

# **STRATEGIC ASSET MANAGEMENT PLAN**

**Municipality of Shuniah  
Core Infrastructure**

<b>Document Control</b>	<b>Asset Management Plan</b>
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## **1.0 EXECUTIVE SUMMARY**

### **1.1 The Purpose of the Plan**

Asset management planning is a comprehensive process ensuring delivery of services from infrastructure is financially sustainable.

This Asset Management Plan (AM Plan) details information about infrastructure assets with 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 over the 2021 - 2030 year planning period. The Asset Management Plan will link to a Long-Term Financial Plan which typically considers a 10-year planning period.

This plan covers the infrastructure assets that provide road travel and travel over water ways

### **1.2 Asset Description**

The roads, bridges & culverts network comprises:

- Asphalt Roads
- Gravel Roads
- Surface Treatment Roads
- Bridges – 4 greater than 10 metres & 6 less than 10 metres
- Culverts – 3 box culverts & 2 arch culverts

The above infrastructure assets have significant total renewal value estimated at \$18,054,034.

### **1.3 Levels of Service**

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

The main service consequences of the Planned Budget are:

- Roads/bridges could be closed
- Roads/bridges weight restrictions

### **1.4 Future Demand**

The main demands for new services are created by:

- Demographic Changes
- Climate change

These demands will be approached using a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand. Demand management practices may also include a combination of non-asset solutions, insuring against risks and managing failures.

### **1.5 Lifecycle Management Plan**

#### **1.5.1 What does it Cost?**

The forecast lifecycle costs necessary to provide the services covered by this AM Plan includes operation, maintenance, renewal, acquisition, and disposal of assets. Although the AM Plan may be prepared for a range of time periods, it typically informs a Long-Term Financial Planning period of 10 years. Therefore, a summary output from the AM Plan is the forecast of 10 year total outlays, which for roads, bridges and culverts is estimated as \$3,630,187 or \$363,019 on average per year.

## 1.6 Financial Summary

### 1.6.1 What we will do

Estimated available funding for the 10 year period is \$10,118,750 or \$1,011,875 on average per year as per the Long-Term Financial plan or Planned Budget. This is 278.74% 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 Informed decision making depends on the AM Plan emphasising the consequences of Planned Budgets on the service levels provided and risks.

The anticipated Planned Budget for bridges and culverts and roads allow us to be able to provide services in the AM Plan compared with the Planned Budget currently included in the Long-Term Financial Plan. This is shown in the figure below.

**Forecast Lifecycle Costs and Planned Budgets**

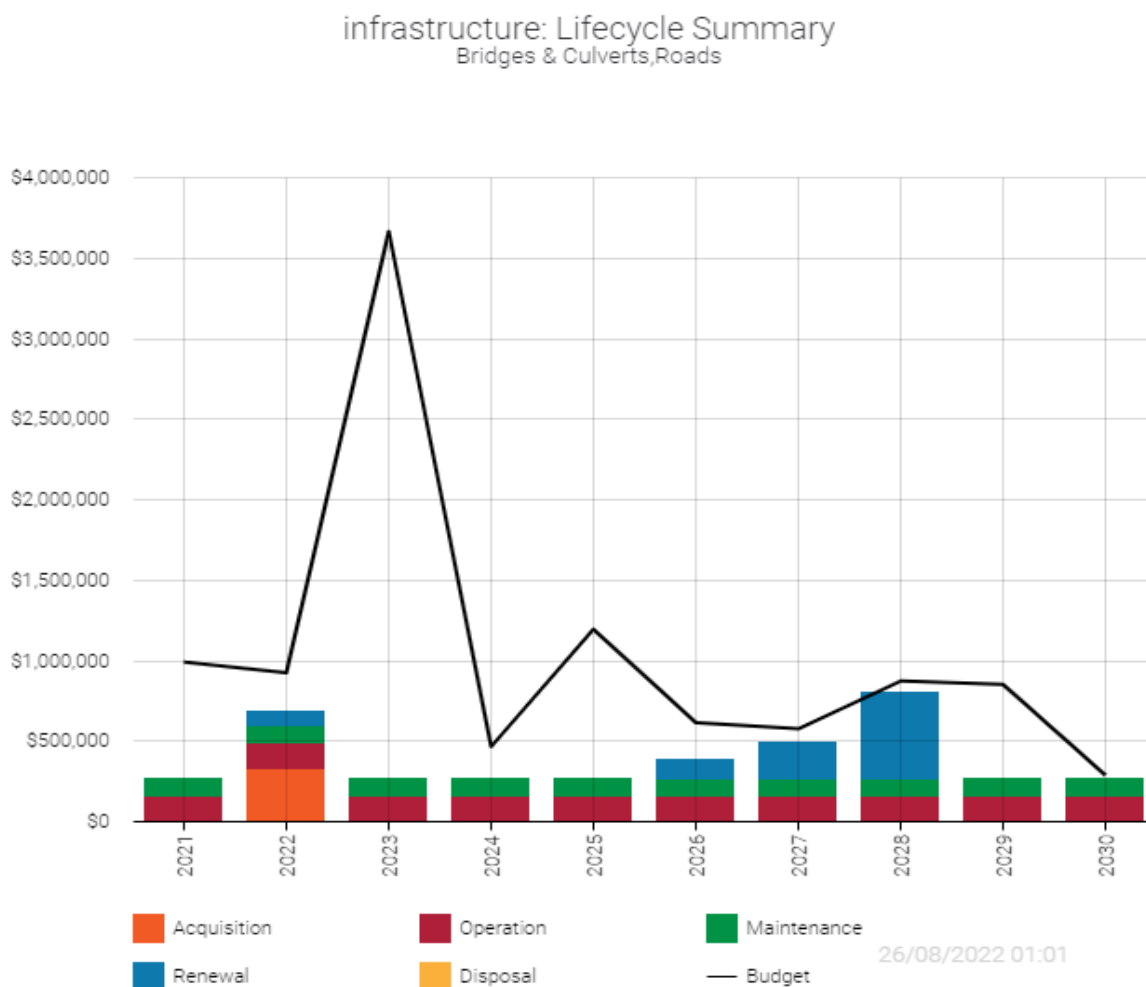


Figure Values are in current dollars.

We plan to provide road & bridges services for the following:

- Operation, maintenance, renewal, and upgrade of gravel, paved, surface treatment roads and bridges to meet service levels set by in annual budgets.
- Major roadway renewals include Lakeshore Drive, Alder Road, Mackenzie Beach Ave, West Loon Drive, Grandview Beach, Amethyst Ave Section 1, Eldorado Beach Road, multiple Amethyst Harbour roadways Spruce River Road, Scott Drive, Coral Bay Road & Drive, Crystal Beach Ave, Hampton Drive, Haugen Road, Road #5 North, Silver Beach Road, East Loon and Mount Baldy Road and a few small roads within the 10-year planning period.



### **1.6.2 What we cannot do**

We currently do not allocate enough budget to sustain these services at the proposed standard or to provide all new services being sought.

### **1.6.3 Managing the Risks**

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

The main risk consequences are:

- Grant cutbacks
- Increase prices due to inflation
- Aging infrastructure

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

- Investing in reserve funds
- Apply for grants when available

### **1.7 Asset Management Practices**

Our systems to manage assets include:

- Public Sector Digest City Wide

Assets requiring renewal/replacement are identified in the asset register or an alternative. These methods are part of the Lifecycle Model.

- If Asset Register data is used to forecast the renewal costs this is done using the acquisition year and the useful life,
- Alternatively, an estimate of renewal lifecycle costs is projected from external condition modelling systems (such as Pavement Management Systems) and may be supplemented with, or based on, expert knowledge.

The Asset Register was used to forecast the renewal life cycle costs for this Asset Management Plan.

### **1.8 Monitoring and Improvement Program**

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

- Regularly evaluate lifecycle events for better data
- Community Level of Services survey
- Continually update asset conditions
- Update long-term financial plan/budgets
- Add all assets to the plan
- Prepare asset management strategy document

## 2.0 Introduction

### 2.1 Background

This Asset Management Plan communicates the requirements for the sustainable delivery of services through management of assets, compliance with regulatory requirements, and required funding to provide the appropriate levels of service over the long term planning period.

The Asset Management Plan is to be read with the Municipality of Shuniah planning documents. This should include the Asset Management Policy and Asset Management Strategy (once developed), along with other key planning documents:

- Official Plan
- Zoning Bylaws

The status of Asset Management in Shuniah is inline with both Shuniah and government legislation with continued improvement.

The infrastructure assets covered by this Asset Management Plan include bridges, culverts, asphalt roads, gravel roads and surface treatment roads. For a detailed summary of the assets covered in this Asset Management Plan refer to Table in Section 5.

These assets are used to provide safe, reliable, and efficient movement of people and goods throughout the community.

The infrastructure assets included in this plan have a total replacement value of \$18,054,034.

Key stakeholders in the preparation and implementation of this Asset Management Plan are shown in Table 2.1.

**Table 2.1: Key Stakeholders in the AM Plan**

Key Stakeholder	Role in Asset Management Plan
Mayor/Councilors	<ul style="list-style-type: none"><li>■ Represent needs of community/shareholders,</li><li>■ Allocate resources to meet planning objectives in providing services while managing risks,</li><li>■ Ensure service sustainable.</li></ul>
CAO/Clerk/Treasurer	<ul style="list-style-type: none"><li>■ Provide financial expertise</li><li>■ Provide insights into community</li></ul>
Operations Manager	<ul style="list-style-type: none"><li>■ Provide advice and expertise on current state of the infrastructure, lead maintenance and construction projects</li></ul>

### 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 forecast costs and how it will be allocated.

Key elements of the planning framework are

- Levels of service – specifies the services and levels of service to be provided,
- Future demand – how this will impact on future service delivery and how this is to be met,
- Lifecycle management – how to manage its existing and future assets to provide defined levels of service,
- Financial summary – what funds are required to provide the defined services,
- Asset management practices – how we manage provision of the services,
- Monitoring – how the plan will be monitored to ensure objectives are met,
- Asset management improvement plan – how we increase asset management maturity.

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>

A road map for preparing an Asset Management Plan is shown below.

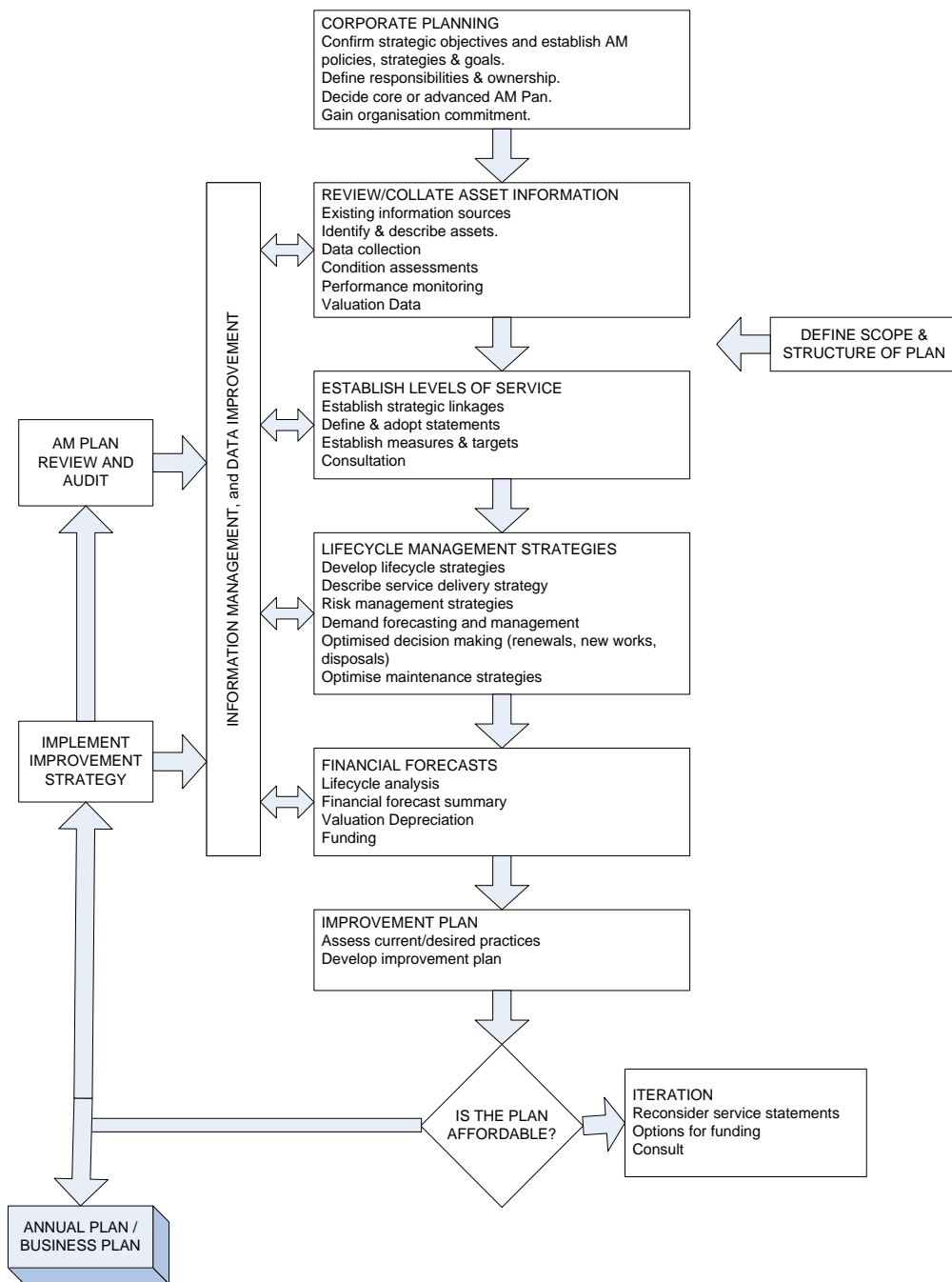
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<sup>1</sup> Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2 | 13

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

### Road Map for preparing an Asset Management Plan

Source: IPWEA, 2006, IIMM, Fig 1.5.1, p 1.11



### 3.0 LEVELS OF SERVICE

#### 3.1 Customer Research and Expectations

This Asset Management Plan is prepared to facilitate consultation prior to adoption of levels of service by the Council of The Municipality of Shuniah. Future revisions of the Asset Management Plan will incorporate customer consultation on service levels and costs of providing the service. This will assist the Council of the Municipality of Shuniah and stakeholders in matching the level of service required, service risks and consequences with the customer’s ability and willingness to pay for the service.

We currently have no new research on customer expectations. This will be investigated for future updates of the Asset Management Plan.

#### 3.2 Strategic and Corporate Goals

This Asset Management Plan is prepared under the direction of the Municipality of Shuniah’s vision, mission, goals and objectives.

Our vision is:

Shuniah’s municipal leaders and staff will strive to ensure that our actions and initiative under the direction of our new Strategic Plan are inspiring, sustainable, pro-active, collaborative, and accessible to our community.

Our mission is:

Shuniah is committed to providing the highest quality of life by building a healthy rural community through the delivery of essential services provided by responsible leadership, planning and effective management of municipal resources.

Strategic goals have been set by the Municipality of Shuniah. The relevant goals and objectives and how these are addressed in this Asset Management Plan are summarised in Table 3.2.

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

Goal	Objective	How Goal and Objectives are addressed in the AM Plan
No detours	Avoid users having to go off route	Implement load restrictions until repairs can be completed
Clear winter roads	Avoid users not being able to travel safely	Following the minimum maintenance standards for levels of services
Few potholes	Avoid rough roads and possible vehicle damage	Funds are budgeted yearly to address this matter
Short closures	Avoid users being stopped for repairs	If possible, build temporary area while rehabilitating a new structure or roadway

#### 3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. Legislative requirements that impact the delivery of the roads and bridges service are outlined in Table 3.3.

**Table 3.3: Legislative Requirements**

Legislation	Requirement
Ontario Regulation 239/02	Minimum maintenance standards - bridges
Ontario Regulation 104/97	Biennial inspections
CSA S6-14 Canadian Highway Bridge Code	Construction standards

**3.4 Customer Values**

Service levels are defined in three ways, customer values, customer levels of service and technical levels of service.

**Customer Values** indicate:

- what aspects of the service is important to the customer,
- whether they see value in what is currently provided and
- the likely trend over time based on the current budget provision

*Table 3.4: Customer Values*

Service Objective:			
Customer Values	Customer Satisfaction Measure	Current Feedback	Expected Trend Based on Planned Budget
Few Potholes	By complaints	Less than 5 complaints	For complaints to decline
Clear roadways of snow & ice	By complaints	Less than 5 complaints	To be about the same
Smooth gravel roads	By complaints	Less than 5 complaints	To be about the same

**3.5 Customer Levels of Service**

The Customer Levels of Service are considered in terms of:

- 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?
- Capacity/Use**        Is the service over or under used ... do we need more or less of these assets?

In Table 3.5 under each of the service measures types (Quality, Function, Capacity/Use) there is a summary of the performance measure being used, the current performance, and the expected performance based on the current funding level.

These 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 and provide a balance in comparison to the customer perception that may be more subjective.

**Table 3.5: Customer Level of Service Measures**

Type of Measure	Level of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget
<b>Quality</b>	Roads and bridge deck approaches are smooth	Complaints & service requests	Less than 10 per year	Expected to improve
	<b>Confidence levels</b>		Low	Low
<b>Function</b>	Constant access is available	Complaints & service requests	Negligible	Expected to stay the same
	<b>Confidence levels</b>		Medium - low	Medium
<b>Capacity</b>	Sufficient capacity and safety	Complaints & service requests	Negligible	Expected to remain the same
	<b>Confidence levels</b>		High	High

### 3.6 Technical Levels of Service

**Technical Levels of Service** – To deliver the customer values, and impact the achieved Customer Levels of Service, are operational or technical measures of performance. These technical measures relate to the activities and allocation of resources to best achieve the desired customer outcomes and demonstrate effective performance.

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

- **Acquisition** – the activities to provide a higher level of service (e.g. widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (e.g. a new bridge or culvert).
- **Operation** – the regular activities to provide services (e.g. line painting, pothole fills, new signage, add gravel and grading 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. road patching, crack sealing, unsealed road grading, bridge repairs),
- **Renewal** – the activities that return the service capability of an asset up to that which it had originally provided (e.g. road resurfacing and pavement reconstruction, bridge deck renewal),

Service and asset managers plan, implement and control technical service levels to influence the service outcomes.

Table 3.6 shows the activities expected to be provided under the current Planned Budget allocation, and the Forecast activity requirements being recommended in this AM Plan.

**Table 3.6: Technical Levels of Service**

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
<b>TECHNICAL LEVELS OF SERVICE</b>				
<b>Acquisition</b>	Asphalting a gravel road	As required	Adequate	Adequate
		<b>Budget</b>	\$95,000	\$300,000
<b>Operation</b>	Crack sealing, line painting and gravel	Frequency	As required	Adequate
	Bi-annual bridge inspections	Legislative bi-annual	Adequate	Adequate
	Snow clearing and removal	Frequency	Adequate	Adequate
		<b>Budget</b>	\$155,950	\$156,550
<b>Maintenance</b>	Hard top maintenance, granular resurfacing & ditching	Condition	Adequate	Adequate
	Repairs from inspections	Engineer inspections	Adequate	Adequate
		<b>Budget</b>	\$100,000	\$110,450
<b>Renewal</b>	Surface replacement	As required	Adequate	Adequate
	Asphalt surfacing	Requests, studies, safety	Adequate	Adequate
		<b>Budget</b>	\$755,925	\$960,019

Note: \* Current activities related to Planned Budget.

\*\* Forecast required performance related to forecast lifecycle costs.

It is important to monitor the service levels provided regularly as these will change. The current performance is influenced by work efficiencies and technology, and customer priorities will change over time.



## 4.0 FUTURE DEMAND

### 4.1 Demand Drivers

Drivers affecting demand include things such as population change, regulations, changes in demographics, seasonal factors, vehicle ownership rates, consumer preferences and expectations, technological changes, economic factors, agricultural practices, environmental awareness, etc.

### 4.2 Demand Forecasts

The present position and projections for demand drivers that may impact future service delivery and use of assets have been identified and documented.

### 4.3 Demand Impact and Demand Management Plan

The impact of demand drivers that may affect future service delivery and use of assets are shown in Table 4.3.

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

Opportunities identified to date for demand management are shown in Table 4.3. Further opportunities will be developed in future revisions of this Asset Management Plan.

**Table 4.3: Demand Management Plan**

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
Demographic Changes	Stable	Stable	Levels of service could be affected	Monitor and review levels of service
Climate Change	Stable	Closures, load restrictions	Levels of service affected and repair of assets	Monitor impacts of weather events on assets and make upgrades
Population Growth	2,798	3,000	Increased level of demand Increase level of stress of staffs	Monitor and review need of community

### 4.4 Asset Programs to meet Demand

The new assets required to meet demand may be acquired, donated or constructed. Additional assets are discussed in Section 5.4.

Acquiring new assets will commit the Municipality of Shuniah to ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs for inclusion in the long-term financial plan (Refer to Section 5).

### 4.5 Climate Change and Adaption

The impacts of climate change can have a significant impact on the assets we manage and the services they provide. In the context of the Asset Management Planning process climate change can be considered as both a future demand and a risk.

How climate change will impact on assets can vary significantly depending on the location and the type of services provided, as will the way in which we respond and manage those impacts.

As a minimum we should consider both how to manage our existing assets given the potential climate change impacts, and then also how to create resilience to climate change in any new works or acquisitions.

Opportunities identified to date for management of climate change impacts on existing assets are shown in Table 4.5.1.

**Table 4.5.1 Managing the Impact of Climate Change on Assets**

Climate Change Description	Projected Change	Potential Impact on Assets and Services	Management
Extreme weather events	Closures, load restrictions	Deterioration acceleration of assets	Monitor impacts of weather events on assets and make upgrades

Additionally, the way in which we construct new assets should recognize that there is opportunity to build in resilience to climate change impacts. Buildings resilience will have benefits:

- Assets will withstand the impacts of climate change
- Services can be sustained
- Assets that can endure may potentially lower the lifecycle cost and reduce their carbon footprint

Table 4.5.2 summarises some asset climate change resilience opportunities.

**Table 4.5.2 Building Asset Resilience to Climate Change**

New Asset Description	Climate Change impact These assets?	Build Resilience in New Works
Larger Culvert	Better water flow	Monitor weather events and assets

The impact of climate change on assets is a new and complex discussion and further opportunities will be developed in future revisions of this Asset Management Plan.

## 5.0 LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the Municipality of Shuniah plans to manage and operate the assets at the agreed levels of service (Refer to 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 5.1.1.

The assets in this asset management plan include all road types and classes and bridges and culverts.

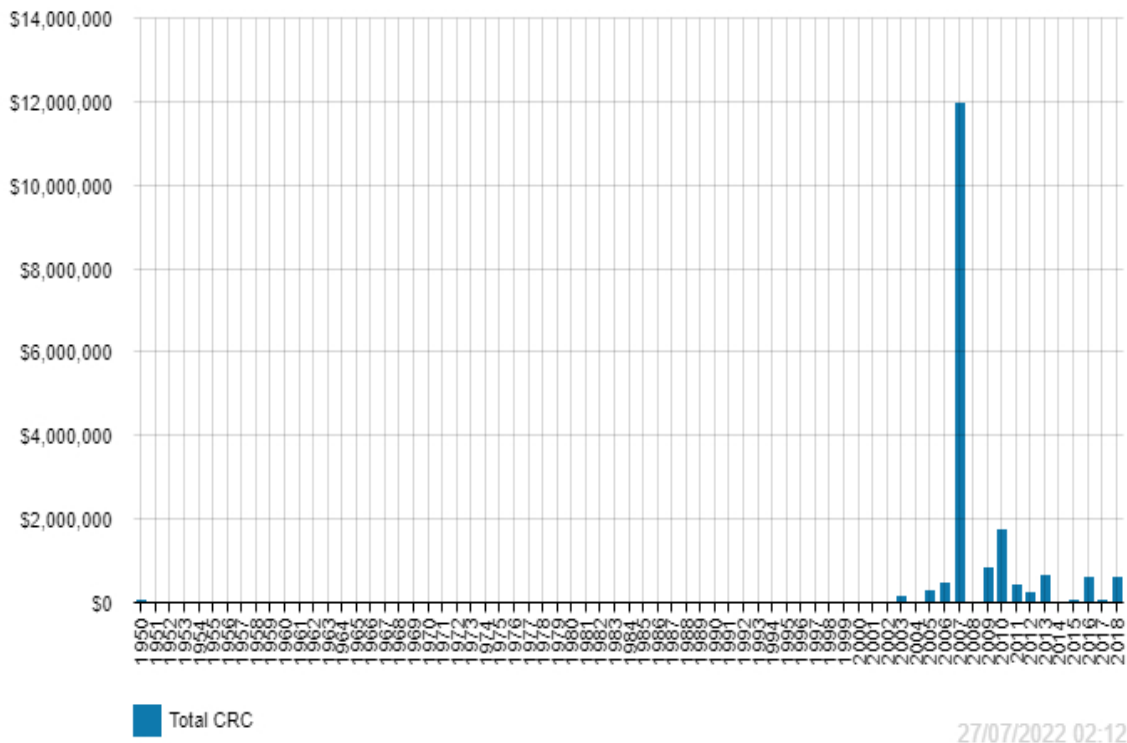
The age profile of the assets included in this AM Plan are shown in Figure 5.1.1.

**Table 5.1.1: Assets covered by this Plan**

Asset Category	Dimension	Replacement Value
Asphalt Roads	61 kilometres	\$11,100,000
Surface Treated Roads	6.8 kilometres	\$929,000
Gravel Roads	55 kilometres	\$2,745,000
Bridges	>10 x 5	\$488,000
Bridges	<10 x 5	\$1,572,280
Culverts	12 x 5.5	\$1,002,150
<b>TOTAL</b>		<b>\$17,836,430</b>

**Figure 5.1.1: Asset**

**Municipality of Shuniah: Age Summary**  
Bridges & Culverts, Roads



**Age Profile**

All figure values are shown in current day dollars.

Due to not having correct data on actual in-service dates of roads and bridges the age summary is based on when the most recent rehabilitation or major repairs completed. The age of the assets is when the asset was first put in service. When a rehabilitation is completed on an asset the useful life is extended/

**5.1.2 Asset capacity and performance**

Assets are generally provided to meet design standards where these are available. However, at this time there is sufficient resources and no know deficiencies. Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

**Table 5.1.2: Known Service Performance Deficiencies**

Location	Service Deficiency
None at this time	None at this time

**5.1.3 Asset condition**

Condition is currently monitored by routine patrolling all roads and bridges. The frequency of patrolling depends on the road class.

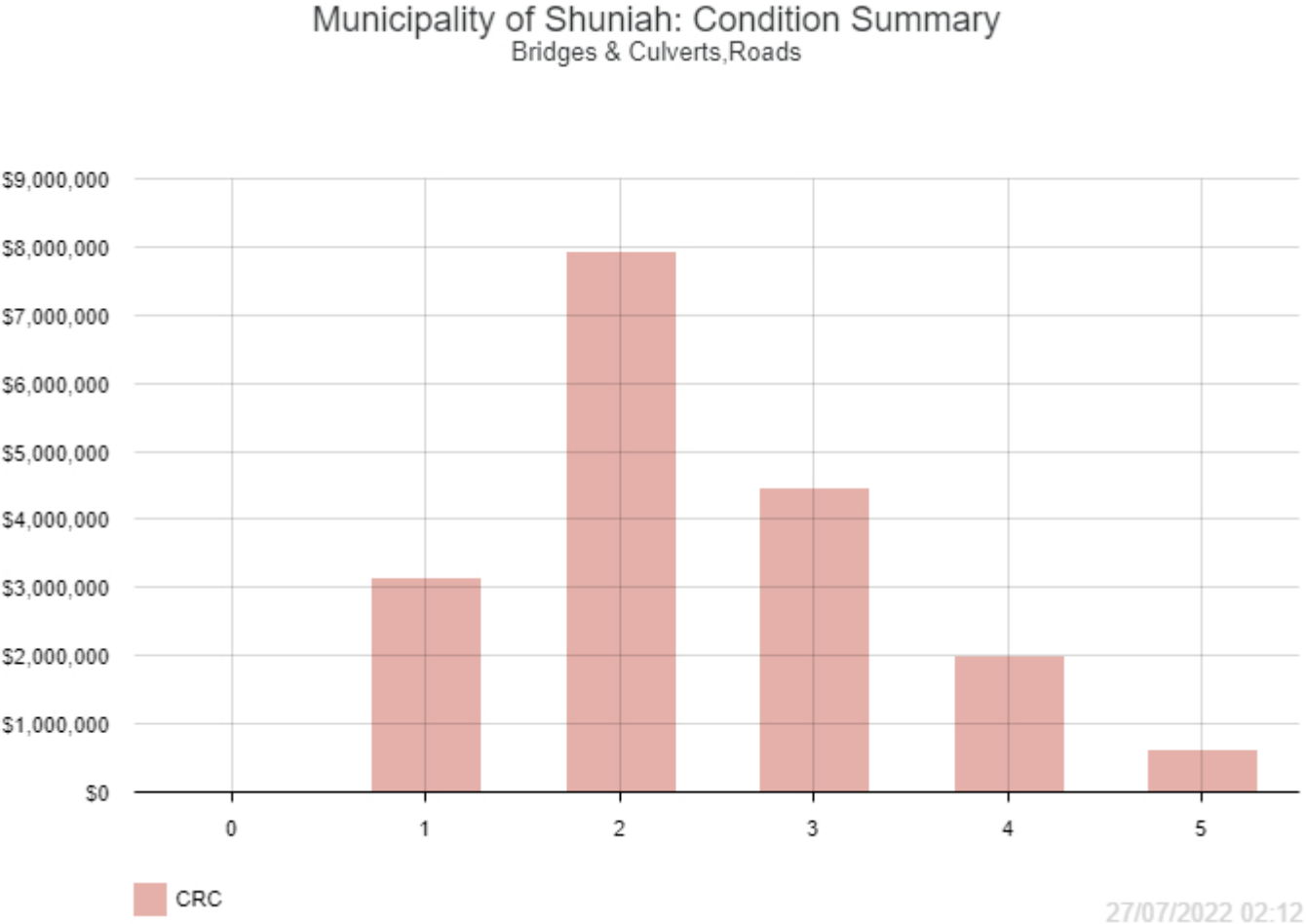
Condition is measured using a 1 – 5 grading system as detailed in Table 5.1.3. It is important that consistent condition grades be used in reporting various assets across an Organization. This supports effective communication. At the detailed level assets may be measured utilising different condition scales, however, for reporting in the AM plan they are all translated to the 1 – 5 grading scale.

**Table 5.1.3: Simple Condition Grading Model**

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

The condition profile of our assets is shown in Figure 5.1.3.

**Figure 5.1.3: Asset Condition Profile**



The asset distribution varies due to the maintenance, the traffic patterns and weather events on each asset.

All figure values are shown in current day dollars.

**5.2 Operations and Maintenance Plan**

Operations include regular activities to provide services. Examples of typical operational activities include cleaning, street sweeping, asset inspection, and utility costs.

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. Examples of typical maintenance activities include crack sealing, asphalt patching, deck cleaning, and line painting.

The trend in maintenance budgets are shown in Table 5.2.1.

**Table 5.2.1: Maintenance Budget Trends**

Year	Maintenance Budget \$
2021	\$250,000
2021	\$270,000
2022	\$270,000

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

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

**Asset hierarchy**

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

The service hierarchy is shown is Table 5.2.2.

**Table 5.2.2: Asset Service Hierarchy**

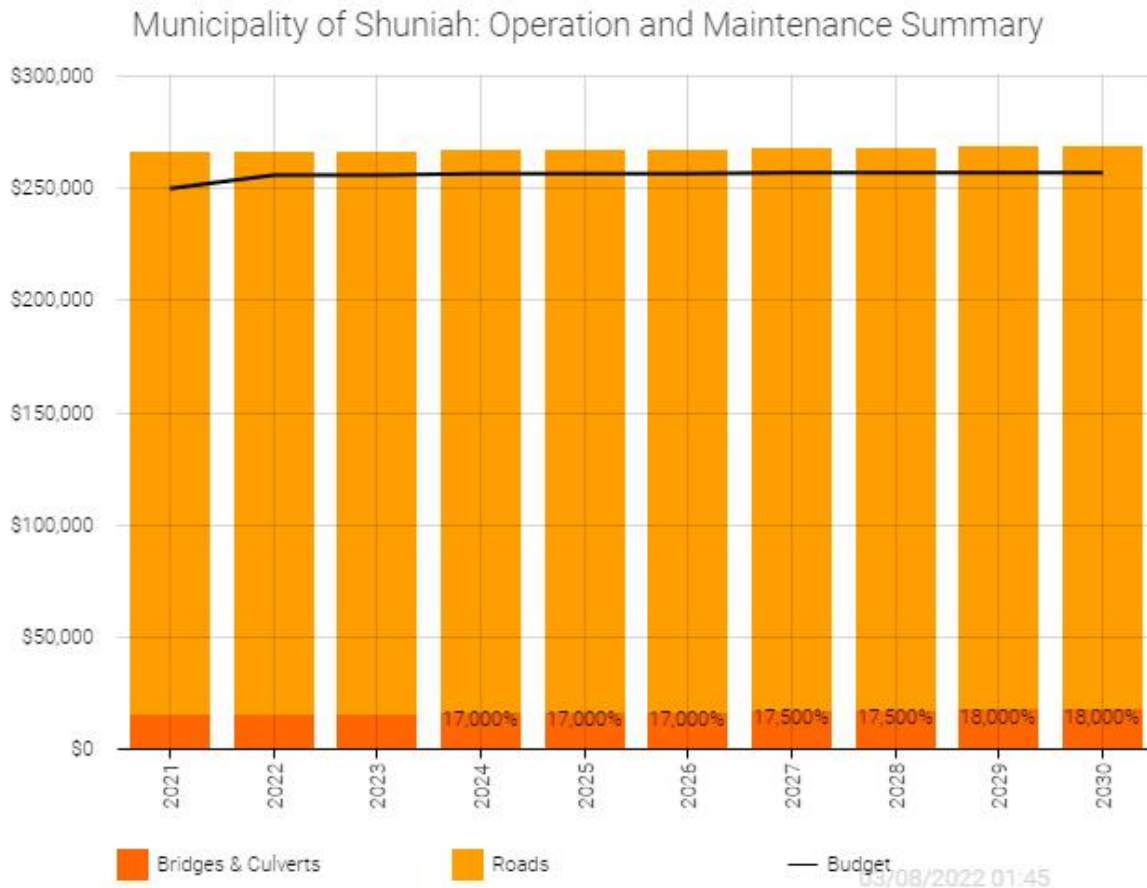
Service Hierarchy	Service Level Objective
Main Arteries	Minimal service interruptions
Local Roads	Limited-service interruptions

**Summary of forecast operations and maintenance costs**

Forecast operations and maintenance costs are expected to vary in relation to the total value of the asset stock. If additional assets are acquired, the future operations and maintenance costs are forecast to increase. If assets are disposed of the forecast operation and maintenance costs are expected to decrease. Figure 5.2 shows the forecast operations and maintenance costs relative to the proposed operations and maintenance Planned Budget.



**Figure 5.2: Operations and Maintenance Summary**



All figure values are shown in current day dollars.

Forecasted operations and maintenance costs have in the past been consistent with the budget. However, with inflation on the rise the actual costs may exceed the budget costs.

### 5.3 Renewal Plan

Renewal is major capital work which does not significantly alter the original service provided by the asset, 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 acquisition resulting in additional future operations and maintenance costs.

Assets requiring renewal are identified from one of two approaches in the Lifecycle Model.

- The first method uses Asset Register data to project the renewal costs (current replacement cost) and renewal timing (acquisition year plus updated useful life to determine the renewal year), or
- The second method uses an alternative approach to estimate the timing and cost of forecast renewal work (i.e. condition modelling system, staff judgement, average network renewals, or other).

The typical useful lives of assets used to develop projected asset renewal forecasts are shown in Table 5.3. Asset useful lives were last reviewed on December 2021.

**Table 5.3: Useful Lives of Assets**

Asset (Sub)Category	Useful life
Roads	15 to 40 years
Bridges and Culverts	20 to 50 years

The estimates for renewals in this Asset Management Plan were based on the asset register.

### 5.3.1 Renewal ranking criteria

Asset renewal 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. condition of a playground).

It is possible to prioritise renewals by identifying assets or asset groups that:

- Have a high consequence of failure,
- Have high use and subsequent impact on users would be significant,
- Have higher than expected operational or maintenance costs, and
- Have potential to reduce life cycle costs by replacement with a modern equivalent asset that would provide the equivalent service.

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

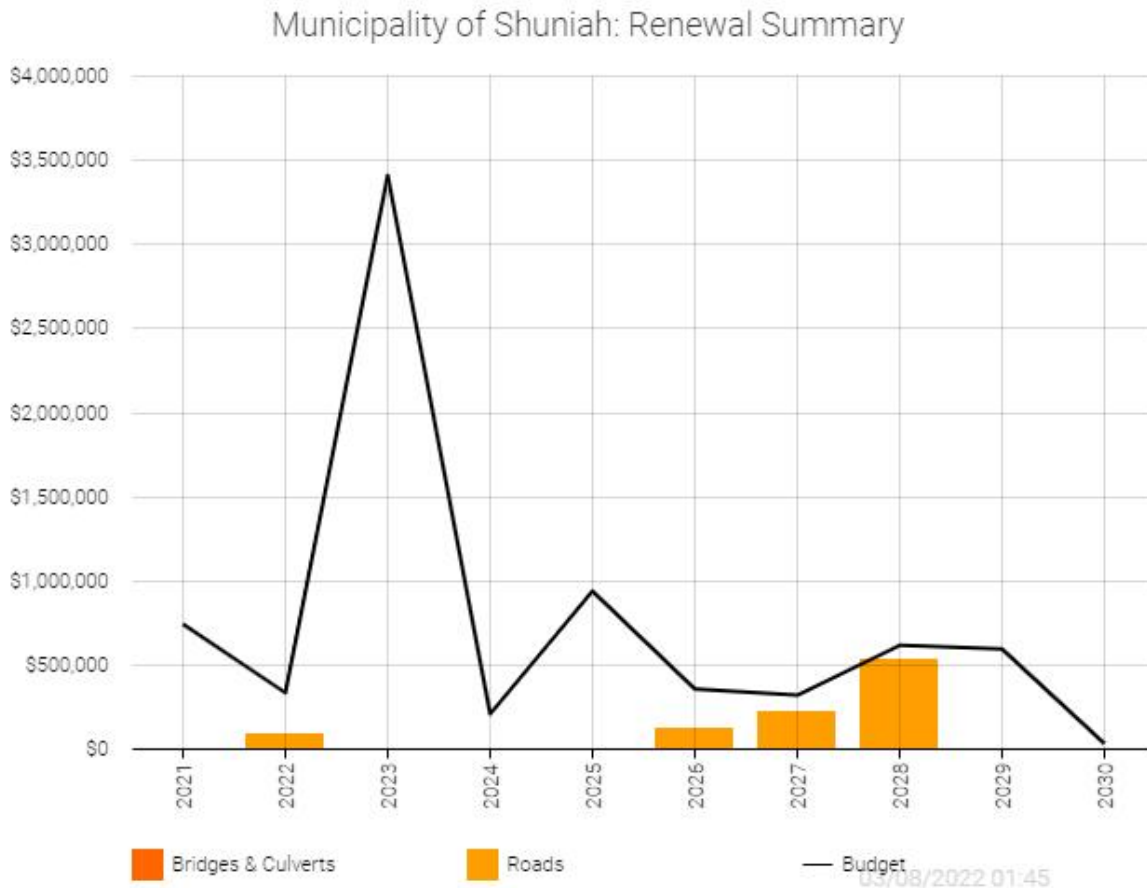
**Table 5.3.1: Renewal Priority Ranking Criteria**

Criteria	Weighting
Condition	50%
Economic	30%
Operational	10%
Health & Safety	10%
<b>Total</b>	<b>100%</b>

### 5.4 Summary of future renewal costs

Forecast renewal costs are projected to increase over time if the asset stock increases. The forecast costs associated with renewals are shown relative to the proposed renewal budget in Figure 5.4. A detailed summary of the forecast renewal costs is shown in Appendix D.

**Figure 5.4: Forecast Renewal Costs**



All figure values are shown in current day dollars.

Forecasted renewal costs include a large increase in budget for Lakeshore Drive. Lakeshore Drive is projected to require a rehabilitation and pave within the next 3 to 5 years.

## 5.5 Acquisition Plan

Acquisition reflects are new assets that did not previously exist or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, demand, social or environmental needs. Assets may also be donated to the Municipality of Shuniah.

### 5.5.1 Selection criteria

Proposed upgrade of existing assets, and new assets, are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. Potential upgrade and new works should be reviewed to verify that they are essential to the Entities needs. Proposed upgrade and new work analysis should also include the development of a preliminary renewal estimate to ensure that the services are sustainable over the longer term. Verified proposals can then be ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed in Table 5.5.1.

**Table 5.5.1: Acquired Assets Priority Ranking Criteria**

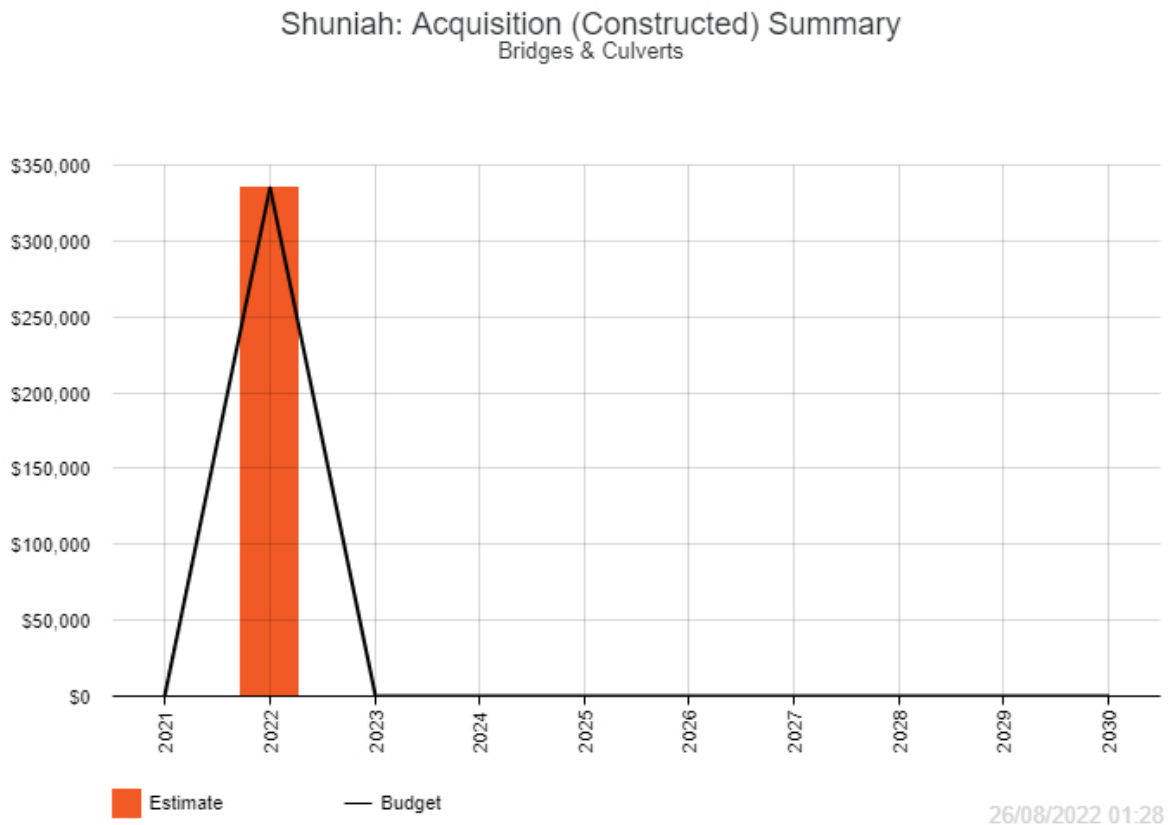
Criteria	Weighting
Fit with strategic plan	35%
Capacity	35%
Classification (Local/Collector)	15%
Surface Type	15%
<b>Total</b>	<b>100%</b>

**Summary of future asset acquisition costs**

Forecast acquisition asset costs are summarized in Figure 5.5.1 and shown relative to the proposed acquisition budget. The forecast acquisition capital works program is shown in Appendix A.

Expenditures on new assets and services in the capital works program will be accommodated in the long-term financial plan, but only to the extent that there is available funding.

**Figure 5.5.1: Acquisition (Constructed) Summary**

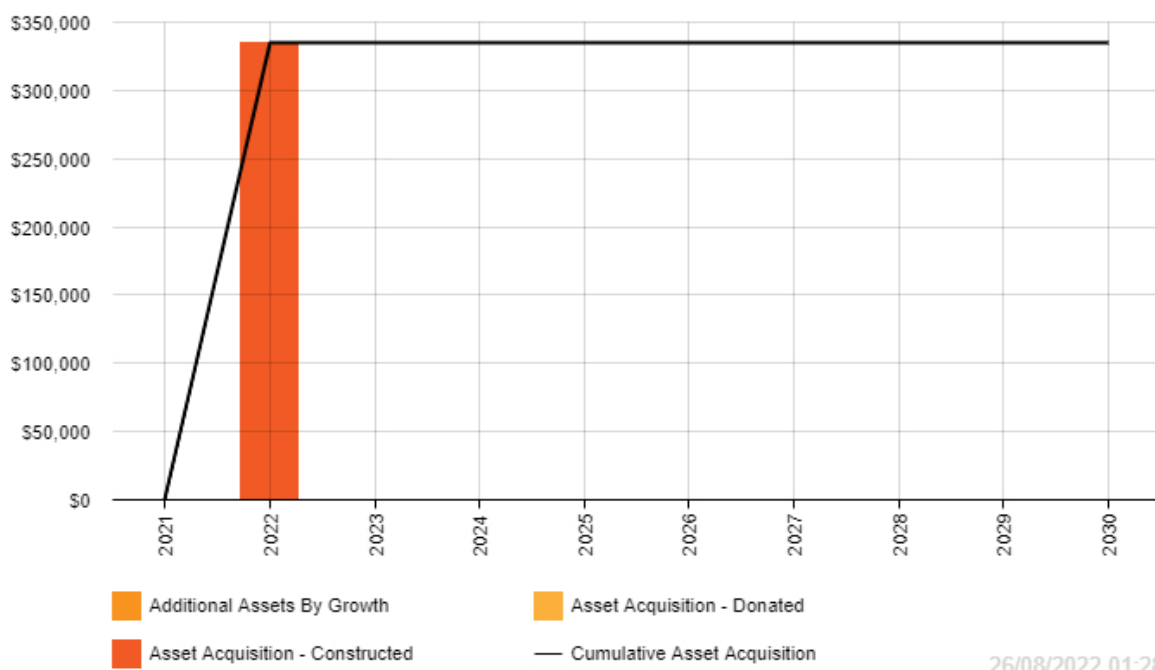


All figure values are shown in current day dollars.

When an Entity commits to new assets, they must be prepared to fund future operations, maintenance, and renewal costs. They must also account for future depreciation when reviewing long term sustainability. When reviewing the long-term impacts of asset acquisition, it is useful to consider the cumulative value of the acquired assets being taken on by the Entity. The cumulative value of all acquisition work, including assets that are constructed and contributed shown in Figure 5.5.2.

**Figure 5.5.2: Acquisition Summary**

**Shuniah: Acquisition Summary**  
Bridges & Culverts



All figures are shown in current dollars.

Expenditure on new assets and services in the capital works program will be accommodated in the long-term financial plan, but only to the extent that there is available funding.

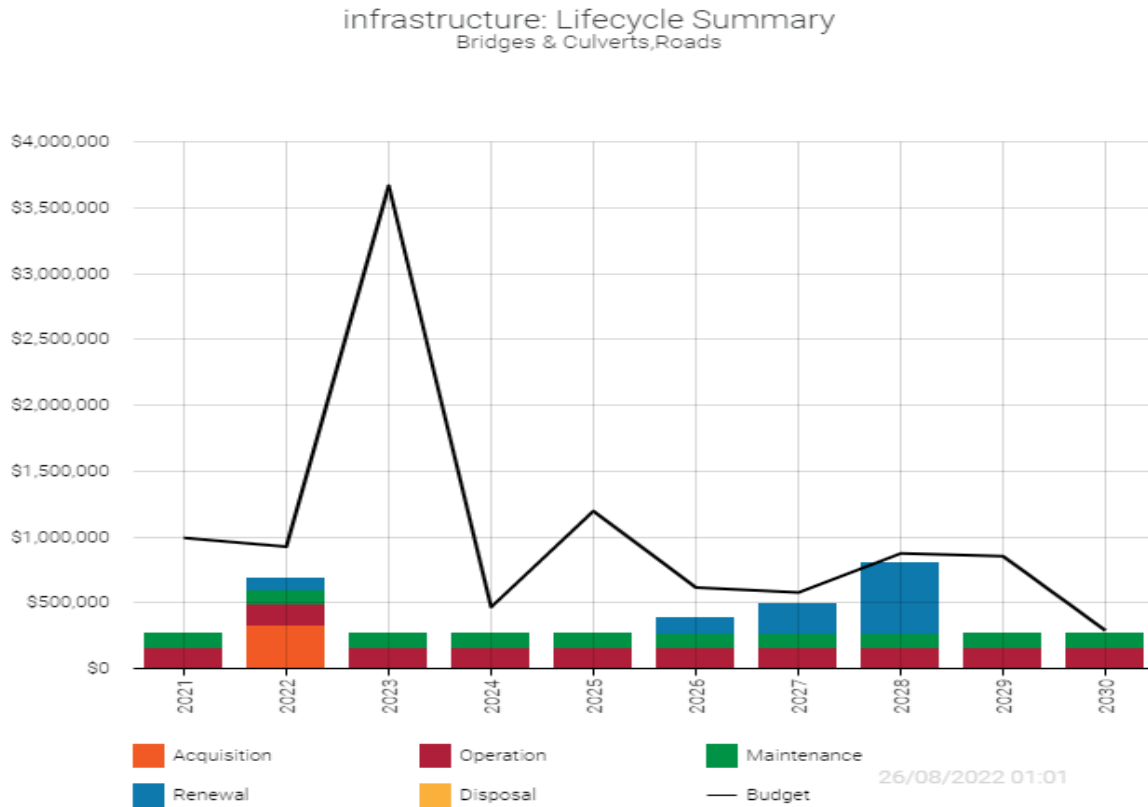
The forecast acquisitions are to convert from gravel road to asphalt. The main roads that will be changed to asphalt roads will be West Loon Road and a portion of Mount Baldy Road.

**Summary of asset forecast costs**

The financial projections from this asset plan are shown in Figure 5.5.2. These projections include forecast costs for acquisition, operation, maintenance, renewal, and disposal. These forecast costs are shown relative to the proposed budget.

The bars in the graphs represent the forecast costs needed to minimise the life cycle costs associated with the service provision. The proposed budget line indicates the estimate of available funding. The gap between the forecast work and the proposed budget is the basis of the discussion on achieving balance between costs, levels of service and risk to achieve the best value outcome.

**Figure 5.5.2: Lifecycle Summary**



All figure values are shown in current day dollars.

The forecast cost is based on the maintenance and renewal schedules that are set in years. The budget cost is based on the condition of the asset and so therefore may need work completed sooner. The condition of the assets change due to traffic, weather events etc.

### 5.6 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 5.6. A summary of the disposal costs and estimated reductions in annual operations and maintenance of disposing of the assets are also outlined in Table 5.6. Any costs or revenue gained from asset disposals is included in the long-term financial plan.

**Table 5.6: Assets Identified for Disposal**

Asset	Reason for Disposal	Timing	Disposal Costs	Operations & Maintenance Annual Savings
None identified				



## 6.0 RISK MANAGEMENT PLANNING

The purpose of infrastructure risk management is to document the findings 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 31000:2018 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2018 as: ‘coordinated activities to direct and control with regard to risk’.

An assessment of risks associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a ‘financial shock’, reputational impacts, or other consequences. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, and the consequences should the event occur. The risk assessment should also include the development of a risk rating, evaluation of the risks and development of a risk treatment plan for those risks that are deemed to be non-acceptable.

### 6.1 Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Critical assets have been identified and along with their typical failure mode, and the impact on service delivery, are summarised in Table 6.1. Failure modes may include physical failure, collapse or essential service interruption.

**Table 6.1 Critical Assets**

Critical Asset(s)	Failure Mode	Impact
None Identified		

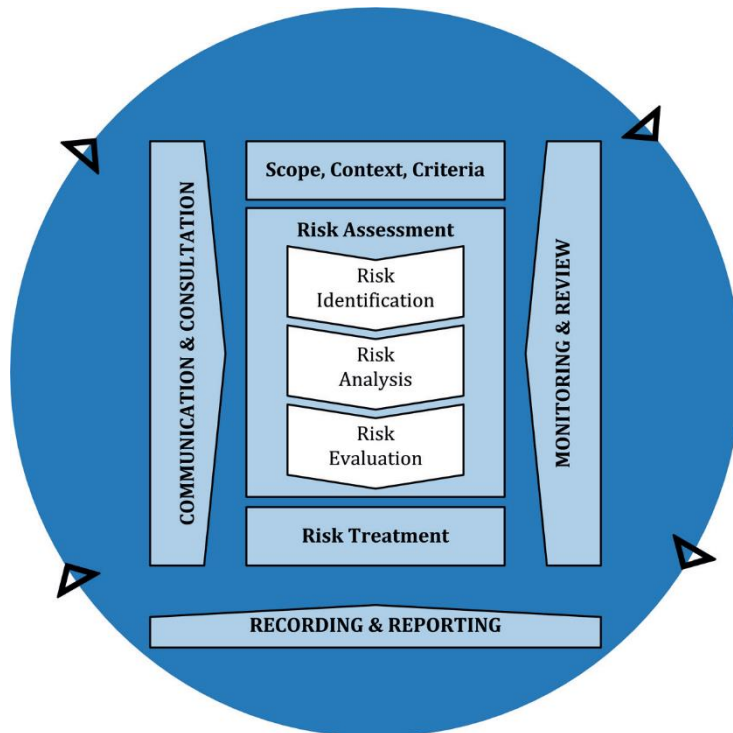
By identifying critical assets and failure modes an Organization can ensure that investigative activities, condition inspection programs, maintenance and capital expenditure plans are targeted at critical assets.

### 6.2 Risk Assessment

The risk management process used 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 International Standard ISO 31000:2018.



**Fig 6.2 Risk Management Process – Abridged**  
 Source: ISO 31000:2018, Figure 1, p9

The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, development of a risk rating, evaluation of the risk and development of a risk treatment plan for non-acceptable risks.

An assessment of risks associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a ‘financial shock’, reputational impacts, or other consequences.

Critical risks are those assessed with ‘Very High’ (requiring immediate corrective action) and ‘High’ (requiring corrective action) risk ratings.

### 6.3 Infrastructure Resilience Approach

The resilience of our critical infrastructure is vital to the ongoing provision of services to customers. To adapt to changing conditions we need to understand our capacity to ‘withstand a given level of stress or demand’, 1 and to respond to possible disruptions to ensure continuity of service.

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

We do not currently measure our resilience in service delivery. This will be included in future iterations of the Asset Management Plan.

### 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 no operations and maintenance activities and capital projects that are unable to be undertaken within the next 10 years.

#### **6.4.2 Service trade-off**

If there is forecast work (operations, maintenance, renewal, acquisition or disposal) that cannot be undertaken due to available resources, then this will result in service consequences for users. At this time there is no service trade-off required.

#### **6.4.3 Risk trade-off**

There are no operations and maintenance activities and capital projects that cannot be undertaken that may sustain or create risk consequences.

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

## 7.0 FINANCIAL SUMMARY

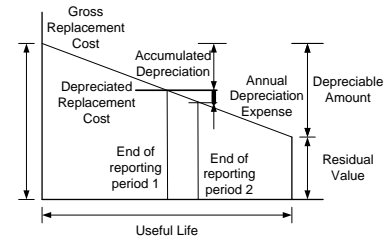
This section contains the financial requirements resulting from the information presented in the previous sections of this Asset Management Plan. The financial projections will be improved as the discussion on desired levels of service and asset performance matures.

### 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. The assets are valued at fair value at cost to replace service capacity:

Current (Gross) Replacement Cost	\$18,054,034
Depreciable Amount	\$18,054,034
Depreciated Replacement Cost	\$9,357,055
Depreciation	\$698,202



#### 7.1.2 Sustainability of service delivery

There are two key indicators of sustainable service delivery that are considered in the Asset Management Plan for this service area. The two indicators are the:

- asset renewal funding ratio (proposed renewal budget for the next 10 years / forecast renewal costs for next 10 years), and
- medium term forecast costs/proposed budget (over 10 years of the planning period).

##### Asset Renewal Funding Ratio

Asset Renewal Funding Ratio 787.27%

The Asset Renewal Funding Ratio is an important indicator and illustrates that over the next 10 years we expect to have 787.27% of the funds required for the optimal renewal of assets.

The forecast renewal work along with the proposed renewal budget, and the cumulative shortfall, is illustrated in Appendix D.

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

This Asset Management Plan identifies the forecast operations, maintenance and renewal costs 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.

This forecast work can be compared to the proposed budget over the 10 year period to identify any funding shortfall.

The forecast operations, maintenance and renewal costs over the 10 year planning period is \$363019 on average per year.

The proposed (budget) operations, maintenance and renewal funding is \$1,011,875 on average per year giving a 10 year funding shortfall or funding excess of \$648,856 per year. This indicates that 0% of the forecast costs needed to provide the services documented in this Asset Management Plan are accommodated in the proposed budget. This excludes acquired assets.

Providing sustainable services from infrastructure requires the management of service levels, risks, forecast outlays 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.

### 7.1.3 Forecast Costs (outlays) for the long-term financial plan

Table 7.1.3 shows the forecast costs (outlays) for the 10 year long-term financial plan.

Forecast costs are shown in 2021-dollar values.

**Table 7.1.3: Forecast Costs (Outlays) for the Long-Term Financial Plan**

Year	Forecast Acquisition	Forecast Operation	Forecast Maintenance	Forecast Renewal	Forecast Disposal
2021	0	156000	110000	0	0
2022	0	156000	110000	83382	0
2023	0	156000	110000	0	0
2024	0	156500	110500	0	0
2025	0	156500	110500	0	0
2026	0	156500	110500	119117	0
2027	0	157000	110500	226322	0
2028	0	157000	110500	531366	0
2029	0	157000	111000	0	0
2030	0	157000	111000	0	0

## 7.2 Funding Strategy

The proposed funding for assets is outlined in the Entity's 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 various service alternatives.

## 7.3 Valuation Forecasts

Asset values are forecast to increase as additional assets are added.

Additional assets will generally add to the operations and maintenance needs in the longer term. Additional assets will also require additional costs due to future renewals. Any additional assets will also add to future depreciation forecasts.

## 7.4 Key Assumptions Made in Financial Forecasts

In compiling this Asset Management Plan, it was necessary to make some assumptions. This section details the key assumptions made in the development of this AM plan and should provide readers with an understanding of the level of confidence in the data behind the financial forecasts.

Key assumptions made in this Asset Management Plan are:

- Funding remains consistent
- No extreme weather events

## 7.5 Forecast Reliability and Confidence

The forecast costs, proposed budgets, and valuation projections in this AM Plan are based on the best available data. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is classified on a A - E level scale<sup>3</sup> in accordance with Table 7.5.1.

<sup>3</sup> IPWEA, 2015, IIMM, Table 2.4.6, p 2 | 71.

**Table 7.5.1: Data Confidence Grading System**

Confidence Grade	Description
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 $\pm 25\%$
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 shown in Table 6.5.1.

**Table 7.5.1: Data Confidence Assessment for Data used in AM Plan**

Data	Confidence Assessment	Comment
<b>Demand drivers</b>		
<b>Growth projections</b>	D	Difficult to project growth in the area
<b>Acquisition forecast</b>	B	Change gravel roads to asphalt
<b>Operation forecast</b>	B	Operation forecast may change due to inflation
<b>Maintenance forecast</b>	B	Maintenance forecast may change due to inflation
<b>Renewal forecast</b>	A	Asset values have been updated to replacement cost and consider inflation
- Asset values		
- Asset useful lives	B	Useful life is based on upgrades
- Condition modelling	B	Based on engineer reports and experienced manager
<b>Disposal forecast</b>	B	No plan to dispose of any roads or bridges

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

## 8.0 PLAN IMPROVEMENT AND MONITORING

### 8.1 Status of Asset Management Practices

#### 8.1.1 Accounting and financial data sources

This Asset Management Plan utilises accounting and financial data. The source of the data is provided in our Public Sector City Wide software.

#### 8.1.2 Asset management data sources

This Asset Management Plan also utilises asset management data. The source of the data is engineered reports, Public Sector City Wide software and discussions with Management.

### 8.2 Improvement Plan

It is important that an entity recognise areas of their Asset Management Plan and planning process that require future improvements to ensure effective asset management and informed decision making. The improvement plan generated from this Asset Management Plan is shown in Table 8.2.

**Table 8.2: Improvement Plan**

Task	Task	Responsibility	Resources Required	Timeline
1	Community Levels of Service	Management	Survey/town hall	<b>Within 2 years</b>
2	Current asset conditions	Asset manager	Completion of work	<b>Yearly</b>
3	Long-term financial plan/budget numbers	Asset Manager	Reports/operation manager	<b>Yearly</b>
4	Continually update data	Asset Manager	Input from managers	<b>On going</b>
5	Resilience measure	Management	Input from managers	<b>Within 2 years</b>
6	Build on to the plan with all municipal assets	Management	Input from managers	<b>Within 2 years</b>
7	<b>Complete Asset Management Strategy</b>	<b>Management</b>	<b>Input from manager</b>	<b>Within 1 year</b>

### 8.3 Monitoring and Review Procedures

This Asset Management Plan will be reviewed during the annual budget planning process and revised to show any material changes in service levels, risks, forecast costs and proposed budgets as a result of budget decisions.

The AM Plan will be reviewed and updated annually to ensure it represents the current service level, asset values, forecast operations, maintenance, renewals, upgrade/new and asset disposal costs and proposed budgets. These forecast costs and proposed budget are incorporated into the Long-Term Financial Plan or will be incorporated into the Long-Term Financial Plan once completed.

The AM Plan has a maximum life of 5 years and is due for complete revision and updating within 1 year of each Municipal Council election.

### 8.4 Performance Measures

The effectiveness of this Asset Management Plan can be measured in the following ways:

- The degree to which the required forecast costs identified in this Asset Management Plan are incorporated into the long-term financial plan,
- The degree to which the 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, risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the Organizational target is 1.0.

## 9.0 REFERENCES

- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- ISO, 2018, ISO 31000:2018, Risk management – Guidelines
- Strategic Plan 2016 – 2020
- Annual Budget 2021



## 10.0 APPENDICES

### Appendix A Acquisition Forecast

#### A.1 – Acquisition Forecast Assumptions and Source

Acquisition forecast assumptions are based on growth and new development where Shuniah would be required to create new road or bridge/culvert assets.

*Table A1 - Acquisition Forecast Summary*

Year	Constructed	Contributed	Growth
2021	0	0	0
2022	335,000	0	0
2023	0	0	0
2024	0	0	0
2025	0	0	0
2026	0	0	0
2027	0	0	0
2028	0	0	0
2029	0	0	0
2030	0	0	0

## Appendix B    Operation Forecast

### B.1 – Operation Forecast Assumptions and Source

The assumptions for the operation forecast is based on passed operational work performed and inflation.

*Table B1 - Operation Forecast Summary*

Year	Operation Forecast	Additional Operation Forecast	Total Operation Forecast
2021	156000	0	156000
2022	156000	0	156000
2023	156000	0	156000
2024	156500	0	156500
2025	156500	0	156500
2026	156500	0	156500
2027	157000	0	157000
2028	157000	0	157000
2029	157000	0	157000
2030	157000	0	157000

**Appendix C Maintenance Forecast**

**C.1 – Maintenance Forecast Assumptions and Source**

The assumptions for the maintenance forecast are based on yearly maintenance items and the bi-annual bridge assessments.

*Table C1 - Maintenance Forecast Summary*

Year	Maintenance Forecast	Additional Maintenance Forecast	Total Maintenance Forecast
2021	110000	0	110000
2022	110000	0	110000
2023	110000	0	110000
2024	110500	0	110500
2025	110500	0	110500
2026	110500	0	110500
2027	110500	0	110500
2028	110500	0	110500
2029	111000	0	111000
2030	111000	0	111000

**Appendix D    Renewal Forecast Summary**

**D.1 – Renewal Forecast Assumptions and Source**

Renewal forecast assumptions are based on the data and conditions that have been set in the asset management data set. Costs are based on average prior years and account for inflation.

*Table D1 - Renewal Forecast Summary*

Year	Renewal Forecast	Renewal Budget
2021	0	743000
2022	83382	335000
2023	0	3410000
2024	0	210000
2025	0	939250
2026	119117	358000
2027	226322	320000
2028	531366	616500
2029	0	595000
2030	0	32500

## Appendix F Budget Summary by Lifecycle Activity

The lifecycle activity is based on the data and strategies in the asset management data set. Condition is also considered to delay or move up and activity.

**Table F1 – Budget Summary by Lifecycle Activity**

Year	Acquisition	Operation	Maintenance	Renewal	Disposal	Total
2021	0	150000	100000	743000		993000
2022	0	156000	100000	335000		591000
2023	0	156000	100000	3410000		3666000
2024	0	156500	100000	210000		466500
2025	0	156500	100000	939250		1195750
2026	0	156500	100000	358000		614500
2027	0	157000	100000	320000		577000
2028	0	157000	100000	616500		873500
2029	0	157000	100000	595000		852000
2030	0	157000	100000	32500		289500