Nambucca Valley Council



# **Unsealed Roads Pavement**

# **Asset Management Plan (Concise)**



Scenario 1

Version 2

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#### NAMS.PLUS Asset Management Plan Templates

NAMS.Plus offers two Asset Management Plan templates - 'Concise' and 'Comprehensive'.

The Concise template is appropriate for those entities who wish to present their data and information clearly and in as few words as possible whilst complying with the ISO 55000 Standards approach and guidance contained in the International Infrastructure Management Manual.

The Comprehensive template is appropriate for those entities who wish to present their asset management plan and information in a more detailed manner.

The entity can choose either template to write/update their plan regardless of their level of asset management maturity and in some cases may even choose to use only the Executive Summary.

The illustrated content is suggested only and users should feel free to omit content as preferred (e.g. where info not currently available).

The concise Asset Management Plan may be used as a supporting document to inform an overarching Strategic Asset Management Plan.

This is the **Concise** Asset Management Plan template.

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# TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	1
	1.1 The Purpose of the Plan	1
	1.2 Asset Description	1
	1.3 Levels of Service	1
	1.4 Future Demand	
	1.5 Lifecycle Management Plan	1
	1.6 Financial Summary	
	1.7 Asset Management Practices	2
	1.8 Monitoring and Improvement Program	2
2.	INTRODUCTION	
	2.1 Background	3
	2.2 Goals and Objectives of Asset Ownership	3
	2.3 Core and Advanced Asset Management	
3.	LEVELS OF SERVICE	4
	3.1 Customer Research and Expectations	
	3.2 Strategic and Corporate Goals	4
	3.3 Legislative Requirements	5
	3.4 Customer Levels of Service	5
	3.5 Technical Levels of Service	6
4.	FUTURE DEMAND	8
5.	LIFECYCLE MANAGEMENT PLAN	8
	5.1 Background Data	8
	5.2 Operations and Maintenance Plan	10
	5.3 Renewal/Replacement Plan	11
	5.4 Creation/Acquisition/Upgrade Plan	13
6.	RISK MANAGEMENT PLAN	14
	6.1 Critical Assets	14
	6.2 Risk Assessment	15
	6.3 Infrastructure Resilience Approach	16
	6.4 Service and Risk Trade-Offs	17
7.	FINANCIL SUMMARY	17
	7.1 Financial Statements and Projections	17
	7.2 Funding Strategy	19
	7.3 Key Assumptions Made in Financial Forecasts	20
	7.5 Forecast Reliability and Confidence	20
8.	PLAN IMPROVEMENT AND MONITORING	21
	8.1 Status of Asset Management Practices	21
	8.2 Improvement Plan	21
	8.3 Monitoring and Review Procedures	21
	8.4 Performance Measures	21
9.	REFERENCES	22
10	APPENDICES	22
	Appendix A Projected 10-year Capital Renewal and Replacement Works Program	23
	Appendix B Budgeted Expenditures Accommodated in LTFP	27

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# **1 EXECUTIVE**

# 1.1 The Purpose of the Plan

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

This asset management plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services over a 20-year planning period.

This plan covers the infrastructure assets pavement that provide unsealed roads. The hierarchy of unsealed network pavement in the Nambucca Valley is range from Class 3 Roads which are major collection roads and primary importance to the community, through to Class 4 rural access which provide property access to a fewer number of residents.

# **1.2 Asset Description**

These assets include:

The unsealed road pavement hierarchy comprises:

- Class 3 unsealed roads
- Class 4 unsealed roads

These infrastructure assets have significant value estimated as \$8,293,716.

# **1.3 Levels of Service**

Our present funding levels are sufficient to continue to provide existing services at current levels in the medium term.

The main services consequences are:

- Considerable change of gravel road condition after continuous rain and flood events
- Road condition change due to events such as Rally Australia car racing

#### **1.4 Future Demand**

There is a negligible future demand for unsealed roads. The unsealed road assets will be managed through a combination of managing existing assets and upgrading of existing assets. Demand management practices include non-asset solutions, insuring against risks and managing failures.

- Regular maintenance to manage the assets in operational condition
- Periodical gravel resheeting to maintain the appropriate condition

# 1.5 Lifecycle Management Plan

#### What does it Cost?

Table 1.5: Total life cycle cost for unsealed roads

Nambucca SC - Report 1 - Executive Summary AM Plan (Unsealed Roads_S1_V2)		
Executive Summary - What does it cost?	(\$000)	
10 year total cost [10 yr Ops, Maint,	\$12,063	
Renewal & Upgrade Proj Exp]		
10 Year Average Cost	\$1,206	
10 year total LTFP budget [10 yr Ops, Maint,	\$12,062	
Renewal & Upgrade LTFP Budget]		
10 year average LTFP budget	\$1,206	
10 year AM financial indicator	99.9%	
10 year average shortfall	-\$70	

The projected outlays necessary to provide the services covered by this Asset Management Plan (AM Plan) includes operations, maintenance, renewal and upgrade of existing assets over the 10-year planning period is \$1,206,295 on average per year.

# **1.6 Financial Summary**

#### What we will do

Estimated available funding for this period is \$1,163,940 on average per year as per the long-term financial plan or budget forecast. This is 100% of the cost to sustain the current level of service at the lowest lifecycle cost.

The infrastructure reality is that only what is funded in the long term financial plan can be provided. The emphasis of the Asset Management Plan is to communicate the consequences that this will have on the service provided and risks, so that decision making is "informed".

The allocated funding does not leaves any excess on average per year of the projected expenditure required to provide services in the AM Plan compared with planned expenditure currently included in the Long Term Financial Plan. This is shown in the figure below.

#### - 1 -

#### **Projected Operating and Capital Expenditure**



Figure Values are in current (real) dollars.

We plan to provide unsealed roads services for the following:

- Operation, maintenance, renewal and upgrade of unsealed road assets to meet service levels set by in annual budgets.
- Spend \$191,373 for gravel road resheeting on average per annum within the 10-year planning period.

#### What we cannot do

We currently do allocate enough funding to sustain these services at the desired standard or to provide all new services being sought. Works and services that cannot be provided under present funding levels are:

- Renew gravel road damages due to continuous raining and flooding
- Repair gravel road damages due to special event such as Rally Australia car racing event

#### Managing the Risks

Our present funding levels are sufficient to continue to manage risks in the medium term.

The main risk consequences are:

Changing road condition due to bad weather

We will endeavour to manage these risks within available funding by:

- Annual gravel road grading
- Conduct the scheduled inspection and carry out the required maintenance

#### 1.7 Asset Management Practices

Our systems to manage assets include:

Technical asset register

- GIS roads data
- Authority finance asset management

Assets requiring renewal/replacement are identified from one of three methods provided in the 'Expenditure Template'.

- Method 1 uses Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year, or
- Method 2 uses capital renewal expenditure
- projections from external condition modelling systems (such as Pavement Management Systems), or
- Method 3 uses a combination of average network renewals plus defect repairs in the Renewal Plan and Defect Repair Plan worksheets on the 'Expenditure template'.

Method 1 was used for this asset management plan.

# 1.8 Monitoring and Improvement Program

The next steps resulting from this asset management plan to improve asset management practices are:

- Update the technical asset register conducting entire unsealed road network inspection and condition assessment in the next revaluation
- Update the GIS data base to represent the actual unsealed road network data.
- Update the useful life to represent the actual current practice.

# 2. INTRODUCTION

# 2.1 Background

This asset management plan communicates the actions required for the responsive management of assets (and services provided from assets), compliance with regulatory requirements, and funding needed to provide the required levels of service over a 20-year planning period.

The asset management plan is to be read with the Nambucca Valley Council planning documents. This should include the Asset Management Policy and Asset Management Strategy where these have been developed along with other key planning documents:

- Long term financial plan,
- Road Hierarchy Plan,
- Nambucca Valley Community Strategic Plan 2023,
- Nambucca Operational Plan and Delivery Program, and
- Register of roads.

The infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are unsealed local roads that provide access across the Valley and are divided into the following classes

Class 3 - Collector roads, which are a substantial importance to many residents but are not essential as sub arterial roads.

Class 4 – Local roads of importance to residents for access to properties.

Asset Category	Dimension (km)	Replacement Value (\$)
Class 3	108.72	3,120,021
Class 4	189.28	5,173,695
TOTAL	298	8,293,716

# 2.2 Goals and Objectives of Asset Ownership

Our goal in managing infrastructure assets is to meet the defined level of service (as amended from time to time) in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing and appropriately controlling risks, and
- Linking to a long-term financial plan which identifies required, affordable expenditure and how it will be allocated.

Other references to the benefits, fundamentals principles and objectives of asset management are:

- International Infrastructure Management Manual 2015<sup>1</sup>
- ISO 55000<sup>2</sup>

<sup>&</sup>lt;sup>1</sup> Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2 | 13

<sup>&</sup>lt;sup>2</sup> ISO 55000 Overview, principles and terminology

# 2.3 Core and Advanced Asset Management

This asset management plan is prepared as a 'core' asset management plan over a 20 year planning period in accordance with the International Infrastructure Management Manual<sup>3</sup>. Core asset management is a 'top down' approach where analysis is applied at the system or network level. An 'advanced' asset management approach uses a 'bottom up' approach for gathering detailed asset information for individual assets.

- 4 -

# 3. LEVELS OF SERVICE

#### 3.1 Customer Research and Expectations

This 'core' asset management plan is prepared to facilitate consultation prior to adoption by the councillors. Future revisions of the asset management plan will incorporate community consultation on service levels and costs of providing the service. This will assist the councillors and stakeholders in matching the level of service required, service risks and consequences with the community's ability and willingness to pay for the service.

Council engaged Jetty Research to undertake a Community Satisfaction Survey in August 2019 and December, 2021. This telephone survey polls a sample of residents on their level of satisfaction with Council's services. The below table represent most recent community satisfaction surveys reported for important and satisfaction levels for the following services:

#### Table 3.1: Community Satisfaction Survey Levels

Performance Measure	Survey Data 2019		Survey Data 2021	
	Importance (score/5)	Satisfaction (score/5)	Importance (score/5)	Satisfaction (score/5)
Unsealed Roads	3.21	2.64	3.35	2.50

Community satisfaction information is used in developing the Strategic Plan and in the allocation of resources in the budget.

#### 3.2 Strategic and Corporate Goals

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

Our vision is:

Nambucca Valley - living at its best

Our mission is:

The Nambucca Valley will value and protect its natural environment, maintain its assets and infrastructure and develop opportunities for its people.

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

<sup>&</sup>lt;sup>3</sup> IPWEA, 2015, IIMM.

Goal	Objective	How Goal and Objectives are addressed in AM Plan
Managing and enhancing council assets, including roads and other infrastructure.	Transport Accessibility	Maintain the condition of rural unsealed road network and urban unsealed roads in accordance with Road Hierarchy policy.
Maintain, renew and upgrade unsealed roads in in cost effective manner.	Ensure the sustainable delivery of transport infrastructure	Provide maintenance, upgrade and renewal of unsealed road assets as justified by the community use as necessary.

#### Table 3.2: Goals and how these are addressed in this Plan

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

# 3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. These include:

Table 3.3:	Legislative Requirements	

Legislation	Requirement
Local Government Act	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
Road Act 1993	Declaration and administration of public roads
Work Health and Safety Act 2011	The main object of this Act is to provide for a balanced and nationally consistent framework to secure the health and safety of workers and workplaces
Native Vegetation Act 2003	To provide for, encourage and promote the management of native vegetation on a regional basis in the social, economic and environmental interests of the State.
Protection of the Environment Operations Act 1997	To protect environment form road construction and maintenance.

# 3.4 Customer Levels of Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

Quality How good is the service ... what is the condition or quality of the service?

**Function** Is it suitable for its intended purpose .... Is it the right service?

The current and expected customer service levels are detailed in Tables 3.4 and 3.5. Table 3.4 shows the expected levels of service based on resource levels in the current long-term financial plan.

**Organisational measures** are measures of fact related to the service delivery outcome e.g. number of occasions when service is not available, condition %'s of Very Poor, Poor/Average/Good, Very good.

These Organisational/Organizational measures provide a balance in comparison to the customer perception that may be more subjective.

	Expectation	Performance Measure Used	Current Performance	Expected Position in 10 Years based on the
				current budget.
Service Obje	ctive: Provides all weather access a	nd a smooth ride	1	1
Quality	Unsealed roads provide safe	Customer service	12 customer service	< 10 Per month
	and smooth travel	requests relating	request Per month	
		to service quality		
	Organisational measure	% of unsealed	64% of unsealed roads	70% of unsealed roads
		roads in very good	in very good / good (1,	in very good / good (1,
		/ good (1, 2) and	2) and 2% poor/very	2) and 2% poor/very
		poor/very poor (4,	poor (4, 5) condition	poor (4, 5) condition
		5) condition and	and confidence.	and confidence.
		confidence.		
	Confidence levels		Medium	Medium / High
Function	Unsealed roads meet	Customer Service	Open all roads to public	Maintain the current
	transport need	request relating to	unless flood event	function level
		usage and		
		availability		
	Organizational measure	% of unsealed	No defined yet	No defined yet
		roads in very good		
		/ good (1,2) and		
		poor / very poor		
		(4,5) functional		
		level		
	Confidence levels		Medium	Medium / High
Capacity	Unsealed roads meet	Service request	No defined yet	No defined yet
and Usage	transport need	relating to		
		insufficient usage		
		of unsealed road		
	Organizational measure	% of unsealed	No defined yet	No defined yet
		roads in very good		
		/ good (1,2) and		
		poor / very poor		
		(4,5) capacity and		
		usage level		
	Confidence levels		Medium	Medium / High

Table 3.4: Customer Level of Service

# 3.5 Technical Levels of Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations the regular activities to provide services (e.g. inspections, etc.
- Maintenance the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. pothole repair, unsealed road grading),
- Renewal the activities that return the service capability of an asset up to that which it had originally (e.g. gravel resheeting),
- Upgrade/New the activities to provide a higher level of service (e.g. widening a road, gravel resheeting for a formed road).

Service and asset managers plan, implement and control technical service levels to influence the customer service levels.<sup>4</sup>

Table 3.5 shows the technical levels of service expected to be provided under this AM Plan. The 'Desired' position in the table documents the position being recommended in this AM Plan.

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost **		
TECHNICAL LEVE	TECHNICAL LEVELS OF SERVICE					
Operations						
	Roads are safe for users' needs	Regular defect surveys and routing inspection	Class 3 Unsealed roads – 12 Weeks Class 4 Unsealed roads – 24 Weeks	No further upgrade plan		
		Reactive inspection	Class 3 Rural unsealed roads – 1 Day Class 4 Rural unsealed roads – 2 Day	No further upgrade plan		
		Emergency defects	A action will be taken within 48 hours	No further upgrade plan		
		Budget	\$43,700			
Maintenance	Respond to service requests	Reactive service requests completed within adopted time frames	65%	80%		
	Maintain smooth surface	Maintenance grading cycle	Once a year gravel grading for all class 3 & 4 roads. Addition gravel road grading as and when required section by section	Class 3 Unsealed roads – twice a year Class 4 Unsealed roads – annually and section by section as an when required.		
		Budget	Total \$884,700			

#### Table 3.5: Technical Levels of Service

<sup>&</sup>lt;sup>4</sup> IPWEA, 2015, IIMM, p 2|28.

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost **
Renewal	Sustain gravel sheeting	Percentage of unsealed roads resheeted in year	Unsealed roads 8%/yr	Unsealed roads 8%/yr
		Budget	\$377,900	\$377,900

Note: \* Current activities and costs (currently funded)

\*\* Desired activities and costs to sustain current service levels and achieve minimum life cycle costs (not currently funded)

It is important to monitor the service levels provided regularly as these will change. The current performance is influences by work efficiencies and technology, and customer priorities will change over time. Review and establishment of the agreed position which achieves the best balance between service, risk and cost is essential.

# 4. FUTURE DEMAND

There will be negligible future demand for unsealed roads with in the council boundaries.

# 5. LIFECYCLE MANAGEMENT PLAN

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

#### 5.1 Background Data

#### 5.1.1 Physical parameters

The assets covered by this asset management plan are shown in Table 2.1.

This plan covers the infrastructure assets that provide unsealed roads with in the council boundary. The hierarchy of unsealed network in the Nambucca Valley is range from Class 3 Roads which are major collection roads and primary importance to the community, through to Class 5 formed roads which provide property access to a very limited number of residents.

The age profile of the assets included in this AM Plan are shown in Figure 2.





Figure Values are in current (real) dollars.

Some of the unsealed road age is assumed since there is limited history information for age.

#### 5.1.2 Asset capacity and performance

Assets are generally provided to meet design standards where these are available.

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

Table 5.1.2: Known Service Performa	nce Deficiencies
-------------------------------------	------------------

Location	Service Deficiency
Unsealed Road Hierarchy	Redefine and rearrange the road hierarchy to improve the funding level for the unsealed roads.
Asset register	Asset register data audit has to done for entire unsealed road network to improve the data quality
Renewal record	The council have to maintain the renewal records to redefine the useful life

#### 5.1.3 Asset condition

Condition is vary considerably due to weather, construction methodology, type of material and road usage but condition is uplifted by frequent gravel grading and the periodic gravel resheeting.

Gravel roads condition is variable between maintenance grading due to weather and traffic. Maintenance grading seeks to restore the surface profile. Gravel resheeting is a process of replacing pavement material lost overtime due to environmental and functional affects e.g. loss of fine material as dust in dry weather.

Council provides gravel roads at a level of service that seeks to maintain all weather access. The process of gravel resheeting restores this capacity/condition. The resheet program is delivered as capital projects scheduled on a cyclic basis and is reflected in the apparent higher rating of the network score i.e. recently resheeted roads are scored condition/capacity 1.

The condition/capacity profile of our assets is shown in Figure 3.



#### Fig 3: Asset Condition/Capacity Profile

Figure Values are in current (real) dollars.

Condition/Capacity is measured using a 1-5 grading system<sup>5</sup> as detailed in Table 5.1.3.

Assets in Condition/Capacity 5 is listed for renewal program in 2021/22

Table 5.1.3: Simple Condition/Capacity Grading Model

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

# 5.2 Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety and amenity, e.g. Shoulder grading, vegetation clearance.

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, e.g. road pothole patching.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

<sup>&</sup>lt;sup>5</sup> IPWEA, 2015, IIMM, Sec 2.5.4, p 2 80.

Maintenance expenditure is shown in Table 5.2.1.

Year	Maintenance Budget \$
2023	\$ 884,700
2024	\$ 902,394
2025	\$ 920,442

Table 5.2.1: Maintenance Expenditure Trends

Maintenance expenditure levels are considered to be adequate to meet projected service levels, which may be less than or equal to current service levels. Where maintenance expenditure levels are such that they will result in a lesser level of service, the service consequences and service risks have been identified and s highlighted in this AM Plan and service risks considered in the Infrastructure Risk Management Plan.

#### Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 4. Note that all costs are shown in current 2020 dollar values (i.e. real values).



Figure 4: Projected Operations and Maintenance Expenditure

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

Maintenance is funded from the operating budget where available. This is further discussed in Section 7.

# 5.3 Renewal/Replacement Plan

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Assets requiring renewal/replacement are identified from one of three methods provided in the 'Expenditure Template'.

- Method 1 uses Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year, or
- Method 2 uses capital renewal expenditure projections from external condition modelling systems (such as Pavement Management Systems), or
- Method 3 uses a combination of average network renewals plus defect repairs in the Renewal Plan and Defect Repair Plan worksheets on the 'Expenditure template'.

Method 1 as used for this asset management plan.

#### 5.3.1 Renewal ranking criteria

Asset renewal and replacement is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (e.g. replacing a bridge that has a 5 t load limit), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. roughness of a road).<sup>6</sup>

It is possible to get some indication of capital renewal and replacement priorities by identifying assets or asset groups that:

- Have a high consequence of failure,
- Have high use and subsequent impact on users would be greatest,
- Have a total value representing the greatest net value,
- Have the highest average age relative to their expected lives,
- Are identified in the AM Plan as key cost factors,
- Have high operational or maintenance costs, and
- Have replacement with a modern equivalent asset that would provide the equivalent service at a savings.<sup>7</sup>

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 5.3.1.

#### Table 5.3.1: Renewal and Replacement Priority Ranking Criteria

Criteria	Weighting
Condition Rating	40%
Road Hierarchy	30%
Number of properties served	30%
Total	100%

#### 5.3.2 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time when the asset stock increases. The expenditure is required is shown in Fig 5. Note that all amounts are shown in current (real) dollars.

The projected capital renewal and replacement program is shown in Appendix B.

#### Fig 5: Projected Capital Renewal and Replacement Expenditure

<sup>&</sup>lt;sup>6</sup> IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.

<sup>&</sup>lt;sup>7</sup> Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3 | 97.



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

Renewals and replacement expenditure in the capital works program will be accommodated in the long term financial plan. This is further discussed in Section 7.

The unfunded portion of the graph refers to projects committed in 2022 but appear within this report to be unfunded.

# 5.4 Creation/Acquisition/Upgrade Plan

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. But it is considered that there will be negligible future demand for unsealed roads with in the council boundaries.

#### 5.4.1 Summary of asset expenditure requirements

The financial projections from this asset plan are shown in Fig 7 for projected operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion). Note that all costs are shown in real values.

The bars in the graphs represent the anticipated budget needs required to achieve lowest lifecycle costs, the budget line indicates what is currently available. The gap between these informs the discussion on achieving the balance between services, costs and risk to achieve the best value outcome.

Fig 7: Projected Operating and Capital Expenditure



#### 5.5 Disposal Plan

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.5, together with estimated annual savings from not having to fund operations and maintenance of the assets. These assets will be further reinvestigated to determine the required levels of service and see what options are available for alternate service delivery, if any. Any costs or revenue gained from asset disposals is accommodated in the long term financial plan.

# 6. RISK MANAGEMENT PLAN

The purpose of infrastructure risk management is to document the results and recommendations resulting from the periodic identification, assessment and treatment of risks associated with providing services from infrastructure, using the fundamentals of International Standard ISO 31000:2009 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2018 as: 'coordinated activities to direct and control with regard to risk'<sup>8</sup>.

An assessment of risks associated with service delivery from infrastructure assets has identified critical risks that will result in loss or reduction in service from infrastructure assets or a 'financial shock'. 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.

# 6.1 Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Similarly, critical failure modes are those which have the highest consequences.

Critical assets have been identified and their typical failure mode and the impact on service delivery are as follows:

#### Table 6.1 Critical Assets

<sup>&</sup>lt;sup>8</sup> ISO 31000:2009, p 2

Critical Asset(s)	Failure Mode	Impact
Class 3 Unsealed roads	Natural disaster or major disaster (e.g. Flood & Storm, Tsunami)	Unaccusable to properties

By identifying critical assets and failure modes investigative activities, condition inspection programs, maintenance and capital expenditure plans can be targeted at the critical areas.

## 6.2 Risk Assessment

The risk management process used in this project is shown in Figure 6.2 below.

It is an analysis and problem solving technique designed to provide a logical process for the selection of treatment plans and management actions to protect the community against unacceptable risks.

The process is based on the fundamentals of the ISO risk assessment standard ISO 31000:2018.



#### Fig 6.2 Risk Management Process – Abridged

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.

An assessment of risks associated with service delivery from infrastructure assets has identified the critical risks that will result in significant loss, 'financial shock' or a reduction in service.

Critical risks are those assessed with 'Very High' (requiring immediate corrective action) and 'High' (requiring corrective action) risk ratings identified in the Infrastructure Risk Management Plan. The residual risk and treatment

cost after the selected treatment plan is implemented is shown in Table 6.2. These risks and costs are reported to management and council.

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Missabotti Road & McHughes Creek Road	Segment 271342 of Missabotti road and segment 87698 of McHughes Creek road has landslips due to March 2021 flood and storm and currently operating as one lane road. The risks associated with the failure of these roads include public access, health and safety, business continuity and emergencies as there is no alternate option open for the residents.	Η	Council will need to have in place a Business Continuity Policy and Plans to ensure that in the event of disruption to the services, a strategy is in place to provide for the reinstatement of those services as soon as possible to minimise any disruption to the community.		GeoTech Investigation is ongoing. Cost will be estimated after investigation is finished.

Table 6.2: Critical Risks and Treatment Plans

Note \* The residual risk is the risk remaining after the selected risk treatment plan is operational.

# 6.3 Infrastructure Resilience Approach

The resilience of our critical infrastructure is vital to our customers and the services we provide. To adapt to changing conditions and grow over time we need to understand our capacity to respond to possible disruptions and be positioned to absorb disturbance and act effectively in a crisis to ensure continuity of service.

Resilience is built on aspects such as response and recovery planning, financial capacity and crisis leadership.

Our current measure of resilience is shown in Table 6.4 which includes the type of threats and hazards, resilience assessment and identified improvements and/or interventions.

#### Table 6.4: Resilience

Threat / Hazard	Resilience LMH	Improvements / Interventions
Unsealed roads affected by possible natural disaster	Low	The natural disaster events were included in the Council "Displan" which should be activated immediately upon a declaration of natural disaster.

In the major unforeseen disaster, the council will be able to obtain the recovery support from the Federal or State governments.

# 6.4 Service and Risk Trade-Offs

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### 6.4.1 What we cannot do

There are some operations and maintenance activities and capital projects that are unable to be undertaken within the next 10 years. These include:

• Nil

#### 6.4.2 Service trade-off

Operations and maintenance activities and capital projects that cannot be undertaken will maintain or create service consequences for users. These include:

• Nil

#### 6.4.3 Risk trade-off

The operations and maintenance activities and capital projects that cannot be undertaken may maintain or create risk consequences. These include:

• Nil

These actions and expenditures are considered in the projected expenditures, and where developed are included in the Risk Management Plan.

# **7. FINANCIL SUMMARY**

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

# 7.1 Financial Statements and Projections

#### 7.1.1 Asset valuations

The best available estimate of the value of assets included in this Asset Management Plan are shown below. Assets are valued at current replacement cost for an as new equivalent asset.

Gross Replacement Cost	\$ 8,293,716
Depreciable Amount	\$ 8,293,716
Depreciated Replacement Cost <sup>9</sup>	\$ 5,310,648
Annual Average Asset Consumption	\$ 364,097

<sup>&</sup>lt;sup>9</sup> Also reported as Written Down Value, Carrying or Net Book Value.

#### 7.1.1 Sustainability of service delivery

#### The Sustainability of service delivery Figures in this building asset management plan is shown in 7.1.1 below.

Sustainability Report	
These are summaries and calculations to report on sustainability.	
Asset Renewal Funding Ratio	
Asset Renewal Funding Ratio	100%
Long Term - Lifecycle Costs	
Lifecycle Forecast [average 10 years forecast ops, maint and depreciation]	1,380,670
Lifecycle Planned Budget [average 10 years planned budget ops, maint & depreciation]	1,206,295
Lifecycle Gap [lifecycle planned budget - lifecycle forecast (-ve = gap)]	-174,375
Lifecycle Indicator [lifecycle planned budget / lifecycle forecast]	87%
Medium Term - 10 year financial planning period	
10 yr Ops, Maint & Renewal forecast [average]	1,206,365
10 yr Ops, Maint & Renewal planned budget [average]	1,206,295
10 year Gap [lifecycle planned budget - lifecycle forecast (-ve = gap)]	-70
10 year Indicator [lifecycle planned budget / lifecycle forecast]	100%
Short Term - 5 year financial planning period	
5 yr Ops, Maint & Renewal forecast [average]	1,204,113
5 yr Ops, Maint & Renewal planned budget [average]	1,204,113
5 year Gap [lifecycle planned budget - lifecycle forecast (-ve = gap)]	0
5 year Indicator [lifecycle planned budget / lifecycle forecast]	100.00%

#### Figure Values are in current (real) dollars.

Two key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the:

- asset renewal funding ratio, and
- medium term budgeted expenditures/projected expenditure (over 10 years of the planning period).

#### **Asset Renewal Funding Ratio**

Asset Renewal Funding Ratio<sup>10</sup> 100%

The Asset Renewal Funding Ratio is the most important indicator and indicates that over the next 10 years of the forecasting that we expect to have 100% of the funds required for the optimal renewal and replacement of assets.

<sup>&</sup>lt;sup>10</sup> AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

#### Medium term - 10 year financial planning period

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

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

The projected operations, maintenance and capital renewal expenditure required over the 10 year planning period is \$1,206,365 on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is \$1,206,295 on average per year. This indicates 100% of the projected expenditures needed to provide the services documented in the asset management plan. This excludes upgrade/new assets.

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

#### 7.1.2 Projected expenditures for long term financial plan

Table 7.1.2 shows the projected expenditures for the 10 year long term financial plan.

Expenditure projections are in 2020 real values.

Voar	Operation	Maintonanco	Ponowal	Disposal
Tear		Wantenance	Reliewal	Disposal
2023	\$42,600.00	\$884,700.00	\$377,900.00	
				0
2024	\$43,452.00	\$902,394.00	\$142,296.00	
				0
2025	\$44.321.00	\$920,442,00	\$182,924,00	
	<i>\(\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>	<i>4020)</i> 2.00	<i><i><i><i></i></i></i></i>	0
2026	\$45,207.00	\$938,851.00	\$317,568,00	
	<i>\(\)</i>	<i>\$500,002,00</i>	<i>\\</i>	0
2027	\$46,112,00	\$957.628.00	\$168,446,00	
	+	+	+	0
2028	\$47.034.00	\$976.780.00	\$175.354.00	
	, ,	1 ,	1 - /	0
2029	\$47,975.00	\$996.316.00	\$94,101,00	
	+,	+	+	0
2030	\$48,934,00	\$1.016.242.00	\$87,496,00	
	<i>\(\)</i>	<i><i>q</i> =)0 =0)= 1=100</i>	<i>\(\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>	0
2031	\$49 913 00	\$1,036,567,00	\$176 269 00	
	÷ .0,010.00	+ =,000,007,000	<i>+,</i>	0
2022	\$50.011.00	\$1 057 208 00	\$175 571 00	
2032	\$50,911.00	,UJ1,Z90.00	\$175,571.00	0
1		1		0

#### Table 7.1.2: Projected Expenditures for Long Term Financial Plan

# 7.2 Funding Strategy

Funding for assets is provided from the budget and long term financial plan.

The financial strategy of the entity determines how funding will be provided, whereas the asset management plan communicates how and when this will be spent, along with the service and risk consequences of differing options.

# 7.3 Key Assumptions Made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this asset management plan. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Table 7.4 shows Key assumptions made in this asset management plan.

#### Table 7.4: Key Assumptions made in AM Plan and Risks of Change

No	Key Assumptions
1	The current unsealed road asset register and asset values are reasonably accurate.
2	The useful life and residual values in the asset register is correct.
3	The current condition assessment data are reasonably accurate.

# 7.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AM Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale<sup>11</sup> in accordance with Table 7.5.

Table 7.5:	Data Confidence	Grading System
------------	-----------------	----------------

Confidence	Description
Grade	
A Highly reliable	Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate $\pm 2\%$
B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate $\pm$ 10%
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ± 25%
D Very Uncertain	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy $\pm$ 40%
E Unknown	None or very little data held.

The estimated confidence level for and reliability of data used in this AM Plan is considered to be "B" which is reliable.

<sup>&</sup>lt;sup>11</sup> IPWEA, 2015, IIMM, Table 2.4.6, p 2 | 71.

# 8. PLAN IMPROVEMENT AND MONITORING

# 8.1 Status of Asset Management Practices<sup>12</sup>

#### 8.1.1 Accounting and financial data sources

The unsealed road asset data is stored in Civica Authority enterprise management system.

#### 8.1.2 Asset management data sources

The excel spread sheets is used for asset management and maintenance data in addition to Civica Authority enterprise management system.

# 8.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 8.1.

Task No	Task	Responsibility	Resources Required	Timeline
1	Asset register data capture	AE	Internal resources	Continuous
2	Road grading data to be capture for the Asset Management	AE	Internal resources	2023
3	Review the useful life	AE	Internal resources	Annually
4	The renewal ranking criteria may need to redefined and approved by the stakeholders	AE	Internal resources	2024
5	Update the GIS data base to represent the actual unsealed road network data	GIS Officer	Internal resources	Continuous
6	Redefine the road hierarchy to improve service levels and befit the stakeholders	AE & MA	Internal resources	2022

#### Table 8.1: Improvement Plan

# 8.3 Monitoring and Review Procedures

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

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

The AM Plan has a life of 4 years and is due for complete revision and update for each council election cycle.

# 8.4 Performance Measures

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

<sup>&</sup>lt;sup>12</sup> ISO 55000 Refers to this the Asset Management System

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

# 9. **REFERENCES**

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, <u>www.ipwea.org/namsplus</u>.
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, <u>www.ipwea.org/AIFMM</u>.
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- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney
- NSC, 2017, 'Nambucca Valley Council Annual Report 2016-2017', Nambucca Valley Council, Macksville
- NSC, 2016, 'Nambucca Valley Council Annual Report 2015-2016', Nambucca Valley Council, Macksville

# **10. APPENDICES**

Appendix A Projected 10 year Capital Renewal and Replacement Works Program

Appendix B LTFP Budgeted Expenditures Accommodated in AM Plan

Asset ID	Category	Asset Name	From	То	Rem Life	Register Renewal Year	Forecast Renewal Year	Renewal Cost	Useful Life
267749	5100015	Bakers Creek Road- 267749	6254	8970	0	2022	2022	\$71,295.00	20
267747	5100014	Bakers Creek Road- 267747	5498	6153	0	2022	2022	\$17,194.00	20
267743	5100013	Bakers Creek Road- 267743	4495	5325	0	2022	2022	\$21,788.00	20
95284	5100012	Bakers Creek Road- 95284	3528	4375	0	2022	2022	\$22,234.00	20
86700	5100090	Hicksons Road- 86700	0	183	0	2022	2022	\$3,843.00	25
86442	5100228	Tamban Road-86442	7253	8570	0	2022	2022	\$29,484.00	25
86435	5100230	Tamban Road-86435	8590	9838	0	2022	2022	\$630.00	25
86432	5100229	Tamban Road-86432	8570	8590	0	2022	2022	\$578.00	25
86431	5100227	Tamban Road-86431	7233	7253	0	2022	2022	\$61,583.00	25
86420	5100231	Tamban Road-86420	9838	9858	0	2022	2022	\$630.00	25
86281	5100221	Tamban Road-86281	142	2488	0	2022	2022	\$4,331.00	25
86594	5100262	Whip Mountain Road-86594	165	185	0	2022	2022	\$32,064.00	25
86593	5100261	Whip Mountain Road-86593	0	165	0	2022	2022	\$29,085.00	25
86592	5100263	Whip Mountain Road-86592	185	2628	0	2022	2022	\$7,340.00	25
							Total	\$265,654.00	
271312	5100110	Lower Buckra Bendinni Rd-271312	10342	11450	1	2023	2023	\$9,671.00	25
271396	5100133	Mitchells Road- 271396	4281	4514	1	2023	2023	\$66,150.00	20
87257	5100132	Mitchells Road- 87257	3868	4175	1	2023	2023	\$30,161.00	20
87253	5100131	Mitchells Road- 87253	1666	3766	1	2023	2023	\$20,601.00	20

# Appendix A Projected 10-year Capital Renewal and Replacement Works Program

Asset ID	Category	Asset Name	From	То	Rem Life	Register Renewal Year	Forecast Renewal Year	Renewal Cost	Useful Life
							Total	\$ <b>112,246.00</b>	
87727	5100103	Lemans Road-87727	0	1915	2	2024	2024	\$23,783.00	25
87046	5100089	Hawks Road-87046	246	900	2	2024	2024	\$21,908.00	25
87071	5100022	Birds Road-87071	328	1234	2	2024	2024	\$39,926.00	20
267683	5100024	Boggy Creek Road- 267683	2039	3430	2	2024	2024	\$5,917.00	20
267681	5100023	Boggy Creek Road- 267681	46	1567	2	2024	2024	\$525.00	20
271452	5100161	North Bank Road- 271452	1452	1774	2	2024	2024	\$48,248.00	20
							Total	\$142,296.00	
86408	5100191	Searles Road-86408	2092	2112	3	2025	2025	\$643.00	25
86539	5100011	Bakers Creek Road- 86539	892	2730	3	2025	2025	\$111,563.00	20
7622	5100290	Gravel access road- 7622	0	0	3	2025	2025	\$15,540.00	25
86415	5100064	Elliotts Road-86415	0	4250	3	2025	2025	\$1,575.00	25
86333	5100086	Hall Road-86333	130	870	3	2025	2025	\$630.00	20
86328	5100084	Hall Road-86328	50	110	3	2025	2025	\$4,200.00	20
86326	5100085	Hall Road-86326	110	130	3	2025	2025	\$1,129.00	20
276574	5100114	Margaret Street- 276574	0	200	3	2025	2025	\$3,213.00	20
							Total	\$182,924.00	
300052	5100307	Mill Lane-300052	93	136	4	2026	2026	\$3,528.00	25
271171	5100096	Kennaicle Creek Road-271171	45	147	4	2026	2026	\$3,129.00	25
90595	4300000	Adam Lane-90595	0	168	4	2026	2026	\$31,122.00	25
90587	4300018	Aston Lane-90587	250	399	4	2026	2026	\$18,900.00	25
87812	5100059	Coulters Road- 87812	0	1482	4	2026	2026	\$25,856.00	25
87739	5100175	Proctors Road- 87739	0	1200	4	2026	2026	\$54,653.00	25

Asset ID	Category	Asset Name	From	То	Rem Life	Register Renewal Year	Forecast Renewal Year	Renewal Cost	Useful Life
271612	5100181	Rhones Creek Road- 271612	5295	6280	4	2026	2026	\$136,500.00	25
271893	5100241	Upper Buckrabendinni Road-271893	4695	6430	4	2026	2026	\$27,185.00	25
271888	5100240	Upper Buckrabendinni Road-271888	695	4695	4	2026	2026	\$12,353.00	25
271871	5100255	Wards Road-271871	564	1427	4	2026	2026	\$89,271.00	25
86649	5100254	Wards Road-86649	50	412	4	2026	2026	\$51,870.00	25
							Total	\$ <b>317,568.00</b>	
271430	5100158	North Arm Road- 271430	26880	29496	5	2027	2027	\$27,305.00	25
86587	5100036	Butts Creek Road- 86587	0	2470	5	2027	2027	\$64,838.00	25
87709	5100094	Jaspers Creek Road- 87709	0	1486	5	2027	2027	\$11,592.00	25
							Total	\$168,446.00	
86403	5100095	Jones Road-86403	0	2470	6	2028	2028	\$23,583.00	25
86612	5100102	Kosekai Road-86612	280	832	6	2028	2028	\$44,100.00	25
86488	5100193	Sheet O'Bark Road- 86488	0	1123	6	2028	2028	\$16,593.00	25
91844	5100280	South Pacific Drive- 91844	784	2184	6	2028	2028	\$14,648.00	25
86598	5100264	Whites Road-86598	0	903	6	2028	2028	\$33,044.00	25
87826	5100265	Whitfields Road- 87826	0	930	6	2028	2028	\$12,369.00	25
							Total	\$175,354.00	
271327	5100120	Missabotti Road- 271327	125	1174	7	2029	2029	\$31,862.00	20
87497	5100121	Missabotti Road- 87497	1383	1972	7	2029	2029	\$7,245.00	20
87496	5100122	Missabotti Road- 87496	2105	4128	7	2029	2029	\$9,581.00	20
87494	5100123	Missabotti Road-	4250	4595	7	2029	2029	\$6,612.00	20

Asset ID	Category	Asset Name	From	То	Rem Life	Register Renewal Year	Forecast Renewal Year	Renewal Cost	Useful Life
		87494							
87439	5100025	Borefield Road- 87439	0	365	7	2029	2029	\$630.00	20
							Total	\$94,101.00	
86845	5100026	Boultons Crossing Road-86845	1991	2220	8	2030	2030	\$51,337.00	20
87810	5100178	Rhones Creek Road- 87810	1625	1645	8	2030	2030	\$28,917.00	20
271616	5100179	Rhones Creek Road- 271616	1645	3818	8	2030	2030	\$315.00	20
271614	5100306	Rhones Creek Road- 271614	3944	5168	8	2030	2030	\$99,351.00	20
							Total	\$ <b>87,496.00</b>	
271459	5100166	North Bank Road- 271459	9016	9026	9	2031	2031	\$11,403.00	20
271456	5100163	North Bank Road- 271456	4960	8114	9	2031	2031	\$4,599.00	20
86573	5100164	North Bank Road- 86573	8206	8749	9	2031	2031	\$17,934.00	20
86569	5100165	North Bank Road- 86569	8870	9016	9	2031	2031	\$5,694.00	20
86567	5100167	North Bank Road- 86567	9026	9514	9	2031	2031	\$36,973.00	20
271885	5100256	Way Way Creek Road-271885	49	290	9	2031	2031	\$116,240.00	20
86359	5100257	Way Way Creek Road-86359	390	1955	9	2031	2031	\$16,328.00	20
							Total	\$176,269.00	
271441	5100157	North Arm Road- 271441	23610	26880	10	2032	2032	\$8,925.00	25
87794	5100217	Spaldings Road- 87794	153	775	10	2032	2032	\$25,053.00	25
87154	5100075	Grassy Road-87154	0	340	10	2032	2032	\$9,025.00	25
87153	5100076	Grassy Road-87153	545	1738	10	2032	2032	\$71,295.00	25
87138	5100279	Kookaburra Lane-	0	382	10	2032	2032	\$17,194.00	25

Asset ID	Category	Asset Name	From	То	Rem Life	Register Renewal Year	Forecast Renewal Year	Renewal Cost	Useful Life
		87138							
							Total	\$ <b>175,571.00</b>	

# Appendix B Budgeted Expenditures Accommodated in LTFP

Year	Acquisition	Operation	Maintenance	Renewal	Disposal	Budget
2023	0	43,700	884,700	377,900	0	1,306,300
2024	0	44,574	902,394	142,296	0	1,089,264
2025	0	45,465	920,442	182,924	0	1,148,831
2026	0	46,375	938,851	317,568	0	1,302,794
2027	0	47,302	957,628	168,446	0	1,173,376
2028	0	48,248	976,780	175,354	0	1,200,382
2029	0	49,213	996,316	94,101	0	1,139,630
2030	0	50,198	1,016,242	87,496	0	1,153,936
2031	0	51,202	1,036,567	176,269	0	1,263,340
2032	0	52,226	1,057,298	175,571	0	1,285,095
2033	0	53,270	1,078,444	450,950	0	1,582,664
2034	0	54,335	1,100,013	139,511	0	1,293,859

2035	0	55,422	1,122,014	381,263	0	1,558,699
2036	0	56,531	1,144,454	745,208	0	1,946,193
2037	0	58,814	1,167,343	215,671	0	1,441,828
2038	0	58,814	1,190,690	240,212	0	1,489,716
2039	0	59,991	1,214,504	470,863	0	1,745,358
2040	0	62,414	1,238,794	844,842	0	2,146,050
2041	0	62,414	1,263,569	505,976	0	1,831,959
2042	0	63,663	1,288,841	625,832	0	1,978,336