

Asset Management Plan

Strategic Summary

2015 – 2018



Asset Management Plan Strategic Summary 2015 - 2018

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Asset Management Plan Strategic Summary 2015 - 2018

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The Asset Management Plan (AMP) at a Glance

Auckland Transport's (AT's) plan to improve transport starts with looking after what we have:

AT is responsible for transport assets with a replacement value of **13.4 billion**¹

- Auckland's road network (excluding motorways) is valued at \$12 billion. These assets provide for 8 billion km of vehicle travel, over 180 million walking and cycling trips, and the movement of over 62 million tonnes of freight to, from and within Auckland each year.
- Auckland's public transport network assets are valued at \$1.4 billion. The PT network carried over 79 million trips in 2014/2015.

Transport network assets are depreciating with time and use – at a rate of \$261 million per year or \$715,000 per day.

Network levels of service have been stable 2012-2015, and customer satisfaction is high:

- Customer satisfaction with roads is 71%, footpaths is 63%, public transport 81%
- 97% of network assets are in "Very Good", "Good" or "Moderate" condition
- Backlog (assets past their renewals intervention point) is manageable at \$104 m

Transport networks are growing in line with population growth, by an estimated 1.5% per year.

The maintenance and operations of transport networks is the second largest item of AT operational expenditure each year, after public transport service contracts.

- Road maintenance and asset-based operations for the coming 10 years **\$1.15 billion**
- Public transport asset maintenance and operations for the coming 10 years² is **\$0.71 billion**

Costs are increasing by around 1.5% per year, as more road and PT assets are added to the network.

Renewals will be AT's largest item of capital expenditure over the coming 10 years (the City Rail Link is second). Renewals needs are assessed in the AMP based on providing a fit for purpose level of service and managing risk while optimising whole of life costs.

- AT has spent close to \$200 million on renewals each year from 2012-2015.

- | | Uninflated | Inflated |
|---|-----------------|-----------------|
| • Renewals funding recommended in the AMP over the coming 10 years is | \$2.88 b | \$3.44 b |
| • Renewals funding approved in the Accelerated Transport Programme is | \$2.13 b | \$2.51 b |

Approved Renewals funding is sufficient in first 3 years of the 10 year LTP.

The 2018 AMP is an opportunity to review funding levels from 2018/2019, in order to maintain the agreed level of service from transport assets.

If renewals spend is \$3.44 billion (recommended), then by 2025 there will be <1% of assets in very poor condition

If renewals spend is \$2.13 billion (approved), then by 2025 there will be 9.4% of assets in very poor condition

If renewals are deferred, maintenance needs increase and levels of service decline.

¹ Excluding land, corporate assets and intangibles (eg. software). Current, depreciated value of these assets is \$9 billion.

² All financial data is as per the adopted Auckland Council Long Term Plan

1. Strategic Themes Alignment

The 30 year Asset Management Plan is one of AT’s core strategic documents, and contributes to all five Strategic Themes, as set out in Table 1.

Table 1: Contribution of the Asset Management Plan to AT's Strategic Themes

Prioritise rapid, high frequency public transport	The AMP ensures that existing public transport (PT) assets, including bus lanes, bus stops, stations, trains, wharves and park and ride, are maintained and renewed appropriately to deliver the level of service required for the current and future PT network.
Transform and elevate customer focus and experience	The AMP sets customer levels of service for road and PT network assets based on safety, accessibility, convenience, reliability and resilience.
Build network optimisation and resilience	The AMP balances levels of service, cost and risk to develop an optimised maintenance and renewals programme.
Ensure a sustainable funding model	The AMP demonstrates that AT is managing and maintaining transport network assets for the benefit of current and future generations, while optimising whole of life costs.
Develop creative, adaptive, innovative implementation	AT is recognised as implementing, and contributing to, national and international best practice in Asset Management Planning

This Strategic Summary presents the key messages and decisions of the Asset Management Plan. The Strategic Summary and AMP are supported by 15 Asset Class Management Plans (ACMP’s). . These provide technical analysis across major asset classes. Figure 1 details the full document set.

Figure 1: AMP document set



2. The Transport Asset Portfolio

AT manages the most complex and diverse transport network in New Zealand, connecting people and moving goods across NZ's largest and fastest growing city.

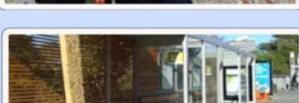
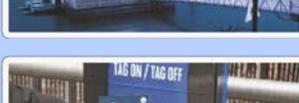
Auckland's local road network provides for 8 billion km of vehicle travel, over 180 million walking and cycling trips, and the movement of over 62 million tonnes of freight each year. Road assets managed by AT have a replacement value of \$11.974 billion, and a current (depreciated) value of \$7.684 billion as shown in Table 2.

Table 2: Road assets

ROADS		Replacement value	Current value
	7,302 kilometres roads	\$6.910 billion	\$4.724 billion (68%)
	12,000 km stormwater channel, 75,481 catch pits	\$2.341 billion	\$1.524 billion (65%)
	6,959 kilometres of footpaths , 321 km of cycleways	\$0.865 billion	\$0.487 billion (56%)
	1,020 bridges and major culverts	\$0.819 billion	\$0.441 billion (54%)
	Other road and parking assets	\$1.039 billion	\$0.659 billion (57%)
TOTAL VALUE ROAD ASSETS		\$11,974 billion	\$7.684 billion (65%)

Auckland's public transport network assets are valued at \$1.4 billion, and will enable over 79 million PT trips in 2014/2015. Public Transport assets are, on average, relatively new and overall current value is 83% of the assets' replacement value (Table 3). An exception is wharves which have depreciated by around half.

Table 3: Public Transport assets

PUBLIC TRANSPORT		Replacement value	Current value
	41 active rail stations , associated stabling and depot	\$0.619 billion	\$0.478 billion (77%)
	57 electric trains (EMUs), 10 Diesel Multiple Units	\$0.504 billion	\$0.496 billion (98%)
	6 Busway stations, 2,342 bus shelters	\$0.060 billion	\$0.046 billion (78%)
	21 ferry wharves	\$0.110 billion	\$0.058 billion (53%)
	AT HOP ticketing system (inc. software)	\$0.083 billion	\$0.060 billion (72%)
TOTAL VALUE PT ASSETS		\$1.376 billion	\$1.138 billion (83%)

3. Levels of Service

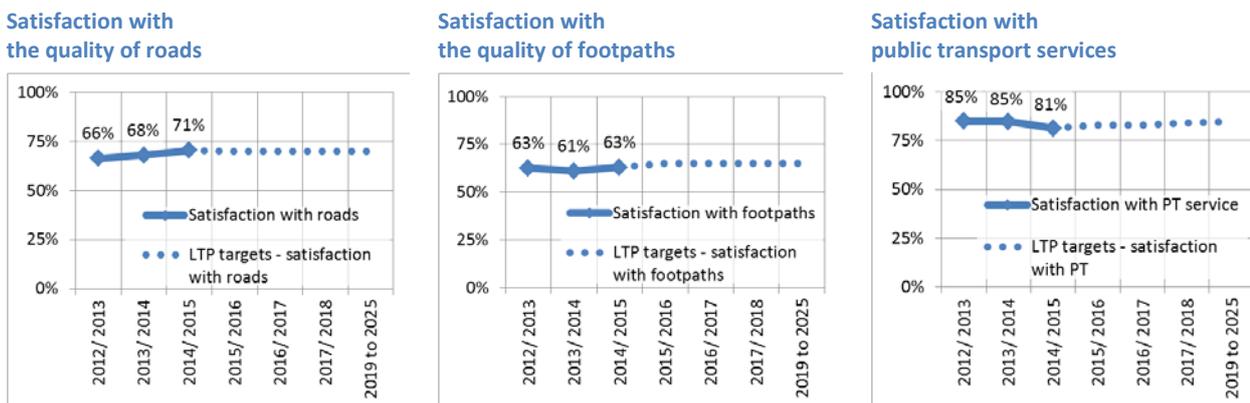
Customer Levels of Service

Customers are more 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 by ensuring that assets are maintained, operated and renewed as needed to deliver a fit for purpose level of service.

Figure 2: Customer Satisfaction trends 2012-2014 and targets 2015-2018



Technical Levels of Service

Underpinning the customer experience of safety, accessibility, convenience, reliability and resilience are Technical Levels of Service. For example the smoothness of road pavements, the facilities provided at public transport stops and interchanges, and footpaths that provide a nonslip surface all contribute to customer experience.

Technical Levels of Service are used throughout the AMP. The thresholds used in regular inspections of asset condition, and the intervention points for maintenance and renewals, are based on Technical Levels of Service.

AT’s approach to setting Technical Levels of Service includes consideration of strategic priorities set through the Integrated Transport Programme. Higher standards are set for some assets based on their role in the PT New Network, the Arterial Road network, the Freight Network, or the essential “lifelines” identified by the Auckland Infrastructure Lifelines Group.

In each of the past three years, the great majority of assets (97%) have been in “Very Good”, “Good” or “Moderate” condition. The AMP recommends continuing the trend of good asset condition, by steadily renewing assets at a rate that keeps pace with asset deterioration.

4. Asset Management Planning

AT prepared its first Asset Management Plan in 2012. The 2012 AMP:

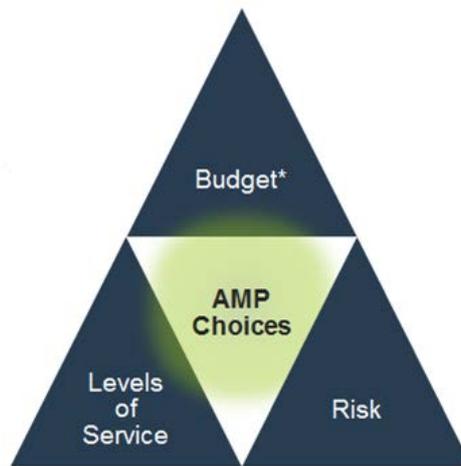
- Integrated the systems and data of eight legacy councils
- Set out a plan to maintain the condition and value of AT assets
- Developed a framework of Levels of Service in response to customer needs
- Recommended maintenance and renewals budgets for inclusion in the Regional Land Transport Plan and in Auckland Council's Long Term Plan to meet Auckland's growth and economic development needs

The 2015 AMP is a major review of AT's asset management practices and:

- Uses best practice modelling systems to develop whole of life strategies to maintain assets and to renew at the optimal time
- Includes more detailed consideration of Levels of Service for each class of asset. For example, bridges are renewed when they fall into "poor" condition, because the impacts of asset failure are so high. Less critical assets are renewed when their condition is "very poor".
- Calculates the consequential impacts of AT's capital investments on long term maintenance and renewals costs
- Advises on the consequences of different levels of funding for maintenance and renewals

Budgets for asset maintenance and renewals are linked to Levels of Service and Risks as shown in Figure 3. The main objective of Asset Management Planning is to achieve the right balance between these three drivers.

Figure 3: Asset Management Planning trade-offs



* Renewals and Maintenance

The links between asset condition, level of service, cost and risk are shown in Table 4 for the example of road pavements. This shows that as asset condition deteriorates with time and use, customer level of service declines, risk increases and the cost to bring the asset back to a fit for purpose condition increases.

Table 4: Links between level of service, cost and risk for road pavements

Condition	Level of Service	Cost	Risk
90% of AT pavements are in Very Good, Good or Moderate condition	Customer expectations met 	Needs routine maintenance only. Cost: maintenance \$10,000 per km per year	Low risk
7% of AT pavements are in Poor condition	Defects noticeable but won't change customer behaviour 	Extent of surface problems means spot fixes are no longer adequate. Water may be entering the road construction layers. Cost: pavement resurface \$100,000 per km	Low risk
3% of AT pavements are in Very Poor condition	Poor customer experience 	Wheel ruts and edge breaks indicate that road construction layers are damaged. Road is less comfortable for drivers and (especially) cyclists. Cost: road rehabilitation \$1,000,000 per km	On a fast and/or busy road, there could be a significant safety risk

5. Growth and Demand

Population and asset growth

In the three years from 2012-2015, the road network managed by AT grew by:

- 107 km additional local roads, with associated streetlights, footpaths, kerb & channel etc
- 19 additional bridges
- 17 additional signalised intersections

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 NZTA are also transferred to AT to manage and maintain.

Table 5 shows past and projected growth in the AT asset base.

Table 5: 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

Consequential opex

New transport assets, from whichever source, bring consequential operations, maintenance and renewals requirements. The AMP estimates that 1.5% more assets are added to the network each year. The financial impact of this is around \$2 million in additional 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 6.

Table 6: 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
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

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.

6. Asset Investment and Funding

The AMP development has informed the renewal and maintenance components of the 2015 Long Term Plan and Regional Land Transport Plan. Key recommendations and decisions are summarised in Table 7.

Table 7: Summary of recommended AMP funding and approved ATP funding

Renewals are based on two funding scenarios:	(10 year totals, inflated)
Recommended (AMP) renewals funding	\$3.44 billion
Accelerated Transport Programme (ATP)	\$2.51 billion
Maintenance and operations:	
Roads, footpaths, parking	\$1.15 billion
Public transport asset maintenance and operations	\$0.71 billion
2016-2025 total AMP network needs	\$5.30 billion

(excludes PT services, corporate, and non-asset opex)

Asset investment needs, maintenance and operations

Maintenance and asset-based operations are the second largest item of AT operational expenditure each year, after public transport service contracts. Asset operations and maintenance requirements are assessed and prioritised in the AMP based on:

- For the road network:
 - Asset maintenance and operations costs, based on competitively tendered service delivery contracts and known historical costs of delivering agreed Levels of Service
 - Consequential operational and maintenance requirements of significant new infrastructure planned to be added to the network
 - Non-asset operational costs (mainly road safety) which are not set in the AMP but are included for context
- For the public transport network:
 - 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, and impact of approved changes to the current Levels of Service
 - Bus, rail and ferry service costs which are not set in the AMP

Over the decade from 2016, consequential opex from growth as shown in Table 6 is the major factor driving maintenance and operations funding needs.

Approved funding, maintenance and operations

The approved ATP budget does not make any provision for the impact of consequential opex; road maintenance budgets do not increase at all over the coming 10 years as shown in Figure 4 and Table 8.

Figure 4: Maintenance and operations 2015/2016 to 2024/2025, Approved ATP funding

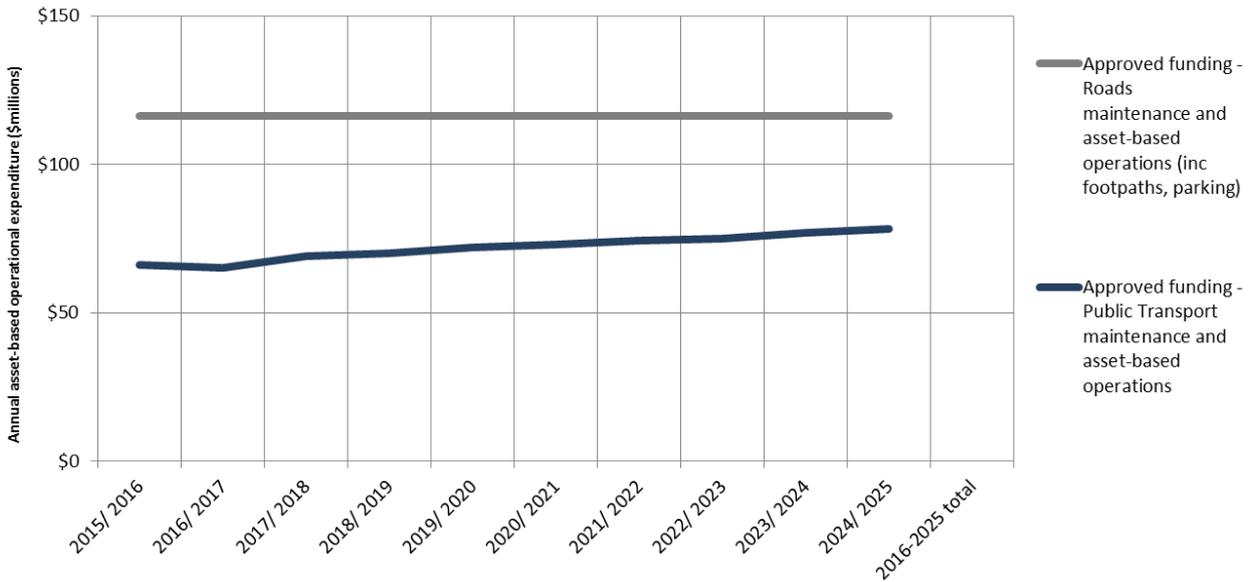


Table 8: Approved ATP funding for maintenance and operations

(\$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

Asset investment needs, renewals

AT determines its recommended renewals programme by using a Renewals Optimisation Model to estimate the cost of renewing assets in future years based on:

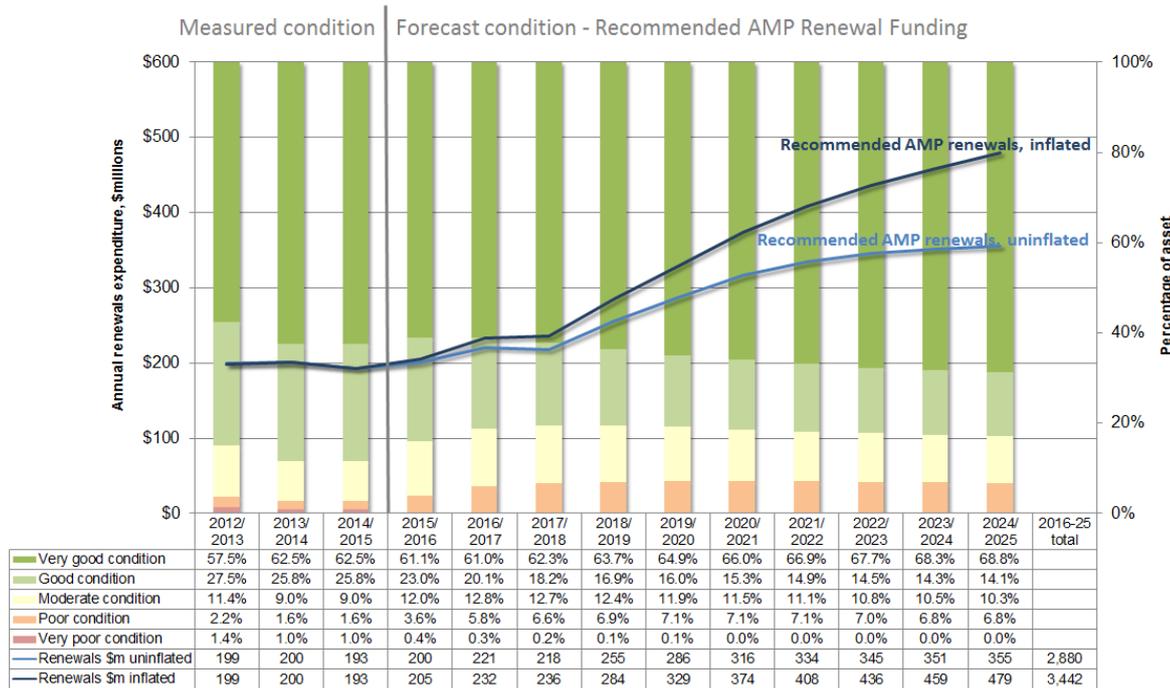
- Renewing assets in the year in which they fall into “very poor” condition
- Renewing critical assets in the year in which they fall into “poor” condition. Critical assets include “front of house” PT assets and assets such as bridges where the impacts of asset failure are high.
- Accounting for new assets added to the road and PT networks

Renewals investment needs do not change steadily over time, because assets were not built at a steady rate in the past and have different condition profiles and expected lives.

Current spending on renewals is around \$200 million each year and the AMP forecasts the need for spending at close to this level in each of the coming three years. From 2018/2019, renewals needs increase.

At the recommended AMP level of renewal funding, asset condition is maintained and the proportion of assets in very poor condition is maintained at 1% or less, as shown in Figure 5.

Figure 5: Asset condition, actual 2013-2015 and forecast 2016-2025, recommended AMP renewal funding

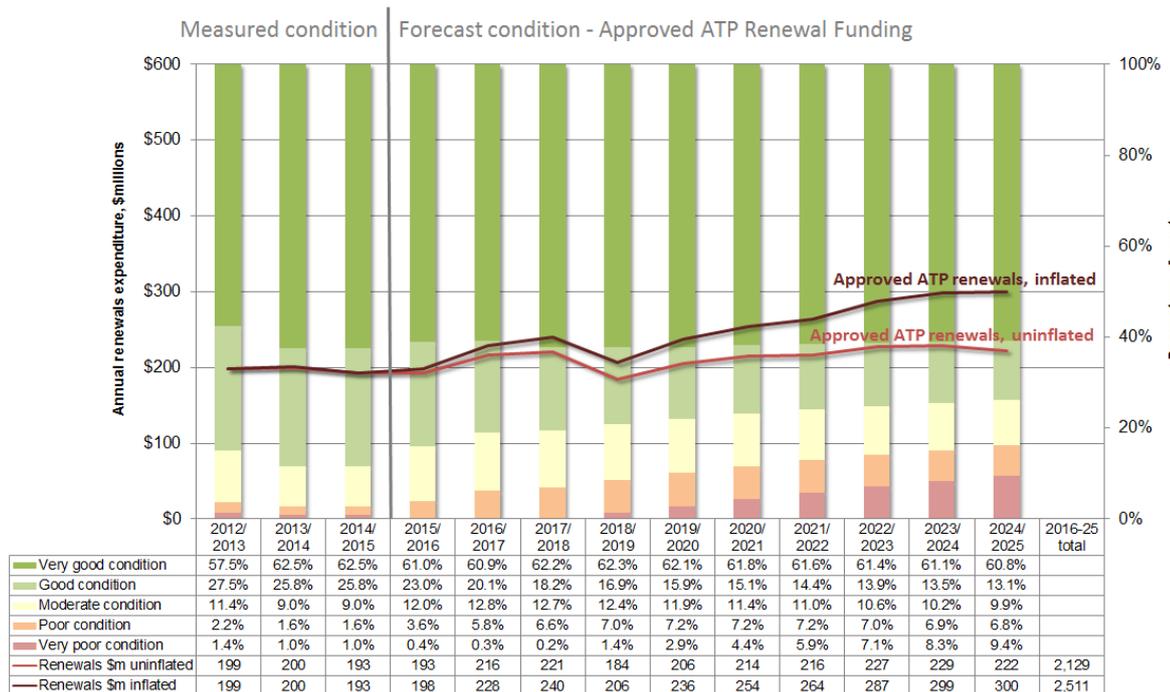


Approved funding, renewals

In the Accelerated Transport Programme, 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 AT's recommendation.

AT's Renewals Optimisation Model is used to analyse the impacts on asset condition of the approved budget. The results of this analysis are shown in Figure 6. Beyond 2018/2019, AT will not be in a position to maintain assets in their current condition with approved levels of funding. By 2025, the proportion of assets in very poor condition will have increased to 9.4%.

Figure 6: Asset condition, actual 2013-2015 and forecast 2016-2025, approved ATP renewal funding



Assets in “Very Poor” condition provide a lower level of service, reducing customer satisfaction. Reduced renewals expenditure may also bring higher risk and increased whole-of-life costs, through increased need for maintenance and through asset condition deteriorating more steeply because renewals did not take place at the optimal time.

The gap between recommended AMP renewals funding and approved ATP renewals funding is shown in Figure 7 and Table 9, in the context of asset depreciation.

Figure 7: Recommended AMP renewals funding and approved ATP renewals funding, in context of depreciation

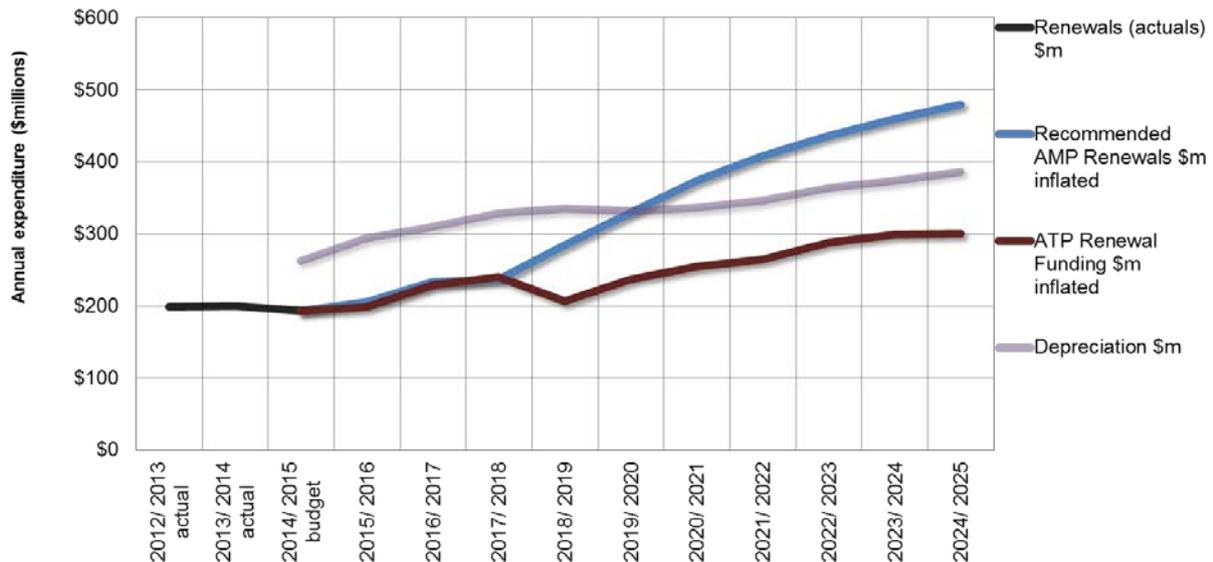
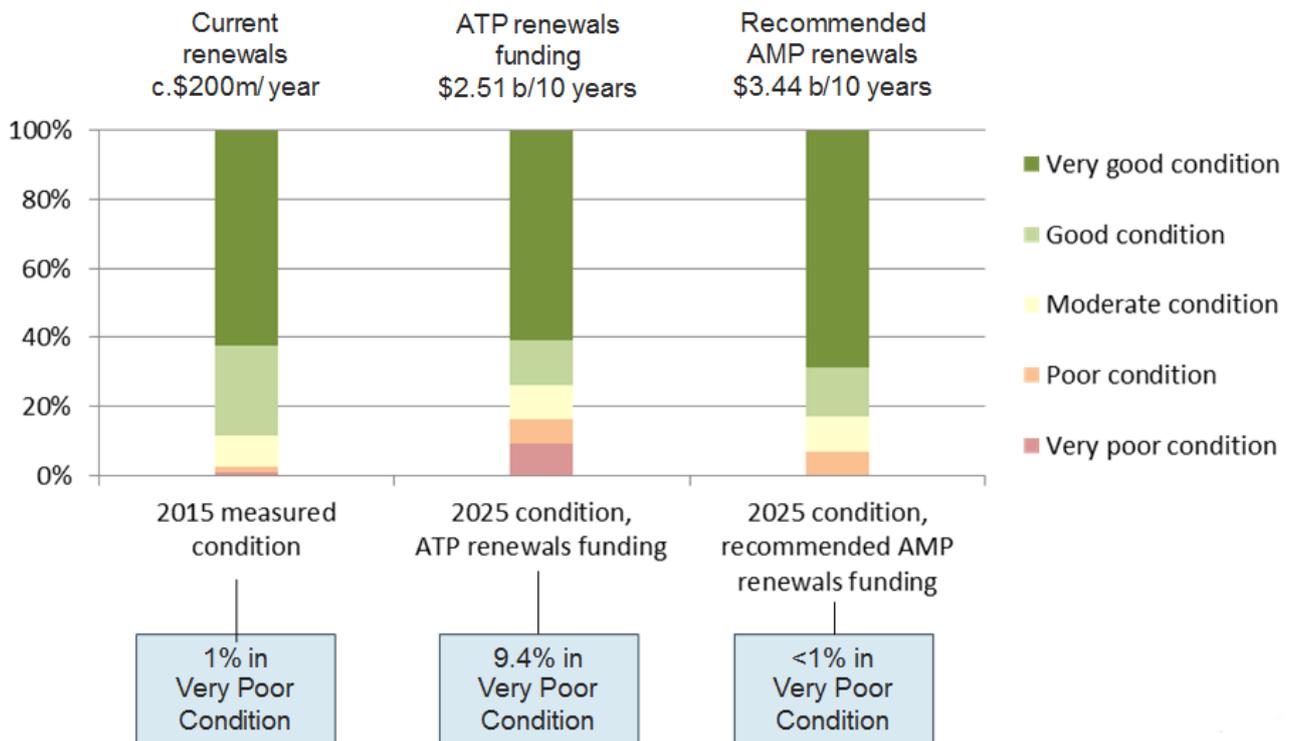


Table 9: Recommended AMP renewals funding and approved ATP renewals funding

(\$million, inflated)	2012/ 2013 actual	2013/ 2014 actual	2014/ 2015 budget	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	2016- 2025 total
Renewals AMP recommendation	n/a	n/a	n/a	205	232	236	284	329	374	408	436	459	479	3,442
Renewals ATP Total	199	200	193	198	228	240	206	236	254	264	287	299	300	2,511
Shortfall	n/a	n/a	n/a	7	4	-4	78	92	120	144	149	160	179	931
Depreciation (network assets)			261	293	308	328	334	331	335	345	364	373	386	3,397

If renewals are funded at a lower level, asset condition deteriorates as shown in Figure 8. This compounds the shortfall in maintenance and operations funding, because assets in poor condition also cost more to operate and maintain.

Figure 8: Summary of condition impacts: recommended AMP renewals funding and approved ATP renewals funding



7. Network Asset Risk

Transport asset risks include death and serious injury risks. The list of negative outcomes that could result from transport asset failure includes:

- Injury or death to transport users, operators or members of the public
- Reduced customer satisfaction, through impacts on safety, accessibility, convenience, reliability and/or resilience
- Damage to infrastructure or property
- Reduced public transport patronage
- Increased operating and maintenance costs
- Environmental impacts (e.g. pollution of waterways, air or soil)

AT has prepared an Asset Risk Management Plan (ARMP) which identifies the key transport asset risks and sets out how those risks are managed and controlled by AT activities.

AT is represented on the Auckland Infrastructure Lifelines Group, which has identified priority routes and transport facilities and their potentially vital contribution in extreme events including earthquake, volcano, tsunami and cyclone hazards.

8. The One Network Road Classification

Network classification and priority setting has an increasing role in road asset management.

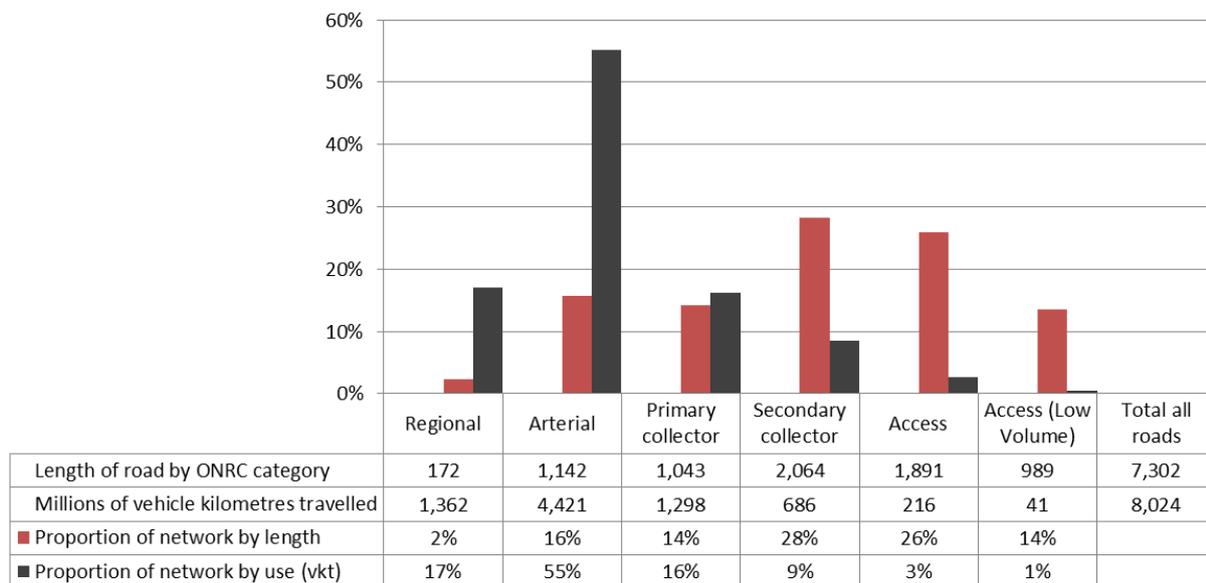
The One Network Road Classification (ONRC) is a joint initiative of NZTA and Local Government NZ to establish nationally consistent priorities to inform asset management planning, investment choices and maintenance and operational decisions.

AT has completed initial ONRC requirements in its AMP 2015-2018, including:

- Classifying the Auckland road network based on the function of each road in the network
- Measuring the current performance of the AT network using the ONRC performance measures
- Developing a transition plan to guide full integration of ONRC into planning, management, financial and delivery processes in the 2018 AMP

The ONRC classification shows that Arterial and Regional roads make up 18% (1,314 km) of AT's network by length, but carry 72% of traffic as shown in Figure 9.

Figure 9: ONRC classification of the AT network by road length and road use (vehicle km travelled)



Working to a nationally agreed road classification system is an opportunity for AT to further improve Asset Management Planning and to build the evidence linking costs, risks and levels of service.

NZTA expects that ONRC will be the basis for allocation of its contribution to maintenance and renewals of local roads from 2018 onwards. This represents a shift from subsidising AT's programme, to co-investing in achieving a fit for purpose level of service on AT roads, based on their importance in the national network.

9. Moving Towards AMP 2018

For the first three years of the 2015 Long Term Plan, funding for renewals has been approved at levels close to the recommendations in the AMP. AT's ongoing programme of asset condition monitoring and annual renewals work programming will allow re-prioritisation as necessary to continue to deliver levels of service and manage risk over this period.

The next Long Term Planning cycle, leading to publication of the 2018-2028 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.

The asset management and risk mitigation tasks set out in Table 10 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 10: Asset management issues and risks 2015-2018

Issue/risk	Management/mitigation tasks
<ul style="list-style-type: none"> Increased requirement for asset management planning 	<p>Additional monitoring, risk management and reporting activities to manage higher levels of risk and to meet new ONRC requirements</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"> Approved (ATP) maintenance and asset-based operations funding does not provide for the impacts of asset growth Approved (ATP) renewals funding from 2018/2019 forward does not meet recommended (AMP) renewals needs 	<p>Reprioritising work from lower to higher risk impact assets eg. defer renewals of lower volume local roads in order to prioritise arterials and collectors, reduce maintenance standards for some assets</p> <p>Analysis 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 NZTA 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"> Levels of service for some assets cannot be sustained at current levels of funding 	<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 2018-2021 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>



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