

Sunshine Coast Council
Asset Management Plan
2017/18 - 2022/23

Transportation



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1 Executive Summary

1.1 What council provides

Council provides a Transportation network in partnership with state and federal governments to enable the delivery of the required level of service to existing and future customers in the most cost-effective way. This plan is intended to demonstrate how council will achieve this outcome by applying the principles of responsible asset management.

This transport asset management plan considers assets from the following sub categories:

- Roads
- Roadside Infrastructure (bus shelters, retaining walls, guard rails, medians and signage)
- Bridges (including road bridges & pedestrian footbridges and boardwalks)
- Pathways (including bicycle paths)
- Car Parks
- Drainage (Kerb and Channel)

1.2 What does it Cost?

The current Transportation network of assets has a replacement value of \$1,928M and a depreciated replacement cost of \$1,504M as at 30 June 2016. There are two key indicators of cost to provide the transportation asset 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 in the next 10 years covered by council's long term financial plan.

The projected Life Cycle Cost (average 10 year projected Operations, maintenance and depreciation expenditure) is \$56,271M on average, per year. Whereas the Life Cycle Expenditure (average 10 years budget for Ops, maintenance and capital renewal) is \$48,669M. This gives a Life Cycle Indicator

(life cycle expenditure/life cycle cost) of 84.2%. This is deemed satisfactory compared to a long term target of 90%, although it is recognised that there is a need to improve the level of confidence in relation to acquisition dates for civil assets and / or align financial data with condition data. It is expected that this will be addressed by adopting the new Asset Management Information System.

1.3 What we will do

We plan to provide Transportation services for the following:

- Operation, maintenance, renewal and upgrade of roads, bridges, boardwalks, pathways, car parks, drainage (kerb and channel) and roadside assets (such as bus shelters, retaining walls, guard rails, medians and signage to meet service levels consistent with Council's annual budgets.

1.4 Managing the Risks

There are risks associated with providing the service and not being able to complete all identified activities and projects. We have identified moderate manageable risks as:

- Misalignment of financial and engineering data; Lack of full current condition data for all transportation assets. We will endeavour to manage these risks within available funding by aligning financial and engineering data and undertaking full condition surveys for all transportation assets.

It is highlighted that comprehensive condition surveys have been undertaken for the following assets:

- **Sealed road network:** the entire sealed road network was surveyed in 2014 and to be repeated in the latter half of 2017;
- **Pathway/cycle path network:** District collector and the Coastal Pathway (i.e.; "strategic pathways") were surveyed in 2013; the remainder of the local pathway network (serving mainly residential areas) was surveyed in 2015;
- **Road bridges and major footbridges:** Level 2 inspections of all

road bridges and major footbridges were undertaken in 2015. Level 3 inspections were carried out on some specific bridges where structural issues/defects were identified, for example, Burgess St, Glasshouse Mountains - road over rail bridge and Hospital Road bridge (over Petrie Creek), Nambour;

- **Retaining walls:** surveyed in 2016;
- **Kerb and channel:** a “desktop” survey of kerb and channel was undertaken in 2016 using video imagery from the sealed roads condition survey.

A program of condition surveys for other significant asset classes is to be undertaken in the next two years. This includes a re-survey of the entire sealed road network and a field survey of kerb and channel to enhance the previous “desktop” survey referred to above).

Streetscapes have been currently excluded from surveys for renewal/rehabilitation works based on anecdotal evidence that suggests significant capital upgrades are generally required when these assets reach the end of their serviceable life. Renewal based on “like for like” replacement is often not appropriate at these locations. For example, older sections of pathway in township areas such as Nambour require upgrading that is consistent with any proposed geometric (e.g.; widening) and/or streetscape improvements, not simply replacing “like for like”.

The information obtained from condition surveys is used to generate rehabilitation and renewal programs for various assets. The data is used for modelling within the Assetic Predictor Software and the SMEC Pavement Management System (PMS) for sealed roads.

1.5 Confidence Levels

This Asset Management Plan is generally based on information that has been obtained with a high level of confidence from recent condition surveys which are carried out at industry standard frequencies. Where interim or desktop surveys were carried out these were used to establish big picture information which will then be updated with more accurate data when required.

1.6 The Next Steps

The actions resulting from this Plan are:

- Condition and other data for sealed roads (such as roughness, cracking, surface texture and rutting) is stored and analysed within Councils Pavement Management System (SMEC PMS) to assist in the development of the Road Reseal and Rehabilitation Program. Road Condition data is planned to be updated in the 2017/18 year.
- Through the software package tool Assetic Predictor, modelling undertaken for pathways, bridges, board walks, retaining walls and kerb and channel will be further refined to future renewal funding requirements.
- Complete CAM Service Level Review to ensure risk to users and to assets are appropriately managed.
- Examine best whole of life investment profiles for maintenance and renewals. This will be more accurately designated once the new Asset Management Information System is selected and in place late in 2017.
- Explore new and innovative technologies and more sustainable use of road making materials to lower whole of life costs for all assets covered under this AMP.
- Work with the Planning and Environment Department to update council's Planning Scheme for Development Works to ensure service levels can be met and whole of life costs for hard assets managed under this AMP are minimised.

1.7 Questions you may have

1.7.1 What is this plan about?

This asset management plan covers the transportation infrastructure assets that serve the Sunshine Coast Council community.

These assets include the following:

- Roads - Sealed and unsealed (gravel)
- Bridges – Road Bridges, Foot Bridges and Boardwalks
- Pathways and Cycle ways (on road and off road)

- Drainage (predominantly kerb and channel); Note, other drainage assets such as pipes, pits, culverts and lined open drains/channels are the responsibility of TIM Branch as the asset custodian
- Car parks - (sealed and unsealed) excluding privately owned car parks
- Other road related infrastructure assets - bus shelters, fences, “entrance statements” to new developments and residential sub-divisions, guideposts, traffic calming devices, retaining walls, guardrails and pavement markings.

1.7.2 What is an Asset Management Plan?

Asset management planning is a comprehensive process to ensure delivery of services from infrastructure is provided in a financially sustainable manner.

This asset management plan details information about transport infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner. This plan defines the services to be provided, how the services are provided and what funds are required to provide the services.

1.7.3 Why is there a funding shortfall?

Most of the Council’s road network was constructed by developers from the 1960’s, often provided and accepted without consideration of large ongoing operations, maintenance and replacement needs.

Many of these assets are approaching the “twilight” years of their life and are experiencing higher traffic loading than was originally anticipated and require renewal or complete replacement. The levels of service provided from these assets is likely to diminish and incur higher maintenance costs unless funding levels are increased.

For the sealed road network, the present funding levels are considered generally sufficient to continue to provide existing services at current levels in the short to medium term (over the next 5 to 10 years). However, in the longer term (beyond 10 years) there is a “catalogue” of road

rehabilitation, reconstruction and resurfacing works which will need to be addressed in future road maintenance programmes.

Further assessments are being undertaken to better quantify the extent of this catalogue. The SMEC Pavement Management System is a tool which is used to provide information on current and future pavement maintenance, resealing and rehabilitation works from a strategic perspective. This will assist and inform Council in maintaining the road network at the best level of serviceability while at the lowest life cycle cost that can be achieved within the budget and other constraints. It’s about “allocating the appropriate funds and surfacing (or rehabilitation) treatment, in the right place at the right time”.

1.7.4 What options do we have?

Resolving the current and future funding requirements involves several steps:

1. Improving asset knowledge so that data accurately records the type, location and extent of assets (i.e.; an asset inventory), how assets are performing and when assets are not able to provide the required service levels,
2. Improving our efficiency in designing, operating/maintaining, renewing or replacing existing assets to minimise whole of life costs,
3. Identifying and managing risks associated with providing infrastructure services,
4. Making trade-offs between service levels and costs to ensure that the community receives the best return from infrastructure investments,
5. Identifying redundant assets or those assets which are surplus to Council’s needs for disposal which in turn creates savings in future operations and maintenance costs,
6. Ongoing and regular consultation with the community to ensure that transport asset services are affordable and meet community needs ,
7. Developing partnerships with other organisations, where available to provide services,
8. Seeking additional funding from governments and other agencies to better

reflect a 'whole of government' funding approach to infrastructure services.

1.7.5 What happens if we don't manage the shortfall?

It is possible that Council would have to reduce service levels in some areas, unless new sources of funding are identified

2. INTRODUCTION

2.1 Background

This asset management plan is to demonstrate responsive management of assets (and services provided from assets), compliance with regulatory requirements, and to communicate funding needed to provide the adopted levels of service over a 20 year planning period. Full revision of the plan is completed every five years as a minimum and an update of financial elements updated annually.

The asset management plan follows the format for AM Plans recommended in Section 4.2.6 of the International Infrastructure Management Manual¹.

The asset management plan is to be read in conjunction with the Council's Asset Management Policy, Asset Management Strategy and the following associated planning documents:

- Transport Infrastructure Act 1994
 - Local Government Act 2009 (Part 3 Division 1 Roads)
 - Cost Sharing Based on Responsibilities within State-controlled roads (QLD Government – Transport and Main Roads) – currently under review
 - Council's current Planning Scheme
 - Infrastructure Services Department Plan 2014-2019
 - Counter disaster and evacuation plans Disaster Management Plans
 - SCC bikeway routes and strategy
 - 2016 Transportation State of the Asset Report
 - SCC 10 Year Capital Works Program
 - SCC Financial Sustainability Plan 2010 – 2020
-

This plan covers the following transport infrastructure assets:

Table 1: Assets covered by this plan

Asset Group	Asset Type	Quantity	Current replacement cost (\$M)
Roads	Sealed	2178 Km	\$1,207
	Gravel	512 Km	
Bridges	Road Bridges	486	\$200
	Boardwalks	145	
Pathways	All Pathways	1,168 km	\$231
Kerb and channel	Concrete	3,190 km	\$150
Bus Stops and Shelters		729	\$15
Other Roadside Assets	Guard rails		\$125
	Signage		
	Retaining walls		
	Medians		
TOTAL			\$1,928

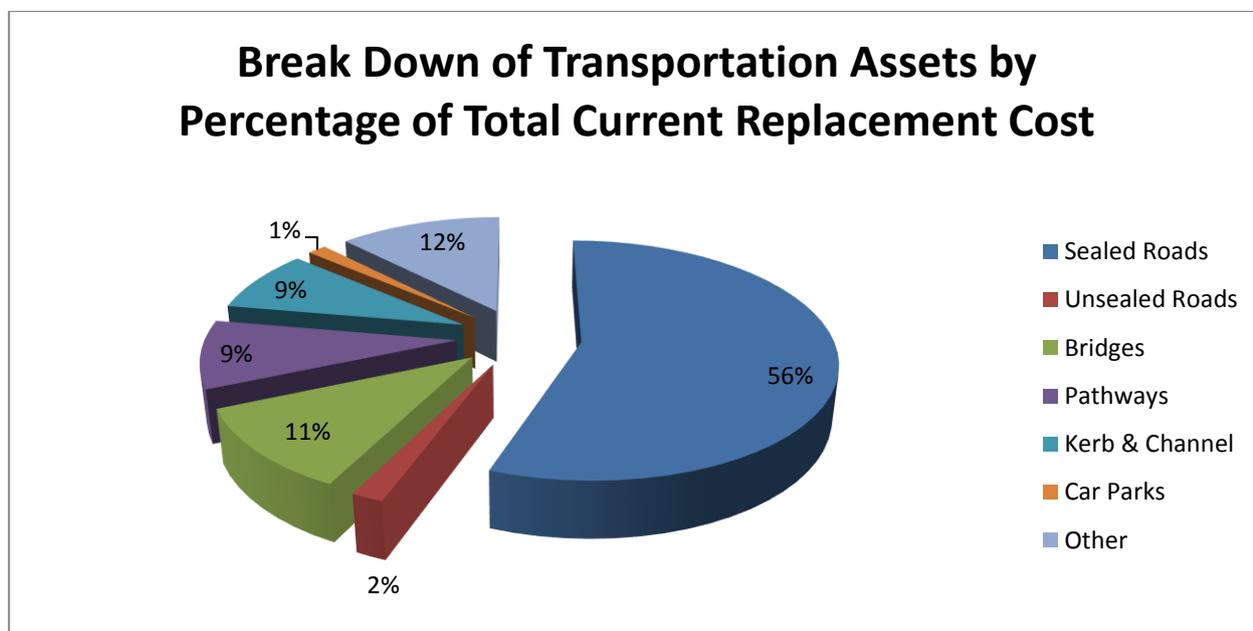


Figure 1: Breakdown of Transport Assets

Asset Values ('\$000)	
Current Replacement Value	\$1,928,297
Depreciable Amount	\$1,928,297
Depreciated Replacement Cost	\$1,504,388
Annual Depreciation Charge	\$36,859
Rate of Annual Asset Consumption	1.90%
Rate of Annual Asset Renewal	1.50%
Rate of Annual Asset Upgrade	1.30%
Rate of Asset Upgrade (Including Contributed Assets)	1.80%
Asset renewals as percentage of consumption	79.60%
Percentage Increase in asset stock	1.80%

Key stakeholders in the preparation and implementation of this asset management plan are: Shown in Table 2.

Table 2: Key stakeholders in the asset management plan

Key Stakeholder	Role in Asset Management Plan
Councillors/Executive Leadership Team	<ul style="list-style-type: none"> • Represent needs of community/shareholders, • Allocate resources to meet the organisation's objectives in providing services while managing risks, • Ensure organisation is financial sustainable.
Mayor & CEO	<ul style="list-style-type: none"> • The office of the Mayor and CEO provides strategic support and advice to the Mayor, Councillors, CEO, Executive Leadership Team and the wider organisation.
Asset Management	<ul style="list-style-type: none"> • Strategic asset management • Planning and management of Council's asset management resources
Asset Managers – Transportation	<ul style="list-style-type: none"> • Are the Transport Infrastructure Service asset custodians • Planning and management of Transport Infrastructure Service resources • Provide asset renewal programs to sustain desired service levels
Service Managers	<ul style="list-style-type: none"> • Determine the most effective and efficient use of the assets
Maintenance Providers	<ul style="list-style-type: none"> • Provide programmed maintenance to sustain required service levels
Facility Users	<ul style="list-style-type: none"> • Community, Council personnel and Business • Take stewardship of the assets • Provide feedback to councillors and staff

2.2 Goals and Objectives of Asset Management

The Council exists to provide services to its community. The majority of these services are provided by the various departments within Council including the Infrastructure Services Department. Council acquires infrastructure assets via 'purchase', contract, internal construction and through donation of assets constructed by developers and others.

Relevant Council goals and objectives and how these are addressed in this Plan are outlined in Table 3.

Table 3: Council goals and how these are addressed in this plan

Goal	Objective	How Goal and Objectives are addressed in AM Plan
A new economy	Providing the regional policy, regulatory settings and identity that shape a globally competitive economy	The AM Plan will focus on the whole of life costs associated with the current and proposed transport infrastructure services.
A strong community	Supporting an engaged, resilient and inclusive community that embraces diversity	The strategies and outcomes of the AM Plan will set the direction and key deliverables for the transportation network.
An enviable lifestyle and environment	Maintaining and enhancing the region's natural assets, liveability and environmental credentials	By defining the levels of service for the various transport infrastructure services, council will define its commitment to providing opportunities and access to active lifestyle facilities.
Service excellence	Providing value-for-money services responsive to the needs of the community	By defining the levels of service for the various transport infrastructure services, Council will define its commitment to providing a high quality service for all users.
A public sector leader	Delivering a high performance organisation, supported by good governance and robust decision-making	The AM Plan delivers a plan to transition to an advanced asset management model. Implementing state-of-the art asset management systems and operating the systems to their full capacity.

2.3 Plan Framework

This plan is prepared in the context of Council's vision, mission, goals and objectives.

Key elements of the plan are

- Levels of service – specifies the facilities, 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 defined levels of service,
- Financial summary – what funds are required to provide the defined services,
- Asset management practices,
- Managing risks associated with assets and potential failures

- Sustainable use of physical resources
- Asset management improvement plan – continuous improvement in asset management practices,
- Monitoring – how the plan will be monitored to ensure it is meeting organisation's objectives.

A road map for preparing an asset management plan is shown in Figure 2, below:

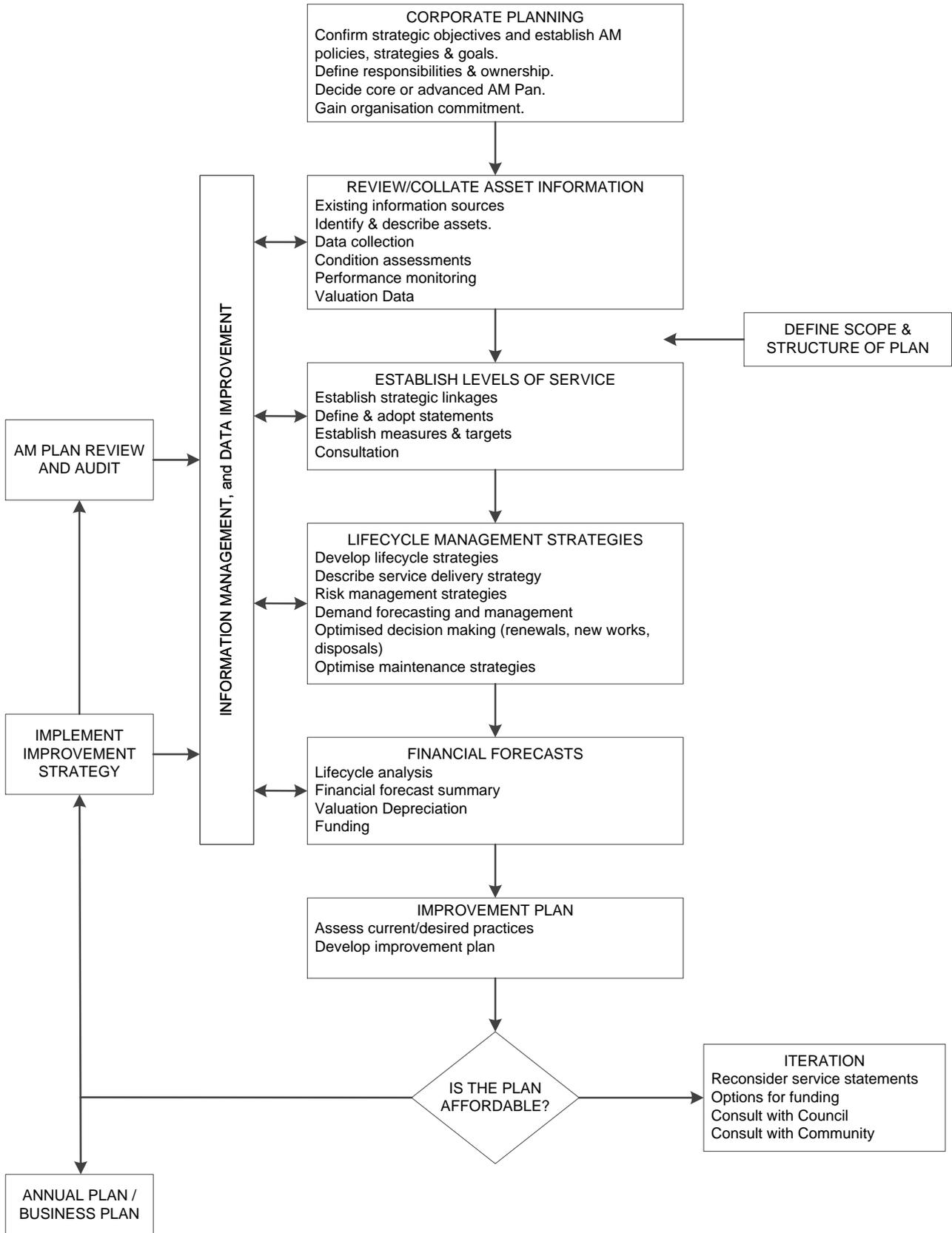


Figure 2: Road map for preparing an asset management plan

2.4 Core and Intermediate asset management

2.4.1 Overview

This Plan is prepared as a 'core' asset management plan in accordance with the International Infrastructure Management Manual (IIMM)². 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. However, it should be acknowledged that significant progress has been achieved lifting elements of this plan to intermediate level asset management using a 'bottom up' approach. Much information has been gathered for most significant civil asset types to support the optimisation of activities and programs to meet agreed service levels. This is summarised in Figure 3.

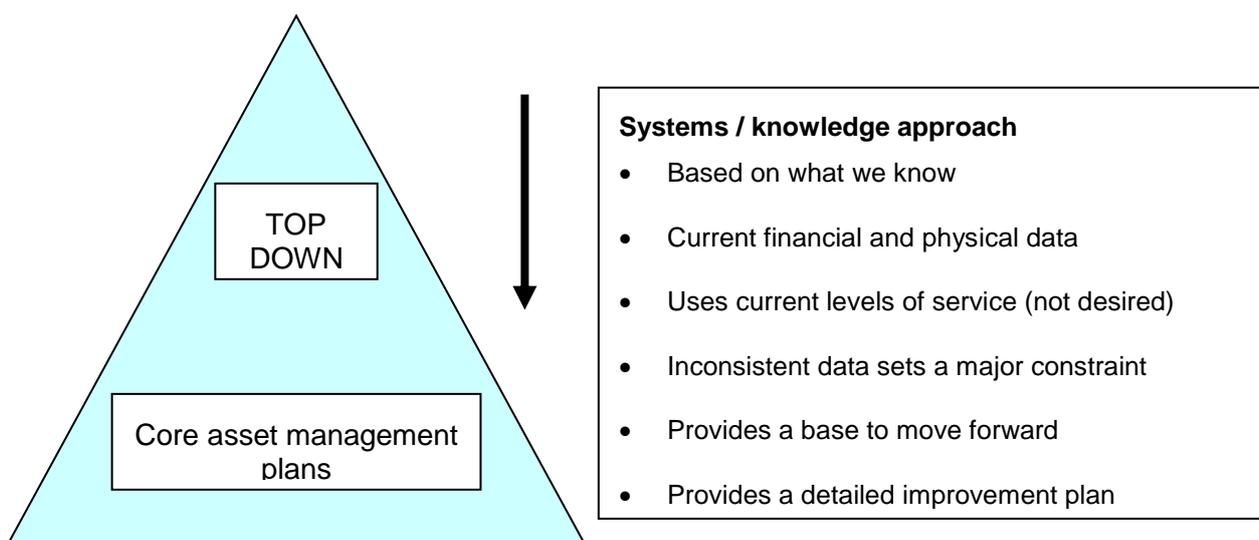


Figure 3: Core asset management approach

2.4.2 Internal Audit Results

Transportation Asset Management Plans and System Elements

The Queensland Audit Office Report to Parliament considers that until condition data is reliable and fully understood, then the most optimum intervention levels may not be achieved. The report considers that renewal programs should be established based on reliable condition data and established across a common set of prioritisation criteria.

The Civil Asset Management branch has made significant progress in establishing reliable condition data across the majority of the transportation network and employs various criteria in the prioritisation and development of its renewal and reseal programs including condition assessments, risk, road hierarchies, usage and professional engineering judgements. The pavement management system has prioritisation and optimisation routines embedded in the software and predicative modelling output and subsequent reports have also started to influence budget allocations. The results of strategic modelling have resulted in a 15 year sealed roads management plan that ensures that the overall long term good average condition of the network is preserved.

Visual condition assessments are also undertaken by engineers to ground truth the results of the pavement management system for roads and condition assessments are also undertaken for paths and bridges. However, the asset management plan does not provide sufficient clarity around how the reseal and renewal programs are finalised and how conditions affect selections.

The definition of the condition grades from a range of 1 to 5 also need to be revisited including their relationship to public liability risks. For example, whilst there were very few condition 5 or very poor condition pathways identified, the condition grading criteria incorrectly refers to “high public risk of injury” which only covers part of the prioritisation of works. Intervention must also consider minimising whole of life costs to the particular asset.

Recommendation 6 Medium Risk (M-36)

Review condition criteria and update the asset management plan to show how renewal and reseal programs are finalised and the relationship to condition and any other relevant prioritisation criteria.

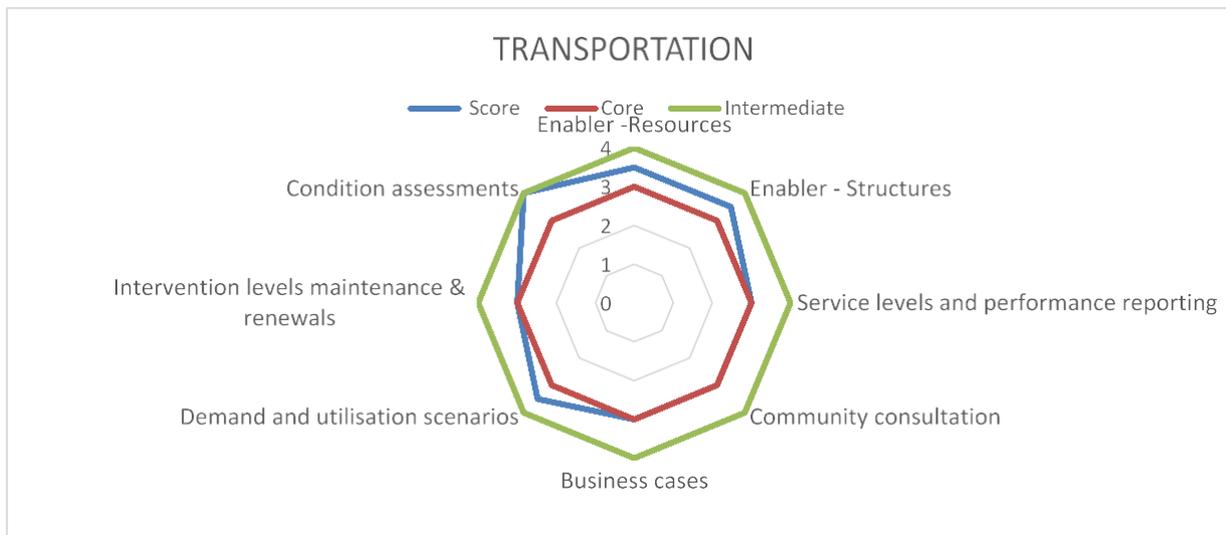


Figure 4: Spider graph showing asset management maturity for transportation assets

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

Council has commissioned IRIS Research to carry out community surveys in 2012 and 2015. The surveys have provided clear indications where there are be gaps between community expectations on importance and actual satisfaction regarding services and facilities. In addition, customer expectations are also further gauged from the Customer Request Management (CRM) System.

The Council uses this information in developing its Strategic Plan and in allocation of resources in the budget. It is part of the current Corporate Plan to conduct community and customer surveys in 2017 to better inform the design and delivery of council services. The IPWEA/ACELG Practice Note 8: Levels of Service & Community Engagement (V1.0, 2014) will assist Council to define the levels of service it provides in customer terms and technical terms.

3.2 Strategic and Corporate Goals

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

Council’s vision is: **“To become Australia’s most sustainable region – healthy, smart, creative”**.

Council’s purpose is: **To serve the community well, and position the region for the future.**

Table 4: Organisational goals and how they are addressed in this plan

Goal	Objective	How Goal and Objectives are addressed in this AM Plan
A new economy	Providing the regional policy, regulatory settings and identity that shape a globally competitive economy	The AM Plan will focus on the whole of life costs associated with the current and proposed transport infrastructure services.
A strong community	Supporting an engaged, resilient and inclusive community that embraces diversity	The strategies and outcomes of the AM Plan will set the direction and key deliverables for the transportation network
An enviable lifestyle and environment	Maintaining and enhancing the region’s natural assets, liveability and environmental credentials	By defining the levels of service for the various transport infrastructure services, council will define its commitment to providing opportunities and access to active lifestyle facilities.
Service excellence	Providing value-for-money services responsive to the needs of the community	By defining the levels of service for the various transport infrastructure services, Council will define its commitment to providing a high quality service for all users.
A public sector leader	Delivering a high performance organisation, supported by good governance and robust decision-making and regional leadership	The AM Plan delivers a plan to transition to an advanced asset management model. Implementing state-of-the art asset management systems and operating the systems to their full capacity

The organisation will exercise its duty of care to ensure public safety is in accordance with the infrastructure risk management plan prepared in conjunction with this AM Plan. Risk Management is covered in Section 6.

3.3 Legislative Requirements

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

Table 5: 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.
Transport Operations (Road Use Management) Act	Sets out the conditions of law associated with travel on the road network including offences and fines.
Transport Infrastructure Act 1994	Sets out to provide a regime that allows for and encourages effective integrated planning and efficient management of a system of transport infrastructure.
Disability Discrimination Act	The Federal Disability Discrimination Act 1992 (D.D.A.) provides protection for everyone in Australia against discrimination based on disability.
Local Government (Finance, Plans and Reporting) Regulation 2010	This regulation is about community planning and financial management for local governments.

3.4 Community Levels of Service

Service levels are defined in two terms, community levels of service and technical levels of service.

Community levels of service measure how the community receives the service and whether the organisation is providing community value. Community levels of service measures used in developing the asset management plan are:

Quality	How good is the service?
Function	Does it meet users' needs?
Capacity/Utilisation	Is the service over or under used?

3.5 Current Levels of Service

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:

Table 6: Examples of measures for service criteria

Service Criteria	Examples of Technical Measures
Quality	Smoothness of roads
Quantity	Length of sealed roads; area of sealed car parks
Availability	Distance from a dwelling to a sealed road
Safety	Number of injury accidents from footpath trip hazards

3.5.1 Current service levels – sealed roads

Civil Asset Management Branch has utilised levels of service for sealed roads (and other civil assets); these service levels were developed in 2011 and implemented at this time.

These define the maintenance levels of service for all for all road network and types of civil assets including inspection frequencies, response times and intervention levels for a variety of operational and maintenance activities. These existing services levels are currently being reviewed with the aim to make the current system more efficient. Inspection cycles are being streamlined to two hierarchical levels rather the current three, with suitable allowance for risk to community and assets. Whilst current intervention levels and response times are seen to be generally acceptable.

An example of the current service levels for sealed roads is shown below:

Sealed Road Hierarchy

The sealed road network is classified in accordance with the service it provides.

- Access Places and Local Streets – typically service a number of houses, the more neighbourhood streets and roads.
- Collector Streets – serviced by a number of access streets, higher use roads with footpaths generally on at least one side of the road.
- Arterial Streets – high use roads linking suburbs and places on interest to the collector network.

Table 7: Maintenance service levels

	Hierarchy		
	Arterial	Collector	Access
Inspections			
Defects	1 Month	6 Monthly	Annual
Cyclic Maintenance			
Shoulder grading	2 years	5 years	As required
Streetsweeping	* Service and frequency determined by P&G		
Programmed Maintenance			
Pavement failure correction - Urgent	10 days	20 days	30 days
Pavement failure correction – High	45 days	60 days	90 days
Cracking – High	3 Months	3 Months	3 Months
Cracking – Med	6 Months	6 Months	6 Months
Cracking – Low	As budget allows.		
Edge drop off – High	30 days	60 days	90 days
Edge drop off – Med/Low	90 days	As budget allows	
Reactive Maintenance			

Potholes/Pavement restoration – Extreme	2 days	5 days	10 days
Potholes/Pavement restoration - Urgent	5 day	10 days	20 days
Potholes - High	10 days	20 days	30 days
Potholes – Med/Low	20 days	90 days	120 days
All defects – non urgent	1 Month	2 Months	3 Months

Prioritising Risk

Priority is given to high use roads in accordance with the following criteria:

- Priority A – school bus routes, link roads, tourist attractors, industry haul routes.
- Priority B – through roads, services more than 10 properties.
- Priority C – no through roads, services less than 10 properties.

Defects

Some of the most common defects on sealed roads and corresponding maintenance intervention levels are shown in the table below:

Defect: Potholes			
			
Priority	Invention Level	Activity	Typical Process
Urgent	Diameter greater than 300mm and depth greater than 100mm.	0121	<ul style="list-style-type: none"> • Patch pothole
High	Diameter greater than 300mm or depth greater than 100mm		
Med / Low	Diameter less than 300mm and depth less than 100mm		

Defect: Road Pavement Failure – corrugations, rutting, shoving, roughness



Priority	Invention Level	Activity	Typical Process
Urgent	Depth of depression measured laterally from top of ridge using a 1.2m straight edge is greater than 100mm	0127, 0168, 0169	•
High	Depth of depression measured laterally from top of ridge using a 1.2m straight edge is greater than 75mm		•
Med/Low	Depth of depression measured laterally from top of ridge using a 1.2m straight edge is greater than 50mm		•

Defect: Cracking



High	Cracking resulting in water entering the pavement over an area greater than 1m ² .	0168	•
Medium	Cracking in the wheel path		•
Low	Isolated cracking		•

Defect: Edge Drop off



High	> 150mm in roads greater than 8m wide or >100mm in narrow roads.	0111, 0141, 0142, 0144	•
Med/Low	<150mm in wide roads or <100mm but >50mm in narrow roads.		•

Note the existing service levels for operation and maintenance of civil assets are under review by the CAM - Asset Strategy team - refer to the Improvement Plan (in Section 7). This Improvement

Plan largely relates to amendments to inspection cycles which will streamline this component without tangible effect on community risk. Intervention levels and response times were seen to be appropriate. Changes would most likely only be driven by significant gaps noted by the community between expectation and performance of these assets after the next survey later this year.

3.6 Desired Levels of Service

At present, indications of desired levels of service are obtained from various sources including Council's planning scheme, residents' feedback to councillors and staff, service requests and correspondence. Council had quantified desired levels of service for various transport asset groups as outlined in the "Operations and Service Level Review" undertaken by Civil Asset Management (previously Civil Works Services) in December 2011. During 2016 these have been reviewed with the aim of simplifying the inspection cycles for example by changing from a three tiered road hierarchy model for most asset bases to a two tier system. In addition, inspection cycles have been modified to better reflect actual risks levels; for example, by placing greater emphasis on inspection of precinct areas, school bus routes, link roads, tourist attractors, industry haul routes and elimination of footpath trip hazards in locations with significant pedestrian traffic. It is proposed to engage in ongoing discussions with Councillors and consultation with the community to obtain feedback as to the suitability and satisfaction with the current service levels.

3.7 Technical Levels of Service

Technical Levels of Service – Supporting the community service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities that the organisation undertakes to best achieve the desired community outcomes and demonstrate effective organisational performance.

Technical service measures are linked to annual budgets covering:

- Operations and Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition, for example road patching, unsealed road grading, footpath cleaning and maintenance to eliminate potential trip hazards, grass mowing/roadside slashing, bridge maintenance and drainage maintenance etc.
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. road resealing/resurfacing and pavement rehabilitation).
- Upgrade – the activities to provide a higher level of service (e.g. widening a road, sealing an unsealed road, replacing a drainage pipe with a larger size pipe) or providing a new (or expanded) service that did not exist previously such as maintenance of Stormwater Quality Improvement Devices (SQID's).

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 8, below.

Table 8: Demand drivers, projections and impact on services

Demand factors	Present position	Projection	Impact on services
Population	Estimate 290,000 persons	Estimate population (in Year 2031) is 508,000	Projected population increases will increase pressure on existing assets and increase demand for provision of new assets in high growth areas such as the "Aura" development, Caloundra South
Shifting growth centres	Highest growth patterns occurring in the Central area of the region	High growth due to the Aura development, Caloundra South and the Palmwoods Master Plan. New residential., commercial and retail areas in the Maroochydore City Centre development	Require new services to facilitate the growth area and increased demand on neighbouring facilities.
Demographics	16% over 65 years old 1.5% over 85 years old 24% under 18 years old	21.7% over 65 years old 3.2% over 85 years old 21% under 18 years old	Requirement for new services to facilitate the growth area and to ensure facilities within neighbouring developments will cater for overflow.
	Migration patterns have seen net gains of young families and retirees from interstate and a net loss of young people to other parts of Queensland and elsewhere	Current patterns predicted to continue	Review of current and future buildings and facilities to ensure the community's changing requirements are met. Established buildings and facilities may require refurbishment to align current use with desired use/s.

Notes:

1. From the Sunshine Coast Council - Annual Report 2015/16 report
2. From the SCC, Regional Strategy and Planning, Business Performance Unit, "Sunshine Coast Council Development Indicators January to March 2014", pg 4, March 2014.

The increasing growth in the population of the Sunshine Coast region over the next 20 years will result in increased vehicle movements on the existing road network which in turn will impact the life of road assets. There is a risk of ongoing deterioration of pavement conditions due to increased traffic and in particular the increase in heavy vehicles to keep up the supply of commodities to cater for the additional growth.

A comprehensive survey of the entire network of sealed roads was undertaken in May/June 2014. The results of the survey provide a “snapshot” of the condition of the network and has been used to develop pavement rehabilitation and maintenance programs. It is proposed to resurvey the condition of the sealed road network in the second half of 2017.

Along with the greater demand on existing infrastructure there will be an increase of “donated” assets particularly as stages of Aura and Palmview develop. Caloundra South is expected to accommodate a population of approximately 50,000 people (approximately 23,750 dwellings).

Also major developments such as the, new Sunshine Coast University Hospital, “Sun Central” Maroochydore CBD, Sunshine Coast airport expansion and future light rail from Caloundra to Maroochydore will impact on the existing network.

Operational maintenance and renewal funding will need to increase to cater for the additional assets being brought on by growth of the transport network. Bridge condition data has now been collected and uploaded into the Assetic Predictor Strategic Asset Management software. The modelling capability of this system will allow council to undertake long term planning and appropriate investment strategies for bridges and other assets types.

TRANSPORTATION ASSETS

4.2 Sealed Road Network

4.2.1 Overview

Presently, road assets can be considered to be in a satisfactory and serviceable condition. However, due to a wave of aging pavement surfacings approaching their end of life in the mid 2020’s and increased recent growth (17.81%) since 2014 (Figure 5) additional allocations are needed. This was detailed in the 15 Year Sealed Roads Management Plan endorsed by council in last year’s budget.

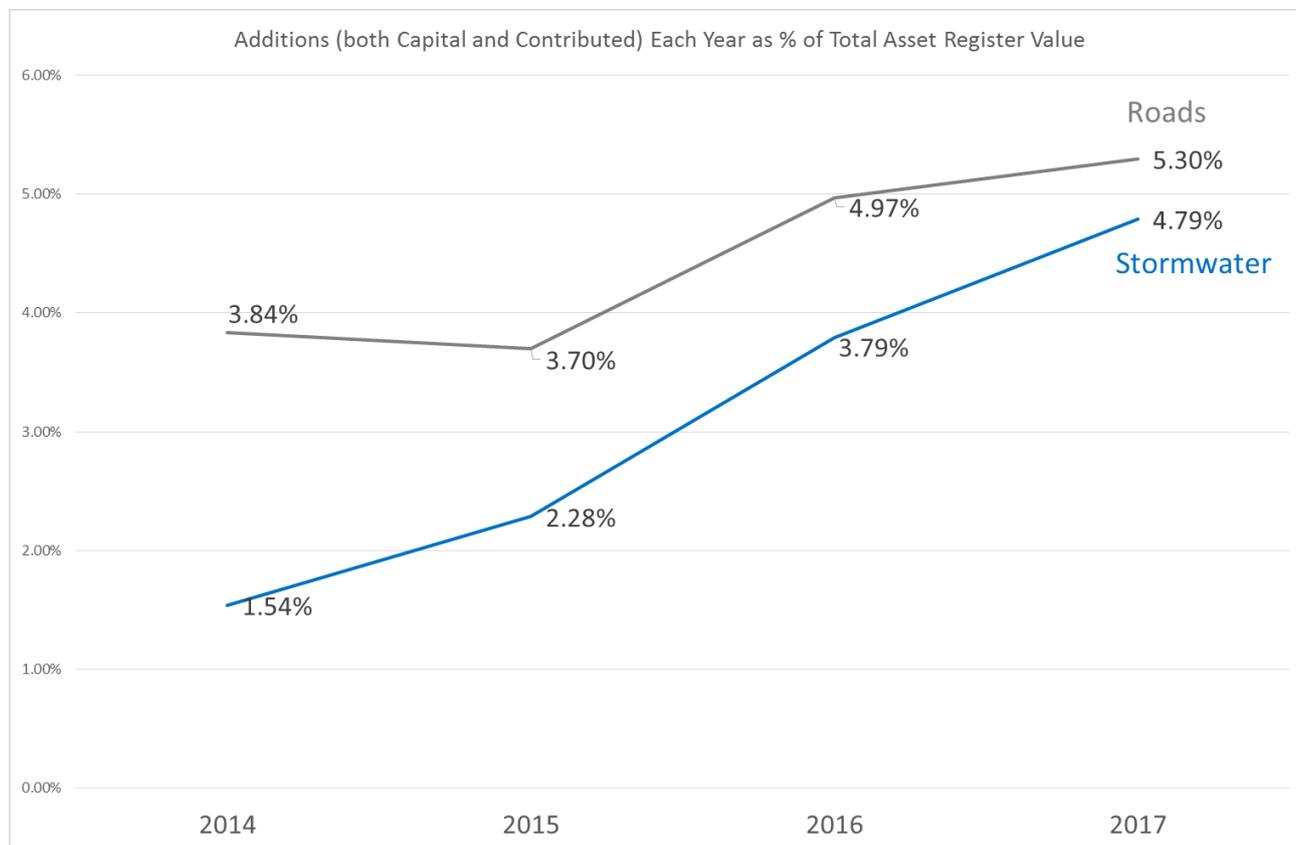


Figure 5: Road network growth 2014-2017

4.2.2 Condition Survey and Modelling

In May 2016, Asset Strategy produced a report analysing and evaluating the current and predicted condition of Sunshine Coast Councils (SCC) **sealed road network** given certain funding scenarios. The SMEC Pavement Management System (PMS) was used to establish an annual average network 'Pavement Condition Index' (PCI) over the next fifteen years. The report explored seven funding scenarios and their effects on the network's PCI. The funding scenarios are as follows:

- **Scenario 1** current SCC allocation until 2031 with 2% allowance for CPI (15 years)
- **Scenario 2** adopted 10 Year Capital Funding Program (\$20 million –includes R2R top up) then increasing the budget annually by CPI 2% until 2031
- **Scenario 3** \$25 million, then \$2 million annual increases for 5 years then continual annual increases of \$1 million to budget until 2031.
- **Scenario 4** \$24.5 million then \$1.5 million annual increases for 5 years then continual annual increases of \$1 million to budget until 2031.
- **Scenario 5A** models initial \$24 million, then \$1 million annual increases until 2031.
- **Scenario 5B** maintain current budget until 2020 (2 years) then \$1 million annual increases until 2031.
- **Scenario 6** \$26 million then \$3 million annual increases for 5 years, then \$1 million annual increases until 2031.
- **Scenario 7** maintain current Pavement Condition Index (PCI) levels each year until 2031. This scenario is effectively fictitious as it will generate widely fluctuating budget requirements but has been included for comparison purposes.

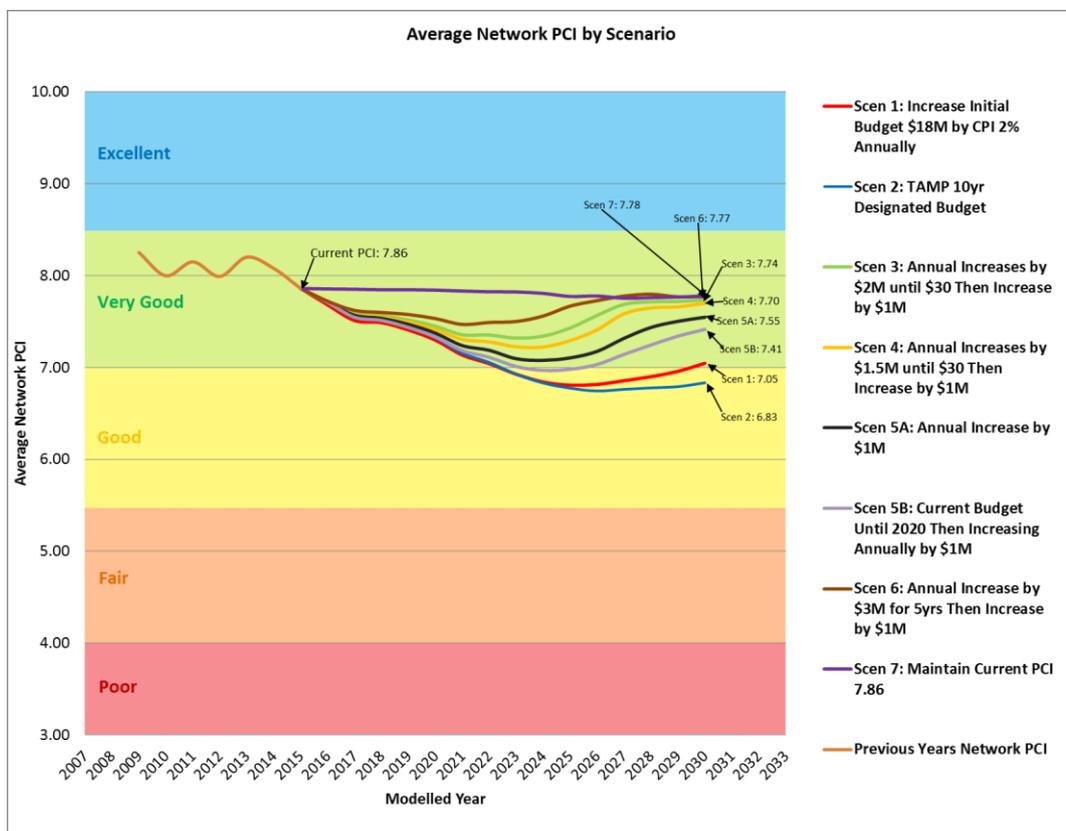


Figure 6: Average network pavement condition index (PCI) by scenario

This graph also shows PCI values in the very good range prior to today's date. In addition note, the current modelling includes an extra injection of \$5 million (Total \$8.07 million) for Scenarios 3-6 from the Federal Government Roads to Recovery Program which has been allocated to the Sunshine Coast Council for the 2016/17 year. The above *Figure 6* shows that for all scenarios the network condition drops under the pressure of a wave of aging pavements arriving at the point of needing resurfacing. For both Scenarios 1 and 2 the network PCI never recovers and drops from very good to good condition.

In Scenarios 3, 4, 5A, 5B and 6 the PCIs lift back up to almost the current condition and remains in the very good range on average. However, due to some levels of uncertainty with respect to road pavement depths, subgrade strengths and traffic loading, as mentioned earlier, across the full 2,268km of sealed roads it is felt that it would be sensible to adopt a measured approach recommending a moderate lift in funding allocation (Scenario 5A) and review this in two years after the next network road condition survey. Whilst 5B delays the annual \$1 million ramping and only drops 0.14 in PCI over 15 years modelling shows that in returning the network condition back up for both options, Scenario 5B will require potentially \$61 million more over a decade.

Figure 7 below tracks the annual budgets required in each scenario over the 15 year period ahead as well as showing the increasing allocations over the last 7 years (excluding Noosa). Scenario 7 as seen in *Figure 7* requires a widely fluctuating budget to maintain the set current PCI. This is obviously an unmanageable funding plan but is included for comparison purposes.

In addition, it should also be highlighted that for all but the fictional Scenario 7 (only included for comparison purposes) average network PCIs drop over the next decade. Whilst the PCI drops for these scenarios looks dramatic in *Figure 3* above, the community may not perceive this drop in the average network condition. However, this said, without an injection of funding the network will deteriorate to a lower condition (Scenario 2) with a network PCI score over one full point lower than today's value.

Whilst the Pavement Condition Indexes (PCIs) are network averages and some road will deteriorate slower than others it is clear that the current funding model (Scenario 2) will lead to a network average condition noticeably below that currently. By a recent benchmarking comparison with 32 other councils using the SMEC software this would put Council in the lowest 20% with respect to average network PCI.

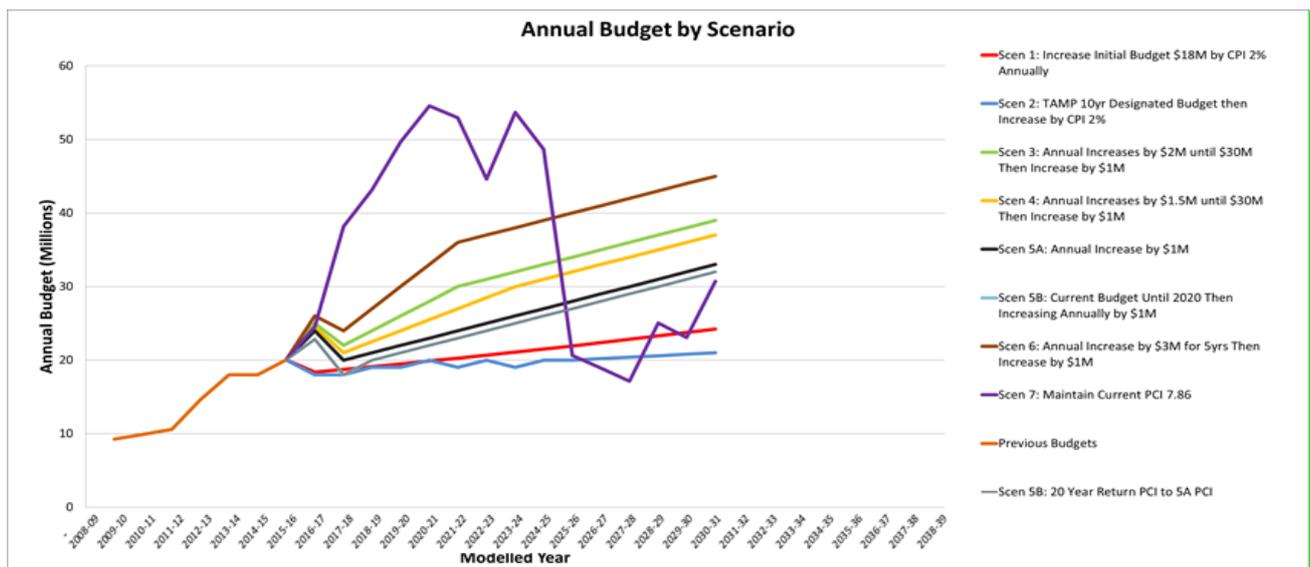


Figure 7: Annual budget by scenario

From *Figures 2 and 3* it is evident that the preferred PCI option is Scenario 6, however due to constraints on funding levels taking a whole of council perspective, and some gaps in input data Scenario 5B was selected and endorsed by council in May 2016. It was seen as a prudent interim

funding plan until recalibration can occur after the next road condition survey in 2 years. *Table 9* below outlines annual and total budgets over the first 10 year period (as normally shown in Capital Forward Programs).

Table 9: Current endorsed 10 year transportation road reseal and rehabilitation program

Financial Year Commencing	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Endorsed Budget (\$M)	18	19	20	21	22	23	24	25	26	27

It needs to be emphasised that this analysis is based on current methodologies for pavement resurfacings and rehabilitations. As new technologies emerge in the future that provide for more sustainable cost effective approaches these could allow for relaxation of the funding requirements predicted.

Furthermore, it should be highlighted though that roads found to be at a point of pavement failure requiring major intervention are generally being rehabilitated by cost effective methods to extend their life where possible e.g. insitu cement or foamed bitumen stabilising. However, this approach cannot be repeated indefinitely and at some point full reconstruction is likely to be required which is a significantly more costly measure. Some councils (e.g. Gold Coast) have road within their networks that have now reached this point and are allocating separate “Road Reconstruction Budgets” to remediate roads that can no longer be rehabilitated as per normal methods.

4.2.3 Conclusion

The sealed road network on the Sunshine Coast is, on a national average, in good shape. It is ranked 16th amongst Snowy Mountain Engineering Corporation (SMEC’s) 53 client councils. A community survey conducted in 2015 supports this but also indicates there is a performance gap and some room for improvement. In addition, due to increased growth there is a wave or bulge of additional aging road pavement and surfacings requiring attention over the next decade.

Both external modelling by SMEC and internal modelling has indicated an amended ramped up funding plan is needed to address the wave of aging road surfacings approaching over the next decade. However, as mentioned earlier, due to some level of uncertainty in this complex analysis and unconfirmed future growth rates, council last year endorsed to ramp the existing budget by an additional annual amount of \$1 million (Scenario 5B) and to reassess after the next road network condition survey in two years. At that point, any divergence of the actual network condition from that predicted plan can be rectified with recalibration can take place. It is noted that council also endorsed allocating all Roads to Recovery funding to this program.

4.3 Bridges and Boardwalks

4.3.1 Overview:

Civil Asset Management manages 486 bridges and boardwalks under the Bridges sub program. The bridge network asset value exceeds \$200M and will receive capital works funding of approximately \$3M for 2017/18, 2018/19 and 2019/20. This budget will be allocated to major renewals and major maintenance and preventative maintenance projects. Major renewals in 2017/18 will include the replacement of the Petrie Park Road Bridge, Nambour and major structural repairs to Chambers Island Foot/Cycle Bridge, Maroochydore. The major renewals are dominated by resolutions to replace older poor condition timber bridges that carry increased maintenance cost and more frequent inspection schedules.

4.3.2 Condition Surveys:

Condition assessments of all Vehicle Bridges and Major Foot/Cycle bridges were undertaken in 2015. The condition assessment identified 14 Vehicle Bridges in poor and very poor condition. Of those structures identified; 5 have been renewed to at least fair condition and 1 replaced; 4 have works scheduled for the first half of 2017; 2 are scheduled for renewal within the next 5 years and 2 are considered very low risk and will be monitored.

4.3.3 Asset Condition Profile:

Burgess Street Rail Overpass Bridge, Landsborough, which until recently was believed to be under Queensland Rail ownership, is also in poor condition. It requires structural repairs to be carried out to continue to allow heavy quarry vehicles to use the route. The future upgrade of the rail link from Beerburrum to Nambour will see this bridge replaced to cater for dual rail lines, after which it will become the responsibility of QR to maintain. This is likely within the next 5 -10 years. Whilst it is believed that the bridge should be under Queensland Rail control, in the interests of public safety a detailed engineering loading assessment was undertaken from which arrangements are being made to carry out short/medium term repairs to a damaged headstock in April.

For the concrete bridges in Fair to Good condition, condition assessment will be required in 2020/21. Management of bridges can be tailored to the requirements for defects that are identified from a level 2 inspection and subsequent investigation. Preventative maintenance strategies are being implemented on concrete bridges close to the coast and bridges spanning salt or brackish water to reduce the risk of corrosion of the reinforcement. These strategies include concrete sealers and repairing failed joints in the road surface. Both are aimed at reducing the amount of moisture that penetrates the concrete bridge components increasing the rate of corrosion. Other major maintenance measures also include remediation of flood damaged bridge abutment protection to a higher level on at risk bridges. Ten bridges were identified with two completed this year. Here, loose rock batter protection armouring or displaced shotcrete is being replaced with rock that is contained (e.g. gabions and mattresses) that can withstand higher flood flows and debris impact. This more robust design requirement is also being incorporated into new bridge construction e.g. Wegners Rd bridge.

Minor Foot/Cycle Bridges and Boardwalks do not have comprehensive whole of network condition assessments completed. These structures are considered lower risk. The condition assessment of this asset group will be undertaken by the bridge maintenance delivery crews. These crews have the specific experience with timber structures that is required for accurate condition assessment. The condition assessments are scheduled to be undertaken in the first half of 2017.

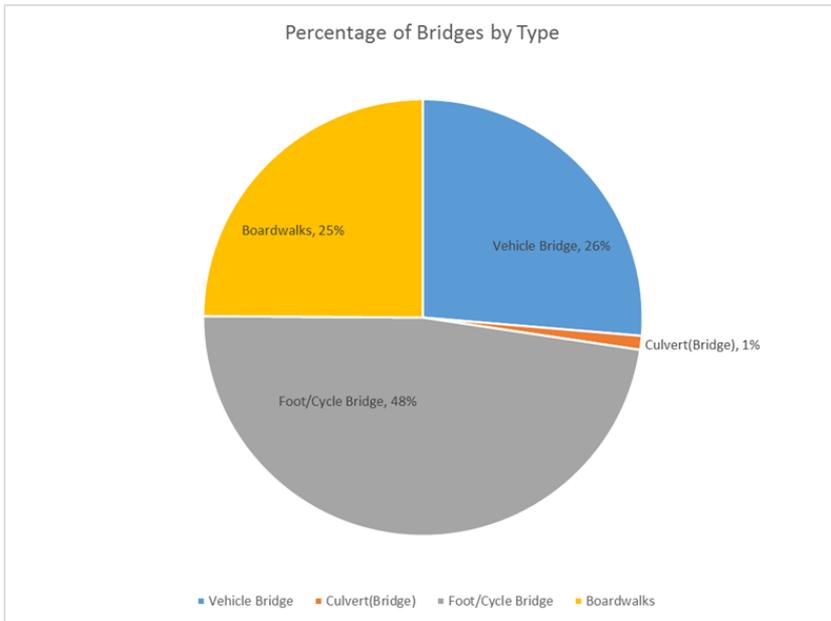


Figure 8: Percentage of bridges by type

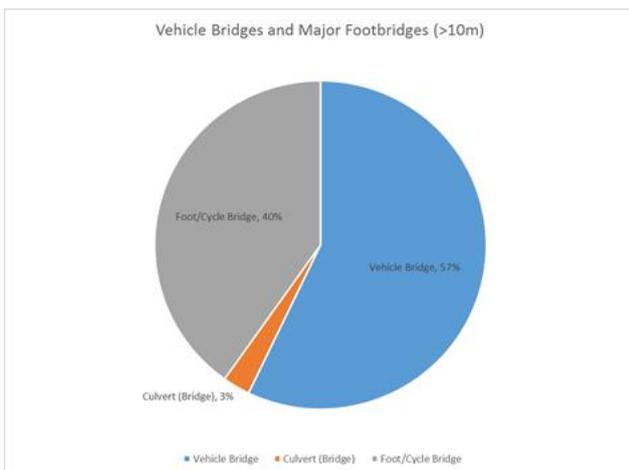


Figure 9: Vehicle bridges and major footbridges (>10m)

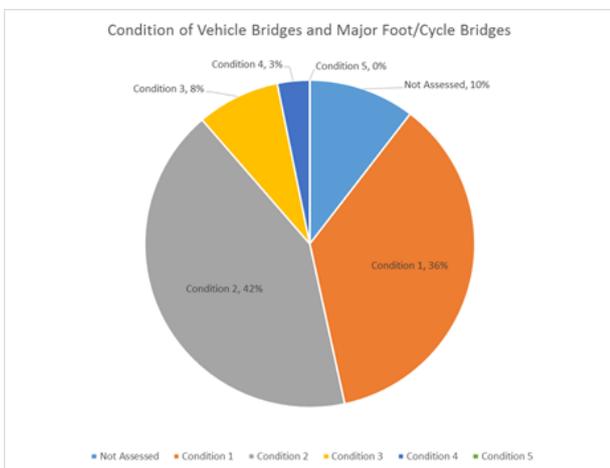


Figure 10: Condition of vehicle bridges and major foot/cycle bridges

4.3.4 Timber Bridge Replacement Plan

Timber bridges identified for replacement (subject to budget deliberations) are shown in Table 10, below:

Table 10: Assets identified for replacement in 2017 to 2020

	Asset	Reason for Disposal	Timing
Vehicle Bridges	Petrie Park Road	Timber Bridge to be replaced with new bridge	2016/17 & 2017/18
	Youngs Bridge		2017/18
	Kiamba Road Bridge		2018/19
	King Road Bridge		2018/19
	Image Flat Road Bridge		2019/20
Foot/Cycle Bridges	Ninderry Road footbridge		2018/19
	School Road Coolum Footbridge		2019/20

4.4 Pathway Network

4.4.1 Overview:

Pathways are a critical component of the transportation assets, particularly in high profile areas where public safety and amenity are paramount. The Sunshine Coast Council manages approximately 1163 km of footpaths and cycle ways which support various community needs and stakeholders. These footpaths and cycleways provide important transport and recreational services associated with:

- Schools
- Shopping Centres
- New Sunshine Coast University Hospital
- Open Space and Recreation Reserves
- Public Transport Areas
- Sporting Complexes
- Retirement villages/aged care
- Community Facilities – libraries, childcare centres, cemetery, halls, car parks
- Other associated infrastructure required to be provided and/or maintained by council.

4.4.2 Condition Surveys:

In 2013, a detailed condition survey of the regional pathways (including the coastal pathway) was undertaken. In 2015, the remaining 50% of the pathway network (comprising local and district pathways) was undertaken. The survey was based on measuring the pathway condition in 20m

long segments and included video imagery of each pathway and surrounds. Thus, CAM Branch has a detailed and complete overall “picture” of the pathway network condition albeit spread over two separate years; this has enabled CAM Branch confidently prioritise capital renewal works for pathways over the next three years and carry out modelling to predict the level of funding required over the next 10 years.

It is acknowledge that that some assets are more important to the community than others and funding of renewal works based on condition alone is not sufficient. For example, by considering the pathway hierarchy (e.g.; regional, district or local), location (whether the pathway is located within a precinct area, in close proximity to medical centres, schools, TAFE and community facilities such as child care centres, retirement villages, libraries etc.) we can determine, which assets get prioritised ahead of others. This means that the most critical pathways asset will receive attention when they are deemed to be candidates for renewal. At the other end of the scale, the least significant pathway assets will be deferred where more important works are required, until such time that either funds are available to perform the work or the condition of the asset needs to be treated for safety reasons rather than for preventative maintenance reasons only.

It should also be noted that pathways are also often renewed to a higher standard either wider (1.2m up to 1.8m for residential areas and up to 3m for regional or coastal pathways) and/or with coloured surface finishes. This requires approximately an extra 20% funding where currently there are no other capital sources available.

The surface type for footpaths and cycle ways vary and are shown in the Table 11, below:

Table 11: Pathway surface types

Pathway Surface Type		
Material	Length (km)	%
Concrete	1077	92.5
Asphalt/Bitumen	22.4	1.9
Paved	9.2	0.8
Undefined	53	4.8
TOTAL	1163 km	100%

Concrete paths represent 92.5% of the asset surface type, followed by asphalt with 1.9%. As asphalt paths approach the end of their useful lives they are generally replaced with longer lasting concrete paths.

The pathway survey/audit conducted in 2013 and 2015 was used to determine the condition profile and levels of intervention for maintenance or complete renewal of footpaths.

4.4.3 Asset Condition Profile:

As highlighted above, a pathway survey/audit was undertaken in 2013 and 2015 to help determine the overall and actual condition of the network; this has enabled improvements to maintenance planning and renewal forecasting documenting.

The path survey/audit data indicates that approximately 97% of pathways in either Very Good, Good, or Fair condition with Fair describing pathways that are clearly still functional but with some wear – see *Figure below*.

A regular (every 3-4 years) condition profile assessment is recommended across the path network with the next audit planned to be completed in the 2018/19 financial year. Additional maintenance inspections and assessments should be undertaken in CBD precincts and locations of high cycling and pedestrian patronage.

The condition and level of service provided by the network is subject to external factors including environmental impacts, poor construction, extraordinary loads and levels of maintenance intervention. Parts of the network have a compromised useful life and are approaching a condition where intervention over and above regular maintenance is required. In some locations (Caloundra) the coastal pathways were constructed without any reinforcement; these older pathways are more susceptible to cracking and damage as they have no tensile strength i.e. they can't support any vertical loading.

The condition profile of Council's Pathways and Cycleways and Condition by hierarchy is shown in the Figures 11-13, below:

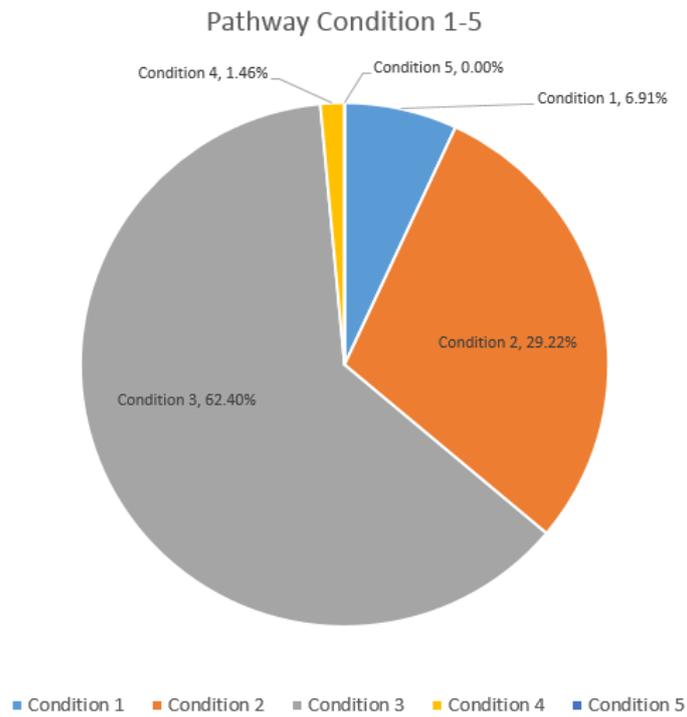


Figure 11: Pathway condition 1-5

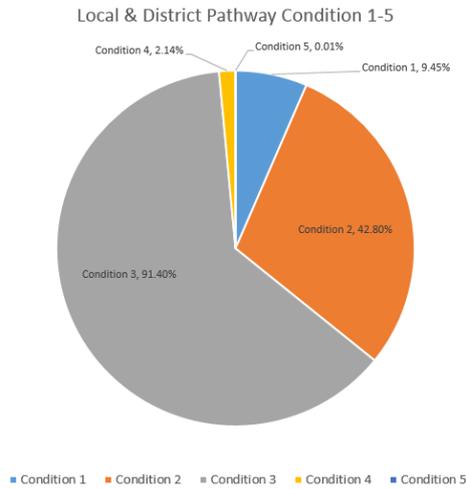


Figure 12: Local and district pathway condition 1-5

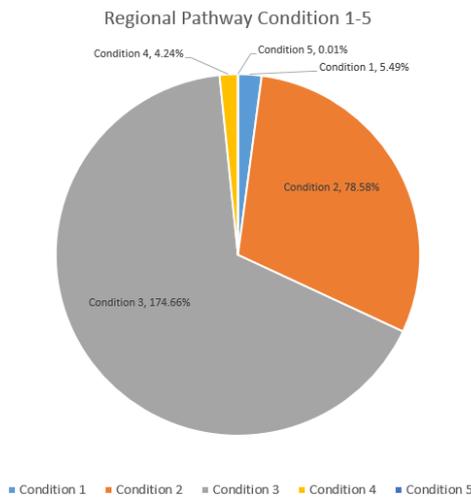


Figure 13: Regional pathway condition 1-5

4.4.4 Financial Modelling of Pathways:

Based on preliminary financial modelling, the forecast funding requirements for pathways over the ten year capital works program have been determined; this is based on an anticipated life span of 60 years and the following funding scenarios:

Scenario 1 – Maintain Current Funding (\$600K per annum)

Scenario 2 – Increase funding (\$1 Million per annum over 10 years)

Scenario 3 – Funding required to maintain the level of required capital renewals (\$1 Million total per annum for 4 years then increase to meet demand)

Scenario 4 – Boost funding by \$1 Million then maintain the level of required capital renewals (\$1.6 Million 2017/18 then increase to meet demand)

The results are shown in *Figure 14, below*

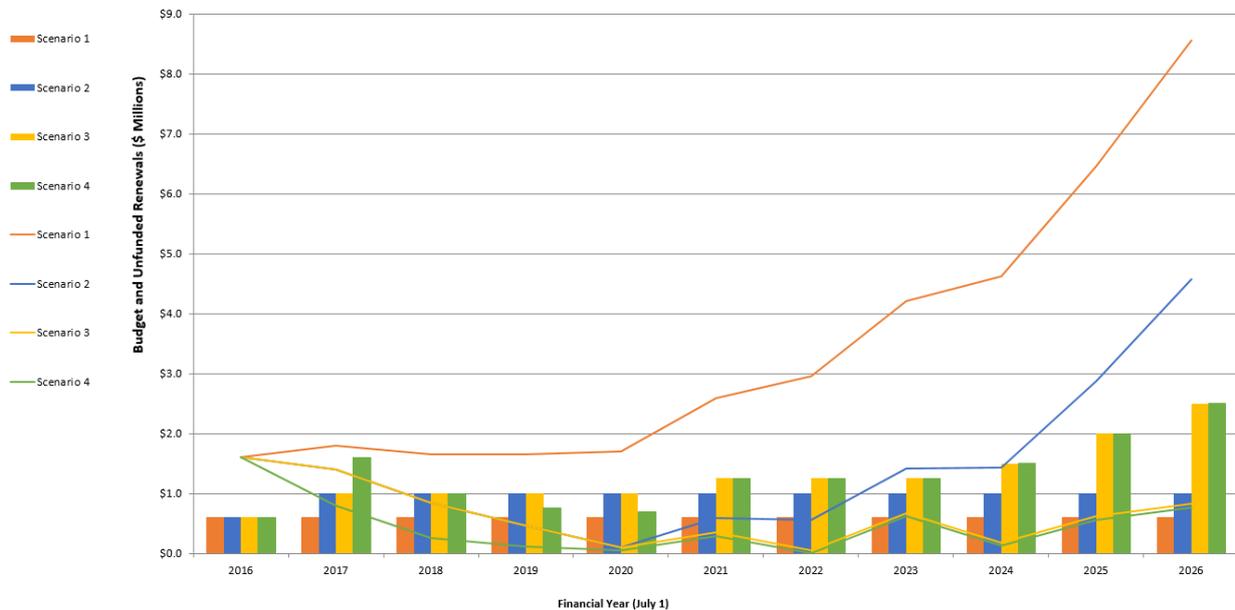


Figure 14: Budget and unfunded renewals per financial year, by scenario

Pathway Funding Modelling Scenarios

The scenarios presented in figure 14, above, have been developed using the current condition survey data, deterioration curve (over 60 year useful life) and intervention levels that are based on current practice. The current modelling predicts that the number of required capital renewals will increase in 2021. The increase in capital renewal in 2021 is due to the large amount of pathway (50%) that are currently rated fair. Scenario 3 and Scenario 4 are designed to maintain the current network condition and reduce the catalogue of required capital renewals to very low levels. This approach will allow CAM to best manage the predicted rise in required capital renewals. As can be seen from the modelling graph a moderate total pathway renewal allocation of \$1M (Scenario 2 - blue) will tackle the current catalogue of unfunded renewals within 4 to 5 years and hold it at current levels until 2024. Furthermore it should be noted that renewals typically require pathways to be widened to current standards (Added 20-25% to renewal costs) and replaced with coloured or textured concrete in higher profile areas. This, together with growth of the network over the next decade of up to 10% (not modelled) supports the proposed increase of \$400k+. In addition, a full network condition survey is planned to be carried out in two years to confirm how the network is performing and that funding levels are sufficient to manage the backlog of pathways needing replacement.

4.5. Retaining Walls

4.5.1 Overview:

There are 1495 retaining walls identified in a recent survey across the network. The main type of retaining walls are grouted rock (approximately 63%) followed by link blocks (12%) and placed rock (8%) with various other types comprising the balance (17%) (Figure 15, below)

Types of Retaining Walls

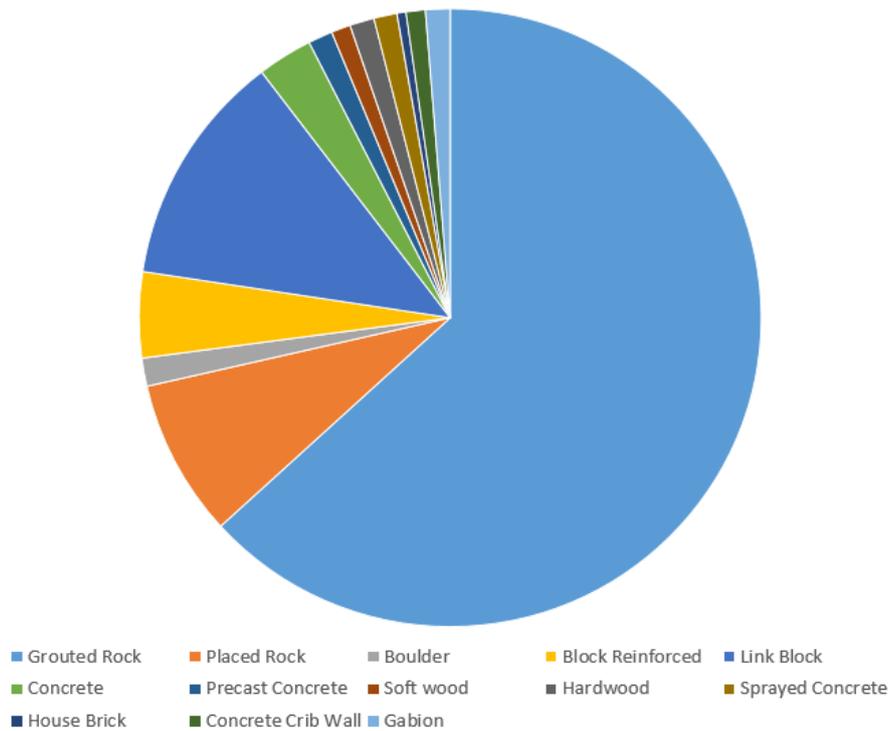


Figure 15: Types of retaining walls

4.5.2 Condition Surveys:

A visual survey of existing retaining walls was undertaken by Council in 2016. The survey data indicates that approximately 93.5% of retaining walls are in fair to very good condition; conversely 6.5% are in poor to very poor condition – see Figure 16, below:. 6.5% of the network equates to a catalogue of required renewals with a replacement cost of \$0.575M. The required renewals are manageable with a \$150,000 capital funding outlay over 3 years (Figure 17, below). After this initial outlay minimal funding is required.

Condition of Retaining Walls

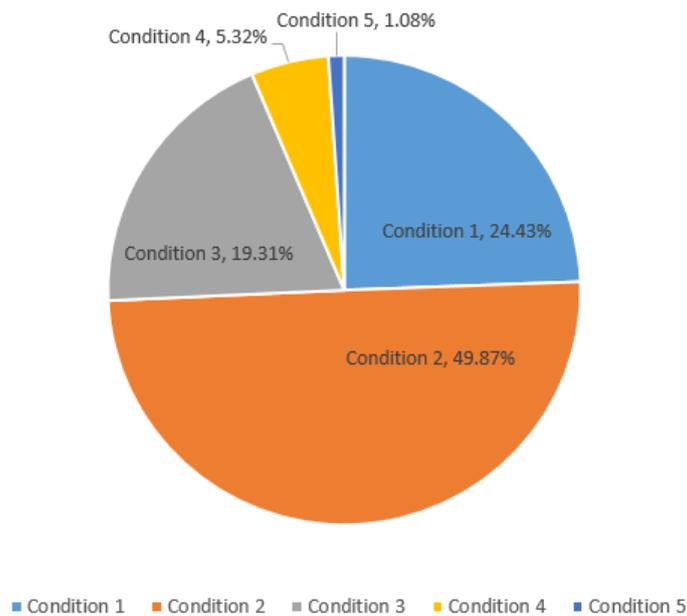


Figure 16: Condition of retaining walls

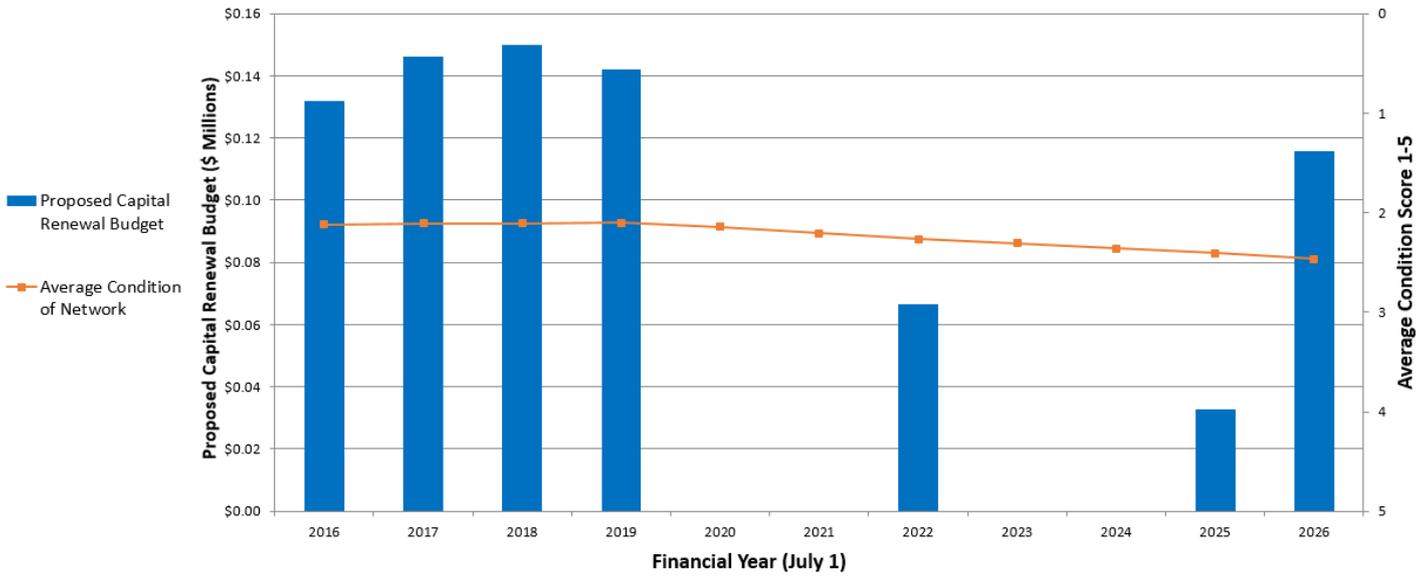


Figure 17: Retaining wall capital renewal budget and network average condition over time

4.5.3 Financial Modelling of Retaining Walls

Future deterioration modelling will be explored and is planned for the forthcoming year by type and also refining of the condition survey to identify subcomponent condition (e.g. based on 20m sections) and hence better cost longer term remediation funding requirements. For those retaining walls identified for replacement geotechnical reports are typically required to ensure those at low risk are only refaced for aesthetic purposes and those that need to retain material are properly engineered.

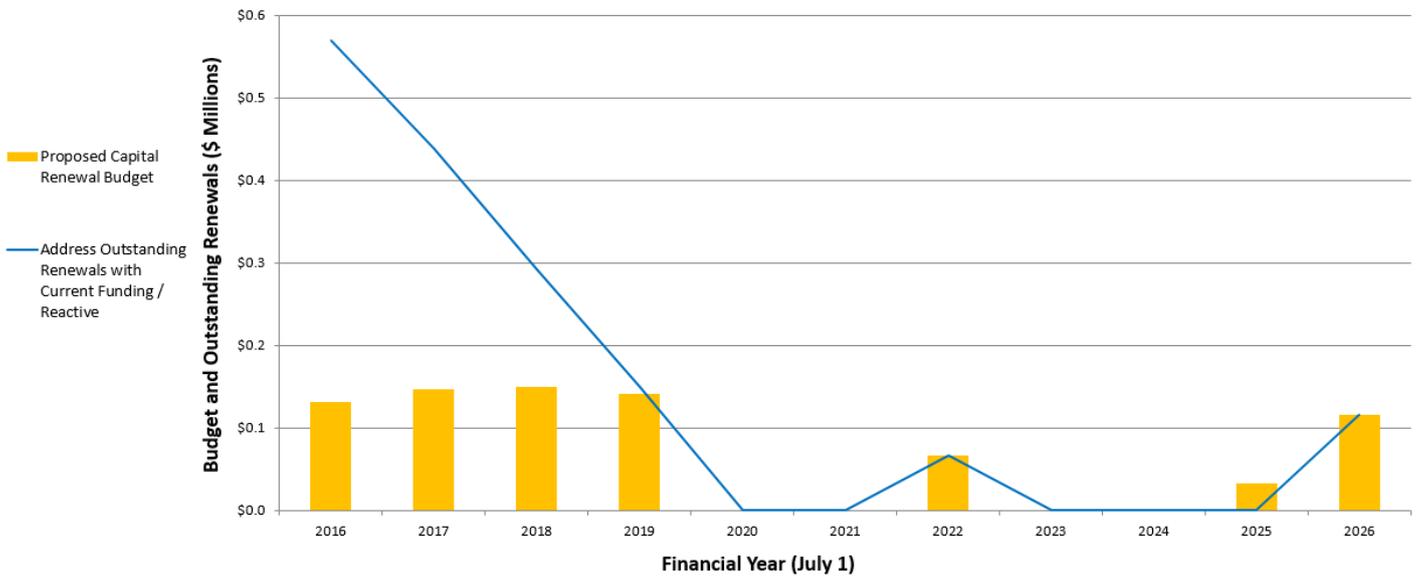


Figure 18: Proposed retaining wall capital renewal budget against time

4.6 Kerb and Channel

4.6.1 Overview:

This year for the first time the Kerb and Channel network has also been fully surveyed for condition using available digital image data. The total length of kerb and channel is approximately 2864km and valued at \$150M to replace

4.6.2 Condition Surveys:

The majority of kerb and channel is in good to very good condition with over 90% fully functioning and performing at a satisfactory standard. The survey data indicates that approximately 96.4% of kerb and channel good to very good condition; conversely 0.33% are in poor to very poor condition – see Figure 19, below:

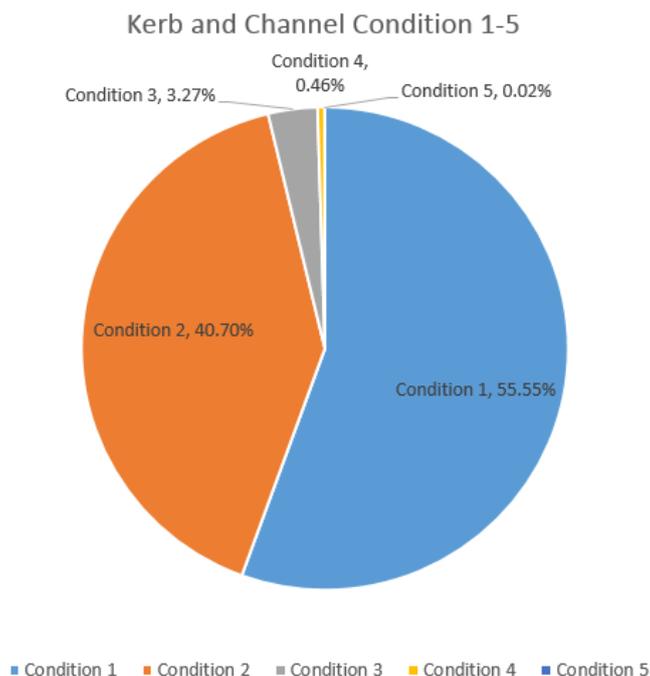


Figure 19: Kerb and channel condition 1-5

4.6.3 Financial Modelling of Kerb and Channel

Recent modelling of the network (Figures below) (using an assumed life of 60 years) has shown that its overall average condition. However, there has been feedback from the community that minor damage to kerb and channel (e.g. chips and chunks removed) is becoming less acceptable and that replacement or repair is needed.

This modelling indicates that the current funding within the Transport Renewals Subprogram of less than \$150k (grey) does not contain and ease the backlog, whereas an annual allocation of approximately \$500k (yellow) will see this catalogue of renewals drop over the next 8 years to less than \$500k. However, an annual renewal allocation of \$300k (blue) will see the backlog contained to less than \$2M. This is less than 1% of the network replacement cost and seems to be a prudent approach. Nevertheless, the network condition needs to be more accurately assessed to confirm the current status assumptions and then further modelling carried out with variable life span scenarios explored. Next year a full condition survey of the road network is programmed and it is proposed to include a condition assessment of the Kerb and Channel network concurrently with this survey.

Finally, amendments to the Planning Scheme Code for Development Works are also being sought from Planning and Environment, to lift kerb and channel concrete strength to 32MPa from the current 20MPa. This will go some way to lifting resilience of this asset. Historically, kerb and channel has been laid using dry mix kerb extrusion machines with frequent poor quality concrete placed and unnoticed due to the practice of placing a mortar slurry top skin that covered all imperfections that were structurally flawed. These underlying blemishes are now presenting as broken kerb with the top mortar skin crushing under any wheel loading. This damage whilst still allowing the kerb and channel to function looks unsightly and is becoming less acceptable to the community.

It is proposed that all kerb and channel construction must use structural concrete that is slip form placed (i.e. no slurry capping over extruded dry mix concrete) and the wet concrete is properly vibrated to ensure compaction and density is achieved. With this process quality assurance prevails to address construction issues that lead to poor low strength concrete. Slip form kerbing, whilst more expensive, is stronger and more durable and can withstand the punishment dealt out on construction sites and road traffic. In addition, for renewals, slip form kerbing does not require the need to over excavate the box to make room for the extrusion machine. This machine can stay on top of the existing roadway. However, no driveway, minor access or car parking invert, where traffic can be expected to transverse, should utilise kerb mix of any type. These shall be deemed structural concrete, thus requiring suitable placement of reinforcing steel to manage vertical loading.

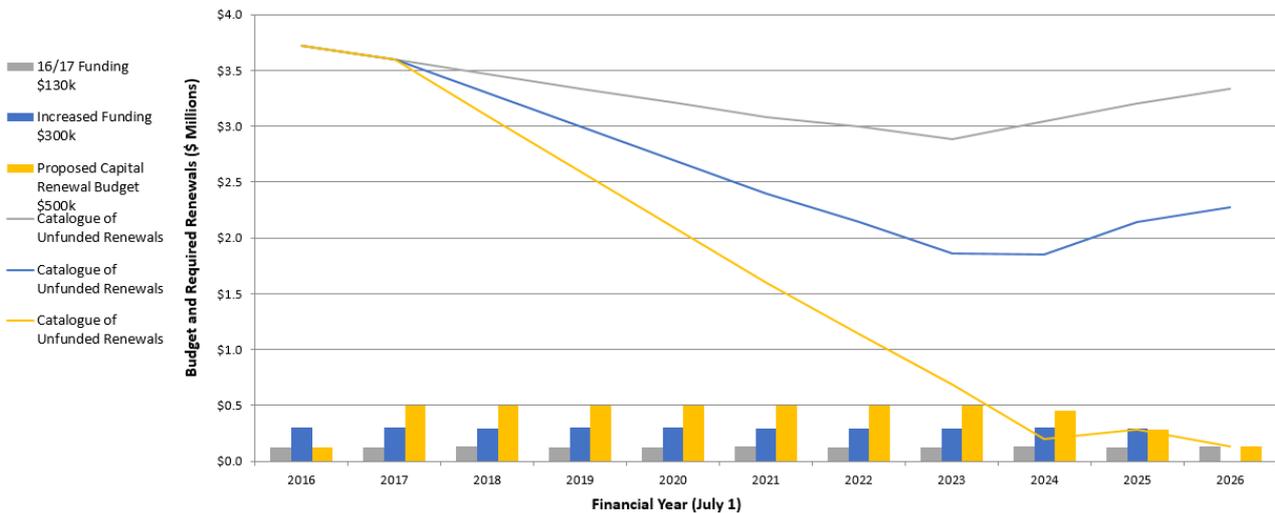


Figure 20: Modelled kerb and channel catalogue of unfunded renewals VS Time

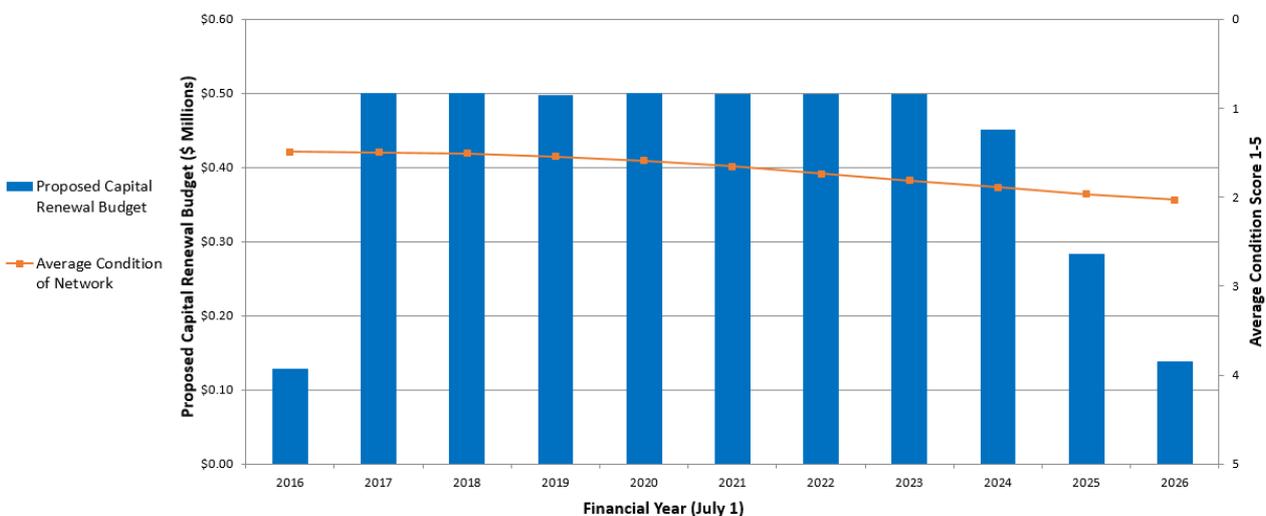


Figure 21: Proposed kerb and channel capital renewals and network condition vs time

4.7 Changes in Technology

Technology changes are forecast to affect the delivery of services covered by this plan, as outlined in Table 12, below. Historically changes in technology have had the effect of reducing whole-of-life costs. Changes in technology will be embraced where possible to reduce future whole-of-life costs.

Table 12: Changes in technology and forecast effect on service delivery

Technology change	Effect on service delivery
The likely increase in the capacity and volume of heavy vehicles.	<ul style="list-style-type: none"> Higher demand on road pavements leading to shorter expected asset lives.
Increased use of recycled materials in pavement construction and maintenance.	<ul style="list-style-type: none"> Better use of existing resources such as quarry materials Appropriate testing is required to ensure that appropriate quality and performance standards are maintained.
Implementation of the Infrastructure Services Information Enabling Strategy (2014 – 2017)	<ul style="list-style-type: none"> The deployment of mobile technology across the Council now ensures that staff work in more flexible and sophisticated ways. All key systems (asset management, customer requests, work orders, payroll, spatial, intranet etc.) will be fully accessible from mobile devices
Move towards sustainable transport methods	<ul style="list-style-type: none"> Increase in cycle ways (both on road and off road) Improvements in public transport infrastructure (proposed light rail) Car pooling
Improvements in vehicle technology	<ul style="list-style-type: none"> Greater use of intelligent transport systems
Implementation of new Asset Management Information System AMIS	<ul style="list-style-type: none"> Central register for all classes of assets owned or managed by Council e.g.; new SAM system and SMEC PMS for road assets. Reports on asset performance, asset standards and asset condition. Automated valuations and annual financial reporting Life cycle costing for all asset types, including critical failure modes. Produce prioritised capital work programs based on optimisation analysis (SAM system for bridges; SMEC PMS for Roads). IT is expected that council will adopt and implement a new AMIS by the end of 2017

4.8 Demand Management Plan

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices include non-asset solutions, insuring against risks and managing failures.

Opportunities identified to date for demand management are shown in Table 13, below. Further opportunities will be developed in future revisions of this asset management plan.

Table 13: Demand management plan summary

Service Activity	Demand Management Plan
Road Reseal and Rehabilitation Program	<ul style="list-style-type: none"> • The effects of this are lower overall maintenance costs and improved traffic flow. • Implementation of innovative surfacing treatments such as micro-surfacing and rejuvenation treatments to reduce the lifecycle costs of road surfaces and increase the % of the network treated within the allocated budget. • Introduction of detailed designs and whole of life costings for rehabilitation projects to achieve optimal treatments.
Operations and Maintenance Service Levels	<ul style="list-style-type: none"> • Review the levels of service, inspection programs and methods of assessments to ensure assets receive the correct treatment at the optimum time.
Pavement Management System (PMS)	<ul style="list-style-type: none"> • Ongoing assessment of investment scenarios using the SMEC PMS to maintain or improve the condition of the road network • Increase accuracy of existing road data e.g. traffic data review, integration of Falling Weight Deflectometer, FWD testing, etc. • Automatic integration between the SMEC PMS and Councils other asset management systems
Strategic Asset Management (SAM) system	<ul style="list-style-type: none"> • Initially to collect data about Councils pathways, kerb and channel, retaining walls and bridge assets including road bridges, foot bridges and boardwalks for developing future maintenance and renewal programs for each of these asset sub types.

4.9 Asset Programs to Meet Demand

The new assets required to meet growth will be acquired from land developments such as Aura, Palmview and the Maroochydore City Centre development. It is currently estimated that council acquires on average \$62.3 million per annum for Roads and Bridges over the last five years, on new assets through development, with an anticipation that this will increase over the life of this Plan. There is uncertainty regarding the type and standard of assets which may be provided through such developments such as Aura (which is being managed by EDQ on behalf of the Qld State Government). . The Aura development is expected to increase the population of the region by approximately 50,000 by 2046 adding up to \$250 million to Council’s road network alone. This has the potential to greatly increase whole-of-life costs into the future depending on the type and number of assets which Council will acquire. The new total asset values are shown in the Asset Values graph below.

Acquiring new assets will commit council to fund ongoing operations 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.

Sunshine Coast RC - Upgrade & New Assets to meet Demand (TRANSPORTATION_S1_V4)

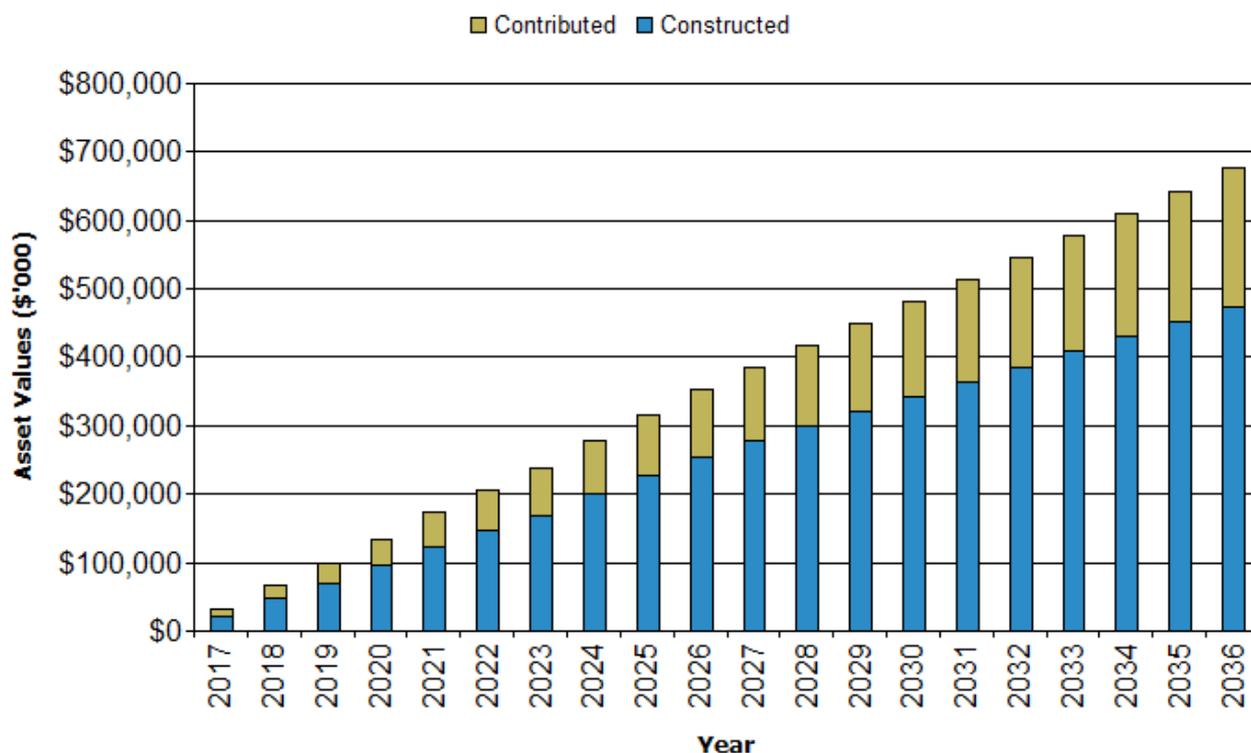


Figure 22: Upgrade and new assets to meet demand

Note:

The Asset Value Figure above does not include the impact of the Aura development at Caloundra South (estimated to include an extra 50,000 dwellings when all stages/precincts are completed) or the Palmview Development (estimated population 15,000). These developments are likely to have an impact that sees these total asset values lift significantly over the next two decades.

Sunshine Coast RC - Age Profile (TRANSPORTATION_S1_V4)

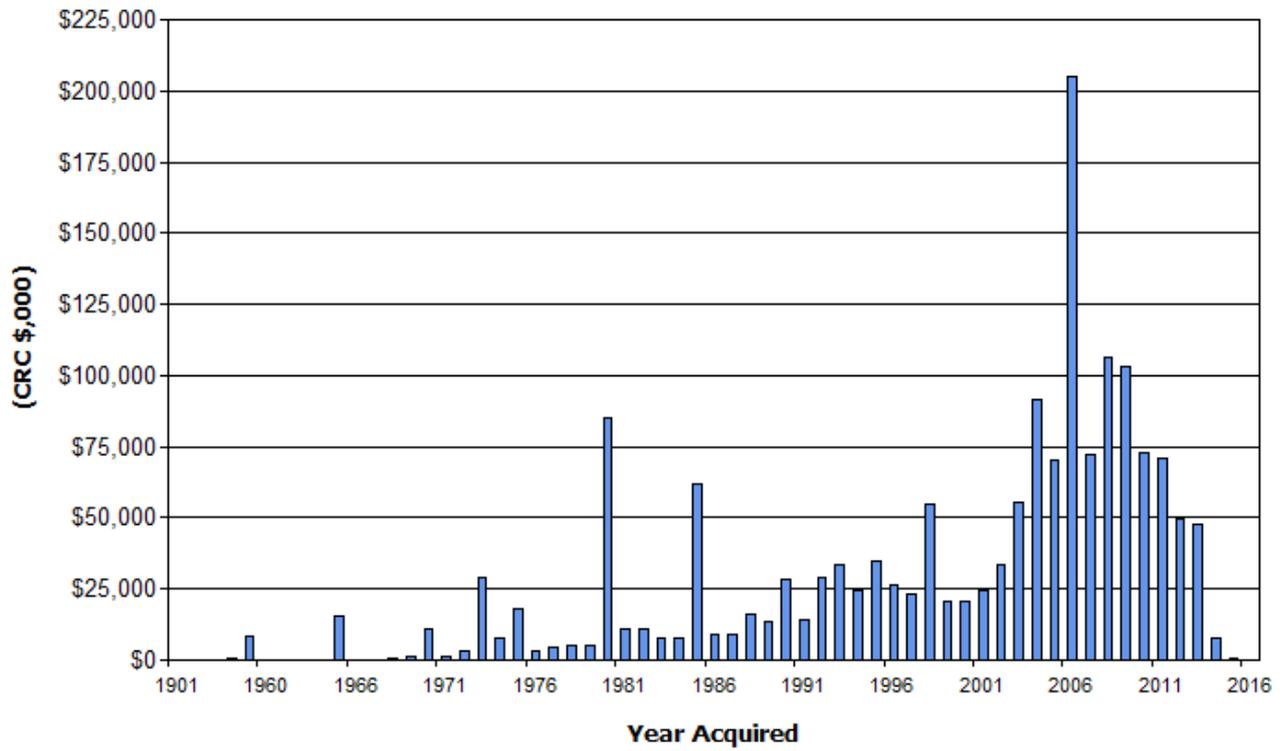


Figure 23: Asset age profile

Note - Data from earlier than 1981 is not likely to be accurate due to method in which the data loaded into council systems at the time. Also, the peak in 2007 is an anomaly due to amalgamation.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the organisation 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 Current quantity of road assets is listed in Table 14:

Table 14: Transportation asset quantities

Asset Group	Asset Type	Quantity
Roads	Sealed	2,178 Km
	Gravel	512 Km
Bridges	Road Bridges	133
	Foot Bridges	232
	Boardwalks	121
Pathways	All Pathways	1,192 km
Kerb and channel	Concrete	2,864 km
Road side Assets	Bus Stop and Shelters	729
TOTAL		

5.1.2 Condition Inspection of Councils Transport Assets

Condition monitoring is crucial to understand future renewal expenditure demand. However, because many assets have not been surveyed for many years, it is expected to take until 2017-18 before there will be complete data sets for each asset class. Currently, survey information for each asset type is as follows:

- Sealed road assets were last surveyed in 2014.
- Bridges were last surveyed in 2015.
- Gravel roads, last surveyed in 2008,
- A network survey of guard rails was completed in 2015
- Kerb and channel assets have not previously been surveyed. A desktop survey was undertaken in 2016.
- The strategic footpaths were audited/surveyed in 2013. The remainder of the footpath network surveyed was completed in 2015
- Retaining walls were surveyed in 2016.

5.1.3 Asset capacity and performance

Council's services are generally provided to meet design standards where these are available. Areas where deficiencies in service performance are known are detailed in Table 15.

Table 15: Known service performance deficiencies

Area	Service Deficiency
Reseal Program	<p>As stated previously, the PMS analysis has determined that the current budget outlined in the TAMP is insufficient to maintain the network in its present condition over the next 20 years.</p> <p>According to the analysis based on the data in the system Council should be considering a budget with annual increases of \$2M until 2023 scaling back \$1M increases. However, as a prudent measure council approved Scenario 5B to be considered in 2017/18 and funding options be reviewed after the next condition survey in two years.</p> <p>Surfacings that are in poor/very poor condition increases the risk of water penetration into the pavement and may result in higher maintenance and rehabilitation costs. The introduction of micro-surfacing and rejuvenation program and reallocating funds from rehabilitation to reseals has minimised the risk of more of the network deteriorating prematurely. However, the backlog of rehabilitation works will take longer to address and in the short-medium term may increase maintenance costs.</p>
Insufficient surface thickness	Asphalt has previously been laid at varying depths (in some cases too thin) resulting in very short asset lives as it increases the risk of water entry into the pavement.
'As constructed' Information	Lack of a centralised asset register and formalised 'as constructed' processes for internal works mean that 'as constructed' information is likely to be misplaced or lost. There is also a break in the chain of information from the 'as designed, as constructed' process and inclusion of asset information into Council's GIS.
Weak pavements	A large part of the SCC road network is built on weak subgrades and shallow pavements, for example in the Caloundra area. Increasing traffic is resulting in premature failures across the network.
Kerb and Channel and Pathway renewals	<p>Kerb and channel and pathways are currently under-funded. Sections requiring renewal are often funded from within the reseal program which is not always the most appropriate use of funds. An injection of funds to remove sections of kerb and channel which are in poor or very poor condition is deemed warranted and for the 2017/18 it is anticipated that council will allocate an additional \$500k for this subprogram with possibly a one off allocation of \$550k from Divisional funds to help clear up the backlog of pathway and kerb and channel renewals.</p> <p>Pathway renewals are also required to maintain the pathway network in an acceptable condition and to reduce potential (personal injury) insurance claims due to trip hazards, tree root intrusion etc.</p> <p>In addition, CAM Branch is promoting the use of "slip form" K & C using structural strength concrete (Minimum 32 MPa) in preference to the conventional mix with slurry topping which is prone to premature deterioration/failure. It is proposed to seek amendment to the Planning Scheme for Development Works</p>

Other Roadside Assets	An inspection program has been carried out to assess the current condition of retaining walls. This survey found that this asset type was in generally good condition but deterioration modelling work was required to obtain a better understanding of future renewal investment requirements.
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5.1.4 Asset condition

Condition is measured using a 1 – 5 grading system³ as detailed in Table 16.

Table 16: Simple condition grading model

Condition Grading	Description of Condition
1	Very Good: only planned maintenance required
2	Good: minor maintenance required plus planned maintenance
3	Fair: significant maintenance required
4	Poor: significant renewal/rehabilitation required
5	Very Poor: physically unsound and/or beyond rehabilitation

Table 17: Road specific simple condition grading model

Condition Grading	Description of Condition
1	Very Good: treatment not required
2	Good: treatment within 3 years
3	Fair: treatment within 2 years
4	Poor: treatment within 1 year
5	High Priority: collaboration project & treatment within 1 year

For the sealed road network the last condition survey was undertaken in May/June 2014 to assess the condition of the road network. The survey collected information on pavement roughness, surface texture, rutting and cracking. This information has been input into the Pavement Management System (PMS) and has been used to prioritise sections of road for treatment under the reseal and rehabilitation program.

The PMS grades roads based on a variety of different defects and parameters and gives each segment a pavement condition index (PCI). The PCI was formulated by SMEC a number of years before AUSTRROADS developed “pavement health” and “surface health” indices. PCIs were available and has been retained to give a degree of consistency between the current version and earlier versions of the software.

The way the SMEC PCI operates is that it assumes a ranking of 10 for a road without defects (perfect) and deducts points from this ranking depending on the level and types of distresses present in the pavement. In general terms, the PCI value may be interpreted as shown in Table 18, below.

Table 18:PCI interpretation

PCI	Road Condition
10 to 8.5	Excellent
7.0 to 8.5	Very good
5.5 to 7.0	Good
4.0 to 5.5	Fair
2.5 to 4.0	Poor
1.0 to 2.5	Very poor
< 1.0	Failed

It is highlighted that, whilst the PCI value for any particular road section can be calculated, this does not mean that road sections with low PCI values will automatically be treated first (i.e.; on a treat worst first basis). This is because the PMS utilises a “rule base” to assess which different treatment options should be analysed and compared for each different road section. The ‘rule base’ is a stored procedure which selects road sections and treatments based on a set of parameters or rules. When running a network analysis, it also depends on which optimisation methods is chosen, for example:

1. Maximise Asset Value;
2. Minimise Agency Costs;
3. Minimise User Costs;
4. Minimising Agency and User Costs.
5. Maximise Network PCI

This affects the way a works program is generated and hence which particular road segments may be triggered for treatment before others in any given year.

Once a works program is generated from the SMEC PMS it is verified by field inspection. Roads listed on the SMEC PMS works program are then assessed and rated using the simple condition gradings shown in table 5.1.4. During the field inspection, detailed measurements of defects are recorded to enable accurate budget estimates to be calculated. Any roads that are identified as requiring a pavement rehabilitation treatment during field inspection are subjected to a detailed geotechnical investigation, detailed pavement design and construction estimate. These budget estimates, together with the simple condition gradings, are then used to generate the final Reseal Works Program

A Business Case Analysis is also carried out for Rehab projects based on securing best value whole of life outcomes. These budget estimates, together with the simple condition gradings, are then used to generate the final Reseal Works Program. Refer to flow chart below:

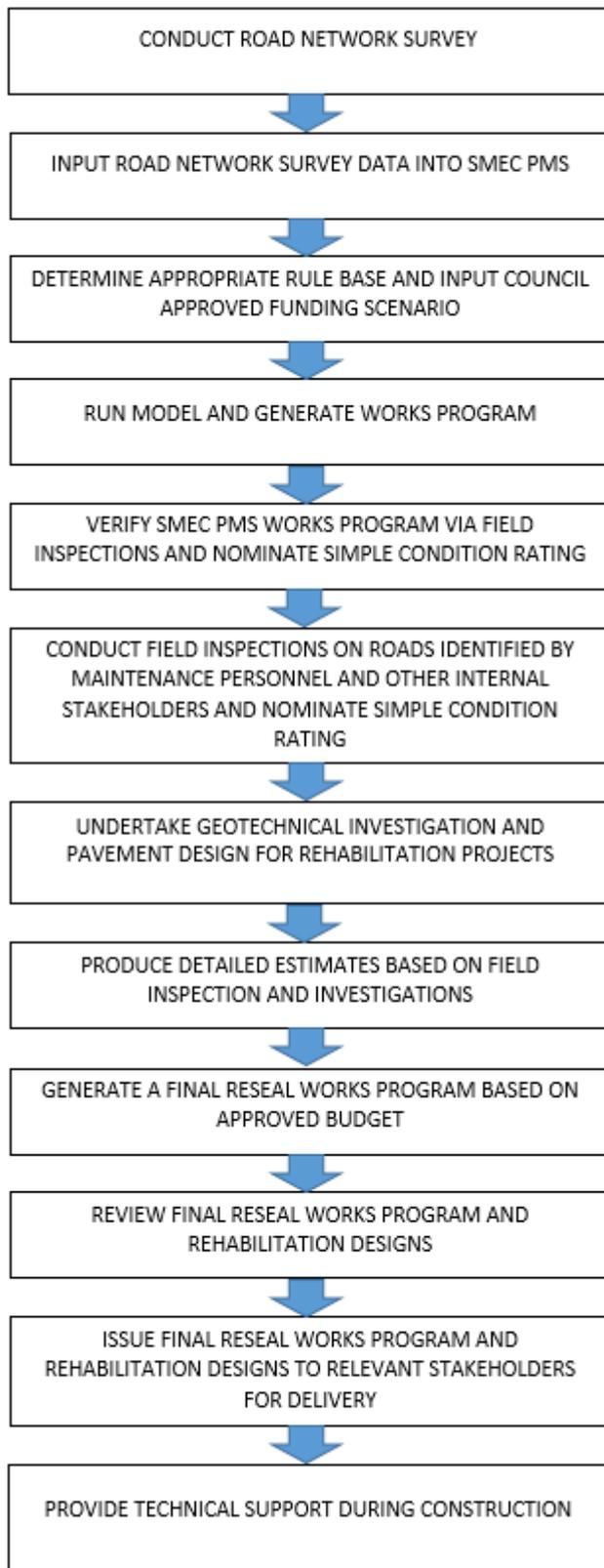


Figure 24: Flow chart to generate reseal works program

5.1.5 Deterioration Curves

Deterioration curves provide a plot of the condition of the asset against the age of the asset and are developed from the results of the asset condition survey. The curve illustrates the assets performance as it ages. Such curves vary according to asset category and especially the life cycle maintenance regime. Figure 9 illustrates the typical way asset condition changes over its expected

useful life, assuming a normal maintenance regime. Such curves are approximations. Deterioration is affected by many factors. However, the following generalisations are possible:

- As the asset condition deteriorates, the probability of complete asset failure increases disproportionately;
- As assets approach the end of their expected life, the rate of deterioration increases disproportionately;
- Postponing asset rehabilitation until asset condition is very poor increases the cost of rehabilitation disproportionately.

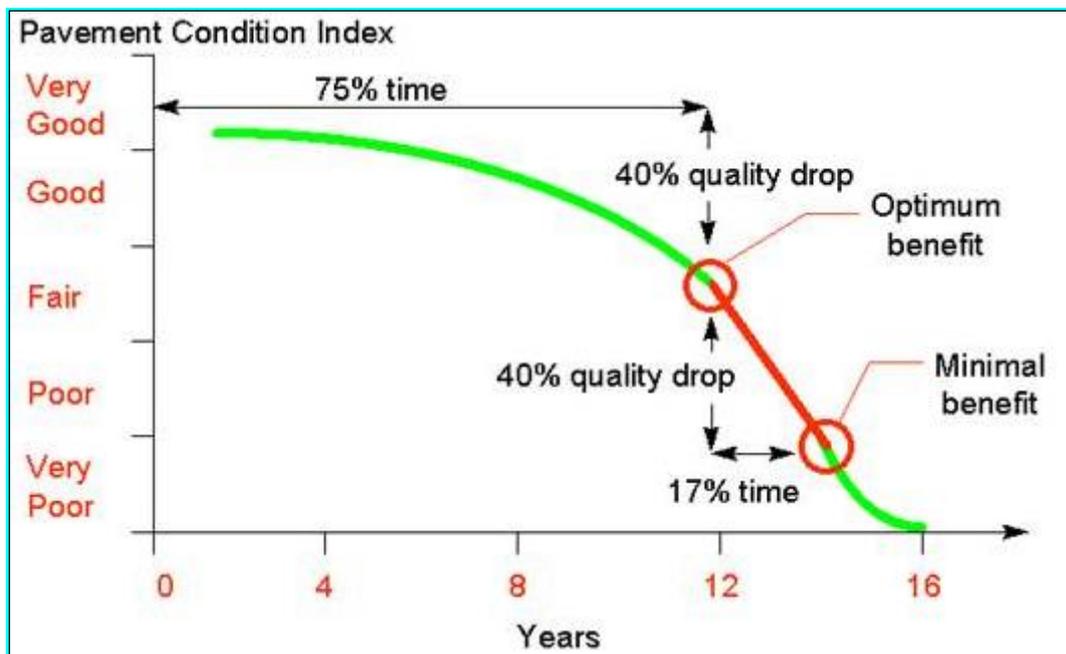


Figure 25: Typical form of asset deterioration curve

The respective AMPs detail the deterioration curves for assets included in the plan and the basis on which they were developed.

5.1.6 Asset valuations

The value of assets recorded in the asset register as at 30th of June 2016 covered by this asset management plan is shown below.

Current Replacement Cost	\$1,928,297
Percent Consumed	22.0%
Depreciated Replacement Cost	\$1,504,388

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

The figures used in the calculation above derived from the available data in the FAIMS and Road Asset Value systems. Assets were last revalued at 30th of June 2014. Assets are valued at “Greenfield” rates.

6. RISK MANAGEMENT

Risk Management can be characterized as the culture, processes and structures that are directed towards the effective management of potential opportunities to reduce or mitigate adverse impacts on an organisation. This risk management plan will enable Sunshine Coast Council to provide high level of service with regards to various risks which arise with the road network guided by the Australian Standard for Risk Management, AS/NZS 4360; 2004.

6.1 Overview

The objectives of the risk management plan are:

- Identify the risks to Sunshine Coast Council's road and bridge assets
- Analyse and understand the impacts of the risk
- Classifying the consequences of the risk to help determine the level of the risk through the relevant specialist advisors and stakeholders
- Prioritise maintenance taking into account consequence and likelihood

A risk assessment associated with service delivery of road and bridge infrastructure assets has identified the 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. This process is defined by the following risk assessment methodology, Figure 26:

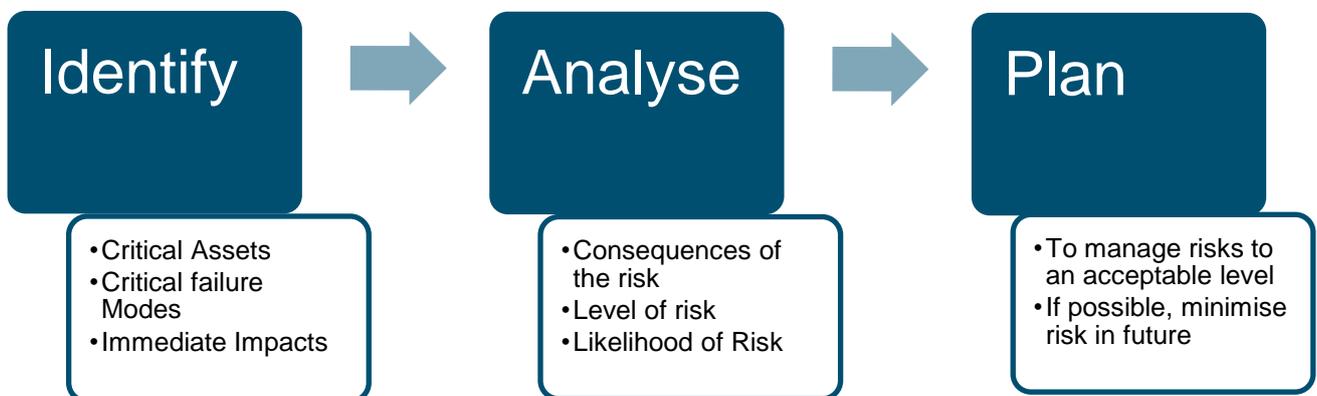


Figure 26: Risk assessment methodology

6.2 Identify the Risks

Identifying risks early is critical to ensure the roads are kept in optimal condition to maintain safety of the road users. These risks can be identified in various ways such as:

- Investigation of the assets
- Regular maintenance of roads
- Road user feedback and complaints
- Data collection and surveys

Possible risks can be traced back to the following factors:

- People e.g. human error in the design and construction of roads.
- Environment e.g. weather conditions affecting road quality and safe driving.
- Asset Management e.g. poor investments decisions.
- Financial e.g. risks that cannot be treated within the organisation's normal maintenance budgets or by reallocation of an annual capital works program.
- Legal e.g. risks that have the potential to generate unacceptable exposure to litigation.
- Operational Performance e.g. risks that have the potential to reduce services for a period of time unacceptable to the community or adversely affects the council's public image.

There is one risk specific to the Road and Bridge Infrastructure program:

Burgess Street (road-over-rail bridge), Glasshouse Mountains – following a Level 3 inspection, urgent repairs to structural elements of the bridge (headstocks) and waterproofing/repair of deck joints are programmed to be undertaken in April/May 2017. This is to ensure the bridge remains open for use by the community and heavy vehicles currently operating under permit(s) issued by the National Heavy Vehicle Regulator (NHVR) and avoid the need for load limit on the bridge to be imposed.

6.3 Analysing the Risks

Possible hazards must be categorised depending on their level of risk and the likelihood of the occurrence. After identifying the impacts and failure modes, the likelihood versus consequence can be used to analyse the risk. The Table below depicts a number of basic risk types and their level of risk.

Table 19: Risk types

Level of Risk	People	Environment	Financial	Safety	Operational Performance	Asset Management
Critical		Irreversible damage	Above \$1,000,000	Death	Unusable road	Condition of the asset poses a significant safety risk to users
Major	Key personnel removed from asset management	Harm requiring major restorative work	Up to \$1,000,000	Extensive injuries	Significant restoration needed – up to 1 month for service	Condition of the asset causes significant damage to
Moderate	Harm requiring moderate restorative work	Up to \$250,000	Medical treatment	Medium delays up to 2 days	Inability of the asset to perform its function (service risk)	Moderate
Minor	Harm requiring minor clean-up work	Up to \$50,000	First aid treatment	Slight delays up to half a day	Failure to preserve the ongoing value of the asset (investment risk)	Minor
Negligible	Perceived environmental risk	Up to \$5,000	No injuries	Negligible impact on service	Minor impact to the value of the asset at the end of its lifecycle	Negligible

Table 20: Risk likelihood

Likelihood	Description	Probability of occurrence
Almost Certain	Expected to occur in most circumstances	Within 3 months
Likely	Will probably occur in most circumstances	Within 6 months
Possible	Should occur at some time	Within 1 year
Unlikely	Could occur at some time	Within 5 years
Rare	May occur only in exceptional circumstances	More than 5 years

6.4 Infrastructure Risk Management Plan

Risk management is a core component of asset management activities. Key risks managed through asset management are:

- Financial risks – addressed through the adoption and enforcement of asset preservation and preventative maintenance policies (see Section 2 above)
- Operational risks – by appropriate planning and operational responses in order to limit harm to individual members of the public or to their property.

An assessment of risks associated with service delivery from infrastructure assets has identified critical risks that will result in loss or reduction in service from infrastructure assets or a 'financial shock' to the organisation. 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' (VH) - requiring immediate corrective action and 'high' (H) – requiring prioritised corrective action identified in the infrastructure risk management plan are summarised in Table 21.

Table 21: Critical risks and treatment plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan
Sealed roads	<p>Potholes and pavement failure causing traffic accidents and damage to vehicles.</p> <p>It is essential that periodic maintenance of sealed roads be undertaken to reduce future deterioration by timely surface interventions to limit the need for expensive rehabilitation, and to ensure minimum skid resistance and general safety levels are maintained. Such works can be relatively modest in unit cost terms, but highly effective when based on whole of life considerations and not by adopting a 'worst-first' approach.</p> <p>Council has a road maintenance strategy so that sealed roads do not deteriorate to a point where they become an issue to public safety, public liability claims, deaths and serious injury.</p>	H/VH	<ul style="list-style-type: none"> • Proactive repair for defects identified through condition inspections and via resurfacing works. • Investigate economical treatments to extend the life of existing surfaces and thereby avoid the need for more expensive rehabilitation. (Note: This will have an impact on the operational budget as roads are kept in better condition reducing the operational burden.) • Review the need for 'fit for purpose' pavement designs based on whole of life cycle costing (*WOLCC).
Road Pavement	Water penetration and heavy traffic loads causing deformation and	H	<ul style="list-style-type: none"> • Water penetration and heavy traffic loads causing deformation and pavement movement, creating safety risk.

	pavement movement, creating safety risk.		
Gravel Roads	Potholes pose risk to vehicles; Dust issues pose risk to resident's health and wellbeing.	High/moderate	<ul style="list-style-type: none"> Continuation of current maintenance grading program and Customer Request procedures; Unsealed Road Upgrade Program.
Bridges: Including Road Bridges, Foot Bridges and Boardwalks	It is essential to keep all bridges in a safe and serviceable condition to minimise any deterioration in the level of performance and to organise the necessary maintenance, rehabilitation and strengthening work so that it is carried out an overall minimum cost to the community.	H	<ul style="list-style-type: none"> Council has adopted Assetic Predictor for its bridge management system. Assetic Predictor will enable a rational and systematic approach to organising and facilitating the activities of bridge management. Council will be better positioned to value bridge assets more accurately and make due allowance in future budgets for depreciation of bridge assets.
Asset data	Gaps in knowledge and records caused by amalgamation and decentralised records have led to the loss of information critical to strategic planning for the rehabilitation of transport assets	H	<ul style="list-style-type: none"> Renewed focus on the asset data base and rebuilding of the knowledge and information that is missing.
Kerb and Channel	Lack of kerb and channelling or damaged/deteriorating assets can pose a risk to vehicles, causing damage and also cause local ponding. Failure to renew kerb and channel increases the risk of water penetrating from the channel into the road base saturating the edge leading to premature failure(s).	H	<ul style="list-style-type: none"> Continuation of current Customer Request procedures; Selective repairs of kerb and channel under the Road Rehabilitation/Reseal Program where warranted. A "desktop" condition survey was carried out for kerb and channel in 2016; the initial data has been modelled in Assetic Predictor. Further truthing in the field is required. In addition, as part of the next Road Condition survey in 2017/18, it is proposed to capture video data of the adjacent kerb and channel to further update the condition data set.
Retaining Walls	Many retaining walls are engineered structures and as such their condition needs to be monitored and understood to ensure failures do not occur	H	<ul style="list-style-type: none"> A visual condition survey was undertaken in 2016 and data uploaded into GIS.
Pathways	Safety incident (trip, fall) due to trip hazard. Failure to renew pathways in a timely manner is likely to increase the risk of trip hazards forming. The Sunshine Coast has a higher than average aged population; operational responses are required to limit harm to	H	<ul style="list-style-type: none"> Pathway network condition and defects audit. A detailed survey of the local pathway network was undertaken in 2015. The results of this survey, when combined with the survey of the strategic pathways in 2012 provides a comprehensive data set of pathway conditions. Initial deterioration modelling has been carried out to identify renewal funding requirements. To better refine and reconfirm modelling, a full survey of the pathway network survey is planned

	individual members of the public or to their property.		<p>for 2018/19. The results of the survey (when completed) will allow a renewal/upgrade plan for pathways to be developed based on priorities determined from the condition surveys and available capital works funding.</p> <ul style="list-style-type: none"> • Planed and reactive inspections • Ensuring pathways are complaint with standards
<p>Bridges: Including Road Bridges, Foot Bridges and Boardwalks</p>	<p>Lack of maintenance or structural deterioration could prompt significant repairs to sections of bridge assets.</p> <p>It is essential to keep all bridges in a safe and serviceable condition to minimise any deterioration in the level of performance and to organise the necessary maintenance, rehabilitation and strengthening work so that it is carried out an overall minimum cost to the community.</p>	Moderate/H	<ul style="list-style-type: none"> • Scheduled Bridge Inspections • Currently Council uses Assetic Predictor for its strategic bridge management system. • Assetic Predictor enables a rational and systematic approach to organising and facilitating the activities of bridge management. • Council will be better positioned to value bridge assets more accurately and make due allowance in future budgets for depreciation of bridge assets.

Note * WOLCC involves an evaluation of all the component costs incurred over the whole life of a project. By adopting a long-term view of the road system, comprehensive WOLCC promotes consideration of total costs including construction, maintenance and operational expenditure and associated maintenance and rehabilitation costs, agency capital costs and routine life cycle maintenance costs.

6.5 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 (and in some instances, safe) again.

6.5.1 Maintenance Plan

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating and in safe condition, e.g. road patching but excluding rehabilitation or renewal.

Maintenance may be classified as reactive, programmed or cyclic maintenance work activities.

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

Programmed 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 road resurfacing, repainting, termite treatment, etc. This work falls below the capital/maintenance threshold but may require a specific budget allocation.

The maintenance budget for the past two financial years is shown in Table 22.

Table 22: Maintenance budget trends

Year	Maintenance Budget		
	Programmed and Cyclic	Reactive	Total
2014-15	unknown	unknown	\$19,323,000
2015-16	unknown	unknown	\$20,743,000

The maintenance budget is considered to be adequate to meet current service levels although growth is placing increased pressure on operational delivery areas. Where maintenance expenditure levels are such that they will result in a lesser level of service, the service consequences and service risks have been identified and service consequences highlighted in this AM Plan and service risks considered in the Infrastructure Risk Management Plan.

Assessment and prioritisation of reactive maintenance is undertaken by Council staff using:

- Data collected and stored in Maximo;
- Agreed service levels; and
- Experience and judgement of field supervisors.

6.5.2 Asset hierarchy

An asset hierarchy provides a framework for structuring data in an information system to assist in collection of data, reporting information and making decisions. The hierarchy includes the asset class and component used for asset planning and financial reporting and service level hierarchy used for service planning and delivery.

6.5.3 Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 27. As a result of the strategy to defer capital renewal expenditure the level of funding required for operations and maintenance will increase. For example if reseal/rehabilitation is left at current expenditure levels the sealed road maintenance budget would need to increase to achieve the same or higher level of service. The required increase in maintenance expenditure is dependent on a review of the current level of service (which is in progress) and using Councils Pavement Management System to develop an optimised works program for maintaining the road network in an acceptable condition as outlined in Section 5.

Sunshine Coast RC - Projected Operations & Maintenance Expenditure (TRANSPORTATION_S1_V4)

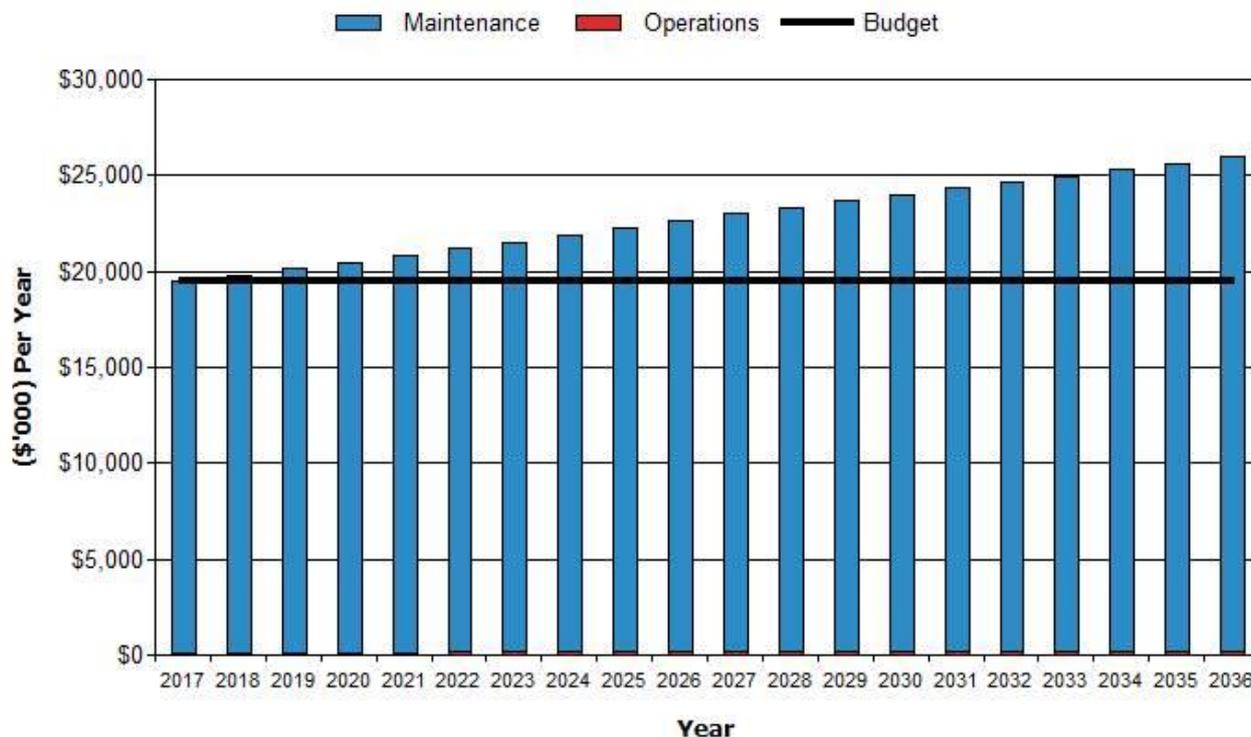


Figure 27: Projected operations and maintenance expenditure

Note that all costs are shown in current 2016-17 dollar values (i.e. real values).

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

Maintenance is funded from the operating budget where available.

6.6 Renewal/Replacement Plan

Renewal and replacement 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 or lesser required service potential. Work over and above restoring an asset to original service potential is upgrade/expansion or new works expenditure (e.g.; road widening).

Renewals are currently driven by the use of condition survey data, visual inspections and corporate asset management system such as SMEC Pavement Management System (for sealed roads) and Assetic Predictor for Bridges.

Other assets such as pathways, kerb and channel and guardrail are also being assessed to determine current conditions and to develop renewal programs within the available budget. The assessment methods will continually be improved as asset data becomes available. The typical type of renewal work undertaken for sealed roads is:

- Reseals – renewing the top surface seal layer of sealed roads;
- Major patching – pavement repair/ replacements prior to re-sealing sealed roads;
- Kerb and Channel replacements – replacing kerbs that are in poor or unserviceable condition.

6.6.1 Renewal plan

Council operates a Pavement Management System (PMS) that models road pavement deterioration for sealed roads and the required budgets to maintain (or improve) network conditions. The system can assess funding and network condition trends then generates an optimised works program based on the most economical intervention levels.

Road renewals are generated by considering the results of the PMS optimised works program, condition assessments, regular visual inspections, customer requests and on site investigations.

Road segments requiring renewal are confirmed by physical inspection as to the suitability of treatment type and location. Other factors are also considered such as community/social benefit, economic benefits, risk assessment and environmental impacts.

Data based on the useful lives indicates that Council is approaching a period of substantial risk as pavements constructed in the 1970's (or earlier) come up for renewal. Some of these pavements are failing prematurely due to thin pavements subjected to heavy traffic loads, especially on the higher order roads.

Renewals 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.

Examples of low cost renewal include the reuse of existing pavement material to eliminate the cost of the sub base (for example by in-situ stabilisation using foam bitumen and cementitious binders) and bitumen rejuvenation treatments on sealed local streets.

The opportunity to perform upgrades to assets is generally considered at the time of renewal. This includes shoulder widening, bikeways, replacement of substandard kerb and channel etc. For major road rehabilitation projects, CAM Branch develops a business case for each project. The business case contains such items as:

- Project objectives and scope
- Background
- Economic analysis of pavement rehabilitation options with the aim of achieving the lowest whole-of-life cost, whilst managing risks appropriately
- Construction estimates
 - Safety in Design; and
 - Recommended Treatment

A strategic analysis of the sealed road network was undertaken in May 2016 based on seven funding scenarios – see Section 4 above for details.

A bridge renewal plan has been adopted by council which details the replacement of all timber bridge stock over a 10 year period. All other assets are renewed on the basis of an infrastructure renewal priority rating system as funding becomes available.

In the context of renewals, the typical useful life of assets is summarised in Table 23, below.

Table 23: Useful lives of assets

Asset (Sub)Category	Useful life
Pavements	75 Years
Surface – urban roads	20 Years
Surface – rural roads	10 – 15 Years
Concrete Bridges	80 Years
Timber Bridges	50 Years
Other Assets (Kerb & Channel, guardrail, pathways etc.)	Varies

Sunshine Coast RC - Projected Capital Renewal Expenditure (TRANSPORTATION_S1_V4)

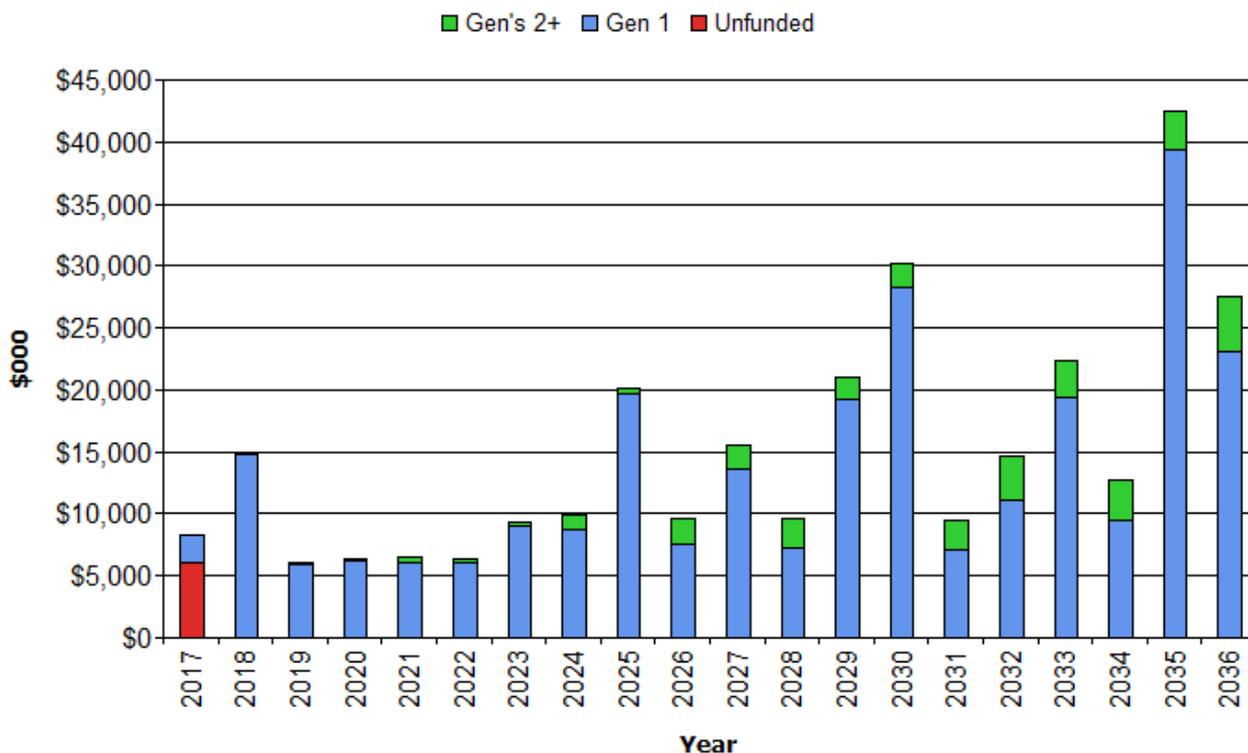


Figure 28: Project capital renewal expenditure

6.7 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 organisation from land development.

New works are outlined in council’s 10 year Capital Works Program, and are linked to the priority infrastructure plans and other council strategies.

6.7.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as councillor/director 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 programmes.

6.7.2 Capital Investment Strategies

The organisation will plan capital upgrade and new projects to meet level of service objectives by:

- Planning and scheduling capital upgrade and new projects to deliver the defined level of service in the most efficient manner,
- Undertake project scoping for all capital upgrade/new projects to identify:
 - the service delivery 'deficiency', present risk and required timeline for delivery of the upgrade/new asset,
 - the project objectives to rectify the deficiency including value management for major projects,
 - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
 - management of risks associated with alternative options,
 - and evaluate the options against evaluation criteria adopted by Council, and
 - select the best option to be included in capital upgrade/new programs based on economic analysis of alternative options with the aim of achieving the lowest whole-of-life cost, whilst managing risks appropriately,
- Review current and required skills base and implement training and development to meet required construction and project management needs,
- Review management of capital project management activities to ensure Council is obtaining best value for resources used.

Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.8

Sunshine Coast RC - Projected Capital Upgrade/New Expenditure (TRANSPORTATION_S1_V4)

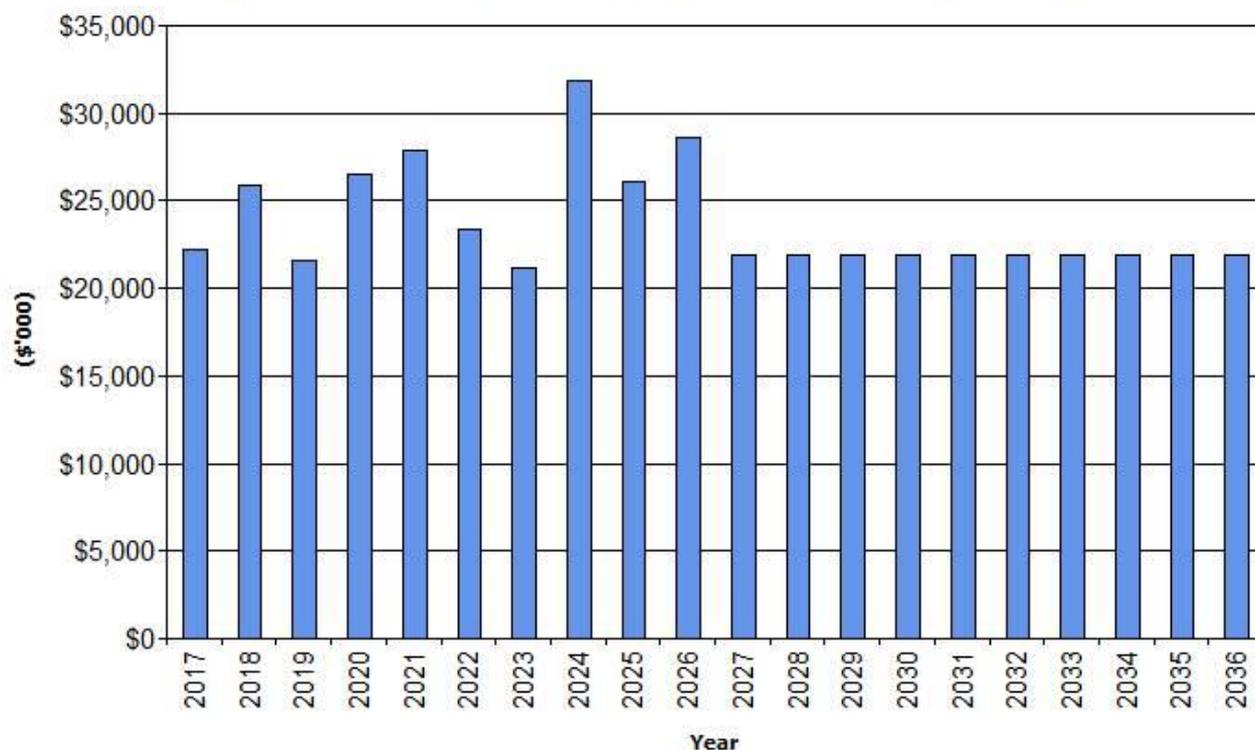


Figure 29: Projected capital upgrade/new expenditure

6.8 Timber Bridge Replacement Plan

Timber bridges identified for replacement (subject to budget deliberations) are shown in Table 24 below:

Table 24: Assets identified for replacement in 2017 to 2020

	Asset	Reason for Disposal	Timing
Vehicle Bridges	Petrie Park Road	Timber Bridge to be replaced with new bridge	2016/17 & 2017/18
	Youngs Bridge		2017/18
	Kiamba Road Bridge		2018/19
	King Road Bridge		2018/19
	Image Flat Road Bridge		2019/20
Foot/Cycle Bridges	Ninderry Road footbridge		2018/19
	School Road Coolum Footbridge		2019/20

6.9 Standards and Specifications

All work is carried out in accordance with the following Standards and Specifications (in no particular order) as appropriate.

- AUSTRROADS - Guide to Pavement Technology
- AUSTRROADS - Guide to Asset Management
- AUSTRROADS - Guide to Bridge Technology
- SCC - Current Works Instructions
- SCC - Service Delivery Levels for Civil Maintenance Works
- Transport and Main Roads (TMR) Technical Specifications, as applicable
- AusSpec specifications
- Transport and Main Roads (TMR) Pavement Design Supplement
 - Transport and Main Roads (TMR) Pavement Rehabilitation Manual
 - IPWEA - Standard Engineering Drawings
 - Manual of Uniform Traffic Control Devices
 - AS2150-2004 Hot Mix Asphalt - A guide to good practice

7. FINANCIAL SUMMARY

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

7.1 Financial Statements and Projections

7.1.1 Sustainability of service delivery

There are four key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the asset renewal funding ratio, long term life cycle costs/expenditures and medium term projected/budgeted expenditures over 5 and 10 years of the planning period.

Asset Renewal Funding Ratio

The Asset Renewal Funding Ratio is the most important indicator and reveals that over the next 10 years, Council is forecasting that it will have 302% of the funds required for the optimal renewal and replacement of its assets. However, this ratio is in error as it doesn't take into account acquisition dates and or condition states.

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 asset life cycle. Life cycle costs include operations and maintenance expenditure and asset consumption (depreciation expense). The life cycle cost for the services covered in this asset management plan is \$57,796M per year (average operations and maintenance expenditure plus depreciation expense projected over 10 years).

Life cycle costs can be compared to life cycle expenditure to give an initial indicator of affordability of projected service levels when considered with age profiles. Life cycle expenditure includes operations, maintenance and capital renewal expenditure. Life cycle expenditure will vary depending on the timing of asset renewals. The life cycle expenditure over the 10 year planning period is \$48,669M per year (average operations and maintenance plus capital renewal budgeted expenditure in LTFP over 10 years).

A shortfall between life cycle cost and life cycle expenditure is the life cycle gap. The life cycle gap for services covered by this asset management plan is +\$17,906M per year (-ve = gap, +ve = surplus).

Life cycle Sustainability Index is currently 84.2%

The life cycle costs and life cycle expenditure comparison highlights any difference between present outlays and the average cost of providing the service over the long term. If the life cycle expenditure is less than that life cycle cost, it is most likely that outlays will need to be increased or cuts in services made in the future. However, a sustainability ratio over 80% is deemed acceptable.

Knowing the extent and timing of any required increase in outlays and the service consequences if funding is not available will assist organisations in providing services to their communities in a financially sustainable manner. This is the purpose of the asset management plans and long term financial plan.

Medium term – 10 year financial planning period

This asset management plan identifies the projected operations, maintenance and capital renewal expenditures required to provide an agreed level of service to the community over a 10 year period. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

These projected expenditures may be compared to budgeted expenditures in the 10 year period to identify any funding shortfall. In a core asset management plan, a gap is generally due to increasing asset renewals for ageing assets.

The **projected** operations, maintenance and capital renewal expenditure **required** over the 10 year planning period is \$48,669M on average per year.

.Asset management financial indicators

Providing services from infrastructure in a sustainable manner requires the matching and managing of service levels, risks, projected expenditures and financing to achieve a financial indicator of approximately 1.0 for the first years of the asset management plan and ideally over the 10 year life of the Long Term Financial Plan.

Table 6.1.1 shows the shortfall between projected renewal and replacement expenditures and expenditure accommodated in long term financial plan. Budget expenditures accommodated in the long term financial plan or extrapolated from current budgets are shown in Appendix D.

Providing services in a sustainable manner will require matching of projected asset renewal and replacement expenditure to meet agreed service levels with the corresponding capital works program accommodated in the long term financial plan.

A gap between projected asset renewal/replacement expenditure and amounts accommodated in the LTFP indicates that further work is required on reviewing service levels in the AM Plan (including possibly revising the LTFP) before finalising the asset management plan to manage required service levels and funding to eliminate any funding gap.

We 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 review future services, service levels and costs with the community.

7.1.2 Projected expenditures for long term financial plan

The projected expenditures for the 5, 10 year and long term financial plan are shown below with the last being the key indicator.

Sunshine Coast RC - AM Financial Indicators (TRANSPORTATION_S1_V4)

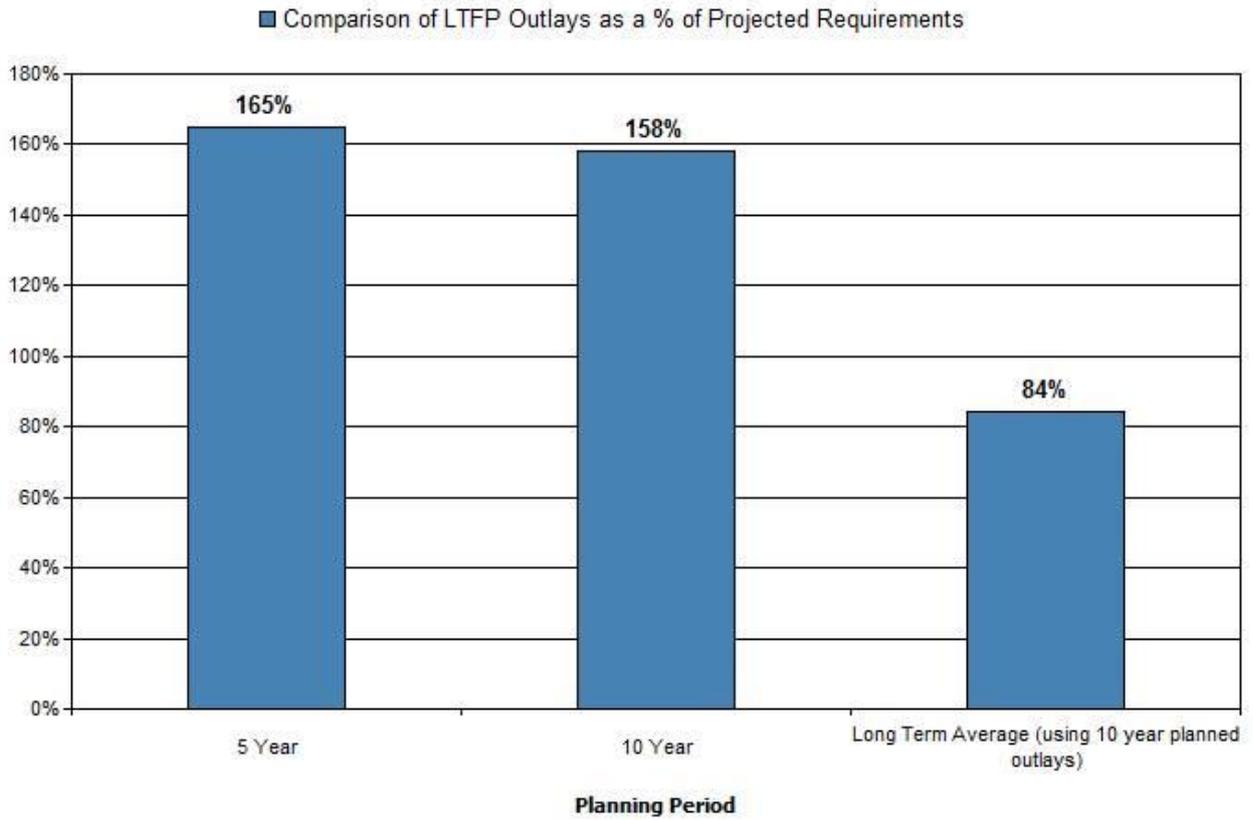


Figure 30: AM financial indicators

Sunshine Coast RC - Projected Operating and Capital Expenditure (TRANSPORTATION_S1_V4)

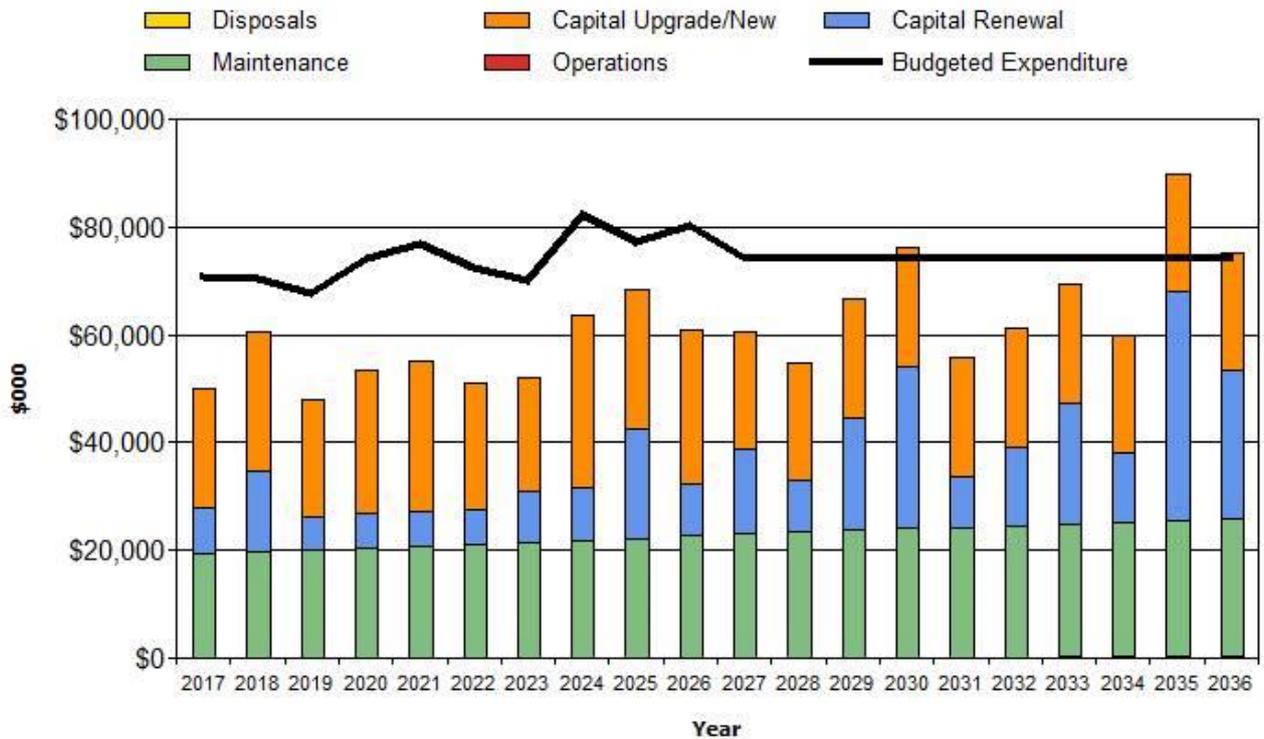


Figure 31: Projected operating and capital expenditure

Sunshine Coast RC - Projected & LTFP Budgeted Renewal Expenditure (TRANSPORTATION_S1_V4)

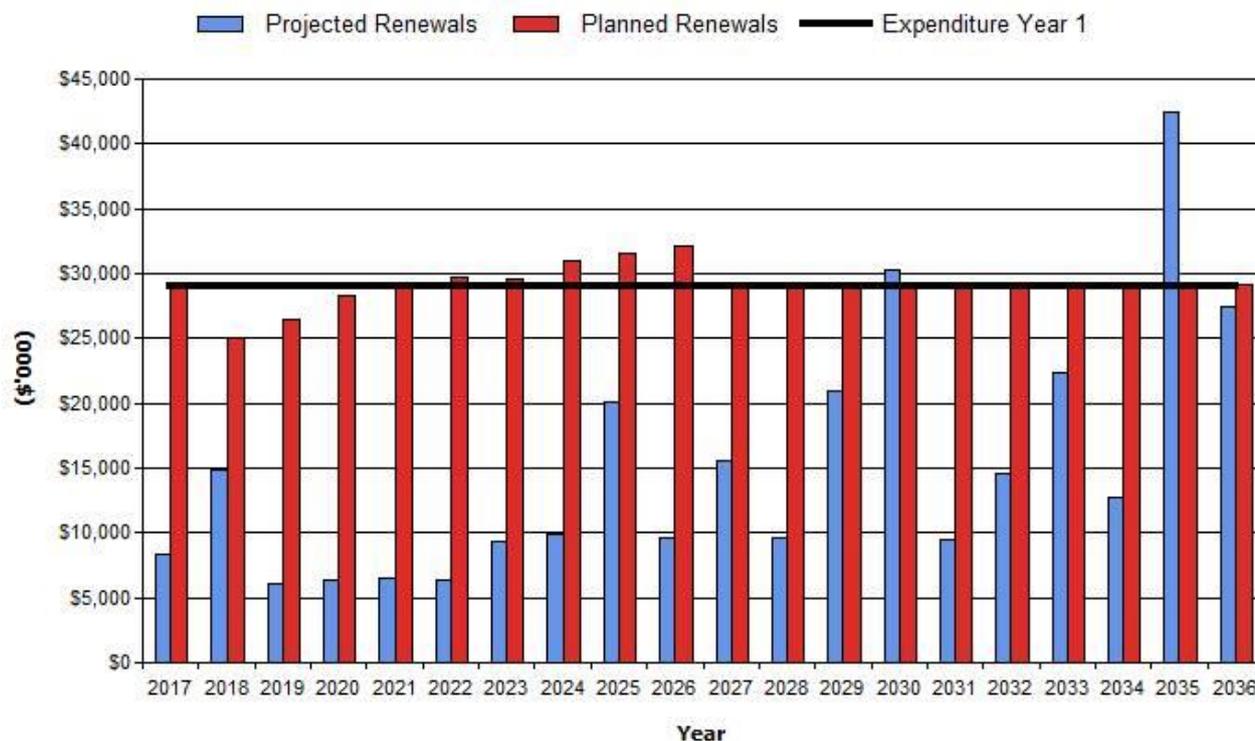


Figure 32: Projected and LTFP budgeted renewal expenditure

7.2 Funding Strategy

Projected expenditure identified in Section 6.1 is to be funded from council’s operating and capital budgets. Achieving the financial strategy will require an accurate register of all assets to be able to project renewal forecasts.

7.3 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. Figure 33 shows the projected replacement cost asset values over the planning period in current 2012 dollar values. The data contained below is an extrapolation of the predicted growth in asset value over the next 20 years.

Sunshine Coast RC - Projected Asset Values (TRANSPORTATION_S1_V4)

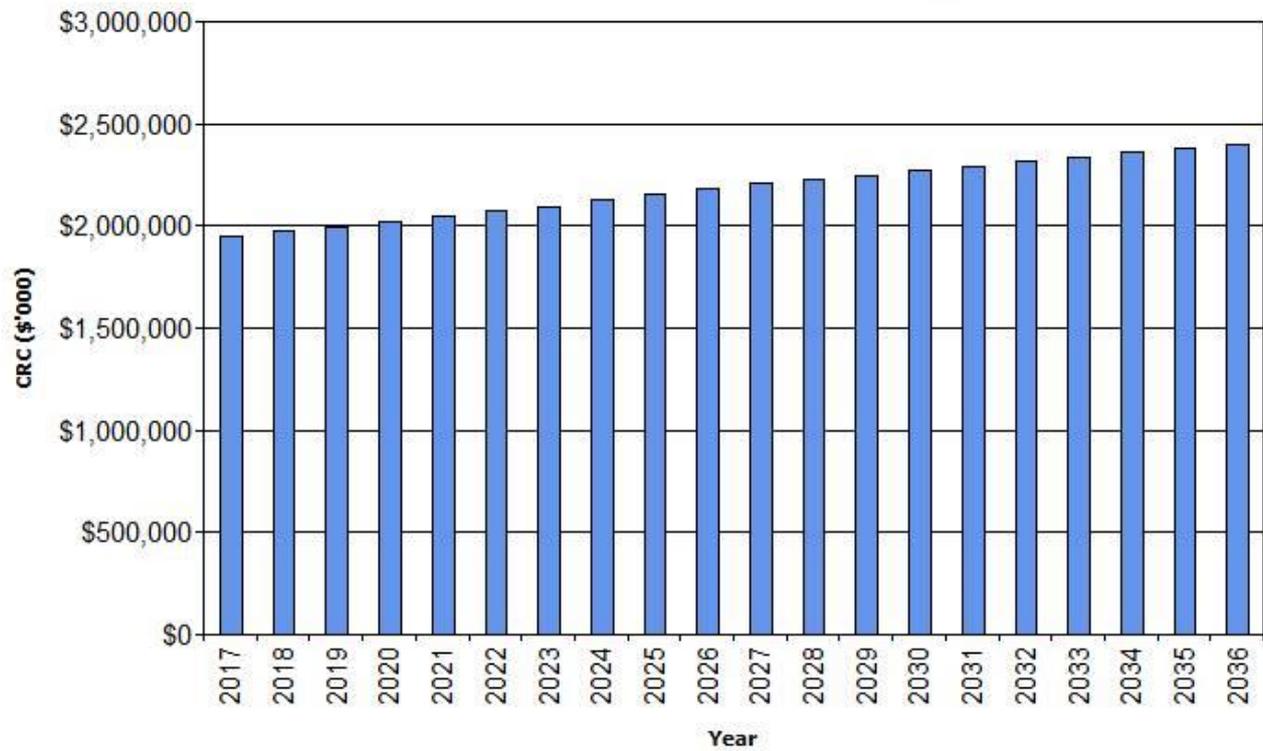


Figure 33: Projected asset values

Depreciation expense values are forecast in line with asset values as shown in Figure 34.

Sunshine Coast RC - Projected Depreciation Expense (TRANSPORTATION_S1_V4)

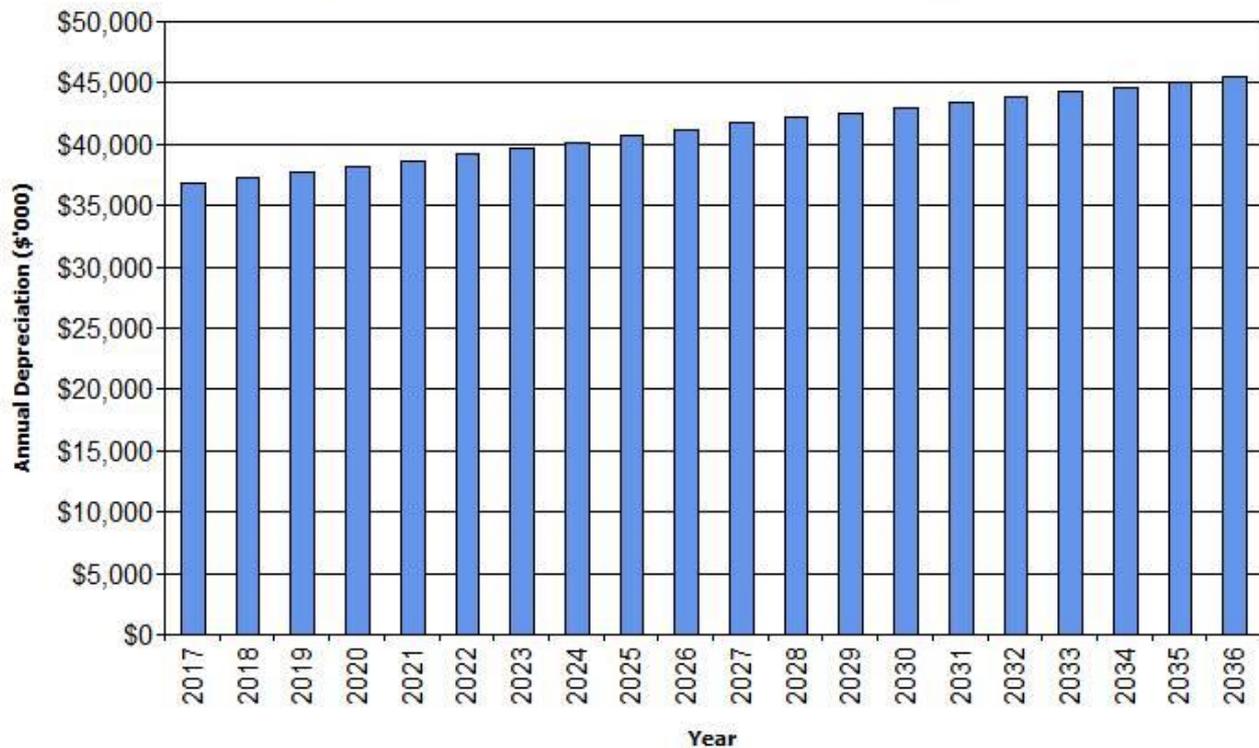


Figure 34: Projected depreciation expense

The depreciated replacement cost 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 Figure 35. The depreciated replacement cost of contributed and new assets is shown in the darker colour and in the lighter colour for existing assets.

Sunshine Coast RC - Projected Depreciated Replacement Cost (TRANSPORTATION_S1_V4)

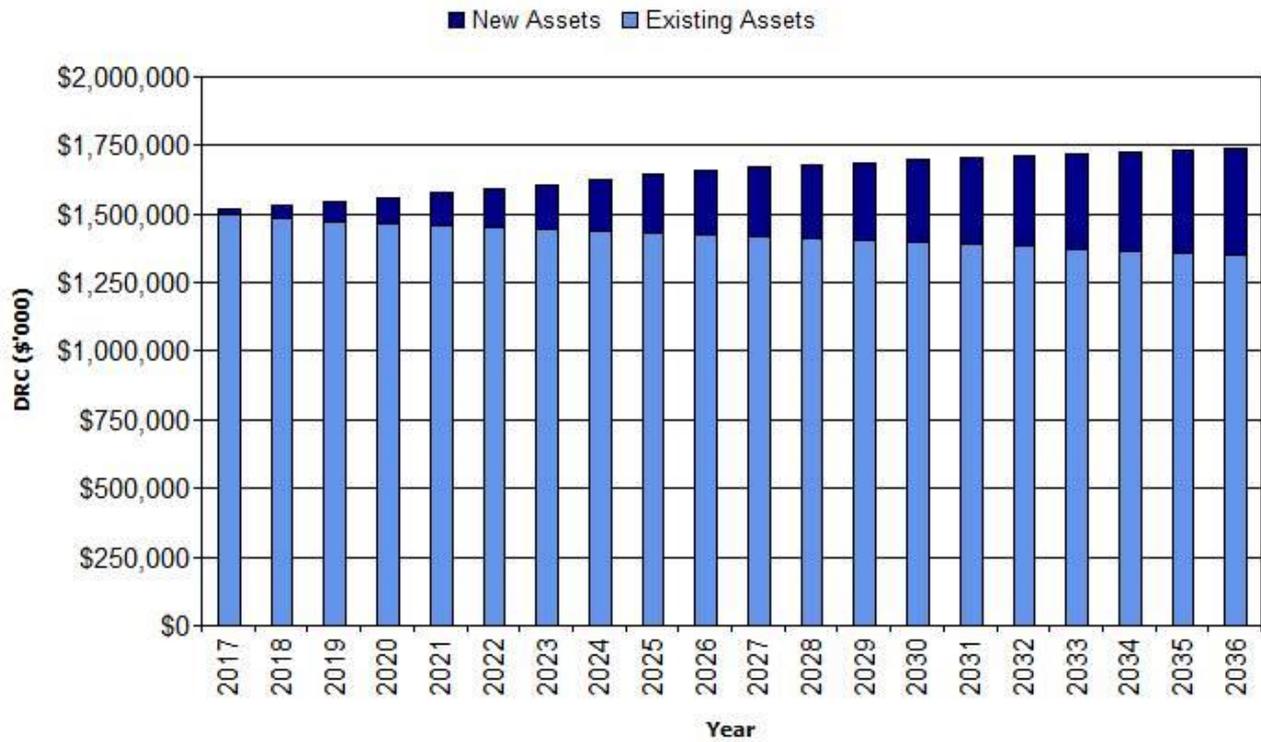


Figure 35: Projected depreciated replacement cost

Sunshine Coast RC - Projected and Budget Expenditure for (TRANSPORTATION_S1_V4)

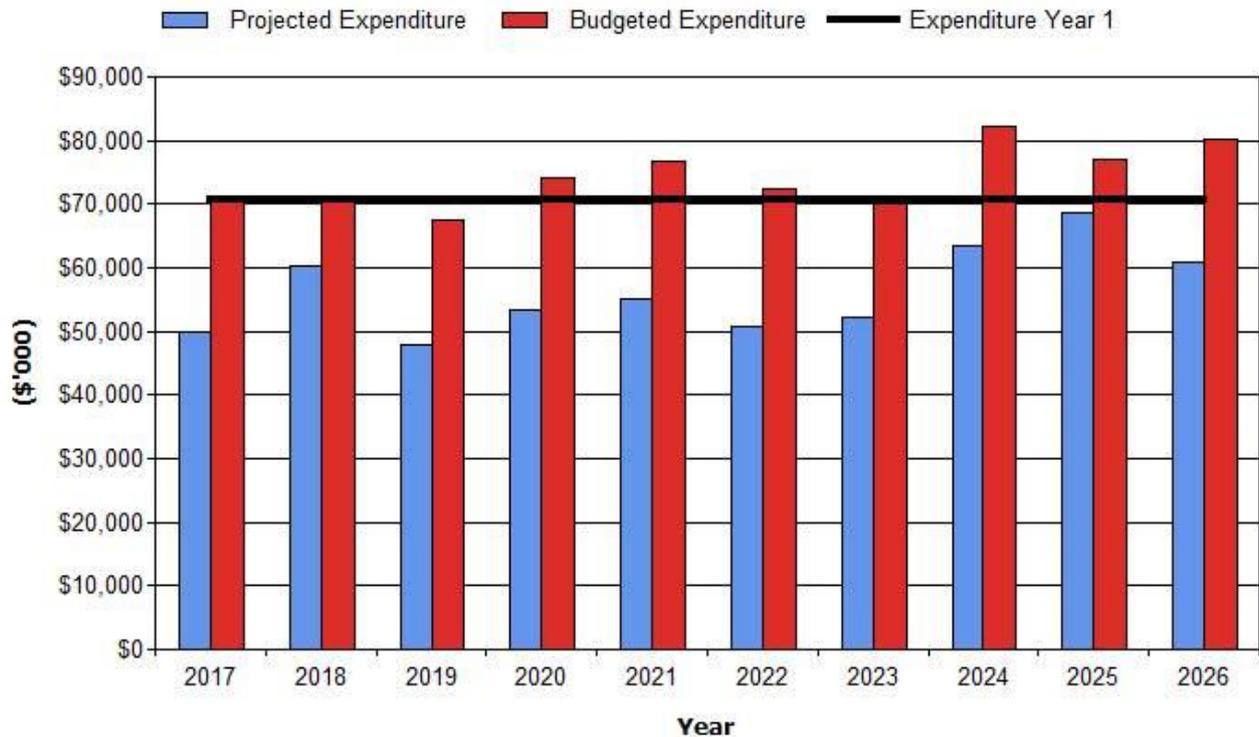


Figure 36: Projected and budget expenditure

7.4 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 shown in Table 25.

Table 25: Key assumptions made in AM plan and risks of change

Key Assumptions
Data integrity is reasonable
Asset registers are accurate
Asset valuation rates reflect actual rates
Asset useful lives reflect current practice
Growth data is accurate
Council boundaries remain unchanged
Acquisition dates are generally reasonable

7.5 Accuracy of Financial Forecasts

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

Table 26: Accuracy of financial forecasts

Accuracy
Development of a centralised asset register with accurate condition data
Review of valuation rates and their application
Continued development of the “as constructed” data base for donated assets
Accurate modelling of deterioration models
Accurate design and life expectancy data
Componentisation of assets
Determining when assets were actually constructed.

8. PLAN IMPROVEMENT AND MONITORING

8.1 Status of Asset Management Practices

8.1.1 Accounting and financial systems

Sunshine Coast Council operates the Technology One system for management of financial information. This system is managed by the Finance Business Unit. Technology One is interfaced with the asset management system (see below) to enable the transfer of financial asset information between the two systems.

8.1.2 Asset management system

Council is currently in the final stages of selecting a new Asset Management Information System (AMIS). This new system will replace Maximo which has been used for maintenance management through use of Work Orders. In addition it will also incorporate strategic modelling components to better explore risk and asset condition management options across all asset categories. This system will take Sunshine Coast Council to the next level in management of its assets as a whole. However, whilst the modelling tools supplied are powerful none are expected to replace the SMEC Pavement Management System as it provides the highest level of confidence in road behaviour due to proven complex modelling algorithms that have been calibrated over 20 years and benchmarking available across over 60 councils in Australia. None the less the AMIS is expected to be in place within 12 months.

8.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 27.

Table 27: Improvement plan

Task No	Task	Responsibility	Timeline
1	Review condition criteria and update the asset management plan to show how renewal and reseal programs are finalised and the relationship to condition and any other relevant prioritisation criteria.	CAM	3 - 6/2017
2	Restructure CAM to reattach asset network inspections to AS and finalise CAM - Service Level Review (streamline inspection cycles taking into account risk exposure and asset maintenance and costs associated with added precinct areas). This will provide transparency of service provision as well as link maintenance priorities to both community safety and asset management	CAM/AS	June 2017
3	Undertake condition assessments of minor foot/cycle bridges and boardwalks.	CAM	June 2017
4	Implement road condition data capture, upload into the SMEC PMS and undertake undertake updated strategic modelling to inform future capital works program	CAM / AS	December 2017
5	Submit proposed amendments to Planning Scheme for Development Works to achieve best value WOL outcomes for transportation assets	CAM / DS	December 2017
6	Update the PMS source data i.e. increase the accuracy of traffic data, and target the key road for structural strength analysis (FWD).	CAM	December 2017
5	Once new AMIS implemented, upload data and refine life cycle modelling for other transportation asset types such as pathways and kerb and channel, whilst commencing preliminary modelling of select types of bridges/boardwalks and retaining walls	AMIS Asset Group / CAM	July 2018
7	Undertake full condition survey of pathway network	CAM/Contract or	June 2019
8	Select and finalise research projects in accordance with the MOU between the USC and SCC	CAM/USC	June 2017
9	Progress implementation of GIS layers for all transportation assets; Secure GIS specialist to assist with this work.	CAM Branch	June 2017
10	Continue to trial and evaluate new and innovative products to achieve effective asset management solutions	CAM	June 2018
11	Collaborate with Finance branch to align theoretical lives of assets with actual service lives	CAM & Finance Branch	June 2017

8.3 Monitoring and Review Procedures

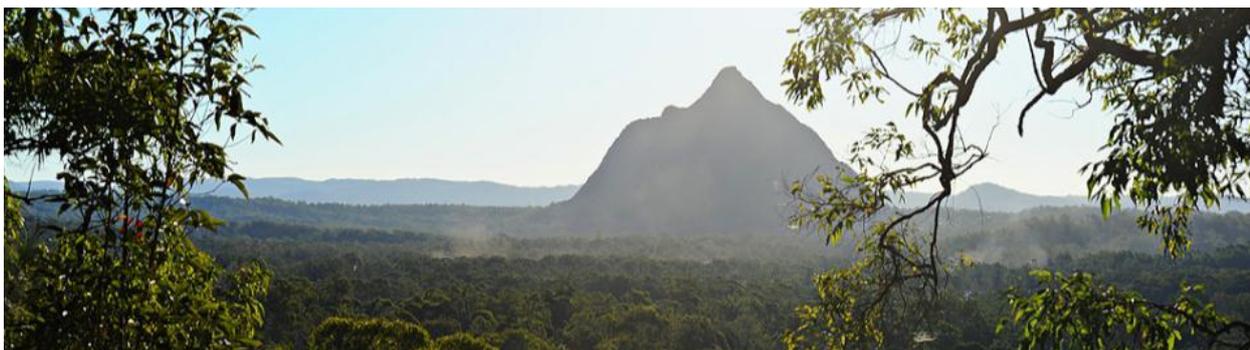
This asset management plan will be reviewed during annual budget planning processes and amended to recognise any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The AM Plan will be updated bi-annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the organisation's long term financial plan.

8.4 Performance Measures

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

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into Council's long term financial 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,
- The Asset Renewal Funding Ratio - achieving the target of 90% (currently at 84%)



Abbreviations

AAAC

Average annual asset consumption

TAMP

Transportation Asset management plan

ARI

Average recurrence interval

BOD

Biochemical (biological) oxygen demand

CAPEX

Capital Expenditure

CRC

Current replacement cost

CRC

Customer Request Management

DA

Depreciable amount

DoH

Department of Health

DTMR

Department of Transport and Main Roads

EF

Earthworks/formation

IIMM

International Infrastructure Management Manual

IRMP

Infrastructure risk management plan

LCC

Life cycle cost

LCE

Life cycle expenditure

LoS

Level of Service

LTFP

Long Term Financial Plan

MMS

Maintenance Management System

OPEX

Operational Expenditure

PCI

Pavement condition index

RV

Residual value

SMEC PMS

SMEC Pavement Management System

WIP

Work in Progress

Glossary

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, and 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 months.

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, e.g. 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, e.g. 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, e.g. 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 arm's 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, e.g. 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.

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 (e.g. 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 (e.g. 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, e.g. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operating expenditure

Recurrent expenditure, which is continuously required excluding maintenance and depreciation, e.g. 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, e.g. 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 are still available for use in providing services (DRC/DA).

Strategic Management Plan (SMA)**

Documents council objectives for a specified period (3-5 yrs.), the principle activities to achieve the objectives, the means by which that will be carried out, estimated income and expenditure, measures to assess performance and how rating policy relates to council's objectives and activities.

Sub-component

Smaller individual parts that make up a component part.

Sustainability

Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Useful life

Either:

(a) The period over which an asset is expected to be available for use by an entity, or

(b) The number of production or similar units expected to be obtained from the asset by the entity.

It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the council. It is the same as the economic life.

Value in use

The present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate new cash flows, where if deprived of the asset its future economic benefits would be replaced.

Source: DVC 2006, Glossary

Note: Items shown * modified to use DA instead of CRC

Additional glossary items shown **

References

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Maintenance work standards and specifications

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Manual of Uniform Traffic Control Devices

Main Roads Pavement Rehabilitation Manual



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