Transport
Asset Management Plan

27.04.2017

Adopted on 27th April 2017

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Document Control

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1	04/04/2017	Draft 1	Jayantha Ediriweera (JE)	Derek Francis (DF) Graeme Bourke(GB) Steph Waterhouse(SW)	
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1. Executive Summary

Bogan Shire Council's intention is to provide a transport network that is serviced and maintained to a level which reflects the community's expectations and operates in a manner that is both functional and cost effective. The Transport network had a current replacement cost of **$171 million** on the 30 June 2014.

This plan assists Council in the decision making process and is presented at a high level to provide key information that can used in the determination of levels of service and funding required. Table 1.1 identifies the asset categories in this plan, the twenty (10) year average costs and any funding gap between the available renewal budget and predicted renewal requirements. Note that due to the cyclic nature of works, there may be small surpluses in any year that will be required in subsequent years.

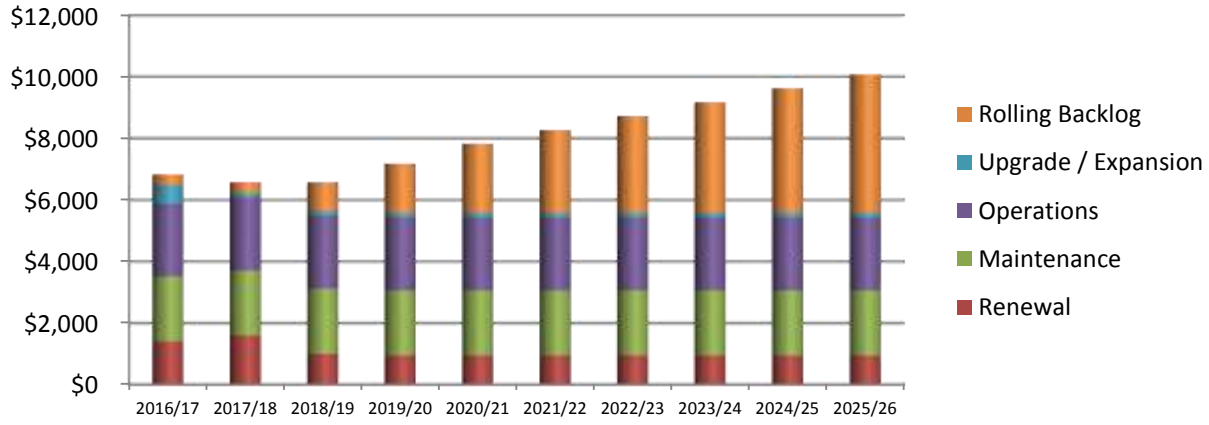
Table 1.1: Transport Asset Portfolio Overview (in 2016 $,000)

Asset	Current Replacement Cost of depreciable assets	Average Operation & Maintenance	Average Renewal Budget	Average Upgrade & New*	Average Funding Gap	Backlog (2016/17)	Backlog (2025/26)
Sealed road	$10,541	$1,006	$375	$173	$1,057	$0	$1,240
Unsealed road	$16,612	$2,674	$690	$0	$3,013	$357	$3,257
Town and village street	$5,718	$542	$0	$0	$0	$0	$0
Footpaths kerbs and others	$35,483	$255	$0	$0	$0	$0	$0
Total	**$68,354**	**$4,477**	**$1,065**	**$173**	**$4,069**	**$357**	**$4,497**

***Notes**:*
1. Budget Figures are the 10 year annual average

The following figure identifies the proposed expenditure over the next 10 years together with the backlog if one exists in any year.

Figure 1.1: What will we spend over the next 10 years (2016$M), and what is unfunded?



The Transport Strategy 2026 works are presently unfunded and the rolling backlog is the amount of unfunded renewals that are predicted to be due in any one year. This rolling backlog occurs due to the funding shortfall for future re sheating work. Historically, council has spent $ 900,000 to carry out nearly 40km resheeting work on shire roads annually, to maintain the gravel road network at condition -2 (Good).

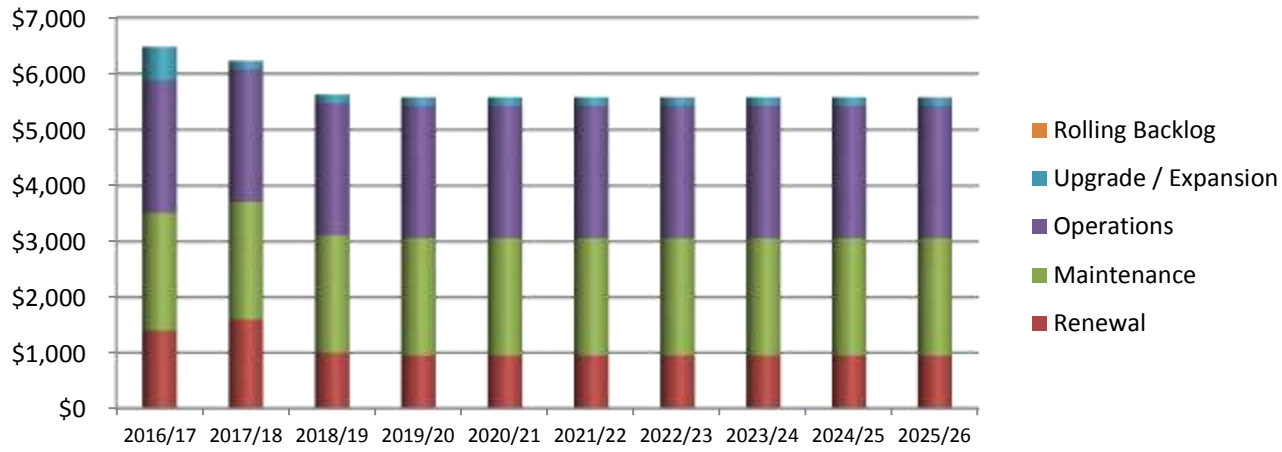
As the Roads to Recovery (R2R) grant is expected to be reduced from $ 800,000 to $ 500,000 from 2018 onwards, council will only be able to allocate $600,000 for resheeting around 25km of gravel roads with in Bogan. The implication of this budget cut would lead council to maintain the shire gravel roads at condition 3 (Average) and council's backlog figure will be increased to $4.5 million in 2025/26.

However, Bogan shire community accepted the condition -3 Average condition for the Shire gravel roads at the community consultation meeting on 01st of March 2017. Therefore, subject to the community expectations of dropping down the level of service to average condition, the unfunded projects could be omitted for this planning scenario and council could maintain condition 3 (Average) gravel roads with zero backlog for as presented in following graph.

What will we spend over the next 10 years (2016$M),

Asset	Current Replacement Cost	Average Operation & Maintenance	Average Renewal Budget	Average Upgrade & New*	Average Funding Gap	Backlog (2016/17)	Backlog (2025/26)
Sealed road	$10,541	$1,006	$375	$173	$0	$0	$0
Unsealed road	$16,612	$2,674	$690	$0	$0	$0	$0
Town and village street	$5,718	$542	$0	$0	$0	$0	$0
Footpaths kerbs and others	$35,483	$255	$0	$0	$0	$0	$0
Total	**$68,354**	**$4,477**	**$1,065**	**$173**	**$0**	**$0**	**$0**

Figure 1.2: What will we spend over the next 10 years (2016$M),

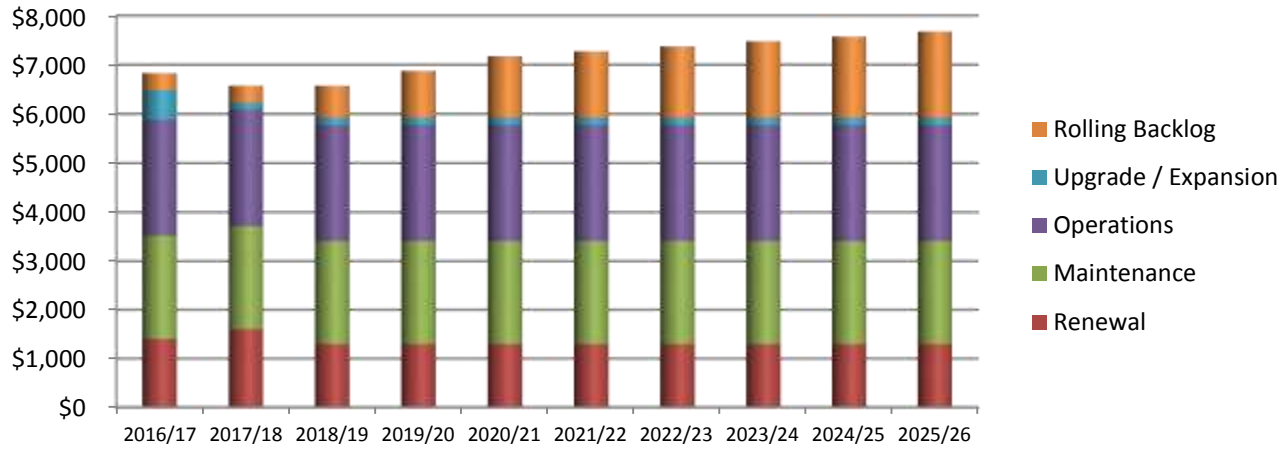


What will we spend over the next 10 years (2016$M) If R2R grant be maintained at $800,000

However, should the R2R grant be maintained at $800,000, the rolling backlog would be funded, if the additional funds are allocated to resheeting.

Asset	Current Replacement Cost	Average Operation & Maintenance	Average Renewal Budget	Average Upgrade & New*	Funding Gap	Backlog (2016/17)	Backlog (2025/26)
Sealed road	$10,541	$1,006	$375	$173	$823	$0	$890
Unsealed road	$16,612	$2,674	$965	$0	$1,346	$357	$857
Town and village street	$5,718	$542	$0	$0	$0	$0	$0
Footpaths kerbs and others	$35,483	$255	$0	$0	$0	$0	$0
Total	**$68,354**	**$4,477**	**$1,340**	**$173**	**$2,169**	**$357**	**$1,747**

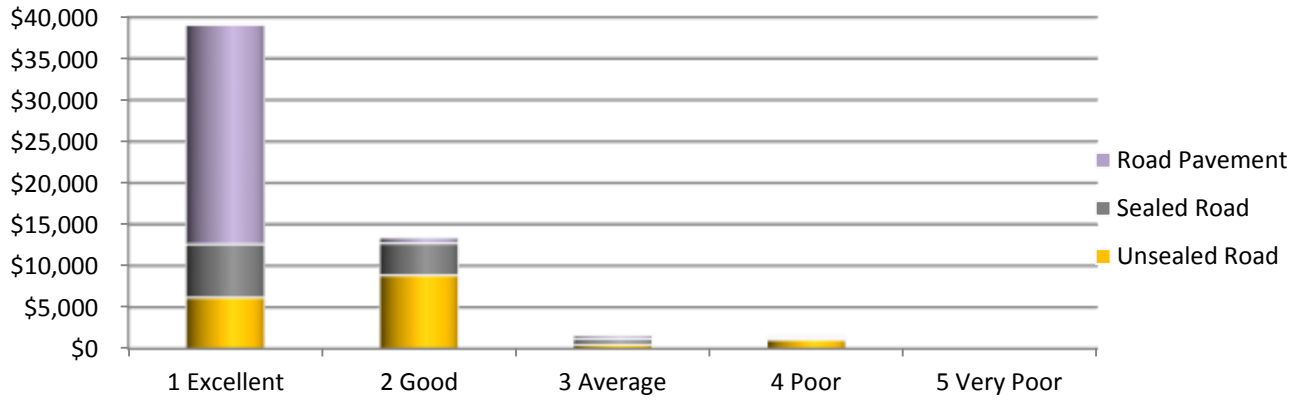
Figure 1.3: What will we spend over the next 10 years (2016$M), with R2R grant?



Although, the resheeting projects are funded by increasing R2R grant to $800, 000, still $150,000 is lagging to carry out all projected pavement rehabilitation projects in each year. That would leads council to have a total backlog of $1, 7 million in 2025/26.

The current condition of our assets is shown in the following graph based on the value of each asset in each of 10 conditions ranging from 1 to 5, with 1 being near new and 5 as a completely failed asset.

Figure 1.4: What condition are our assets in ($M)?



The process of managing our transport assets is one of continually improving the knowledge Council has including maintaining up to date asset registers, condition ratings, and the cost of work on the asset and the rate at which assets deteriorate and reach their intervention level. Section 13 contains details of the assumptions made and plans to further improve the details contained in the next Plan.

2. Strategic Objectives

Council operates and maintains the Transport assets to achieve the following strategic objectives.

1. Ensure the asset is maintained at a safe and functional standard as set out in this asset management plan.
2. To encourage and support the economic and social development in and around Bogan Shire.
3. Ensure that Transport are managed to deliver the requirements of Council's Asset Management Policy and Strategic Asset Management Plan.

Bogan Shire Council developed a comprehensive community engagement strategy to ensure a broad range of opinions; ideas and visions were captured to help shape the Bogan Shire Community Strategic Plan. The outcomes & strategies supported by that plan are detailed in the Strategic Asset Management Plan.

To assist in the delivery of the objectives in this plan, a number of key documents & systems have been prepared and should be referred to in considering the findings presented:

Table 2.1: Where can I find additional information?

Document / System	Content
Community Strategic Plan	Outcomes and Strategies identified by the community
Council Asset Policy	How we manage assets
Asset Management Strategy	Overall direction of asset management and portfolio summary
Asset Management Manual	Procedures and Processes that guide the management of assets
Condition Assessment Manual	Details on the process of assessing condition, including photographic examples of various conditions
Enterprise Risk Management Plan	The identification and management of risks across Council operations
Bogan Shire Transport Strategy to 2026	Deals with Council's transport strategy….
AuspecDocumentation	Describe Council's planning, design and construction standards for new infrastructure associated with subdivisions and development works.

The Bogan Shire CSP Outcomes supported by the Transport AMP include following strategies

1. Our well-constructed and maintained transport network enables safe and efficient movement of people and freight throughout the Shire.

2. Efficient local and regional transport networks that meet community and business needs.

3. Maintain state road networks to ensure provision of efficient transport links

4. Services Provided & Classification

Bogan Shire Council provides its wider rural community with Transport Infrastructure to enable the safe movement of pedestrians, cyclists, motorists and freight.

The establishment of a hierarchy for roads provides a useful tool for the planning of transport systems and ensuring the efficient allocation of resources to roads based on maintaining levels of service appropriate to their function within the hierarchy. Council road hierarchy consists of:

1. **Arterial**– Carries predominantly through traffic from one region to another thus is forming the principal avenue of communication for traffic movements. It is the top level of road / asset in the hierarchy.
2. **Distributor**– Connecting arterial assets to areas of development, and carrying traffic directly from one part of a region to another.
3. **Collector**– Collects and distributes traffic in an area, as well as serving abutting property.
4. **Access**– Used primarily for access to abutting properties.

The transport assets had a Current Replacement Cost of $171 mill on the 30 June 2014, and details of the major components are contained in Table 3.1 together with their renewal cost.

Table 3.1: What is provided ($,000)?

Asset Category	Quantity	Current Replacement Cost
Rural Roads	1490 km	$117,421,722
Town Streets	70 km	$9,891,598
Village Streets	15 km	$1,674,685
Bridges	14 Nos	$11,784,390
Culverts	734 Nos	$16,447,561
Footpaths	12 Km	$3,381,711
Kerbs &Gutter	40 km	$2,817,045
Signs Roads	1519 Nos	$379,700
Road Structures	141 Cum	$334,776
Bus shelters	3 Nos	$24,000
Levee Bank	12.3 Km	$6,027,000
Gates	31 Nos	$53,511
Pump Station	3 Nos	$249,654
Open Drains	9 Km	$896,000
Sign Stormwater	31 Nos	$10,695
Total		**$171,394,048**

5. Levels of Service

One of the basic tenets of sound asset management practice is to provide the level of service the current and future community want and are prepared to pay for, in the most cost effective way (NZ NAMS 2007)

Transport assets have been categorised into classes to assist in the determination of Levels of Service (LOS) which are grouped into:

- Community LOS – relates to how the community receives the service in terms of safety, quality, quantity, reliability responsiveness, cost efficiency and legislative compliance; and
- Technical LOS – are the technical measures of performance developed to ensure the minimum community levels of service are met.

Table 4.1 outlines what the community desires for each asset Category and how Council will deliver it.

Table 4.1: What does the Community want?

Unsealed Roads

Key Performance Measure	Level of Service Objective	Performance Measure Process	Desired Level of Service	Current Level of Service
COMMUNITY LEVELS OF SERVICE				
Quality	Provide smooth ride	Customer service requests	Less than 10 per annum	Less than 10 per annum
Function	Ensure that the road meets user requirements	Customer service requests	Less than 10 per annum	Less than 10 per annum
Safety	Ensure safe road network	Reported number of accidents	Less than 5 per annum	Less than 5 per annum
TECHNICAL LEVELS OF SERVICE				
Condition	Carry out patrol grading and resheeting	Grading Frequency	Regional road = 2 per year Local road = 1 per year	Regional road = 2 per year Local road = less than 1 per year
Accessibility	Provide all weather service to priority roads	Length and duration of road being impassable	Less than 8 hours when road is impassable per year at no more than 2 locations	Up to 72 hours occurrence
Cost Effective	Provide services in cost effective manner	Cost per kilometre	Regional Road = $3,500 Local Road = $1,500	Regional Road = $3,000 Local Road = $1,000
Safety	Provide road safety to Australian Standards	Road inspection on surface and signage	Less than 10 reported defects per annual inspection	94% signage in place and meeting required standard

Sealed Roads

Key Performance Measure	Level of Service Objective	Performance Measure Process	Desired Level of Service	Current Level of Service
COMMUNITY LEVELS OF SERVICE				
Quality	Provide smooth ride	Customer service requests	Less than 10 per annum	Less than 3 per annum

Function	Ensure that the road meets user requirements	Customer service requests	Less than 10 per annum	Less than 5 per annum
Safety	Ensure safe road network	Reported number of accidents	Less than 5 per annum	Less than 5 per annum
TECHNICAL LEVELS OF SERVICE				
Condition	Undertake resealing, patching and rehabilitation program	Resealing, frequency	Regional roads = 13 years Local roads = 15 years	Regional roads = 15 years Local roads = 18 years
Accessibility	Provide all weather access regional and local roads	Record of road closure, duration and frequency	Available 98% of the time	Available 90% of the time
Cost Effective	Provide services in cost effective manner	Maintenance cost per Km	Regional road = $5,500 Local road = $ 700 Town street = $ 2,500	Regional road = $4,600 Local road = $ 500 Town street = $ 2,200
Safety	Provide clear signage, good line marking, maintained traffic control devices and traffic island	Annual compliance inspection	90% signage in place and meeting required standard	94% signage in place and meeting required standard

Bridges

Key Performance Measure	Level of Service Objective	Performance Measure Process	Desired Level of Service	Current Level of Service
COMMUNITY LEVELS OF SERVICE				
Quality	Provide smooth ride	Customer service request	Less than 5 per annum	nil
Function	Ensure that the bridge meets users requirements	Customer service request	Less than 5 per annum	nil
Safety	Provide safe suitable bridges, free hazard	Reported number of accidents	Less than 1 per annum	nil
TECHNICAL LEVELS OF SERVICE				
Condition	Carry out routine maintenance inspection each year	Annual defect and condition inspection	1 inspection per annum. Repair work carried out in accordance with intervention level over 80% of time	1 inspection every 2 years
Accessibility	Provide structures that are capable of carrying vehicles and loads	Duration and frequency of road being impassable	Less than 4 hours when road is impassable per year at no more than 2 locations	1 day 4 times per year
Cost Effective	Provide services in cost effective manner	Maintenance cost per Sqm.	Regional bridges = $ 10/m2 Local bridges = $ 7/m2	Less than $ 5/m2 for both
Safety	Provide clear safety signage and protection railing	Annual defect and condition inspection	Less than 10% of railings and signs with defects	Less than 15% of signs and railing with defects

Footpaths

Key Performance Measure	Level of Service Objective	Performance Measure Process	Desired Level of Service	Current Level of Service
COMMUNITY LEVELS OF SERVICE				
Quality	Provide a smooth surface	Customer service request	Less than 10 per annum	Less than 5 per annum
Function	Provide access to and from residential to commercial and major public areas	Customer service requests relating to availability	Less than 10 per annum	Less than 5 per annum
Safety	Provide safe suitable footpath, free from trip hazards	Number of trips and falls	Less than 10 per annum	Less than 10 per annum
TECHNICAL LEVELS OF SERVICE				
Condition	Carry out routine maintenance inspections each year	Customer service request	Less than 10 per annum	Less than 5 per annum
Accessibility	Maintain footpath that link to residential, commercial and other public facilities in town	Continuity of footpath facilities	Interruptions of footpath less than 10%	Interruption to footpath less than 15%
Cost Effective	Provide services in cost effective manner and community needs	Maintenance cost per Sqm.	Local footpath = $ 5/m2	Local footpath = $ 3.5/m2
Safety	Joint deflections within standards	Annual defect and condition inspection	Less than 10% of path with defects	Less than 15% of path with defects

Kerbs and Gutters

Key Performance Measure	Level of Service Objective	Performance Measure Process	Desired Level of Service	Current Level of Service
COMMUNITY LEVELS OF SERVICE				
Quality	Provide barrier to storm water entering property	Customer service requests	Less than 10 per annum	Less than 10 per annum
Function	Provide smooth flow of storm water to the nearest drain	Customer service requests related to water movement	Nil ponding of storm water	15% of street experience ponding
Safety	Provide unbroken and level Kerb and Gutter	Number of trips, falls and injuries	Less than 10 per annum	Less than 5 per annum
TECHNICAL LEVELS OF SERVICE				
Condition				

Function	Provide structure by which storm water is dispatched from the road surface	Annual kerb and gutter survey customer service request constructed in accordance with priorities	Nil ponding of storm water	15% of street experience ponding
Cost Effective	Provide services in cost effective manner and community needs	Maintenance cost per running metre	Kerb and Gutter = $ 0.60 /lm	Kerb and Gutter = $ 0.51 /lm
Safety	Provide unbroken level kerb and gutter	Number of trips, falls and injuries	Less than 10 per annum	nil

Stormwater drainage

Key Performance Measure	Level of Service Objective	Performance Measure Process	Desired Level of Service	Current Level of Service
COMMUNITY LEVELS OF SERVICE				
Quality	Provide efficient method of collection and disposal of stormwater	Customer service request	Less than 10 per annum	Less than 5 per annum
Function	Ensure stormwater system meets community expectations	Customer requests relating of property flood	Less than 10 per annum	Less than 5 per annum
Safety	Provide stormwater system that's low risk to the community	Number of accident and injury	Less than one per annum	Nil
TECHNICAL LEVELS OF SERVICE				
Condition	Periodic visual assessment to determine condition	Routine cleaning and slashing of open drain	100% of flood risk areas cleaned each	100% of flood risk areas cleaned each
Function	Ensure stormwater system has appropriate design capacity	Number of properties inundation events	Less than 10 per annum	Nil
Cost Effective	Provide cost effective stormwater system	Cost / metre	N/A	N/A
Safety	Provide stormwater system that's low risk to the community	Number of accident and injury	Less than one per annum	Nil

Pump stations

Key Performance Measure	Level of Service Objective	Performance Measure Process	Desired Level of Service	Current Level of Service
COMMUNITY LEVELS OF SERVICE				
Quality	Stormwater system works when required	Customer service request	Less than 10 per annum	Less than 5 per annum
Function	No flooding in roads during rainfall	Customer requests relating of property flood	Less than 10 per annum	Less than 5 per annum
Safety	Pump stations are locked off to public	Number of defective lock identified in monthly inspections	Zero defects. Any defects are repaired within 24 hours.	Nil
TECHNICAL LEVELS OF SERVICE				
Condition	Carry out regular maintenance	Repaired completed within agreed response times	100% of flood risk areas cleaned each	90% of flood risk areas cleaned each
Function	System operates when required	Number of pump breakdowns	Less than 10 per annum	Nil
Cost Effective	Cost effective maintenance per pump	Cost $ / pump per annum	Less than $500 / pump per annum	
Safety	Required safety devices are fully operational	Number of reported injuries to staff in cleaning and maintenance	Zero injuries	Nil

6. Condition of Our Assets

Council maintains a Condition Assessment Manual that details the frequency of inspection and condition rating to be used for all assets. This data is recorded in the Council Asset Management System and used to predict the timing of renewal / maintenance requirements in the Long Term Financial Plan.

Assets are rated on a 1 (Near New) to 5 (Completely Failed) scale

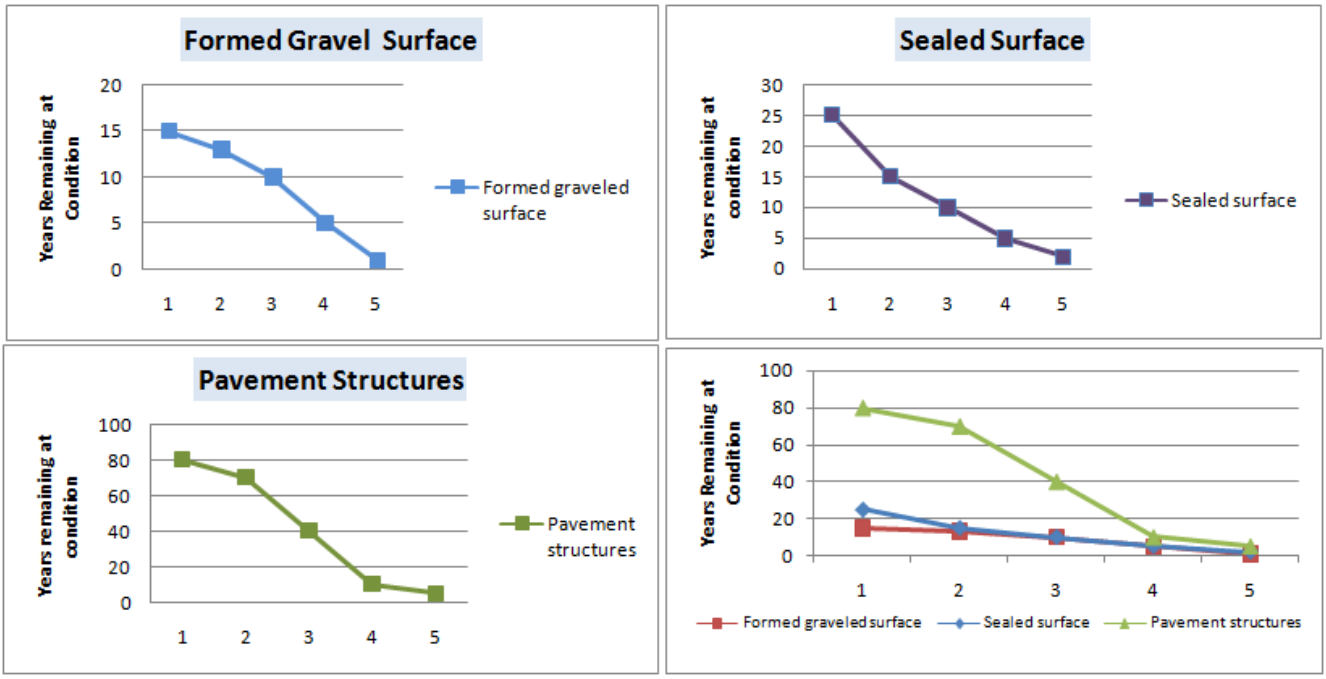
Level	Condition	Description	Description for Roads
1	Excellent	No work required(normal maintenance)	Normal maintenance
2	Good	Only minor maintenance work required	Some surface/Pavement structure deterioration – Patching only needed for repair
3	Average	Maintenance required	Serious surface/Pavement structure deterioration - Require resurfacing or recycling of pavement structure
4	Poor	Renewal required	Deterioration materially affecting entire surface /Pavement structure - requires renovation within 1 year
5	Very poor	Urgent renewal / upgrading required	Deterioration of sufficient extent to render the surface /Pavement structure unserviceable

The intent of Council is not to undertake renewal on an asset until it reaches its 'Intervention Level', that is the condition at which the community has determined renewal is required based on the Level Of Service (LOS) analysis. Typically, assets will be renewed between condition 3 & 4, which ranges from fair/poor to very poor depending on their classification.

Deterioration profiles have been developed that track the rate of deterioration expected over time for each material type in each asset group. This information is used in our models to determine when an asset is expected to be due for renewal, noting that assets will only be renewed when they reach their intervention condition, not based on their age.

Figure 5.1 provides examples of several deterioration profiles used with the vertical column showing the years remaining at a particular condition

Figure 5.1: At what rate do we expect our assets to deteriorate?



Using the information from the curves above and the intervention level set for the class of an asset we can determine the expected useful live of our assets as detailed in table 5.1 and the condition model.

Table 5.1: What are our Intervention Levels to Renew an Asset?

Road Hierarchy	Traffic Volume Ranking Priority (Based on traffic count)	Intervention Level
		Condition
Arterial	6	3 - Average
Arterial	5	3- Average
Distributor	4	3-Average
Collector	3	4-Poor
Access	2	4-Poor
Access	1	4-Poor

Condition model

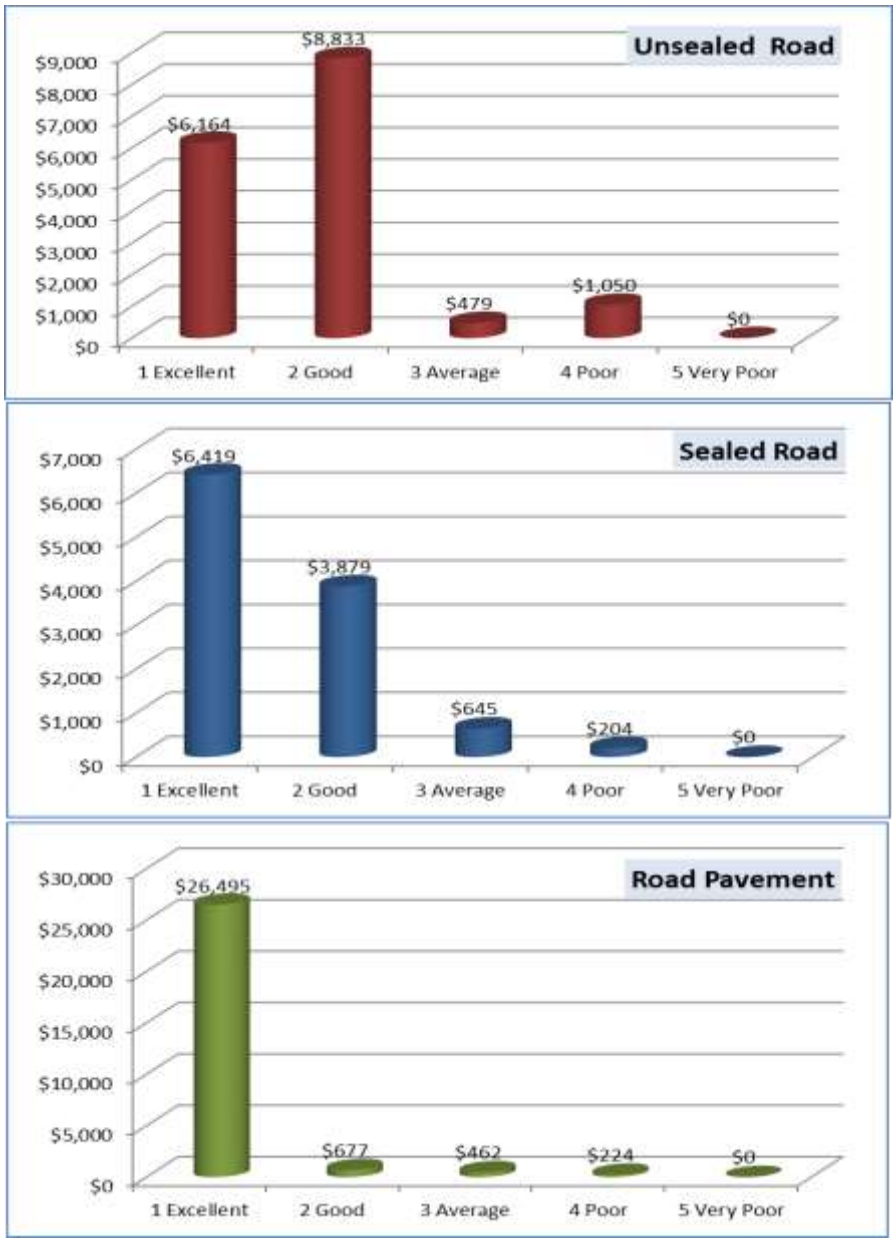
Condition	Description	Road Hierarchy - Formed Gravel Roads	
		Arterial	Distributor
Excellent	Normal maintenance		
Good	Some surface/Pavement structure deterioration – Patching only needed for repair		
Average	Serious surface/Pavement structure deterioration - Require resurfacing or recycling of pavement structure		
Poor	Deterioration materially affecting entire surface /Pavement structure - requires renovation within 1 year		
Very poor	Deterioration of sufficient extent to render the surface /Pavement structure unserviceable		

Condition	Description	Road Hierarchy - Formed Gravel Roads	
		Collector	Access
Excellent	Normal maintenance		
Good	Some surface/Pavement structure deterioration – Patching only needed for repair		
Average	Serious surface/Pavement structure deterioration - Require resurfacing or recycling of pavement structure		
Poor	Deterioration materially affecting entire surface /Pavement structure - requires renovation within 1 year		
Very poor	Deterioration of sufficient extent to render the surface /Pavement structure unserviceable		

Condition	Description	Road Hierarchy -Sealed Roads	
		Arterial	Distributor
Excellent	Normal maintenance		
Good	Some surface/Pavement structure deterioration – Patching only needed for repair		
Average	Serious surface/Pavement structure deterioration - Require resurfacing or recycling of pavement structure		
Poor	Deterioration materially affecting entire surface /Pavement structure - requires renovation within 1 year		

Each asset's condition is maintained in the Asset Register and the graphs below gives the condition profile based on the renewal dollar value of the top 6 valued assets in each condition.

Figure 5.2: What Conditions are our top assets in ($M)?



7. Operations

Operational activities are those regular activities that are required to continuously provide the service including management expenses, street lighting, asset inspection, street furniture, signs, linemarkingand other overheads.

The road network is inspected regularly in accordance with Council's Defined Asset Management Policy (DAMP) in order to development and update annual cyclic maintenance programs including:

- Footpath and kerb and gutter repair programs
- Gravel re-sheeting program (unsealed roads)
- Maintenance grading program (unsealed roads)

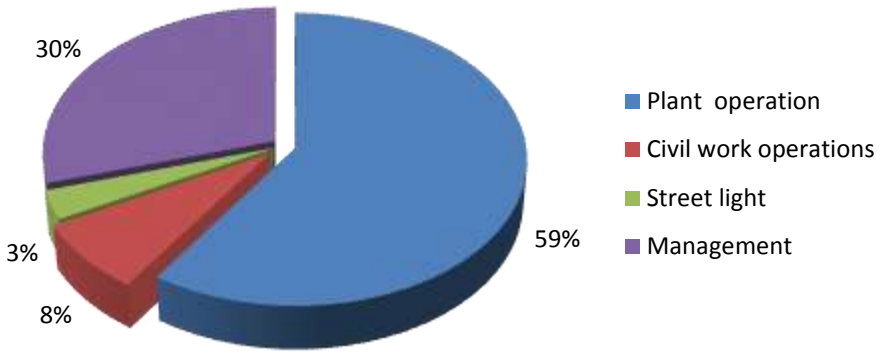
Table 6.1: When do we undertake Inspections?

Inspection	Frequency
Condition Assessments	
Sealed Roads	Annually
Gravel Roads	After rain or every six months
Kerb & Gutter	Annually
Footpaths	Annually
Safety Inspections	Annually

Table 6.2: What are our Operational Costs?

Activity	20 year average (2015 $,000)
Plant operations	1,405
Civil work operations	185
Street lighting	75
Management	700
Total	**2,365**

Figure6.1: What is the breakup of our Operational Costs?



8. Maintenance

Routine maintenance is the regular on-going work that is necessary to keep assets operating to ensure they reach their useful life. It includes work on an asset where a portion may fail and need immediate repair to make it operational again.It may be either planned where works are programmed in or cyclic in nature or reactive in response to storm damage, vandalism etc. The majority of the maintenance undertaken by Council is planned or cyclic in nature.

Planned or reactive maintenance are defined as follows:

- Reactive maintenance – unplanned repair work carried out in response to service requests.
- 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 experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

The level of service and standards of care for maintenance is carried out in accordance with Council's Asset Management Policy and Asset Management Manual. Current maintenance expenditure levels are considered to be adequate to meet required service levels.

Future revision of this asset management plan will include linking required maintenance expenditures with required service levels in the Community Strategic Plan.

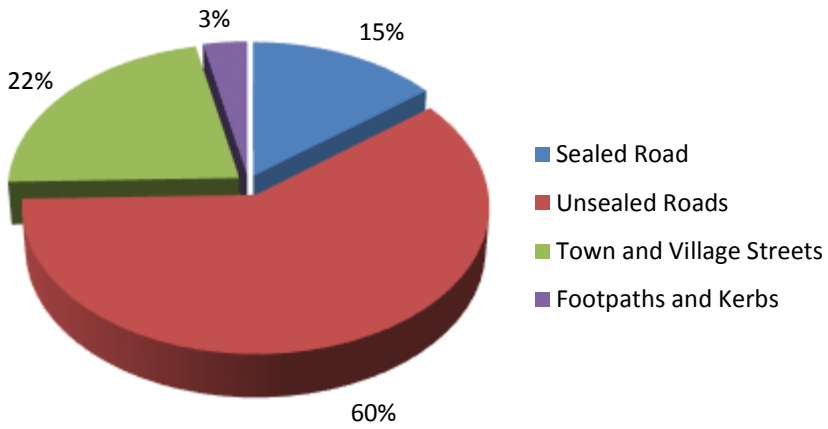
Table 7.1: What are our Maintenance Activities and the frequency we undertake them?

Activity	Arterial	Distributor	Collector	Access
Maintenance Grading	6 months	12 months	12 months	24 months Where ever necessary

Table 7.2: What are our Maintenance Costs?

Activity	20 year average (2015 $,000)
Sealed roads	304
Un sealed roads	1,271
Town and village streets	467
Foot paths and kerbs	70
Total	**2,113**

Figure 7.1: What is the breakup of our Maintenance Costs?



Adjusting Levels of Service

The opportunity to adjust the level of service provided is primarily through reducing reaction time to repair defects, increasing the frequency of shoulder and other maintenance grading or other maintenance activities.

The proposed maintenance programs are as per the Asset Management Manual. The Unsealed Roads gravel re-sheeting program is contained in Appendix A.

9. Capital Renewal / Rehabilitation

This includes work on an existing asset to replace or rehabilitate it to a condition that restores the capability of the asset back to that which it had originally. The intervention level and estimated useful lives are contained in Table 5.1.

This Asset Management Plan contains an analysis based on broad assumptions and best available knowledge to date. Modelling is not an exact science so we deal with long term averages across the entire asset stock. Work will continue on improving the quality of our asset registers and systems to increase the accuracy of our renewal models.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 the full replacement cost.

Pavement renewals are addressed in the form of road pavement in-situ rehabilitation. A pavement stabilisation additive is incorporated into the existing pavement via the use of a road reclaimer. The pavement is then re-compacted and sealed. Renewing or "Resealing" existing road surfaces at the optimum time reduces the amount of "reactive" pothole patching required and extends the life of the underlying pavement.

Footpath renewals are based on the risk that the asset poses to pedestrians. Concrete footpath and cycleway deterioration is generally the result of tree root damage. Asphalt footpath and cycleway deterioration consists of age deterioration causing surface irregularities which may be caused by tree root damage. Renewal work is carried out in accordance with the following standards and specifications:

- AUSPEC Construction Specification &Relevant Australian Standards
- RMS Road Maintenance Contract&Road Works Quality Assurance Specifications
- Bridge Design AS 5100

Assets requiring renewal will be generally identified from estimates of remaining life and condition assessments obtained from the asset register and models. Candidate proposals will be inspected to verify the accuracy of the remaining life estimate and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes.

Details of planned renewal over the next 4 years are listed in Appendix B. The first year of the program will be considered in the development of the next Operational Plan and the remaining 3 years of work will be assessed each year to confirm that the asset has reached its intervention level prior to the work being scheduled.

For this asset group, an analysis has been undertaken to determine assets that are already at or above intervention level that are not able to be funded in the next Operational Plan. This work is quantified in the 'Backlog' columns. Note a negative figure in a backlog column is indicative of the work required that year only, practically, those funds would be diverted to another program that has a deficit that year. Budget, required and average gap figures are based on a 10 year annual average amount.

Table 8.1: What are our Renewal Costs, Gap and Backlog (2016 $,000)?

(With un-funded projects)

Activity	Average Renewal Budget	Average Renewal Budget Required	Average Funding Gap	Backlog (2016/17)	Backlog (2025/26)
Sealed road	$375	$550	$175	$0	$1,240
Unsealed road	$690	$965	$275	$357	$3,257
Town and village street	$0	$0	$0	$0	$0
Footpaths and kerbs	$0	$0	$0	$0	$0
Total	**$1,065**	**$1,515**	**$450**	**$357**	**$4,497**

What will we spend over the next 10 years (2016$M), (Without unfunded projects)

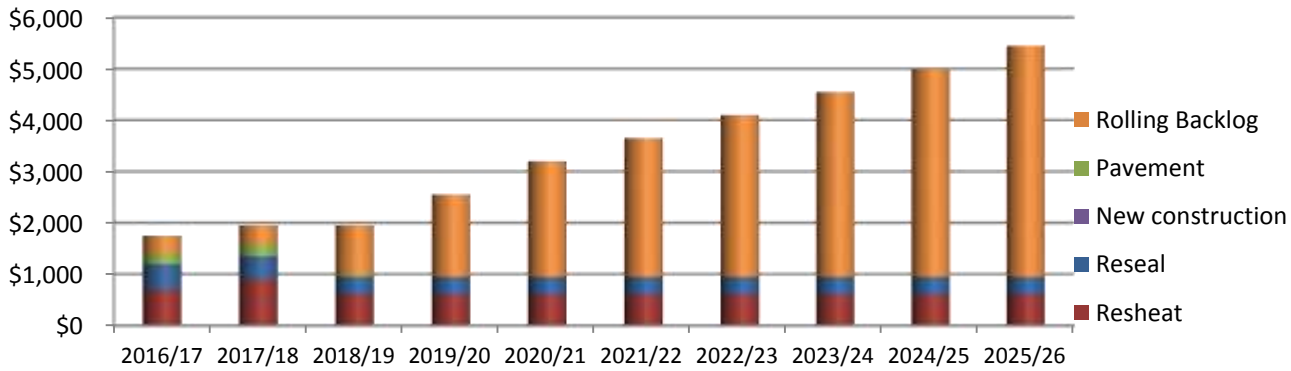
Activity	Average Budget	Average Budget Required	Funding Gap	Backlog (2016/17)	Backlog (2025/26)
Sealed road	$375	$426	$51	$0	$0
Unsealed road	$690	$639	-$51	$0	$0
Town and village street	$0	$0	$0	$0	$0
Footpaths and kerbs	$0	$0	$0	$0	$0
Total	**$1,065**	**$1,065**	**$0**	**$0**	**$0**

1. Budget Figures are the 10 year annual average.

The following graphs show the proposed expenditure on renewals over the next 10 years and the rolling backlog in any one year over that period. Two graphs are presented due to the high impact of the rolling backlog. Figure 8.1 indicates that, based on current projections, Council will spend approximately $ 1 million per annum on renewals. Note that there is a large injection of funds into renewals for the 2015/16 year to assist in addressing the backlog.

Figure 8.1: What will we spend (2016 $,000) over the next 10 years on Renewal?

(With Un- funded projects)



What will we spend (2016 $, 000) over the next 10 years on Renewal?

(Funded projects)

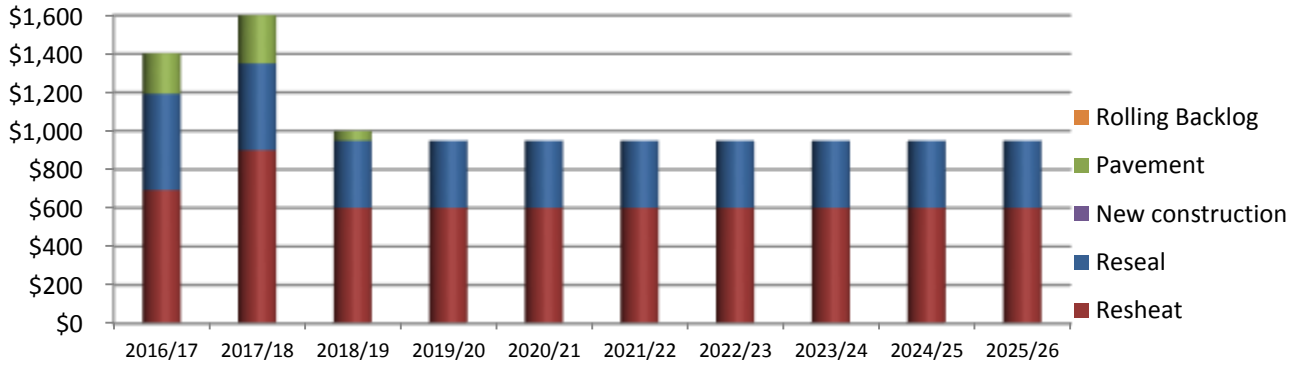
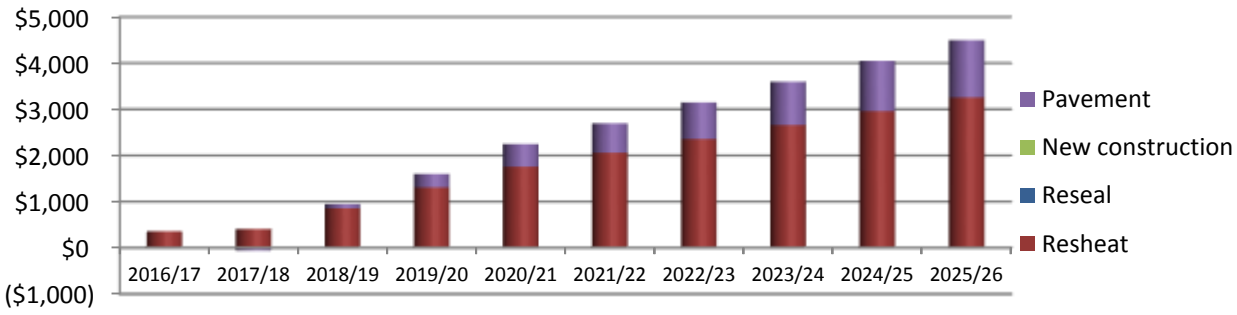


Figure 8.2 indicates that in any year the value of work exceeding the intervention levels set in this Asset Plan could be as high as $5 million, with no backlog projected at the end of 10 years. However from Table 8.1, when considering the renewals required over the next 10 years, an additional $500,000 per year would be required to ensure no backlog of works in 2025/26.

Figure 8.2: What are the projected rolling backlog splits ($,000)? (With un-funded projects)



The projected rolling backlog splits ($, 000) for funded projects is zero.

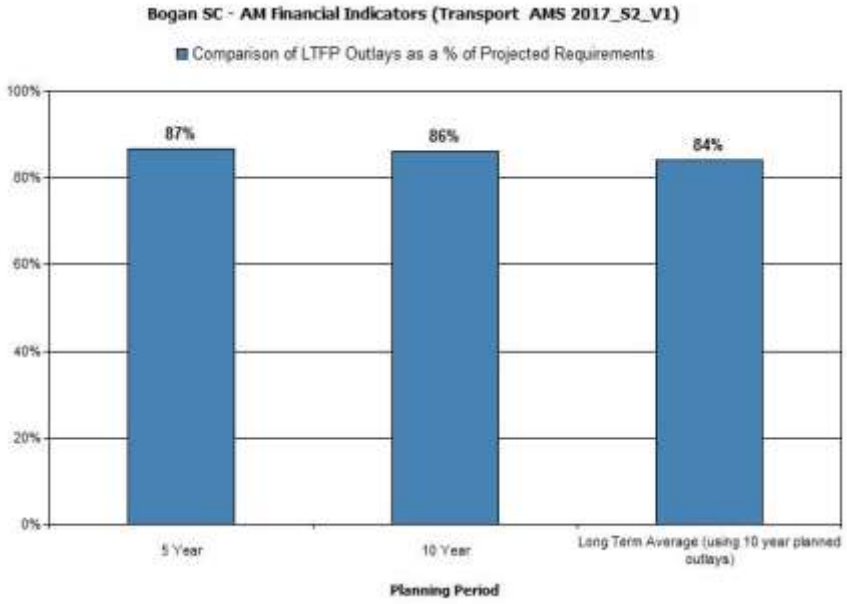
Lifecycle costs

The lifecycle costs are determined based on the total cost of ownership of each asset including operations, maintenance, renewal and disposal costs. The average annualised lifecycle costs for each component is presented in table 8.2.

Table 8.2: What are our Lifecycle Costs? With Un –funded projects

Bogan SC - Report 3 - Section 6.1 Sustainability (Transport AMS 2017_S2_V1)	
Asset Renewal Funding Ratio	
Asset Renewal Funding Ratio	**71 %**
Life Cycle Cost (long term)'($000)	
Life Cycle Cost [average 10 years projected ops, maint exp and deprn.]	**$3,407**
Life Cycle Exp [average 10 years LTFP budget ops, maint & capital renewal exp]	**$2,861**
Life Cycle Gap [life cycle expenditure - life cycle cost [-ve = gap]	**-$546**
Life Cycle Indicator [life cycle expenditure / life cycle cost]	**84 %**
Medium Term (10 yrs) Sustainability	
10 yr Ops, Maint & Renewal Projected Expenditure	**$3,322**
10 yr Ops, Maint & Renewal LTFP Budget Exp	**$2,861**
10 year financing shortfall [10 yr proj exp - LTFP Budget exp]	**-$461**
10 year financing indicator [LTFP Budget exp / 10 yr proj exp]	**86 %**
Short Term (5 yrs) Sustainability	

5 yr Ops, Maint & Renewal Projected Expenditure	**$3,433**
5 yr Ops, Maint & Renewal LTFP Budget Exp	**$2,977**
5 year financing shortfall [10 yr proj exp - LTFP Budget exp]	**-$456**
5 year financing indicator [LTFP Budget exp / 5 yr proj exp]	**87 %**



What are our Lifecycle Costs? For Funded Projects

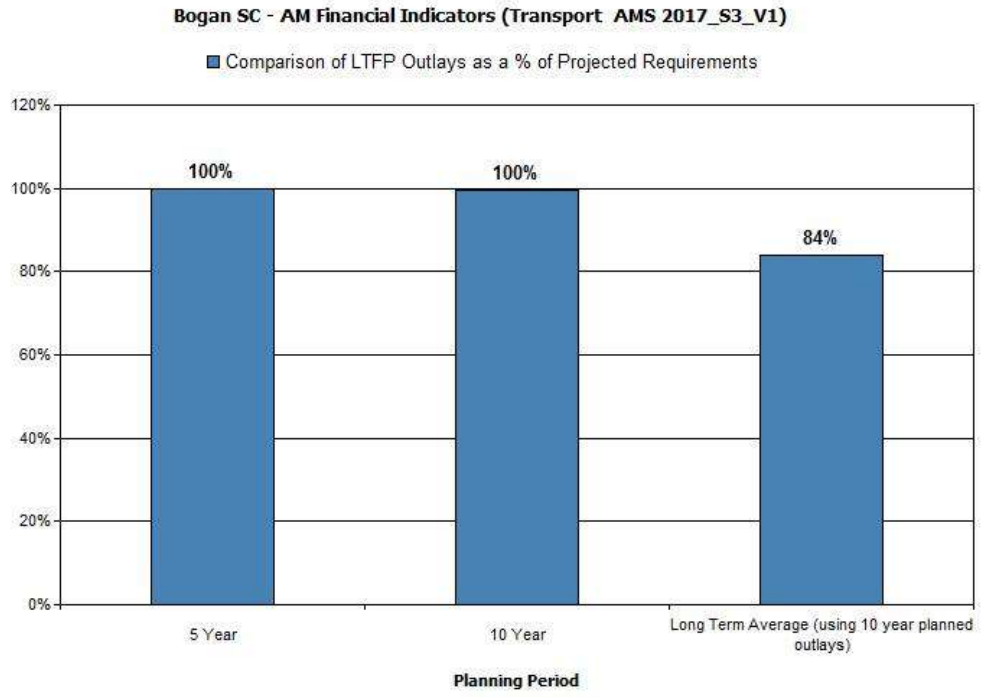
Bogan SC - Report 3 - Section 6.1 Sustainability (Transport AMS 2017_S3_V1)

Asset Renewal Funding Ratio	
Asset Renewal Funding Ratio	**100 %**
Life Cycle Cost (long term)'($000)	
Life Cycle Cost [average 10 years projected ops, maint exp and deprn.]	**$3,407**
Life Cycle Exp [average 10 years LTFP budget ops, maint & capital renewal exp]	**$2,861**
Life Cycle Gap [life cycle expenditure - life cycle cost [-ve = gap]	**-$546**
Life Cycle Indicator [life cycle expenditure / life cycle cost]	**84 %**
Medium Term (10 yrs) Sustainability	
10 yr Ops, Maint & Renewal Projected Expenditure	**$2,873**
10 yr Ops, Maint & Renewal LTFP Budget Exp	**$2,861**
10 year financing shortfall [10 yr proj exp - LTFP Budget exp]	**-$11**

10 year financing indicator [LTFP Budget exp / 10 yr proj exp]	**100 %**

Short Term (5 yrs) Sustainability

5 yr Ops, Maint & Renewal Projected Expenditure	**$2,984**
5 yr Ops, Maint & Renewal LTFP Budget Exp	**$2,977**
5 year financing shortfall [10 yr proj exp - LTFP Budget exp]	**-$7**
5 year financing indicator [LTFP Budget exp / 5 yr proj exp]	**100 %**



10. Capital Upgrades & New Assets

Upgrades enhance an existing asset to provide a higher level of service, for example widening an existing road seal. New assets are those created to meet an additional service level requirement or increase the size of a network, for example, new subdivisions, or extension of the stormwater drainage network.

The requirements for new assets may result from growth, social or environmental needs. The impact from growth is included in the demand analysis within the Asset Management Strategy.

Both capital types may be funded at least in part through Developer Contributions in the form of a Section 64 or 94 Contribution, a Voluntary Planning Agreement, or as part of a subdivision development. Section 94 of the Environmental Planning and Assessment Act 1979 allows Council to require developers to contribute towards meeting the increased demand for public amenities and services created by new development. Council's S94 Development Contribution Plan provides a means for collecting relevant contributions in respect to road upgrading, traffic management and car parking.

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

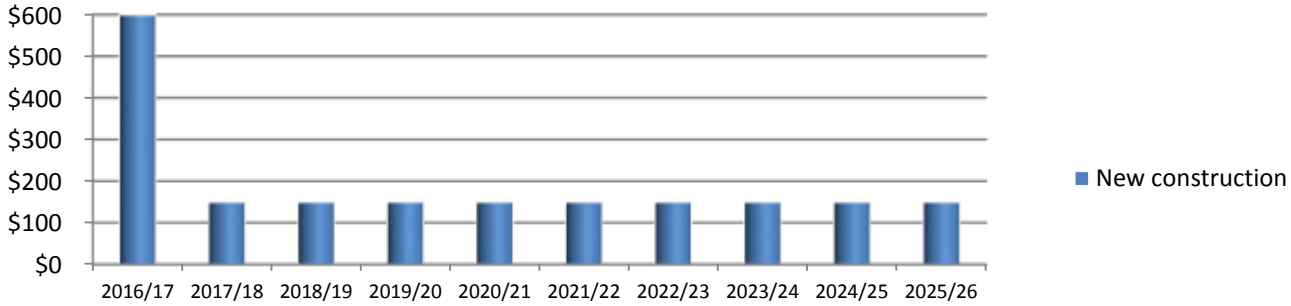
Council has developed a framework for the prioritisation of capital projects and that information is used in the consideration of all new projects above the threshold set in the framework. Included in the analysis is the identification of life cycle costs as outlined in the Asset Management Strategy.

Council has an adopted strategy for the expansion of Transport with the following new / upgraded assets proposed over the next 10 years to meet demand and safety improvement requirements. Table 9.1 indicates the major projects (a complete list is contained in Appendix C).

Table 9.1: What are the upgraded / new assets are proposed over the next 10 years?

Project / Group	Year(s)	Status	Cost
Construction of 1 km of new road annually	2016-2026	On going	$150,000/km

Figure 9.1: What will we spend ($M) over the next 10 years on Upgraded or New Assets?



11. Disposal Plan

No redundant assets requiring decommissioning and disposal are anticipated.

12. Financial Plan

As part of its funding strategy, Council has the option to supplement any or all of the current or new Transport proposals that come into consideration for construction with borrowings. This strategy is heavily influenced by the monitoring of Council's Debt Service Ratio.

The debt service ratio is a measure of the degree to which revenues are committed to servicing debt. The purpose of the ratio is to assess the impact of loan principal and interest repayments on the discretionary revenue of the Council.

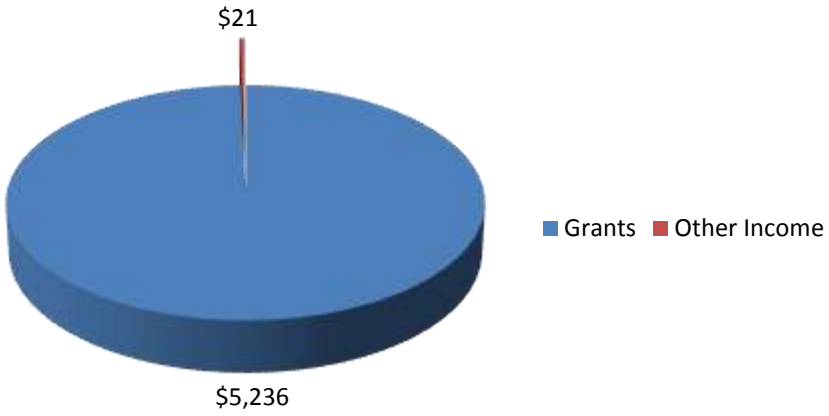
A summary of the funding requirements and expenditure over the next 10 years is included in Appendix D, with the projected budget amounts being based on 2016 dollars increased for growth by 0.9% per annum.

Funding for management of assets can come from a variety of sources as detailed in the table below.

Table 11.1: Where does our Income come from?

Activity	20 year average (2015 $,000's)
Grants and subsidies	5,236
Other income	21
Total	**5,257**

Figure 11.1: What is the breakup of our income streams?



13. Key Performance Measures

Development of Key Performance Measures based on condition have been developed by considering

Table 12.1 Performance Measures

Key Performance Measure	Level of Service	Target	Current
Annual monthly average of Sealed Roads surface defect complaints in the CRM system	Sound and smooth surface	< 10 / month	TBA
Annual monthly average of footpath/cycleway defect complaints in the CRM system	Sound and non slippery walking/riding surface	< 10 / month	TBA
Annual monthly average of Unsealed Roads defect complaints in the CRM system	Unsealed roads provide all weather access	< 10 / month	TBA
Percentage to roads inspected annually	Adequate road safety facilities provided (signage, linemarking, roadside furniture, etc)	>95%	TBA
No. of physical road closures due to wet weather	Roads remain accessible during moderate rainfall	< 0.5 /month	TBA

14. Plan Improvements

The following assumptions have been used in the 20 year financial modelling forthis plan:

1. No allowance has been included for any increase in maintenance expenditure. The increases in the assumed useful life's of transport asset (e.g. from 14 to 21 years for flush seals and from 60 to 90 years for local road pavements) as assumed in the financial modelling may require an increase maintenance expenditure but this yet to be quantified and hence will continue to be monitored.
2. With the current combination of re sheeting and maintenance grading, the unsealed road network remains at average condition throughout the shire.

In addition to the Asset Management Strategy improvements, the following improvements in the way assets are managed and planned for the coming 12 months:

1. Develop and document the process of uploading new asset data into Council's asset register in a timely manner
2. Complete uploading of rural culverts, bridges and ancillary asset data into Council's asset register
3. Consider adding an additional level to the roads hierarchy for minor access roads and laneways (to allow better prediction of pavement renewal due dates for these roads)
4. Monitor and improve knowledge of maintenance costs due to the impact of the proposed increase in useful life.

15. Risk Management Plan

Council is committed to the identification and elimination or reduction of risks associated with hazards that arise throughout Council operations as far as reasonably practicable. To facilitate this process an Enterprise Risk Management Plan has been developed which includes the management of risks for each of its assets. 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.The key Risks identified in this Plan are summarised in the following Table 14.1.

Table 14.1 Critical Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Associated Costs
Unsealed local road network	Loss of all weather access to properties and dwellings	H	1.Conducting reactive and planned maintenance program 2. Resheet program at average 15 yr intervals 3. Develop hierarchy and service levels	$965,000per annum (included in capital renewal program)
Un sealed regional road network	Loss of all weather access to properties and dwellings	H	1.Conducting reactive and planned maintenance program, 2.Resheet program at average 10 yr intervals 3. Develop hierarchy and service levels	
Sealed surfaces	Increase in pavement failures and road roughness due to wearing of sealed surface. No smooth ride, risk of accident	H	1.Conducting reactive and planned maintenance program, 2. Bitumen reseal program at 30 yr and 35yr for Asphalt roads	$550,000 per annum (included in capital renewal program)
Footpath	Personal injury from trip and fall	H	inspection and maintenance	Staff time Maintenance cost of $ 90,000 per annum
Kerb and Gutter	Loss flow	H	Inspection and maintenance	Staff time
Culvert	Loss of all weather access to properties and dwellings, Increase flood level	H	Inspection and maintenance	Staff time Maintenance cost of $ 70,000 per annum
Road signs	Loss of visibility	H	Inspection and replacement	$37,000 per annum (included in capital renewal program)
Levee Bank Embankment	Erosion and Ants attack	H	Inspection and maintenance	Staff time Maintenance cost of $ 10,000 per annum
Gates	Siltation	H	Inspection and maintenance	Staff time and Maintenance cost of $ 5,000 per annum
Pump stations	Malfunctioning the motor		Inspection and replacement	$20,000 for spare parts
Open drain	Backflow	H	Inspect and identify open drain that need spraying and cleaning	Staff time

One of the outcomes of this assessment is the determination of **Critical Assets** Critical assets are specific assets which have a high consequence of failure but not necessarily a high likelihood of failure. By identifying critical assets and critical failure modes, Council can appropriately target and refine inspection regimes, maintenance plans and capital expenditure plans.

Operations and maintenances activities may also be targeted to mitigate critical assets failure and maintain service levels. These activities may include increased inspection frequency, higher maintenance intervention levels, etc.

Critical Assets and Intervention Levels									
Road Hierarchy	Traffic Volume Ranking Priority (Based on traffic count)	Traffic Volume Range (Veh/Day)	Operating Speed in Dry Weather (km/hr)	Intervention Level for Heavy Grade (km/hr)		Maintenance Grading Frequency (Years)	Resheet Frequency (Years)	Reseal Frequency (Years)	Performance Indicators
				Condition	(Minimum Lower Dry Weather Operating Speed)				
Arterial	6	45 +	80 to 100+	3	80	0.5	5 to 10	10 to 15	**1.** Maintenance grading within the specified frequency (annual program); **2.** Gravel resheeting or resealing within the specified frequency (longer term); **3.** Documented inspection and risk assessment determining that each road is safe for road users at speeds appropriate to the class of road and prevailing conditions (excluding unsealed roads when not trafficable due to wet weather) at least annually and otherwise upon inspection ahead of programmed maintenance grading or upon receiving a request or feedback from road users; **4.** Desirable to improve shape of unsealed roads for drainage - aim for 10 km/yr. **5.** Improve the drainage to get water away from the road surface
Arterial	5	23 to 44	70 to 90+	3	70	0.5	5 to 10	10 to 15	
Distributor	4	11 to 22	70 to 90+	3	70	1	5 to 10	10 to 15	
Collector	3	11 to 22 (Gravel)	70 to 90+	4	70	1	5 to 10 (Where necessary)	10 to 15	
Access	2	0 to 10 (Gravel)	60 to 80+	4	60	2 (Where necessary)	5 to 10 (Where necessary)	N/A	
Access	1	0 to 10 (Formed)	50+	4	50	2 (Where necessary)	N/A	N/A	

The factors in Table 14.2 have been used to determine the most critical assets, with those scoring more than 40 being listed in table 14.3

Table 14.2 Critical Assets

Factor	High Score (6)	Medium Score (3)	Low Score (1)
AADT	> 45 vpd	11 - 22 vpd	< 22vpd
Alternative route(s) exist	Communities isolated	Travel times increased, damage to side streets	
Underground services	Water supply mains present		
Adjacent to a waterway	Runs parallel	Crosses waterway	
Emergency Services	Provides direct access		

Adjacent schools, shops, sports venues, etc	Adjacent to schools		
Bus Routes	Public transport bus route	School bus route	
Accident history	Fatality in past 5 years	> 5 injury accidents past 2 years	> 5 injury accidents in past 5 years
Heavy vehicle route	> 5% heavy vehicles	3-5 % heavy vehicles	<3% heavy vehicles

Table 14.3 Critical Assets

Critical Assets – Roads	Critical Failure Mode	Treatment Plan
Arterial	Pavement failure due to underground services (e.g. water main rupture)	Elevated inspection, response times and Intervention level

Roads also have risks associated with initial construction and maintenance activities. These risks are managed under specific risk management plans (such as traffic control plans and Safe Work Method Statements) and in accordance with applicable Work Health and Safety requirements.

Risks associated with the degradation of assets are managed by the periodic inspection (proactive) or through customer service requests under the requirements and response times outlined in Council's Customer Request Management (CRM) system.

The Asset Classification Standard (ACS) defines the road in terms of its position within the network hierarchy and describes its functional characteristics relative to other ACS levels. Each road is managed, inspected, maintained and repaired in accordance with the Maintenance Service Level (Specification) Standard applicable to the particular ACS.

The Maintenance Service Level (MSL) is described by maintenance activities including responses for different defects (kerb and gutter, footpath, potholes, heavy patching, re-sheeting etc which must be carried out to achieve a standard (both qualitative and quantitative) outcome.

Examples of maintenance activities which may be described by MSL include:

- maintenance grading of a gravel road - MSL - frequency of grading
- edge patching of sealed road - MSL - dimensional limit of edge break
- slashing of road verge - MSL - maximum height of grass
- linemarking re-painting - MSL - frequency of repainting or measure of paint visibility

Operational risks and treatment plans are outlined in the following Table 14.4.

Table 14.4 Operational Risks and Treatment Plans

Asset at Risk	What can Happen	Risk Treatment Plan
Road pavement / wearing surface	Early loss of service level due to excessive roughness, potholes, etc	▪
	Loss of wet weather skid resistance due to bleeding of surface of sprayed bitumen seal or asphalt surfaces.	▪
	Unacceptable performance due to poor standard of reinstatement by service utilities / developers.	▪
Road delineation / signage / sight distances	High accident rates	▪
Bridges / rural culverts / sections of the road network	Impassable due to collapse, wildfire, flooding or windstorm resulting in loss of conductivity / greater travel times	▪
Unsealed roads	Inaccessible after rain, increase in traffic accidents	▪
Footpaths/Cycleways	Early loss of service level due to excessive cracking, stepping deformation, etc	▪

16. Appendix A: Maintenance Program

Gravel Road Re-sheeting Program

17. Appendix B: Rolling Four Year Renewal Programs

The following programs are based on best available information with the first year of works expected to be delivered within the currently identified budgets. After the first year, the following years will be validated each year with a review of the condition so that assets are only renewed at the intervention level. Works that can't be funded within the 4 years but which are expected to be due based on modelling, are grouped as 'unfunded'.

Year	Item	Description	Estimate
2017		**Network Renewals**	
	1	Resheet	$693
	2	Reseal	$500
	3	Pavement	$210
2017		**Total**	**$1,403**

2018		**Network Renewals**	
	1	Resheat	$900
	2	Reseal	$450
	3	Pavement	$250
2018		**Total**	**$1,600**

($000)

Year	Item	Description	Estimate
2019		**Network Renewals**	
	1	Resheat	$600
	2	Reseal	$350
	3	Pavement	$50
2019		**Total**	**$1,000**

2020		**Network Renewals**	Estimate
	1	Resheat	$600
	2	Reseal	$350
	3	Pavement	
2020		**Total**	**$950**

($000)

Year	Item	Description	Estimate
2021		**Network Renewals**	
	1	Resheat	$600
	2	Reseal	$350
2021		**Total**	**$950**

2022		**Network Renewals**	
	1	Resheat	$600
	2	Reseal	$350
2022		**Total**	**$950**

($000)

Year	Item	Description	Estimate
2023		**Network Renewals**	
	1	Resheat	$600

	2	Reseal	$350
2023		**Total**	**$950**

2024		**Network Renewals**	
	1	Resheat	$600
	2	Reseal	$350
2024		**Total**	**$950**

($000)

Year	Item	Description	Estimate
2025		**Network Renewals**	
	1	Resheat	$600
	2	Reseal	$350
2025		**Total**	**$950**

2026		**Network Renewals**	
	1	Resheat	$600
	2	Reseal	$350
2026		**Total**	**$950**

Recommended Road Re Sheeting Program at 12.04.2017

Road Hierarchy	Road Name	Segment Description	Length (Km)	Cost ($)
Distributor	Buddabadah Road	16.2 to 17.7	1.5	$22,500
Arterial	Piesley Road	6.3 km to 15.7 km	9.4	$141,000
Arterial	Pangee Road	16.4km to 29.87km	13.5	$202,050
Distributor	Pangee Road	44.49 km to 46.49 km	2.0	$30,000
Collector	Honeybugle Road	End of scalps resheeting to start of scalps resheeting	3.7	$55,500
Distributor	Coffils Lane	Start of scalps resheeting to end of resheeting 10.0km	3.8	$56,400
Distributor	Coffils Lane	Start from 10.0 km to11.36 km	1.4	$20,400
Collector	Bourkes Road	19.7 km to 20.7 km	1.0	$15,000
Distributor	Murrawombie Road	Marlow gate to Warra gate	2.8	$42,300
Distributor	Gongolgon Road	32 km to 34.38 km	2.4	$35,700
Arterial	Canonba Road	31.2 km to 32.9 km	1.7	$25,595
Access	Kidstons Road	1. km to the intersection with Backhouses rd.	0.3	$4,500
Distributor	Plummers Road	End of seal to Horse Ridges gate	8.0	$119,550
Distributor	Whiterock road	21.8 km to grid (24 km)	2.4	$36,000
Collector	Doneys Road	4.7 km to 5.4 km	0.7	$10,500
Collector	Tubbavilla Road	Intersection MR424 to 4.0 km	4.0	$60,000
Collector	Okeh Road	Grid to 10.5 km	2.6	$39,600
Arterial	Colane Road	9th grid to 10th grid	3.9	$58,050
Arterial	Cockies Road	Condo 145km sign to 11.8 km	1.8	$27,000
Arterial	Cockies Road	11.8 km to Condo 140km sign	3.2	$48,000
		Total	**70.0**	**$1,050,00**

Recommended Road Re Sealing Program at 12.04.2017

Road Hierarchy	Road Name	Segment Description	Length (Km)	Cost ($)
Arterial	Canonba Road	17.08 km to 18.90 km	1.8	$54,452
Arterial	Canonba Road	24.43 km to 25.9 km	1.5	$53,046
Arterial	Tottenham Road	9.0 to 11.6	2.6	$96,720
		Total	**6.0**	**$204,000**

Recommended Pavement Rehabilitation at 12.04.2017

Road Hierarchy	Road Name	Segment Description	Length (Km)	Cost ($)
Arterial	Tottenham Road	5.8 to8.1	1.30	$117,000
Arterial	Cockies Road	Intersection of Tottenham rd to the bridge	1.19	$107,370
		Total	**2.50**	**$225,000**

18. Appendix C: 4-year Program for Upgrade / New Capital Works

Project	2015/16	2016/2017	2017/2018	2018/2019
Construction of 1km new road in each year				

19. Appendix D: 20 Year Financial Plan (2016 $,000)

Year	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	Average
Income																					
Grants	$7,033	$4,806	$4,655	$4,449	$4,585	$4,729	$4,882	$5,043	$5,213	$5,393	$5,393	$5,393	$5,393	$5,393	$5,393	$5,393	$5,393	$5,393	$5,393	$5,393	**$5,236**
Other Income	$22	$21	$21	$21	$21	$21	$21	$21	$21	$21	$21	$21	$21	$21	$21	$21	$21	$21	$21	$21	**$21**
Total Income	**$7,056**	**$4,827**	**$4,677**	**$4,470**	**$4,606**	**$4,750**	**$4,903**	**$5,064**	**$5,234**	**$5,414**	**$5,414**	**$5,414**	**$5,414**	**$5,414**	**$5,414**	**$5,414**	**$5,414**	**$5,414**	**$5,414**	**$5,414**	**$5,257**
Renewals																					
Resheat	$693	$900	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	**$620**
Reseal	$500	$450	$350	$350	$350	$350	$350	$350	$350	$350	$180	$180	$180	$180	$180	$180	$180	$180	$180	$180	**$278**
Pavement	$210	$250	$50	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$26
New construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Renewal	**$1,403**	**$1,600**	**$1,000**	**$950**	**$950**	**$950**	**$950**	**$950**	**$950**	**$950**	**$780**	**$780**	**$780**	**$780**	**$780**	**$780**	**$780**	**$780**	**$780**	**$780**	**$923**
Maintenance																					
Sealed road	$304	$304	$304	$304	$304	$304	$304	$304	$304	$304	$304	$304	$304	$304	$304	$304	$304	$304	$304	$304	**$304**
Unsealed road	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	**$1,271**
Town and village street	$467	$467	$467	$467	$467	$467	$467	$467	$467	$467	$467	$467	$467	$467	$467	$467	$467	$467	$467	$467	**$467**
Footpaths kerbs and others	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	**$70**
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Total Maintenance	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**	**$2,112**
Operations																					
Plant operations	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	$1,405	**$1,405**
Civil works	$185	$185	$185	$185	$185	$185	$185	$185	$185	$185	$185	$185	$185	$185	$185	$185	$185	$185	$185	$185	**$185**
Street lighting	$75	$75	$75	$75	$75	$75	$75	$75	$75	$75	$75	$75	$75	$75	$75	$75	$75	$75	$75	$75	**$75**
Management	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	$700	**$700**
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Total Operations	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**	**$2,365**
Upgrade / Expansion																					
New construction	$600	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	$150	**$173**
Treatment and Disposal	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Other Structures incl Plant	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Total Upgrade/Exp	**$600**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$150**	**$173**
Total Expenditure	**$6,480**	**$6,227**	**$5,627**	**$5,577**	**$5,577**	**$5,577**	**$5,577**	**$5,577**	**$5,577**	**$5,577**	**$5,407**	**$5,407**	**$5,407**	**$5,407**	**$5,407**	**$5,407**	**$5,407**	**$5,407**	**$5,407**	**$5,407**	**$5,572**
Rolling Backlog	**$347**	**$347**	**$947**	**$1,597**	**$2,247**	**$2,697**	**$3,147**	**$3,597**	**$4,047**	**$4,497**	**$4,897**	**$5,297**	**$5,697**	**$6,097**	**$6,417**	**$6,637**	**$6,857**	**$7,077**	**$7,297**	**$7,517**	