

Muswellbrook Shire Council



LAND TRANSPORT

ASSET MANAGEMENT PLAN



Version 1

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Minute No. 582**

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The Institute of Public Works Engineering Australia.

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1. EXECUTIVE SUMMARY

What Council Provides

Council provides a transport infrastructure network in partnership with internal and external service providers to enable safe and efficient pedestrian, vehicular circulation and environmental flows; and enjoyment of the community.

Following is a brief inventory of transport infrastructure maintained and owned by Muswellbrook Shire Council.

- Bridges
- Carparks
- Footpaths and Shared Pathways
- Kerb and Gutter
- Roads
- Traffic Controls.

What does it Cost?

There are two key indicators of the cost of providing the transport infrastructure service.

- The life cycle cost being the average cost over the life cycle of the asset; and
- The total maintenance and capital renewal expenditure required to deliver existing service levels over the next 10 years covered by Council's long term financial plan.

The life cycle cost to provide the transport infrastructure service is estimated at \$8.27M per annum. Council's average planned life cycle expenditure for one year of the asset management plan is \$4.41M which gives a life cycle sustainability index of 0.53.

The total maintenance and capital renewal expenditure required to provide the transport infrastructure service over the next 10 years is estimated at \$58.85M. This is an average of \$5.89 per annum.

Council's average maintenance and capital renewal expenditure for one year of the asset management plan of \$4.41M giving a 10 year sustainability index of 0.75.

Plans for the Future

Council plans to operate and maintain the transport infrastructure network to achieve the following strategic objectives:

1. Ensure that the above infrastructure is maintained at a safe and functional standard as set out in this asset management plan;;

2. Ensure that the above infrastructure is renewed or replaced as appropriate in order to achieve best asset productivity;
3. Ensure that Council achieves an acceptable service with regards to delivery and sustainability.

Measuring our Performance

Quality

Transport infrastructure assets will be maintained in a reasonably usable condition. Defects found or reported that are outside our service intervention level will be repaired. See our maintenance response service levels for details of defect prioritisation and response time.

Function

Our aim is that an appropriate transport infrastructure network is maintained in partnership with other levels of government and stakeholders to provide a safe and functional transport network for the travelling public.

Transport infrastructure asset attributes will be maintained at a safe level, and associated signage and equipment will be provided as needed to ensure public safety. We need to ensure key functional objectives are met:

- To provide a transport network to agreed targets of safety and function;
- To provide and maintain infrastructure to community requirements within the resources available;
- To manage traffic on Council's road network to statutory requirements and community needs.

Safety

We inspect all transport infrastructure assets regularly and prioritise and repair defects in accordance with our inspection schedule to ensure they are safe.

The Next Steps

The actions resulting from this asset management plan are:

- Develop renewal and upgrade programs;
- Determine resource requirements, and ensure their availability;
- Develop a long-term financial plan for managing assets;
- Review the plan and update it for further improvements.

2. INTRODUCTION

2.1 Background

This asset management plan has been developed to demonstrate the responsive management of assets (and services provided from assets), compliance with regulatory requirements, and to quantify the funding necessary to provide and maintain the required levels of service.

The asset management plan is to be read in conjunction with the following planning documents:

- Muswellbrook 2020: Online and random telephone surveys 2011
- Widden Cutting Report by RTA Hunter Geotech 2011
- Core Risk Registers 2011 (<http://InfoXpert/docs/~D255370>)
- Muswellbrook Shire Council Management Plan 2010
- Muswellbrook Shire Council Roads Flooding Study
- Fair Value of Assets 2010
- Draft Timber Bridge Asset Management Plan 2010
- Muswellbrook Traffic Study and Roadworks Plan 2010
- Walk and Cycle Plan 2009
- Hunter Emergency: Muswellbrook Council- Slope Stability Assessments by RTA 2008
- Risk Control Plan 2006
- Public Infrastructure Risk Management Plan 2005
- Geotechnical Inspection of Road Cuttings Within the Muswellbrook Shire 2004
- Strategic Plan for Road Management 2004
- Muswellbrook Western Roads Strategic Traffic Study 1997

This asset management plan covers the following infrastructure assets:

Table 2.1. Assets covered by this Plan

Asset category	Replacement Value (\$M)
Bridges	\$60.96
Carparks	\$3.66
Footpaths Cycleways	\$11.10
Kerb and Gutter	\$31.81
Roads	\$188.28
Traffic Control	\$11.38
TOTAL	\$307.20

Key stakeholders in the preparation and implementation of this asset management plan are:

Stakeholders	Responsibilities
Councillors	Adopt the Asset Management Plan and ensure sufficient resources are provided to enable compliance with the aims and targets of the Plan.
Management Executive	Reports on the status and effectiveness of current asset management processes to Council.
Asset Management Team	Coordinates development and implementation of the Asset Management Plan and asset management related matters.
Asset Managers	Implement the Asset Management Plans and provide management of assets under their control.
State and Federal Government authorities and agencies	Regulate some practices and requirements through Legislation
Council Staff	Responsible for the timely completion of those tasks allocated to them from within the Asset Management Plans.
Community and Rate Payers	Assist in the decision making processes regarding the levels of service provided in the Asset Management Plan.
Insurers	Integral to risk management strategies that require sound AM practice.

2.2 Goals and Objectives of Asset Management

The Council exists to provide services to its community. Many of these services are provided by infrastructure assets. Council has acquired infrastructure assets by 'purchase', by contract, construction by council staff and by donation of assets constructed by developers and others to meet increased levels of service.

Council's goal in managing infrastructure assets is to meet the required level of service in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Taking a life cycle approach;
- Developing cost-effective management strategies for the long term;
- Providing a defined level of service, and monitoring performance;
- Understanding and meeting the demands of growth through demand management and infrastructure investment;
- Managing risks associated with asset or service impairment;
- Sustainable use of physical resources;
- Continuous improvement in asset management practices.¹

This asset management plan is prepared under the direction of Council's mission, goals and objectives.

¹ IIMM 2006 Sec 1.1.3, p 1.3

Council's mission is:

“To do what is best for our community through leadership, excellent service and encouragement of sustainable development.”

Relevant Council goals and objectives and how these are addressed in this asset management plan include:

Table 2.2. Council Goals and how these are addressed in this Plan

Goal	Objective	How Goal and Objectives are addressed in IAMP
Sustainability	“...Co-operatively manage growth, development and construction that recognise environmental standards.”	This plan examines options for the renewal and maintenance of assets to ensure sustainable infrastructure development within available resources.
Infrastructure Development	Build and maintain community infrastructure and cost effective and sustainable land transport systems to serve community needs and support economic development.	This plan examines options for the: <ul style="list-style-type: none"> • renewal and upgrade of assets with improved technology; • planned maintenance of assets; • renewal of assets with a lesser asset; and • partial renewal of assets to extend economic life with consideration to current and future demand, reasonable level of service and community affordability.

2.3 Plan Framework

A road map for preparing an asset management plan is provided in the “Glossary and Notes” at the rear of the document.

2.4 Core and Advanced Asset Management

This asset management plan is prepared as a ‘core’ asset management plan in accordance with the International Infrastructure Management Manual. It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is a ‘top down’ approach where analysis is applied at the ‘system’ or ‘network’ level.

Future revisions of this asset management plan will move towards ‘advanced’ asset management using a ‘bottom up’ approach for gathering asset information for individual assets to support the optimisation of activities and programs to meet agreed service levels.

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

In January 2011, Muswellbrook Shire Council (MSC) commissioned Jetty Research to conduct a random telephone survey, and parallel online poll, of local residents in relation to their vision for the shire’s future. This “Muswellbrook 2020” research forms part of a community consultation phase, designed to understand resident sentiment in preparation for the shire’s community strategic plan through to the next decade. Total number of respondents surveyed was 586.

The questions posed relating to infrastructure were generic. The first of these was “In terms of infrastructure, are there any additions or improvements you would like to see between now and 2020?”

The second of these related to Roads, Traffic and Parking. The question posed was “In terms of roads, traffic and parking, are there any additions or improvements you would like to see between now and 2030?”

Answers to these questions were summarised within the report in the following paragraphs on page 5:

“*Infrastructure Needs:* Common infrastructure wish lists among respondents included a cinema and/or bowling alley, road improvements, ...more community or cultural facilities.....improved health care facilities and/or or more GPs, more recreational options for youth, better aged care options and improved sporting and swimming facilities..... a CBD bypass, and their desire to see Muswellbrook a tidier and cleaner town.”

“*Roads, Traffic and Parking:* Better roads topped the list of both set of respondents. Beyond this, views diverged, with telephone respondents focusing mainly on desired improvements to rural roads, while online participants identified the need for a bypass of Muswellbrook.”

The summary document outlining results are located in Councils EDMS. The hyperlink to the document is <http://InfoXpert/docs/~D248654>

Council uses these survey results in the development of the Strategic Management Plan and in allocation of resources in the budget.

3.2 Legislative Requirements

Council has to meet many legislative requirements including Australian and State legislation and State regulations. These include:

Table 3.2. Legislative Requirements

Legislation	Requirement
Local Government Act	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
The Australian Accounting Standards	The Australian Accounting Standards Board Standard, AASB 116 Property Plant & Equipment, requires that assets be valued, and reported in the annual accounts, which also includes depreciation value (i.e. how fast are these assets wearing out).
Roads Act	Other issues affecting asset service levels include judicial decisions relating to Council's role as roads authority for local roads as conferred by the Roads Act 1993, and legislative powers granted to public utilities relating to road openings.
Environmental Planning and Assessment Act 1979	Sets out guidelines for land use planning and promotes sharing of responsibilities between various levels of government in the state.
Environmental Planning and Assessment Amendment Act 2008	Sets out guidelines for land use planning and promotes sharing of responsibilities between various levels of government in the state.
Protection of the Environment Operations Act 1997	Sets out Council responsibility and powers of local area environment and its planning functions.

3.3 Current Levels of Service

Council has defined service levels in two terms.

Community Levels of Service relate to how the community perceives the service in terms of safety, quality, quantity, reliability, responsiveness, cost/efficiency and legislative compliance.

Supporting the community service levels are operational or technical measures of performance developed to ensure that the minimum community levels of service are met. These technical measures relate to service criteria such as:

Service Criteria	Technical measures may relate to
Quality	Smoothness of roads
Quantity	Area of parks per resident
Availability	Distance from a dwelling to a sealed road
Safety	Number of accidents

Service levels of council's land transport assets are detailed in Tables 3.3.1 to 3.3.3.

3.4 Desired Levels of Service

At present, indications of desired levels of service are obtained from various sources, including residents' feedback to Councillors and staff, service request enquiries and correspondence, professional experience and engineering judgment. Council has to quantify desired levels of service more precisely. These will be prepared in future revisions of this asset management plan.

Table 3.3.1 Service Levels – Roads

Key Performance Measure	Level of Service	Performance Measure Process	Optimal Performance Target ^a	Planned Funded Performance Target ^b	Current Funded Performance ^c
<i>Community Levels of Service</i>					
Quality	Provide a smooth ride	Customer request Service	MBK: <4 per month Denman: <1 per month Rural: <8 per month	MBK: <5 per month Denman: <1 per month Rural: <10 per month	<i>MBK: 7 per month Denman: 1 per month Rural: 12 per Month (2009/10)</i>
Function	Ensure the requirements for travel time and availability	Customer service request relating to travel time and availability	Zero	Urban: Zero Rural: Less than 2	Urban: Zero (2009/10) Rural: Less than 2 (2009/10)
Safety	Provide safe roads, free from hazards	Number of injury accidents/incidents	Accidents: zero Incidents: Less than 3 per annum	Accidents: zero Incidents: Less than 3 per annum	<i>Urban:</i> Accidents: 4 (2009/10) Incidents: 2 (2009/10) <i>Rural</i> Accidents: 1 (2009/10) Incidents: 2 (2009/10)
Request response time	Provide a response to request	No. of request taken	MBK: <40 per annum Denman: <10 per annum Rural: <100 per annum	MBK: <60 per annum Denman: <10 per annum Rural: <120 per annum	MBK: 82 Denman: 15 Rural: 143
		No. of action taken within agreed time	95% of requests	95% of requests	MBK: 58 (70.7% of requests) Denman: 15 (100% of requests) Rural: 132 (92.3% of requests)

Key Performance Measure	Level of Service	Performance Measure Process	Optimal Performance Target ^a	Planned Funded Performance Target ^b	Current Funded Performance ^c			
<i>Technical Levels of Service</i>								
Road condition	Provide a smooth ride	Sealed road condition inspection	Bi-annual visual inspection	Annual visual inspection	As resources permit			
			Bi-annual mechanical inspection	Annual mechanical inspection	Mechanical inspection by Roughometer III recently started.			
		Unsealed road condition inspection	Bi-annual visual inspection	Annual visual inspection	As resources permit			
			Bi-annual mechanical inspection	Annual mechanical inspection	Mechanical inspection by Roughometer III recently started.			
		Overall condition rating of sealed road* (Specifications recommended by GHD)	Excellent	40%	Excellent	40%	Excellent	24%
			Very good	40%	Very good	40%	Very good	24.1%
			Good	20%	Good	20%	Good	7.2%
			Poor	0	Poor	0	Poor	2.7%
			Very poor	0	Very poor	0	Very poor	0.9%
			Unsurveyed	0	Unsurveyed	0	Unsurveyed	41.1%
		Overall condition rating of unsealed road* (Specifications recommended by GHD)	Excellent	33%	Excellent	14%	Excellent	2.9%
			Very good	33%	Very good	40%	Very good	5.4%
			Good	33%	Good	46%	Good	7%
			Poor	0	Poor	0	Poor	4.9%
Very poor	0		Very poor	0	Very poor	0		
Unsurveyed	0		Unsurveyed	0	Unsurveyed	79.7%		

Key Performance Measure	Level of Service	Performance Measure Process	Optimal Performance Target ^a		Planned Funded Performance Target ^b		Current Funded Performance ^c	
Kerb & Gutter Condition [‡]	Provide functional kerb & gutter	Physical Condition rating (Specifications recommended by GHD)	Excellent	60%	Excellent	74%	Excellent	74.1%
			Very good	20%	Very good	16%	Very good	13.2%
			Good	20%	Good	10%	Good	9%
			Poor	0%	Poor	0	Poor	2.7%
			Very poor	0%	Very poor	0	Very poor	1%
		Physical Condition rating (Specifications recommended by GHD)	Excellent	60%	Excellent	50%	Excellent	49.7%
			Very good	20%	Very good	31%	Very good	26.4%
			Good	20%	Good	19%	Good	16.7%
			Poor	0%	Poor	0	Poor	4.5%
			Very poor	0%	Very poor	0	Very poor	2.6%
Under Road Drainage Condition	Provide functional under-road drainage	Under-road drainage inspection	Annual inspection		Annual inspection		Informal inspection	
Accessibility	Ensure that the assets availability meets user requirements	Compliance with strategic plans	100%		100%		100%	
Safety	Provide safe roads, free from hazards	Road marking inspection	Bi-annual inspection of pedestrian crossings		Bi-annual inspection of pedestrian crossings		Bi-annual inspection of pedestrian crossings	
		Road marking renewal	33% renewal of all markings per annum		33% renewal of all markings per annum		25% renewal of all markings per annum	
		Signs Renewal	10% renewal per annum + renewal of damaged signs		Renewal of damaged signs		Renewal of damaged signs	

Key Performance Measure	Level of Service	Performance Measure Process	Optimal Performance Target ^a	Planned Funded Performance Target ^b	Current Funded Performance ^c
		Traffic Control devices inspection	Annual inspection	Annual inspection	Annual inspection
		Road inspection	Inspection according to road risk management plan	Partial compliance to the plan	Partial compliance to the plan
		Provide minimum shoulder width as per Austroads (RTA, 2011)	100% compliance	100% compliance	100% compliance
Design Specifications	Construct or renew roads to meet standards	Compliance with Austroads standard	100% compliance	100% compliance	100% compliance
Road works	Carry out reactive maintenance	Response within agreed timeframes	100% response within agreed procedure	100% completion within agreed time	100% completion within agreed time
	Routine Maintenance cyclic	Available maintenance program	Program of regular routine maintenance to prevent road and roadside deteriorations	Rolling program of proactive maintenance works to prevent road and roadside deterioration.	No program available due to resource constraints
	Planned Maintenance (Reseal, AC, Renewal, Grading, Regravelling)	Application of optimal planned capital works	95% of planned works from optimised works program	95% of planned works from optimised works program	Small percentage of planned works from optimised works program

*Current condition details are available at <http://InfoXpert/docs/~D254506>.

Please Note that percentages are measured according to road length. Total Sealed Road: 522.9 km. Total Unsealed Road: 97.8 km
It is assumed that unsurveyed assets have the same proportions of Excellent, Very Good, Good, Poor and Very Poor conditions.

‡ Current condition details are available at <http://InfoXpert/docs/~D254562>

Table 3.3.2 Service Levels of Bridges and Major Culverts

Key Performance Measure	Level of Service	Performance Measure Process	Optimal Performance Target ^a	Planned Funded Performance Target ^b	Current Funded Performance ^c			
<i>Community Levels of Service</i>								
Quality	Provide facilities for smooth travel	Customer service requests	Less than 10 per annum	Less than 10 per annum	Less than 10 per annum			
Function	Facilities are fully serviceable	Bridge closure/ flood damage statistics	2 occurrences per annum	2 occurrences per annum	2 occurrences per annum			
Safety	Facilities are safe and free from hazards	Reported accidents/incidents	Reduce accidents/incidents by 10% every year	Reduce accidents/incidents by 10% every year	Information not available			
Safety related complaint response	Provide response to complaints to satisfy users	Safety related complaints responded within agreed time	100% investigated within 24 hours	100% investigated within 24 hours	100% investigated within 24 hours			
		Action Taken within agreed time	100% action taken based on priority	100% action taken based on priority	100% action taken based on priority			
<i>Technical Levels of Service</i>								
Asset Quantity	Provide sufficient number of assets	Number of Bridges	Concrete	24	Concrete	24	Concrete	21
			Timber	1	Timber	1	Timber	4
		Number of Culverts	Box	36	Box	36	Box	36
			Pipe	6	Pipe	6	Pipe	6
		Length	< 10 m	27	< 10 m	27	< 10 m	27
			10 to 50 m	34	10 to 50 m	34	10 to 50 m	34
			50 to 100 m	4	50 to 100 m	4	50 to 100 m	4
			> 100 m	2	> 100 m	2	> 100 m	2

Key Performance Measure	Level of Service	Performance Measure Process	Optimal Performance Target ^a		Planned Funded Performance Target ^b		Current Funded Performance ^c	
Condition	Ensure structural integrity	Overall condition (RTA Level 1 Specification) (No. of assets)	Excellent	12	Excellent	12	Excellent	12
			Very good	21	Very good	21	Very good	14
			Good	34	Good	34	Good	34
			Poor	0	Poor	0	Poor	7
			Very poor	0	Very poor	0	Very poor	0
	Construction standard	All structures to meet construction standards (AUS-SPEC/Austrroads)	100% of structures to meet standard	80% of structures meet AUS-SPEC construction standard.	80% of structures meet AUS-SPEC construction standard.			
Function and accessibility	Proactive inspection post heavy rainfall or flooding	Clear structures of debris and sedimentation as required.	100% inspection is carried out within 48 hours of heavy rainfall or flooding	100% inspection is carried out within 48 hours of heavy rainfall or flooding	100% inspection is carried out within 48 hours of heavy rainfall or flooding			
	Allow heavy vehicle	No. of Load limited structures	No structures to be load limited	1 timber bridge is load limited	3 timber bridges are load limited			
	Allow sufficient width to support prevailing traffic	Sufficient width comply with standard	100%	Not measured (In Improvement plan)	Not measured (In Improvement plan)			
	Flood Immunity	1 in 2 years or inundation of ≤ 6 hours in the 1 in 100 year flood.	100% of structures	97% of structures	97% of structures			
Cost-effectiveness	Maintenance of structures by pro-active (planned or cyclic) maintenance	Percentage of maintenance completed as planned or cyclic works	100% completed	More than 90% funded	60% funded			
Safety	Provide safe traversable bridge & culvert structures	Frequency of inspection to identify hazards	After every heavy rainfall, flooding, request services, accidents or incidents	After every heavy rainfall, flooding, request services, accidents or incidents	After every heavy rainfall, flooding, request services, accidents or incidents			
		Major defects that may contribute accidents	Zero	Zero	Zero (2010)			
		Minor defects	Less than 5	Less than 10	10 (2010)			

Table 3.3.3 Service Levels of Footpaths

Key Performance Measure	Level of Service	Performance Measure Process	Optimal Performance Target ^a	Planned Funded Performance Target ^b	Current Funded Performance ^c	
<i>Community Levels of Service</i>						
Quality	Suitable network, good walking surface	Customer Service requests	Less than 10 requests per year	12 requests per year	16 requests (2009/10)	
Function	Suitable networks, adequate width paths	Customer service request for network suitability	Zero	Zero	Zero (2009/10)	
Safety	Provide safe footpaths free of trip hazards, obstructions and non-slip surface	Annual Audit	Regular inspection according to council insurer State-wide recommendations and footpath risk control policy	Regular inspection according to council insurer State-wide recommendations and footpath risk control policy	Regular inspection according to council insurer State-wide recommendations and footpath risk control policy	
		Number of injury claims reported	< 2 claims per year	Less than 7 reported claims per year	7 reported claims (2009/10)	
Complaint Response	Provide response to complaints to satisfy users	Complaints investigation within agreed time	100% (within 72 hours)	100% (within 72 hours)	100% (within 72 hours)	
		Action Taken within agreed time	95%	90%	56% (2009/10) 9 out of 16 requests	
<i>Technical Levels of Service</i>						
Function ^a	Suitable width of footpaths	Footpath width	Average Width	1.94 m	Average width	1.94 m
			< 1 m	0.3%	< 1 m	0.3%
			1 to 2 m	47.85%	1 to 2 m	47.85%
			> 2 m	51.85%	> 2 m	51.85%

Key Performance Measure	Level of Service	Performance Measure Process	Optimal Performance Target ^a	Planned Funded Performance Target ^b	Current Funded Performance ^c
Amenity	Footpaths are clean and litter free	Footpath sweeping is measured against schedule	Footpaths are cleaned by property owners	Footpaths are cleaned regularly by respective property owners	Footpaths are cleaned regularly by respective property owners
Accessibility	All residents able to access at least one paved footpath within every street	Percentage of footpaths based on urban road length	18% (36 km)	18% (36 km)	18% (36 km) ^a
Safety	Provide a footpath network free from hazards	Number of high level hazards	No high level hazards exist	No high level hazards	58 high level hazards ^β
Cost-effectiveness	Provide footpaths in cost effective manner	Maintenance cost	Within budget	No individual budget for footpath. Budget comes from road maintenance budgets.	No individual budget for footpath. Budget comes from road maintenance budgets.

^aDetails are available at <http://InfoXpert/docs/~D255556>

^β58 number of high level hazards are already identified. Footpath inspection is an ongoing process and the number would be updated in future.

^aOptimal Performance Target: The defined LOS that would be achievable and/or desirable, if resourced. On occasion, this might be less than what is currently provided.

^bPlanned Funded Performance Target: The defined LOS that can be provided using the resource levels planned for the upcoming (and future) financial years.

^cCurrent Funded Performance: The defined LOS provided using the resource levels available within current budget.

4. FUTURE DEMAND

4.1 Demand Forecast

Factors affecting demand include population change, changes in demographics, seasonal factors, vehicle ownership, consumer preferences and expectations, economic factors, agricultural practices, environmental awareness, etc.

Demand factor trends and impacts on service delivery are summarised in Table 4.1.

Table 4.1. Demand Factors, Projections and Impact on Services

Demand factor	Present position	Projection	Impact on services
Population	<p>According to the 2001 Census Population was 14,566. Population growth rate was 0.9% from 2001 to 2006. In 2006, census shows a population of 15,236.</p> <p>Population growth was very high, 5.48% from 2006 to 2007. From 2007 to 2009, it was normal, 0.99%. Estimated population in 2009 was 16,391.</p> <p>Current (2011) population growth is 1.2%. Assuming this growth rate, present population is 16,787.</p>	<p>Estimated population growth rates are as follows:</p> <p>From 2011 to 2016: 1.2% From 2016 to 2030: 0.9%</p> <p>Using the above-mentioned growth rate population in future would be as follows:</p> <p>Population in 2015: 17,607 Population in 2020: 18,469 Population in 2025: 19,315 Population in 2030: 20,200</p>	<p>Increase users, reduce serviceability, increase maintenance intensity and frequency, need renewal, upgrade and new assets.</p>
Demographics	<p>In 2006, 26.63% of the population of the Muswellbrook Shire Council was over 50 years of age. 2.36% were aged 80+ years old.</p> <p>31.56% were below 20 years of age and 41.82% stands between 20 to 49 years of age.</p>	<p>According to the Department of Planning (2009). projection by broad age groups represents that number of population over 65 years of age would increase significantly in next 20 years and become almost double of the current number. However, population of other age groups would be almost the same all over the next 20 years.</p>	<p>Significant increase of the age group over 65 years may affect footpath facilities. Availability of footpaths and their condition need to be improved. Footpath hazards should also be reduced. Moreover, attention may be necessary for traffic control services.</p>

4.2 Changes in Technology

Technology changes are forecast to affect the delivery of services covered by this plan in the following areas.

Table 4.2. Changes in Technology and Forecast effect on Service Delivery

Technology Change	Effect on Service Delivery
Footpath grinding instead of frequent replacement (Implemented recently in Maitland Street)	Lesser requirement to replace, hence longer asset use life
Modular Bridge Construction	Cheaper and quicker construction
Roughometer for road surface inspection	Quicker and consistent road inspection data
PMS by using HDM-4	Optimised decision making by considering lifecycle costs
Root guard for tree protection	Longer lasting footpaths and kerb & gutter
Pipe repairing technology (Implemented recently in Crinoline Street)	In-situ repairs
Improvement in roadside furniture designs	Installation of sign post, guide post and guiderails
In-situ pavement stabilisation	Will increase pavement life and reduce rehabilitation costs
Rejuvenation of asphalt and sprayed seal surface	Cheaper, environment friendly and natural resource saving
Recycling of pavement materials	Saving costs and natural resources

4.3 Demand Management Plan

Demand for new services will be managed through a combination of managing existing assets, upgrading and replacing existing assets as given in the renewal plan. Demand management practices include non-asset solutions, insuring against risks and managing failures.

4.4 New Assets from Growth

The new assets required to meet growth will be acquired from land developments. The new asset values are summarised in Fig 1.

Fig 1. New Assets from Growth

No new assets from growth

Acquiring these new assets will commit council to fund ongoing operational and maintenance costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operating and maintenance costs.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how Council plans to manage and operate the assets at the agreed levels of service (defined in section 3) while optimising life cycle costs.

5.1 Background Data

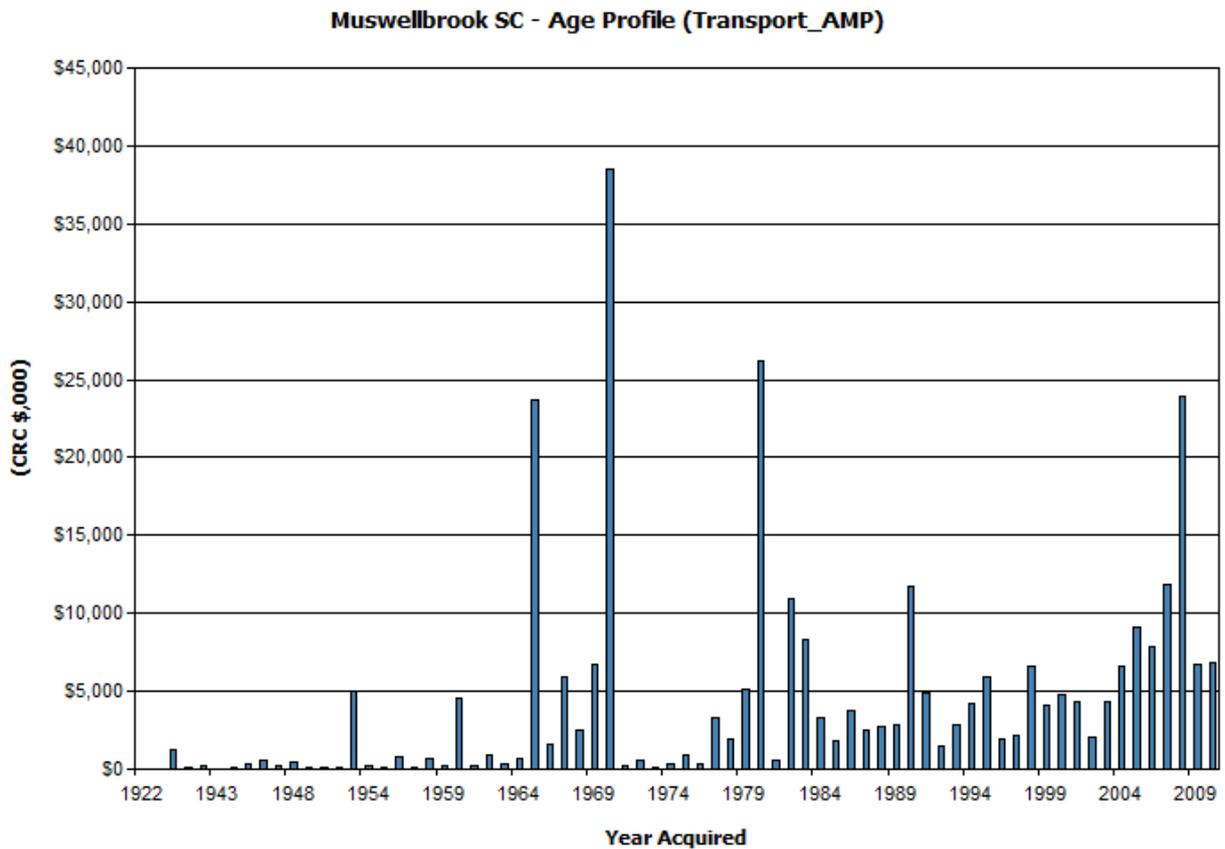
5.1.1 Physical parameters

The assets covered by this asset management plan are shown below.

Bridges	Carparks
Footpaths Cycleways	Kerb and Gutter
Roads	Traffic Control

The age profile of Council's assets is shown below.

Fig 2. Asset Age Profile



5.1.2 Asset capacity and performance

Council's services are generally provided to meet design standards where these are available.

Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

Table 5.1.2. Known Service Performance Deficiencies

Asset Type and Location	Service Deficiency
Kerb - Various Locations	Kerb inspections show extensive areas of damaged kerb. A risk based priority program is needed
Traffic facilities	Many traffic control items (guardrails and islands are approaching end of life). Minimal expenditure in the past. Approx \$300K per year needed for the next 10 years. High Risk
Roads – Various locations	Past low reseal budgets – less than half of the required annual average has resulted in a significant backlog of reseal work which is resulting in pavement damage and increasing amounts of rehabilitation needed before a reseal can be done – current average is estimated at 20%. In addition to recent increases in expenditure, \$730,000 per year is additionally needed over the next 10 years for reseals and pavement rehabilitation. There is a high economic risk if pavements are damaged by delaying reseals.

5.1.3 Asset condition

Current condition data for each of the assets are available in the Muswellbrook Shire Council database.

A series of graphs that illustrate the condition of land transport assets will be produced for future versions of this plan.

Condition of simple assets is measured using a 1 – 5 rating system. RTA Level 1 specification is applied for bridges and major culverts inspection. For roads, Carparks and kerb and gutter, council uses a condition inspection specification recommended by GHD. For the inspection of traffic control devices, council use its own assessment criteria. Footpaths are inspected based on risk management issues. Table 5.1.3 summarises the detail of the condition rating.

Table 5.1.3. Detail of condition Rating

Condition	Condition Score	Condition Description	Wear	Maintenance Requirement	Functionality
Excellent	1	Chance of failure is minimal	Negligible wear	No problem beyond normal maintenance	Easily performing required function
Good	2	Chance of failure is minimal	All wear within design tolerance	No problem beyond normal maintenance	Adequately performing required function
Fair	3	Chance of failure is low but present	Wear approaching allowable limits	Problem that will require prioritised attention	Performing function but possibly not effectively
Poor	4	There is a real chance of failure	Wear beyond allowable limits	Problem identified requiring immediate attention	At lowest level of acceptability in performing required function
Broken/ Damaged	5	Failed	Substantial deterioration	Dangerous or Broken down	Not performing function

Recently, council started more accurate and consistent road surface condition inspections by using Roughometer III. This inspection generates sealed and unsealed road profiles in terms of International

Roughness Index (IRI) in tabular and graphical formats. Council is currently collecting the roughness data for its entire road network, and this is expected to be completed within the fourth quarter of 2010/11. Moreover, council carried out Falling Weight Deflectometer (FWD) testing for several important road segments to assess the overall strength of pavements.

5.1.4 Asset valuations

The value of assets covered by this asset management plan, as at 1 March 2011, is summarised below. Assets were last re valued at 1 January 2011. Assets are valued at brownfield rates.

Current Replacement Cost	\$303,087,000
Depreciable Amount	\$307,197,000
Depreciated Replacement Cost	\$195,078,000
Annual Depreciation Expense	\$6,160,000

Council's sustainability reporting reports the rate of annual asset consumption and compares this to asset renewal and asset upgrade and expansion.

Asset Consumption	2.11%
Asset renewal	1.14%
Annual Upgrade/expansion	0.54%

5.2 Risk Management Plan

An assessment of risks associated with service delivery from infrastructure assets has identified critical risks to Council. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

Critical risks, being those assessed as 'Very High' - requiring immediate corrective actions and 'High' – requiring prioritised corrective action identified in the infrastructure risk management plan are summarised in Table 5.2. Detail risks registers for land transport are available in infoxpert at <http://InfoXpert/docs/~D255370>. The top high and very high risks need to be incorporated into Councils corporate risk register. Among land transport assets, one asset, Smiths Bridge (Timber Bridge), has been rated as very high risk that needs immediate corrective actions. The bridge is already considered to be replaced and budget is allocated for this work.

There are three more high rated risks in risk registers. They are roads closure due to flooding, vehicle collision with guardrail in Smiths Bridge and train derailment at concrete bridge over rail. However, they have been considered as acceptable risks. Council does not have realistic options within available resources to minimise these risks. There are 15 more medium rated unacceptable risks that need planned maintenance actions. Details of these risks, required actions to minimise them and resources required for the treatment actions are summarised in the risk registers available at <http://InfoXpert/docs/~D255370>.

Table 5.2 Critical Risks and Treatment Plans – Land Transport

Asset at Risk	What can happen?	Risk rating	Treatment option(s)	Risk treatment plan	Council resource required		External resource required (\$)
					(days)	(\$)	
Sealed Roads	Surface distresses (potholes, cracking, edge break) causing pavement damages, lower travel speed, increased risk of traffic crashes and reduce pavement life	High	<ol style="list-style-type: none"> 1. Inspect regularly and apply reactive and proactive maintenance works. 2. Investigate frequently occurring failures 	<ol style="list-style-type: none"> 1. Formalised inspection and maintenance program required. 	160	0	\$30,000
Unsealed Roads	Washout of roads and drainage infrastructure due to storms or protracted rainfall	High	<ol style="list-style-type: none"> 1. Maintain existing maintenance and re-sheeting program 2. Introduce planned inspection and clearing program. 3. Temporary signage control. 4. Proactively improve drainage systems 	<ol style="list-style-type: none"> 1. Maintain existing maintenance and re-sheeting program. 2. Implement drainage improvement plan 	20	\$15,000	0
Unsealed Roads	Slippery surface	High	<ol style="list-style-type: none"> 1. Inspect unsealed road and find out slippery surface. 2. Apply optimal maintenance strategies. 	<ol style="list-style-type: none"> 1. Formalised inspection and maintenance program required. 		0	0
Unsealed Roads	Roughness, corrugation, potholes and gravel loss causing lower travel speed and increased risk of traffic crashes. They will also cause higher road user costs and discomfort.	High	<ol style="list-style-type: none"> 1. Inspect condition and update database 2. Determine and apply optimal preventive maintenance strategies. 	<ol style="list-style-type: none"> 1. Formalised inspection and maintenance program required. 		0	0

Asset at Risk	What can happen?	Risk rating	Treatment option(s)	Risk treatment plan	Council resource required		External resource required (\$)
					(days)	(\$)	
Rural cuttings	Slippage of rocks, earth and trees onto roadway	High	<ol style="list-style-type: none"> 1. Remove build-up of material 2. Mitigate to ensure slopes are satisfactory 3. Remove hazardous rocks and other materials. 	<ol style="list-style-type: none"> 1. Engage consultant to carry out a further study of all Shire Cuttings 2. Seek budget to carry out identified remedial works. 	0	0	\$1M for Bylong Valley cutting remedial works (Widden Cutting). For further study \$100,000
Road Signs	Removal/damage of signs	High	<ol style="list-style-type: none"> 1. Regular road traffic control inspection. 2. Replace damaged signs 3. Add anti-theft nuts to all/new signs 4. Audit selected roads to ensure that the signage is adequate and correctly placed to meet the safety requirement of the asset. 	<ol style="list-style-type: none"> 1. Replace damaged signs 2. Add anti-theft nuts to new signs. 	50	0	0
Guide posts	Removal/damage of guide posts	High	<ol style="list-style-type: none"> 1. Ensure guide posts have maximum resilience properties to minimise maintenance requirement 2. Audit selected roads to ensure that the guide posts are adequate and correctly placed to meet the safety requirement of the asset. 	<ol style="list-style-type: none"> 1. Replace damaged guide posts 2. Ensure guide posts are resilient. 		0	0
Regulatory signs	Missing or incorrect signs and markings not picked up during inspection	High	<ol style="list-style-type: none"> 1. Locate missing/incorrect points and reinstall 	<ol style="list-style-type: none"> 1. Reinstall missing/incorrect signs 		0	0

Asset at Risk	What can happen?	Risk rating	Treatment option(s)	Risk treatment plan	Council resource required		External resource required (\$)
					(days)	(\$)	
Kerb and Gutter	Subsidence and ponding causing pavement damage, aquaplaning, mosquito breeding environment, trip and cycling hazards.	High	1. Review current kerb defect register 2010.	1. Currently developing defect rectification programme. 2. Complete risk assessment of all condition 5 kerb and high priority defects.	It will be covered by road/footpath inspection	0	Council will estimate the budget after preparing work programs
Shared pedestrian / cycleways	Cyclists pedestrians hit by car at road crossings	High	1. Inspection- path safety audit against Austroads standard	1. Complete safety audit 2. Complete prioritised improvement plan	0	0	\$10,000
Smiths Bridge (Timber Bridge), Martindale Rd.	Collapse or Closure for >= 7 days	Very High	1. Renew the bridge	1. Renewal of the bridge	Budgeted already. The bridge is going to be renewed.		
Edderton Road Causeway	Car accidents or incidents	High	1. Put in place improved safer controls at causeway and approaches 2. Replace causeway as a long-term solution	1. Design improved safety controls at causeway and approaches	Need to be investigated and estimated		
Bell St. Rail Bridge- Two structures (joint ownership)	Failure or closure due to unplanned major maintenance. This bridge is the only alternative route during moderate flooding.	High	1. Level 2 inspection recommended treatment options that have not yet been implemented. 2. Level 3 Inspection	1. Level 3 Inspection	10 (with consultants)	0	\$50,000 (Budget available for Level 3 Inspection)

Asset at Risk	What can happen?	Risk rating	Treatment option(s)	Risk treatment plan	Council resource required		External resource required (\$)
					(days)	(\$)	
Keys Bridge & major culverts on Bengalla Link Road (Council asset, maintenance under development consent)	Failure or closure	High	1. Document responsibility for regular inspection (level 1 and 2)	1. Document responsibility for regular inspection (level 1 and 2)	Need to inspect biannually and make sure the assets meet service standards	0	0

5.3 Routine Maintenance Plan

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again.

5.3.1 Maintenance plan

Maintenance includes reactive, planned and cyclic maintenance work activities.

Reactive maintenance is unplanned repair work carried out in response to service requests and management/supervisory directions.

Planned maintenance is repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Cyclic maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, building roof replacement, etc. This work generally falls below the capital/maintenance threshold.

Maintenance expenditure trends are shown in Table 5.3.1

Table 5.3.1. Maintenance Expenditure Trends

Year	Maintenance Expenditure		
	Reactive ('\$000)	Planned ('\$000)	Cyclic ('\$000)
2010/11	\$126.2	\$1,702.7	\$13.0

Maintenance expenditure levels are considered to be inadequate to meet required service levels. Future revision of this asset management plan will include linking required maintenance expenditures with required service levels.

Assessment and prioritisation of reactive maintenance is undertaken by Council staff using experience and judgement.

5.3.2 Standards and specifications

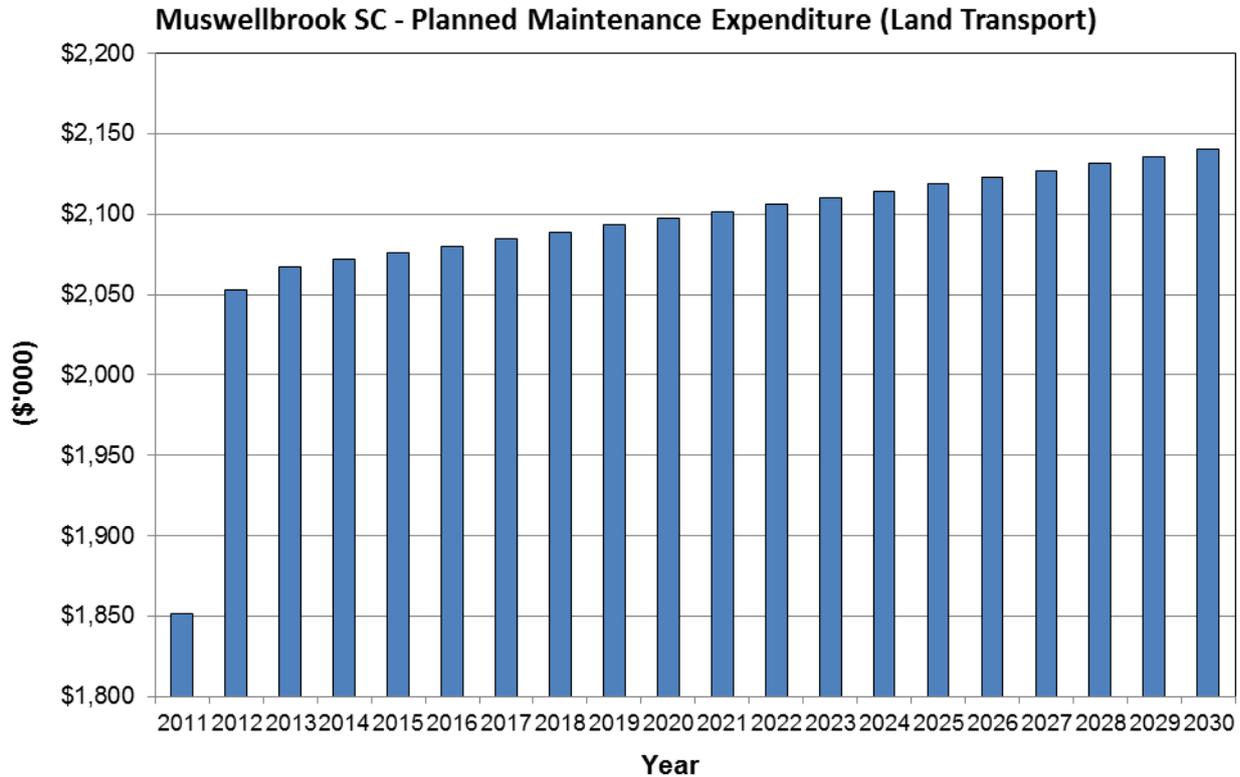
Maintenance work is carried out in accordance with the following Standards and Specifications.

- Austroads Pavement Design Guide
- RTA and Council specifications.

5.3.3 Summary of future maintenance expenditures

Future maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Fig 4. Note that all costs are shown in current 2011 dollar values.

Fig 4. Planned Maintenance Expenditure



Deferred maintenance, i.e. works that are identified for maintenance and unable to be funded is to be included in the risk assessment process in the infrastructure risk management plan.

Maintenance is funded from Council's operating budget and grants where available. This is further discussed in Section 6.2.

5.4 Renewal/Replacement Plan

Renewal expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is upgrade/expansion or new works expenditure.

5.4.1 Renewal plan

Assets requiring renewal are identified from estimates of remaining life obtained from the asset register worksheets on the 'Planned Expenditure template'. Candidate proposals are inspected to verify accuracy of remaining life estimate and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed in Table 5.4.1.

Table 5.4.1 Renewal Priority Ranking Criteria

Criteria	Weighting
Council's renewal program	100%
Total	100%

Renewal will be undertaken using 'low-cost' renewal methods where practical. The aim of 'low-cost' renewals is to restore the service potential or future economic benefits of the asset by renewing the assets at a cost less than replacement cost.

5.4.2 Renewal standards

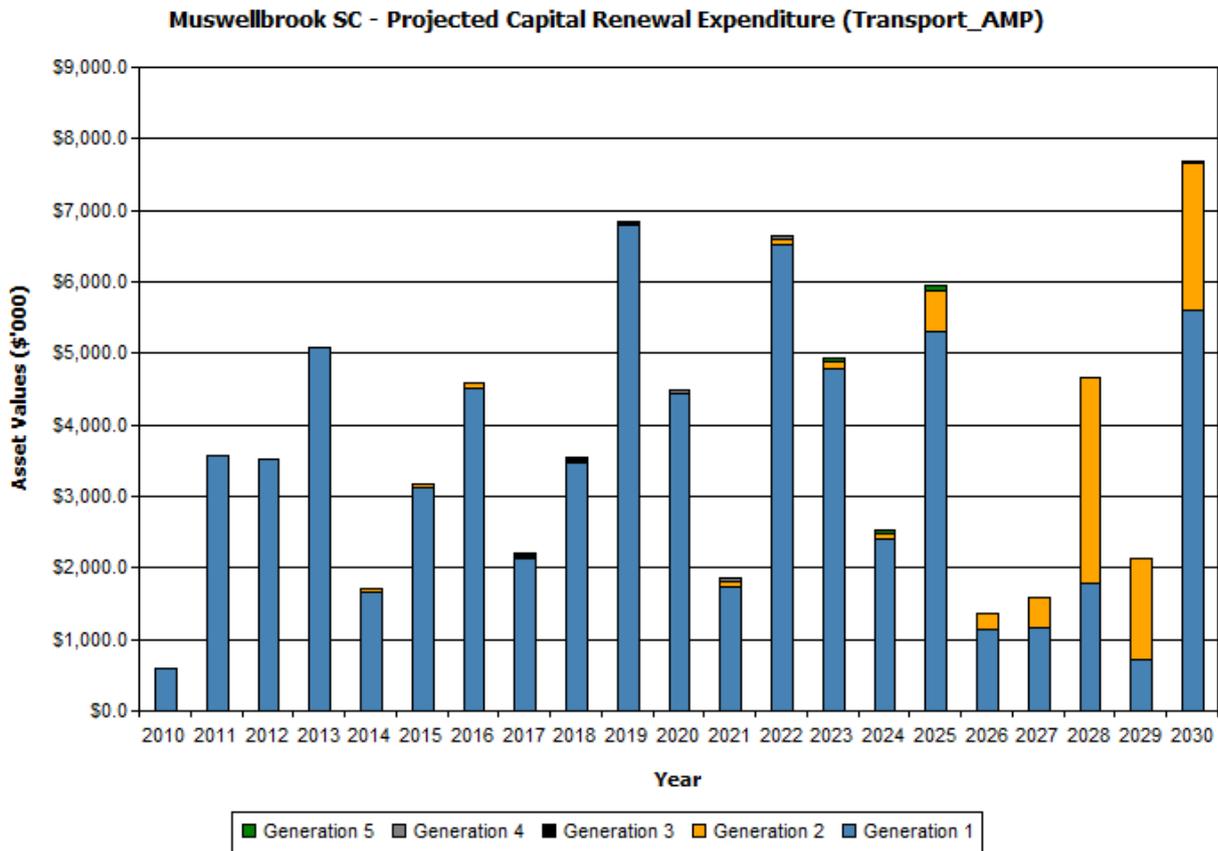
Renewal work is carried out in accordance with the following Standards and Specifications.

- Austroads Pavement Design Guide
- RTA and Council specifications.

5.4.3 Summary of future renewal expenditure

Projected future renewal expenditures are forecast to increase over time as the asset stock ages. The costs are summarised in Fig 5. Note that all costs are shown in current 2011 dollar values.

Fig 5. Projected Capital Renewal Expenditure



Deferred renewal, i.e. those assets identified for renewal and not scheduled for renewal in capital works programs are to be included in the risk assessment process in the risk management plan.

Renewals are to be funded from Council’s capital works program and grants where available. This is further discussed in Section 6.2.

5.5 Creation/Acquisition/Upgrade Plan

New works are those works that create a new asset that did not previously exist, or works which upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost to the Council from land development. These assets from growth are considered in Section 4.4.

5.5.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as councillor or community requests, proposals identified by strategic plans or partnerships with other organisations. Candidate proposals are inspected to verify need and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programs. The priority ranking criteria is detailed below.

Table 5.5.1 New Assets Priority Ranking Criteria

Criteria	Weighting
Gap between target Service Quality (set by Community Plan) and actual service provided	50%
Gap between target Service Function (set by Community Plan) and actual service provided	50%
Total	100%

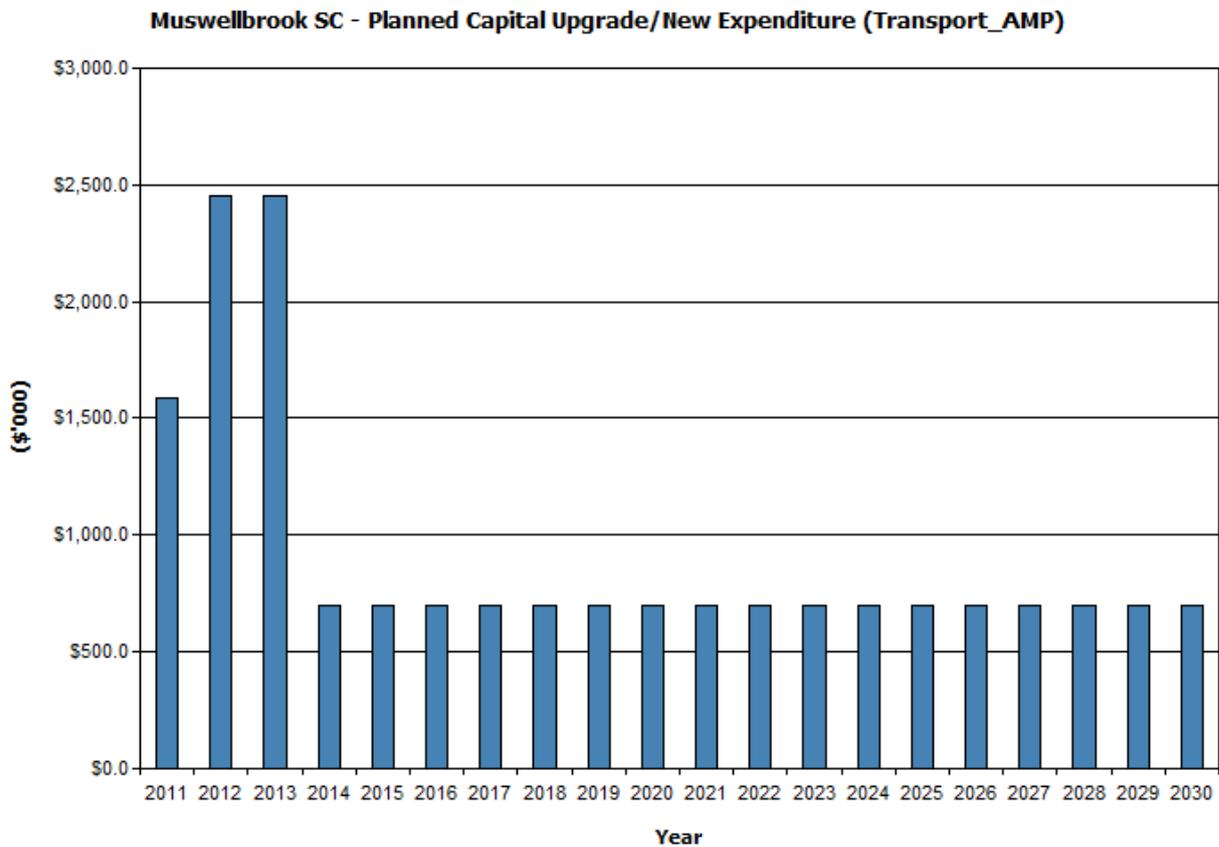
5.5.2 Standards and specifications

Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.4.2.

5.5.3 Summary of future upgrade/new assets expenditure

Planned upgrade/new asset expenditures are summarised in Fig 6. All costs are shown in current 2011 dollar values.

Fig 6. Planned Capital Upgrade/New Asset Expenditure



New assets and services are to be funded from Council's capital works program and grants where available. This is further discussed in Section 6.2.

5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.6. These assets will be further investigated to determine the required levels of service and see what options are available for alternate service delivery.

Table 5.6 Assets identified for Disposal

Asset	Timing
\$381,000 – Oakleigh Bridge. Probable replacement with box culvert.	2013

Where cash flow projections from asset disposals are not available, these will be developed in future revisions of the asset management plan.

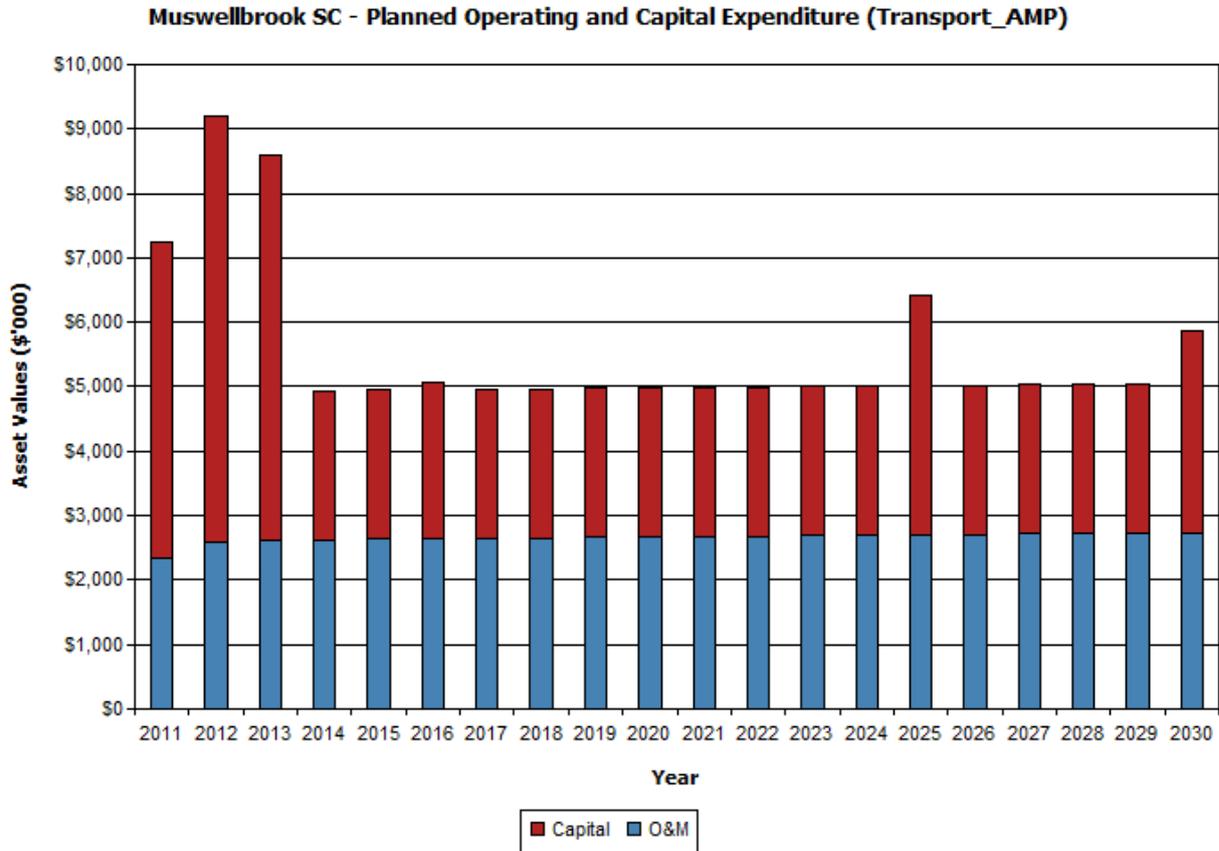
6. FINANCIAL SUMMARY

This section contains the financial requirements resulting from all the information presented in the previous sections of the asset management plan. The financial projections relating to desired levels of service and current and projected future asset performance will be improved as further information becomes available.

6.1 Financial Statements and Projections

The financial projections are shown in Fig 7 for planned operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets).

Fig 7. Planned Operating and Capital Expenditure



Note that all costs are shown in current 2011 dollar values.

6.1.1 Sustainability of service delivery

There are two key indicators for financial sustainability that have been considered in the analysis of the services provided by this asset category, these being long term life cycle costs and medium term costs over the 10 year financial planning period.

Long term - Life Cycle Cost

Life cycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the longest asset life. Life cycle costs include maintenance and asset consumption (depreciation expense). The annual average life cycle cost for the services covered in this asset management plan is \$8.27M.

Life cycle costs can be compared to life cycle expenditure to give an indicator of sustainability in service provision. Life cycle expenditure includes maintenance plus capital renewal expenditure. Life cycle expenditure will vary depending on the timing of asset renewals. The life cycle expenditure at the start of the plan is \$4.41M.

A gap between life cycle costs and life cycle expenditure gives an indication as to whether present consumers are paying their share of the assets they are consuming each year. The purpose of this land transport infrastructure asset management plan is to identify levels of service that the community needs and can afford, and to develop the necessary long term financial plans to provide the service in a sustainable manner.

The life cycle gap for services covered by this asset management plan is \$3.86M per annum. The life cycle sustainability index is 0.53.

Medium term – 10 year financial planning period

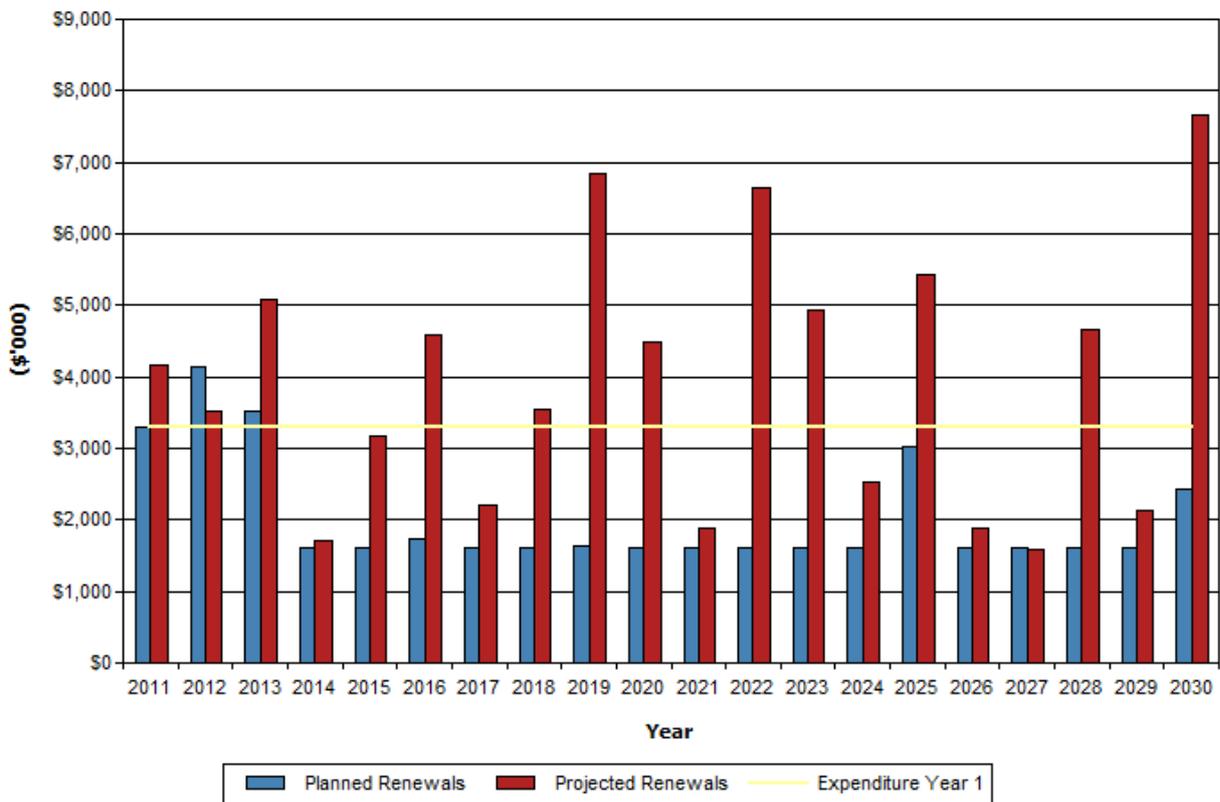
This asset management plan identifies the estimated maintenance and capital expenditures required to provide an agreed level of service to the community over a 20 year period for input into a 10 year financial plan and funding plan to provide the service in a sustainable manner.

This may be compared to existing or planned expenditures in the 20 year period to identify any gap. In a core asset management plan, a gap is generally due to increasing asset renewals.

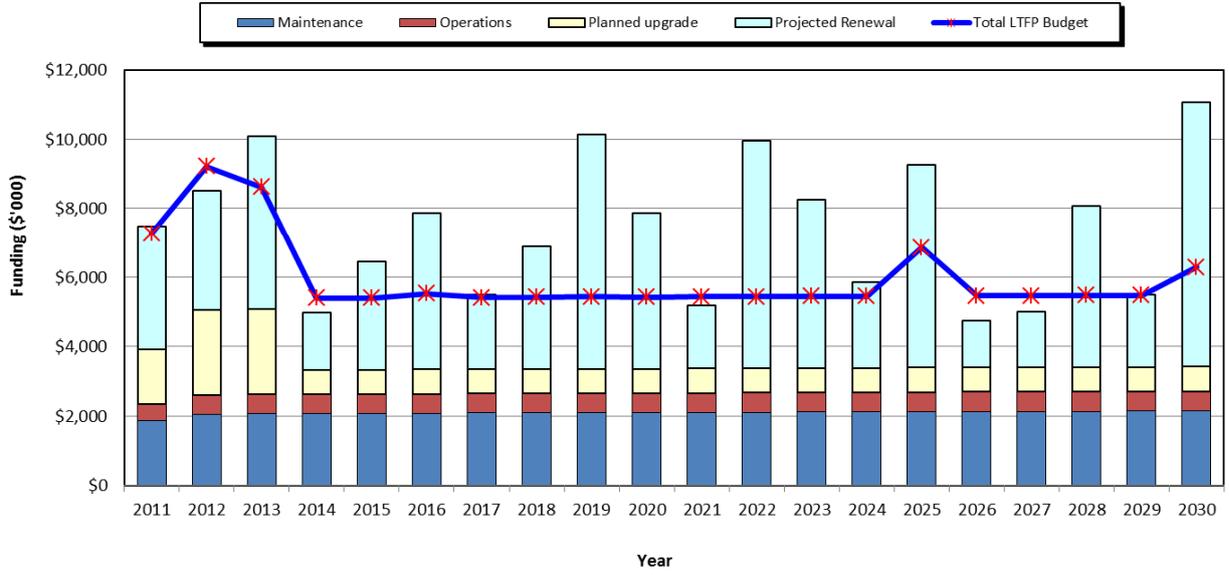
Fig 8 shows the projected asset renewals in the 20 year planning period from the asset register. The projected asset renewals are compared to planned renewal expenditure in the capital works program and capital renewal expenditure in year 1 of the planning period as shown in Fig 8. Table 6.1.1 shows the annual and cumulative funding gap between projected and planned renewals.

Fig 8. Projected and Planned Renewals and Current Renewal Expenditure

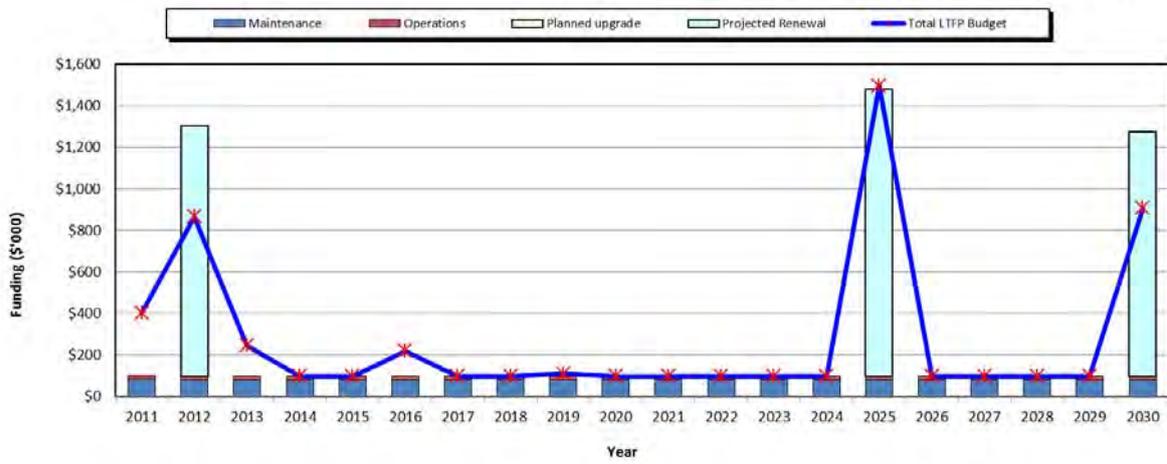
Muswellbrook SC - Projected & Planned Renewals and Current Renewal Expenditure (Transport_AMP)



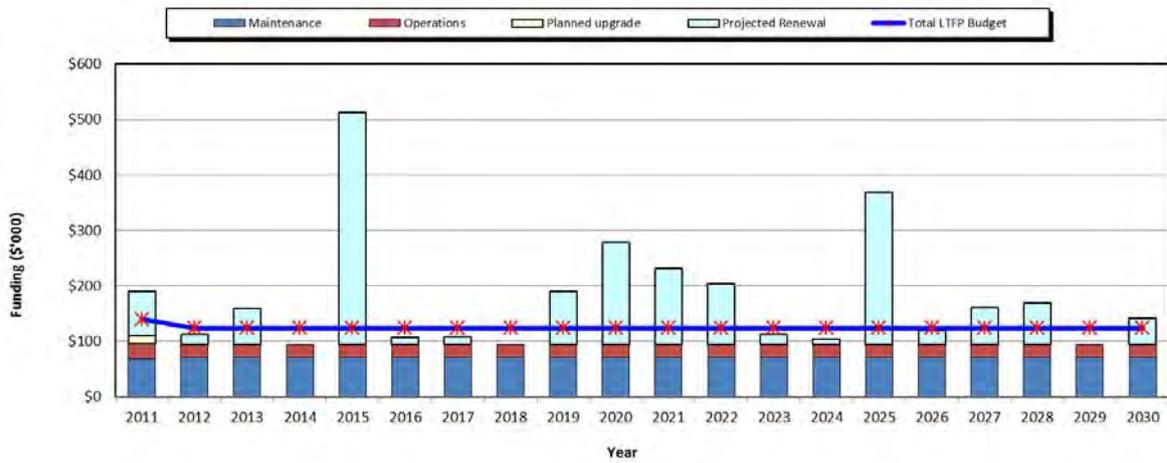
Comparison of Asset Service Costs Required by AMP with Funding Model in LTFP (Land Transport)



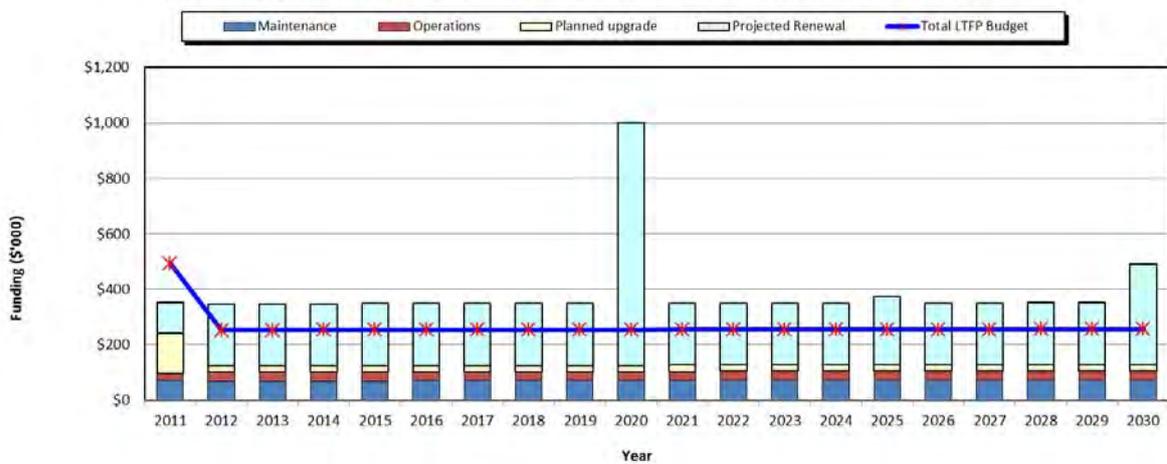
Comparison of Asset Service Costs Required by AMP with Funding Model in LTFP (Bridges and Major Culverts)



Comparison of Asset Service Costs Required by AMP with Funding Model in LTFP (Carparks)



Comparison of Asset Service Costs Required by AMP with Funding Model in LTFP (Footpaths Cycleways)



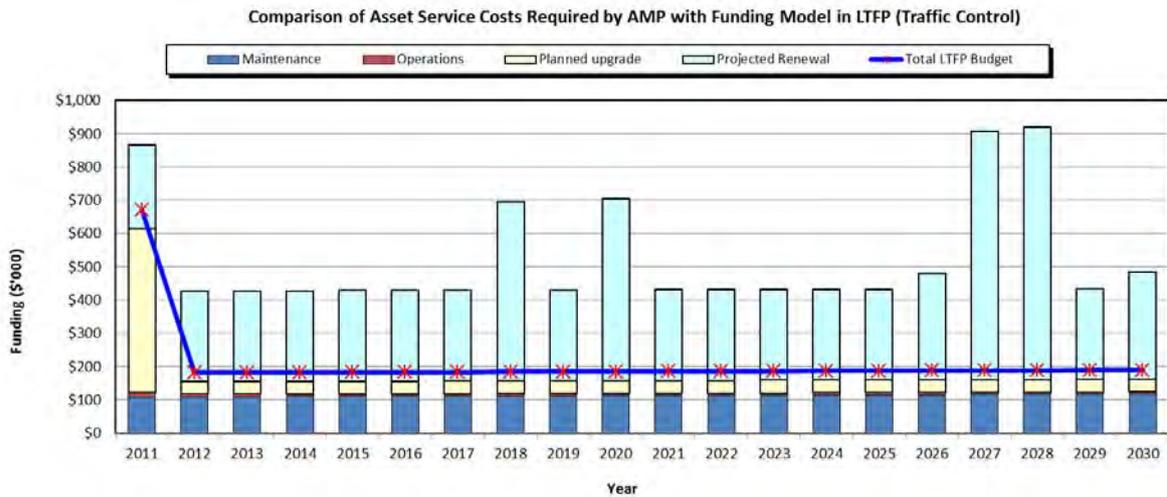
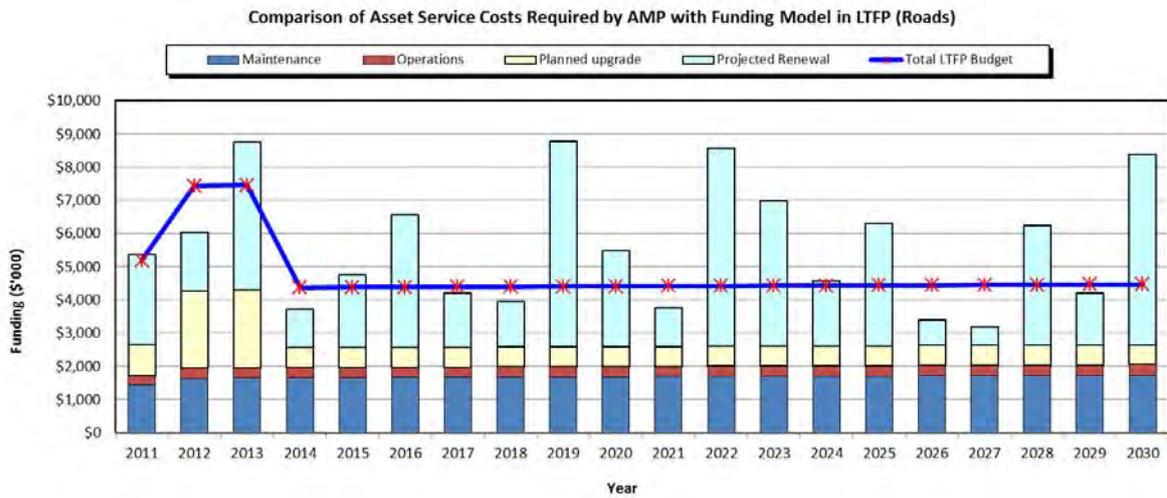
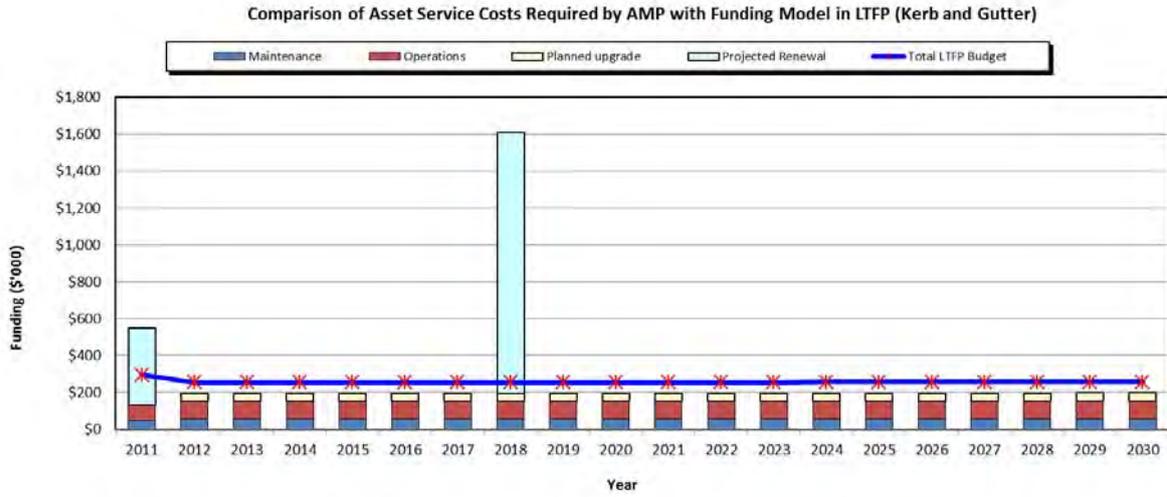


Table 6.1.1 shows the gap between projected and planned renewals.

Table 6.1.1 Projected and Planned Renewals and Expenditure Gap

Muswellbrook SC >> Planned Expenditures for Long Term Financial Plan (Transport_AMP)								
Year End	Total	Total	Projected	Planned	Planned	Planned	Shortfall in	Cumulative
Jun-30	Operations	Maintenance	Capital	Capital	Disposals	Capital	Renewal	Renewal
	Expenditure	Expenditure	Renewal	Upgrade/New	(\$'000)	Renewal	Expenditure (Projected - Planned)	Funding
	(\$'000)	(\$'000)	Expenditure (\$'000)	Expenditure (\$'000)		Expenditure (\$'000)	(\$'000)	Shortfall (\$'000)
2011	\$482.72	\$1,851.57	\$3,559.18	\$1,591.10	\$0.00	\$3,335.00	\$224.18	\$224.18
2012	\$547.61	\$2,052.57	\$3,467.81	\$2,452.30	\$381.00	\$4,164.10	-\$696.29	-\$472.11
2013	\$551.49	\$2,067.48	\$5,022.97	\$2,452.30	\$0.00	\$3,542.60	\$1,480.37	\$1,008.26
2014	\$552.60	\$2,071.74	\$1,649.34	\$702.30	\$0.00	\$2,064.10	-\$414.76	\$593.50
2015	\$553.72	\$2,076.01	\$3,111.52	\$702.30	\$0.00	\$2,064.10	\$1,047.42	\$1,640.92
2016	\$554.83	\$2,080.28	\$4,513.54	\$702.30	\$0.00	\$2,186.10	\$2,327.44	\$3,968.36
2017	\$555.94	\$2,084.55	\$2,140.42	\$702.30	\$0.00	\$2,064.10	\$76.32	\$4,044.67
2018	\$557.06	\$2,088.82	\$3,540.88	\$702.30	\$0.00	\$2,064.10	\$1,476.78	\$5,521.45
2019	\$558.17	\$2,093.08	\$6,787.10	\$702.30	\$0.00	\$2,078.20	\$4,708.90	\$10,230.35
2020	\$559.28	\$2,097.35	\$4,494.59	\$702.30	\$0.00	\$2,064.10	\$2,430.49	\$12,660.84
2021	\$560.39	\$2,101.62	\$1,807.21	\$702.30	\$0.00	\$2,064.10	-\$256.89	\$12,403.95
2022	\$561.51	\$2,105.89	\$6,580.03	\$702.30	\$0.00	\$2,064.10	\$4,515.93	\$16,919.88
2023	\$562.62	\$2,110.15	\$4,875.73	\$702.30	\$0.00	\$2,064.10	\$2,811.63	\$19,731.51
2024	\$563.73	\$2,114.42	\$2,473.85	\$702.30	\$0.00	\$2,064.10	\$409.75	\$20,141.25
2025	\$564.84	\$2,118.69	\$5,875.29	\$702.30	\$0.00	\$3,464.10	\$2,411.19	\$22,552.45
2026	\$565.96	\$2,122.96	\$1,350.91	\$702.30	\$0.00	\$2,064.10	-\$713.19	\$21,839.26
2027	\$567.07	\$2,127.23	\$1,598.22	\$702.30	\$0.00	\$2,064.10	-\$465.88	\$21,373.38
2028	\$568.18	\$2,131.49	\$4,671.04	\$702.30	\$0.00	\$2,064.10	\$2,606.94	\$23,980.32
2029	\$569.29	\$2,135.76	\$2,071.55	\$702.30	\$0.00	\$2,064.10	\$7.45	\$23,987.77
2030	\$570.41	\$2,140.03	\$7,663.00	\$702.30	\$0.00	\$2,874.10	\$4,788.90	\$28,776.67

Providing services in a sustainable manner will require matching of projected asset renewals to meet agreed service levels with planned capital works programs and available revenue.

A gap between projected asset renewals, planned asset renewals and funding indicates that further work is required to manage required service levels and funding to eliminate any funding gap.

Council will manage the 'gap' by developing this asset management plan to provide guidance on future service levels and resources required to provide these services, and complete an asset revaluation to update the background data for this asset management plan. Council will also consider a range of service level scenarios that predict the likely service consequences of the current funding level, the target funding level and options to extend asset life.

Council's long term financial plan covers the first 10 years of the 20 year planning period. The total maintenance and capital renewal expenditure required over the 10 years is \$58.85M.

This is an average expenditure of \$5.89M. Estimated maintenance and capital renewal expenditure in year 1 is 4.41M. The 10 year sustainability index is 0.75.

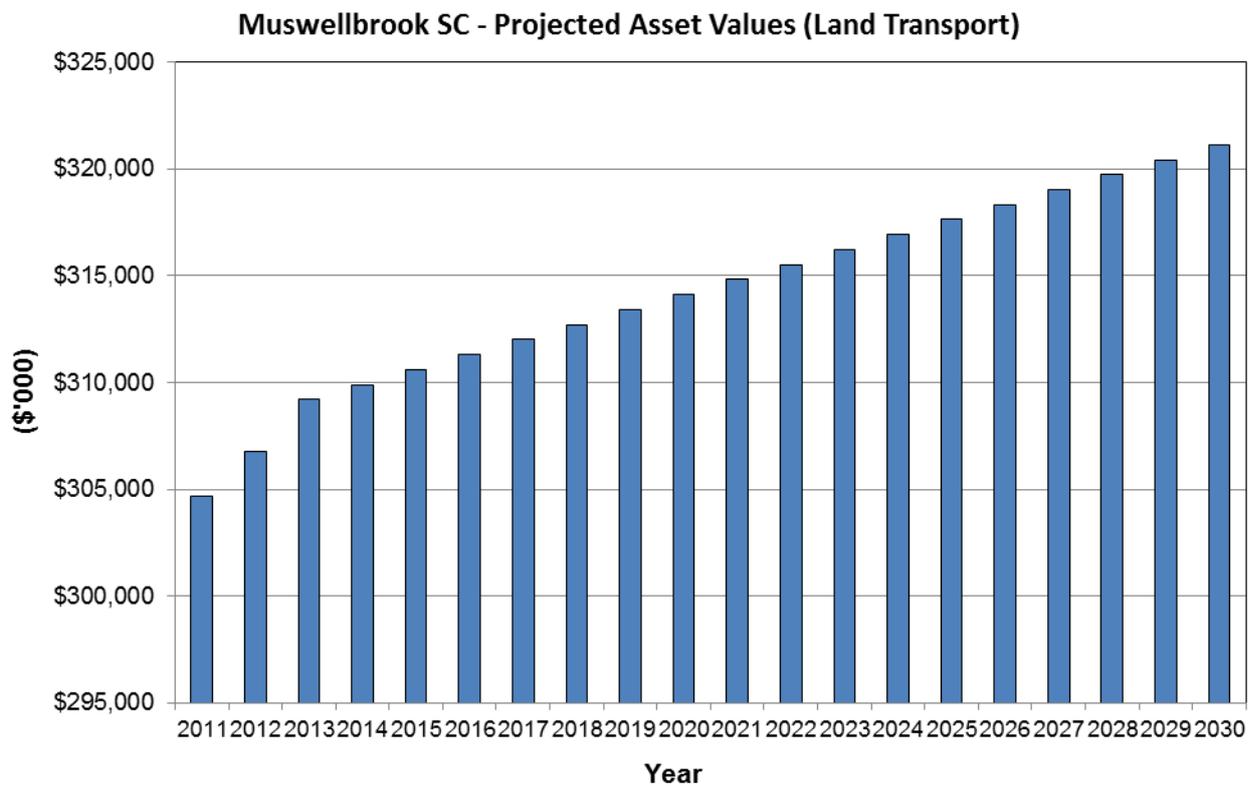
6.2 Funding Strategy

Projected expenditure identified in Section 6.1 is to be funded from Council's operating and capital budgets. The funding strategy is detailed in Council's 10 year long term financial plan.

6.3 Valuation Forecasts

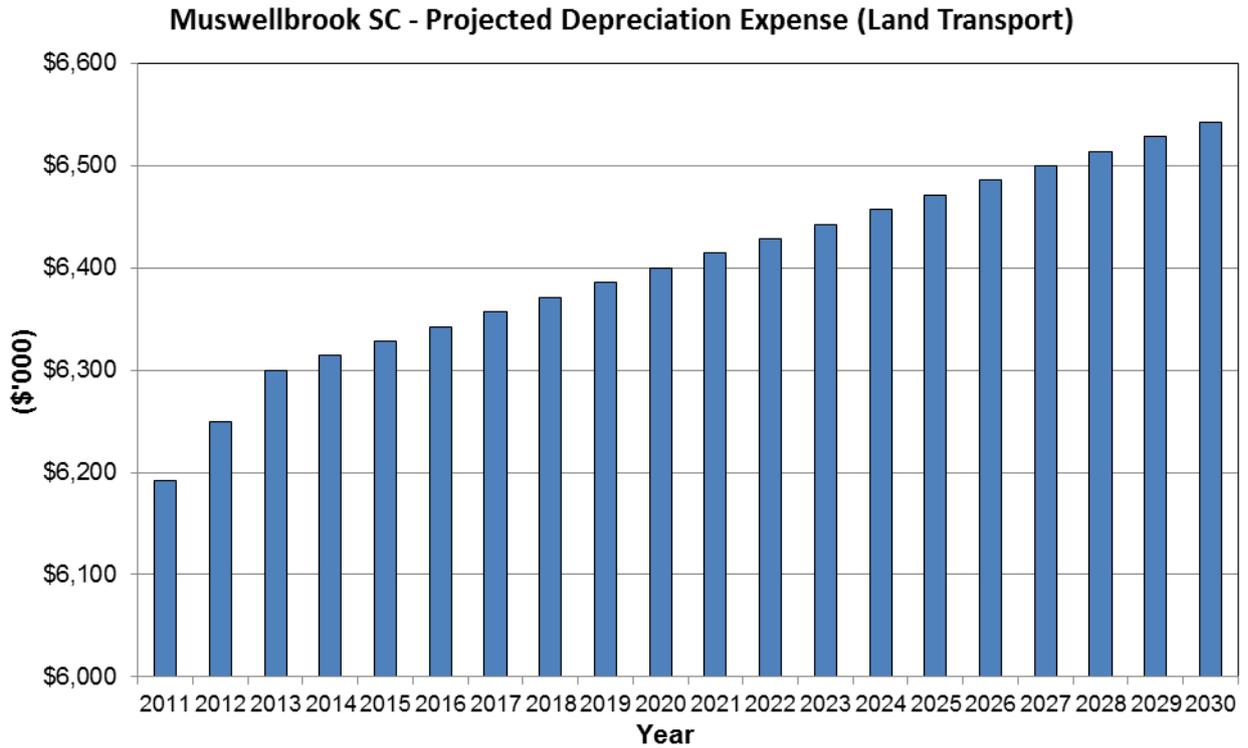
Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council, and from assets constructed by land developers and others and donated to Council. Fig 9 shows the projected replacement cost asset values over the planning period in current 2011 dollar values.

Fig 9. Projected Asset Values



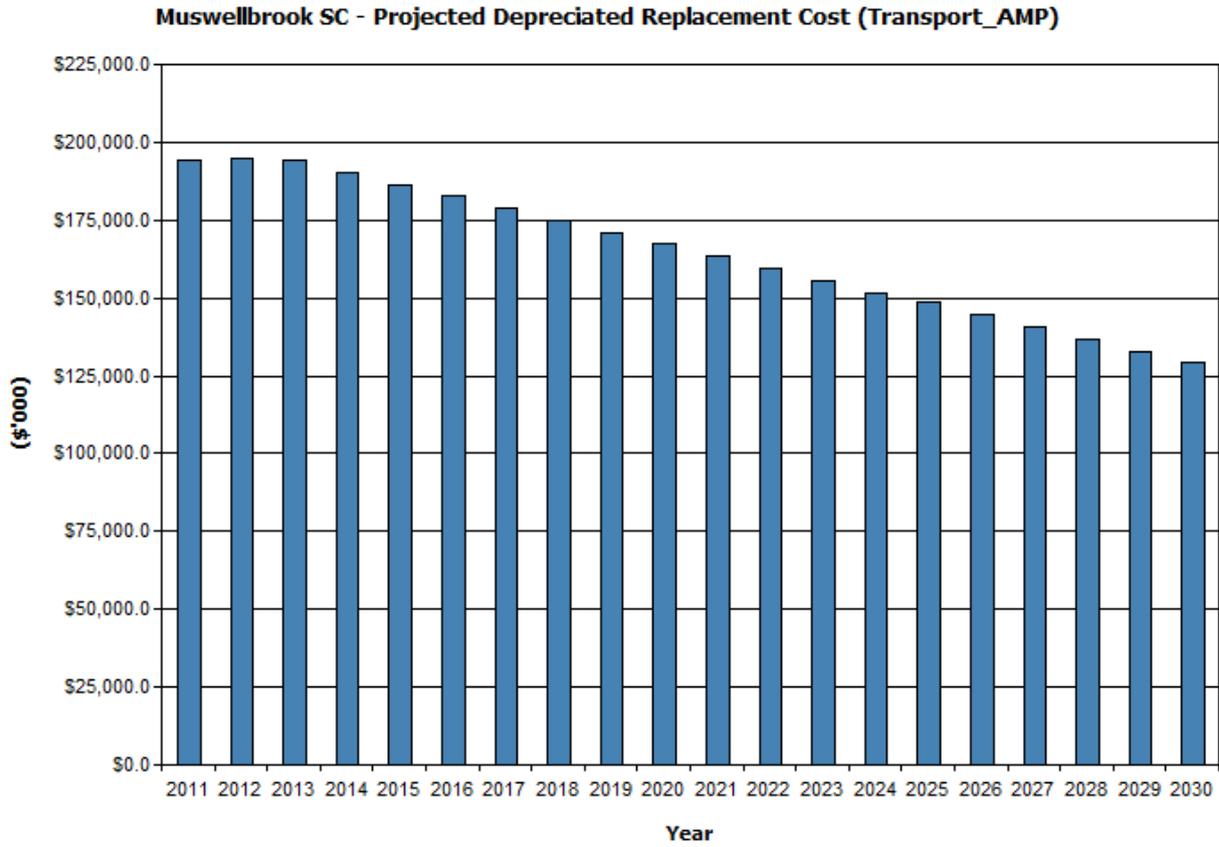
Depreciation expense values are forecast in line with asset values as shown in Fig 10.

Fig 10. Projected Depreciation Expense



The depreciated replacement cost (current replacement cost less accumulated depreciation) will vary over the forecast period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets. Forecast of the assets' depreciated replacement cost is shown in Fig 11.

Fig 11. Projected Depreciated Replacement Cost



6.4 Key Assumptions made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this asset management plan and in preparing forecasts of required operating and capital expenditure and asset values, depreciation expense and carrying amount estimates. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Key assumptions made in this asset management plan are:

- Asset inventory is correct as at 1 March 2011 for the purpose of providing annual depreciation costs for the asset class.
- Maintenance allocations are largely based on maintaining the current level of expenditure.

Accuracy of future financial forecasts may be improved in future revisions of this asset management plan by the following actions.

- Refining useful lives for all asset classes;
- Refining planned maintenance and renewal for asset classes;
- Improving the accuracy of the current asset register;
- Improving asset inspection procedures;
- Refinement of growth forecasts used in the current plan;
- Refining accurate unit rates for asset classes.

7. ASSET MANAGEMENT PRACTICES

7.1 Accounting/Financial Systems

Financial Systems

Authority by Civica is Council's financial management and accounting system. *Authority* has a number of general

purpose modules including:

- General Ledger
- Purchasing
- Debtors
- Payroll
- Rates
- Water Billing
- Project Costing

The *Authority* software provides an interface to allow read/write access to an Informix data repository. *Authority* is supplemented by a secondary interface, *Power Budget* by Chameleon, which allows read access and data extraction processes to budget and expenditure information from the same Informix database.

Accountabilities

The Finance Manager is responsible for the operation and maintenance of the Financial Reporting Systems.

Standards and Regulations

In regard to Asset Management Planning, the financial regulations that apply are outlined as part of the Integrated Planning Framework, especially with regard to the Long Term Financial Plan. Further reference may also be made to Council's Financial Sustainability policy.

Capital Threshold Policy

Council has developed a policy (F26/1) on asset capitalisation. This policy will guide Council on the capitalisation and thresholds of its road asset expenditure.

Changes to Financial Systems

At this stage, there have been no changes to Financial or Accounting systems implemented due to the production of this AMP.

7.2 Asset Management Systems

Maintenance Management System

Muswellbrook Shire Council is currently using Reflect with Insight to record maintenance accomplishments over the State and Regional road networks. Staff can now capture information relating to work activities including location (segment level), resources used, and the quantity of the work accomplished. The MMS also allows costs to be extracted from the general ledger and reported on. Work has commenced on setting up the system for use on Council's Local road network as a temporary system.

HDM-4

Muswellbrook Shire Council has implemented Pavement Management System by using Highway Development and Management (HDM-4). The system can estimate road deterioration, user cost, maintenance impact, and finally can produce optimal strategies by minimising lifecycle cost. It can be used for both project and network level analysis with or without budget constraints for a defined analysis period.

Asset Management and Geographic Information Systems

Muswellbrook Shire Council uses Microsoft Access databases for managing asset inventory, condition, replacement costs and other related information. These databases provide spatial data integration with Council's GIS. Asset Management systems are not linked to the accounting/financial system. Upgrades to processes used are necessary to provide predictive financial modelling.

Council finance section is responsible for keeping Council's financial asset register up to date. Entries and updates are applied based on capital expenditure. Technical asset registers are updated following receipt of WAE plans and/or other technical documentation by the Community Infrastructure section.

Links to Financial Systems

Asset Management systems are not integrated with Council's accounting/financial system. Improvements in this area would require substantial changes to the use and level of investment of Authority within Council.

Some levels of data extraction from Authority takes place and these extracts are compared to works accomplished to provide unit rates, etc.

Improvements are required to automate extracts from Authority and manage external links between financial records and asset inventories.

7.3 Information Flow Requirements and Processes

The key information flows *into* this asset management plan are:

- The asset register data on size, age, value, remaining life of the network;
- The unit rates for categories of work/material;
- The adopted service levels;
- Projections of various factors affecting future demand for services;
- Correlations between maintenance and renewal, including decay models;
- Data on new assets acquired by council.

The key information flows *from* this asset management plan are:

- The assumed Works Program and trends;
- The resulting budget, valuation and depreciation projections;
- The useful life analysis.

These will impact the Long Term Financial Plan, Strategic Business Plan, annual budget and departmental business plans and budgets.

7.4 Standards and Guidelines

Australian Infrastructure Financial Management Guidelines 2009, IPWEA Version 1.

International Infrastructure Management Manual, IPWEA

8. PLAN IMPROVEMENT AND MONITORING

8.1 Performance Measures

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required cash flows identified in the asset management plan are incorporated into council's long term financial plan and Strategic Management Plan;
- The degree to which 1-5 year detailed works programs, budgets, business plans and organisational structures take into account the 'global' works program trends provided by the asset management plan;

8.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 8.2.

Table 8.2 Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1.	Develop priority program for traffic control facilities			
2.	Improve quality of road data for future rolling reseal and rehabilitation programme (On going Roughometer III survey and PMS database)	Asset Inspector, Asset System Officer, Asset Management Engineer	Budgeted already for most of the data. External resources required for FWD tests.	1 year
3.	Annual update of AMP and AMP or when data is materially improved.	Asset System Officer, Asset Management Engineer	Budgeted already. No extra resource is required.	1 year
4.	Carry out research to determine customer satisfaction level	Asset System Officer, Asset Management Engineer	\$5,000	1 year
5.	Determine required width of bridges and major culverts to comply with standards	Manager Technical Services	No extra resource is required.	6 months
6.	Collect road asset condition data every year and develop deterioration models	Asset Inspector, Asset System Officer, Asset Management Engineer	Budgeted already. No extra resource is required.	3 years
7.	Apply lifecycle costs to determine optimal maintenance strategies and projected costs for Roads	Manager, Asset System Officer, Asset Management Engineer	Budgeted already. No extra resource is required.	6 months

8.	Apply lifecycle costs to determine optimal maintenance strategies and projected costs for other assets	Manager, Asset System Officer, Asset Management Engineer	Considerable resource is required. It will be estimated later.	5 years
9.	Improve the accuracy of current and target level of services	Manager, Asset System Officer, Asset Management Engineer	Budgeted already. No extra resource is required.	1 years
10.	Implement inspection program of under road drainage assets. Review definition of major culverts and collate inventory related to 'significant' under road drainage eg where pipe diameter exceeds 1000mm. (Adopt Qld Dept Main roads definition is 1.8m high or 3m2 waterway area?)	Manager, Asset Inspector, Asset System Officer, Asset Management Engineer	Not budgeted.	As a matter of urgency.

8.3 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget preparation and amended to recognise any changes in service levels and/or resources available to provide those services as a result of the budget decision process.

The Plan has a life of 4 years and is due for revision and updating within 2 years of each Council election.

REFERENCES

DVC, 2006, 'Asset Investment Guidelines', 'Glossary', Department for Victorian Communities, Local Government Victoria, Melbourne, <http://www.dvc.vic.gov.au/web20/dvclgv.nsf/allDocs/RWP1C79EC4A7225CD2FCA257170003259F6?OpenDocument>

IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney, www.ipwea.org.au

Department of Planning, 2009, Population Projection by Broad Age Groups.

RTA 2011, RTA Supplement to Austroads Guide to Road Design, Published in March 2011.

APPENDICES

Appendix A Maintenance Response Levels of Service for Roads Bridges & Drainage

Defect Group	Defect Type	Physical Description	Defect No.	Position within Location	Activity	
Batters Batters Batters	Batter Damage	Batter loose, unstable rocks	1.1	Roadside Roadside Roadside	1314	
		Batter protection system damaged	1.2		1314	
		Water flowing over batter due to blocked surface drain	1.3		1501	
Bridges	Bridge Cleaning	Clear & clean bridge of hazardous material, clear blocked drains, etc.	2.1	Bridge	1701	
	Bridge Repairs	Damage to rails and scuppers or flakey paint on rails	2.2	Minor	1701	
		Structural defects affect strength, safety. Scaffolds or spe	2.3	Major	1701	
Drainage	Drain Block	Culvert	3.1	blocked >40% cross section	1511	
		Culvert	3.2	ponding or water redirected over road	1511	
		Drainage Pit	3.3	water course not affected	1511	
		Drainage Pit	3.4	ponding or water redirected over road	1511	
		Floodway	3.5	ponding or water redirected over road	1511	
		Kerb & Gutter	3.6	ponding or water redirected over road	1150	
		Table drain Table drain	3.7	Blockage causing redirection of water away from drain	1150/1501	
			3.8	ponding or water redirected over road	1150/1501	
	Drain Damaged	Culvert Culvert Culvert		4.1	Deformation >50mm per metre	1512
				4.2	Headwall undermined >50mm at edge	1512
				4.3	Structural damage	1512
		Drainage pit Drainage pit		4.4	Damaged concrete or rock protection	1512
				4.5	Grate/lid/grid missing collapsed or broken	1512
		Kerb & Gutter		4.6	K&G broken, cracked, unstable or undermined	1504
		Stock grid		4.7	Faulty or unsafe, advise owner	
Table drain			4.8	scour >300mm deep	1501	

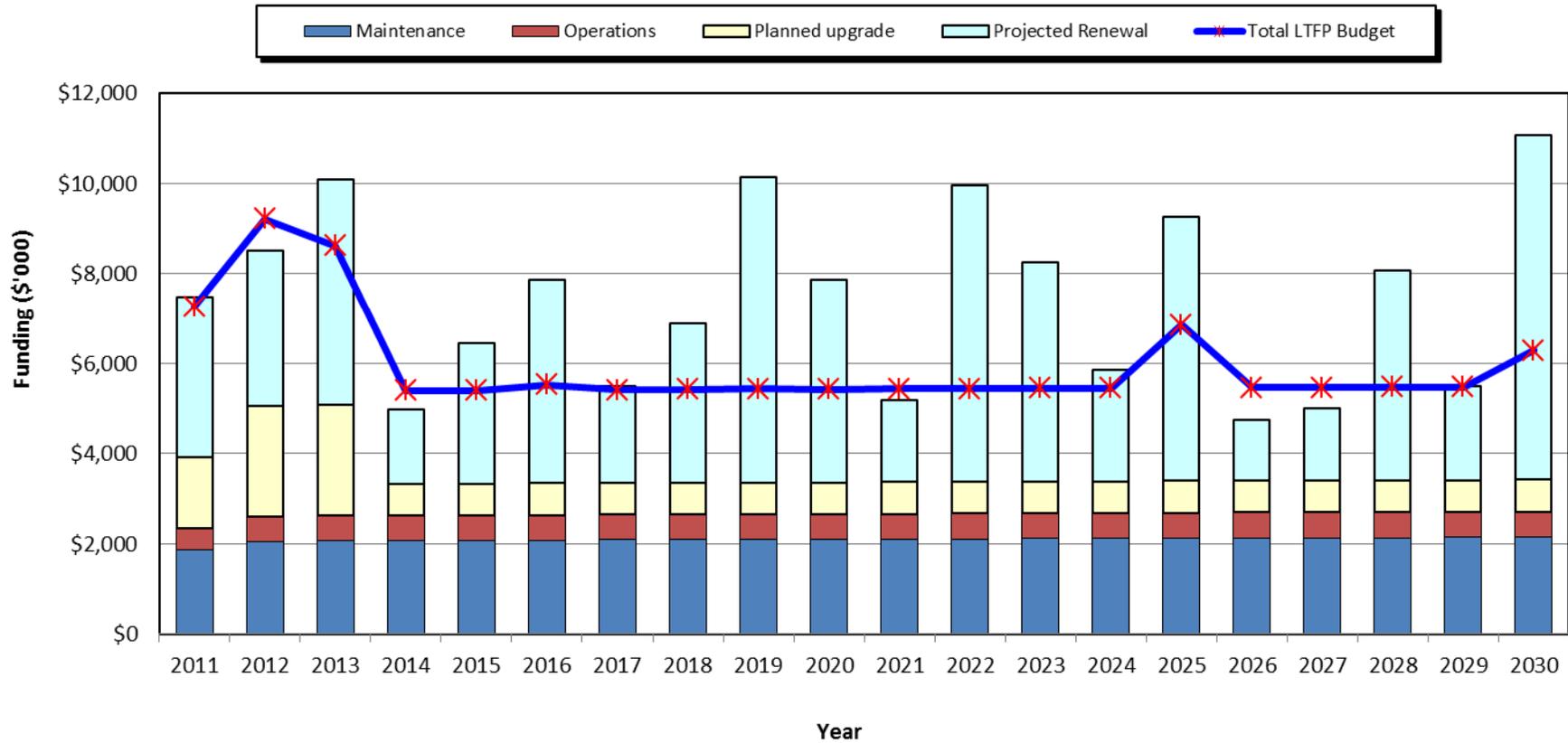
Defect Group	Defect Type	Physical Description	Defect No.	Position within Location	Activity
Guidepost/Guardrail	Guidepost	Consecutive Broken or Obscured >2	5.1	Guidepost	1163
			5.2	Reflector	1163
	Safety Barrier Damaged - (Choose Type)	Any structural or foundation damage or missing item (MUST SPECIFY TYPE)	5.3	Post, beams, terminals, reflector	1620
Internal Work Request	Miscellaneous Request	.	6.1	.	As applicable
Object to remove	Abandoned Vehicle	Abandoned vehicle	7.1	Any location	1432
	Debris	Debris on road surface non hazardous	7.2	Pavement Shoulder	1141
		Hazardous Debris on shoulders causing drainage problems	7.3		1141
		7.4	Shoulder	1141	
	Graffiti	offensive and visible to public	7.5	Offensive	1144
	Illegal land use	Illegal occupations or users	7.6	Rest area, vacant land, stockpile site	
Illegal Vehicle	Illegally parked vehicle	7.7	Any location	1432	
Pavement Shape	Crossfall incorrect	High verge impedes drainage or causes water ponding	8.1	Verge	1527
		excessive crossfall >8%	8.2	Unsealed Pavement	1280
		insufficient crossfall <1%	8.3		1280
Signs	Sign Damaged	large sign >2m2 - Sign Panel or Post damaged but readable	9.1	Choose Guide/Information, Regulatory, Warning	1165
		Small sign <2m2 - Sign Panel or Post damaged but readable	9.2		1165
	Sign Missing	Large sign >2m2 missing or illegible	9.3	Choose Guide/Information, Regulatory, Warning	1165
		Small sign <2m2 missing or illegible	9.4		1165
Surface Defect	Aggregate Stripping	Surface Defect with Aggregate Stripping area >10sqm	10.1	Traffic Lane	1121
		Surface Defect with Aggregate Stripping area >20sqm	10.2	Shoulder	1121
	Bleeding	Bleeding area >20sqm	10.3	Traffic Lane	1121
		Bleeding area >20sqm	10.4	Shoulder	1121
		Bleeding picking up on tyres and traffic hazard	10.5	Traffic Lane	1121
			10.6	Shoulder	1121
	Cracking	>50% of 1km section	10.7	Sealed Pavement	1121
Depr/Bump/Scour/Rut	> 75mm deep	11.1	Choose Pavement or Shoulder	1121	

Defect Group	Defect Type	Physical Description	Defect No.	Position within Location	Activity
		Causing Water Ponding > 10 sq. m	11.2		1121
		Causing Water Ponding > 5 sq. m	11.3		1121
	Edge Break	Edge break length > 20m or edge drop > 75mm	11.4	Sealed Shoulder	1201
		encroaching into traffic lane > 100mm	11.5	Traffic Lane	1201
	Pothole	Pothole < 200 mm wide and > 40mm depth	12.1	Sealed Pavement	1120
			12.2	Sealed Shoulder	1120
		Pothole < 400 mm wide and > 40mm depth	12.3	Sealed Pavement	1120
			12.4	Sealed Shoulder	1120
		Pothole or Defect on Ped. Xing >10mm deep	12.5	Pedestrian Crossing	1120
		dia>300mm within 1m of traffic & depth >100mm	12.6	Unsealed Shoulder	1527
Surface Defect	Depr/Bump/Scour/Rut	causing water ponding >10m2	13.1	Unsealed Pavement	1280
		under a 1.5m straight edge > 80mm deep	13.2		1280
		under a 1.5m straight edge >150mm deep	13.3		1280
	Other Uns Rd Defects	soft, slippery, rough conditions hazardous to traffic	13.4		1280
	Pothole	>300mm wide and > 80mm deep	13.5		1280
	Windrow	>50% of 1km section	13.6		1280
	Corrugation	>50% of 1km section	13.7		1280
Vegetation	Sight Obstructed	inside curves obstructed 200m MOW	14.1	>90km/h speed zone	1132
		inside curves obstructed 200m VEG CTRL	14.2		1131
		MOW within 250m of intersection, signs or safety barrier	14.3		1132
		VEG CTRL within 250m of intersection, signs or safety barrier	14.4		1131

Defect Group	Defect Type	Physical Description	Defect No.	Position within Location	Activity
	Vegetation overgrown	Veg < 5.5m interfering with traffic VEG CTRL	14.5a	Roadside	1131
		Veg < 5.5m interfering with traffic HERBICIDE	14.5b	Roadside spraying	1387
		Veg from edge of pavement to road furniture and 3m surrounds	14.6	Mowing required	1132
	Vegetation threat	Trees dead, diseased or overhanging branches risk falling	14.7	Roadside	1131
		trunk base likely to exceed 150mm dia. > 90km/h zone	14.8	within 6m of traffic	1131

Appendix B Strategy Graph for Transport

Comparison of Asset Service Costs Required by AMP with Funding Model in LTFP (Land Transport)



Appendix C Sustainability Ratios

Section	Ratio	Result		
5.1.4	Asset Consumption	2.11%		
5.1.4	Rate of renewal	1.14%		
5.1.4	Annual Upgrade/expansion	0.54%		
6.1.1	annual long term life cycle costs	\$ 8,271	\$000	
	long term life expenditure	\$ 4,414	\$000	
	The life cycle gap	\$ 3,857	\$000	
	The life cycle sustainability index is	0.53		= Long term life expenditure / Annual Long term lifecycle cost
	10 Yr Maintenance Renewal	\$ 58,851	\$000	= The total maintenance and capital renewal expenditure required over the 10 years
	This is an average annual expenditure of	\$ 5,885	\$000	
	10 Yr Planned Maintenance Renewal	\$ 4,414	\$000	= Estimated maintenance and capital renewal expenditure in year 1
	The 10 year sustainability index is	0.75		= LTFP Funding Allocation / 10 Yr Required Expenditure
	The 20 year sustainability index is	0.72		= LTFP Funding Allocation / 20 Yr Required Expenditure

Required Expenditure		
20 Year Renewal Required	\$77,254	\$000
10 Year Renewal Required	\$38,287	\$000
10 Year Maintenance Expenditure	\$20,563	\$000
Total 10 Year Required Cost	\$58,851	\$000
Total 20 Year Required Cost	\$119,026	\$000

Budget Expenditure		
10 Year Renewal Budget	\$25,627	\$000
10 Year Maintenance Expenditure	\$18,516	\$000
LTFP Funding Allocation	\$44,142	\$000

Budget Expenditure		
20 Year Renewal Budget	\$48,478	\$000
20 Year Maintenance Expenditure	\$37,031	\$000
LTFP Funding Allocation	\$85,509	\$000

GLOSSARY AND NOTES

Annual service cost (ASC)

An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operating, maintenance, depreciation, finance/ opportunity and disposal costs, less revenue.

Asset class

Grouping of assets of a similar nature and use in an entity's operations (AASB 166.37).

Asset condition assessment

The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

Asset management

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.

Assets

Future economic benefits controlled by the entity as a result of past transactions or other past events (AAS27.12).

Property, plant and equipment including infrastructure and other assets (such as furniture and fittings) with benefits expected to last more than 12 month.

Average annual asset consumption (AAAC)*

The amount of a local government's asset base consumed during a year. This may be calculated by dividing the Depreciable Amount (DA) by the Useful Life and totalled for each and every asset OR by dividing the Fair Value (Depreciated Replacement Cost) by the Remaining Life and totalled for each and every asset in an asset category or class.

Brownfield asset values**

Asset (re)valuation values based on the cost to replace the asset including demolition and restoration costs.

Capital expansion expenditure

Expenditure that extends an existing asset, at the same standard as is currently enjoyed by residents, to a new group of users. It is discretionary expenditure, which increases future operating, and maintenance costs, because it increases council's asset base, but may be associated with additional revenue from the new user group, eg. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

Capital expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital funding

Funding to pay for capital expenditure.

Capital grants

Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or new investment proposals.

Capital investment expenditure

See capital expenditure definition

Capital new expenditure

Expenditure which creates a new asset providing a new service to the community that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operating and maintenance expenditure.

Capital renewal expenditure

Expenditure on an existing asset, which returns the service potential or the life of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it has no impact on revenue, but may reduce future operating and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital upgrade expenditure

Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operating and maintenance expenditure in the future because of the increase in the council's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Carrying amount

The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Class of assets

See asset class definition

Component

An individual part of an asset which contributes to the composition of the whole and can be separated from or attached to an asset or a system.

Cost of an asset

The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, plus any costs necessary to place the asset into service. This includes one-off design and project management costs.

Current replacement cost (CRC)

The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Current replacement cost "As New" (CRC)

The current cost of replacing the original service potential of an existing asset, with a similar modern equivalent asset, i.e. the total cost of replacing an existing asset with an as NEW or similar asset expressed in current dollar values.

Cyclic Maintenance**

Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, building roof replacement, cycle, replacement of air conditioning equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

Depreciable amount

The cost of an asset, or other amount substituted for its cost, less its residual value (AASB 116.6)

Depreciated replacement cost (DRC)

The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset

Depreciation / amortisation

The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.

Economic life

See useful life definition.

Expenditure

The spending of money on goods and services. Expenditure includes recurrent and capital.

Fair value

The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

Greenfield asset values **

Asset (re)valuation values based on the cost to initially acquire the asset.

Heritage asset

An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

Impairment Loss

The amount by which the carrying amount of an asset exceeds its recoverable amount.

Infrastructure assets

Physical assets of the entity or of another entity that contribute to meeting the public's need for access to major economic and social facilities and services, eg. roads, drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no market value.

Investment property

Property held to earn rentals or for capital appreciation or both, rather than for:

- (a) use in the production or supply of goods or services or for administrative purposes; or
- (b) sale in the ordinary course of business (AASB 140.5)

Level of service

The defined service quality for a particular service against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental, acceptability and cost).

Life Cycle Cost **

The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises annual maintenance and asset consumption expense, represented by depreciation expense. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure **

The Life Cycle Expenditure (LCE) is the actual or planned annual maintenance and capital renewal expenditure incurred in providing the service in a particular year. Life Cycle Expenditure may be compared to Life Cycle Expenditure to give an initial indicator of life cycle sustainability.

Loans / borrowings

Loans result in funds being received which are then repaid over a period of time with interest (an additional cost). Their primary benefit is in 'spreading the burden' of capital expenditure over time. Although loans enable works to be completed sooner, they are only ultimately cost effective where the capital works funded (generally renewals) result in operating and maintenance cost savings, which are greater than the cost of the loan (interest and charges).

Maintenance and renewal gap

Difference between estimated budgets and projected expenditures for maintenance and renewal of assets, totalled over a defined time (eg 5, 10 and 15 years).

Maintenance and renewal sustainability index

Ratio of estimated budget to projected expenditure for maintenance and renewal of assets over a defined time (eg 5, 10 and 15 years).

Maintenance expenditure

Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

Materiality

An item is material if its omission or misstatement could influence the economic decisions of users taken on the basis of the financial report. Materiality depends on the size and nature of the omission or misstatement judged in the surrounding circumstances.

Modern equivalent asset.

A structure similar to an existing structure and having the equivalent productive capacity, which could be built using modern materials, techniques and design. Replacement cost is the basis used to estimate the cost of constructing a modern equivalent asset.

Non-revenue generating investments

Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to the Council, eg. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operating expenditure

Recurrent expenditure, which is continuously required excluding maintenance and depreciation, eg power, fuel, staff, plant equipment, on-costs and overheads.

Pavement management system

A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

Planned Maintenance**

Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

PMS Score

A measure of condition of a road segment determined from a Pavement Management System.

Rate of annual asset consumption*

A measure of average annual consumption of assets (AAAC) expressed as a percentage of the depreciable amount (AAAC/DA). Depreciation may be used for AAAC.

Rate of annual asset renewal*

A measure of the rate at which assets are being renewed per annum expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade*

A measure of the rate at which assets are being upgraded and expanded per annum expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

Reactive maintenance

Unplanned repair work that carried out in response to service requests and management/supervisory directions.

Recoverable amount

The higher of an asset's fair value, less costs to sell and its value in use.

Recurrent expenditure

Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operating and maintenance expenditure.

Recurrent funding

Funding to pay for recurrent expenditure.

Rehabilitation

See capital renewal expenditure definition above.

Remaining life

The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining life is economic life.

Renewal

See capital renewal expenditure definition above.

Residual value

The net amount which an entity expects to obtain for an asset at the end of its useful life after deducting the expected costs of disposal.

Revenue generating investments

Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate some savings or revenue to offset operating costs, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

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.

Section or segment

A self-contained part or piece of an infrastructure asset.

Service potential

The capacity to provide goods and services in accordance with the entity's objectives, whether those objectives are the generation of net cash inflows or the provision of goods and services of a particular volume and quantity to the beneficiaries thereof.

Service potential remaining*

A measure of the remaining life of assets expressed as a percentage of economic life. It is also a measure of the percentage of the asset's potential to provide services that is still available for use in providing services (DRC/DA).

CWMS	Community wastewater management systems
DA	Depreciable amount
DoH	Department of Health
EF	Earthworks/formation
IRMP	Infrastructure risk management plan
LCC	Life Cycle cost
LCE	Life cycle expenditure
MMS	Maintenance management system
PCI	Pavement condition index
RV	Residual value
SS	Suspended solids
vph	Vehicles per hour

ABBREVIATIONS

AAAC	Average annual asset consumption
AMP	Asset management plan
ARI	Average recurrence interval
BOD	Biochemical (biological) oxygen demand
CRC	Current replacement cost

PLAN FRAMEWORK

Key elements of the plan are

- Levels of service – specifies the services and levels of service to be provided by council.
- Future demand – how this will impact on future service delivery and how this is to be met.
- Life cycle management – how Council will manage its existing and future assets to provide the required services
- Financial summary – what funds are required to provide the required services.
- Asset management practices
- Monitoring – how the plan will be monitored to ensure it is meeting Council's objectives.
- Asset management improvement plan

A road map for preparing an asset management plan is shown below:

Road Map for preparing an Asset Management Plan

Source: IIMM Fig 1.5.1, p 1.11

