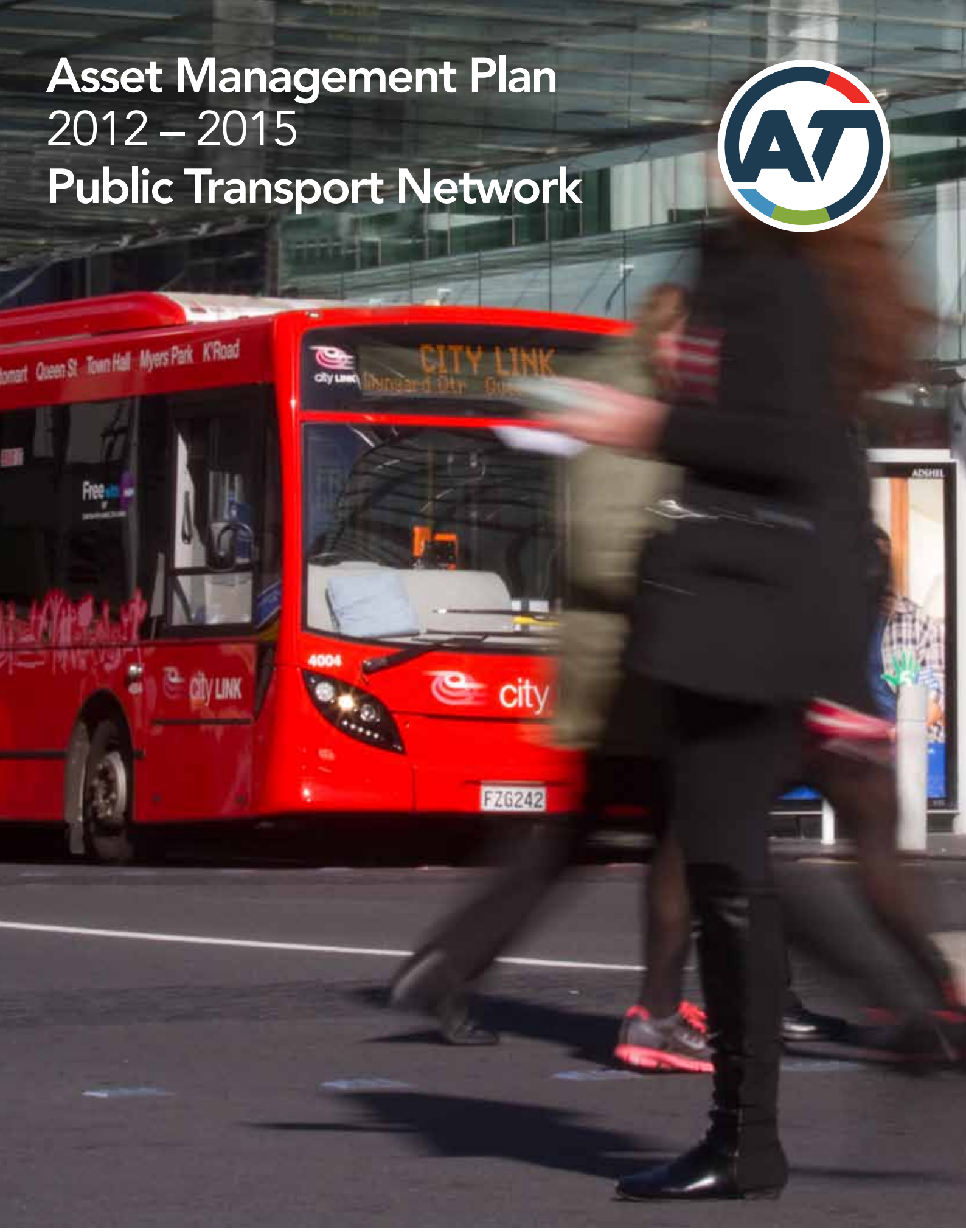
Asset Management Plan
2012 – 2015
Public Transport Network



Auckland Transport
An Auckland Council Organisation

Asset Management Plan
2012 – 2015
Public Transport Network

Quality Record Sheet

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Auckland Transport
An Auckland Council Organisation

Foreword

2012 – 2015 Asset Management Plan

Auckland's transport system is the largest in the country and one of the region's most valuable assets. The replacement cost of the road and public transport assets is $9.2b, excluding land under roads. Complex in space and scale, the network must accommodate the kind of rapid growth being experienced by all major world cities. Scenarios to 2041 put Auckland's population at around 2.1 million.

An expanding population creates pressure to prioritise spending on new assets. Auckland Transport must ensure this is not at the expense of maintaining, upgrading and renewing existing assets. The central task for Auckland Transport is to deliver best value for money and the best performance from existing assets.

Good communications, strong partnerships and leading-edge planning tools are required. This comprehensive 2012-15 Asset Management Plan is a critical tool. It is based on the asset management systems inherited from some of the legacy councils. A cycle of continuous improvement will see these systems, and this plan, refined as the organisation moves forward.

Local government amalgamation in late 2010 also gave the new Auckland Transport an opportunity to take stock of the transport portfolio, its size and condition, and to develop a "big picture" understanding of future costs and service consequences.

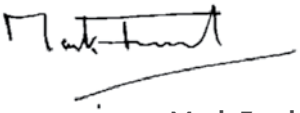
This plan is both strategic and tactical in its approach. It provides critical and detailed information on which to make decisions about future spending on assets and infrastructure-based services, and to develop policies for capital spending that give due weight to maintenance and asset renewal. It supports the organisation to manage assets in order to deliver an agreed standard of service, using multi-disciplinary management techniques over the lifecycle of each asset.

Auckland's transport network is being planned and managed as "One System", in partnership with the New Zealand Transport Agency's state highways and KiwiRail's railway infrastructure. This 10-year Asset Management Plan is closely aligned with the 30-year Integrated Transport Plan, which was developed collaboratively with NZTA. The two plans are being published together to provide the evidence base for the 2012 Regional Land Transport Programme and to support Auckland Council's Long-term Plan.

The Mayor's vision of Auckland as the world's most liveable city requires delivering a transformational shift in the public transport system. Over the past decade, Auckland has witnessed a revitalisation of its rail network through an injection of $1.1b from the Government. Every dollar spent on new assets contributes on average 10 cents every year to subsequent budgets for maintenance, operations and renewals. It is critical that asset maintenance and renewal keep pace with asset growth. In the 2010/11 year, renewals made up 38 per cent of all capital spending.

The benefits of sustaining, upgrading and renewing assets are numerous. Of the less obvious, asset management planning plays an important role in achieving road safety outcomes. Auckland Transport is a party to the Government's strategy of further reducing injuries and deaths on our roads – balancing this with the need to improve the region's productivity by moving people and goods faster and more efficiently.

Strategic and tactical asset management also plays a role in improving social and environmental outcomes for Auckland. This first 2012-15 Asset Management Plan is not a static document; it's an ongoing inquiry into what Auckland Transport should be doing with the region's transport assets to progressively improve the value for money delivered on behalf of Auckland's communities.



Mark Ford
Chairman
Auckland Transport

David Warburton
Chief Executive
Auckland Transport

1 Introduction

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Auckland Transport
An Auckland Council Organisation

1 Introduction

1.1 Regional overview

Auckland Transport has transport asset stewardship and service delivery responsibilities on behalf of the Auckland Council. It is responsible for the day-to-day activities of the Auckland transport networks (excluding state highways) from roads and footpaths, to cycling, parking and public transport. These include the planning and funding of transport activities, promoting alternative ways to get around the city and operating the local road network.

Auckland Transport is the single agency responsible for managing local transport networks for the Auckland region. The replacement cost for these road and public transport assets is $9.2 billion (excluding buildings and land under roads). It is the second largest road controlling authority (RCA) in New Zealand next to NZ Transport Agency (NZTA).

The local transport network has a strong urban bias, but has more than 1,000 kilometres of rural unsealed roads, making it the ninth most unsealed road network in New Zealand.

The Auckland region is home to almost 1.5 million people (or about a third of New Zealand's population) and is the fastest growing region. A world-class transport system is needed to service Auckland's population of between 2.1 and 2.8 million people (low and high scenarios) by 2051. This will be achieved by making best use of our existing transport system, using demand management strategies and by increasing patronage of public transport to delay construction of new roads.

Auckland is a marine region with many hundreds of kilometres of coastline, inlets and streams. There is an extensive natural environment. Auckland is recognised for its rural settings, but there is also a risk of natural hazards, including flooding and land instability. Appropriate land use is needed to help reduce the risk of these hazards to transport infrastructure.

The Auckland region is dominant in the national economy and the transport network is essential for enabling economic growth. Economic activity and growth is affected by the movement of people, goods and services. Road congestion causes people and freight delays, which directly contribute to loss of productivity.

The Auckland Council sets the overarching strategy for transport for the next 30 years through the Auckland Plan. The Plan identifies a number of outcomes, strategic directions and targets directly related to transport. Auckland Transport gives effect to the Plan's transport priorities and is also required to consult with both the Governing Body and Local Boards in preparing the three-yearly Regional Land Transport Programme (RLTP). Integrated transport planning and land development is a key intervention for achieving the Plan's vision.

Infrastructure asset management

The application of management, financial, economic and engineering principles to infrastructure assets in order to provide an agreed level of service in the most cost-effective manner.

1.2 Role of asset management

The role of asset management at Auckland Transport is to:

- Provide an effective and efficient transport system
- Develop asset management in keeping with the New Zealand Asset Management Support (NAMS) practice as presented in the suite of INGENIUM NAMS asset management publications
- Comply with statutory requirements in the Local Government Act (LGA) 2002, Schedule 10
- Provide information required for good asset management as set out in the Office of the Auditor General criteria for Asset Management Plans (AMP).

1.3 About this plan

The AMP is an umbrella document that gives effect to a range of other strategic and tactical planning documents. It achieves this through describing the planning, delivery and daily operations of Auckland's roads, footpaths, cycleways, bridges, street lighting, parking and other assets and services. The AMP gives effect to documents such as:

- Auckland Council's strategic direction and Long Term Plan (LTP)
- Regional Land Transport Programme (RLTP)
- Road safety, community transport and safety around schools.

This AMP demonstrates how the strategic goals and targets will be achieved through effective, sustainable management of transport assets.

The AMP develops and documents the levels of service to be provided and identifies the development, maintenance and renewal work programmes required to maintain those levels of service at the least cost over the lifecycle period of the assets. Asset management employs predictive modelling, risk management and optimised decision-making techniques to identify those long-term work programmes and funding requirements.

The AMPs provide evidence of:

- Compliance with the statutory requirements in the LGA 2002, Schedule 10
- Alignment with strategic planning in the Integrated Transport Plan (ITP), LTP and RLTP
- Quality and consistency of asset knowledge, levels of service, risk management, optimised lifecycle decision making, financial forecasting with growth and demand planning
- Planning assumptions and confidence limits
- Well-founded cost allocation between renewals, growth and levels of service elements
- Organisational performance monitoring
- Organisational commitment to good asset management practice.

1.4 Auckland Transport's asset management practices

1.4.1 Asset management frameworks

Auckland Transport uses two frameworks to provide asset management guidance, asset management and levels of service, as described below.

Asset Management Framework

The Asset Management Framework was adopted by Auckland Transport's Board in April 2011. The framework integrates planning processes, decision making and information across all transport assets and activities. It provides a management structure within which stakeholder needs, levels of service, asset information, finance, risk and resources are brought together to enable balanced, consistent and high-quality asset management decision making. Through this structure, the framework enables the delivery of agreed service levels to customers in the most cost-effective manner and provides proper stewardship of transport assets.

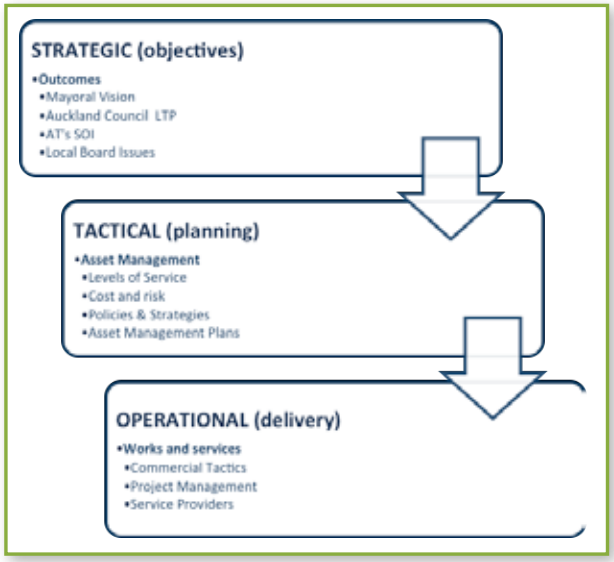
The framework enables consistent asset management practice by linking the asset management responsibilities of key Auckland Transport stakeholders. High-quality asset management outcomes are highly dependent upon the consistent use of the framework by stakeholders, planners and decision makers.

Auckland Transport is working towards advanced asset management principles and practices to achieve these tasks. Our optimised decision-making techniques are discussed further in Section 4, Lifecycle Management Plan (LCMP) Overview.

Infrastructure asset management is the tactical decision making that links strategic objectives with the operational delivery of physical works. Asset management planning is the organisational activity used to produce the operational forward works plans that deliver the strategic objectives.

Figure 1.4-1 shows the importance of asset management and the AMP as a cornerstone of our business.

Figure 1.4-1 Asset management linkages



Levels of Service Framework

The Levels of Service Framework provides the structure to monitor and manage a common set of performance measures, outputs and outcomes. It provides the links between operational activities and strategic outcomes and aligns with Auckland Transport's Statement of Intent (SOI) and Auckland Council's LTP.

The key features of Auckland Transport's infrastructure asset management are:

- A whole-of-life asset management approach
- Planning for a defined level of service
- Long-term strategies for cost-effective asset management
- Performance monitoring
- Meeting the impact of growth through demand management and infrastructure investment
- Managing risks associated with asset and service failures
- Sustainable use of physical resources
- Continuous improvement in asset management practices.

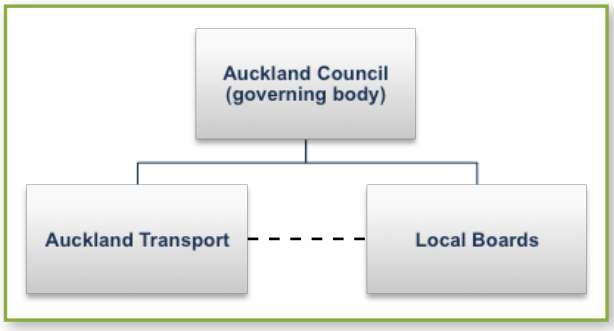
1.4.2 Governance

Auckland Transport was formed as a council-controlled organisation (CCO) of the Auckland Council. It was established under the provisions of Part 4 of the Local Government (Auckland Council) Act 2009. The transport assets were transferred to the new organisation on 1 November 2010.

Auckland Transport is accountable as a CCO to the Governing Body of the Auckland Council. The council sets Auckland Transport's objectives and monitors its performance through the annually agreed SOI. The SOI sets the basis of accountability of the Directors of Auckland Transport to the Auckland Council. The key goals for the organisation are articulated as well as a comprehensive Programme of Action.

Auckland Council has two decision-making parts: a Governing Body (made up of the mayor and 20 councillors) and 21 Local Boards. The Governing Body focuses on issues, decisions and strategies affecting the whole region. The 21 Local Boards represent their communities and make decisions on local issues. Auckland Transport provides advice to Local Boards and asks them to investigate or report on local transport issues. The Governing Body is assisted by the CCO Governance and Monitoring unit. This three-way relationship between the Auckland Council and Auckland Transport is shown in Figure 1.4-2.

Figure 1.4-2 Governance hierarchy



1.4.3 One System

Auckland Transport's strategic focus has a One System, one customer approach. One System relates to treating the local and state highway networks in the Auckland region as one integrated system. Auckland Transport is responsible for the local networks and NZTA is responsible for the state highways and motorways. The travel experience for customers is independent of ownership or management techniques. The One System approach enables transport management from a user perspective.

A partnering charter between Auckland Transport and NZTA for the Joint Traffic Operations Centre (JTOC) was signed in March 2011. This was a major step forward for managing the Auckland roading network as One System. The partnering charter's objective is:

- To enable customers to make smarter, more informed choices about the way they travel, achieving the most from Auckland's transport services and infrastructure and keeping Auckland moving by a single network approach.

One example of how this partnership will work is the use of NZTA's variable message signs to alert Northern Motorway users of delays on Quay Street. Another example is real-time travel information on the local network using electronic boards at key strategic locations in the city that advise the road user of the estimated travel time to the another destination, using the state highway network such as the city centre to Auckland Airport route. An integrated approach to operations will be progressed to enable the Auckland regional and state highway/motorway networks to be managed as a single system.

1.4.4 Resilient networks

The vision for the 2011 National Infrastructure Plan is:

- By 2030 New Zealand's infrastructure is resilient and coordinated and contributes to economic growth and increased quality of life.

The recent Canterbury earthquakes have highlighted the importance of resilient networks. Resilience is a guiding principle in the infrastructure plan, so that national infrastructure networks are able to cope with significant disruption from natural disasters and hazards and adapt to changing circumstances.

The transport network is a lifeline utility and outages such as coastal inundation, slips and extreme rainfall events have a significant impact on Auckland's communities. Auckland Engineering Lifelines Group (AELG) consists of key infrastructure providers and looks at how vulnerable infrastructure is towards hazards. This assists infrastructure providers to be prepared for natural hazard events so damage to lifelines is limited. (Refer to Section 8, Risk Management and Section 4.2 Road Pavements for further information on engineering lifelines.)

1.4.5 Transport safety

Auckland Transport plays an essential role in improving transport safety in the Auckland region and supports the success of the Government's Safer Journeys Strategy (2010). It is committed to making a step change to transport safety as well as achieving transport safety goals.

A red light camera pilot, a significant road safety project, was completed in July 2011. Red light running at traffic signals is a long-standing crash risk behaviour among Auckland motorists. The pilot monitored and assessed the impact of the cameras on red light running, including the impact on crashes and pedestrian injuries in Auckland's city centre from 2008 to 2011. The pilot report will assist the Ministry of Transport to develop a national policy for red light cameras.

Auckland Transport is working with NZTA to develop a KiwiRAP process for Auckland's local roads. KiwiRAP, the New Zealand Road Assessment Programme, is a road safety partnership between the Automobile Association and New Zealand government agencies (NZTA, Ministry of Transport, Accident Compensation Corporation, and New Zealand Police). KiwiRAP has been developed to date for the state highway network, with the first set of risk maps published in January 2008 and the publication of Star Ratings in June 2010. It provides meaningful information on where the greatest level of road risk is faced.

Transport safety is considered in our lifecycle management processes. In particular the renewal and maintenance programmes make a significant contribution to transport safety by considering smart and efficient methods of achieving transport safety outcomes. Safety is a primary driver when selecting materials for asset renewals. For example, frangible poles are used for replacing signal poles to minimise casualties.

1.4.6 Road controlling authority responsibilities

Auckland Transport's RCA responsibilities include providing and controlling access to the road network and being a prudent asset owner. RCA operates under various legislation and these functions are discussed as follows:

Corridor access request

Auckland Transport manages the road reserve area but utility owners have legal rights of access to open the road corridor to install and maintain their assets. This represents a significant risk and cost on the road network. Auckland Transport cannot withhold permission for these works to be undertaken, but can impose reasonable conditions. This is achieved through the CAR (corridor access request) procedure that places conditions with respect to timing and restoration standards.

Auckland Transport has used the new CAR service since March 2011 and replaced the road opening notice (RON) system. This new service combines the current process of lodging a beforeUdig enquiry and having to apply separately for a RON if the intended excavation site is in the road corridor.

Over-weight and over-dimensional permits system

There is a formal process to control the use of over-weight and over-dimensional vehicles. The operators are required to obtain prior approval from Auckland Transport to operate these vehicles on the road network.

1.5 Strategic direction and linkages

The Mayor's vision for Auckland as the world's most liveable city by 2041 means Auckland will be the place to be for an outstanding quality of life, economic opportunity and sense of place. The Integrated Transport Plan (ITP) has been developed as a strategic response to coordinate the investment activities of the various network providers to deliver the Auckland Plan. Auckland Transport's strategic direction and context is detailed in the higher level documents Strategic Context and Overview. The alignment of this AMP to the Auckland Plan is provided in the Appendix.

The AMP is a central document linking with other strategic documents internally at Auckland Transport and externally with NZTA and the Auckland Council. Asset management is a key business function for Auckland Transport. This AMP forms the basis for providing inputs into the LTP as required by the LGA 2002.

The key planning documents that this AMP relates to are:

The Auckland Plan

The Auckland Plan is a long-term strategy for Auckland's growth and development to make Auckland the world's most liveable city by 2041. The Plan was adopted by the Auckland Council in March 2012 and published in May. Its aim is to simplify planning systems to enable integrated planning in the Auckland region by the various agencies.

Integrated Transport Plan

The ITP has been produced jointly by Auckland Transport and the NZTA, with input and support from the other network providers and the Auckland Council. It focuses on the transport investment that will be needed to deliver the vision and outcomes of the Auckland Plan, taking into account central government policy statements on transport. The ITP integrates key strategies, tactical plans, programmes and project packages developed by Auckland Transport, NZTA, Auckland Council and KiwiRail. It delivers an integrated One System approach to the development and operation of Auckland's transport system.

Government Policy Statement

The Government Policy Statement (GPS) on Land Transport Funding details the government's desired outcomes and funding priorities for the use of the National Land Transport Fund to support activities in the land transport sector. The GPS is issued by the Minister of Transport. The government's main priority is national economic growth and productivity. The GPS will ensure the use of land transport funding supports this goal.

The 2012 GPS builds on the realignment of funds to support economic growth. The main focus is funding projects that enable economic growth through moving people and freight between New Zealand's five main centres. The three priorities for the 2012 GPS are:

- Economic growth and productivity
- Value for money
- Road safety.

1.6 Legislative requirements

The transport activity is also influenced by key legislation as detailed in Table 1.6-1.

1.7 Transport services

The transport activity is essential for the wellbeing of people and the economy as it ensures community travel needs are satisfied and that goods and freight are delivered to the desired destinations. The purpose of the transport activity is to provide a system that is safe and efficient to use.

Table 1.6-1 Key legislation

Act	Description
The Land Transport Management Act 2003 (and LTMA Amendment Act 2008)	The purpose of this Act is to contribute to the national aim of achieving an integrated, safe, responsive and sustainable land transport system, an approach reflected in the New Zealand Transport Strategy (NZTS). The strategy's objectives are to: • Assist economic development • Assist safety and personal security • Improve access and mobility • Protect and promote public health • Ensure environmental sustainability. The funding framework was previously biased towards roads and now the Act expands the focus to land transport as a whole, including some water-based surface transport. This Act requires an integrated approach to land transport planning, management and funding with the intention of improving social and environmental responsibility and to allocate land transport funding in an effective and efficient manner Land Transport Programmes must take into account how they will give effect to the objectives of the NZTS. Land transport funding applications must be supported by long-term planning. Information on activities and activity classes to be funded and also financial forecasts covering a period of 10 years need to be provided
The Local Government Act (LGA) 1974 (retained sections)	This act enables the formation, management, stopping, closing and control of roads (including limited access roads). It provides for public safety.
LGA 2002	This Act requires local authorities to: • Identify community outcomes and priorities, at least every six years. These must cover social, cultural, economic and environmental outcomes. Additionally indicators need to be developed which assess the contribution of transport assets to these outcomes • Prepare a range of policies, including Significance, Funding and Financial Policies • Prepare a LTP, at least every three years. Asset Management Plans are the main method of demonstrating Schedule 10 requirements. Schedule 10 requires the Council's LTP to contain information on the implications of changes in demand or service levels The LGA 2002 is undergoing reform to improve the operation of local government in New Zealand. The Government's reform programme includes: • Refocus on the purpose of local government including financial prudence requirements • Develop a framework for the interface between central and local government regulatory roles, efficiency of local government infrastructure provision, and review of the use of development contributions.

Local Government (Auckland Council) Act 2009	The Act sets out Auckland Transport's core statutory obligations. The relevant sections are:
	• Section 39, Purpose of Auckland Transport. Purpose is to contribute to an effective and efficient land transport system
	• Section 45, Functions of Auckland Transport:
	  • Prepare the Regional Land Transport Programme for Auckland in accordance with the Land Transport Management Act 2003
	  • Manage and control the Auckland transport system
	  • Carry out research and provide education and training in relation to land transport in Auckland.
	  • Undertake any other transport functions the council directs or delegates
	  • Undertake any functions NZTA delegates
	• Section 46, Functions and powers of Auckland Transport acting as local authority or other statutory body. These include prosecuting stationary vehicles, undertaking powers under the Land Transport Act 1998, closing roads, undertaking functions under Part 4 of the Government Roading Powers Act 1989, and making and enforcing bylaws
	• Section 47, Auckland Transport is a requiring authority. Auckland Transport is a requiring authority and a network utility operator under the Resource Management Act 1991
	• Section 54, Delegations. Auckland Transport may delegate all but certain specified functions to a committee, an employee, or to the council, including one or more Local Boards.

The Resource Management Act (RMA) 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 RMA Simplification and Streamlining Amendment 2010 has simplified and streamlined the consent application and appeal processes
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. These are normally documented in business continuity plans, which identify critical services and infrastructure needed to maintain operations
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 (HPV; up to 53 tonnes gross mass instead of the current limit of 44 tonnes) to operate under specific over dimension / overweight permits on specific parts of our 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 informational requirements
Utilities Access Act 2010	The Utilities Access Act 2010 requires utility operators and corridor managers to comply with a national code of practice that regulates access to transport corridors

The core services Auckland Transport needs to consider in performing its role are network infrastructure and public transport services. For the transport system, core services are about the following main functions:

- Moving people and goods efficiently so people reach their destination, not just for employment but also for leisure activities
- Providing and controlling access to the road network for properties and businesses
- Providing parking for road users, properties and businesses
- Managing the road reserve area for utilities to access the road corridor to install and maintain their assets.

The assets directly related to supporting Auckland Transport's core service functions for the public transport network are rail, ferry, busway stations, and park-and-ride facilities.

Some key facts about our public transport network services are:

1.8 Network overview

Transport enables the daily flow of people and commerce throughout the region by providing a range of range of diverse assets including rail, bus, and ferry facilities. These assets are summarised in Table 1.8-1.

1.9 Customers and stakeholders

Strong partnerships are crucial to Auckland Transport's success as a new organisation. Auckland Transport has strong partnerships with the Auckland Council, NZTA, KiwiRail, Ports of Auckland Ltd, other CCOs, Auckland International Airport, contractors, industry groups and customer groups.

Asset management exists to optimise stakeholder outcomes. Good knowledge of stakeholder values and drivers is essential for an effective, efficient, safe and sustainable regional transport activity. Table 1.9-1 shows Auckland Transport's stakeholders and their areas of interest in the transport activity. This includes the One System partners NZTA, the Auckland Council and KiwiRail.

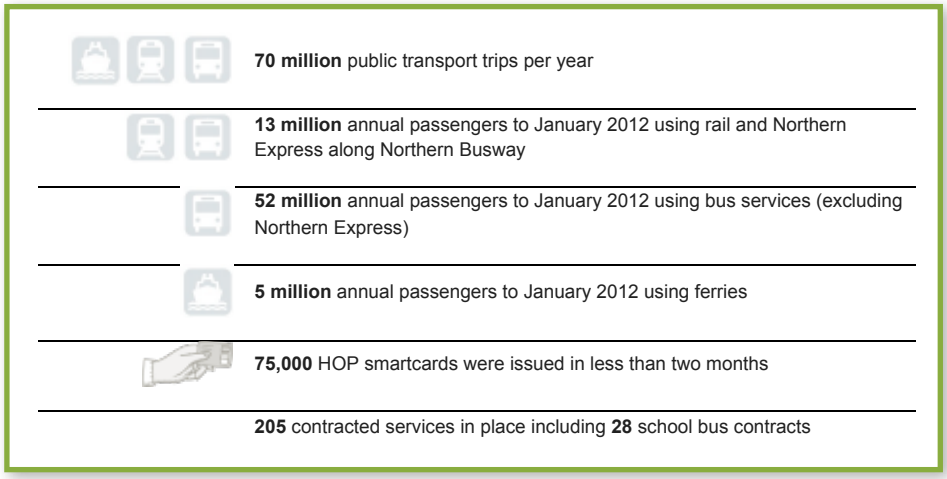


Table 1.8-1 Transport network summary
Source: Auckland Transport SPM database (February to April 2012)

Asset group	Description
Rail stations	42 rail stations – Auckland Transport is responsible for above-platform assets excluding tracks and signals, which are owned and managed by KiwiRail
Fibre optic cable	66km length of fibre optic cables laid in UPVC duct within the rail corridor between Britomart and Sylvia Park, Waitakere, and Papakura.
Diesel Multiple Units (DMU)	A fleet of 19 DMU locomotive trains and 106 carriages
Bus shelters	1,554 throughout the region
Busway stations	5 busway stations – Auckland Transport is responsible for above platform assets excluding busway road which are owned and managed by NZTA
Bus stations	15
Park-and-ride	2 to support the busway network located at Smales Farm and Albany
Ferry terminals	22 terminal sites, four of which have terminal buildings constructed on them

Table 1.9-1 Key stakeholders

Stakeholders	Transport area of interest	Consultation method	Relationship
Transport network users	Network performance and safety Service charges	Surveys and focus groups	External
Auckland ratepayers	Rates impact	Surveys	External
Auckland Council	Strategic outcomes Rates impact Advice on transport policy and operational issues	Formal liaison through Auckland Transport's Key Relationships Unit	External
Local Boards	Transport programme Transport component of Local Plans	Elected Member Liaison Team	External
Other council-controlled organisations (CCO) including Waterfront Auckland and Tourism, Events and Economic Development	Transport planning within the waterfront area Road closures, transport services and planning for significant events	Direct liaison on specific liaison	External
NZTA	Planning for land transport needs Initiatives for efficiency gains Network performance and safety outcomes Network standards Subsidy funding levels Coordination of road works timetabling JTOC	Direct liaison Non- voting member to Auckland Transport's Board MoU (February 2012)	External
KiwiRail	Projects of high regional significance and interdependence	Relationship Plan	External
Ports of Auckland	Arterial road efficiency and reliability for carrying freight Long and short-term work plans	Liaison with industry group	External
Auckland International Airport Ltd	Joint study of transport solutions for Southern opportunity area Network efficiency and reliability Long and short-term work plans	Liaison with industry group	External
Iwi	Engagement on transport projects Establishment of consistent approach for engagement at earliest opportunity	Independent Māori Statutory Board, Tamaki Regional Mana Whenua Forum, Tamaki (Treaty Negotiations) Collective and several runanga, iwi and hapu authorities Through the Auckland Council and NZTA Māori Relationships Managers	External
Industry and customer groups (including Road Users Forum, Business Forum and walking and cycling advocates)	Transport planning and projects Support brand development such as HOP	Whoa to Go online customer panel	External
Utilities e.g. Watercare, Telecom, Vector	Corridor access Programming	Direct and industry group liaison	External
Adjoining road corridor authorities	Network services alignment Standards and protocols	Direct liaison	External
Freight operators	Network efficiency and reliability Access to properties	Liaison with industry group	External
Business and commerce	Network efficiency and reliability Access to properties	Liaison with industry group	External
Transport operators	Customer service experiences Travel time reliability Public transport demand Network performance Scheduling, ticketing and information systems Service subsidies	Through commercial franchising model	External
Auckland Transport Road Corridor Operations	Long- and short-term work plans Network performance and safety	Direct liaison	Internal
Auckland Transport Road Corridor Maintenance	Long- and short-term work plans Network performance and safety	Direct liaison	Internal
Auckland Transport Road Corridor Access	Long- and short-term work plans Network performance	Direct liaison	Internal
Auckland Transport Infrastructure Development	Strategic outcomes Network capacity	Direct liaison	Internal

1.10 Negative effects

The transport activity ensures the availability of a safe, efficient and effective transport system for the region. However, the transport system may have negative effects on the social, cultural, environmental and economic wellbeing of the region. These negative effects are managed through a variety of processes, summarised in Table 1.10-1, and Section 4, Lifecycle Management Plan, Section 5, Sustainability and Section 8, Risk Management.

1.11 Guide to plans

Auckland Transport produces a number of key planning documents that make up the AMP. Each document has a different purpose, target audience and level of detail as shown in Figure 1.11-1. The Briefing Paper, Strategic Context and Overview are the higher level documents. These documents cover all transport modes including roads and public transport by bus, rail, and ferry.

These higher level documents are supported by two Tactical AMPs; one for road-based activities, including footpaths and cycleways, and the other for public transport activities covering bus, rail, and ferry. The Tactical AMPs provide comprehensive source information for producing the higher level documents.

Auckland Transport's Briefing Paper and Overview contain summarised and key information that will be made available for public information and consultation and which will support the Council's LTP.

This AMP is the tactical AMP for public transport-based activities. The Table of Contents, Table 1.11-1 provides a guide for key sections that detail asset management planning, processes and thinking.

Table 1.10-1 Summary of significant effects

Negative effect				Mitigation measures
Traffic crashes and resulting injuries and deaths				This will be mitigated through measures such as incorporating good road safety practice in the design of roads, addressing crash black spots through appropriate engineering and regulation measures, and through community road safety programmes
Social	Economic	Environmental	Cultural	
✓	✓			
Travel disruption and congestion due to construction and maintenance of transport infrastructure				This will be mitigated through measures such as programming the timing of works (as far as practicable) at times to minimise disruption. This will ensure the work is managed in a way that ensures public safety. Other measures include communicating effectively with customers and communities likely to be affected. We will work closely with NZTA through our One System approach to ensure works are well coordinated.
Social	Economic	Environmental	Cultural	
✓	✓			
Disruption to communities affected by increased traffic flows and undesirable traffic behaviour				This will be mitigated through identifying locations where traffic characteristics are inappropriate to the function of the road and introducing measures such as traffic calming and traffic regulation to improve traffic behaviour
Social	Economic	Environmental	Cultural	
✓	✓			
Environmental impacts such as air pollution and water pollution				Where local air quality issues are identified that relate to transport emissions, these will be mitigated through measures such as traffic management and regulation aimed at making traffic flows smoother or reducing traffic volumes. The impact of receiving water from run-off from road surfaces will be mitigated through collection management and treatment of the run-off where appropriate. We also support national and regional regulations on vehicle exhaust limits
Social	Economic	Environmental	Cultural	
✓		✓		
Noise from transport activities disturbing neighbours				This will be mitigated by complying with District Plan rules (and Unitary Plan in future years) and consent conditions, and actively implementing noise reduction measures on major transport projects
Social	Economic	Environmental	Cultural	
		✓		
Major transport corridors divide communities				This will be mitigated by introducing pedestrian friendly features, and urban design features where possible
Social	Economic	Environmental	Cultural	
✓			✓	

Figure 1.11-1 Planning document hierarchy

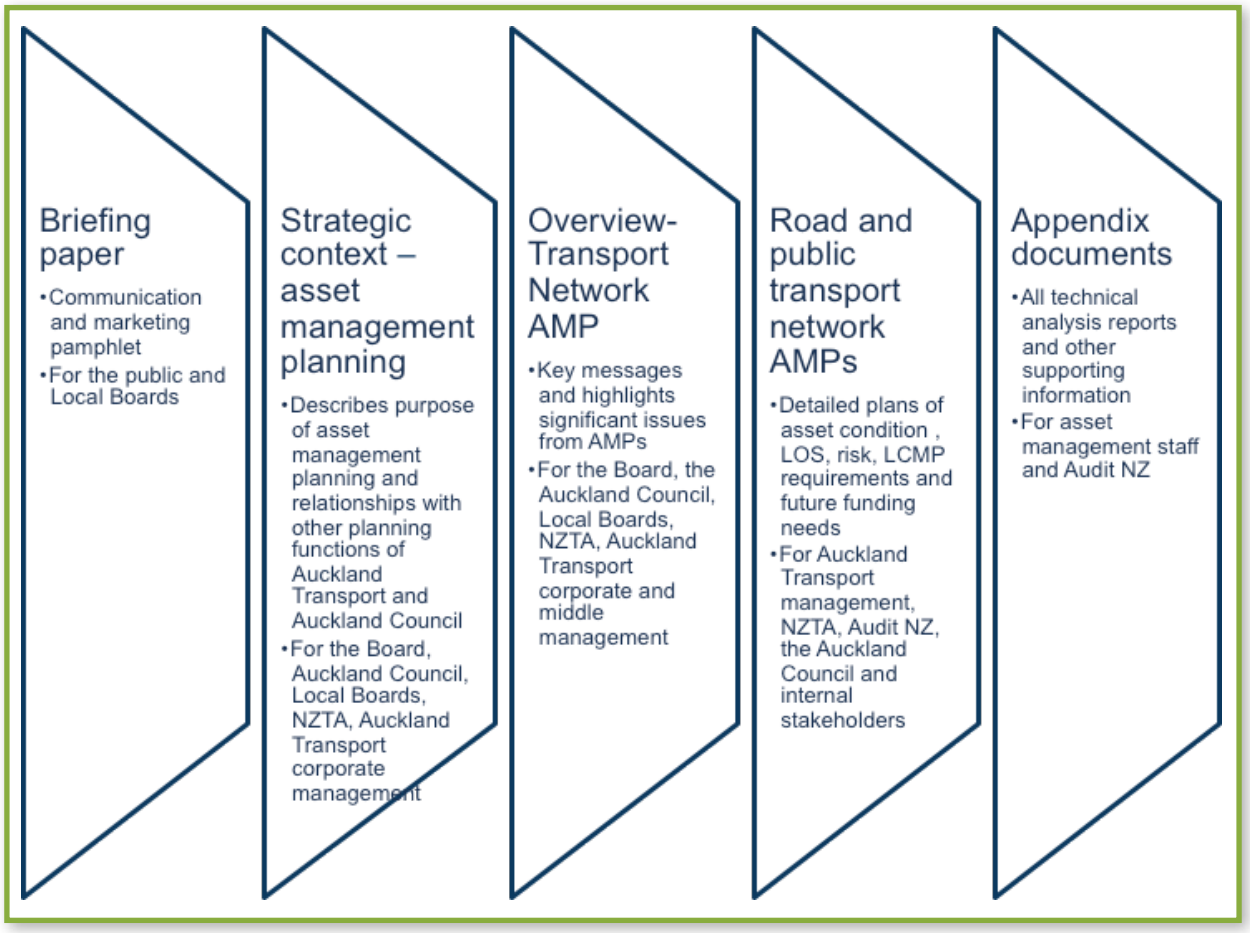


Table 1.11-1 Guide to Public Transport AMP

Public Transport AMP Table of Contents	
Section name	**Section overview**
Introduction (this section)	Describes Auckland Transport's role in asset management and practices. Also provides an overview of transport network assets and services
Levels of service	Describes what the community and stakeholders expect from the transport system and about plans to ensure these service levels are delivered
Growth and demand	Describes in detail the knowledge held of what changes are expected to the Auckland region including the Auckland Plan, and what will be required from the transport system in the next 10 years Explains the projects and plans intended to be implemented to meet these changes
Asset lifecycle management plans	Describes plans to maintain and renew existing and new transport assets. Auckland Transport's goal is to maintain the transport system so that each network component provides the required service level at least cost over its lifecycle. This lifecycle management ensures best use of funds This section is divided into three asset groups, as the management of these assets varies from one group to another. There is also a separate public transport services plan. This section is introduced with a LCMP Overview that describes the overall lifecycle approach and strategies
Sustainability	Describes Auckland Transport's intention to use more sustainable practices when developing and maintaining the transport system and the initiatives being implemented to meet sustainability goals
Value management	Describes the value management process through which Auckland Transport delivers value for money to its stakeholders and throughout the asset lifecycle; from inception to decommissioning and disposal
Financial summary	Summarises the financial plans detailed in the previous sections and provides a detailed analysis of the cost of developing and maintaining the transport system for the next 10 years
Risk management	Describes the risks related to managing the transport system and how those risks are managed and mitigated
Asset management practice	Describes the processes used to manage the transport system and the systems used to manage asset management information Identifies requirements for asset knowledge and data. Includes frameworks linking strategies, information, decisions, plans and governance approvals Describes the asset management systems, data and processes to support managing the transport network
Improvement plan and monitoring	Improvements can always be made to how the transport system is managed. Included in this section is an improvement plan for both managing the network and the next AMP

2 Levels of Service

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Auckland Transport
An Auckland Council Organisation

2 Levels of Service

Levels of Service – a definition

"The description of the service output for a particular activity or service area against which performance can be measured".[1]

Figure 2.1 LOS relationship to network outcomes

2.1 Introduction

Auckland Transport manages transport assets to deliver the levels of service in a sustainable manner over the long term.

Levels of Service (LOS) is the term used for a series of statements that encapsulate the agreed standards that Auckland Transport services and assets will meet. LOS is an asset management tool that maintains organisational and operational focus on managing the transport infrastructure network in an effective, efficient, safe and sustainable manner. A LOS framework links operational activities with tactical and strategic outcomes in a robust and logical manner.

LOS plays a key role in determining investment levels across the transport network. It provides the performance, condition and operative targets to be achieved through expenditure on services, asset maintenance, renewals and new works, as shown in Figure 2.1-1.

"Our ability to manage effectively our levels of service lies at the heart of achieving good community outcomes from assets and services." [2]

All transport LOS inherited from legacy Long Term Council Community Plans (LTCCP) and AMPs have remained in effect until 30 June 2012. Beyond this date, some LOS measures, performance and targets will change, subject to Auckland Transport Board approval, as improved knowledge of assets, costs, stakeholder and customer needs are developed.

[1] NAMS – Developing Levels of Service and Performance Measures V2 2007.
[2] Audit New Zealand – Asset management for public entities: Learning from local government examples.

LOS will be a resource for consultations and discussions between governance, users, planners, service providers, customers and other stakeholders. As such, Auckland Transport's approach has been to focus the LOS on measurable outcomes and provide a structure that is easy to use.

2.2 Legacy levels of service

Following local government amalgamation in Auckland in late 2010, all current AMPs and LTCCP LOS were consolidated for analysis and reporting. These existing LOS were aligned into various common categories such as service area, asset type, customer service value and technical performance measure type.

The following legacy organisations were included in this LOS stocktake. They illustrate eight different ways of defining, measuring and managing LOS.

• Auckland Regional Council	• Rodney District Council
• North Shore City Council	• Auckland City Council
• Waitakere City Council	• Manukau City Council
• Papakura District Council	• Franklin District Council

2.2.1 Current LOS stocktake

The key findings of the stocktake of the current LOS are as follows:

- The previous councils shared core NAMS structures and concepts such as strategic outcomes, customer values, customer and technical LOS
- There is significant variation in LOS across previous councils, both in the number of LOS and the level of detail. Some are minimal and some are highly complex.

- There is wide variation in the consistency and rigour of linkages between outcomes and operational activities
- Several current LOS have no active measure and are noted for future development
- There is significant variation between current LOS methodologies, language, interpretation and measurements
- There are few LOS measures that are fully common across previous councils apart from technical measures linked to funding such as road roughness and safety statistics used for NZTA reporting.

The high degree of variation found between the LOS is not unexpected given the differences of scale and community focus and asset management maturity of previous councils.

A number of previous council AMPs have been recently acknowledged as examples of best practice LOS, e.g. Auckland City and North Shore City. The relevant aspects of these AMPs have been used in the development of the Auckland Transport LOS framework.

2.3 Key drivers and legislative requirements

The Local Government Act 2002 (LGA 2002) has prescribed that service levels must be developed from a community perspective. The LGA Amendment Act 2010 repeals the definition of community outcomes and substitutes the following definition:

"Community outcomes means the outcomes that a local authority aims to achieve in order to promote the social, economic, environmental, and cultural well-being of its district or region, in the present and for the future."

Service levels need to be presented to the community in a clear, informed way as service level statements are aligned with customer performance measures. These support the consultations that must be undertaken to obtain community perspectives.

In addition to community consultation, there are a number of infrastructure providers and other stakeholders who contribute to the region that need to be kept informed on service levels. This includes partners under the One System approach, Auckland Council, NZTA and KiwiRail.

Schedule 10, clause 2 (1) of the LGA 2002 provides some specific requirements for the development of service levels:

- Intended service levels, measures and targets are required to be stated for each group of activities
- Forecast capital costs need to be apportioned between growth and service levels
- Targets are to be set in detail for the first three years and in outline for the next seven years.

Sections 76-81 of the LGA 2002 state the way in which service levels are developed within the decision-making process:

- Section 76 Decision Making
- Section 77 Requirements
- Section 78 Community views in relation to decisions
- Section 79 Compliance with procedures in relation to decisions
- Section 80 Identification of inconsistent decisions
- Section 81 Contributions to decision-making process by Māori.

2.3.1 Service levels reporting requirements

Schedule 10 Part 1 Section 4 of the LGA 2002 requires a Statement of Service Provision in the Long Term Plan that must, in relation to each group of activities of the local authority, include a statement of the intended levels of service provision that specifies:

- Performance measures
- A performance target for each performance measure
- Any intended changes to the level of service that was provided in the year before the first year covered by the plan and the reasons for the changes
- The reason for any material change to the cost of a service.

2.3.2 Industry standards and guidelines

A listing of the industry standards and guidelines that influence the provision of customer service levels are included in the appendices. As a result of amalgamation, many of these refer to Auckland Transport policies, standards and guidelines that are currently under development.

Further to these standards and guidelines, the roading and transport services that we deliver to our customers are also influenced by a number of other bylaws and codes. The legacy bylaws are still in place and will be reviewed over time by Auckland Transport for the management of local roads and public transport.

2.4 Understanding stakeholder issues

Asset management endeavours to optimise stakeholder service and cost outcomes. As transport impacts almost all facets of life across the community, it is important to gain a good understanding of stakeholder and user perspectives of transport service levels and cost. Good knowledge of stakeholder values and drivers is essential to determining appropriate levels of service.

Auckland Transport's external stakeholders, their areas of interest in the transport activity and how the organisation will consult to gain knowledge of their requirements are detailed in Section 1.9 Customers and Stakeholders. Many consultation methods are now in place since Auckland Transport was set up including:

- Whoa to Go online customer panel
- Memorandum of Understanding with NZTA
- Relationship Plan with KiwiRail.

Auckland Transport is currently developing an understanding of stakeholder and community opinion on services through a range of surveys, market research, focus groups and stakeholder consultation. Surveys of customer opinion that are currently undertaken to provide monitoring data for the LOS include:

- Customer satisfaction monitoring of Auckland public transport services[3]
- Community perceptions of personal transport choices[4]
- NZTA reports e.g. Road Transport Road Casualties.

The One System initiative between NZTA and Auckland Transport is a special case of liaison and consultation. (Refer to Section 4.1-2 of this plan).

2.5 The development of levels of service

LOS measures and statements from the legacy AMP, annual plans and LTCCPs have been used as a starting point for the development of the LOS. These have been consolidated into a framework, a set of measures using good practice guidelines from NAMS, and feedback to the sector from the Office of the Auditor-General. Auckland Transport's LOS framework was developed through this process to align outcomes, impacts, organisation outputs and performance measures across four key result areas: effective, efficient, safe and sustainable networks.

The ITP identifies the transport impacts to be achieved to deliver "better connections and accessibility within Auckland, across New Zealand and to the world."

These impacts are the objectives that the LOS addresses. The service values of effective, efficient, safe and sustainable are translated through the LOS framework to levels of service which provide the output and performance targets for the AMP in general and the lifecycle management plans in particular.

2.5.1 Levels of service drivers

The LOS detailed in this AMP is aligned to the council's Long Term Plan (LTP) and other drivers through the ITP as shown in Figure 2.5-1.

A key role of asset management is to identify costs directly associated with LOS to support decision making. More work will be required to understand this relationship fully. Asset management improvement tasks that will establish cost and LOS links are described in Section 10 of this plan.

The LOS hierarchy in Figure 2.5-2 further illustrates the role of LOS in determining the operational performance of the transport system that is required to achieve Auckland Council's strategic outcomes.

2.6 Levels of service framework

The consolidation of legacy councils into a single unitary authority requires a strong focus on reconciliation of levels of service and their costs through consultation and discussion. The LOS framework shown in Figure 2.6-2 on page 25 provides a common basis for discussing transport issues from multiple perspectives and has a strong emphasis on measurable outcomes. The framework embeds the concept of 'necessary and sufficient' and is designed to align LOS with asset and cost categories used within Auckland Transport.

[3] Gravitas Research and Strategy Ltd.
[4] National Research Bureau Ltd.

Figure 2.5-1 The ITP as driver for LOS

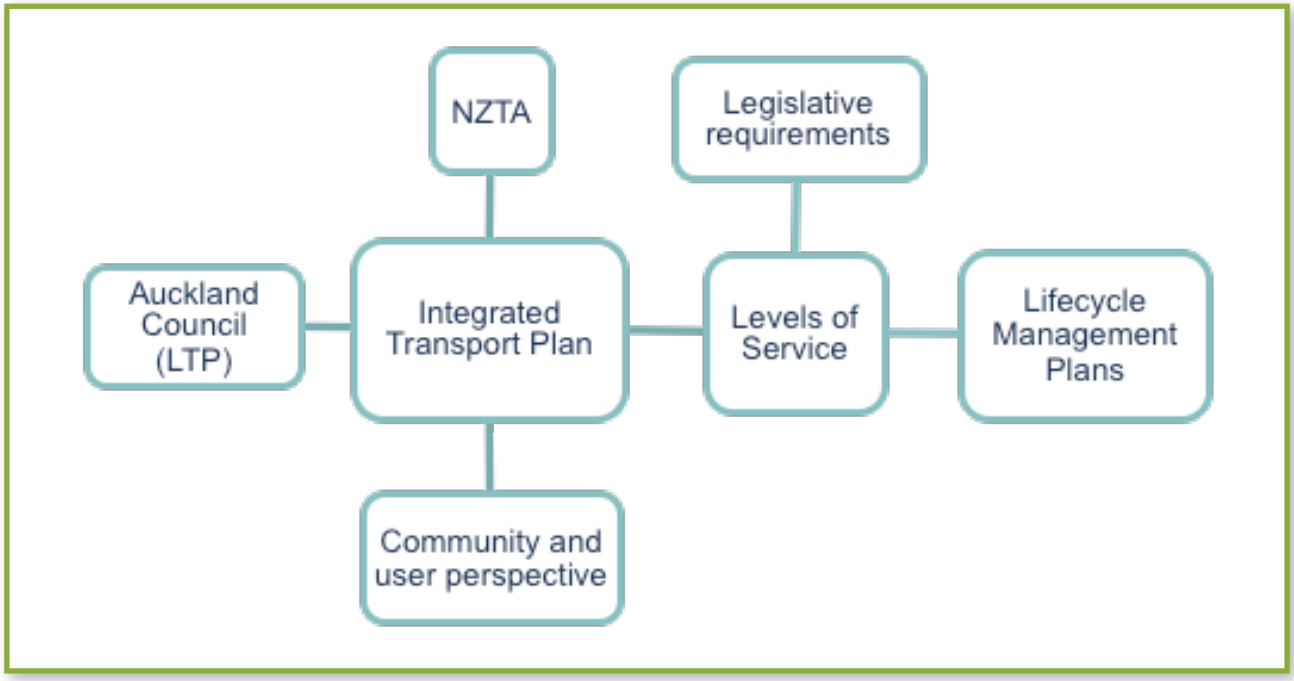
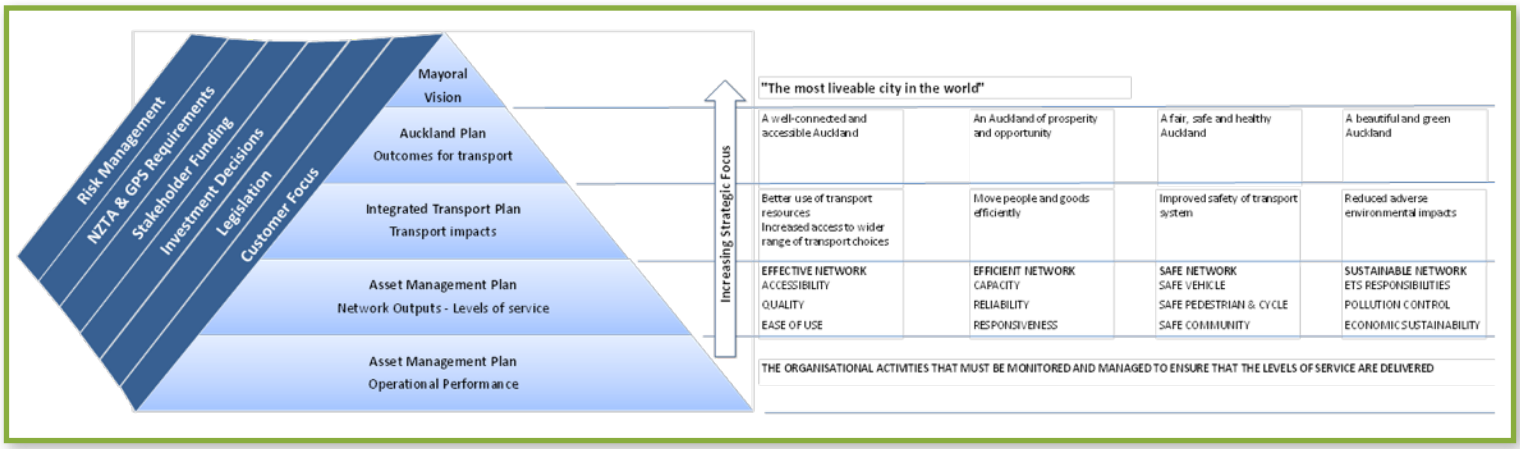


Figure 2.5-2 Levels of service hierarchy



To this end, the Auckland Transport LOS is developed to the following set of principles and criteria:

Guiding principles of Auckland Transport LOS

- LOS to reflect the Auckland Transport services
- LOS to reflect core NAMS LOS concepts and principles
- LOS to focus on delivery of measurable outcomes
- LOS must be easily understood, accessible and usable to provide a common resource for consultation and discussion between customers, stakeholders, governance, executive, planning and service delivery.

Criteria for LOS framework

- Clear definition of strategic goals
- Consistency of service values across service areas
- Correct use of asset categorisation and hierarchies
- Use of necessary and sufficient SMART measures
- (**S**pecific **M**easurable **A**chievable **R**elevant **T**ime-bound)
- Use of plain English language.

2.6.1 Framework structure

The Auckland Transport LOS framework translates Auckland Plan outcomes through the ITP and the AMPs as shown in Figure 2.6-1.

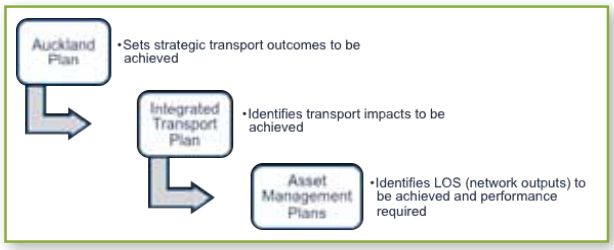
The Auckland Transport LOS framework uses three reporting levels below the Auckland Plan outcomes:

- **Level 1 – ITP impacts** includes key performance area measures to ensure multi-agency integration and optimised investment
- **Level 2 – network outputs** at service area level, e.g. rail, buses, roads, footpaths
- **Level 3 – operations performance** of assets and services, e.g. response times, condition.

An "impact" is the equivalent of a milestone on the way to achieving a high-level outcome, such as well-connected and accessible Auckland. The ITP transport impacts listed in Figure 2.6-2 are:

- Better use of transport resources to maximise return on existing assets
- Increased access to a wider range of transport choices
- Moving people and goods efficiently
- Improved safety of Auckland's transport system
- Reduced adverse environmental effects.

Figure 2.6-1 Levels of service planning framework



Four key result areas, each having multiple service attributes (or values), are shown in Figure 2.6-2 across the three levels as follows:

- **Effective** (accessibility, quality, ease of use)
- **Efficient** (capacity, reliability, responsiveness)
- **Safe** (safe vehicle, pedestrian and cycle environments, support for community safety)
- **Sustainable** (Emissions Trading Scheme responsibilities, pollution control, economic sustainability).

The LOS framework contains key performance indicators (KPIs) with current performance and future targets. These KPIs demonstrate that progress is being made towards the results, impacts, outcomes and vision stated in the key 30-year planning documents, ITP and Auckland Plan. In some cases, measures of performance still need to be developed to enable effective monitoring of progress towards our key dates. The LOS also identifies where new baseline measures will need to be developed during the period covered by this plan. Auckland Transport will work with Auckland Council and, where appropriate, NZTA to develop additional suitable measures.

The AMP LOS framework shown in Figure 2.6-2 thus provides a formal performance monitoring and reporting framework to demonstrate Auckland Transport is meeting the requirements of the Auckland Plan and statutory obligations under the Local Government Act 2002.

SOI performance measures

Auckland Transport's 2012 Statement of Intent (SOI) is a key document that describes the performance measures that are to be reported to Auckland Council. The SOI sets the accountability of Auckland Transport to Auckland Council. Some of the SOI measures are considered in the LOS statements and these are specifically identified within the LOS tables.

Figure 2.6-2 Levels of Service framework

Auckland Plan	Mayoral Vision	**World's most liveable city**		**World's most liveable city**	
	Auckland Plan Outcomes linked to transport	**A well-connected and accessible Auckland**	**An Auckland of prosperity and opportunity**	**A fair, safe and healthy Auckland**	**A green Auckland**
	Transformational shift	**Move to outstanding public transport within one network**			
	Strategic directions	**Create better connections and accessibility within Auckland, across NZ to the world**	**Keep rural Auckland productive, protected and environmentally sound**	**Create a strong, inclusive and equitable society that ensures opportunity for all Aucklanders**	**Contribute to tackling climate change and increasing energy resilience**
Integrated Transport Plan	AT Overarching Outcome	**Auckland's transport system is effective, efficient and provides for the region's social, economic, environmental and cultural wellbeing**		**Auckland's transport system is effective, efficient and provides for the region's social, economic, environmental and cultural wellbeing**	
	AT Impacts	**Better use of transport resources Increased access to wider range of transport choices Effectively connects communities Provides for Auckland's compact urban form**	**People and goods move efficiently**	**Improved safety of transport system**	**Reduced adverse environmental impacts**
		Increased customer satisfaction		**Increased customer satisfaction**	
	ITP & AMP Levels of Service	Public transport patronage Peoples access to jobs Public transport access Mode share Public transport morning peak mode share Asset quality	Road congestion Commute travel times Arterial road network productivity Strategic freight route mobility Bus congestion Transport delay Public transport efficiency	Road fatalities and serious injuries Public transport safety and secuity	Greenhouse gas emissions Air quality Fossil fuel energy consumption Active modes Split Transport affodability

Asset Management Plan	Key result areas	**Effective Network** Provide an effective, resilient and good quality transport network that is easy to use			**Efficient Network** Provide an efficient and reliable transport network			**Safe Network** Provide a safe transport environment for users and the community					**Sustainable Network** Provide a regional transport network without compromising the environment for future generations		
	Service values	**Accessibility**	**Quality**	**Ease of use**	**Capacity**	**Reliability**	**Responsiveness**	**Safe vehicle environment**	**Safe pedestrian environment**	**Safe cycle environment**	**Safe public transport**	**Support for community safety**	**ETS responsibilities**	**Pollution control**	**Economic sustainability**
	Network Outputs	Increase availability of travel options	Assets and services are fit for purpose	Improve signage and real-time information	Reduce road peak congestion	Improve or maintain road travel time reliability	Improve or maintain resolution rate for Requests for Service	Minimise fatal and serious injuries per 100 million VKT	Minimise number of pedestrian fatal and serious injuries	Minimise number of cycle fatal and serious injuries	Minimise the number of PT fatal/serious injuries	Increase coverage of school travel programmes	Minimise carbon footprint	Minimise air pollution	Provide assets and services at least whole of life cost
		Provide appropriate levels of parking	Assets are in good condition	Improve inter-modal links across public transport	Public transport capacity to match demand	Improve or maintain public transport travel time reliability	Improve or maintain timelines for clearance of network blockages	Eliminate road black spots	Improve availability of pedestrian crossings	Increase cycle safety education programmes	Minimise the number of PT safety and security incidents	Provide community safety programmes	Maximise the economic value of recycled materials	Minimise water pollution	Capital projects are managed within budget
		Improve distribution of the freight network	Increase resilience of the network	Provide inter-modal single ticketing across public transport	Reduce or maintain journey time for public transport			Increase road safety education programmes	Eliminate very poor condition footpaths	Provide targeted cycle safety projects	Provide targeted PT safety and security programmes	Provide transport component for emergency services		Minimise soils pollution	
		Improve integration of utilities within the corridor			Reduce or maintain road journey times			Increase police road safety liaison programmes				Provide transport component for Civil Defence		Eliminate prosecutions for RMA non-compliance	
		Improve availability of footpaths in the urban area			Improve capacity and efficiency of freight routes			Provide targeted road safety work programmes							
		Improve distribution of cycle networks across the region													
	Operational performance	Accessibility performance Measures	Quality performance measures	Ease of use performance measures	Capacity performance measures	Reliability performance measures	Responsiveness performance measures	Vehicle safety performance measures	Pedestrian safety performance measures	Cycle safety performance measures	Public transport safety performance measures	Community safety performance measures	ETS performance measures	Pollution control performance measures	Economic sustainability performance measures

2.7 AMP levels of service tables

The levels of service tables in this section identify current and target performance measures within key result areas:

- Section 2.7-1 Network outputs
- Section 2.7-2 Operations performance.

A mix of customer perception measures (mainly customer satisfaction ratings) and related output measures are used for the network outputs level within the framework. The operations performance level comprises performance measures and does not include customer satisfaction ratings.

The LOS tables have the following structure:

- Key result – the key result or service value to be delivered (effective, efficient, safe, sustainable)
- Level of service – a statement that describes the output or objective to be delivered
- Service area – road, footpath, cycle or whole of network
- Measure – the description of how performance is quantified
- Current performance – the most recent published or available measure of performance
- Target performance – the intended standard or performance to be achieved. Target dates are provided for some Auckland Transport measures but are otherwise not stated due to the wide variation in legacy approach. Target performance in this document is indicative only.

Note that the target performance area is still to be consulted widely, discussed and agreed.

2.7.1 Network outputs

The network outputs LOS table is shown in Table 2.7-1.

Initial Auckland Transport LOS statements have been developed to be consistent with the outcome requirements of the ITP and the major funding stakeholders, i.e. Auckland Council and NZTA. They incorporate the intent and direction of the legacy LOS as much as possible. This distillation of multiple values and statements means that some LOS are more generic at this point in time than the legacy LOS that they replace.

Plans that will evolve over time are to focus Auckland Transport LOS on service and geographic-specific issues through community and stakeholder consultation. The exceptions to this are those LOS that can already be directly aligned with the major funding stakeholders. These include LOS already being measured at a regional level such as safety, road condition, travel times and loading.

Network output measures are focused on the outputs of each specific service area and some measures apply across all service areas within each network. Where possible, they include customer opinion paired with network output or performance measures.

Measures at this level are provided to lead the discussion for further development with stakeholders following the publication of this AMP. Several areas are already subject to existing measures and should only require stakeholder review and confirmation. A few areas such as sustainability will need significant development to be ready for community and stakeholder discussion.

Table 2.7-1 Network outputs – public transport network

Source: Levels of service final draft.xlsx – June 2012

Key Result	Level of Service	Service Area	Measure	Current Performance	Target Performance (indicative / to be further developed and agreed)	Source
Effective	Increase availability of travel options	PT Network	Percentage of passengers travelling on an integrated ticket	TBC	TBC	
			Increase in weekday PT mode share for all trips (measured in trip legs)	3.4% in 2007	7% by 2020 12% by 2040	ARTA
			Percentage of residents using passenger transport to travel to work	1% - Census 2006	3% - Census 2011	FDC
			Percentage of services running on the RTN and QTN meet the strategy's minimum service level guidelines by 2020	TBC	TBC	ARTA
			Passenger satisfaction rating for ease of transfer between public transport modes	66%	TBC	Gravitas Topline report 2011
		Bus	Percentage of key bus corridors with bus shelters located within 500m of each other	Compliance 100% (estimated)	Not less than 75%	NSCC
		Rail	Percentage of passengers travelling on an integrated ticket	TBC	70%	ARTA
			Overall % satisfaction of users with the proximity of station facilities to their origin and destination of travel	TBC	TBC	ARTA
		Targeted services	Percentage of users who find targeted services accessible	TBC	TBC	
	Improve navigability across the network	PT Network	Percentage of passengers satisfied with integrated transport information at terminal/station sites	TBC	70%	
	Assets are maintained in good condition	PT Network	Overall user satisfaction for facility	78%	Maintain or improve on baseline	Gravitas Topline report 2011
		Bus	Percentage compliance with graffiti removal response times	90%	TBC	
			Overall user satisfaction for facility	78%	Maintain or improve on baseline	Gravitas Topline report 2011
			Percentage of bus shelters in moderate (condition grade 3) or better	80%	95%	
		Ferry	Overall customer satisfaction scores for ferry QTN & LCN services. Total of "good", "very good" or "excellent"	90%	QTN >80% LCN >75%	Gravitas Topline report 2011
			Overall user satisfaction for facility	94%	Maintain or improve on baseline	Gravitas Topline report 2011
			Percentage of wharves in moderate (condition grade 3) or better	TBD	95%	
		Rail	Overall customer satisfaction scores for rail RTN and LCN services. Total of "good", "very good" or "excellent"	84%	RTN >85% LCN >80%	Gravitas Topline report 2011
			Overall user satisfaction for facility	91%	Maintain or improve on baseline	Gravitas Topline report 2011
			Percentage of rail facilities in moderate (condition grade 3) or better	TBC	95%	
	The assets are fit for purpose	Ferry	Percentage of stations which have passed a barrier free audit	TBC	90%	ARTA
			Overall satisfaction by ferry operators	72%	TBA	Gravitas Topline report 2011
		Rail	Rail operator (Veolia) satisfied with the rolling stock maintenance facilities	TBC	90%	ARTA

Table 2.7-1 Network outputs – public transport network. Continued...

Key Result	Level of Service	Service Area	Measure	Current Performance	Target Performance (indicative / to be further developed and agreed)	Source
			Overall Satisfaction Index by operator	69.10	TBC	Gravitas Topline report 2011
Efficient	The public transport network can accommodate demand and enables customers to move around efficiently	PT Network	Percentage of public transport passengers satisfied with their public transport service	86%	87%	SOI
			Total public transport patronage - annual boardings for bus, rail and ferry	69,401,126	80,245,000 (2014/15)	SOI
		Bus	RTN: Busway boardings: 12-month rolling	2,233,943	2,499,000 (2014/15)	SOI
			QTN & LCN buses (including contracted school buses): 12-month rolling	51,196,688	56,182,000 (2014/15)	SOI
		Ferry	Ferry boardings: 12-month rolling	5,132,858	5,434,000 (2014/15)	SOI
		Rail	RTN: Rail boardings: 12-month rolling	10,837,637	16,128,000 (2014/15)	SOI
	Improve or maintain travel time reliability	PT Network	Service reliability – bus, rail and ferry	100%	99%	AT reporting 2011-12
		Rail	Service arrives at all stations within five minutes of scheduled time	81%	84%	AT reporting 2011-12
	Improve or maintain resolution rate for Requests for Service	PT Network	Percentage of telephone calls to MAXX call centre answered within 20 seconds	82%	80% or better each year	SOI
			Response time to PT service enquiries	87%	90%	AT reporting 2011-12

Key Result	Level of Service	Service Area	Measure	Current Performance	Target Performance (indicative / to be further developed and agreed)	Source
Safe	Minimise the number of safety and security incidents	PT Network	Percentage of users perceive public transport modes as being safe	80%	Maintain or improve on baseline	Gravitas Topline report 2011
			Public and customer safety and security incidents across public transport network	0.115 incidents per 100,000 passenger boardings (year to 31 Dec 2011)	0.090 (to 31 Dec 2014)	SOI
		Bus	Rating of personal safety at facilities	78%	TBD	Gravitas Topline report 2011
		Ferry	Rating of personal safety at facilities	82%	TBD	Gravitas Topline report 2011
		Rail	Rating of personal safety at facilities	78%	TBD	Gravitas Topline report 2011

Key Result	Level of Service	Service Area	Measure	Current Performance	Target Performance (indicative / to be further developed and agreed)	Source
Sustainable	The network is managed to minimise carbon emissions	Transport Network	Total CO_2 vehicle (petrol and diesel powered) emissions	3,790 kilotons (year to 30 June 2011)	Reduce baseline	SOI
			Auckland Transport carbon footprint	TBD	TBD	
		Rail	CO_2 emissions from rail network	24.1 kilotons (year to 30 June 2011)	Reduce baseline	SOI
	The organisation provides assets and services at least whole of life cost	PT Network	Increase proportion of customers who rate value for money as "good", "very good" or "excellent"	61%	TBC	Gravitas Topline report 2011
	The public transport network promotes and provides sustainable travel options	PT Network	PT mode share during the morning peak period increases across the isthmus and CBD screenlines	In 2006 H/Bridge (S/bound) 27% Isthmus (inbound) 12% CBD (inbound) 39%	By 2020 2040 38% 50% 18% 26% 52% 58%	ARTA

2.7.2 Operational performance

The operational performance LOS table is shown in Table 2.7-2.

The operational performance measures cover the performance of those assets and services that are considered necessary and sufficient to deliver the network outputs. These operational measures are aligned with their relevant service area outputs, which are in turn delivering stakeholder values of effectiveness, efficiency, safety and sustainability.

Table 2.7-2 Operational performance – public transport network
Source: Levels of service final draft.xlsx – June 2012

Key Result	Level of Service	Service Area	Measure	Current Performance	Target Performance (indicative / to be further developed and agreed)	Source
Effective	Increase availability of travel options	Transport Network	Number of participants in business travel planning activities	TBD	TBD	AT reporting 2011-12
		Bus	Km of bus lanes Implemented	3	TBD	ACC
			Number of new bus shelters built	20	55	ACC
	Improve navigability across the network	PT Network	Percentage of PT passengers with access to real time service information: internet/mobile data	72%	89%	AT reporting 2011-12
			Information channel outages	0%	8%	AT reporting 2011-12
			Percentage of PT stops with service information	50%	56%	AT reporting 2011-12
	The assets are fit for purpose	PT Network	Increase in proportion of PT vehicles with low floors and wheelchair provision	56% in 2009	75% by 2020 100% by 2040	RLTS
		Bus	Percentage of bus shelters designs that comply with design standards	TBC	TBC	ACC
		Rail	Percentage of stations which have passed a barrier free audit	TBC	90%	ARTA

Key Result	Level of Service	Service Area	Measure	Current Performance	Target Performance (indicative / to be further developed and agreed)	Source
Efficient	The public transport network can accommodate demand and enables customers to move around efficiently	PT Network	Total boardings for bus, rail and ferry: Monthly % change	8%	1%	AT reporting 2011-12
			Total boardings bus, rail and ferry: FYTD % change	11%	1%	AT reporting 2011-12
			Service trips with disability access	22%	21%	AT reporting 2011-12
		Bus	RTN: Busway boardings: 12-month rolling	2,233,943	2,160,000	AT reporting 2011-12
			QTN & LCN buses (including contracted school buses): 12-month rolling	51,196,688	49,700,000	AT reporting 2011-12
			RTN: Busway boardings: Monthly % change	6%	5%	AT reporting 2011-12
			RTN: Busway boardings: FYTD % change	18%	5%	AT reporting 2011-12
			QTN & LCN buses (including contracted school buses): Monthly % change	9%	1%	AT reporting 2011-12
			QTN & LCN buses (including contracted school buses): FYTD % change	9%	1%	AT reporting 2011-12
		Ferry	Ferry boardings: 12-month rolling	5,132,858	4,775,000	AT reporting 2011-12
			Ferry boardings: Monthly % change	10%	1%	AT reporting 2011-12
			Ferry boardings: FYTD % change	18%	1%	AT reporting 2011-12
		Rail	RTN: Rail boardings: 12-month rolling	10,837,637	10,090,000	AT reporting 2011-12
			RTN: Rail boardings: Monthly % change	1%	2%	AT reporting 2011-12
			RTN: Rail boardings: FYTD % change	20%	2%	AT reporting 2011-12
	Improve or maintain travel time reliability	PT Network	Service Provision (Reliability) – bus, rail and ferry	100%	99%	AT reporting 2011-12
			Service punctuality – bus, rail and ferry	87%	85%	AT reporting 2011-12
		Rail	Service provision (Reliability) – rail only	98%	98%	AT reporting 2011-12
	Improve or maintain resolution rate for Requests for Service	PT Network	PT service complaints: Monthly	18	20	AT reporting 2011-12
			PT service complaints: 12-month rolling	20.5	20	AT reporting 2011-12

Table 2.7-2 Operational performance – public transport network. Continued...

Key Result	Level of Service	Service Area	Measure	Current Performance	Target Performance (indicative / to be further developed and agreed)	Source
Safe	Minimise the number of safety and security incidents		Compliance with CPTED and safety and security design guidance	TBD	TBD	(blank)
		Rail	Compliance with H&S Legislation	TBC	1	ARTA
	Maintain a safe working environment	PT Network	Health and safety incidents involving contractors	3	<60 pa = 5	(blank)
			Accidents and incidents involving contractors	2	5	AT reporting 2011-12
			Public and customer safety and security incidents per 100,000 passenger boardings across PT network	0.08	0.095	AT reporting 2011-12
		Transport Network	Lost time injuries	TBC	0	AT reporting 2011-12
	The assets are fit for purpose	Ferry	Percentage of wharves pass Annual Fitness survey	TBC	100%	ACC

Key Result	Level of Service	Service Area	Measure	Current Performance	Target Performance (indicative / to be further developed and agreed)	Source
Sustainable	Public transport subsidies are set at an appropriate level	PT Network	PT Farebox recovery ratio	0.45	0.48	AT reporting 2011-12

2.8 LOS reporting system

Auckland Transport currently monitors many key performance measures (KPIs) across a wide range of business activities such as:

• Financial performance	• Asset management
• Operational performance	• Risk management
• Project and contract management	• Marketing and communications
• Network performance for planning	• Customer relations

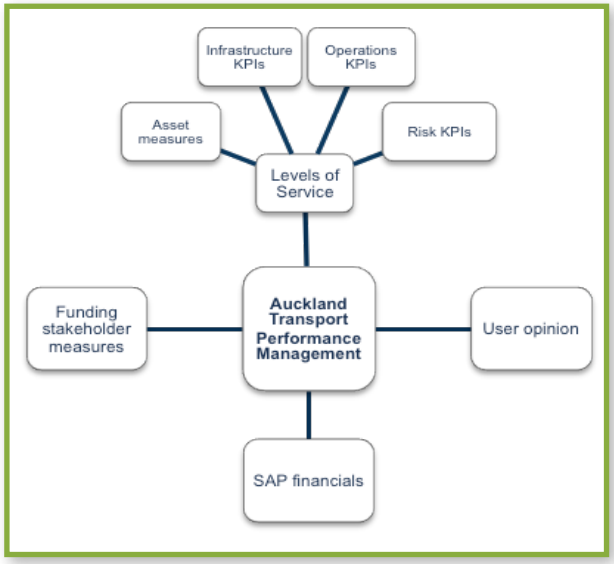
The LOS framework includes only those KPIs that are considered necessary and sufficient to monitor and manage particular LOS. There is an ongoing process to assess these KPIs for inclusion in the LOS framework.

There are also areas within the LOS framework that are not currently covered well by existing KPIs, e.g. freight, civil defence and sustainability. KPIs for these areas have been assessed and developed where appropriate for inclusion in the first Auckland Transport AMP.

The LOS framework is being developed as an information system in the short term to manage the LOS data, linkages and categorisations that comprise the LOS measures. A performance management system is being considered to integrate the monitoring of financial and non-financial KPIs with LTP and LOS to provide management, executive and governance reporting. The role of LOS within the general arrangement of a performance management system is shown in Figure 2.8-1.

A mix of customer opinion measures and related performance measures are used for the strategic outcomes (level 1) and service area outputs (level 2). Asset and service performance measures at level 3 are predominantly performance measures.

Figure 2.8-1 Performance Management and LOS



Customer and stakeholder opinion information is developed through a range of surveys, market research, focus groups and stakeholder consultation. Performance measures are obtained from business-as-usual planning and operational processes such as asset condition and service performance analysis, usage and safety statistics and service request data.

2.9 LOS future improvements

Ongoing work on the LOS will be undertaken beyond the 2012 AMP. Through this work, some key improvements to LOS will be provided:

Improvement in the selection and alignment of output measures with key Auckland Transport plans (SOI, ITP, Statement of Priorities) and key plans of the principal funding stakeholders: Auckland Council and NZTA	**This work will entail further consultation with stakeholders. Required for this first AMP but will require on-going development**
Development of more meaningful KPIs in several areas	**This work will entail further consultation with stakeholders. Required for this first AMP but will require on-going development**
• **Sustainability**	
• **Road network congestion**	
• **Value for money**	
• **Economic productivity, e.g. freight network efficiencies**	
• **Public transport accessibility**	
Improvement in the identification of long-term regional and local LOS targets	**This work will entail further consultation with stakeholders. Required for this first AMP but will require on-going development**
Improvement in the performance management systems used to integrate, monitor and report LOS within Auckland Transport	**Programme to be developed**
Identification and alignment of costs directly associated with LOS	**Programme to be developed. This item is dependent in part upon the previous item**

A specific programme of improvement works has been developed, identified and costed within the 2012 AMP.

3 Growth and demand

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Auckland Transport
An Auckland Council Organisation

3 Growth and demand

3.1 Overview

3.1.1 Regional issues

The Auckland region has experienced successive decades of rapid growth with much of this growth being accommodated through intensified development in specified areas. This rapid population increase has impacted our existing transport network infrastructure. Auckland is New Zealand's most populous and fastest growing region, from a population of just over 1.2 million residents in 2001 to almost 1.5 million residents in 2011.

This section focuses on how we assess the current demands on the transport network and how we intend to manage future demand. Our approach is to maximise the use of our existing transport network and increase patronage of public transport to delay the construction of new roads. This approach will help address road traffic congestion to enable our economic goals for the Auckland region to be achieved and support the national economy. A world-class transport system is needed to service Auckland's population of between 1.9 and 2.8 million people (low and high scenarios) by 2051.

This section is about managing growth and demand on the public transport infrastructure with strong linkages to the transport network. The public transport network consists of the Rapid Transit Network (rail and the Northern Express bus service), Quality Transit Network (buses including contracted school buses), and the ferry network (including wharves).

With the Auckland regional governance changes, public transport functions are now consolidated under Auckland Transport management. This provides a platform for opportunities to improve the network in a more holistic manner, and in close collaboration with our primary partners Auckland Council, NZTA and KiwiRail. A well-connected and accessible Auckland is one of the six outcomes to enable the Mayor's vision of the world's most liveable city. While significant investment in the rail network is proposed to increase the viability of this transport mode, a One System approach of integrated investment is required in all transport modes to achieve this vision.

Public transport, along with changing behaviours to manage demand, is an important component of sustainability for the Auckland region as it provides travel mode choices that reduce reliance on the private motor vehicle and free up limited arterial and state highway capacity. This will reduce congestion and support economic growth.

Public transport growth is primarily development-led rather than demand-led. The transport system is a major shaper for Auckland to accommodate current and future populations, and reducing congestion to allow freight and commercial movement is an important requirement to improve productivity.

The Auckland Plan is the strategy to enable the Mayor's vision and uses spatial planning as a method to distribute people and activities in a space. One of the four fundamental components of spatial planning is the rational land use plan for where growth will be accommodated. The Auckland Plan is discussed in detail in the following sections in relation to the transport network and growth.

3.1.2 Managing growth and demand

There is a range of pressures, risks and opportunities for the region that have a bearing on how we plan our public transport network and services in response to growth and demand. Mayoral vision, strategies and plans are supported by analyses of population, environmental changes, economic and transport trends and regional issues to give a picture of future requirements of the transport network.

The transport response to regional growth and demand is planned in alignment with the wider Auckland vision and outcomes. The relationship between Auckland Council and Auckland Transport plans is outlined in Figure 3.1-1.

The Auckland Plan, adopted by the Auckland Council in March 2012, sets out the spatial vision and outcomes that drives the strategic direction of the activities Auckland Transport undertakes.

The Integrated Transport Plan (ITP) strategically coordinates the planning of the Auckland Transport network with other network providers, prioritising and sequencing investment over the next 30 years to deliver the spatial vision, outcomes and other requirements of the Auckland Plan.

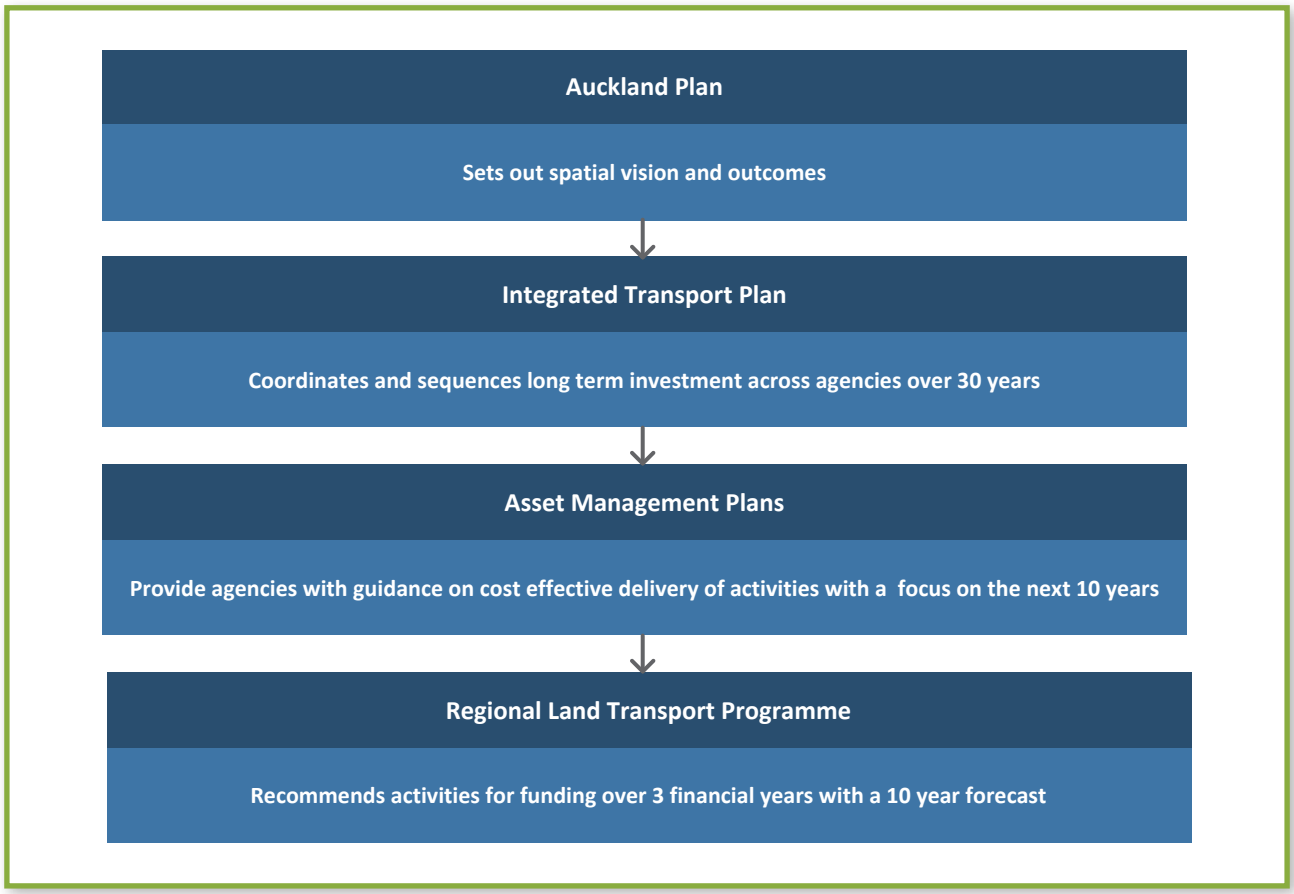
The Asset Management Plan supports the preparation of the Long Term Plan (LTP) and Regional Land Transport Programme (RLTP) to deliver initiatives in travel demand management and capital programmes to address travel options and network capacity.

3.1.3 Section layout

The long-term plans described in the ITP and Section 1 determine transport and land use planning. These plans shape the pattern of development and the existing public transport system detailed in Section 4. The strategic asset management response to growth and demand

Figure 3.1-1 Transport network growth and demand

Source: Strategy and Planning (April 2011)



management outlined in this section identifies strategies to manage the gap between anticipated demand and current asset capacity. It enables staged development of new assets to meet future demand over time, and optimises utilisation of resources by considering demand management strategies and other non-asset solutions.

Current growth and demand trends including population, economics and transport are detailed in Section 3.2. Demand forecasts at the regional level are covered in Section 3.3, as well as the impact on the public transport network. Auckland Transport's demand management plan is covered in Section 3.4 including regional strategies and the travel demand management plan to minimise the need for new assets. It also covers the growth driven capital projects for the next 20 years, with detail on our significant projects and programmes for the next three years.

3.2 Growth and demand trends

3.2.1 Population trends

Auckland is New Zealand's fastest growing region with a population increase of 286,000 between 2001 and 2011 (based on population estimates from Statistics New Zealand). The estimated resident population at 30 June 2011 for the Auckland region was 1.486 million (adjusted for the new Auckland Council boundaries). Population growth drives the increasing demand on transport infrastructure and other services.

Where and how these additional people live is the primary driving force for change in Auckland. The Auckland region was the fastest growing region at 1.6 per cent in the June 2010 year compared to the national average at 1.2 per cent. It was the only region to grow faster than the national average. Auckland is currently home to about one third of New Zealand residents.

3.2.2 Economic trends

National level

The Auckland region is dominant in the national economy as indicated by the following:

- Economic growth in the Auckland region accounts for 35 per cent of New Zealand's GDP
- Auckland is the gateway to over 70 per cent of all international arrivals to New Zealand
- Auckland Airport and Ports of Auckland account for 46 per cent of New Zealand's exports / imports by value.

The public transport network and services is an enabler of economic growth through increased productivity. The transport chapter of the National Infrastructure Plan supports the Government's overall vision for transport which is "an effective, efficient, safe, secure, accessible and resilient transport system that supports growth of our country's economy in order to deliver greater prosperity, security and opportunities for all New Zealanders".

An economy delivering opportunities and prosperity for all Aucklanders and New Zealand is one of 11 strategic directions of the Auckland Plan.

Auckland is New Zealand's largest commercial centre and main international gateway. The public transport network and services is important to the total transport system by relieving congestion caused by growth and thus supporting economic growth in the region and nationally.

Economic activity and growth is enabled by the movement of people, goods and services. Maintaining and increasing the level of regional economic productivity in the short and long term is affected by transport factors including travel distances, increasing numbers of cars on the road, and transport mode choices. These factors have contributed to increasing traffic congestion and delays along some of the region's main transport routes. Road congestion causing people and freight delays has a direct impact on the cost of doing business and contributes to loss of productivity.

Building activity

Building activity has slowed in the Auckland region with the global financial crisis and economic conditions. The number of new dwelling authorisations declined to 3,681 in December 2010, as shown in Table 3.2-1. Continued effects of the global financial crisis are expected to limit growth in building activity. This may have a positive effect on changing people's behaviour, with an increased uptake of public transport as people manage their living costs carefully.

3.2.3 Transport trends

How transport issues and trends contribute to demand growth is detailed below. Greenhouse gas emissions within the transport network are also a factor influencing demand and this is covered in this AMP in Section 5, Sustainability.

Car ownership

Private car usage affects people's accessibility to their destination. Ready availability of other transport options can lead to significant reductions in private car usage. Since the advent of the motorway system and car import deregulation, Aucklanders have been reliant on private vehicles to get around.

The trends in public transport use, registered vehicles and population growth since the 1920s are shown in Figure 3.2-1. Significant milestones included car affordability after World War 2, the opening of the Southern and Northern motorways and the Harbour Bridge. These milestones of increasing road network capability directly impacted annual public transport trips.

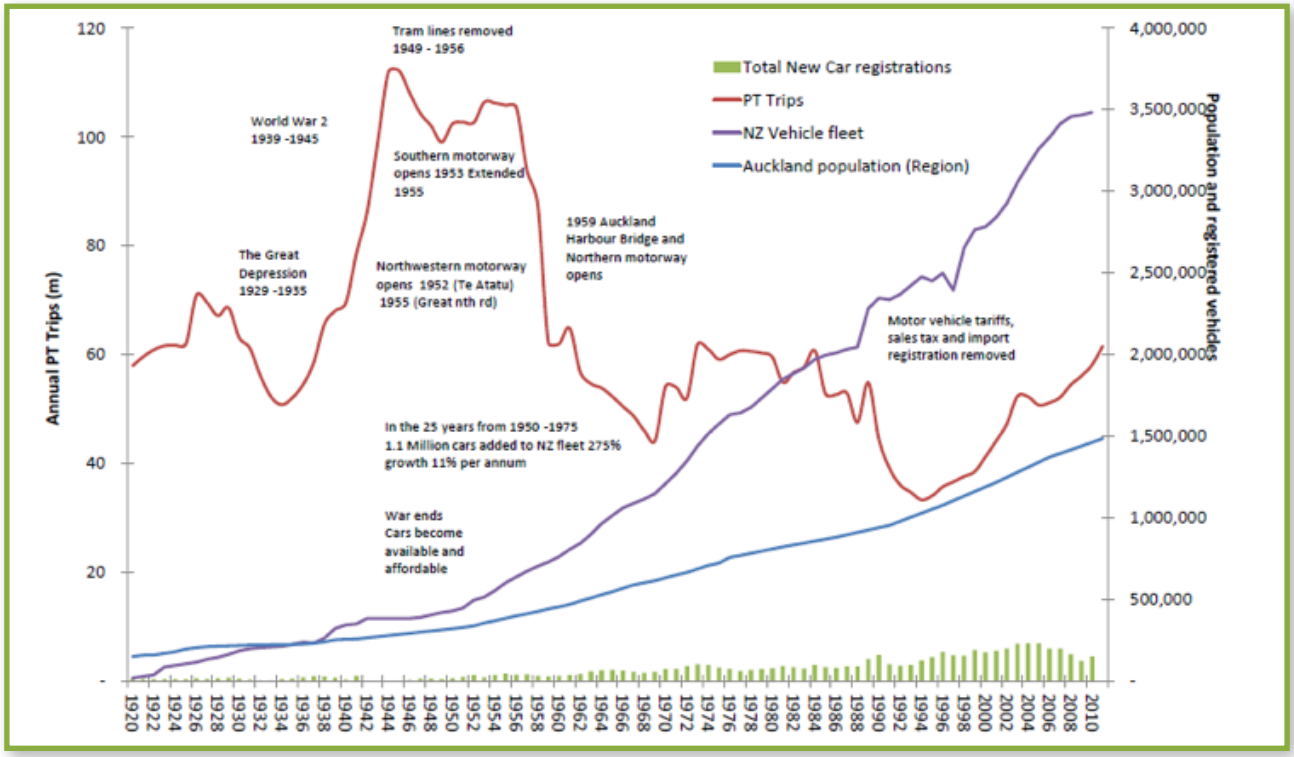
Destination accessibility describes how close and accessible the daily things that we do are to where we live, for example, work, shopping, and leisure. Auckland has poor destination accessibility by world standards, which is exacerbated by a relatively low investment in public transport infrastructure. Car ownership and public transport trends need to be viewed together to gain a holistic understanding of accessibility.

The number of households with no access to a motor vehicle in the Auckland region has declined in the last three censuses as shown in Figure 3.2-2. This number accounted for 11.3 per cent in 1996, but in 2006 had declined to 7.4 per cent of all households. Single-vehicle only households also declined from 38.8 per cent in 1996 to 35.1 per cent in 2006.

Table 3.2-1 Summary of dwelling authorisations in the Auckland region
Source: Auckland Council, April 2011

Annual number of dwelling authorisations								
Year	Rodney District	North Shore City Council	Waitakere City Council	Auckland City Council	Manukau City Council	Papakura District	Franklin District	Total
2006	821	1,244	843	1,873	1,698	239	623	7,341
2007	727	1,049	697	1,747	1,198	126	745	6,289
2008	717	430	608	1,438	715	163	349	4,420
2009	604	549	514	916	541	199	234	3,557
2010	599	569	443	897	623	260	290	3,681

Figure 3.2-1 Population, car and public transport use
Source: Auckland Transport's website (October 2011)

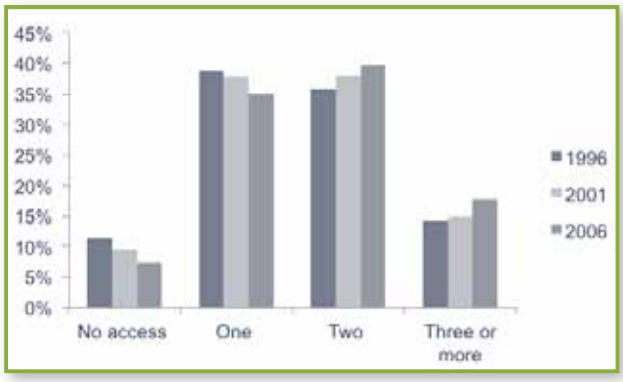


The proportion of households with access to two, three or more cars has increased, from 35.7 per cent in 1996 to 39.7 per cent in 2006. Households with access to three or more cars increased from 14.2 per cent in 1996 to 17.7 per cent in 2006. It is expected as the region in-fills people will be more encouraged to use public transport and become less reliant on private vehicles.

There has been increased growth in public transport trips into the Auckland CBD due to significant investment in the public transport network and services coupled with higher fuel prices. It is expected that this trend will continue with significant public transport investment planned for the next 10 years (refer to Section 3.3.2 for demand forecasts).

Public transport patronage is currently growing and this will directly affect private car usage in the medium term. Sustained growth in public transport is essential for economic prosperity and liveability. Public transport has the ability to move people more efficiently and free up motorways and arterials for freight and other travel needs that cannot use public transport. There is also a change in people attitudes with using private vehicles which uses a scare resource. This value is making public transport more attractive.

Figure 3.2-2 Access to motor vehicles in the Auckland region
Source: Auckland Council (20 May 2011) and Statistics New Zealand Censuses

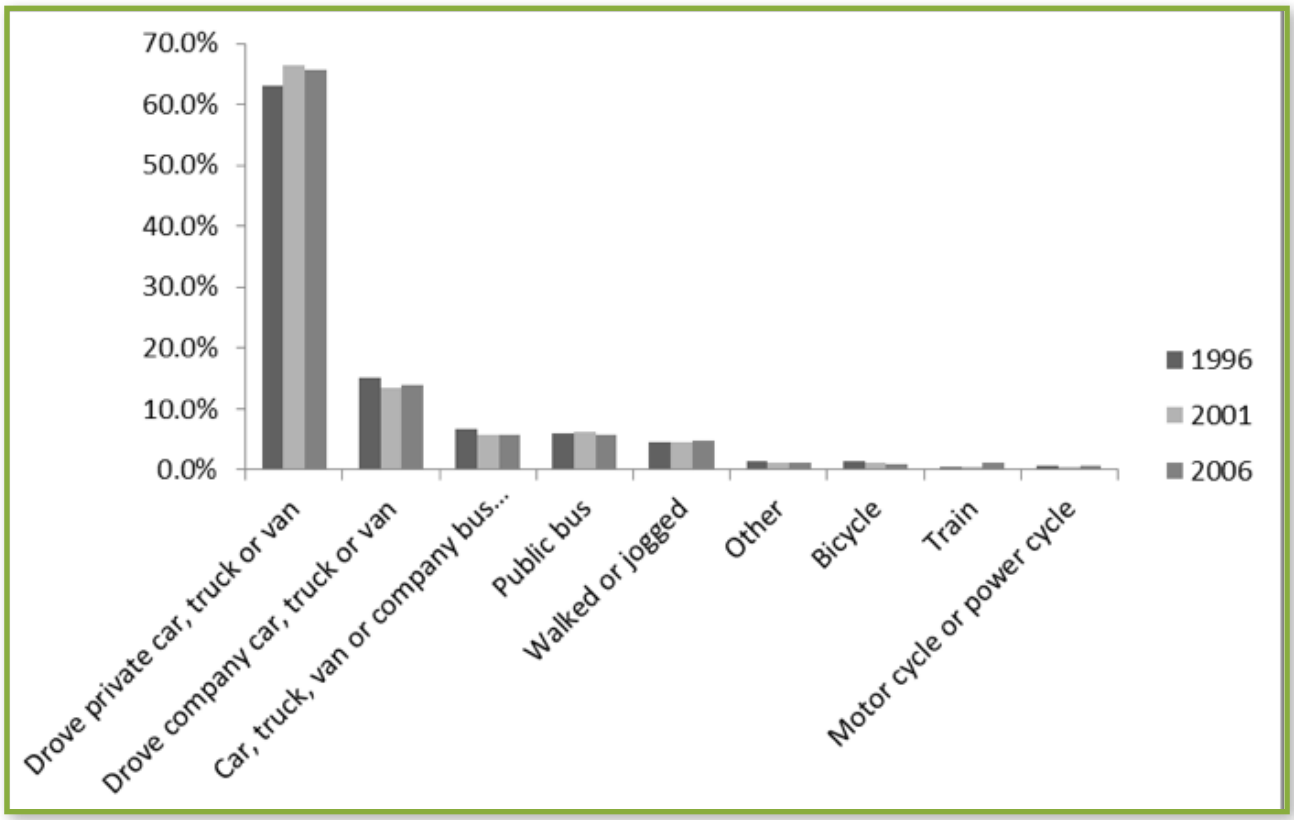


Travel to work

Driving a private car, truck or van was the most common means of travel to work on census day in the Auckland region, consistently accounting around two thirds (66 per cent) in each of the three censuses (1996-2006) as shown in Figure 3.2-3. The second most common means of travel to work was driving a company car, truck or van at around 14-15 per cent of all modes.

Driving a private or company motor vehicle to work in the Auckland region over the last three censuses

Figure 3.2-3: Main means of travel to work
Source: Auckland Council and Statistics New Zealand (22 June 2011)



has consistently accounted for approximately 80 per cent of work travel trips. Public transport bus was the next most common means of travel to work on census day. Around six per cent opted for this option on each of the three censuses. People arriving by train remained just over half a per cent (0.6 per cent) between 1996 and 2001, but in 2006 this increased to 1.1 per cent.

The proportion of people walking or jogging to work increased marginally from 4.5 per cent in 1996 and 2001 to nearly five per cent in 2006. People cycling to work decreased from 1.5 per cent in 1996 to one per cent in 2006.

Energy costs and availability

Energy needed to run the transport fleet and to move goods drives the economy. Rising and fluctuating fuel prices is a factor affecting transport trends.

Fuel prices are dependent on underlying oil prices and at this point in time the long-term trend for oil prices has been higher; for example as shown in Figure 3.2-4 which tracks the trend Brent crude prices in constant (2010) US dollar terms. Not only has the trend been higher, but a critical issue for transport services provision is the volatility of prices around the trend. It is volatility, defined by price swings over one to two years that create problems estimating transport demand, particularly for public transport provision in the short term and makes longer term capacity planning more difficult.

Trends in oil prices are influenced by supply and demand factors. The growth and industrialisation of countries in Asia, particularly China and India, is helping to push growth in demand for crude oil. Increases in activity and living standards in this region are helping to drive trends, competing with the western developed economies for supply. Price volatility is driven by related geopolitical and economic events that have both actual and perceived impacts on supply and demand. Strikes and conflict in known producing areas signal potential supply shortages, while economic events such as the 2008 global financial crisis and ensuing recession influence views around current and future demand. The trend towards higher oil prices seems fairly established, but that event driven volatility will continue to generate short-term noise.

Figure 3.2-5 shows volume-based price forecasts from 2008 to 2060 for a range of transport fuels. This figure shows significant increases in prices for all fuels to 2060.

Figure 3.2-4 Long-term trends in constant US dollar Brent crude oil prices
Source: BP Statistical Review of World Energy 2011

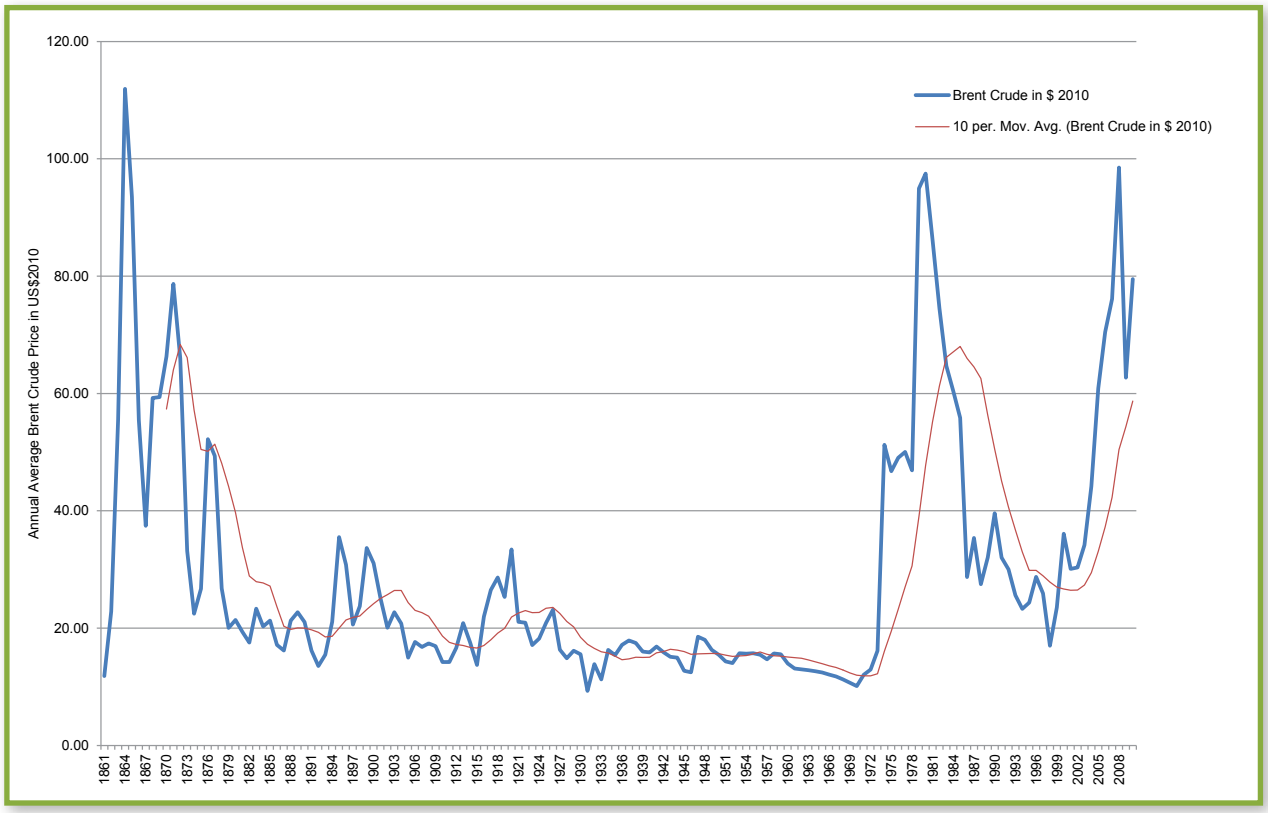
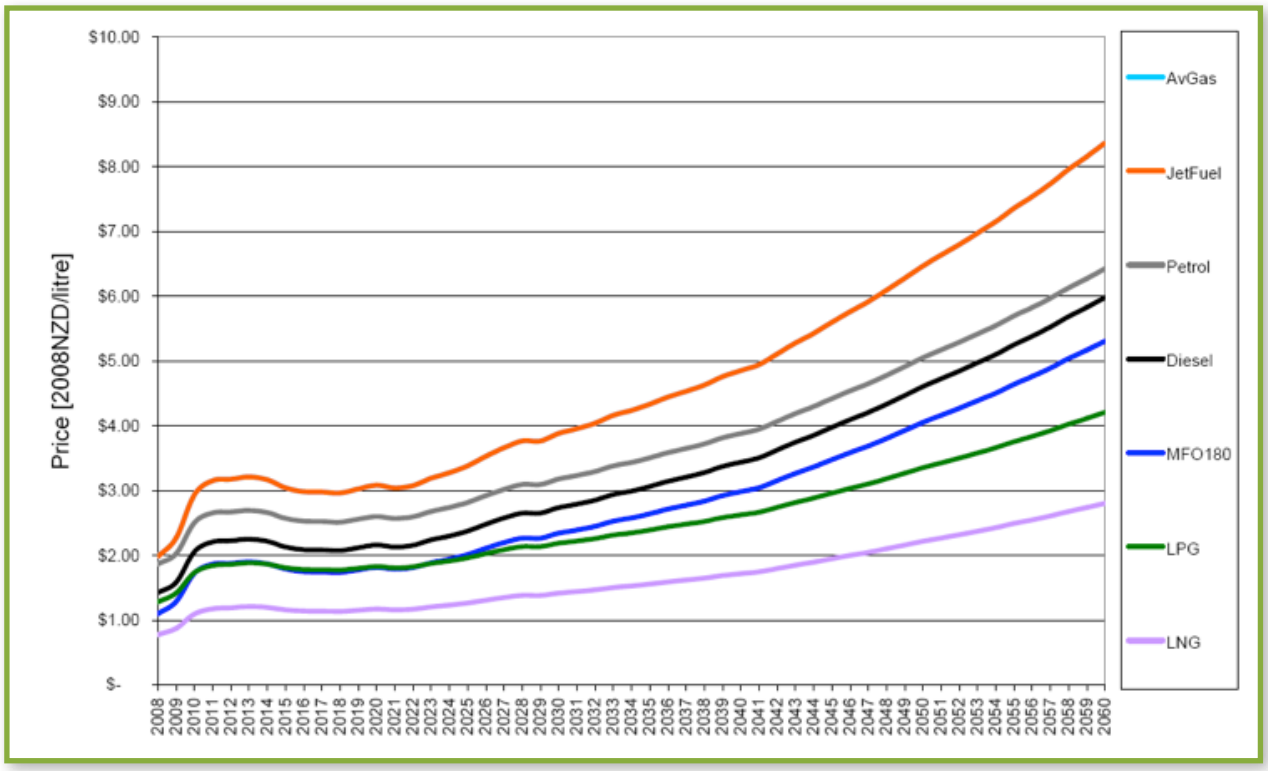


Figure 3.2-5 Volume based prices for transport fuels
Source: Auckland Regional Council (prepared by McCormick Rankin Cagney)



Note that MFO 180 is a fuel for use in marine diesel engines, boilers, furnaces and other combustion equipment.

Fluctuating fuel prices support the need to reduce the reliance on transport modes that use non-renewable fossil fuels, in particular the private car. To achieve destination accessibility will require a significant shift to a range of energy-efficient travel modes.

Fossil fuel reserves are peaking and once demand outstrips our ability to supply oil-based fuel, we can expect future price shocks. While alternative energy and fuel sources are being developed, we can still expect price and availability shocks. This is a bigger picture than fuel price alone and has huge potential to disrupt the global economy. Therefore, modern cities need to adapt to more resilient transport modes.

Bitumen and ready-mix concrete are important construction materials for Auckland's transport network. Forecasts of bitumen prices are strongly influenced by international oil price forecasts. NZTA publishes the Bitumen Price Index, which is linked to Singapore oil prices and the United States / New Zealand exchange rate. The Bitumen Price Index started at 906 in March 1998 and was 3,257 in November 2011. It peaked at 3,701 in August 2008 at the start of the global financial crisis.

Movement

Auckland's motorways and arterial roads are vital to our economy and communities. They comprise only nine per cent of the network but provide for 70 per cent of all road passenger transport trips, and almost 60 per cent of all peak and commercial vehicle travel.

Road congestion occurs as traffic volumes approach maximum capacity. Local road congestion and other general traffic issues tend to be focused on some of the key arterial corridors such as Dominion Road and Mount Eden Road. Population growth and increased road freight transport will continue to place significant pressure on road capacity.

Typically road congestion occurs at morning and afternoon peaks as people move to and from their place of work or study. The morning peak hour is the main constraint on the Auckland transport network and is generally two hours in duration. Movement is also important so people reach their destination not just for employment but also for other activities such as sports events, shopping and recreational activities. This is also commonly referred to as destination accessibility or the ease of reaching goods, services, activities and destinations.

Congestion can be an indicator that the infrastructure has inadequate capacity. However, congestion typically occurs only in certain areas of the network at peak times. Congestion is therefore addressed through more efficient use of the existing network and by encouraging public transport use and by travel demand management planning (refer to Section 3.4.2) first before building new road capacity. Maximising the capacity of the existing network and achieving an integrated network is detailed in Section 3.4.2. Congestion relief with public transport is targeting key arterial road corridors to free up road corridors for freight and passenger trips that cannot use public transport. It is expected that capacity in the future may be addressed through peak hour spreading. Road users will be encouraged to travel at different time of day and route. This has been an effective method for managing congestion overseas and is frequently linked to road user charge schemes.

Transport safety

Road safety is a high priority for Auckland Transport and is closely monitored. Although road deaths in the region have declined by 21 per cent between 2000 and 2008 along with a 12 per cent decrease in serious injuries, the number of minor injuries increased by 35 per cent in the same period. The highest road casualties per 100 million vehicle kilometres travelled (VKT) by legacy council and urban and rural networks were located in the former Waitakere followed by Auckland and Manukau areas.

The capital programmes to address these safety issues are mainly through capital programmes and targeted community transport programmes (refer to Sections 3.4.3 and 4.15 respectively).

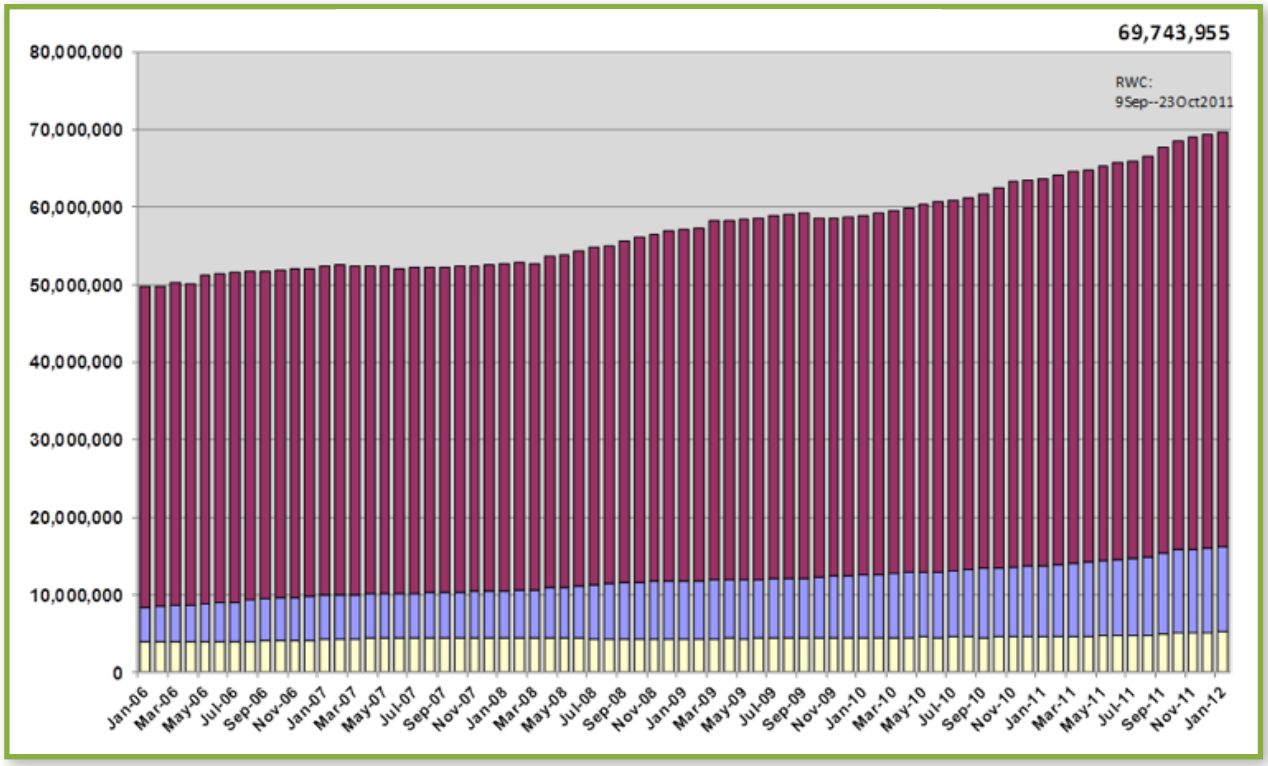
In addition to addressing serious road injuries and casualties, it is important that all transport users have a high degree of personal security, both real and perceived. The transport system should provide an environment where personal security is assured, whether the individual chooses to travel by private vehicle, public transport, walking or cycling. Safety issues need to be addressed with walking and cycling modes.

Public health

The regional transport network provides vital links and connections for communities. The development and operation of the transport network can influence community health in terms of risk from air pollution, noise and vibration.

Vehicles produce toxic air pollutants particularly carbon monoxide (CO), nitrogen oxides (NO2) and fine particles (PM10). The 2001 Ministry of Transport study Health Effects of Vehicle Emissions estimated that air pollution causes 436 premature deaths each year in the region with 58 per cent due to motor vehicles. Auckland Council monitors

Figure 3.2-6 Historical total patronage – 12 months rolling total
Source: Auckland Transport KPI Report (January 2012)



the air quality and reports any concentration of a pollutant that exceeds the national air quality standards to the public.

The majority of current transport-related activities are energy intensive and rely on consuming non-renewable resources in terms of fuel, materials and land use. These activities contribute to greenhouse gases and climate change. These are discussed separately in Section 5, Sustainability. Vehicles account for 35 per cent of greenhouse gas emissions in the region. High reliance on private cars for short trips instead of active modes such as walking and cycling may lead to poorer regional health outcomes in future.

Environmental sustainability at the local level

The transport system can impact on the loss or degradation of waterways due to the discharge of stormwater contaminants. These include sediment, stormwater flows being increased and/or diverted, leading to flooding and erosion. This is discussed further in Section 4.12, Drainage Lifecycle Management Plan (LCMP).

3.2.4 Patronage trends

Network summary

Improvements in the public transport network and services have increased growth in public transport trips into the city centre and total boardings over the last decade. This has been assisted more recently by higher fuel prices.

Patronage growth by month for the last six years is presented in Figure 3.2-6. This shows steady increases in patronage each year. The figure also shows that Auckland public transport patronage totalled 69,743,955 passengers for the 12 months to January 2012. This is an increase of 6,156,970 boardings or 9.7 per cent. February 2011 was the highest 12-month patronage total since the 1950s and the first 12-month period to exceed 64 million passenger trips.

A breakdown of patronage by month and 12-month rolling total is provided in Table 3.2-2 by public transport mode. Note that the Onehunga Line opened in September 2010. There has been significant patronage growth on the rail lines over the past few years. The Northern Express bus service and the Western Line have had significant growth in the past 12 months at 15.8 per cent and 29.6 per cent respectively.

Modal split

QTN is the most heavily used service at 75 per cent, followed by the RTN at 18 per cent and ferry at 7 per cent (based on March 2012 patronage results). The Rapid Transit Network (RTN) refers to rail and the Northern Express bus service, and the Quality Transit Network (QTN) is buses including contracted school buses.

Table 3.2-2 Patronage breakdown summary for last 12 months
Source: Auckland Transport KPI Report (January 2012)

Public transport mode	Patronage for 12 months to August 2011	% change
Rapid Transit Network sub-total	13,150,086	19.1
Northern Express bus	2,248,080	15.8
Rail sub-total	10,902,006	19.9
Western Line	4,085,266	29.6
Southern and Eastern Line	6,085,658	6.1
Onehunga Line	731,081	Not applicable
Quality Transit Network and local bus (include school bus) sub-total	51,388,303	7.2
Quality Transit Network and local bus	48,772,989	7.4
Contracted school bus	2,615,314	2.5
Ferry	5,025,566	13.3
Total patronage	69,743,955	9.7

International comparison of public transport trips

Compared with other similar sized cities internationally, Auckland's public transport trips are very low as shown in Figure 3.2-7. This is partly due to lower levels of historical investment in the public transport network. Most of the comparator cities have had extensive and well established electrified rail systems for many years while Auckland's rail redevelopment is still under way. Auckland's topographical shape is also not ideal for public transport infrastructure. This is a trend now being reversed.

Note that statistics relate to 2008/09 financial year for New Zealand and Australian metro areas and to 2008 calendar year for Canada and USA areas.

Rapid transit patronage

The RTN comprises right-of-way (unobstructed by other traffic) public transport on rail and the Northern Express along the Northern Busway. Patronage totalled 13,150,086 passengers for the 12 months to January 2012. This was an increase of 2,113,452 boardings or 19.1 per cent. The RTN patronage for the last four years is presented in Figure 3.2-8. This shows a steady annual increase from just over six million passengers in December 2006 to over 13 million passengers in January 2012 – more than double.

Rail patronage has experienced a steady increase from three million passengers in March 2004

Figure 3.2-7 International comparison of public transport trips
Source: ARC Auckland Public Transport Performance Benchmarking Study (August 2011)

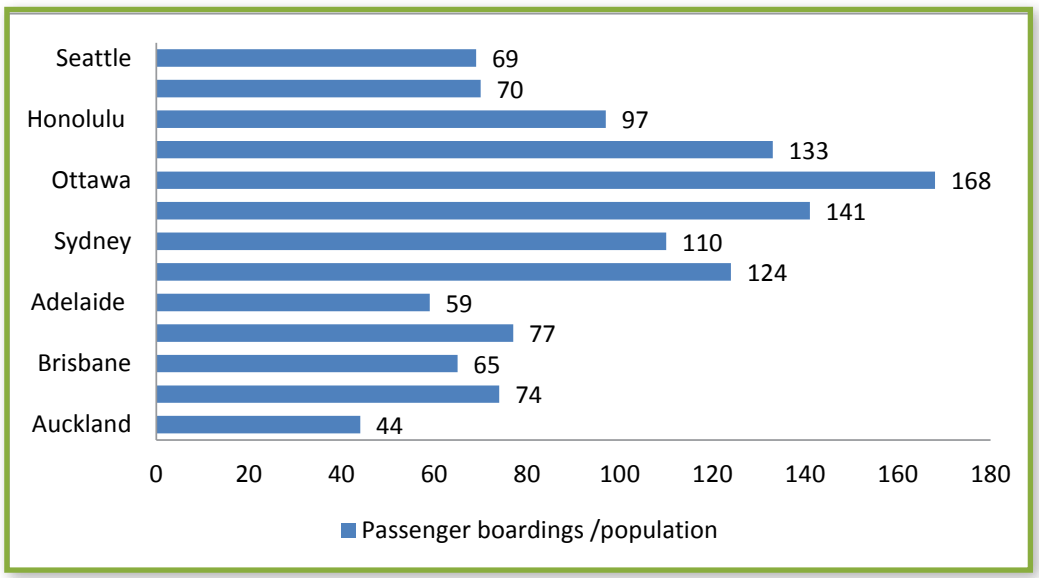
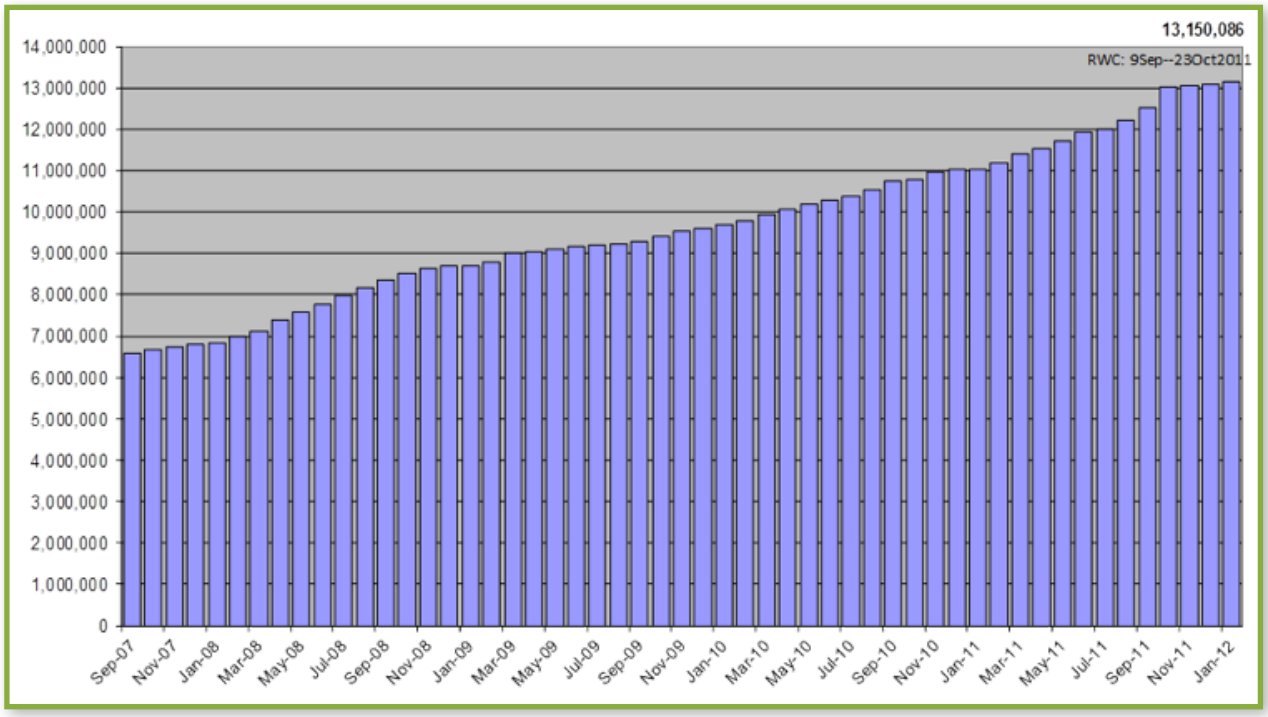


Figure 3.2-8 RTN patronage (12 month rolling total)
Source: Auckland Transport KPI Report (January 2012)



to 10.9 million passengers in January 2012, as presented in Figure 3.2-9. There is a sharp increase in patronage from 2005, following the opening of Britomart.

A network overview plan of the Auckland passenger rail transport network is presented in Section 4.2 Rail Network LCMP.

Figure 3.2-9 Rail patronage (12 month rolling total)
Source: Auckland Transport KPI Report (January 2012)

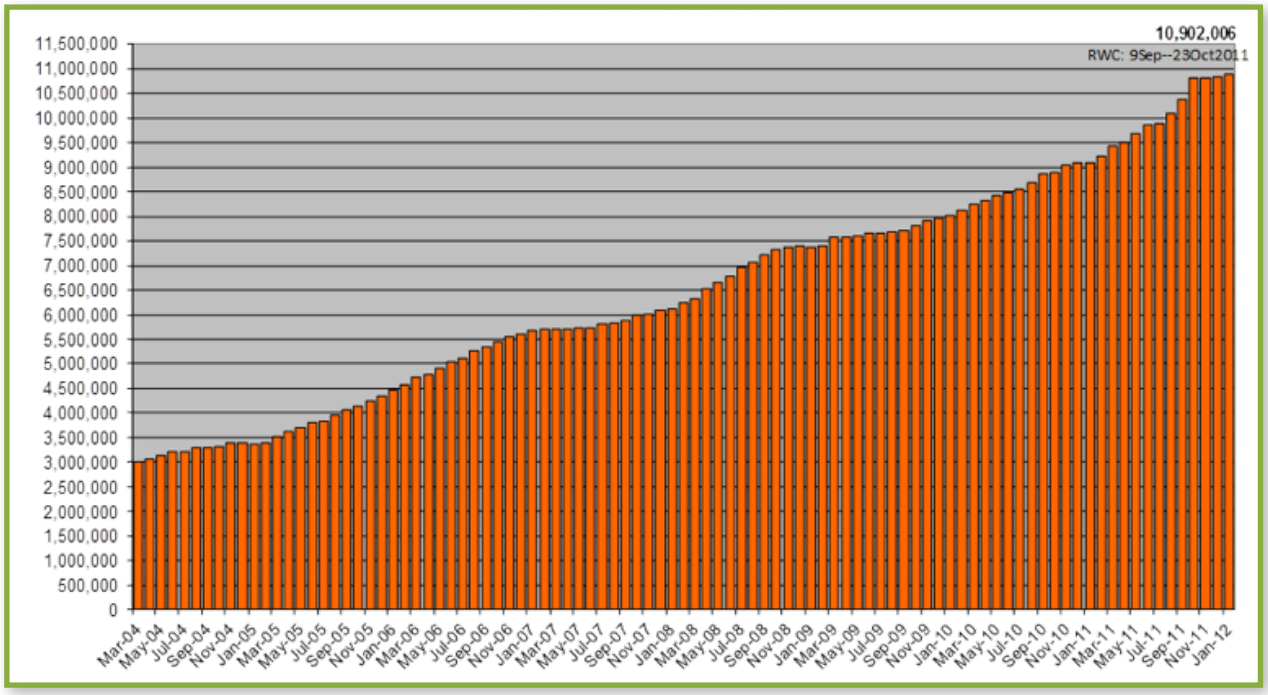
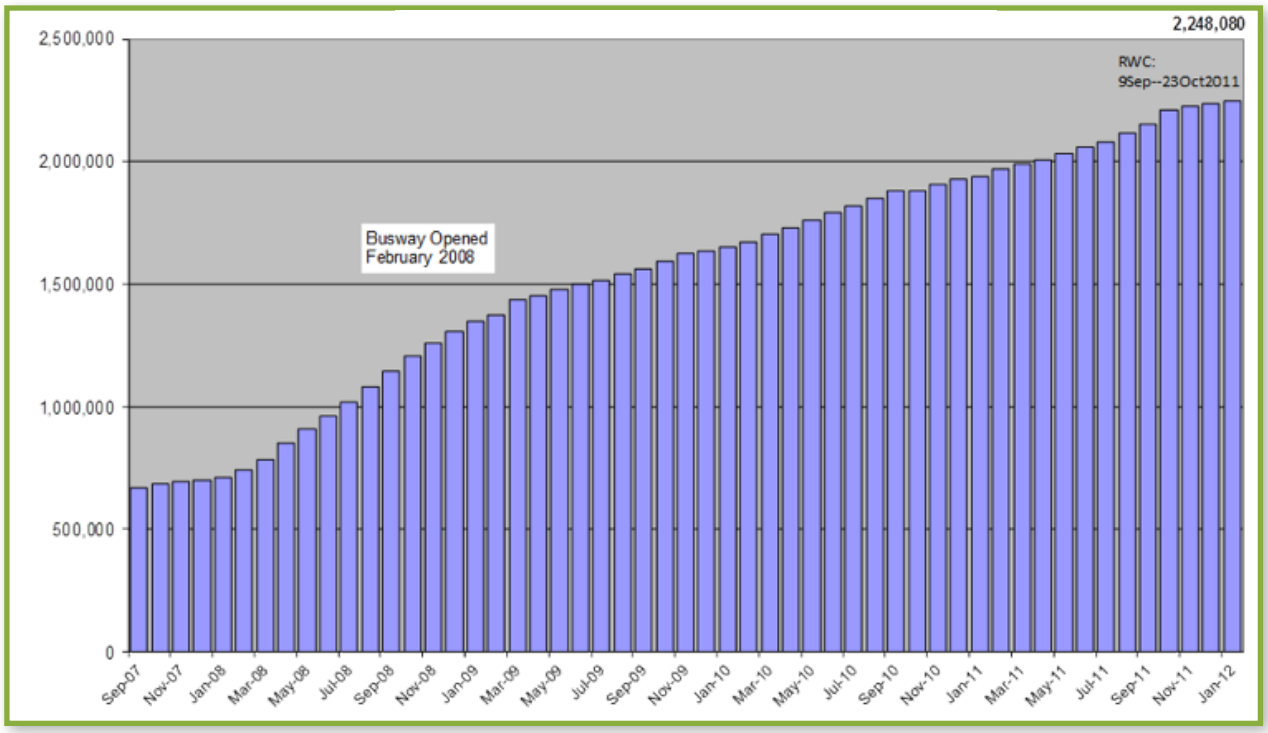


Figure 3.2-10 Northern Express bus patronage (12 month rolling total)
Source: Auckland Transport KPI Report (January 2012)



The Northern Express bus services forms the major shuttle or rail equivalent service on the Northern Busway. Northern Express patronage totalled 2,248,080 passengers for the 12 months to January 2012, an increase of 15.8 per cent. Northern Express patronage has experienced a steady annual increase from just over 800,000 passengers in February 2008 when the Northern Busway opened as presented in Figure 3.2-10.

Quality transit patronage

Bus services other than the Northern Express form the majority of services on the QTN and Local Connector Network (LCN) including contracted school bus services. Patronage totalled 51,388,303 passengers for the 12 months to January 2012, an increase of 7.2 per cent. QTN patronage has experienced moderate increases compared to similar months since 2005/06, as presented in Figure 3.2-11. QTN patronage increases have not been as significant as those of RTN.

An overview plan of the Auckland QTN network is presented in Section 4.3 Bus Network LCMP.

Ferry patronage

Ferry patronage totalled 5,025,566 passengers for the 12 months to January 2012 an increase of 13.3 per cent. Ferry patronage has experienced significant increases in the past 12 months, partly due to Rugby World Cup 2011 as presented in Figure 3.2-12.

An overview plan of the Auckland ferry terminal network is presented in Section 4.4 Wharves Network LCMP.

3.2.5 Knowing the demand

Public transport demand is mainly monitored by patronage trends through ticket sales. These are analysed monthly and a KPI report is developed to understand patronage trends across public transport modes, bus sectors (geographic areas), bus operators, contracted school buses, rail lines, ferry routes, and by customer segment. Monthly public transport statistics are made available on Auckland Transport's website.

HOP is Auckland Transport's new integrated smartcard for public transport. It started in April 2011 on some bus services and will be progressively rolled out for Auckland's rail, ferry and other bus services. It was available for rail to service Rugby World Cup passengers. As integrated ticketing is fully implemented, real-time information will be available to analyse these patronage trends more readily.

Figure 3.2-11 QTN patronage growth (12 month rolling total)
Source: Auckland Transport KPI Report (January 2012)

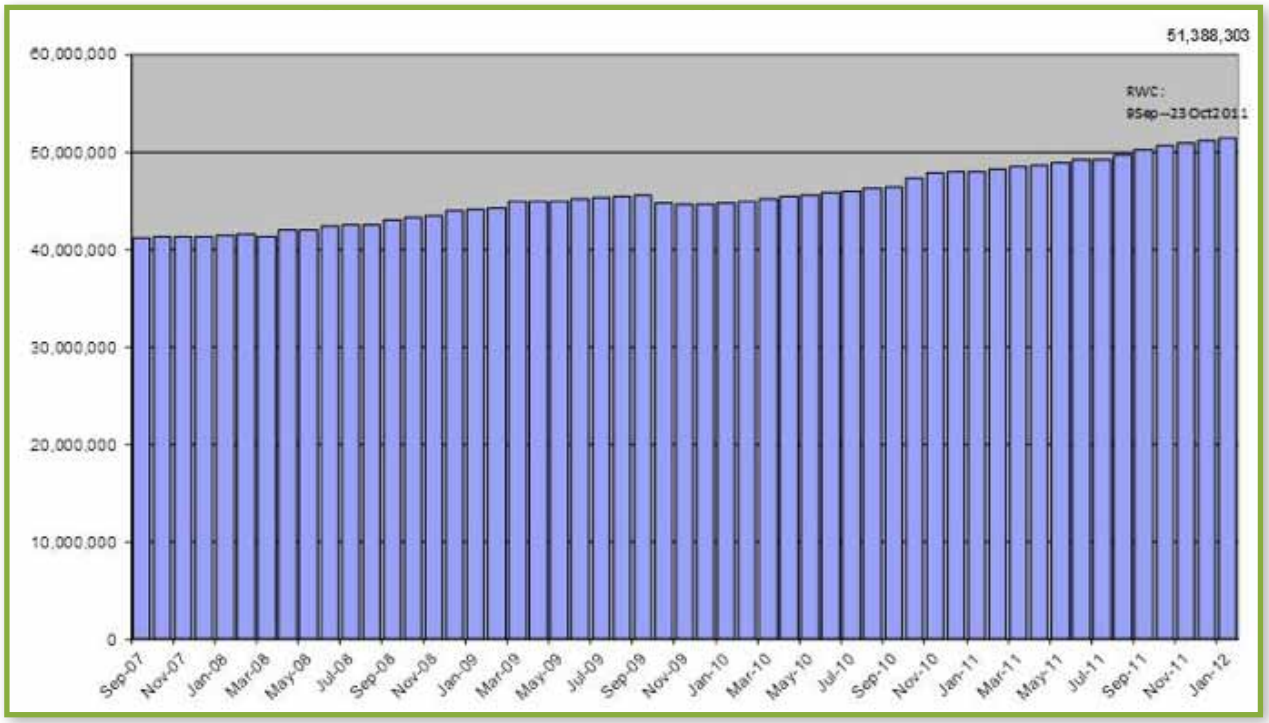
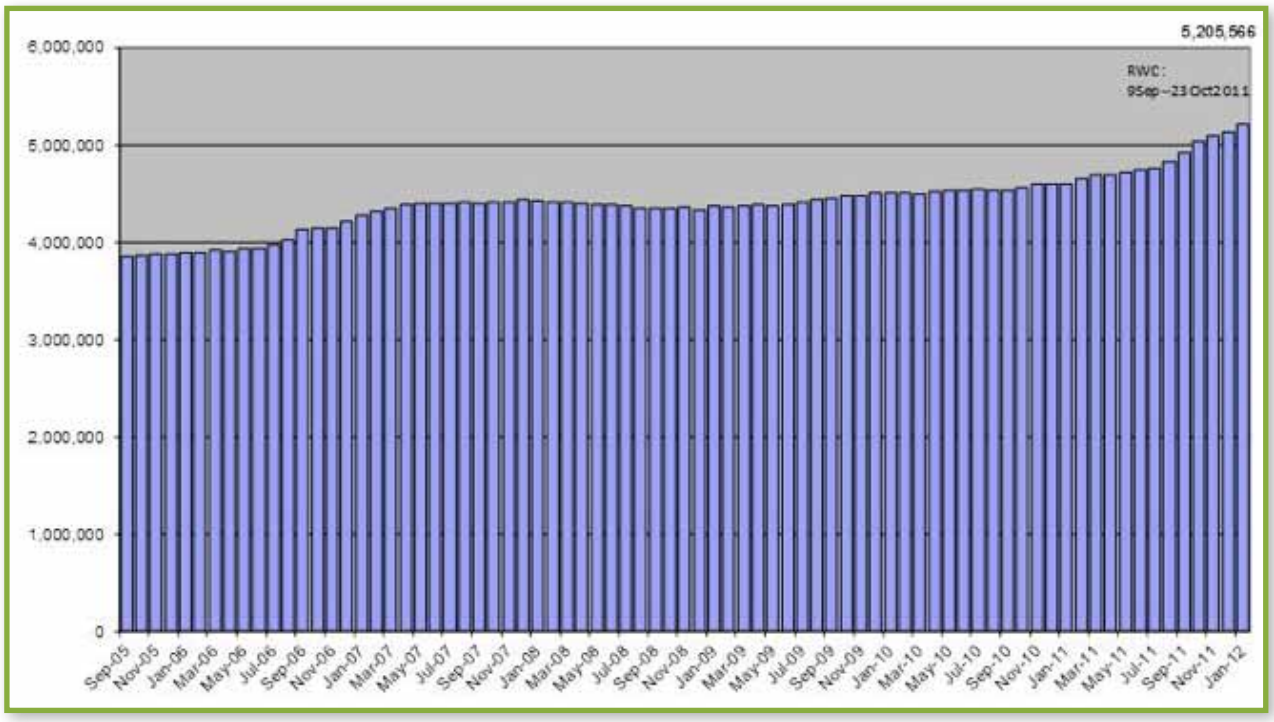


Figure 3.2-12 Ferry patronage growth (12 month rolling total)
Source: Auckland Transport KPI Report (January 2012)



Customer surveys are regularly undertaken to also understand public transport demand. There has been a good history of customer surveys to understand customer perceptions of personal transport choices. Surveys provide a useful tool to monitor strategy performance including public perceptions of each transport mode, particularly public transport options compared to private vehicles.

The October 2011 customer satisfaction perception survey found there was a shift to using public transport modes as follows:

- 86 per cent of respondents stated they have been using Auckland's public transport for at least a year, with 68 per cent using it for three or more years
- Ferry has a significantly greater share of long-time public transport users, with more than half (52 per cent) having used Auckland's public transport system for more than five years
- Rail has a significantly higher share of newer users (19 per cent having used public transport for less than a year compared with 14 per cent of all respondents).

3.2.6 Changes in technology

Technological advancement will have an impact on the operations and maintenance of the public transport network and services. Changes in technology are also expected to affect travel demand by removing the need to travel, making a particular mode of transport more or less attractive, or affecting the impacts of travel. The main changes in technology that influence demand on the public transport network are summarised in Table 3.2-3.

3.3 Demand forecast

3.3.1 Regional growth forecast

Regional growth

The demand forecast of our transport network is influenced by multiple factors: population growth, economics including employment, commercial and industrial development, and town centres. The Auckland Plan is supported by a high-level Development Strategy which sets out how

Table 3.2-3 Changes in technology summary

Technological change	Description and possible future impact
Integrated ticketing	Seamless tickets between different public transport modes will make it more attractive to people and reduce reliance on their private motor vehicle. People prefer tickets that they can use easily between rail, ferry and bus regardless of the service provider
Real-time information	Texting and use of Wi-Fi technology including smart phones can help bring information such as timetable changes or delay in service readily to passengers. This will help them with decisions on their travel plans
Ultra-fast broadband	The Government's objective is to accelerate the roll out of ultra-fast broadband to 75 per cent of New Zealanders over 10 years. It is concentrating in first six years on priority broadband users such as businesses, schools and health services, plus greenfield developments and certain tranches of residential areas. This intense infrastructure building programme will result in an increase in internet usage. There will be more people using websites to access public transport information to help them make travel choices
Transport modelling technology	Developments in this area will better support our region's transport planners in their assessment and definition of where new / improved transport facilities should be provided. The likely impact is better response to the needs of its transport customers
Cleaner and efficient buses, ferries and rail	As vehicle technology improves in the long term, it is intended that air and water pollution will reduce. People may be more inclined to use much more environmentally friendly vehicles. There will be multiple environmental benefits with the new electric trains including: • Energy efficient • Quieter to the surrounding community • Make no air pollution.
Rail electrification	Diesel trains will be replaced over time, with the Eastern Rail Line to be electrified by 2014. This will improve journey times for passengers. It will also improve the environment by using a renewable resource and reducing greenhouse gas emissions
CCTV cameras	Development of CCTV will support increased personal and property safety and emergency response. This will encourage public transport patronage and support the reduction in congestion and demand management
Contract renewal process	Innovation including sustainability and technology innovation is valued in the contract renewal process within road corridor maintenance. This awards points to contractors for work / achievements in these areas

Auckland will change and grow over the next 30 years. Growth is focussed on existing and more compact urban areas which are serviced by public transport.

The Development Strategy has adopted a place-based approach by aligning investment in areas where the majority of growth will occur. The integration between land use and infrastructure is important for determining how Auckland evolves in the long term. Of all infrastructure types, transport has the strongest influence on the location, patterns, and quality of place.

The Development Strategy consists of four key elements:

- Key shapers and enablers
- Two big initiatives (City Centre and Southern Initiative)
- Moving to a quality, compact Auckland
- Working and delivering with others (through a coordinated and collaborative approach).

The Development Strategy has sequenced priority growth areas for three, 10 and 30-year planning horizons. Figure 3.3-1 on page 50 shows the detailed Development Strategy for the next 30 years. The figure shows the CBD as the City Centre area, with metropolitan centres (such as Takapuna and Manukau), town centres (such as Panmure and Browns Bay), and local centres. Two satellite towns, Warkworth and Pukekohe, have been identified to function semi-independently of the main metropolitan area. The future form consists of a network of centres connected through transport corridors.

Two big initiatives are intended to make a step change in Auckland's performance:

City Centre area	**To become a leading commercial and cultural centre internationally. Public transport will be enhanced to improve access to the city centre's opportunities. The City Rail Link is a significant project identified to improve access to the city centres and future growth opportunities at other centres. A City Centre Masterplan has been developed to support the Auckland Plan and provides a 20-year transformation direction.**
Southern Initiative area	**This is an area of high social need and economic opportunity and includes Auckland International Airport. It will be transformed from a gateway to a manufacturing hub with housing provision to accommodate residential growth.**

Nine areas have been identified for further planning and implementation over the first three years. These nine locations will be the focus in the short term and include:

- City Centre
- Southern Initiative
- Hobsonville / Westgate, Massey North
- Tamaki
- New Lynn Metropolitan Centre
- Onehunga Town Centre and Suburban Area
- Takapuna Metropolitan Centre
- Warkworth satellite town
- Pukekohe satellite town.

The quality approach is based on the following measures:

- A new rural urban boundary
- Provision for new development areas for residential and business growth with a commitment to best practice in urban design
- A network of inter-connected towns and villages
- Opportunities for employment growth
- A less-is-more approach which prioritises eight growth areas for investment in the first three years
- A clear direction as to how growth and development will be sequenced over 30 years.

The Development Strategy intends to achieve a compact urban form as well as allowing for flexibility:

- Provide for 60 to 70 per cent of total new dwellings inside the existing core urban area as defined by the 2010 Metropolitan Urban Limit (MUL)
- Between 30 to 40 per cent of new dwellings outside of the baseline 2010 MUL in new greenfields, satellite towns, and rural and coastal towns
- Provide for at least 1,400 hectares of business land in new greenfields
- Provide for a Rural Urban Boundary (RUB) to define the maximum extent of urban development to 2040.

Figure 3.3-1 Detailed Development Strategy
Source: Auckland Plan (April 2012)

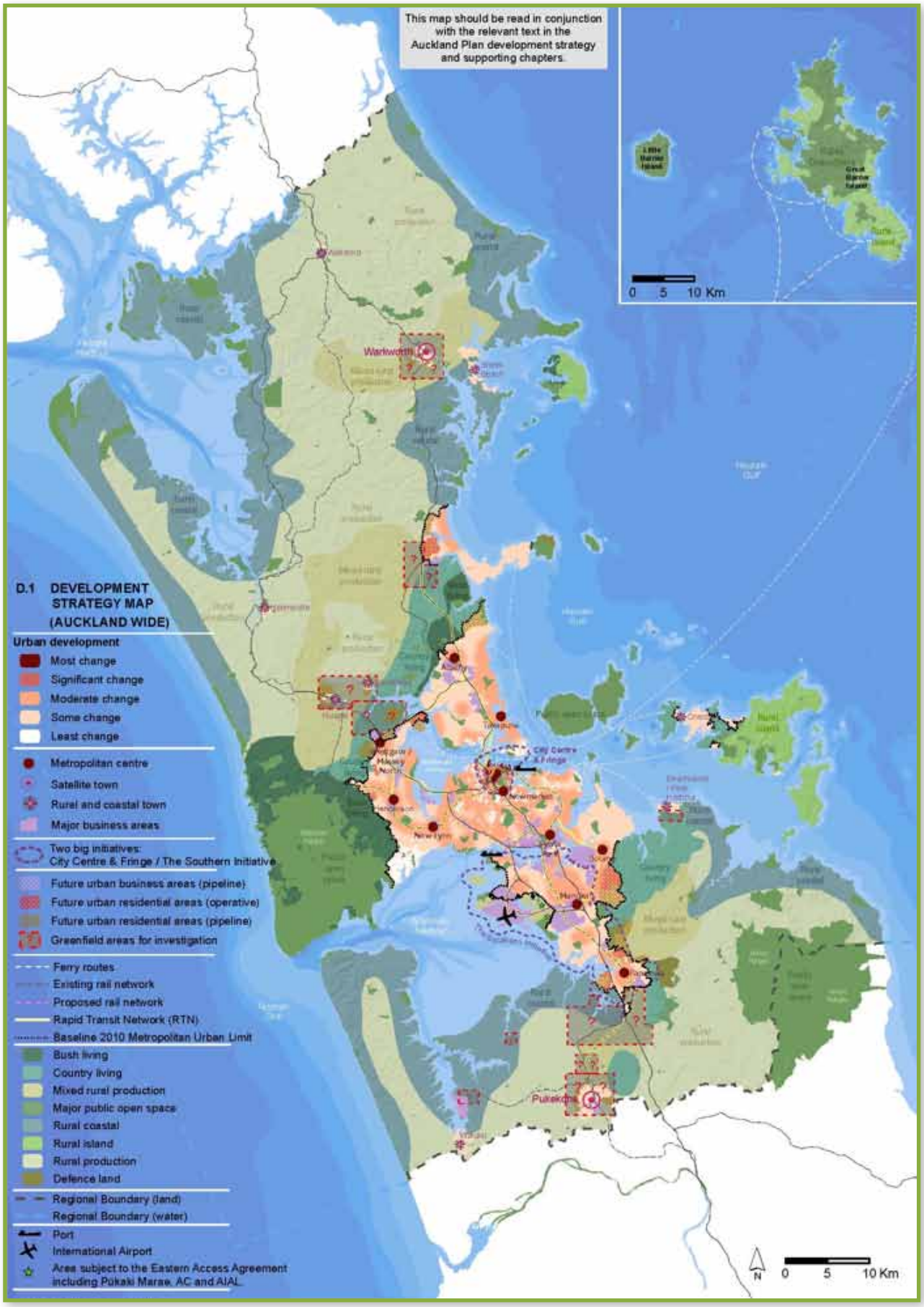
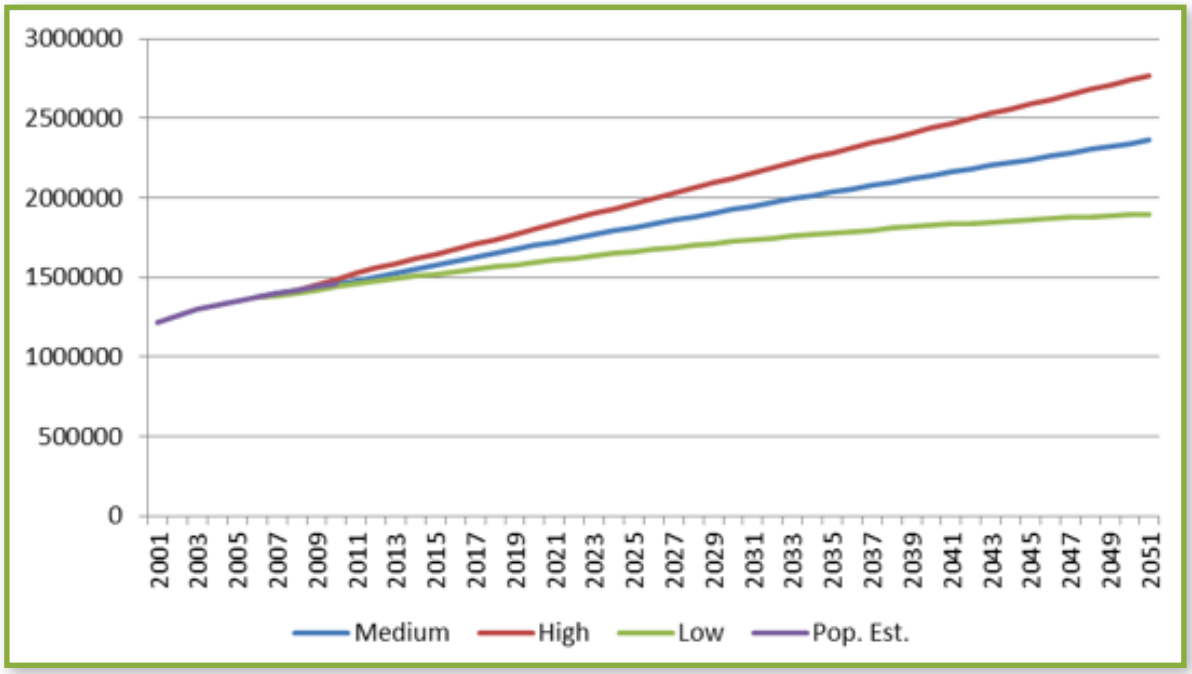


Figure 3.3-2 Auckland region population projections
Source: Auckland Council, Market Economics and Statistics New Zealand (4 April 2012)



Regional population growth forecast

The Auckland Plan has identified growth as a significant issue for the region to accommodate an increase of some 235,800 people under a medium-growth projection between 2012 and 2022. Auckland is expected to grow to a population of between 1.9 and 2.8 million people (low and high scenarios) depending on the rates of natural increase and migration, by 2051. The regional population growth forecast is presented in Figure 3.3-2. Population is expected to grow in future due to natural increase and migration (internal and international).

The regional demand forecast for this AMP has been developed using Auckland Council's growth model developed for the Auckland Plan. It provides high-level numbers for population, households, dwellings and employment. It is important to acknowledge that projections are subject to uncertainty. They are best used as an overall guideline and an indication of the overall trend rather than as exact forecasts.

The growth model uses broad information based on the following assumptions:

- Medium growth projections
- Statistics New Zealand population projections
- Employment projections provided by Market Economics using a proprietary model.

Asset management planning for the 2012-22 LTP uses the medium population growth scenario, which at the time of writing was considered to be the most likely future growth scenario. Close monitoring of actual population growth and change will need to occur to ensure use of this scenario remains valid over time.

As a 30-year plan, the Auckland Plan has chosen to use both a medium and a high-growth scenario so as not to constrain growth potential unnecessarily over the planning timeframe. This is also appropriate given the relative unpredictability of long-term growth trends.

Dwelling projections have been developed from Auckland Council's growth model at Local Board level. Auckland's largest population growth is located in Franklin, Hibiscus and Bays, and Rodney Local Boards.

There are also expected changes in the demographic structure, which will influence urban form and consequently the transport network. As with most developed countries, New Zealand's general trend is an increase in the ageing population. The number of persons of retirement age in Auckland is expected to grow from about 164,000 to 237,000 between 2012 and 2022. By 2051, the proportion of residents aged over 65 will be around 20 per cent.

The projected population growth will create demands for residential dwellings. The 2006 census recorded a total of 476,046 dwellings. Most of these were private occupied dwellings and included 33,000 unoccupied dwellings. Population-driven demand for private dwellings could see the region with between 755,000 (low) and around one million (high) dwellings at 2051.

There are uncertainties in all forecasts and ongoing monitoring of the timing, location, form and quantity of growth is necessary to judge alignment of the growth model outputs with actual development trends. The Development Strategy will be monitored and reviewed through the following Auckland Council mechanisms:

- Ongoing analysis of growth capacity (including land supply, vertical space and commercial factors)
- Every three years capacity may be adjusted in response to the above information and analysis
- Input into six-yearly reviews of the Auckland Plan.

3.3.2 Regional demand forecast

Auckland Plan demand forecasts

Transport demand forecasts have been modelled on Auckland Plan aspirations. These forecasts have been based on two new scenarios as follows:

- Medium growth projection with a new population projection of 2.1 million people by 2041 (called Scenario E) and based on intensive containment
- High growth projection with a new population projection of 2.4 million people by 2041 (called Scenario F) and based on intensive expansion.

Auckland Transport is in the process of understanding the consequential funding needed to achieve these aspirations. Alternative scenarios are being modelled that have a more realistic view to supporting regional growth with appropriate funding. This is an iterative process that will continue into 2012 and beyond.

Figure 3.3-3 shows that the number of daily trips by population decreases over time for four scenarios (including scenarios A and B that are now superseded) as the population increases (except for A in 2021).

Figure 3.3-3 Daily trips by population
Source: Auckland Plan transport modelling (15 March 2012)

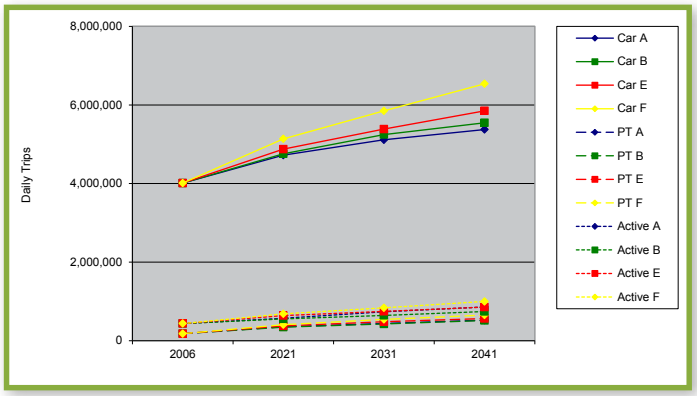


Figure 3.3-4 and Figure 3.3-5 present the public transport forecast in terms of passenger kilometres and per capita. This shows that passenger kilometres increase over time for all scenarios for morning peak (AM) and inter-peak (IP) periods.

Figure 3.3-4 Public transport passenger kilometres forecast
Source: Auckland Plan transport modelling (15 March 2012)

Figure 3.3-5 Public transport passenger kilometres and per capita forecasts
Source: Auckland Plan transport modelling (15 March 2012)

Table 3.3-1 Walking and cycling demand forecasts
Source: Draft Active Transport Technical Paper 2012 (December 2011)

Transport mode	Demand measure	Medium target	Long-term target
Walking	Increase daily walking trips into the City Centre in the morning peak	6,100 by 2016 (4,476 in 2009/10)	8,750 by 2026
Walking and cycling	Mode share	23% by 2020	37% by 2040
Cycling	Completion of the Regional Cycle Network (as set out in 2009)	50% by 2016	100% by 2026

Walking and cycling demand forecasts

Walking and cycling are becoming more important as journeys frequently involve more than one transport mode. It is expected that there will be longer walking and cycling trips to fewer bus routes with more frequent services. The linking of pedestrian routes with other transport modes, particularly public transport interchanges, is important for increasing public transport demand.

The demand forecasts for walking and cycling are summarised in Table 3.3-1. Walking trips into the City Centre are expected to increase as well as the walking and cycling mode share over the long term.

The key initiative for increasing cycling demand is to complete the regional cycle network for development rather than demand-led growth. The regional cycle network is presented in Section 4.8 Cycling LCMP and shows the existing and proposed network. The current focus for managing cycling growth is to complete the network gaps.

3.3.3 Impact of demand

The success of implementing a comprehensive public transport network has generated a high demand for particular services, causing congestion at times. The Albany Park-and-Ride facility and buses on the Northern Express service are two examples.

The impact of this demand has been assessed at a high level with the development of the ITP (see page 55) and the RLTP. A One System approach has been adopted to improve congestion, increase reliability and safety, and to manage the impact of demand.

The One System approach requires the integration of its network elements: physical, functional and operational. As well as the traditional physical infrastructure there are functional elements of freight, business traffic, school and university students, and commuters, recreational and social users. These contribute to a local sense of place and community. Overlaying the physical and functional networks is operational networks traffic management, public transport services and public transport systems such as integrated ticketing, fares and information.

A One System approach is used when making changes in an area with a focus on a suite of options by the different partners, i.e. Auckland Transport, NZTA and KiwiRail. For example, the Auckland Manukau Eastern Transport Initiative (AMETI) project is using the One System approach and this will result in a higher level of integration between different transport modes.

Demand drivers

Public transport demand is influenced by a number of factors other than population growth. It is necessary to understand how these demand factors interplay in order to provide an effective and reliable transport network. This is critical to sustain Auckland's quality of life and to support Auckland's growing contribution to New Zealand's economic productivity.

These demand trends are described in Sections 3.2.1 to 3.2.3. The main effects of demand drivers on public transport demand are summarised in Table 3.3-2. Increased traffic congestion is the primary effect of population and economic growth and this causes an increased public transport demand. Environmental pollution is the secondary effect of increased traffic congestion. The results, shown in arrows, illustrate increasing, decreasing or no change in the effect on demand.

Current strategies

The impact of demand on the public transport network is managed through current adopted strategic plans. The primary planning document for the Auckland public transport network is the 2010 Auckland Regional Land Transport Strategy (RLTS).

The 2010 RLTS was adopted in March 2010. It provides the regional strategic context for the development and operation of the land transport system in Auckland over the next 30 years. The Land Transport Management Act requires that the Auckland RLTP is consistent with the RLTS.

The 2010 RLTS developed a "policy hierarchy" approach to improving transport in Auckland. This consists of first considering region-wide activities which can affect the demand for transport before considering increases to the capacity of the transport system.

Table 3.3-2 Demand impact summary

Growth / demand effects	Impact on public transport	Demand effect
Service levels		
Improving levels of service	Encourages the use of public transport with park-and-ride facilities and the new HOP smartcard. Key improvement areas include real-time information, service capacity, increased safety and security provision, and sustainable car parking facilities	▲
Fare increases above the rate of inflation	Fare increases have the effect of dampening demand. Fares are currently subsidised and with pressure on keeping rates increases within inflation, this subsidy may be removed or heavily reduced. Fares are likely to increase to the Government's target of 50 per cent recovery	▼
Population and demographics		
Congestion	Higher population leads to traffic growth which causes increased congestion, particularly at peak periods. This increases demand for public transport	▲
Residential growth – compact form	The location of residential growth within the region will influence the way that residents access jobs, education and other daily needs. An increasing number of inner city residents increases public transport patronage, which reduces congestion	▲
Ageing population	This has the potential to increase off-peak use	▲
Economic growth		
Economic growth of Auckland region	Some additional pressure for moving people and goods.	▲
Increasing car ownership levels	This decreases demand for public transport and other modes of travel	▼
Increased fuel prices	On-going fuel price increases will keep public transport attractive in the long term	▲
Inner city parking	Continued perception that inner city parking is difficult, unavailable and expensive will continue to encourage public transport use	▲
Environmental and social sustainability		
Environmental awareness	Increased willingness to use public transport and other modes of travel	▲

3.4 Demand management plan

The One System approach is improving congestion and increasing reliability and safety. This includes using the existing assets and reducing demand (Section 3.4.1) before building new capacity through future strategies (Section 3.4.2) and capital works programmes (Section 3.4.3). The public transport network has the ability to move more people more efficiently than any other mode.

3.4.1 Future transport strategy

Long-term plans are vital for managing future capacity. Transport and land use planning determine the efficiency, effectiveness, resilience, affordability and environmental sustainability of a transport system. By shaping the pattern of development and influencing the location, scale, density, urban design and mix of land uses, planning can help to facilitate an efficient transport and land use system. Long-term investment to improve the system to cope with increasing traffic is driven by the Auckland Plan.

Auckland Transport's plan hierarchy is presented in Figure 3.4-1 in response to Auckland Council's planning framework. Auckland Transport's main linkages with Auckland Council are through:

- Integrated Transport Plan (ITP) – to achieve the outcomes sought by the Auckland Plan
- Statement of Intent – to publicly state and measure the activities and intentions of Auckland Transport as a council-controlled organisation.

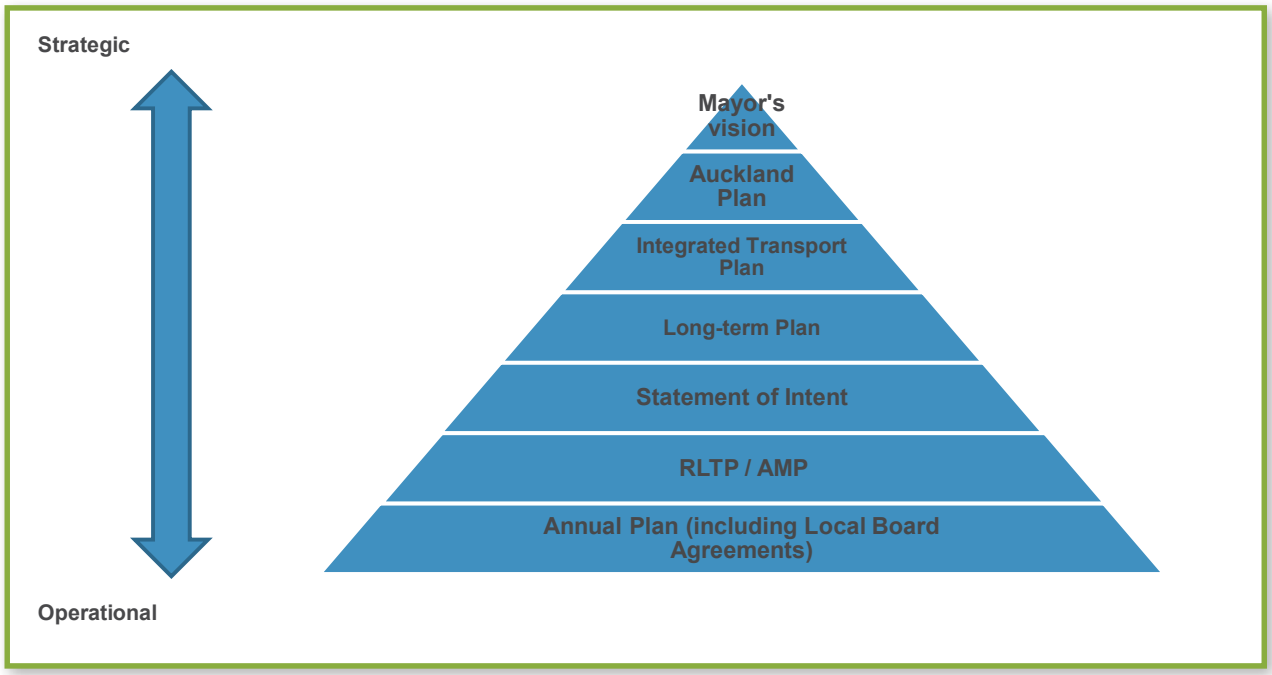
Auckland Plan

A single system approach is a key feature of the Development Strategy. The three elements to address current congestion problems and accommodate future business and population growth are:

- Improve and complete the existing road and rail network
- Encourage a shift toward public transport
- Support environmental and health objectives through walking and cycling.

Providing only for road capacity will not cater for future growth nor is it sustainable. A transformational shift requires investment in all transport modes. The impact of demand requires a combination of measures to manage congestion. This includes investing in public transport and walking and cycling networks, using traffic management techniques, intensification of land to encourage mode shift to walking, cycling and public transport and providing demand management programmes.

Figure 3.4-1 Auckland Transport's plan hierarchy



The Auckland Plan aims to manage population growth and integrate the provision and development of transport with identified growth areas. Provision of transport infrastructure and services is a key enabler and shaper of future growth. Commercial and residential developments need to be designed with all transport modes in mind.

There is a dedicated transport chapter in the Auckland Plan supported by a technical paper Transport Framework for the Auckland Plan. The four strategic priorities for Auckland are:

- Manage Auckland's transport as a single system
- Integrate transport planning and investment with land use development
- Prioritise and optimise investment across transport nodes
- Implement new transport funding mechanisms.

The Government has indicated that the development of the Auckland Plan will ultimately replace the RLTS as the key strategic document for transport in Auckland.

Integrated Transport Plan

Auckland Transport is preparing an ITP in conjunction with the RLTP development. It integrates key strategies, tactical plans, programmes and project packages developed by Auckland Transport, NZTA, Auckland Council and KiwiRail to deliver an integrated One System approach to the development and operation of Auckland's transport system. At the strategic level, the ITP 2012-42 has a 30-year horizon to reflect the Auckland Plan and RLTS. While not a statutory document, it is an important delivery mechanism for transport in the Auckland region. The ITP will reflect the one system approach with a focus on developing an indicative 30-year funding plan. It will reflect the strategic directions of the Auckland Plan and the new GPS on land transport funding.

Its key purpose is to:

- Provide the strategic context and framework for prioritising and integration of transport activities from different agencies
- Bridge the gap between long-term outcomes sought by the Auckland Plan and RLTS and provide practical, achievable solutions within the 30-year timeframe
- Bridge the gap between the long-term strategic approach of the Auckland Plan, and the short-to-medium term tactical focus of the RLTP.
- Indicate how the key actions and activities can be implemented together, the affordability of them and how risks can be managed
- Provide Auckland Council, NZTA and other key stakeholders with a clear picture of the preferred approach for implementing the Auckland Plan (and RLTS) and create confidence for funding the RLTP based on their support for the ITP.

Table 3.4-1 Summary of park-and-ride strategic initiatives
Source: Parking Strategy (21 June 2011)

Parking area	Objectives	Initiative
Park-and-ride	Support for regional goals, including reducing pressure on congested corridors and increasing public transport patronage	Develop a coherent strategy to guide the location, supply and pricing / funding of park-and-ride facilities. Take account of land availability, facility cost, short and long-term development plans for the area, potential for patronage gains, and effect on the road network
	Cost effectiveness, including appropriate pricing	Prioritise investment in new park-and-ride facilities according to their economic value and contribution to transport objectives

Corridor Management Plans

CMPs are the tools for addressing network deficiencies including general traffic service level at peak periods. There is a move away from addressing congestion through building additional capacity to looking more holistically through CMP development where multiple factors are considered such as movement, providing choices with other travel modes and integrated land use. The detailed CMP for each arterial corridor considers the potential use of supporting cycleway and walking networks, local bus services, and/or local traffic.

Parking strategy

Parking has a key demand management function on the transport network. Parking provision and availability is strongly related to public transport patronage. A Parking Strategy has been developed for Auckland Transport's parking activities over the next three years. It highlights the strategic drivers that influence parking in Auckland, identifies the issues, challenges and opportunities facing the parking business, and summarises the key initiatives that are proposed to enable Auckland Transport to meet its objectives in relation to parking, enforcement and demand management. The parking activities cover on-street parking, off-street parking, park and ride, and enforcement.

The key growth and demand strategic initiatives for the park-and-ride area only is summarised in Table 3.4-1 with full details in Section 4.6 Parking LCMP.

3.4.2 Travel Demand Management Plan

Current TDM programme

Demand is managed through the long-term plans as well as operating the existing asset to its maximum capacity. This is a shift away from the traditional engineering approach of providing additional capacity to meet all demands through building new roads. Maximising use of the existing network capacity by managing demand is known as travel demand management (TDM).

TDM measures are typically more cost effective than increasing road capacity and are often achieved in a shorter timeframe. There are significant benefits other than capital investment deferral, which include:

- Improving public health – by encouraging greater use of physically active travel modes such as walking and cycling
- Reducing greenhouse gas emissions – through increased use of public transport and carpooling
- Increasing public transport patronage – will enable a sustainable transport network and therefore support economic growth in the region.

Our current TDM programmes for public transport that help manage congestion in the Auckland region are summarised in Table 3.4-2.

Table 3.4-2 TDM programme summary

TDM programme	Description
Integrated land use and transport planning	Main TDM tool as this provides multiple benefits
Provision of information about travel choices	Personal journey planning for infrastructure projects to provide people with options
Promotion of public transport as an alternative transport mode to private vehicles	Auckland Transport's website is used as much as possible for providing promotional material
Promotion of alternative transport such as cycling, walking, taxis and City Hop (short-term car hire)	Walking and cycling maps are available on Auckland Transport's website to promote these sustainable transport modes
Provision of travel information about public transport through our regional travel brand MAXX	Timetables and travel plans are available on our website and also via a texting service
Implementation of a smart card system for public transport known as HOP	The HOP card can also be used for buying everyday items such as such as newspaper, coffee or sandwiches at certain retail outlets
Encouraging public transport through pricing and supply of on- and off-street parking	
Integrate park-and-ride facilities with public transport services	

Refer to Section 4.15 Community Transport Services Activity for details on travel plans, walking and safety in more detail.

Integrated network design

The ITP supports a transformational increase in public transport use and more viable travel options for people. This will result in freeing up limited road capacity and potentially avoiding some additional spend on road infrastructure due to less demand. These measures will also improve travel times for public transport users, private car users and road freight.

A review of public transport duplications is under way to operate the existing asset to its maximum capacity. Many public transport services were historical. These networks could be operated more effectively, especially between rail and bus services. The review is looking at the whole network with operational input to ensure that the network is working as an integrated system. More interchanges will be introduced to create more efficiency between rail and bus routes. This will result in value for money, which is a GPS priority. There have already been some achievements with redesigning parts of the bus network resulting in significant growth.

The principles of an integrated network design are:

- Simpler and more intuitive network of routes
- Higher frequency of services on fewer routes
- Improved customer communication of the service design
- Better connection between modes and services.

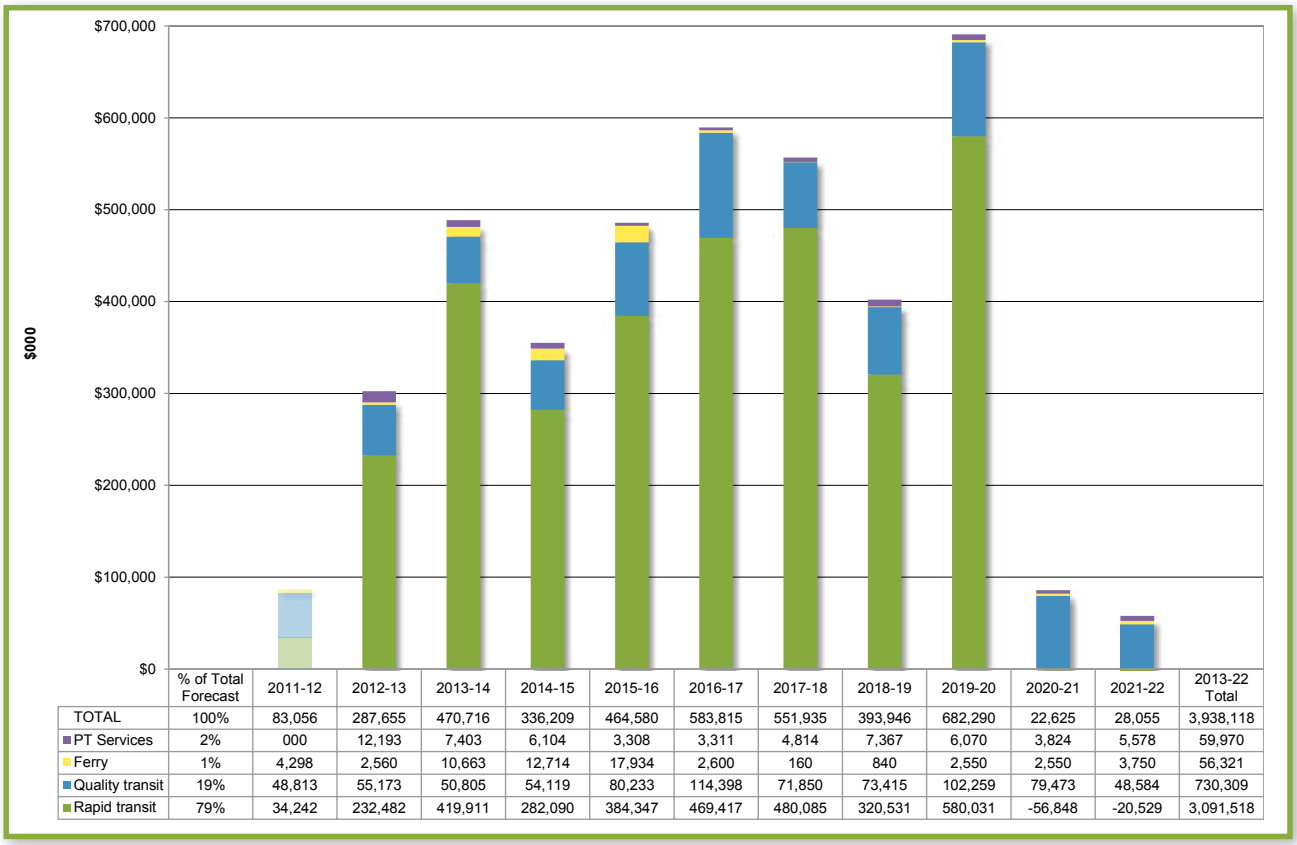
The connected and integrated network will be a primary network of high-frequency public transport corridors including rail and busways as an RTN right-of-way and a network of bus and ferry services on key arterial corridors. The high-frequency corridors will form a connected network of services. This integrated network will be supported with improved, real-time passenger service information, integrated ticketing and simpler fare payment (refer to Section 4.5 Public Transport Services).

3.4.3 Capital plan – growth and demand

Capital summary

The overall capital programme for upgrading infrastructure over the next 10 years to meet growth is summarised in Figure 3.4-2 by the four investment areas. The total amount of expenditure

Figure 3.4-2 Summary of growth capital programme
Source: LTP budget model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
TOTAL	100%	83,056	287,655	470,716	336,209	464,580	583,815	551,935	393,946	682,290	22,625	28,055	3,938,118
PT Services	2%	000	12,193	7,403	6,104	3,308	3,311	4,814	7,367	6,070	3,824	5,578	59,970
Ferry	1%	4,298	2,560	10,663	12,714	17,934	2,600	160	840	2,550	2,550	3,750	56,321
Quality transit	19%	48,813	55,173	50,805	54,119	80,233	114,398	71,850	73,415	102,259	79,473	48,584	730,309
Rapid transit	79%	34,242	232,482	419,911	282,090	384,347	469,417	480,085	320,531	580,031	-56,848	-20,529	3,091,518

for growth over the next 10 years is $4 billion. Rapid transit has the highest level of expenditure at $3.1 billion in that period. The financial forecasts are mainly based on the Auckland Plan, project readiness and benefits, coordination with other programmes, and mayoral proposals. The capital programme is subject to LTP changes and these will be finalised later in 2012.

The capital plan for new growth and levels of service driven projects is combined. It has been based on the existing capital plans from the legacy councils, which did not split the capital categories of growth and levels of service consistently. This limitation is recognised as a high priority for future improvement to the AMP.

Notes on Figure 3.4-2:

- These forecasts are indicative and subject to LTP approval in June 2012
- The negative values for capital new works after 2020 are due to the expected re-sale of land associated with the City Rail Link project, which are not shown in the figure but are shown as negative cost values.

The council normally use development contributions and financial contributions to fund part of its growth-related capital expenditure. A series of guideline documents set out how the growth-related part of the capital programme can be identified. These have been applied against projects and programmes in the council's capital works programme.

Rapid Transit Network

The programme covers expansion and upgrade of the rail network and supporting facilities such as park-and-ride, and is summarised in Table 3.4-3.

The planned expenditure for these programmes is shown in Figure 3.4-3. This shows that CRL has the highest expenditure level at 78 per cent.

Note on Figure 3.4-3. These forecasts are indicative and subject to LTP approval in June 2012.

Quality Transit Network

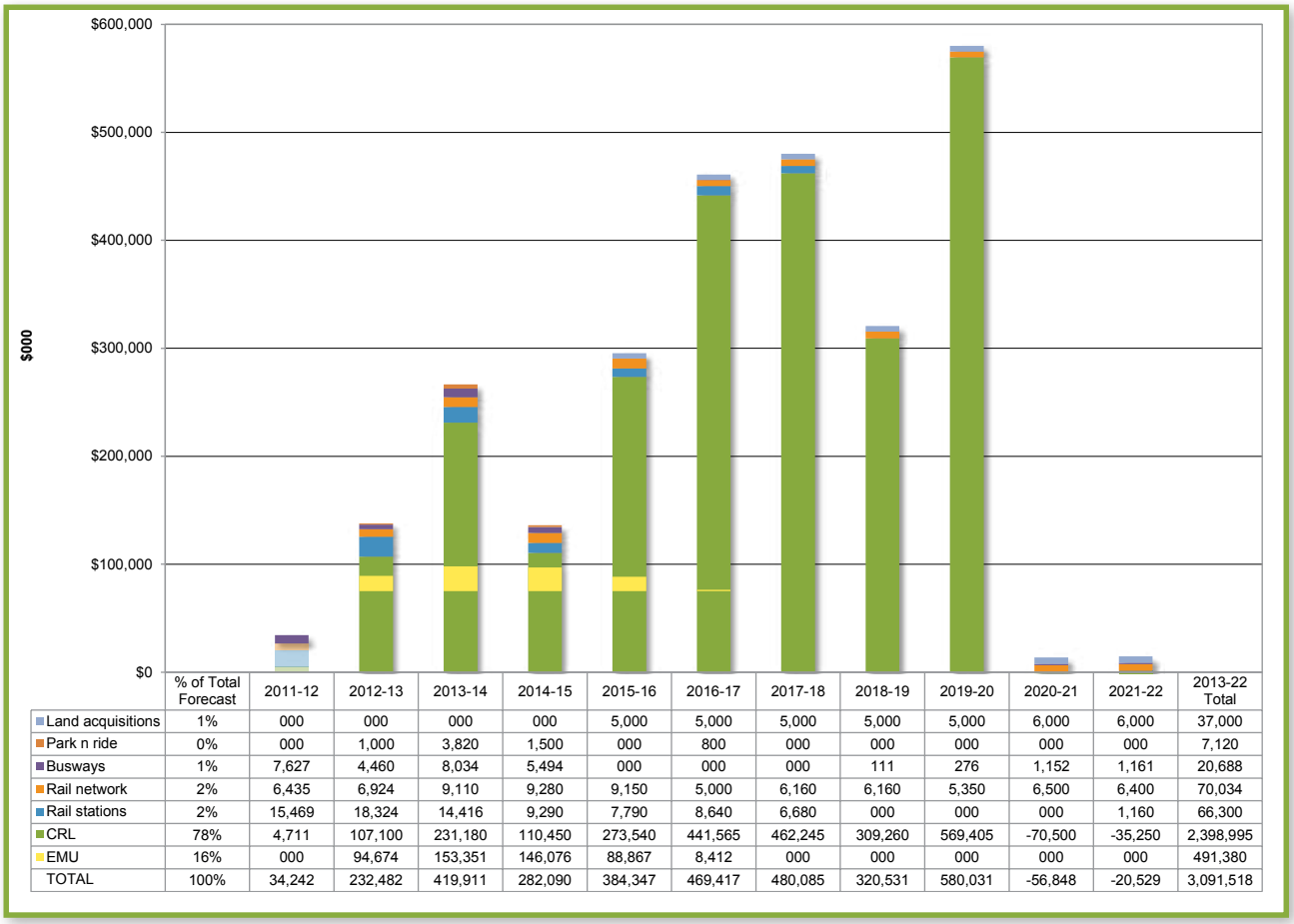
The programme covers bus shelter improvements, bus interchanges and bus lane provision with road corridor projects summarised in Table 3.4-4.

The planned expenditure for these programmes is shown in Table 3.4-5.

Table 3.4-3 Rapid transit capital plan

Programme	Description
City Rail Link (CRL)	The City Rail Link (CRL) is a proposed new 3.5 kilometre double track underground electrified rail line running up to 45 metres below Auckland city centre streets from Britomart to the Western Line near Mt Eden station. There is $2.4 billion planned over the next 10 years including land purchases
Electric trains rolling stock	The purchase of electric trains and a depot to house and maintain rolling stock for the Auckland Region. There is $492 million planned over the next 10 years. This project is supported by NZTA and Central Government. The electric trains are known as Electric Multiple Units (EMU)
Rail stations	Upgrade of about 18 stations is planned over the next 10 years at $67 million. This includes Huapai, Waitakere, Drury, Westfield, Parnell and Mt Albert
Rail network	Rail network projects include rail links and improvements. $70 million is planned for the next 10 years and consists of the following new works: • Southdown to Avondale Loop • Westfield Loop Infrastructure Track • Manukau City Rail Link • Rail station gateway installation • Station amenity improvements • Rail crossing separation • South Western airport multi-modal rail link.
Busways	Three new busway stations are planned over the next 10 years: • Northern Busway Extension – stations at $2.7 million • Hibiscus Coast Busway Station at $8.4 million • Rosedale / Greville Busway Station at $2.7 million. There is also $7 million planned for Busway Westlake Station Land
Park-and-ride	Five park-and-ride stations are planned at $7.1 million over the next 10 years including Sylvia Park, Glen Eden, Avondale, Takanini and Puhunui. These park-and-ride stations are associated with railway stations
Land purchases	Region wide land purchases will be required to secure land for the provision RTN facilities in priority areas. There is $37 million planned for region-wide land purchases

Figure 3.4-3 Rapid transit expenditure
Source: LTP Budget Model 12 April 2012 after Refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
Land acquisitions	1%	000	000	000	000	5,000	5,000	5,000	5,000	5,000	6,000	6,000	37,000
Park n ride	0%	000	1,000	3,820	1,500	000	800	000	000	000	000	000	7,120
Busways	1%	7,627	4,460	8,034	5,494	000	000	000	111	276	1,152	1,161	20,688
Rail network	2%	6,435	6,924	9,110	9,280	9,150	5,000	6,160	6,160	5,350	6,500	6,400	70,034
Rail stations	2%	15,469	18,324	14,416	9,290	7,790	8,640	6,680	000	000	000	1,160	66,300
CRL	78%	4,711	107,100	231,180	110,450	273,540	441,565	462,245	309,260	569,405	-70,500	-35,250	2,398,995
EMU	16%	000	94,674	153,351	146,076	88,867	8,412	000	000	000	000	000	491,380
TOTAL	100%	34,242	232,482	419,911	282,090	384,347	469,417	480,085	320,531	580,031	-56,848	-20,529	3,091,518

Table 3.4-4 Quality transit capital plan

Programme	Description
QTN improvement programme	**$730 million is planned over the next 10 years including upgrading suburban bus stations and bus stops, and bus widening with road corridor projects throughout the region. Projects include:** • **AMETI Pakuranga Ti Rakau and Reeves Road, Panmure Corridor and land purchases at $411 million** • **Dominion Road Corridor upgrade at $63 million** • **Pakuranga Highway QTN at $42 million** • **Flatbush to Manukau City Centre (bus priority improvement) at $31 million** • **Lincoln Road corridor improvements at $30 million.**

Table 3.4-5 Quality transit expenditure
Source: LTP Budget Model 12 April 2012 after Refresh for AMP

Programme ($000s)	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total ($000s)
Bus improvement programme	**55,173**	**50,805**	**54,119**	**80,233**	**114,398**	**71,850**	**73,415**	**102,259**	**79,473**	**48,584**	**730,309**

Table 3.4-6 Ferry capital plan

Programme	Description
Ferry terminals and wharves programme	$57 million is planned over the next 10 years for about 13 sites. Projects include: • $12 million for Bayswater Ferry Terminal • $12 million for Half Moon Bay Ferry Terminal • $8 million for Downtown Ferry Terminal Queens Wharf Extension • $6 million for Devonport Ferry Terminal.

Table 3.4-7 Ferry expenditure
Source: LTP Budget Model 12 April 2012 after Refresh for AMP

Programme ($000s)	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10 Year Total ($000s)
Ferry general	2,560	10,663	12,714	17,934	2,600	160	840	2,550	2,550	3,750	56,321

Table 3.4-8 Public transport services' capital plan

Programme	Description
Public transport services	$60 million is planned over the next 10 years for real-time and customer information, integrated ticketing, and Local Board initiatives. Public transport service activity covers the following areas: • Network design and services • Procurement, fares and funding • Branding and information.

Table 3.4-9 Public transport services expenditure
Source: LTP Budget Model 12 April 2012 after Refresh for AMP

Programme ($000s)	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10 Year Total ($000s)
Public transport services	12,193	7,403	6,104	3,308	3,311	4,814	7,367	6,070	3,824	5,578	59,970

Ferry network

The programme covers upgrades of wharves, and new and upgraded ferry terminals. The ferry programme is summarised in Table 3.4-6.

The planned expenditure for these programmes is shown in Table 3.4-7.

Public transport services

The public transport services programme is summarised in Table 3.4-8. Further details on public transport services are provided in Section 4.5.

The planned expenditure for these programmes is shown in Table 3.4-9.

Development contributions

Long-term strategic intentions for service or asset provision are an important consideration when developing a capital programme, and making decisions about individual capital projects. This includes identifying where a project or part of a programme is intended to deliver increased capacity to meet increased demand, arising from growth. The council has a number of methodology documents that outline how this capital expenditure for growth can be identified.

Development contributions are a method for collecting revenue from those who are building additional dwellings and work capacity that contribute subsequent increases in demand and additional council infrastructure costs that relate to growth. They are not able to be used for renewal of existing facilities or for improvements to levels

of services or assets. Development contributions must be applied to, or used towards, the capital expenditure for which the contribution was required.

Development contributions are therefore based on a capital programme (in the LTP); raised from developments as they are consented; and then applied against the original capital programme, alongside other funding sources such as rates. This loop creates an opportunity for a high level of transparency about the use of this and other funding sources. The council's website includes detailed information supporting the use of development contributions to fund part of the capital programme.

In practice, given the number and range of projects included in the LTP and this AMP, there will be some variation in the project list from year to year. In general, these changes are accommodated through the three-yearly LTP updates (and the update of the development contributions policy as part of that). Changes to planning for various large projects may require earlier amendments to the development contributions policy.

The council can also use financial contributions (under the Resource Management Act 1991) to provide for the mitigation of effects connected with developments. Several of the former councils used financial contributions rather than development contributions as the main way of addressing growth-related effects for particular asset areas.

At the time of writing this AMP, Auckland Council is reviewing its development contribution policy and the use of financial contributions. A new policy will be adopted in June 2012, alongside the LTP, and based on the capital programme outlined in this AMP.

Significant projects

The significant public transport projects planned for the next three years are detailed by the main investment areas. The location, timing and value of these significant projects are presented in Figure 3.4-4 (over the page).

Electric trains

KiwiRail is electrifying Auckland's rail network. Electrification is a vital step towards the creation of a modern and sustainable passenger transport network. It will mean quieter and more reliable train services, allowing rail to take a more prominent role in the region's transport mix. Electrification will extend from Papakura in the south to Swanson in the west, and include the Onehunga Branch Line and Manukau Rail Link.

Trains will be powered from a wire held overhead by masts and cantilevers. The 25kv AC power system (currently used on the North Island Main Trunk between Hamilton and Palmerston North), is used widely overseas and was assessed as the most suitable option for Auckland.

Auckland Transport has entered an agreement for supply of 57 EMUs between late 2013 and 2016. The trains will include the latest developments in railway technology to provide a reliable, comfortable and energy efficient mode of transport. The old Winstone Quarry south of Auckland at Wiri has been selected as the site for a depot for the new trains ordered for Auckland. Construction started in 2012.

City Rail Link

The ability of private transport to meet projected growth will be severely limited by the capacity of city centre streets, parking and demands from buses and pedestrians. Overall, this project will increase the accessibility of the City Centre, New Zealand's largest concentration of economic activity, to more than half a million people within 30 minutes travel time by rail, which is completely free of road congestion. This will release the economic potential of Auckland's City Centre and growth centres, and lead to economic benefits estimated at $2.4 billion.

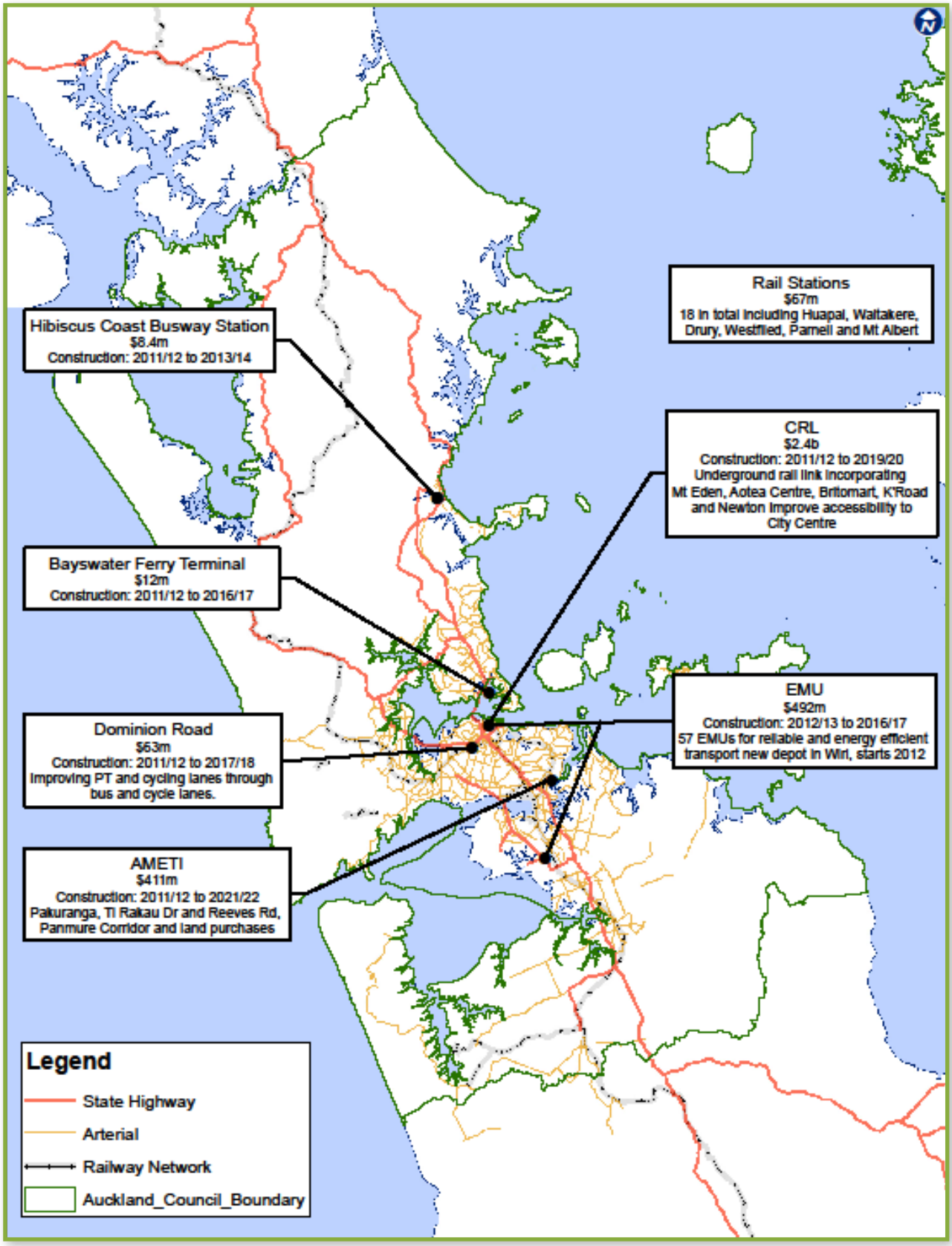
The City Rail Link (CRL) is a proposed new 3.5 kilometre double track underground electrified rail line running up to 45 metres below Auckland city centre streets from Britomart to the western line near Mt Eden station. Britomart would become a through station and up to three new stations would be allowed for near Aotea Centre, Karangahape Road and Newton. Changing Britomart to a through station will create a rapid transit system radiating from downtown Auckland that will boost central city life.

It is estimated the CRL will take five-and-a-half years to build at a cost of $2.4 billion. While discussions are continuing, both central government and Auckland Council have agreed that it is sensible to protect a route now to enable future construction. The route and station locations will be chosen to avoid private property and city heritage buildings as much as possible.

NorSGA

The Northern Strategic Growth Area (NorSGA) is the strategic growth area located north-west. The Regional Growth Strategy identified it as an intense growth area including Hobsonville Peninsula, Westgate, and Hobsonville corridor. It has also been identified in the Auckland Plan as an innovation area for Auckland, including marine and film industries. This development area is using sustainable practices such as local impact design for stormwater management with streams having amenity value as well as their traditional function.

Figure 3.4-4 Significant public transport new works projects



The three main areas are summarised as follows:

Massey North / Westgate area (PC 15)	**This is located at the end of the Western motorway and is the most advanced of the three development areas.** **The two main roads, Tahi North and Northside Drive West are designed as pedestrian-friendly shared spaces (expected to be completed in 2013). This area consists of industrial, retail and high-density residential apartments.** **Fred Taylor Drive will be widened and includes signalised intersections with cycleways and bus lanes and will be completed by 2014. Auckland Transport-driven local roads will connect with the arterials in this area (to be completed in 2013).** **The Westgate Bus Interchange will provide interchange between bus services (to be completed by 2013). The site has been moved to Rua Road for better transport connections**
Hobsonville village (PC 14)	**This is located along Hobsonville Road and will consist of industrial only development west of Brigham Creek Road, and industrial and retail east of Brigham Creek Road. The retail centre is called Hobsonville village.** **There will be signalised intersections for local roads with Hobsonville Road. There will be extra lanes at the intersections for bus lanes as part of the Quality Transit Network. There will be a new footpath on the greenfield side of Hobsonville Road and dedicated cycleways on both sides of the road. There will be extra lanes for Brigham Creek Road to help with the State Highway interchange to reduce congestion**
Hobsonville Point (PC 13)	**This is located at the Hobsonville airbase and will consist of mainly residential development of all three densities (low, medium and high), marine industries, and yard-based retail (or bulk retail). The Hobsonville Land Company (set up by Housing New Zealand) is undertaking the development. The new roads will be vested to Auckland Transport.** **Auckland Transport is constructing a new ferry terminal, bus interchange, and park-and-ride facilities as part of the land development agreement. The Landing ferry terminal will be completed in late 2012**

Dominion Road

Dominion Road is a key passenger transport arterial route for Auckland and connects the southern and central areas with the CBD and SH20. This upgrade project will improve bus speeds and reliability on this key link in the QTN.

The Dominion Road upgrade is to improve public transport and cycling links through bus and cycle lanes. Following public consultation, the Dominion Road project has been revised with extension and widening of bus lanes, and retention of on-street parking outside of peak hours. The project is from SH20 to View Road and consists of a peak hour only, 4.5 metre bus lane. Bus lane widening is only between village centres to accommodate buses and bikes in the same lane.

The Dominion Road upgrade will be a driver for the revitalisation of village centres. There will be improved footpath amenity with additional trees, maximising width, and reducing the clutter along the footpaths. Detailed design is expected to be completed by 2013 with construction starting in late 2013.

3.5 Growth and demand assumptions

The assumptions for developing the growth and demand forecast are mainly associated with the development of the Auckland Plan. Four scenarios for land use were evaluated for the preferred growth scenarios for the Auckland region.

The key demand assumptions of the Auckland Plan are:

- Growth will occur in accordance with Development Strategy as indicated in the Auckland Plan (March 2012).
- Population projections are based on medium growth.

The key demand assumption with developing this AMP is:

- Projected land use is based on the quality compact city model as indicated in the Auckland Plan (March 2012).

3.6 Key improvement initiatives

The key improvements in Table 3.6-1 have been identified that will contribute to the robustness of the growth and demand forecasting and management processes.

Table 3.6-1 Key improvement initiatives

Improvement initiative number	Description	AMP section	Priority
Growth 1	Identify the main driver for each capital project by growth or levels of service.	4.3.1	High
Growth 2	Refine the demand forecasts for each public transport mode once the Auckland Plan is finalised.	3.2, 3.3 and 3.4	High

4 Lifecycle Management Plans

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4.1 Lifecycle Management

4.1.1 Section overview

Auckland Transport manages public transport assets to deliver the levels of service defined in Section 2 in a sustainable manner over the long term. The public transport network (excluding Northern Busway lane and rail tracks) is maintained and developed in a way that is fit for purpose and is sustainable over time and consistent across the region. Auckland Transport operates and manages rail stations including over bridges, ferry terminals including wharf structures and bus shelter / busway stations.

Auckland Transport's organisational approach to lifecycle management includes:

- Meeting the service levels at least cost over time
- Lifecycle management plans (LCMP) providing good guidance of how the network is to be managed; and providing a clear link between service levels, lifecycle management needs and cost.

The lifecycle sections cover operations, maintenance, renewal, new works, disposal strategies and standards that are generic for all transport assets at a network level. They describe the asset management lifecycle practices and key issues for four public transport asset groups: rail, buses, ferries and public transport services.

4.1.2 Transport network

Auckland's public transport network consists of rail, ferry and bus services. Supplementary facilities such as park-and-ride areas and cycle lockers are provided at various locations along the network to encourage the use of public transport. To manage these assets effectively, Auckland Transport prepares lifecycle management plans for the individual assets that make up the transport system.

The physical parameters of the different asset types are shown regionally in Table 4.1-1.

Note that "public transport services" is an activity and not an asset group.

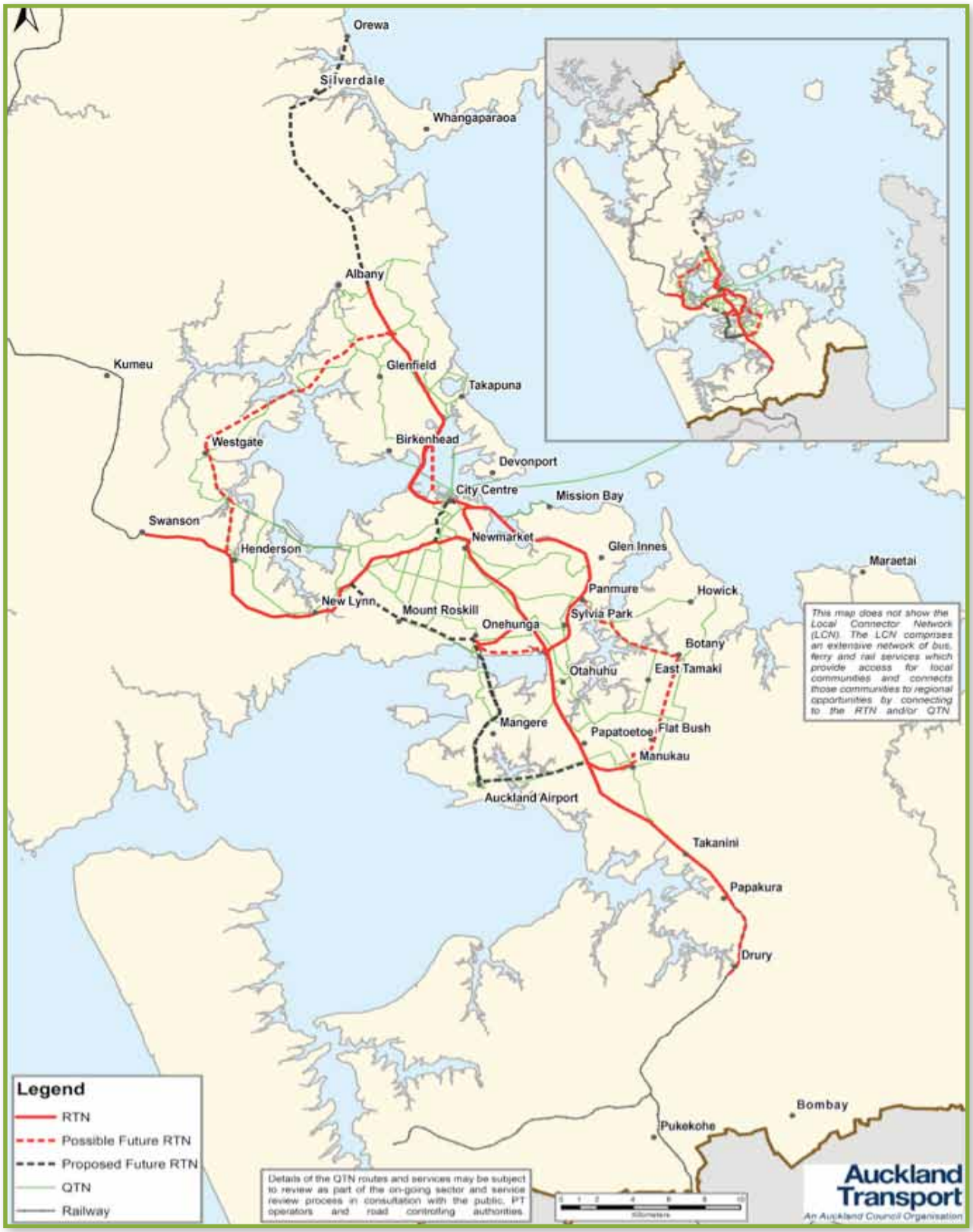
The current and proposed routes for the Rapid Transit Network (RTN) and Quality Transit Network (QTN) are shown in Figure 4.1-1. There are currently 70 million public transport trips taken each year.

Table 4.1-1 Public transport asset data

Source: Rail and rolling stock asset valuation (September 2010), RAMM (March 2012) and SPM (March 2012 for buses)

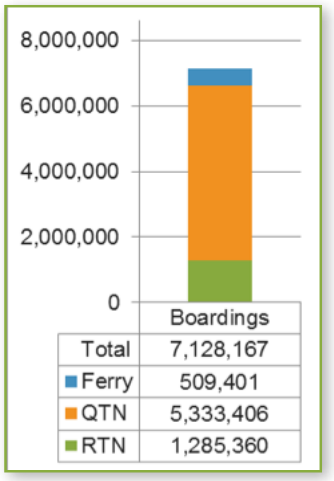
AMP Section number	Asset group	Sub Asset group	Asset quantity	Unit	Optimised Replacement Cost ($000s)
4.2	Rail	Stations	42	number	107,622
		Fibre optic cable	66	km	
		Rolling stock – Diesel Motor Units	19	number	167,815
		Rolling stock – carriages	106	number	
4.3	Bus	Bus shelters	1,554	number	22,476
		Busway stations	5	number	18,270
		Park-and-rides	2	number	
4.4	Ferry	Ferry terminals	22 terminal sites	number	73,708
4.5	Public Transport Services	Public transport procurement, fares and funding			
		Branding and information			
		Network design and services			

Figure 4.1-1 Auckland's Rapid Transit Network (RTN) and Quality Transit Network (QTN)
Source: Draft Regional Land Transport Programme (April 2012)



The network allows transport partners to use the facilities to provide public transport services to the Auckland region. The current modal split for March 2012 is shown in Figure 4.1-2. QTN is the main provider of these services and makes up 75 per cent, followed by the RTN at 18 per cent and ferry at seven per cent.

Figure 4.1-2 Monthly modal split
Source: Auckland Transport KPI report (March 2012)

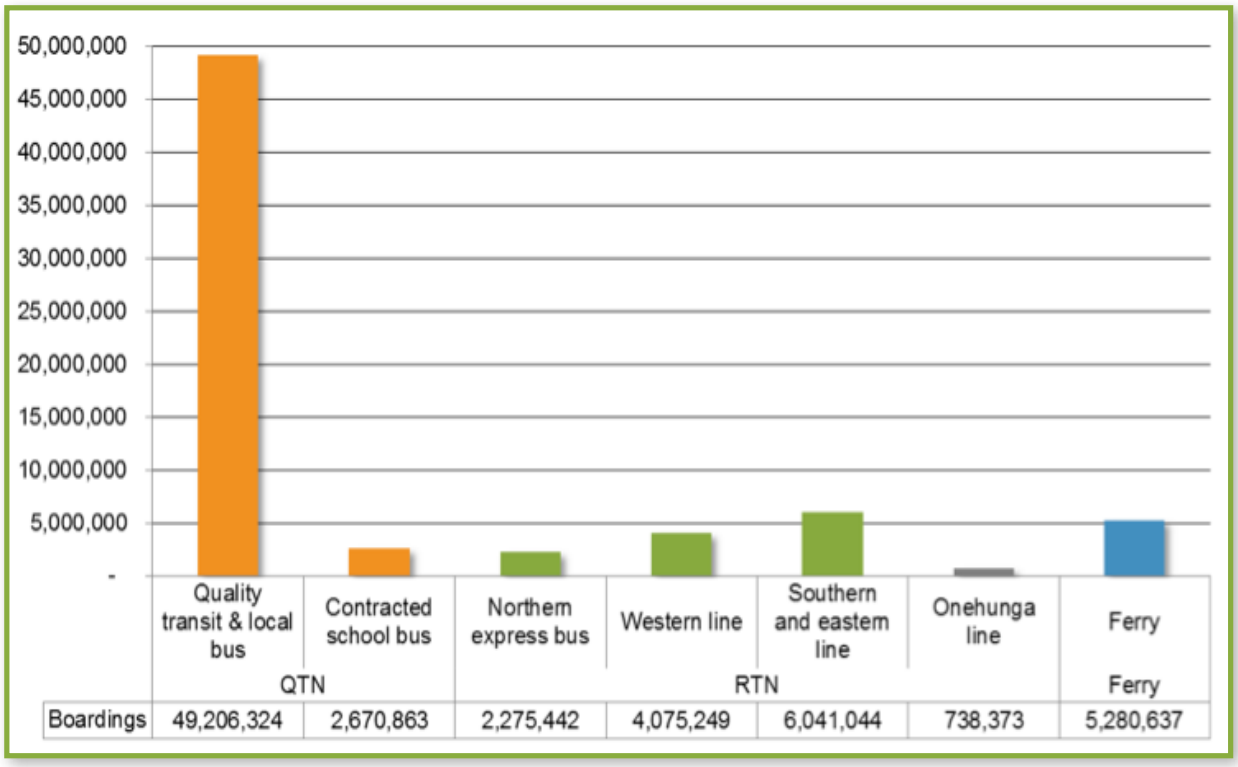


The public transport network is made up of four layers which represent an interconnected hierarchy of services, where lower-order services generally support the higher-order layers. The four layers are:

Rapid Transit Network (RTN)	**High-quality, fast, high-frequency service in its own right of way where it is unaffected by traffic congestion. The RTN will connect the major growth centres to the city centre. It includes the Northern Busway and the Eastern, Southern, Western and Onehunga rail corridors**
Quality Transit Network (QTN)	**Fast, high-frequency, and high-quality transit services operating between key centres and over major corridors to provide extensive transit priority. In conjunction with the RTN, the QTN will facilitate high-speed, reliable access around the region through the integration of radial and cross-town services**
Local Connector Network (LCN)	**Bus, ferry and train services that provide access to local centres and connect with the RTN and/or the QTN. Priority measures will be provided at key congestion points to improve service reliability**
Targeted services	**Services that provide mobility for groups whose needs are not met by the regular passenger transport network. They include the Total Mobility service for people with disabilities, demand-responsive services in areas of low demand, fare concession schemes and contracted school bus services.**

The usage of the network is measured by patronage figures. For the 12 months ending March 2012, patronage numbers totalled 70,287,931 which is an 8.9 per cent increase over the previous 12 months. The split between the different networks is shown in Figure 4.1-3.

Figure 4.1-3 Modal split for last 12 months
Source: Auckland Transport KPI report (March 2012)



4.1.3 Work categories

The main work categories are:

- Operations and maintenance – operations is the running costs; maintenance can be proactive or reactive
- Capital renewals – replacement and rehabilitation
- Capital new works – new capital (Auckland Transport provided), land development (growth driven and developer provided), vested assets and levels of service (improvements), and regulatory improvements
- Asset disposals.

Figure 4.1-4 shows the lifecycle management categories.

Figure 4.1-4 Transport lifecycle management categories

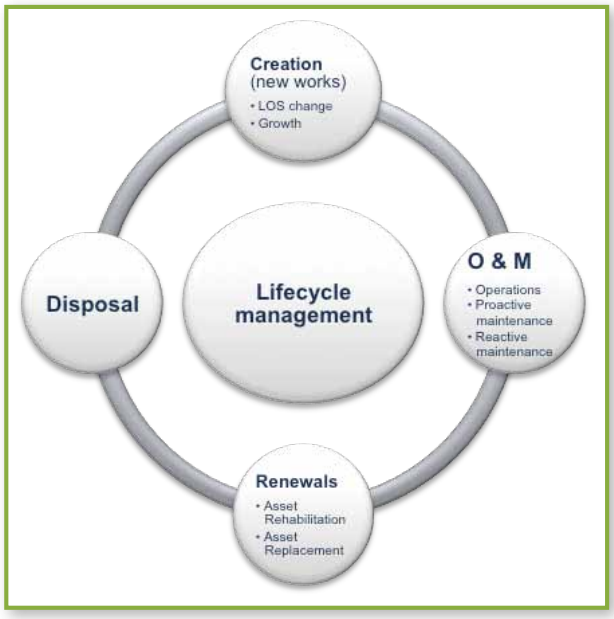
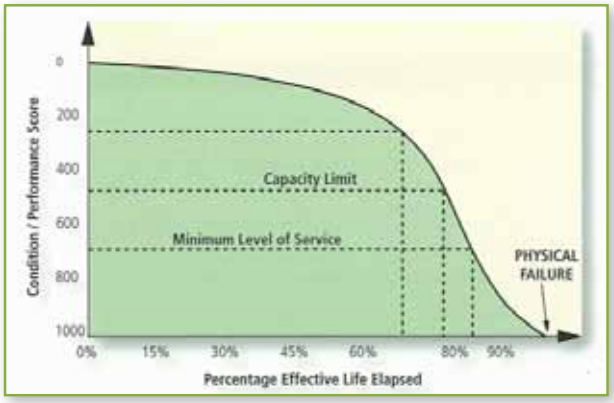


Figure 4.1-5: Typical condition curves
Source: 2011 International Infrastructure Management Manual (Figure 2.5.4)



4.1.4 Asset condition

In this plan, the term 'condition' is used in its asset management context and refers to the degree of deterioration of an asset or asset element. All assets deteriorate at different rates to eventual failure. The end of life or failure may be physical collapse, failure to meet service level requirements or failure to meet capacity requirements.

Asset condition is a measured assessment of an asset's current position or place on the asset decay curve, an example of which is illustrated in Figure 4.1-5. Each asset group deteriorates at different rates, particularly from condition grades 4 to 5.

Transport condition assessments typically use an advanced asset management approach using a condition/performance scoring index between 0 and 1000. This is banded to a base score index of 1 to 5 which is a commonly understood condition rating scale. This condition grading approach is used to assess an asset's condition with a ranking from 1 (very good) through to 5 (very poor). A grading of zero is assigned where an asset has been abandoned or no longer exists. This condition grading system, summarised in Table 4.1-2, is based on the 2011 International Infrastructure Management Manual (IIMM) and is used for all transport asset groups.

Each LCMP details how Auckland Transport monitors the condition for a specific asset group. Monitoring provides an understanding of the distribution of the current condition to ensure an acceptable level of service at least lifecycle cost. Auckland Transport aims to spend the least amount of funds to keep road networks in condition grades 1 to 3. Renewal or maintenance works provides additional service life, otherwise the asset deteriorates to the bottom part of the curve, condition grade 1.

Each asset group requires different maintenance and renewal strategies to manage the risk of future service failure resulting from poor asset condition. Assets fail to deliver their target level of service below a certain condition or will not meet acceptable performance levels. This is known as the intervention point to trigger planned works which may be maintenance or renewals. The decision-making process considers levels of service, condition and risk. It may use sophisticated optimised decision-making strategies, detailed in Section 4.1.7, or may be practical and relatively straightforward.

Auckland Transport measures a large number of condition indicators for its transport network, most of which are used to inform technical decision making at a relatively detailed level or to support other processes such as deterioration modelling and renewal programming. These are discussed in each LCMP relative to the levels of service to be provided and risk appetite.

A formal condition assessment programme is being developed for all asset groups that will start in July 2012. A higher priority has been given for critical assets including bridges, retaining walls, and public transport, including ferry facilities, bus shelters and rail assets. Detailed inspections will be undertaken for these critical assets. They will assign condition rating and confidence and risk factors, and will determine residual life and replacement cost and confidence. Routine condition assessments will be undertaken for the non-critical assets at an appropriate frequency for the asset group.

4.1.5 Lifecycle management strategies

Auckland Transport's key asset management principle is meeting the service levels and managing risk while minimising whole-of-life costs. It is important that asset lifecycle costs are considered in decision making as they are typically several times greater than the initial development costs. Asset management is required to deliver an appropriate balance between asset cost, levels of service and risk as presented in Figure 4.1-6.

If an asset is allowed to deteriorate into poor condition, it will require more maintenance and present increased risk to the network. Maintenance costs resulting from deferred renewals can be significant.

Figure 4.1-6 Balancing LOS, risk and cost

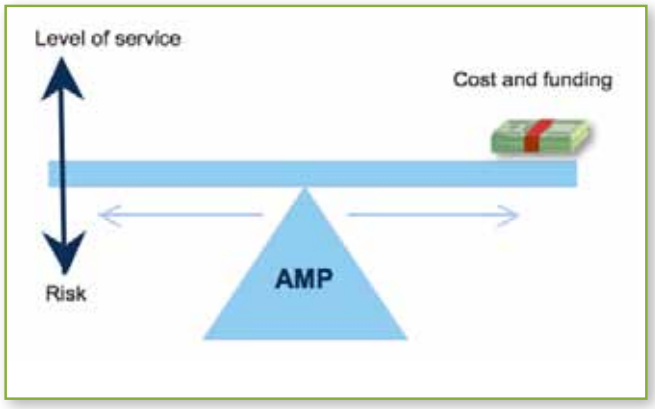
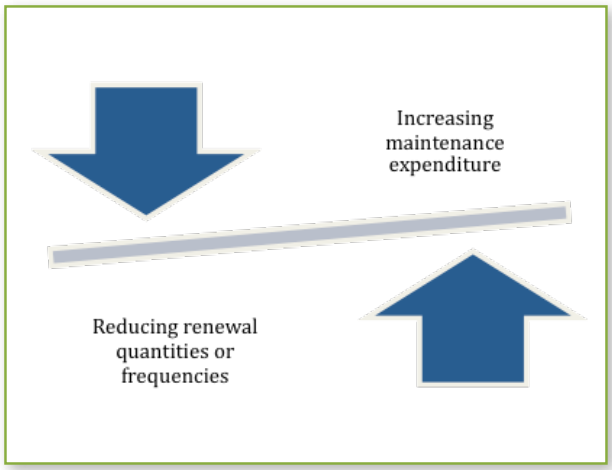


Table 4.1-2: Condition grading system
Source: 2011 IIMM

Condition grade rating	Condition score range	Description of condition	Condition criteria
1	0-200	Very good condition	Only cyclical maintenance required
2	200-400	Good condition	Minor maintenance required plus cyclical maintenance
3	400-600	Moderate condition	Significant maintenance required
4	600-800	Poor condition	Significant renewal / upgrade required
5	800-1000	Very poor condition	Unserviceable

Figure 4.1-7 Impact of reduced renewals



Renewal investment is used to maintain levels of service, manage the cost of maintenance and manage risk. Optimised decision making (ODM) is used to minimise the whole cost of asset ownership by providing an optimal balance between renewal and maintenance investment levels. It is important to identify the most cost-effective time to renew the assets to maintain service levels. Deferred or reduced renewal works programmes can trigger increased maintenance requirements on deteriorating assets, as shown in Figure 4.1-7.

Auckland Transport wishes to manage the assets with a consistent regional approach but it is recognised that this will take time. There were quite different approaches to lifecycle management strategies taken by the legacy councils. It is expected that regional consistency will be enabled as the new maintenance contracts are progressively implemented.

Current lifecycle management strategies are summarised in the following sections.

Operations and maintenance strategy

Auckland Transport wishes to optimise its maintenance activities to minimise the total maintenance cost. The optimal maintenance mix is a balance of planned and reactive maintenance as shown in Figure 4.1-8. The initial focus will on the major asset groups; these high value and high demand assets will give the best benefits for the effort undertaken.

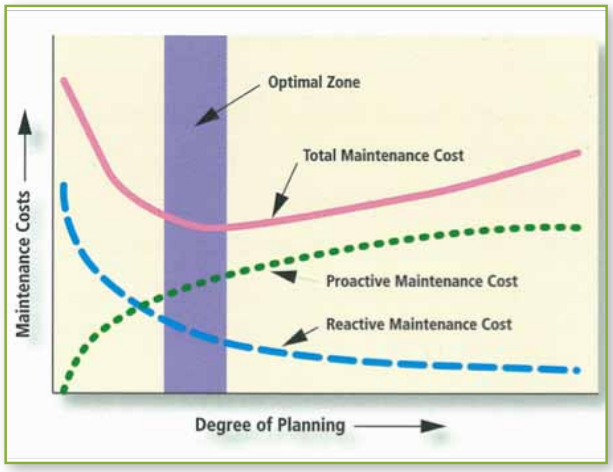
Maintenance definitions are as follows:

- Proactive – proactive inspection and maintenance works planned to prevent asset failure
- Reactive – reactive action to correct asset malfunctions and failures on an as-required basis (i.e. emergency repairs).

Typical operational activities include graffiti removal, weed control, customer service response, road opening procedures, inspections, reporting, traffic management, intelligent transport systems, asset management database and systems operations such as RAMM and SPM.

Maintenance includes minor repairs that cannot be capitalised, consistent with Auckland Transport's capitalisation policy.

Figure 4.1-8 Maintenance optimisation
Source: 2011 IIMM (Figure 3.3.4)



Renewal strategy

Asset renewal is the process of restoring the level of service delivered by an asset to its original design level, or close to it, by repairing or replacing the worn components. The purpose of the renewal strategy is to maintain the levels of service by identifying the most cost-effective time to renew the asset as presented in Figure 4.1-9. This shows that the asset age can be extended from 15 years with no interventions to between 47 and 54 years with different renewal strategies.

As the purpose of renewals is to restore levels of service close to design levels, the driver for their initiation is decline (or failure) of the ability to deliver the required level of service. This failure may be assessed in two ways:

- Level of service – asset does not achieve the required condition or performance such as road safety
- Economic criteria – more cost effective to provide the required level of service by replacing the asset rather than by repairing it.

There are four ways assets might fail that are used in assessing whether a renewal is necessary and all of them must be considered:

- Condition failure
- Capacity failure – such as insufficient space, not enough assets to deliver the service
- Reliability failure – such as road casualties, cannot consistently achieve the required performance
- Obsolescence and changes in technology.

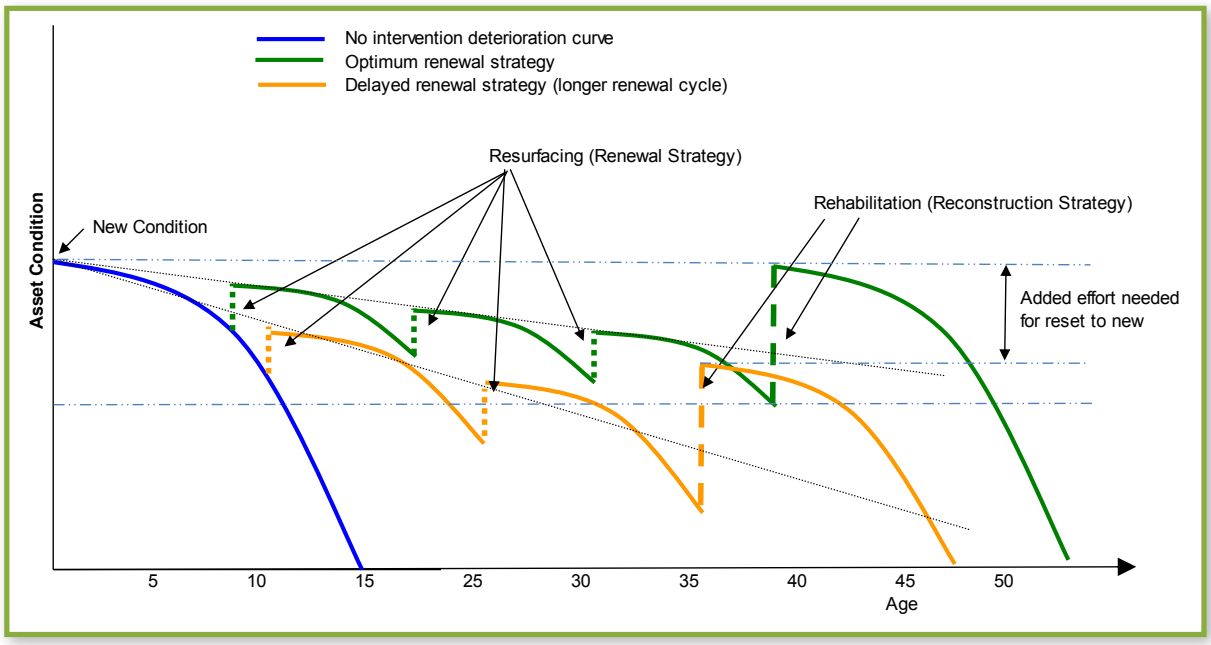
New capital strategy

New assets are created or upgraded to cater for growth, additional levels of service or legislative requirements. These works are either Auckland Transport or developer initiated. New assets that are growth and levels of service driven are covered in more detail in Section 3, Growth and Demand.

New assets are built to meet the needs of growth. In addition to the need to build "new roads", growth can also drive the widening of existing pavements and, as in the case of the increased heavy vehicle loadings for example, the strength of pavements and the suitability of their surfaces.

New works are generally developed through long term plans and strategies such as the Integrated Transport Plan and Corridor Management Plans. Auckland Transport's new works strategy is to manage the impact of growth through focusing on maximising the use of the existing assets and by increasing patronage of public transport to the delay the construction of new roads.

Figure 4.1-9 Asset deterioration and timing of work required



4.1.6 Renewal approach

There are four approaches for renewal planning with increasing maturity as shown in Figure 4.1-10. Some renewal approaches are more appropriate for certain asset groups due to their value, size and inherent risk. Auckland Transport wishes to move towards the proactive renewal approach over time for the major asset groups.

Renewals were analysed by age and condition based methods for each LCMP where there was sufficient information available. Each method becomes less effective where there are significant amounts of unknown information. The resulting renewal profiles are detailed in each LCMP.

4.1.7 Optimised decision making strategy

ODM approach

Auckland Transport's ODM frameworks generally follow the New Zealand Asset Management Support's (NAMS) ODM Guidelines. These frameworks provide the platform for decision making for the maintenance, renewal and development of new assets, based on economic principles and multi-criteria objectives reflecting community well-being. They represent best practice, advanced asset management.

The ODM process involves the consideration of different options for solving a particular problem, allowing for different trade-offs and financial outcomes. The ODM process a multi-step process as shown in Figure 4.1-11 with a mix of ODM tools and judgement resulting in the final output. Financial projections for the AMP are developed in close coordination with the Auckland Council's LTP process, thus reinforcing the link to community outcomes.

These ODM frameworks are used in different asset management processes. Although the existing frameworks from the legacy councils are still being used in many cases, it is recognised that their future status will need to be rationalised. A key asset management improvement programme is the development of robust ODM processes including the introduction of appropriate tools (refer to Section 10, Improvement Plan and Monitoring).

4.1.8 Service delivery

A number of agencies are involved in the delivery of public transport within the Auckland region. Auckland Transport will continue to work with these agencies to deliver robust public transport services to the Auckland public.

Figure 4.1-10 Renewals approach

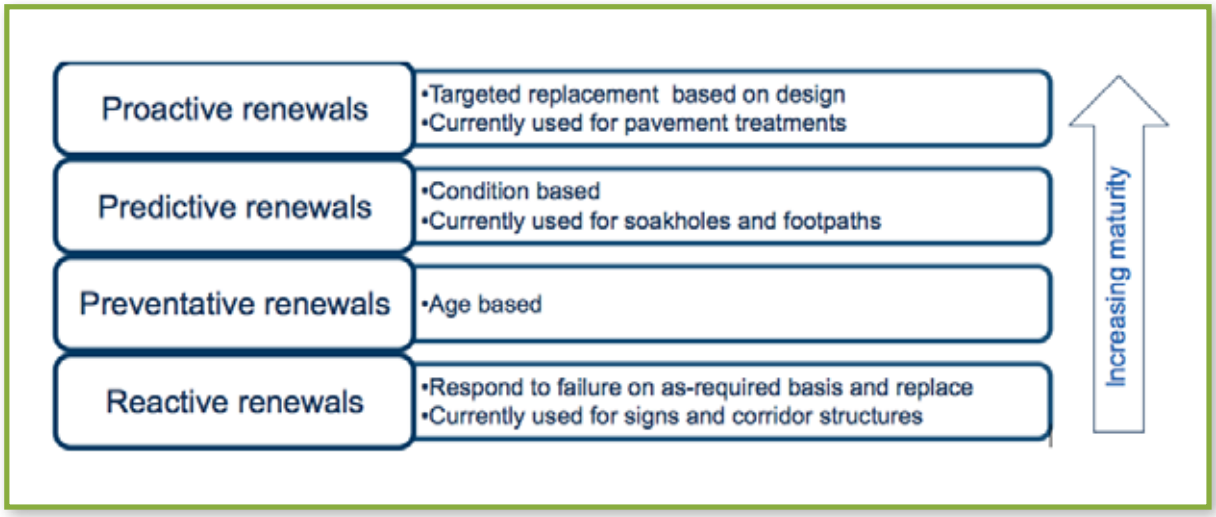
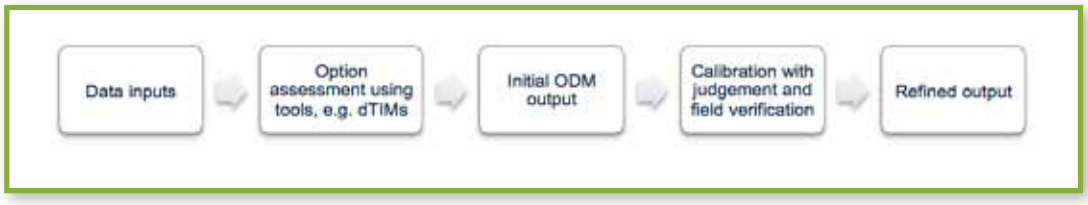


Figure 4.1-11 ODM Process



Service delivery contracts have been put in place across all modes of public transport to enable the effective and efficient delivery of these services. NZTA subsidises public transport services to encourage people out of cars and onto public transport, which then helps to free up congestion on the main arterials and allow for the efficient movement of other vehicles such as those used for freight.

Further information on service delivery can be found in Section 4.5, Public Transport Services. Bus shelters are included in the new road corridor maintenance contracts planned to be implemented from July 2012 to July 2014.

4.1.9 Section layout

The LCMPs describe the assets that are used to deliver transport services to customers, how the transport network is performing and the condition trends of key asset groups; and provides input into developing the operations and maintenance, renewal work and new works programmes.

Detailed LCMPs are provided for each asset group including the following key sections:

The service we provide	Outline of relevant levels of service
Network overview	Key LCMP issues and the strategies to manage these issues
	Description of the assets in physical and financial terms
	Detailed asset condition, performance and capacity
10-year plan	Detailed operations, maintenance, and renewal and new works needs
	A summary of the predicted expenditure forecast for the 10-year network needs at the end of each LCMP
Approved Long Term Plan	Comparison of AMP needs and approved LTP and any long term consequences
Improvement plan	Key improvement initiatives

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4.2 Rail Network

4.2.1 The service we provide

Providing a rail network that encourages and promotes passenger rail travel is important to the Auckland Council and Auckland Transport. A quality public transport rail service is a necessary component of the Auckland transport network. It provides reliable passenger transport travel options and helps reduce congestion on the city's roads.

The rail network service values most relevant to that delivery are:

- Accessibility
- Quality
- Reliability
- Ease of use
- Capacity

The details of the rail network levels of service being measured are provided in Section 2. Several of these measures and targets are yet to be confirmed (TBC) or developed (TBD) and will be included in the improvement plan.

Rapid Transit Network (RTN)	**High quality, fast, high frequency, dedicated pathway services**
Quality Transit Network (QTN)	**High quality, fast, high frequency, non-dedicated, but prioritised pathway services**
Local Connector Network (LCN)	**Provides access to local centres and connects with the RTN and QTN**

Auckland Transport differentiates service levels according to the passenger transport network hierarchy.

The network outputs and operational performance measures are shown for indicative purposes in Table 4.2-1.

4.2.2 Network overview

Auckland's passenger rail network forms a large part of the Rapid Transit Network (RTN), based on its ability to transport large numbers of passengers in a reliable manner. It is therefore an integral part of the RTN, and provides essential links to the QTN at interchange and hub locations. The only other major component of the RTN is the Northern Busway. Certain stations on the rail network are, however, classed as part of the Local Connector Network (LCN) due to their location at the extremities of the network, and their lower frequency services.

The passenger rail network extends from Pukekohe in the south, and Waitakere in the west to the Auckland city centre (Britomart Transport Centre). Services are divided into three main lines and two branch lines:

- Western Line (Britomart to Waitakere)
- Southern Line (Pukekohe to Britomart via Ellerslie and Newmarket)
- Eastern Line (Pukekohe to Britomart via Sylvia Park and Glen Innes)
- Onehunga Branch Line (from Penrose to Onehunga)
- Manukau Branch Line (from Puhinui to Manukau).

This is shown in Figure 4.2-1. A series of proposals for the future extension of the passenger rail network can also be seen in Figure 4.2-1. These include the development of City Rail Link, the proposed airport rail link, the North Shore light rail system, and the Southdown to Avondale rail link. These substantial development proposals are

Table 4.2-1 Rail network Levels of Service

Service value	Level of service	Service measure	Current performance	Target performance (indicative/ to be developed and agreed)
Accessible	**Increase availability of options for convenient travel Auckland wide**	**Passenger satisfaction rating for ease of transfer between public transport modes**	**66%**	**TBC**
Ease of use		**Percentage of passengers travelling on an integrated ticket**	**TBC**	**70%**
Quality	**Assets are maintained in good condition**	**Overall customer satisfaction scores for rail RTN and LCN services. Total of good, very good or excellent**	**84%**	**RTN >85% LCN >80%**
Capacity	**The public transport network can accommodate demand and enables customers to move around efficiently**	**RTN: Rail boardings, 12-month rolling**	**10,837,637**	**16,128,000 (2014/15)**
Reliability	**Improve or maintain travel time reliability**	**Service punctuality – Rail only**	**81.3%**	**83.5%**
		Service reliability – Bus, Rail and Ferry	**100%**	**99%**
Safety	**Minimise number of safety and security incidents**	**Rating of personal safety at facilities**	**78%**	**TBD**
		Percentage of users perceive public transport modes as being safe	**80%**	**Maintain or improve on baseline**

part of a programme that seeks to deliver a truly world-class rail system for the benefit of a greater proportion of the suburban Auckland population.

4.2.3 Network valuation

The approximate replacement cost of the passenger rail transport network assets owned and maintained by Auckland Transport is $275,437,000, shown in Table 4.2-2.

The optimised depreciated replacement cost (ODRC) of the asset categories in Table 4.2-2 is approximately $245,446,000.

The implication for value of the existing rail assets will be assessed following the purchase of new electric trains. The effective date of valuation varies across the various legacy councils. Auckland Transport will revalue its rail asset portfolio at a single effective date in 2013.

Figure 4.2-1 Overview of the Auckland passenger rail transport network
Source: Draft Passenger Ferry Plan (April 2011)

Table 4.2-2 Rail valuation
Source: Rail and rolling stock asset valuation (September 2010)

Asset	Optimised replacement cost (ORC) ($000s)	Optimised depreciated replacement cost (ODRC) $000s	Annual depreciation $000s
Structures / buildings	51,291	47,311	To be confirmed
Services / infrastructure	39,982	30,863	To be confirmed
Other site specifics	14,385	11,999	To be confirmed
Civil assets	1,964	1,934	To be confirmed
Rolling stock	167,815	153,339	To be confirmed
Total	275,437	245,446	To be confirmed

4.2.4 Network asset details

Auckland Transport has stewardship and management of the region's rail passenger transport assets including rail station facilities, rolling stock and maintenance facilities, and control and operations facilities. The ownership and maintenance of the rail tracks, signalling, platforms, and accessways, including pedestrian footbridges, is undertaken by KiwiRail. Auckland Transport works closely with KiwiRail to ensure a seamless and high-quality service across all rail assets.

Auckland Transport maintains and promotes a strong interface with NZTA, which subsidises rail maintenance, renewals and new works, and with adjacent road controlling authorities.

The assets are summarised in Table 4.2-3.

A summary of the assets by network line and station is shown in Table 4.2-5.

Table 4.2-3 Rail assets summary

Asset	Regional total quantity	Eastern Line	Southern Line	Onehunga Branch Line	Western Line
Rail stations	42	6	17	3	16
Stabling sites	2				
Fibre optic cables	66 km				
Diesel multiple units (DMU)	19				
Carriage units	106				

Table 4.2-4 Rail patronage for 2011 by line

Line	2011 boardings (per week day)
Eastern	32,794
Southern	29,190
Onehunga	1,321
Western	22,095

Table 4.2-5 Rail asset details by network line and station

Eastern Line

Station location	Asset	Owner	Auckland Transport responsibility	Bike racks or cycle store	Bus stop close by	Electronic display	Park-and-ride	2011 boardings (per week day)
Britomart	Operations centre (station facilities owned by third party)	Auckland Transport and KiwiRail	Selected assets within the Central Control Room	Yes	Yes, plus ferry terminal	Yes	Yes	25,112
Orakei	Station facilities	Auckland Transport	All above track assets	Yes	Yes	No	Yes	983
Meadowbank	Station facilities	Auckland Transport	All above track assets	Yes	No	No	Yes	687
Glen Innes	Station facilities	Auckland Transport	All above track assets	Yes	Yes	No	Yes	2,705
Panmure	Station facilities	Auckland Transport	All above track assets	Yes	Yes	No	Yes	1,628
Sylvia Park	Station facilities	TBC	All above track assets	No	Yes	No	No	1,679

Southern Line

Station location	Asset	Owner	Auckland Transport responsibility	Bike racks or cycle store	Bus stop close by	Electronic display	Park-and-ride	2011 boardings (per week day)
Newmarket	Facilities	Auckland Transport	All above track assets and accessways (excluding station square)	Yes	Yes	Yes	No	5,878
Remuera	Facilities	Auckland Transport	All above track assets	No	Yes	No	No	485
Greenlane	Facilities	Auckland Transport	All above track assets	No	Nearby	No	No	633
Ellerslie	Facilities	Auckland Transport	All above track assets	No		No		1,933
Penrose	Facilities	Auckland Transport	All above track assets	No	Yes			591
	All above track assets	No	Yes			591	No	354
Otahuhu	Facilities	Auckland Transport	All above track assets	No	No	No	No	954
Middlemore	Facilities	Auckland Transport	All above track assets	Yes	Yes	No	No	3,055
Papatoetoe	Facilities	Auckland Transport	All above track assets	Yes	Yes	No	Yes	3,074
Puhinui	Facilities	Auckland Transport	All above track assets	No	No	No	No	676
Manukau	Facilities	Auckland Transport	New station, details to be confirmed					
Homai	Facilities	Auckland Transport	All above track assets	Yes	Yes	No	Yes	1,707
Manurewa	Facilities	Auckland Transport	All above track assets	Yes	Yes	No	Yes	3,532
Te Mahia	Facilities	Auckland Transport	All above track assets	No	Yes	No	No	350
Takanini	Facilities	Auckland Transport	All above track assets	No	No	No	No	1,062
Papakura	Facilities and stabling facilities	Auckland Transport	All above track assets	Yes	Yes	No	Yes	3,854
Pukekohe	Facilities and stabling Facilities	Auckland Transport	All above track assets	No	Yes	No	Yes	1,052

Onehunga Line

Station location	Asset	Owner	Auckland Transport responsibility	Bike racks or cycle store	Bus stop close by	Electronic display	Park-and-ride	2011 boardings (per week day)
Penrose	Facilities	Auckland Transport	All above track assets	No	Yes	Yes	No	247
Te Papapa	Facilities	Auckland Transport	All above track assets	Yes	Yes	Yes	No	304
Onehunga	Facilities	Auckland Transport	All above track assets	Yes	Yes	Yes	Yes	770

Western Line

Station location	Asset	Owner	Auckland Transport responsibility	Bike racks or cycle store	Bus stop close by	Electronic display	Park-and-ride	2011 boardings (per week day)
Grafton	Facilities	Auckland Transport	All above track assets	No	Yes	Yes	No	1,702
Mt Eden	Facilities	Auckland Transport	All above track assets	No	Yes	Yes	No	893
Kingsland	Facilities	Auckland Transport	All above track assets	Yes	Yes	Yes	Yes	1,019
Morningside	Facilities	Auckland Transport	All above track assets	No	Yes	Yes	No	717
Baldwin Avenue	Facilities	Auckland Transport	All above track assets	No	No	Yes	No	1,026
Mt Albert	Facilities	Auckland Transport	All above track assets	No	No	No	No	2,117
Avondale	Facilities	Auckland Transport	All above track assets	Yes	No	Yes	No	1,406
New Lynn	Facilities	Auckland Transport	All above track assets	Yes	Yes	Yes	Yes	2,980
Fruitvale Road	New facilities	Auckland Transport	All above track assets	No	No	Yes	Yes	1,034
Glen Eden	Facilities	Auckland Transport	All above track assets	Yes	Yes	Yes	Yes	1,866
Sunnyvale	Facilities	Auckland Transport	All above track assets	Yes	No	No	Yes	1,084
Henderson	Facilities and heritage station facility	Auckland Transport	All above track assets	Yes	Yes	Yes	No	3,105
Sturges Road	Facilities	Auckland Transport	All above track assets	Yes	Yes	No	Yes	1,339
Ranui	Facilities	Auckland Transport	All above track assets	Yes	Yes	No	Yes	1,094
Swanson	Facilities	Auckland Transport	All above track assets	Yes	Yes	No	Yes	535
Waitakere	Facilities	Auckland Transport	All above track assets	No	Yes	No	Yes	178

Eight stations have historic relevance or heritage status. Newmarket Historic Station has been physically removed from site into storage and is now part of the new Parnell Station site.

A number of the old RTN minor stations are due to be upgraded in 2012 ready for the rail electrification.

The useful life of rail station assets varies according to their form and engineered life. The anticipated rate of change in the rail environment is such that significant structural assets are deemed to have a useful life of 60 years, whilst services, fit-out and platform furniture have a useful life of between 10 to 50 years.

Fibre optic cable

Communications between the rail stations are effected using a fibre optic cable owned and maintained by Auckland Transport. The cable comprises a 66km length of fibre optic cables laid in UPVC duct within the rail corridor between Britomart, Sylvia Park, Waitakere and Papakura.

The useful life of this asset is estimated to be 20 years. Based on the installation date of 2003, the remaining useful life is 13 years.

Rolling stock

Auckland Transport currently owns and operates, by means of contract with Veolia Transport Auckland, a fleet of Diesel Multiple Unit (DMU) locomotive trains and a series of various types of carriages. This fleet is augmented by leased DMUs from KiwiRail, which have been employed to meet recent increases in patronage growth.

Table 4.2-6 shows that the DMU fleet requires significant refurbishment and replacement over the next five years and is reaching the end of its useful life. The fleet will be phased out in favour of electric trains.

The data and systems from the various LOS for support assets such as park-and-ride facilities and public toilets need to be amalgamated into a single data system. This has been identified as a future improvement initiative.

4.2.5 Asset data confidence and reliability

Auckland Transport uses a number of systems to manage its rail infrastructure assets, including Decision Support Tool (DST) and SPM databases. These systems include an asset inventory, condition and risk rating information, and operational information including plans, photos, and operations and maintenance guidelines.

Table 4.2-7 illustrates confidence levels in the reliability of the asset and condition information currently held in the asset databases.

The current confidence level of asset data in terms of the inventory and condition of the building and structural components of the rail asset portfolio is relatively uncertain.

Further clarification is required on:

- The relationship of adjoining assets to the rail stations that support the provision of rail passenger transport services, e.g. park-and-ride car parks, toilet facilities
- The asset inventory and condition information for the rolling stock.

The collation of information relating to this asset class is a key improvement action for this lifecycle management plan. Information relating to the performance of the rail asset portfolio is at a basic level only. The performance of the network requires re-appraisal with the redefinition of levels of service undertaken as part of the transition from ARTA to Auckland Transport. This is an improvement action for the next AMP.

Table 4.2-6 Rail asset lives

Description/ type name	Number	Average useful life (years)	Average acquisition date	Average life remaining (years)	Range of life remaining (years)
ADK motor and ADB trailer class two-car DMUs	9	6.5	2006	2.7	2 to 6
ADL motor and ADC trailer class two-car DMUs	10	13	2003	5.7	3 to 8
SXC and SXV carriage units	6	8	2009	6.8	6.8
SA carriage units	84	Exterior 15 Interior 7	2007	Exterior 11.5 Interior 4	Exterior 9-15 Interior 1-7
SD carriage units	23	Exterior 15 Interior 7	2007	Exterior 11.5 Interior 4	Exterior 9-15 Interior 1-7

Table 4.2-7 Data confidence summary

Data attribute	Very uncertain	Uncertain	Reliable	Highly reliable
Asset descriptors and quantity				
Asset age				
Condition				
Performance				

Table 4.2-8 Rail confidence data

Asset group	System data completeness		
	Measure	Age	Condition
Rail stations	70%	70%	70%

4.2.6 Asset condition

Condition rating

The planned condition survey frequency likely to be carried out on the rail station assets is summarised in Table 4.2-9. A formal condition assessment programme is being developed for the rail assets from July 2012.

Provision for emergency inspections to be carried out as result of vehicle crashes or other events has been incorporated within the condition assessment programmes.

Rail station site assets

The condition of the portfolio is generally good, having benefited from a period of sustained investment in facility upgrade, although condition information has not been formally captured for approximately 30 per cent of the rail station assets. As shown in Figure 4.2-2, 67 per cent of rail stations are in moderate to very good condition (grades 1 to 3), with a small portion or two per cent in poor and very poor condition (grades 4 to 5).

Fibre optic cable and duct asset

The condition of the fibre optic cable and the associated buried ducts is unknown. The cable has been subject to damage from excavation works in the rail corridor on a number of occasions, and as a result has been repaired or replaced in part. A detailed assessment of the cable and the duct integrity is required as part of the improvement plan.

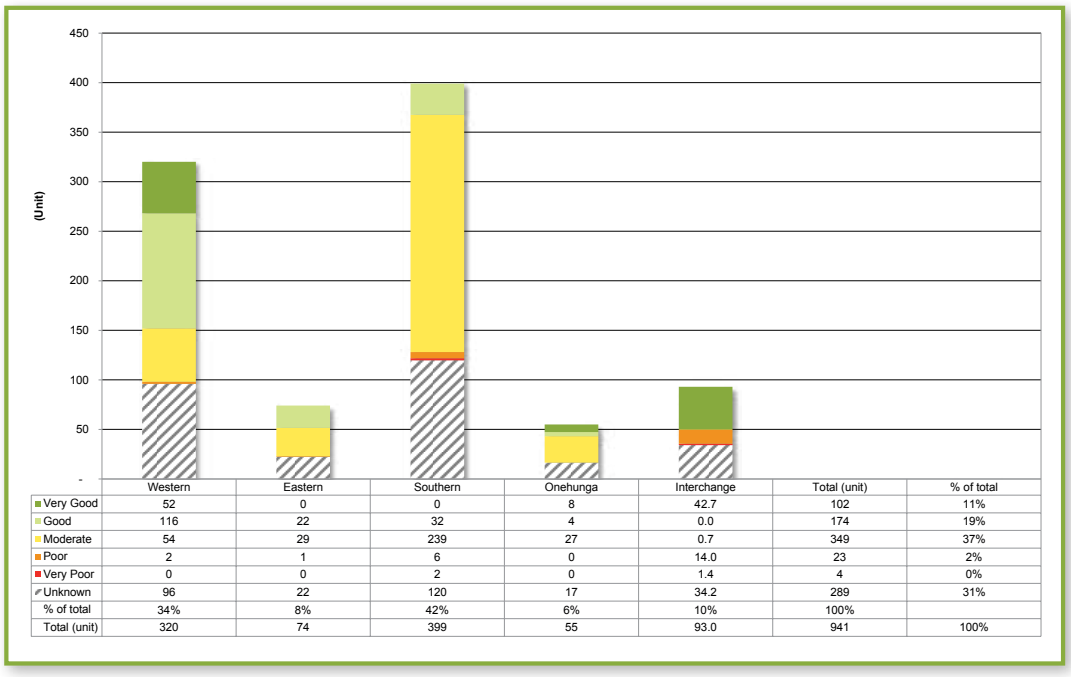
Rolling stock

The rolling stock condition was assessed in 2011 as part the valuation, based on historical understanding of the assets. The Auckland rolling stock consists of vehicles with varying fleet ages and types. The fleet was sourced from Australia and UK with build dates ranging from 1960s to 1980s, and the newly rebuilt SA/SD carriages that entered service in 2010.

Table 4.2-9 Rail condition survey frequency

Rail asset group	Current condition survey frequency	Future condition survey frequency
Rail stations	**A third of the portfolio each year**	**Routine assessments bi-annually More detailed assessment every six years**

Figure 4.2-2 Rail station condition
Source: SPM database (March 2012)



	Western	Eastern	Southern	Onehunga	Interchange	Total (unit)	% of total
Very Good	52	0	0	8	42.7	102	11%
Good	116	22	32	4	0.0	174	19%
Moderate	54	29	239	27	0.7	349	37%
Poor	2	1	6	0	14.0	23	2%
Very Poor	0	0	2	0	1.4	4	0%
Unknown	96	22	120	17	34.2	289	31%
% of total	34%	8%	42%	6%	10%	100%	
Total (unit)	320	74	399	55	93.0	941	100%

4.2.7 Asset performance and capacity

Asset performance

Formal assessment of performance is planned to be undertaken along with the formal condition assessment of rail facilities. The criteria for assessing performance include:

- Compliance with relevant Building Act, Building Code and Building Regulations
- The passenger capacity of facilities and peak passenger use for each facility
- Appropriateness of size for current and future rolling stock
- Provision of ancillary facilities to meet customer requirements such as car parking, toilets, ticketing facilities and signage
- Safety and operational functional requirements such as handrails and accessways
- Input from operators regarding the above issues.

4.2.8 Asset risks and criticality

Asset risks

Risk assessment for Auckland Transport's rail network considers safety, capacity, quality and reliability factors that may prevent the organisation from providing the required network infrastructure assets to deliver and support an adequately sized, provisioned, and secure transport network.

In addition to this is the risk that the assets will be insufficiently specified to provide for Auckland's required development in the period ahead.

Potentially these risk situations will arise as a result of:

- External economic influences – causing cost escalations due to variations in economic status of New Zealand and global economy, or other influences such as increases in oil, fuel and energy prices
- Ineffective input into regional strategic planning – causing reduced funding availability
- Ineffective governance – lack of documented business processes, roles, responsibilities and accountabilities around asset management and operations
- Transport network integration risk – the risk of insufficient co-ordination of different transport modes, including the implementation of new electrification technologies, and the exacerbation of sub-optimal transport effectiveness
- Unsatisfactory working relationships between stakeholders leading to delays in project delivery
- Ineffective safety protocols – the risk of personal harm to Auckland Transport staff, rail passengers and members of the public from ineffective safety management
- Asset failure or inadequate performance resulting in a loss of operational effectiveness, compromises in levels of service, and reduced patronage
- Ineffective regulatory compliance management leading to the risk of legal action and compensation
- Natural disaster – the threat posed to the continuity of essential services by earthquake, flooding, volcanic event, or other natural event.

There are relatively few assets at the severe end of the scale, representing assets that have a high likelihood of failure and a high consequence of failure. All assets in this category are prioritised for immediate remedial action to mitigate the risk.

Asset-specific risk of failure of Auckland Transport's rail passenger transport assets is evaluated using the Auckland Transport risk matrix system. Further detailed information on the risk matrix and risk analysis methods can be found in Section 8, Risk Management.

Critical assets

Critical assets are those parts of the passenger rail transport that are vital to providing service continuity and have unacceptable consequences should they fail.

The criticality of individual assets in the rail asset portfolio is currently only applied to buildings, structures and platform improvement assets. The criticality of individual assets associated with the rolling stock, fibre optic cable, and park-and-ride facilities is to be undertaken as an improvement action.

Critical assets in the rail portfolio include the rolling stock, the major interchange facilities of Britomart Transport Centre and Newmarket Rail Interchange, and the stabling facilities at Papakura and Pukekohe. These asset groups have the greatest influence on the delivery of services for the passenger rail transport system. However, all station facilities and related infrastructure are necessary for the integrity of the transport system as a viable alternative to car travel. In this sense, all major asset groups may be considered as 'important', if not 'critical'.

The impact of third party-owned and non-rail portfolio assets is significant and these assets are regarded as critical to rail passenger transport services. They include the KiwiRail-owned signalling

and track infrastructure, the KiwiRail DMUs leased by Auckland Transport, the KiwiRail-owned bridges, underpasses, retaining walls and structures along the railway corridor, and the Auckland Transport-owned road network overbridges, underpasses and level crossings.

The mitigation of risk for critical assets is part of Auckland Transport's risk management process. Details of these processes are included in Section 8, Risk Management.

Asset safety

It is of paramount importance to Auckland Transport that the safety of the public and its staff is ensured whenever they come into contact with the rail passenger transport network. A comprehensive health and safety review of the network was undertaken by Lloyds Register in 2008. This review identified two very high, four high, eight moderate and three low-risk events for rail stations.

A safety audit to identify hazards and security issues needs to be undertaken. This will be part of the planned performance assessment.

Asset safety is reviewed as part of the asset handover process of new assets to ensure that they are fit for purpose. New assets are not put into operation if there are any safety concerns at this stage.

4.2.9 Key issues and strategies

Key lifecycle issues that affect the passenger rail network are shown in Table 4.2-10.

4.2.10 Operations and maintenance needs

Scope of operations and maintenance

Auckland Transport keeps the rail network well maintained through an ongoing maintenance programme. This addresses defects resulting from inspections, or arising from health and safety issues and public complaints. This work can be either planned or responsive maintenance.

Asset operations cover the activities Auckland Transport undertakes on a day-by-day basis to keep the rail passenger transport assets operating in a safe and healthy manner. The specific purpose of these activities is to:

- Operate and manage the rolling stock including all light maintenance duties and all running costs, including fuel, provision of management, operations, and security staff for trains, control room, stabling and maintenance facilities, rail stations, and management support functions
- Keep and maintain all station building assets and grounds in a neat and tidy condition. Regularly remove and eliminate all refuse and

Table 4.2-10 Key rail issues

No.	Key rail issues	Action plans for managing these issues	Outcomes
1	The electrification of the suburban rail corridor will add significant complexity and cost to future maintenance, renewal and redevelopment works	Fast tracking of remaining station upgrade programme ahead of 2013 electrification	New technology assets integrated into all asset management systems
2	The forecast increase in rail patronage may cause capacity issues at certain station facilities, requiring platform extensions and enhanced passenger flow management	Programme of platform extension underway. Capacity modelling and optimisation at key interchange sites	Capacity issues addressed to meet demand
3	The enhancement of rail station facilities and the implementation of increased technology has vastly increased maintenance and future renewals' liabilities	Whole-life cost evaluation of project proposals and robust lifecycle planning for existing asset portfolio	Robust maintenance and renewals forward works programmes
4	The current fleet of Diesel Multiple Units (DMUs) have lower reliability and performance than other international city suburban locomotive units. These units are considered to be reaching end of life and improved electromotive units (EMUs) are being purchased	Purchase agreement for electric trains was signed October 2011 and new trains will begin service late 2013. Maintenance of existing fleet and management of reliability through to this time	Service levels improved
5	The performance of the passenger rail facilities and rolling stock against service level measures has not yet been undertaken. The priority for upgrade works beyond the immediate station upgrade programme to 2013 is therefore uncertain	Implement service level performance measurement system and evaluate service level gaps and tactics for remedying these gaps	Robust service level statements and measuring system to monitor them

non-required plant or vegetative growth in accordance with good facility management standards, including routine collection of refuse and waste material collected in suitable waste receptacles and excess waste and rubbish removed from site promptly

- Keep and maintain any sealed or surfaced areas, accesses or pedestrian bridges in a state of good order and repair in accordance with legislative and asset management requirements, along with the stormwater drainage systems of property assets
- Ensure that all condition inspection and safety assessments of rail assets are completed correctly in accordance with the programmes and schedules as detailed within the maintenance plan for each facility and that all issues are communicated and addressed in a timely manner
- Take all necessary steps to manage risks especially those risks related to safety, security, and service through hazard / safety management plans for each facility.

Operational plans for rail passenger transport assets include call centre operation provided by MAXX and response systems, inspections, reporting, data collections and the use of the asset management system.

Operations and maintenance plan

Physical works necessary to deliver the scope of works listed above are procured through contracts awarded on a competitive basis. Contractors delivering the maintenance services have the ability to programme works on a priority basis and are required to comply with the contract specifications and recognised guidelines for maintenance activities.

The activities included as part of the operations work programme and the method of provision is shown in Table 4.2-11.

The scope of rail operations and maintenance excludes any service contracts, as these are contained within AMP Section 4.5, Public Transport Services.

Contractor performance on delivering the maintenance works and related outputs is linked to the operational levels of service of the transport network. Historical levels of operations and maintenance expenditure have provided the current levels of service of the network. It is expected that this current level of service will be maintained in the future and is the basis of long-term lifecycle management strategies of this AMP. This position may change in the future as a result of Auckland Council and Auckland Transport adopting a different level of service in view of the funding and budgetary constraints.

Table 4.2-11 Rail operational activities

Activity	Method of provision
Operation and management of rolling stock and real-time information displays	Contract Veolia Transport Auckland Ltd
Cleaning of facilities	Contract
Operational management of rail stations and facilities	In house
Provision of code of compliance auditing	Contract
Security	Contract
Operation of CCTV cameras	In house

Operations and maintenance 10-year expenditure forecast

Auckland Transport intends to maintain the current levels of service as outlined in Section 4.2.1. Additional assets such as the electric trains (electric multiple units EMUs) and the City Rail Link (CRL) project, that bring the total operations and maintenance spend for the rail network to $334 million over 10 years, are shown in Figure 4.2-3.

Notes on the expenditures in this figure:

- Loan financing charges for EMUs are $327 million over 10 years
- CRL net profits are gained from rental properties acquired for the CRL project. These are not shown graphically in Figure 4.2-3, but are given as negative cost values
- Track access charges totalling $180 million over 10 years are including in the O&M for interchange stations
- The scope of rail infrastructure operations and maintenance excludes any service contracts, as these are contained within the Public Transport Services lifecycle management section of the AMP.

4.2.11 Renewal needs

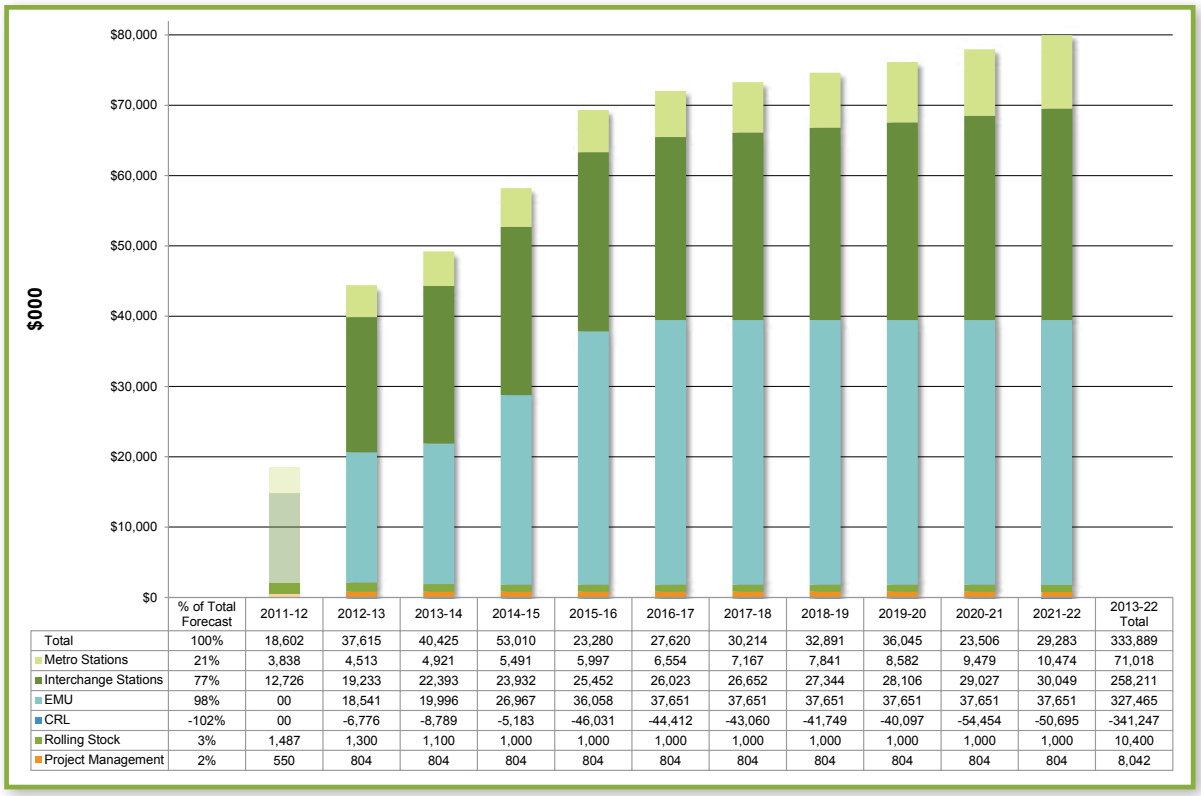
Renewal strategy

Asset renewal activity returns an asset to its optimum / original working capacity. Renewal projects are identified and developed using a range of tools:

- Condition and performance inspection reviews
- Outputs from SPM asset system
- Sub-optimal operations and maintenance costs
- Review of outcomes from the risk management process
- Asset obsolescence as a result of demand or technology factors.

These tools enable a determination of assets that have effectively reached the end of their useful life. These assets are then programmed for renewal.

Figure 4.2-3 Planned rail network operations and maintenance expenditure
Source: LTP Budget Model 12 April 2012 after Refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
Total	100%	18,602	37,615	40,425	53,010	23,280	27,620	30,214	32,891	36,045	23,506	29,283	333,889
Metro Stations	21%	3,838	4,513	4,921	5,491	5,997	6,554	7,167	7,841	8,582	9,479	10,474	71,018
Interchange Stations	77%	12,726	19,233	22,393	23,932	25,452	26,023	26,652	27,344	28,106	29,027	30,049	258,211
EMU	98%	00	18,541	19,996	26,967	36,058	37,651	37,651	37,651	37,651	37,651	37,651	327,465
CRL	-102%	00	-6,776	-8,789	-5,183	-46,031	-44,412	-43,060	-41,749	-40,097	-54,454	-50,695	-341,247
Rolling Stock	3%	1,487	1,300	1,100	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	10,400
Project Management	2%	550	804	804	804	804	804	804	804	804	804	804	8,042

Renewal plan

The decision-making process for rail renewals is summarised as follows:

1. Asset inspection	
2. Preparation of forward works programme	Producing a three-year indicative programme for renewal forecasts, using condition and performance assessments to determine future works
3. Validation	Joint validation walkover to verify sites prior to finalising the annual forward works programme
4. Confirmation of asset ownership status	Verifying accuracy of asset ownership status, e.g. private, Auckland Council (stormwater or parks)
5. Prepare one-year detailed work plan	Outlines the condition and performance rating for each rail asset and safety issue, provides the recommended capital / operational works and forward works programme. Revision of the budget for each renewal project or work package

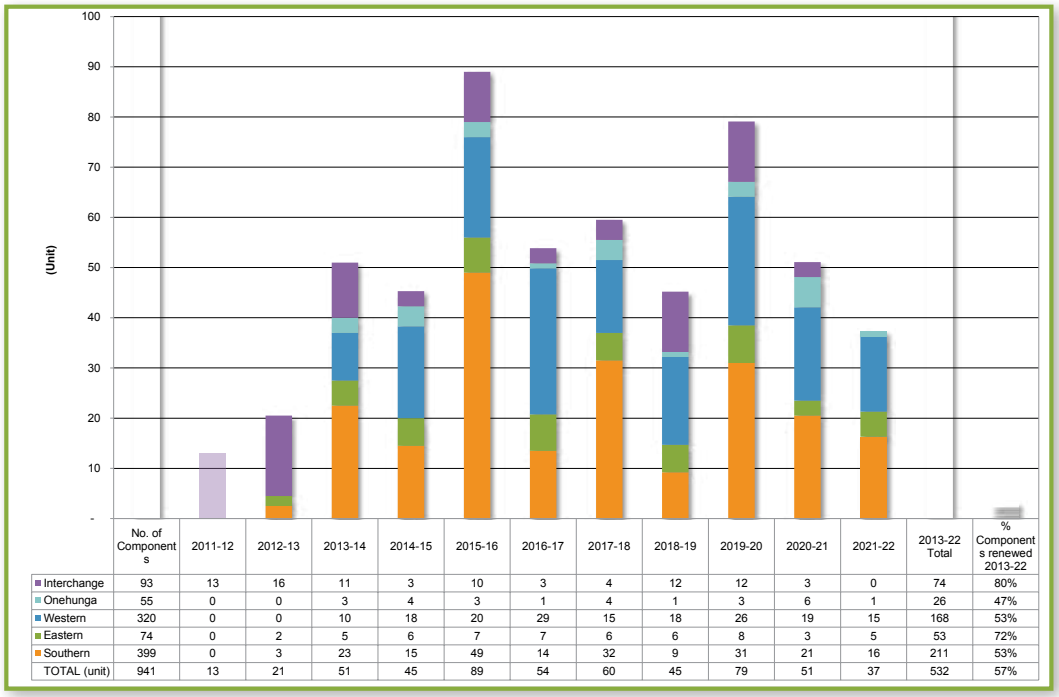
Renewal analysis

The rail renewals have been analysed by the following methods. Each method is less effective when there are significant amounts of unknown information.

Condition-based method

Rail station assets are mainly in good condition as detailed in Section 4.2.6. The analysis is by asset type with a total of 941 components identified. Condition assessments are carried out on the assets and the analysis has identified that a total of 532 components are due for renewal within the next 10 years, representing 57 per cent of the network as shown in Figure 4.2-4.

Figure 4.2-4 Condition-based renewal profile
Source: SPM March 2012



	No. of Components	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	% Components renewed 2013-22
Interchange	93	13	16	11	3	10	3	4	12	12	3	0	74	80%
Onehunga	55	0	0	3	4	3	1	4	1	3	6	1	26	47%
Western	320	0	0	10	18	20	29	15	18	26	19	15	168	53%
Eastern	74	0	2	5	6	7	7	6	6	8	3	5	53	72%
Southern	399	0	3	23	15	49	14	32	9	31	21	16	211	53%
TOTAL (unit)	941	13	21	51	45	89	54	60	45	79	51	37	532	57%

Table 4.2-12 Component useful economic lives
Source: SPM March 2012

Component group	Life range (years)	Average life (years)	Comments
Services	7-40	20	Electrical, CCTV, lifts and escalators, plumbing
Exterior works	5-75	23	Signs, fences, bike stands, seats, rubbish bins
Non property	5-60	35	Walkways, pedestrian bridges, car parking
Interior finishes	10-75	38	Seating, ceiling, wall finishes, stairs, joinery, floor finishes
External fabrics	10-100	47	Walls, stairs, roof, windows and doors

Age-based method

The assets are analysed by component groups which have a range of economic lives dependent on the materials used. Useful economic lives are expected to range from 20 to 47 years as shown in Table 4.2-12.

Analysis identified 381 components, representing 40 per cent of the network to be renewed over the next 10 years.

Operational priorities

The preliminary renewal programme for 2012/13 has identified the following indicative renewal quantities for rail stations, as shown in Table 4.2-13.

This programme has been prepared by in conjunction with the Asset Programming and Public Transport Operations teams based on local priorities.

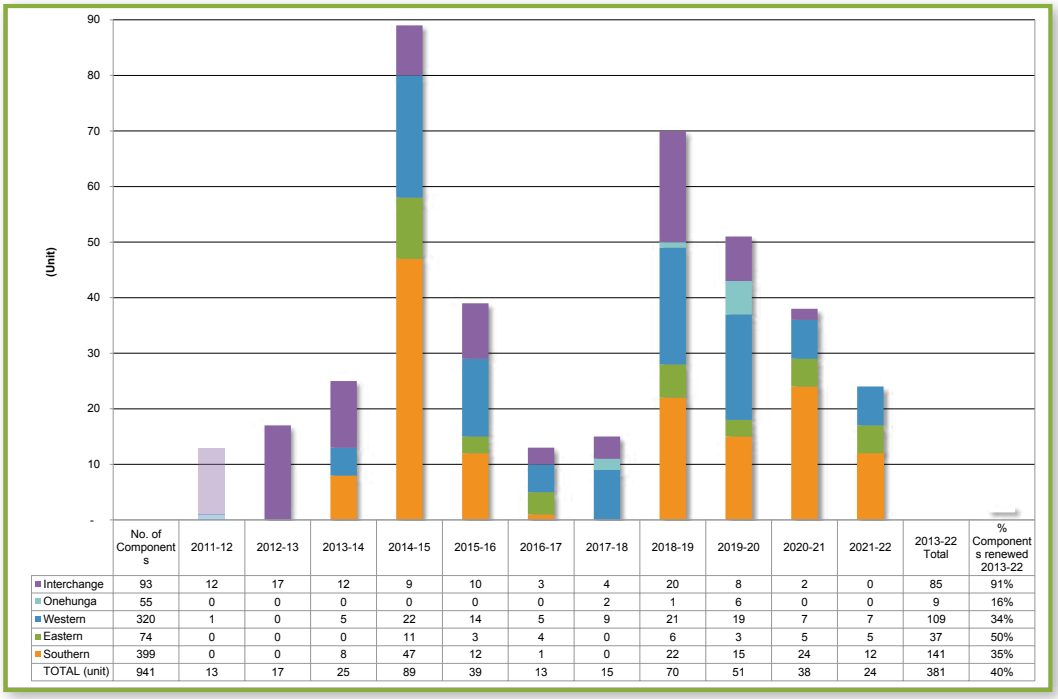
The annual depreciation for rail stations over the next 10 years is indicated in Table 4.2-14.

The implications of these annual depreciation figures are yet to be assessed.

Renewal expenditure trends

The majority of expenditure on the rail network has been on facility updates as part of the rail electrification works. This has been identified as new works. Consequently, expenditure trends for renewal work are unable to be appropriately analysed.

Figure 4.2-5 Age-based renewal profile
Source: SPM March 2012



	No. of Components	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	% Components renewed 2013-22
Interchange	93	12	17	12	9	10	3	4	20	8	2	0	85	91%
Onehunga	55	0	0	0	0	0	0	2	1	6	0	0	9	16%
Western	320	1	0	5	22	14	5	9	21	19	7	7	109	34%
Eastern	74	0	0	0	11	3	4	0	6	3	5	5	37	50%
Southern	399	0	0	8	47	12	1	0	22	15	24	12	141	35%
TOTAL (unit)	941	13	17	25	89	39	13	15	70	51	38	24	381	40%

Table 4.2-13 Indicative renewal quantities 2012/13

Management area	Estimated quantity
Interchange	0
Onehunga	2
Western	17
Eastern	7
Southern	17

Table 4.2-14 Rail asset depreciation forecasts
Source: Auckland Transport infrastructure depreciation profiles (25 April 2012)

Profile	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total 10 yr 2013-2022
Depreciation ($ millions)	5.0	6.6	10.2	17.7	24.4	34.3	46.4	58.7	66.9	82.7	82.9	430.8

Renewal 10-year work and expenditure forecast

Considering the above renewal analysis and likely budgetary constraints that have been indicated to Auckland Transport, the recommended renewal profile for the rail network is presented in Figure 4.2-6. This shows that the total renewal spend for the rail network is approximately $55 million over 10 years, with an average of $3.2 million for rolling stock, $1.6 million for rail stations and $744,000 for Britomart renewals each year.

4.2.12 New works needs

Capital new works overview

Asset creation, acquisition or upgrade activity provides new facilities in new locations, in line with the expected growth reported in the suite of regional public transport planning documents, and increases the capacity of an existing asset above its former working capacity or quality. Provision of these new or upgraded facilities is to a certain extend provided in accordance with the rationale that to successfully create a world-class passenger transport network, Auckland Transport will need to actively grow demand for public transport.

Auckland Transport has continued a programme of projects and initiatives on the rail network over the past year, and this has resulted in an increase of boardings of 19.9 per cent for the January 2012 financial year to date (10,902,006 passengers for the 12 months to January 2012).

New station sites, however, will only be provided if supported by verification of demand or determination of new growth areas. As such, the timing for implementation of these projects is very provisional, and will be affected by the uptake of growth on the existing network.

Work in this programme is carried out using project-based contracts that are publically tendered under NZTA procedures.

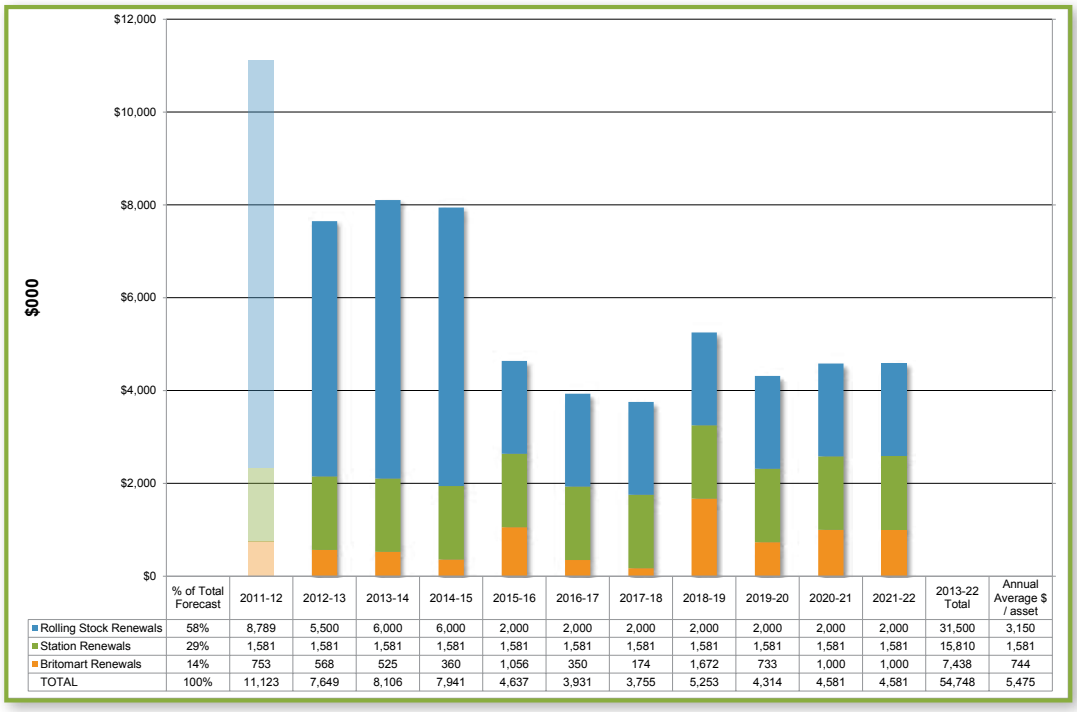
Projects are identified and developed for action on particular sites, using a range of tools:

- OPEX (electricity vs. oil)
- Review of outcomes from the risk management process
- Review of current and future facility capacity requirements
- A need to relocate a facility in an adjacent location.

Capital new works strategy

The capital new works associated with the rail passenger transport network are managed by an integrated cooperation between Auckland Transport's development and maintenance staff and representatives, and the various contractors across the legacy areas of the region that are responsible for the rail station facilities and rolling stock.

Figure 4.2-6 Rail network 10-year renewal works summary
Source: LTP Budget Model 12 April 2012 after Refresh from AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	Annual Average $ / asset
Rolling Stock Renewals	58%	8,789	5,500	6,000	6,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	31,500	3,150
Station Renewals	29%	1,581	1,581	1,581	1,581	1,581	1,581	1,581	1,581	1,581	1,581	1,581	15,810	1,581
Britomart Renewals	14%	753	568	525	360	1,056	350	174	1,672	733	1,000	1,000	7,438	744
TOTAL	100%	11,123	7,649	8,106	7,941	4,637	3,931	3,755	5,253	4,314	4,581	4,581	54,748	5,475

Capital works are considered on the basis of strategic transport planning research and analysis, and according to the ongoing evaluation of rail station sites in terms of performance against levels of service and the opportunity to achieve higher utilisation and lower unit cost for rail passenger transport services.

Following transfer of the asset base from legacy councils to Auckland Transport, all station sites are to be subjected to an amenity review to identify the requirements for rail station facilities in the immediate and medium term. This review will help inform the future rail station upgrade programme.

Electrification is a significant change in the rail passenger transport network and provides the opportunity for improvements in service frequency made possible by investment in new rolling stock. These replacement trains are a significant capital investment. Environmental benefits of electrification include the following:

- Energy efficiency: each train has regenerative braking, allowing energy to be produced by the train and fed back into the 25kv supply, providing a major improvement to their efficiency; a recovery of up to 20 per cent of the energy used
- No air pollution: because the trains are electric there are no exhaust fumes polluting the air
- Noise reduction: the 25kV power supply means that the trains are very quiet both externally and internally – a very important consideration for people living and working near the rail network.

New works plan

A summary of capital new works expenditure for the rail passenger transport network is shown in Figure 4.2-7.

An indication of the types of capital new works projects for the rail passenger transport network is shown in Table 4.2-15.

Table 4.2-15 Rail CAPEX new works forecast

Expenditure type	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total ($000)
Major projects	208,698	391,031	263,026	368,407	452,977	465,245	312,260	572,405	-67,500	-32,250	2,934,300
Minor projects		610	780	1,150	1,160	1,160					4,860
Station upgrades	18,324	16,415	11,290	9,790	10,640	8,680	2,000	2,350	3,500	4,560	87,549
Park-and-rides	1,000	3,820	1,500		800						7,120
Total	228,022	411,876	276,596	379,347	464,417	475,085	315,420	574,755	-64,000	-27,690	3,033,829

Figure 4.2-7 Rail network 10-year new works summary
Source: LTP Budget Model 12 April 2012 after Refresh from AMP

Notes on the expenditures:

- Station upgrades are the main focus, with a number of the stations being upgraded in preparation for the electrification of the network in 2014
- Proposed rail capital new works (un-inflated costs) include the City Rail Link ($2.4 billion) and electric trains and depot ($491 million).
- The negative values for capital new works after 2020 are due to the expected re-sale of land associated with City Rail Link project, which are not shown graphically in Figure 4.2-7, but are given as negative cost values
- Possible extension of electric train services to Pukekohe is to be advised.

4.2.13 Disposal plan

Disposal refers to activities necessary to dispose of decommissioned assets. On delivery of the new electric trains and their incorporation into service, the existing diesel rolling stock will be gradually retired. A disposal plan is currently being developed for the DMUs to coincide with the implementation of the electric trains into service, but priorities for the first tranche of disposal have already been agreed. Due to their age, availability of replacement parts and general reliability, the ADK carriages will be retired within nine months of the first electric trains entering revenue service. This is expected to be by the end of 2014.

The implication of the $153 million depreciated replacement cost of the existing rolling stock is to be assessed.

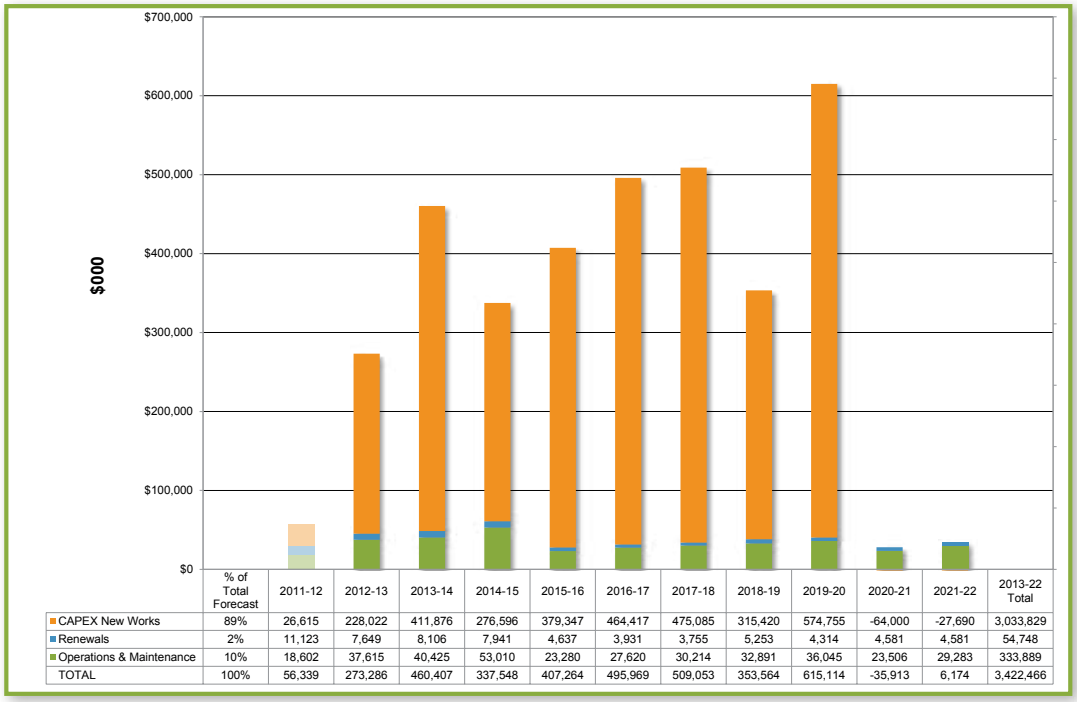
The next series of priorities is still to be confirmed, and is currently subject to a diesel fleet retention study. This will provide a recommendation from a vehicle condition perspective as to whether the SA/SD carriages should be retained to deliver the proposed diesel shuttle services on the peripheries of the network; or the ADL DMUs. The future of the SX train is still to be considered, and depends on the outcome of the diesel fleet retention study.

4.2.14 Summary of 10-year network needs

All expenditure for Auckland Transport's rail network is contained in Auckland Transport's SAP financial management system.

The total expenditure for the operations and maintenance, renewals and new works over the next 10 years is $3.5 billion. New works generates 89 per cent of the spend or $3 billion, followed by operations and maintenance at $334 million (10 per cent) and renewals at $55 million (two per cent) for the 10-year period.

Figure 4.2-8 Summary of rail network 10-year expenditure
Source: LTP Budget Model 12 April 2012 after Refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
CAPEX New Works	89%	26,615	228,022	411,876	276,596	379,347	464,417	475,085	315,420	574,755	-64,000	-27,690	3,033,829
Renewals	2%	11,123	7,649	8,106	7,941	4,637	3,931	3,755	5,253	4,314	4,581	4,581	54,748
Operations & Maintenance	10%	18,602	37,615	40,425	53,010	23,280	27,620	30,214	32,891	36,045	23,506	29,283	333,889
TOTAL	100%	56,339	273,286	460,407	337,548	407,264	495,969	509,053	353,564	615,114	-35,913	6,174	3,422,466

Notes on the expenditures in Figure 4.2-8.

- Prediction for OPEX costs is relatively constant over the 10-year period, averaging $33 million each year
- OPEX figures exclude any service contracts; this information is contained within Section 4.5 Public Transport Services
- There is a significant increase in CAPEX new works, which reflects the timing of the CRL construction and new electrified rolling stock
- The negative values for capital new works after 2020 are due to the expected re-sale of land associated with the CRL project, which are not shown graphically in Figure 4.2-8, but are given as negative cost values
- The assumed growth factor for consequential OPEX and renewals needs to be reviewed.

4.2.15 Approved Long Term Plan envelope

The approved Long Term Plan

This section compares the approved LTP envelope for OPEX and renewals with the rail network needs as determined by this AMP at a regional level and identifies the likely impacts of any variances. Revenue and funding incomes to Auckland Transport (from Auckland Council ratepayers and NZTA government subsidies and the like) are allocated through the approved Long Term Plan budgets. The LTP was adopted on 28 June 2012.

OPEX impacts

The apparent variance of +$4.3 million over 10 years shown in Table 4.2-16, is not an increase in OPEX, but rather a re-allocation from public transport services to the rail-related infrastructure.

Therefore, based on the information above, rail operational expenditure shows no variance between the LTP allocated budgets and the AMP needs. However, it is anticipated that the LTP will require further efficiency savings and therefore a funding gap for bus operational expenditure may eventuate.

Renewals impacts

Based on the information above, rail capital renewals expenditure shows no variance between the LTP allocated budgets and the AMP needs.

Further efficiency savings

As required by the approved LTP, a further reduction in OPEX of $18.6 million per year, reducing to nil by 2016/17, will need to be allocated against asset related operational budgets. The impact of this reduction on rail operational budgets is yet to be assessed and finalised.

Monitoring and management of Long Term Plan consequences

The consequences resulting from these variances will be monitored and reported as appropriate.

CAPEX new works

CAPEX new works contained in this AMP are derived from draft LTP listings as at April 2012 and are produced in section 4.2.12.

The capital new works programme has been further refined and adopted in late June 2012. Details of this adopted programme are contained in the LTP.

AMP inflation effects

Un-inflated and inflated rail needs for the AMP are shown in Table 4.2-17.

LTP inflation effects

Un-inflated and inflated rail budgets from the LTP are shown in Table 4.2-18.

Table 4.2-16 Variance between LTP approved budget and AMP network needs for rail (all un-inflated)
Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

Activity	10-year total LTP approved budget ($000s)	10-year total AMP network needs ($000s)	Variance ($000s)
Operations and maintenance	338,203	333,889	4,314
Renewals	54,748	54,748	0
Rail total	392,951	388,637	4,314

Table 4.2-17 Un-inflated and inflated rail AMP needs

Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

UN-INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		37,615	40,425	53,010	23,280	27,620	30,214	32,891	36,045	23,506	29,283	333,889
Renewal		7,649	8,106	7,941	4,637	3,931	3,755	5,253	4,314	4,581	4,581	54,748
Rail total		45,264	48,531	60,951	27,917	31,551	33,969	38,144	40,359	28,087	33,864	388,637
AC Inflator	OPEX	3.30%	3.30%	3.30%	3.30%	3.50%	3.60%	3.10%	3.10%	3.30%	3.60%	n/a
AC Inflator	CAPEX	3.90%	3.40%	2.80%	2.90%	3.10%	3.30%	3.50%	3.70%	4.00%	4.00%	n/a
INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		38,856	43,137	58,433	26,560	32,646	36,818	41,323	46,780	31,605	40,791	396,949
Renewal		7,947	8,708	8,771	5,270	4,606	4,544	6,580	5,604	6,189	6,436	64,656
Rail total		46,803	51,845	67,204	31,830	37,252	41,362	47,903	52,384	37,794	47,227	461,605

Table 4.2-18 Un-inflated and inflated rail LTP budgets

Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

UN-INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		39,251	54,056	52,685	60,910	20,146	22,491	24,898	27,761	15,120	20,885	338,203
Renewal		7,649	8,106	7,941	4,637	3,931	3,755	5,253	4,314	4,581	4,581	54,748
Rail total		46,900	62,161	60,627	65,548	24,078	26,246	30,150	32,075	19,701	25,466	392,951
AC Inflator	OPEX	3.30%	3.30%	3.30%	3.30%	3.50%	3.60%	3.10%	3.10%	3.30%	3.60%	n/a
AC Inflator	CAPEX	3.90%	3.40%	2.80%	2.90%	3.10%	3.30%	3.50%	3.70%	4.00%	4.00%	n/a
INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		40,546	57,682	58,075	69,492	23,812	27,407	31,281	36,029	20,330	29,092	393,746
Renewal		7,947	8,708	8,771	5,270	4,606	4,544	6,580	5,604	6,189	6,436	64,656
Rail total		48,493	66,390	66,846	74,762	28,418	31,952	37,860	41,633	26,519	35,528	458,402

4.2.16 Revenue sources

Auckland Transport's revenue and funding sources are contained in Auckland Transport's SAP financial management system.

Rail network funding is subsidised by NZTA up to the rates shown below. However, typically not all of the activities that are eligible for subsidy will be accepted by NZTA because capping limits are usually applied based on available funds from NZTA. The remainder is funded by ratepayers, loans for capital projects, farebox recovery and various other user-pays income sources.

Operational and maintenance revenue

Maintenance funding is subsidised by NZTA at a rate of 59 per cent from July 2012 (reducing by one per cent each year to 50 per cent over the next 10 years).

Capital renewals revenue

Renewals may be funded by NZTA at a rate of 50 per cent.

Capital new works revenue

Improvements and new works may be funded by NZTA at a rate of 50 per cent. Rail capital new works to improve safety and levels of service are generally funded from rates or loans. Some capital improvements components of the renewals programme may be funded from renewals budgets.

4.2.17 Key improvement initiatives

Key improvement initiatives relating to the rail passenger transport asset lifecycle management plan are shown in Table 4.2-19.

LCMP-related documents

The Auckland regional approach to passenger rail transport infrastructure is contained in the ARTA Sustainable Transport Plan 2006-16.

Table 4.2-19 Key improvement initiatives

Improvement area	Description	AMP Section	Priority
Rail 1	Complete general and detailed inspections to assess performance issues for rail assets.	4.2.7	High
Rail 2	Undertake a data exercise to amalgamate the data and systems from the various LOS for support assets such as park-and-ride facilities and public toilets into a single data system	4.2.4	Medium
Rail 3	Undertake an analysis of critical assets of the rail network	4.2.8	High

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4.3 Bus Network

4.3.1 The service Auckland Transport provides

Providing a bus passenger transport service is important to the Auckland Council and Auckland Transport. A quality public transport bus service is a necessary component of Auckland's transport network. It offers reliable passenger transport travel options and helps reduce congestion on the region's roads.

The bus network service values most relevant to that delivery are:

- Accessibility
- Quality
- Reliability
- Ease of use
- Capacity
- Safety.

The details of the bus network levels of service (LOS) being measured are provided in Section 2, Levels of Service. Several of these measures and targets are yet to be confirmed or developed and will be included in the improvement plan.

Auckland Transport differentiates service levels according to the passenger transport network hierarchy:

Rapid Transit Network (RTN)	**High quality, fast, high frequency, dedicated pathway services**
Quality Transit Network (QTN)	**High quality, fast, high frequency, non-dedicated, but prioritised pathway services**
Local Connector Network (LCN)	**Provides access to local centres and connects with the RTN and QTN**

The bus network consists of the Northern Express Busway as an RTN, the main commuter routes QTN, and the remaining LCN. The following network outputs and operational performance measures are shown for indicative purposes.

Table 4.3-1 Bus network performance measures

Service value	Level of service	Service measure	Current performance	Target performance (indicative / to be developed and agreed)
Accessible	**Increase availability of travel options for convenient travel across the Auckland region**	**Percentage of key bus corridors with bus shelters located within 500m of each other**	**Compliance 100% (estimated)**	**Not less than 75%**
Quality	**Assets are maintained in good condition**	**Overall user satisfaction for facility**	**78%**	**Maintain or improve on baseline**
		Percentage of bus shelters in moderate condition (grade 3) or better	**80%**	**95%**
Easy to use	**Improve navigability across the network**	**Passenger satisfaction rating for ease of transfer between public transport modes**	**66%**	**TBC**
		Percentage of public transport passengers with access to real-time service information: internet/mobile data	**72%**	**89%**
Reliability	**Improve or maintain travel time reliability**	**Percentage of public transport passengers satisfied with their public transport service**	**86%**	**87%**
		Service reliability – bus, rail, ferry	**100%**	**99%**
Capacity	**The public transport network can accommodate demand and enables customers to move around efficiently**	**RTN: Busway boardings: 12-month rolling**	**2,233,943**	**2,499,000 (2014/15)**
		QTN and LCN buses (including contracted school buses): 12-month rolling	**51,196,688**	**56,182,000 (2014/15)**
Public transport safety	**Minimise the number of safety and security incidents**	**Rating of personal safety at public transport facilities**	**78%**	**TBD**
		Percentage of users perceive public transport modes as being safe	**80%**	**Maintain or improve on baseline**

Figure 4.3-1 RTN and QTN network plans

Source: Auckland Transport strategy and planning division (January 2011)

4.3.2 Network overview

The Auckland bus network

There are a total of five busway stations and 15 bus stations supported by a network of 1,554 bus shelters and over 66 bus and transit (T2 and T3) lanes throughout the Auckland region.

The bus and transit lanes form part of the road carriageway and consequently are covered within the road carriageway lifecycle management plan. The ownership and maintenance of the busway lanes alongside the Northern Motorway is with NZTA, with bus services being provided by private operators. To ensure a seamless and high quality service across the bus network, there is a close relationship between Auckland Transport, network operators and maintenance crews. More information on the services provided can be found in Section 4.5, Public Transport Services.

Auckland's bus network is currently in the process of being redesigned to create a more connected and integrated public transport network. The first of the changes are rolling out in mid-2012, with ongoing implementation over the next three years.

4.3.3 Network valuation

The approximate replacement value of the bus shelters is $22.5 million, together with $18.2 million for the busway stations.

4.3.4 Network asset details

The Auckland bus network consists of 6,500 bus stops, 1,554 bus shelters, 15 bus stations, five busway stations, and two park-and-rides, as summarised in Table 4.3-3. There are also a number of assets which support bus movement, including priority signals, real-time information display units, CCTVs and bus priority lanes. Some of these assets, such as bus priority signals and bus lanes, are included within the Road Asset Management Plan and are not covered within this AMP. Other assets, such as the interchanges, have not been covered but will be covered in detail in the future.

An additional 915 bus shelters are provided by Adshel. These are supplied and maintained by Adshel and are not considered an Auckland Transport asset. They have therefore been excluded from any figures contained within this document, except for income received from Adshel. Where an Adshel shelter replaces an existing Auckland Transport shelter, the original shelter is relocated to a new location by Adshel. The useful asset life for bus shelters is approximately 15 years.

4.3.5 Asset data confidence

The RAMM database holds the asset information for bus shelters, while SPM holds asset information for bus stations and busway stations, including park-and-rides. The information contained within RAMM includes location, shelter type, general condition and notes. SPM breaks down components by type, condition and age, enabling better analysis.

Table 4.3-4 illustrates Auckland Transport's confidence in the reliability of the asset and condition information currently held in the asset database:

Data completeness for bus shelters, bus stations and busway station assets is shown in Table 4.3-5, based on the inventory in RAMM and SPM databases. This shows that the data sets for all the bus asset groups in relation to the measure are approximately 60 per cent complete. Auckland Transport intends to improve the data completeness with the planned condition assessment programme (refer to Section 4.3-6, asset condition).

Table 4.3-2 Bus network valuation
Source: Auckland Transport valuation (August 2011)

Asset	Optimised replacement cost (ORC) $000	Optimised depreciated replacement cost (ODRC) $000	Annual depreciation (ADR) $000
Bus shelters	22,476	13,204	562
Busway stations	18,270	17,158	261

Table 4.3-3 Bus network asset data
Source: RAMM March 2012 and SPM March 2012

Asset	Regional total quantity	North	Central	West	South
Bus shelters	1,554	633	470	241	210
Bus stations	15	4	5	2	4
Busway stations	5	5			
Park-and-rides	2	2			

4.3.6 Asset condition

Condition rating

The planned condition survey frequency likely to be carried out on the bus network assets is summarised in Table 4.3-6. A formal condition assessment programme is currently being developed for the bus network assets, and will commence in July 2012.

Provision for emergency inspections following vehicle crashes or climatic / geophysical events has been incorporated within the condition assessment programmes.

Bus shelters, bus stations and busway stations

Bus shelters

62 per cent of bus shelters are in moderate to very good condition, as shown in Figure 4.3-2. Six per cent are in poor and very poor condition. Note that the condition of 32 per cent of bus shelters is unknown.

Bus stations

41 per cent of bus station assets are in moderate to very good condition, as shown in Figure 4.3-2. Seven per cent are in poor and very poor condition. Note that the condition of 53 per cent of bus station assets is unknown.

Table 4.3-4 Bus network confidence data
Source: RAMM/SPM

Data attribute	Very uncertain		Uncertain		Reliable	Highly reliable
Asset descriptors and quantity						
Asset age						
Condition						
Performance						

Table 4.3-5 Data completeness summary
Source: SPM and RAMM database (March 2012)

Asset group	System data completeness		
	Measure	Age	Condition
Bus shelters	95%	90%	68%
Bus stations	47%	47%	47%
Busway stations including park-and-ride	68%	68%	68%

Table 4.3-6 Bus shelter, bus stations and busway stations condition surveys
Source: Asset Systems and Monitoring (28 February 2012)

Asset group	Current condition survey frequency	Future condition survey frequency
Bus shelters	Variable standards across the region	Annually to determine the need for replacement
Bus stations	Variable standards across the region	From 1 July 2012 routine inspections are being carried out every two years A more detailed inspection regime will be carried out every six years
Busway stations	Good to very good	From 1 July 2012 routine inspections are being carried out every two years A more detailed inspection regime will be carried out every six years

Busway stations

Most busway stations (67 per cent) are in moderate to very good condition, as shown in Figure 4.3-2, with no assets in poor or very poor condition. Note however that the condition of 32 per cent of busway station assets is unknown.

Overall bus network

For the total network, 57 per cent is in moderate to very good condition. However, a large portion of condition is unknown – 39 per cent. Auckland Transport identifies better condition information as a future improvement.

Planned condition assessments

A formal condition assessment programme is being developed for the bus network along with other public transport facilities. The overall programme will start in July 2012. Detailed bus facility inspections will be undertaken in the fourth year, because many of the bus facilities are new assets. Detailed inspections will be completed every 10 years.

The detailed inspections will assign a condition rating and confidence grade, as well as a risk factor in terms of public safety and bus operation and confidence. The detailed inspection will also identify residual life (physical life left), and determine a replacement cost and confidence.

Routine condition assessments will occur after detailed inspections have identified the key components.

4.3.7 Asset performance and capacity

Performance factors

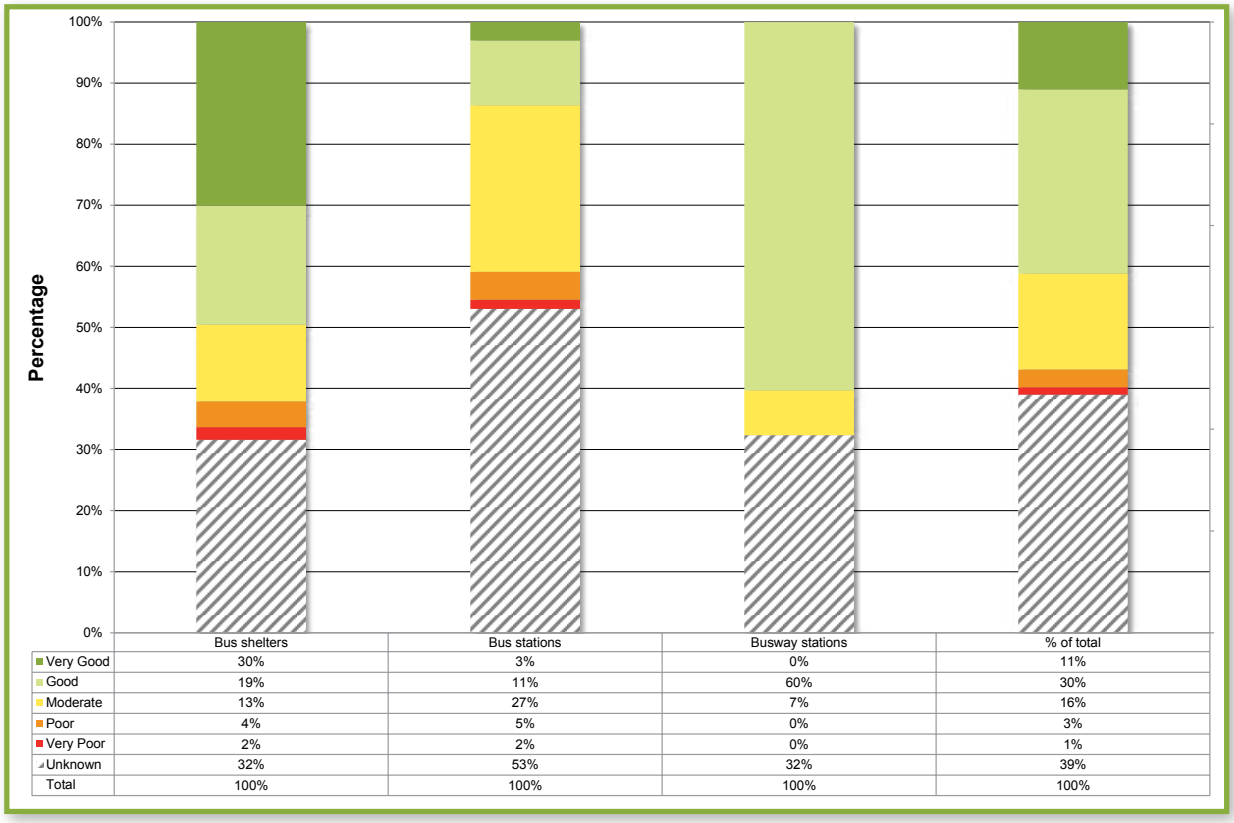
Performance of the bus network is very important for encouraging bus usage. Performance relates to a number of factors including function, usability and information systems, safety and cleanliness.

Performance of the bus network can be measured by customer surveys. Customer satisfaction surveys are carried out in May and October each year. Figure 4.3-3 displays information obtained from the October 2011 survey. The acceptable minimum mean rating is 3.5; the overall mean rating for the bus stops was 4.4. (The rating is out of a total score of 6.)

Capacity

The bus network continues to be a popular choice of public transport for the Auckland region. Just over three million people used the bus network across the four sectors in January 2012. In the 12 months to January 2012, 69.7 million passengers used public transport, and of these 53.6 million

Figure 4.3-2 Bus network condition
Source: SPM and RAMM March 2012



	Bus shelters	Bus stations	Busway stations	% of total
Very Good	30%	3%	0%	11%
Good	19%	11%	60%	30%
Moderate	13%	27%	7%	16%
Poor	4%	5%	0%	3%
Very Poor	2%	2%	0%	1%
Unknown	32%	53%	32%	39%
Total	100%	100%	100%	100%

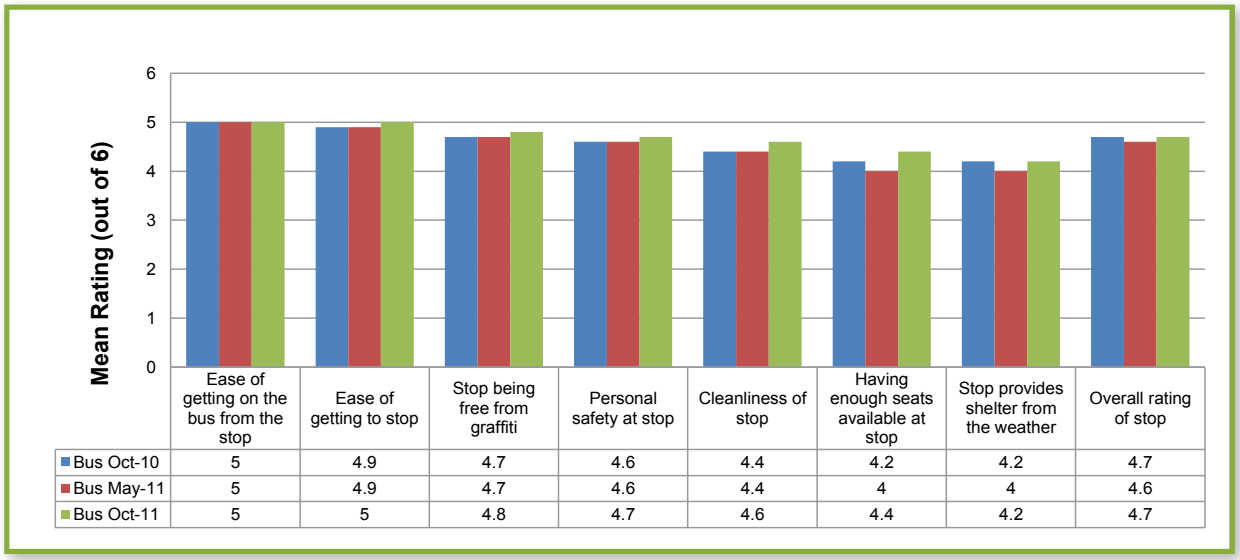
utilised the bus network. Auckland Transport is currently redesigning parts of the bus network on the principles of fewer, simpler and more intuitive network routes.

As shown in the Figure 4.3-4, the Isthmus sector makes up the majority of users, followed by the North sector.

Two park-and-ride facilities support the patrons of the Northern Busway by providing 920 car parks. There is demand for additional parking spaces to be made available to support the record number of bus users on the Northern Busway. Additional services have been provided by bus contractors to support the rise in bus patronage.

Figure 4.3-3 Performance rating of the bus network

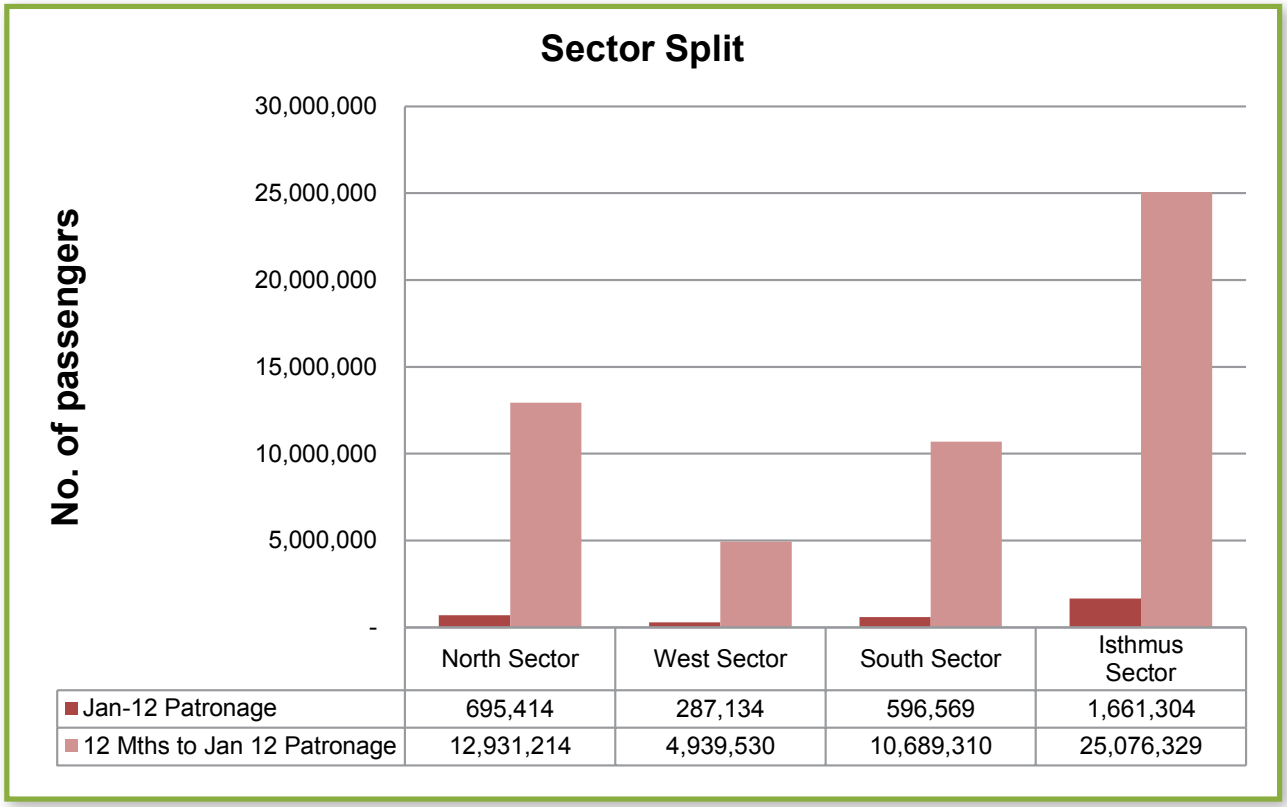
Source: Auckland Transport Customer Satisfaction Monitoring of Auckland Transport Services – Topline Report October 2011 (January 2012)



	Ease of getting on the bus from the stop	Ease of getting to stop	Stop being free from graffiti	Personal safety at stop	Cleanliness of stop	Having enough seats available at stop	Stop provides shelter from the weather	Overall rating of stop
Bus Oct-10	5	4.9	4.7	4.6	4.4	4.2	4.2	4.7
Bus May-11	5	4.9	4.7	4.6	4.4	4	4	4.6
Bus Oct-11	5	5	4.8	4.7	4.6	4.4	4.2	4.7

Figure 4.3-4 Sector split

Source: January 2012 Auckland Transport KPI Report



	North Sector	West Sector	South Sector	Isthmus Sector
Jan-12 Patronage	695,414	287,134	596,569	1,661,304
12 Mths to Jan 12 Patronage	12,931,214	4,939,530	10,689,310	25,076,329

4.3.8 Asset risks and criticality

Asset risks

Asset risks across the transport network, identified through a formal risk analysis review, appear in Section 8, Risk Management. Risks for the bus network are summarised in Table 4.3-7.

Auckland Transport will update this risk assessment once risk analysis has been completed.

Additional risks that have been identified through AMP development are shown in Table 4.3-8.

Critical assets

A critical asset is defined as "one for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation".

Examples of critical assets within the bus network are:

- Busway stations
- Real-time information
- Pedestrian overbridges.

Asset safety

Potential hazards and safety issues are mitigated through regular maintenance inspections on bus network assets.

Contracts are subjected to regular KPI reporting on any accidents and incidents involving contractors while carrying out work within the bus network. Any accidents need to be investigated and mitigation methods put in place to avoid future occurrences.

Any bus network building which contains a building system such as a lift, escalator or fire sprinkler system is subject to a regular inspection and maintenance programme. Such systems or services need to comply with the Building Act and warrant of fitness requirements and require annual inspections to ensure that they are compliant.

New assets are subject to a handover process to ensure that they are fit for purpose. New assets are not put into operation if there are any safety concerns at this stage.

4.3.9 Key issues and strategies

Key lifecycle issues that affect the bus network are shown in Table 4.3-9.

Table 4.3-7 Bus network risk analysis
Source: Previous legacy AMP information

Risk description	Net risk	Management options
Failure to deliver on agreed projects – indications made in planning processes are not met	Operational Legal Financial	Manage public projects appropriately. Review project plans against public plans Escalate issues when required Ensure earlier involvement in strategic processes
Inadequacy of bus shelters – resulting in reduced patronage due to exposure to elements	Low risk – no formal requirement for further action unless escalation of risk is possible	Greater interaction with public transport operations to assess unforeseen needs and generate 10-year plan Monitor and review current practices
Absence of quality bus shelters – resulting in reduced patronage due to exposure to security issues, lighting, and graffiti	Moderate risk – address via new procedures and/or modification of existing practices and training	Monitor and review current practices Further investigation into security in Crime Prevention Through Environmental Design (CPTED) Upgrade of glass

Table 4.3-8 Additional identified risks

Risk description	Net risk	Management options
Asset failure due to lack of condition information	Moderate risk	Review current practices
Public safety	Moderate risk	Safety awareness campaigns

Table 4.3-9 Key issues and strategies

Source: Legacy council AMP

No.	Key issues	Action plans for managing issues	Outcomes
1	Improve serviceability issues to address dirtiness, broken glass, vandalism and graffiti	Review current maintenance contract and budgets to ensure required service levels and to address local problems and vandalism. Analyse site specific problems data and incorporate solutions into renewal programmes. Investigate the use of CCTV at high-risk sites to prevent vandalism / improve safety	Manage public projects appropriately. Review project plans against public plans Escalate issues when required Ensure earlier involvement in strategic processes
2	Improve database management to enhance the maintenance and renewal regime as well as to assist in shelter needs analysis	Enter shelter information into a robust AMIS programme to enable performance and condition monitoring	Complete inventory of bus network assets Improved maintenance and renewals programmes
3	Develop new infrastructure for expanding services	Promote increase in the number of privately funded and maintained bus shelters	More privately funded and maintained bus shelters
4	Develop busway station pedestrian over-bridges	Need to assess Auckland Transport's maintenance responsibilities and access arrangements to carry out inspections over motorways	Confirmed role and responsibility for Busway station pedestrian overbridge, which straddles motorway

Table 4.3-10 Maintenance categories

Source: Rodney 2010/2011 Transport Asset Management Plan (October 2010)

Routine (general) maintenance	Routine maintenance is the regular ongoing day-to-day work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to restore operation
This work falls into two broad categories as follows:	
Proactive	Proactive inspection and maintenance works planned to prevent asset failure
Reactive	Reactive action to correct asset malfunctions and failures on an "as required" basis

4.3.10 Operations and maintenance needs

Scope of operations and maintenance

Auckland Transport keeps the bus network suitable, accessible, safe and well maintained through an ongoing maintenance programme. This addresses defects identified through inspections, or arising from health and safety issues. The maintenance programme includes both planned and responsive work.

Maintenance of the bus network includes:

- Busway station maintenance and repairs
- Commercial area cleaning for bus shelters
- Inspection programming and reporting
- Response times (to routine and emergency work) defined for notified defects, with standards by activity type
- Compliance with legislation, e.g. health and safety.

Operations and maintenance plan

Physical works necessary to deliver the scope of work listed above are procured through contracts awarded on a competitive basis. The contracts are normally for long periods of time.

Contractors delivering the maintenance services have the ability to programme works on a priority basis and are required to comply with the contract specifications and recognised guidelines for maintenance activities.

Contractor performance on delivering the maintenance works and related outputs are linked to the operational LOS of the transport network.

Historical levels of operations and maintenance expenditure have provided the current LOS of the network. It is expected that the current LOS will be maintained in the future, and this assumption is the basis of the long-term lifecycle management strategies of this AMP. However, this position may change in the future as a result of Auckland Council and Auckland Transport adopting a different level of service in view of the funding and budgetary constraints.

Approach to maintenance works will generally be in line with Table 4.3-10.

Operations and maintenance expenditure forecast

OPEX operations and maintenance

The recommended 10-year operations expenditure forecast is shown below in Figure 4.3-5. The forecast is based primarily on historical trends but also includes, to some extent, the revised activities detailed above and the LOS to be achieved. This recommendation has also taken into account current funding constraints being experienced by Auckland Transport and Auckland Council. Note however that the actual plan approved by Auckland Transport and Auckland Council may differ from these network needs because of the impact of funding constraints.

Table 4.3-5 shows that the total operations and maintenance expenditure is $35 million over the 10-year period.

This averages approximately $3.5 million per annum on bus network operations and maintenance.

Note that profit is shown from Adshel bus shelter advertising and this is used to offset other bus shelter maintenance costs.

The scope of bus infrastructure operations and maintenance excludes any service contracts, as these are contained within the Public Transport Services section of the AMP.

4.3.11 Renewal needs

Renewal strategy

Renewal strategies are designed to provide for the progressive replacement of individual assets that have reached the end of their useful life. This is managed at a rate that maintains the service standard of the network as a whole.

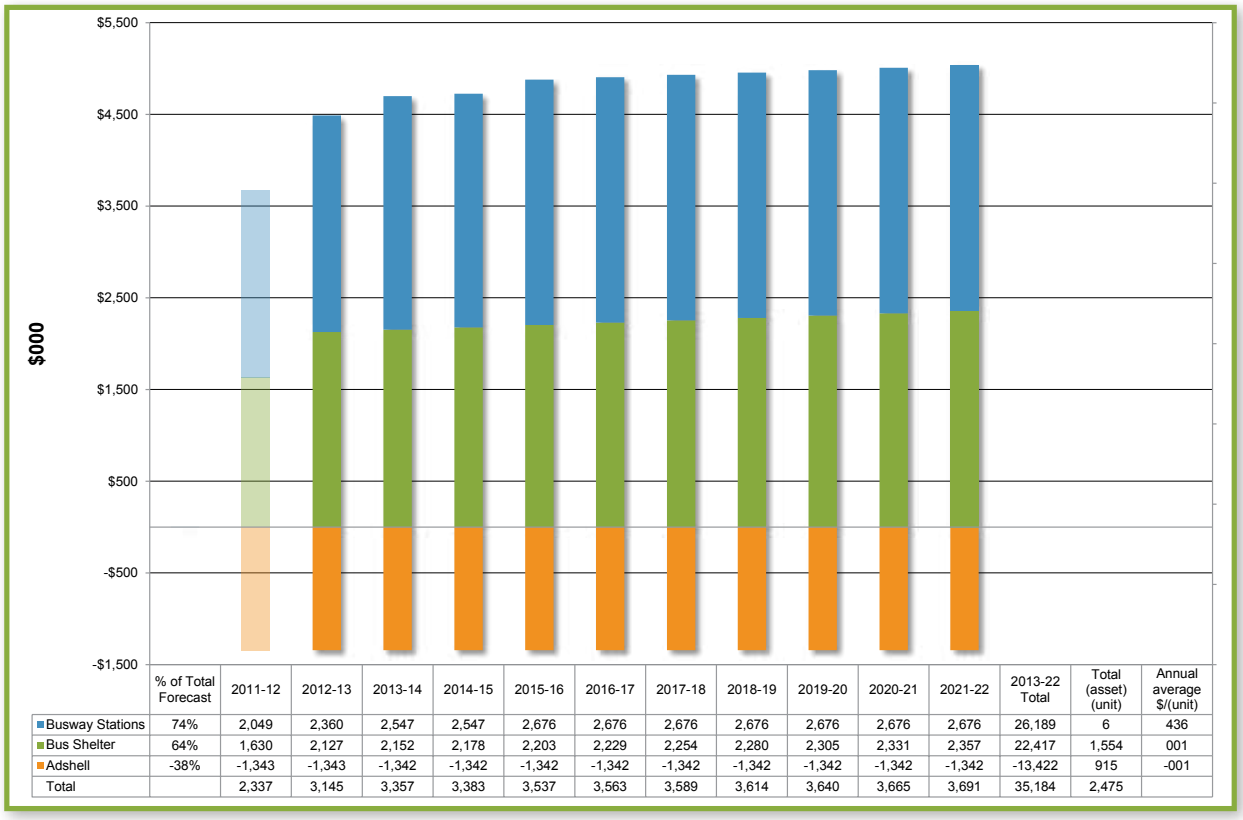
While condition is the primary renewal driver based on visual inspections, other aspects are also taken into consideration, such as asset age, condition and performance and demand.

Renewal plan

10-year renewal plan

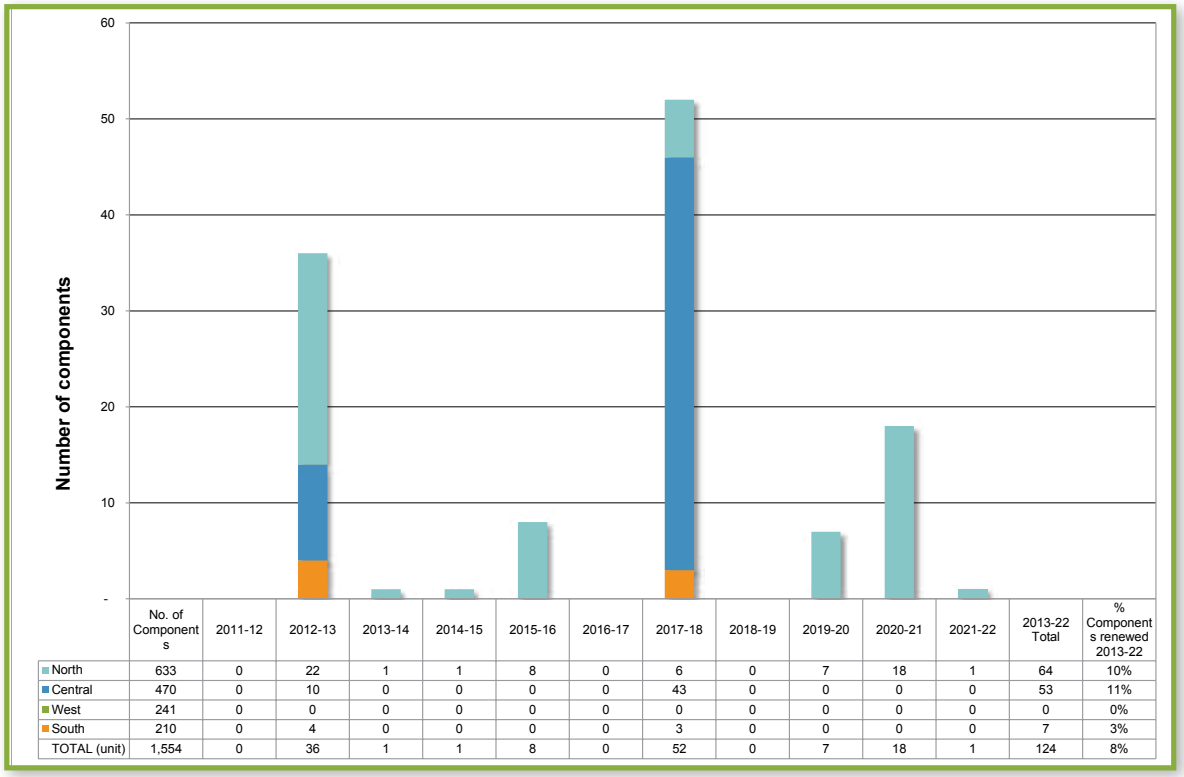
Auckland Transport's long-term renewal plan is to analyse data extracted from the RAMM and SPM databases. Renewals are developed using age- and condition-based analysis. A data model facilitates development of the 10-year renewal profiles for both methods. Some validation is undertaken with passenger transport operations, otherwise the analysis is mainly desktop. Currently criticality is not considered in the renewal analysis. The resulting 10-year renewal profiles are used for asset management purposes.

Figure 4.3-5 Planned bus network operational and maintenance expenditure
Source: LTP Budget Model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	Total (asset) (unit)	Annual average $/(unit)
Busway Stations	74%	2,049	2,360	2,547	2,547	2,676	2,676	2,676	2,676	2,676	2,676	2,676	26,189	6	436
Bus Shelter	64%	1,630	2,127	2,152	2,178	2,203	2,229	2,254	2,280	2,305	2,331	2,357	22,417	1,554	001
Adshell	-38%	-1,343	-1,343	-1,342	-1,342	-1,342	-1,342	-1,342	-1,342	-1,342	-1,342	-1,342	-13,422	915	-001
Total		2,337	3,145	3,357	3,383	3,537	3,563	3,589	3,614	3,640	3,665	3,691	35,184	2,475	

Figure 4.3-6 Bus shelter condition-based renewal profile
Source: RAMM March 2012



	No. of Components	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	% Components renewed 2013-22
North	633	0	22	1	1	8	0	6	0	7	18	1	64	10%
Central	470	0	10	0	0	0	0	43	0	0	0	0	53	11%
West	241	0	0	0	0	0	0	0	0	0	0	0	0	0%
South	210	0	4	0	0	0	0	3	0	0	0	0	7	3%
TOTAL (unit)	1,554	0	36	1	1	8	0	52	0	7	18	1	124	8%

Annual and three-year renewal plan

Auckland Transport also prepares a short-term renewal programme for delivering the forward works programme for the next one to three years. This programme development also includes site walkovers, confirmation of asset ownership and coordination with other works programmes.

Renewal analysis

Auckland Transport has analysed the bus network assets using the following methods, The limitations of analysis due to data quality are also noted.

Condition-based method – bus shelters

The following analysis of renewals is based on the current condition of the assets and uses whole-of-life deterioration to identify indicative renewal needs.

Bus shelter assets are mainly in good condition, as detailed in Section 4.3.6, asset condition. Six per cent have been identified in poor or very poor condition (grades 4 and 5).

Assuming that the grades 4 and 5 assets will be replaced over the next five years, there is a need to renew a total of 124 bus shelters (eight per cent of the total) over the next 10 years, as shown in Figure 4.3-6.

Notes on the renewal profile in Figure 4.3-6:

- Data has been outputted directly from RAMM
- Condition is unknown for approximately 30 per cent of all bus shelters, which have been assigned a default condition grade of 3
- Where condition dates are unknown, the following dates have been adopted:
  - NSCC = 2007
  - ACC = 2010
  - WCC = 2011
  - RDC, MCC, PDC and FDC = 2008
- Minimum remaining useful life is one year
- No data validation has been done.

Condition-based method – bus stations

The following analysis of renewals is based on the current condition of the assets and uses whole-of-life deterioration to identify indicative renewal needs.

Bus station assets are mainly in good condition, as detailed in Section 4.3.6. Seven per cent have been identified in poor or very poor condition (grades 4 and 5). The bus station assets are treated slightly different from the bus shelters as they are broken down into component groups; while there are 15 bus stations, there are a total of 66 different component groups making up these assets.

Assuming that the grades 4 and 5 assets will be replaced over the next five years, there is a need to renew 43 per cent of the total bus station assets over the following 10 years, as shown in Figure 4.3-7.

Notes on the renewal profile in Figure 4.3-7:

- Data has been outputted directly from SPM condition-based renewal analysis
- An OPEX threshold of $500 has been applied
- Westgate bus station is missing from the analysis
- 53 per cent of components have been assigned default condition grades, as their condition is currently unknown
- No data validation has been done.

Condition-based method – busway stations

The following analysis of renewals is based on the current condition of the assets and uses whole-of-life deterioration to identify indicative renewal needs.

Busway stations have been analysed by component groups, with a total of 68 different components making up the five busway stations and the related park-and-rides. Condition information is presently unknown for Smales Farm, which represents 32 per cent of the busway station assets. Assuming that the grade 4 and 5 assets will be replaced over the next five years, there is a need to renew 74 per cent of the total busway station assets over the following 10 years, as shown in Figure 4.3-8.

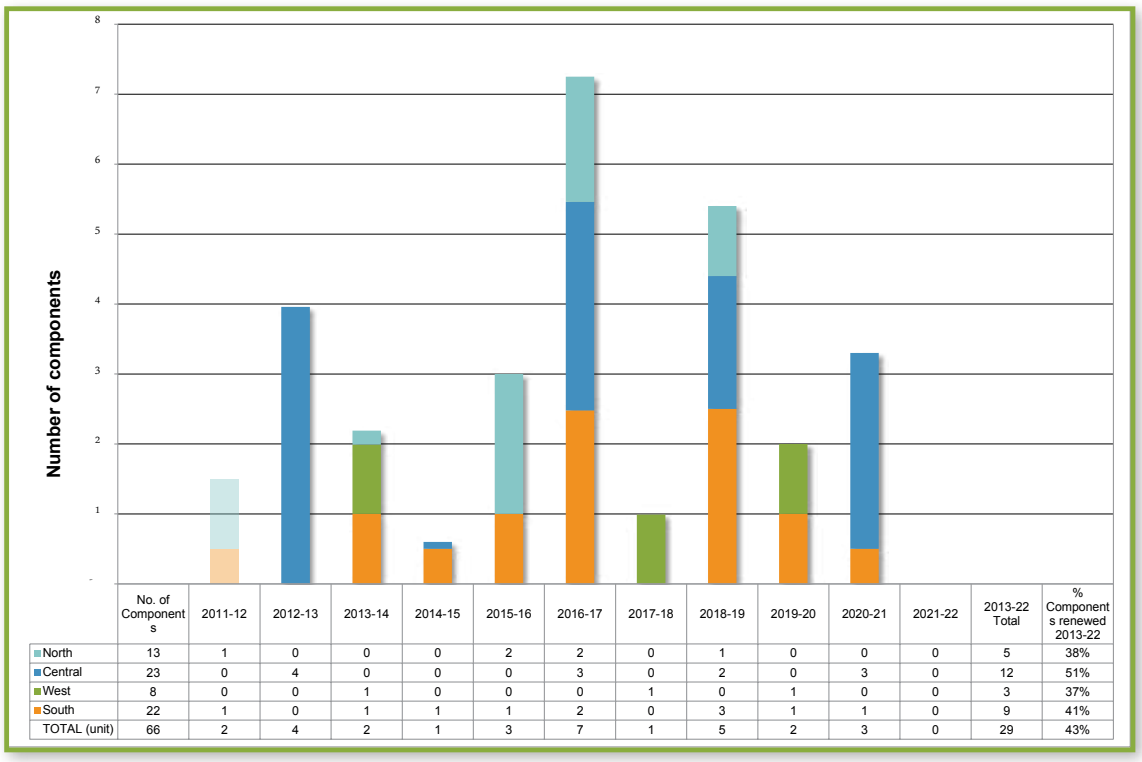
Notes on the renewal profile in Figure 4.3-8:

- Data has been outputted directly from SPM condition-based renewal analysis
- An OPEX threshold of $500 has been applied
- Smales Farm components have been assigned default condition grades as condition is currently unknown
- The significant renewal expenditure in 2014-15 is for replacement of lifts at Smales Farm
- No data validation has been done.

Age-based method – bus shelters

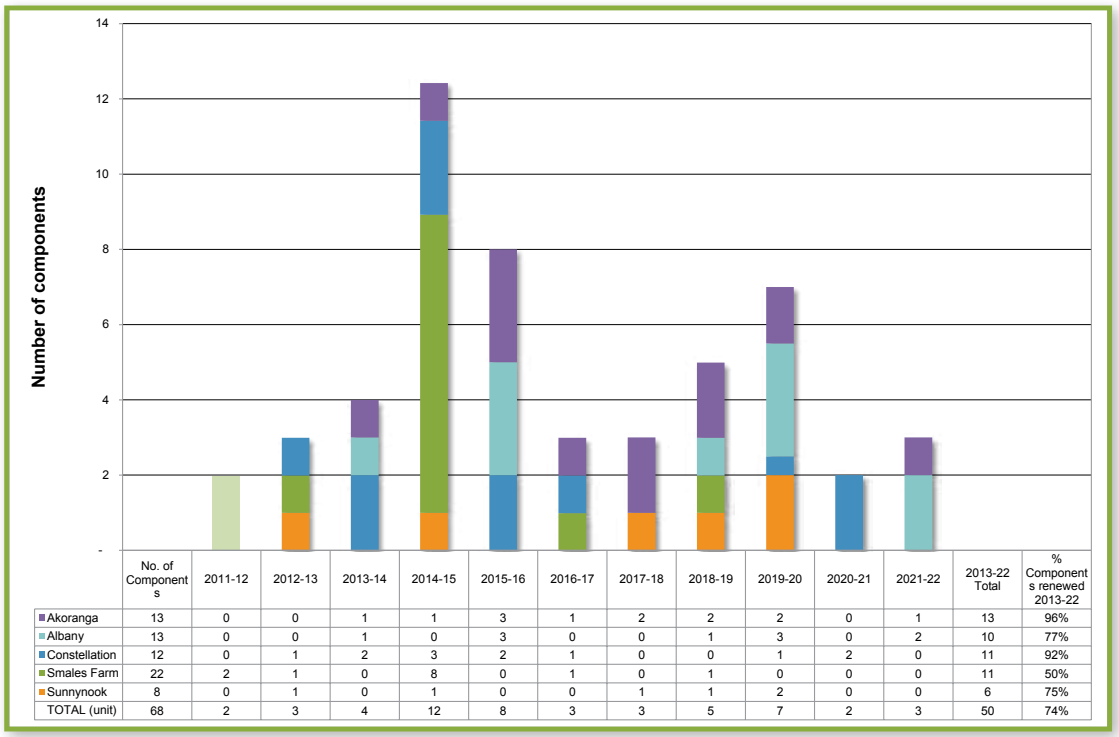
Figure 4.3-9 shows the 10-year renewal profile is based on an average useful life of 50 years.

Figure 4.3-7 Bus station condition-based renewal profile
Source: SPM March 2012P



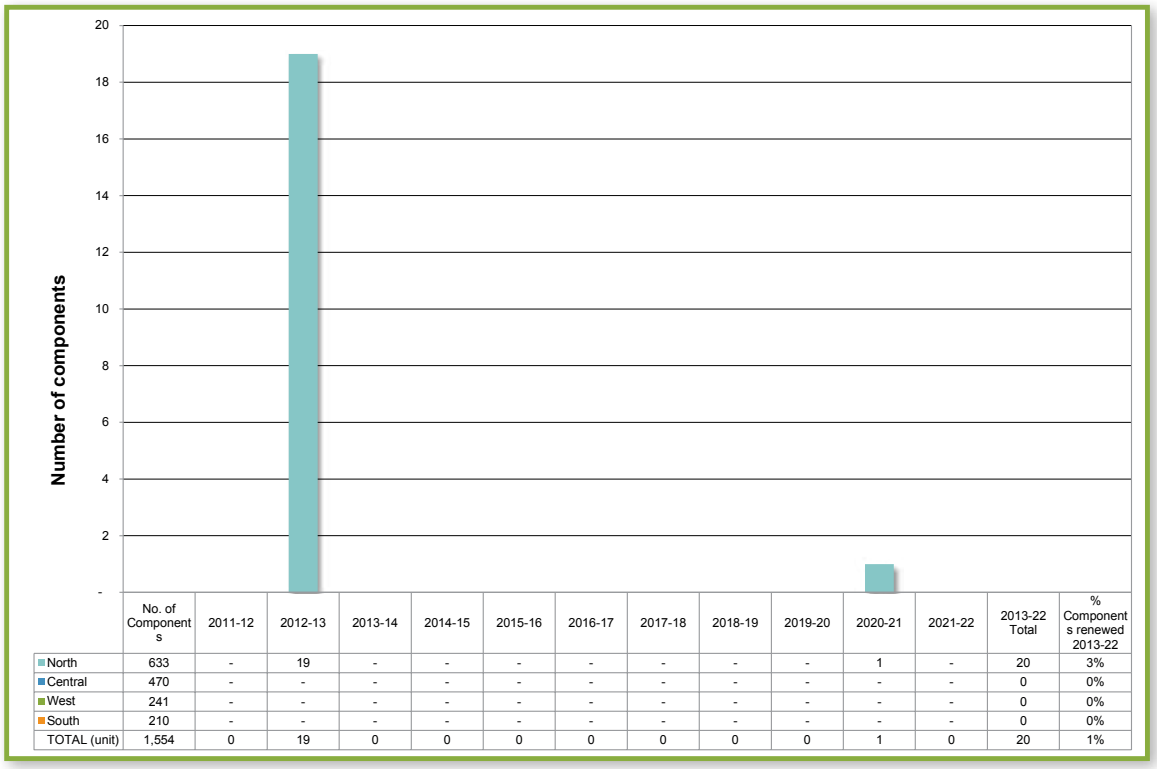
	No. of Components	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	% Components renewed 2013-22
North	13	1	0	0	0	2	2	0	1	0	0	0	5	38%
Central	23	0	4	0	0	0	3	0	2	0	3	0	12	51%
West	8	0	0	1	0	0	0	1	0	1	0	0	3	37%
South	22	1	0	1	1	1	2	0	3	1	1	0	9	41%
TOTAL (unit)	66	2	4	2	1	3	7	1	5	2	3	0	29	43%

Figure 4.3-8 Busway station condition-based renewal profile
Source: SPM March 2012



	No. of Components	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	% Components renewed 2013-22
Akoranga	13	0	0	1	1	3	1	2	2	2	0	1	13	96%
Albany	13	0	0	1	0	3	0	0	1	3	0	2	10	77%
Constellation	12	0	1	2	3	2	1	0	0	1	2	0	11	92%
Smales Farm	22	2	1	0	8	0	1	0	1	0	0	0	11	50%
Sunnynook	8	0	1	0	1	0	0	1	1	2	0	0	6	75%
TOTAL (unit)	68	2	3	4	12	8	3	3	5	7	2	3	50	74%

Figure 4.3-9 Bus shelter age-based renewal profile
Source: RAMM March 2012



	No. of Components	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	% Components renewed 2013-22
North	633	-	19	-	-	-	-	-	-	-	1	-	20	3%
Central	470	-	-	-	-	-	-	-	-	-	-	-	0	0%
West	241	-	-	-	-	-	-	-	-	-	-	-	0	0%
South	210	-	-	-	-	-	-	-	-	-	-	-	0	0%
TOTAL (unit)	1,554	0	19	0	0	0	0	0	0	0	1	0	20	1%

Notes on the renewal profile in Figure 4.3-9:

- Data has been outputted directly from RAMM
- Condition is unknown for approximately 30 per cent of bus shelters, which have been assigned a default condition grade of 3
- Where condition dates are unknown, the following dates have been adopted:
  - NSCC = 2007
  - ACC = 2010
  - WCC = 2011
  - RDC, MCC, PDC and FDC = 2008
- Minimum remaining useful life is one year
- No data validation has been done.

Age-based method – bus station

The assets are analysed by component groups which have a range of economic lives dependent on the materials used and the nature of the materials supported.

Useful economic lives are expected to range from 15 to 41 years, as shown in Table 4.3-11.

The age-based analysis indicates a need to renew nine per cent of the total bus station assets over 10 years.

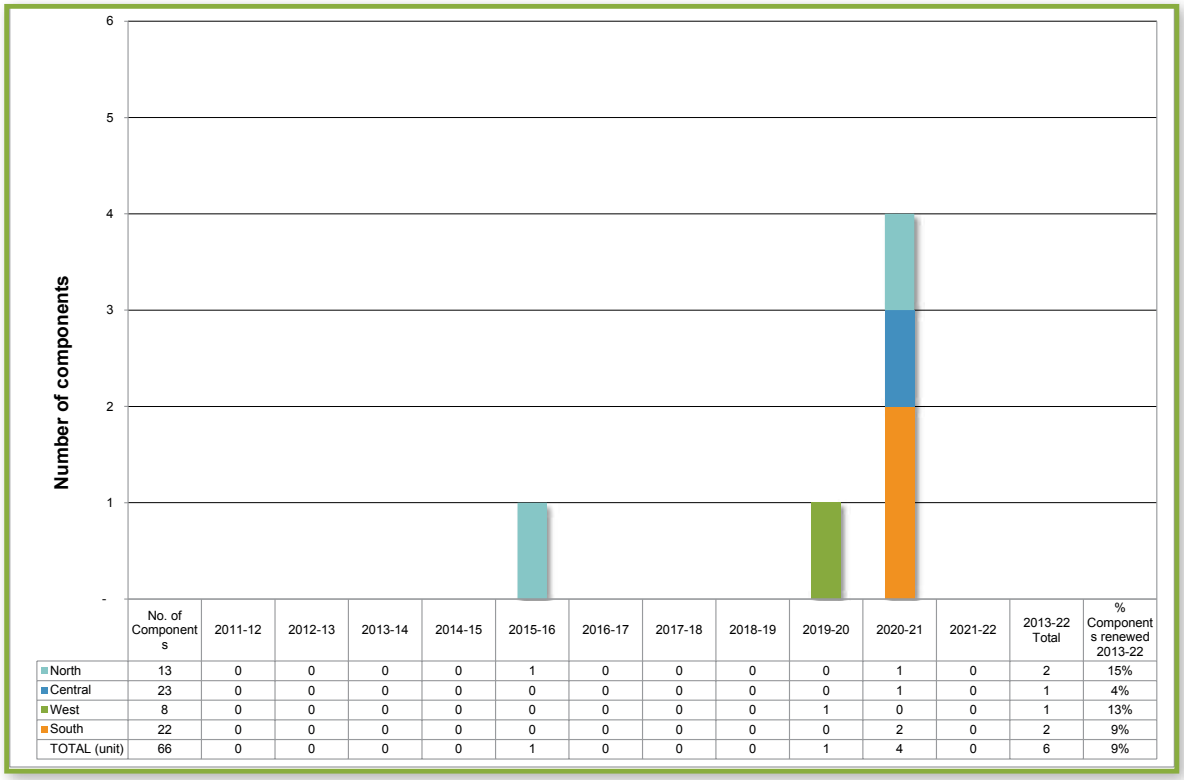
Notes on the renewal profile in Figure 4.3-10:

- Data has been outputted directly from SPM age-based renewal analysis
- Total number of components has been taken from the condition-based renewal data

Table 4.3-11 Bus network economic lives
Source: SPM March 2012

Component group	Life range	Action plans for managing issues	Outcomes
Services	15	15	Lighting
Exterior works	10-25	23	Signs, fences, bike stands, seats, rubbish bins
Interior finishes	10-20	26	Seating, ceiling, wall finishes, joinery, floor finishes
External fabrics	25-55	41	Walls, roof, seating

Figure 4.3-10 Bus station age-based renewal
Source: SPM March 2012



	No. of Components	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	% Components renewed 2013-22
North	13	0	0	0	0	1	0	0	0	0	1	0	2	15%
Central	23	0	0	0	0	0	0	0	0	0	1	0	1	4%
West	8	0	0	0	0	0	0	0	0	1	0	0	1	13%
South	22	0	0	0	0	0	0	0	0	0	2	0	2	9%
TOTAL (unit)	66	0	0	0	0	1	0	0	0	1	4	0	6	9%

- An OPEX threshold of $500 has been applied
- Westgate bus station is missing from the analysis as it has not been componentised in SPM
- No data validation has been done.

Age-based method – busway stations

The assets are analysed by component groups which have a range of economic lives dependent on the materials used and nature of the materials supported.

Useful economic lives are expected to range from 15 to 41 years, as shown in Figure 4.3-11.

The age-based analysis indicates a need to renew 46 per cent of the total busway station assets over 10 years.

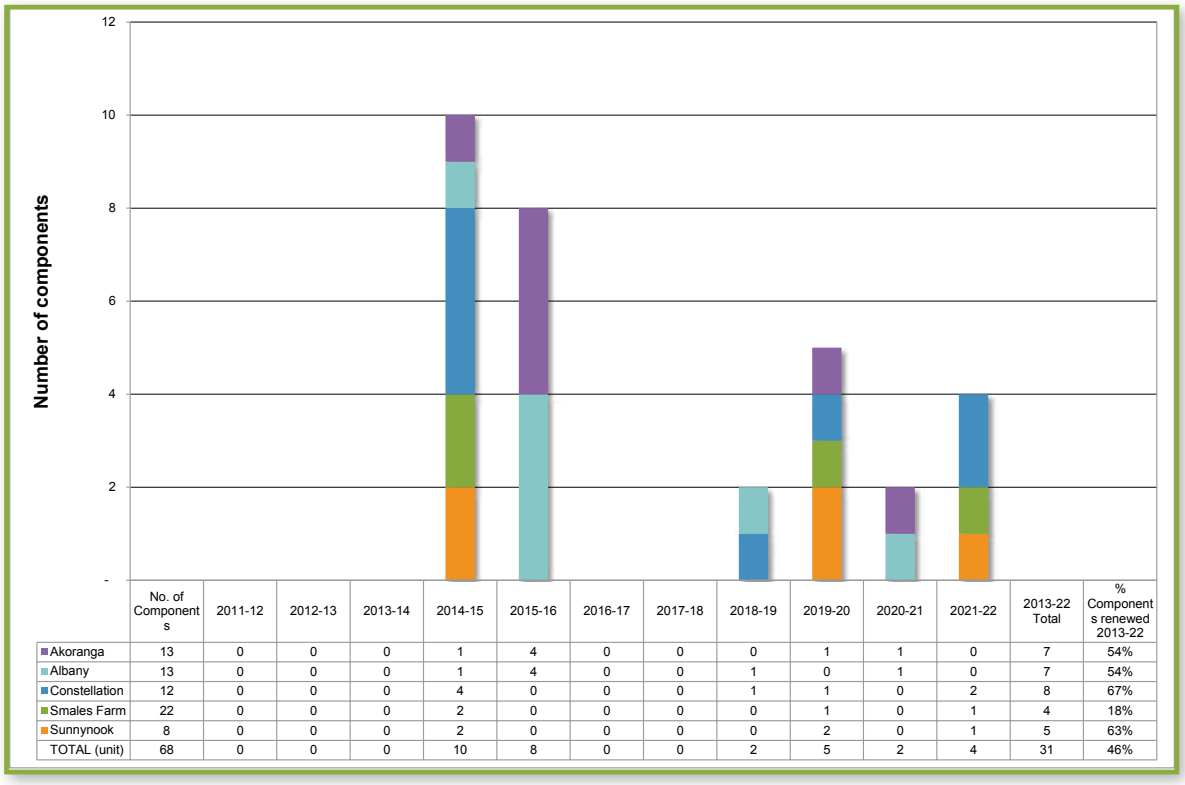
Notes on the renewal profile in Figure 4.3-11:

- Data has been outputted directly from SPM age-based renewal analysis
- Total number of components has been taken from the condition-based renewal data
- An OPEX threshold of $500 has been applied
- No data validation has been done.

Table 4.3-12 Component lives
Source: SPM March 2012

Component group	Life range (years)	Average life (years)	Comments
Services	**7-40**	**20**	**Electrical, plumbing, lifts**
Exterior works	**10-25**	**17**	**Signs, fences, bike stands, seats, rubbish bins**
Interior finishes	**20-50**	**32**	**Seating, ceiling, wall finishes, joinery, floor finishes**
External fabrics	**30-55**	**40**	**Walls, roof, seating**

Figure 4.3-11 Busway station age-based renewal profile
Source: SPM March 2012



	No. of Components	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	% Components renewed 2013-22
Akoranga	13	0	0	0	1	4	0	0	0	1	1	0	7	54%
Albany	13	0	0	0	1	4	0	0	1	0	1	0	7	54%
Constellation	12	0	0	0	4	0	0	0	1	1	0	2	8	67%
Smales Farm	22	0	0	0	2	0	0	0	0	1	0	1	4	18%
Sunnynook	8	0	0	0	2	0	0	0	0	2	0	1	5	63%
TOTAL (unit)	68	0	0	0	10	8	0	0	2	5	2	4	31	46%

Table 4.3-13 Indicative renewal quantities

Management area	Estimated Quantity
North	20
Central	9
West	5
South	1
Total	35

Operational priorities

The preliminary renewal programme for 2012-13 identifies the following renewal quantities for the bus shelters with this draft AMP, as shown in Table 4.3-13. This programme has been prepared in conjunction with the asset programming and public transport operations teams based on local priorities.

In addition, a nominal sum has been allowed for unknown renewal works due to accidents and vandalism.

Depreciation profile

The annual depreciation for bus network assets over the next 10 years is indicated in Table 4.3-14.

Renewals expenditure trends

There is currently insufficient commonality between legacy data sets to provide a reliable regional view of historical expenditure trends.

A future improvement is to implement consistent tracking of expenditure by asset type and expenditure type over time. This will enable robust expenditure trends analysis in future.

Renewals 10-year work and expenditure forecast

The analyses given above provide varying levels of indicative renewal work for the future. This demonstrates the current difficulty of forecasting future renewal needs.

Considering the above renewal analyses and the current funding constraints being experienced by Auckland Transport and Auckland Council, the recommended 10-year renewals needs is shown in Figure 4.3-12.

Note however that the actual renewals plan approved by Auckland Transport and Auckland Council may differ from these network needs because of the impact of funding constraints.

This shows that the average renewals expenditure is $900,000 per annum, making a total of $8.8 million for the 10-year renewal expenditure.

There is a total of $7.5 million for bus shelter renewals and $1.3 million for busway stations renewals over the next 10 years.

The proposed renewals investment of $750,000 per year for bus shelter renewals appears insufficient to maintain the rate of deterioration and will require a higher level of renewals investment in the longer term.

Figure 4.3-12 Bus network 10-year renewals expenditure
Source: LTP Budget Model 12 April 2012 after refresh for AMP

	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	Annual Average $ / asset
Busway Station Renewals	15%	126	127	128	129	130	131	132	133	134	136	137	1,316	$26,328
Bus Shelter Renewals	85%	776	750	750	750	750	750	750	750	750	750	750	7,500	$483
TOTAL	100%	901	877	878	879	880	881	882	883	884	886	887	8,816	$566

Table 4.3-14 Bus assets depreciation forecasts
Source: Auckland Transport infrastructure depreciation profiles (25 April 2012)

Profile	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Depreciation ($ millions)	0.8	1.7	2.9	4.0	5.2	6.9	9.3	10.9	12.4	14.6	16.4	85.1

4.3.12 New works needs

New works strategy

The bus shelter strategy and three-year programme deals with:

- Optimisation of site selection for new shelters
- Current and future site selection
- The decision making process.

This method aims to be more proactive through its focus on QTN routes, particularly the inbound stops where people wait, and through incorporation of Bus Stop Infrastructure Design Guidelines, May 2009. The current priority relates to assessing inbound bus routes. This acknowledges that there are generally more passengers waiting to board buses inbound, whereas return trip passengers alighting are not likely to wait.

New works programmes

The bus network programmes total $751 million over 10 years, as shown in Table 4.3-15. The investment in bus priority programmes will provide a high quality passenger transport network which will increase trip reliability for both passenger and private transport.

The largest proposed capital development works between 2015 and 2021 include:

- AMETI Panmure and Pakuranga – a new south-eastern busway project will ease congestion on roads and, together with improved bus priority programmes in the north, will further enhance bus services, showing Auckland Transport's commitment in reducing reliance on private car use by providing high quality passenger transport
- Dominion Road
- Lincoln Road
- Interchanges – two new interchanges are planned in Massey North Town Centre and Botany Town Centre for changing between bus services, or other modes of transport
- Flatbush to Manukau – a connection between Flat Bush and Manukau and route protection of the RTN corridor between Botany and Manukau
- Pakuranga Highway QTN.

Other bus priority programmes include:

- The bus stop improvement programme involves allowances for installation of concrete pads, road realignments, relocations for blockages and optimisation of route performance, new bus stops, and installation of seats, shelter or bins at bus stops which presently lack these facilities
- East Coast Bays road bus priority
- Silverdale Busway Station becomes operational in 2012-13, with 200 car parking spaces, full busway station, and 500 carparks from 2013-14
- Extra CCTV surveillance
- Significant increase in the size of the Constellation Station, with a new parking building planned for 2015-16
- Additional car parking to Albany busway station from 2012.

Table 4.3-15 Bus CAPEX new works forecast
Source: LTP Budget Model 12 April 2012 after refresh for AMP

Expenditure type	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total ($000)
Bus priority programmes	11,030	13,981	22,839	41,797	59,614	22,532	29,023	54,191	5,306	5,079	265,393
Bus stop and interchange improvements	2,200	4,100	2,200	2,200	2,200	2,200	2,200	2,200	2,200	2,200	23,900
AMETI	41,944	32,724	28,080	34,235	32,084	47,117	42,192	45,867	71,967	41,305	417,516
Busway	7,627	8,034	5,494	-	-	-	111	276	1,152	1,161	20,688
RTN network	-	-	1,000	2,000	20,500	-	-	-	-	-	23,500
Total	56,441	58,839	59,613	80,233	114,398	71,850	73,526	102,535	80,652	49,745	750,997

4.3.13 Disposal plan

Disposal is the retirement or sale of assets whether surplus or superseded by new or improved systems. Assets may become surplus to requirements due to:

- Policy changes that result in a reduction of LOS
- Policy changes that result in service being provided by other means, e.g. private sector involvement
- Potential risk carried by ownership, e.g. financial, environmental, legal, social, vandalism.

Bus shelters may become surplus to requirements at a particular site due to new installations of commercial advertising shelters by Adshel. Such surplus shelters are relocated and reused at other sites.

4.3.14 Summary of 10-year network needs

All expenditure for Auckland Transport is contained in Auckland Transport's SAP financial management system.

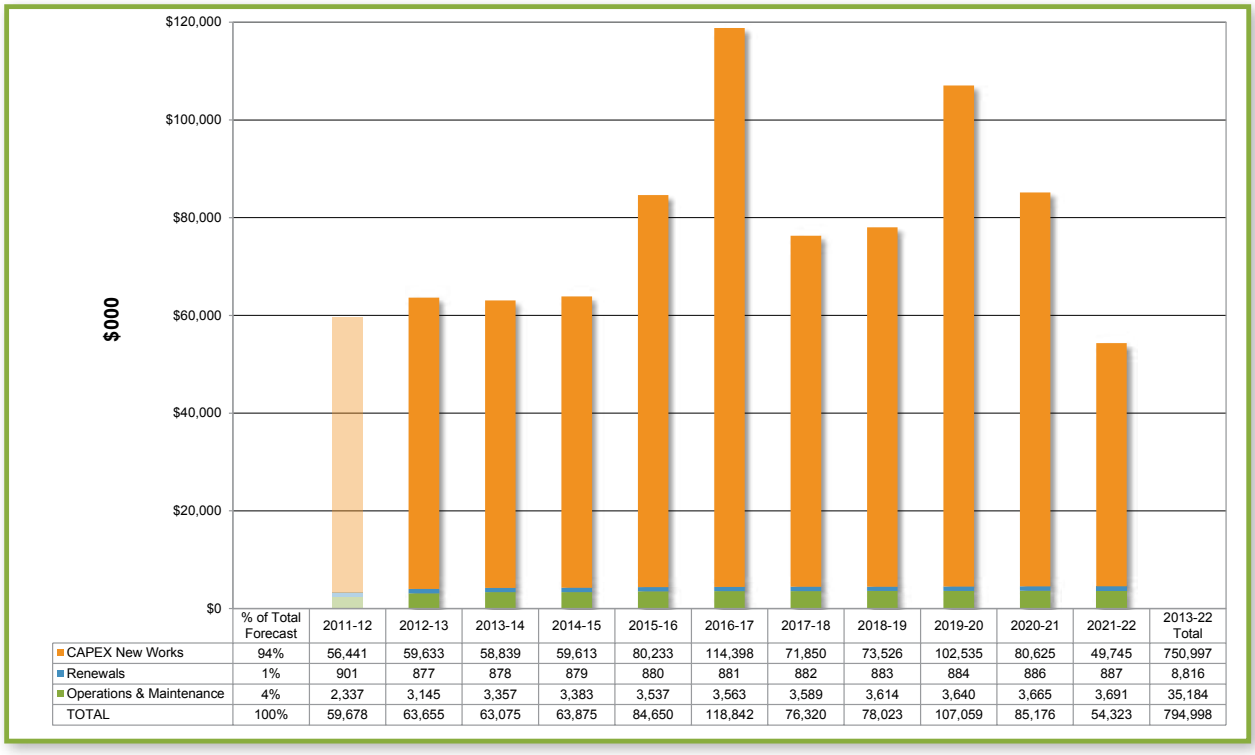
The total amount of expenditure for operations and maintenance, renewals and new works on the bus network over the next 10 years is $795 million. New works makes up the majority of expenditure at approximately $751 million (or 98 per cent), followed by operational and maintenance expenditure at approximately $35 million (or 4 per cent) and renewals expenditure at approximately $9 million (or one per cent).

The forecast for the bus network over the next 10 years shows that annual costs fluctuate, with OPEX and renewals relatively constant and new works showing distinct spikes.

Notes on the expenditures in Figure 4.3-13:

- In some areas of OPEX, a 1.5 per cent growth factor was allowed, however the assumed growth factor for consequential OPEX and renewals needs to be reviewed
- Bus shelter OPEX is increased by $25,000 per year to allow for the maintenance of an additional 50 bus shelters across the region per year, at a cost of $500 each per year.

Figure 4.3-13 Summary of bus network 10-year expenditure
Source: LTP Budget Model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
CAPEX New Works	94%	56,441	59,633	58,839	59,613	80,233	114,398	71,850	73,526	102,535	80,625	49,745	750,997
Renewals	1%	901	877	878	879	880	881	882	883	884	886	887	8,816
Operations & Maintenance	4%	2,337	3,145	3,357	3,383	3,537	3,563	3,589	3,614	3,640	3,665	3,691	35,184
TOTAL	100%	59,678	63,655	63,075	63,875	84,650	118,842	76,320	78,023	107,059	85,176	54,323	794,998

4.3.15 Approved Long Term Plan envelope

The approved Long Term Plan

This section compares the approved LTP envelope for OPEX and renewals with the bus network needs as determined by this AMP at a regional level and identifies the likely impacts of any variances. Revenue and funding incomes to Auckland Transport (from Auckland Council ratepayers and NZTA government subsidies and the like) are allocated through the approved Long Term Plan budgets. The LTP was adopted on 28 June 2012.

OPEX impacts

The apparent variance of +$16 million over 10 years shown in Table 4.3-16, is not an increase in OPEX, but rather a re-allocation from public transport services to the bus related infrastructure.

Therefore, based on the information above, bus operational expenditure shows no variance between the LTP allocated budgets and the AMP needs. However it is anticipated that the LTP will require further efficiency savings and therefore a funding gap for bus operational expenditure may eventuate.

Renewals impacts

Based on the information above, bus capital renewals expenditure shows no variance between the LTP allocated budgets and the AMP needs.

Further efficiency savings

As required by the approved LTP, a further reduction in OPEX of $18.6 million per year, reducing to nil by 2016/17, will need to be allocated against asset related operational budgets. The impact of this reduction on bus operational budgets is yet to be assessed and finalised.

Monitoring and management of Long Term Plan consequences

The consequences resulting from these variances will be monitored and reported as appropriate.

CAPEX new works

CAPEX new works contained in this AMP are derived from draft LTP listings as at April 2012 and are produced in section 4.3.12.

The capital new works programme has been further refined and adopted in late June 2012. Details of this adopted programme are contained in the LTP.

Table 4.3-16 Variance between LTP approved budget and AMP network needs

Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

Bus	10-year total LTP approved budget ($000s un-inflated)	10-year total AMP network needs ($000s un-inflated)	Variance 10-year total ($000s un-inflated)
Operations and maintenance	50,987	35,184	15,803
Renewals	8,816	8,816	0
Bus total	59,804	44,000	15,803

Table 4.3-17 Un-inflated and inflated bus AMP needs

Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

UN-INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		3,145	3,357	3,383	3,537	3,563	3,589	3,614	3,640	3,665	3,691	35,184
Renewal		877	878	879	880	881	882	883	884	886	887	8,816
Bus total		4,022	4,235	4,262	4,417	4,444	4,471	4,497	4,524	4,551	4,578	44,000
AC Inflator	OPEX	3.30%	3.30%	3.30%	3.30%	3.50%	3.60%	3.10%	3.10%	3.30%	3.60%	n/a
AC Inflator	CAPEX	3.90%	3.40%	2.80%	2.90%	3.10%	3.30%	3.50%	3.70%	4.00%	4.00%	n/a
INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		3,249	3,583	3,729	4,036	4,211	4,373	4,541	4,724	4,928	5,141	42,514
Renewal		911	943	971	1,000	1,032	1,068	1,106	1,149	1,196	1,246	10,622
Bus total		4,160	4,526	4,700	5,036	5,243	5,441	5,647	5,873	6,124	6,387	53,136

AMP inflation effects

Un-inflated and inflated bus needs for the AMP are shown in Table 4.3-17.

LTP inflation effects

Inflated and inflated bus budgets from the LTP are shown in Table 4.3-18.

4.3.16 Revenue plan

Revenue and funding incomes to Auckland Transport are contained in Auckland Transport's SAP financial management system.

Bus network funding is subsidised by NZTA up to rates as shown below. However, typically not all of the activities that are eligible for subsidy will be accepted by NZTA, because capping limits are usually applied based on available NZTA funds. The remainder is funded by ratepayers, farebox recovery and various other user-pays income sources.

Operations and maintenance revenue

Maintenance funding is subsidised by NZTA at a rate of 50 per cent, with some activities up to 59 per cent.

Capital renewals revenue

Renewals may be funded by NZTA at a rate of 50 per cent.

Capital new works revenue

Improvements and new works such as busways, park-and-rides, and real-time information may be funded by NZTA at a rate of 50 per cent.

Note that some capital improvement components of the renewals programme, such as replacing whole bus shelters, may be funded from renewals budgets.

4.3.17 Key improvement initiatives

See Table 4.3-19.

Table 4.3-18 Un-inflated and inflated bus LTP budgets

Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

UN-INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		4,671	4,942	4,968	5,123	5,149	5,175	5,201	5,227	5,253	5,279	50,987
Renewal		877	878	879	880	881	882	883	884	886	887	8,816
Bus total		5,548	5,819	5,847	6,003	6,030	6,057	6,084	6,111	6,139	6,166	59,804
AC Inflator	OPEX	3.30%	3.30%	3.30%	3.30%	3.50%	3.60%	3.10%	3.10%	3.30%	3.60%	n/a
AC Inflator	CAPEX	3.90%	3.40%	2.80%	2.90%	3.10%	3.30%	3.50%	3.70%	4.00%	4.00%	n/a
INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		4,825	5,273	5,476	5,844	6,086	6,306	6,534	6,784	7,063	7,354	61,545
Renewal		911	943	971	1,000	1,032	1,068	1,106	1,149	1,196	1,246	10,622
Bus total		5,736	6,216	6,447	6,844	7,118	7,374	7,641	7,933	8,259	8,600	72,168

Table 4.3-19 Key improvement initiatives

Improvement initiative	Description	AMP section	Priority
Bus 1	Develop a complete asset system to capture asset age, performance and condition data on the bus shelters, busway stations, bus interchanges and associated assets for the whole region	4.3.5 4.3.6	High
Bus 2	Start tracking historical information so trending can be ascertained for operational and maintenance, and renewal costs	4.3.11, renewal analysis 4.3.10	High
Bus 3	Develop a bus shelter strategy and three-year programme for the region as a whole based on similar principles to the one which the former Auckland City Council put in place in December 2008	4.3.13, new works	High
Bus 4	Develop and implement a renewal programme for busway stations	4.3.11	High

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4.4 Wharves

4.4.1 The service Auckland Transport provides

Providing a wharf network that encourages and promotes ferry travel is important to the Auckland Council and Auckland Transport. A quality public transport ferry service is a necessary component of the Auckland transport network. It provides reliable passenger transport travel options and helps reduce congestion on the region's roads.

The wharf service values most relevant to the delivery of ferry services are:

- Quality
- Capacity
- Safety.

The details of the wharf network levels of service (LOS) being measured are provided in Section 2, Levels of Service. Several of these measures and targets are yet to be confirmed (TBC) or developed (TBD) and will be included in the improvement plan.

Table 4.4-1 relates to network outputs and are shown for indicative purposes.

The passenger ferry network is an integral part of the Quality Transit Network (QTN). An Auckland Transport objective is that the passenger ferry network develops and is maintained to the standard of a world-class passenger transport network, so that it will:

- Assist economic development
- Provide safe and secure networks
- Improve access and mobility
- Protect and promote public health
- Effectively integrate transport and other land usage
- Achieve economic efficiency criteria
- Ensure environmental sustainability.

Auckland Transport uses maintenance, renewals and new works programmes to ensure that wharf and ferry terminal infrastructure is suitable, accessible, safe and well maintained.

This Lifecycle Management Plan focuses on the services provided in support of the Auckland Transport passenger ferry network. Activities include those that are delivered without significant or long-lived physical assets, such as the MAXX travel information service, and those that are reasonably intensive in terms of physical assets, such as the provision of efficient and effective ferry terminal facilities. The activities most relevant to this lifecycle management plan are those that have a direct bearing on the long-lived physical assets employed by Auckland Transport. This incorporates the wharf and building assets. These assets are Auckland Transport's "platform for services".

There are two high-level services provided by Auckland Transport in relation to the Auckland passenger ferry network: effective ferry network operations, and driving growth in ferry patronage.

The LOS statements are an important component of the Lifecycle Management Plan. Transport by

Table 4.4-1 Wharves network Levels of Service

Service value	Level of service	Service measure	Current performance	Target performance
Easy to use	Improve navigability across the network	% of passengers satisfied with integrated transport information at terminal/station sites	TBC	70%
Quality	Assets are maintained in good condition	Overall customer satisfaction scores for ferry QTN and LCN services. Total of "good", "very good" or "excellent"	90%	QTN > 80% LCN > 75%
		Percentage of wharves in moderate condition (grade 3) or better	TBD	95%
	The assets are fit for purpose	Overall satisfaction by ferry operators	72%	TBA
Capacity	The public transport network can accommodate demand and enables customers to move around efficiently	Ferries boardings: 12-month rolling	5,132,858	5,434,000 (2014/15)
Reliability	Improve or maintain travel time reliability	Service Reliability - Bus, Rail and Ferry	100%	99%
Safety	Minimise the number of safety and security incidents	Percentage of users perceive public transport modes as being safe	80%	Maintain or improve on baseline
		Rating of personal safety at facilities	82%	TBD

ferry is an important option for the Auckland region given the influence of harbours and waterways on transport connections. The viability of this public transport mode is closely tied to the quality, reliability and frequency of the service.

4.4.2 Network overview

The Auckland ferry network is a relatively small but important part of the Auckland regional transport system. It carries over five million passengers each year, and is a popular way for people to quickly travel around parts of the region. The management, improvement, and further development of this network is therefore one of Auckland Transport's priority focus areas. Management and improvement of the ferry network will support Auckland Transport's vision to deliver a world-class transport system to make the region an even better place to live, work and play.

Auckland's ferry network extends from Pine Harbour in the south to Gulf Harbour in the north, and from Hobsonville in the west to Waiheke Island in the east (see Figure 4.4-1 for details).

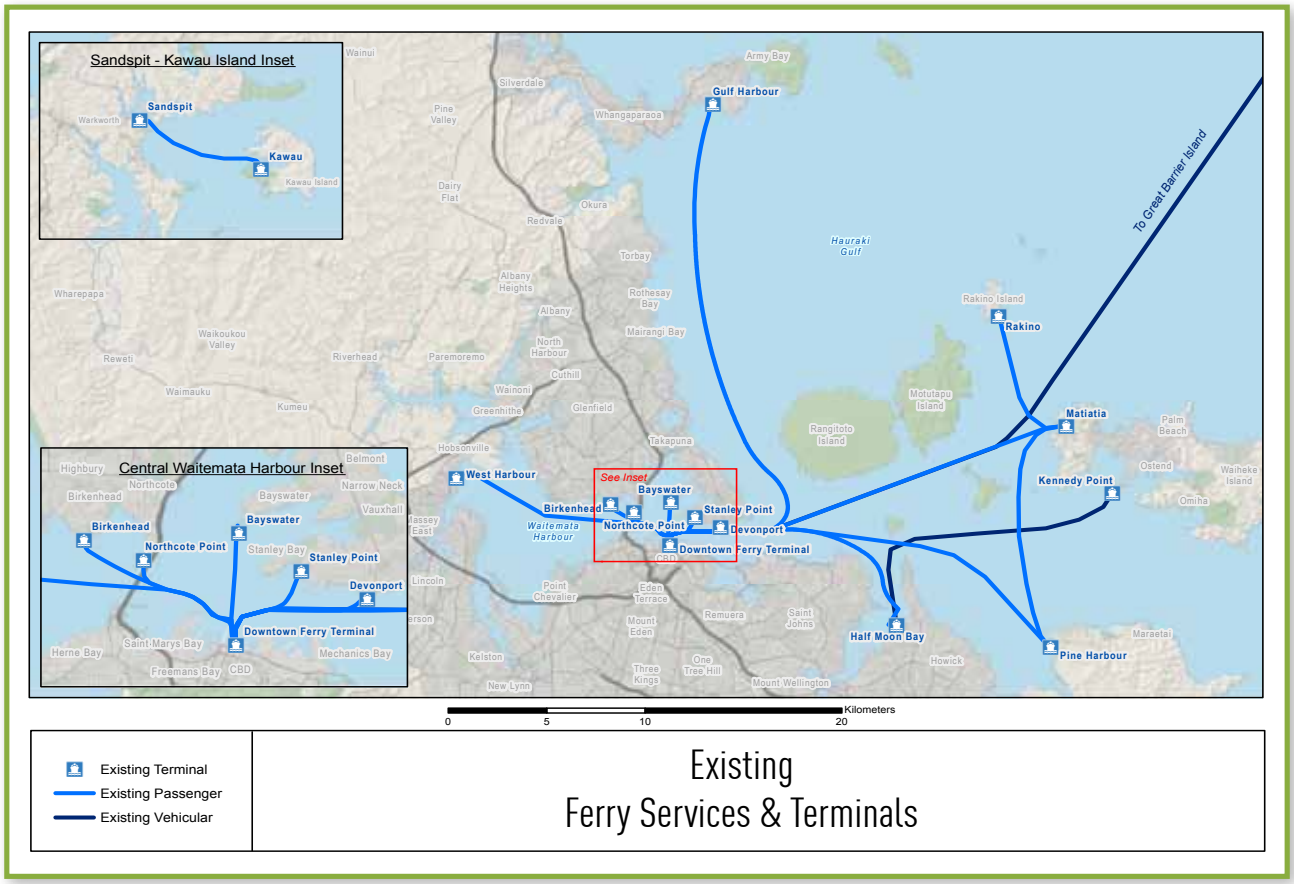
Auckland Transport has stewardship responsibilities for and manages the region's network of passenger ferry terminals, which includes 19 terminal sites, four of which have terminal buildings. There are also two proposed ferry sites under development, a new pontoon facility at Beach Haven and a new ferry terminal facility at Hobsonville Point.

Major operator Fullers provides ferry services in conjunction with various other smaller companies. The operator in some situations is responsible for the provision of certain facilities necessary to the network, such as provision of floating pontoons at some berthing faces.

Auckland Transport differentiates service levels according to the passenger transport network hierarchy:

Rapid Transit Network (RTN)	**High quality, fast, high frequency, dedicated pathway services**
Quality Transit Network (QTN)	**High quality, fast, high frequency, non-dedicated, but prioritised pathway services**
Local Connector Network (LCN)	**Provides access to local centres and connects with the RTN and QTN**

Figure 4.4-1 Ferry terminal network map
Source: Draft Passenger Ferry Plan (April 2011)



The Auckland regional passenger ferry service is one of the region's key higher order transport modes as a result of its ability to transport significant numbers of passengers in a reliable manner. It is therefore an integral part of the QTN, and provides essential links to the LCN at interchange and hub locations.

Development-led growth

Auckland Transport has successfully adopted an approach of development-led growth across the passenger ferry network, albeit with a lower overall expectation of a step change in patronage growth. Achieving region-wide development of the ferry passenger transport network relies on the following passenger transport initiatives:

- Improvements to passenger waiting facilities at Half Moon Bay completed in 2008
- More frequent services to Pine Harbour and West Harbour from 2008, Gulf Harbour from 2009, and to Stanley Bay in 2010
- More frequent evening and weekend services to Devonport from 2008
- Ferry terminal upgrades at Downtown, Half Moon Bay, Birkenhead, Stanley Bay, West Harbour and Gulf Harbour.

4.4.3 Network valuation

The approximate replacement value (ORC) of the passenger ferry transport network is $73.7 million and the depreciated replacement cost is $43 million. Annual depreciation is $1.6 million. The effective date of valuation is 30 June 2011.

Table 4.4-2 Wharves network valuation

Asset	Optimised replacement cost (ORC) $000s	Optimised depreciated replacement cost (ODRC) $000s	Annual depreciation (ADR) $000s
Wharves structures	73,708	42,954	1,620

4.4.4 Network asset details

Auckland Transport has stewardship responsibilities for wharf structures as shown in Table 4.4-3. The accuracy and ownership of wharf quantities still needs to be resolved, including for recreational wharves. This has been recognised as a future improvement initiative.

There is also a privately owned wharf at West Harbour that provides its facility for the use of public ferries.

The useful asset life of passenger ferry terminal assets varies according to form and materials. The anticipated rate of deterioration in the marine environment of significant structural assets is shown in Table 4.4-4.

Services, fit-out and wharf improvements have a useful life of between 10 to 50 years.

The ferry terminal network is made up of the following asset components:

- Wharf substructures (timber, steel or concrete piles; piles may be vertical, raking or fender type)
- Wharf deck (timber or concrete)
- Berthing faces (floating pontoon, hydraulic platform)
- Terminal shelter (building or freestanding shelter).

Table 4.4-3 Wharf asset data

Source: Auckland Transport asset consolidation (14 February 2011)

Terminal site	Sub zone	Area m2	Terminal building	Berthing faces [1]	Floating pontoons [1]	Legacy organisation
Bayswater	Current berth	TBC	TBC	1	1	North Shore
	Original wharf	TBC	TBC	-	-	North Shore
Beach Haven	-	90	TBC	TBC	TBC	North Shore
Birkenhead	-	1424	1	2	1	North Shore
Blind Bay	Okupu Wharf	TBC	TBC	TBC	TBC	Auckland
Devonport	Passenger Wharf	TBC	1	2	2 [2]	North Shore
Downtown Ferry Centre	Pier 1	3,507	1	2	2 [2]	Auckland
	Pier 2	2,356	1	2	2	Auckland
	Pier 3, 4 and Western Steps	981	-	4	4	Auckland
Gulf Harbour	-	TBC	-	1	1	Rodney
Half Moon Bay	Passenger facility	312	-	1	1	Auckland
	Vehicular facility	TBC	-	TBC	TBC	Auckland
Kennedy Point	Passenger facility	TBC	-	TBC	TBC	Auckland
	Vehicular facility	TBC	-	TBC	TBC	Auckland
Matiatia Wharf	Old	TBC	-	TBC	TBC	Auckland
	New	TBC	-	TBC	TBC	Auckland
Northcote	-	85	-	1	TBC	Auckland
Orapiu	-	TBC	-	TBC	TBC	North Shore
Pine Harbour	-	TBC	-	TBC	TBC	Auckland
Stanley Bay	-	485	-	1	TBC	Manukau
Rakino	Sandy Bay	TBC	-	TBC	TBC	Auckland
Tryphena	Shoal Bay Wharf	TBC	-	TBC	TBC	Auckland
Whangaparapara	-	TBC	-	TBC	TBC	Auckland
Sandspit	Sandspit Wharf	TBC	-	TBC	TBC	Rodney
Kawau Island	Schoolhouse Bay Wharf	TBC	-	TBC	TBC	Auckland
	South Cove Wharf	TBC	-	TBC	TBC	Auckland

Table 4.4-4 Useful lives

Component	Useful life
Timber bracing	10 years
Fender pile	20 years
Headstock	50 years
Breakwater	100 years

Notes:

1. Numbers to be confirmed
2. Not owned by Auckland Transport (some of the pontoons are owned by the operators)

Table 4.4-5 Wharf asset component summary

Terminal site	Sub zone	Asset element	Quantity	Unit	Expected life	Average remaining life	Owner
Bayswater	Current berth	Timber pile	5	no	50	35	Auckland Transport
		Pontoon	1	no	50	5	Other
	Original wharf	TBC	TBC	TBC	TBC	TBC	TBC
Beach Haven		Timber pile	30	no	50	TBC	Auckland Transport
		Timber beam	85	no	50	TBC	Auckland Transport
		Timber deck	90	m^2	50	TBC	Auckland Transport
Birkenhead		Steel pile	59	no	50	5	Auckland Transport
		Timber pile	46	ea	50	50	Auckland Transport
		Concrete beam	27	m	50	5	Auckland Transport
		Concrete deck	1,424	m^2	50	5	Auckland Transport
		Pontoon	1	no	50	5	TBC
		Boarding ramp	1	no	50	50	Auckland Transport
		Building	TBC	m^2	TBC	TBC	Auckland Transport
Blind Bay	Okupu Wharf	TBC	TBC	TBC	TBC	TBC	TBC
Devonport	Passenger Wharf	Concrete pile	118	no	50	32	Auckland Transport
		Steel pile	18	no	50	32	Auckland Transport
		Timber pile	57	no	50	TBC	
		Concrete beam	1,269	m	50	32	Auckland Transport
		Concrete deck	4,050	m^2	50	32	Auckland Transport
		Building	TBC	m^2	TBC	TBC	TBC
Downtown Ferry Centre	Pier 1	Concrete pile	182	no	50	22	Auckland Transport
		Timber pile	33	no	50	26	Auckland Transport
		Concrete beam	3,445	m	50	21	Auckland Transport
		Concrete deck	3,507	m^2	50	25	Auckland Transport
		Pontoon	TBC	no	TBC	TBC	Others
		Building	TBC	m^2	TBC	TBC	Auckland Transport
	Pier 2	Concrete pile	117	no	50	22	Auckland Transport
		Concrete beam	2,523	m	50	22	Auckland Transport
		Concrete deck	2,356	m^2	50	21	Auckland Transport
		Pontoon	TBC	no	TBC	TBC	Others
		Building	TBC	m^2	TBC	TBC	Auckland Transport
	Pier 3, 4 and Western Steps	Concrete pile	61	no	50	20	Auckland Transport
		Timber pile	4	no	50	25	Auckland Transport
		Steel pile	12	no	50	25	Auckland Transport
		Concrete beam	1,011	m	50	19	Auckland Transport
		Timber deck	92	m^2	50	3	Auckland Transport

Table 4.4-5 Continued...

Terminal site	Sub zone	Asset element	Quantity	Unit	Expected life	Average remaining life	Owner
Gulf Harbour		Concrete deck	981	m^2	50	20	Auckland Transport
		Pontoon	3	no	TBC	TBC	Others
		Concrete deck	64	m^2	50	44	Others
		Pontoon	1	no	50	TBC	Others
Half Moon Bay	-	TBC	TBC	TBC	TBC	TBC	TBC
Kennedy Point	-	TBC	TBC	TBC	TBC	TBC	TBC
Matiatia Wharf	Old	TBC	TBC	TBC	TBC	TBC	TBC
	New	TBC	TBC	TBC	TBC	TBC	TBC
Northcote	-	Timber pile	16	no	50	24	Auckland Transport
		Steel pile	5	No	50	24	Auckland Transport
		Timber beam	153	m	50	24	Auckland Transport
		Timber deck	85	m^2	50	10	Auckland Transport
		Canopy	80	m^2	50	TBC	Auckland Transport
		Boarding ramp	1	no	50	TBC	Auckland Transport
Orapiu	-	TBC	TBC	TBC	TBC	TBC	TBC
Pine Harbour	-	TBC	TBC	TBC	TBC	TBC	TBC
Stanley Bay	-	Timber pile	26	no	50	24	Auckland Transport
		Timber beam	106	no	50	24	Auckland Transport
		Timber deck	485	m^2	50	3	Auckland Transport
Whangaparapara	-	TBC	TBC	TBC	TBC	TBC	TBC
Tryphena	Shoal Bay Wharf	TBC	TBC	TBC	TBC	TBC	TBC

Table 4.4-6 Data confidence summary

Data attribute	Very uncertain	Uncertain	Reliable	Highly reliable
Asset descriptors and quantity				
Asset age				
Condition				
Performance				

Details of the asset components at each wharf site are shown in Table 4.4-5.

4.4.5 Asset data confidence

Data confidence of wharves assets is uncertain, with data completeness for asset descriptors, quantity, condition and age estimated at 60 per cent.

Asset information for the wharves including the passenger ferry network is maintained within the SPM asset management system. This is currently Auckland Transport's master information store for wharf assets.

As a result of the disparate sources of the data, the consistency and/or accuracy of current information varies. Table 4.4-6 illustrates Auckland Transport's confidence in the reliability of the asset and condition information currently held in its asset database:

The data completeness for the wharves assets is based on the inventory in SPM. This shows that data was made available for 18 of the 22 wharves, most of which came from the 2011 valuation. Only three wharves have been componentised in SPM, but the completeness of this data is unknown.

Table 4.4-7 Data completeness summary
Source: SPM database (March 2012)

Asset group	Data completeness		
	Quantity	Age	Condition
Wharves	60%	60%	60%

Data confidence and completeness will improve with the planned condition assessment programme and other planned improvement initiatives commencing 2012-13.

4.4.6 Asset condition

Condition rating

The planned frequency of condition surveys for wharf assets is summarised in Table 4.4-8. A formal condition assessment programme is under development for the wharves assets, with implementation starting in July 2012.

Approximately 54 per cent of the wharves are in moderate to very good condition (grades 1 to 3), with four per cent in poor and very poor condition (grades 4 to 5). A significant number of the wharves (42 per cent) have an unknown condition grade.

There are currently 22 wharves being managed by Auckland Transport. Information for the condition assessments have been taken out of SPM, and combined with the valuation data. A number of wharves are missing from the analysis. A small number of the SPM-derived components have been assigned default condition grades, indicating that condition is currently unknown.

Condition assessment programme

Auckland Transport is developing a formal condition assessment programme for wharf structures. The overall programme starts in July 2012. Detailed inspections will be undertaken on a six-year rotation with general inspections every two years.

The detailed inspections will assess condition rating and confidence, residual life (physical life left) and replacement cost.

Auckland Transport may increase the frequency and detail of inspections for structures that are in or showing signs of distress. Such surveillance may take the form of one-off special inspections or regular monitoring inspections (conducted from once a month to every six months).

As the planned condition assessments get under way, there will be more robust and complete condition information for wharves. Going forward, the intention is to report wharf condition by material type. This will help refine the inspection and renewal programmes.

4.4.7 Asset performance and capacity

Network constraints

There are some constraints to growing the ferry network. The Waitemata Harbour is a tidal estuary with the sea floor sloping gently out into deep water. There are limited locations naturally suitable or available to build a ferry terminal close to shore with good water depth. Channels accessing suitable locations are narrow and require reduced speed to avoid foreshore damage. This impacts on passage time and reduces the attractiveness of the ferry to commuters. There is a 3.4m tidal range which also creates difficulties for terminal location and service operations.

In addition, Auckland's frequent windy weather creates difficult conditions affecting ferry operations and passenger comfort. Exposed east coast locations are especially subject to wind and wind-generated waves, so that breakwaters would be required to ensure uninterrupted operations.

Table 4.4-8 Wharf condition surveys
Source: Asset Systems and Monitoring

Wharf asset group	Current condition survey frequency	Future condition survey frequency
Buildings	Varying standards across the region	From 1 July 2012 detailed inspections will be completed every five or six years. From 1 July 2012 routine inspections will be carried out annually for timber wharves and biannually for reinforced concrete wharves. Routine inspections will focus on the key components of the ferry facility, as identified in the detailed condition assessments
Dolphins		
Mooring piles		
Passenger ramps		
Wharf furniture		
Canopies		
Fuelling and pump out facilities		
Mechanical elements		

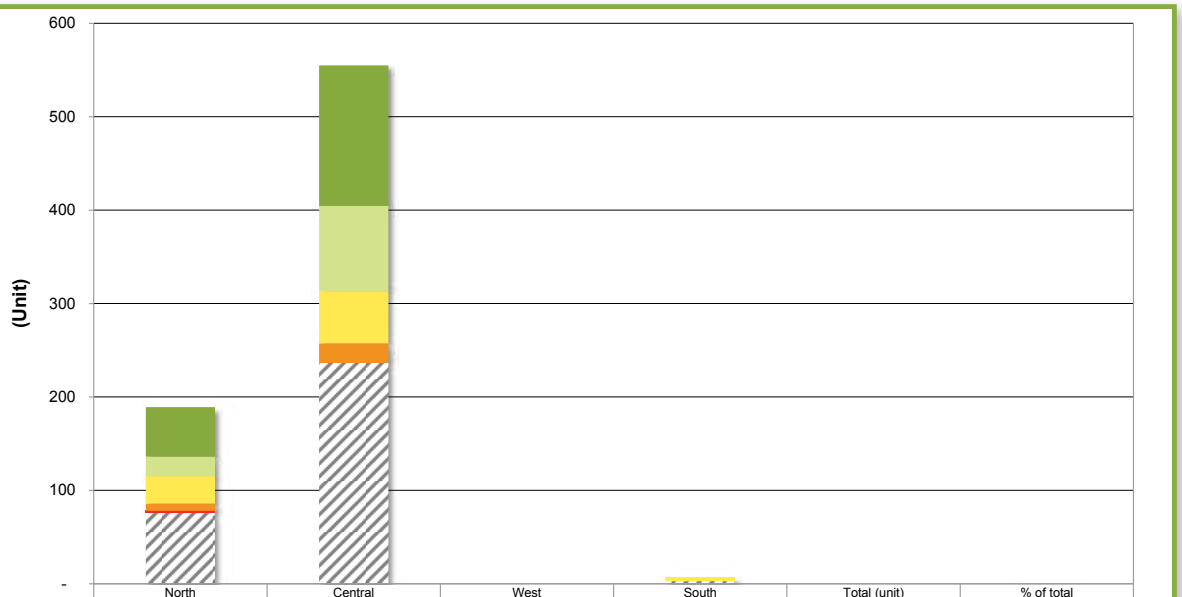
Constraints on growth include:

- North Shore services are from older residential suburbs where population density is unlikely to increase significantly
- Catchments can be limited due to the coastal location of ferry terminals
- Other public transport modes such as the Northern Busway or rail are already available and may provide a faster trip from some areas
- Vessels and infrastructure require significant capital investment
- Current peak capacity at the Downtown Ferry Terminal is constrained by confined water space for manoeuvring and limited berth space
- Speed is limited to 5 knots within 200m of the foreshore and when close to mooring areas, and a 12 knot speed limit is proposed for ferries in the inner Waitemata Harbour, reducing the travel time advantage
- Potential terminal sites are at beaches or in locations identified as protected coastal areas
- Providing a terminal in a shallow area such as St Heliers Bay or Howick would require a long wharf or extensive dredging
- Reclamation and dredging face potential environmental and consent issues, and incur significant costs, not only for initial work but also in long-term maintenance of dredged channels
- Terminal accessibility, including parking, may be impeded on the landward side where access may not be technically feasible or may be environmentally unsuitable.

The Downtown Ferry Terminal is the most used ferry terminal regionally as all passenger ferry services terminate at it. The berthing facilities are operating close to capacity during peak times. Improvements are required both to increase the number of berths (to meet planned increases to services) and to provide for the long-term future of the terminal.

The Auckland waterfront redevelopment provides opportunities for extending the ferry terminal and improving operational efficiency. Auckland Transport liaises with the Waterfront Development Agency to ensure that planning for the waterfront takes into account the requirements of ferry operations. There is a greater focus on passenger transport in the downtown area with the Wynyard Quarter development and Britomart precinct and Queens Wharf redevelopment. The Downtown Ferry Terminal and Britomart bus and rail stations form a major integrated transport interchange, and development needs to be carefully planned.

Figure 4.4-2 Wharf condition
Source: SPM database (March 2012) and valuation data



	North	Central	West	South	Total (unit)	% of total
Very Good	53	151	0	0	203	27%
Good	21	91	0	0	112	15%
Moderate	29	56	0	4	89	12%
Poor	8	21	0	0	29	4%
Very Poor	2	0	0	0	2	0%
Unknown	76	236	0	3	315	42%
% of total	25%	74%	0%	1%	100%	
Total (unit)	189	555	0	7	751	100%

Asset performance

Formal assessment of performance is planned along with the formal condition assessment of ferry facilities starting in July 2012. The criteria for assessing performance include:

- Compliance with relevant Building Act, Building Code and Building Regulations
- The passenger capacity of facilities and peak passenger use for each facility
- Appropriateness of wharf size for current and future ferries
- Provision of ancillary facilities to meet customer requirements such as car parking, toilets, ticketing facilities, and way-finding signage
- Safety and operational functional requirements such as handrails and access ways
- Input from operators regarding the above issues.

Asset performance of wharves may also be affected by natural hazards which are considered part of the risk assessment process.

Performance of the wharves can be measured by customer surveys. Customer satisfaction surveys are carried out in May and October of every year starting in October 2011.

Figure 4.4-3 shows the overall performance rating of wharves by percentages from excellent to dreadful.

Note that the grading categories for the customer satisfaction surveys are different from those of the usual condition grades.

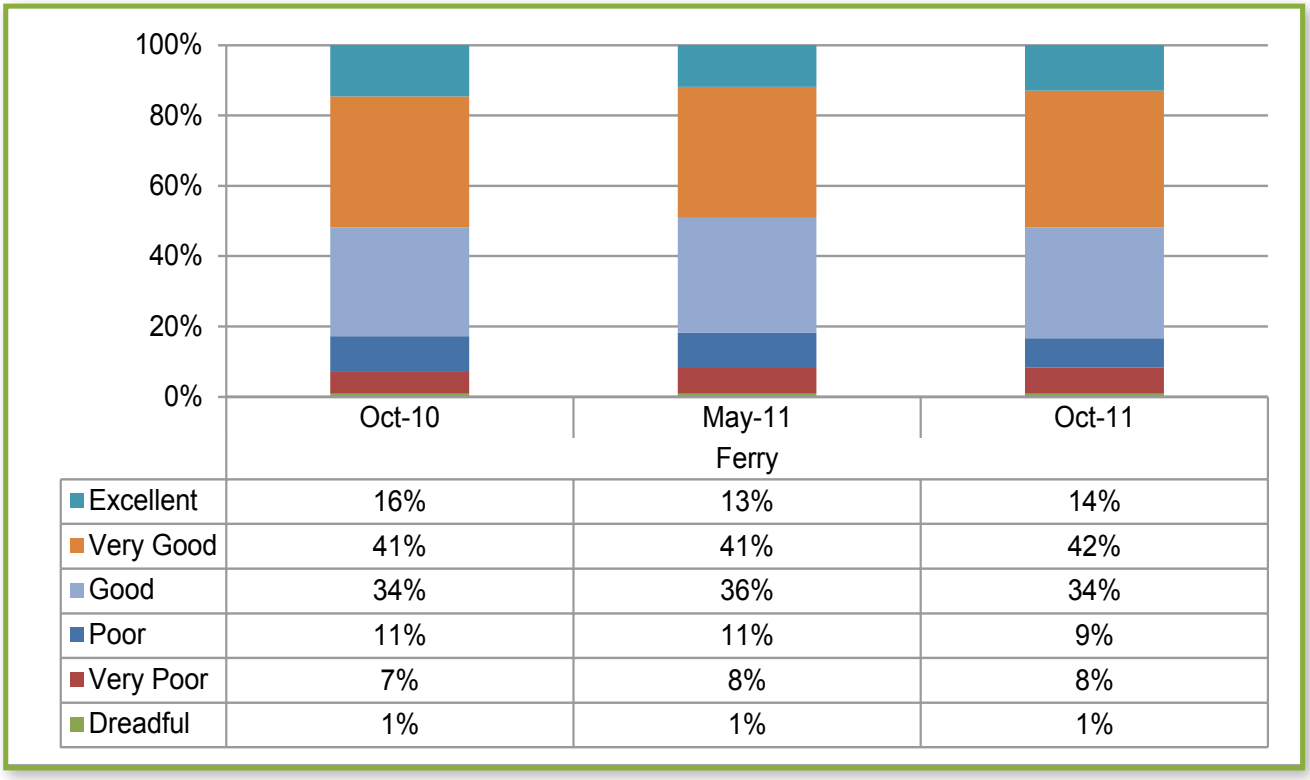
Figure 4.4-4 shows a performance rating by service attribute of 4.7, where 6.0 represents the highest rating attainable and 3.5 is the acceptable threshold.

4.4.8 Asset risks and criticality

Asset risks

Asset risks across the transport network, identified through a formal risk analysis review, appear in Section 8, Risk Management. Risks relating to the passenger ferry network are summarised in Table 4.4-9.

Figure 4.4-3 Overall performance rating of wharves
Source: Auckland Transport Customer Satisfaction Topline Report – October 2011



	Oct-10	May-11	Oct-11
	Ferry		
Excellent	16%	13%	14%
Very Good	41%	41%	42%
Good	34%	36%	34%
Poor	11%	11%	9%
Very Poor	7%	8%	8%
Dreadful	1%	1%	1%

A network-wide risk register, covering all asset elements and using a standard rating system, is being developed.

Critical assets

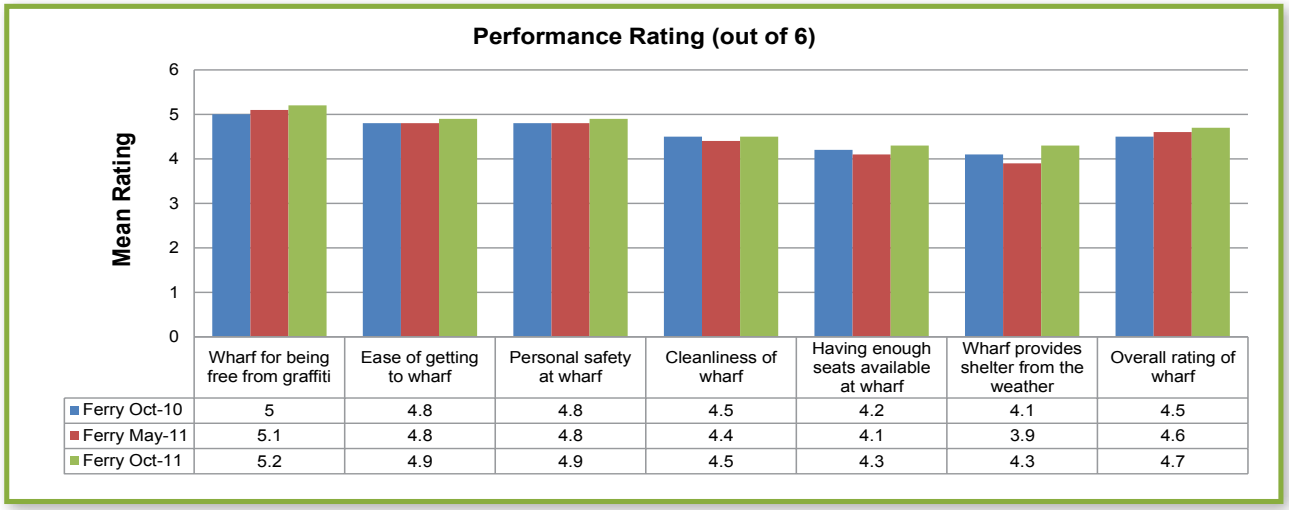
Critical assets are those parts of the passenger ferry transport network that are vital to providing service continuity and have unacceptable consequences should they fail. Although a formal asset criticality analysis has not yet been undertaken, critical passenger ferry transport assets are considered to be Downtown Ferry Centre, Devonport and Matiatia Wharves.

Informed by input from ferry operators, later versions of this AMP will identify the critical passenger ferry transport assets. It is expected that the criticality assessment will be on a ferry terminal basis.

Asset safety

Auckland Transport aims to provide public safety for public transport users. Any requests regarding risks related to public safety and security are responded to in a timely manner. Auckland Transport recognises the need to undertake a formal assessment of potential risks to safety and security. This will be part of the formal performance assessment detailed above.

Figure 4.4-4 Performance rating by service attribute
Source: Auckland Transport Customer Satisfaction Topline Report – October 2011



	Wharf for being free from graffiti	Ease of getting to wharf	Personal safety at wharf	Cleanliness of wharf	Having enough seats available at wharf	Wharf provides shelter from the weather	Overall rating of wharf
Ferry Oct-10	5	4.8	4.8	4.5	4.2	4.1	4.5
Ferry May-11	5.1	4.8	4.8	4.4	4.1	3.9	4.6
Ferry Oct-11	5.2	4.9	4.9	4.5	4.3	4.3	4.7

Table 4.5-9 Risk analysis
Source: ARTA ferry terminal risk analysis 2008

Risk area	Mitigation measures
Asset management governance	The ferry AMP is effectively the mitigation of risk for Auckland Transport's asset management . Issues relating to the systems and operation of asset management are dealt with, and continuous improvement initiatives identified to ensure changing demands and evolving practices are met
Project delivery risk	Auckland Transport operates project delivery systems in accordance with expectations for an effective service delivery organisation. The Board and corporate governance structure provide the ultimate level of responsibility to ensure that projects are delivered in accordance with public service principles
Service quality and quantity risks	The risk that low service quality standards, or insufficient service quantity will lead to reduced ferry patronage is managed via a series of initiatives and systems. The PTNP operating principles capture the various means by which these risks are managed and how service quality and quantity enhancements are delivered
Staff and public safety risks	Auckland Transport operates a legacy safety management system (SMS) inherited from the former operator of the ferry network, ARTNL. This SMS is currently under review and will be revised to more closely reflect the operating environment and needs of Auckland Transport. In 2008, ARTA commissioned an assessment of the risks associated with the operations of its ferry terminal assets via Lloyd's Register. This review identified very high (0), high (3), moderate (6), and low risk events (6) for ferry terminals
Asset failure risk	Auckland Transport's asset management practices incorporate evaluation of risk posed by asset failure as a result of condition using a classic risk matrix system. A risk profile is assigned to each asset group for the various categories of risk pertinent to Auckland Transport to establish the criticality of assets
Environmental risks	Auckland Transport's systems of environmental management fall under the scope of the ARC's Auckland Regional Policy Statement (ARPS). ARPS is a statement about managing the use, development and protection of the natural and physical resources of the region. Auckland Transport's ferry activities are generally perceived to be supportive of environmental improvements via the promotion of public transport. However, ferry terminals also have the potential to detract from the local environment through noise pollution, discharge to water, visual impairment, or litter and poor grounds maintenance
Natural disaster risk	Auckland Transport maintains current business continuity plans. While the susceptibility of ferry terminal assets to natural disaster has not been assessed, it is not anticipated to be significant, or necessarily critical

4.4.9 Key issues

Key lifecycle issues that affect the passenger ferry network are shown in Table 4.4-10.

4.4.10 Operations and maintenance needs

Scope of operations and maintenance

Auckland Transport ensures the passenger ferry network is suitable, accessible, safe and well maintained through an ongoing maintenance programme that addresses cleanliness, security, defects resulting from graffiti, wear and tear, or arising from health and safety issues and public complaints. This can be either planned or responsive maintenance.

The operations and maintenance activities associated with the passenger ferry network are managed through work programmes integrated between:

- Auckland Council's call centre
- Auckland Transport's operations and maintenance staff and representatives
- Various contractors across the legacy areas of the region that are responsible for routine and emergency response and maintenance.

Asset operations cover the activities Auckland Transport undertakes on a day-to-day basis to keep facilities operating in a safe and healthy manner. The specific purpose of these activities is to:

- Keep and maintain all terminal building assets and grounds in a neat and tidy condition, regularly remove and eliminate all refuse and non-required plant or vegetative growth. Such maintenance will be in accord with recognised standards of facilities management and routine building maintenance
- Keep and maintain any sealed or surfaced areas accesses in a state of good order and repair in accordance with current legislative requirements
- Keep clear access and maintain property assets
- Ensure that all relevant condition inspection and safety assessments of wharf assets are completed in accordance with the programmes and schedules of the maintenance plan, and ensure that all concerns and faults are communicated and addressed in a timely manner.

The provision of these activities is as shown in Table 4.4-11.

Asset maintenance as documented within this plan is sensitive to the upgrading of existing facilities, and development of new facilities. Auckland Transport operates an enhanced asset maintenance service for new facilities relative to old. This differential LOS is consistent with the strategy to maintain the quality and safety of newly upgraded or created facilities to improve the passenger experience at these sites.

Operations and maintenance plan

To deliver the physical works necessary for the scope of works listed above, Auckland Transport awards contracts on a competitive basis.

Contractors delivering the maintenance services have the ability to programme works on a priority basis and are required to comply with the contract specifications and recognised guidelines for maintenance activities.

Contractor performance in delivering the maintenance works and related outputs links to the transport network's operational LOS.

Historical levels of operations and maintenance expenditure provide the current LOS of the network. It is expected that this LOS will be

Table 4.4-11 Operating method of provision

Activity	Method of provision
Cleaning of facility	Contract
Operational management	In house
Provision of code of compliance auditing	Contract
Security	Contract
Operation of CCTV cameras	In house

Table 4.4-10 Lifecycle issues and strategies for passenger ferry network

No.	Key issue	Strategies for managing issues
1	A performance measurement of passenger ferry facilities and ferry schedules against LOS has not yet been undertaken	Implement LOS performance measurement system. Evaluate LOS gaps, and tactics for remedying these gaps
2	Due to the absence of performance measurement, prioritisation of upgrade works beyond the immediate upgrade programme to 2013 is uncertain	Implement LOS performance measurement system. Evaluate LOS gaps, and tactics for remedying these gaps
3	An increase in services via the Ferry Terminal Network Development map may cause capacity issues at the Downtown Ferry Centre, requiring wharf configurations and enhanced passenger flow management	Strategic review and recommendations surrounding demand, future demand and capacity to be completed. This review will inform physical asset options

maintained in the future and is the basis of the long-term lifecycle management strategies of this AMP. This position may change in the future as a result of Auckland Council and Auckland Transport adopting a different LOS in view of the funding and budgetary constraints.

Operations and maintenance expenditure forecasts

The recommended 10-year operational expenditure forecast is shown in Figure 4.4.5. The forecast is based primarily on historical trends but also includes for the revised activities detailed above, and for LOS to be achieved to some extent. This recommendation has also taken into account current funding constraints being experienced by Auckland Transport and Auckland Council. Note however that the actual plan approved by Auckland Transport and Auckland Council may yet differ from these network needs because of the impact of funding constraints.

Auckland Transport intends to maintain the current LOS as outlined in Section 4.4.1. Based on this, a regional summary of operational and maintenance expenditure for the wharves network is as shown in Figure 4.4-5. This indicates that the total operations and maintenance budget starts at $1.3 million, escalates to $5 million, and has an expected expenditure of $30 million over 10 years.

4.4.11 Renewal needs

Renewal strategy

Auckland Transport manages the lifecycle of existing assets through an annual renewals programme that is based on condition and importance. The annual renewals programme seeks to optimise risk, cost and LOS.

A renewal strategy is important in developing a forward renewals programme that helps deliver Auckland Transport's wharf network policy outcomes.

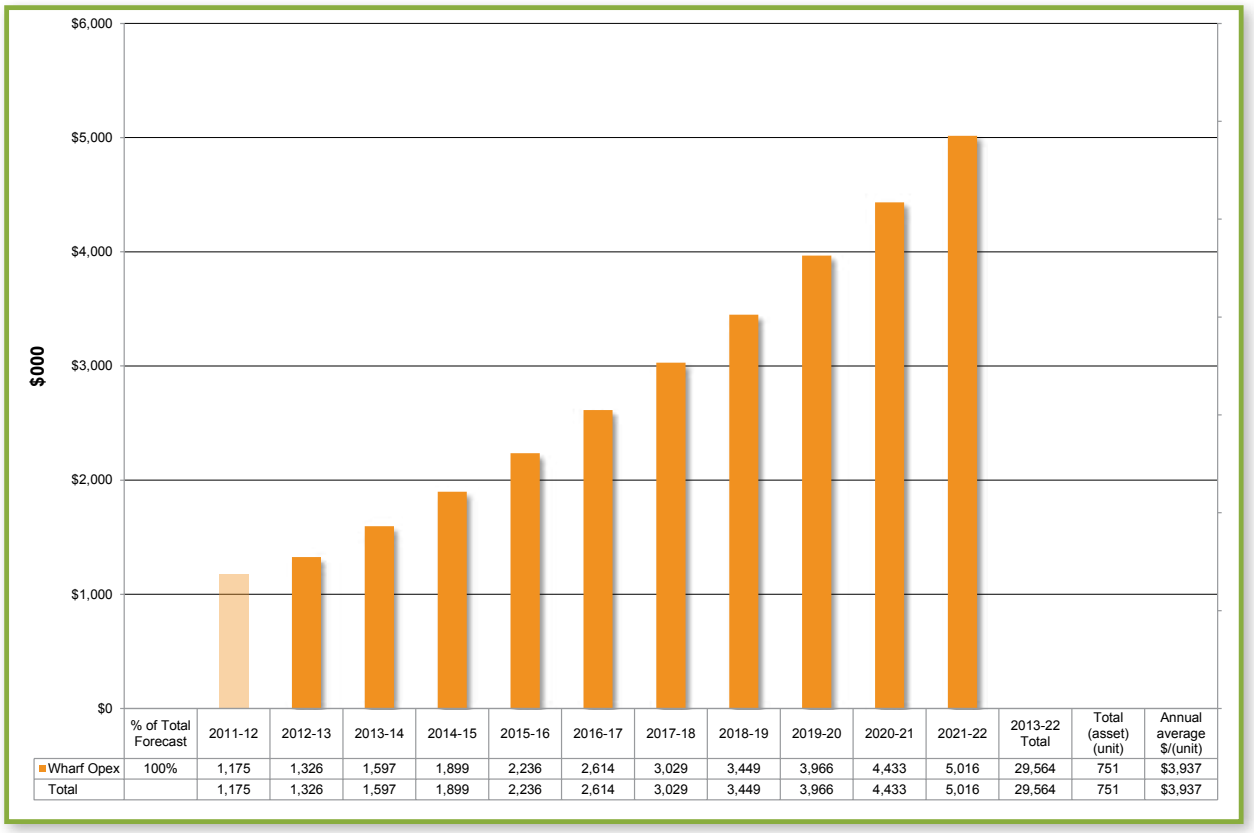
The following considerations are pivotal in that decision-making process:

- Prioritisation
- Current standards
- Design considerations
- Implementation considerations.

To achieve the agreed LOS, the recommended approach is to stocktake assets and their condition, and match this data with an appropriate service response, both in terms of existing and planned infrastructure.

Achieving this performance target is crucial as it establishes a base on which other target performance measures can be achieved in order to deliver that agreed customer level of service.

Figure 4.4-5 Planned wharves operations and maintenance expenditure
Source: LTP Budget Model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	Total (asset) (unit)	Annual average $/(unit)
Wharf Opex	100%	1,175	1,326	1,597	1,899	2,236	2,614	3,029	3,449	3,966	4,433	5,016	29,564	751	$3,937
Total		1,175	1,326	1,597	1,899	2,236	2,614	3,029	3,449	3,966	4,433	5,016	29,564	751	$3,937

For the purposes of this AMP, the renewal plan was informed by requirements of physical asset condition lifecycle management, rather than by forecasting the likely funding envelope, i.e. the plan is asset condition driven rather than financially constrained. This will clearly inform stakeholders of the true picture of the network condition, and what is required physically and financially over the next 10 years. Stakeholders can therefore identify options from this.

Renewal plan

Auckland Transport's decision-making process for wharf renewals is summarised as follows:

1. Asset inspection	
2. Preparation of forward works programme	**Produce a three-year indicative programme for renewal forecasts, using condition and performance assessments to determine future works**
3. Validation	**Carry out a joint validation walkover to verify sites prior to finalising the annual forward works programme**
4. Confirmation of asset ownership status	**Verify accuracy of asset ownership status, e.g. private, Auckland Council (stormwater or parks)**
5. Prepare one-year detailed work plan	**Outline the condition and performance rating for each wharf asset and safety issue, and provide the recommended capital/operational works and forward works programme. Revise the budget for each renewal project or work package**

Renewal analysis

The wharf renewals have been analysed by the following methods:

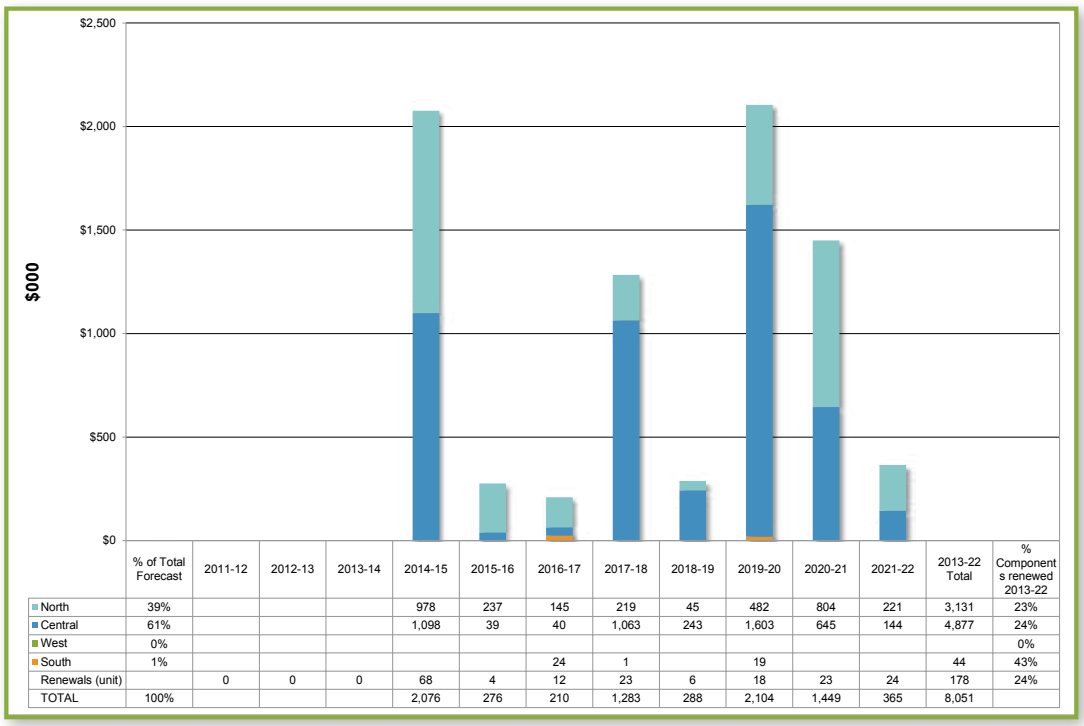
Condition-based method

The following analysis of renewals is based on the current condition of the wharf components of assets and uses whole-of-life deterioration to identify indicative renewal needs.

Wharf assets are mainly in good condition as detailed in Section 4.4.6. Seven per cent have been identified as in poor or very poor condition (grades 4 and 5). This analysis assumes that the grades 4 and 5 assets will be replaced over the next five years.

The following 10-year renewal profile shows that a total of 24 per cent of wharf components (178 components out of 751) will need to be replaced over 10 years at a cost of approximately $8 million.

Figure 4.4-6 Wharf condition-based renewal profile
Source: SPM March 2012 and Valuation June 2011



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	% Components renewed 2013-22
North	39%				978	237	145	219	45	482	804	221	3,131	23%
Central	61%				1,098	39	40	1,063	243	1,603	645	144	4,877	24%
West	0%													0%
South	1%						24	1		19			44	43%
Renewals (unit)		0	0	0	68	4	12	23	6	18	23	24	178	24%
TOTAL	100%				2,076	276	210	1,283	288	2,104	1,449	365	8,051	

Notes on the renewal profile in Figure 4.4-6:

- Data has been outputted directly from SPM and combined with valuation data. Valuation data has been used where data existed both in SPM and valuation
- A number of wharves are missing from the analysis, which covers five wharves
- A small number of the SPM-derived components have been assigned default condition grades, indicating that the condition is currently unknown
- A minimum RUL of three years has been used
- No data validation has been done.

Age-based method

The following 10-year renewal profile is based on the average useful economic lives of different components which make up the wharf. The lives are dependent on the materials used and the nature of the materials supported. Useful economic lives are expected to range from seven to 100 years.

This analysis shows that a total of 35 per cent of wharf components (265 components out of 751) will need to be replaced over 10 years at a cost of approximately $19 million.

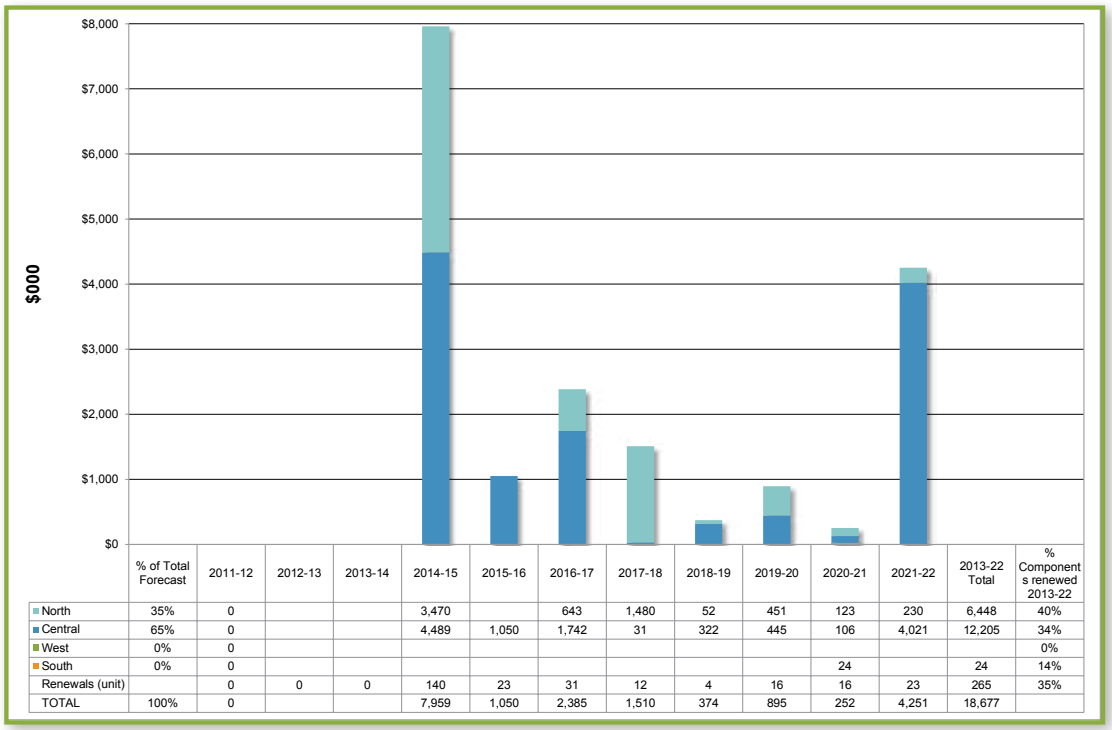
Notes on the renewal profile in Figure 4.4-7:

- Data has been outputted directly from SPM and combined with valuation data. Valuation data has been used where data existed both in SPM and valuation
- A number of wharves are missing from the analysis, which covers five wharves
- A small number of the SPM-derived components have been assigned default condition grades, indicating that condition is currently unknown
- A minimum RUL of three years has been used
- No data validation has been done.

Operational priorities

An indicative renewal programme for 2012/13 has been identified for wharves, as shown below. This programme has been prepared in conjunction with the assets and public transport operations teams based on local priorities. The programme is indicative only, subject to confirmation once condition data has been collected and analysed.

Figure 4.4-7 Wharf age-based renewal profile
Source: SPM March 2012 and Valuation June 201



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	% Components renewed 2013-22
North	35%	0			3,470		643	1,480	52	451	123	230	6,448	40%
Central	65%	0			4,489	1,050	1,742	31	322	445	106	4,021	12,205	34%
West	0%	0												0%
South	0%	0									24		24	14%
Renewals (unit)		0	0	0	140	23	31	12	4	16	16	23	265	35%
TOTAL	100%	0			7,959	1,050	2,385	1,510	374	895	252	4,251	18,677	

Table 4.4-12 Indicative renewal needs for 2012/13 based on local priorities

Wharf location	Description	Estimated ($000s)
Northcote	Replace deteriorating walers, braces, life buoys and handrail bolts	350
Kennedy Point	TBC	200
Bayswater	TBC	500
Great Barrier – Okupu	Piles beneath shed may require replacement	150
Great Barrier – Tryphena	Remedial measures to ramp, piles and bracing	200
Half Moon Bay – marshalling yard	Yard pavement may require replacement	200
TOTAL		1,600

Table 4.4-13 Ferry assets depreciation forecasts

Source: Auckland Transport infrastructure depreciation profiles (25 April 2012)

Profile	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Depreciation ($ millions)	2.7	2.8	2.9	3.2	3.5	4.0	4.1	4.1	4.1	4.2	4.3	39.9

Historical trends

There is currently insufficient commonality between legacy data sets to provide a reliable regional view of historical expenditure trends. Auckland Transport identifies consistent tracking of expenditure by asset type and expenditure type over time as a future improvement. This will enable robust expenditure trends analysis.

Depreciation profile

The annual depreciation for ferry terminals over the next 10 years is indicated in Table 4.4-13.

Renewals 10-year work and expenditure forecast

The analyses given provide varying levels of indicative renewal work for the future. This demonstrates the current difficulty of forecasting future renewal needs.

Figure 4.4-8 Wharf network 10-year renewals work summary

Source: LTP Budget Model 12 April 2012 after Refresh for AMP

	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	Annual Average $ / asset
Wharf Renewals	7%	189	189	189	189	189	189	189	189	189	189	189	1,888	$13,483
Ferry Terminal Renewals	93%	2,058	1,125	1,700	2,500	2,500	3,000	3,000	3,000	3,000	3,000	3,000	25,825	322,813
Renewals (unit)		0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	100%	2,246	1,314	1,889	2,689	2,689	3,189	3,189	3,189	3,189	3,189	3,189	27,713	$125,966

Considering the renewal analysis and the current funding constraints being experienced by Auckland Transport and Auckland Council, the recommended 10-year renewal needs are shown in Figure 4.4-8. Note however that the actual renewals plan approved by Auckland Transport and Auckland Council may yet differ from these network needs because of the impact of funding constraints.

This shows that the average annual spend per facility is $13,000 for wharf sites and $323,000 for ferry terminal sites.

4.4.12 New works needs

New works strategy

Auckland Transport provides new assets and upgrades existing assets to meet actual or planned changes in the pattern of demand and LOS requirements.

The capital new works associated with the passenger ferry network are managed in cooperation with Auckland Transport's development and maintenance staff and representatives, and the various contractors across the legacy areas of the region.

Strategic drivers for the construction of new or upgraded ferry terminals include the LOS improvement to enhance the ferry network and provide an integrated transport system for the region.

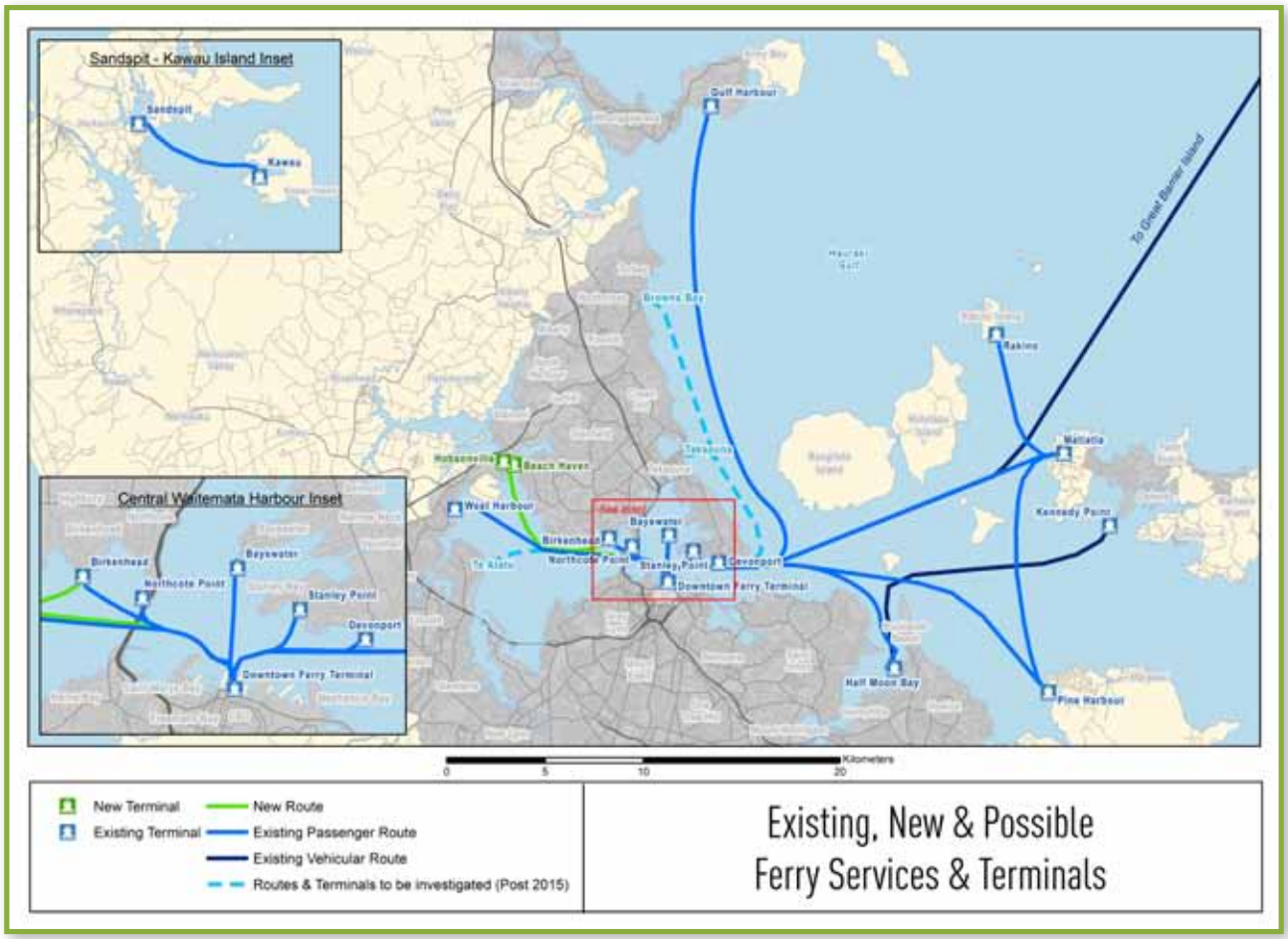
Future region-wide development of the ferry passenger transport network is expected to be given effect via the following region-wide passenger transport initiatives:

- New ferry wharf and ferry services for Beach Haven
- New ferry terminal at Bayswater, to allow for more frequent services to Bayswater and Birkenhead
- Ferry services from Hobsonville via Beach Haven
- Ferry services from Takapuna and Browns Bay.

Another anticipated improvement is real-time public transport information available across the region.

Figure 4.4-9 indicates the ferry network layout resulting from these growth response strategies.

Figure 4.4-9 Ferry terminal network development map
Source: Draft Passenger Ferry Plan (April 2011)



A key element of increasing patronage of the ferry network is provision of facilities that link to other services. This includes the provision of good car parking, provision of "kiss and drop off" areas, and links with scheduled bus services. A number of the existing and proposed facilities incorporate all of these elements.

New works programmes

The wharf projects expenditure is estimated at $56 million in total over the next 10 years, shown in Table 4.5-14.

The wharf projects include new and upgraded ferry terminals, reclamation of coastal frontage, new pontoons and gangways, new berths, and additional parking.

Table 4.4-15 outlines the proposed forward works programme of capital new projects and associated cost projections.

Figure 4.4-10 Wharf network new works 10-year expenditure forecast
Source: LTP Budget Model 12 April 2012 after refresh for AMP

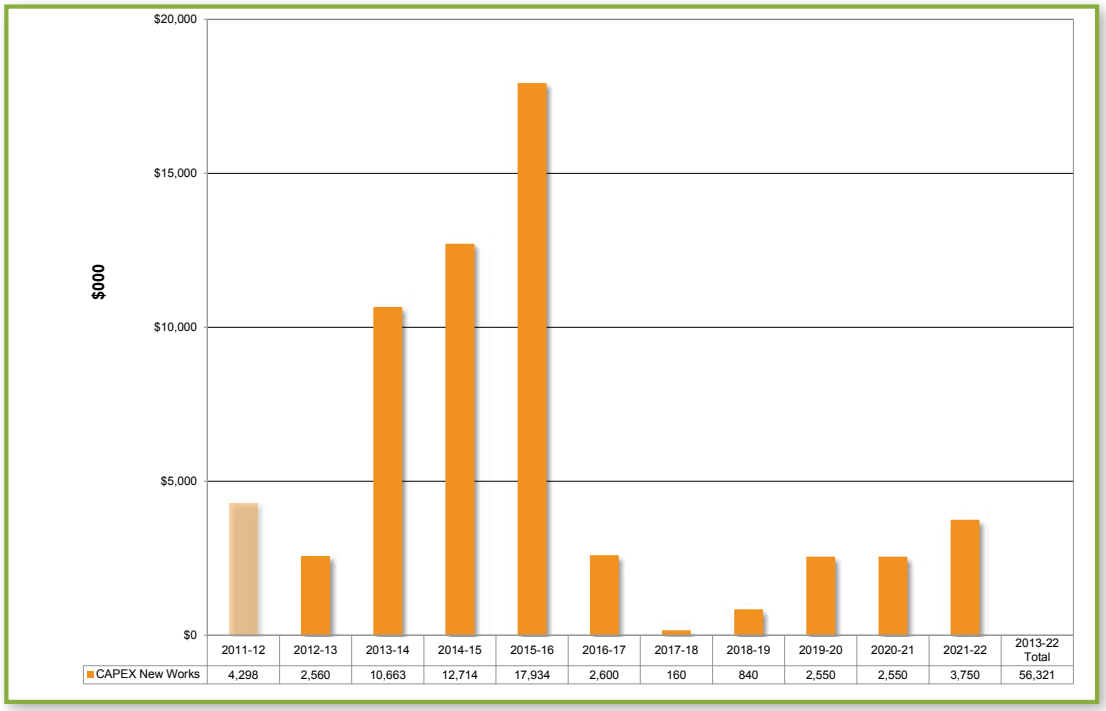


Table 4.4-14 Summary of planned new works projects
Source: LTP Budget Model 12 April 2012 after refresh for AMP

Expenditure type	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total ($000s)
Terminal upgrades	1,260	8,663	12,714	17,934	1,680	160	840	0	0	1,200	44,450
Wharf development	2,300	1,00						2,550	2,550	2,550	10,950
Access upgrade					920						
Total	4,298	2,560	10,663	12,714	2,600	160	840	2,550	2,550	3,750	56,321

Table 4.4-15 Planned new works projects
Source: LTP Budget Model 12 April 2012 after Refresh for AMP

New works	Expenditure total ($000)	From year	To year
Half Moon Bay ferry terminal and vehicular ferries	11,736	2013	2016
Shoal Bay wharf development (Tryphena)	3,000	2013	2014
Hauraki Gulf Island wharves – Kennedy Point development	7,950	2013	2022
Stanley Bay Ferry Terminal	60	2013	2013
Downtown Ferry Terminal Queen's Wharf extension	7,483	2014	2016
Downtown Ferry Terminal pier three and four	1,750	2014	2014
Downtown Ferry Terminal pier two	1,000	2014	2014
Bayswater Ferry Terminal	11,922	2014	2017
Beachhaven Ferry Terminal	2,300	2015	2017
Devonport Ferry Terminal	6,000	2015	2015
Stanley Bay Wharf access upgrade	920	2017	2017
Northcote Point Ferry Terminal	1,000	2018	2019
Te Atatu Ferry Terminal	1,200	2022	2022
Total	56,320	2013	2022

4.4.13 Disposal plan

Disposal refers to activities necessary to dispose of decommissioned assets.

4.4.14 Summary of 10-year network needs

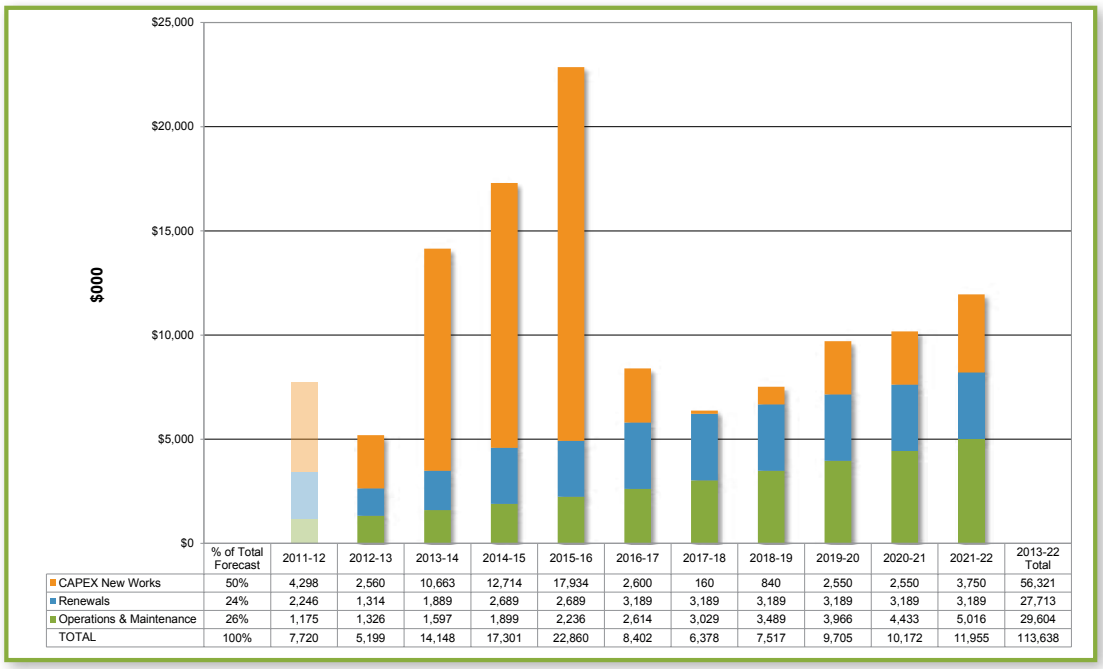
All expenditure for Auckland Transport wharves network is contained in Auckland Transport's SAP financial management system.

The total amount of expenditure for operations and maintenance, renewals and new works over the next 10 years is $114 million. New works generates half of the spend ($56 million) followed by operations and maintenance ($30 million or 26 per cent) and renewals ($28 million or 24 per cent).

Notes on the expenditures in Figure 4.4-11:

- The proposed 10-year expenditures for OPEX has been given a variable growth factor ranging from 2.75 per cent through to 10 per cent, dependent upon the category of spend
- Renewal figures are relatively constant, starting out at $1.8 million and levelling off to $4.8 million per annum

Figure 4.4-11 Summary of wharf 10-year expenditure
Source: LTP Budget Model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
CAPEX New Works	50%	4,298	2,560	10,663	12,714	17,934	2,600	160	840	2,550	2,550	3,750	56,321
Renewals	24%	2,246	1,314	1,889	2,689	2,689	3,189	3,189	3,189	3,189	3,189	3,189	27,713
Operations & Maintenance	26%	1,175	1,326	1,597	1,899	2,236	2,614	3,029	3,489	3,966	4,433	5,016	29,604
TOTAL	100%	7,720	5,199	14,148	17,301	22,860	8,402	6,378	7,517	9,705	10,172	11,955	113,638

- New works shows some peaks in the early years due to ferry terminal upgrades for a number of sites
- Consequential OPEX and renewals are currently addressed through the growth factor. The scale of new capital in this plan means that this consequential expenditure will have to be reviewed.

4.4.15 Approved Long Term Plan envelope

The approved Long Term Plan

This section compares the approved LTP envelope for OPEX and renewals with the wharves network needs as determined by this AMP at a regional level and identifies the likely impacts of any variances. Revenue and funding incomes to Auckland Transport (from Auckland Council ratepayers and NZTA government subsidies and the like) are allocated through the approved Long Term Plan budgets. The LTP was adopted on 28 June 2012.

OPEX impacts

Based on the information shown in Table 4.4-16, wharves operational expenditure shows no variance between the LTP allocated budgets and the AMP needs. However, it is anticipated that the LTP will require further efficiency savings and therefore a funding gap for wharves operational expenditure may eventuate.

Renewals impacts

Based on the information below, wharves capital renewals expenditure shows no variance between the LTP allocated budgets and the AMP needs.

Further efficiency savings

As required by the approved LTP, a further reduction in OPEX of $18.6 million per year, reducing to nil by 2016/17, will need to be allocated against asset related operational budgets. The impact of this reduction on wharves operational budgets is yet to be assessed and finalised.

Monitoring and management of Long Term Plan consequences

The consequences resulting from these variances will be monitored and reported as appropriate.

CAPEX new works

CAPEX new works contained in this AMP are derived from draft LTP listings as at April 2012 and are produced in section 4.4-12.

The capital new works programme has been further refined and adopted in late June 2012. Details of this adopted programme are contained in the LTP.

AMP inflation effects

Un-inflated and inflated wharves needs for the AMP are shown in Table 4.4-17.

LTP inflation effects

Un-inflated and inflated wharves budgets from the LTP are shown in Table 4.4-18.

4.4.16 Revenue sources

Revenue and funding incomes to Auckland Transport are contained in Auckland Transport's SAP financial management system.

Passenger ferry wharf network funding is subsidised by NZTA up to rates as shown below. However, typically not all of the activities that are eligible for subsidy will be accepted by NZTA because capping limits are usually applied based on available NZTA funds. The remainder is funded by ratepayers, farebox recovery and various other user-pay income sources.

Operations and maintenance revenue

Maintenance funding is subsidised by NZTA at a rate of 50 per cent, with some activities up to 59 per cent.

Capital renewals revenue

Renewals may be funded by NZTA at a rate of 50 per cent.

Capital new works revenue

Improvements and new works may be funded by NZTA at a rate of 50 per cent.

4.4.17 Key improvement initiatives

Key improvement initiatives relating to the passenger ferry transport lifecycle management plan is shown in Table 4.4-19.

Table 4.4-16 Variance between LTP approved budget and AMP network needs for wharves (all un-inflated)
Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

Wharves	10-year total LTP approved budget ($000s un-inflated)	10-year total AMP network needs ($000s un-inflated)	Variance 10-year total ($000s un-inflated)
Operations and maintenance	29,604	29,604	0
Renewals	27,713	27,713	0
Wharves total	57,317	57,317	0

Table 4.4-17 Un-inflated and inflated wharves AMP needs

Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

UN-INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		1,326	1,597	1,899	2,236	2,614	3,029	3,489	3,966	4,433	5,016	29,604
Renewal		1,314	1,889	2,689	2,689	3,189	3,189	3,189	3,189	3,189	3,189	27,713
Wharves total		2,640	3,486	4,588	4,925	5,803	6,218	6,678	7,155	7,622	8,205	57,317
AC Inflator	OPEX	3.30%	3.30%	3.30%	3.30%	3.50%	3.60%	3.10%	3.10%	3.30%	3.60%	n/a
AC Inflator	CAPEX	3.90%	3.40%	2.80%	2.90%	3.10%	3.30%	3.50%	3.70%	4.00%	4.00%	n/a
INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		1,369	1,704	2,093	2,552	3,089	3,691	4,383	5,148	5,961	6,987	36,976
Renewal		1,365	2,029	2,969	3,056	3,736	3,859	3,995	4,142	4,308	4,480	33,940
Wharves total		2,734	3,733	5,062	5,608	6,825	7,550	8,378	9,290	10,269	11,467	70,916

Table 4.4-18 Un-inflated and inflated wharves LTP budgets

Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

UN-INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		1,326	1,597	1,899	2,236	2,614	3,029	3,489	3,966	4,433	5,016	29,604
Renewal		1,314	1,889	2,689	2,689	3,189	3,189	3,189	3,189	3,189	3,189	27,713
Wharves total		2,639	3,486	4,587	4,925	5,802	6,218	6,677	7,155	7,622	8,205	57,317
AC Inflator	OPEX	3.30%	3.30%	3.30%	3.30%	3.50%	3.60%	3.10%	3.10%	3.30%	3.60%	n/a
AC Inflator	CAPEX	3.90%	3.40%	2.80%	2.90%	3.10%	3.30%	3.50%	3.70%	4.00%	4.00%	n/a
INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		1,369	1,704	2,093	2,552	3,089	3,691	4,383	5,148	5,961	6,987	36,976
Renewal		1,365	2,029	2,969	3,056	3,736	3,859	3,995	4,142	4,308	4,480	33,940
Wharves total		2,734	3,733	5,062	5,607	6,825	7,551	8,378	9,290	10,269	11,467	70,916

Table 4.4-19 Key improvement initiatives

Improvement area	Description	AMP section	Priority
Wharves 1	Understand and resolve the accuracy and ownership of wharf quantities, including recreational wharves	4.4.4	Very high
Wharves 2	Undertake a comprehensive exercise to consolidate the data and systems from the various legacy councils into a single data system	4.4.5	High
Wharves 3	Carry out a comprehensive condition survey for all assets, using a consistent methodology (both in terms of consistency across all sites, but also consistency with the AMDST). Condition surveys should be designed to understand the asset situation, not to determine a workbook of repairs needed now. Need for an initial immediate safety survey	4.4.7	High
Wharves 4	Complete general and detailed inspections to assess performance issues for wharf assets	4.4.7	High
Wharves 5	Redevelop a network-wide risk register, using a standard rating system, covering all asset elements	4.4.8	High

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4.5 Public Transport Services

4.5.1 The service Auckland Transport provides

Auckland Transport's overall approach to public transport is to improve, upgrade and expand transport infrastructure and services. Public Transport Services develops and implements activities to influence people's behaviour relating to how they travel throughout the region. Improving public transport is a critical component of overall plans to lift the performance of Auckland's transport system, improve quality of life for the city's growing population and build Auckland's economic competitiveness.

Public transport service activity covers the following areas:

- Public transport procurement, fares and funding
- Branding and information
- Network design and services.

Systematic improvements to the rail, bus and ferry networks have seen an increase in passenger volumes. More comprehensive details on service facilitation are contained in the Auckland Regional Public Transport Plan 2010.

Auckland Transport's philosophy for managing growth is to focus on using the existing transport assets and reducing demand before building new capacity. Public transport has a direct role in implementing this philosophy by providing people information and choices about alternative ways of meeting their travel needs.

Public Transport Services directly support the following long term asset management outcomes of Auckland Transport:

- Effective network – providing an accessible and good quality network
- Efficient network – moving people and goods efficiently
- Safe network – minimising death and serious injury
- Sustainable network – managed to enable the needs of the future.

Some key facts about public transport service activity are:

- 205 service contracts across six main areas
- 70 million passenger journeys over the last 12 months.

Auckland Transport provides the infrastructure needed to allow the public transport services to operate. Information on the servicing of these assets can be found within the lifecycle management sections of this AMP under the relevant sections of rail, bus and wharves.

4.5.2 Current services

The current services provided by the Public Transport Services area are:

Public transport procurement, fares and ticketing

Auckland Transport is currently developing a new set of partnering agreements. These agreements will provide different scenarios and will allow a better risk allocation between Auckland Transport and operators. As well, the agreements will facilitate best value for money and service quality to permit patronage growth. The agreements will be implemented / negotiated as older contracts start to expire. The new partnering agreement will cover a period of up to 12 years dependent on the type of contract. In addition, vehicle quality and performance standards set by Auckland Transport will be applied to contracted bus, train and ferry services in the region.

When setting and reviewing the maximum fare schedule, Auckland Transport consults with operators and takes into account increased costs and patronage impacts while also ensuring compliance with NZTA's farebox recovery policy.

The HOP card is the first phase in the city's move to an integrated ticketing system. The HOP card has been launched on some bus services and will eventually cover all public transport services – such as rail, bus and ferry – across Auckland.

Concession fares are available for identified target groups such as school and tertiary students and SuperGold Card holders. SuperGold Card holders are able to travel for free between after 9am. NZTA subsidises 65 per cent of a single adult fare between 9am and 3pm and after 6.30pm, with the operator picking up the balance. Auckland Transport subsidises this fare between 3pm and 6.30pm.

Branding and information

MAXX is the brand name adopted for public passenger transport in the Auckland Region. MAXX incorporates a theme and colour scheme for information, advertising and equipment relating to the Auckland network. The theme and colour scheme have been designed to be instantly recognisable to users as being part of an integrated

transport network. For example, the printed timetables for each of the modes will have an overarching common colour scheme depending on the area of operation (green for western services, maroon for southern services and gold for eastern services).

An integral part of the MAXX brand is vehicle livery, with the rolling stock, including locomotives, incorporating MAXX colours or chevrons together with external MAXX logos.

The marketing of train, bus or ferry services is the responsibility of the individual operator under Auckland Transport's guidance and direction. All content and expenditure in this area must be prior approved by Auckland Transport. This includes all customer information relating to train service provision. It also includes alterations resultant from planned disruption on the network and additional services provided for special events. In the future, Auckland Transport will take prime responsibility for the specification and marketing of additional special event services, in conjunction with the operator.

Network design and services

Design

Auckland Transport differentiates service levels according to the passenger transport network hierarchy:

Rapid Transit Network (RTN)	**High quality, fast, high frequency, dedicated pathway services**
Quality Transit Network (QTN)	**High quality, fast, high frequency, non-dedicated, but prioritised pathway services**
Local Connector Network (LCN)	**Provides access to local centres and connects with the RTN and QTN**

Auckland Transport is currently redesigning the public transport network to be more connected and integrated, through a primary Rapid Transit Network (RTN) right-of-way rail and busway corridors and a network of bus and ferry services on key arterial road corridors. This redesign presents a network of high frequency services of 15 minutes minimum, 7am to 7pm, seven days a week. It will also provide a connected public transport network for people outside of the peak periods, offering greater transport options for more travel needs.

A secondary network of local public transport feeder services will connect into the primary high frequency network. These feeder services will use main commuter routes Quality Transit Network (QTN) and the remaining Local Connector Network (LCN).

Service level guidelines are provided to determine the minimum service levels that will apply to the different network layers, setting frequency for peak and off-peak services, and minimum and maximum loading trigger points to control services. To aid with the scheduling, the region is split into 68 service-orientated route groups. A service review programme is in place for some of these groups.

Services

Commercial services play a significant role in the Auckland public transport system. For the most part these services are integrated into the overall system so that customers do not experience any significant differences between contracted and other commercial services.

Auckland Transport identifies that an integrated ticketing network is a key to facilitate simple transfers between different services. A new Public Transport Operating Model (PTOM) is being implemented which will facilitate partnerships between public and private sectors, providing improved vehicle standards, consistency of specifications, and implementation of integrated ticketing. The new PTOM contracts will roll out from mid-2012 through to mid-2014.

Rail services

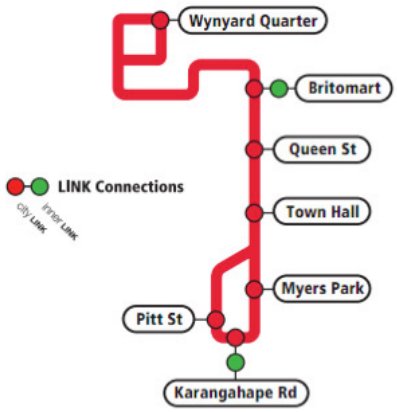
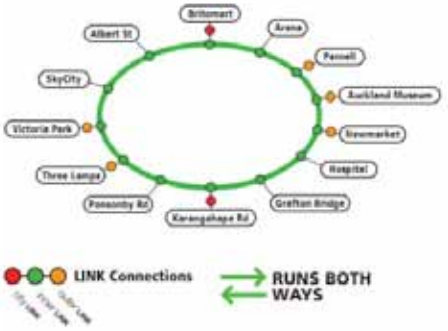
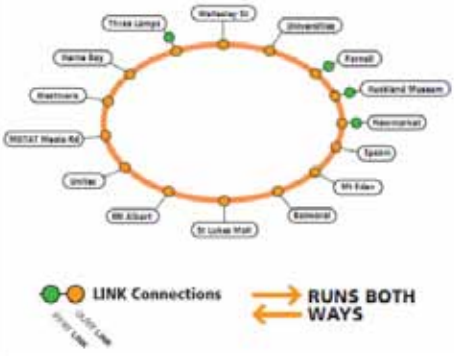
Suburban passenger services are funded by Auckland Transport and are currently managed by an operator under contract to Auckland Transport. The Auckland rail network extends from Pukekohe in the south to Helensville in the northwest. It is joined to the national network but is a separate contractual entity. Not all of the network is used for passenger operations; currently there are no passenger services west of Waitakere on the Western Line, and passenger services do not use the Westfield or Southdown depots.

With the completion of the upgrade of the rail stations and the commissioning into service of the new electric trains by 2015-16, a modern, safety-enhanced rail service will be provided progressively from 2014 to 2016. Local bus services will feed into the enhanced rail capacity and services.

Bus services

The bus network will be redesigned and implemented over the next three years. Resource efficiency across the public transport network will be increased through:

- Removing duplicate services
- Integrating the bus network to connect to other public transport services
- Utilising integrated ticketing
- Offering real-time information.

1 City LINK	
The City LINK is the easiest way to get around Auckland's city centre. It runs from the newly developed Wynyard Quarter, along Queen Street, up to K-Road and then back down Queen Street. All the City LINK buses are bright red and easy to spot.	
2 Inner LINK	
The Inner LINK is the easiest way to get around Auckland's inner city. It runs from the Britomart Train Station, out to Parnell, through Newmarket, along K-Road, Ponsonby Road, past Victoria Park and then back to Britomart via SkyCity. The buses are bright green and operate on a frequent basis.	
3 Outer LINK	
The Outer LINK is the easiest way to get around the inner suburbs of Auckland City. It runs from Wellesley Street, past the Universities, through Parnell, Newmarket, Epsom, Balmoral, Mt Eden, St Lukes, Mt Albert, out to the Meola Road entrance to MOTAT, through Westmere, Herne Bay and then back to Wellesley Street. The buses are bright amber and operate on a frequent basis.	

Some recent improvements to services include:

1. LINK Services operate on a frequent basis. There are three different LINK services
2. B.line buses run every 15 minutes along the Dominion Road and Mt Eden Road corridors
3. Other specific services include four airport services which take both domestic and international travellers to the airports from Central Auckland, North Shore, Manukau City Centre and Botany Town Centres.

Ferry services

The ferry network forms part of the QTN and LCN network and provides the most direct route between coastal suburbs and the Auckland city centre. The alternative for most ferry passengers would be a car or bus journey.

Three of the seven contracted services (Half Moon Bay, Bayswater and Birkenhead) each carry between 190,000 and 250,000 passengers per year with the remainder of the services carrying lower, but increasing, numbers of passengers.

A number of commercial operators provide vital services to the Hauraki Gulf Islands for passengers, goods and vehicles and also have a key role in Auckland's tourist industry.

Targeted services

With the redesign of the network, targeted services will comprise peak-only services, school bus services and rural services.

Table 4.5-1 summarises Auckland Transport's different types of targeted services.

4.5.3 Key issues and strategies

Key issues that affect Public Transport Services are summarised in Table 4.5-2.

4.5.4 Operations and maintenance plan

Operations expenditure for Public Transport Services includes the costs associated with providing:

- Service contracts for rail, bus and ferry
- Hoist implementation programme and targeted services such as school bus contracts
- Network design
- Branding and information including call centre operations
- Operational matters generic to all public transport services.

Table 4.5-1 Travel plan summary

Targeted service type	Description
School bus services	Targeted school bus services are designed to meet demand for school travel where the regular public transport network cannot provide sufficient capacity or route coverage to meet demand. The services are used exclusively to transport students to school and are subject to ongoing reviews of demand, value for money, and the ability to integrate school travel into the scheduled public transport network. There are currently 28 school bus contracts in place
Total Mobility scheme	The Total Mobility scheme assists people with impairments to enhance their community participation by assessing appropriate transport. The scheme provides a 50 per cent taxi fare up to the value of $40 for people with an impairment which prevents them from using buses, trains or ferries in a safe and dignified manner. All vehicles used on the Total Mobility contracts must be equipped with approved card-readers that meet Auckland Transport quality standards, and in addition all drivers must complete an Auckland Transport approved specialist training course. There are approximately 8,900 registered members of the Total Mobility scheme in the region
Community transport services	In areas where regular scheduled services will generally not be cost-effective, Auckland Transport intends to work with local communities to explore options for community-based transport initiatives which are able to provide cost-effective solutions to the access needs of the community
Major or special event services	During major or special events (e.g. concerts and sporting events) there is a need to carry large volumes of public to and from key venues such as Eden Park, Vector Arena and Mt Smart Stadium. Special or additional services are often programmed to travel to the venues. Fares are either discounted or free of charge on the presentation of a pre-purchased ticket for the event.

Table 4.5-2 Key public transport issues

No.	Key issues with public transport	Strategies for managing these issues
1	Revenue risk on Gross Contracted Services where farebox revenue does not meet the cost of the service provided	Provide appropriate risk allocation between Auckland Transport and operators
2	Services not keeping up with demand	Continual monitoring and review of services and patronage to match demand, and respond to new service opportunities
3	Operators not performing to required standards	New Public Transport Operating Model (PTOM) contracts rolled out for operators will see better management of operators standards

Operations and maintenance 10-year expenditure forecast

The 10-year operations expenditure forecast has been based on historical trends, the revised activities detailed above, and levels of service to be achieved. A regional summary of operations and maintenance (O&M) expenditure for Public Transport Services is presented in Figure 4.5-1 with $2.3 billion forecast over the next 10 years.

The average annual expenditure for the operations and maintenance of Public Transport Services over the next 10 years is approximately $233 million, which equates to 96 per cent of the expenditure.

4.5.5 New works needs

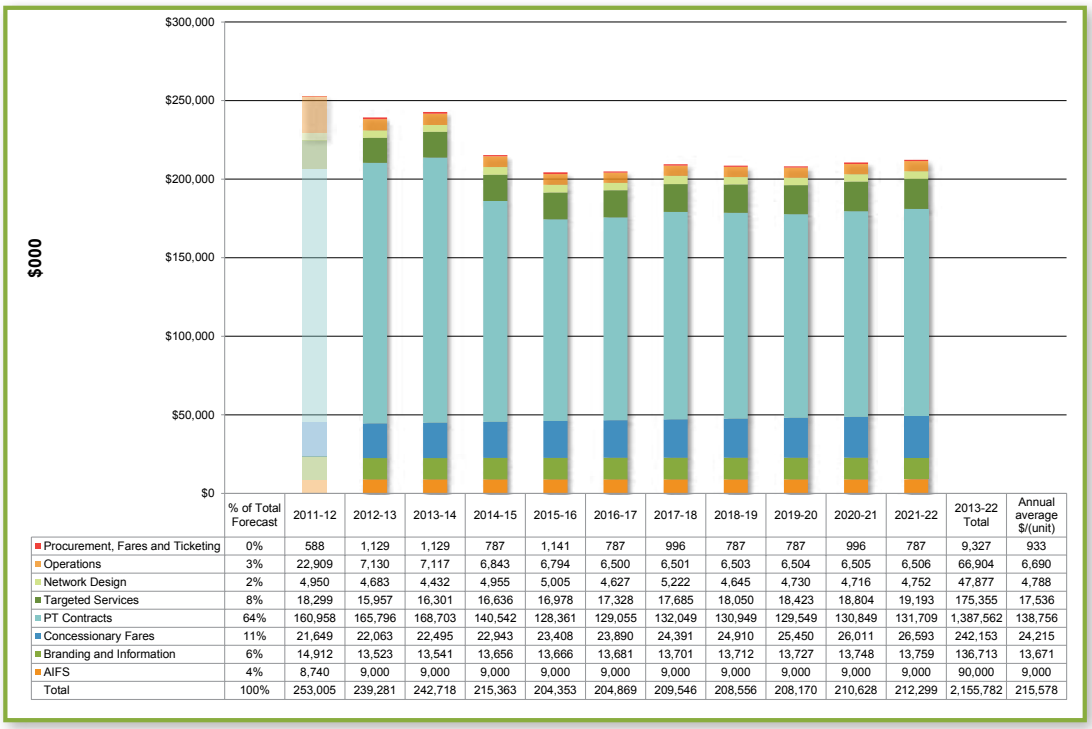
New works plan

This section of the plan covers the creation of new assets or works which upgrade or improve an existing asset beyond its existing capacity or performance in response to changes in usage or customer expectations.

New works programmes

A proposed forward works programme of capital new projects and associated cost projections is shown in Table 4.5-3. Providing customer information and real-time information is the focus of the 10-year programme.

Figure 4.5-1 Planned Public Transport Services operations and maintenance expenditure
Source: LTP Budget Model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	Annual average $/(unit)
Procurement, Fares and Ticketing	0%	588	1,129	1,129	787	1,141	787	996	787	787	996	787	9,327	933
Operations	3%	22,909	7,130	7,117	6,843	6,794	6,500	6,501	6,503	6,504	6,505	6,506	66,904	6,690
Network Design	2%	4,950	4,683	4,432	4,955	5,005	4,627	5,222	4,645	4,730	4,716	4,752	47,877	4,788
Targeted Services	8%	18,299	15,957	16,301	16,636	16,978	17,328	17,685	18,050	18,423	18,804	19,193	175,355	17,536
PT Contracts	64%	160,958	165,796	168,703	140,542	128,361	129,055	132,049	130,949	129,549	130,849	131,709	1,387,562	138,756
Concessionary Fares	11%	21,649	22,063	22,495	22,943	23,408	23,890	24,391	24,910	25,450	26,011	26,593	242,153	24,215
Branding and Information	6%	14,912	13,523	13,541	13,656	13,666	13,681	13,701	13,712	13,727	13,748	13,759	136,713	13,671
AIFS	4%	8,740	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	90,000	9,000
Total	100%	253,005	239,281	242,718	215,363	204,353	204,869	209,546	208,556	208,170	210,628	212,299	2,155,782	215,578

Table 4.5-3 New works 10-year forecast
Source: LTP Budget Model 12 April 2012 after refresh for AMP

Expenditure type	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total ($000)
Customer services project	2,600										2,600
Local Board initiatives	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	21,000
Wynyard Quarter Te Wero Bridge								400	750	1,000	2,150
Regionwide RTN land purchase				5,000	5,000	5,000	5,000	5,000	6,000	6,000	37,000
AIFS	5,193										5,193
Customer info incl real time	2,671	5,303	4,004	1,208	1,211	2,714	5,267	3,570	974	2,478	29,398
TOTAL	12,193	7,403	6,104	8,308	8,311	9,814	12,367	11,070	9,824	11,578	96,970

Figure 4.5-2 Summary of Public Transport Services 10-year expenditure
Source: LTP Budget Model 12 April 2012 after refresh for AMP

	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
CAPEX New Works	4%	000	12,193	7,403	6,104	8,308	8,311	9,814	12,367	11,070	9,824	11,578	96,970
Operations & Maintenance	96%	253,005	239,281	242,718	215,363	204,353	204,869	209,546	208,556	208,170	210,628	212,299	2,155,782
TOTAL	100%	253,005	251,474	250,121	221,467	212,661	213,180	219,360	220,923	219,240	220,452	223,877	2,252,752

4.5.6 Summary of 10-year network needs

The total amount of expenditure operations and maintenance and new works over the next 10 years is $2.3 billion as shown in Figure 4.5-2. Operations and maintenance makes up most of this expenditure at 96 per cent.

4.5.7 Approved Long Term Plan envelope

The approved Long Term Plan

This section compares the approved LTP envelope for OPEX and renewals with the public transport services network needs as determined by this AMP at a regional level and identifies the likely impacts of any variances. Revenue and funding incomes to Auckland Transport (from Auckland Council ratepayers and NZTA government subsidies and the like) are allocated through the approved Long Term Plan budgets. The LTP was adopted on 28 June 2012.

OPEX impacts

The apparent variance of $43 million over 10 years shown in Table 4.5-4, is not a reduction in OPEX, but rather a re-allocation from public transport services to rail and bus related infrastructure as well as a re-assessment of fare and lease recoveries.

Table 4.5-4 Variance between LTP approved budget and AMP network needs for public transport services (all un-inflated) **Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012**

Public transport services	10-year total LTP approved budget ($000s un-inflated)	10-year total AMP network needs ($000s un-inflated)	Variance 10-year total ($000s un-inflated)
Operations and maintenance	2,112,691	2,155,782	-43,091
Renewals	0	0	0
Public transport services total	2,112,691	2,155,782	-43,091

Therefore, based on the information above, public transport services operational expenditure shows no variance between the LTP allocated budgets and the AMP needs. However it is anticipated that the LTP will require further efficiency savings and therefore a funding gap for public transport expenditure may eventuate.

Renewals impacts

Based on the information above, public transport services capital renewals expenditure shows no variance between the LTP allocated budgets and the AMP needs.

Further efficiency savings

As required by the approved LTP, a further reduction in OPEX of $18.6 million per year, reducing to nil by 2016/17, will need to be allocated against asset related operational budgets. The impact of this reduction on public transport services operational budgets is yet to be assessed and finalised.

Monitoring and management of Long Term Plan consequences

The consequences resulting from these variances will be monitored and reported as appropriate.

CAPEX new works

CAPEX new works contained in this AMP are derived from draft LTP listings as at April 2012 and are produced in section 4.5.5.

The capital new works programme has been further refined and adopted in late June 2012. Details of this adopted programme are contained in the LTP.

AMP inflation effects

Un-inflated and inflated public transport services needs for the AMP are shown in Table 4.5-5.

LTP inflation effects

Un-inflated and inflated public transport services budgets from the LTP are shown in Table 4.5-6.

Table 4.5-5 Un-inflated and inflated public transport services AMP needs

Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

UN-INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		239,281	242,718	215,363	204,353	204,869	209,546	208,556	208,170	210,628	212,299	2,155,782
Renewal		0	0	0	0	0	0	0	0	0	0	0
Public transport services total		239,281	242,718	215,363	204,353	204,869	209,546	208,556	208,170	210,628	212,299	2,155,782
AC Inflator	OPEX	3.30%	3.30%	3.30%	3.30%	3.50%	3.60%	3.10%	3.10%	3.30%	3.60%	n/a
AC Inflator	CAPEX	3.90%	3.40%	2.80%	2.90%	3.10%	3.30%	3.50%	3.70%	4.00%	4.00%	n/a
INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		247,177	259,002	237,395	233,143	242,146	255,352	262,024	270,170	283,201	295,724	2,585,332
Renewal		0	0	0	0	0	0	0	0	0	0	0
Public transport services total		247,177	259,002	237,395	233,143	242,146	255,352	262,024	270,170	283,201	295,724	2,585,332

Table 4.5-6 Un-inflated and inflated public transport services LTP budgets

Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

UN-INFLATED expenditure ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M		231,065	228,372	208,386	203,465	204,723	207,204	206,333	205,566	207,946	209,631	2,112,691
Renewal		0	0	0	0	0	0	0	0	0	0	0
Public transport services total		231,065	228,372	208,386	203,465	204,723	207,204	206,333	205,566	207,946	209,631	2,112,691
AC Inflator	OPEX	3.30%	3.30%	3.30%	3.30%	3.50%	3.60%	3.10%	3.10%	3.30%	3.60%	n/a
AC Inflator	CAPEX	3.90%	3.40%	2.80%	2.90%	3.10%	3.30%	3.50%	3.70%	4.00%	4.00%	n/a

INFLATED expenditure ($000s)	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	10-year total 2013-22
O&M	238,690	243,693	229,705	232,130	241,974	252,498	259,231	266,790	279,594	292,008	2,536,312
Renewal	0	0	0	0	0	0	0	0	0	0	0
Public transport services total	238,690	243,693	229,705	232,130	241,974	252,498	259,231	266,790	279,594	292,008	2,536,312

4.5.8 Revenue plan

Revenue and funding incomes to Auckland Transport are managed through Auckland Transport's SAP financial management system.

Public transport services are usually entitled to subsidy funding from NZTA of 50 to 59 per cent. Other public transport services, such as Total Mobility services, are eligible for funding subsidies of 100 per cent.

Some contracted services currently attract funding of 59 per cent; however this is reducing by one per cent per annum to 50 per cent over 10 years. However, typically not all of the activities that are eligible for subsidy will be accepted by NZTA because capping limits are usually applied based on available funds from NZTA. The remainder is funded by ratepayers, farebox recovery and various other user-pay income sources.

4.5.9 Key improvement initiatives

There have been no key improvements identified at this stage. However, key improvements, together with the key issues identified earlier in this section, will be reviewed on a continual basis.

Major proposed Public Transport Services key improvement initiatives are:

Service contract improvements	Implementation of the Public Transport Operational Model (PTOM) and progressive rollout of new contracts
Community Transport services	Explore options for community-based transport initiatives in areas where regular scheduled services are not cost-effective
Service design review	A staged programme of service reviews is currently taking place across the region

5 Sustainability

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Auckland Transport
An Auckland Council Organisation

5 Sustainability

5.1 Overview

Auckland Transport has a primary responsibility for managing and controlling all assets and activities within Auckland's urban and rural road network. The road corridor does not exist in isolation from its users and wider transport matters, nor do Auckland Transport's accountabilities sit apart from the communities both served and shaped by these networks.

In this context, Auckland Transport has both the opportunity and the responsibility to adopt a holistic and integrated approach to its asset management and operations. Inherently, this requires a longer term and sustainable view.

However, 'sustainability' operates at several levels and is considered in terms of the practices, methods, designs, devices and approaches adopted. If embedded and seamlessly integrated into the organisation, sustainability can provide a powerful and positive difference to the way Auckland Transport operates and serves its stakeholders and communities.

5.1.1 Purpose

The purpose of this section is to provide an overview of sustainability as it relates to asset management roles and responsibilities, and list current legislation, strategies, plans and key performance indicators (KPIs) and their progress.

This section sets out how sustainability is embedded in Auckland Transport processes, projects, and culture so that outcomes are more robust and sustainable over the longer term. Current sustainability initiatives are highlighted to demonstrate how Auckland Transport is going beyond business as usual whilst managing its assets. These initiatives provide exemplars for how future projects may evolve and further actions to reflect the key result area – a sustainable network, future levels of service, asset management KPIs and key asset issues.

5.1.2 Approach and management of effects

Auckland Transport's assets are complex and are interwoven with many other aspects, so there is not one 'thing' that can be implemented to adopt a sustainable approach; instead a multi-faceted and multi-disciplinary response is required.

Effects associated with transport activities can be both positive and negative. On the positive side, improved traffic flows reduce environmental impacts, the transport network contributes to a more liveable city, and the road corridor contributes to our sense of place.

Table 5.1-1 shows a range of the common negative effects associated with the organisation's activities and assets as identified in Section 1, Introduction. A transport activity that has a negative effect may also have an associated positive effect for transport users, which can provide opportunities and offer a more balanced representation of transport activities. For example, travel disruption and congestion due to construction and maintenance of transport infrastructure is identified as a negative effect of transport activity. Balanced against this is the positive impact that an action such as sealing an unsealed road has for traffic and emergency services to access destinations far more quickly than previously. An opportunity to communicate this benefit to transport users is a useful way of providing a balanced view of transport activities.

Some of these opportunities, or accelerated actions that hasten an opportunity or the benefits of mitigation, may have already been adopted. Negative effects are frequently beyond Auckland Transport's direct control (for example, environmental impacts such as air pollution rely on emissions standards). This does not mean that Auckland Transport can or should dismiss its responsibility to act. It means instead looking at what can be controlled (e.g. specifying emission standards for public transport operators), what can be influenced (e.g. lobbying central government or other agencies with direct control of the matter) and encouraging sustainable transport modes through providing an effective network.

Asset Management's ability within Auckland Transport to directly control negative effects is limited further in that projects relate only to maintenance and renewals. That said, Asset Management can still influence projects outside of the department's remit.

The range of effects associated with the organisation is dynamic and can change over time in size or because of greater awareness and improved information about how activities are affecting the four well-beings. Being aware of, and able to anticipate and capitalise on, change is important.

Table 5.1-1 Summary of significant negative effects and associated opportunities

Negative effect	Mitigation measures	Accelerated action / opportunity
Travel disruption and congestion due to construction and maintenance of transport infrastructure Social: ✓ Economic: ✓ Environmental: Cultural:	Measures such as programming the timing of works as fast as practicable at times to minimise disruption, ensuring the work is managed in a way that minimises disruption and ensures the safety of the public, and by communicating effectively with travellers and communities likely to be affected	Communicate to transport users that there will be new or well-maintained infrastructure Collaborate with community regarding construction scheduling to compress construction duration and disruption to neighbours
Environmental impacts, such as air pollution and water pollution Social: ✓ Economic: ✓ Environmental: ✓ Cultural: ✓	Specifying standards relating to the emissions of public transport vehicles provided by commercial and contracted operators	Communicate to transport users the value of low emissions public transport vehicles Advocate for change Encourage and maintain water sensitive urban design
Traffic crashes and resulting injuries and deaths Social: ✓ Economic: ✓ Environmental: Cultural:	Incorporating good road safety practice on roads, addressing crash black spots through appropriate engineering and regulation measures, and through community road safety programmes	Proactively address issues with black spots and communicate to transport users how lives are saved by safety programmes
Disruption to communities affected by increased traffic flows and undesirable traffic behaviour Social: ✓ Economic: ✓ Environmental: ✓ Cultural: ✓	Identifying locations where traffic characteristics are inappropriate to the function of the road and introducing measures such as traffic calming and traffic regulation to improve traffic behaviour	Create community cohesion. Add amenity value; provide a valuable pedestrian and/or cycle environment Encourage water sensitive urban design or transport-orientated design Integrate with wider Auckland Council spatial planning initiatives to create cohesive communities
Noise from transport activities disturbing communities Social: ✓ Economic: Environmental: ✓ Cultural:	Complying with District Plan rules and consent conditions, and actively implementing noise reduction measures on major transport projects	Influence planning mechanisms to reduce the risk of reverse sensitivity
Major transport corridors divide communities Social: ✓ Economic: Environmental: Cultural:	Introducing pedestrian-friendly features and urban design features where possible	Create community cohesion. Add amenity value to area with urban design features and create pedestrian access Integrate with wider Auckland Council spatial planning initiatives to create cohesive communities
Waterway contamination by stormwater run-off from road surfaces Social: Economic: Environmental: ✓ Cultural: ✓	Installation of contaminant trapping devices at sensitive locations and implementing innovative design solutions on new developments to treat stormwater run-off at source (where practicable)	Communicate to the public innovative measures that deal with contaminants and have an amenity value Encourage water sensitive urban design and amend maintenance and asset management mechanisms to adapt to 'green engineering'

5.2 Overarching sustainability management

Sustainability encapsulates the four well-beings – social, cultural, economic and environmental, which are all interrelated. So what does this mean for Auckland Transport, particularly as a new organisation?

Typically, an organisation or project moves through a progressive approach to sustainability (Figure 5.2-1).

Auckland Transport has an opportunity to evolve through to a fully integrated and 'mature' approach to sustainability (stage 3). How embedded sustainability might be achieved through its asset management is addressed in Section 5.3.

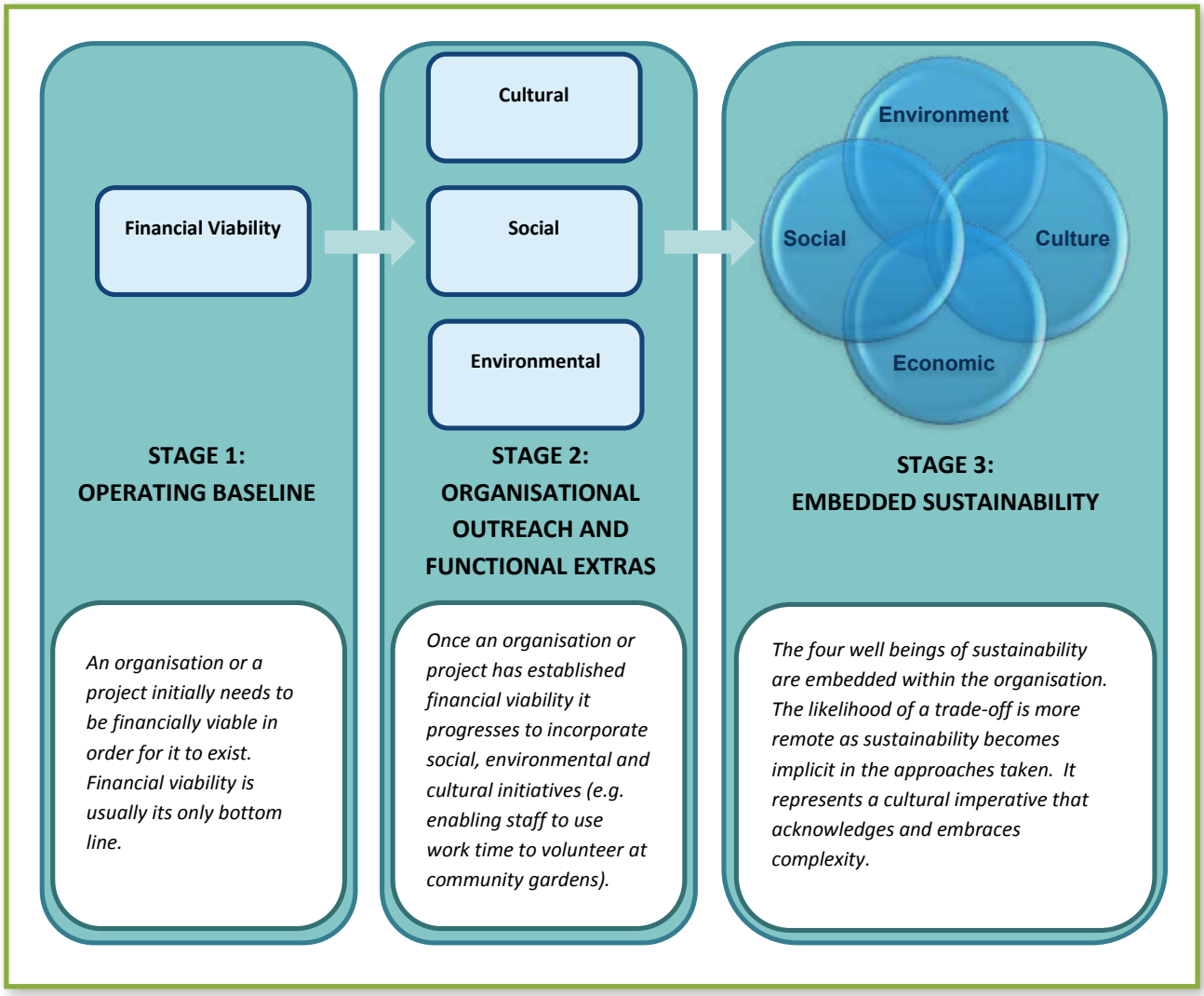
5.3 Overarching drivers

5.3.1 Legislation

The Land Transport Management Act 2003 (LTMA) is the principal legislation that governs the land transport planning and funding system. Sustainability is embedded in the purpose of the LTMA, which is to:

> *"Contribute to the aim of achieving an affordable, integrated, safe, responsive, and sustainable land transport system. To contribute to that purpose, this Act... improves social and environmental responsibility in land transport funding, planning, and management."*[1]

Figure 5.2-1: Sustainability: Progress of an organisation or project
Source: Anguillid Consulting Engineers and Scientists Ltd



The LTMA highlights that in order to achieve part of its purpose – a sustainable land transport system – transport projects at the funding, planning and management stages need to incorporate social and environmental responsibility. Essentially, this requires a quadruple bottom line approach (i.e. across all the four well-beings) because just as financial matters are part of the wider LTMA, cultural aspects can be viewed as an inherent part of social and environmental responsibility.

The Local Government Act 2002 (LGA) recognises the need for local government authorities to be autonomous and respond to the differing needs of their communities. The LGA offers local government a devolved role in which they can develop their own sustainable development approach. This is highlighted in the LGA which has the stated purpose to:

> *"provide for democratic and effective local government that recognises the diversity of New Zealand communities and, to that end, this Act...*
>
> *(d) "provides for local authorities to play a broad role in promoting the social, economic, environmental, and cultural well-being of their communities, taking a sustainable development approach."(s3(d) Local Government Act, 2002)*.

Central Government is currently considering the reform of s3(d) of the LGA. It is proposed that references to the "social, economic, environmental and cultural well-being of communities"[2] be replaced with "providing good quality local infrastructure, public services and regulatory functions at the least possible cost to households and business."[3] Whilst the current draft of the reform (which will be progressed in Parliament after this document is finalised) excludes any explicit mention of the well-beings, these will remain relevant to Auckland Transport as the well-beings represent the underlying principle and well understood principles of sustainability. They are reflected in other relevant legislation, including the LTMA and the RMA, both of which apply to Auckland Transport.

5.3.2 Strategies and plans

Every three years, the National Land Transport Programme (NLTP) gives effect to the Government Policy Statement (GPS) and identifies the transport activities that are likely to be funded. With a 10-year outlook, the programme is influenced by the Regional Land Transport Strategy (RLTS) and asset management plans.

[1] s3, Land Transport Management Act, 2003.
[2] Department of Internal Affairs, Better Local Government, 2012.
[3] Department of Internal Affairs, Better Local Government, 2012.
[4] Auckland Council, Auckland Plan, 2012.
[5] Auckland Council, Auckland Plan, 2012.

The Auckland RLTS identifies several objectives that relate to sustainability's four well-beings:

- Assisting economic development
- Assisting safety and personal security
- Improving access and mobility
- Protecting and promoting public health
- Ensuring environmental sustainability
- Achieving economic efficiency.

An analysis of the Auckland Plan highlights that Auckland Transport may be managing assets in the future that are complex, serve multiple purposes, have a broader context and incorporate different design elements. Some of the environmental design principles emphasised in the Auckland Plan include stormwater disposal, such as low impact design, swales, soakage pits, rain gardens and the use of recycled or reused materials.[4]

Auckland Council's Unitary Plan will be developed to replace the District and Regional plans and will be the key way of implementing the Auckland Plan. The council also identified principles to achieve the vision and outcomes of the Auckland Plan; these are:

- Work together
- Check progress and adapt to improve
- Be sustainable
- Make the best use of every dollar spent
- Value te Ao Maori
- Act fairly.

These principles reflect sustainability, where people, economy and the environment are interlinked; preserving the environment also sustains society and the economy. This approach is also consistent with te Ao Maori where the understanding of sustainability includes a strong focus on the natural environment but is also linked with society, culture and the economy.

The principles, along with a discussion of each, are listed as follows:

1. ***Work together*** – *"Work collaboratively and as partners on the priorities identified in the Auckland Plan. Recognise the interdependence of projects, programmes and initiatives."*[5]

Auckland Transport's Statement of Intent (SOI) highlights the important relationship between the organisation, Auckland Council, and other council-controlled organisations. In particular, Auckland Transport provides input into the development of council plans, such as the Auckland Plan, the Long-term Plan (LTP), the Unitary Plan and the Annual Plan. Alignment of infrastructure and service-level

investments with other agencies and organisations allows for better use of existing assets and better allocation of new investments.

The SOI also identifies major road construction projects, planned public transport initiatives and Auckland Transport's contribution to other external agency-led projects. A strong relationship between internal Auckland Transport departments, Auckland Council and other agencies is important in order to provide input into the projects at the design stage and also to gather information for the lifetime management of the assets after their completion.

Involving asset managers at the design stage of a project can also put Auckland Transport in a stronger position to meet its KRAs of delivering efficient, effective, safe and sustainable networks.[6]

Since asset managers have influenced the earlier project phases, they:

- May have influenced the design to better reflect operational needs
- Should have a better understanding of community issues and ideally an existing relationship with the communities our assets will serve
- Can plan for the assets and ensure they have all the relevant asset information to deliver against all of the asset performance requirements (including non-financial and non-engineering requirements).

2. ***Check progress and adapt to improve –*** *"Monitor and evaluate every initiative to ensure we move in the right direction. Adapt accordingly and continually improve the way we are working to achieve Auckland's vision."*[7]

Identifying how Auckland Transport is progressing towards meeting its objectives and KRAs, as well as community expectations is imperative. This assessment of progression recognises project performance while evaluating how Auckland Transport can continue to improve, and may also result in a project moving beyond business as usual.

There is an opportunity to go beyond some of asset management's conventional concepts and to embed emerging and leading-edge asset management practices that reference sustainability concepts, including:

- **Infrastructure equity development:** This goes beyond established lifecycle management approaches with the aim of building knowledge equity within infrastructure management processes (of which asset management is a key part). This innovative framework is particularly relevant where design integrity and higher performance outcomes have been sought or required
- **Place-based management – the community-oriented results / co-ordinated operating requirements (CORe):**[8] All four well-beings are represented in this approach. KPIs for maintenance specifications that concern the community and cultural aspirations are included. A combined approach to infrastructure management can lead to economic efficiencies and finally an environmental benefit, where assets achieve their desired environmental outcome due to methods appropriate for asset management and operations.[9]

Asset managers have a role in influencing how assets are both delivered into the asset management process, and in turn, how these assets function and create a sense of place. The community is not generally concerned with what they see as an arbitrary asset, department, operating, or organisational division; they interact with their space, the environment and each other within this context. It is these interactions that contribute to achieving the Auckland Plan's vision of the world's most liveable city, and the ability for the asset management process to influence other parts of the greater organisation is key to that.

3. ***Be sustainable –*** *"Take a long-term view and have the resilience and flexibility to adapt to changing conditions that affect our communities, our economy, our environment and our infrastructure. Do more with less."*[10]

By managing assets sustainably, we meet the users and/or the communities' expectations and their needs for the future and address one of Auckland Transport's KRAs – a sustainable network. Auckland Transport's Levels of Service framework is included in Section 2.6.

Given that change is constant and can occur in many different forms, assets designed, managed and maintained to be robust and resilient should be able to respond and adapt to these changes in the surrounding environment over time. Areas relevant to Auckland Transport include:

- Civil defence events/natural disasters
- Climate change
- Population
- Technology.

[6] Asset Management has a role to contribute towards this sustainability KRA that is discussed later in section 5.4.
[7] Auckland Council, Auckland Plan, 2012.
[8] Co-ordinated Operating Requirements and Community Orientated Results.
[9] For additional information about the CORe please refer to the White Paper CORe Services: A Step Change Opportunity (Anguillid Consulting Engineers and Scientists Ltd, April 2011).
[10] Auckland Council, Auckland Plan, 2012.
[11] Auckland Council, Auckland Plan, 2012.
[12] New Zealand Transport Agency's, Procurement Manual, November 2009.

Civil defence scenarios, such as an earthquake or a major flood, pose a threat to the transport network with the risk that key lifeline links could be disabled. To build resilience, asset managers can manage the design and specify the durability of an asset at the development stage. This information can also be used to maintain and renew lifeline link routes and therefore reduce negative impacts on assets during a civil defence event.

Climate change and the associated predicted sea level rise present a need to adapt and manage assets in a way that minimises impacts. Failure of structures such as sea walls and wharves has potential to cause a major disruption to the transport network. Identifying asset condition and performance will therefore become increasingly important as additional factors that could undermine asset integrity become more prevalent or frequent.

Given rapid population growth trends in Auckland, asset managers will be operating in an environment of increased demand and pressure on the transport network. Figure 5.3-1 highlights the likelihood of a significant increase in use of trains and buses; so anticipating the maintenance and renewals needs of the network is particularly relevant.

Auckland Transport is operating with an increasing – and an increasingly diverse – asset base. It is important to understand and fill any knowledge gaps about how these diverse assets operate optimally.

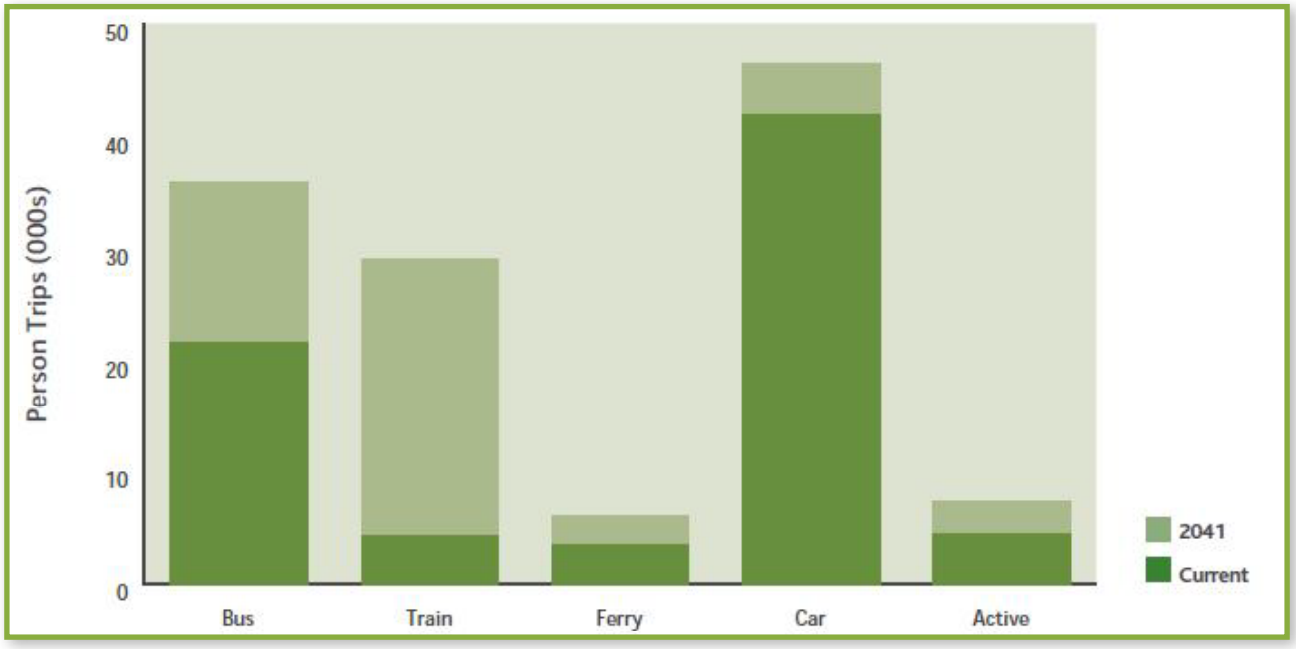
4 ***Make the best use of every dollar spent –*** *"Act prudently and commit to projects and initiatives that achieve the best value result without compromising quality, or stifling creativity and innovation. Focus on achieving long-term benefits and intergenerational equity."*[11]

The Ministry of Transport has highlighted three main concepts that guide NZTA and local government when making funding decisions; these are effectiveness, efficiency, and safety. NZTA in turn has identified financial and non-financial attributes associated with efficiency and economy:

"Non-financial attributes may include:

- Quality (e.g. of the supplier or product)
- Impact on communities and the environment (e.g. positive or negative impacts on connectivity, disruption and pollution)
- Design integrity (e.g. arising from capable and skilled suppliers)
- Innovation (e.g. meeting LTMA outcomes via an agreed output variation from that originally specified)
- Whole-of-life considerations (e.g. when considering the longevity of value against maintenance costs of different materials over the life of the asset)
- Training and development opportunities (e.g. by valuing suppliers that invest in workforce capability)
- Health and safety practices (e.g. by valuing suppliers that meet certain specified standards)
- Capital invested."[12]

Figure 5.3-1 Modal person trips in Auckland – current and 2041
Source: The Auckland Plan Discussion Document version 1.1 2011



Auckland Transport's SOI shows that there is space for non-financial measures as well as financial measures which offers a broad assessment of activities and aligns with the need to take a broader view of 'value for money'. This also means there is an opportunity (and in fact a need) to record non-financial measures that include sustainability features of projects and report to both the public and respond to the Auditor General's Auditing Standard 4 (AG-4) regarding Auckland Transport's sustainability progress.[13]

Clearly then, making the best use of every dollar spent is not just delivering more for less money; there is a broad variety of non-financial attributes ranging from internal organisational practices through to consideration of the actual asset.

Creating assets that do not balance these needs (e.g. design life, expectations and/or environmental outcomes) means that rework is likely to be required. Creating assets that are right the first time is therefore optimal as it is economically efficient, and socially and environmentally expedient.

5 ***Value te Ao Maori –*** *"Acknowledge the special place of Mana Whenua and enable their participation in decision making. Build lasting and reciprocal relationships with Auckland's Maori."*[14]

Te Ao Maori has been illustrated as "how Maori perceive their environment and the inter-relationship of the spiritual world, the living world and the natural world."[15] It represents a holistic worldview with interlinkages and connections between the wider environments. Recognising this is a useful way of understanding and valuing the dynamic relationship Maori have with the world and how this relates to Auckland Transport.

Taking a holistic approach to sustainability and embedding it within the organisation creates an opportunity for asset management to influence and give real effect to valuing te Ao Maori. Incorporating a te Ao Maori perspective into transport projects at the concept and design stage will ensure te Ao Maori is valued from the project's outset – although giving value to te Ao Maori means going beyond consultation at the design stage.

[13] AG-4 requires consideration of non-financial performance, which is particularly important with regard to sustainability as it provides Auckland Transport with an opportunity to display their sustainability performance and show how well they are performing.
[14] Auckland Council, Auckland Plan, 2012.
[15] Ministry of Justice, *He Hinatore ki te Ao Maori A Glimpse into the Maori World*, March 2001.
[16] *The Journal of the Polynesian Society*, Kaitiakitanga: A Maori Anthropological Perspective of the Maori Socio-environmental Ethic of Resource Management, 2000.

The document *Te Toi Roa: Towards an Evaluation Methodology for Mana Whenua and Mātaawaka Wellbeing in Tāmaki Makaurau* was developed for Auckland Council's Independent Maori Statutory Board.

The document identifies that iwi groups have requested the council to provide:

- "Equal access to high quality local services and facilities. There are many communities that experience financial, transport, locality barriers and are unable to gain access to Council facilities, and...
- Manage resources in accordance with iwi management plans."

Te Ao Maori resonates well with a place-based approach to asset management and sustainability principles as a whole. This approach encompasses community, economic, cultural and environmental aspects, and is couched in an environment or an area. Also, because the environment as a whole is being perceived, it is being monitored meaning any new interactions or issues can be anticipated or identified at the outset, and therefore represents a proactive approach to asset management.

Kaitiakitanga is a practice of guardianship and resource management that "embraces social and environmental dimensions. Human, material and non-material elements are all to be kept in balance."[16] Kaitiakitanga is continually changing and "adapting to new circumstances created by law, policy, infrastructural development, shifts in human, bio-physical and capital resources."[17] This highlights the opportunity for Mana Whenua to participate in the ongoing stewardship of Auckland's transport assets.

Auckland Transport's approach to stewardship differs from the Resource Management Act 1991 (RMA) interpretation of kaitiakitanga. Instead, given that the concept of kaitiakitanga has many dimensions, a broad literal definition has been taken that represents a commonality between asset management and Maori in order to facilitate understanding and progress forward.

Asset management also relates to guardianship and as a discipline it is continually evolving due to legislative changes and the emergence of new types of assets.

6 ***Act fairly –*** *"Consider the needs of all groups in the community to ensure that all Aucklanders can participate equally."*[18]

[17] *The Journal of the Polynesian Society*, Kaitiakitanga: A Maori Anthropological Perspective of the Maori Socio-environmental Ethic of Resource Management, 2000.
[18] Auckland Council, Auckland Plan, 2012.

Auckland Transport has a responsibility to provide assets in an equitable manner throughout the Auckland region across the following areas:

- Quality over geographical areas
- Generations
- Asset types – roads, public transport, footpaths.

A range of assets has been created in different geographical areas – urban, rural and suburban – over the wider Auckland region. Equitable quality of these assets is important as it displays a consistent approach without apparent preferential treatment. This standard of assets can also reflect willingness to pay (not ability to pay) and the relative priorities of a given community. It provides for another aspect – communities' aspirations or decisions – to be included when developing asset management priorities.

Approximately "90 per cent of the land mass of the Auckland region is rural (this includes rural townships), with transport needs that are often different from the needs of urban communities"[19]. However, the majority of the population lives in urban areas, which presents an obvious tension and means maintenance and renewals decisions need to be made with that in mind. Socio-economic performance varies and as a result assets may need to be managed differently within particular locations.

Intergenerational asset equity is strongly associated with managing assets in a way that will allow their continual use by future generations, aligning with the original Brundtland definition of sustainable development: "development which meets the needs of current generations without compromising the ability of future generations to meet their own needs."[20] Therefore when assets operate to their whole-of-life design intent, intergenerational equity is provided.

Providing intergenerational equity relates to lifecycle management and asset purpose over its whole life, rather than at an immediate point within its lifecycle. This approach facilitates anticipatory decisions; thereby encouraging a proactive response to asset management.

Acting fairly across the asset types is also important, and managing complexity is key to this. Beyond hard infrastructure, Auckland Transport needs to be mindful of also managing:

- Assets linked to statutory compliance. Many assets are linked to consent or designation conditions which require certain outcomes or performance (e.g. noise baffling glass panelling, swales and stormwater treatment devices)
- Assets that require high service levels (e.g. town centre paving, street furniture, public transport facilities), where architectural or higher levels of maintenance frequency and performance outcomes are required for amenity reasons
- Green infrastructure. Plants and vegetation may often be used as part of the engineering controls, especially in water sensitive urban design or low impact design developments. Vegetation needs to be maintained to retain this engineering function rather than just the aesthetic component.

For Auckland Transport to adopt an integrated and embedded view of sustainability, it will need to critically review its existing asset management framework and expand and adjust this over time to accommodate and care for the complexity within its asset base. This is the underlying concept of the asset management CORe approach outlined in Section 5.4 and represents a step change for industry, let alone Auckland Transport. Whilst such an initiative will take time to both roll out and embed, it has the potential to result in organisational efficiencies and effective, sustainable performance.

5.4 Implementing sustainability

Some of Auckland Transport's recently implemented projects represent a sustainable approach that has progressed beyond business as usual in terms of sustainability. These projects are highlighted in this section. Each project is described and an additional explanation around how each project addresses the four well-beings (social, cultural, economic and environmental) is provided. Lastly, each of the projects addresses various aspects within the AMP including key asset management issues, future LOS and/or risk or asset performance measures. In so doing, the ability of these sustainability projects to influence and enhance Auckland Transport's performance on many levels is explained, which adds value to these projects and the concepts of sustainability in general.

[19] Auckland Council The Auckland Plan Discussion Document, version 1.1, 2011.
[20] United Nations Report of the World Commission on Environment and Development: Our Common Future, 1987.

Figure 5.4-1 Rain garden – Albany Lakes Precinct
Source: Internet

5.4.1 Projects

Integrated Asset Management Plan

The Albany Lakes Precinct (ALP) comprises two complex developments – Albany Lakes and Civic Crescent where water sensitive urban design (WSUD) features heavily in the asset base, as shown in Figure 5.4-1. The assets were developed to meet community expectations as well as provide for environmental sustainability. However, over a period of several years issues were identified with the long-term operational, maintenance and whole-of-life cost issues associated with WSUD assets. Many of these concerns were centred on roads within the ALP, as conventional maintenance contracts were not always an effective approach for maintaining these multi-functional assets. The Integrated Asset Management Plan for the ALP was developed to address these issues.

The plan provides a framework to assist managers and should make it easier to create and maintain 'green' infrastructure to the original intended standard or to protect existing natural systems. It also promotes greater accountability across non-financial performance indicators. The framework aligns well with the AG4 for Auckland Council long-term plans and integrates asset management requirements for stormwater, streetscapes, parks and transportation assets.

In section 3.2 of the Road Network Asset Management Plan, WSUD is identified as a technological change offering the inherent environmental benefit of reducing the impact on the surrounding ecosystem. The Integrated Asset Management Plan for the ALP transcended this technological change by developing an innovative approach to managing low impact design (LID) assets, allowing the assets' full potential to be attained over their design life.

The plan represents a place-based approach to managing transport infrastructure in the ALP. As a result the approach responds to this key issue associated with drainage:

> *"Significant growth in non-traditional drainage systems such as rain gardens in new developments which will have higher maintenance costs than conventional systems."*

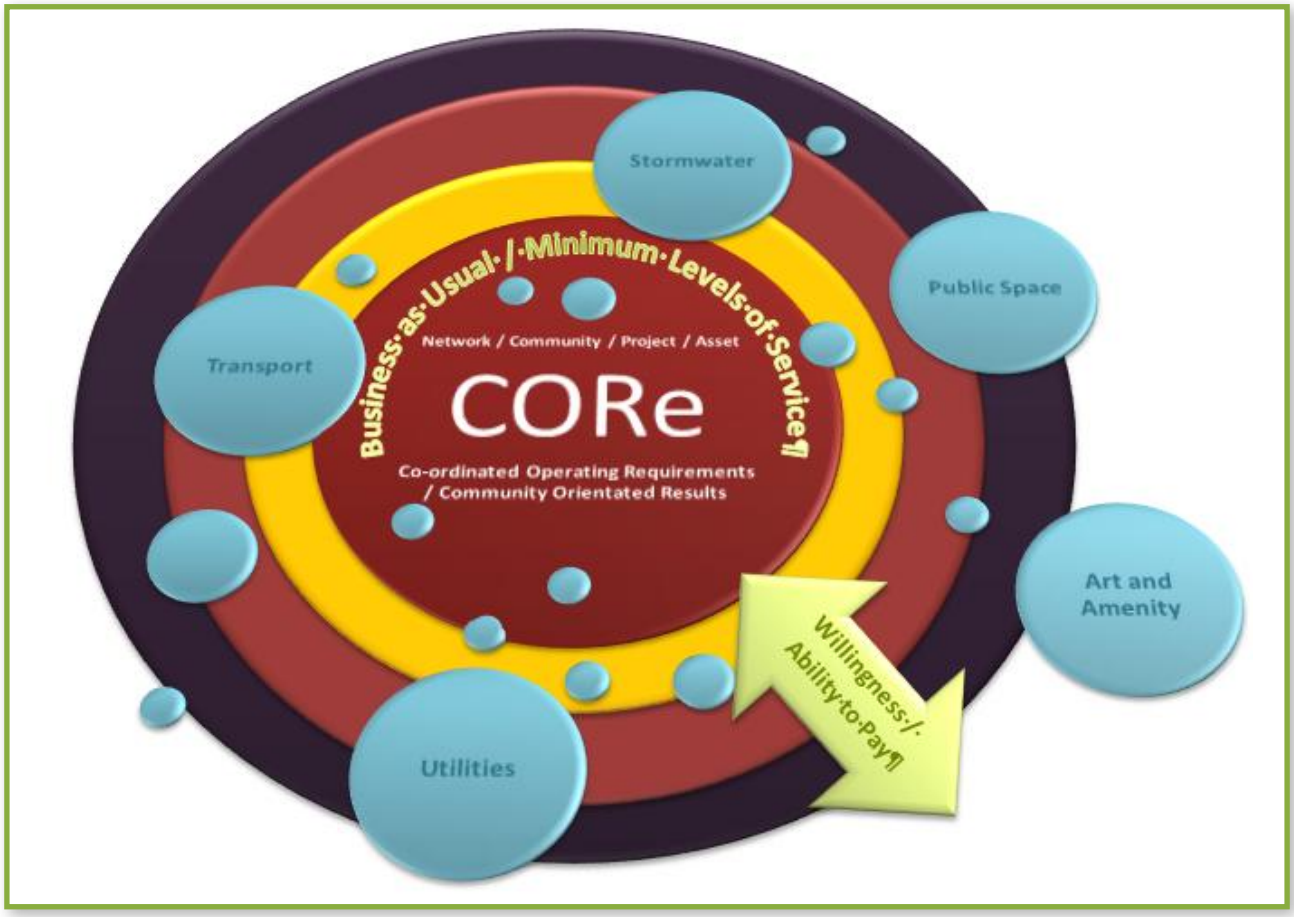
The plan enables some of the stormwater LOS to be achieved, by managing assets in a more effective way so they are operating at their optimum. The future LOS associated with the drainage network is "remove stormwater efficiently from the road surfaces" and the quality level of service, is that "assets are maintained in good condition".

Additionally the plan relates to a future road LOS, which is "improve road user satisfaction to greater than 70% regionally". Within the plan is a focus on Auckland Transport's customer satisfaction and community expectations with the assets it is managing. This represents the idea of community orientated results / co-ordinated operating requirements or the CORe, as shown in Figure 5.4-2.

Table 5.4-1 Sustainability aspects within the Integrated Asset Management Plan

Integrated Asset Management Plan			
Social	**Economic**	**Environmental**	**Cultural**
✓	✓	✓	✓
The plan includes KPIs for maintenance specifications that include community interaction, disruption and retention of amenity. Included within the plan is an asset management framework for the CORe, which is summarised in Figure 5.4-2	**It is expected that a combined approach to infrastructure management, where asset management requirements are integrated across departments will lead to operational efficiencies and an associated reduction in operating costs. Monitoring is proposed to enable this aspect to be further assessed**	**Low impact design (LID) features were not achieving the environmental outcomes originally intended during their operational life. Given that these assets typically have a design life of 20 to 50 years this is a significant risk. The asset management and operational specifications now include environmental outcomes, which were not in the original specifications**	**Cultural aspects have been incorporated into the plan as specifications. Even though these aspects are limited they would not have been included in a conventional maintenance approach**

Figure 5.4-2 CORe Asset Management Framework
Source: Anguillid



Sediment Traps

Auckland Transport has continued the work that Auckland City Council began, which was addressing the water quality of stormwater run-off from the road network.

A series of catchpit pollutant trap devices, called TetraTraps, were installed across the central Auckland area; particularly at sites situated near beaches used for recreational activities. The low maintenance cost filter was inserted into street catchpits over the outlet pipe (as shown in figure 5.4-3) to trap gross pollutants, such as sediment and litter that is washed from the carriageway. These pollutants are captured whilst the TetraTrap remains hydraulically effective.

Testing has shown that the TetraTrap can significantly increase the capture of gross pollutants which reduces pollution and enhances Auckland's stormwater assets.[21]

When combined with an effective road sweeping and catchpit cleaning programme water quality has been found to improve significantly.[22]

[21] New Zealand Local Government, August 2011.
[22] New Zealand Local Government, August 2011.

Figure 5.4-3 TetraTrap
Source: Auckland City Council

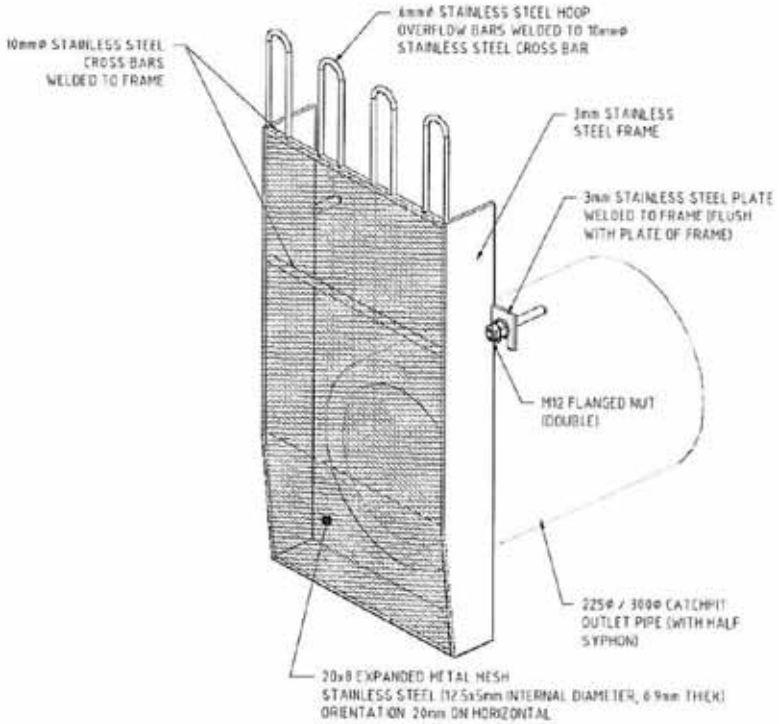


Table 5.4-2 Sustainability aspects of the sediment traps

Sediment Traps			
Social	**Economic**	**Environmental**	**Cultural**
✓	✓	✓	✓
The catchpit traps facilitate communities enjoying the use of local beaches, streams, rivers and/ or estuaries	**Whilst there is a cost associated with installing the trap the cost of maintenance is relatively low and the trap can capture litter that could become a maintenance issue within the stormwater system. Also there is a cost associated with degrading the environment that is more difficult to assess**	**The catchpit trap captures sediment and litter and thus improves the water quality of the streams, waterways and the sea**	**By improving the water quality, the mauri (lifeforce) of the water is acknowledged. Also Auckland Transport is practising guardianship (kaitiakitanga) over the drainage network, shellfish and the water it uses**

There are substantial sustainability benefits associated with this initiative as shown in Table 5.4-2.

This project addresses one of the key issues of the drainage network – "improving stormwater quality and the potential need for treatment of stormwater before discharge to natural watercourses".

The Transport Network Activity Management Plan also highlights a key LOS for the drainage network, which is "minimise network water pollution through compliance with regulatory standards". This project has exceeded this LOS through the installation of catchpit pollutant traps voluntarily (i.e. gone beyond regulatory standards) to improve stormwater quality.

The TetraTrap also helps to address a key issue with drainage, that being "greater public awareness and higher stakeholder expectations for sustainability of stormwater quality particularly road run-off and environmental impacts".

Energy efficient lighting systems

Prior to amalgamation, Waitakere City Council installed light fittings and 20-watt light emitting diodes (LEDs) along seven kilometres of the Project Twin Stream Walk and Cycleways network with the aim of pursuing energy efficiency.[23] Figures 5.4-4 and 5.4-5 show sections of the walk and cycleways with energy efficient lighting.

The LEDs use approximately half the electricity when compared with standard lighting products and are expected to provide more than 100,000 hours of operation. So far energy use, maintenance, spill light and sky glow have all reduced significantly.[24]

Lighting design was also considered within this project as the walk and cycleways is situated within residential areas. District Plan rules regarding spill light were adhered to, whilst also providing adequate levels of lighting. An optimal solution was reached where reducing the spacing between poles to no greater than 35 metres increased the lighting levels considerably, but with minimal additional cost.

Figure 5.4-4 Energy efficient lighting along the Project Twin Streams walk and cycleways
Source: IES Lighting Design Awards Application

This project addresses the future LOS to "reduce power costs through innovative energy efficient technologies" by incorporating energy efficient lighting into the design and as a result decreasing lighting costs.

The Road Network Asset Management Plan identifies several key issues which are addressed by this project:

- "Considerable electricity usage and costs from streetlights...
- Street lighting quality is a key issue for customers and a relatively high proportion of call centre requests for service are received for street lighting. Implement cost-effective ways to improve the level of service and efficiency of street lighting...
- Additional street lighting to walkways."

Table 5.4-3 Sustainability aspects of energy efficient lighting systems

Energy efficiency lighting systems			
Social	**Economic**	**Environmental**	**Cultural**
✓	✓	✓	
The project has reduced maintenance, so it is assumed that interruptions to the community using the walkway and cycleway will reduce. Also the spill light and sky glow have reduced, so nearby residents will not be so affected by light pollution as a result of this project	**The whole-of-life costs of this project were considered at the outset. As a result the project delivered a reduction in energy and maintenance costs and a high level of resistance to vandalism, over the life of the assets**	**Reducing the demand for electricity (and hence CO_2 emissions) and pressure on the electricity network has been achieved through the use of energy efficient lighting technology**	

Figure 5.4-5 Energy efficient lighting along the Project Twin Streams walk and cycleways
Source: IES Lighting Design Awards Application

There are substantial sustainability benefits associated with this initiative as shown in Table 5.4-3.

The project also addresses an aspect of the general decision-making strategy for renewals identified in Section 4.9.1 of the Road Network Asset Management Plan which is to "reduce energy cost of the street lighting network".

Another key improvement initiative is to "adopt best appropriate practices going forward" and this relates to promoting innovations in street lighting technology that reduce energy costs and improve the reliability of the asset.

[23] IES Lighting Design Awards Application, 2010.
[24] IES Lighting Design Awards Application, 2010.
[25] Interlocking blocks as a sealed surface are discussed in Section 4.2.13.3 of the Road Network Asset Management Plan. However, it could be termed as a semi-sealed surface.

Permeable paving on Birkdale Road

Roads inherently generate an environmental issue in that they are an impermeable surface; so when it rains, water washing over the road puts pressure on the stormwater system and degrades water quality.

To address these issues, a permeable paving project was trialled on a section of Birkdale Road for North Shore City Council, a legacy council. The permeable pavement consists of interlocking concrete blocks, arranged with a gap between pavers designed to adsorb stormwater and reduce contaminants that flow to our waterways, streams and harbours.[25]

The permeable pavement was intentionally trialled on a section of Birkdale Road that is on a bus route, experiences regular local through traffic and is located at the entrance to a school – so it is subject to high pavement stress due to traffic turning movements. Figures 5.4-6 and 5.4-7 shows the area of permeable pavement (foreground) and asphalt (background) that was used as a control.

Figure 5.4-6 Close up of permeable pavement
Source: Internet

Table 5.4-4 Sustainability features of permeable paving

Permeable paving			
Social	**Economic**	**Environmental**	**Cultural**
✓	✓	✓	✓
A reduction in water quantity can help to protect communities from flooding over the long term. Also improvements in water quality preserve the communities' use of streams, rivers and harbours	**Under conventional cost benefit analysis the permeable paving project is more expensive than a standard asphalt surface. However, the benefits of permeable paving are not incorporated into the costing analysis. These benefits are financial "savings due to less pressure on stormwater reticulation systems [and] reduced environmental impacts, including hydrologic and water quality (pollution) impacts etc."[27] A shift in cost benefit analysis may be required before permeable paving's true cost (and benefits) are identified**	**The trial was effective at improving the water quality of the run-off and reducing the quantity of the run-off. Water quantity and quality are two key stormwater issues that affect the environment, so this project addressed both of these**	**By improving the water quality of the stormwater run-off we are maintaining the mauri (lifeforce) of the water for Maori and other cultures. Furthermore the water in our harbours is less likely to become contaminated, which would affect the ability of local iwi to harvest healthy seafood**

Figure 5.4-7 Permeable pavement section on Birkdale Road
Source: Yung et al, 2008

The sustainability features of this project are shown in Table 5.4-4.

This project was independently trialled under challenging conditions for a two-year period over which the effectiveness of the surface was monitored. Stormwater run-off at peak flow decreased by an average of 75 per cent during most storms and the volume of total run-off was reduced by about 40 per cent in comparison to run-off from the asphalt on the same section of road.[26]

[26] Yung, C.Y.S, Kodippily, S, Henning, T.F.P, and Fassman, E. 2008. The Sustainability of permeable Road Pavement – The North Shore Experience. Blueprints for Sustainable Infrastructure Conference, Auckland.
[27] Yung, C.Y.S, Kodippily, S, Henning, T.F.P, and Fassman, E. 2008. The Sustainability of permeable Road Pavement – The North Shore Experience. Blueprints for Sustainable Infrastructure Conference, Auckland.

The permeable pavement was also effective at removing pollutants from the run-off. Total suspended solids, copper and zinc were all efficiently removed from the run-off.[27]

The application of permeable paving to part of the road network to address stormwater issues recognises the interconnectedness of the transport network. As a result, this project achieved two of the future LOS within the drainage network section of the Transport Activity Management Plan:

- "Remove stormwater efficiently from the road surfaces
- Minimise network water pollution through compliance with regulatory standards"

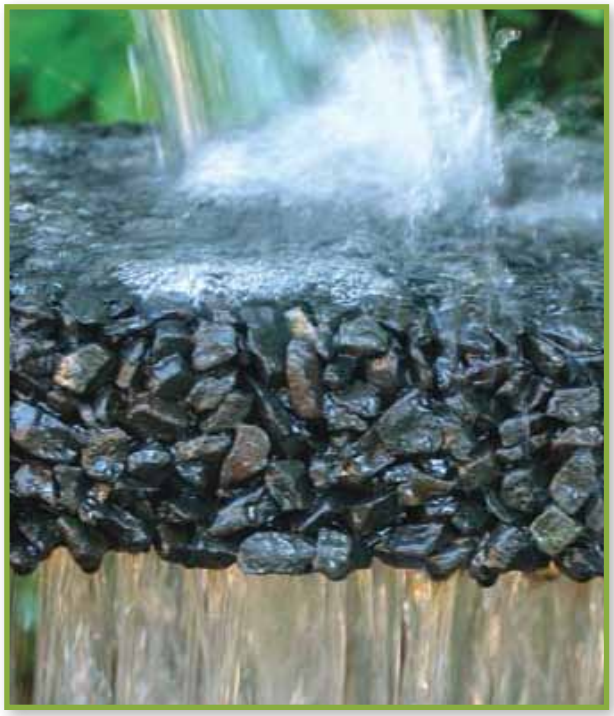
In the Transport Network Activity Management Plan there are two key issues that the project partially, if not fully, addresses:

- "Risk to road base from flooding due to inadequate road drainage
- Improving stormwater quality and the potential need for treatment of stormwater before discharging to natural watercourses".

The pavement performed well under challenging conditions and it is expected to exceed its design life. A project of this type contributes to achieving the LOS associated with a sustainable network which is:

- "Deliver a properly connected arterial road and State Highway network without compromising the environment for future generations."

Figure 5.4-8 An example of a permeable paving product
Source: www.projecttwinstreams.com



Green Road Project

On a section of Church Street (between Avenue Road and High Street) in Otahuhu, Auckland City Council and Fulton Hogan collaborated to reconstruct a road using recycled materials. The lower portion (the sub-base) of the road pavement was formed using recycled crushed concrete (RCC), which was sourced from buildings demolished within Auckland. The upper portion of the pavement was constructed using a combination of millings from existing pavements.

The sustainability features of this project are shown in Table 5.4-5.

This was then strengthened. Finally, the pavement was sealed with asphalt that contained recycled asphalt pavement (RAP). The construction materials were tested and then the road was constructed and completed in June 2008.

The project aimed to recycle RCC and the millings from existing pavements by incorporating them into the rehabilitation of the pavement. As a result, this process of creating a 'green' road reduces the need for new bitumen and aggregates.

Figure 5.4-9 Recycled asphalt pavement
Source: www.sustainableli.org

Table 5.4-5 Sustainability features of a green road project

Green road project			
Social	**Economic**	**Environmental**	**Cultural**
✓	✓	✓	✓
Reduces pressure on the need for landfill space and impacts on adjacent communities	**Given the general rising cost of construction materials, these recycled materials offer a cost effective alternative for future projects**	**RCC and millings from existing pavements were being recycled, which means they were diverted from landfill. As a consequence the need for new materials (aggregate and bitumen) was reduced**	**Reduces the need for additional landfill and impacts on the land and adjacent communities**

Auckland City Council identified that up to 15 per cent RAP could be included in roading projects. Prior to amalgamation contractors had only been using between 5 per cent and 10 per cent due to a lack of suitable RAP. Incorporating recycled materials into projects helps to generate more of a market and therefore helps to expand the supply of RAP.

With the use of recycled materials, this project anticipates the high risk associated with the development of roading assets that is identified in the Road Network Asset Management Plan as "availability and cost of road materials and quality aggregate – economic viability and sustainability of the region". Bitumen and ready mix concrete are significant inputs into the construction of our roads for which prices are expected to rise.

Not only does this project address a risk, it also responds to the asset performance measures used when reporting to Auckland Transport's key stakeholder, Auckland Council. In particular, the Road Network Asset Management Plan identifies Auckland Transport and Contractor Performance. This is measured by:

> *"volume of recycled material used, percentage of recycled material used in pavement reconstructions and new pavements, a proportion of the total volume of material used for those works in the year".*

In responding to an asset performance measure it also represents a technological change, which is envisaged to help manage the demand on the transport network. Reuse and recycling of road materials is identified as a technological change and the likely future impact will be a double positive where waste and the cost of completing the work are both reduced.

Facilities management framework

Auckland Transport is currently developing a facilities management framework for the rail stations, ferry terminals, Northern Busway stations as well as some parking facilities.

The sustainability features of this project are shown in Table 5.4-6.

The framework aims to develop and identify information that is relevant to each facility and retain this information within a central repository. This includes high level documents around governance roles, KPIs and LOS, through to the as built drawings, specifications and emergency management strategies for each facility.

The project will produce an integrated framework for each facility, enabling any maintenance and renewals projects to be performed based on the relevant as built drawings and specifications and consequently maintaining the integrity of the asset over the long term.

An approach of this nature supports some of the operational, maintenance and renewals strategies across the rail, Northern Busway, parking and ferry terminals, which are highlighted in the Public Transport Network Asset Management Plan and the Road Network Asset Management Plan.

A LOS that relates to the quality key service value for wharves and buses is "provide public transport facilities in a maintained condition".

Figure 5.4-10 Passengers at Onehunga Station
Source: www.bettertransport.org.nz

Table 5.4-6 Sustainability features of the facilities management framework

Facilities management framework			
Social	**Economic**	**Environmental**	**Cultural**
✓	✓	✓	
Community expectations can be included within the Framework. Also the aim is to maintain the asset to the level it was built	**More efficient for operational and facilities managers keeping all information in central place for easy access and quick response to maintenance issues**	**Asset is maintained to original level – better maintained so less likely to need as frequent renewals**	

The framework also anticipates a future rail network LOS within the Transport Network Activity Management Plan:

> *"Enhance performance measurement and asset management to achieve enhanced outcomes and increased value for money".*

It relates to the asset management governance risk area where the mitigation measure is "continuous improvement initiatives identified to ensure changing demands and evolving practices are met." The framework will enable effective and efficient operation of the facilities to ensure that the needs of the users are met over the long term.

Manukau Integrated Transport Hub

Manukau Station is now completed and further work to create an integrated transport hub is continuing with the project being fully complete in 2013. Figure 5.4-11 shows how the interior of the transport hub may look.

The project represents a joint development between Auckland Transport and Manukau Institute of Technology; originally developed by Manukau City Council and the Auckland Regional Transport Authority (ARTA). The station was constructed in line with a whole-of-life approach, so the design incorporated materials with a significant design life, as well as materials that function well in an operational and maintenance context.

The majority of the station is constructed using concrete, and steel, as can be seen in Figure 5.4-12. The approach to the building's construction provided environmental benefits as less earthworks were required around the structure compared to an open cut construction. To develop the main structure and

Figure 5.4-11 Artist's impression of the interior of the Manukau Integrated Transport Hub
Source: Auckland Transport

Figure 5.4-12 Concrete surfaces at Manukau Rail Station (under construction)
Source: sustainableconcrete.org.nz

tension piles an aggregate mix was combined with fly ash (residue from the combustion of coal). This diverted a by-product from the waste stream. The aggregate mix also enabled the main structure and tension piles to have an extended 100-year design life.

A series of precast concrete panels were used in the station and the panel surfaces were designed to produce a reflective shine. These exposed panels produce 'visual noise' and have been specially coated. Both of these features deter tagging and will simplify the removal of graffiti in the future. In addition the surface is non-abrasive to skin and clothing, so it is an effective material to use given that it is a space expected to be used by approximately 600,000 passengers every year.[28]

The Public Transport Network Asset Management Plan highlights the purpose of some of the operational activities, which includes maintaining the station in a neat and tidy condition through the removal of graffiti.

Within the Transport Network Activity Management Plan a future LOS is "enhance performance measurement and asset management to achieve enhanced outcomes and increased value for money". The construction of Manukau rail station worked towards achieving value for

[28]Auckland Transport, Annual Report, 2011.

money over the lifetime of the asset by reducing the maintenance budget required to maintain it. This enabled Auckland Transport to meet the LOS whilst minimising whole-of-life costs with effective planning in terms of renewal programmes. From an operational viewpoint it responds to the idea that the asset risk (in this case graffiti) is incorporated into the build of the asset and therefore managed from the outset.

5.5 Performance

5.5.1 Stocktake

Auckland Transport is a new organisation so it is working on projects it has inherited from the legacy councils as well as developing new initiatives. The SOI lists a number of major transport initiatives planned for the next three years, such as AMETI and the electrification of Auckland's rail network. An opportunity exists for Auckland Transport to review these projects against its sustainability initiatives before they are completed and transferred to the operational teams.

The Asset Management team will undertake a stocktake of legacy and currently planned projects to make sure these are also foreshadowed in its systems. It will also begin to look at its zones of influence and work with the other parts of Auckland Transport on shared future projects and assets.

5.5.2 Key result areas and key performance indicators

'Sustainable networks' is one of the key result areas for which key performance indicators (KPIs) have been developed. The KPIs and measures identified below are specific to Asset Management and reflect different assets, including stormwater, street lighting and roads. Each KPI relates to several (often all four) of the four well-beings of sustainability, so they represent a broad approach.

Some of the measures reflect the sustainability projects discussed in section 5.4. Just as these projects pushed the boundaries and required innovation, the measures below are intended to be aspirational and provide for growth or development over time, to influence future decisions and progress the organisation forward; therefore they are quite different from monitoring, which tends to be quite passive in terms of influencing decisions. The measures are aimed to be indicators of part of Auckland Transport's performance rather than complete measures of its work on projects.

Asset Management's sustainability KPIs and measures are:

KPI 1 Resource efficiency of Auckland Transport's existing and new infrastructure

- Measure 1 – Resource efficiency factor
- Measure 2 – Increase in street lighting energy efficiency improvements
- Measure 3 – Maximise the economic value of recycled materials
- Measure 4 – Provide assets and services at least whole-of-life cost

KPI 2 Resilience to climate change and civil defence events

- Measure 5 – Resilience to climate change and civil defence events
- Measure 6 – Manage the network is to minimise carbon emissions
- Measure 7 – Minimise carbon footprints

KPI 3 Contribution of the network to Auckland's biodiversity

- Measure 8 – Proportion of network with stormwater treatment and quality of treatment
- Measure 9 – Proportion of network that positively contributes to biodiversity
- Measure 10 – Minimise network air, water pollution / pollution control

KPI 4 Consistency of Asset Management's own sustainability behaviour

- Measure 11 – Improvement in Asset Management's own sustainability performance

Overall KPI – Asset Management's project sustainability performance

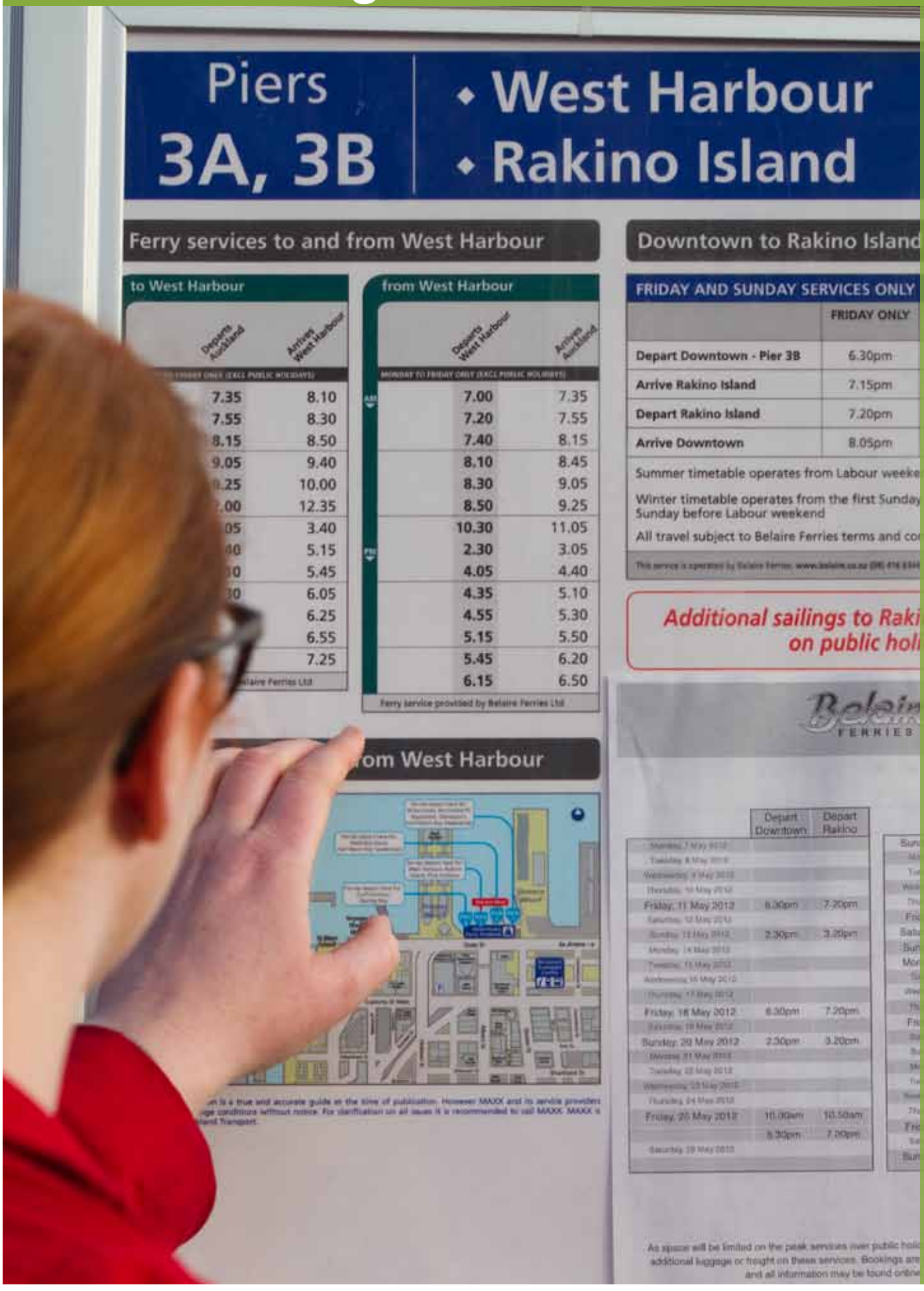
- Measure 12 – Sustainability of Asset Management's projects

It is intended that these KPIs and measures will drive behaviour within Asset Management and other parts of the organisation, as in order to achieve them Auckland Transport will need to work across the entire organisation. Additional information about the KPIs and measures are included in the report, Development of Sustainability KPIs.

5.5.3 Performance measures and feedback

An overarching sustainability strategy needs to be developed, along with a sustainability scorecard that looks not only at incremental improvement and the KPIs, but the effectiveness of these in directing change and outcomes in the sustainability area. The scorecard should also provide valuable feedback for asset managers, the rest of Auckland Transport, external organisations and the community. Feedback from the scorecard can be used to influence future asset management projects and facilitate the development of future sustainability KPIs and measures.

6 Value Management



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Auckland Transport
An Auckland Council Organisation

6 Value Management

6.1 Introduction

6.1.1 Overview

Planning for defined Levels of Service (LOS) and cost effective asset management are key features of Auckland Transport's asset management practices. Through this approach, asset management can achieve high quality outcomes for stakeholders and for the communities that use and interact with the transport assets.

Value management as a concept is very well aligned with asset management. It offers Auckland Transport an established process and mechanism to deliver value for money (VFM) and LOS, which are some of the key tenets of asset management.

6.1.2 Purpose

The purpose of this value management section is to:

- Define what is meant by value management in the context of Auckland Transport, and more particularly asset management
- Recognise the New Zealand Standards for value management and how Auckland Transport can go beyond these
- Discuss the application of value management at the different stages of asset management
- Identify Auckland Transport's current value management practices, future opportunities and how these respond to gaps within current value management practices
- Highlight how value management could be used to generate further improvements to asset management practices.

6.2 Value management

6.2.1 Definition

Value management offers a decision-making approach that is couched within the concept of value for money and achieving the relevant LOS or levels of quality. Standards New Zealand defines value management as a "structured and analytical process which seeks to achieve value for money by providing all the necessary functions at the lowest total cost consistent with required levels of quality and performance".

For Auckland Transport, value management can have a broader meaning that is beyond cost alone. Because of statutory drivers there is also a need to balance fiscal requirements against broad sustainability principles and community expectations. Value management involves considering these multiple factors. This is discussed further in section 6.2.3 in terms of value for money.

6.2.2 Value management and Auckland Transport

From a high level perspective, amalgamating the legacy councils and forming Auckland Council, as well as Auckland Transport, has provided for efficiency gains. Amalgamation offers a more co-ordinated approach to delivering an effective and efficient transport system across the Auckland region that should be of value to the Auckland transport users. The process of amalgamation represents a very high level application of value management to organisational structures.

As a CCO, Auckland Transport has the remit from Auckland Council to implement new transport projects as well as maintain and renew existing transport assets. Strategic directives and objectives need to align with the decisions that Auckland Transport makes at the operational level as well as at the funding level. The incorporation of value management into Auckland Transport's processes ensures that the best use of resources can be achieved, recognising opportunities for improvement and developing innovative projects and concepts.

The Infrastructure division of Auckland Transport contains a central management committee. The value added committee (dVAC and pVAC) was set up to ensure that, among other matters, value concepts are considered at every possible step of the decision-making processes.

Auckland Transport, as controlling authority of a large transport network, is also bound by the requirements of the Land Transport Management Act. This Act heavily emphasises value management concepts as a means to ensure VFM for all transport activities.

6.2.3 Value management and asset management

More specifically, value management is a central principle of the asset management discipline. Both approaches seek to achieve assets that meet an agreed standard or LOS, while realising VFM.[1]

[1] Infrastructure asset management is defined in the Auckland Transport Asset Management Framework as "the application of management, financial, economic and engineering principles to infrastructure assets in order to provide an agreed level of service in the most cost-effective manner.

[2] New Zealand Standards, Australian/New Zealand Standard for Value Management AS/NZS 4183:1994, 1994.

Elsewhere within this document asset management highlights the current and future LOS for the various transport assets under its stewardship. Value management is also considered within the context of VFM. For all involved, it is necessary to understand what VFM means, as the principle may be interpreted differently by Auckland Transport's various stakeholders – between those that fund the projects and the communities that interact with the transport assets. Some of the following concepts may contribute to what is considered to be VFM for a stakeholder such as NZTA:

- First time right policy
- Collaboration or partnership
- Risk identification
- Clear identification of objectives
- Environmental / product stewardship
- Alignment of delivery with objectives and outcomes
- Quality
- Whole-of-life approach.

In contrast, the communities that use the assets may take an alternative view of VFM. A broader view of VFM that also considers the communities' perspectives is relevant and could consider:

- Performance versus expectation
- Perception
- Values and cultural association
- Association or contribution to a place or experience.

Ideally, asset management maximises delivery in accord with the organisational objectives, vision, and community aspirations. To this end, as part of the improvement plan discussed in section 6.5.3, there may be a need to review the concept of VFM (as identified in asset management) in relation to the perspectives listed above.

Unfortunately, assets may bear traits that make maximising VFM inherently difficult for asset managers. This occurs because of factors such as:

- A poor understanding of operations or maintenance needs
- Lack of consideration of whole-of-life matters.

Lack of processes to ensure adequate communication of maintenance needs or specifications to the asset manager.

Auckland Transport is addressing these potential risks during the asset development stage and in its handover and maintenance cycles. For example, project handover information and effective and complete owner's manuals will ensure asset managers are well positioned to ensure delivery.

6.3 New Zealand standards

New Zealand Standard 4183:1994 Value Management (NZS 4183:1994) provides a useful guide and platform from which organisations can develop a constructive and collaborative value-management process that achieves value for money while delivering the necessary functions. The standard highlights the flexibility of value management as an approach, which enables it to be applied to any stage in the lifecycle of a project, asset or system. Typically the greatest potential benefit from value management is harnessed at the beginning of a project.

The Standards identify that value management can usually be applied to the following stages, each of particular relevance to asset management:

- Construction – design proposals, material selection, construction programmes and methods, and facility maintenance
- Systems, services and processes – design proposals, implementation, monitoring and maintenance procedures, and strategic planning
- Management decision making – policy formulation, maintenance management and programming development
- Value management incentive clauses.

Asset Management may only be accountable for some aspects of these but it is vital that it extends its influence into other parts of Auckland Transport in order to manage value during the maintenance and renewal cycle.

Regarding the final application of value management, contractors and asset management interface frequently and there is potential to involve contractors in the value management process through the use of value management incentive clauses within contracts. These clauses offer contractors a financial incentive to make changes to the contract specifications, scope of work, or methodology that would generate shared savings between the contractor and asset management.

This application of value management as included in NZS 4183:1994 can foster a culture where contractors strive for economical approaches while providing assets that meet their function and LOS.

According to NZS 4183:1994, there are three elements that are essential to creating the best possible outcome. These are: the core methodology, commitment of participants, and management of the process.[2]

The core methodology provides asset management with an approach that can be applied to any of the stages identified above. Adherence to the following phases is recommended:

- Information – collect all relevant information including specifications, details of any constraints, relevant policy decisions and costs
- Analysis – list significant functions and determine costs of functions
- Creativity – list numerous alternative ideas or options for performing existing or proposed functions
- Judgement – apply analytical judgement to the ideas or options to identify alternatives that provide VFM and meet LOS
- Development – consider problems of implementing the alternatives and how they can be overcome.

Obviously this process requires commitment from the participants, which means Asset Management needs to operate a culture of co-operative behaviour, free exchange of ideas, and openness to change. Furthermore management needs to be committed to the process and its implementation, which will ensure that Auckland Transport can provide the resources in terms of time and staff availability.

Auckland Transport has a requirement to consult, and NZS 4183:1994 also identifies the need for communities to be involved in the consultation process. Given that there is a spectrum of public participation it is crucial to clarify with the community the extent to which they can influence the value management processes of asset management. Auckland Transport's consultation framework provides guidance on the appropriate approach for including communities in the value management process.

6.4 Application of value management

Asset management considers how assets are managed at the strategy and planning level through to the tactical and operational levels so as to achieve the best value for money for the established LOS at every level. Applying value management to the strategy and planning level, in particular, offers an opportunity for asset management to evaluate non-asset solutions (i.e. strategies and plans). To achieve VFM, sometimes the strategy, plan or general approach under which an asset is managed needs to change, rather than forcing change on the asset itself.

An example of this is the incorporation of travel demand management (TDM) as a non-asset solution that enables existing assets to achieve greater VFM and efficiencies.

Through TDM the need to increase the capacity of roads is reduced and thereby limited funding can be diverted to maintenance and renewals and perhaps to capital projects where the existing capacity is truly limited.

6.5 Auckland Transport value management practice

6.5.1 Current value management approaches

A number of initiatives are in place to ensure value management.

Integrated asset management

Asset Management has initiated the development of high level strategic and planning documents in cases where some assets were not achieving VFM and non-asset solutions needed to be considered.

The award winning Albany Lakes Precinct (ALP) Integrated Asset Management Strategy challenged the application of a conventional maintenance approach, given that the assets being maintained were complex. The conventional maintenance approach was not meeting the design expectations over the lifetime of the assets.

The assets were not realising their full value and the application of value management helped to attain this value. An alternative framework capable of accommodating the intricacies at play was developed with the aim of maintaining environmental integrity, community aspirations and design intent over the long term and to capture operational and asset management efficiencies. This approach is now in the process of being embedded and rolled out through asset management's policies and processes. Figure 6.5-1 shows one of the non-standard assets within the ALP.

Facilities management

The development of a facilities management Framework has become a necessity because appropriate information about maintaining public transport and parking facilities has not been readily available.[3] Lacking this information compromises Auckland Transport's ability to maintain assets to their original specification and attain the various LOS and VFM over the life of the assets. The intended Facilities Management Framework has the potential to offer an effective means for collaboration between Asset Management, Property, Public Transport Operations and Parking. Such collaboration will allow priorities and needs across Auckland Transport's departments to be properly considered; with the result of a positive impact on achieving the defined LOS and VFM.

[3] Project handover notes for new capital works have also been developed by Asset Management. These notes will support the Facilities Management Framework by enabling the asset managers to easily access information about the assets and include this within their existing systems.

Figure 6.5-1 Low impact design feature – grass swale at the ALP
Source: Anguillid Consulting Engineers and Scientists Ltd

Optimised decision-making framework

Auckland Transport continues to use the legacy Councils' Optimised Decision Making (ODM) frameworks that follow the New Zealand Asset Management Support (NAMS) ODM Guidelines. These frameworks are being used for decision-making about the operations and maintenance, renewal and development of new assets. Generally the frameworks are based on identifying:

- The asset strategy or project that will minimise long term costs and maximise outcomes for the organisation and its customers
- Optimal decisions using benefit-cost analysis and multi-criteria analysis
- Social, economic, cultural and environmental benefits for each project or strategy.

In essence, these frameworks represent the application of value management at the programme development and programme delivery stages as a process is undertaken to identify different options, trade-offs and financial outcomes.

The following frameworks are used by asset management:

- Specialised modelling
- Refined ODM renewal
- Project prioritisation.

Since these frameworks have been inherited from a number of legacy councils, going forward Auckland Transport needs to rationalise and add value to them, which could mean aligning them with the organisations KPAs and Asset Managements KPIs. This will be discussed further in section 6.5.3, where improvements are considered.

6.5.2 Future value management opportunities

There are a number of future opportunities that Asset Management can consider which support value management and VFM. The opportunities suggested below begin to address the gaps that exist within Auckland Transport's current value management approach.

Figure 6.5-2 Inside Britomart Transport Centre
Source: flickr.com

There are some initial processes that need to be completed as a precursor to developing future value management opportunities. One such process is to ensure that asset registers are complete and that they reflect conventional assets as well as multi-functional assets. Such multi-functional assets include facilities such as rail stations and ferry terminals, which themselves contain many assets: including public spaces, retail facilities and a transport service. An example of such a facility is Britomart, shown in Figure 6.5-2.

The current ODM frameworks are from some of the legacy councils and therefore are not specific to Auckland Transport. There is an opportunity to develop new frameworks or adjust existing frameworks to better reflect Auckland Transport's status as a CCO assigned with the task of delivering Auckland's transport network. The development of the refined ODM framework has already been identified as a high priority item within section 10.5, key improvement programmes, of this document.

During the review of the current ODM frameworks, Asset Management can draw on Auckland Council's initiatives that align with value management. Projects already under way include:

- Project Genesis – identifies significant early opportunities to generate efficiency gains as a result of the transition
- Project management framework – enables council projects to maximise customer value form investment
- Prioritisation framework – considers compliance, strategic fit, risks, benefits and opportunities to leverage for projects that exceed $1m
- Peer review programme – a Finance department programme that includes an independent review of the robustness of major proposals.

Future value management approaches used by asset management will increasingly need to provide for climate change and civil defence events within the analysis of different solutions. Into the future, if particular assets are to provide VFM over the long term then the transport network assets will need to be resilient. This may involve foresighting what a resilient asset will be.

Application of zones of influence across Auckland Transport is another value management principle that can be applied across departments and projects and generate opportunities for improvement. Zones of influence recognise that departments do not operate in isolation and neither does the transport system.

How assets are developed at the design stage will affect Asset Management and then also affect the communities that use the assets. Often Asset Management is at the interface trying to reconcile community expectations around the constraints of the inherited assets. Enabling Asset Management to operate within the zones of influence provides a platform for invaluable feedback about maintenance and renewals at the design stage and can lead to the development of innovative ideas and optimal solutions.

Where asset managers use the zones of influence to impact the design and capital works process, the outcome can be a better integrated management and VFM of the asset. For example, currently architectural preferences and the lack of a common specification frequently results in a high degree of variability in lighting and fittings across the region, which impacts the stock of spare parts and response times. If asset managers are involved in the specification of street lighting for new projects, they could specify fittings and bulbs to meet the required standards, but also offer VFM in terms of maintenance and renewals in the future, and perhaps energy efficiency.

6.5.3 Improvement plan

A number of improvement tasks, as indicated in section 6.5.2 above, are included in the future asset management improvement programme.

The details of these are given in Section 10, Improvement Plan and Monitoring of this document.

7 Financial Summary

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Auckland Transport
An Auckland Council Organisation

7 Financial Summary

7.1 Introduction

The long-term works programmes and expenditures in this Asset Management Plan are based on the lifecycle needs of the assets in order for them to meet the required levels of service. The key programmes are detailed in the LCMPs (refer to Section 4). These programmes will be sufficient to deliver the current agreed levels of service for transport activity.

7.2 Summary of financial information

7.2.1 Financial needs summary

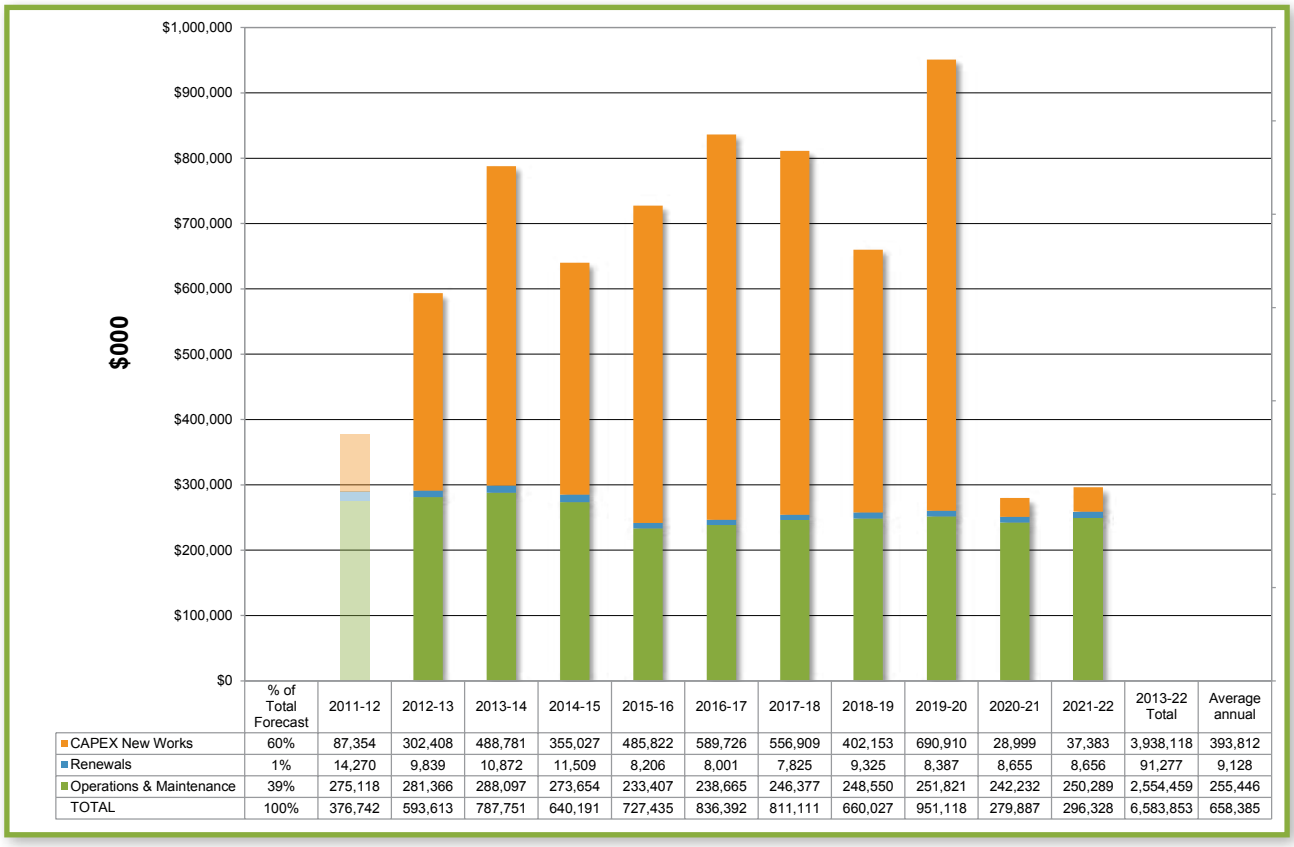
The long-term financial needs are given in this section.

All values in this AMP allow for expected growth in demand but do not allow for escalation or market price fluctuations over time.

Future financial needs (un-inflated) over the next 10 years for the public transport network are as follows:

Average annual public transport network financial needs	$658 million per year
· OPEX operations and maintenance (O&M)	$255 million per year
· CAPEX renewals	$9 million per year
· CAPEX new works	$394 million per year
Total 10-year financial needs 2012/13 to 2021/22	$6.6 billion

Figure 7.2-1 Public transport financial needs by expenditure type, year and percentage
Source: LTP budget model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total	Average annual
CAPEX New Works	60%	87,354	302,408	488,781	355,027	485,822	589,726	556,909	402,153	690,910	28,999	37,383	3,938,118	393,812
Renewals	1%	14,270	9,839	10,872	11,509	8,206	8,001	7,825	9,325	8,387	8,655	8,656	91,277	9,128
Operations & Maintenance	39%	275,118	281,366	288,097	273,654	233,407	238,665	246,377	248,550	251,821	242,232	250,289	2,554,459	255,446
TOTAL	100%	376,742	593,613	787,751	640,191	727,435	836,392	811,111	660,027	951,118	279,887	296,328	6,583,853	658,385

A regional summary of total public transport network financial needs ($000s) over the next 10 years by expenditure type, percentage comparison and annual average spend per kilometre is shown in in Figure 7.2-1.

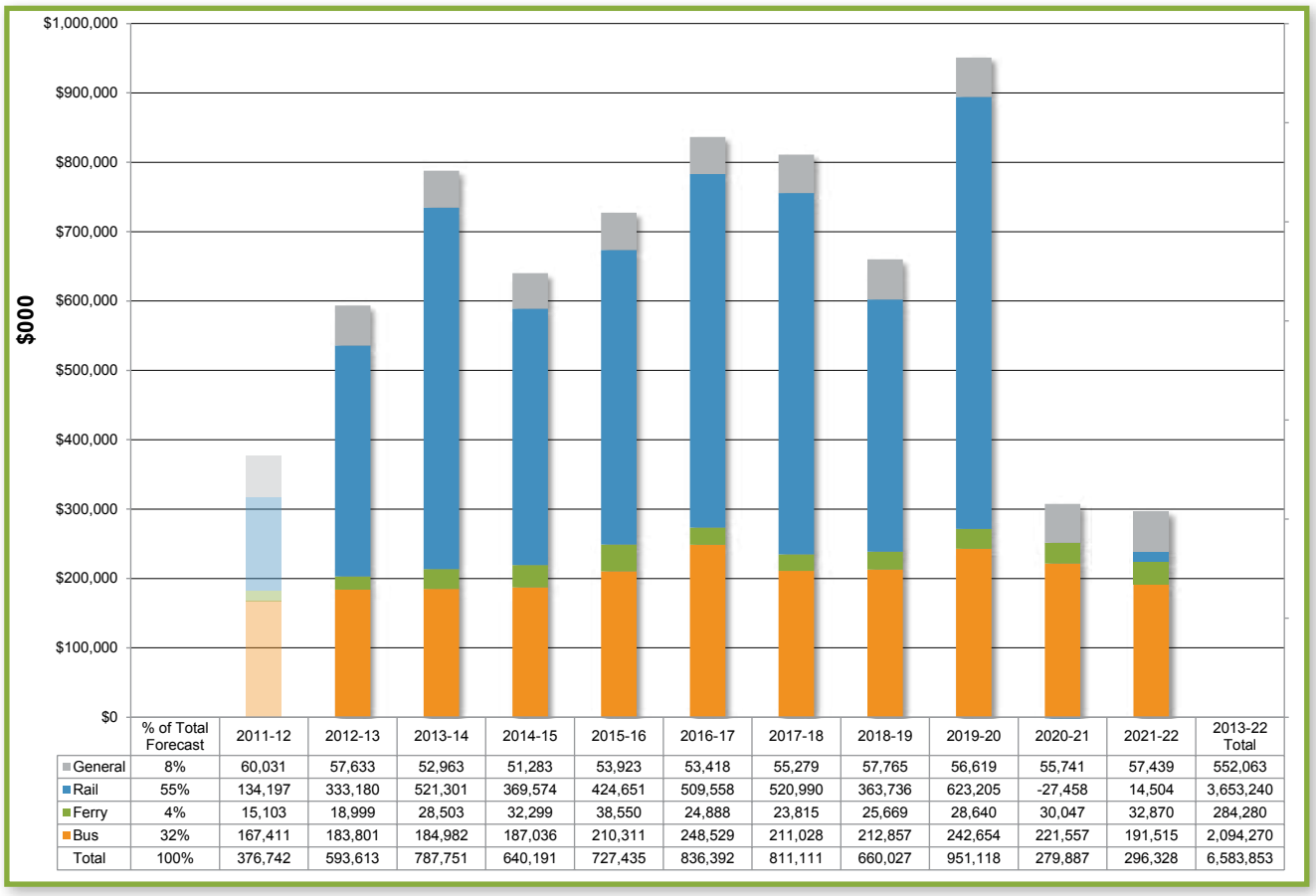
Notes on financial needs in Figure 7.2-1:

1. Annual growth is included to allow for consequential OPEX and consequential renewals from growth in the network and growth in demand for services.
2. The above financial needs exclude corporate and IT support overheads.
3. The order of priority or call on funds by Auckland Transport is generally:
    - Operations
    - Maintenance
    - Renewals
    - New works for growth
    - New works for service level improvement.
4. Historically, the transition from the legacy councils to Auckland Transport, Auckland Council and other CCOs led to many changes in scope, role and responsibility in the stewardship and management of the region's infrastructure assets and networks. It is therefore not possible to accurately compare historical legacy council expenditure with that of the new organisation going forward. However, the future network needs in this AMP are consistent with the historical expenditure trends of legacy organisations.
5. Historical expenditure trends will be shown in future versions of the Transport AMP as information becomes available.

7.2.2 Financial needs detail

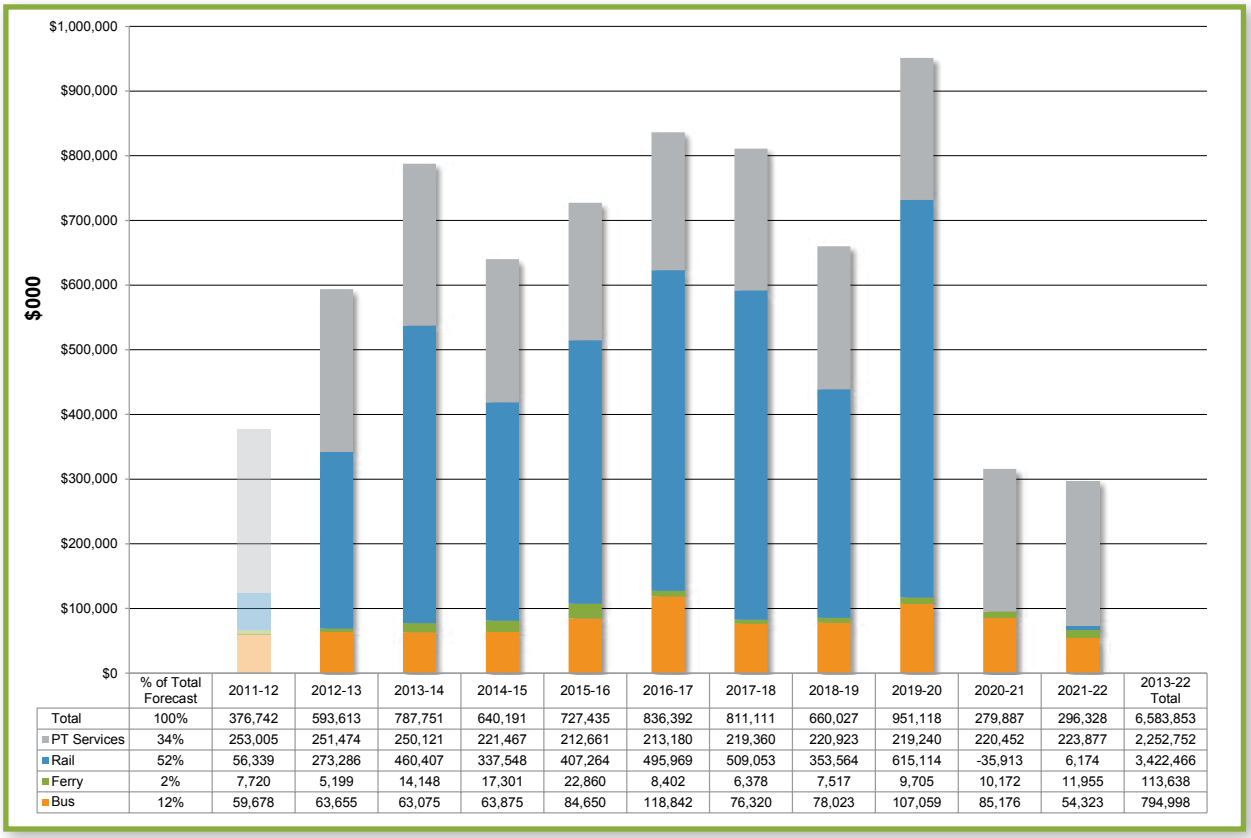
A comparison between public transport network financial needs by mode type (public transport services are included in each mode type) and percentage is given in Figure 7.2-2.

Figure 7.2-2 Public transport total financial needs by modal type, year and percentage
Source: LTP budget model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
General	8%	60,031	57,633	52,963	51,283	53,923	53,418	55,279	57,765	56,619	55,741	57,439	552,063
Rail	55%	134,197	333,180	521,301	369,574	424,651	509,558	520,990	363,736	623,205	-27,458	14,504	3,653,240
Ferry	4%	15,103	18,999	28,503	32,299	38,550	24,888	23,815	25,669	28,640	30,047	32,870	284,280
Bus	32%	167,411	183,801	184,982	187,036	210,311	248,529	211,028	212,857	242,654	221,557	191,515	2,094,270
Total	100%	376,742	593,613	787,751	640,191	727,435	836,392	811,111	660,027	951,118	279,887	296,328	6,583,853

Figure 7.2-3 Public transport total financial needs forecast by LCMP type, year and percentage
Source: LTP budget model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
Total	100%	376,742	593,613	787,751	640,191	727,435	836,392	811,111	660,027	951,118	279,887	296,328	6,583,853
PT Services	34%	253,005	251,474	250,121	221,467	212,661	213,180	219,360	220,923	219,240	220,452	223,877	2,252,752
Rail	52%	56,339	273,286	460,407	337,548	407,264	495,969	509,053	353,564	615,114	-35,913	6,174	3,422,466
Ferry	2%	7,720	5,199	14,148	17,301	22,860	8,402	6,378	7,517	9,705	10,172	11,955	113,638
Bus	12%	59,678	63,655	63,075	63,875	84,650	118,842	76,320	78,023	107,059	85,176	54,323	794,998

A comparison between public transport network financial needs by LCMP type (showing public transport services separately from each mode type) and percentage is given in Figure 7.2-3.

7.3 Operational expenditure needs summary

7.3.1 Operations and maintenance costs

Future expenditure needs

Generally, operations and maintenance activities will have the first call on Auckland Transport funds.

The expenditure needs for operations and maintenance activities are combined into a single operational expenditure (OPEX) category called 'operations and maintenance' (O&M) for the purposes of this AMP.

Operations costs generally include:

- Inspections
- Reporting
- Data collections
- The use of asset management systems such as RAMM and SPM
- Call centre operation and response systems
- Various other expenses such as electricity to keep the network assets operating.

Maintenance costs include physical works such as:

- 'Making safe'
- Minor repairs (that are expensed and not capitalised)
- Cleaning.

Expenditure needs forecast

A comparison of proposed O&M expenditure needs by mode type and percentage is given in Figure 7.3-1.

A comparison of proposed O&M expenditure needs by activity type, year and percentage is given in Figure 7.3-2.

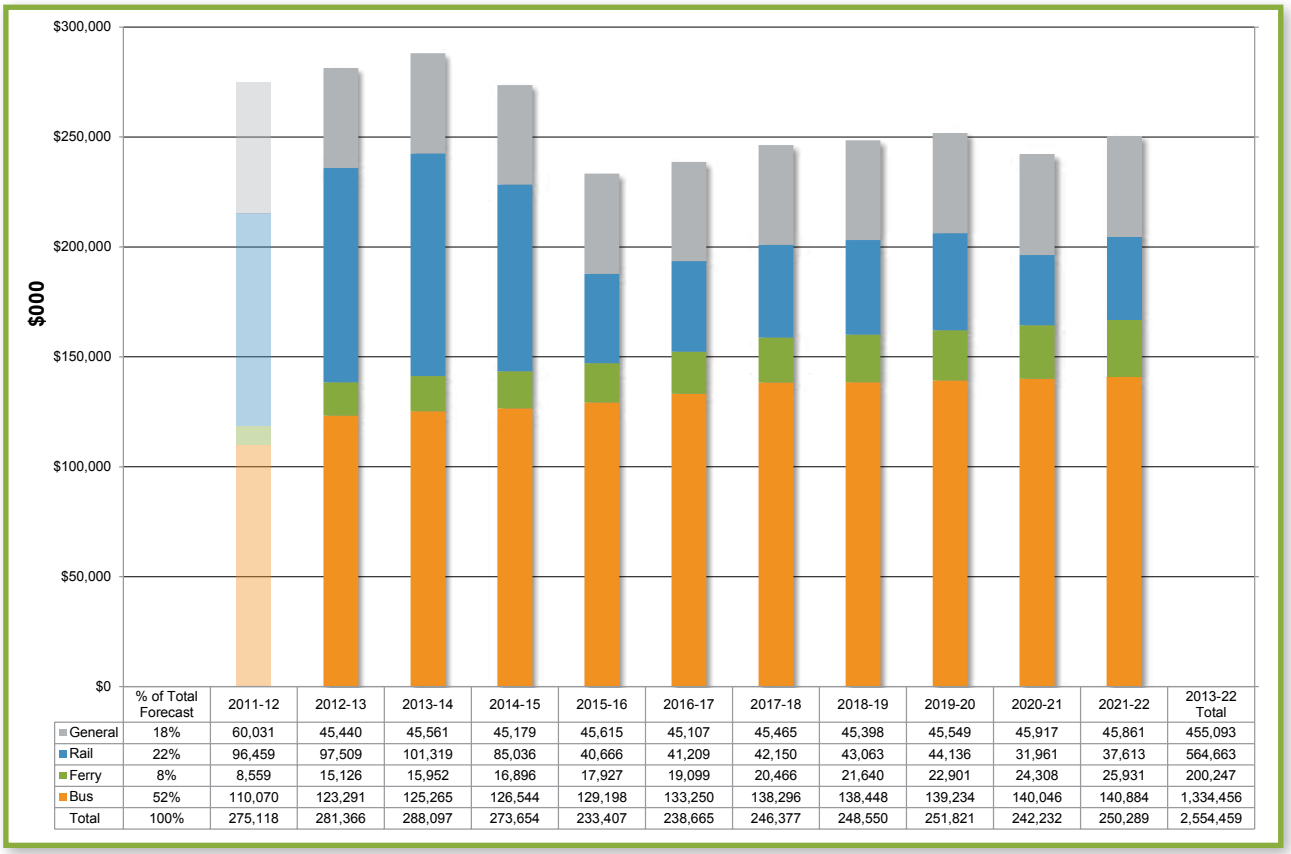
7.3.2 Consequential operations costs

Consequential OPEX will be required to cover the increased future maintenance costs associated with capital new works such as improvement or upgrade projects.

There is substantial physical works capital expenditure in delivering capital new and improvement programmes and as a result the consequential OPEX is significant.

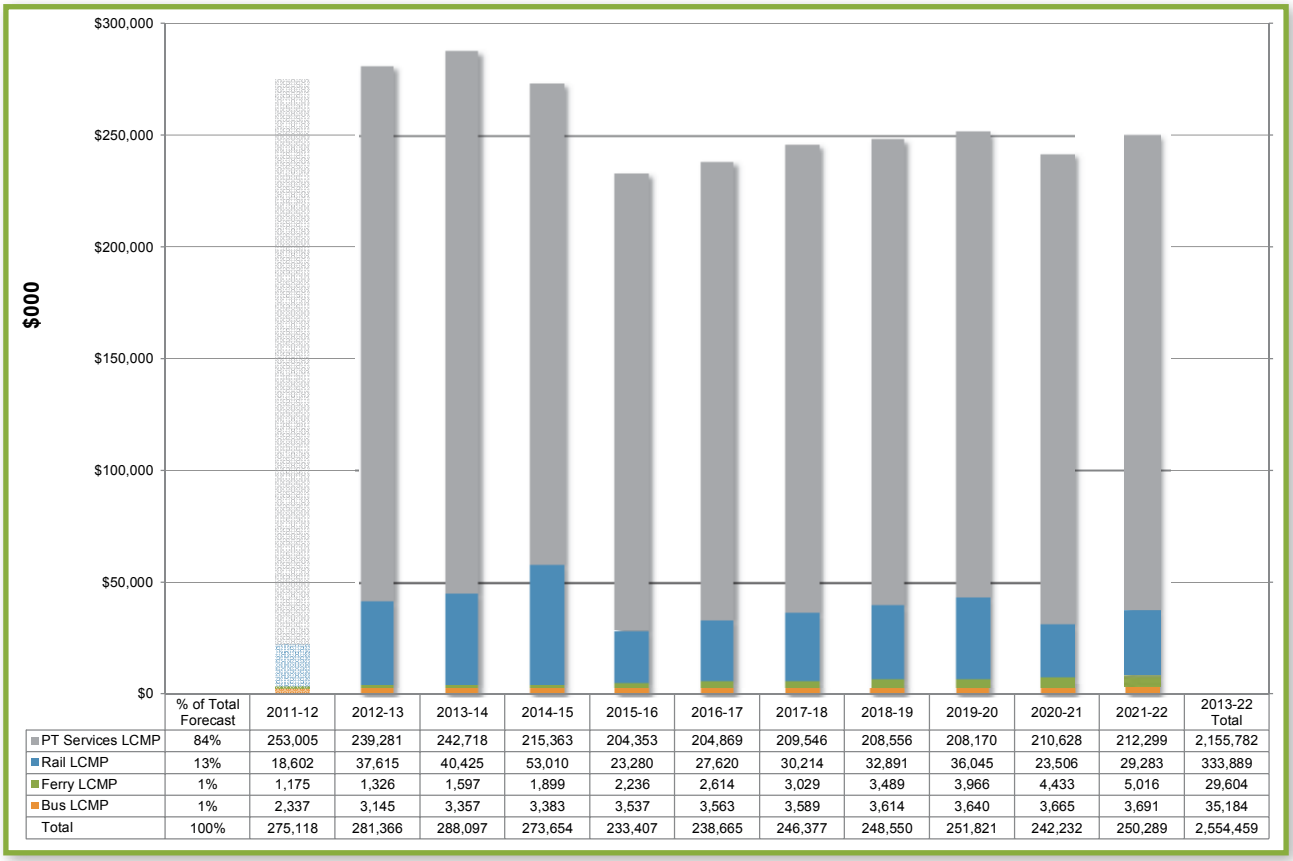
Consequential OPEX is allowed for in the regional annual growth factors, under increases in operational expenditure from growth or demand.

Figure 7.3-1 Public transport O&M expenditure needs by mode type, year and percentage
Source: LTP budget model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
General	18%	60,031	45,440	45,561	45,179	45,615	45,107	45,465	45,398	45,549	45,917	45,861	455,093
Rail	22%	96,459	97,509	101,319	85,036	40,666	41,209	42,150	43,063	44,136	31,961	37,613	564,663
Ferry	8%	8,559	15,126	15,952	16,896	17,927	19,099	20,466	21,640	22,901	24,308	25,931	200,247
Bus	52%	110,070	123,291	125,265	126,544	129,198	133,250	138,296	138,448	139,234	140,046	140,884	1,334,456
Total	100%	275,118	281,366	288,097	273,654	233,407	238,665	246,377	248,550	251,821	242,232	250,289	2,554,459

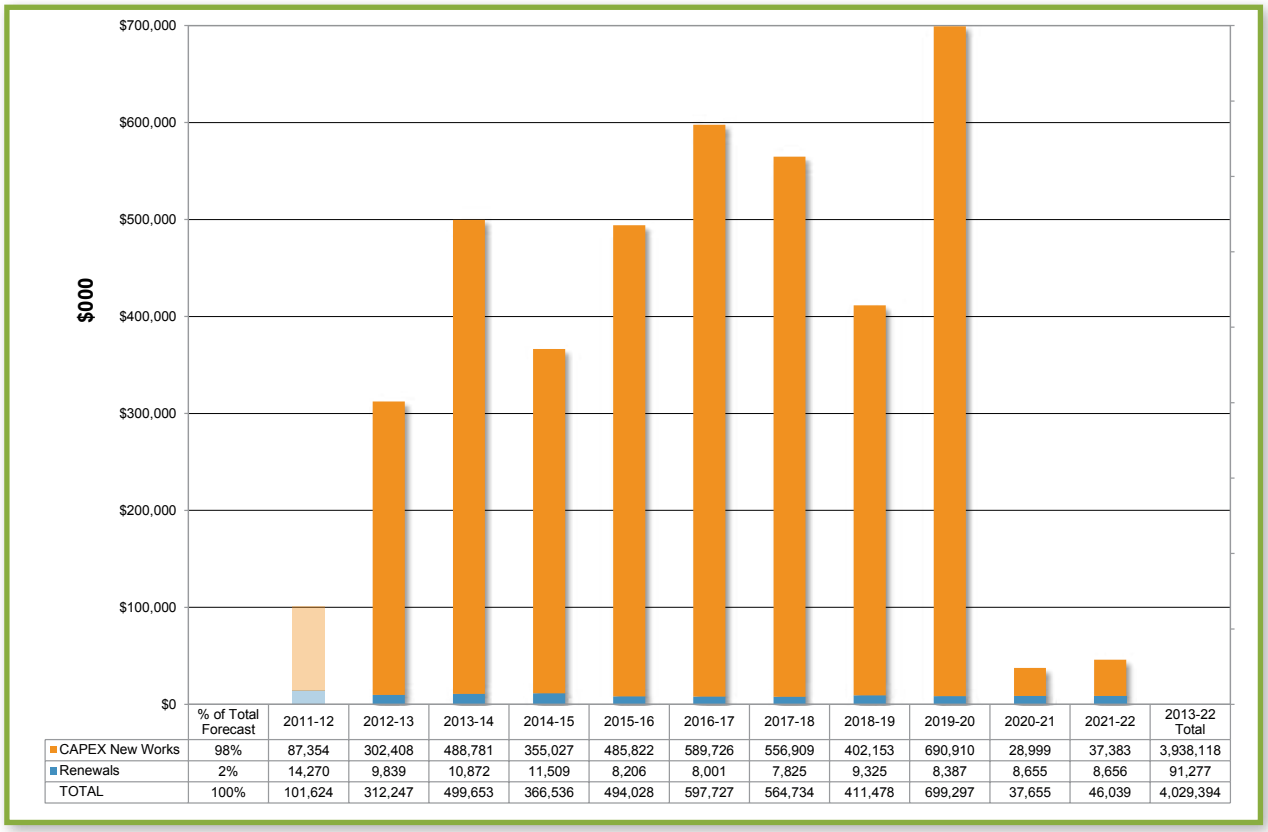
Figure 7.3-2 Public transport O&M expenditure needs by activity type, year and percentage
Source: LTP budget model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
PT Services LCMP	84%	253,005	239,281	242,718	215,363	204,353	204,869	209,546	208,556	208,170	210,628	212,299	2,155,782
Rail LCMP	13%	18,602	37,615	40,425	53,010	23,280	27,620	30,214	32,891	36,045	23,506	29,283	333,889
Ferry LCMP	1%	1,175	1,326	1,597	1,899	2,236	2,614	3,029	3,489	3,966	4,433	5,016	29,604
Bus LCMP	1%	2,337	3,145	3,357	3,383	3,537	3,563	3,589	3,614	3,640	3,665	3,691	35,184
Total	100%	275,118	281,366	288,097	273,654	233,407	238,665	246,377	248,550	251,821	242,232	250,289	2,554,459

Figure 7.4-1 Capital financial needs by expenditure type

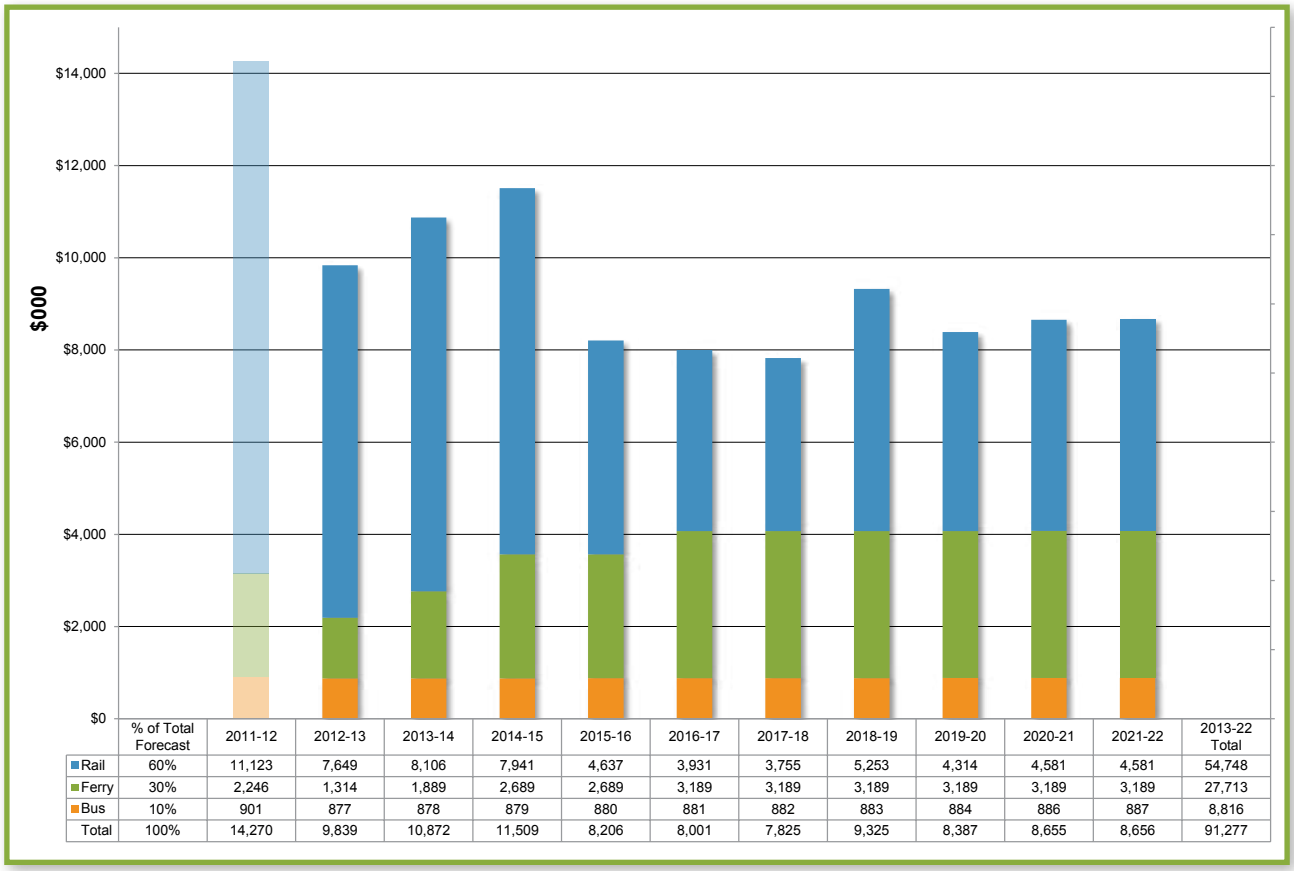
Source: LTP budget model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
CAPEX New Works	98%	87,354	302,408	488,781	355,027	485,822	589,726	556,909	402,153	690,910	28,999	37,383	3,938,118
Renewals	2%	14,270	9,839	10,872	11,509	8,206	8,001	7,825	9,325	8,387	8,655	8,656	91,277
TOTAL	100%	101,624	312,247	499,653	366,536	494,028	597,727	564,734	411,478	699,297	37,655	46,039	4,029,394

Figure 7.4-2 Public transport renewals financial needs by mode type, year and percentage

Source: LTP budget model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
Rail	60%	11,123	7,649	8,106	7,941	4,637	3,931	3,755	5,253	4,314	4,581	4,581	54,748
Ferry	30%	2,246	1,314	1,889	2,689	2,689	3,189	3,189	3,189	3,189	3,189	3,189	27,713
Bus	10%	901	877	878	879	880	881	882	883	884	886	887	8,816
Total	100%	14,270	9,839	10,872	11,509	8,206	8,001	7,825	9,325	8,387	8,655	8,656	91,277

7.4 Capital financial needs summary

7.4.1 Capital financial needs overview

A comparison of proposed capital expenditure (CAPEX) by expenditure type, year and percentage is given in Figure 7.4-1.

98 per cent of the capital financial needs are for new works rather than renewals. Professional costs are included in the total project costs for renewals and new works.

7.4.2 Renewals financial needs

A comparison of renewals expenditure by public transport mode type, year and percentage is given in Figure 7.4-2.

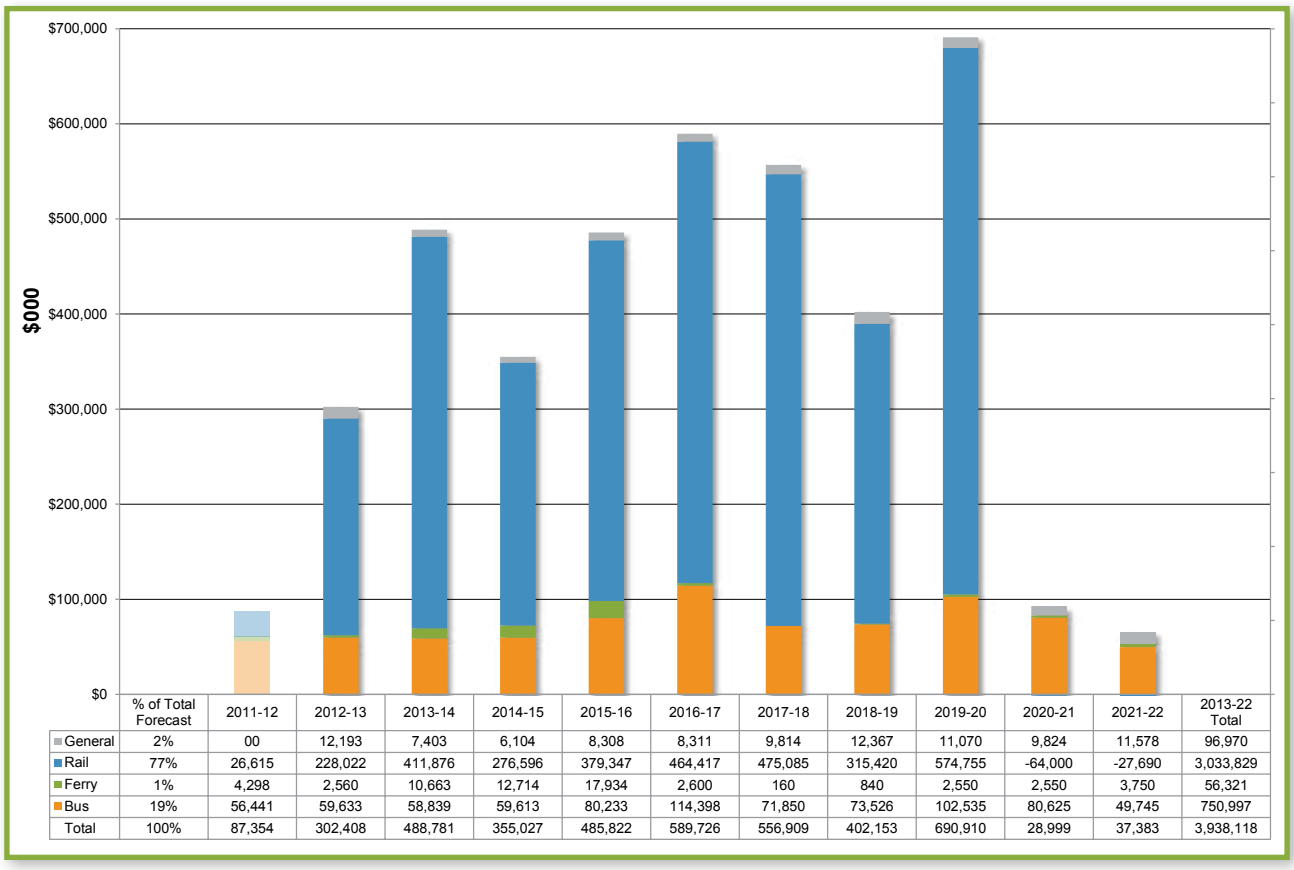
More details of renewals by asset type and 10-year forecast are shown in the listing of renewals projects in section 7.10, renewal programme.

7.4.3 New works capital financial needs

New works budget allocations for growth and for improvements in levels of service are combined. A comparison of new works financial needs by public transport mode type, year and percentage is given in Figure 7.4-3.

A listing of the capital new works projects that make up the programme is included in section 7.11, capital improvement programme.

Figure 7.4-3 Public transport new works financial needs by mode type, year and percentage
Source: LTP budget model 12 April 2012 after refresh for AMP



	% of Total Forecast	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2013-22 Total
General	2%	00	12,193	7,403	6,104	8,308	8,311	9,814	12,367	11,070	9,824	11,578	96,970
Rail	77%	26,615	228,022	411,876	276,596	379,347	464,417	475,085	315,420	574,755	-64,000	-27,690	3,033,829
Ferry	1%	4,298	2,560	10,663	12,714	17,934	2,600	160	840	2,550	2,550	3,750	56,321
Bus	19%	56,441	59,633	58,839	59,613	80,233	114,398	71,850	73,526	102,535	80,625	49,745	750,997
Total	100%	87,354	302,408	488,781	355,027	485,822	589,726	556,909	402,153	690,910	28,999	37,383	3,938,118

7.5 Funding strategy and financial sustainability

7.5.1 Funding

The Local Government Act 2002 provides a range of funding sources (s103) that the Auckland Council can provide to Auckland Transport.

Funding sources include:

- General rates – provided through the council
- User charges – such as farebox recovery and leases
- Subsidies – from central government provided through NZTA
- Development contributions – for new works related to growth and development
- Loans.

Funding sources and allocations are targeted specifically to the type of expenditure. Expenditure types are defined and reported as follows:

- Operations and maintenance:
  Expensed (not capitalised) work that continues the provision of services provided by assets
- Renewals:
  Capitalised works to replace existing deteriorated assets or components of assets to restore their remaining life and service potential
- Service level improvement:
  Capitalised works that add new or enlarged existing assets to improve service levels or performance or to increase asset base life
- Growth:
  Capitalised works that add new or enlarged existing assets to increase the capacity to cater for further growth in demand.

NZTA subsidies and development contributions are further discussed below.

7.5.2 NZTA subsidies

The public transport programme is eligible for subsidy through the Government's financial assistance scheme, administered by NZTA. Public transport expenditures for services and infrastructure are generally eligible for subsidy funding of 50 to 60 per cent, with total mobility services up to 100 per cent.

However, typically not all of the activities that are eligible for subsidy will be accepted by NZTA because capping limits are usually applied, based on available funds.

7.5.3 Development contributions for capital new works

The council can use development contributions to fund part of its growth-related capital expenditure. Development contributions can be used for new works to add new or enlarged existing assets to cater for growth and to mitigate other effects that may result from development projects.

Development contributions are not intended to be used for operations, maintenance, renewals or new works required for service-level improvement.

7.6 Asset valuation

An approximate summary of the value of public transport network assets in the Auckland region as at 30 June 2011 is given in Table 7.6-1.

Note: The quantity of the assets shown below will not necessarily match the quantity currently held in the SPM and RAMM systems.

7.7 Financial assumptions

The financial assumptions upon which the un-inflated financial needs are based include the following:

1. Financial needs are stated in dollar values un-inflated from the 2011/12 baseline. The effect of inflation and cost escalation has not been built into the financial model.
2. Financial forecasts exclude corporate and IT support overheads.
3. Maintenance and operations costs are based on historical expenditure and an expectation of continuation of current levels of service and have been adjusted to meet efficiency and mayoral proposal targets.
4. Operations, maintenance and renewal costs allow for the impact of consequential OPEX and consequential renewals from growth changes in the public transport network and demand for services.
5. Unit rates have been assumed from the current maintenance contracts.
6. The above financial needs are for the public transport network and do not include the road network. Refer to a separate road network AMP for details relating to roads.
7. All financial needs, revenue and funding figures in this AMP are sourced from Auckland Transport's SAP financial management system, which is also used for the transport financial information in the LTP.

8. It is assumed that the capacity exists in the contracting industry and in the Auckland Transport 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.
9. The degree of accuracy and completeness of the asset data information is as assessed in the various LCMPs.

Table 7.6-1 Asset valuations as at 30 June 2011
Source: Summary of asset valuations by ANA Group and Halcrow (for Rail)

Asset category	Asset type	Unit	Quantity	Replacement value ($000s)	Depreciated replacement value ($000s)	Annual depreciation rate ($000s)
BUS						
Bus shelters (council owned)	facilities (with equipment)	no.	1,532	22,476	13,204	562
Bus shelters (Adshel owned)	facilities (with equipment)	no.	915	na	na	na
Busway stations	facilities (with equipment)	no.	5	18,270	17,158	261
FERRY WHARVES						
Wharf platforms	facilities (with equipment)	no.	17	73,708	42,954	1,620
Wharf facilities (buildings)	ferry terminals (with equipment)	no.	12	tba	tba	tba
Wharf ops and info systems		no.	10	tba	tba	tba
Wharves recreational (not transport)	not Auckland Transport responsibility	no.	100	na	na	na
RAIL						
Britomart Transport Centre	facilities (with equipment)	no.	1	tba	tba	tba
Rail stations	facilities (with equipment)	no.	41	51,291	47,311	tbc
Rail systems				39,982	30,863	tbc
Rail civil				1,964	1,934	tbc
Rail other, furniture				14,385	11,999	tbc
Rail ops and info systems	automated cash dispensing ticket machines	no.	3	tba	tba	tba
	electronic wayfarer ticket machines	no.	33	tba	tba	tba
	train stabling facilities	no.	2	tba	tba	tba
	fibre optic cabling	no.	60	tba	tba	tba
	co-located control rooms	no.	1	tba	tba	tba
	real time VPIDs	no.	398	tba	tba	tba
Rolling stock				167,815	153,339	tbc
	train motor and two-carriage sets	no.	38	tba	tba	tba
	carriages	no.	110	tba	tba	tba
	locomotive improvements	no.	31	tba	tba	tba
PARK-AND-RIDE						
Park-and-Ride facilities	facilities (with eqpmt)	no.	12	tba	tba	tba

7.8 Reliability of financial forecasts

Considering the assumptions made in deriving the future financial needs of the network and the historical levels of expenditure for various activities, the reliability of the financial forecast to deliver the current level of service is considered to be 'high'. This can be further stated as follows:

- Operations high
- Maintenance high
- Renewals high
- New works high

7.9 Recommendations for improving financial management

1. Define capitalisation rules (e.g. minimum dollar value and/or frequency less than one year). This will define the difference between O&M expenditures and capital expenditures for renewals and new works. This in turn will define which assets are valued and depreciated and how they are coded in the asset register and asset management system.
2. Consider capitalising AMPs and strategic documents.
3. Confirm the definition and difference between capital expenditures for renewals versus that for new works. This will assist in calculating development contributions (DCs), if applicable, related to growth and also levels of service improvement costs.
4. Define CAPEX new works either for growth (DCs may apply, refer AMP Growth and Demand section) or LOS (refer LOS AMP section projects). Note – many projects will be a mix of new work for growth, new work for LOS, and renewals.
5. Consider costs and projects for consequential OPEX and renewals on CAPEX new works.
6. Consider implications on the financials and forecasts from all the other issues listed in the LCMPs and issues register.
7. Provide 20-year horizons for AMP forward works programmes and financials.

7.10 Renewals programme

Below is the indicative 10-year renewals programme (in dollars) for public transport network projects. These are capital renewals works required because of ageing and deterioration of assets.

Table 7.10 10-year public transport network renewals programme ($s)
Source: Auckland Transport SAP system (April 2012)

Renewals programme LCMP / activity name	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	TOTAL
ARTA CAPEX renewals (rolling stock)	5,500,000	6,000,000	6,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	31,500,000
ARTA ferry terminal renewals	1,125,000	1,700,000	2,500,000	2,500,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	25,825,000
ARTA rail station renewals	1,580,986	1,580,986	1,580,986	1,580,986	1,580,986	1,580,986	1,580,986	1,580,986	1,580,986	1,580,986	15,809,860
Manukau City Council bus shelter renewals	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	7,500,000
Britomart asset renewals	567,780	524,680	360,440	1,056,190	350,440	173,590	1,671,520	733,110	1,000,000	1,000,000	7,437,750
Auckland City Council wharf renewals	188,758	188,758	188,758	188,758	188,758	188,758	188,758	188,758	188,758	188,758	1,887,580
North Shore City Council renewals – Northern Busway Stations	126,682	127,759	128,844	129,940	131,044	132,158	133,281	134,414	135,557	136,709	1,316,388
TOTAL RENEWALS WORKS ($)	9,839,206	10,872,183	11,509,028	8,205,874	8,001,228	7,825,492	9,324,545	8,387,268	8,655,301	8,656,453	91,276,578

7.11 Capital improvement programme

Below is the indicative 10-year capital improvement programme for public transport projects. These are capital new works required for growth and/or service level improvement.

Table 7.11 10-year public transport networks capital improvement programme
Source: LTP budget model 12 April 2012 after refresh for AMP

Project name	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	TOTAL
City Rail Link (CRL) construction (Mayoral proposal)	15,000,000	108,580,000	95,050,000	273,540,000	441,565,000	462,245,000	309,260,000	599,405,000	0	0	2,304,645,000
Electric trains CAPEX – rolling stock purchase (Mayoral proposal)	44,079,888	133,150,714	146,076,133	88,867,349	8,412,422	0	0	0	0	0	420,586,506
AMETI – Panmure Corridor Package 1 – Bus 75%	34,580,873	25,398,750	14,812,500	20,156,250	21,675,000	29,625,000	18,075,000	12,750,000	26,300,000	11,750,000	215,123,374
AMETI – Package 4 Pakuranga Ti Rakau and Reeves Road	0	0	7,000,000	10,211,667	6,541,667	13,625,000	20,250,000	29,250,000	41,800,000	22,175,000	150,853,334
CRL land (Mayoral proposal)	92,100,000	122,600,000	15,400,000	0	0	0	0	-30,000,000	-70,500,000	-35,250,000	94,350,000
Electric train depot CAPEX (Mayoral proposal)	50,593,714	20,200,078	0	0	0	0	0	0	0	0	70,793,792
Dominion Road corridor upgrade – Bus 75%	1,875,000	4,875,000	15,000,000	15,000,000	18,000,000	8,250,000	0	0	0	0	63,000,000
AMETI land – Bus 25%	5,031,924	5,235,346	3,867,335	3,867,335	3,867,335	3,867,335	3,867,335	3,867,335	3,867,335	7,379,835	44,718,446
Pakuranga Highway QTN	0	0	0	0	0	0	2,000,000	40,000,000	0	0	42,000,000
Region-wide RTN and corridor land purchase	0	0	0	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	6,000,000	6,000,000	37,000,000
Flatbush to Manukau City Centre (bus priority improvement)	0	1,500,000	2,000,000	7,000,000	16,000,000	4,000,000	0	0	0	0	30,500,000
Lincoln Road corridor improvements	1,475,000	3,800,000	2,500,000	9,000,000	13,000,000	0	0	0	0	0	29,775,000
SWAMMCP Detailed design (Mayoral proposal) – PT 60%	990,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	27,990,000
Public transport bus stop construction and improvement	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	22,000,000
Botany to Manukau RTN – Botany interchange	0	0	0	2,000,000	20,000,000	0	0	0	0	0	22,000,000
Local Board initiatives – PT 20%	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	21,000,000
Station amenity improvements	0	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,400,000	18,400,000
Takapuna Anzac Street upgrade (Northcote to Hurstmere) – Bus 80%	0	0	0	0	0	2,080,000	11,600,000	4,400,000	0	0	18,080,000
Public transport Real-time Passenger Information System	1,000,000	4,000,000	2,700,000	0	0	1,500,000	4,200,000	2,500,000	0	1,500,000	17,400,000
Great South Road (Manukau Central to Drury) – Bus 50%	0	0	500,000	7,500,000	7,500,000	0	0	0	0	0	15,500,000
Ellerslie / Panmure Highway upgrade – Bus 50%	0	0	410,000	218,339	1,406,661	775,000	2,500,000	3,500,000	3,500,000	3,000,000	15,310,000
Great North Road corridor improvements – Bus 30%	150,000	180,000	300,000	1,350,000	1,500,000	3,150,000	3,000,000	1,500,000	1,500,000	0	12,630,000
Bayswater Ferry Terminal	0	1,921,720	3,260,862	6,159,138	580,000	0	0	0	0	0	11,921,720
Half Moon Bay Ferry Terminal and vehicle ferries	1,200,000	3,333,000	3,403,000	3,800,000	0	0	0	0	0	0	11,736,000
Pukekohe Station upgrade	300,000	5,000,000	5,000,000	0	0	0	0	0	0	0	10,300,000
Manukau City Rail Link (Manukau Transport Interchange)	5,854,329	3,000,000	0	0	0	0	0	0	0	0	8,854,329
Plan Change 15 Area – Massey North and Westgate – Bus 15%	3,409,740	1,409,861	1,213,900	115,785	870,000	1,018,983	815,108	0	0	0	8,853,377
Parnell Station (SUP)	4,000,000	4,415,688	0	0	0	0	0	0	0	0	8,415,688
Hibiscus Coast Busway Station	3,709,900	4,634,300	0	0	0	0	0	0	0	0	8,344,200

Table 7.11 Continued...

Project name	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	TOTAL
Auckland City Council Hauraki Gulf Island wharves – Kennedy Point development	300,000	0	0	0	0	0	0	2,550,000	2,550,000	2,550,000	7,950,000
Khyber Pass Road – Bus 50%	0	0	250,000	0	0	1,087,929	6,412,072	0	0	0	7,750,000
Mt Albert Station (SUP)	7,574,000	0	0	0	0	0	0	0	0	0	7,574,000
Downtown Ferry Terminal Queens Wharf extension	0	657,958	0	6,825,153	0	0	0	0	0	0	7,483,111
Westfield Loop infrastructure track	80,000	500,000	3,500,000	3,000,000	0	0	0	0	0	0	7,080,000
North Shore City Council Busway – Westlake Station land	0	3,000,000	3,994,000	0	0	0	0	0	0	0	6,994,000
AMETI – Sylvia Park Bus Lanes Package 2	2,330,850	2,090,000	2,400,000	0	0	0	0	0	0	0	6,820,850
Strand Permanent Station	0	0	0	0	0	6,680,000	0	0	0	0	6,680,000
Papakura Station upgrade	3,550,000	3,000,000	0	0	0	0	0	0	0	0	6,550,000
Devonport Ferry Terminal	0	0	6,000,000	0	0	0	0	0	0	0	6,000,000
Drury Station upgrade	0	0	0	0	6,000,000	0	0	0	0	0	6,000,000
Public transport customer information – minor infrastructure	750,000	750,000	750,000	650,000	650,000	650,000	500,000	500,000	400,000	400,000	6,000,000
East Coast Road bus priority	0	0	0	257,850	538,088	601,961	1,254,258	2,396,993	0	0	5,049,150
Newmarket Station	0	0	3,700,000	1,300,000	0	0	0	0	0	0	5,000,000
Public transport minor CAPEX	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	5,000,000
AIFS CAPEX systems (former line item – Massey North Town Centre: bus interchange)	4,822,000	0	0	0	0	0	0	0	0	0	4,822,000
North Area bus improvements programme	144,000	740,000	144,000	740,000	145,000	740,000	128,000	645,000	110,000	553,000	4,089,000
AIFS CAPEX (rail station gateway installation)	0	110,000	280,000	1,150,000	0	1,160,000	1,160,000	0	0	0	3,860,000
Taharoto Road / Wairau Road upgrade (Shakespeare to Boulevard) – Bus 40%	2,900,000	724,000	0	0	0	0	0	0	0	0	3,624,000
Sylvia Park Station	0	0	360,000	1,480,000	1,500,000	0	0	0	0	0	3,340,000
Shoal Bay Wharf Development (Tryphena)	1,000,000	2,000,000	0	0	0	0	0	0	0	0	3,000,000
Glenfield Archers Road upgrade (Wairau to Coronation) – Bus 20%	0	0	0	0	87,701	74,153	78,476	933,845	196,108	1,526,288	2,896,571
Southdown to Avondale Loop	0	0	0	0	0	0	0	350,000	1,500,000	1,000,000	2,850,000
Rosedale / Greville Busway Station	0	0	0	0	0	0	111,000	276,000	1,152,000	1,161,000	2,700,000
Northern Busway Extension – stations	750,000	400,000	1,500,000	0	0	0	0	0	0	0	2,650,000
Customer services experience project	2,600,000					0					2,600,000
Beachaven Ferry Terminal	0	0	50,000	1,150,000	1,100,000	0	0	0	0	0	2,300,000

Table 7.11 Continued...

Project name	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	TOTAL
Wynyard Quarter – Te Wero Bridge	0	0	0	0	0	0	0	400,000	750,000	1,000,000	2,150,000
Waitakere City Council Glen Eden Park-and-Ride	1,000,000	1,000,000	0	0	0	0	0	0	0	0	2,000,000
Waitakere Station upgrade	0	450,000	0	1,530,000	0	0	0	0	0	0	1,980,000
Glenfield Road / Birkenhead Avenue upgrade (Eskdale to Mokoia) – Bus 20%	0	0	0	89,672	402,677	307,311	322,676	815,682	0	0	1,938,018
Otahuhu Bus Interchange	0	1,900,000	0	0	0	0	0	0	0	0	1,900,000
Tamaki Drive Broadwalk between Kelly Tarltons and Millennium Bridge – Bus 20%	171,600	587,160	521,460	525,780	0	0	0	0	0	0	1,806,000
Downtown Ferry Terminal Piers 3 and 4	0	1,750,000	0	0	0	0	0	0	0	0	1,750,000
Takanini Park-and-Ride	0	1,740,000	0	0	0	0	0	0	0	0	1,740,000
Paerata Station	0	0	0	1,650,000	0	0	0	0	0	0	1,650,000
Takanini Station upgrade	0	0	0	1,600,000	0	0	0	0	0	0	1,600,000
Huapai Station upgrade	0	0	230,000	230,000	1,140,000	0	0	0	0	0	1,600,000
Te Mahia Station upgrade	0	1,550,000	0	0	0	0	0	0	0	0	1,550,000
East Coast Road upgrade (Sunset to Constellation) – Bus 20%	0	0	0	0	163,429	447,107	912,089	0	0	0	1,522,625
Sylvia Park Station Park-and-Ride	0	0	1,500,000	0	0	0	0	0	0	0	1,500,000
Swanson Station	1,400,000	0	0	0	0	0	0	0	0	0	1,400,000
Te Atatu Ferry Terminal	0	0	0	0	0	0	0	0	0	1,200,000	1,200,000
Puhinui Park-and-Ride	0	1,080,000	0	0	0	0	0	0	0	0	1,080,000
New Lynn TOD Stage 5 Great North Road – Bus 30%	904,500	165,000	0	0	0	0	0	0	0	0	1,069,500
Botany to Manukau RTN	0	0	1,000,000	0	0	0	0	0	0	0	1,000,000
Northcote Point Ferry Terminal	0	0	0	0	0	160,000	840,000	0	0	0	1,000,000
Downtown Ferry Terminal Pier 2	0	1,000,000	0	0	0	0	0	0	0	0	1,000,000
Rail crossing separation	0	500,000	500,000								1,000,000
Devonport Stanley Bay Wharf access upgrade	0	0	0	0	920,000	0	0	0	0	0	920,000
Puhinui Station upgrade	800,000	0	0	0	0	0	0	0	0	0	800,000
Avondale Station Park-and-Ride	0	0	0	0	800,000	0	0	0	0	0	800,000
Westfield Station upgrade	700,000	0	0	0	0	0	0	0	0	0	700,000
Electronic sign renewals	50,000	52,500	54,000	57,881	60,775	63,814	67,005	70,000	74,000	77,566	627,541
Sunnyvale Station	0	0	0	0	0	0	0	0	0	580,000	580,000
Glen Innes Station	0	0	0	0	0	0	0	0	0	580,000	580,000
Henderson – Albany Rapid Transport Network	0	0	0	0	500,000	0	0	0	0	0	500,000
IT HOP Phase 2	370,776	0	0	0	0	0	0	0	0	0	370,776
Stanley Bay Ferry Terminal	60,000	0	0	0	0	0	0	0	0	0	60,000
TOTAL PUBLIC TRANSPORT CAPITAL NEW WORKS ($)	302,408,094	488,781,076	355,027,190	485,822,198	589,725,754	556,908,591	402,153,019	690,909,854	28,999,442	37,382,689	3,938,117,907

7.12 The approved Long Term Plan

The approved Long Term Plan

This section compares the approved LTP envelope for OPEX and renewals with the public transport network needs as determined by this AMP at a regional level and identifies the likely impacts of any variances. Revenue and funding incomes to Auckland Transport (from Auckland Council ratepayers and NZTA government subsidies and the like) are allocated through the approved Long Term Plan budgets. The LTP was adopted on 28 June 2012.

It is noted in Table 7.12-1, that the LTP OPEX and renewal budgets and network needs do not include corporate overheads.

OPEX impacts

Based on the information above, the LTP allocated budget for public transport OPEX shows an apparent 10-year shortfall of $23 million (one per cent reduction) compared to the network needs determined by this AMP. However, the apparent variance of $23 million not a reduction in asset related OPEX, but rather a re-assessment of fare and lease incomes. Therefore, public transport asset-related operational expenditure shows no variance between the LTP allocated budgets and the AMP needs.

The OPEX shortfalls and impacts specific to the various PT asset types are contained the lifecycle management plans in Section 4 of this AMP.

Renewal impacts

Based on the information above, the public transport network capital renewals expenditure shows no variance between the LTP allocated budgets and the AMP needs.

Further efficiency savings

As required by the approved LTP, a further reduction in OPEX of $18.6 million per year, reducing to nil by 2016/17, will need to be allocated against asset related operational budgets. The impact of this reduction on public transport operational budgets is yet to be assessed and finalised.

Monitoring and management of Long Term Plan consequences

The consequences resulting from these variances will be monitored and reported as appropriate.

CAPEX new works

CAPEX new works contained in this AMP are derived from draft LTP listings as at April 2012 and are produced in section 7.4.3.

The capital new works programme has been further refined and adopted in late June 2012. Details of this adopted programme are contained in the LTP.

Table 7.12-1 Variance between LTP approved budget and AMP network needs for PTs (all un-inflated)
Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

Public transport network	10-year total LTP approved budget ($000s)	10-year total AMP network needs ($000s)	Variance ($000s)
Operations and maintenance	2,531,485	2,554,459	-22,974
Renewals	91,277	91,277	0
Public transport network total	2,622,762	2,645,736	-22,974

7.13 Inflation effects

7.13.1 Inflation effects on AMP needs

Un-inflated and inflated public transport network needs for the AMP are shown in Table 7.13-1.

7.13.2 Inflation effects on LTP budgets

Un-inflated and inflated PT network budgets from the LTP are shown in Table 7.13-2.

Table 7.13-1 Un-inflated and inflated PT network needs

Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

UN-INFLATED financial needs ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	202-21	2021-22	10-year total 2013-22
O&M		281,366	288,097	273,654	233,407	238,665	246,377	248,550	251,821	242,232	250,289	2,554,459
Renewal		9,839	10,872	11,509	8,206	8,001	7,825	9,325	8,387	8,655	8,656	91,277
Public transport total		291,205	298,969	285,163	241,613	246,666	254,202	257,875	260,208	250,887	258,945	2,645,736
AC inflator	OPEX	3.30%	3.30%	3.30%	3.30%	3.50%	3.60%	3.10%	3.10%	3.30%	3.60%	n/a
AC inflator	CAPEX	3.90%	3.40%	2.80%	2.90%	3.10%	3.30%	3.50%	3.70%	4.00%	4.00%	n/a
INFLATED financial needs ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	202-21	2021-22	10-year total 2013-22
O&M		290,651	307,425	301,650	266,290	282,092	300,234	312,271	326,822	325,694	348,642	3,061,772
Renewal		10,223	11,680	12,711	9,325	9,375	9,471	11,681	10,895	11,693	12,163	109,218
Public transport total		300,874	319,105	314,361	275,615	291,467	309,705	323,952	337,717	337,387	360,805	3,170,990

Table 7.13-2 Un-inflated and inflated public transport network LTP budgets

Source: LTP Budget Model 12 April 2012 after refresh for AMP and revised LTP Budget Model 28 June 2012

UN-INFLATED financial needs ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	202-21	2021-22	10-year total 2013-22
O&M		276,312	288,966	267,938	271,735	232,632	237,899	239,920	242,520	232,752	240,811	2,531,485
Renewal		9,839	10,872	11,509	8,206	8,001	7,825	9,325	8,387	8,655	8,656	91,277
Public transport total		286,151	299,838	279,447	279,941	240,633	245,724	249,245	250,907	241,407	249,467	2,622,762
AC Inflator	OPEX	3.30%	3.30%	3.30%	3.30%	3.50%	3.60%	3.10%	3.10%	3.30%	3.60%	n/a
AC Inflator	CAPEX	3.90%	3.40%	2.80%	2.90%	3.10%	3.30%	3.50%	3.70%	4.00%	4.00%	n/a
INFLATED financial needs ($000s)		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	202-21	2021-22	10-year total 2013-22
O&M		285,431	308,352	295,349	310,018	274,960	289,902	301,429	314,751	312,948	335,440	3,028,580
Renewal		10,223	11,680	12,711	9,325	9,375	9,471	11,681	10,895	11,693	12,163	109,218
Public transport total		295,654	320,032	308,060	319,343	284,335	299,373	313,110	325,646	324,641	347,603	3,137,798

8 Risk Management

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8 Risk Mangement

8.1 Overview

This section covers the risk management process being implemented by Auckland Transport and how this applies to current and future transport activities.

The objectives of risk management in Auckland Transport are to provide:

- Protection and continuity of the core business activities
- Fulfilment of legal obligations
- Safeguarding of passenger, public, employee and contractor health
- Environmental protection
- Operation and protection of assets at the lowest cost
- Contingency planning for foreseeable emergency situations
- Secure funding and protection of the balance sheet.

8.2 Risk management approach

Auckland Transport's risk management function fulfils an essential governance role, overseeing the organisation's management of risk. It provides guidance to ensure that appropriate processes exist to identify and manage business risks.

Risk is an integral part of the world in which we live. Work and the management of risk is fundamental to achieving both organisational and related individual objectives. Risk management activities take various forms and although many people do not use the term 'risk' when they undertake these activities, the concept of risk is central to what they are doing.

Auckland Transport has developed a risk management framework consistent with the joint Australian New Zealand Standard – AS/NZS ISO: 31000:2009 (Risk Management – Principles and guidelines) in order to ensure that risks generally throughout the business are managed and that risk management is performed on a consistent basis.

The Rsk Management Framework defines the management policies, procedures and practices to be applied to the tasks of identifying, analysing, assessing, treating and monitoring risk.

8.3 Risk Management framework

Auckland Transport's Enterprise Risk Management Framework provides the basis for managing business risks of the organisation.

This framework defines:

- The Risk Management Policy
- Governance framework, roles and responsibilities within the Auckland Transport
- The risk assessment process
- Reporting and accountabilities
- Escalation process.

These polices, processes and definitions are included in the draft framework and in Auckland Transport's Infrastructure Risk Governance Plan.

The risk governance structure of the Infrastructure Department, which is included in the Risk Governance Plan, is reproduced in Figure 8.1-1.

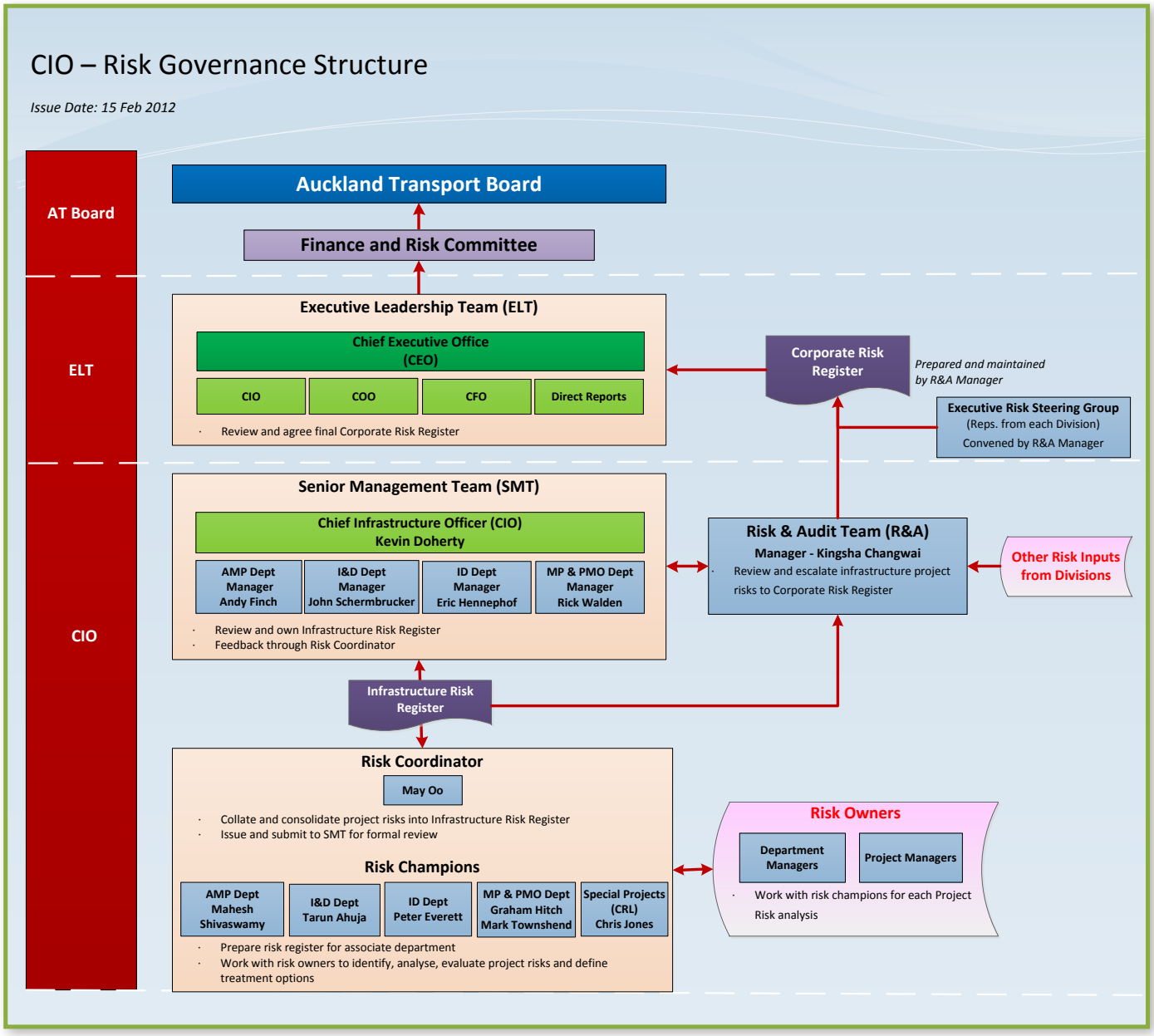
8.4 Asset management key strategic objectives

It is good business practice to align risk management with the strategic objectives of the organisation.

The Asset Management and Programming department has the following strategic objectives:

- To optimise Auckland Transport's capital project portfolio within the fiscal envelope
- To ensure effective strategic asset management planning including regional LOS to guide investment decisions across the business
- To maintain and optimise asset data to inform decision making across the business
- To ensure regional operating principles and standards reflect appropriate asset management practices for the network.

Figure 8.1-1 Infrastructure risk governance structure
Source: Auckland Transport Infrastructure Risk Governance Plan



8.5 Risk management process

The five major steps of the risk management process are summarised in Figure 8.5-1.

8.5.1 Establishing the context

Establishing the context defines the basic parameters within which risks must be managed and sets the scope for the rest of the risk management process.

All risks are reviewed in the context of the internal / external environment in which Auckland Transport seeks to achieve its business objectives.

The context includes linking and identifying risks relative to:

- **Strategy and objectives** (key for identifying risks) – also called value drivers
- **Risk types or categories** for aggregated reporting (to senior management and the Board)
- **Risk ownership** assigned to senior management (to ensure responsibility and accounting for managing risks)
- **Where the risk occurs** (location – business units, geographically and projects to generate risk registers per reporting entities)
- **Risk assessment criteria matrix** to guide the consistent analysis and evaluation of the likelihood and consequences of risks, which provides the overall risk rating.

8.5.2 Risk identification

Risk identification is a systematic and continuing process to maintain an up-to-date view of risks to achieving Auckland Transport's business objectives. The tools and techniques used to identify new risks are appropriate to Auckland Transport's business and include checklists, workshops, reports from subject matter experts, assessments based on review of data and records by experienced staff and process and systems' analysis.

Figure 8.5-1 Risk management process
Source: ISO 31000:2009 Risk Management Process Diagram

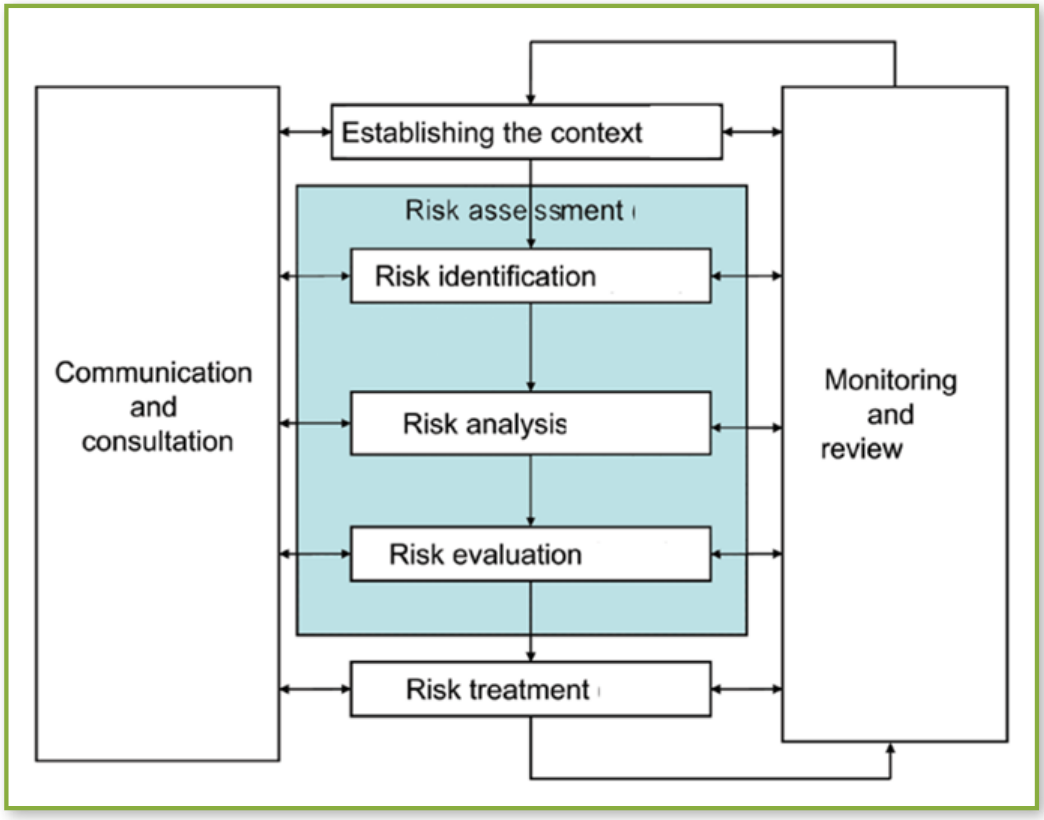


Table 8.5-1 Frequency / likelihood ratings table
Source: Draft Enterprise Risk Management Framework (v 1.0)

Likelihood risk rating				
1. Very low	2. Low	3. Medium	4. High	5. Very high
(May occur once in 20 years) <5%	(May occur once in five to 20 years) 2 - 20%	(May occur once in the next two to five years) 20 - 50%	(May occur once in the next two years) 50 - 75%	(May occur this year) > 75%

Auckland Transport operates a number of continuing programmes which assist the risk identification process including:

- Asset condition assessments
- Assessments of asset performance.

Both the impact and likelihood of each risk needs to be identified. The potential consequence to the achievement of business objectives will then be assessed. Auckland Transport maintains a number of systems which are used to support risk registers and inform the risk management process.

The responsibility for management of each risk is assigned to the most appropriate person within Auckland Transport.

8.5.3 Risk analysis

Risk analysis is the process used to determine the nature and level of risk, and if the risk requires treatment. Risk analysis includes:

- Consideration of risk causes / sources
- The likelihood (probability) that the risk will occur with current controls in place and considering any completed mitigation actions
- The consequences if all mitigations and controls fail and the risk crystallises
- Reviewing possible positive (opportunities) and negative consequences of risks to the achievement of business objectives.

The assessment of the risk can be qualitative or quantitative.

The estimated level (or magnitude) of risk is expressed as a combination of its consequences and their likelihood. The likelihood of occurrence and the severity of consequences should be based on as much real data as possible, for example local knowledge or recorded events such as maintenance records and weather events. Some analysis may be required for verification.

During the evaluation process, current controls (measures that reduce the risk) and completed mitigation actions are considered. Any future planned actions should not be considered until complete.

Risk should be considered in the context of the current position of the business and the risk to achieving its objectives.

The likelihood both in percentage and as timeframes for the risk crystallising is shown in Table 8.5-1.

After the likelihood and consequence factors have been determined, the level of risk is calculated by multiplying the likelihood of occurrence and the consequence rating.

Risk = the likelihood of an event occurring x the consequence of such an event

The final outcome is a risk rating. The risk rating enables definition between those risks that are significant and those that are of a lesser nature. Having established the comparative risk level applicable to individual risks, it is possible to rank those risks.

Table 8.5-2 Risk consequence ratings table
Source: Draft Enterprise Risk Management Framework (v 1.0)

Consequence risk rating					
	Reputation	**Finance**	**Environment**	**Health and safety**	**Service delivery / asset management**
5. Very high	• Adverse global media coverage • Widespread and significant community concern • Potential prosecution with maximum fine / imprisonment • Significant negative impact on stakeholder confidence	**Loss > $ 50m**	**Extensive irreversible damage (widespread) to the environment resulting in:** • Widespread, irreversible damage to land and/or water ecosystems • Permanent loss of one or more species • Clean up and remediation work required.	**Fatality – staff, agent or public, attributable to Auckland Transport**	**Failure to achieve core service delivery standards**
4. High	• Adverse national media coverage • High-profile community concerns raised • High profile legal challenge or prosecution with heavy fine • Damage to stakeholder confidence	**Loss > $20m to Loss < $50m**	**Irreversible localised damage (major) to the environment resulting in:** • Widespread, long term reversible damage to land and/or water ecosystems • Significant reduction in one or more species • Clean up and remediation work required.	**Life threatening injuries or impacts to staff, agent or public, attributable to Auckland Transport**	**Failure to achieve some service delivery standards**
3. Medium	• Adverse local media coverage • Community complaints • Some legal constraints imposed, minimal fine • Some loss of stakeholder confidence	**Loss > $10m to Loss < $20m**	**Measurable damage (some) to the environment requiring significant corrective action resulting in:** • Localised, medium term reversible damage to land and/or water ecosystems • Moderate reduction in one or more species • Pollution which requires clean up and remediation work.	**Non-life-threatening injuries or impacts to staff, agent or public requiring hospitalisation attributable to Auckland Transport**	**Some reduction in service delivery standards**
2. Low	• Reputation within the transport industry is damaged • No media attention • Some community complaint • Technical legal challenge or breach • Marginal impact on stakeholder confidence	**Loss > $0.5m to Loss < $10m**	**Contained and reversible (minimal) environmental impact resulting in:** • Localised minor reversible damage to land and/or water ecosystems • Temporary reduction in one species • Contained pollution requires clean up.	**Injuries to staff, agent or public attributable to Auckland Transport**	**Minor impact on service delivery standards**
1. Very low	• Reputation intact, internal knowledge only • Minimal impact on stakeholder confidence • Minor legal impact or breach	**Loss < $0.5m**	**Small localised and reversible environmental impact resulting in:** • Slight short term damage to land and/or water ecosystems • No noticeable species reduction • Contained pollution which is cleaned up immediately by operators / contractors.	**Minor injuries to staff, agent or public attributable to Auckland Transport**	**Negligible impact on service delivery standards**

Table 8.5-2 shows how the consequences are assessed in terms of the outcome of an event affecting objectives. The range of outcomes are classified into five categories such as reputation, finance, environment, health and safety, and service delivery / asset management.

Five risk classes have been used to categorised the risk levels, based on the above ranking system, and they are very low, low, medium, high and very high. The estimated levels of risks are determined by using the table on the next page.

Once the impact has been ranked according to the relative risk level it poses, it is then possible to target treating the risk exposure, by beginning with the highest risks and identifying the potential mitigation measures.

The outcome of this stage provides an initial view of the significance of the identified risks. Particularly with simple scoring schemes, risks can be assigned a too high or too low significance on the first pass. The next stage is designed to review this assignment and adjust it where necessary.

8.5.4 Risk evaluation

Risk evaluation is the process of comparing the results of the risk analysis to determine whether a risk of a particular magnitude is tolerable or acceptable.

In order to assess the magnitude of the risk, the risk class is assessed. This is achieved by scoring the risk likelihood and consequence on the risk rating graphs shown in Table 8.5-3. Likelihood is plotted on the X-axis and consequence on the Y-axis.

Table 8.5-3 Risk scoring table
Source: Draft Enterprise Risk Management Framework (v 1.0)

Overall risk rating (likelihood x consequence)					
5. Very high	Class 4 (5)	Class 4 (10)	Class 5 (15)	Class 5 (20)	Class 5 (25)
4. High	Class 3 (4)	Class 3 (8)	Class 4 (12)	Class 5 (16)	Class 5 (20)
3. Medium	Class 2 (3)	Class 3 (6)	Class 3 (9)	Class 3 (12)	Class 5 (15)
2. Low	Class 2 (2)	Class 2 (4)	Class 2 (6)	Class 3 (8)	Class 3 (10)
1. Very low	Class 1 (1)	Class 1 (2)	Class 1 (3)	Class 2 (4)	Class 3 (5)
	1. Very low	2. Low	3. Medium	4. High	5. Very high

Consequence rating

Likelihood rating

The higher the risk class (representing the level of risk), the greater the priority afforded to treating the risk. Treatments in Class 5 risks should be immediate. Class 4 and 5 risks should be reported to the Board on a monthly basis.

There is likely to be strong correlation between the risk class (Class 4 and 5 risks will have higher priority) and the operational / capital projects. Major / strategic project risks will be reported or presented to the Board on a two-monthly rotating basis, as part of project reporting, in addition to enterprise-wide risks.

Table 8.5-4 is intended to provide a statement of the general approach at each class level, noting that each risk must still be assessed for treatment individually.

8.5.5 Risk treatment

Risk treatment involves selecting one or more options for treating risks and implementing those options. The selection process should include a cost / benefit analysis to ensure that the solution is cost effective.

The risk owner (with authority and accountability to manage the risk) will be responsible for development of appropriate risk treatment plans. In some cases, responsibility for development will be transferred between Auckland Transport teams (e.g. major project requirements are transferred from Operations to Infrastructure). Where this occurs, the transfer of responsibility should be clearly documented and associated reporting responsibilities should also be transferred.

The risk treatment options are shown below:

- **Tolerate:** Accept the risk without treatment. This would normally only be the case where treatment is not cost effective, in which case robust contingency plans should be developed and implemented. This option may be taken in the case of 'run to failure assets'. Where the risk will not be treated, then the decision to tolerate the risk should be clearly documented. The position should be monitored and significant changes reported
- **Terminate:** Cease the activity. This is rarely an option for a transport service provider
- **Transfer:** The risk is transferred to other parties e.g. as part of a contract. As with the termination option
- **Treat:** Develop one or more options for modifying the risk. Frequently, a number of stages is required over time to provide the maximum mitigation for the risk and an example is given.

Table 8.5-4 Risk class and priority for treatment
Source: Draft Enterprise Risk Management Framework (v 1.0)

Risk class	Significance	Priority for risk treatment
Class 5	Very high	Immediate action One monthly reviews by Board
Class 4	High	Treatment options investigated Short, medium and long-term actions developed and implemented One monthly review by Board
Class 3	Medium	Treatment is required where cost effective and practicable Changes regularly monitored, requirements for action reviewed Regular reviews scheduled
Class 2	Low	Implement cost-effective treatment where appropriate Tolerate only where treatment is not cost effective Changes regularly monitored Regular reviews scheduled
Class 1	Very low	Tolerate – monitor for significant changes in risk class

- **Short term** – Temporary operational treatments to stabilise the position, e.g. maintenance programmes to hold the current state
- **Medium term** – May include studies into options for a permanent solution, refurbishments and some smaller scale replacement projects
- **Long term** – Major replacement project.

The objective is for the treatment to become more robust and sustainable over time.

Expectations regarding how treatment will reduce likelihood and consequence need to be carefully reviewed. In addition, a wide range of treatment / mitigation actions are continuing at all times across Auckland Transport and the result of these actions should be considered when deciding on new or additional treatments.

Examples of a continuing treatment regime include condition assessments, planned preventative and corrective maintenance and incident and fault responses.

Due to the high consequence associated with the loss of a major transport asset, it is sometimes only possible to reduce the likelihood score. This should not detract from pursuing these risk treatments.

On completion of the risk treatments, the risk class should be reassessed and the risk register be updated accordingly. In addition, appropriate contingency and incident response plans must be maintained for risks where the consequence remains high, regardless of treatment.

8.6 Monitoring, review and reporting

Regular monitoring, review and reporting of risks is an important component of the Auckland Transport risk management framework, as it ensures new risks and changes to existing risks are identified and managed, and that risk treatment plans are developed and implemented.

The risk registers are the records of all risk-related information within Auckland Transport. Risks will be added to risk registers, appropriate risk owners assigned and all risk treatments will be referenced.

Risks that have been treated will be reviewed and the likelihood and consequence reassessed. Where the risk has been completely mitigated, it will be closed and archived (removed from the risk register, but clear records of the risk and its treatment will be maintained).

All risks held in the risk registers will be assigned a risk owner who has authority and responsibility for managing and reporting progress towards completion of the risk treatments for the specific risks.

Table 8.6-1 Reporting, monitoring and review regime
Source: Draft Enterprise Risk Management Framework (v 1.0)

Risk class	Responsibility for completion of review	Report to	Monitoring and reporting frequency
Class 5	Chief officers	Chief Executive and Board	Monthly, in enterprise risk report
Class 4	Chief officers	Chief Executive and Board	Monthly, in enterprise risk report
Class 3	Tier 3 / unit managers	Chief officers	Monthly
Class 2	Line managers	Tier 3 / unit managers	Quarterly
Class 1	Line managers	Tier 3 / unit managers	Quarterly

Chief officers will ensure that monitoring and reporting of risks is completed in accordance with Table 8.6-1.

To promote meaningful reporting, risks may be grouped where the underlying asset and treatment of risk allows for aggregated reporting (e.g. all rail stations or park-and-ride facilities with similar capacities or capabilities). Where aggregation of risks is applied, exception reporting (e.g. where there is a change to the risk profile of an individual asset, changing it from the classification of the group) is to be promoted.

The two-monthly management reporting process should note any significant changes to the classification of a component of an existing aggregated risk, i.e. any changes in profile compared to its group.

Chief officers and business unit managers will then complete reviews focusing on changes in the risk profile.

New risks will be classified and any with proposed class 4 or 5 risk classifications will be presented to the Executive Leadership Team for consideration before being added to the risk register.

The risk owner at lower management level, who is responsible for the individual (not aggregated) risk, will be assigned responsibility for reviews at appropriate intervals utilising the detail provided by supporting management information systems, and will advise the appropriate business unit manager of any resultant changes to risk profiles.

8.7 Current status

Risk registers are being developed and refined across Auckland Transport at present in line with the approach outlined in this section. Table 8.7-1 provides details of the Risk Register for the Asset Management and Programming Department of Auckland Transport.

The corporate risk management function coordinates risk registers across the organisation. These organisational risk registers are included in the Appendix.

Table 8.7-1 Risk Register (Asset Management and Programming) May, 2012

Ref ID (Business Unit and Risk #)	Date raised	Risk description	Risk type	Cause of the risk event	Consequence of the risk event	Gross risk (without controls)				Existing		Residual risk (after applying existing controls)				Future		Action plans to address gaps in controls	Responsibility	Due date
						Likelihood	Consequence	Gross Risk	Risk Class	Pre-event preventative controls	Post-event mitigation controls	Likelihood	Consequence	Residual Risk	Risk class	GAP missing preventative control(s) (treatments)	GAP missing post-event mitigation control(s) (treatments)			
AMP 1	Mar-12	Failure to deliver on funding investment outcomes	Service Delivery Financial Reputational	Lack of clear strategic alignment between Auckland Plan, Integrated Transport Plan (ITP), Regional Land Transport Plan (RLTP) and Asset Management Plan (AMP) Potential misalignment between national outcomes signalled in GPS and regional outcomes in Auckland Plan Optimised Decision Making process aligned to outcomes not yet developed Delivered project benefits not measured AC/Local Boards drive non-strategic local based investment decisions	Lack of confidence from Auckland Council and NZTA Additional oversight and control AT fail to convince NZTA to bulk fund capital projects under $5m	3	4	12	Class 4	A project team and steering group has been established to map the governance, resources and plot of the ITP First draft of ITP to be published in June 2012		2	4	8	Class 3	Clarification around ownership and responsibilities Future Versions of ITP Development of ODM through Integrated Transport Plan	Development of process to measure and report achieved project benefits- compare to those envisaged at commencement	Liaise with Strategy and Planning to formalise roles and responsibilities matrix for the ITP	Andy Finch (Manager Asset Management and Programming)	Dec-13
AMP 2	Mar-12	Ineffective decision making using inaccurate data in asset management systems	Service Delivery Financial Reputational	Inconsistent data sets within RAMM inherited from legacy councils. Legacy councils had different approaches, methodology and extent and quality of recorded data No controls over internal and external access to RAMM for data entry.	Inadequate forward work programmes affecting service delivery Effectiveness of new AMP contracts may be compromised through non-standardised data formats Possible impact upon viability of CRM Project. Requires RAMM 2011 to operate - AT runs RAMM 2008 Unable to obtain optimal benefits from investment	3	4	12	Class 4	A high level analysis of the asset data contained in RAMM has been completed and reported through decision value assurance committee (dVAC) Small project team established across AMP / IT / RCM to review migration to RAMM 2011	Development and implementation of asset data standards manual	3	3	9	Class 3	Lack of funding for the prioritised improvement plan. Total cost of implementation => $1m Development of competence criteria for accessing database.		Resubmit business case for funding improvement tasks in the next financial year (not approved this year)	Viren Sharma (Asset Systems and Monitoring Manager)	Jun-13
AMP 3	Mar-12	Failure to deliver capital works programme compromising the delivery of Statement of Intent (SOI) programme of action	Service Delivery Financial Reputational	NZTA moratorium on capital project subsidy Manual collation of spread sheets and information reliant upon individuals Unclear roles between Business Support, AMP, Finance and RLTP teams for managing NZTA subsidy process and reporting Capital programme split between divisions (lack of whole of organisation visibility) Present programme developed without capital programming tools	NZTA subsidisable projects not progressed, and increased AC funding required or reduction in programme Inefficient, inaccurate status reports and financial forecasting, with discrepancies, errors and out of date information Incomplete and inaccurate reporting from the lack of clear responsibility for monitoring Inconsistent information provided to management creating a poor reputation for programming and delivery Inaccurate programming information resulting in poor accuracy of programme delivery	3	4	12	Class 4	A Financial Assistance Rate (FAR) agreement with NZTA, for capital projects in 2011/12, Liaison with NZTA on subsidy level increases, possible ring fencing subsidy surpluses from projects Monthly performance value assurance committee (pVAC) meetings to review CIO delivery of performance. Project Highlight Reports (PHRs) Defined team roles and individual responsibilities, risk and project management guidelines developed Monthly review of data with management oversight Over-allocated programme based on legacy councils LTPs	Projects unlikely to receive subsidy in 2011/12 deferred to later years Post programme delivery review to be undertaken, end of year financial process Post programme delivery review to be undertaken, review team and individual responsibilities Recommendations to CEO on organisational structural changes to align with required workflows, accountabilities and interfaces Engage stakeholders to re-adjust future years capital programme to account for funding and delivery variance in 2011/12	2	4	8	Class 3	No agreement with NZTA on the balance between opex and capex to meet an overall subsidy funding shortfall No automated project and programme reporting developed mid 2012 sourced from a single data warehouse Needing additional clarification of team roles and individual responsibilities PMO, programming and risk assessment processes & reporting not consistent across all of AT Risk adjustment programme management process to be finalised, no GIS view of capital programme, information supply inconsistent and a manual process	Contingency Plan if NZTA agreement / subsidy not be received No KPI measurement on organisation compliance to following guidelines No business improvement plan or KPI's to track progress	Work with NZTA to identify opportunities to mitigate impact of moratorium on subsidy, and ensure sufficient projects are progressed to construction stage to enable rapid delivery once moratorium is lifted Initial discussions with IT around use of a dedicated IT resource for capital works programming Monthly reforecast of actual and forecast expenditure within CIO, systematised reporting framework under development A report with recommendations on role clarification, RLTP to return to Strategy and Policy PMO extended to cover all AT capital projects, staff training or administration support Develop risk adjustment programming database, GIS spatial tool and data warehouse solution to supply capital programme data	Veenay Rambisheswar (Regional Asset Programme Manager)	Jun-14
AMP 4		Ineffective life cycle management plans	Service Delivery Financial Reputational	Ineffective links between key Auckland Transport planning documents such as ITP, LTP, RLTP and AMP Poor understanding of levels of service and associated costs Lack of options for the delivery of alternative levels of service Lack of knowledge on asset condition and performance	Inaccurate recommendations for the Long-term Plan (LTP) Delivery of the agreed levels of Service will be compromised Value for money will not be delivered Objectives of the ITP and AMP may not be delivered	3	4	12	Class 4	The emerging asset management plan will identify the required levels of investment over the next 10 years to maintain asset condition and base levels of service. Publication date June 2012 Links being developed between AMP and ITP Consolidated legacy asset information.		3	3	9	Class 3	The AMP team has to develop the base levels of service and then identify the cost of maintaining it Undertake levels of service modelling Optimum investment levels for maintenance and renewals is yet to be established Compare actual growth and demand with forecast Whole of Life costs to be considered as part of procurement		Understand fully the life cycle needs of asset groups Undertake ODM based analysis to identify optimum investment levels • Develop a monitoring framework for growth and demand Develop Whole of Life principles with Procurement team	Siri Rangamuwa (Regional AMP and Policy Manager)	Jun-15

KEY:	
Very High	Class 5
High	Class 4
Medium	Class 3
Low	Class 2
Very Low	Class 1
Gross Risk	Risk before controls are applied
Residual Risk	Risk after application of existing controls
Gaps or missing controls	Controls that have not been applied/actioned

Table 8.7-1 Risk Register (Asset Management and Programming) May, 2012. Continued...

Ref ID (Business Unit and Risk #)	Date raised	Risk description	Risk type	Cause of the risk event	Consequence of the risk event	Gross risk (without controls)				Existing		Residual risk (after applying existing controls)				Future		Action plans to address gaps in controls	Responsibility	Due date
						Likelihood	Consequence	Gross Risk	Risk Class	Pre-event preventative controls	Post-event mitigation controls	Likelihood	Consequence	Residual Risk	Risk class	GAP missing preventative control(s) (treatments)	GAP missing post-event mitigation control(s) (treatments)			
AMP 5	Mar-12	Unexpected failure of critical assets	Service Delivery Financial Reputational health and safety	Incomplete asset inventory inherited from legacy Councils Incomplete knowledge of condition and remaining life of critical infrastructure Insufficient maintenance and renewal funding Insufficient opex budget to undertake asset condition surveys in accordance with published standards and guidelines	Unforeseen Capital or Renewal Expenditure required between LTP periods Unplanned closure or restrictions on network Health and safety issues Adverse publicity Reduction in LoS	3	4	12	Class 4	New contracts for asset condition surveys being procured with a commencement date of July 2012. These will establish robust protocols for data collection and processing to provide additional assurance around completeness of asset data by 2015 Routine inspections of assets by Operations staff Potential implications of funding shortfalls to be identified in Asset Management Plan Opex growth bid submitted for 2012/13 onwards to support specified level of condition surveys	Emergency procedures and incident management plans developed and managed by Operations Division through their maintenance contracts.	2	4	8	Class 3	Develop programmes to ensure appropriate maintenance and renewals and prevent deterioration of assets		Focus on filling the critical gaps in asset information through new contracts Identify funding needs to maintain LoS	Viren Sharma (Asset Systems and Monitoring Manager)	Jun-14
AMP 6	Mar-12	Inaccurate asset registers and asset valuation	Service Delivery Financial Reputational	Numerous registers, databases and spread sheets held across AT recording different types of asset No AT wide process for recording asset changes	Incorrect Fixed Asset Register Incorrect asset depreciation calculation Incomplete knowledge of assets held across AT	4	3	12	Class 3	A project to formalise asset recording across the business has been scoped Memo sent to CFO, CIO & COO		4	3	12	Class 3	A decision needs to be made by the business as to whether this is a priority at this time		Follow-up with management to get a decision	Andy Finch (Manager Asset Management and Programming)	Jun-14
AMP 7	Mar-12	Failure to assess the Levels of Service needs in the development of AMP	Service Delivery Financial Reputational	Legacy LOS inherited from previous councils were not consistent throughout the region Lack of knowledge about customer expectations	Mis-alignment between levels of service and long term needs in AMP and LTP Customer service expectations may not be aligned to LoS	4	3	12	Class 3	Completed a stock take of legacy levels of service • Assumed maintaining the legacy LOS across the region until the approval of 2012-15 LTP Legacy council LoS were based around customer expectations		4	3	12	Class 3	Harmonise LOS across the region Obtain feedback from Local Boards and customers on proposed LoS		Develop options for harmonise regional levels of service and identify local variations Develop a framework for collecting customer views on LoS	Siri Rangamuwa (Regional AMP & Policy Manager)	Jun-15
AMP 8	Apr-12	Failure or unserviceability of critical infrastructure during an emergency event	Service Delivery Financial Reputational	Critical Transport Infrastructure not aligned to AC's emergency planning processes Insufficient funding within AMP budgets to undertake criticality assessment and resilience screening	Implementation of emergency plans may be compromised Significant adverse publicity	4	5	20	Class 5	AMP contracts to commence in July 2012 include scope for resilience screening		2	5	10	Class 4	Insufficient existing budget to support resilience screening		Business case for increased opex funding submitted	Andy Finch (Manager Asset Management and Programming)	Jun-14
AMP 9	Mar-12	Unforeseen programme cost escalation due to external factors (overspend)	Service Delivery Financial Reputational	Sudden change in the economic situation or market supply and demand	Lack of approved funding to meet improvement capital projects Programme delay leads to expiry of designations and consents on individual projects Failure to deliver on the strategic impacts for growth or service level as identified in SOI	3	4	12	Class 4	Factoring cost escalation into project budgets, NZTA inflation agreement Extension sought on existing consent Monthly re-forecasting of capital expenditure within CIO.	Individual projects deferred to meet the programme envelope New consents sought Agree with stakeholders adjusted future programme	2	4	8	Class 3	Monitoring and analysis cost indices that affect transport infrastructure		Investigate cost escalation forecasts Review cost escalation indices	Veenay Rambisheswar (Regional Asset Programme Manager)	Jun-13

KEY:	
Very High	Class 5
High	Class 4
Medium	Class 3
Low	Class 2
Very Low	Class 1
Gross Risk	Risk before controls are applied
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9 Asset Management Practices

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Auckland Transport
An Auckland Council Organisation

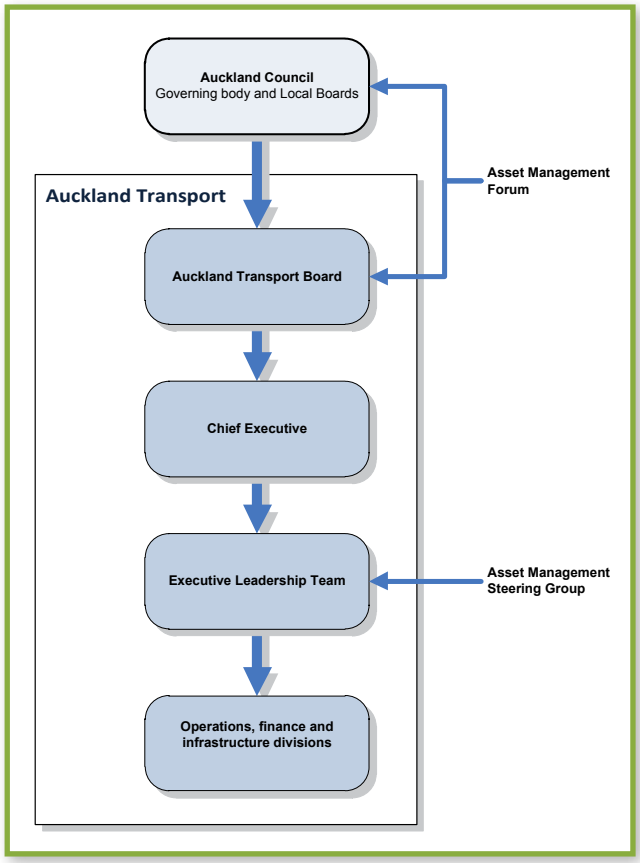
9 Asset Management Practices

9.1 Auckland Transport organisational responsibility

9.1.1 Governance

Auckland Transport has been given the management and control of the Auckland transport system under the Local Government (Auckland Council) Act 2009. It has the responsibility for all local roading and public transport activities in the wider Auckland region extending from Rodney in the north to a portion of Franklin in the south.

Figure 9.1-1 Governance hierarchy



People, processes and practices together contribute to Auckland Transport achieving effective asset management. The main business divisions of Auckland Transport are Operations, Infrastructure and Finance as shown in Figure 9.1-1. The organisation is structured beneath the chief executive as tier 2 divisions, tier 3 departments and tier 4 management units.

The Asset Management and Programming Department is within the Infrastructure Division and leads asset management planning and programming across the organisation. It has three management units which work closely together; AM Planning and Policy, Asset Programming and AM Systems. These units are tasked with providing the strategic and tactical asset management for the division.

Auckland Transport has an Asset Management Steering Group that meets fortnightly. It provides strategic overview and direction for the AMP project team. Auckland Transport also participates in Auckland Council's Asset Management Forum. This allows for information to be shared across all council units and CCOs such as growth projections. Auckland Transport follows the guidance material provided where appropriate for the transport business.

9.1.2 Frameworks for asset management

Two asset management frameworks were adopted by Auckland Transport's Board in April 2011:

- Asset Management Framework
- Levels of Service Framework.

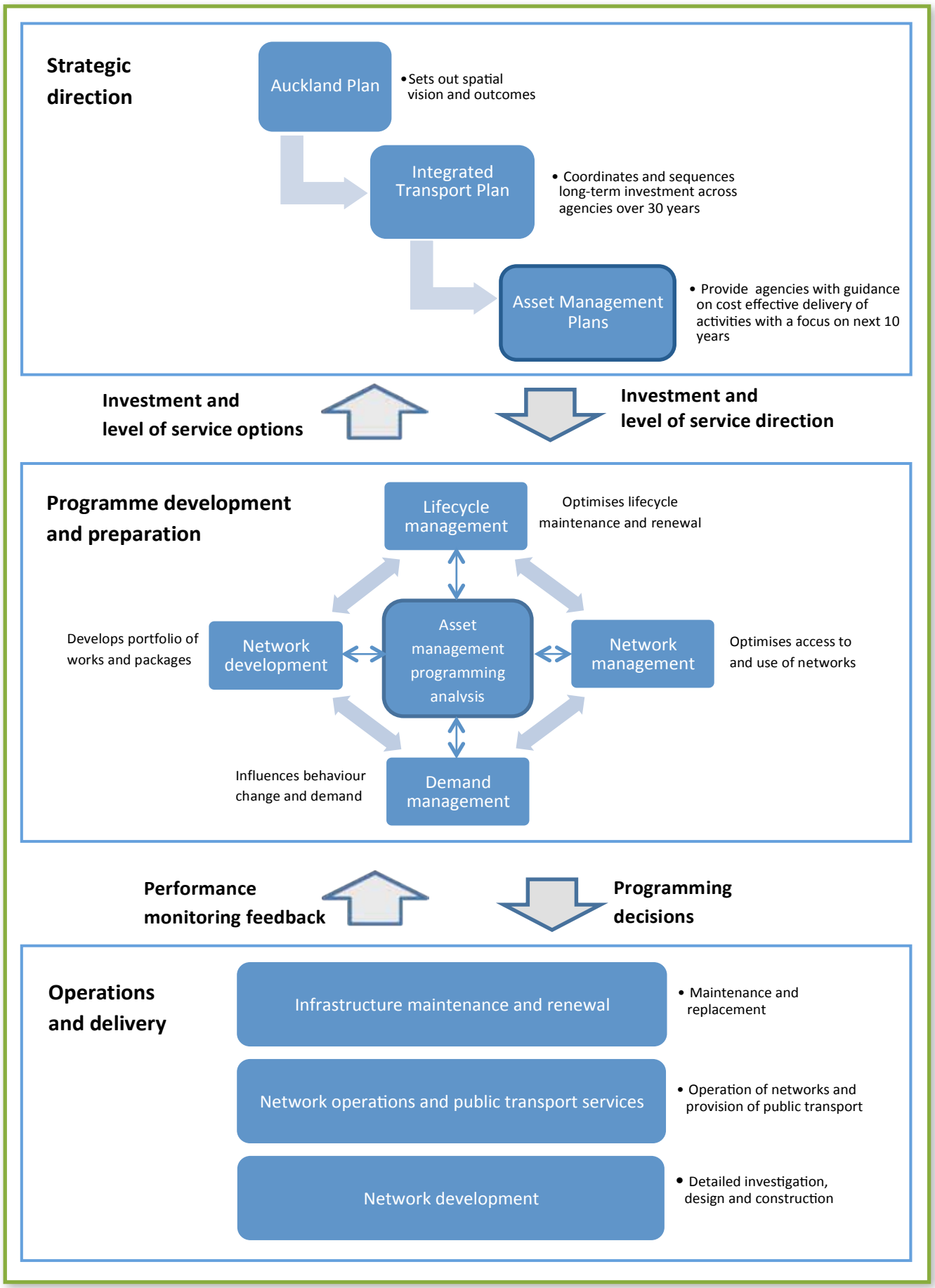
The Asset Management Framework integrates policies, planning processes, decision making and information across all transport assets and activities, and sets the asset management policy. It provides a management structure within which stakeholder needs, levels of service, asset information, finance, risk and resources are brought together. This enables balanced, consistent and high-quality asset management decision-making.

The Levels of Service Framework provides the structure to monitor and manage a common set of performance measures, outputs and outcomes. It provides the links between operational activities and strategic outcomes. It also aligns with Auckland Transport's Integrated Transport Plan (ITP), Statement of Intent (SOI) and Auckland Council's Long-term Pan (LTP). These frameworks are included in the appendix of this plan.

9.1.3 Auckland Transport system planning and delivery framework

Auckland Transport's planning regime and the delivery mechanism are shown in Figure 9.1-2.

Figure 9.1-2 Asset management development process



9.2 Process involving key Auckland Transport plans

The process that has been followed to date for the development of the key Auckland Transport plans is given in Figure 9.2-1. This process is still evolving in the new organisation and it will be further refined as necessary in the future.

Figure 9.2.1 Asset management development process

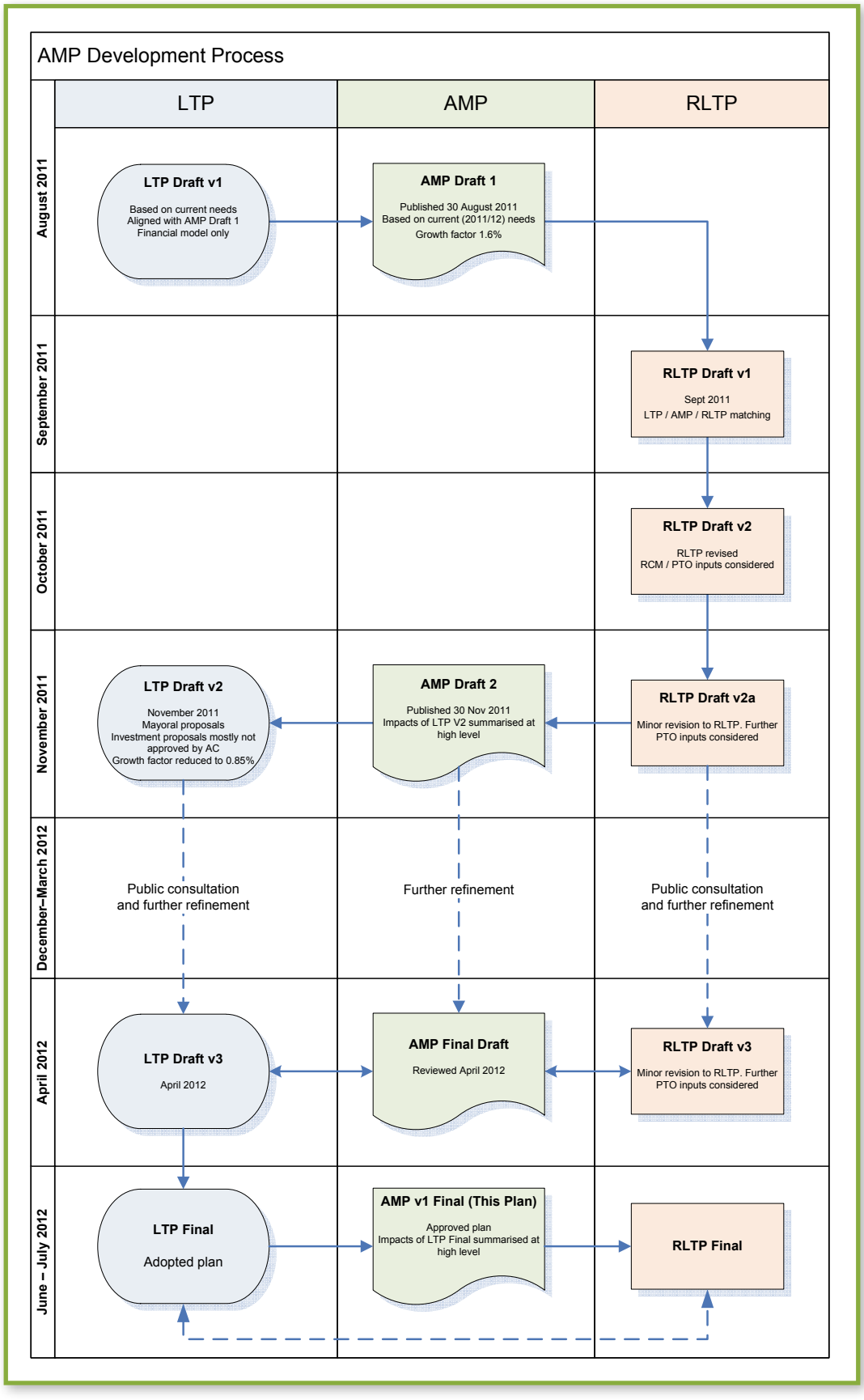


Table 9.3-1 Legacy councils evidencing best practice for AMP sections

Category / AMP section	Best practice council
Process of development	Auckland
Links to other planning documents	Manukau
Demand management	North Shore and Waitakere
LOS and performance measurement	North Shore and Waitakere
Asset systems and data	Rodney and Waitakere
Financial information	North Shore
Lifecycle management and asset management practices	North Shore
Risk management	Papakura
Optimised decision making	Rodney
Improvement programme	Auckland

9.3 Asset management practices

9.3.1 Legacy practices

Auckland Transport combines the transport skills and functions of seven local councils and Auckland Regional Transport Authority. The legacy councils generally followed the New Zealand Asset Management Support (NAMS) guidelines, in particular the International Infrastructure Management Manual (IIMM).

In 2010, NZTA undertook a review and comparison of the transport AMPs of Auckland's legacy local councils. Individual sections considered by the review to be best in their category are listed in Table 9.3-1.

Overall, the NZTA review concluded that the Auckland region's AMPs were current and of a very high standard. The overall best practice document was produced by North Shore City Council. Auckland City Council's 2009 Transport AMP won the 2010 Ingenium Asset Management Excellence award.

A stocktake has since been completed of the asset management planning processes and outcomes of the legacy councils. The stocktake found that the large urban councils had the best asset management practices. These have been used as the starting point to produce the new transport tactical Asset Management Plans for the region.

The legacy councils managed the public transport networks in a council environment where the public transport function was embedded with other services. The single Auckland Transport agency allows a more holistic and coordinated approach to regional public transport. It provides an opportunity for a more effective and efficient governance and use of asset management to help deliver service and value to the stakeholders in the region.

9.3.2 AMP development process

The initial draft AMPs (refer to Figure 9.2-1) were based on the existing AMPs of the legacy councils and their consolidated asset data, existing levels of service and condition information, the draft Auckland Plan (March 2011), and a preliminary financial model (based on existing budgets available in SAP).

These draft AMPs have now been further refined in this final AMP and they include the latest available information from key documents such the adopted Auckland Plan (March 2012) and the Integrated Transport Plan.

AMP development team

A rigorous approach has been taken with the production of this AMP. A structured project team with a blend of in-house specialists and external resources have been used to produce each the draft AMPs and this final version. Members of this AMP development team have extensive asset management experience with most of them holding bachelors and masters degrees in engineering and related fields.

Stakeholder consultation and feedback

The initial draft AMPs were completed in June and November 2011 and provided to internal and external stakeholders such as Auckland Transport business units, Auckland Council and NZTA. Formal sessions were completed in June and July 2011 with key internal and external teams to gather feedback on levels of service, identify additional network needs, understand any new information and indicate forward work programmes.

The information gathered from these feedback sessions have been incorporated in the final AMPs as appropriate.

The key Auckland Transport business units consulted include:

- Road Corridor Maintenance
- Road Corridor Operations
- Road Corridor Access
- PT Operations
- Parking
- Community Transport
- Property
- Business Support
- Strategy and Planning.

Peer Reviews and Audits of draft AMPs

A number of peer reviews and audits have been completed to establish the compliance of draft AMPs with industry best practice and audit NZ requirements. The details of these reviews and audits are included in Section 10, Improvement Plan and Monitoring.

These peer reviews and audits have been completed by following organisations:

- Auckland Council
- Audit NZ
- GHD and Beca.

AMP approval process

The approval of Auckland Transport Board has been obtained for the publication of this final AMP.

The overall approval process that was followed at various stages of the AMP development process is highlighted below:

Milestone	Status
1st draft of AM Plans	Completed in June 2011 Endorsed by AM Steering Group
2nd draft of AM Plans	Completed in November 2011 Endorsed by Auckland Transport Board
Final AM plans • Report to ELT • Report to AT Board	 Approved June 2012 Approved June 2012
Final AM plans	Published June 2012

9.3.3 Formal practices' assessment

A formal practices review of public transport services for the new organisation needs to be undertaken to help prioritise initiatives. Generally, the legacy councils periodically used gap analysis to review business practices, and to identify and prioritise asset management improvements.

9.4 Current status overview

This section discusses the status of Auckland Transport's current asset management practices and identifies practices the organisation wishes to use. Many of the legacy councils had mature business practices to support the delivery of their transport services. Auckland Transport is now working through harmonising and refining these processes, systems and data.

The key asset management practices needed to support good asset management plans can be grouped into three broad areas:

Processes	The necessary processes, analysis and evaluation techniques needed for lifecycle asset management
Information systems	The information support systems that support the above processes and which store and manipulate asset data
Data	Data available for manipulation by information systems to support asset management decision making

Harmonising the legacy data, systems and processes has been a significant task, required to develop the initial draft AMPs. Although a lot has been achieved to date, there is still much work to fully integrate these asset management practices to a consistent level regionally.

9.4.1 Asset management systems

Information systems are essential for storing and analysing asset information to make good asset management decisions. The main asset management information systems used by Auckland Transport for public transport assets are:

- SAP for finances
- RAMM for asset inventory
- DST for property asset management.

More detail on the systems used to manage the public transport assets is shown in Table 9.4-1

9.4.2 Asset management data

Data quality is important for end users so that they can have confidence in making an analysis using that data. Data was supplied by the legacy councils and its quality and completeness varies across the region and between asset classes.

Table 9.4-1 Asset management systems' summary

System purpose	Name	Purpose	System owners	Status / enhancement
Asset information system for roads	RAMM	RAMM holds individual asset records and condition for most road asset types	Asset Systems and Monitoring team	A number of significant issues exist from merging the seven legacy RAMM databases. These differences were in approach, methodology and recorded data in the seven databases. These need to be understood, managed and updated to provide a consistent, single database over time. (Refer to the table below for further detail)
Asset information system for property	SPM Assets	SPM Assets currently holds the asset records and condition for some public transport asset types. Some asset records are also held in RAMM and spread sheets	Asset Systems and Monitoring	Future plans are to contain all public transport asset records and condition in the SPM Assets. This is a software application that is web based and hosted by SPM consultants for various clients Some legacy wharf information was held in Opus' decision support tool (DST). This information has now been moved into SPM Assets
Asset information	GIS	Access information using network maps and aerial photographs	Auckland Council	The council manages all updates and holds the enterprise licence for the council and CCOs. It also uses ESRI products
Accounting system	SAP Finance	The mainframe accounting system used throughout Auckland Transport	IT and Business Systems	
Financial modelling	Financial model	Development of the financial model for AMP and LTP purposes using raw SAP financial data	Asset Planning and Policy	Currently in Excel spreadsheet but in future a planning module in SAP may be used
LOS monitoring and reporting	LOS framework	Stores the performance data from the legacy councils, SOI measures and new measures where developed. Integrates the monitoring of KPIs with LTP and LOS to provide management, executive and governance reporting	Asset Planning and Policy	Currently in Excel spreadsheet. Future plans are to store the performance data in the SQL management system with a front face in SharePoint
Managing customer services	Resolve / CRM	To record customer service requests, complaints and enquiries regionally for roads and public transport. Resolve is an ARTA legacy system	Customer Services	CRM is the new Customer Relationship Management system that is progressively replacing the legacy system Resolve. MS Dynamics is the customer management system. It went live in April 2011 with integrated ticketing for public transport for RWC and with a phased roll out. It will provide a single view of the customer for call centre and front line operations staff. Both systems will operate until 2012/13. CRM has a wider job than Resolve, including the RFS system, and communications and marketing campaigns
Customer service information	My Street Citizen Portal	'My Street' is a Web Portal that delivers a series of online services and information that will transform Auckland Transport's primary interface with its customers. My Street will be implemented progressively in 2012	IT and Business Systems	Over time, customers will be able to: • Request a larger variety of services online • More effectively plan and manage journeys, across multiple transport modes, by having access to higher quality information about network activity (works, incidents, congestion). It is expected that internal customers will use My Street as well as information readily available in a user-friendly format
Road safety analysis	CAS (Crash Analysis System)	CAS is a national database owned and managed by NZTA. The data is based on completed Traffic Crash Reports (TCR) from the New Zealand Police. There can be up to six months' delay on crash data being entered	Road Safety	Auckland Transport uses the crash data through ad hoc reports (about 200 queries are available) as well as the annual reports produced. Information is available regionally and for the six CAS areas within the Auckland region CAS information is used for project prioritisation such as crash reduction studies, 40km speed zones and school travel plans
Traffic modelling	EMME Saturn S-Paramics	There are three main traffic modelling tools. EMME is GIS linked for demand modelling regionally. Auckland Council uses the same tool for transport strategy planning. Saturn is used for network traffic modelling for large area networks. S-Paramics is used for micro simulation for small areas Saturn and S-Paramics are not GIS linked	Strategy and Planning	
Managing resource consents	CS-VUE	CS-VUE is used to record and manage resource and building consents for Auckland Transport both as the asset owner and applicant	Investigation and Design	This is a proprietary system of Andrew Stewart Ltd
Request access to dig in road corridor	CAR (Corridor Access Request)	CAR Monitor is a new service. It combines the current process of lodging a beforeUdig enquiry and having to apply separately for a CAR if the intended excavation site is in the road corridor	Road Corridor Access	CAR is progressively being rolled out throughout New Zealand over the next 12 months. The roll-out started at Auckland Transport in March 2011
Public transport key factor information	Data Farm	Data Farm holds public transport data collection. Key Factor information is submitted monthly by the operators and consists of patronage, in service km, passenger km, revenue from passengers, and claim information per their contract	Public Transport Operations	Status: Developed on an Excel platform

Table 9.4-2 Asset data confidence

Asset group	Very uncertain	Uncertain	Reliable	Highly reliable
Rail				
Ferry				
Buses				

Figure 9.4-1 Process framework

Completeness and accuracy has been assessed and reported in each LCMP by the following data attributes:

- Asset quantity
- Asset age
- Condition
- Performance.

A summary of the overall rating by each asset group is summarised in Table 9.4-2.

9.4.3 Asset management processes

The asset management processes from the legacy councils were adopted in November 2010 but not mapped. These were used as a starting point for developing the initial tactical AMPs.

Auckland Transport is made up of employees from different councils and authorities who each had their own way of doing things. It is clear there needs to be a single framework for managing the collective assets from this point on.

Auckland Transport has developed a Process Management Framework to bring consistency to the way processes are documented across the business. Every current process will need to be revised and documented using the new system. A key feature of the process management plan is to ensure the customer is kept in mind during every step of the process. The framework is made up of objectives, goals and actions. It is grouped in Figure 9.4-1.

High-level business processes are being developed for the key processes throughout Auckland Transport. The asset management processes are expected to be mapped by December 2012, to include:

- Stakeholder consultation such as NZTA, Auckland Council, Asset Management Steering Group
- Data flow information between the Asset Management and Programming Unit
- AMP development
- Financial model development and ongoing maintenance
- Asset revaluation.

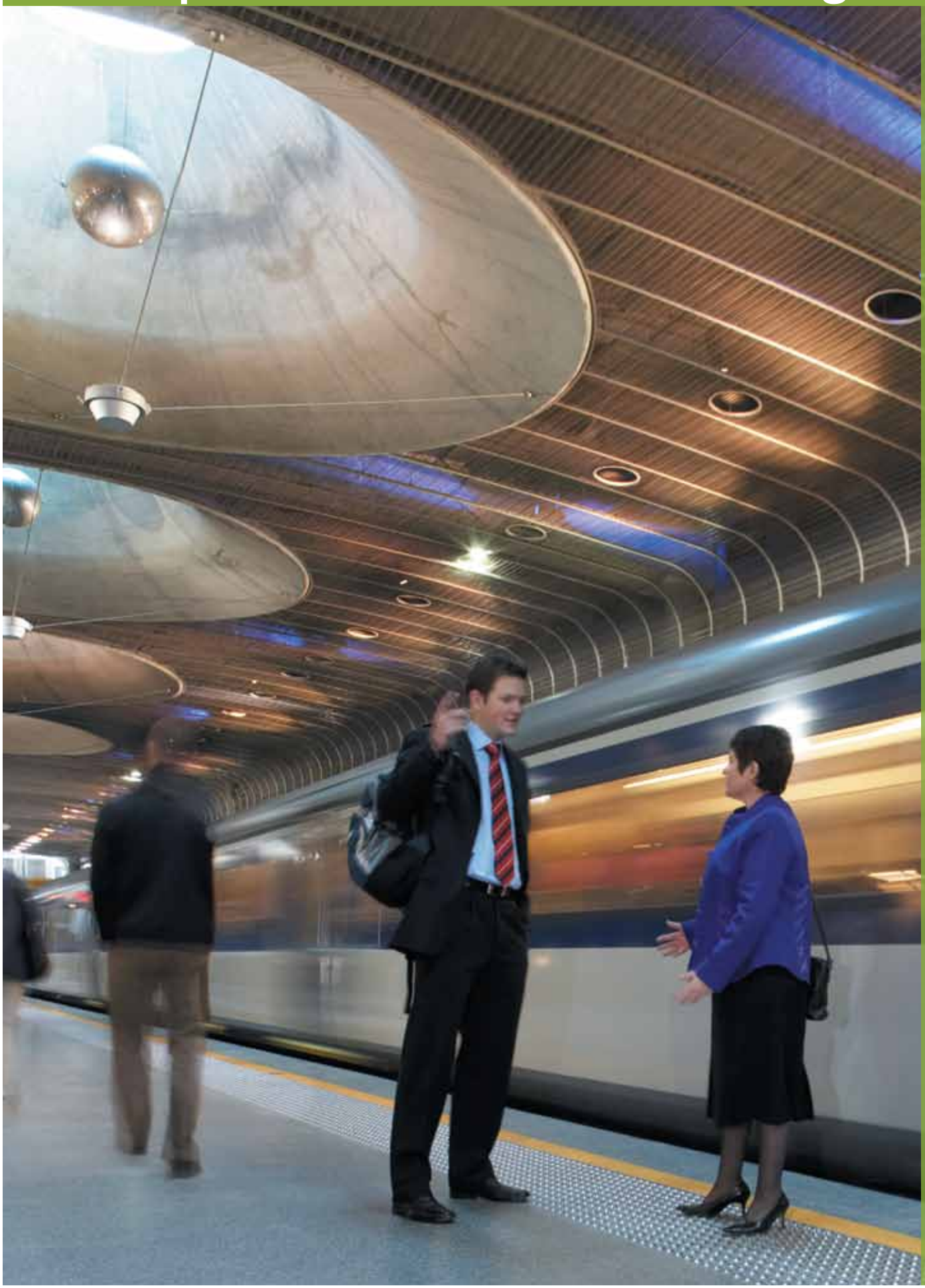
9.5 Future improvements

Key improvements have been identified that will ensure end-user needs are met are shown in Table 9.5-1.

Table 9.5-1 Key improvement initiatives

Improvement initiative number	Description	AMP section	Priority
Practices 1	Complete a formal practices review of public transport services for the new organisation to help prioritise initiatives	9.3.3	High
Practices 2	Complete the high-level asset management process maps by December 2012	9.4.3	High

10 Improvement Plan and Monitoring



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Auckland Transport
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10 Improvement Plan and Monitoring

10.1 Commitment to asset management

A key feature in Auckland Transport's asset management framework is to continue to improve asset management practices, processes and tools. This is essential to ensure the asset system and services are effectively managed. Through the initiatives presented in this section, Auckland Transport is committed to moving towards appropriate advanced asset management practices. This practice is being developed in keeping with the New Zealand Asset Management Support (NAMS) practice as presented in their suite of asset management publications.

The following activities are undertaken in support of this commitment:

- Adoption of the asset management and levels of service frameworks by the Board
- Development of the Asset Management improvement plan, which will be reviewed and endorsed by Auckland Transport's Asset Management Steering Group
- Internal and external reviews of the AMPs to incorporate identified improvements and to align them with other strategic documents
- Staged adoption of the AMPs by the Board
- Quality audits of information in the AMPs to confirm degree of confidence, integrity and cost effectiveness of data collected.

10.2 Peer reviews of AMPs

Peer reviews are integral to monitoring the goal of advanced asset management. Four reviews of the first draft AMP were completed and the findings addressed before the documents were finalised in June 2012. These reviews were undertaken by internal and external specialists with a different focus area for each review. This process is summarised in Table 10.2-1. Note that the Activity Management Plan is now called the Overview Transport Networks AMP.

The key findings of these reviews are summarised in Table 10.2-2 with the full reviews provided in the Appendices. The review findings will be considered in further developing the AMPs and the improvement plan.

Note: The improvements suggested by these reviews have been built into the asset management improvement programme discussed in Section 10.5.

Table 10.2-1 Planned asset management reviews

Review focus	AMP documents	Reviewer	Current status
Compliance with the Local Government Act and Office of the Auditor General requirements	• Activity Management Plan • Road AMP • Public Transport AMP	Audit New Zealand	• Preliminary review provided in November 2011 with feedback considered in the development of the AMPs • Issues relating to the formal audit were clarified in January 2012 and verbal feedback indicated the approach for the AMP process was acceptable • Formal audit report delivered to Auckland Council in June 2012
Technical review and good asset management practice	• Activity Management Plan • Road AMP • Public Transport AMP	Becas	• Technical review provided in October 2011 with feedback considered for the updates of the second and final AMPs
Strategic overview and good asset management practice to meet external stakeholder requirements	• Activity Management Plan	GHD	• Strategic advice provided in October 2011 • Review assists with developing the strategic level plan and with support required from the tactical AMPs for the final AMPs
Quality assurance (internal) review against the Auckland Council's Asset Management Planning Evaluation Framework	• Activity Management Plan • Road AMP • Public Transport AMP	Auckland Council	• Final internal review provided in October 2011 • Process review provided feedback considered for the improvement plan for the second and final AMPs

Table 10.2-2 Asset management review summary

Review	Review type	Assessment	Strengths	Improvements
Audit New Zealand	Compliance	• Assessed compliance with good practice as set out in the International Infrastructure Management manual (IIMM) and Audit New Zealand methodology • Assessed against their expectations for seven areas	• Plans are well presented overall • Some areas of strengths in: corporate context improvement planning levels of service review and audit. • Activity Management Plan shows clear linkages to key documents	• Lack of reliability of asset data • Indicate movement towards advanced principles • Establish performance measures for all significant assets and services • Give specific examples of how Auckland Transport contributes to sustainable development • Clearly define core services • Specifically identify critical assets • Maintenance budgets do not reflect the age profile • Include confidence factor of the reliability of the financial forecasts • Key improvement tasks should include resources, responsibilities, risks and delivery measures
Beca	Technical	• Used a gap analysis for assessment to assist with prioritising improvement areas • All three plans achieved 60 per cent status for all sections except 70 per cent for growth and demand and Lifecycle Management Plans sections • 55 to 80 per cent is considered competence • Overall, the three AMPs were assessed as competent	• The plan follows the IIMM, which is generally accepted as best practice in New Zealand and various other countries • Good presentation of the levels of service hierarchy • Good sections on demand, and demand management plan • The LCMP section is extensive and brings together the information from the legacy councils in a good, logical format • The limitations and status of the financial information is clearly noted	• Provide clearer linkages between the target levels of service, the associated maintenance and capital management strategies, projects, and associated financial forecasts • Develop linkages between preceding and subsequent sections • Give greater emphasis to the fact that there is still a lot of work to fully integrate processes and systems • Levels of service need to be consolidated and linked to other council documents • Improvement tasks should have scopes, resources, budgets and programmes associated with them
GHD	Strategic overview	• Reviewed the traditional approach against future strategic issues to be considered	• Achievement in bringing together an enormous amount of asset data from predecessor organisations • Forms a sound basis for activity management planning	• Review the future role of activity management planning • Focus on the future strategic issues • Three options presented for future Activity Management Plans • Prepare a communications document to highlight the key findings of the current plan
Auckland Council	Process / quality assurance (internal)	• Assessed compliance against Asset Management Plan Evaluation Framework • Both the road and public transport AMPs sections were assessed as partially compliant, except risk was assessed as compliant • Assessed for opportunity for improvement and alignment	• Demonstrates a sound understanding of the operational business • Excellent job in structuring AMPs, providing and demonstrating excellent asset management principles and understandings • Discerns the broad direction of the Auckland Plan and align priorities accordingly • Demand trends and drivers are integrated into the business • LCMP is comprehensive • Has begun to document infrastructure sustainability initiatives	• Needs direct correlation between the two Auckland Transport AMPs as both contribute to a common strategic intent • Deficiencies in strategic alignment due to the timing of the Auckland Plan • Populate the current performance at legacy council level • Does not contain actual demand forecasts for the region • Relocate network management and planning activities from LCMP and move to other AMP sections • Include the approach to the cost allocation methodology for development contribution purposes

10.3 Issues register

The development of the regional AMPs was based on existing information from the legacy councils. The information and systems varied, which resulted in a large number of discrepancies and gaps. As part of the regional AMP development process – and for transparency – the issues to be resolved were methodically recorded in an issues register.

There are 92 issues in total for roads and public transport that cover the following broad areas:

- Levels of service – inconsistent levels of service and policies regionally such as footpath material and width; different weed control practices; different intervention levels for treatment
- Data completeness – including variable quality and completeness in information by portfolio / asset class / criticality for asset condition data in the RAMM database; many assets are not in RAMM such as street furniture, parking and green assets; condition information for wharves is generally poor and not always available

- Financial – including a need to define capitalisation rules; need to define CAPEX new works as either for growth or levels of service; need to separate operational budgets for retaining walls and bridges at general ledger level etc.
- Development contributions – to develop a regional approach to identify the part of planned capital expenditure that relates to growth to replace the legacy policies currently still in operation
- Asset ownership –unclear ownership and responsibilities of some parking buildings and facilities not on Auckland Transport's road reserve land; some street lighting poles in RAMM do not distinguish poles owned by Vector and Telecom
- Roles and responsibilities – including confirming with Auckland Council regarding roles and responsibilities in town centres and city transformation assets such as catchpit emptying and public toilets ownership; shared ownership and responsibilities of assets with Watercare and Stormwater Unit to be carefully managed.

A complete listing of issues is included in the Appendices.

It will take time and resources to resolve the issues as systems, data and processes are developed and embedded into the new organisation. These issues have provided input into developing the key improvement programmes listed below.

10.4 Key improvement programmes

Key improvement programmes and associated projects have been developed through a review of the gaps in developing this draft AMP, issues identified and recorded in the issues register, and the recommendations from the four completed reviews.

Twelve key improvement programmes are the priorities for regional asset management integration work in the next three years. These are described in Table 10.4-1.

Improvement initiatives were identified in the existing AMPs of the legacy councils. An assessment of achievement against the previous plans has not been completed, as these improvements have now been superseded. Achievement against Auckland Transport's single Public Transport AMP is intended, in future, to be formally assessed on an annual basis.

10.5 Three-year improvement projects

The three-year improvement projects are outlined in Table 10.5-1 with the full projects provided in the Appendices.

Table 10.4-1 Key improvement programmes

No.	Key improvement programmes	Description	Priority
1	Levels of service options and costs	Establish investment levels needed for different levels of service options.	Very high
2	Robust optimised decision-making processes	Establish a robust optimised decision making processes for major transport projects.	High
3	Robust renewal programming	Develop robust renewal programmes on a regional basis.	High
4	Asset management risk management processes	Further develop the asset management risk management processes including criticality, vulnerability and resilience requirements.	High
5	LCMP and customer expectation alignment	Establish alignment between lifecycle management plans and customer expectations.	High
6	Condition assessment programme	Complete a condition assessment programme for high risk assets as a priority and implement a routine condition survey programme for all transport assets.	Very high (for high risk assets)
7	Quality of asset data in AM systems	Improve the quality of asset data in asset management systems such as RAMM and SPM.	High
8	Asset operations and maintenance	Rationalise monitoring and reporting frameworks and operational procedures between internal Auckland Transport groups including clarification of roles and responsibilities.	High
9	Assets ownership	Develop a process to clarify asset ownership issues.	High
10	Sustainability	Develop policies and strategies to promote sustainability through innovative solutions.	Medium
11	Financial planning	Implement a financial planning model to facilitate the development of long-term financial plans.	Medium
12	Asset Management Practice	Complete a formal practice review of Auckland Transport asset management practices.	Medium

Table 10.5-1 Improvement plan summary table

Asset management improvement programme areas	Action	Priority	Completion date	Resources (external only)	Responsibility
Levels of service options and costs	Identify priorities, with feedback from stakeholders, for analysing levels of service options	Very high	Dec 2012	$50,000	Asset Planning and Policy
	Establish investment levels needed for different levels of service options. Understand trade-offs for investment options between different modes (i.e. road versus public transport) and services to achieve a balanced outcome	Very high	Dec 2013	$250,000	Asset Planning and Policy
	Develop a system to report on alternative levels of service options to facilitate decision-making processes	Very high	June 2014	$100,000	Asset Planning and Policy
Robust optimised decision-making processes	Establish a framework for optimised decision-making processes	High	June 2013	$50,000	Asset Planning and Policy
	Develop robust processes for optimised decision making including introducing appropriate tools	High	June 2014	$250,000	Asset Planning and Policy
Robust renewal programming	Establish a framework for developing long-term renewal programmes	High	June 2013	$50,000	Asset Planning and Policy
	Develop robust 10-year renewal programmes for the whole Auckland region. Programme based on condition and performance assessment, work coordination, risk, criticality and acceptable service levels	High	Dec 2014	$200,000	Asset Planning and Policy
Asset management risk management processes	Identify critical assets of the transport network for further risk analysis	High	June 2013	$50,000	Asset Planning and Policy
	Further develop the asset management risk management processes including criticality, vulnerability and resilience requirements. The formal review of the regional transport network is to include assessment against location on Lifeline routes, age, seismic screening, overweight routes, HPMV routes, and load capacity of existing bridges	High	June 2014	$150,000	Asset Planning and Policy
LCMP and customer expectation alignment	Identify customer expectations in relation to the transport services	High	June 2013	$100,000	Asset Planning and Policy
	Establish alignment between lifecycle management plans and customer expectations. Develop a framework for determining long-term needs to reflect customer expectations	High	June 2014	$150,000	Asset Planning and Policy
Condition assessment programme	Complete a condition assessment programme for high-risk road assets including bridges and retaining walls	Very high	Ongoing from July 2012	$300,000	Asset Systems and Monitoring
	Complete a condition assessment programme for high-risk public transport assets including ferry facilities, bus shelters and rail assets	Very high	Ongoing from July 2012	$200,000	Asset Systems and Monitoring
	Implement a routine condition survey programme for all road assets	High	Ongoing from July 2012	$700,000	Asset Systems and Monitoring
	Implement a routine condition survey programme for all public transport assets	High	Ongoing from July 2012	$300,000	Asset Systems and Monitoring
Quality of asset data in AM systems	Improve the quality of road asset data in asset management systems such as RAMM	High	June 2014	$700,000	Asset Systems and Monitoring
	Improve the quality of public transport asset data in asset management systems such as SPM	High	June 2014	$250,000	Asset Systems and Monitoring
Asset operations and maintenance	Rationalise monitoring and reporting frameworks and operational procedures between internal Auckland Transport groups including clarifying roles and responsibilities	High	June 2013	$25,000	Asset Management and Programming
Asset ownership	Develop a process to clarify and agree asset ownership between key stakeholders (Auckland Transport, Auckland Council, KiwiRail, NZTA)	High	June 2013	$50,000	Asset Planning and Policy
Sustainability	Develop policies and strategies that promotes sustainability through innovative solutions	Medium	June 2014	$150,000	Asset Planning and Policy
Financial planning	Implement a robust financial planning model including a new budget structure to facilitate the development of long-term financial plans for the assets network	Medium	June 2013	$200,000	Asset Planning and Policy
Asset management practice	Complete a formal practice review of asset management within Auckland Transport	Medium	Dec 2013	$150,000	Asset Planning and Policy

10.6 Improvement monitoring

Auckland Transport Asset Management Steering Group manages the asset management activity and receives monthly reports. The improvement plan is formally reviewed by this group on a quarterly basis. Actions are implemented to address issues arising in order to ensure that programmed improvement tasks are delivered.

This plan is a living document and priorities may well change, which makes the review even more important. The following review activities will be undertaken.

Table 10.6-1 Monitoring and review of improvement programme

Frequency	Review task	Action	KPI	Report name	Audience
Three yearly	AMP development	Formal adoption of the plan by Auckland Transport's Board	100% achievement	Board AMP report	Board and Audit New Zealand
Annually	AMP peer review	Revise plan annually to incorporate new knowledge from the asset management improvement programme	100% achievement	Internal report	AMP steering group
Three yearly	Formal review	The plan will be formally reviewed three yearly to assess adequacy and effectiveness	100% achievement	External consultant report	AMP steering group, Auckland Transport's Board and Audit New Zealand
Annually	Monitoring and reporting	The KPIs identified in this table will be monitored and reported on annually	100% achievement	Internal KPI report	AMP Steering Group and Auckland Transport's Board
Quarterly	Implementing the improvement programme	Tracking the progress of implementing the improvement programme quarterly, particularly the projects in the short-term improvement programme	100% achievement	Quarterly reports	AMP Steering Group

Glossary of terms

Acronym or Term	Meaning
AADT	Annual Average Daily Traffic
Activity	An activity is the work undertaken on an asset or group of assets to achieve a desired outcome.
Advanced Asset Management	Asset management which employs predictive modelling, risk management and optimised renewal decision making techniques to establish asset lifecycle treatment options and related long term cash flow predictions. (See Basic Asset Management).
AIS	Accident Investigation System
Annual Plan	The Annual Plan provides a statement of the direction of Council and ensures consistency and co-ordination in both making policies and decisions concerning the use of Council resources. It is a reference document for monitoring and measuring performance for the community as well as the Council itself.
Asset	A physical component of a facility which has value, enables services to be provided and has an economic life of greater than 12 months.
Asset Management (AM)	The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.
Asset Management Plan (AMP)	A plan developed for the management of one or more infrastructure assets that combines multi-disciplinary management techniques (including technical and financial) over the lifecycle of the asset in the most cost effective manner to provide a specified level of service. A significant component of the plan is a long term cash flow projection for the activities.
Asset Management Strategy	A strategy for asset management covering, the development and implementation of plans and programmes for asset creation, operation, maintenance, renewal, disposal and performance monitoring to ensure that the desired levels of service and other operational objectives are achieved at optimum cost.
Asset Management System (AMS)	A system (usually computerised) for collecting analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset Register	A record of asset information considered worthy of separate identification including inventory, historical, financial, condition, construction, technical and financial information.
AT	Auckland Transport
Auckland Regional Public Transport Plan	Specifies the public transport services for the region and the policies which apply to those services.
Basic Asset Management	Asset management which relies primarily on the use of an asset register, maintenance management systems, job/resource management, inventory control, condition assessment and defined levels of service, in order to establish alternative treatment options and long term cash flow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than risk analysis and optimised renewal decision making).
Benefit Cost Ratio (B/C)	The sum of the present values of all benefits (including residual value, if any) over a specified period, or the lifecycle of the asset or facility, divided by the sum of the present value of all costs.
Berm	The area of a road reserve between the kerb or surface water channel and property boundary exclusive of footpath.
Business Plan	A plan produced by an organisation (or business units within it) which translate the objectives contained in an Annual Plan into detailed work plans for a particular, or range of, business activities. Activities may include marketing, development, operations, management, personnel, technology and financial planning
Bus Priority Measures	Measures designed to improve the efficiency of scheduled bus services by giving priority to buses over general traffic. Measures include: signal pre-emption at traffic lights, bus lanes, high occupancy vehicle lanes.
Busway	Dedicated bus lanes which run alongside the Northern motorway forms part of the RTN network.
Busway Station	Bus shelter facility located on the Busway.
Capital Expenditure (CAPEX)	Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
Carriageway	The portion of road devoted particularly to the use of wheeled vehicles, including shoulders.
Cash Flow	The stream of costs and/or benefits over time resulting from a project investment or ownership of an asset.
CCO	Council Controlled Organisation
Commercial Service	A passenger transport service that is provided on a commercial basis with no subsidy provided.
Condition Monitoring	Continuous or periodic inspection, assessment, measurement and interpretation of resulting data, to indicate the condition of a specific component so as to determine the need for some preventive or remedial action
Contracted Service	A passenger transport service that is contracted and paid for or subsidised.
CORe	Community oriented results and co-ordinated operating requirements
CPP	Competitive Pricing Procedures; procedures for assessing tender prices based on one of three evaluation methods.
Critical Assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.
Current Replacement Cost	The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset.
Deferred Maintenance	The shortfall in rehabilitation work required to maintain the service potential of an asset.
DMUs	Diesel multiple units includes a locomotive train and a series of carriages.
Demand Management	The active intervention in the market to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX expenditure. Demand management is based on the notion that as needs are satisfied expectations rise automatically and almost every action taken to satisfy demand will stimulate further demand.
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.

Acronym or Term	Meaning
Depreciation	The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for by the allocation of the historical cost (or revalued amount) of the asset less its residual value over its useful life.
Design Life	The theoretical life of an asset assumed in its design.
Disposal	Activities necessary to dispose of decommissioned assets.
dTIMS	A predictive modelling system used to project future asset condition, network treatment and budget needs, it provides a long term economic or performance based analysis.
Economic Life	The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to the physical life however obsolescence will often ensure that the economic life is less than the physical life.
EMUs	Electromotive units
Facility	A complex comprising many assets (e.g. a hospital, water treatment plant, recreation complex, etc.) which represents a single management unit for financial, operational, maintenance or other purposes.
Geographic Information System (GIS)	Software that provides a means of spatially viewing, searching, manipulating, and analysing an electronic database.
GPS	Government Policy Statement
HOP card	Name given to Auckland's smartcard ticketing system that can be used to pay for public transport.
Infrastructure Assets	Stationary systems forming a network and serving whole communities, where the system as a whole is intended to be maintained indefinitely at a particular level of service potential by the continued replacement and refurbishment of its components. The network may include normally recognised 'ordinary' assets as components.
Integrated Ticketing	The ability to use one ticket across different modes of transport.
Kaitiakitanga	A practice of guardianship and resource management that includes social and environmental dimensions.
KPI	Key performance indicator
KRA	Key result area
Local Connector Network (LCN)	Term used to describe one of four different layers of the network hierarchy. The local connector networks provide access to local centres and connect with the RTN and/or the QTN.
Level Of Service (LOS)	The defined service quality for a particular activity or service area (i.e. interior) against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, regulatory & environmental acceptability and cost.
LGA	Local Government Act 2002
LID	Low impact design
Life	A measure of the anticipated life of an asset or component; such as time, number of cycles, distance intervals etc.
Lifecycle	Lifecycle has two meanings: a) The cycle of activities that an asset (or facility) goes through while it retains an identity as a particular asset, i.e., from planning and design to decommissioning or disposal. b) The period of time between a selected date and the last year over which the criteria (e.g. costs) relating to a decision or alternative under study will be assessed
Lifecycle Cost	The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
LTCCP	Long Term Council Community Plan (as required by the Local Government Act 2002). The NSCC LTCCP is known as the City Plan.
LTMA	Land Transport Management Act 2003
LTP	Auckland Council's Long Term Plan
Maintenance	All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal.
Mauri	Lifeforce
MAXX	Brand name which has been adopted for public transport in the Auckland region.
NLTF	National Land Transport Fund
NLTP	National Land Transport Programme
NZTA	New Zealand Transport Agency
Objective	An objective is a general statement of intention relating to a specific output or activity. They are generally longer-term aims and are not necessarily outcomes that managers can control.
Operation	The active process of utilising an asset that will consume resources such as manpower, energy, cleaning products and materials. Operation costs are part of the lifecycle costs of an asset.
Optimised Decision Making (ODM)	An optimisation process for considering and prioritising all options to rectify performance failures of assets. The process encompasses net present value analysis and risk assessment.
Park n Ride	A service that allows people to park their person vehicle and catch a public transport service.
PCB's	Polychlorinated Biphenols; toxic substances found in some electrical components.
Performance Measure	A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.
Performance Monitoring	Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.

Acronym or Term	Meaning
Physical Life	The actual life of an asset.
Planned Maintenance	Planned maintenance activities fall into 3 categories : (a) Periodic - necessary to ensure the reliability or sustain the design life of an asset. (b) Predictive- condition monitoring activities used to predict failure. (c) Preventive- maintenance that can be initiated without routine or continuous checking (e.g. using information contained in maintenance manuals or manufacturers' recommendations) and is not condition-based.
PT	Public transport
PTMA	Public Transport Management Act 2008
PTNP	Public Transport Network Plan ten year plan centring on developing infrastructure and services for the Auckland region.
QTN	Term used to describe one of four different layers of the network hierarchy. The quality transit network provides fast, high frequency transit services between key centres and over major corridors.
RAMM	Road Assessment and Maintenance Management system; Roading AMS, developed as an asset inventory and treatment selection tool.
Rehabilitation	Works to rebuild or replace parts or components of an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification. Generally involves repairing the asset using available techniques and standards to deliver its original level of service (i.e. re roofing, replacing doors etc.) without resorting to significant upgrading or replacement.
Renewal	Works to upgrade, refurbish, rehabilitate or replace existing facilities with facilities of equivalent capacity or performance capability.
Repair	Action to restore an item to its previous condition after failure or damage.
Replacement	The complete replacement of an asset that has reached the end of its life, so as to provide a similar or agreed alternative, level of service.
Replacement Value	The prevailing market cost of supply and installation of an asset delivering an equivalent service, making no allowance for depreciation of the asset.
Risk Management	The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.
RLTS	Regional Land Transport Strategy
RMA	Resource Management Act 1991
RMM	Road Maintenance Management
Routine Maintenance	Day to day operational activities to keep the asset operating (replacement of light bulbs, flushing of pipes, repairing leaks, etc.) and which form part of the annual operating budget, including preventative maintenance.
RRPM	Raised Reflectorised Pavement Marker
RTIS	Real time information systems
Rapid Transit Network (RTN)	Term used to describe one of four different layers of the network hierarchy. The rapid transit network provides high quality, fast, high frequency service on its own right of way where it is unaffected by traffic congestion. The RTN connects major growth centres with the CBD.
Service Potential	The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset.
SLIMS	A street lighting information management system, this is a module of the RAMM System
SOI	Statement of Intent
Standards	Standards which detail the roading materials and practices that are approved for use within the District. Physical details for items such as typical metal depths, carriageway widths and cross sectional shape are contained in Council's Engineering Standards.
Strategic Plan	Strategic planning involves making decisions about the long term goals and strategies of an organisation. Strategic plans have a strong external focus, cover major portions of the organisation and identify major targets, actions and resource allocations relating to the long term survival, value and growth of the organisation.
Structure Maintenance	Maintenance of the physical items associated with prolonging the life of the road pavement or road surfacing. It includes pavement patching, shoulder maintenance, grading, maintenance and repair of drainage facilities, periodic re-metalling of unsealed roads (up to 50mm) and repair of kerb and channel.
Sumps	Stormwater catchpits
Targeted Services	Term used to describe one of four different layers of the network hierarchy. Targeted sservices provide transport for groups whose needs are not met by the regular passenger transport network.
Te Ao Maori	The Maori worldview
Traffic Volume	The number of vehicles flowing in both directions past a particular point in a given time (usually measured in vehicles per hour (vph) or vehicles per day).
Transit	Transit New Zealand, the national road controlling authority for State Highways throughout New Zealand
Unplanned Maintenance	Corrective work required in the short term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.
Upgrading	The replacement of an asset or addition/ replacement of an asset component which materially improves the original service potential of the asset.
User Cost	Cost borne by the travelling public when using the roading network.
Valuation	Estimated asset value which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels or market value for lifecycle costing.
Vehicle Crossing	A formed area for vehicles to cross the road channel and footpath.
WSUD	Water sensitive urban design

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