

# Infrastructure Asset Management Plan

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## Transport

### District Council of Yankalilla

November 2016

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# 1 Introduction

## 1.1 Background

The District Council of Yankalilla is located 75km south of Adelaide and covers an area of 751 square kilometres of the South Western Fleurieu Peninsula. This district is valued for its unique character and surrounding landscapes, and people will continue to migrate to the area for its unspoilt beaches, rural setting and quality of life.

The Yankalilla District has a permanent population of approximately 5,400. However towns within the area serve as a coastal getaway for residents of the metropolitan area and almost 50% of dwellings are holiday homes unoccupied periodically during the year. During summer months, the area experiences peak population levels which place pressure on services and infrastructure.

The provision and management of infrastructure assets within the Council includes challenges such as:

- Protection of the natural features which attract people to the district.
- Strengthening the connections between the towns so that they function cohesively.
- Promoting community wellbeing by planning for the needs of an ageing population through a diverse supply of housing and greater transport options.
- Ensuring infrastructure is developed and used efficiently to meet peak demands.
- The relatively small ratepayer base for the geographical size of the Council.
- Assisting the continuing regional economic transition from primary industry by creating opportunities for tourism, service and knowledge based activities.
- The extent of the Council area that contains steep terrain together with high rainfall.

Council provides a transport infrastructure network to residential and commercial properties in both rural areas and built up townships.

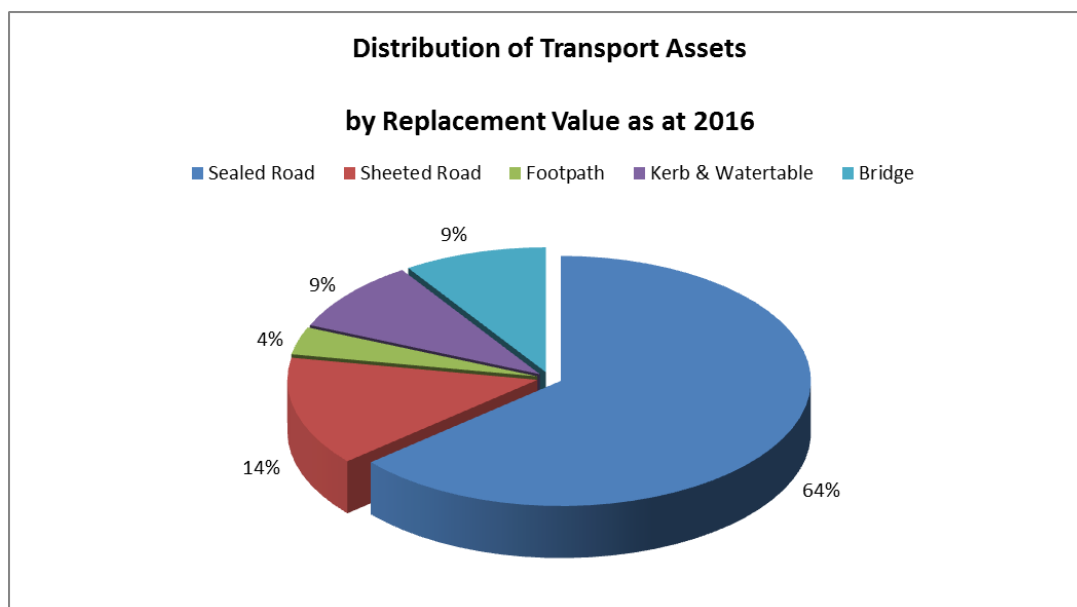
The transport infrastructure assets provide transport services through the provision of a safe and effective road and footpath network. The road network includes unsealed surfaces, sealed surfaces including the underlying pavement, kerbing, footpath and bridge assets. An overview of the transport infrastructure assets covered by this asset management plan are shown in Table 1 and Figure1.

**Table 1**      *Assets covered by this plan*

<b>Asset Category</b>	<b>Dimension</b>	<b>Replacement Value</b>
Sealed Road	129km	\$61,462,318
Sheeted Roads	289km	\$13,615,461
Footpath	33km	\$3,447,559
Kerbing	91Km	\$8,957,129
Bridge	71 no	\$8,966,602
<b>TOTAL</b>		<b>\$96,449,069</b>

Council is also responsible for a number of unsealed (crusher dust) footpaths and approximately 82km of unsheeted roads. As it has been determined that the renewal of these assets is funded through maintenance expenditure rather than capital, these assets are not shown in Table 1.

Figure 1 shows the distribution of transport assets by replacement value as at 30 June 2016 (note: sealed roads include the surface and underlying pavement).



**Figure 1** *Distribution of Transport Assets by Replacement Value as at 30 June 2016*

## 1.2 Plan Framework

This transport infrastructure asset management plan is based on the fundamental structure of the IPWEA NAMS 3 Asset Management for Small, Rural or Remote Communities template and has been simplified to minimise the content to suit The District Council of Yankalilla.

The District Council of Yankalilla provides services for the community in part through the provision of infrastructure assets. Council have acquired these assets directly through construction by council staff or contractors and by donation of assets constructed by developers and others over time.

The 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.
- Managing risks associated with asset failures.
- Sustainable use of physical resources.

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.
- Plan improvement and monitoring – how the plan will be monitored to ensure it is meeting the organisation's objectives.

This asset management plan is prepared under the direction of Council's vision, mission, goals and objectives contained in its Strategic Plan 2014-2018.

Council's vision for the district is:

*"A community with an enriched quality of life."*

Council will achieve its vision by:

- Building on our sense of community.
- Maintaining our built and natural environments.
- Providing strong leadership and prudent stewardship.
- Delivering services to our community within a responsible financial framework.

Priorities listed in the Strategic Plan specific to this asset management plan are:

- Finalise asset management plans
- Develop and agree appropriate community levels of service.
- Maintain and develop stormwater, CWMS, reserves roads, footpaths and tracks, including car parking to within service standard provisions.
- Commence implementation of the streetscape/footpath network enhancement plan for Normanville; Yankalilla; Myponga; Cape Jervis.
- In partnership, deliver a bridge across the Bungala.
- Reinstate prioritised township road sealing program, including a plan for the re-seal Fork tree Road.

## 2 Levels of Service

The community generally expect that Council will provide transport networks which meet the required safety standards together with Australian and State legislative regulations. Council has defined service levels in two terms and provides the level of service objective, performance measure process and service targets in section 2.1 and 2.2.

### 2.1 Community Levels of Service

Community levels of service relate to the service outcomes that the community wants in terms of quality, reliability, responsiveness, amenity and safety

Council previously participated in the Local Government Association of South Australia Comparative Performance Measures in Local Government Customer Satisfaction survey. This telephone survey polls a sample of residents on their level of satisfaction with Council's services. The most recent (2009-2012) customer surveys reported satisfaction levels for the following services:

Community Satisfaction with Asset Management for Yankalilla Council (average score for 2009-2012) = 103.61.

Note under the scoring system utilised a score of 100 represents a "satisfactory" rating of 7 out of 10.

This plan proposes to measure the Council's community level of service performance using the customer request system. The Service Targets set in the plan are based on the number of requests/ complaints received in the period 1 July 2014-30 June 2016.

**Table 2** *Community Levels of Service Unsealed Roads*

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
Quality	Provide smooth ride	Customer service requests	<201/year
Function	Meet user requirements for -accessibility -traffic control (safety)	Customer service requests	<70/year
Capacity/Utilisation	Road capacity is appropriate to service hierarchy	Customer service requests	<2/year

*Community Levels of Service Sealed Roads*

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
Quality	Provide smooth ride	Customer service requests	<28/year
Function	Meet user requirements for -accessibility -traffic control (safety) - lighting	Customer service requests	<55/year
Capacity/Utilisation	Sealed road capacity is appropriate to service hierarchy	Customer service requests	<3/year



*Community Levels of Service Footpath*

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
Quality	Provide even surface for pedestrians. (safety)	Customer service requests	<14/year
Function	Meet users' needs for accessibility	Customer service requests	<12/year
Capacity/Utilisation	Footpaths are provided for pedestrian demand	Customer service requests	<2/year

*Community Levels of Service Kerb and Gutter*

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
Quality	Kerb and Gutter free from ponding and displacement	Customer service requests	<4/year
Function	Meets users' needs for drainage control	Customer service requests	<2/year
Capacity/Utilisation	Storm water flow is contained within kerb and channel	Customer service requests	<2/year

*Community Levels of Service Bridges*

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
Quality	Provide smooth ride	Customer service requests	<4/year
Function	Meet user requirements for -accessibility -traffic control (safety)	Customer service requests	<2/year
Capacity/Utilisation	Bridge width and weight capacity is suitable for road hierarchy	Customer service requests	<2/year

## 2.2 Technical Levels of Service

Technical levels of service support the community service levels and 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.

The operational and maintenance service target budgets are based on the budget figures established for the 2016/2017 financial year as a reference point.

**Table 3      Technical Levels of Service Unsealed Roads**

<b>Key Performance Measure</b>	<b>Level of Service Objective</b>	<b>Performance Measure Process</b>	<b>Service Target</b>
Operations	<p>Roads are free from obstructions</p> <p>Traffic Safety measures appropriate to the Road classification are in place</p> <p>Roads are in suitable for purpose</p>	<p>Vegetation clearance</p> <p>Rural Network Road Safety Audit</p> <p>Scheduled defect inspection program</p> <p>Transport assets operational costs (wages, internal plant cost, depot and asset systems costs)</p>	<p>Clearance envelopes as shown in section 2.3</p> <p>2005 Network Road Safety Audit to be reviewed and priority action list determined</p> <p>To be developed</p> <p>\$2,067,000 (Refer section 4.3.1)</p>
Maintenance	<p>Existing Infrastructure is maintained to a suitable condition</p>	<p>Reactive service requests are assessed and completed within adopted timeframes</p> <p>Scheduled maintenance program based on road hierarchy to be developed and implemented</p> <p>Maintenance costs (materials /contract)</p>	<p>To be developed</p> <p><b>Collector Road (High use)</b> 3 times/year <b>Local Road (Med – Med/ High Use)</b> 2 times/year <b>Minor Access</b> 1 time/year</p> <p>\$610,000/year (Refer section 4.3.1)</p>
Renewal	<p>Roads are suitable for purpose</p> <p>Road Sheetting Depths meet Target Service Levels</p>	<p>Yearly Capital Resheeting Program</p> <p>Existing Depths 58km (20%) of the existing sheeted road network has an average sheetting depth less than 25mm )</p>	<p>\$ 900,000/year (To be remodelled)</p> <p>No more than 20km (7%) of the existing sheeted network should have an average sheetting depth less than 25mm in any one year</p>
Upgrade	<p>Road widths meet Target service</p>	<p>Road Widths Currently</p> <p>Approximately 42km of unsealed Roads are 1.0m or more below the target service</p>	<p>Roads meet Target Service levels for Widths</p>

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
	Road surface meets target service	width measurement for the nominated road category  Road Sheetting Currently 33km of C classification rural roads are unsheeted.	All B and C class unsealed Roads are to be sheeted.

*Technical Levels of Service Sealed Road*

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
Operations	Roads are clean  Roads are lit to user needs  Traffic Control is appropriate    Roads are suitable for purpose	Street sweeping frequency  Australian Standards  Australian Standards  Sealed road operation costs Street sweeping Street lighting Line marking Signage  Scheduled defect inspection program	2 times/year residential roads 4 times/year town centre roads  New roads lit to P5 standard  Meets requirements  \$ 11,000/year \$100,000/year \$ 15,000/year \$ 10,000/year (Refer section 4.3.1) To be developed
Maintenance	Existing Infrastructure is maintained in suitable condition	Reactive service requests are assessed and completed within adopted timeframes  Maintenance costs (materials contracts)	To be determined  \$35,000/year (Refer section 4.3.1)
Renewal	Roads are suitable for purpose	Yearly Capital resealing program  Condition of road assets Existing condition	\$300,000/year       <div>&lt;5% (6.5km) of the sealed road network should be at or above</div>

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
		10% (13.2 km) of the sealed road network is at or above the condition score for resealing	the condition score for resealing in any one year
Upgrade	Roads within townships are constructed and sealed	Allocation of funds to undertake road construction  Budget	All Township Roads to be sealed within 15 years  \$ 300,000/year

*Technical Levels of Service Footpath /Cycleway*

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
Operations	Existing Footpaths have clear access  Footpaths are suitable for purpose	Vegetation Clearance  Scheduled defect inspection program	Footpath should have 2.5m height clearance for its full width  To be developed
Maintenance	Existing Infrastructure is maintained to a suitable condition, free from trip hazards	Reactive service requests are assessed and completed within adopted timeframes.  Maintenance costs (materials contracts)	To be determined  \$30,000/year (Refer section 4.3.1)
Renewal	Footpaths are suitable for purpose	Yearly Capital replacement  Footpath Condition	< 3% (1300 m <sup>2</sup> ) of footpath with a displacement of (10-15%, > 15mm) or worse
Upgrade	Provide a footpath network that is appropriate for anticipated pedestrian and bicycle movements	Installation of footpaths identified in a Footpath Network Plan	Development of a Footpath Network Plan and costing of the identified works

*Technical Levels of Service Kerb and Gutter*

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
Operations	Kerb and Gutter is suitable for purpose	Scheduled defect inspection program	To be developed
Maintenance	Existing Infrastructure is maintained to a suitable condition	Reactive service requests are assessed and completed within adopted timeframes.	To be determined

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
		Maintenance costs (materials and contracts)	\$4,000/year (Refer section 4.3.1)
Renewal	Kerb and Gutter is suitable for purpose	Condition	< 1% of kerb in condition 80 or worse (sections deteriorated and displaced)
Upgrade	Roads within townships are provided with Kerb and Gutter where required	Allocation of funds to undertake road construction	Expenditure amounts Included in sealed roads table

*Technical Levels of Service Bridges*

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
Operations	Bridges are suitable for purposes	Scheduled inspection program	To be developed
Maintenance	Existing Infrastructure is maintained to a suitable condition	Reactive service requests are assessed and completed within adopted timeframes.  Maintenance Costs (materials and contracts)	To be determined  \$10,000 (Refer section 4.3.1)
Renewal	Bridges are suitable for purposes	Yearly Renewal Program Bridge Condition	Undertake new Level 2 bridge assessment Report to determine new renewal requirements
Upgrade	Bridges are suitable for road Classification	Bridge widths, barrier protection	Undertake new Level 2 Bridge assessment Report to determine upgrade requirements

## 2.3 Construction and Renewal Standards for Roads

This plan has been developed based on assumptions related to the construction and renewal standards set out in the following sections for the sealed and unsealed road network.

In 2007 Council adopted a Rural Road Hierarchy based on established examples used by the Local Government Association. A road hierarchy states the classification of a road from highest order through to lowest order. The hierarchy developed is based on the anticipated traffic volumes generated by freight, tourism industries or social (resident access/ school bus route) requirements.

The Road Hierarchy adopted by the District Council of Yankalilla is:

- DPTI (Road under care and control of Department for Planning Transport and Infrastructure)
- Class A Arterial/Distributor Road - Major sealed road forming access between major centres
- Class B Collector Road - sealed or sheeted road which links small townships
- Class C Local Road - sealed (township) or sheeted road that provides access to properties
- Class D Minor Access Road - sheeted or unsheeted road that provides access to a minimal number of dwellings

The existing road layout within in the Yankalilla District resulted in many rural unsealed roads falling within the Class C, Local Roads classification, many of which vary from being a through road through to a dead end road along its length

To account for the likely change in use along a road, the road hierarchy allocations are further classified to distinguish between differing uses along Roads, and are grouped as follows for the purposes of determining unit replacement rates and/or useful lives:

High:	Class A and High Use Class B1
Medium High:	Medium Use Class B2 or High Use C1
Medium:	Medium Use Class C2
Standard Low:	Low Use Class C3
Low:	Low Use Class D

All roads have been inspected and condition rated. The Condition score of a road is a measure of the road consumption between 0 and 100 where 0 represents a newly surfaced road and 100 represents a fully deteriorated road. For sheeted roads the condition score of each road is based on the average sheeting depth, sheeting coverage, existing cross fall, drainage condition and the ride quality of the road. The Condition at End of Life is the condition at which intervention to maintain road serviceability is required

### 2.3.1 Township Seal Classes B1, B2, C1 & C2

Council owns and maintains a township sealed road network totalling approximately 64km. Township sealed roads are classified based on high, medium and low use. Service level requirements for township sealed roads vary depending on several factors and as such no single desirable service level can be provided.

## **Current Standard**

### **Construction Method**

*Seal Width:* Varies

*Seal Types:* Spray seal and hotmix bitumen

*Pavement Width:* Varies

*Pavement Depth:* Varies

- Township high use (B1) > 300mm
- Older township medium high/medium Use (B2, C1,C2) 150 -200mm
- Identified new land division medium high/medium use (B2,C1,C2) 300mm

*Formation:* Included

### **Renewal Method**

*Reseal:* Varies

- Edge profiling and hotmix overlay of high use (B1) hotmix Roads
- Two coat spray seal on township other roads (spray seal 14/7mm)

*Note:* The plan allows for existing B2, C1 and C2 roads with hotmix bitumen surfaces to be overlaid with spray seal.

*Condition at End of Life:* Considers surface condition, cracking, edge defects and extent of patching, equates to a score of 50 in the Asset System.

*Pavement:* Varies

- For township high use (B1) roads, saw cut, demolition, disposal of base trimming and compaction of sub-base, import 150mm granular material, water and compact.
- For older township medium high/medium use (B2,C1,C2) roads, demolition, disposal of existing base import place 150-200mm granular material, compact and trim, prime surface.

Identified new land division medium high/medium use (B2,C1,C2) roads, saw cut, demolition, disposal of base trimming and compaction of sub-base, import 150mm granular material, water and compact.

- *Formation:* Assume have indefinite life hence no cost incurred at renewal

*Condition at End of Life:* Considers road deformation, surface cracking, pavement age (where known) and extent of patching, equates to a score of 75-95 in the Asset System depending on road classification.

*Spray Seal Life:* 22 years

*Hotmix Life:* 25- 65 years depending on usage and assumes spray seal overlay of B2, C1 and C2 Roads

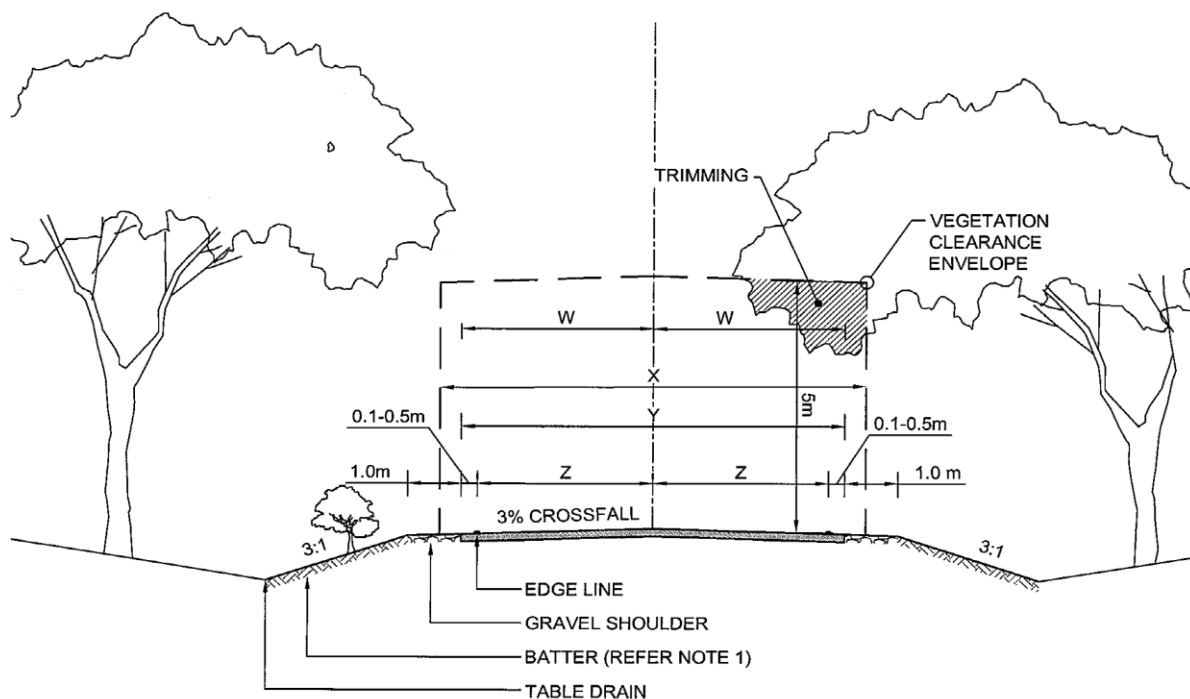
*Pavement Base Life:* 70-100 years depending on usage

*Pavement Subbase Life:* 210-400 years depending on usage

### 2.3.2 Rural Seal Class A, B1, B2, C1 & C2

Council owns and maintains a rural sealed road network totalling approximately 65km. Rural sealed roads are all classified as high use. Figure 2 shows a typical construction cross section to illustrate Council's service target for rural sealed roads. It is noted that this is not always achievable due to native vegetation restrictions.

#### Target Service Level



	A	B1	B2, C1, C2
W	3.75	3.6	3.1
X	10.5	7.2 - 10.0	7.0 - 9.0
Y	7.5	7.2	6.2
Z	3.5	3.1	3.0

#### NOTES

1. Where terrain requires batters steeper than 3:1, refer Austroad (2010) Part 6 Guide to Road Design for assessment of safety barriers.

**Figure 2 Rural Seal Construction Cross Section**



## **Current Standard**

### **Construction Method**

*Seal Width:* Varies

*Seal Types:* Spray seal and hotmix bitumen

*Pavement Width:* Varies

*Pavement Depth:* 250mm

*Formation:* Included

### **Renewal Method**

*Reseal:* Two coat spray seal on (spray seal 14/7mm)

*Note:* Existing hotmix bitumen surfaces will be overlaid with spray seal.

*Condition at End of Life:* Considers surface condition, cracking, edge defects and extent of patching, equates to a score of 45 in the Asset System.

*Pavement:*

- Tyne existing bitumen, top up with 100-150mm crushed rock trim and compact.

*Condition at End of Life:* Considers road deformation, surface cracking, pavement age (where known) and extent of patching, equates to a score of 70-95 in the Asset System depending on road classification.

*Formation:* Assume have indefinite life hence no cost incurred at renewal

*Seal Life:* Spray Seal 18 years, Hotmix 25 years

*Pavement Base Life:* 60-70 years depending on usage

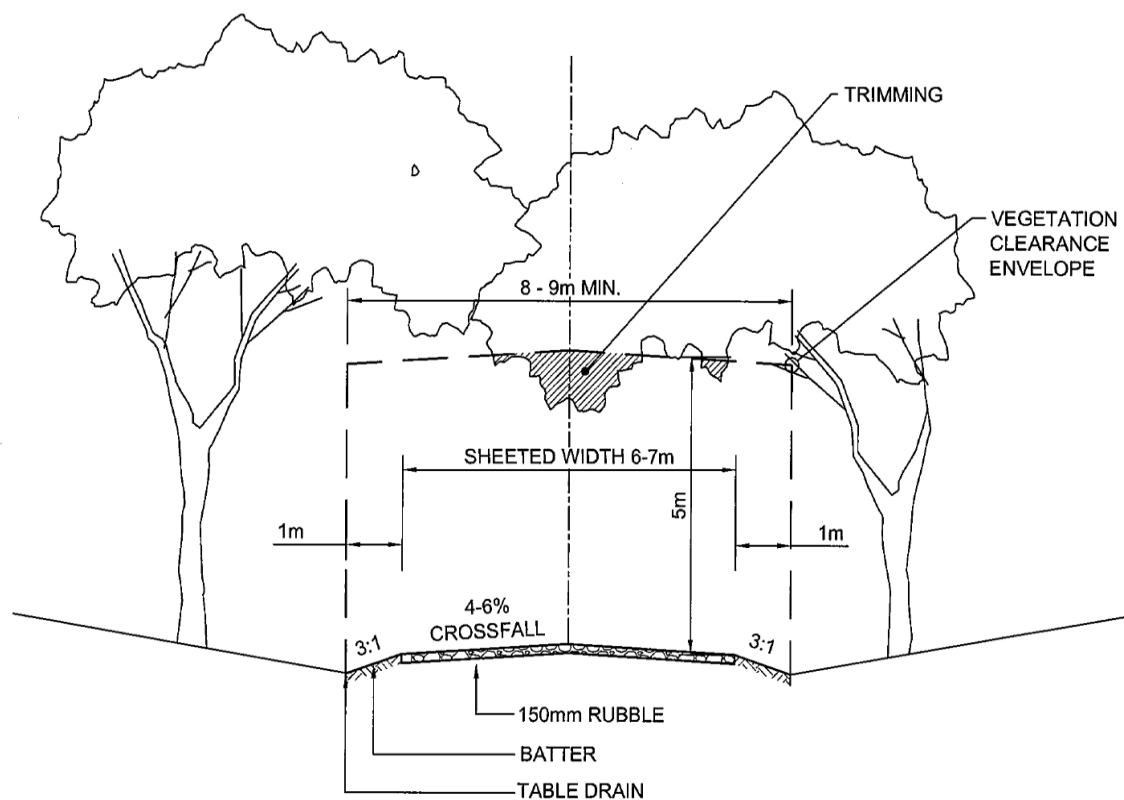
*Pavement Sub Base Life:* 180-280 years depending on usage

### 2.3.3 Sheeted Class B1

Council owns and maintains a rural sheeted category B1 road network totalling approximately 12km. Rural sheeted class B1 roads are all classified as high use. The existing width of B1 sheeted roads in the district ranges from 6-8 metres.

Figure 3 shows a typical construction cross section to illustrate Council's service target for rural sheeted class B1 roads. It is noted that this is not always achievable due to native vegetation restrictions.

#### Target Service Level



**Figure 3** Rural Sheeted Class B1 Construction Cross Section

## **Current Standard**

### **Construction Method**

*Sheeting Width:* 6-7m

*Sheeting Depth:* 100mm wearing surface on 50mm nominal lower base material (total 150mm)

*Formation:* Included

### **Renewal Method**

*Resheet:* Reform existing material to create cross fall and shape. Supply, place and compact 100mm crushed material

*Condition at End of Life:* Assume 50mm-75mm rubble left prior to re sheeting with moderate subgrade break through, equates to a score of 50 in the asset system

*Useful Life:* Wearing Surface 12 years and Lower base 24 years

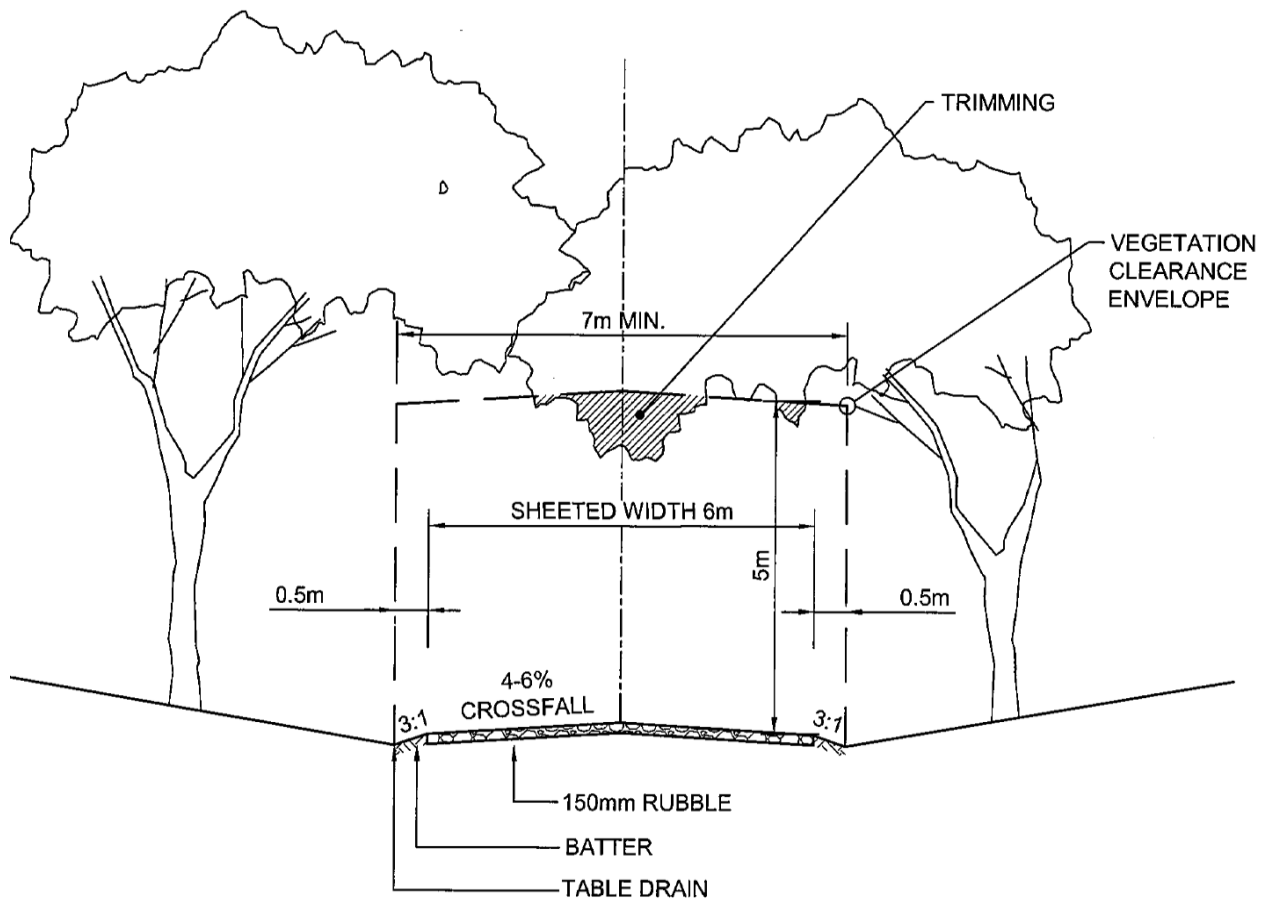
*Formation:* Assume have indefinite life hence no cost incurred at renewal

### 2.3.4 Rural Sheeted Class B2 & C1

Council owns and maintains a rural sheeted class B2 & C1 road network totalling approximately 27 km and 98km respectively. Rural sheeted class B2 and C1 roads are classified as medium high use. The existing width of B2 and C1 sheeted roads in the district ranges from 4-7 metres.

Figure 4 shows a typical construction cross section to illustrate Council's service target for rural sheeted category B2 & C1 roads. It is noted that this is not always achievable due to native vegetation restrictions.

#### Target Service Level



**Figure 4** Rural Sheeted Class B2 & C1 Construction Cross Section

## **Current Standard**

### ***Construction Method***

*Sheeting Width:* 6m

*Sheeting Depth:* 100mm wearing surface on 50mm nominal lower base material (total 150mm)

*Formation:* Included

### ***Renewal Method***

*Resheet:* Reform existing material to create cross fall and shape. Supply, place and compact 100-120 mm crushed material

*Condition at End of Life:* Assume 25-50mm rubble left prior to resheeting with significant subgrade break through, equates to a score of 70 in the asset system

*Useful Life:* Wearing Surface 13-14 years lower Base 39-42 years

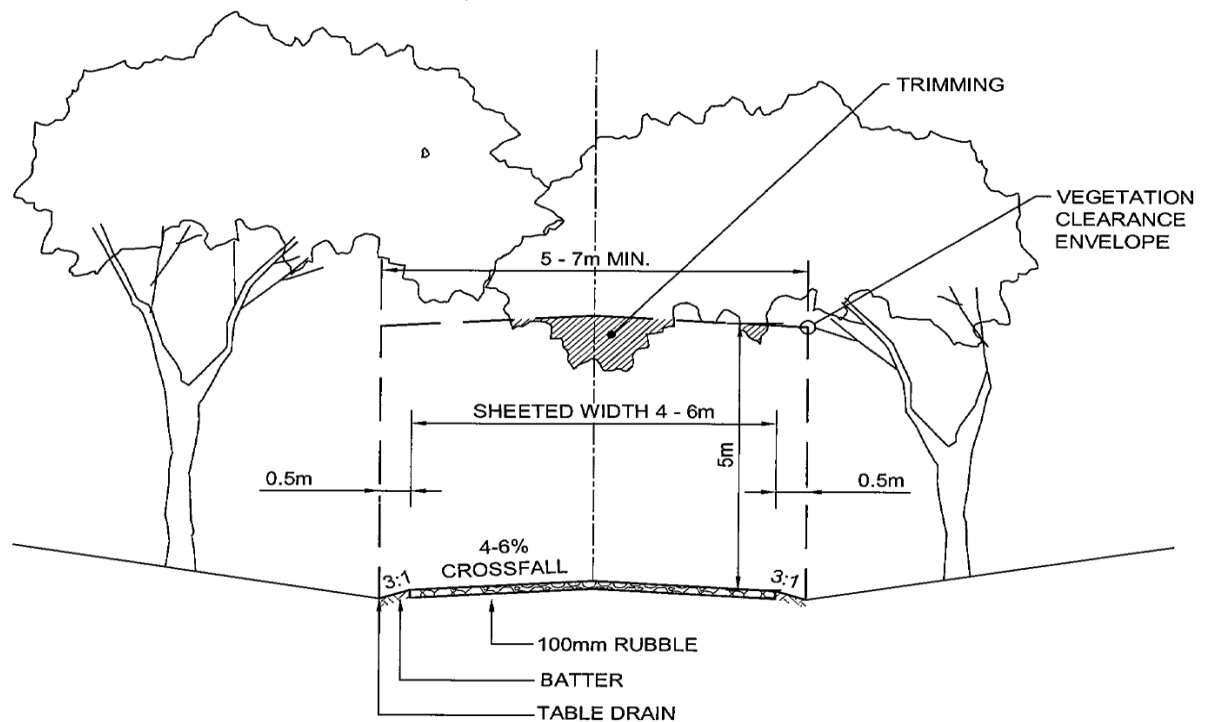
*Formation:* Assume have indefinite life hence no cost incurred at renewal

### 2.3.5 Rural Sheeted Class C2

Council owns and maintains a rural sheeted class C2 road network totalling approximately 80km. Rural sheeted category C2 roads are all classified as medium use. The existing width of C2 sheeted roads in the district ranges from 3-6 metres.

Figure 5 shows a typical construction cross section to illustrate Council's service target for rural sheeted class C2 roads. It is noted that this is not always achievable due to native vegetation restrictions.

#### Target Service Level



**Figure 5** Rural Sheeted Class C2 Construction Cross Section

## **Current Standard**

### **Construction Method**

*Sheeting Width:* 4-6m

*Sheeting Depth:* 80mm-100 mm wearing surface on 20-30mm nominal lower base 100-120mm total depth)

*Formation:* Included

### **Renewal Method**

*Resheet:* Reform existing material to create cross fall and shape. Supply, place and compact 100mm crushed material

*Condition at End of Life:* Assume less than 25 mm rubble left prior to resheeting with extensive subgrade break through, equates to a score of 90 in the asset system

*Useful Life:* Wearing Surface 15 years Lower Base 45 years

*Formation:* Assume have indefinite life hence no cost incurred at renewal

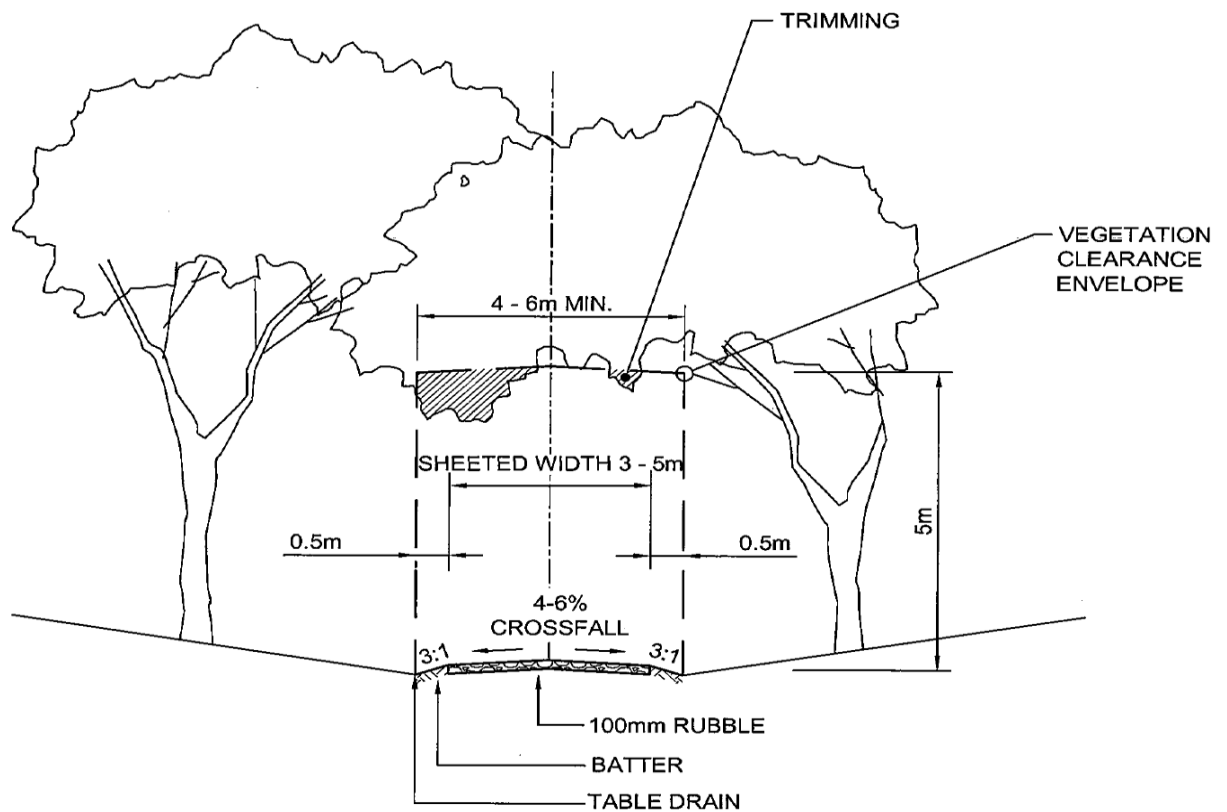
### 2.3.6 Rural Sheeted Class C3 & D

Council owns and maintains a rural sheeted category C3 road network totalling approximately 35km. Rural sheeted category C3 roads classified as low use. The existing width of C3 sheeted roads in the district ranges from 3-5 metres.

Council's Rural Road Hierarchy Plan indicates that class D (low use) roads may not be sheeted, however sheeting has been placed on approximately 37km of the total class D road length of 73km, the unsheeted length of class D roads is included within the form graded road length in section 2.3.6. The existing width of class D sheeted roads in the district ranges from 3-5 metres.

Figure 6 shows a typical construction cross section to illustrate Council's service target for rural sheeted category C3 & sheeted category D roads. It is noted that this is not always achievable due to native vegetation restrictions.

#### Target Service Level



**Figure 6** Rural Sheeted Category C3 & D Construction Cross Section



## **Current Standard**

### **Construction Method**

*Sheeting Width:* 3-5m

*Sheeting Depth:* 100mm

*Formation:* Included

### **Renewal Method**

*Resheet:* Reform existing material to create cross fall and shape. Supply, place and compact 100mm crushed material

*Condition at End of Life:* Class C3 Assume less than 25mm rubble left prior to resheeting with extensive subgrade break through, equates to a score of 90 in the asset system

*Condition at End of Life:* Class D Assume 0 mm of rubble left prior to re sheeting with extensive subgrade break through equates to a score of 100 in the asset system

*Useful Life:* 18 to 25 years depending on usage

*Formation:* Assume have indefinite life hence no cost incurred at renewal

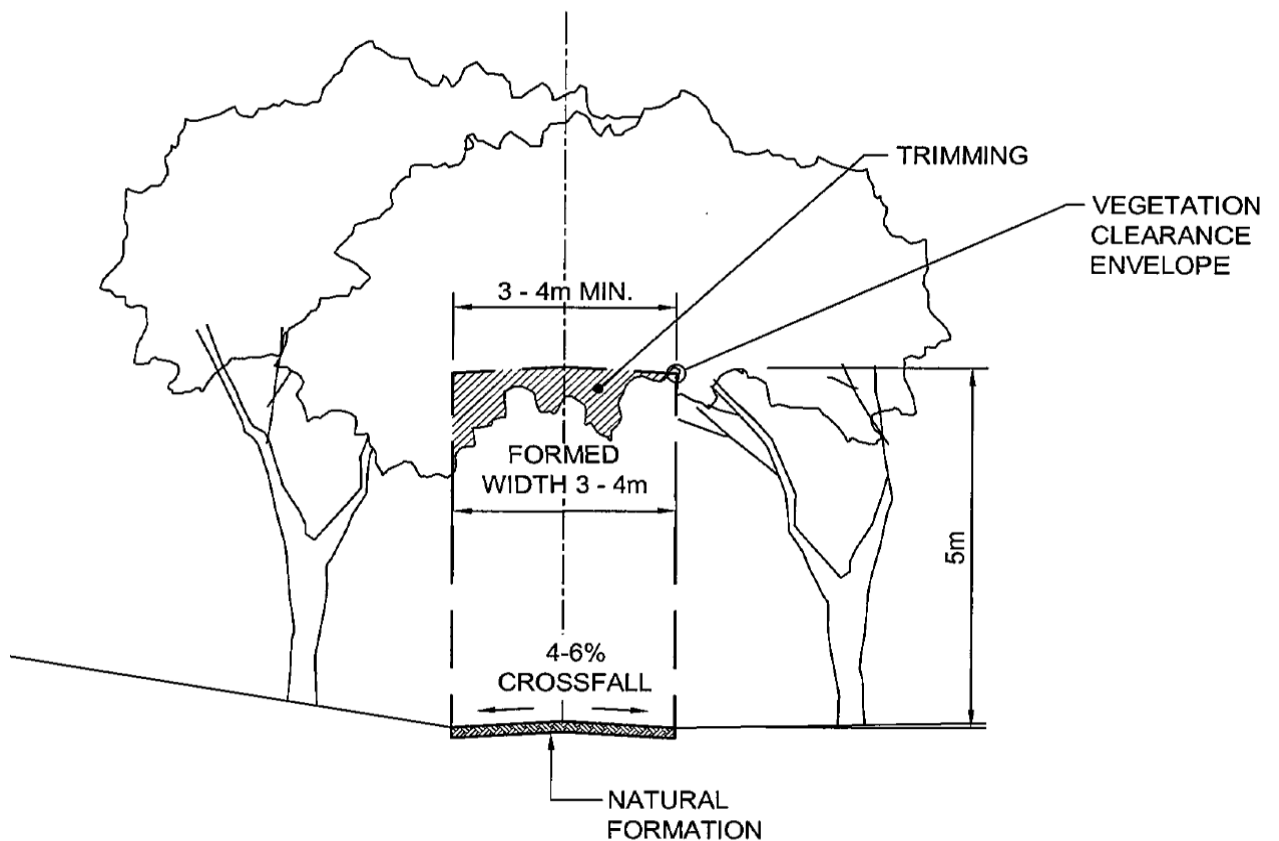
### 2.3.7 Rural Formed Graded

Council owns and maintains an existing rural formed graded road network totalling approximately 69km. Rural formed graded roads are low use roads only. Figure 7 shows a typical construction cross section to illustrate Council's service target for rural formed graded roads. Formed graded roads require no road base material to provide a surface, they are never renewed by capital works, they do undergo maintenance activities (grading). Formed graded roads do not necessarily provide all weather access for all types of vehicles. Approximately 32km of currently listed form graded roads are classified as a C category roads and consideration should be given to providing sheeting to these roads.

Council also owns approx.13km of unformed tracks that are utilised for vehicular access.

It is noted that this is not always achievable due to native vegetation restrictions.

#### Target Service Level



**Figure 7 Rural Formed Graded Construction Cross Section**

#### Current Service Level

#### Replacement Cost Assumptions

Not a valued asset

#### Renewal Method

Not a valued asset, maintained by grading.

## 3 Future Demand

### 3.1 Demand Forecast

Factors affecting demand include population change, changes in demographics, seasonal factors, vehicle ownership, consumer preferences and expectations, economic factors, agricultural practices, environmental awareness, etc. Demand factor trends and impacts on service delivery are summarised in Table 4.

**Table 4** *Demand Factors, Projections and Impact on Services*

<b>Demand Driver</b>	<b>Present Position</b>	<b>Projection</b>	<b>Impact on Services</b>
Rateable Properties	5,520	6,927 in 2030 ( Structure Plan, URS, 2015)	Increase in demand on all Transport Assets
Demographics	25% of population aged over 65 years old	31% of population aged over 65 years old in 2022 (Piron/ABS 2007)	Increase demand for expanded network of higher quality footpaths and facilities suitable for small wheeled mobility devices
“Green change” Factors	The rural population live on and make a living from the farmland with vehicles suitable for variable unsealed road conditions	Increased number of people living in rural style allotments, but not working the land	Increased use of unsealed roads Increased level of service expectations for the unsealed road network Pressure to construct and maintain new sheeted roads to access new development in rural areas
“Sea Change” Factors	The majority of existing dwellings in the Seaside township are private holiday or rental holiday accommodation	Increasing number of dwellings and percentage of the population living presently in seaside township areas  In many instances the increase in permanent population will not result in increase in rate base	More Demand for Infrastructure improvements within township i.e. streetscapes  More demand to provide pedestrian and cycling infrastructure
Freight Movements	Gazetted B- Double and Heavy Mass Freight routes restricted to State Government Controlled Roads	Requests will be placed on Council to gazette Local Roads as B Double Freight Commodity Routes under State Government Heavy Vehicle Access Framework. To service Dairy and Forestry Industries	Improvements to existing road alignments required
Forest Harvesting	Currently there is approximately 4,500ha of land parcels that are utilised for forest plantations	Seasonal Demands for harvesting during wet seasons to avoid fire season	The adverse impact on unsealed road of increased logging truck movements during wetter months
Climate Change	Current Climate conditions used as the basis for infrastructure design and use	Increased extreme heat days (increased bushfire risk)	Increased Extreme heat will impact on spray sealed road performance

Demand Driver	Present Position	Projection	Impact on Services
	Current sea level	Sea level rise	<p>Bushfires can damage transport infrastructure</p> <p>Low level coastal infrastructure could be more regularly inundated or damaged</p>

### 3.2 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. Council will determine the ability of the existing assets to manage increased usage for new and housing developments as well as demand for freight vehicular movements. Developers will be required to provide additional infrastructure for the existing network and upgrade where necessary to ensure adequate transportation. Opportunities identified to date for demand management are shown in Table 5. Further opportunities will be developed in future revisions of this asset management plan.

**Table 5**      *Demand Management Plan Summary*

Service Activity	Demand Management Plan
Footpaths	Council is to develop a network plan to cater for the anticipated increase in bike and pedestrian traffic within the Yankalilla/Normanville and Carrickalinga Townships with particular regard to the increase in the percentage of the population over 65 years in age
Roads	Council to liaise with ForestrySA to determine road access movements and harvest timing
Roads	Council to determine "offsite" infrastructure requirements and development infrastructure agreements as part of future land zoning changes
Roads	Continue unsealed township road construction and sealing program
Roads	Council to liaise with owners of properties (both residential and farming) along minor access roads to determine the required access routes to focus maintenance and renewal activities

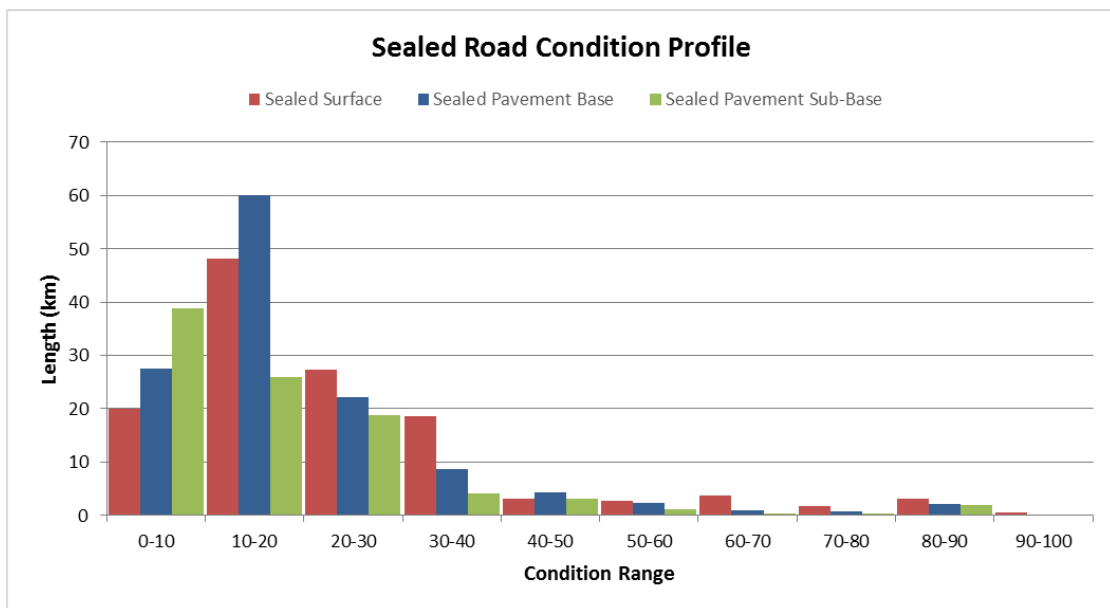
## 4 Life Cycle Management

The life cycle management plan details how Council plans to manage and operate the assets at the agreed levels of service (defined in Section 2) while optimising life cycle costs.

### 4.1 Background Data

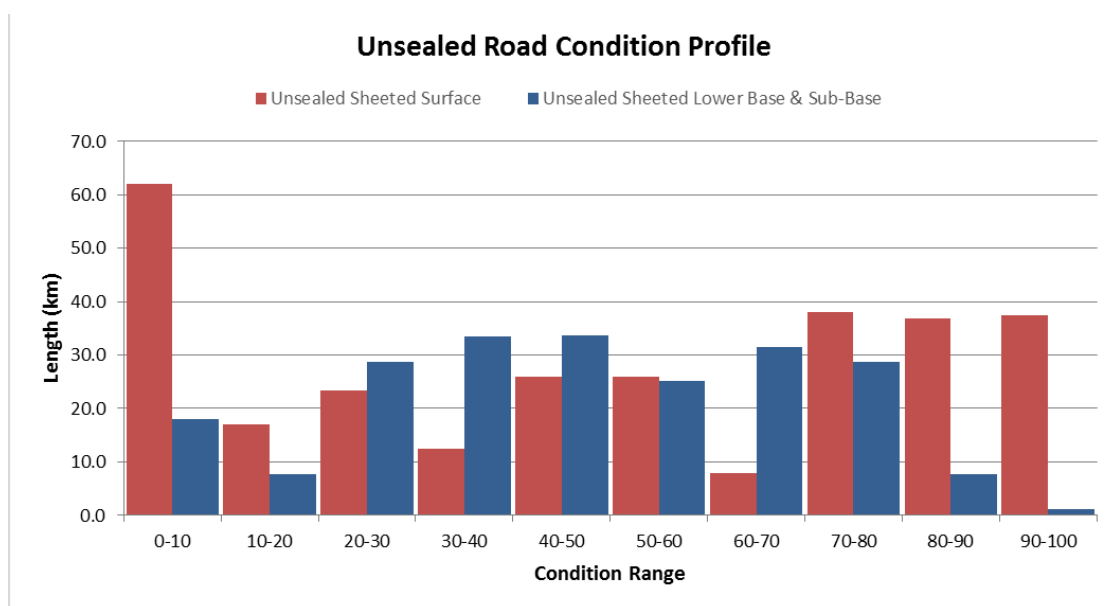
The District Council of Yankalilla's Transport assets are located in both rural areas and townships within the Council and the assets covered by this asset management plan are shown in Table 1. The transport assets consumption is measured by condition at time of inspection.

The condition profile of the transport assets shown by Current Replacement Cost (CRC) included in this plan is shown in the following figures.



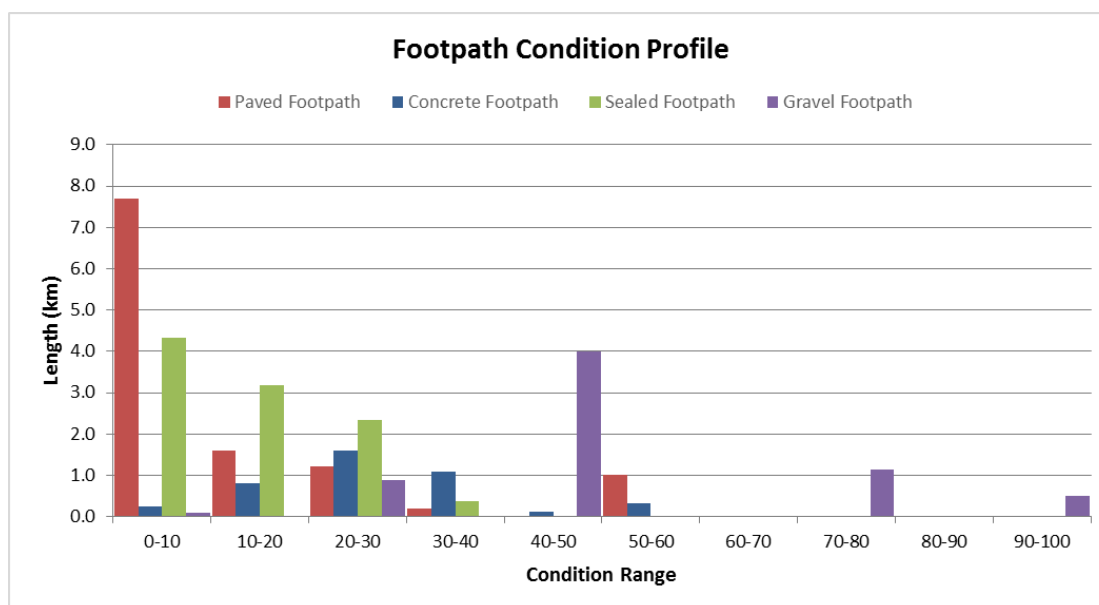
**Figure 8** Summary Sealed Road Condition Profile

As shown in Figure 8 a large portion of the assets are found to be in condition 30 or better, the defined condition range at which sealed surface assets reach their end of useful life is between 45 and 50. This results in a total 10 year replacement cost, for carparks and sealed road surfaces pavements, including any identified backlog expenditure, of \$3,960,910.



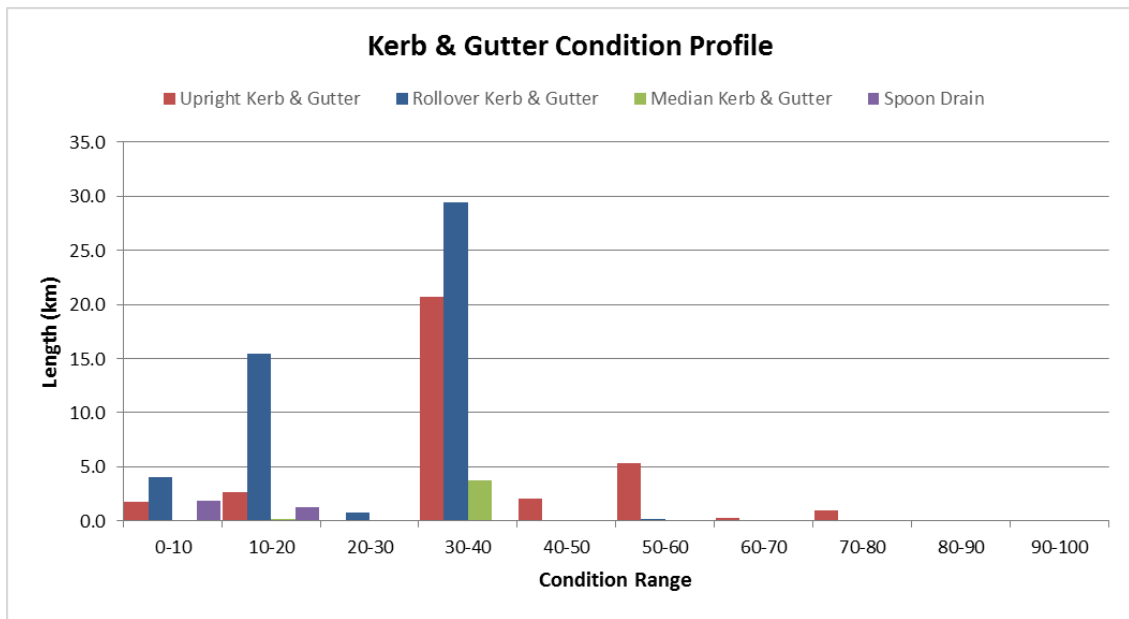
**Figure 9 Summary Unsealed Road Condition Profile**

As shown in Figure 9 the assets are found to be in an even spread of condition ranging from 0-100 or as new to end of life, the defined condition range at which unsealed assets reach their end of useful life is between 50 and 100. This results in a total 10 year replacement cost, for unsealed roads, including any identified backlog expenditure, of \$9,199,726.



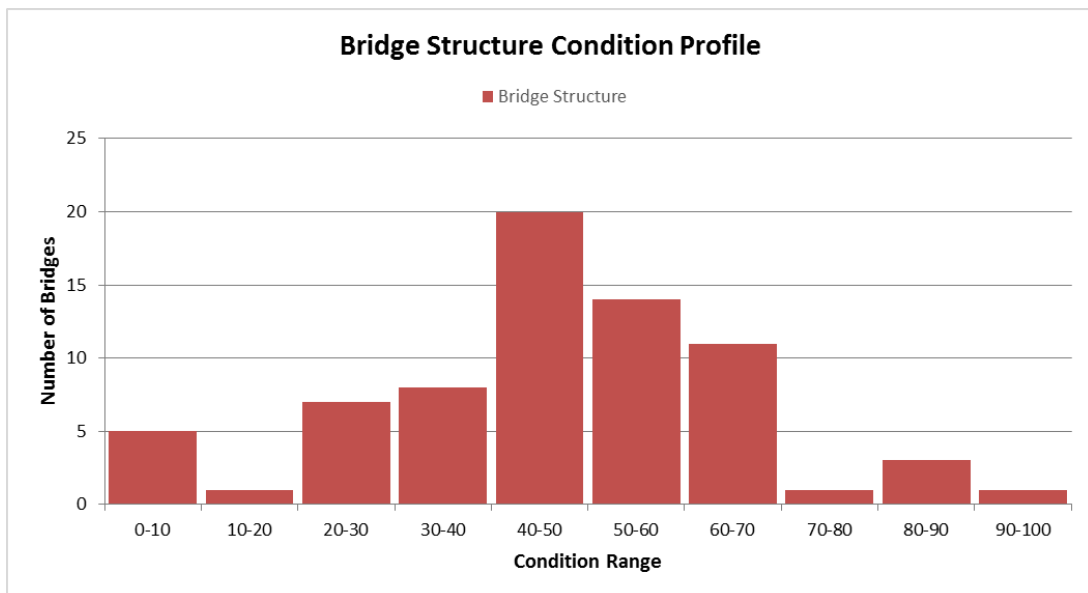
**Figure 10 Summary Footpath Condition Profile**

The 33km of footpath are constructed of various surfaces as shown in Figure 10. The majority of concrete, brick paved or sealed footpaths assets are found to be in condition 30 or better. The assigned condition at which footpath assets reach their end of useful life is 85. This results in a total 10 year replacement cost, for footpaths, including any identified backlog expenditure, of \$214,700.



**Figure 11 Summary Kerbing Condition Profile**

The 91km of kerb assets are made up of the various types shown in Figure 11. The majority of kerb assets are found to be in condition 40 or better. The assigned condition at which kerb assets reach their end of useful life is 90. This results in a total 10 year replacement cost, for footpaths, including any identified backlog expenditure, of \$148,130.



**Figure 12 Summary Bridge Condition Profile**

Council is responsible for 71 bridge structures. As shown in Figure 12 approximately 77% of the assets are found to be in a condition 60 or better, the assigned condition at which bridge assets reach their end of useful life is 90. This results in a total 10 year replacement cost for bridges, including any identified backlog expenditure, of \$1,045,817.

However the bridges identified in in the 10 year replacement program, include a bridge already physically closed to traffic (No 50 Essington Lewis Drive) and one that services a single property only (No 66 off Barclay Road).

A new condition assessment is to be undertaken on all bridges to review the current remaining lives and rehabilitation and maintenance requirements. This is listed in Table 12 in Section 5.



#### 4.1.1 Asset Capacity and Performance

Council's services are generally provided to meet design standards where these are available. Locations where deficiencies in service performance are known are detailed in Table 6.

**Table 6** *Known Service Performance Deficiencies*

Asset	Service Deficiency
Rural Unsealed Roads	Approximately 42km of unsealed Roads are 1.0m or more below the target service width measurement for the nominated road category (approximate cost \$1.0 million excluding vegetation removal costs)
Rural Unsealed Roads	Approximately 33km of Form Graded Roads require formation and sheeting approximate upgrade cost (\$1.6-\$2.0 million)
Rural Sealed Roads	Approximately 7.5km of rural sealed roads are 1m or more below the target service width measurement for the nominated road category (approximate cost \$700,000 excluding vegetation removal costs)
Township Unsealed Roads	Approximately 4.5 km of unsealed Roads township roads require construction and sealing (approximate cost \$4.0M - \$4.5 million)
Footpaths	Approximately 10km of roads within the major centres of Yankalilla and Normanville townships have no constructed footpath either side of the road (approximately cost \$900,000)
Bridges	Frequency of overtopping of Essington Lewis Drive culvert (to be determined)
Bridges	Frequency of overtopping of Paradise Drive culverts and subsequent damage (\$1.5 million)

Table 6 indicates that approximately 49.5km of road is 1m or more below the current target service width for the nominated road category. However on roads with very low traffic volumes and configurations that restrict speed this would not result a high risk to road users. As indicated in the target service level road cross sections the nominated widths may not be achievable due to native vegetation restrictions. Less than 1.5% of current road customer requests/complaints are related to the width of the roads. Therefore it is not proposed in the 10 years of this plan to allocate targeted upgrade expenditure to undertake this work. Some minor widening may occur in conjunction with road renewal projects.

Prior to the allocation of funds to construct new footpaths an assessment/methodology should be developed to prioritise footpath construction projects. This is listed as an improvement item in section 5. No allocation has been made in the upgrade expenditure values in section 4.3.3 to undertake a significant new footpath construction program within the current version of this plan. Table 9 in Section 4.3.2 indicates a surplus for currently allocated renewal expenditure from 2020-21 onwards. Subject to the outcomes of the remodelling of road renewal requirements, additional new/upgrade expenditure for a footpath construction program could be considered in these years as part of the next review of this plan due by 2020.

The Paradise Drive culverts (Bridge Assets) have overtopped approximately once every 10 years causing various degrees of road damage, however in each case the road has been returned to a trafficable surface in a relatively short time span. The current version of the plan does not allocate the \$1.5 million to upgrade these bridge assets.

The renewal and new/upgrade expenditure allocations indicated in sections 4.3.2 and 4.3.3 will allow for works to address the other service deficiencies listed in table 6 above.

#### 4.1.2 Asset Valuations

The value of the transport assets recorded in the asset register as at 30 June 2016 covered by this asset management plan is shown below. Assets were last revalued at 1 July 2012.

Current Replacement Cost	\$96,449,069
Depreciable Amount	\$80,700,715
Written Down Value	\$58,011,504
Annual Depreciation Expense	\$1,999,837

The current rate of consumption (annual depreciation/depreciable amount) for transport assets is 2.5%. This indicates on average over the life of the asset that 2.5% of the depreciable amount is consumed annually. The translation of this consumption rate into renewals is subject to a decision on funding, service level determination, timing of renewal and condition.

The Depreciable Amount is different to the Current Replacement Cost as there is currently an allowance for residual amounts with some asset types. The residual amount is assumed to be retained when the asset is due for renewal and is typically applied to lower pavement layers. A ruling of the Australian Accounting Standards Board stated that residual values should only be applied to reflect expected net receipts from disposal of an asset to another party and expected savings to an organisation from renewal rather than replacement of an asset should not be recognised as a residual value.

A new asset valuation methodology, removing residuals has been developed to produce the renewal expenditures values shown in this plan, however a new revaluation process is to be formally completed. The anticipated new 1 July 2016 Current Replacement Cost for Transport Assets is expected to be \$102,070,363 with an Annual Depreciation Expense of \$2,198,479.

## 4.2 Risk Management

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

Critical risks, assessed as being 'Very High' - requiring immediate corrective action and 'High' - requiring prioritised corrective action will be identified with associated costs in future revisions of the plan.

Table 7 is a summary of the critical risks detailed in Council's transport asset risk management plan.

**Table 7 Risk Treatment Plan Summary**

Service or Asset at Risk	What can Happen	Risk Rating (VH,H)	Risk Treatment Plan	Treatment Costs
Bridges General	Vehicle Collision on single lane bridges	H	Assess existing signage and install additional signage if required	\$10,000
Bridges General	Vehicle /pedestrian fall from bridge	H	Undertake new level 2 Bridge network assessment ,undertake barrier replacement program	\$35,000 + \$10,000/yr.

Service or Asset at Risk	What can Happen	Risk Rating (VH,H)	Risk Treatment Plan	Treatment Costs
Myponga Creek Bridge	Bridge collapse	H	Undertake load testing every 2-3 years. Plan for bridge replacement	\$4,000/2 years +\$30,000
Paradise Drive Culverts	Road damage and loss of Marina Access	H	Determine options and costings to replace culverts, realign road or build detention dam	\$10,000
Roads ( All)	Vehicle accidents and/or damage	H	Prioritise remaining sign installation as recommended in Safety Audit Undertake new network safety audit	\$30,000
Roads( All)	Vehicles can fall from roadway	H	Prioritise remaining barrier installation as recommended in Safety Audit Undertake new network safety audit	Included in capital works
Unsealed Roads	Vehicle accidents and/or damage due to lack of sight distance and roads width	H	Continue tree trimming processes Prioritise any road widening requirements	To be determined
Unsealed Roads	Vehicle accidents and/or damage due to road condition	H	Prioritise and schedule road maintenance and renewal activities on road classifications	To be determined
Unsealed Roads	Wet weather can make roads impassable	H	Undertake Road modelling to determine capital works program and funding  Prepare and implement new 5-10 year road renewal program	Within operational budgets  To be determined
Sealed Roads	Vehicle accidents and/or damage due to road surface conditions	H	Undertake Road modelling to determine capital works program and funding  Prepare and implement new 5-10 year road renewal program	Within Operational Budgets  To be determined
Footpaths	Pedestrian Injury due to trip hazards	H	Schedule footpath inspections and maintenance	Within Operational Budgets

### 4.3 Required Expenditure

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 medium term financial planning period. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

#### 4.3.1 Routine Maintenance

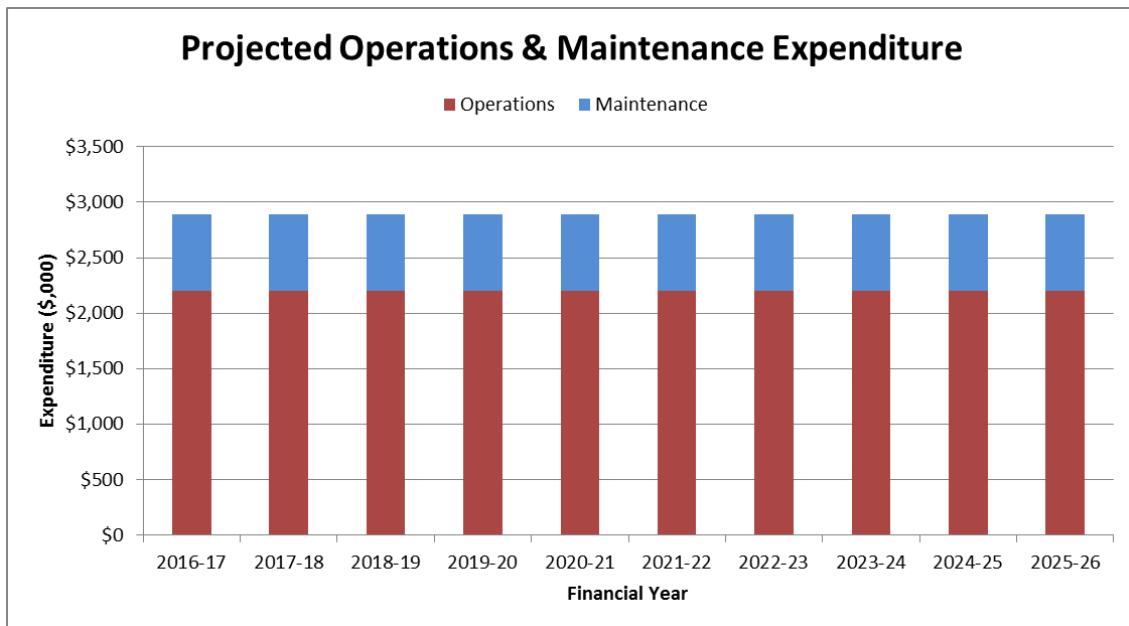
Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again. Maintenance includes reactive (unplanned), planned and specific maintenance work activities. Assessment and prioritisation of reactive maintenance is undertaken by operational staff using experience and judgement.

Note that all costs are shown in 2016/2017 financial year dollar values.

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Table 8 and Figure 13. The average annual operation and maintenance cost over a 10 year planning period (medium term) is \$2,892,000. This cost is based on the actual maintenance budget set for the 2016/2017 financial year. This plan does not include an allowance for growth, future development of this plan may include growth.

**Table 8** *Projected Operations and Maintenance Expenditure*

Financial Year	Operations	Maintenance	Total
2016-17	\$2,203,000	\$689,000	\$2,892,000
2017-18	\$2,203,000	\$689,000	\$2,892,000
2018-19	\$2,203,000	\$689,000	\$2,892,000
2019-20	\$2,203,000	\$689,000	\$2,892,000
2020-21	\$2,203,000	\$689,000	\$2,892,000
2021-22	\$2,203,000	\$689,000	\$2,892,000
2022-23	\$2,203,000	\$689,000	\$2,892,000
2023-24	\$2,203,000	\$689,000	\$2,892,000
2024-25	\$2,203,000	\$689,000	\$2,892,000
2025-26	\$2,203,000	\$689,000	\$2,892,000
<b>Total</b>	<b>\$22,030,000</b>	<b>\$6,890,000</b>	<b>\$28,920,000</b>



**Figure 13** *Projected Operations and Maintenance Expenditure*

The operations and maintenance budgets remain static over the 10 year planning period (medium term)

#### 4.3.2 Capital Renewal

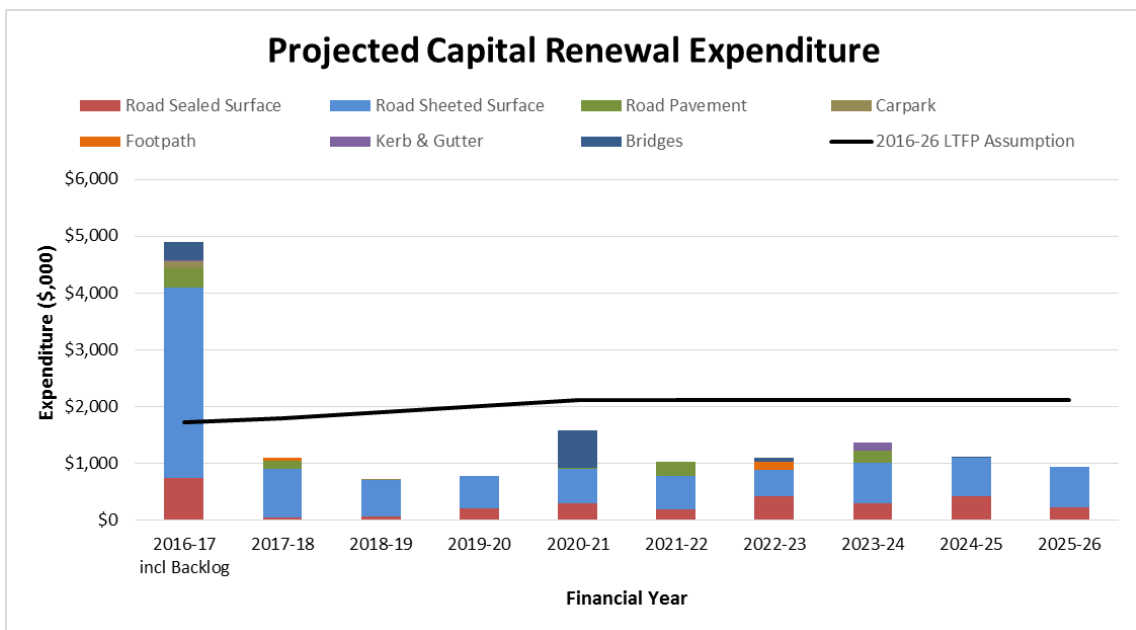
Renewal expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered upgrade expenditure.

The method used to develop the renewal plan uses the asset register data to project the renewal costs for renewal years using acquisition year and useful life, this equates to the expiry date generated from Council's asset management system.

The costs associated with the renewals have been aggregated for each financial year over a 10 year planning period (medium term) and shown in Table 9 and Figure 14.

**Table 9 Required Capital Renewal Expenditure**

Financial Year	Capital Renewal Expenditure	2016-26 LTFP Assumption	Funding Gap /Surplus
2016-17			
Inc. backlog	\$4,894,457	\$1,714,346	-\$3,180,111
2017-18	\$1,745,479	\$1,798,600	-\$3,126,990
2018-19	\$719,620	\$1,904,400	-\$1,942,210
2019-20	\$771,051	\$2,010,200	-\$703,061
2020-21	\$922,887	\$2,116,000	\$490,052
2021-22	\$1,015,130	\$2,116,000	\$1,590,921
2022-23	\$1,096,634	\$2,116,000	\$2,610,288
2023-24	\$1,358,315	\$2,116,000	\$3,367,972
2024-25	\$1,102,787	\$2,116,000	\$4,381,185
2025-26	\$942,930	\$2,116,000	\$5,554,255
<b>Total</b>	<b>\$14,569,291</b>	<b>\$20,123,546</b>	<b>\$5,554,255</b>



**Figure 14 Required Capital Renewal Expenditure**

A projected 5-10 year capital renewal program is to be developed to address the backlog expenditure and provided in appendix A in a future revision of the plan.

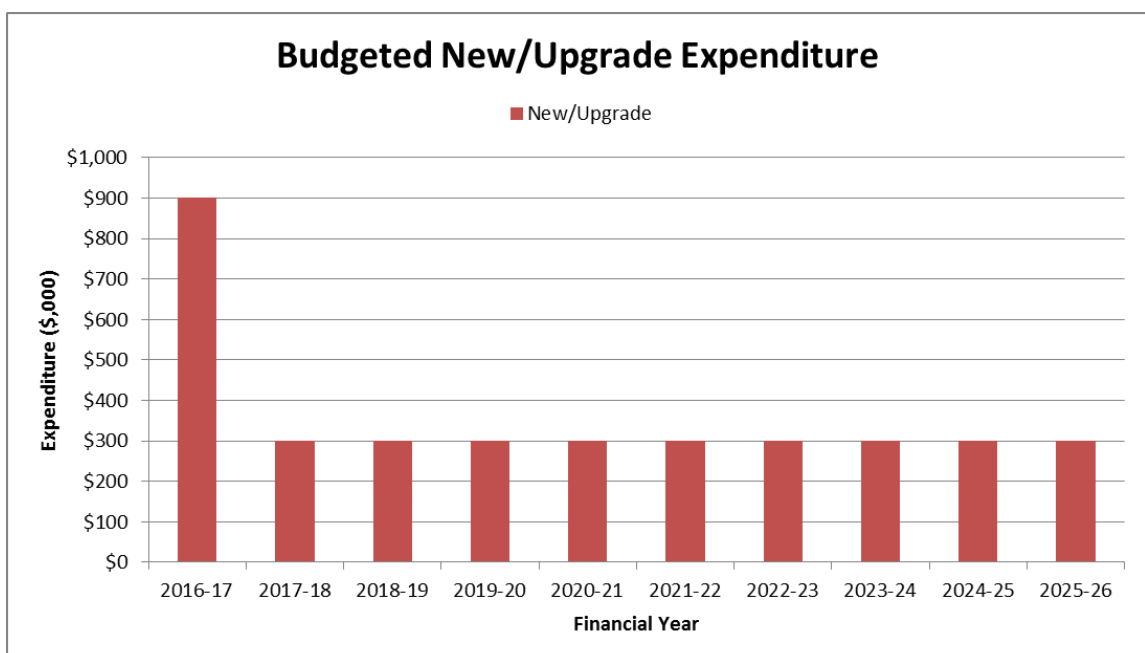
### 4.3.3 Capital New/Upgrade and Acquisition

New/upgrade expenditure is major work that creates 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.

The costs associated with the new/upgrades have been aggregated for each financial year over a 10 year planning period (medium term) and shown in Table 10 and Figure 15, the average annual capital renewal cost over the medium term is \$360,150.

**Table 10** *Budgeted New/Upgrade Expenditure*

Financial Year	Capital New/Upgrade Expenditure
2016-17	\$901,500
2017-18	\$300,000
2018-19	\$300,000
2019-20	\$300,000
2020-21	\$300,000
2021-22	\$300,000
2022-23	\$300,000
2023-24	\$300,000
2024-25	\$300,000
2025-26	\$300,000
<b>Total</b>	<b>\$3,601,500</b>



**Figure 15** *Budgeted New/Upgrade Expenditure*

Council has identified several significant new/upgrade works within its Strategic Plan. The expenditure allocations allow for the construction and sealing of unsealed roads located within township areas. A 1.8km section of Fork tree Road has been identified in the Council's Strategic Plan for investigation into construction and sealing (estimated cost \$1.6 million) however this expenditure is not included in the upgrade figures shown in Table 10.

Table 9 in Section 4.3.2 indicates a surplus for currently allocated renewal expenditure from 2020-21 onwards. Subject to the outcomes of the remodelling of road renewal requirements, additional new/upgrade expenditure for the construction of Forktree Road could be considered in these years as part of the next review of this plan due by 2020.

If the Forktree Road project was to be considered within the 10 year time frame of this plan, Council would need to allocate funds over a number of years, for the assessment and development of concept and final designs and funding submissions to the Special Local Roads Program prior to determining the construction timeframe.

#### **4.3.4 Disposal Plan**

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Council has not yet identified any transport infrastructure assets to be disposed in the 10 year planning period (medium term). However further consideration will need to be given over the closed bridge No.50 on Essington Lewis Drive.

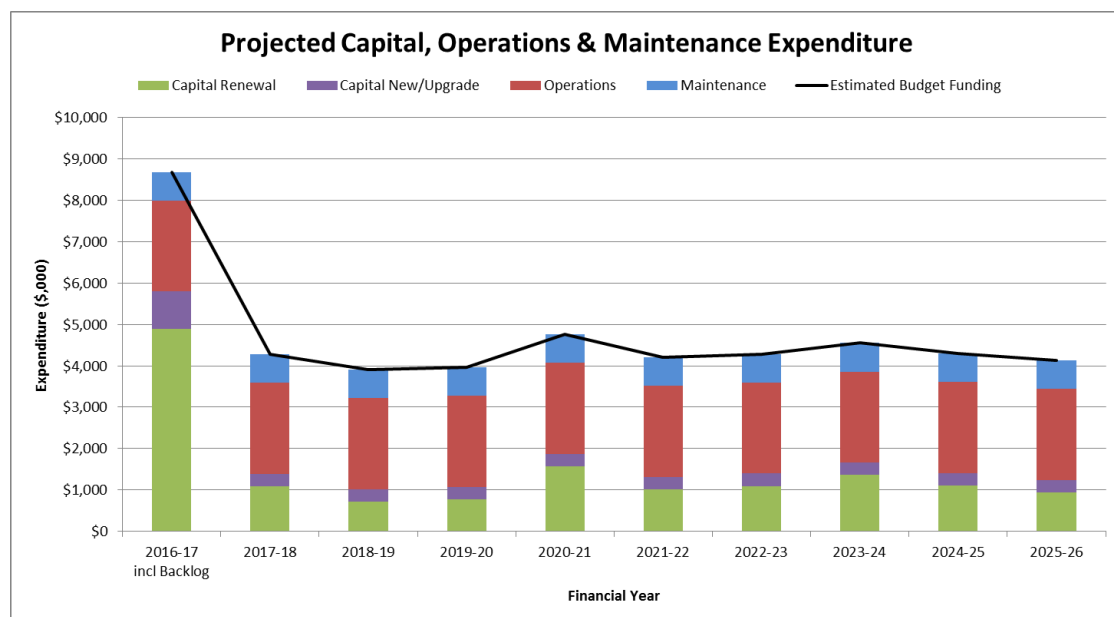


#### 4.3.5 Financial Projections

The financial projections are shown in Table 11 and Figure 16 for projected operating (operations and maintenance), capital renewal, capital new/upgrade and estimated budget funding.

**Table 11** *Operating and Capital Expenditure*

Financial Year	Operations and Maintenance	Capital Renewal	Capital New/Upgrade	Estimated Budget Funding
2016-17				
Inc. backlog	\$2,892,000	\$4,894,457	\$901,500	\$8,687,957
2017-18	\$2,892,000	\$1,093,755	\$300,000	\$4,285,755
2018-19	\$2,892,000	\$719,620	\$300,000	\$3,911,620
2019-20	\$2,892,000	\$771,051	\$300,000	\$3,963,051
2020-21	\$2,892,000	\$1,574,611	\$300,000	\$4,766,611
2021-22	\$2,892,000	\$1,015,130	\$300,000	\$4,207,130
2022-23	\$2,892,000	\$1,096,634	\$300,000	\$4,288,634
2023-24	\$2,892,000	\$1,358,315	\$300,000	\$4,550,315
2024-25	\$2,892,000	\$1,102,787	\$300,000	\$4,294,787
2025-26	\$2,892,000	\$942,930	\$300,000	\$4,134,930
<b>Total</b>	<b>\$28,920,000</b>	<b>\$14,569,291</b>	<b>\$3,601,500</b>	<b>\$47,090,079</b>



**Figure 16** *Projected Operating and Capital Expenditure over the Medium Term (10 Years)*

The average projected operations, maintenance and capital expenditure required over the 10 year planning period is \$4,709,079/year.

## 5 Plan Improvement and Monitoring

The following tasks have been identified for improving future versions of the plan. Council should assign responsibilities and resources to these tasks as part of the endorsement of the plan.

**Table 12** *Tasks identified for improving future versions of the plan*

Task No.	Task	Responsibility
1.	Review/validate replacement rates on works not regularly undertaken by Council, and complete revaluation process	Chief Operations Officer
2.	Obtain Auditor approval of new road componentisation methodology	Chief Operations Officer
3.	Review Level 2 Bridge Assessment report	Chief Operations Officer
4.	Review network road safety Audit	Chief Operations Officer
5.	Develop inspection and maintenance schedules	Chief Operations Officer
6.	Model Road network with predictive software to produce 5-10 year renewal program	Chief Operations Officer
7.	Produce costed 5-10 year renewal and upgrade program	Chief Operations Officer
8.	Develop Footpath/Cycle Network Plan	Chief Operations Officer
9.	Review Levels of Service	Chief Operations Officer /Councillors
10.	Investigate grant funding sources to offset any capital and operational costs.	Chief Operations Officer

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

This plan has a life of four (4) years and is due for revision and updating within two (2) years of each Council election.

## 6 References

- District Council of Yankalilla Strategic Plan 2014-2018
- District Council of Yankalilla Annual Business Plan 2016-2017
- District Council of Yankalilla Long Term Financial Plan 2016-2026
- IPWEA, 2006, *NAMS.PLUS3 Asset Management*, Institute of Public Works Engineering Australia, Sydney, [www.ipwea.org](http://www.ipwea.org)
- IPWEA, 2011, *Asset Management for Small, Rural or Remote Communities Practice Note*, Institute of Public Works Engineering Australia, Sydney, [www.ipwea.org](http://www.ipwea.org)
- District Council of Yankalilla Road Bridges inspection report 2007
- District Council of Yankalilla Network Road Safety Audit 2005
- District Council of Yankalilla Rural Road Hierarchy 2005