future generations to meet their own needs. It requires that investment decisions consider the long-term impacts of any action or inaction in the broadest possible terms.*

*This chapter identifies transport sustainability issues and how these are addressed within this AMP.*

### Key messages

- The *Auckland 30-year Infrastructure Strategy* requires AT to plan, design and operate its networks and assets in ways that support quality compact growth, reduce resource use and help generate positive behaviour change in Aucklanders.
- Sustainability initiatives are underway and AT is using its draft Sustainability Framework to identify further opportunities

### 6.1. Context

The *Auckland Plan* commits Auckland Council and its CCOs, including AT, to environmental action and green growth.

Infrastructure, including transport infrastructure has a lead role in delivering on this commitment. The *Auckland 30-year Infrastructure Strategy* states that networks and assets will need to be planned, designed, and operated in a way which:

- supports quality compact growth
- reduces resource use
- assists in generating positive behaviour change in Aucklanders (6).

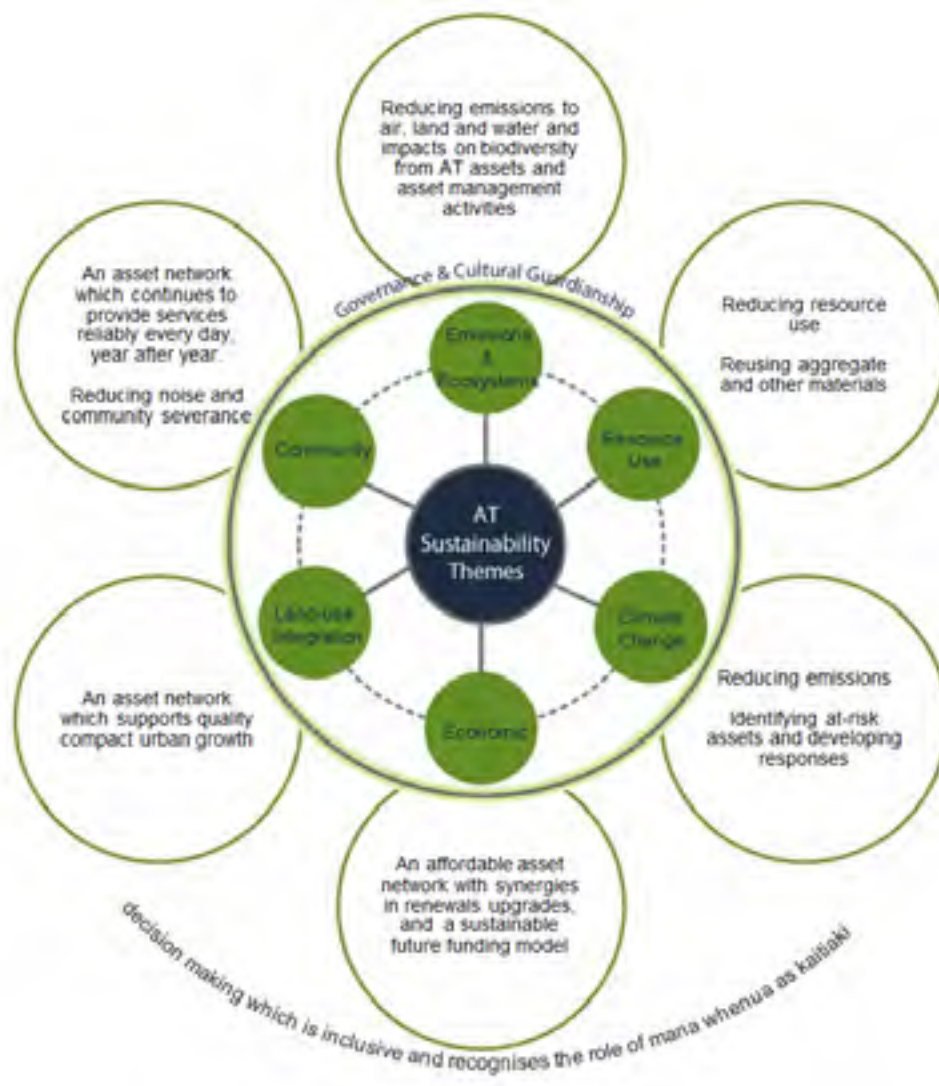
This includes recognising the role of mana whenua as kaitiaki and providing opportunities for this responsibility to be expressed as part of infrastructure planning and ongoing monitoring.

AT's Statement of Intent 2015 (3) commits it to use sustainable business practices in all its operations.

### 6.2. Auckland Transport's draft Sustainability Framework

AT is developing a Sustainability Framework to embed sustainability across the business, from policy to procurement. The draft Framework has informed the preparation of this Asset Management Plan, as shown in Figure 49.

Figure 49: AT Sustainability Framework, as applied to Asset Management



### 6.3. AT Sustainability Initiatives

Initiatives already under way to progress sustainable asset management include:

- Replacement of diesel trains with energy-efficient electric trains which also reduce noise and air pollution
- Replacement of streetlights with longer lasting, more energy efficient LED lamps where suitable
- Sustainability Plans and Achievement Reports as part of all road maintenance contracts
- Compliance of asset management activities with AT's Maori Engagement Framework

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Future challenges, to be built into 2018-2021 Asset Management Plan, include:

- Increasing the proportion of renewals projects which enhance the public transport, walking and cycling networks in line with future strategies, rather than simply replacing like with like
- Undertake a systematic review of the potential impacts of climate change and sea level rise on AT assets
- Develop a Vegetation Asset Class Management Plan which considers the maintenance and enhancement of ecosystems in the road corridor

Table 25 shows further detail of sustainability issues and mitigation actions, by asset class.

**Table 25: Sustainability impacts and mitigation actions**

<b>Asset Class</b>	<b>Impacts on sustainability</b>	<b>Mitigation measures (to be delegated to contractors as appropriate)</b>	<b>Contributes to:</b>
Pavements	Road noise	Smooth road surfaces that use innovative materials. Smooth bridge joints. Bylaw controls.	Community
	Dust from unsealed roads	Road sealing (see AT's Seal Extension Guidelines). Surface treatment during periods of dry weather. Innovative unsealed road designs.	Emissions, Community
	Scarcity of consented quarries providing quality natural aggregates near Auckland	Recycling concrete and other materials	Resource Use
	Bitumen run-off	Robust controls when applying bitumen products in road construction, maintenance and renewals.	Emissions (to air and water)
Stormwater	Pavement surface renewals	Recycle and reuse pavement surfaces by refreshing the binder and re-laying (requires specialist plant.)	Resource Use
	Stormwater runoff from road surfaces	Manage stormwater to avoid flooding and reduce sediment load Promote low-impact design to manage stormwater quality at the outset of development Install Tetra Traps, which are gross-pollutant filter devices, where the filter is inserted into street catch pits over the outlet pipe.	Emissions (to water)
	Air pollution	Provide safe, attractive and accessible footpath facilities to encourage walking instead of private vehicle use.	Emission/ Resource use, Land-use integration, Community
Footpaths and cycleways	Personal security	Improve the urban environment to create attractive pedestrian streets and shared spaces that are safe to enjoy 24/7. Provide well-designed lighting.	Community
	High energy consumption and CO2 emissions associated with production of cement needed for bridge construction	Recycling bridge components. Innovative bridge design and construction solutions.	Resource use, Economic, Community

Asset Class	Impacts on sustainability	Mitigation measures (to be delegated to contractors as appropriate)	Contributes to:
Walls	Unattractive appearance of retaining walls, noise walls and sea walls.	Use natural materials. Use murals, patterns in the façade, tiling and/or planting to improve the appearance.	Emission/ Resource use, Community Eco-systems,
	Effect of stream contamination on fish in streams and rivers.	When constructing or repairing walls near streams and rivers, use pre-cast blocks, off-site fabrication, catch fences and sheet piling. Store materials out of reach of water.	Emission/ Resource use, Community Eco-systems,
	Material used to fill gabion baskets could be dissolved by the sea water and could be harmful to aquatic life forms.	Ensure that material used in gabion baskets is non-soluble and inert.	Emission/ Resource use, Community Eco-systems,
	The construction of new sea walls can have a negative impact on sand dunes	Dunes should not be removed or damaged to enable the construction of new sea walls.	Emission/ Resource use Eco-systems,
	Parking	Convenient parking may not attract road users to other transport modes such as walking, cycling or public transport	Prioritise and manage parking as set out in the Parking Strategy
Land used for car parking is not available for other, more productive, uses		Work towards ISO 14001 certification of car parks	Governance, Emission/ Eco-systems, Economic
Operation of parking buildings has negative environmental impacts		Use enforcement to ensure bus, high-occupancy vehicle (HOV) lanes and traffic lanes are free from obstruction	Emission/ Eco-systems, Economic, Land-use integration, Community
Illegally parked vehicles cause delay and risk		Progressively install LED street light lamps and control gear that can vary lighting levels according to need (This also applies to parking and PT facilities and traffic signals).	Emission/ Eco-systems, Economic, Community
Street lights	Energy use	Improve lighting standards through better light distribution and lower light pollution from new lighting technologies, reducing spill light and sky glow.	Emission/ Eco-systems, Community
	Light pollution		

Asset Class	Impacts on sustainability	Mitigation measures (to be delegated to contractors as appropriate)	Contributes to:
Traffic systems	Air pollution from vehicle exhausts	Use traffic systems to manage congestion and reduce inefficient, stop-start travel	Emission/ Eco-systems, Community
Corridor structures and fixtures	Optimising vehicle flow can discourage other road users including pedestrians and cyclists	Use Route Optimisation to favour certain road user groups depending on current strategies such as bus priority, key pedestrian routes, cycle lanes or freight. For example, Queen St intersections have increased pedestrian phase lengths.	Emission/ Eco-systems, Land-use integration, Community
	Deforestation of slow-growing native hardwood trees including kauri, rimu and totara	Use of sustainable sources of wood for fences, bollards and sight rails	Emission/ Eco-systems, Climate change
Rail stations	Zinc from galvanized steel, and toxins from wood treatment, old paint and creosote can enter streams and rivers or be toxic Lack of suitable alternatives lead to high levels of private vehicle use	Avoid the use of these materials, use appropriate safeguards, and dispose of used products carefully	Emission/ Eco-systems
Rolling stock	Atmospheric pollution and carbon emissions	Increased use of trains due to high quality stations will decrease the number of road vehicles and hence decrease pollution and carbon emissions from road vehicles Electric trains generate less pollution and carbon emissions compared to the older diesel trains The new electric train service is also quieter than the diesel trains.	Emission/ Eco-systems, Climate change, Community
Wharves	Material used in wharf construction can enter the sea water and could be harmful to aquatic life forms. Implementation of the PT New Network will change usage of bus assets	Ensure that material used in wharves is appropriate for use in the marine environment. Dispose of used materials safely.	Emission/ Eco-systems
Bus network	Opportunities to enhance ecosystems and to mitigate other impacts of transport infrastructure, including visual amenity and discharges to air and water	Use the bus stop renewals programme as an opportunity to ensure facilities are fit for purpose, considering their role and forecast usage in the PT New Network Prepare a Vegetation Asset Class Management Plan which considers the maintenance and enhancement of ecosystems in the road corridor	Resource use, Land-use integration, Community
Vegetation			Emissions and ecosystems, Community,



## Chapter 7

# Asset Investment Requirements





## 7. Asset investment requirements

*Ongoing investment in the transport network is required to ensure that assets are maintained in sound condition, are suitable for use and are able to deliver the levels of service identified in Chapter 3.*

*This chapter identifies the asset investment needs, based on AT's asset management strategies, core principles and processes.*

### Key messages

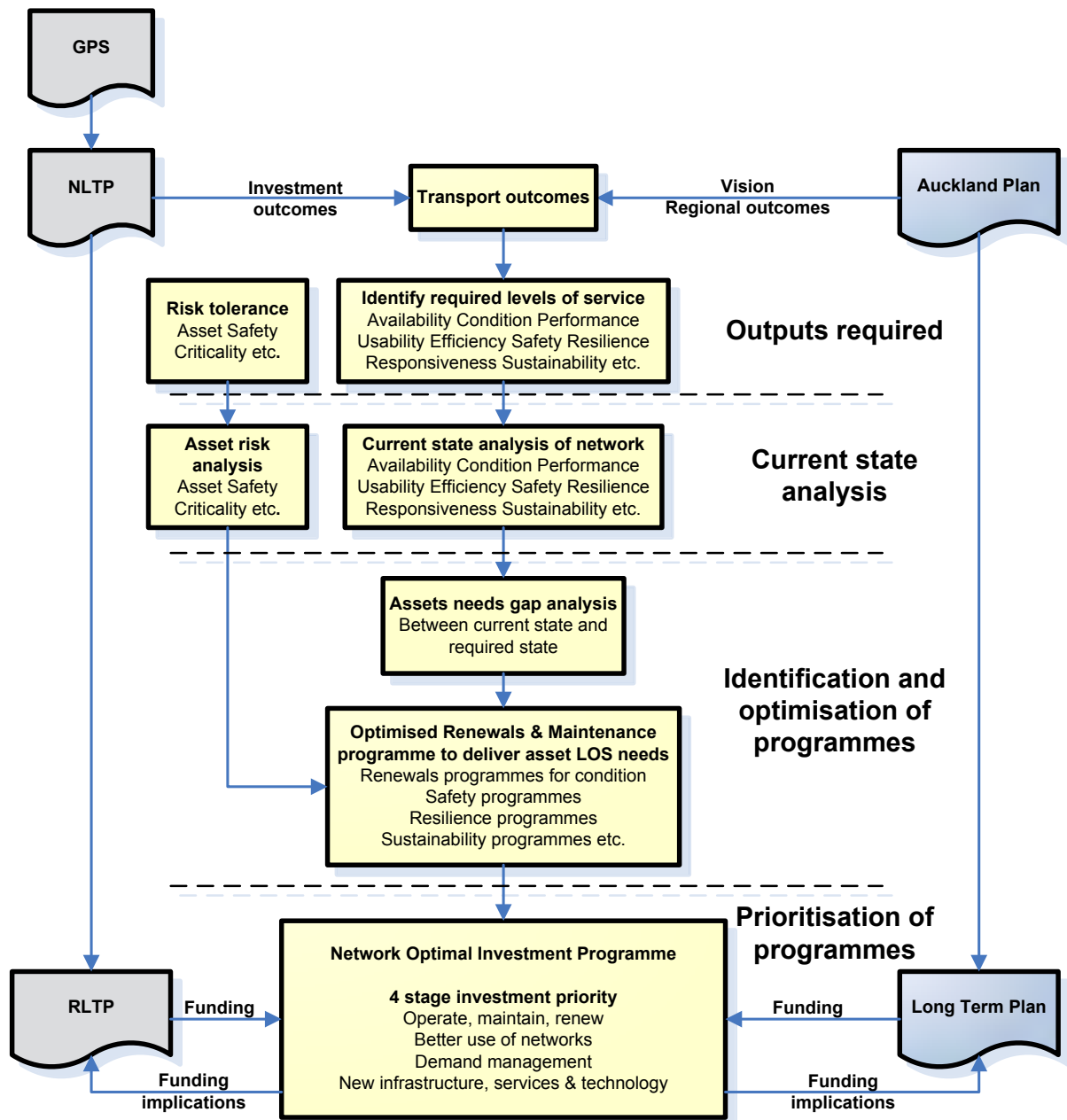
	uninflated	inflated
• 2015/16–2024/25 renewals investment needs	\$2.88 billion	\$3.44 billion
• 2015/16–2024/25 maintenance investment needs –public transport assets		\$0.71 billion
• 2015/16–2024/25 maintenance investment needs – existing roads		\$1.15 billion
• Consequential opex from new roads and capital projects		\$0.98 billion
• Current asset condition is good, with 97% of assets in very good, good or moderate condition. Backlog (assets that are due or overdue for renewal) is \$157 million.		
• AT's recommendation is to reduce the backlog over periods ranging from 3 to 30 years, addressing the backlog for critical assets first.		

### 7.1. Identifying asset requirements

This chapter sets out AT's future investment requirements for asset renewals, maintenance and operations.

AT's recommended renewals, maintenance and operations programmes have been developed on an 'asset needs' basis, applying AT's asset management process as described in the previous sections of this AMP. Figure 50 summarises this process.

Figure 50: Development of renewals and maintenance programmes



## 7.2. Assessment of renewal needs

Renewals work involves replacing assets or components of assets to avoid service failure. Because transport is essential infrastructure, renewals work is timed to minimise any risk of failure, while obtaining the longest economic and service life from assets.

The predominant drivers of renewals investment are, for each asset class, its:

- current condition
- rate of deterioration
- renewals intervention point.

One factor that has not been taken into account in this chapter is funding constraints and timing. Minimising the whole-of-life costs of assets often involves spending now to avoid greater costs later on. Funding constraints, and the amended work programme to fit these constraints, is considered in Chapter 8 – Funding and Impacts.

### **Condition**

AT regularly inspects its assets to monitor their condition, using a condition grading system based on the *2011 International Infrastructure Management Manual*. Assets are assessed against a 5 point condition scale, ranging from 1 = very good (meets or exceeds customer levels of service as set in Chapter 3) through to 5 = very poor (delivers a very poor level of service, at risk of failing completely).

### **Rate of deterioration**

Figure 51 shows the rate of deterioration curves for the various transport asset classes. These rates are estimations for planning purposes and are based on work previously done within the New Zealand infrastructure asset management sector. AT reviews the accuracy of the curves and the actual expected life for each asset type each year based on actual age, condition and useful life trends.

### **Renewals intervention point**

A renewals intervention point is set for each asset class, based on the level of service required from that class and its risk categorisation.

Figure 51 shows the general approach AT takes to identifying renewals intervention points, using three levels of service options for managing asset condition. Each asset type has been assigned an intervention point based as set out in Table 22.

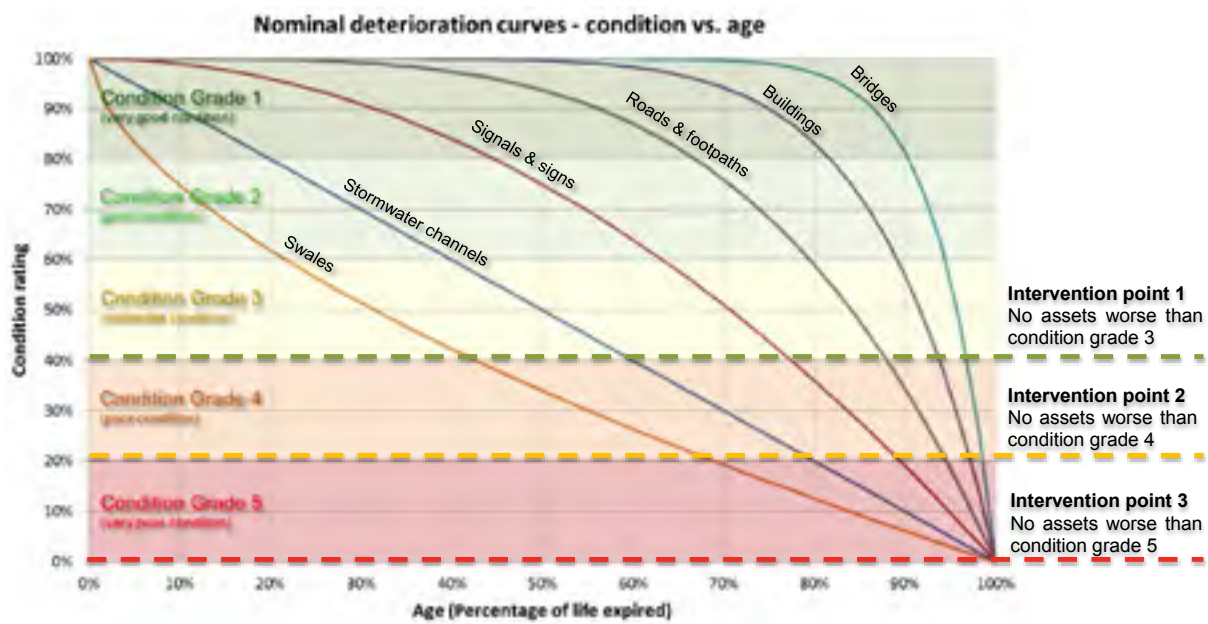
At present, there are no asset classes that are set to be managed at intervention point 3 (allowed to fall below very poor condition, that is, to fail completely). This is because of the potential for higher levels of risk, increased maintenance costs and negative public perception that allowing assets to fall to this condition may have.

Intervention point 2, in which assets are replaced or renewed when they fall into very poor condition, is currently the default setting for the majority of AT's assets.

Important front-of-house and critical assets are managed at renewals intervention point 1, and are replaced when they fall into poor condition.

Risk is also taken into account in setting the time within which the current and annually accruing backlog must be addressed (backlog is the highest risk condition state for an asset). This reflects the tolerance for backlog risk over time for each asset, and has an impact on the timing of recommended renewals investments.

Figure 51: Condition, deterioration and renewals intervention points

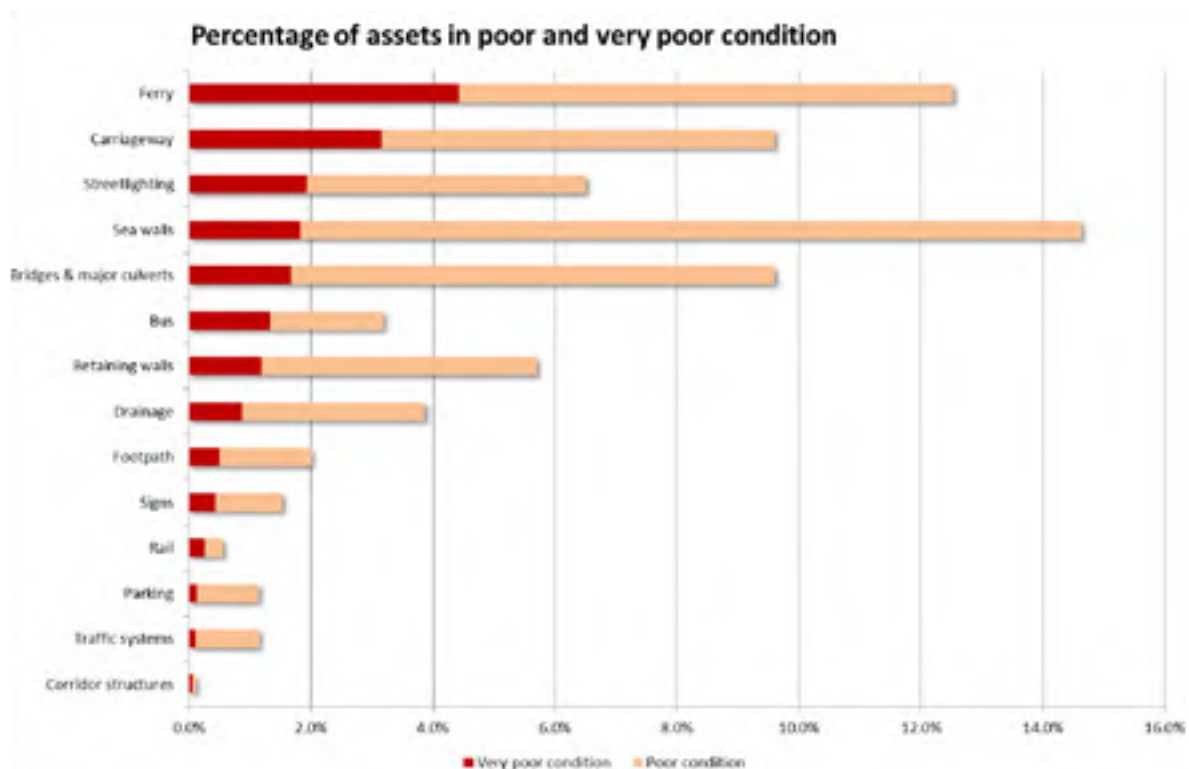


### 7.3. Very poor condition assets

Currently 1 per cent of AT’s road and public transport assets are in very poor condition. This represents \$114.8 million of renewals.

Figure 52 shows the distribution of poor and very poor condition across the asset classes. Assets in very poor condition have a higher risk of unplanned failure and attract higher maintenance costs to keep them viable.

Figure 52: Assets in poor and very poor condition



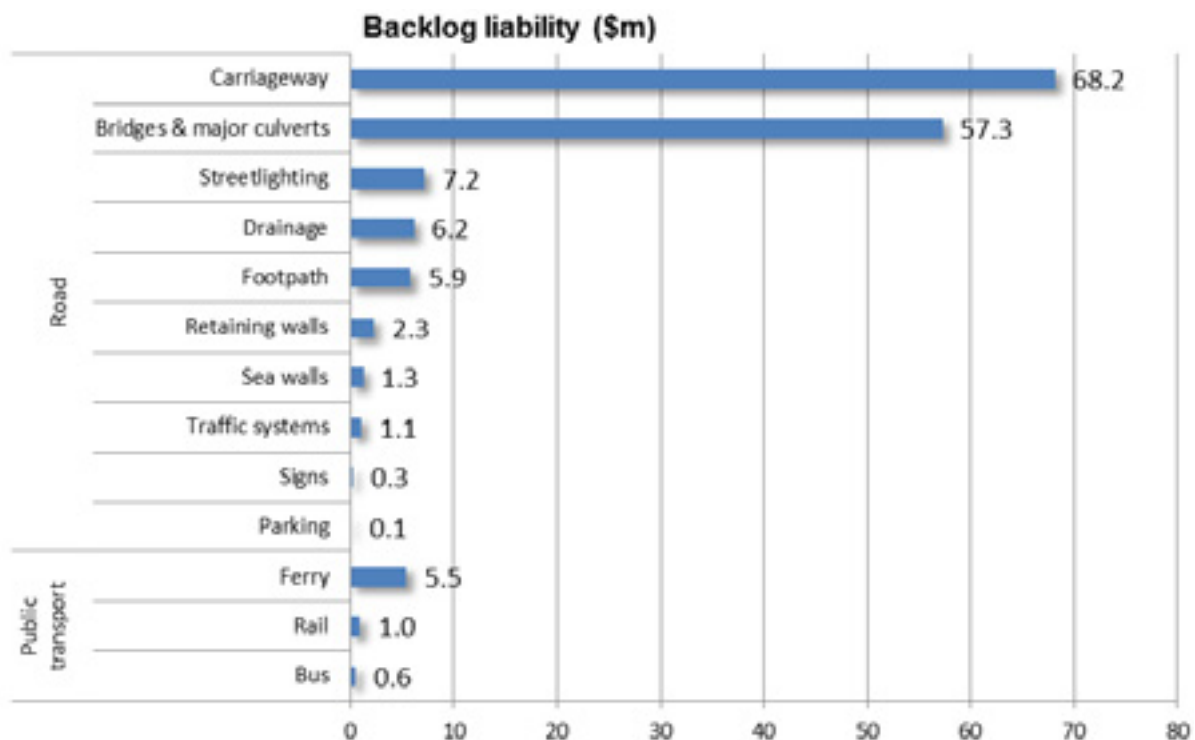
Source: AT renewals optimisation model (4)

## 7.4. Backlog levels across the assets

Backlog liability is the total value of assets that are in worse condition than their nominated intervention point. The current value of backlog liability in the transport network is \$157 million. This is made up of \$114.8 million of assets in very poor condition, and a further \$42.2 million of level of service 1 assets that are in poor condition.

Figure 53 shows the distribution of backlog liability for both road and public transport assets. It shows that the majority of backlog exists within the pavement and bridges asset class. Some backlog needs have also been identified within the streetlights, drainage, footpaths and ferry (wharves) classes. Renewals work focusses on reducing this backlog.

Figure 53: Current backlog liability



Source: AT renewals optimisation model (4)

## 7.5. Identifying renewals investment

AT determines its recommended renewals programme by using the renewals optimisation model (4) to estimate the cost of renewing assets in future years. The model calculates renewals costs based on:

- renewing intervention point 1 assets in the year in which they fall into poor condition
- renewing intervention point 2 assets in the year in which they fall into very poor condition
- applying the growth factors described in Section 4.4 to take into account new assets created either through AT capital works or by developers as part of the subdivision process.

The renewals optimisation model calculates an optimal long-term renewals investment profile by optimising the relationship between condition, risk and cost across the various asset classes. It can also be used to calculate the future asset condition and risk consequences of available budgets, as set out in the following chapter.

The renewals optimisation model approach allows for direct testing of trade-offs between funding availability, levels of service and the levels of backlog that can be accepted, based on risk criteria such as criticality, movement and public perception considerations. It provides decision-makers with a good understanding of the trade-off consequences for each asset class and across the portfolio as whole. The area of potential trade-offs between cost, service and risk is illustrated in Figure 54. The 14 asset class management plans provide further details, for specific assets, of renewals needs, levels of service and risk policy settings.

**Figure 54: Renewals optimisation model trade-offs**



Details of the first decade (2016–2025) renewals investment for each asset class are shown in Table 26. Further details of renewals needs are included in the asset class management plans, summarised in Appendix 4.

**Table 26: Renewals investment needs, recommended AMP renewals programme 2016–2025**

(\$ million; inflated)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016-2025 total
Pavement	125.2	133.7	116.3	152.7	189.5	222.2	247.0	266.5	282.0	294.8	2030.0
Stormwater	8.7	15.6	22.8	29.4	35.1	39.8	43.8	47.2	50.2	52.7	345.3
Footpaths & Cycleways	21.0	7.8	10.5	13.2	16.0	18.9	21.7	24.7	27.6	30.5	192.0
Bridges and Major Culverts	9.7	16.7	18.4	20.0	21.3	22.5	23.5	24.5	25.3	26.0	208.1
Walls	13.1	4.2	5.4	6.5	7.5	8.3	9.0	9.7	10.2	10.7	84.6
Traffic Systems	8.2	14.8	12.5	18.5	16.9	16.6	17.4	18.1	18.4	19.0	160.4
Street Lighting	6.7	26.6	25.6	17.1	15.7	17.5	16.9	16.4	15.8	15.5	173.7
Corridor Structures and Fixtures	3.1	1.9	6.1	8.7	9.5	9.2	8.4	7.6	6.9	6.6	68.1
Vegetation	-	-	-	-	-	-	-	-	-	-	0.0
Parking	2.5	2.0	3.2	3.7	4.2	5.1	5.1	5.5	5.8	6.0	43.1
<b>Road total</b>	<b>198.2</b>	<b>223.3</b>	<b>220.9</b>	<b>269.9</b>	<b>315.7</b>	<b>360.0</b>	<b>393.0</b>	<b>420.2</b>	<b>442.2</b>	<b>461.8</b>	<b>3,305.3</b>
Rail Stations and Depots/ Stabling	2.1	1.9	7.4	6.8	7.2	8.1	9.3	10.4	11.3	12.1	76.6
Rolling Stock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wharves	4.1	4.5	4.3	4.4	3.2	3.1	3.0	2.9	2.8	2.7	35.0
AT HOP	-	-	-	-	-	-	-	-	-	-	0.0
Bus Network	0.9	2.8	3.2	3.0	2.6	2.4	2.3	2.3	2.5	2.6	24.6
<b>PT total</b>	<b>7.0</b>	<b>9.2</b>	<b>15.0</b>	<b>14.2</b>	<b>13.1</b>	<b>13.6</b>	<b>14.6</b>	<b>15.7</b>	<b>16.6</b>	<b>17.4</b>	<b>136.2</b>
<b>Total renewals needs, inflated</b>	<b>205.2</b>	<b>232.4</b>	<b>235.9</b>	<b>284.1</b>	<b>328.8</b>	<b>373.7</b>	<b>407.6</b>	<b>435.9</b>	<b>458.8</b>	<b>479.2</b>	<b>3,441.5</b>
Renewals needs, uninflated	200.0	220.6	217.8	254.9	286.4	315.7	333.7	345.1	351.3	354.8	2,880.2

Source: AT renewals optimisation model (4) Further detail is set out in Appendix 3. Figures are to the nearest \$100,000, so items shown as \$0 can be between \$0 and \$50,000.



Long term asset renewals needs are forecast to grow as the asset base increases. Indicative long term renewals needs (uninflated) are shown in Table 27.

**Table 27 Indicative renewals investment needs 30 year summary (\$m) uninflated**

Annual average renewals needs (\$m, uninflated)	1st decade average	2nd decade average	3rd decade average	2016-45 total
Road	276.5	335.1	319.6	9,312.4
Public transport	11.5	12.9	43.1	674.4
<b>Total</b>	<b>288.0</b>	<b>347.9</b>	<b>362.7</b>	<b>9,986.9</b>

Source: Renewals Optimisation Model (4)

## 7.6. Procurement strategy for renewals

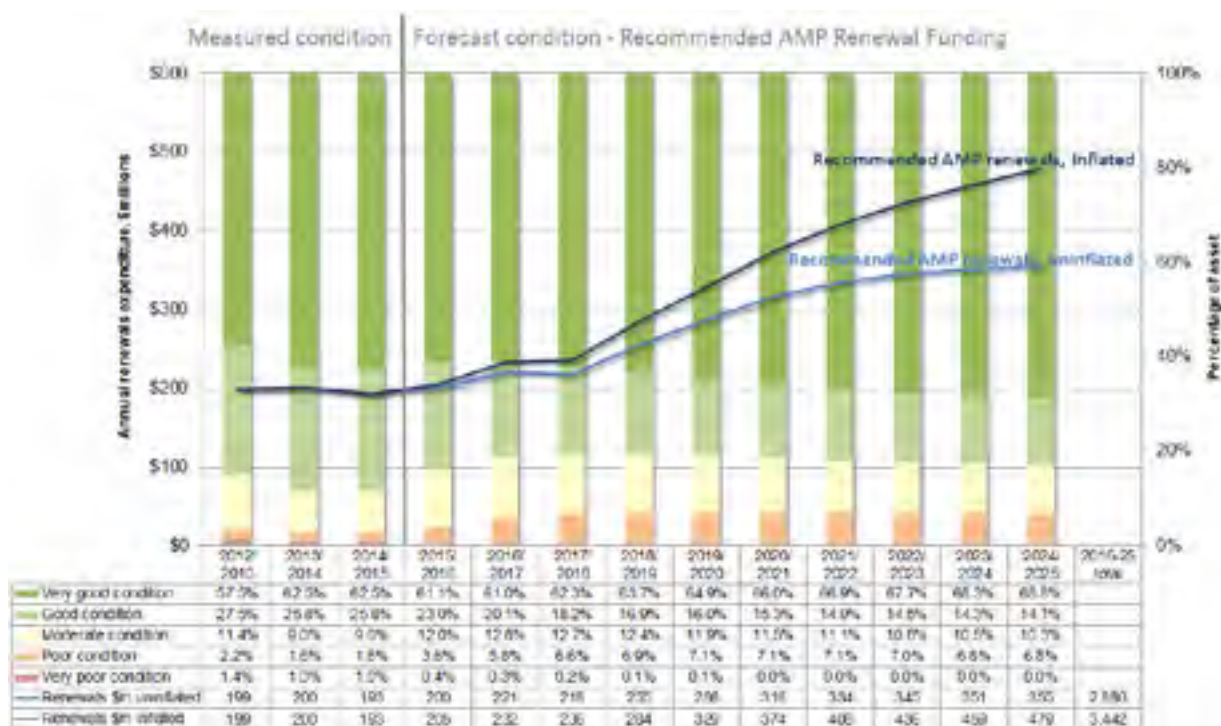
Maintenance and renewals works are procured through a single competitive bidding process, and are provided by external contractors and suppliers across three contract areas; north, central and west, south. Contracts combine maintenance, renewals and some minor capital works. They have terms of four years, plus two subsequent rights of renewal of two years each, and are structured to give contractors incentives to get to know the network and deliver to the agreed level of service statements and performance measures.

Over the 2015–2018 period, AT will work with contractors to align levels of service and performance measures for road assets with the One Network Road Classification described in Chapter three.

## 7.7. Impact of the recommended AMP renewals programme

Over the 30 years it covers, the recommended AMP renewals programme will ensure that the proportion of assets in very poor condition remains below 1 per cent, and will achieve a gradual improvement in the asset condition profile as backlog variations are reduced. This includes an increase in the proportion of assets in very good condition, from 61.1 per cent in 2016 to 68.8 per cent in 2025, as shown in Figure 55.

Figure 55: 10-year renewals cost vs condition, Recommended AMP renewals programme



Source: Renewals Optimisation Model (4)

## 7.8. Assessment of maintenance and operations needs

Renewals and maintenance are strongly linked; maintenance strategies can hasten or delay the need for renewals, and if renewals are deferred, this increases maintenance needs.

The distinction between renewals (which are capital works) and maintenance (which is an operational expense) is set by accounting policies; maintenance ensures the asset continues to deliver agreed levels of service, while renewals extend the asset's useful life. A simple analogy would be that, for a house, patching a hole in the roof would be maintenance, while re-roofing would be renewals.

Table 28 summarises how activities within each asset class have been classified as maintenance and asset-based operations for the purpose of this AMP and asset class management plans.

Table 28: Categorisation used to classify maintenance and asset-based operational activities

ACMP	Activities classified as Maintenance	NZTA W/C*	Operations (asset based) activities	NZTA W/C	Operations (non asset based)	NZTA W/C
Roads and Footpaths						
Pavement	Sealed pavement maintenance	111	Network and asset management	151		
	Unsealed pavement maintenance	112				
	Environmental maintenance	121				
	Emergency works	141				
Stormwater	Routine drainage maintenance	113	n/a		n/a	
Footpaths and cycleways	Footpath maintenance	n/a	n/a		n/a	
	Cycle path maintenance	124				

ACMP	Activities classified as Maintenance	NZTA W/C*	Operations (asset based) activities	NZTA W/C	Operations (non asset based)	NZTA W/C
Bridges and major culverts	Structures maintenance	114	n/a		n/a	
Walls	n/a		n/a		n/a	
Traffic systems	Traffic services maintenance Operational traffic management Level crossing warning devices	122 123 131	Operational traffic management	123	n/a	
Street lighting	Traffic services maintenance	122	Traffic services maintenance	122	n/a	
Corridor structures and fixtures	Traffic services maintenance Amenities maintenance	122 n/a	n/a		n/a	
Vegetation	Environmental maintenance Amenity planting	121 n/a	n/a		n/a	
Roads and Footpaths (not otherwise classified)					Operational traffic management Permits to access/work in road corridor Safety and demand management Other road related operational costs	123 n/a 151
Parking (not subsidised by NZTA)						
Parking	Maintenance of parking buildings and offstreet parking areas	n/a	Pay & Display systems	n/a	Enforcement	n/a
Public Transport						
Rail stations and depots/stabling	Rail station and depot facilities maintenance	514	Rail station operating costs (514)	514	Rail service contracts, concessionary fares, track access payments to KiwiRail	515 522
Rolling stock	Maintenance fees for diesel and electric trains	515	Fuel and other costs for diesel and electric trains	515	n/a	
Wharves	Wharf facilities maintenance	514	Passenger facilities operating costs	514	Ferry service contracts and concessionary fares	512 522
AT HOP	n/a		AT HOP operating costs	524	n/a	
Bus network	Bus shelter cleaning and maintenance	514	Bus station operating costs	514	Bus service contracts and concessionary fares	511 517 521 522
Public transport (not otherwise classified)					Public transport information supply, operations and maintenance	524

\*NZTA Work Category as defined in the *NZTA Planning and Investment Knowledge Base*

The basis for assessing some of the transport network's key operations and maintenance requirements are summarised in Table 29.

**Table 29: Operations and maintenance requirements**

Activities	Scope	Basis of assessing requirements
Maintenance	Planned maintenance	Historical trends together with established asset specific requirements to minimise whole-of-life costs and to maintain agreed levels of service
	Reactive maintenance	Historical trends
Operations (asset based)	Electricity	Hours of operation
	Telecommunication	Information exchange requirements
	Cleaning and vegetation control	Frequency of activities and standards required
	Inspection	Frequency of inspections and standards required
	Emergency	Historical trends
	Customer service	Agreed standards, such as response times
	Security	Agreed standards, such as locations and hours of operations

## 7.9. Recommended maintenance and operations investment

Maintenance and asset-based operations, as recommended by the AMP, are the second largest item of AT operational expenditure each year, after public transport service contracts.

For the road network, asset operations and maintenance requirements are assessed and prioritised in the AMP based on:

- Current, competitively tendered service delivery contracts and known historical costs of delivering agreed Levels of Service . These include Network management costs for roads which are set to deliver Network Optimisation levels of service determined by the Auckland Traffic Operations Centre (ATOC)
- Consequential operational and maintenance requirements of significant new infrastructure planned to be added to the network

Over the decade from 2016, consequential opex from growth is the major factor driving maintenance and operations investment requirements. Table 30 shows that consequential opex adds around 1.5%, compounding, to road maintenance and operations asset needs per year, in line with asset growth. Apart from consequential opex, maintenance requirements for roads are very stable over time.

**Table 30: Road maintenance and asset-based operations investment needs 2016-2025**

(\$ million)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Pavement	35.1	35.5	35.9	36.2	36.4	36.5	36.6	36.6	36.6	36.7	362.1
Stormwater	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	90.0
Footpaths and Cycleways	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	25.6
Bridges and Major Culverts	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	17.5
Walls	-	-	-	-	-	-	-	-	-	-	0.0
Traffic Systems	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	230.3
Street Lighting	17.8	17.5	17.1	16.8	16.7	16.6	16.6	16.6	16.6	16.6	168.9
Corridor Structures and Fixtures	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
Vegetation	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	131.5
Parking	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	118.1
<b>Road maintenance needs – existing assets</b>	<b>114.4</b>	<b>114.4</b>	<b>114.4</b>	<b>114.4</b>	<b>114.5</b>	<b>114.5</b>	<b>114.5</b>	<b>114.6</b>	<b>114.6</b>	<b>114.7</b>	<b>1145.0</b>
<b>Consequential opex from asset growth</b>	<b>1.7</b>	<b>3.4</b>	<b>5.2</b>	<b>6.9</b>	<b>8.8</b>	<b>10.6</b>	<b>12.5</b>	<b>14.4</b>	<b>16.3</b>	<b>18.3</b>	<b>98.1</b>

**Source: Auckland Council Long Term Plan. Excludes costs which cannot be allocated to an asset class. Further detail is included in Appendix 3**

For the public transport network, future maintenance and asset-based operations costs are estimated based on:

- PT facilities maintenance and operations costs, based on the hours of operation, frequency of services, customer Levels of Service and other cost drivers as set in the Regional Public Transport Plan
- The forecast cost impact of specific new facilities including Otahuhu and Manukau interchanges
- Patronage growth targets as set out in the Statement of Intent (3).

Public transport asset costs increase at an average rate of 1.9 per cent each year, as shown in Table 31. This is a slower rate of increase than patronage, as public transport patronage targets set in the *Long Term Plan 2015-2025* (2) increase by an average of 3.4 per cent each year.

**Table 31: Public transport maintenance and asset-based operations investment needs 2016-2025**

(\$ million; inflated)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016-2025 total
Rail Stations and Depots/ Stabling	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	146.8
Rolling Stock	21.4	18.6	20.3	20.7	21.0	21.3	21.7	22.1	22.4	22.8	212.4
Wharves	5.7	6.7	6.9	7.0	7.2	7.3	7.5	7.6	7.8	7.9	71.5
AT HOP	18.2	18.6	19.2	19.6	20.3	20.6	21.3	21.5	22.3	22.5	204.2
Bus Network	5.0	5.7	6.9	7.0	7.7	7.8	7.8	7.9	8.2	8.8	72.7
<b>PT asset maintenance total</b>	<b>65.0</b>	<b>64.2</b>	<b>68.0</b>	<b>69.0</b>	<b>70.8</b>	<b>71.7</b>	<b>73.0</b>	<b>73.7</b>	<b>75.4</b>	<b>76.7</b>	<b>707.7</b>

**Source: Auckland Council Long Term Plan. Excludes costs which cannot be allocated to an asset class. Further detail is included in Appendix 3**



## Chapter 8

# Funding and Impacts







## 8. Funding and impacts

AT's funding comes from Auckland Council, the New Zealand Transport Agency and from revenue, including parking charges and public transport fares. Auckland Council has adopted an Accelerated Transport Programme in its Long-Term Plan 2015–2025, which provides for renewals funding for the transport network at close to the levels recommended in this AMP in the first three years. From year four of the long-term plan, funding for renewals is below the recommended level, which is forecast to result in lower levels of service, increased risk and increased whole-of-life costs.

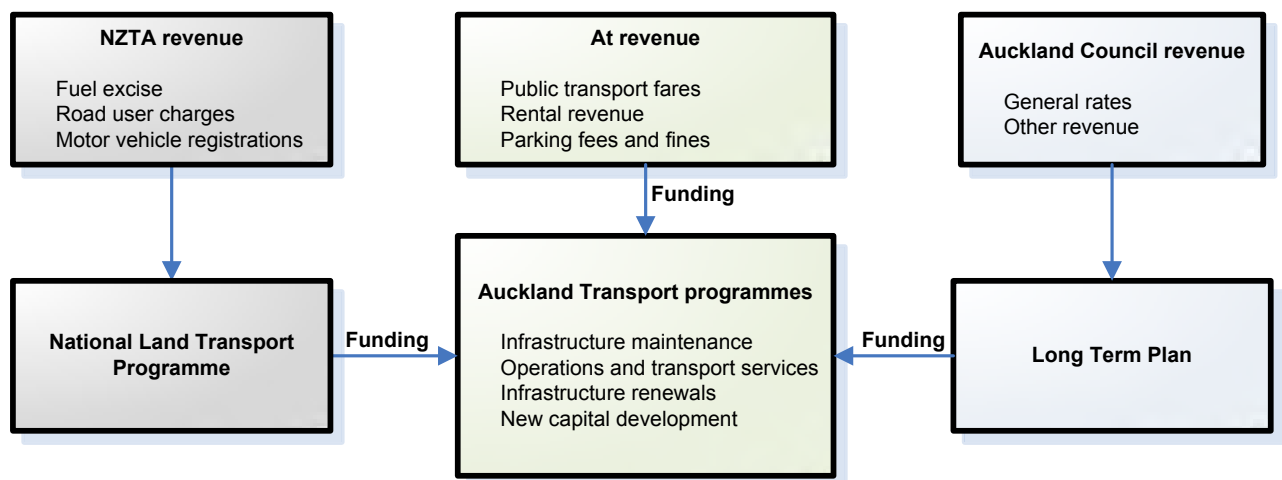
### Key messages

- |  | inflated | uninflated |
|--|----------|------------|
| • Renewals investment need 2015/2016 to 2024/2025              | • 3,440  | • \$2,880  |
| • Renewals funding approved in <i>Long-Term Plan 2015–2025</i> | • 2,511  | • \$2,129  |
- Renewals funding is close to recommended levels for the first three years of the long-term plan (2015/16 to 2017/18), but falls thereafter.
  - This level of renewals funding will increase the proportion of assets in very poor condition, from 1 per cent in 2016 to 9.4 per cent in 2025.
  - Maintenance and operations budgets approved in the Long Term Plan do not include provision for consequential opex from asset growth.

### 8.1. Funding sources

AT's funding comes from three sources: Auckland Council, the New Zealand Transport Agency and AT revenue, as shown in Figure 56.

Figure 56: Funding and delivery flows for the AT network



AT is a Council Controlled Organisation of Auckland Council. Auckland Council contributes over half of AT's total funding, and sets the level of funding for AT in its long-term plan (2). Auckland Council's policy settings for funding roads, footpaths, public transport and parking are contained in its *Revenue and Financing Policy* (22).

The New Zealand Transport Agency is directly responsible for State Highways and also co-invests in AT activities that contribute to achieving the priorities in the *Government Policy Statement on Land Transport 2015/16–2024/25* (8). Roughly a quarter of AT’s funding comes from the New Zealand Transport Agency. The policies that guide the agency’s investment are set out in its *Investment Assessment Framework* (23).

The remainder of AT’s funding comes from operating revenue (parking and enforcement revenue and public transport fares).

## 8.2. The Accelerated Transport Programme – Capital Improvements

Auckland Council consulted in its draft long-term plan on two alternative capital improvement programmes:

- an optimised capital programme, called the *Auckland Plan* scenario
- a reduced basic programme to fit within capital funding constraints.

Following public consultation, Auckland Council adopted an accelerated transport capital programme (ATP), which includes all of the projects in the basic programme, along with some additional programmes. The accelerated programme will include:

- bringing forward investment for the Auckland–Manukau Eastern Transport Initiative between 2015 and 2018
- increasing walking and cycling funding to \$124 million, leveraging additional central government funding
- developing transport interchanges at Otahuhu, Manukau and Te Atatu
- improving the Te Atatu road corridor
- developing a Pukekohe interchange and park-and-ride
- building new park-and-rides at Papakura, Westgate and Silverdale
- improving Tamaki Drive and Ngapipi Road intersection
- increasing the budget for rural road seal extensions by \$7 million
- undertaking public transport safety improvements
- building 45 kilometres of additional bus lanes.

Table 32 summarises the ten year capital programme (2016–2025) by asset class. Note that some projects, including the Growth Infrastructure Fund and corporate projects, cannot be allocated to an asset class and are not included in the summary table. Full detail of capital projects is set out in Appendix 3.

As part of the Accelerated Transport Programme, Auckland Council makes provision within its overall transport renewals allocation for the following specific projects:

- Refurbishment of the 10 diesel trains used for the Pukekohe service in 2019/2020 (noting that the preferred option is the extension of electrification to Pukekohe, subject to Government funding)
- LED Streetlighting, which will reduce whole-of-life costs by installing more energy-efficient, longer lasting LED luminaires
- Seismic strengthening projects, including a seismic upgrade of the Quay St seawall
- Replacement of some assets from AT’s revenue-generating parking activities
- General AT asset replacement/renewal (corporate and IT assets)

These projects are included as capital projects in Table 32 and Appendix 3.

**Table 32: Approved ATP capital improvement programmes by asset class**

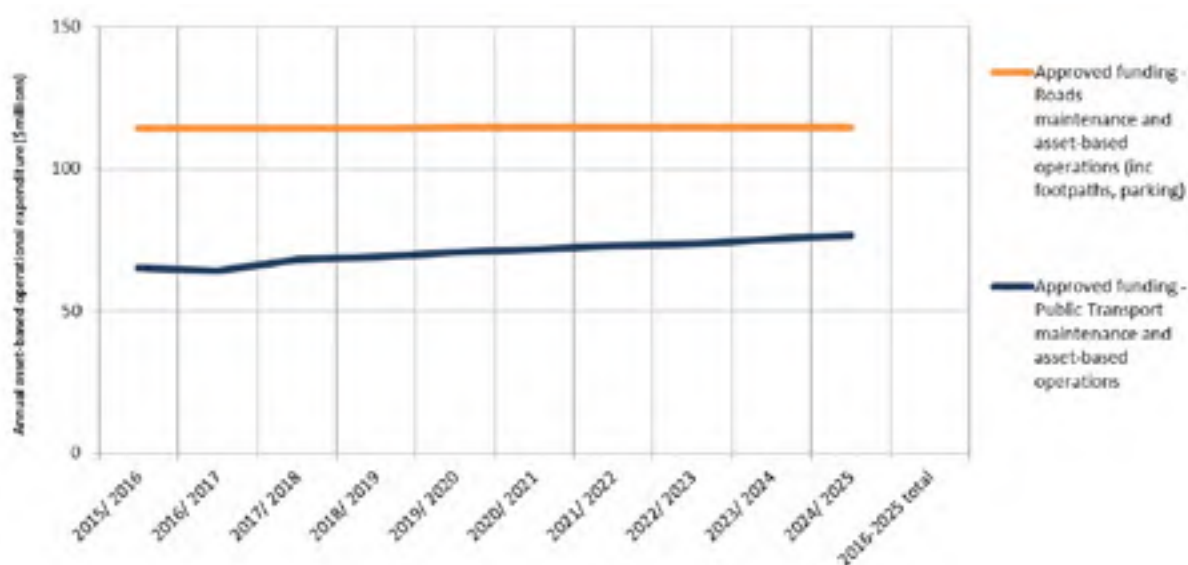
(\$m, inflated)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Pavements	94.4	99.2	54.4	26.0	23.4	58.2	159.4	131.5	171.7	126.9	945.1
Footpaths and Cycleways	38.5	48.2	68.5	13.4	20.7	23.7	24.4	25.3	26.1	27.0	315.7
Bridges and Major Culverts	0.0	4.4	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
Walls	1.0	1.1	1.1	1.1	1.1	11.0	55.9	12.6	13.1	13.5	111.5
Traffic Systems	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	1.4
Street Lighting	4.8	5.0	5.1	5.2	5.4	7.5	7.7	8.0	8.2	8.5	65.3
Parking (includes park and ride)	7.3	9.2	5.8	2.5	4.2	3.8	3.9	4.1	4.2	4.3	49.3
<b>Road capital projects total</b>	<b>146.1</b>	<b>167.2</b>	<b>139.6</b>	<b>48.3</b>	<b>54.9</b>	<b>104.2</b>	<b>251.5</b>	<b>181.6</b>	<b>223.5</b>	<b>180.5</b>	<b>1497.3</b>
Rail Stations and Depots/ Stabling (inc City Rail Link)	114.4	158.0	125.1	217.0	314.4	470.1	508.3	380.6	77.8	7.2	2372.9
Rolling Stock	26.8	1.0	0.0	0.0	8.1	0.0	0.0	0.0	0.0	0.0	35.9
Wharves	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8	7.1
AT HOP	8.0	1.9	4.2	2.0	2.1	3.4	2.2	7.8	8.1	2.4	42.2
Bus Network	57.4	85.1	66.9	6.9	12.9	121.7	210.1	91.0	75.6	120.3	848.0
<b>PT capital projects total</b>	<b>207.3</b>	<b>246.7</b>	<b>196.9</b>	<b>226.6</b>	<b>338.1</b>	<b>595.9</b>	<b>721.3</b>	<b>480.1</b>	<b>162.3</b>	<b>130.7</b>	<b>3306.1</b>

Source: Auckland Council Long Term Plan. Excludes costs which cannot be allocated to an asset class. Further detail is included in Appendix 3

### 8.3. The Accelerated Transport Programme – maintenance and operations

Approved road maintenance budgets show no significant increase over the coming 10 years as shown in Figure 57 and Table 33. Public transport maintenance and asset-based operations budgets increase by an average of 1.9% each year, while over the same period patronage targets increase by an average of 3.4% per year.

**Figure 57 : Approved ATP maintenance and asset-based operations funding 2015/2016 to 2024/2025**



**Table 33: Approved ATP maintenance and asset-based operations funding 2016-2025**

(\$millions)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016-2025 total
Pavement	35.1	35.5	35.9	36.2	36.4	36.5	36.6	36.6	36.6	36.7	362.1
Stormwater	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	90.0
Footpaths and Cycleways	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	25.6
Bridges and Major Culverts	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	17.5
Traffic Systems	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	230.3
Street Lighting	17.8	17.5	17.1	16.8	16.7	16.6	16.6	16.6	16.6	16.6	168.9
Corridor Structures and Fixtures	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
Vegetation	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	131.5
Parking	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	118.1
<b>Road maintenance total</b>	<b>114.4</b>	<b>114.4</b>	<b>114.4</b>	<b>114.4</b>	<b>114.5</b>	<b>114.5</b>	<b>114.5</b>	<b>114.6</b>	<b>114.6</b>	<b>114.7</b>	<b>1145.0</b>
Rail Stations and Depots/ Stabling	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	146.8
Rolling Stock	21.4	18.6	20.3	20.7	21.0	21.3	21.7	22.1	22.4	22.8	212.4
Wharves	5.7	6.7	6.9	7.0	7.2	7.3	7.5	7.6	7.8	7.9	71.5
AT HOP	18.2	18.6	19.2	19.6	20.3	20.6	21.3	21.5	22.3	22.5	204.2
Bus Network	5.0	5.7	6.9	7.0	7.7	7.8	7.8	7.9	8.2	8.8	72.7
<b>PT asset maintenance total</b>	<b>65.0</b>	<b>64.2</b>	<b>68.0</b>	<b>69.0</b>	<b>70.8</b>	<b>71.7</b>	<b>73.0</b>	<b>73.7</b>	<b>75.4</b>	<b>76.7</b>	<b>707.7</b>
<b>Total maintenance and asset-based operations</b>	<b>179.4</b>	<b>178.6</b>	<b>182.5</b>	<b>183.5</b>	<b>185.3</b>	<b>186.2</b>	<b>187.5</b>	<b>188.3</b>	<b>190.1</b>	<b>191.4</b>	<b>1852.7</b>

**Source: Auckland Council Long Term Plan. Excludes costs which cannot be allocated to an asset class. Further detail is included in Appendix 3**

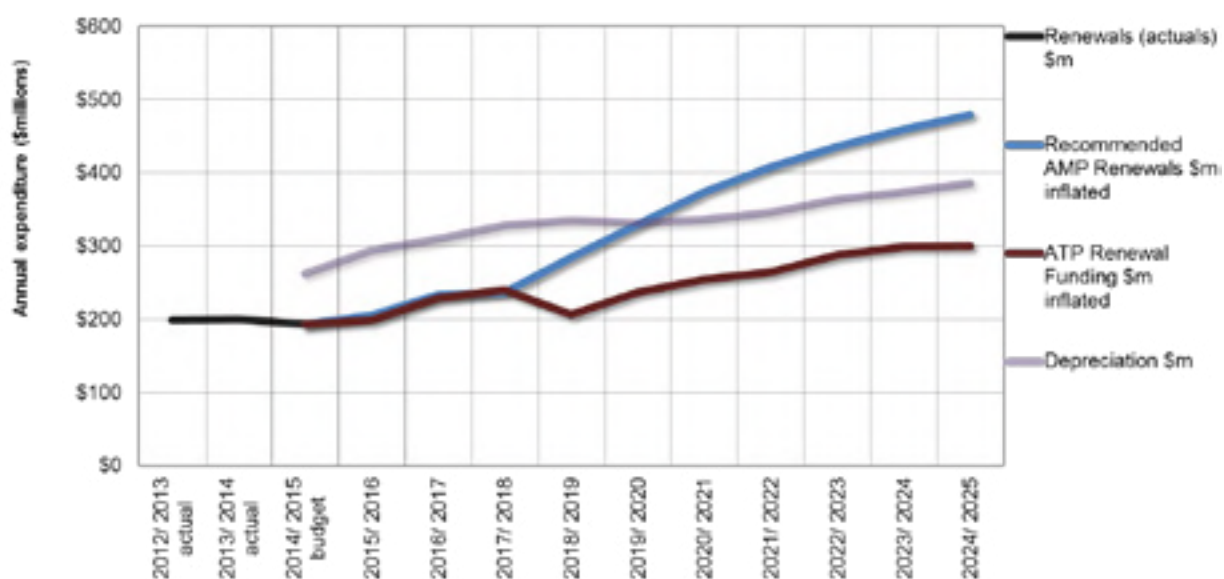
Over the coming ten years a widening gap will arise between maintenance budgets and asset needs, for the following reasons.

- inflation
- consequential opex from asset growth, estimated at 1.5% (compounding) each year, \$98 million in total over the ten years
- additional costs associated with patronage growth (for public transport) and growth in vehicle, freight, cycle and pedestrian trips (for roads).
- The shortfall in renewals funding creating increased demand for maintenance. For example, if roads are resealed less often, then more pothole maintenance will be required as the pavement deteriorates.

## 8.4. The Accelerated Transport Programme – Renewals

The Accelerated Transport Programme provides for core renewals at close to recommended levels for the first three years (2015/2016 to 2017/2018). From 2019, funding for renewals is set at a level significantly lower than AT's recommendation, with a large and widening gap between renewals and depreciation, as shown in Figure 58.

Figure 58: Recommended AMP renewals funding and approved ATP renewals funding, in context of depreciation



Source: AT analysis of Auckland Council Long-Term Plan 2015–2025 (2) Further detail is included in Appendix 3

The distribution of the approved LTP core renewals funding of 2.511 billion over 10 years is shown in Table 34.

Table 34: Details of approved LTP renewals programme 2016-25 (\$m)

(\$millions, inflated)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Pavement	123.8	143.1	150.2	127.4	145.8	157.4	165.7	180.4	187.7	188.7	1,570.2
Stormwater	12.6	14.5	15.3	13.1	15.1	16.2	16.8	18.3	19.0	19.1	160.1
Footpaths and Cycleways	14.6	16.9	17.7	15.2	17.5	18.8	19.5	21.2	22.1	22.2	185.5
Bridges and Major Culverts	15.2	17.5	18.4	13.9	15.4	17.5	20.4	22.2	23.1	23.2	186.8
Walls	4.7	5.4	5.7	4.9	5.6	6.0	6.3	6.8	7.1	7.1	59.7
Traffic Systems	7.4	8.7	9.2	7.5	9.0	9.6	10.0	11.1	11.5	11.6	95.6
Street Lighting	9.1	10.4	11.0	9.4	10.8	11.6	12.1	13.1	13.7	13.7	114.9
Corridor Structures and Fixtures	2.5	2.8	3.0	2.6	3.0	3.2	3.3	3.6	3.7	3.7	31.4
Parking	2.2	2.3	2.4	2.5	2.5	2.5	2.7	2.8	2.9	2.9	25.7
<b>Road renewals total</b>	<b>192.2</b>	<b>221.7</b>	<b>232.9</b>	<b>196.4</b>	<b>224.6</b>	<b>242.8</b>	<b>256.9</b>	<b>279.6</b>	<b>290.8</b>	<b>292.2</b>	<b>2,430.0</b>
Rail Stations and Depots/ Stabling	2.2	2.5	2.6	2.3	2.6	2.8	2.9	3.1	3.3	3.3	27.5
Rolling Stock	0.5	0.5	0.5	4.1	5.6	4.4	0.0	0.0	0.0	0.0	15.7
Wharves	2.3	2.4	2.5	2.1	2.5	2.6	2.9	3.1	3.2	2.9	26.5
Bus Network	0.9	1.1	1.1	1.0	1.1	1.2	1.2	1.3	1.4	1.4	11.6
<b>PT renewals total</b>	<b>5.9</b>	<b>6.5</b>	<b>6.7</b>	<b>9.5</b>	<b>11.9</b>	<b>10.9</b>	<b>7.0</b>	<b>7.6</b>	<b>7.8</b>	<b>7.6</b>	<b>81.4</b>
<b>Total renewals</b>	<b>198.0</b>	<b>228.2</b>	<b>239.6</b>	<b>205.8</b>	<b>236.5</b>	<b>253.7</b>	<b>263.9</b>	<b>287.2</b>	<b>298.6</b>	<b>299.8</b>	<b>2,511.4</b>

Source: AT analysis of Auckland Council Long-Term Plan 2015–2025 (2) Further detail is included in Appendix 3

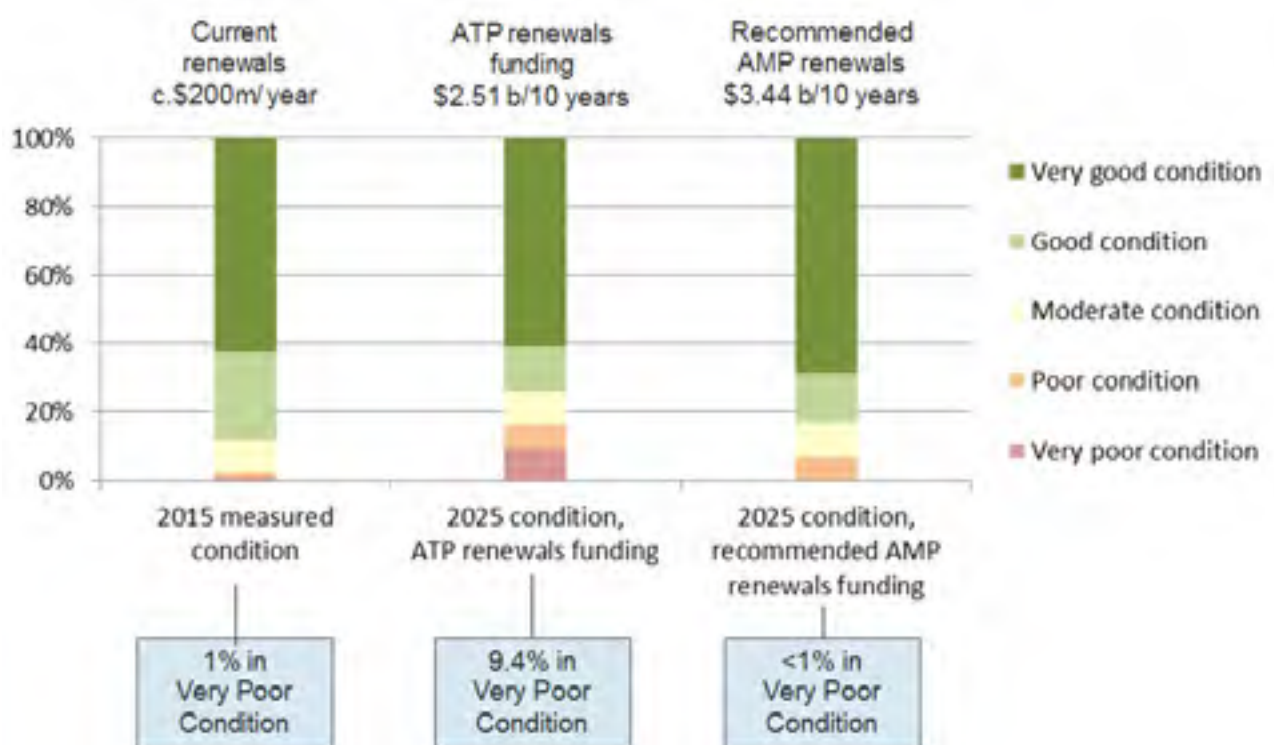
## 8.5. Impacts of Accelerated Transport Programme renewals funding

The gap between the recommended and funded renewals programme remains small until 2017/2018, but then widens to 28 per cent in 2018/2019 and 37 per cent by 2025.

These figures actually under-represent the impact that reduced renewals funding will have, because the effects are cumulative. Under the proposed renewals budget, a proportion of required renewals each year from 2019 would not be funded. As a result, each year, some assets are forecast to fall into very poor condition (or poor condition for critical assets). These assets would then become part of the backlog, requiring renewals work in the following year, and further constraining the funding available to renew other assets that fall into unacceptable condition during that year.

This causes a compounding effect, which means that by the end of the decade (2025), 9.4 per cent of AT's assets will be in very poor condition, as shown in Figure 58.

**Figure 59: Summary of condition impacts: recommended AMP renewals funding and approved ATP renewals funding**

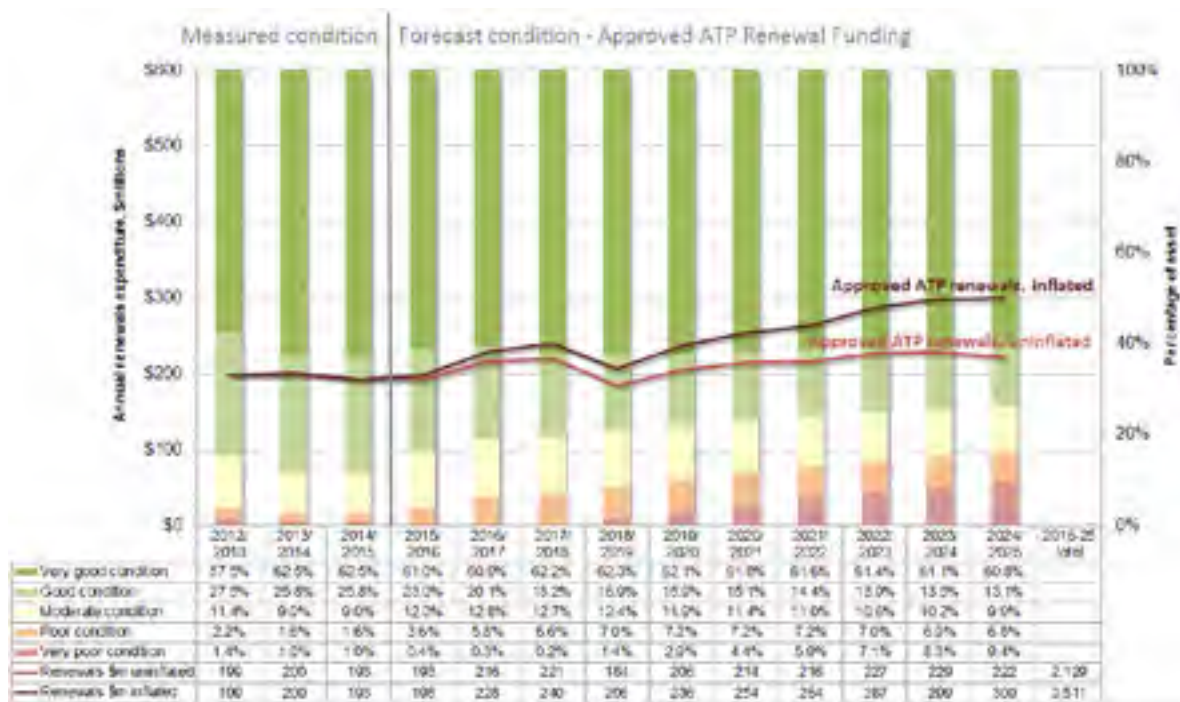


Source: AT renewals optimisation model (4)

Figure 60 shows further details of the impact that the approved renewals programme will have on asset condition over time. Funding at the levels approved in the long-term plan will, within 10 years, lead to a steady reduction in the proportion of very good and good condition assets, and an increase in the number of very poor condition assets (from 1 per cent in 2016 to 9.4 per cent in 2025) across the network.

In Auckland's large and complex transport network there will always be some assets in very poor condition, and some backlog as it takes time for asset renewals to be scheduled and delivered. However less spending on renewals means assets will degrade over time, and the proportion of assets in very poor condition will increase and will noticeably affect levels of service and customer satisfaction.

Figure 60: 10-year renewals cost vs condition, approved ATP renewals programme

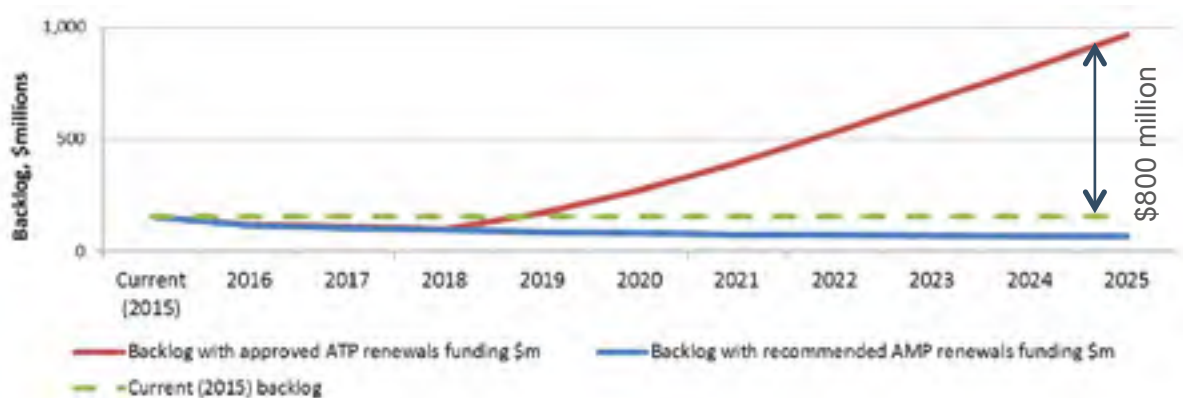


Source: AT renewals optimisation model (4)

The short-term savings from the proposed constrained renewals programme will lead to long-term increases in the overall level of backlog in the network, i.e. the proportion of assets that are in worse condition than their agreed renewal intervention point.

The backlog liability arising from the constrained funding is shown in Figure 61. Backlog liability will increase by over \$800 million over the coming 10 years as renewals budgets fail to keep pace with asset deterioration. More backlog liability is created than the money saved by the constrained budgets, because provision is not made for renewals to occur at the optimal time.

Figure 61: Overview of backlog liability



Source: AT renewals optimisation model (4)

## 8.6. Addressing the funding gap from 2018

For the first three years of the *Long-Term Plan 2015–2025*, funding for renewals has been approved at levels close to the recommendations in this AMP. Approved renewals funding will enable network risk to be managed according to the policies set out in Chapter 5.

From year 4 of this 10-year plan, the level of funding approved in the long-term plan has significant risk implications and is not sustainable in the long -term. In the next long-term planning cycle, in 2018, AT will need to address these significant issues in order to manage these risks and adverse effects.

AT will use the risk management and mitigation tasks shown in Table 35 to build the evidence base for Auckland Council to reassess renewals funding levels in the 2018 AMP.

**Table 35: Risk management and mitigation tasks relevant to Asset Management**

Issue/risk	Management/mitigation tasks
<ul style="list-style-type: none"> <li>Increased requirement for asset management planning</li> </ul>	<p>Fully integrate the One Network Road Classification into AT planning, management, financial and delivery processes</p> <p>Additional monitoring, risk management and reporting activities to manage higher levels of risk</p> <p>Annual updates of the AMP including key indicators such as customer satisfaction, health and safety issues, network condition and performance.</p>
<ul style="list-style-type: none"> <li>Approved maintenance and asset-based operations funding does not provide for the impacts of asset growth</li> <li>Approved renewals funding from 2018/2019 forward does not meet recommended renewals needs</li> </ul>	<p>Reprioritise work from lower to higher risk impact assets eg. defer renewals of lower volume local roads in order to prioritise regional and arterial roads</p> <p>Reduce maintenance standards for some assets</p> <p>Advise on of the consequences resulting from the level of funding proposed in the LTP, and the impact of the shortfall relative to the needs identified in the AMP</p> <p>Work closely with Auckland Council and the Transport Agency to ensure that AT’s funding needs are clear, and that tradeoffs between cost, risk and level of service are transparent.</p>
<ul style="list-style-type: none"> <li>Levels of service for some assets cannot be sustained at current levels of funding</li> </ul>	<p>Re-assess investment needs and levels of service. Consult on any proposed significant changes.</p> <p>Revisit the agreed levels of service and funding envelope consequences in the 2018-21 funding round.</p> <p>Close monitoring of asset condition, network risk and customer satisfaction trends.</p> <p>Forecasting of the links between funding and trends in customer complaints and asset integrity.</p>



# Appendices





# 1. Legislative requirements

AT's transport activities are governed by legislation, as summarised in Table 36.

**Table 36: Key legislation**

Act	Description
The Land Transport Management Act 2003 (and Land Transport Management Act Amendment Act 2008)	The purpose of this act is to contribute to the aim of achieving an affordable, integrated, safe, responsive and sustainable land transport system, an approach reflected in the <i>New Zealand Transport Strategy</i> .
The Local Government Act 1974 (retained sections)	This act enables the formation, management, stopping, closing and control of roads (including limited access roads). It provides for public safety.
Local Government Act 2002	The Local Government Act 2002 requires Auckland Council to formalise its asset management activities and to manage its assets in an effective manner. The AMP provides the strategies for AT to manage the transport assets under its care and ownership.
Local Government (Auckland Council) Act 2010	The Local Government (Auckland Council) Amendment Act 2010 provides for the establishment of Auckland Transport. The act sets out Auckland Transport's purpose, functions and governance rules.
The Resource Management Act 1991	This act establishes the planning framework for activities that affect the environment. It covers the process by which land is designated and the provision of resource consents.
The Civil Defence Emergency Management Act 2002	This act requires lifeline utilities to function at their fullest possible extent during and after an emergency event. AT is part of the Auckland Lifelines Group which enhances the connectivity of lifeline utility organisations across agency and sector boundaries in order to improve infrastructure resilience
The Health and Safety in Employment Act 1992	This act requires safe work places to be provided for all activities undertaken by local authority staff, consultants and contractors. Compliance audits and the maintenance of an audit trail are also required.
Vehicle Mass and Dimensions Amendment Act 2010	This act came into effect on 1 May 2010 and allows high-productivity vehicles (up to 53 tonnes gross mass instead of the current limit of 44 tonnes) to operate under specific over-dimension and overweight permits on specific parts of the transport network. This increases risk to roads and bridges on these routes, and could lead to shorter pavement lives and hence increased renewals, as well the need to strengthen certain bridges.
The Public Works Act 1981	This act enables compulsory land purchases – it defines the procedural and information requirements.
Utilities Access Act 2010	This act requires utility operators and corridor managers to comply with a national code of practice that regulates access to transport corridors.

## 2. Notes, assumptions and limitations of financial information

The following notes provide context for the financial information in this AMP.

- All financial information in Chapter 7: Asset Investment Requirements is on an 'asset needs' basis and aligns with the *Auckland Plan* budget published in the *Auckland Draft Regional Land Transport Plan 2015–2025* (24). This is a recommended budget, which takes into account value for money, including minimising whole-of-life costs and achieving efficiency targets. Consideration of affordability and timing of expenditure is a separate step.
- Financial information in Chapter 8: Funding and Impacts aligns with the decisions in Auckland Council's *Long-Term Plan 2015–2025* (2).
- All financial information in this AMP is sourced from AT's SAP financial management system, which is also used for the transport financial information in the Regional Land Transport Plan (5) and in Auckland Council's Long Term Plan (2).
- Both inflated and uninflated budgets are reported, as specified in the text.
- All financial information in the AMP excludes corporate and IT support overheads, and corporate and IT renewals. Staff time is included as a cost where it is allocated in SAP to specific outputs, but 'cost centre' budgets are not included.
- Harbour Master was a late transfer to AT and given the value has not been included in the AMP
- The classification of expenditure as 'new capital', 'renewals' and 'maintenance/operations' is as per AT's accounting policies, as set out in its *Annual Report 2013/14* (25) and aligns with the SAP financial management system.
- The classification of maintenance/operations expenditure into maintenance, operations (asset based) and operations (non asset based) is specific to AT Asset Management and details of this classification are set out in Table 28.
- Valuation information is as at 30 June 2014 and aligns with the asset management inputs to the *Annual Report 2013/14* (25). Valuations exclude land, corporate assets and intangible assets, and may not align to the values published in the *Annual Report 2013/14*.
  - Road asset values are from AT infrastructure valuation as at 30 June 2014, with the exception of parking buildings, the value of which is taken from the AT asset register, as at 30 June 2014.
  - PT asset values are from the June 2014 Fair Value Assessment of AT Specialised Buildings & Infrastructure, except as listed below:
    - Valuations for trains were taken from the AT asset register. This value excludes any residual value of rolling stock that is currently surplus to AT's requirements, and any depreciation to date on electric trains.
    - AT's bus assets, including bus shelters and busway stations, were valued as part of the 2014 road network valuation, and are included as public transport assets in this AMP.
    - Values for AT's integrated ticketing system (AT HOP) assets were taken from the AT asset register, as at 30 June 2014.
- Renewal unit rates have been assessed from the current maintenance contracts.
- It is assumed that the capacity exists in the contracting industry, and in AT's management of consents, land purchase, legalisation, design, procurement and contract administration, to implement the capital new works and renewals projects and programmes that are forecasted.
- The degree of accuracy and completeness of the asset data information is as assessed in the 14 asset class management plans (26).

## 3. Detailed financial tables

### 3.1. Recommended AMP renewals programme

#### Recommended AMP renewals programme by ACMP, inflated

(\$millions, inflated)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Pavement	125.2	133.7	116.3	152.7	189.5	222.2	247.0	266.5	282.0	294.8	2030.0
Stormwater	8.7	15.6	22.8	29.4	35.1	39.8	43.8	47.2	50.2	52.7	345.3
Footpaths and Cycleways	21.0	7.8	10.5	13.2	16.0	18.9	21.7	24.7	27.6	30.5	192.0
Bridges and Major Culverts	9.7	16.7	18.4	20.0	21.3	22.5	23.5	24.5	25.3	26.0	208.1
Walls	13.1	4.2	5.4	6.5	7.5	8.3	9.0	9.7	10.2	10.7	84.6
Traffic Systems	8.2	14.8	12.5	18.5	16.9	16.6	17.4	18.1	18.4	19.0	160.4
Street Lighting	6.7	26.6	25.6	17.1	15.7	17.5	16.9	16.4	15.8	15.5	173.7
Corridor Structures and Fixtures	3.1	1.9	6.1	8.7	9.5	9.2	8.4	7.6	6.9	6.6	68.1
Parking	2.5	2.0	3.2	3.7	4.2	5.1	5.1	5.5	5.8	6.0	43.1
<b>Road renewals needs total</b>	<b>198.2</b>	<b>223.3</b>	<b>220.9</b>	<b>269.9</b>	<b>315.7</b>	<b>360.0</b>	<b>393.0</b>	<b>420.2</b>	<b>442.2</b>	<b>461.8</b>	<b>3305.3</b>
Rail Stations and Depots/ Stabling	2.1	1.9	7.4	6.8	7.2	8.1	9.3	10.4	11.3	12.1	76.6
Wharves	4.1	4.5	4.3	4.4	3.2	3.1	3.0	2.9	2.8	2.7	35.0
Bus Network	0.9	2.8	3.2	3.0	2.6	2.4	2.3	2.3	2.5	2.6	24.6
<b>PT asset renewals needs total</b>	<b>7.0</b>	<b>9.2</b>	<b>15.0</b>	<b>14.2</b>	<b>13.1</b>	<b>13.6</b>	<b>14.6</b>	<b>15.7</b>	<b>16.6</b>	<b>17.4</b>	<b>136.2</b>
<b>Total renewals</b>	<b>205.2</b>	<b>232.4</b>	<b>235.9</b>	<b>284.1</b>	<b>328.8</b>	<b>373.7</b>	<b>407.6</b>	<b>435.9</b>	<b>458.8</b>	<b>479.2</b>	<b>3441.5</b>

#### Recommended AMP renewals programme by ACMP, uninflated

(\$millions, uninflated)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Pavement	122.0	126.9	107.4	137.0	165.1	187.8	202.2	211.0	215.9	218.3	1693.6
Stormwater	8.5	14.8	21.1	26.4	30.5	33.6	35.8	37.4	38.4	39.1	285.6
Footpaths and Cycleways	20.5	7.4	9.7	11.9	14.0	15.9	17.8	19.5	21.1	22.6	160.4
Bridges and Major Culverts	9.5	15.9	17.0	17.9	18.6	19.0	19.3	19.4	19.4	19.3	175.2
Walls	12.7	3.9	5.0	5.8	6.5	7.0	7.4	7.7	7.8	7.9	71.9
Traffic Systems	8.0	14.0	11.6	16.6	14.7	14.0	14.3	14.4	14.1	14.1	135.7
Street Lighting	6.5	25.3	23.6	15.3	13.7	14.8	13.8	13.0	12.1	11.5	149.6
Corridor Structures and Fixtures	3.0	1.8	5.6	7.8	8.3	7.8	6.9	6.0	5.3	4.9	57.4
Parking	2.5	1.9	3.0	3.3	3.7	4.3	4.2	4.4	4.4	4.4	36.0
<b>Road renewals needs total</b>	<b>193.2</b>	<b>211.9</b>	<b>204.0</b>	<b>242.1</b>	<b>275.0</b>	<b>304.2</b>	<b>321.7</b>	<b>332.7</b>	<b>338.6</b>	<b>342.0</b>	<b>2765.4</b>
Rail Stations and Depots/ Stabling	2.0	1.8	6.9	6.1	6.2	6.9	7.6	8.3	8.7	8.9	63.4
Wharves	4.0	4.2	4.0	4.0	2.8	2.7	2.5	2.3	2.1	2.0	30.5
Bus Network	0.8	2.7	3.0	2.7	2.3	2.0	1.9	1.8	1.9	1.9	21.0
<b>PT asset renewals needs total</b>	<b>6.8</b>	<b>8.7</b>	<b>13.8</b>	<b>12.8</b>	<b>11.4</b>	<b>11.5</b>	<b>12.0</b>	<b>12.4</b>	<b>12.7</b>	<b>12.9</b>	<b>114.9</b>
<b>Total renewals</b>	<b>200.0</b>	<b>220.6</b>	<b>217.8</b>	<b>254.9</b>	<b>286.4</b>	<b>315.7</b>	<b>333.7</b>	<b>345.1</b>	<b>351.3</b>	<b>354.8</b>	<b>2880.2</b>

## Recommended AMP renewals programme detail, uninflated

		(\$millions, uninflated)												2016-2025 total
		2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025			
Pavement	Pavement base	34.8	39.4	61.1	83.5	103.3	119.2	130.8	138.5	142.8	144.4		997.9	
	Pavement surface	87.2	87.5	46.2	53.5	61.7	68.6	71.4	72.5	73.1	73.9		695.7	
Stormwater	Catchpits	4.7	9.4	13.3	15.8	17.0	17.4	17.2	16.5	15.7	14.7		141.8	
	Drainage pipes	1.9	2.0	2.3	2.8	3.3	3.7	4.1	4.4	4.6	4.8		33.7	
	Kerb and channel	1.9	3.4	5.4	7.8	10.2	12.5	14.6	16.5	18.1	19.5		110.0	
Footpaths and Cycleways	Footpaths	20.0	6.8	9.0	11.1	13.1	14.9	16.7	18.3	19.8	21.2		150.9	
	Cycleways	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4		9.5	
Bridges and Major Culverts	Bridges	9.5	15.9	17.0	17.9	18.6	19.0	19.3	19.4	19.4	19.3		175.2	
Walls	Retaining walls	6.0	2.3	3.1	3.7	4.3	4.7	5.0	5.3	5.5	5.6		45.5	
	Sea walls	6.7	1.7	1.9	2.1	2.2	2.3	2.4	2.4	2.4	2.4		26.4	
Traffic Systems	Signs	0.5	1.8	4.0	5.5	6.1	6.2	5.9	5.6	5.4	5.3		46.4	
	Traffic Systems	7.5	12.2	7.5	11.1	8.6	7.8	8.3	8.7	8.7	8.8		89.3	
Street Lighting	Street Lighting	6.5	25.3	23.6	15.3	13.7	14.8	13.8	13.0	12.1	11.5		149.6	
Corridor Structures and Fixtures	Corridor fixtures	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9		14.5	
	Corridor structures	2.0	0.7	4.4	6.5	6.9	6.3	5.3	4.3	3.5	3.0		42.9	
Parking	Off-street parking Parking buildings and equipment	0.4	0.4	0.8	1.1	1.3	1.5	1.6	1.7	1.7	1.7		12.3	
		2.1	1.5	2.2	2.2	2.3	2.8	2.6	2.6	2.7	2.7		23.7	
<b>Road renewals needs total</b>		<b>193.2</b>	<b>211.9</b>	<b>204.0</b>	<b>242.1</b>	<b>275.0</b>	<b>304.2</b>	<b>321.7</b>	<b>332.7</b>	<b>338.6</b>	<b>342.0</b>		<b>2765.4</b>	
Rail Stations and Depots/ Stabling	Rail stations	2.0	1.8	6.9	6.1	6.2	6.9	7.6	8.3	8.7	8.9		63.4	
Wharves	Wharves	4.0	4.2	4.0	4.0	2.8	2.7	2.5	2.3	2.1	2.0		30.5	
Bus Network	Bus shelters	0.8	2.6	2.9	2.5	2.0	1.7	1.5	1.4	1.3	1.4		18.1	
	Busway stations	0.0	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.6		3.0	
<b>PT asset renewals needs total</b>		<b>6.8</b>	<b>8.7</b>	<b>13.8</b>	<b>12.8</b>	<b>11.4</b>	<b>11.5</b>	<b>12.0</b>	<b>12.4</b>	<b>12.7</b>	<b>12.9</b>		<b>114.9</b>	
<b>Total renewals needs</b>		<b>200.0</b>	<b>220.6</b>	<b>217.8</b>	<b>254.9</b>	<b>286.4</b>	<b>315.7</b>	<b>333.7</b>	<b>345.1</b>	<b>351.3</b>	<b>354.8</b>		<b>2880.2</b>	

## 3.2. Approved ATP renewals programme

### Approved ATP asset renewals programme by ACMP, inflated

(\$millions, inflated)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Pavement	123.8	143.1	150.2	127.4	145.8	157.4	165.7	180.4	187.7	188.7	1,570.2
Stormwater	12.6	14.5	15.3	13.1	15.1	16.2	16.8	18.3	19.0	19.1	160.1
Footpaths and Cycleways	14.6	16.9	17.7	15.2	17.5	18.8	19.5	21.2	22.1	22.2	185.5
Bridges and Major Culverts	15.2	17.5	18.4	13.9	15.4	17.5	20.4	22.2	23.1	23.2	186.8
Walls	4.7	5.4	5.7	4.9	5.6	6.0	6.3	6.8	7.1	7.1	59.7
Traffic Systems	7.4	8.7	9.2	7.5	9.0	9.6	10.0	11.1	11.5	11.6	95.6
Street Lighting	9.1	10.4	11.0	9.4	10.8	11.6	12.1	13.1	13.7	13.7	114.9
Corridor Structures and Fixtures	2.5	2.8	3.0	2.6	3.0	3.2	3.3	3.6	3.7	3.7	31.4
Parking	2.2	2.3	2.4	2.5	2.5	2.5	2.7	2.8	2.9	2.9	25.7
<b>Road renewals total</b>	<b>192.2</b>	<b>221.7</b>	<b>232.9</b>	<b>196.4</b>	<b>224.6</b>	<b>242.8</b>	<b>256.9</b>	<b>279.6</b>	<b>290.8</b>	<b>292.2</b>	<b>2,430.0</b>
Rail Stations and Depots/ Stabling	2.2	2.5	2.6	2.3	2.6	2.8	2.9	3.1	3.3	3.3	27.5
Rolling Stock	0.5	0.5	0.5	4.1	5.6	4.4	0.0	0.0	0.0	0.0	15.7
Wharves	2.3	2.4	2.5	2.1	2.5	2.6	2.9	3.1	3.2	2.9	26.5
Bus Network	0.9	1.1	1.1	1.0	1.1	1.2	1.2	1.3	1.4	1.4	11.6
<b>PT renewals total</b>	<b>5.9</b>	<b>6.5</b>	<b>6.7</b>	<b>9.5</b>	<b>11.9</b>	<b>10.9</b>	<b>7.0</b>	<b>7.6</b>	<b>7.8</b>	<b>7.6</b>	<b>81.4</b>
<b>Total renewals</b>	<b>198.0</b>	<b>228.2</b>	<b>239.6</b>	<b>205.8</b>	<b>236.5</b>	<b>253.7</b>	<b>263.9</b>	<b>287.2</b>	<b>298.6</b>	<b>299.8</b>	<b>2,511.4</b>

### Approved ATP asset renewals programme by ACMP, uninflated

(\$millions, uninflated)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Pavement	120.7	135.8	138.7	114.3	127.0	133.0	135.7	142.8	143.7	139.7	1,331.4
Stormwater	12.3	13.8	14.1	11.8	13.1	13.7	13.8	14.5	14.6	14.2	135.8
Footpaths and Cycleways	14.3	16.0	16.3	13.6	15.2	15.8	16.0	16.8	16.9	16.4	157.3
Bridges and Major Culverts	14.8	16.6	17.0	12.5	13.4	14.8	16.7	17.6	17.7	17.2	158.3
Walls	4.6	5.1	5.3	4.4	4.9	5.1	5.1	5.4	5.4	5.3	50.6
Traffic Systems	7.2	8.2	8.5	6.7	7.8	8.2	8.2	8.8	8.8	8.6	81.0
Street Lighting	8.8	9.9	10.1	8.4	9.4	9.8	9.9	10.4	10.5	10.2	97.5
Corridor Structures and Fixtures	2.4	2.7	2.8	2.3	2.6	2.7	2.7	2.8	2.9	2.8	26.6
Parking	2.2	2.1	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	21.9
<b>Road renewals total</b>	<b>187.3</b>	<b>210.4</b>	<b>215.0</b>	<b>176.2</b>	<b>195.6</b>	<b>205.2</b>	<b>210.3</b>	<b>221.3</b>	<b>222.6</b>	<b>216.4</b>	<b>2,060.3</b>
Rail Stations and Depots/ Stabling	2.1	2.4	2.4	2.0	2.3	2.3	2.4	2.5	2.5	2.4	23.3
Rolling Stock	0.5	0.5	0.5	3.7	4.9	3.7	0.0	0.0	0.0	0.0	13.8
Wharves	2.2	2.3	2.3	1.9	2.2	2.2	2.4	2.5	2.4	2.2	22.6
Bus Network	0.9	1.0	1.0	0.9	1.0	1.0	1.0	1.1	1.1	1.0	9.9
<b>PT renewals total</b>	<b>5.7</b>	<b>6.2</b>	<b>6.2</b>	<b>8.5</b>	<b>10.3</b>	<b>9.2</b>	<b>5.8</b>	<b>6.0</b>	<b>6.0</b>	<b>5.6</b>	<b>69.6</b>
<b>Total renewals</b>	<b>193.0</b>	<b>216.6</b>	<b>221.2</b>	<b>184.7</b>	<b>206.0</b>	<b>214.4</b>	<b>216.0</b>	<b>227.4</b>	<b>228.6</b>	<b>222.0</b>	<b>2,129.9</b>

## Approved ATP asset renewals programme by asset class detail, uninflated

		2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2016-2025 total
		(\$millions, uninflated)										
Pavement	Pavement base	59.1	66.8	68.2	55.4	61.4	64.6	66.8	70.3	70.8	68.9	652.3
	Pavement surface	61.6	69.0	70.5	58.8	65.7	68.4	68.9	72.5	72.9	70.8	679.1
Stormwater	Catchpits	2.5	2.8	2.8	2.3	2.6	2.7	2.7	2.9	2.9	2.8	27.1
	Kerb and channel	9.9	11.1	11.3	9.4	10.5	10.9	11.0	11.6	11.7	11.3	108.7
Footpaths and Cycleways	Footpaths	14.1	15.9	16.2	13.5	15.1	15.7	15.8	16.7	16.7	16.3	156.0
	Cycleways	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.4
Bridges and Major Culverts	Bridges	14.8	16.6	17.0	12.5	13.4	14.8	16.7	17.6	17.7	17.2	158.3
Walls	Retaining walls	3.2	3.5	3.6	3.0	3.4	3.5	3.5	3.7	3.7	3.6	34.9
	Seawalls	1.4	1.6	1.6	1.4	1.5	1.6	1.6	1.7	1.7	1.6	15.7
Traffic Systems	Signs	0.4	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	4.7
	Traffic Systems	6.8	7.8	8.0	6.3	7.3	7.7	7.7	8.3	8.3	8.1	76.3
Street Lighting	Street Lighting	8.8	9.9	10.1	8.4	9.4	9.8	9.9	10.4	10.5	10.2	97.5
Corridor Structures and Fixtures	Corridor fixtures	1.8	2.0	2.0	1.7	1.9	1.9	2.0	2.1	2.1	2.0	19.3
	Corridor structures	0.7	0.7	0.8	0.6	0.7	0.7	0.7	0.8	0.8	0.8	7.3
Parking	Off-street parking	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.8
	Parking buildings	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	20.1
<b>Road renewals approved LTP funding total</b>		<b>187.3</b>	<b>210.4</b>	<b>215.0</b>	<b>176.2</b>	<b>195.6</b>	<b>205.2</b>	<b>210.3</b>	<b>221.3</b>	<b>222.6</b>	<b>216.4</b>	<b>2060.3</b>
Rail Stations and Depots/ Stabling	Rail stations	2.1	2.4	2.4	2.0	2.3	2.3	2.4	2.5	2.5	2.4	23.3
Rolling Stock	DMU	0.5	0.5	0.5	3.7	4.9	3.7	0.0	0.0	0.0	0.0	13.8
Wharves	Wharves	1.9	2.1	2.1	1.8	2.0	2.1	2.1	2.2	2.2	2.2	20.6
	Harbourmaster	0.4	0.2	0.1	0.1	0.2	0.1	0.3	0.3	0.2	0.0	1.9
Bus Network	Bus shelters	0.8	0.9	0.9	0.7	0.8	0.8	0.9	0.9	0.9	0.9	8.4
	Busway stations	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	1.4
<b>PT asset renewals approved LTP funding total</b>		<b>5.7</b>	<b>6.2</b>	<b>6.2</b>	<b>8.5</b>	<b>10.3</b>	<b>9.2</b>	<b>5.8</b>	<b>6.0</b>	<b>6.0</b>	<b>5.6</b>	<b>69.6</b>
<b>Total renewals approved LTP funding</b>		<b>193.0</b>	<b>216.6</b>	<b>221.2</b>	<b>184.7</b>	<b>206.0</b>	<b>214.4</b>	<b>216.0</b>	<b>227.4</b>	<b>228.6</b>	<b>222.0</b>	<b>2129.9</b>



## Approved ATP asset renewals programme by NZTA work category, inflated

NZTA Work Category	Asset Class	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016-2025 total
		(included below with sealed pavement rehab)										
211	Unsealed road metalling											
212	Sealed road resurfacing	63.2	72.8	76.4	65.6	75.4	80.9	84.1	91.6	95.2	95.6	800.7
213	Drainage renewals	12.6	14.5	15.3	13.1	15.1	16.2	16.8	18.3	19.0	19.1	160.1
214	Sealed road pavement rehab	60.7	70.3	73.9	61.8	70.5	76.5	81.6	88.8	92.4	93.1	769.4
215	Structures component replacements	15.2	17.5	18.4	13.9	15.4	17.5	20.4	22.2	23.1	23.2	186.8
	Bridges and Major Culverts											
	Corridor Structures and Fixtures	0.5	0.6	0.6	0.5	0.6	0.7	0.7	0.7	0.8	0.8	6.4
222	Traffic services renewals	9.1	10.4	11.0	9.4	10.8	11.6	12.1	13.1	13.7	13.7	114.9
	Traffic Systems	7.3	8.7	9.2	7.5	8.9	9.6	10.0	11.1	11.5	11.5	95.4
124	Cycleways	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	1.6
	Footpaths and Cycleways											
	<b>Subsidiisable Road Renewals Total</b>	<b>168.7</b>	<b>195.0</b>	<b>204.9</b>	<b>171.9</b>	<b>196.8</b>	<b>213.2</b>	<b>225.9</b>	<b>246.0</b>	<b>255.9</b>	<b>257.2</b>	<b>2135.5</b>
n/a	Footpaths	14.5	16.7	17.5	15.1	17.3	18.6	19.3	21.0	21.9	22.0	183.9
n/a	Parking	2.2	2.3	2.4	2.5	2.5	2.5	2.7	2.8	2.9	2.9	25.7
n/a	Corridor fixtures	2.0	2.3	2.4	2.0	2.3	2.5	2.6	2.9	3.0	3.0	24.9
n/a	Walls	4.7	5.4	5.7	4.9	5.6	6.0	6.3	6.8	7.1	7.1	59.7
n/a	Traffic systems	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.2
	<b>Non subsidiisable Road Renewals Total</b>	<b>23.4</b>	<b>26.7</b>	<b>28.0</b>	<b>24.5</b>	<b>27.8</b>	<b>29.7</b>	<b>31.0</b>	<b>33.5</b>	<b>34.9</b>	<b>35.0</b>	<b>294.4</b>
	<b>Road Renewals Total</b>	<b>192.2</b>	<b>221.7</b>	<b>232.9</b>	<b>196.4</b>	<b>224.6</b>	<b>242.8</b>	<b>256.9</b>	<b>279.6</b>	<b>290.8</b>	<b>292.2</b>	<b>2430.0</b>
514	PT facilities maintenance and operations	2.2	2.5	2.6	2.3	2.6	2.8	2.9	3.1	3.3	3.3	27.5
514	PT facilities maintenance and operations	1.9	2.2	2.3	2.0	2.3	2.5	2.6	2.8	2.9	2.9	24.3
514	PT facilities maintenance and operations	0.9	1.1	1.1	1.0	1.1	1.2	1.2	1.3	1.4	1.4	11.6
515	Rail passenger services	0.5	0.5	0.5	4.1	5.6	4.4	0.0	0.0	0.0	0.0	15.7
	Rolling Stock											
	<b>Subsidiisable Public Transport Renewals Total</b>	<b>5.5</b>	<b>6.3</b>	<b>6.6</b>	<b>9.3</b>	<b>11.6</b>	<b>10.8</b>	<b>6.7</b>	<b>7.3</b>	<b>7.5</b>	<b>7.6</b>	<b>79.2</b>
n/a	Harbourmaster	0.4	0.2	0.1	0.1	0.3	0.1	0.4	0.4	0.3	0.0	2.2
	<b>Wharves</b>											
	<b>Renewals Total</b>	<b>198.0</b>	<b>228.2</b>	<b>239.6</b>	<b>205.8</b>	<b>236.5</b>	<b>253.7</b>	<b>263.9</b>	<b>287.2</b>	<b>298.6</b>	<b>299.8</b>	<b>2511.4</b>

### 3.3. Approved ATP maintenance and asset-based operations

#### Approved ATP maintenance and asset-based operations

(\$millions)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016-2025 total
Pavement	35.1	35.5	35.9	36.2	36.4	36.5	36.6	36.6	36.6	36.7	362.1
Stormwater	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	90.0
Footpaths and Cycleways	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	25.6
Bridges and Major Culverts	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	17.5
Traffic Systems	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	230.3
Street Lighting	17.8	17.5	17.1	16.8	16.7	16.6	16.6	16.6	16.6	16.6	168.9
Corridor Structures and Fixtures	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
Vegetation	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	131.5
Parking	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	118.1
<b>Road maintenance total</b>	<b>114.4</b>	<b>114.4</b>	<b>114.4</b>	<b>114.4</b>	<b>114.5</b>	<b>114.5</b>	<b>114.5</b>	<b>114.6</b>	<b>114.6</b>	<b>114.7</b>	<b>1145.0</b>
Rail Stations and Depots/ Stabling	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	146.8
Rolling Stock	21.4	18.6	20.3	20.7	21.0	21.3	21.7	22.1	22.4	22.8	212.4
Wharves	5.7	6.7	6.9	7.0	7.2	7.3	7.5	7.6	7.8	7.9	71.5
AT HOP	18.2	18.6	19.2	19.6	20.3	20.6	21.3	21.5	22.3	22.5	204.2
Bus Network	5.0	5.7	6.9	7.0	7.7	7.8	7.8	7.9	8.2	8.8	72.7
<b>PT asset maintenance total</b>	<b>65.0</b>	<b>64.2</b>	<b>68.0</b>	<b>69.0</b>	<b>70.8</b>	<b>71.7</b>	<b>73.0</b>	<b>73.7</b>	<b>75.4</b>	<b>76.7</b>	<b>707.7</b>
<b>Total maintenance and asset-based operations</b>	<b>179.4</b>	<b>178.6</b>	<b>182.5</b>	<b>183.5</b>	<b>185.3</b>	<b>186.2</b>	<b>187.5</b>	<b>188.3</b>	<b>190.1</b>	<b>191.4</b>	<b>1852.7</b>

## Approved ATP maintenance and asset-based operations detail

ACMP	Expenditure category	Main activity	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016-2025 total
Pavement	Maintenance Operations (Asset based)	Pavement maintenance Network and asset management	31.3	31.6	32.1	32.3	32.5	32.7	32.7	32.7	32.8	32.8	323.4
		Routine drainage maintenance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	38.7
Stormwater Footpaths and Cycleways	Maintenance	Footpaths and cycleway maintenance	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	90.0
Bridges and Major Culverts	Maintenance	Bridge maintenance	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	17.5
Traffic Systems	Maintenance Operations (Asset based)	Traffic systems maintenance Operational traffic management	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	168.4
Street Lighting	Maintenance Operations (Asset based)	Maintenance of streetlights	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	41.5
Corridor Structures and Fixtures	Maintenance	Electricity costs for streetlights	13.7	13.4	13.0	12.7	12.6	12.4	12.4	12.4	12.4	12.4	127.4
Vegetation	Maintenance	Corridor structures and fixtures maintenance	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
Parking	Maintenance Operations (Asset based)	Parking buildings, offstreet parking	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	131.5
Roads and footpaths generally	Operations (Non asset based)	Pay & Display	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	92.7
	Operations (Non asset based)	Enforcement	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	25.4
	Operations (Non asset based)	All non-asset road activities	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	56.1
		<b>Road maintenance and asset-based operations total.</b>	<b>114.4</b>	<b>114.4</b>	<b>114.4</b>	<b>114.4</b>	<b>114.5</b>	<b>114.5</b>	<b>114.5</b>	<b>114.6</b>	<b>114.6</b>	<b>114.7</b>	<b>1145.0</b>

**Shaded (non-asset) items excluded from total**

ACMP	Expenditure category	Main activity	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Rail Stations and Depots/ Stabling	Maintenance	Rail station and depot maintenance	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	43.8
	Operations (Asset based)	Rail station operations	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	103.0
	Operations (Non asset based)	Rail services, concessionary fares, track access	100.2	104.2	106.3	109.9	112.6	122.4	134.2	133.0	143.8	170.7	1237.2
Rolling Stock	Maintenance	Maintenance of diesel and electric trains	14.6	11.3	12.2	12.4	12.5	12.7	12.9	13.1	13.3	13.5	128.6
	Operations (Asset based)	Fuel and other costs for diesel and electric trains	6.8	7.3	8.1	8.3	8.5	8.6	8.8	8.9	9.1	9.3	83.8
Wharves	Maintenance	Wharf facilities maintenance	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	13.0
	Operations (Asset based)	Ferry passenger facilities operations	4.4	5.4	5.6	5.7	5.9	6.0	6.2	6.3	6.5	6.6	58.5
	Operations (Non asset based)	Ferry services and concessionary fares	13.7	22.1	28.9	30.2	31.6	33.1	34.7	36.4	38.4	28.2	297.3
AT HOP	Operations (Asset based)	AT HOP operations	18.2	18.6	19.2	19.6	20.3	20.6	21.3	21.5	22.3	22.5	204.2
Bus Network	Maintenance	Bus stop maintenance	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	16.1
	Operations (Asset based)	Busway station operations	3.4	4.1	5.3	5.4	6.1	6.1	6.2	6.3	6.6	7.2	56.6
	Operations (Non asset based)	Bus services and concessionary fares	167.5	275.8	316.0	329.3	337.9	346.6	356.1	371.8	386.0	400.8	3287.7
PT not otherwise specified	Operations (Non asset based)	PT marketing and information, multimodal	18.2	18.7	18.6	17.4	17.4	17.5	17.6	17.6	17.7	17.8	178.5
		<b>Public transport maintenance and asset-based operations total.</b>	<b>65.0</b>	<b>64.2</b>	<b>68.0</b>	<b>69.0</b>	<b>70.8</b>	<b>71.7</b>	<b>73.0</b>	<b>73.7</b>	<b>75.4</b>	<b>76.7</b>	<b>707.7</b>
		<b>Shaded (non-asset) items, corporate costs and future CRL operating costs excluded</b>											

### 3.4. Accelerated Transport Programme capital projects

#### Accelerated Transport Programme capital projects by ACMP, inflated

(\$m, inflated)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Pavements	94.4	99.2	54.4	26.0	23.4	58.2	159.4	131.5	171.7	126.9	945.1
Footpaths and Cycleways	38.5	48.2	68.5	13.4	20.7	23.7	24.4	25.3	26.1	27.0	315.7
Bridges and Major Culverts	0.0	4.4	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
Walls	1.0	1.1	1.1	1.1	1.1	11.0	55.9	12.6	13.1	13.5	111.5
Traffic Systems	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	1.4
Street Lighting	4.8	5.0	5.1	5.2	5.4	7.5	7.7	8.0	8.2	8.5	65.3
Parking (includes park and ride)	7.3	9.2	5.8	2.5	4.2	3.8	3.9	4.1	4.2	4.3	49.3
<b>Road capital projects total</b>	<b>146.1</b>	<b>167.2</b>	<b>139.6</b>	<b>48.3</b>	<b>54.9</b>	<b>104.2</b>	<b>251.5</b>	<b>181.6</b>	<b>223.5</b>	<b>180.5</b>	<b>1497.3</b>
Rail Stations and Depots/ Stabling (inc City Rail Link)	114.4	158.0	125.1	217.0	314.4	470.1	508.3	380.6	77.8	7.2	2372.9
Rolling Stock	26.8	1.0	0.0	0.0	8.1	0.0	0.0	0.0	0.0	0.0	35.9
Wharves	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8	7.1
AT HOP	8.0	1.9	4.2	2.0	2.1	3.4	2.2	7.8	8.1	2.4	42.2
Bus Network	57.4	85.1	66.9	6.9	12.9	121.7	210.1	91.0	75.6	120.3	848.0
<b>PT capital projects total</b>	<b>207.3</b>	<b>246.7</b>	<b>196.9</b>	<b>226.6</b>	<b>338.1</b>	<b>595.9</b>	<b>721.3</b>	<b>480.1</b>	<b>162.3</b>	<b>130.7</b>	<b>3306.1</b>

Excludes corporate projects and Growth Infrastructure Fund

#### Accelerated Transport Programme capital projects by ACMP, uninflated

(\$m, uninflated)	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Pavements	92.0	94.2	50.2	23.3	20.4	49.1	130.5	104.1	131.5	94.0	789.3
Footpaths and Cycleways	37.5	45.7	63.2	12.0	18.0	20.0	20.0	20.0	20.0	20.0	276.5
Bridges and Major Culverts	0.0	4.2	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4
Walls	1.0	1.0	1.0	1.0	1.0	9.3	45.7	10.0	10.0	10.0	90.0
Traffic Systems	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.2
Street Lighting	4.7	4.7	4.7	4.7	4.7	6.3	6.3	6.3	6.3	6.3	55.0
Parking (includes park and ride)	7.1	8.8	5.4	2.2	3.6	3.2	3.2	3.2	3.2	3.2	43.1
<b>Road capital projects total</b>	<b>142.4</b>	<b>158.7</b>	<b>128.8</b>	<b>43.4</b>	<b>47.8</b>	<b>88.0</b>	<b>205.9</b>	<b>143.7</b>	<b>171.1</b>	<b>133.6</b>	<b>1263.5</b>
Rail Stations and Depots/ Stabling (inc City Rail Link)	111.5	150.0	115.5	194.6	273.8	397.2	416.1	301.3	59.6	5.3	2025.0
Rolling Stock	26.1	0.9	0.0	0.0	7.1	0.0	0.0	0.0	0.0	0.0	34.1
Wharves	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	6.0
AT HOP	7.8	1.8	3.9	1.8	1.8	2.9	1.8	6.2	6.2	1.8	36.0
Bus Network	56.0	80.8	61.8	6.2	11.2	102.8	172.0	72.0	57.9	89.1	709.8
<b>PT capital projects total</b>	<b>202.0</b>	<b>234.1</b>	<b>181.8</b>	<b>203.3</b>	<b>294.5</b>	<b>503.5</b>	<b>590.5</b>	<b>380.1</b>	<b>124.3</b>	<b>96.8</b>	<b>2811.0</b>

Excludes corporate projects and Growth Infrastructure Fund

## Accelerated Transport Programme capital projects detail, uninflated

	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016-2025 total
Pavements											
Dominion Road Transport Corridor						9.1	40.0				49.1
Long Bay Glenvar Ridge Rd	3.0	2.6	2.4								7.9
Penlink Toll Road	1.2										1.2
Warkworth Western Collector		3.2									3.2
DEFERRAL FROM 2014/15 - Te Atatu Rd : Corridor Improvements	6.7										6.7
Te Atatu Rd : Corridor Improvements	6.7	6.3									12.9
Lincoln Rd - Corridor Improvements	1.8	2.0				2.0	10.1	8.7	16.4	2.7	43.6
Albany Highway Upgrade	22.9	12.4	1.0								36.3
Mill Road Improvements (Northern)	3.0	3.0	3.0			3.0	12.6	21.5	29.3	29.3	104.7
NORSGA PC 13 Hobsonville Point		0.5									0.5
NORSGA PC14 Hobsonville Village							0.3	5.5	11.8		17.7
NORSGA PC 15 Massey North T/C	16.7	9.2	5.7	6.4							38.0
DEFERRAL FROM 2014/15 - NORSGA PC 15 Massey North T/C		4.1									4.1
Flat Bush Main Street Collector Link	1.4	5.3									6.7
Taharoto/Wairau - Stage 3						0.5	3.0				3.5
Brigham Creek Road Corridor Improvements						1.0	7.7	0.1			8.8
Newmarket Crossing	1.0	5.1									6.1
Wynyard Quarter - Integrated Rd Prog	5.4										5.4
East West Link	1.5	1.5	1.5			1.5	29.6	39.4	33.0		108.0
Tamaki Drive & Ngapipi Intersection		4.0									4.0
Seal Extensions and Local Transport Improvements	3.2	3.2	3.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	16.5
Improvements Complementing Development	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	8.0
Road Deferral New Capex (balancing item)	-17.3										-17.3
PC 32 Penihana North Tpt Mitigation				0.1	0.1	0.1	0.1				0.4
PC 127 Huapai North Transport Mitigation						2.1					2.1
Route Optimisation / Network Operating Plan Capital Programme	2.5	2.5	2.5			2.5	2.5	2.5	2.5	2.5	20.0
AMETI Mt Wellington Hwy							0.2	2.0	6.5	6.3	15.0
AMETI Morin to Merton Link								1.0	8.2	28.9	38.1
General AT Asset replacement	6.0	3.7	6.0	5.1	5.5	4.0	6.0	5.1	5.5	4.0	50.9
Safety programmes	21.9	21.4	20.8	10.0	13.0	13.0	13.0	13.0	13.0	15.0	154.1
Intelligent Transport Systems Infrastructure	3.5	3.5	3.5			3.5	3.5	3.5	3.5	3.5	28.0
Local road improvements complementing HNO initiatives						5.0					5.0

		(\$millions, uninflated)												2016-2025 total
		2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025			
Footpaths and Cycleways	Walking and Cycling Programme	24.0	34.0	53.2	2.0	8.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	171.2
	Waterview Shared Path	3.5	1.7											5.2
	Local Board Initiatives	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	100.0
Bridges and Major Culverts	Murphys Rd Bridge Improvements		4.2	4.2										8.4
Walls	Quay Street Seawall Seismic Upgrade						4.3	35.7						40.0
	Seismic strengthening (Exc renewals)	1.0	1.0	1.0	1.0	1.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	50.0
Traffic Systems	Red Light Camera New	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.2
Street Lighting	Street Lighting improvements- regionwide	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.0
	LED Streetlighting	4.4	4.4	4.4	4.4	4.4	6.0	6.0	6.0	6.0	6.0	6.0	6.0	52.0
Parking	Park n Ride Silverdale-Stage 2		5.7											5.7
	Park n Ride - Glen Eden	0.9												0.9
	Encroachment Resolution	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	12.2
	Park n Ride - Westgate		3.1											3.1
	Parking Programme	2.0	1.0	1.0	1.0	2.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	17.4
DEFERRAL FROM 2014/15 - Parking Programme		3.0												3.0
Park n Ride - Papakura			0.8											0.8
<b>Road capital projects total</b>		<b>142.4</b>	<b>158.7</b>	<b>128.8</b>	<b>43.4</b>	<b>47.8</b>	<b>88.0</b>	<b>205.9</b>	<b>143.7</b>	<b>171.1</b>	<b>133.6</b>	<b>133.6</b>	<b>1263.5</b>	
Rail Stations and Depots/ Stabling	Rail Crossing Separation (excluding Newmarket Crossing)						5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0
	PT Rail Station Minor Capex	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.0
	Newmarket Station (Newmarket Square improvements)	0.3	1.1											1.4
	City Rail Link	110.9	148.5	115.2	194.3	273.5	396.9	410.8	296.0	54.3				2000.6
Rolling Stock	EMU Procurement	26.1	0.9											27.1
	Diesel Refurbishment (Pukekohe shuttles)						7.1							7.1
Wharves	PT Wharves Capex - Minor	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	6.0
AT HOP	AIFS Expansion	1.8	1.8	3.9	1.8	1.8	2.9	1.8	6.2	6.2	6.2	6.2	6.2	30.0
	PT Integrated Fares	6.0												6.0
Bus Network	PT Bus Stop Improvements	3.6	2.2	2.1	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	17.2
	PT Information and Signage Improvements	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	12.0
	PT Te Atatu Motorway Bus Interchange	0.5	4.5											5.0

	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016-2025 total
(\$millions, uninflated)											
PT Bus Station Minor Capex	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
Manukau Bus Interchange (Lot 59)	9.3	8.4									17.7
DEFERRAL FROM 2014/15 - Manukau Bus Interchange (Lot 59)		2.5									2.5
Otahuhu Bus Interchange	14.0	3.6									17.6
PT Safety, Security and Amenity Improvements	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	18.0
Double decker network mitigation works	6.3	5.9	5.9						5.9		23.9
Bus Priority & Transit Lane Improvements	3.9	5.3	5.4	3.0	3.0	7.3	7.3	7.3	7.3	7.3	57.0
Akoranga Busway Station improvements						5.4					1.0
Northern Busway (Additional Stations)						5.4					5.4
Pukekohe Interchange	3.0	10.0									13.0
City Centre Bus Improvements	2.0	15.0	15.0			20.0	40.0				92.0
AMETI Busway (Panmure to Botany)	10.0	20.0	30.0		5.0	60.0	90.0	60.0	40.0	76.1	391.1
North Western Busway - early works and/or route protection						5.4	30.0				35.4
<b>Public Transport capital projects total</b>	<b>202.0</b>	<b>234.1</b>	<b>181.8</b>	<b>203.3</b>	<b>294.5</b>	<b>503.5</b>	<b>590.5</b>	<b>380.1</b>	<b>124.3</b>	<b>96.8</b>	<b>2811.0</b>
Corporate projects, projects not associated with an ACMP, and Growth Infrastructure Fund	1.1	1.1	1.1			1.1	1.1	1.1	1.1	1.1	8.8
AT Metro Business Technology											
Fleet Vehicle Replacement	2.3			0.9	0.5	2.0	2.0	0.9	0.5	2.0	9.1
Airport Rail planning and route protection	2.0	6.0	12.0			2.0	2.0	2.0	2.0	2.0	30.0
Private Plan Change 12 Drury South Transport Implementation	3.0	24.5	13.9	9.0	2.8	1.9	0.0	3.6	1.4	0.6	60.7
Digital Technology	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	65.7
Allowance for 2014/15 deferrals (currently unspecified)	20.0										20.0
Growth Infrastructure Fund	34.1	34.1	34.0	33.9	33.9	33.9	33.8	33.8	33.8	33.8	339.1
Core renewals	193.0	216.4	221.0	184.4	205.8	214.3	215.9	227.3	228.5	221.9	2128.4



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## 4. Asset class management plan summaries

### Road network

- 1.1. [Pavement](#) (PDF 236KB)
- 1.2. [Stormwater](#) (PDF 264KB)
- 1.3. [Footpaths and cycleways](#) (PDF 244KB)
- 1.4. [Bridges and major culverts](#) (PDF 228KB)
- 1.5. [Walls \(seawalls, noise walls and retaining walls\)](#) (PDF 336KB)
- 1.6. [Parking](#) (PDF 156KB)
- 1.7. [Traffic systems \(signals, signs and markings\)](#) (PDF 244KB)
- 1.8. [Street lighting](#) (PDF 236KB)
- 1.9. [Corridor structures and fixtures](#) (PDF 252KB)

### Public transport network

- 1.10. [Rail stations and depots/ stabling](#) (PDF 224KB)
- 1.11. [Rolling stock \(trains\)](#) (PDF 208KB)
- 1.12. [Wharves](#) (PDF 320KB)
- 1.13. [AT HOP](#) (PDF 212KB)
- 1.14. [Bus network](#) (PDF 308KB)

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