Dungog Shire Council

Roads and Transport

Asset Management Plan

Version 7

November 2018

Institute of Public Works Engineering Australia
AM4SRRC

Document Control	Asset Management for Small, Rural or Remote Communities

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Asset Management for Small, Rural or Remote Communities Practice Note

The Institute of Public Works Engineering Australia.

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1. EXECUTIVE SUMMARY BASED ON 10 YEAR LONG TERM PROGRAM

Context

The Shire of Dungog is part of the Hunter Region and the Lower Hunter Sub-Region and is bound by Great Lakes Shire to the East, Singleton Shire to the West, Upper Hunter Shire to the North-west, Gloucester Shire to the North and by Port Stephens Shire and the City of Maitland to the South.

Dungog Shire covers an area of 2251 sq. kilometres. The Council is situated in the Barrington tops region and has a population of 8,500. The Shire consists predominantly of very rugged to hilly country which becomes less rugged from north to south. The major population centres within the Shire include:

•Dungog •Clarence Town •Paterson •Gresford •Martins Creek •Vacy

The Australian Bureau of Statistic's annual Estimated Residential Population for Local Government Areas reported that Dungog Shire recorded a growth rate of 0.4% and that over the previous five years had recorded an average annual growth rate of 0.7%.

Roads and Transport

The Transport network comprises:

• Road Pavements • Bridges/Drainage • Kerb and Gutter • Roadside Assets • Footpaths

These infrastructure assets have been valued as follows:-

- Current Replacement Cost $394,369,854
- Depreciable Amount **$306,197,102**
- Depreciated Replacement Cost $208,489,135
- Annual Depreciation Expense $ 5,753,230

What does it Cost?

The projected expenditure to provide the services covered by this Asset Management Plan includes operations, maintenance, renewal and upgrade of existing assets over the 10 year planning period is $7.73 million per year (excluding depreciation, averaged over the next 10 years).

Whilst at present (2018/2019), Council is currently renewing assets at 137% of the rate they are being consumed, this figure is exaggerated due to current Special Grants that Council has received. This figure reduces to 34% over the next 4 year period .

In the Transport Assets area, Council's main focus is to ensure that funding is sufficient for ongoing renewal of the asset to ensure full life expectancies of the asset are achieved and replacement of the asset at the end of the useful life.

Sealed Roads

At present, forecast budgets allow for the following average annual works to be undertaken:-

Regional Roads	% Network Being Renewed	Rehabilitation / Renewal Expenditure	% Network Required to be Renewed	Rehabilitation / Renewal Required	Shortfall	Budget Increase Required
Capital Renewal	2.9%	$1,728,344	3.3%	$1,975,126	$246,782	14%
Reseals	5.1%	$254,092	6.7%	$333,431	$79,339	31%
Bridges	0%	$0	1.3%	$151,980	$151,980	--

Rural Sealed Roads	% Network Being Renewed	Rehabilitation / Renewal Expenditure	% Network Required to be Renewed	Rehabilitation / Renewal Required	Shortfall	Budget Increase Required
Capital Renewal	0.4%	$436,758	3.3%	$3,330,289	$2,893,531	663%
Reseals	3.9%	$378,873	6.7%	$567,882	$189,009	50%

Rural Unsealed Roads	% Network Being Renewed	Rehabilitation / Renewal Expenditure	% Network Required to be Renewed	Rehabilitation / Renewal Required	Shortfall	Budget Increase Required
Resheeting	1%	$162,909	5%	$490,234	$327,325	201%

Urban Sealed Roads	% Network Being Renewed	Rehabilitation / Renewal Expenditure	% Network Required to be Renewed	Rehabilitation / Renewal Required	Shortfall	Budget Increase Required
Capital Renewal	1.5%	$334,415	3.3%	$756,775	$422.360	126%
Reseals	4.5%	$85,435	6.7%	$127,755	$42,320	50%

Rural Road Bridges	% Network Being Renewed	Rehabilitation / Renewal Expenditure	% Network Required to be Renewed	Rehabilitation / Renewal Required	Shortfall	Budget Increase Required
Capital Renewal	0.5%	$128,558	1.5%	$1,697,031*	$1,568,473	1220%

* Includes extra $1.28M per annum over 10 years for timber bridge replacements

The above tables do not take into consideration ongoing maintenance costs. Any reduction in maintenance votes over forthcoming years will have a detrimental affect on expected useful lives of the asset and increase the rate for renewal requirements.

For example, Timber Bridges have an expected useful life of 50 years. This lifespan is, however, highly dependent upon regular maintenance of the asset. It is also expected that over the life of a timber bridge, the value of the maintenance will be similar to the replacement cost. Therefore the majority of Council's current annual Bridge Maintenance vote of $472,626 is expended on timber bridge maintenance.

From the above tables it can be identified that, given present funding limits, Council is not currently able to fund rehabilitation and renewal works at the required intervals and is highly dependent upon Special Grants to achieve necessary asset renewals. It can also be seen that significant increases in funding is required to retain the road and bridge network at its current condition and undertake renewals as they become required . If the funding shortfall is not addressed, this will lead to a reduced level of service and further deterioration of the sealed roads and bridge network across the Shire.

What we will do

Council plans to provide Transport services for the following:

- Operation, maintenance, renewal and upgrade Transport Assets to meet service levels set by Council in annual budgets;
- Explore all avenues for grants and subsidies to increase expenditure on the Road Network;
- Review Rehabilitation and Renewal plans annually and prioritise works accordingly;
- Ensure new works receive renewal and maintenance at required intervals to ensure projected useful lives of the asset are achieved;
- Review and prioritise the bridge replacement program;
- Review rehabilitation and maintenance program and methods in accordance with best practice

What we cannot do

Council does not have sufficient funding to provide all services at the desired service levels or provide new services. Works and services that cannot be provided under present funding levels are:

- Carry out pavement renewal or resurfacing at the required intervals on all sections of the Road Network;
- Upgrade or widen sealed rural local roads;
- Upgrade existing gravel roads to sealed road;
- Gravel resheet all of the unsealed road network as required;
- Fund the entire asset renewal programme demonstrated in the Asset Management Plan.

Managing the Risks

There are risks associated with providing the service and not being able to complete all identified rehabilitation, renewal, maintenance and operational tasks and projects. We have identified major risks as:

- Frequency of road rehabilitation and renewal being inadequate;
- Road resurfacing frequency being inadequate to sustain the current standards;
- Frequency of the gravel road resheeting being inadequate to sustain the current standards;
- Further knowledge and review of asset condition and useful lives is required for future Asset Management Plans.

We will endeavour to manage these risks within available funding provisions by implementing an asset management programme and aligning road hierarchy standards with the funding available.

The Next Steps

The actions resulting from this asset management plan are:

- Maintain the current assets in a safe condition
- Continue to assess condition and report annually on the state of the assets for condition, function and capacity.
- Improve asset management capability to provide the same or better service level at lower life cycle cost whilst managing risk.
- Improve the analysis of options so that an informed discussion can be had with the community about priorities.
- Improve life cycle cost analysis on the optimum frequency of road resurfacing to minimise expensive pavement repairs.
- Improve asset information and knowledge; develop single corporate asset register and second generation Asset Management Plan and Long Term Financial Plan.

Questions you may have

What is this plan about?

This asset management plan covers the infrastructure assets that serve the Dungog Community's transport needs. These assets include:

- Road Surface and Pavements
- Bridges
- Major Culverts
- Causeways
- Footpaths & Cycleway
- Roadside Assets such as bus shelters and guardrails

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.

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

Why is there a funding shortfall?

Most of the Council's transport network was constructed from government grants often provided and accepted without consideration of ongoing operations, maintenance and replacement needs.

Many of these assets are approaching the later years of their life and require replacement, services from the assets are decreasing and maintenance costs are increasing.

Councils' present funding levels are insufficient to continue to provide existing services at current levels in the medium term.

What options do we have?

Resolving the funding shortfall involves several steps:

1. Improving asset knowledge so that data accurately records the asset inventory, how assets are performing and when assets are not able to provide the required service levels;
2. Improving our efficiency in operating, maintaining, replacing existing and constructing new assets to optimise life cycle costs;
3. Identifying and managing risks associated with providing services from infrastructure;
4. Making trade-offs between service levels and costs to ensure that the community receives the best return from infrastructure;
5. Identification of assets surplus to needs for disposal to make saving in future operations and maintenance costs;
6. Consulting with the community to ensure that transport services and costs meet community needs and are affordable;
7. Developing partnership with other bodies, where available to provide services;
8. Seeking additional funding from governments and other bodies to better reflect a 'whole of government' funding approach to infrastructure services.

What happens if we don't manage the shortfall?

It is likely that council will have to reduce service levels in some areas, unless new sources of revenue are found. For transport infrastructure, the service level reduction may include a reduction in maintenance and operating costs and an inability to renew existing transport infrastructure at the optimal time.

What can we do?

Council can develop options and priorities for future transport infrastructure services with costs of providing the services, consult with the community to plan future services to match the community services needs with ability to pay for services and maximise benefit to the community for costs to the community.

What can you do?

Council will be pleased to consider your thoughts on the issues raised in this asset management plan and suggestions on how Council may change or reduce its transport services mix to ensure that the appropriate level of service can be provided to the community within available funding.

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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 required levels of service.

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

- Dungog Shire Council Operational Plan
- Dungog Shire Council Delivery Program
- This infrastructure assets covered by this asset management plan are shown in Table 1.

Table 1: Assets covered by this Plan

Asset Category	Asset Sub-Category	Asset Replacement Cost (*Calculated from asset register)	Depreciated Replacement Cost (Current Value)
Sealed Roads			
Regional Roads	Sealed Roads (excluding Earthworks)	$60,639,325	$48,101,861
	Earthworks (Non-Depreciable)	$24,534,431	
Local Rural Roads	Sealed Roads (excluding Earthworks)	$102,434,341	$70,279,587
	Earthworks (Non-Depreciable)	$33,679,696	
Local Urban Roads	Sealed Roads (excluding Earthworks)	$22,825,523	$16,657,964
	Earthworks (Non-Depreciable)	$10,332,525	
	Car parks	$91,931	$36,633
	Sub-Total	**$254,537,773**	**$135,076,045**
Unsealed Roads			
Local Rural Roads	Unsealed Roads (excluding Earthworks)	$16,446,567	$4,881,800
	Earthworks (Non-Depreciable)	$19,367,411	
Local Urban Roads	Unsealed Roads (excluding Earthworks)	$176,692	$79,318
	Earthworks (Non-Depreciable)	$258,688	
	Sub-Total	**$36,249,358**	**$4,961,118**
Bridges			
Regional Roads	Concrete - Regional	$17,919,806	$12,763,067
	Timber - Regional	$2,097,600	$1,048,800
	Major Culverts - Regional	$1,064,997	$721,989
Local Roads	Concrete - Local	$29,280,398	$21,802,731
	Timber - Local	$15,274,199	$3,225,165
	Major Culvert - Local	$3,827,377	$2,601,148
	Causeways	$8,000,283	$5,779,052
	Footbridge - Local	$155,310	$110,411
	Sub-Total	**$77,619,970**	**$48,052,363**
Rural Stormwater Drainage			
Regional Roads	Sealed Roads	$5,623,843	$4,817,991
Rural Roads	Sealed Roads	$9,815,993	$8,032,405
	Unsealed Roads	$3,778,787	$2,991,800
	Sub-Total	**$19,218,623**	**$15,842,196**
Kerb and Gutter			
Local Rural Roads	Kerb and Gutter	$310,987	$257,916
Local Urban Roads	Kerb and Gutter	$2,758,015	$2,082,795
	Sub-Total	**$3,069,002**	**$2,340,711**
Footpaths / Shared Paths			
Local Urban Roads	Footpaths	$1,109,180	$671,027
	Cycleways	$132,775	$98,264
	Sub-Total	**$1,241,955**	**$769,291**
Roadside Assets			
Local Urban Roads	Bus Shelter	$39,773	$916
Local Rural Roads	Guardrail	$2,393,400	$1,446,495
	Sub-Total	**$2,433,173**	**$1,447,411**
TOTAL		**$394,369,854**	**$208,489,135**

2.2 Goals and Objectives of Asset Management

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

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

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

The goal of this asset management plan is to:

- Document the services/service levels to be provided and the costs of providing the service,
- Communicate the consequences for service levels and risk, where desired funding is not available, and
- Provide information to assist decision makers in trading off service levels, costs and risks to provide services in a financially sustainable manner.

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

Council's theme is:

"A vibrant, united community, with a sustainable economy. An area where rural character, community safety, and lifestyle are preserved."

Council's mission is:

"To manage, enhance, and protect, the resources of the Shire, in consultation with the community."

Relevant goals and objectives and how these are addressed in this asset management plan are shown in Table 2.

[1] IPWEA, 2006, *IIMM* Sec 1.1.3, p 1.3.

Table 2: Organisation Goals and how these are addressed in this Plan

STRATEGY	PROGRAM / ACTIVITY	HOW THE ACTIONS ARE BEING ADDRESSED IN THIS AMP
1. Improve the safety and functionality of our road network	1.3 Road Asset Management Policy and Plans	Asset management principles are used to assess the transport infrastructure assets managed by Council and the implementation of works programs are linked to achieving the corporate objectives and service level targets. Compliance with regulations is a principle component of the asset management process, and is considered in the context of quality, condition, functionality and safety (risk).
	1.5 Funding	The AMP will be utilised as the basis for future funding requirements and grant applications
5. Ensure that community assets and facilities and public infrastructure are maintained and improved to a reasonable standard	5.1 Asset Management	Infrastructure is provided to support services. Getting the correct infrastructure appropriate to the needs of the community is a primary goal of Asset Management. As Council has limited resources, the Asset Management Planning process sets the priorities and allocations of these resources in line with community expectations in the Community Strategic Plan.
8. Other Council programs and activities supporting Public Infrastructure and Services	Road maintenance, construction and rehabilitation works	The AMP sets the basis for the future maintenance, construction and rehabilitation works on the road network. The AMP also identifies the level of funding required to provide adequate resources to achieve minimum standards.

2.3 Plan Framework

Key elements of the plan are

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

2.4 Core and Advanced Asset Management

This asset management plan is prepared as a first cut 'core' asset management plan in accordance with the International Infrastructure Management Manual[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.

[2] IPWEA, 2006.

2.5 Community Consultation

This 'core' asset management plan is prepared to facilitate community consultation initially through feedback on public display of the draft asset management plans prior to adoption by Council. Future revisions of this asset management plan will incorporate community consultation on service levels and costs of providing the service. This will assist Council and the community in matching the level of service requested by the community, service risks and consequences with the community's ability to pay for the service.

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

Council has undertaken extensive Community Consultation in the development of the Community Strategic Plan, Delivery Program and Operational Plans.

3.2 Legislative Requirements

Council has to meet many legislative requirements including Australian and State legislation and State regulations. Relevant legislation is shown in Table 3.

Table 3: Legislative Requirements

Legislation	Requirement
NSW Local Government Act Local Government Amendment (Planning and Reporting) Act (the Act).	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery. The amendments to the Act give effect to the Integrated Planning and Reporting framework.
NSW Roads Act	To provide public access to roads, to classify roads, to act as the local road authority, to carry out certain functions e.g. road works and to regulate activities on public roads.
NSW Work Health and Safety Act	Aims to secure the health, safety and welfare of people at work. It lays down general requirements which must be met at places of work in New south wales. The provisions of the Act cover every place of work in New south Wales. The Act covers self employed people as well as employees, employers, students, contractors and visitors.
NSW Native Vegetation Act	To manage native vegetation, to prevent broad scale clearing, to protect native vegetation, to improve native vegetation and to encourage revegetation of land.
Australian Standards,	Provides guidance for transport asset managers in use of transport services, such as AS1742 – Manual of Uniform Traffic Control Devices.
Australian Road Rules	To ensure compliance and uniformity with road rules in the State and elsewhere in Australia
The Australian Accounting Standards	The Australian Accounting Standards Section 27 (AAS27) requires that assets be valued, and reported in the annual accounts, which also includes depreciation value (i.e. how fast are these assets wearing out).
NSWEnvironmental Planning and Assessment Act 1979	Sets out guild lines for land use planning and promotes sharing of responsibilities between various levels of government in the state.
NSW Environmental Planning and Assessment Amendment Act 2008	Sets out guidelines for land use planning and promotes sharing of responsibilities between various levels of government in the state.
NSW Protection of the Environment Operations Act 1997	Sets out Council responsibility and powers of local area environment and its planning functions.
Disability Discrimination Act 1992	Sets out the responsibilities of Council and staff dealing with access and use of public infrastructure.

3.3 Current Levels of Service

Council has defined service levels in two terms.

Community Levels of Service: relate to the service outcomes that the community wants in terms of safety, quality, quantity, reliability, responsiveness, cost effectiveness and legislative compliance.

- Quality — How good is the service?
- Function — Does it meet users' needs?
- Capacity or Utilisation — Is the asset substantially over or under capacity.
- Safety — Is the service safe? This is managed by the risk management plan and the governance process that reports any high residual risks to the audit committee and Council.

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 council undertakes to best achieve the desired community outcomes within Council's budgetary constraints.

Technical service measures are linked to annual budgets covering:

- Operations – the regular activities to provide services such as opening hours, cleansing frequency, mowing frequency, etc.
- Maintenance – the activities necessary to retain an assets as near as practicable to its original condition (e.g. road patching, unsealed road grading, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. frequency and cost of road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),
- Upgrade – the activities to provide an higher level of service (e.g. widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (e.g. a new bus shelter).
- Quality or Condition
- Function
- Capacity

Table 4: Current Service Levels

COMMUNITY LEVELS OF SERVICE				
Key Performance Measure	**Customer Level of Service**	**Performance Measure**	**Performance Target**	**Acceptable Level of Service Response**
Quality	Well maintained roads and footpaths Adequate and well maintained drainage	Customer surveys Customer requests % of network not meeting community expectation	Number and severity of customer requests do not increase annually % of network not meeting community expectation is reduced	<50 Customer requests annually Community Survey to be undertaken

COMMUNITY LEVELS OF SERVICE				
Key Performance Measure	**Customer Level of Service**	**Performance Measure**	**Performance Target**	**Acceptable Level of Service Response**
Function	Road network is appropriate for purpose	Customer surveys Customer requests % of network not meeting community expectation	Number and severity of customer requests do not increase annually % of network not meeting community expectation is reduced	Number and severity of customer requests do not increase annually % of network not meeting community expectation is reduced

TECHNICAL LEVELS OF SERVICE				
Key Performance Measure	**Technical Level of Service**	**Performance Measure**	**Performance Target**	**Current Performance**
Quality	Provide an acceptable road pavement	Percentage of network meeting acceptable condition rating	Increase in percentage of network meeting acceptable condition rating	88% by length
	Provision of adequate bridge and drainage structures	Percentage of network meeting acceptable condition rating	Increase in percentage of network meeting acceptable condition rating	97.7% by length
Function	Road network meets standards and functional requirements	Compliance with standards and best practice	Ensure compliance	Load limits applied to 2 timber bridges
Responsiveness	Intervention and response times for maintenance and renewal works	Maintenance is undertaken in accordance with Best Practice standards	Ensure compliance	Capital renewals and reseal programmes not meeting Best Practice Standards

3.4 Desired Levels of Service

At present, indications of desired levels of service are obtained from various sources including residents' feedback to Councillors and staff, service requests and correspondence. There will be an ongoing challenge for Council to review levels of service and budget allocations in attempting to more closely match these with community expectations.

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 5.

Table 5: Demand Factors, Projections and Impact on Services

Demand factor	Present position	Projection	Impact on services
Population	8,975 (2016)	9830 (2029)[3]	Increased assets and demand on existing assets will have a follow on impact on maintenance and renewal costs.
Construction Costs	Current costs	Costs anticipated to increase	The shortage of skilled labour, high labour costs and increasing material costs will impact on construction costs.
Plant and Equipment Costs	The cost to construct, maintain and replace plant and equipment is increasing	Anticipated to continue	Increasingly difficult to maintaining the current level of service Equipment will need to provide greater efficiencies
Climate Change	Higher frequency of extreme weather events	Unknown, but changes likely.	Additional costs may be imposed to fund environmental initiatives Expectation of increased costs to repair major damage to road infrastructure

4.2 Changes in Technology

Technology changes forecast to affect the delivery of services covered by this plan are detailed in Table 6.

Table 6: Changes in Technology and Forecast effect on Service Delivery

Technology Change	Effect on Service Delivery
Change in road construction methods and the materials used	May increase the life of road components, reducing the susceptibility to damage, or by reducing the cost of construction or maintenance
Introduction of new machinery	Reduced costs, improved productivity and reduced workplace risks
Asset data capture methods, such as video inspection that can be viewed using council Geographic Information System	Spatial location and condition of assets able to be verified by Council's Geographic Information System.

[3] Projection based on 0.7% average annual growth rate provided by the Australian Bureau of Statistic's annual Estimated Residential Population for Local Government Areas

4.3 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.

Non-asset solutions focus on providing the required service without the need for the council to own the assets. Examples of non-asset solutions include providing services from existing infrastructure such as aquatic centres and libraries that may be in another council area or public toilets provided in commercial premises.

Opportunities identified to date for demand management are shown in Table 7. Further opportunities will be developed in future revisions of this asset management plan.

Table 7: Demand Management Plan Summary

Service Activity	Demand Management Plan
Increase pressure on existing road network	Continue to analyse the effect of larger and greater capacity vehicles on existing roads. This is of particular concern given the design capacities of the ageing timber infrastructure network and the increased vehicle loading being requested by industry and government policy.
Community engagement	Engage with the community and monitor community expectations by communicating service levels and financial capacity the community to balance priorities for infrastructure with what the community is prepared to pay for
Funding priority works	Continue to seek grant funding for projects identified in the Community Plan and Asset Management Plans
Improve understanding of costs and capacity to maintain current service levels	Continue to analyse the cost of providing service and the capacity to fund at the current level of service
Review gravel roads	Review current gravel road maintenance program

4.4 New Assets for Growth

The new assets required to meet growth will be acquired from land developments or constructed by Council. Acquisition of these new assets will commit Council to funding for ongoing operational costs for the period of service provided by the asset.

5. LIFECYCLE MANAGEMENT PLAN

5.1 Background Data

5.1.1 Physical parameters

The assets covered by this asset management plan are detailed below:-

Sealed Roads	Regional, urban and rural roads with a bitumen surface that are typically spray seal
Unsealed Roads	Mostly rural roads formed and surfaced with imported gravel material.
Bridges	Includes timber, steel, concrete bridges, foot bridges, major culverts ie. > 6m width and concrete causeways
Footpaths / Cycleways	Concrete, paved and asphalt paths for pedestrian and cycle movements.
Kerb and Gutter	Constructed of concrete on the edge of mostly urban sealed roads to formalise the traffic corridor and transport rain and stormwater runoff to underground pipe network, concrete channels and natural waterways.
Traffic Barriers	Constructed typically of steel are installed to keep vehicles within the roadway and prevent vehicles from colliding with dangerous roadside obstacles. Note that there are a large number of old chain mesh fences, acting as traffic barriers that are to be replaced by guardrail when funding becomes available.
Bus Shelters	Constructed to provide safe pickup up points for school children. Note that there are no bus shelters provided for the domestic bus service.
Note:	Items such as signage, line marking, street lighting, street furniture, street trees, etc are not covered in asset management plans.

Table 8: Road Surface Type

Road Type	Length (km)	Surface Area (m^2)	Average Width (m)
Regional Sealed	123.7	930,625	7.52
Rural Sealed	285.2	1,548,770	5.43
Urban Sealed	41.8	348,423	8.34
TOTAL	450.7	2,827,818	
Rural Unsealed	268.3	1,054,267	3.93
Urban Unsealed	2.8	11,362	4.06
TOTAL	271.1	1,065,629	

Figure 1: Road Surface Type

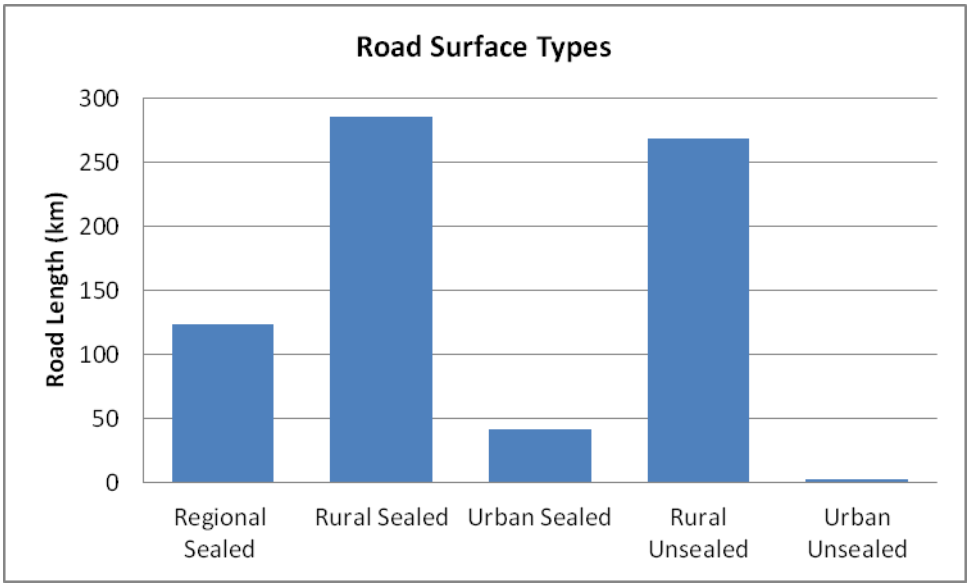


Table 9: Bridge and Causeway Type

Bridge Type	No.	Length (m)	Surface Area (m^2)
Concrete - Regional	13	453	3,688
Concrete - Local	56	1,263	6,699
Timber - Regional	1	60	480
Timber - Local	32	840	3,468
Major Culverts - Regional Roads	5	42	413
Major Culverts - Local Roads	18	147	876
Causeways	42	932	4509
Footbridges	3	29	36
Total	**170**	**3,766**	**20,169**

Figure 2: Bridge and Causeway Type

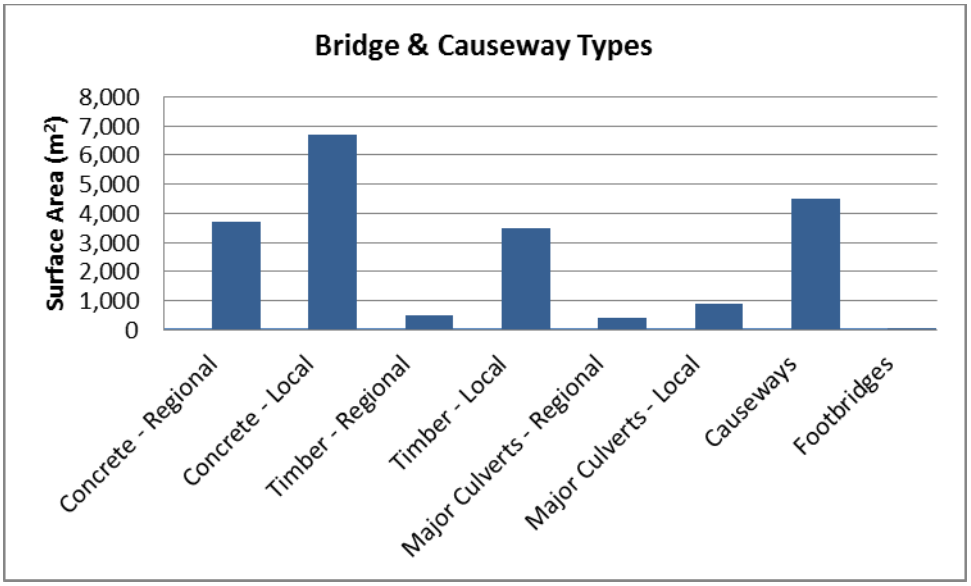


Table 10: Footpath Functionality

Footpath functionality	Length (m)	Surface Area (m^2)
Footpath	7,585	14,659
Cycleway	783	1,695
Total	**8,368**	**16,354**

Figure 3: Path Surface Type

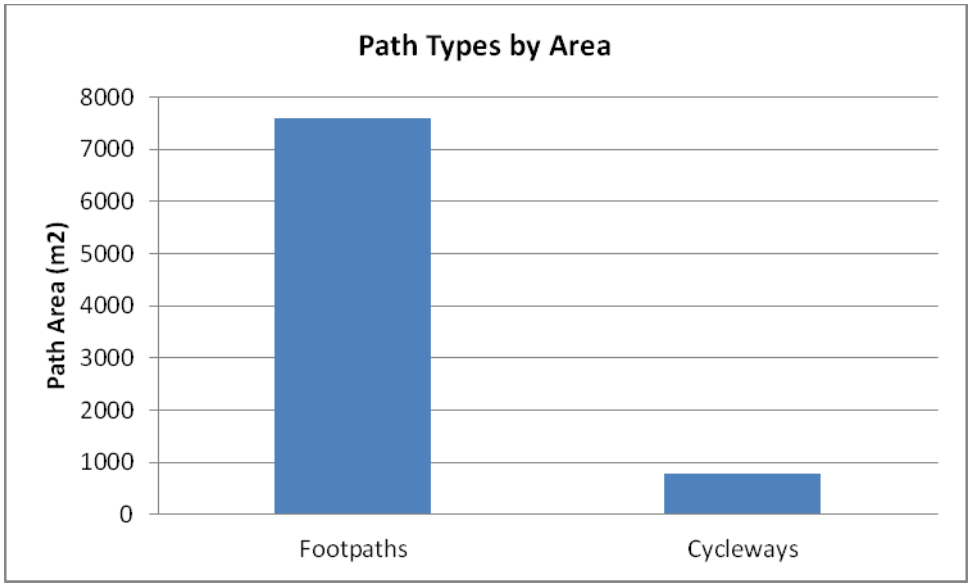


Table 11: Kerb Type

Kerb Type	Length (m)
Square back Kerb and Gutter	39,057
Mountable Kerb and Gutter	3,351
Dish Drain	23
Total	**42,431**

Figure 4: Kerb Type

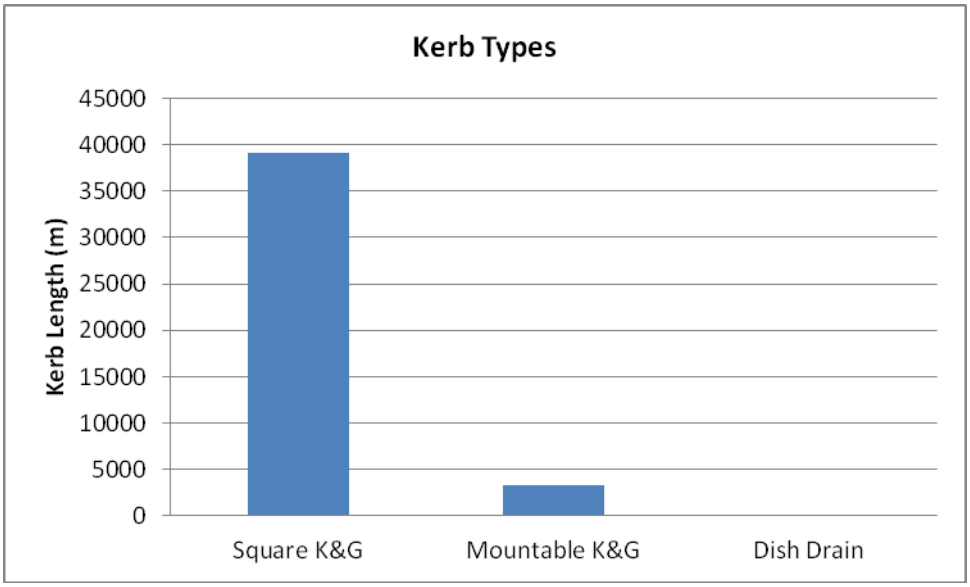


Table *12:* Traffic Barrier Type

Traffic Barrier Type	Length (m)
Steel guard rail	10,285
Timber rail	499
Wire Mesh & Timber Post	10,364
Total	**21,148**

Figure 5: Traffic Barrier Type

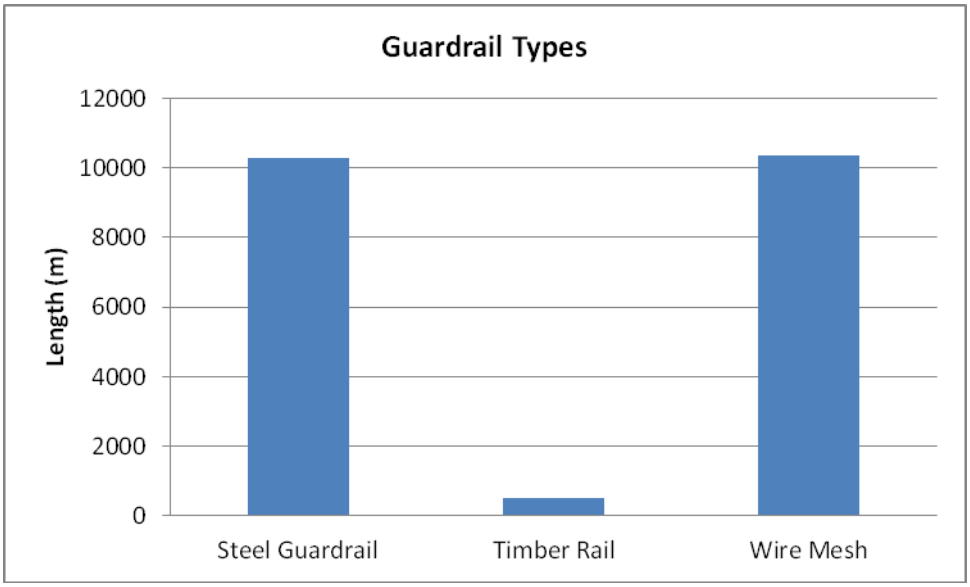


Table *13:* Bus Shelters

Bus Shelter	Quantity
Bus Shelter	9

Note: No graph provided.

5.1.2 Asset condition

A condition inspection of Dungog Shire sealed road network was carried out in 2012. The following graphs show the condition ratings for the various roads and bridge assets:-

Figure 6: Current Asset Condition Profile - Sealed Roads

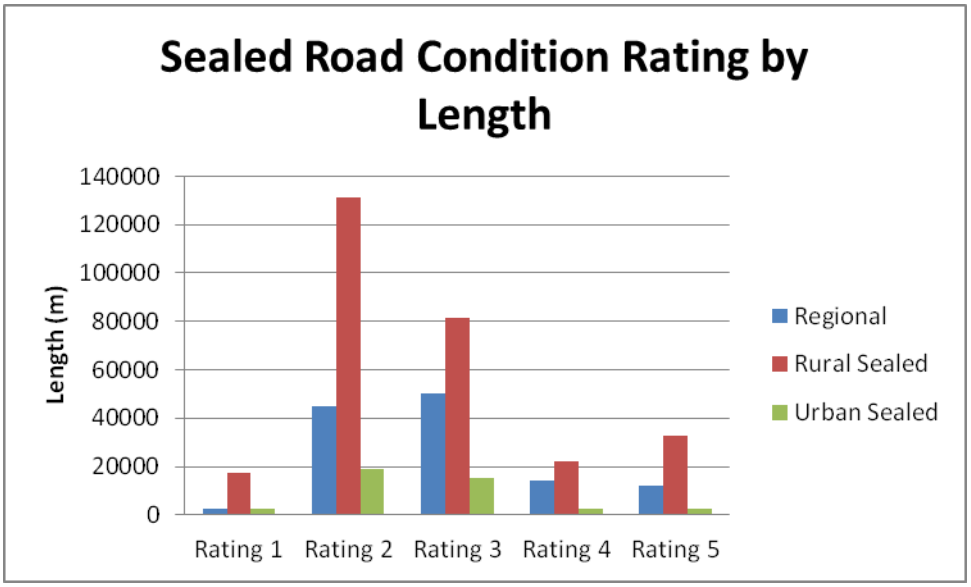


Figure 7: Current Asset Condition Profile – Regional Sealed Roads

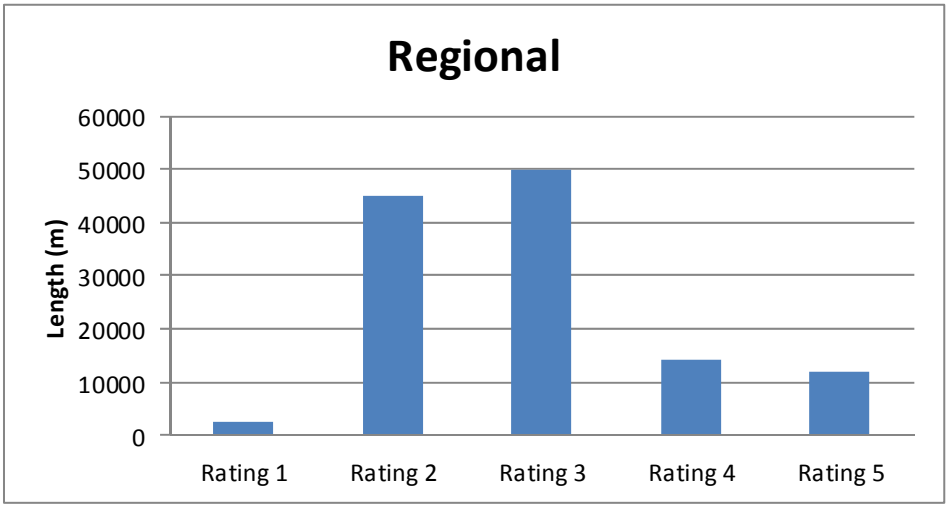


Figure 8: Current Asset Condition Profile – Rural Sealed Roads

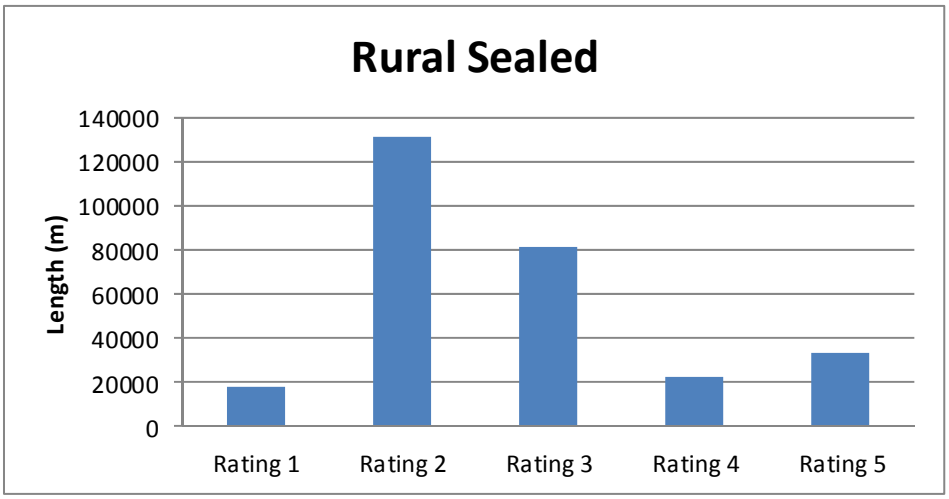
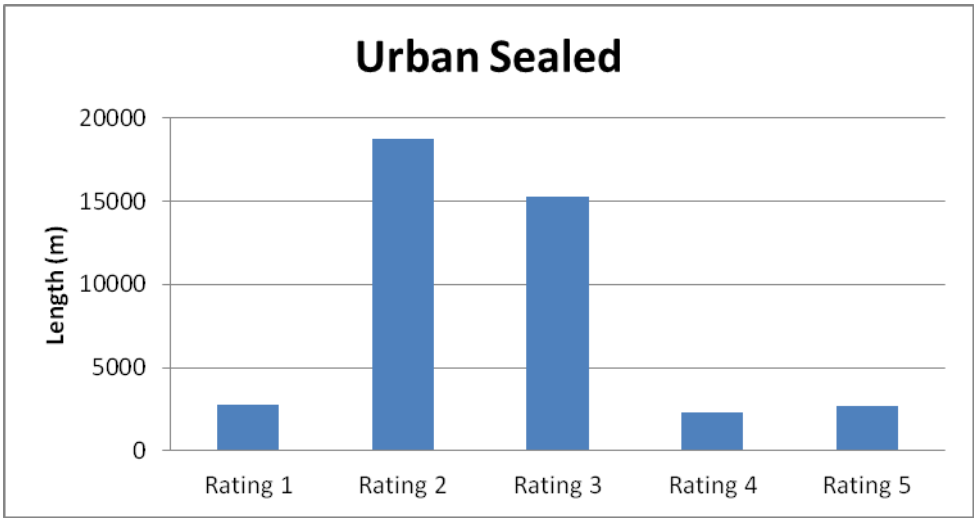


Figure 9: Current Asset Condition Profile – Urban Sealed Roads



Condition is measured using a 1 – 5 rating system[4] as detailed in Table 8.

Table 14: Description of Condition for Sealed Roads

Condition Rating	Description
1	Very good: Only planned maintenance required.
2	Good: Minor maintenance required plus planned maintenance.
3	Fair: Significant maintenance required.
4	Poor: Significant renewal/upgrade required.
5	Very Poor: Unserviceable.

[4] IIMM 2006, Appendix B, p B:1-3 ('cyclic' modified to 'planned', 'average' changed to 'fair'')

Figure 10: Current Asset Condition Profile- Unsealed Roads

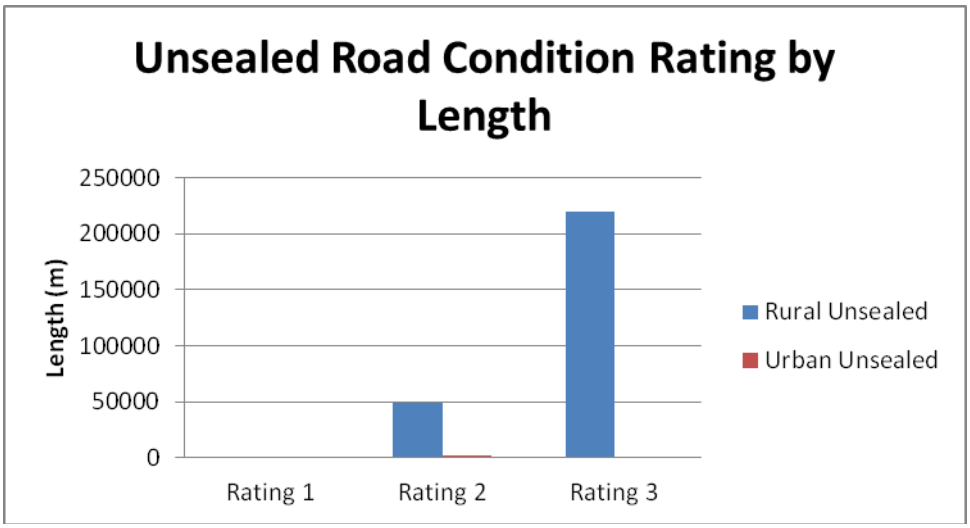


Figure 11: Current Asset Condition Profile – Rural Unsealed Roads

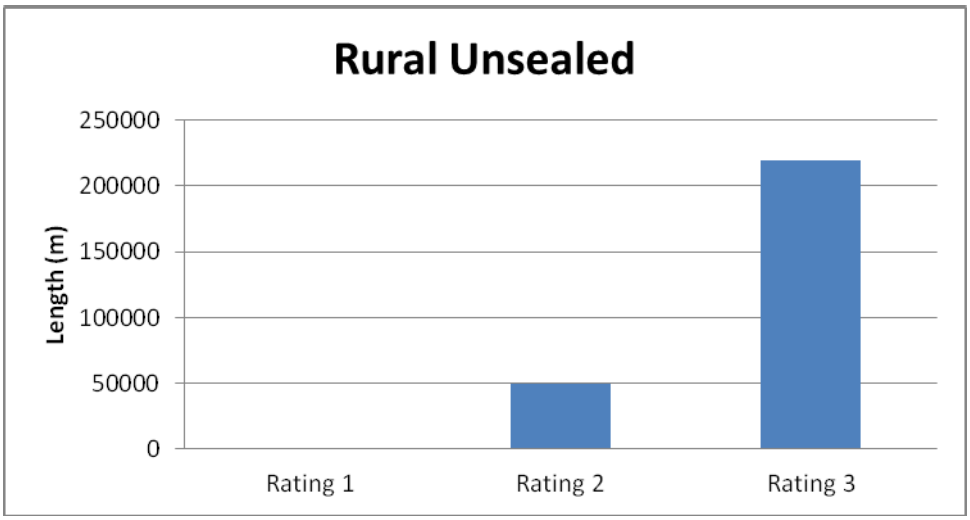


Figure 12: Current Asset Condition Profile – Urban Unsealed Roads

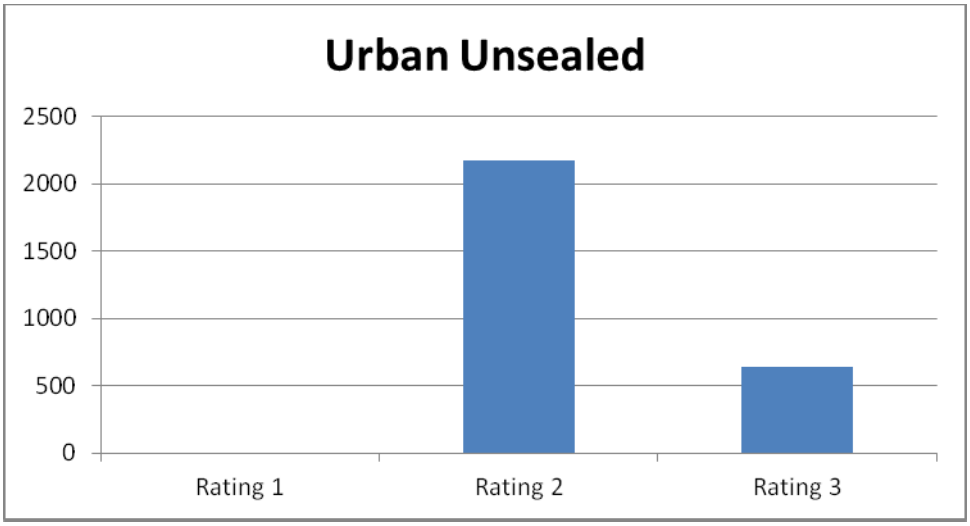


Table 15: Description of Condition for Unsealed Roads

Condition Rating	Description
1	>200mm gravel depth present
2	100mm to 200mm gravel depth present
3	Less than 100mm gravel depth present

The condition profile of bridge assets is shown in Figures 13 to 23.

Figure 13: Current Asset Condition Profile- Bridges

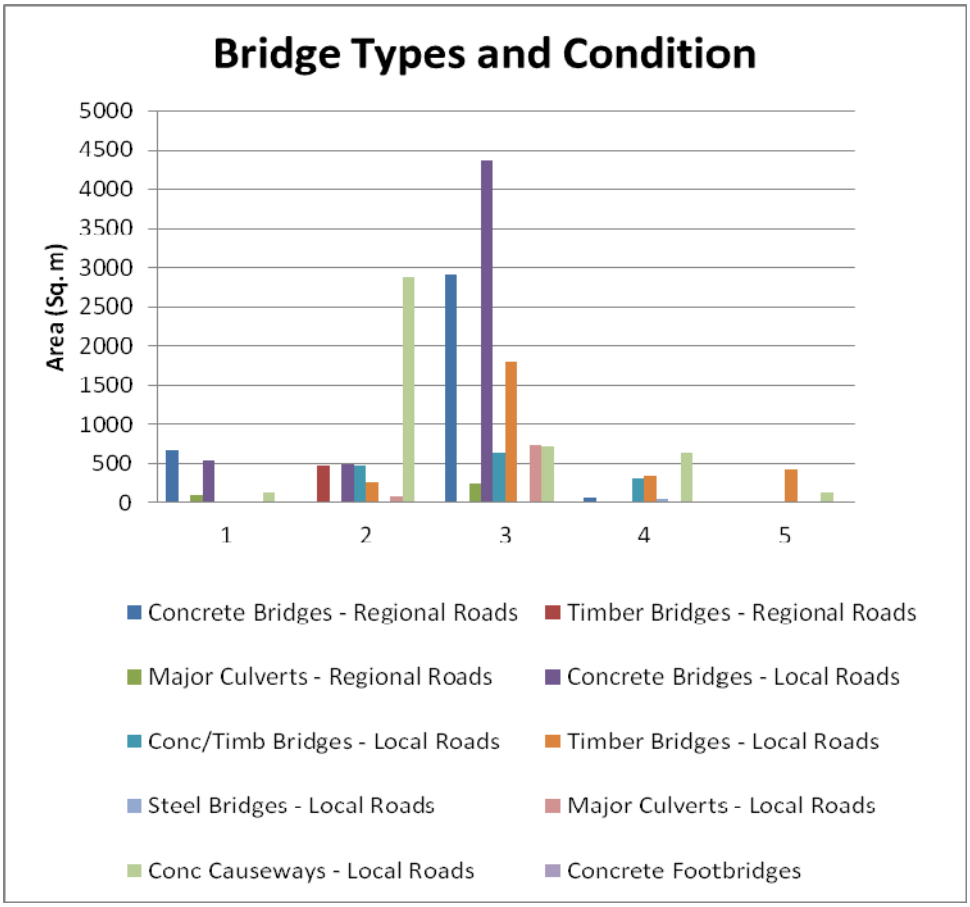


Figure 14: Current Asset Condition Profile- Concrete Bridges - Regional Roads

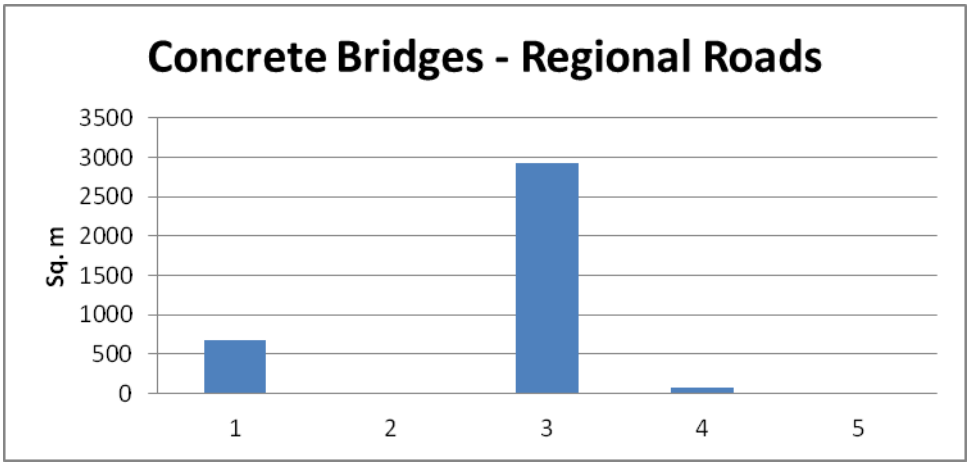


Figure 15: Current Asset Condition Profile- Concrete Bridges- Local Roads

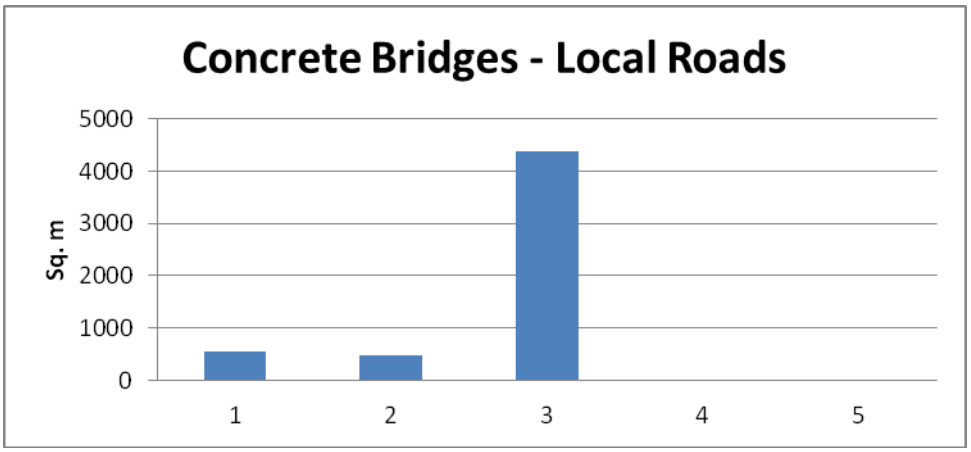


Figure 16: Current Asset Condition Profile- Timber Bridges - Regional Roads

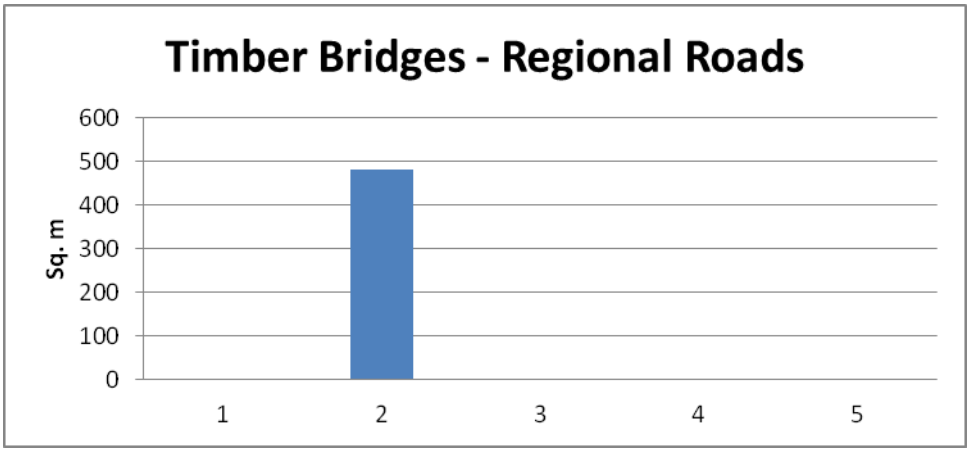


Figure 17: Current Asset Condition Profile – Concrete / Timber Composite Bridges - Local Roads

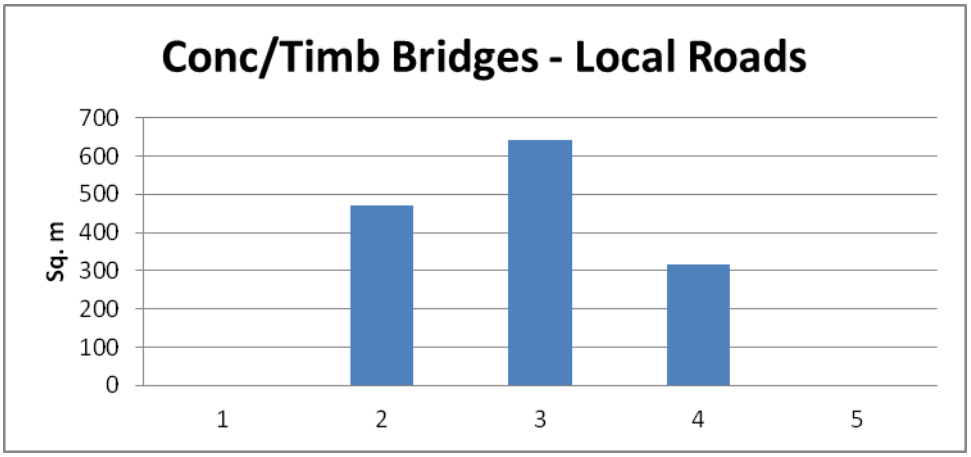


Figure 18: Current Asset Condition Profile- Timber Bridges - Local Roads

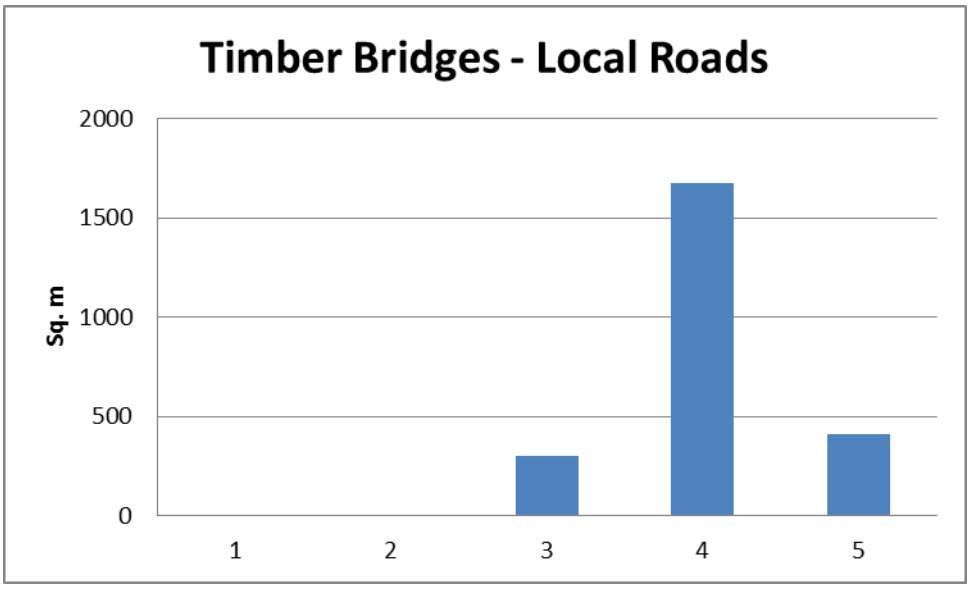


Figure 19: Current Asset Condition Profile- Major Culverts - Regional Roads

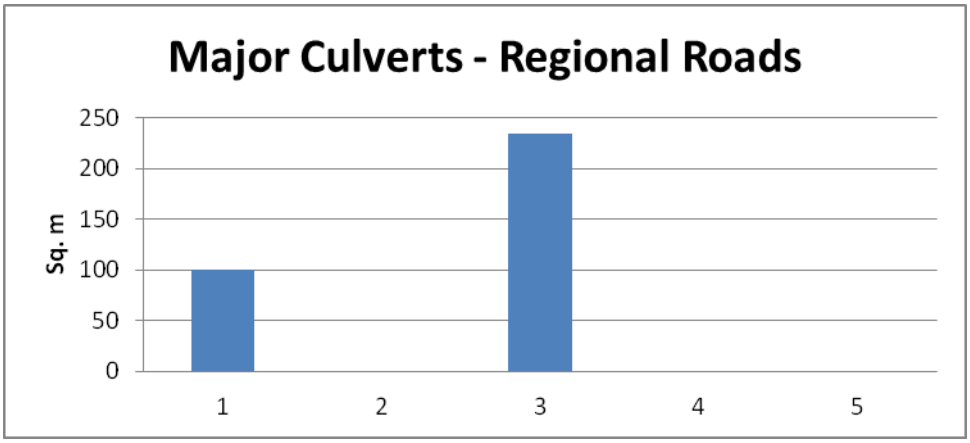


Figure 20: Current Asset Condition Profile- Major Culverts - Local Roads

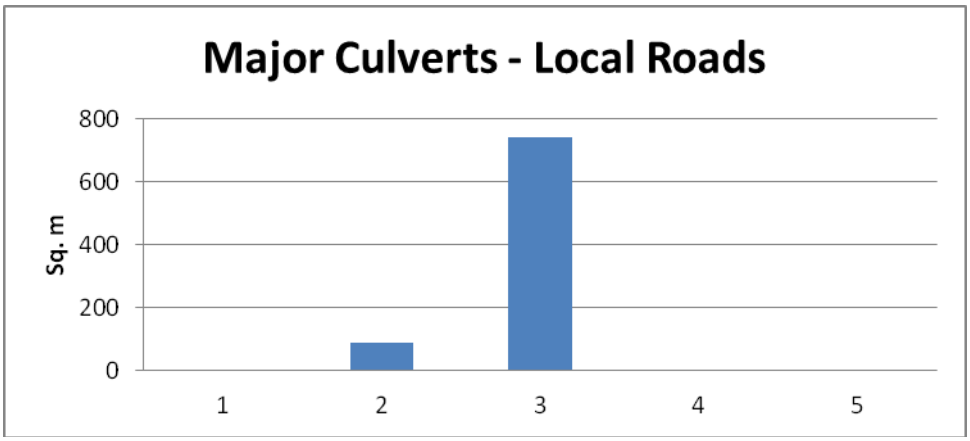


Figure 21: Current Asset Condition Profile- Causeways

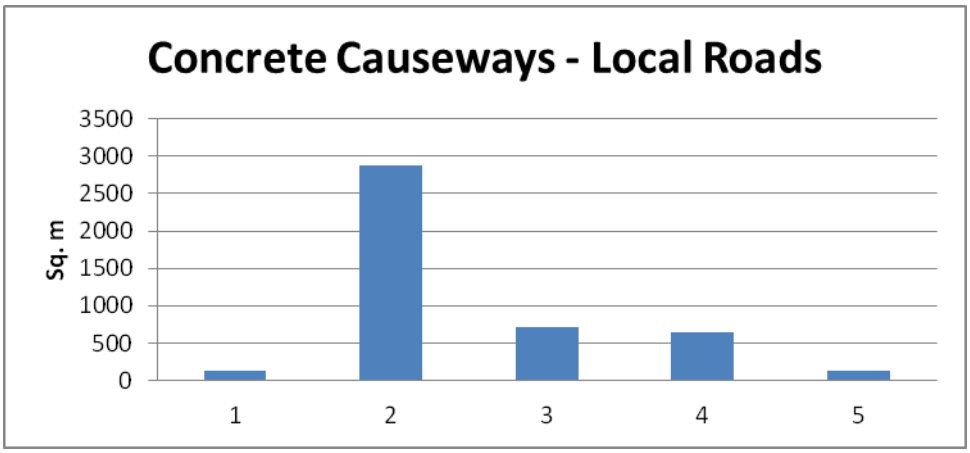
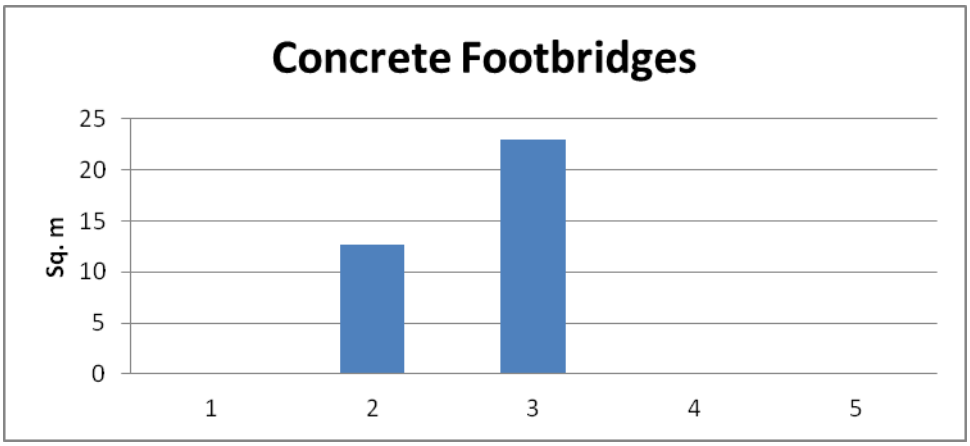


Figure 22: Current Asset Condition Profile - Footbridges

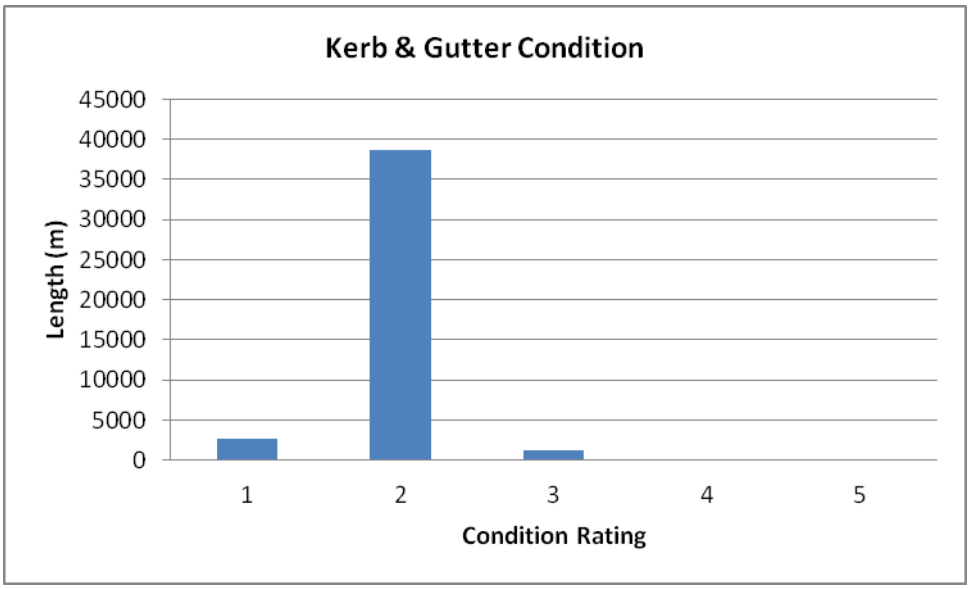


Condition is measured using a 1 – 5 rating system[5] as detailed in Table 16.

Table 16: Description of Condition for Bridges

Condition Rating	Description
1	Excellent condition: Only planned maintenance required.
2	Very good: Minor maintenance required plus planned maintenance.
3	Good: Significant maintenance required.
4	Fair: Significant renewal/upgrade required.
5	Poor: Unserviceable.

Figure 23: Current Asset Condition Profile- Kerb and Gutter



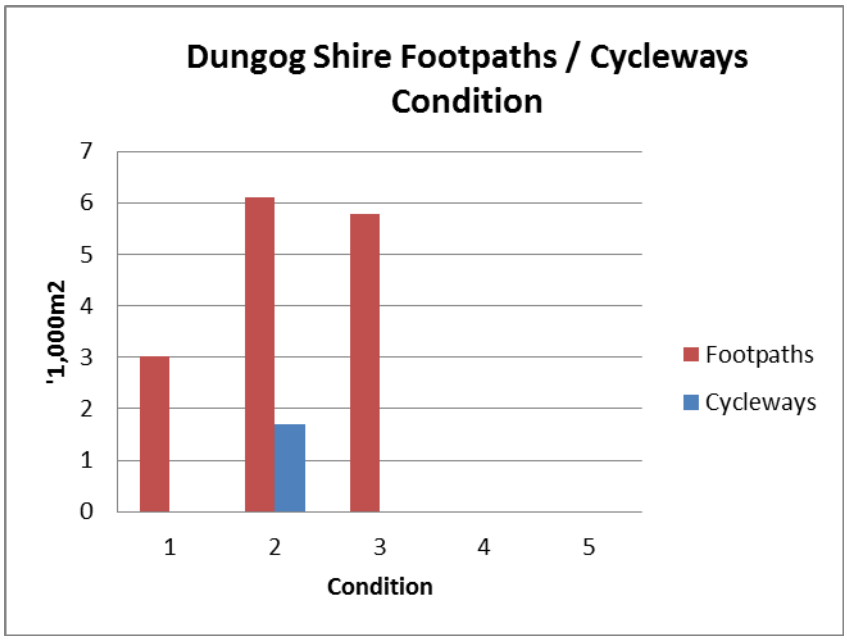
Condition is measured using a 1 – 5 rating system[6] as detailed in Table 17.

Table 17: Description of Condition for Kerb & Gutter

Condition Rating	Description
1	Very good: Only planned maintenance required.
2	Good: Minor maintenance required plus planned maintenance.
3	Fair: Significant maintenance required.
4	Poor: Significant renewal/upgrade required.
5	Very Poor: Unserviceable.

[5] IIMM 2006, Appendix B, p B:1-3 (‘cyclic’ modified to ‘planned’, ‘average’ changed to ‘fair’’)
[6] IIMM 2006, Appendix B, p B:1-3 (‘cyclic’ modified to ‘planned’, ‘average’ changed to ‘fair’’)

Figure 24: Current Asset Condition Profile- Footpaths/ Cycleways



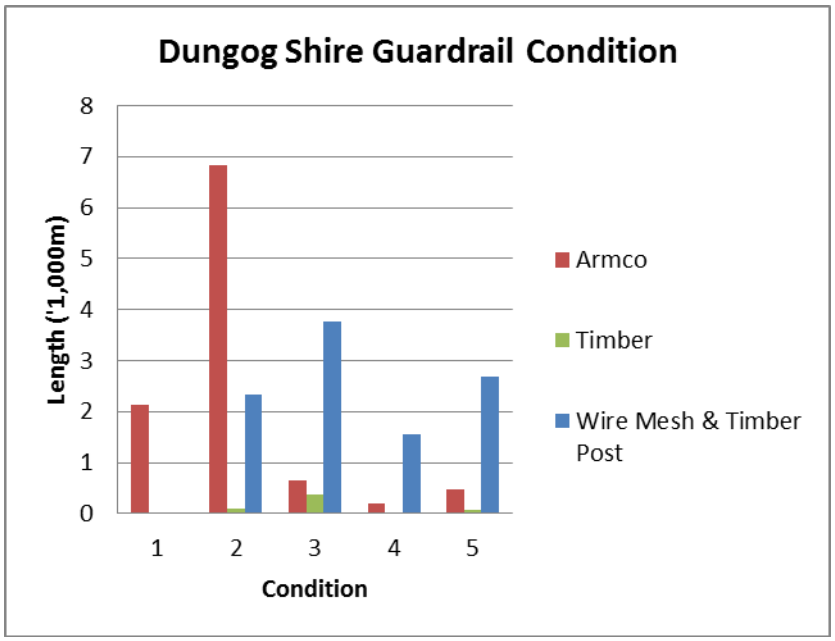
Condition is measured using a 1 – 5 rating system[7] as detailed in Table 18.

Table 18: Description of Condition for Footpaths & Cycleways

Condition Rating	Description
1	Very good: Only planned maintenance required.
2	Good: Minor maintenance required plus planned maintenance.
3	Fair: Significant maintenance required.
4	Poor: Significant renewal/upgrade required.
5	Very Poor: Unserviceable.

[7] IIMM 2006, Appendix B, p B:1-3 ('cyclic' modified to 'planned', 'average' changed to 'fair'')

Figure 25: Current Asset Condition Profile- Guardrail



Condition is measured using a 1 – 5 rating system[8] as detailed in Table 19.

Table 19: Description of Condition for Guardrail

Condition Rating	Description
1	Very good: Only planned maintenance required.
2	Good: Minor maintenance required plus planned maintenance.
3	Fair: Significant maintenance required.
4	Poor: Significant renewal/upgrade required.
5	Very Poor: Unserviceable.

Frequency of Condition Assessment

Transport assets are assessed for condition every 4 years.

[8] IIMM 2006, Appendix B, p B:1-3 ('cyclic' modified to 'planned', 'average' changed to 'fair'')

5.1.4 Asset valuations

The value of assets covered by this asset management plan is shown below. Assets were last fully revalued at 30 June 2013 (roads) and June 2017 (bridges) with additions through to 30 June 2018.

Current Replacement Cost	$394,369,854
Depreciable Amount	**$306,197,102**
Depreciated Replacement Cost	$208,489,135
Annual Depreciation Expense	$ 5,753,230

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

Asset Consumption (Depreciation/Depreciable Amount)	2.10%
Asset renewal (Capital renewal exp/Depreciable amount) *Note:- This is the average Asset Renewal over the next 4 years excluding Special Grants*	2.42%

Council is currently renewing assets at 138% of the rate they are being consumed. This figure indicates that Council is slowly increasing the general condition of the Transport Assets, however, if maintenance and renewal works such as resealing are not fully funded then deterioration of the network will still occur.

Therefore, t o provide services in a financially sustainable manner, Council will need to ensure that it is renewing assets at the rate they are being consumed over the medium-long term and funding the life cycle costs for all new assets and services in its long term financial plan.

5.1.5 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.

Council's Asset Management Systems, internal and external reporting, are based on this hierarchy.

Council's asset hierarchy is shown is Table 20.

Table 20: Asset Hierarchy

Hierarchy	Description
Regional Roads	The regional road network provides regional access for communities; provides access to a broad range of services and supports economic growth and development. Regional roads carry heavy traffic and need higher levels of expenditure on resurfacing and pavement reconstruction.
Local Roads	The local road network provides access within local communities; provides access to services and supports local growth and development. This category is broken down into Rural and Urban sectors.

5.2 Risk Management Plan

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.

Risks are assessed as per Council Policy C3.33 Roads Maintenance - Risk Management.

5.3 Routine Maintenance Plan

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

5.3.1 Maintenance plan

Maintenance includes reactive, planned and cyclic maintenance work activities.

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

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

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

Proposed maintenance expenditure is shown in Table 21.

Table 21: Selected Maintenance Expenditure Trends

Maintenance Budgets	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Urban Roads	$344,704	$349,798	$354,994	$360,294	$365,700	$371,214
Rural Roads	$1,713,902	$1,744,821	$1,776,356	$1,808,524	$1,841,334	$1,874,800
Bridges	$469,372	$478,759	$488,335	$498,101	$508,063	$518,225
Footpaths	$42,942	$43,801	$44,677	$45,570	$46,482	$47,411
Traffic Facilities + Roadside	$180,349	$182,577	$184,829	$187,107	$189,410	$191,739
Regional Roads	$902,700	$920,754	$939,169	$957,952	$977,112	$996,654
	$3,653,969	**$3,720,510**	**$3,788,360**	**$3,857,548**	**$3,928,101**	**$4,000,043**

Current maintenance expenditure levels are not considered to be adequate to meet required service levels. Key areas where increases in budgets are necessary are shown below:-

Regional Roads	% Network Being Renewed	Rehabilitation / Renewal Expenditure	% Network Required to be Renewed	Rehabilitation / Renewal Required	Shortfall	Budget Increase Required
Capital Renewal	2.9%	$1,728,344	3.3%	$1,975,126	$246,782	14%
Reseals	5.1%	$254,092	6.7%	$333,431	$79,339	31%
Bridges	0%	$0	1.3%	$151,980	$151,980	--

Rural Sealed Roads	% Network Being Renewed	Rehabilitation / Renewal Expenditure	% Network Required to be Renewed	Rehabilitation / Renewal Required	Shortfall	Budget Increase Required
Capital Renewal	0.4%	$436,758	3.3%	$3,330,289	$2,893,531	663%
Reseals	3.9%	$378,873	6.7%	$567,882	$189,009	50%

Rural Unsealed Roads	% Network Being Renewed	Rehabilitation / Renewal Expenditure	% Network Required to be Renewed	Rehabilitation / Renewal Required	Shortfall	Budget Increase Required
Resheeting	1%	$162,909	5%	$490,234	$327,325	201%

Urban Sealed Roads	% Network Being Renewed	Rehabilitation / Renewal Expenditure	% Network Required to be Renewed	Rehabilitation / Renewal Required	Shortfall	Budget Increase Required
Capital Renewal	1.5%	$334,415	3.3%	$756,775	$422.360	126%
Reseals	4.5%	$85,435	6.7%	$127,755	$42,320	50%

Rural Road Bridges	% Network Being Renewed	Rehabilitation / Renewal Expenditure	% Network Required to be Renewed	Rehabilitation / Renewal Required	Shortfall	Budget Increase Required
Capital Renewal	0.5%	$128,558	1.5%	$1,697,031*	$1,568,473	1220%

Future revision of this asset management plan will include linking required maintenance expenditures with required service levels.

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

5.3.2 Standards and specifications

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

- Relevant engineering Australian Standards
- Relevant technical standards and specifications for road, drainage and works e.g. Austroads, RMS guidelines

5.3.3 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 26.

Figure 26: Projected Operations and Maintenance Expenditure by Area

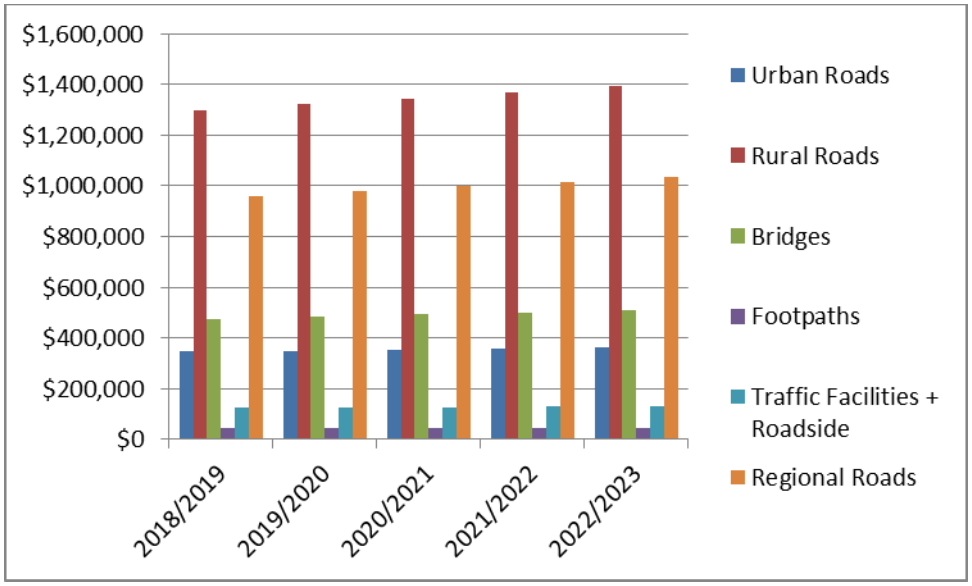
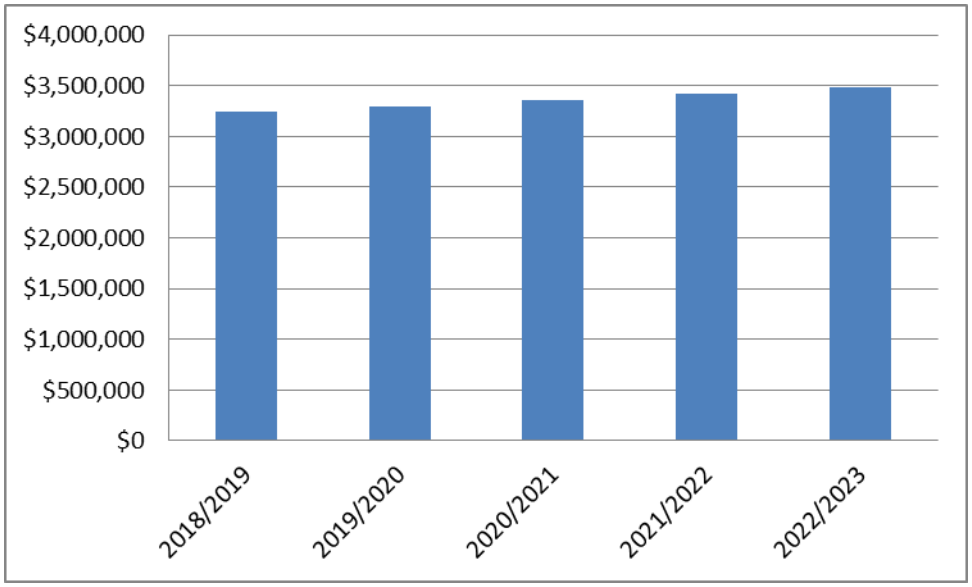


Figure 27: Projected Operations and Maintenance Expenditure Total



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

Maintenance is funded from the operating budget and grants where available.

5.4 Renewal/Replacement Plan

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

5.4.1 Renewal plan

Assets requiring renewal are identified from estimates of remaining life obtained from the asset register spreadsheets. Proposals are inspected to verify the accuracy of the assessment of remaining life. Projects are then prioritized based upon the following factors:-

Regional/Local Road significance, Traffic volumes, road functionality, conditional safety, speed characteristics, community expectations, ongoing maintenance costs and other available funding sources.

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

5.4.2 Renewal standards

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

- Relevant engineering Australian Standards
- Relevant technical standards and specifications for road, drainage and works e.g. Austroads, RMS guidelines
- Council codes and design standards.

5.4.3 Summary of projected renewal expenditure

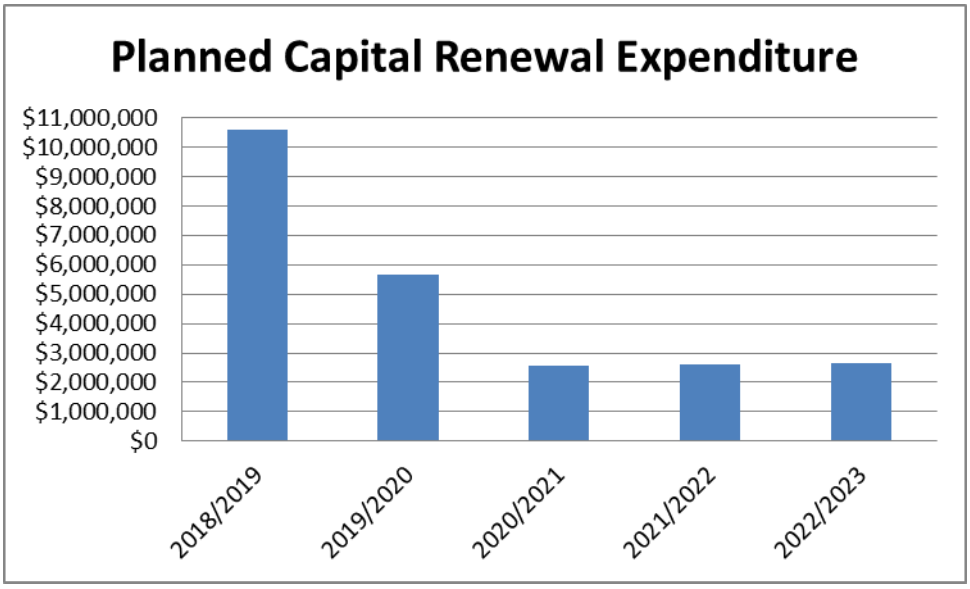
Projected future renewal expenditures are forecast to increase over time as the asset stock ages.

Actual Forecast Capital Expenditure is shown below:-

	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023
Urban Roads	$961,743	$283,887	$85,565	$87,277	$520,492
Rural Roads	$767,856	$971,410	$730,986	$912,627	$996,430
Bridges	$5,360,124	$2,079,110	$217,350	$217,350	$217,350
Regional Roads	$3,497,060	$2,307,413	$1,534,289	$1,400,677	$934,251
	$10,586,783	**$5,641,820**	**$2,568,190**	**$2,617,931**	**$2,668,523**

Note:- Above figures include Capital Reconstruction and Capital Renewal (Reseals, Gravel Resurfacing, etc)

Figure 28: Planned Annual Capital Renewal Expenditure



The renewal projection shows major renewal expenditure identified in the 4 year Delivery Program.

Renewals are to be funded from capital works programs, grants and developer contributions where available.

5.5 Creation/Acquisition/Upgrade Plan

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

5.5.1 Summary of projected upgrade/new assets expenditure

It is expected that the majority of new assets and upgrades will be driven by traffic increases from future development (ie shoulder widenings, intersection treatments, etc). The actual quantum is unknown at this time but the identification of these items will be assessed and incorporated in future reviews of this Asset Management Plans.

5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. It is unlikely that any constructed sealed road would be disposed of whilst it is still in service. It is possible, that if a sealed road is deemed to be under-utilised then it may revert back to an unsealed road. There are no plans to dispose of any significant lengths of sealed road at this time.

In the carrying out of road realignment or upgrade works existing road materials may be ripped up and left in-situ or removed and reused elsewhere. For all practical purposes, the value of the salvaged road and footpath materials is of little consequence.

6. 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.

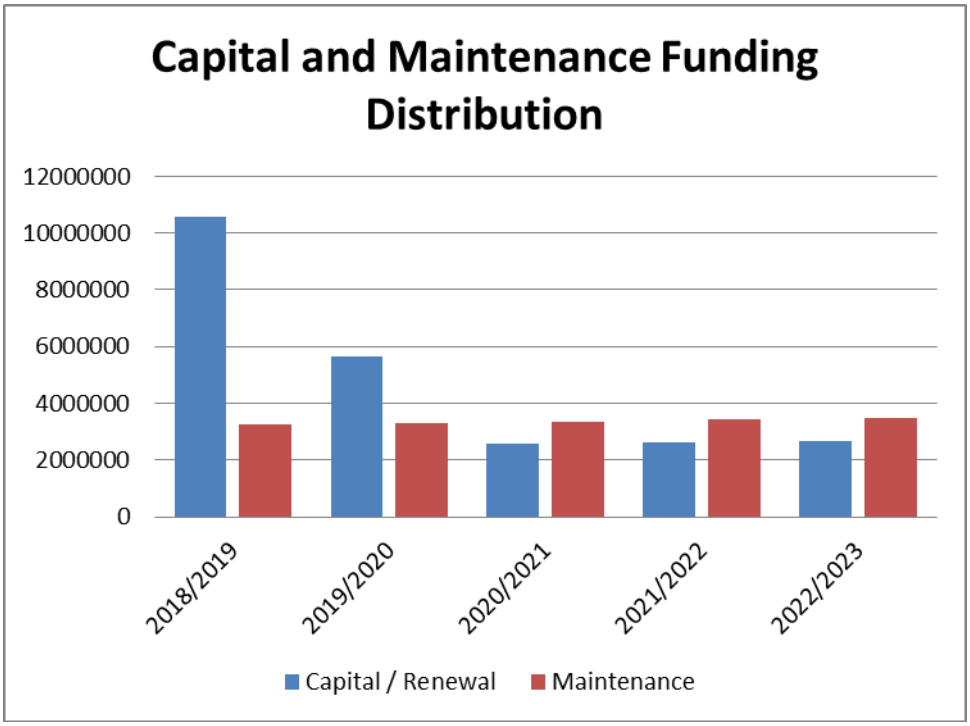
6.1 Financial Statements and Projections

The financial projections are shown in Table 22 for planned operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets).

Table 22: Planned Operating and Capital Expenditure

ACTIVITY	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028
Capital Works										
Road Renewal	10,810,494	4,891,906	1,587,028	1,622,591	1,658,724	1,548,470	1,724,616	1,749,770	1,775,553	1,801,980
Road Upgrade	0	0	0	0	0	0	0	0	0	0
Sub Total	**10,810,494**	**4,891,906**	**1,587,028**	**1,622,591**	**1,658,724**	**1,548,470**	**1,724,616**	**1,749,770**	**1,775,553**	**1,801,980**
Renewal / Maintenance										
Regional Mtce	958,700	977,754	997,169	1,016,152	1,037,112	1,057,654	1,078,587	1,099,919	1,121,657	1,143,810
Regional Reseal	237,660	242,413	247,621	252,207	257,251	262,396	267,644	272,997	278,457	284,026
Rural Sealed	1,334,881	1,359,919	1,385,457	1,411,506	1,438,076	1,465,178	1,492,821	1,521,018	1,549,778	1,579,114
Rural Reseal	361,386	368,614	375,986	383,506	391,176	398,999	406,979	415,119	423,421	431,890
Rural Unsealed	848,393	863,661	879,234	895,119	911,321	927,847	944,704	961,898	979,436	997,325
Urban Mtce	344,704	349,798	354,994	360,294	365,700	371,214	376,838	382,575	388,426	394,395
Urban Reseals	82,243	83,887	85,565	87,277	89,022	90,802	92,619	94,471	96,360	98,288
Ancillaries	308,722	317,516	326,679	336,230	346,185	356,564	367,386	378,673	390,444	402,725
Sub Total	**4,476,689**	**4,563,562**	**4,652,705**	**4,742,291**	**4,835,843**	**4,930,654**	**5,027,578**	**5,126,670**	**5,227,979**	**5,331,573**
TOTAL	**15,287,183**	**9,455,468**	**6,239,733**	**6,364,882**	**6,494,567**	**6,479,124**	**6,752,194**	**6,876,440**	**7,003,532**	**7,133,553**

Figure 29: Capital and Maintenance Funding Distribution



6.1.1 Sustainability of service delivery

There are two key indicators for financial sustainability that have been considered in the analysis of the services provided by this asset category, these being long term life cycle costs/expenditures and medium term projected/budgeted expenditures.

For the overall assessments used in this asset management plan, life cycles are based upon known or projected asset design periods not theoretical design periods. These projected design lives are identified in Council's valuations of the various assets.

Long term - Life Cycle Cost

Life cycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the longest asset life. Life cycle costs include operations and maintenance expenditure and asset consumption (depreciation expense). The annual average life cycle cost for the services covered in this asset management plan is $12,166,476.

Life cycle costs can be compared to life cycle expenditure to give an indicator of sustainability in service provision. Life cycle expenditure includes operations, maintenance and capital renewal expenditure in year 1. Life cycle expenditure will vary depending on the timing of asset renewals. The life cycle expenditure at the start of the plan is $12,801,271

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

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 $12,440,975 per year (including $1,280,000 per annum for 10 years for timber bridge replacements).

Estimated (budget) operations, maintenance and capital renewal funding is $7,341,261 per year giving a 10 year funding shortfall of $5,099,713 per year and a 10 year sustainability indicator of 0.59. This indicates that Council has 59% of the projected expenditures needed to provide the services documented in the asset management plan.

Short Term – 4 year financial planning period

The projected operations, maintenance and capital renewal expenditure required over the first 4 years of the planning period is $12,440,975 per year.

Estimated (budget) operations, maintenance and capital renewal funding is $8,683,075 per year giving a 4 year funding shortfall of $3,757,900 per year and a 4 year sustainability indicator of 0.70.

Table 23 Shows the gap between projected and planned renewals.

Table 23: Gap between Projected and Planned Renewals

Year	Projected Renewals	Planned Renewals	Renewal Funding Gap	Cumulative Gap
2018/2019	7,733,472	10,586,783	-2,853,311	-2,853,311
2019/2020	7,733,472	5,641,820	2,091,652	-761,659
2020/2021	7,733,472	2,568,190	5,165,282	4,403,623
2021/2022	7,733,472	2,617,931	5,115,541	9,519,164
2022/2023	7,733,472	2,668,523	5,064,949	14,584,113
2023/2024	7,733,472	2,720,025	5,013,447	19,597,560
2024/2025	7,733,472	2772522	4,960,950	24,558,510
2025/2026	7,733,472	2826032	4,907,440	29,465,950
2026/2027	7,733,472	2880574	4,852,898	34,318,848
2027/2028	7,733,472	2936169	4,797,303	39,116,151

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

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

Council will manage the 'gap' by developing this asset management plan to provide guidance on future service levels and resources required to provide these services, and what will be required if the gap is not funded. Issues that will be created by managing this funding gap may include:-

- Reduced levels of service
- Reduced customer satisfaction levels

- Increased Risk / Decreased safety
- Greater proportion of asset in poor condition

6.2 Funding Strategy

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

Achieving the financial strategy may require increasing rates, receiving larger amounts of State and Federal Government funding, disposing of assets to generate income or accepting a lower level of service.

6.3 Valuation Forecasts

Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers and others and donated to Council.

6.4 Key Assumptions made in Financial Forecasts

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

Key assumptions made in this asset management plan are:

- That current levels of service remain unchanged.
- Treatment and maintenance costs are based on Council's current unit costs and may not directly compare to actual costs.
- Required maintenance is assumed to take place in accordance with relevant guidelines/standards
- Natural disasters, accidents and other unplanned events are not considered in the asset lifecycles
- That assets will actually be replaced at the end of their respective useful lives
- Assets are assumed to have reached their allocated useful lives even though actual condition will vary depending on actual usage and prevailing conditions
- All expenditure is stated in current dollar values and are not adjusted for inflation for the particular year of work.
- Maintenance expenditure is based on historical expenditure and assumes there will no significant change.
- Maintenance and operations allocations are based on maintaining current service levels and utilisation.
- It is assumed that regulations/standards relating to roads and transport will remain the same over the planning period (i.e. the 10 years until June 2029).

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

- Consultation with stakeholders to refine service levels
- Refining and improving the prediction modelling (life cycle paths and decision matrices).

7. ASSET MANAGEMENT PRACTICES

7.1 Accounting/Financial Systems

7.1.1 Accounting and financial systems

The financial system used by Dungog Shire Council is Civica Authority 6.9

7.1.2 Accountabilities for financial systems

The Executive Manager Corporate Services is responsible for the operation and maintenance of the Financial Reporting Systems.

7.1.3 Accounting standards and regulations

The following standards and regulations with respect to asset accounting are applicable:

- The Australian equivalents to international Financial Reporting Standards
- The Local Government Code of Accounting and Financial Reporting
- The Local Government Act 1993 – as amended for the Integrated Planning and Reporting Framework
- AASB116 Property, Plant and Equipment
- AAS27 Financial Reporting by Local Governments
- Dungog Shire Council Accounting Policy

7.2 Asset Management Systems

Dungog Shire Council have data inventory in MapInfo Geographic Information System (GIS) and Microsoft Excel spreadsheets. Improvements in the methodology of recording and accounting for Council's Assets are expected to occur within the life of this plan.

All asset valuation registers currently in Microsoft Excel.

The Executive Manager Infrastructure and Assets is responsible for the operation and maintenance of the Asset Registers.

7.3 Information Flow Requirements and Processes

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

- Relevant Council strategic and operational plans;
- Asset register data on size, age, type, value and remaining life of network assets;
- The unit rates for categories of work/materials;
- Current levels of service, expenditures, depreciation, service deficiencies and service risks;
- Projections of various factors affecting future demand for services and new assets acquired by Council;
- Future capital works programs;
- Financial asset values.

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

- The projected Works Program and trends;
- The resulting budget and long term financial plan expenditure projections;
- Financial sustainability indicators.

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

Council recognises that the process for recognising new assets and capitalisation of such requires reviewing and improving.

7.4 Standards and Guidelines

Development of this plan is in accordance with:

- The International Infrastructure Management Manual (IIMM)
- Australian Infrastructure Financial Management Guidelines
- Dungog Shire Council Asset Management Policy
- Dungog Shire Asset Management Resourcing Strategy
- Local Government Act (NSW) 1993
- Local Government Amendment (Planning and Reporting) Act 2009
- Local Government (Finance Plans and Reporting) Regulation 2010
- AASB116

8. PLAN IMPROVEMENT AND MONITORING

8.1 Performance Measures

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

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

8.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 24.

Table 24: Section 8.2: Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1	Obtain Council approval of this Asset Management Plan	EMIA		Nov 2018
2	Confirm desired levels of service.	EMIA	Staff Time	June 2019
3	Further investigate and improve growth estimates	EMIA	Staff Time	Ongoing
4	Continue to Improve project cost accounting to record costs against the asset component and develop valuation unit rates	EMIA	Staff Time	Ongoing
5	Ensure the Asset groups covered by this plan are appropriate	EMIA	Staff Time	Ongoing
6	Develop data collection methods to ensure consistency and improvement of condition data	EMIA	Staff Time	Ongoing
7	Review methodology for determining remaining life, with detail assessment for assets requiring renewal in the medium term (next 10-20 years)	Corporate (Technical & Financial)	Staff Time	June 2019
8	Continue to review the procedures for maintaining the Asset and Financial Registers	Corporate (Technical & Financial)	Staff Time	Ongoing

8.3 Monitoring and Review Procedures

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

The Plan has a life of 4 years and is due for revision and updating within 12 months of each Council election.

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Abbreviations

AAAC Average annual asset consumption

AMP Asset management plan

ARI Average recurrence interval

BOD Biochemical (biological) oxygen demand

CRC Current replacement cost

CWMS Community wastewater management systems

DA Depreciable amount

EF Earthworks/formation

IRMP Infrastructure risk management plan

LCC Life Cycle cost

LCE Life cycle expenditure

MMS Maintenance management system

PCI Pavement condition index

RV Residual value

SS Suspended solids

vph Vehicles per hour

Glossary

Annual service cost (ASC)

1) Reporting actual cost
   The annual (accrual) cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.
2) For investment analysis and budgeting
   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 operations, maintenance, depreciation, and finance / opportunity and disposal costs, less revenue.

Asset

A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. Infrastructure assets are a sub-class of property, plant and equipment which are non-current assets with a life greater than 12 months and enable services to be provided.

Asset class

A group of assets having a similar nature or function in the operations of an entity, and which, for purposes of disclosure, is shown as a single item without supplementary disclosure.

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 (AM)

The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.

Average annual asset consumption (AAAC)*

The amount of an organisation's asset base consumed during a reporting period (generally a year). This may be calculated by dividing the depreciable amount by the useful life (or total future economic benefits/service potential) and totalled for each and every asset OR by dividing the carrying amount (depreciated replacement cost) by the remaining useful life (or remaining future economic benefits/service potential) and totalled for each and every asset in an asset category or class.

Borrowings

A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided**.**

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 expenditure - expansion

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

Capital expenditure - new

Expenditure which creates a new asset providing a new service/output that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operations and maintenance expenditure.

Capital expenditure - renewal

Expenditure on an existing asset or on replacing an existing asset which returns the service capability 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 generally has no impact on revenue, but may reduce future operations and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval.

Capital expenditure - upgrade
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 operations and maintenance expenditure in the future because of the increase in the organisation's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

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

Capitalisation threshold
The value of expenditure on non-current assets above which the expenditure is recognised as capital expenditure and below which the expenditure is charged as an expense in the year of acquisition.

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
Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.

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, including 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.

Depreciable amount
The cost of an asset, or other amount substituted for its cost, less its residual value.

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

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

Economic life
See useful life definition.

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

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

Funding gap
A funding gap exists whenever an entity has insufficient capacity to fund asset renewal and other expenditure necessary to be able to appropriately maintain the range and level of services its existing asset stock was originally designed and intended to deliver. The service capability of the existing asset stock should be determined assuming no additional operating revenue, productivity improvements, or net financial liabilities above levels currently planned or projected. A current funding gap means service levels have already or are currently falling. A projected funding gap if not addressed will result in a future diminution of existing service levels**.**

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

Key performance indicator
A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.

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

Life Cycle Cost
1. **Total LCC** The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2. **Average LCC** The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises annual operations, 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 operations, maintenance and capital renewal expenditure incurred in providing the service in a particular year. Life Cycle Expenditure may be compared to average Life Cycle Cost to give an initial indicator of life cycle sustainability.

Loans / borrowings
See borrowings.

Maintenance
All actions necessary for retaining an asset as near as practicable to its original condition, including regular ongoing day-to-day work necessary to keep assets operating, eg road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

- **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.
- **Reactive maintenance**
  Unplanned repair work that is carried out in response to service requests and management/supervisory directions.
- **Significant maintenance**
  Maintenance work to repair components or replace sub-components that need to be identified as a specific maintenance item in the maintenance budget.
- **Unplanned maintenance**
  Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

Maintenance and renewal gap
Difference between estimated budgets and projected required expenditures for maintenance and renewal of assets to achieve/maintain specified service levels, 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 (eg 5, 10 and 15 years).

Maintenance expenditure

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

Materiality
The notion of materiality guides the margin of error acceptable, the degree of precision required and the extent of the disclosure required when preparing general purpose financial reports. Information is material if its omission, misstatement or non-disclosure has the potential, individually or collectively, to influence the economic decisions of users taken on the basis of the financial report or affect the discharge of accountability by the management or governing body of the entity.

Modern equivalent asset
Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently available asset which will provide the same stream of services as the existing asset is capable of producing. It allows for technology changes and, improvements and efficiencies in production and installation techniques

Net present value (NPV)
The value to the organisation of the cash flows associated with an asset, liability, activity or event calculated using a discount rate to reflect the time value of money. It is the net amount of discounted total cash inflows after deducting the value of the discounted total cash outflows arising from eg the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

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

Operations expenditure
Recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, eg power, fuel, staff, plant equipment, on-costs and overheads but excludes maintenance and depreciation. Maintenance and depreciation is on the other hand included in operating expenses.

Operating expense
The gross outflow of economic benefits, being cash and non cash items, during the period arising in the course of ordinary activities of an entity when those outflows result in decreases in equity, other than decreases relating to distributions to equity participants.

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

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).

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 operations and maintenance expenditure.

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

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

Renewal
See capital renewal expenditure definition above.

Residual value
The estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

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

Risk management
The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

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

Service potential
The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset. A measure of service potential is used in the not-for-profit sector/public sector to value assets, particularly those not producing a cash flow.

Service potential remaining
A measure of the future economic benefits remaining in assets. It may be expressed in dollar values (Fair Value) or as a percentage of total anticipated future economic benefits. It is also a measure of the percentage of the asset's potential to provide a service that is still available for use in providing services (Depreciated Replacement Cost/Depreciable Amount).

Strategic Longer-Term Plan
A plan covering the term of office of councillors (4 years minimum) reflecting the needs of the community for the foreseeable future. It brings together the detailed requirements in the council's longer-term plans such as the asset management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where the council is at that point in time, where it wants to go, how it is going to get there, mechanisms for monitoring the achievement of the outcomes and how the plan will be resourced.

Specific 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.

Sub-component
Smaller individual parts that make up a component part.

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.

Value in Use
The present value of future cash flows expected to be derived from an asset or cash generating unit. 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 net cash inflows, where the entity would, if deprived of the asset, replace its remaining future economic benefits.

Source: IPWEA, 2009, Glossary