LEETON
SHIRE COUNCIL

TRANSPORT ASSET MANAGEMENT PLAN

Leeton Shire Council
July 2023

DOCUMENT CONTROL

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REVIEW OF THIS DOCUMENT

This document will be reviewed every 5 years following a comprehensive revaluation of the asset class or as required in the event of legislative changes or operational requirements.

Any major amendments to the document must be made by way of a Council Resolution. Minor amendments such as corrections to spelling, changes to wording for improved clarity, formatting and updates to the Appendixes may be made without approval from the Council under the authorisation of the General Manager.

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1. EXECUTIVE SUMMARY

1.1 Purpose of the Plan

This Asset Management Plan demonstrates that we are managing Leeton Shire Council's transport assets in a responsible manner. It has been developed in accordance with our Asset Management Policy and principles of the Strategic Asset Management Plan (SAMP).

This Asset Management Plan details information about our transport assets. The plan outlines the management approach by:

- Describing and aligning delivery objectives of transport assets to align with Liveable Leeton's 2035 strategic objectives.
- Managing the future demand for assets to achieve and maintain financial sustainability.
- Optimising the lifecycle management of assets (achieving service demand at lowest lifecycle cost).
- Identifying and managing risks associated with Transport assets.
- Identifying the funds required to operate the transport assets.
- Continual improvement in the management of the assets and performance monitoring.

1.2 Asset Description

Our transport assets contribute to the community through:

- Facilitating the safe and equitable movement of people and goods within and through the shire by both motorised and non-motorised transport modes
- Providing accessibility for the community to key activity areas and facilities.

This Asset Management Plan has a focus on transport services provided to the community and the infrastructure assets that support these services located in our road reserves and streetscapes.

Our transport asset portfolio has an estimated replacement cost of **$151million** (as at 30 June 2020).

The transport asset portfolio includes sealed/unsealed roads, footpaths & cycleways, bridges, car parks and various traffic management assets.

1.3 Levels of Service

We are continuing to develop comprehensive levels of service for our transport assets to meet community expectations whilst maintaining financial sustainability.

At present, management of transport assets, including intervention points and chosen treatment methods, is based upon:

- Available budget and resource allocations.
- Feedback from the community.
- Active monitoring of the performance of the transport asset portfolio.

Recent community consultations indicate that transport assets are a priority for our community in the next 4 years. The community has also indicated that they need better service, particularly in local unsealed and sealed rural roads and local sealed town roads. Therefore, it is necessary to provide sufficient funding in the long-term to achieve;

- improved community satisfaction with the provision of transport services,
- improve asset condition,
- better access throughout the shire.

This plan, and future revisions, will inform the long-term financial planning to fund the future renewal and upgrades necessary to meet the capacity demand and levels of service.

1.4 Future Demand

The future demand for services is impacted by:

- Changes in industry and agricultural practices within the region
- Population and demographic change
- Changing design standards
- Climate change impacts
- Council financial sustainability
- Community satisfaction
- Road safety legislation and industry best practice

These will be managed through a combination of managing existing assets, upgrading of existing assets, minimising climate change impact on assets and better management of customer expectations whilst maintaining financial sustainability.

1.5 Lifecycle Management Plan

Lifecycle planning describes the approach to maintaining an asset from construction to disposal. It involves the prediction of future performance of an asset, or a group of assets, based on investment scenarios and maintenance strategies.

Our current approach to managing and operating our transport assets is transitioning to a more proactive approach as we are continually improving our knowledge on performance, changing requirements, and service demands.

We are always striving to improve our approach to lifecycle management to make sure that we deliver on our service commitments in the most cost effective and efficient manner.

1.6 Financial Summary

Based on our current forecasting, the renewal of existing transport assets over the next ten (10) years is **$30.9million** or **$3.09million** on average per year.

Our Long-Term Financial Plan has currently allocated **$31.5million** which means we plan to fund **102%** of our required renewals over the next 10 years.

There is a planned 90% increase to financial allocations in FY2024 for Roads Rehabilitations that is forecasted to continue until 2032 in addition to a planned increase of 21% to Gravel Re-sheeting until 2029 which then increases again by an additional 11.1% from 2029 until 2032. It is important to note, Council's financial situation will determine the reality of available funds year on year.

It should also be noted that 2020 valuation and condition data has been used for renewal modelling. Therefore, it is important that Council undertake condition assessment of all transport assets to validate these forecasts.

The following graph shows the financial summary of transport assets.

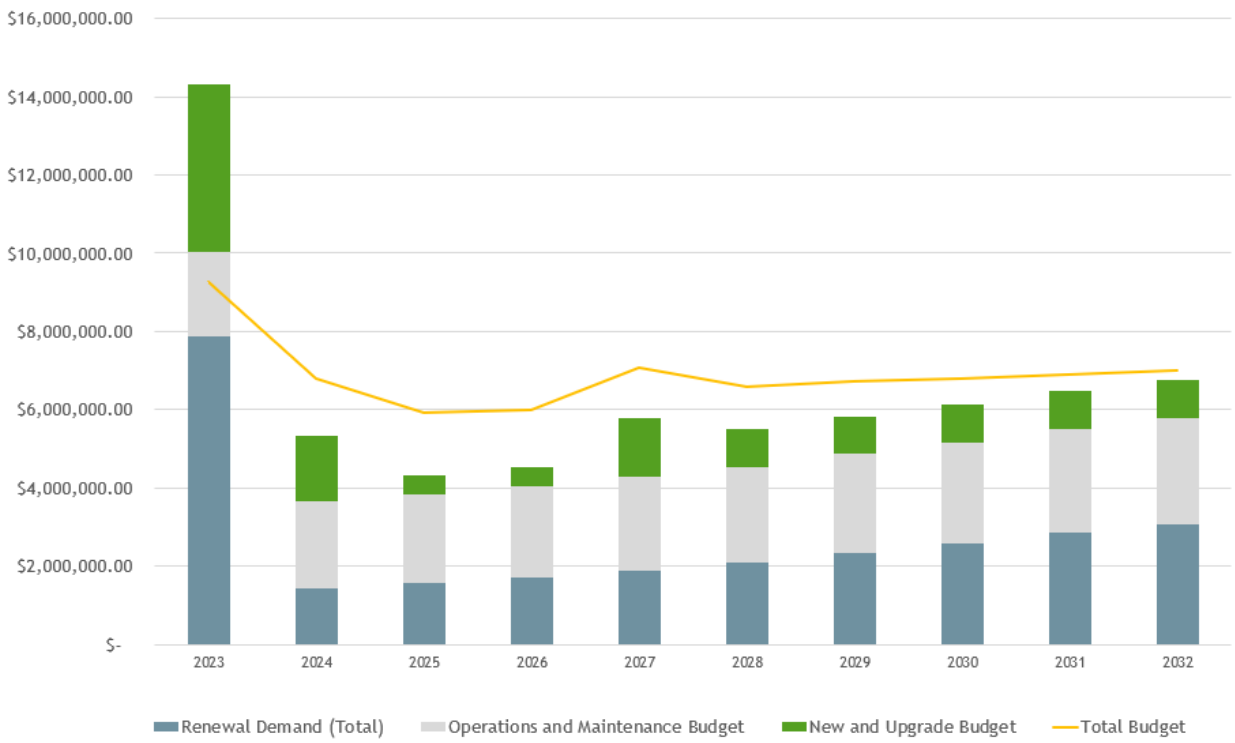

Figure 1: Financial Summary - Transport Assets

1.7 Our priority

We will continue to inspect and proactively maintain our transport assets to ensure they are safe and functional within the current levels of service. We also need to prioritise renewals, upgrades, expansion and adding new transport assets to our transport asset base according to priorities and annual budget allocations and ensure transport assets comply with all relevant statutory requirements and Australian Standards.

We will continue to work with local community, industries and businesses to press for more funding from both state and federal government to ensure Leeton Shire can continue to grow.

1.8 Risk Management

There are number of risks that need to be carefully managed in order to maintain our asset base to the expected standards and continue to provide the current level of service.

The main risks are;

- Lack of human resourcing to complete our annual maintenance programs.
- Increase in the number of heavy vehicles using our roads.
- Uncertainty in ownership of assets owned by Murrumbidgee Irrigation
- Impact of maintenance practises (channels, culverts, etc.) of Murrumbidgee Irrigation on our transport assets.
- Employing sub-par road designs due to budget constraints.
- Inadequate funding levels for gravel road sheeting, road rehabilitation, pothole program and heavy patching program.
- Community dissatisfaction with our roads (based on 2021 community survey)
- Safety considerations.

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

- Proactively inspecting our transport assets and carrying out maintenance to ensure public safety.
- Work with our community and user groups to receive information about service levels and our performance.
- Continue to implement Liveable Leeton 2035 and supporting strategies to guide development and enhancement of Transport Assets
- Designing our assets to achieve more economical lives.
- Working closely with Murrumbidgee Irrigation to resolve current concerns.

1.9 Improvement Plan

This Transport Asset Management plan has identified a number of actions to improve overall management of transport assets.

Some of these actions include:

- Formulate a working group with Murrumbidgee Irrigation
- Review resourcing and funding strategies.
- Review current road designs.
- Implement an asset management information system and works management system.
- Implement cyclic condition assessment programs.
- Development a renewal programs based on asset condition.
- Increase community consultation.

2. INTRODUCTION

2.1 Background

Leeton Shire is located in southwest New South Wales, 584km from Sydney, 470km from Melbourne and 371km from Canberra. Leeton is the birthplace of the Murrumbidgee Irrigation Area and was purposely built as part of the Murrumbidgee Irrigation Scheme.

The Local Government Area covers 1,167km2 and a population of 11,343 (ABS, 2020). Leeton is the second largest regional centre in the Western Riverina region and plays an integral role in value-added agricultural processing, agriculture, education and research, transport, and logistics. Leeton Shire Council includes the towns of Leeton, Yanco and Whitton and the villages of Murrami and Wamoon.

We have over 782 kilometres of local roads, 42 kilometres of footpaths, 3 road bridges, 30 car parks, 38 bus stops and a range of support infrastructure such as traffic management assets. These assets are central to an effective transport network and provide the community, road users and pedestrians with a safe, functional, and fit for purpose road and pathway networks. They help to connect the community, providing accessibility and linkages for efficient movement throughout Leeton Shire.

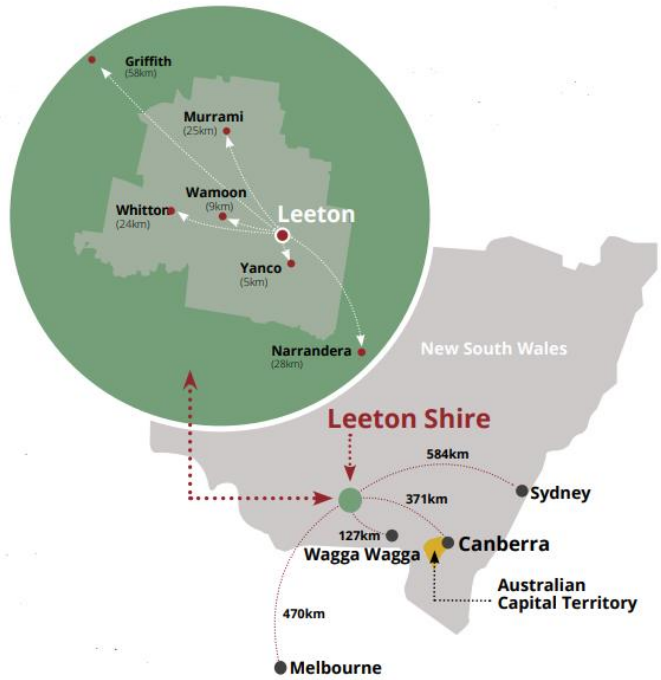

Figure 2: Leeton Shire Council Area

2.2 Purpose of the Plan

This Asset Management Plan covers a 10-year horizon and is intended to demonstrate how we will support its vision in the provision of community assets to plan, develop and maintain infrastructure that is sustainable. This is achieved by applying the principles of responsible asset management planning, the objective of which is to deliver the required level of service to existing and future customers in the most cost-effective way.

The purpose of the Asset Management Plan is to ensure our transport assets fulfil their intended purpose and life expectancy at the most economical cost to the community. It balances financial, design, landscape, architectural and technical practices with community expectations to achieve this purpose.

The key objectives of this plan are to:

- Provide a plan to convey the long-term planning and strategy for the management of our transport assets.
- Improve understanding of service level standards and options, while improving customer satisfaction and organisational image.
- Identify optimal whole of lifecycle costs to provide target levels of service.
- Provide the basis for improved understanding and forecasting of asset related management options and costs to meet funding demands.
- Clearly justify long term works programmes and evidence of future funding requirements.
- Manage the environmental and financial risks of asset failure.
- Road safety.

2.3 Asset Management Plan Structure

This Asset Management Plan has been prepared using good practice guidance from the *ISO55000 - Asset Management standard, International Infrastructure Management Manual* and has been developed based on existing processes, practices, data, and standards. We are committed to striving towards best appropriate asset management practices and it is recognised that this Asset Management Plan will need to be updated periodically to reflect changes to management of our assets.

It is intended that our Asset Management Plans should always reflect as closely as practicable actual practices used in managing its assets. Only in this way will we be best able to ascertain its long-term financial needs for delivering sustainable assets and services.

2.4 Our Transport Assets

The following table shows the summary of our transport assets.

Asset Class	Asset Type	Asset Quantity
Transport	Sealed Roads	409km
	Unsealed Roads	363km
	Footpaths & Cycleways	42km
	Kerb & Gutter	114km
	Car Parks	30
	Bridges	3
	Bus Stops	38
	Traffic Management Assets (Various)	270
	Bike Training Facility	1

Table 1: Summary of Transport Asset Information

2.5 Road Classification Framework

Planning for our road network is informed by a classification system; Class 1 to Class 5, that considers road hierarchy rating, traffic volume rating and traffic type rating scores. The road network for asset management purposes is classified as per the table below.

The purpose of the transport asset classification framework is to be able to identify; the different types of transport assets that we provide to the community; the level of service that we maintain these assets to; and how much it costs us to provide them.

Classification	Score
Class 1	25-30
Class 2	19-24
Class 3	13-18
Class 4	7-12
Class 5	0-6

Table 2: Road Classification

Ratings		AADT	AADT	AADT	AADT	AADT
		0-50	51-100	101-500	501-1001	1001+
		1	2	3	4	5
Arterial	15	16	17	18	19	20
Sub Arterial	12	13	14	15	16	17
Collector	8	9	10	11	12	13
Access	5	6	7	8	9	10
Lanes	2	3	4	5	6	7
Limited Access	1	2	3	4	5	6

Table 3: Road Hierarchy and Traffic Volume Ratings

Criteria		Hierarchy
Is the prime function of the road to provide access between towns/villages? (MR80)	**YES**	Arterial
NO		
Is the prime function of the road to connect towns and villages to the wider arterial network? (HV route)	**YES**	
NO		
Is the prime function of the road to provide access to a major traffic attractor/generator? E.g., Mill, Quarry, tourist attraction, major employer (AADT – volume & type) (HV route)	**YES**	Sub-Arterial
NO		
Is the prime function of the road to collect and distribute traffic and act as a feeder to sub-arterial roads?	**YES**	Collector
NO		
Does the road provide access to the front of properties? (Number of property access points ≥1)	**YES**	Access
NO		
Does the road provide rear access to properties?	**YES**	Lane
NO		
Is the road the responsibility of Leeton Shire Council?	**YES**	Limited Access

Table 4: Road Hierarchy

Road Classification Calculation

The road maintenance/inspection classification is achieved by adding the two figures above and matching the result in the table below.

Traffic Types	Bus Route	B-Double Route	Road Train Route	Speed Limit > 79km/h
Ratings	2	3	4	1

Table 5: Traffic Type Ratings

3. STRATEGIC ALIGNMENT

This Asset Management Plan is aligned with Asset Management Policy, Strategic Asset Management Plan (SAMP) and Community Strategic Plan. The objective of this asset management plan is to support the delivery of the Liveable Leeton 2035 Community Strategic Plan.

The following diagram shows the Integrated Planning and Reporting (IP&R) framework which helps deliver the community Council and Government aspirations.

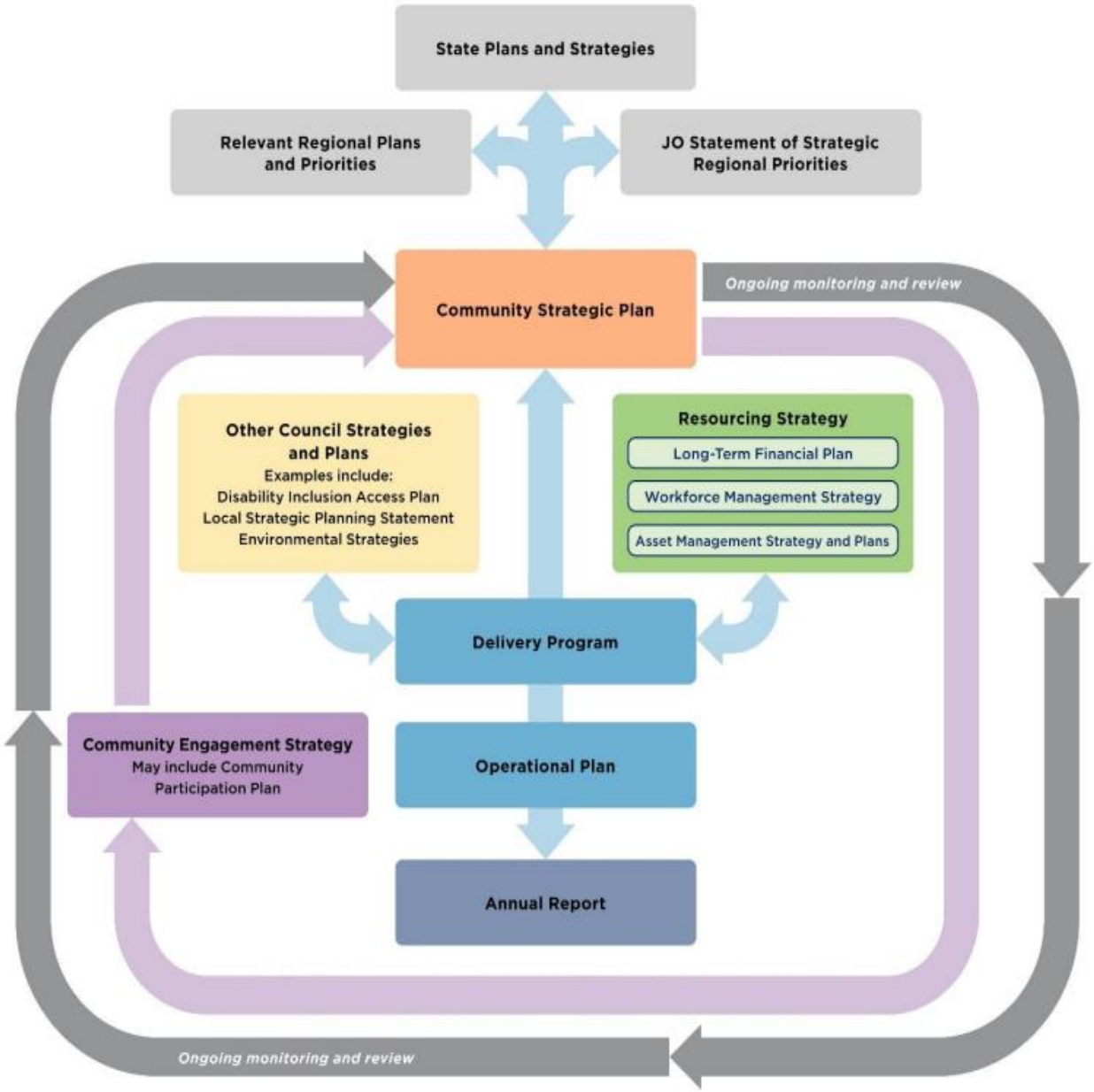

Figure 3: Integrated Planning & Reporting Framework – Leeton Shire Council

3.1 Strategic Goals and Objectives

Liveable Leeton 2035 is Leeton Shire's Community Strategic Plan. It outlines the community's aspirations and long-term vision for Leeton Shire.

The vision for liveable Leeton 2035 is;
"We are a healthy, safe and connected community that respects people and the environment, enjoying active lives in a strong local economy underpinned by quality, accessible infrastructure, reliable water supplies and strong leadership".

It has been prepared by Council in collaboration with, and on behalf of residents, other levels of government and agencies. Responsibility for meeting the long-term community vision and desired outcomes rests with everyone.

Liveable Leeton 2035 Community Strategic Plan not only provides a clear vision it also sets out the priority steps we can take towards achieving that vision so that we can work together to make Leeton Shire the place we want it to be.

The Liveable Leeton 2035 makes a commitment to outcomes and priority initiatives across several strategic objectives that align with the Community Vision. The Community Strategic Plan is broken into five focus areas and for each focus area there is a set of outcomes.

The five focus areas are,

- FOCUS AREA 1. A connected, inclusive and enriched community (Cc)
- FOCUS AREA 2. A safe, active and healthy community (Sc)
- FOCUS AREA 3. A thriving regional economy (Ec)
- FOCUS AREA 4. A quality environment (En)
- FOCUS AREA 5. Strong Leadership and civic participation (L)

Effective asset management supports the strategic objectives and outcomes of the Liveable Leeton 2035 and the delivery of sustainable services and programs.

This Asset Management Plan is integrated with Liveable Leeton 2035 and provides a view (both strategic and in financial terms) of how we propose to manage the transport assets that we own and control.

Liveable Leeton 2035 Strategic Objectives – Transport Assets

The following table shows Shire's relevant strategic objectives for transport service and assets to achieve Liveable Leeton 2035 vision.

Focus Area	Strategic Community Objective	Outcome
A safe, active, and healthy community (Sc)	Sc1.1 Support programs and services that promote the safety of residents and visitors	Our community is safe to live in and move about
	Sc2.2 Provide, maintain and improve a network of footpaths and cycleways for leisure and active transport	We participate in active sports and leisure
A thriving regional economy (Ec)	Ec3.1 Provide a transport network that meets the Shire's transport needs	We have the infrastructure we need to support our economy.
	Ec3.4 Provide enough parking for easy access to shops, services, events and recreation	
A quality environment (En)	En2.2 Mitigate the impacts of climate change reduce our carbon footprint and apply sustainable energy solutions	We live sustainably, use our resources responsibly and have adapted to climate change
	En4.2 Intelligent land use planning and utilities planning to meet the needs of a growing population, with consideration for the environment and future generations	We balance the needs of our natural and built environments
Strong leadership and civic participation (L)	L1.1 Provide clear, accessible, relevant information to our community	We are well informed and engaged in decision-making
	L1.2 Actively engage with and seek direction from our community and other stakeholders	
	L2.2 Advocate on behalf of the community to ensure the long-term sustainability of our region and lifestyle	Our leaders speak out for the good of our community
	L3.1 Develop and maintain relationships and partnerships for the benefit of the community	We work together to achieve our goals
	L4.1 Provide and promote opportunities for community involvement	We are active community members who recognise we all have a role to play

	L5.1 Practice sound financial and resource management	Our Council operates efficiently and effectively
	L5.2 Maintain a framework of up-to-date plans, policies, procedures, systems, and service standards	
	L5.3 Sustainably manage our assets and infrastructure to ensure they are fit for their current purpose and are maintained for future generation	
	L5.4 Effectively manage risk, quality assurance, and work health and safety	
	L5.5 Deliver high quality customer service	
	L6.1 Provide effective disaster prevention/mitigation, emergency management and disaster recovery services	We demonstrate leadership in the face of disaster

Table 6: Strategic Community Objectives – Transport Assets

3.2 Liveable Leeton 2035 Alignment to Council Services & Key Stakeholders – Transport Assets

The following table presents the activities and the key stakeholders involved in achieving relevant strategic objectives of Liveable Leeton 2035.

Liveable Leeton Strategic Objective	Service/Activities	Key Stakeholders
Sc1.1	Road safety, street lighting, design community infrastructure to Australian Standards, CCTV, driver education, Safety inspections	NSW Police Force, Transport for NSW (TfNSW), Council
Sc2.2	Shared pathways, footpaths	Council
Ec3.1	Roads and drainage	Council, TfNSW, Council, neighbouring councils, RAMJO, State and Federal Governments
Ec3.2	Shire activation, roads	Council, NSW Government, Federal Government, Griffith City Council, Grainlink Storage, Linx Cargo
Ec3.4	Town planning, parking regulation	Council, Community
En2.2	Energy Masterplan, Shire activation	Council, Department of Planning and Environment, Riverina & Murray Joint Organisation (RAMJO)
En4.2	Planning and development services, Leeton Local Environment Plan, Leeton Strategic Planning Statement, Development Control Plan	Council, Department of Planning and Environment, developers
L1.1	Media releases, Council News, reports, social media, Council Meeting Business Papers	Council, State and Federal Governments, media outlets
L1.2	Engagement activities, advisory groups	Council, State and Federal Governments, community members
L2.2	Advocacy	Council, Local Members of Parliament, RAMJO
L3.1	Community Transport	Council, State and Federal Governments and their agencies, businesses, community groups, Department of Planning and Environment – Crown Lands, NSW Parks and Wildlife, Interagency Forums
L4.1	Working groups	Council, Community members
L5.1	Financial management, human resource management	Council
L5.2	Governance, integrated planning and reporting, information technology, customer service	Council, Office of Local Government
L5.3	Corporate Services – Finance, Operations – roads and drainage, waste, water and wastewater, parks and gardens	Council

L5.4	Work health and safety, risk management, quality control	Council, Audit, Risk and Improvement Committee, Safe Work Australia
L5.5	Customer Service	Council
L6.1	Disaster planning, disaster recovery, emergency services support, business continuity	Council, State and Federal Governments, Murrumbidgee Irrigation, Rural Fire Service, NSW Fire Brigade, NSW Reconstruction Authority, NSW Police, NSW Health/MLHD, Local Emergency Management Committee (LEMC), Regional Emergency Management Committee (REMC)

Table 7: Services Delivered by Transport Assets

3.3 Council Policies, Strategies and Plans Relevant to Transport Assets

The following table shows various Council policies, strategies and plans that are relevant to and support management of transport assets.

Policy/Strategy/Plan
• Asset Management Policy 2022 • Revenue Policy • Long Term Financial Plan • Strategic Asset Management Plan 2022-2032 • Aging Well Strategy 20221-2025 • Delivery Program 2022–2025 • Operational Plan 22/23 • Workforce Management Strategy 2022-2025 • Procurement Policy • Risk Management Policy • Business Continuity Plan • Disability Inclusion Action Plan (DIAP) • Active Transport Plan (ATP) • Development Control Plan (DCP)

3.4 Goals and Objectives of Asset Ownership

Our goal in managing infrastructure assets is to meet the defined range and levels of service in the most cost-effective manner for present and future consumers. By achieving the most cost-effective approach, we will contribute to affordability and liveability contributing to a vibrant, growing, and connected community.

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 that meet the defined levels of service.
- Identifying, assessing, and appropriately controlling risks.
- Linking to a long-term financial plan that identifies required expenditure and how it will be allocated.
- Road safety requirements.

Ownership and Stakeholder Arrangements

The ownership and management of transport assets within the municipal area can take various forms and involves various public entities. The number of stakeholders involved in the provision of transport services within the shire indicates why engagement and co-ordinated decision making is vital for successful planning and delivery.

Currently there is uncertainty in relation to the ownership of certain assets including culverts owned by Murrumbidgee Irrigation prior to its privatisation. The maintenance of these culverts is paramount to keep our roads free from flooding and therefore it is vital to engage with Murrumbidgee Irrigation to resolve the current situation.

Improvement Opportunity
Form a working group to liaise with Murrumbidgee Irrigation to resolve asset ownership, asset handover, and condition of road culverts impacting Council's road network.

4. LEVELS OF SERVICE

Levels of Service is the defined quality of service of an asset. Understanding the required level of service is vital for lifecycle management, as this largely determines an asset's development, operation, maintenance, replacement, and ultimate disposal.

In developing the levels of service outlined in this Asset Management Plan, we have given due regard to the following:

Community Requirements *(Customer Expectations)*	These are the expectations of the customers/community. These expectations must be balanced with the community's ability and desire to pay (balancing risk, cost, and performance).
Strategic Goals and Objectives *(Strategic Drivers)*	The lifecycle management of assets (service offered by assets, service delivery mechanism and specific levels of service that Council wishes to achieve) will be consistent with goals and objectives stated in the Community Vision and Council Plan.
Legislative Requirements *(Mandatory Requirements)*	These are the objectives and standards that must be met, set by legislation, regulations, Codes or Practice, etc that impact the way assets are managed.
Industry Standards and Guidelines *(Operating Requirements)*	Design and construction standards and guidelines that provide the principles and minimum standards for an asset.

Table 8: Key Levels of Service Drivers

4.1 Customer Research and Expectations

Leeton Shire Council 's Community Strategic Plan was prepared with the input of many people from the Leeton Shire community. Starting as early as 2020, a range of community engagement activities were undertaken to give Leeton Shire residents the opportunity to list what they value now, what they'd like to see changed and what they'd like Leeton Shire to look like in 2035.

In July 2021, community engagement sessions were held in Leeton, Murrami, Wamoon, Whitton and Yanco. Also in July 2021, emails requesting input into the development of the Community Strategic Plan were sent to a range of community groups, government agencies and other organisations identified as having a stake or a role to play in Leeton Shire. Based on the customer research and expectations 5 areas of focus have been identified in Liveable Leeton 2035.

Our areas of focus are:

- A connected, inclusive and enriched community
- A safe, active and healthy community
- A thriving regional economy
- A quality environment
- Strong leadership and civic participation

A number of Strategic objectives to realise these focus areas have been identified and the strategic objectives relevant to transport assets are documented in Chapter 3 of this plan. These strategic objectives help identify strategic direction for transport assets to realise Liveable Leeton 2035.

Community Consultation

Leeton Shire Council's most recent community satisfaction survey was conducted in June 2021.

Based on the 2021community consultation, the following areas related to transport assets have been identified as the priorities for the next 4 years for the Leeton community

Maintaining and upgrading local roads

- Provision and maintenance of quality services and facilities including street lighting
- General maintenance/updated appearance of town/maintaining local infrastructure
- Provision of and maintenance of footpaths

Community Satisfaction

The following diagram shows the Transport asset report card of 2021 community consultation. Even though the ratings are lower than that of previous year, Council is still well above the regional benchmark satisfaction levels.

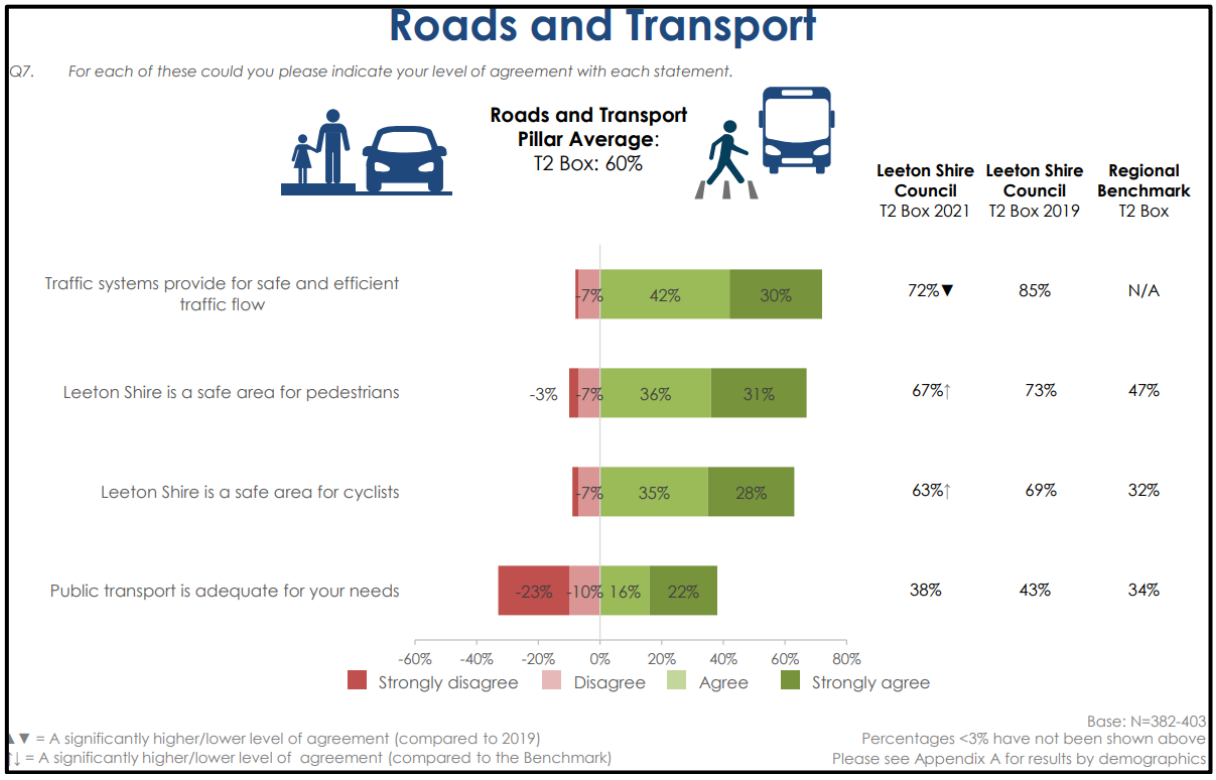

Figure 4: Transport Asset Report Card - Community Survey 2021

Residents also acknowledged that there is adequate access to parking in the CBD. The satisfaction level of access to parking has increased to 68%, which is 4% more than that of previous year.

However, it should be noted that local unsealed and sealed rural roads and local sealed town roads yielded the lowest satisfaction of the residents. Residents have also identified that bus shelters are of lowest significance to the community. Residents also want the Council to invest more on transport assets. The following table shows the transport assets and the percentage of residents that want more investments made on those assets.

Transport Asset	% of Residents
Local Sealed Rural Roads	75%
Local Sealed Town Roads	74%
Local Unsealed Rural Roads	64%
Footpaths and Cycleways	50%
Street Lighting	44%
Bridges & Footpaths	30%
Bus Shelters	32%

Table 9: Transport Asset Priority Areas as Identified by Residents

4.2 Legislative Requirements

There are many legislative requirements relating to the management of assets. The following table shows a list of legislations applicable to transport assets.

Legislation	Requirement
Local Government Act 1993	Sets out roles, 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.
NSW Roads Act 1993	Sets out the rights of passage along public roads, allows access to public road from adjoining land, opening, and closing of road. To provide classification and function of roads and the carrying out of actives on public roads
Work Health and Safety Regulation 2011	Sets out roles and responsibilities to secure the health, safety, and welfare of persons at work and covering injury management, emphasising rehabilitation of workers particularly for return to work. Organisations are to provide a safe working environment and supply equipment to ensure safety.
Environmental Protection Act 1994	Sets out guild lines for land use planning and promotes sharing of responsibilities between various levels of government in the state.
Civil Liability Act 2003 and Civil Liability Regulation 2014	To manage negligence, elements of a claim, duty of care, standard of care and causation and to address the requirements of sections 35 and 37.

4.3 Industry Standards and Guidelines

The majority of standards applicable to Transport infrastructure are covered by Council Standard Drawings, guidelines or design standards, along with other industry standards and guidelines that may influence service delivery including Commonwealth Disability Standards.

4.4 Level of Service

Levels of service are generally set based on legislative and compliance obligations, and historical standards that we have used in the past. To support this, we have prepared high level performance measures to monitor the effectiveness of its service delivery for community and technical levels of service. In future, we expect to undertake deliberative community engagement to validate our levels of service and ascertain the community's willingness to pay.

Community Level of Service

Service levels are defined service levels in two terms, community levels of service and technical levels of service. These are supplemented by organisational measures. Community Levels of Service measure how the customer receives the service and whether value to the customer is provided.

Community 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?
Capacity/Use	Is the service over or under used, do we need more or less of these assets?

Key Performance Measure	Activity	Performance Measure	Target Performance
Safety	Improve road safety by installing and replacing road signs as needed	Number of road signs installed/replaced	No target – report as completed
	Improve road safety by undertaking vegetation / weed management to improve visibility	Number of clearing activities, distance and location	No target – report as completed
	Improve road safety by carrying out inspections and responding to public reporting of faults	Number of unplanned maintenance works undertaken in response to inspection regimes and public reporting Percentage remedied to agreed service level within the target time frame (which varies according to the nature of the work)	No target – Report by occurrence 90+%

	Implement programs and campaigns that foster and promote road safety	Distance and location of vegetation slashing to improve visibility /safety Number of driver safety initiatives Crash data trends	No target – Report by occurrence ≥ 4 Report data – aim is for trend to decrease.
	Promote road safety through design and appropriate regulation	Number of Leeton Local Traffic Committee meetings held Percentage completion of endorsed actions arising from Leeton Local Traffic Committee meetings	≥ 4 90+%
	Issue permits for heavy vehicles on Shire roads	Number of permits issued and where	No target – Report by occurrence
Other	Construct and repair State roads under the Road Maintenance Council Contract (RMCC) for Transport for NSW (TFNSW)	Annual number of ordered works entered Total value of contracts	≥ 2 ≥ $300,000

Table 10: Customer Level of Service

4.5 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 *(Reliability, Safety, and Responsiveness)*	The regular activities to provide services (e.g., opening hours, cleansing, mowing grass, energy, inspections, etc.)
Maintenance *(Reliability, Safety, and Responsiveness)*	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., repair to road pavement, repair to footpath path and shared path networks, repairs to bridges etc)
Renewal *(Condition and Cost)*	The activities that return the service capability of an asset up to that which it had originally (e.g., replacement of road surface and pavement, part of full replacement of bridges and structures, renewal of road furniture)
Asset Improvements *(Availability, Function, Sustainability and Capacity)*	The activities to provide a higher level of service (e.g. widening a road or road intersection upgrade) or a new service that did not exist previously (e.g. a new bridge or pathway section).

Council's Delivery Program 2022-2025 is Council's statement of commitment to the community regarding what Council will do during its term of office to bring the community closer to achieving its long-term goals using the resources identified in the Resourcing Strategy. It turns the community's strategic goals into actions in asset operations, maintenance, renewal, and improvements. Its overall purpose is to program the strategies and activities Leeton Shire Council will undertake to deliver the aspirational goals of the community, as set out in the Liveable Leeton 2035 Community Strategic Plan.

Leeton Shire Council's Operational Plan 22/23 details the projects, programs, and actions to be undertaken in the 2022/23 financial year to achieve the Delivery Program commitments. Operational Plan 22/23 provides performance measures and targets expected to be provided by the Council in delivering Delivery program 2022-2025. The technical level of service provided by transport assets are documented under "Operational Plan 22/23 activities – Roads and Drainage (page 30) of the Operational Plan 22/23.

Transport Asset	Activity	Performance Measure	Target Performance
Roads	Shoulder widening	Percentage completion of planned shoulder widening works	90+%
	Road rehabilitation – sealed	Percentage completion of rehabilitation works	100%
		Total kilometres of road rehabilitated	No target – report as completed
	Road resealing	Percentage completion of resealing works	100%
		Area of road heavy patched, in square metres	No target – report as completed
	Heavy patching of sections of road	Percentage completion of heavy patching works	100%
		Area of road heavy patched, in square metres	No target – report as completed
	Line marking of roads	Percentage completion of line marking works	n/a
		Kilometres of line marking completed	≥ 32km
	Monitor Leeton Shire's Street Lighting network (delivered by Council and Essential Energy	Total number of repairs	No target – report by occurrence
	Resheeting of gravel roads	Percentage completion of gravel resheeting works.	100%
		Kilometres of gravel road resheeted	No target – report as completed
	Construct and repair MR 539 (Whitton to Darlington Point) under the Regional Roads Block Grant	Works undertaken	No target – report when completed
Bus Shelters	Renew, replace or relocate bus shelter in consultation with bus operators	Percentage completion of review of bus shelter locations	100%
		Number of bus shelters relocated	No target – report by occurrence
		Number of bus shelters	2

		renewed	
Kerb & Guttering	Install or renew kerb and guttering	Percentage completion of K&G works	100%
		Metres or K&G installed or renewed	No target – report by occurrence
Car Parks	Provide and maintain car parking and other traffic facilities	Percentage completion of new or repaired carparking and traffic facilities	100%
Footpaths & Cycleways	Extend the footpath and cycleway network	Percentage completion of new section of footpaths & cycleways	100%
		Number of grant applications submitted.	≥ 1
		Value of grant funding received, expressed as a percentage of the cost of the program	50%
	Ensure a safe and maintained footpath and cycleway network	Percentage of the 2022/23 Maintenance Program implemented	90%
All Transport Assets	Continue effective Asset Management Planning (AMP) and GIS Service	Percentage completion of revaluation and condition assessments	100%

Table 11: Technical Levels of Service

5. FUTURE DEMAND

The objective of asset management is to create, operate, maintain, rehabilitate, and replace assets at the required level of service for present and future customers in a cost effective and environmentally sustainable manner. The Asset Management Plan must therefore forecast the needs and demands of the community in the future and outline strategies to develop the assets to meet these needs.

5.1 Demand Forecasts and Impact on Assets

The present position, demand drivers, and their potential impacts on future service delivery and use of assets are presented in table below.

Demand Drivers	Present Position	Projection	Impact
Expansion and change of industry	Expansion and change in agricultural uses within Leeton SC requiring widening of road widths and upgrade to cater of increase heavy vehicle usage.	Increase/ change in agriculture associated industries in the region leading to further demand on rural road network. Ex: Cotton and wine industry expansion. Farmland expansion.	Need for wider roads designed for heavy vehicle use
Murrumbidgee Irrigation	Uncertainty regarding the ownership of several culverts and bridges. Unknown culvert and channel maintenance levels for assets not owned by Council.	Potential damage to Council assets. Unforeseen costs associated with culvert lifecycle costs.	Risks of flooding caused by poorly maintained channels. Financial burden on Council having to take ownership of large number of culverts and bridges.
Population Change	11,343 in 2020	12,700 by 2041	Future population growth will generate additional demand for transport infrastructure. However, demand will not be greatly impacted by the growth.
Demographics	The working age population (15–64) and the population of children aged 14 and under will remain stable.	There will be an increase of more than 50% in the number of people of retirement age (65 and over) by 2042.	Demand to cater for aging population will increase significantly.
Increase in Level of Service	Evolving design standards for transport assets	Further improvements to design standards to bring transport assets to current standards	Increased level of service and economical assets
Climate Change	The *Bureau of Meteorology and CSIRO 2016 State of the Climate* report outlines the following impacts of climate change in Australia: • Australia's climate has	Transport assets are impacted by a range of changing climate conditions: • More intense and frequent rainfall, wind, hail, and electrical storms	Impacts on road pavement, such as increased UV exposure and water ingress resulting in increased deterioration rates. Higher levels of deterioration may result in increased asset

Demand Drivers	Present Position	Projection	Impact
	warmed by around 1°C since 1910. • The duration, frequency and intensity of extreme heat events have increased	• More severe drought periods. • Changes to humidity levels • Longer and more intense heat spells • Changes to ground water levels	maintenance requirements and changed schedules to maintain asset in a serviceable condition, resulting in increased maintenance costs. Use and reuse of sustainable materials for road, pathway and bridge renewal/ construction incorporating materials with low carbon emissions.
Council Financial Sustainability	Council is required to provide its projects, programs, and services within an environment of constrained revenue control resulting from rate capping.	Rate capping has the potential to affect effective asset management if sufficient funds are unable to be secured to manage existing assets to agreed levels of service, or to provide new or upgraded transport assets desired by the community	Achieving equitable distribution of resources and the provision of transport networks and assets. Ensure community receives maximum benefit from the investment in transport infrastructure.
Community Satisfaction	Poor rating of sealed roads in rural and urban areas.	Increased expectations from the community	Council will be expected to revisit asset intervention levels to meet community expectations, particularly in sealed roads. Need for management of community expectations.

Table 12: Demand Drivers, Projections, and Impact on Services

5.2 Demand Management Strategy

The table below presents the strategies to meet the current projected demands on transport assets.

Demand	Demand Management Activities
Change in Demographics	Continue to implement Aging Well Strategy 2021-2025 to meet the needs of aging population.
Increased Community Expectations **Achieve Financial Sustainability**	Prepare long term transport asset maintenance and renewal programs according to priorities and funding availability. Review asset criticality, inspection programs and maintenance programs to identify improvements. Conduct level of service analysis including community desired level of service across all transport asset types and review affordability and risks. Ensure that the Financial Plan and Asset Plan are integrated and reflect future asset needs.
Adapting to climate change	Undertake impact analysis of climate change on transport assets. Undertake flood studies to identify impact on transport assets.
Design Standards	Ensure design standards take into consideration of the aging population, climate change, local conditions, increasing number of heavy vehicles using our roads, whole of life costings and accessibility requirements. Wherever appropriate Council will work to align with the DCP & DIAP to ensure organisational strategic alignment is met.

Table 13: Demand Management Strategies

Improvement Opportunity
Develop a capital work prioritisation framework and include demand drivers as part of the prioritisation criteria.

6. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how we plan to manage and operate the assets at the agreed levels of service while managing life cycle costs.

We are the custodian of a portfolio of transport assets with a replacement value of $151M as reported in our financial statements as at 30 June 2020.

These assets require significant and ongoing planning and management to meet both stakeholder and legislative requirements within the financial resources available to us.

Our transport portfolio is summarised in the table below:

Asset Class	Asset Type	Asset Quantity	Replacement Value as at June 2020	Written Down as at June 2020
Transport	Sealed Roads	409km	$91,526,425	$55,585,285
	Unsealed Roads	363km	$10,434,243	$8,096,415
	Bulk Earth Works (Non-Depreciable)		$8,706,192	$8,706,192
	Footpaths & Cycleways	42km	$9,978,025	$7,736,322
	Kerb & Gutter	114km	$16,523,336	$9,504,210
	Car Parks	30	$2,242,748	$1,322,383
	Bridges	3	$6,134,751	$4,638,152
	Bus Stops	38	$728,301	$258,918
	Traffic Management Assets (Various)	270	$4,704,877	$2,389,059
	Bike Training Facility	1	$95,687	$80,040
	Total		**$151,074,585**	**$98,316,976**

Table 14: Summary of Transport Asset Information

6.1 Asset Data

Council is committed to maintain the currency of all transport asset data. There are number of initiatives currently underway to improve asset data and systems to centralise transport asset information.

- Road survey – to capture asset condition information and collect attribute data.
- Footpath condition survey - to capture asset condition information and collect attribute data.
- Configuration of "Univerus" (Asset Management Information System) and migration of asset data including condition and valuation information.
- Configuration of "Univerus" works order management system to streamline work order management.

6.2 Asset Condition

Asset condition is a measure of the health of an asset and is a key consideration in determining remaining useful life, as well as predicting how long it will be before an asset needs to be repaired, renewed, or replaced. Asset condition is also an indicator of how well it can perform its function. Condition data is valuable for developing long term funding scenarios for strategic planning of our budgets.

We use a 1 to 5 condition rating system for our transport assets as described in table below.

Score	Condition Rating	Characteristics
1	Very Good	Asset looks new or very close to as new.
2	Good	Asset is no longer in new condition. Only minor maintenance may be required.
3	Fair/ Average	The asset is serviceable and in a satisfactory condition however some maintenance may be required to address aesthetic, safety, or functional issues.
4	Poor	Asset requires significant maintenance or replacement of the asset is required
5	Very Poor	Asset is physically unsound, and replacement is required

Table 15: Condition Rating System

Our condition grading system follows good practice guidance as provided by various industry standards including the *International Infrastructure Management Manual.* Condition data for our transport assets is recorded in valuation registers as at June 2020 have been used for renewal modelling. The following sections provide an overview of the condition of our transport assets:

1. Current Sealed Road Asset Condition

The increase in number of heavy vehicles using our road network due to the changes in farmland activities has resulted in an increased decline in the condition of some of our roads which have not been designed for heavy vehicle use. Therefore, there is an increased pressure on Council to cater for heavy vehicles in future and amend design standards accordingly.

Class 2 roads make up a small percentage of our total road network however, 58 % of class 2 roads are in very poor condition. These include Canal Street and Vance Road in Leeton (Urban Roads) and Murrami Road in Stanbridge (Rural Road). 39% of class 3 asphalt surfaces are in very poor condition. Most of these roads are urban roads in Leeton.

About 22% of road base of class 5 roads are in very poor condition. Most of these roads are urban class 5 roads in Leeton.

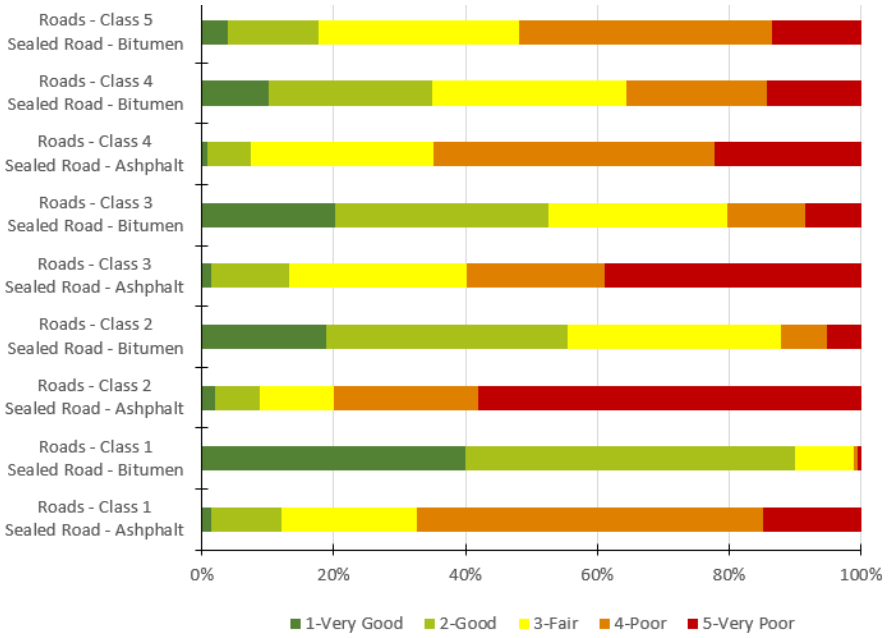

Figure 5: Condition Profile – Road Surface

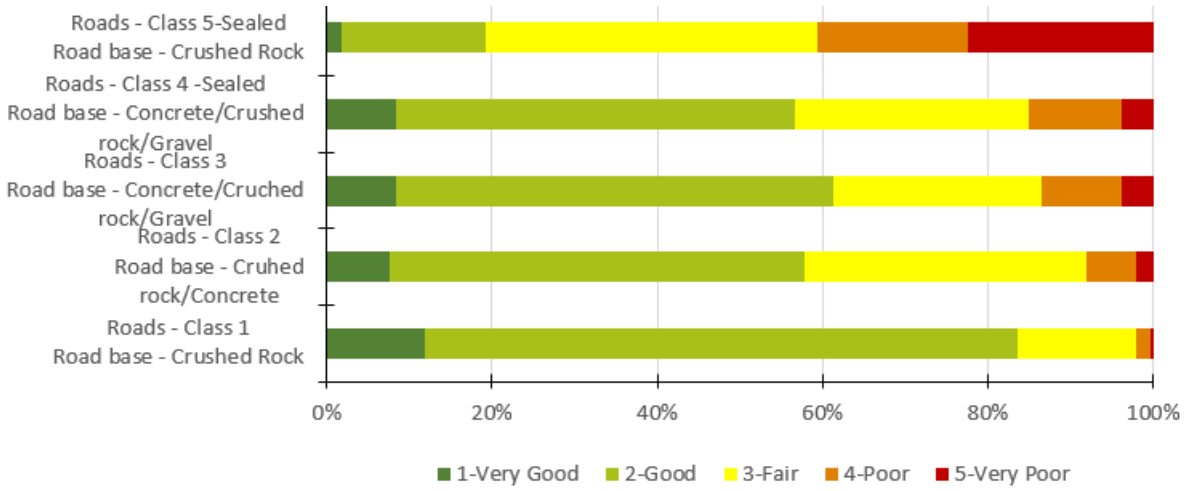

Figure 6: Current Condition - Sealed Road Base

2. Current Unsealed Road Base Condition

Majority of the road base of unsealed roads are in very good to fair condition. The gravel base of Tower Road in Stanbridge is in very poor condition and will require immediate intervention.

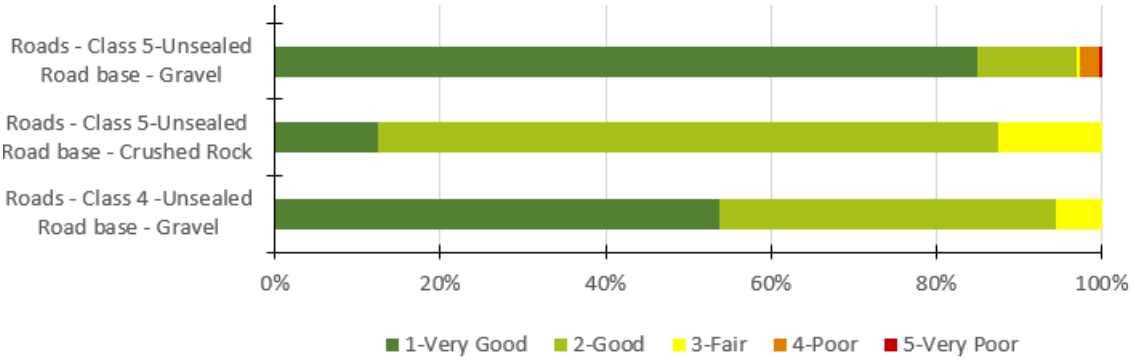

Figure 7: Condition Profile - Road Base

3. Current Kerb & Gutter Asset Condition

Majority of kerb and gutter assets are in very good to fair condition. About 1.8% of these assets are in very poor condition.

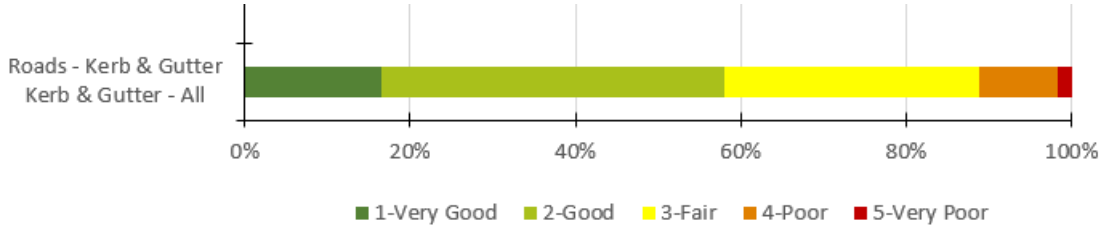

Figure 8: Condition Profile – Kerb & Gutter

4. Current Footpaths and Cycleways Asset Condition

Overall, our footpaths and cycleways network are in very good to fair condition.

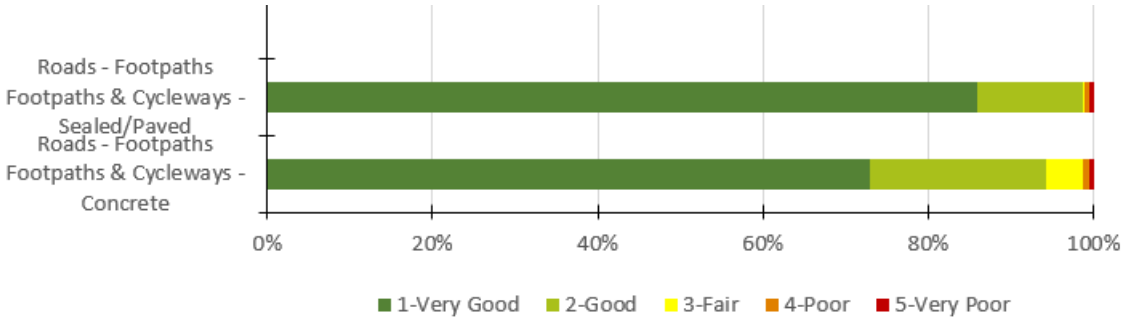

Figure 9: Condition Profile – Footpaths and Cycleways

5. Current Car Parks Asset Condition

Majority of our car parks are in a very good to fair condition.

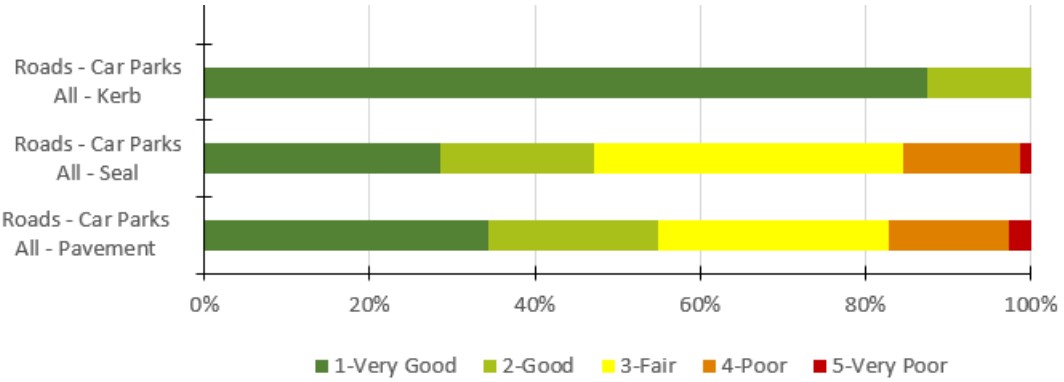

Figure 10: Condition Profile – Car Parks

6. Current Bridges Asset Condition

All 3 bridges we own (Euroley rd Bridge, Mackellar rd Bridge and Whitton Rd Channel Bridge) are in a very good to fair condition.

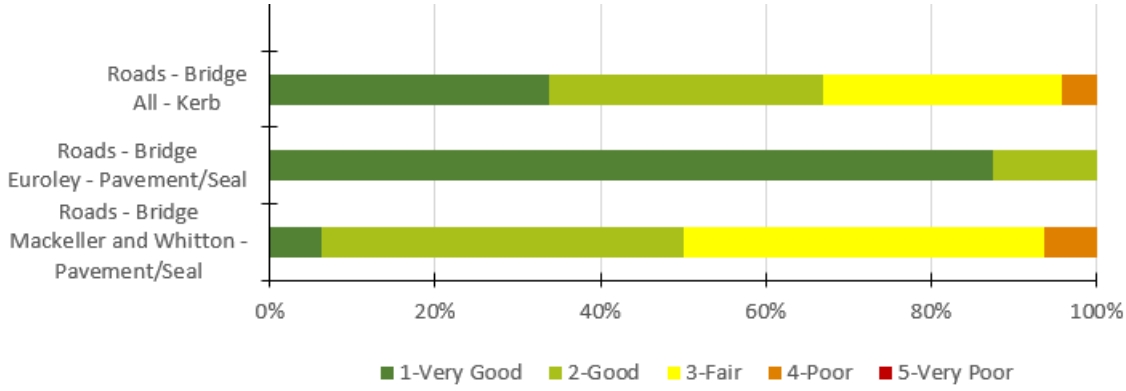

Figure 11: Condition Profile - Bridges

7. Current Bus Stops Asset Condition

About 30% of surface and 36% base (pavement) of bus stops are in very poor condition. These assets would require urgent intervention to bring them up to acceptable level of service.

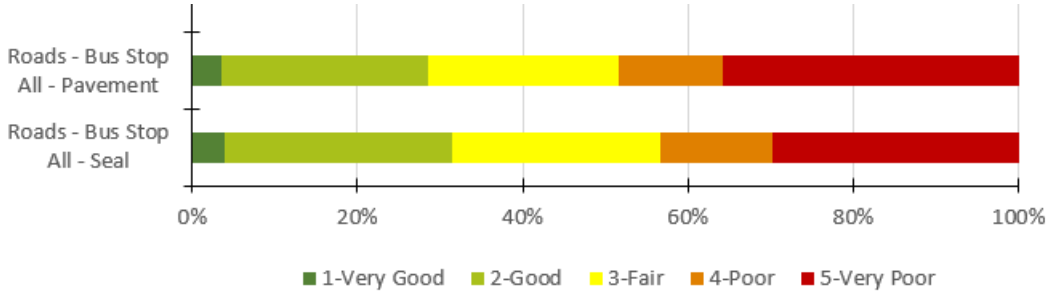

Figure 12: Condition Profile: Bus Stops

8. Current Traffic Management Asset Condition

Our traffic management assets comprise of medians, parking lanes, pedestrian refuges, raised crossings, roundabouts, speed cushions and speed humps. Majority of these assets are in very good to fair condition. About 14% medians are in very poor condition.

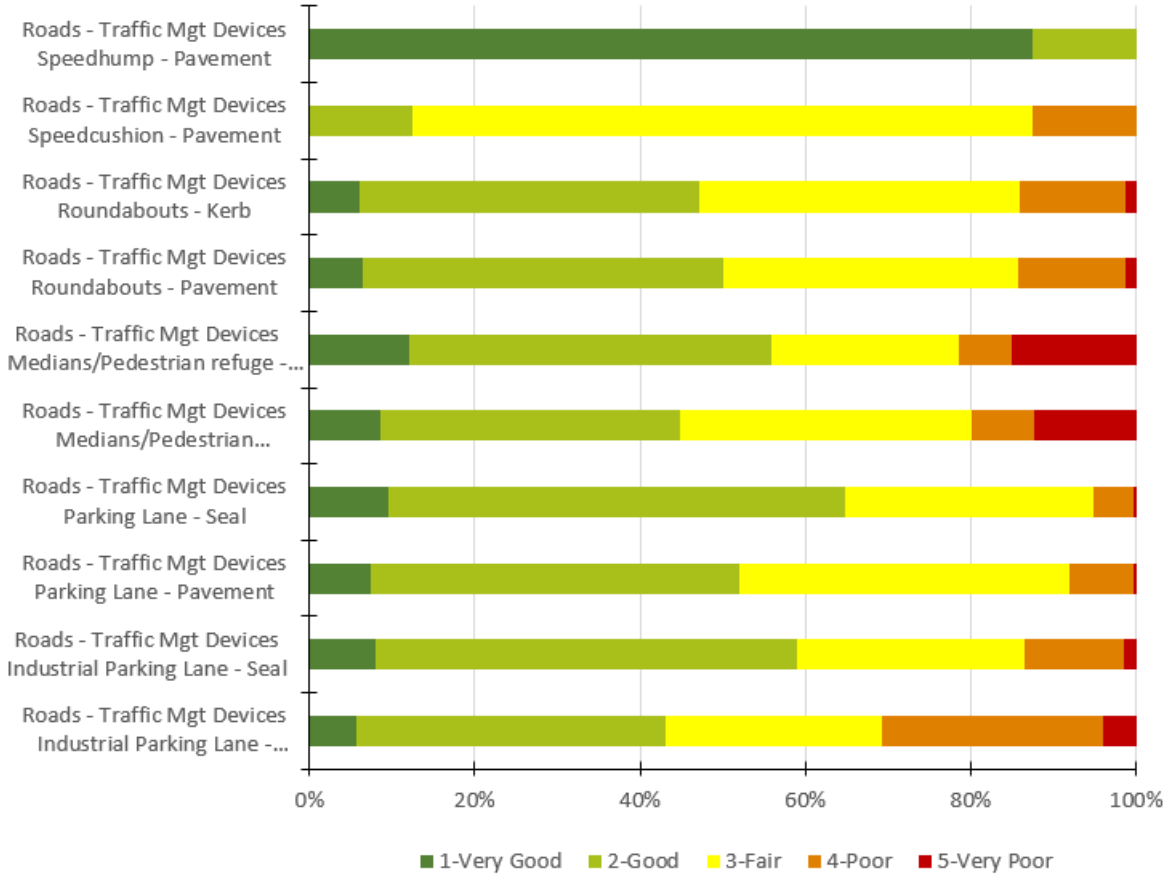

Figure 13: Condition Profile – Traffic Management Assets

Improvement Opportunity
Revise current road design standards to make allowance for increasing number of heavy vehicles using our roads with the consideration of local soil conditions and make up.

6.3 Transport Asset Maintenance and Inspections

Leeton Shire Council carries out a number of maintenance and inspection programs to enable existing assets operate to their service potential over their useful life. This is necessary to meet service standards, achieve target standards and prevent premature asset failure or deterioration. This is achieved by providing the optimum level of maintenance and care in a financially and environmentally sustainable manner.

Our objectives in maintaining and operating transport assets are:

- To maintain safety, amenity, and aesthetics of transport networks and assets to the satisfaction of Council and the community.
- To maintain and preserve the functionality and value of the existing assets.
- To provide and maintain a safe environment for the community within the constraints of our financial capacity and resource capability, while displaying a reasonable 'duty of care'.
- To ensure the provision of excellent customer service and that customer requests are responded to quickly and efficiently.

Transport Asset Maintenance

Maintenance activities for our transport assets is managed and delivered using inhouse resources supplemented by the use of contractors. A broad overview of our transport maintenance and operations management approach is detailed in the table below.

Activity Category	Description	Road Type	Activities
Planned Maintenance	Maintenance works that are required to be undertaken at regular intervals to maintain service levels and minimises ongoing lifecycle costs.	Local Roads	– Bridge Maintenance – Line marking – Road Grading – Shoulder Grading – Slashing (Sealed Network Only)
		Regional Roads	– Line marking – Longitudinal – Line marking – Transverse – Shoulder Grading (Sealed Network Only) – Slashing (Sealed Network Only)
Unplanned Maintenance	Response to service requests or unforeseen asset failures or system interruptions.	Local Roads	– Guidepost Replacement – Intersection Sweeping – Pothole Repair – Sign Repair – Sign Replacement – Gravel Roads Repair – Award, WHS & Planning
		Regional Roads	– Guidepost Repair/Replacement – Intersection Sweeping – Pothole Repair – Sign Repair – Sign Replacement – Tree Maintenance – Award, WHS & Planning Overheads
Cyclic Maintenance	Response to service requests or unforeseen asset failures or system interruptions.	All	– Correct Surface Shape – Edge Repair – Tree Maintenance

Table 16: Routine and Reactive Maintenance Activities

The process for cyclic maintenance activities is similar to that of unplanned maintenance except that the

schedules of work are generated over longer periods.

Planned Maintenance

The current service levels of planned maintenance activities are presented in the Table below.

Service Type / Activity	Road Class	Intervention/Service Level
Local Roads Planned Maintenance		
Bridge Maintenance	All	For 'as required' works
Line marking - Longitudinal	1	Remarked once per 12 years
	2	Remarked once per 12 years
	3	Remarked once per 12 years
Line marking - Transverse	All	Remarked once per 12 years
Road Grading (Dry Weather Only Network)	4	Graded once per 3 years
	5	Graded once per 3 years
Road Grading (Gravel Network)	4	Graded once per year
	5	Graded once per year
Shoulder Grading (Sealed Network Only)	1	Graded once per 5 years
	2	Graded once per 10 years
	3	Graded once per 10 years
	4	Graded once per 25 years
	5	Graded once per 25 years
Slashing (Sealed Network Only)	1	Slashed 3 times per year
	2	Slashed 2 times per year
	3	Slashed once per year
	4	Slashed as required
	5	Slashed as required
Street Sweeping	All	Generally, once per week
		CBD 3 times per week
Regional Roads Planned Maintenance		
Line marking - Longitudinal	All	Remarked once per 10 years
Line marking - Transverse	All	Remarked once per year
Shoulder Grading (Sealed Network Only)	All	Graded once per 5 years
Slashing	All	Slashed 3 times per year

Figure 14: Planned Maintenance Program - Transport Assets

Council is planning to review its planned maintenance program and the frequencies to refine the level of service across entire transport asset portfolio whilst looking for financial saving opportunities.

Unplanned Maintenance

Council is planning to review its current intervention and response times for unplanned maintenance based on the criticality of the corresponding asset. Appendix A outlines the intervention times currently set for various defects/maintenance activities undertaken by the Council.

The current service levels of unplanned (reactive) maintenance activities are presented in Table below.

Service Type / Activity	Road Class	Intervention/Service Level
Local Roads Reactive Maintenance		
Correct Surface Shape	All	7750 sq.m per year (avg)
Edge Repair	All	7750 sq.m per year (avg)
Guidepost Replacement	All	970 guideposts per year (avg)
Intersection Sweeping	All	94 Intersections per year (avg)
Pothole Repair	All	16600 events per year (avg)
Sign Repair	All	194 signs per year
Sign Replacement	All	284 signs per year
Tree Maintenance	All	Amount reserved for 'as required' works
Gravel Roads Repair	All	6000sq.m of repair per year
Regional Roads Reactive Maintenance		
Correct Surface Shape	All	250 sq.m per year (avg)
Edge Repair	All	250 sq.m per year (avg)
Guidepost Repair/Replacement	All	30 guideposts per year (avg)
Intersection Sweeping	All	23 Intersections per year (avg)
Pothole Repair	All	400 events per year (avg)
Sign Repair	All	6 signs per year
Sign Replacement	All	8 signs per year
Tree Maintenance	All	Amount reserved for 'as required' works

Figure 15: Unplanned Maintenance Program - Transport Assets

Inspections

For us to carry out effective planning and competent management of our transport assets, it is essential that maintenance and performance related information is collected through disciplined and regular inspections of the whole portfolio.

Our road inspection program which covers all transport assets within the road reserve is shown below.

Service Type / Activity	Road Class	Intervention/Service Level
Local Roads Risk Management		
Routine Inspection	1	Inspected 6 times per year
Routine Inspection	2	Inspected 3 times per year
Routine Inspection	3	Inspected 3 times per year
Routine Inspection	4	Inspected once per year
Routine Inspection	5	Inspected once per year
Regional Roads Risk Management		
Routine Inspection	All	Inspected 6 times per year

Figure 16: Inspection Program - Transport Assets

Council is planning to review all of the inspection program and the frequencies to inspect the entire asset portfolio.

Future Operation and Maintenance Costs

Figure 17 outlines the forecast operations and maintenance budgets based on the understanding of the current levels of service delivered for our transport assets.

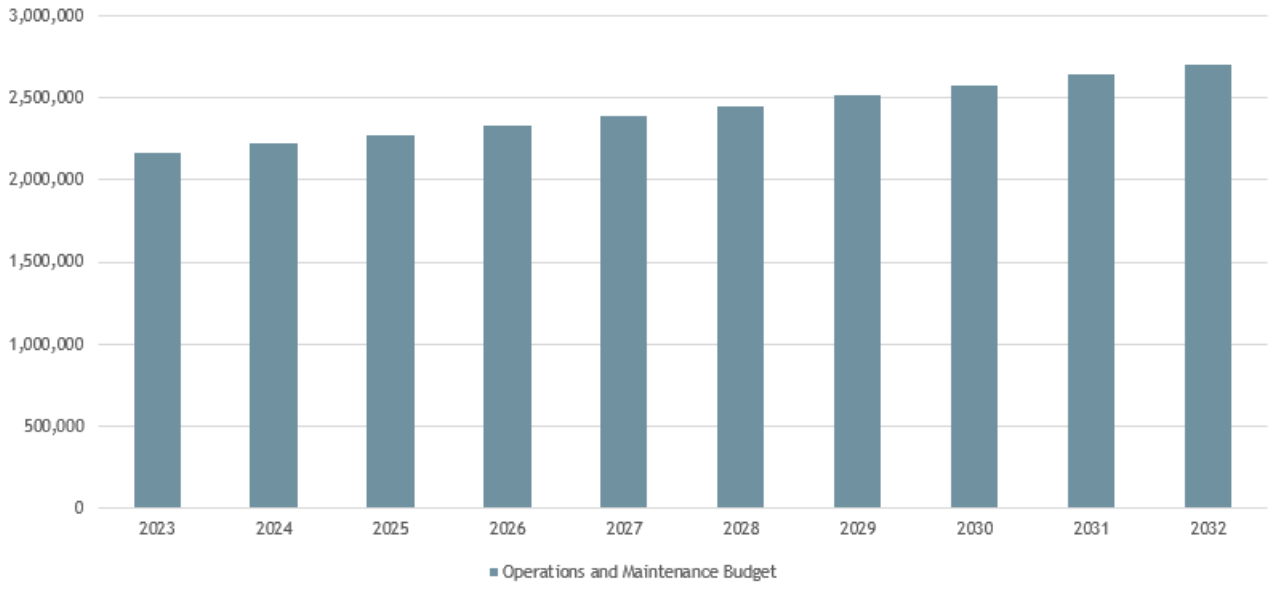

Figure 17 - Projected Operations and Maintenance Expenditure

The total operations and maintenance budget over the next 10-years starting from 2022/23 is **$24 million.** This is the required operations and maintenance budget to continue to deliver present service standards over the long term. An annual indexation rate of 2.5% has been applied to the forecast consistent with Council's Long Term Financial Plan. The forecast maintenance expenditure requirements comprise two components: routine maintenance and operations, and consequential maintenance.
The routine program is made up ongoing activities required to maintain the amenity, safety, and

functionality of our transport networks. The increase in the routine program is indicative of the need to fund operations and maintenance associated with the creation of new assets acquired over the forecast period. The majority of these new assets are created through our own capital works program.

Detailed analysis of the current levels of service compared to desired levels of service has not yet been undertaken. We will need to review the budget allocations we set aside for transport maintenance and operations within our Financial Plan. This is to make sure that they are adequate for us to continue to maintain our current levels of service and the maintain safe and serviceable transport assets. Depending on funding availability, we may also need to review our levels of service to ensure that they are affordable, and we continue to be a financially sustainable organisation.

Improvement Opportunity
Review current funding allocations allocated to transport asset operations and maintenance to ensure that that they are sufficient to deliver current levels of service and compare against any desired levels of service.

Disaster Recovery Maintenance Works

Identified disaster management works need to be carefully identified, recorded and actioned as a separate activity so that they can be reported appropriately and ensure disaster funding recovery arrangements are covered as part of the process. Necessary information required and the process to support effective reporting for disaster recovery works (including information to support applications for disaster recovery funding) are:

- Assessment of the initial state of assets and infrastructure. This includes "before" photos and or video of assets and infrastructure affected and can sourced from cyclic asset condition assessment reports and associated photos/ images linked to assets in Council's Asset Information Systems.
- Defects and damage identified following a disaster event including location, photos and details of assets affected.
- Estimated cost and scope of works to repair damaged assets.
- Effective reporting within Council asset information systems of works and costs against the damaged assets and infrastructure. This necessitates the coding of works orders raised in Council's system to be tagged or identified as disaster recovery works and all costs attributed to these works orders.
- Photos of completed works and condition of assets.

6.4 Transport Asset Renewal

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

Assets requiring renewal are identified using a combination of an analysis of the long-term financial needs at a portfolio level and other information that identifies specific assets that require renewal at a project level.

Renewal Strategy

Renewal strategies are based on assessing a range of factors to ensure the appropriate level of investment is targeted at the optimum time to ensure assets remain fit for purpose and that renewal plans are efficient and effective.

The factors considered include the following:

- Criticality
- Maintenance and/or failure history
- Age
- Expected life
- Remaining useful life
- Condition (where known)
- Condition prediction
- Climate change factors and impacts affecting assets
- Geographical grouping
- Demand and use patterns
- Timing in relation to linked asset renewal plans
- Road safety requirements

As a general principle the number and cost of repairs will determine the optimum timing to invest in the renewal of assets. Every time an asset is repaired it provides information about its performance, rate of deterioration, and a prediction of the optimum time to renew.

As the rate of repairs increase a prediction can be made about the best time to renew an asset to keep the cost of ownership at the lowest possible levels.

Renewal work is carried out in accordance with the current standards and specifications. Leeton Shire Council has 14 design standards, and these standards determine carriageway widths, pavement depths & surface type, and ancillary features. The road design standards can be found here: https://austroads.com.au/safety-and-design/road-design/guide-to-road-design

Sealed Road Renewal Strategy

Currently, council applies a range of aesthetic treatments to sealed roads. The aesthetic treatment types are often not economical in the long term as intended useful lives are not achieved. Therefore, it is important that aesthetic treatments are compared against the standard treatment methods to determine the most appropriate treatment.

Treatment methods, costs and the useful lives are presented in the table below. It should be noted that these are average/generic treatments. Generally, the depth and treatment of the pavement is determined by geotechnical report and design.

Current Treatment Option	Average Cost (m^2)	Indicative Useful Life (Years)	Description
Sealed Roads – 50mm overlay & mix (excluding seal components)	$11	15-20	Aesthetic Treatment
Sealed Roads – 100mm overlay & mix (excluding seal components)	$12	20-30	Aesthetic Treatment
Sealed Roads – 150mm (excluding seal components)	$18	50-70	Used in a low to medium trafficable rural road
Sealed Roads – 200mm – Dig and replace (excluding seal components)	$24	50-70	Currently used
Sealed Roads – 250mm – Dig and replace (excluding seal components)	$29	50-70	Currently used and
Sealed Roads – 300mm – Dig and replace (excluding seal components)	$35	50-70	Currently used

Table 17: Sealed Road Treatment Types

Improvement Opportunity
Review current treatment selections vs standard sealed road treatments by analysing whole of life costs/useful life.

Renewal Ranking Criteria

In general, renewal works are prioritised and planned by assessing the following considerations:

- Safety issues.
- Physical condition.
- Risk and asset criticality.
- Community/user feedback.
- Location and use type and patterns.

Following indicators are generally used to determine the criticality of an asset:

- 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 Asset Management Plan as key cost factors.
- Have high operational or maintenance costs.
- Have replacement with a modern equivalent asset that would provide the equivalent service at a savings.

Leeton Shire Council renewal program development is based upon the principles set out in Council's Asset Management Strategy. Renewal planning is carried out utilising a predefined set of indicators as well as the technical expertise of staff.

These indicators, when placed into a weighted matrix, produce a prioritised lists of assets requiring renewal works. This list is then assessed by technical staff for accuracy and validity. Following Council approval, renewal programs are rolled into annual, and 4 year works programs.

Following the development of a 4 year works program (Delivery Plan), Council Officers begin selecting and working on the planning and development of the various renewal works as separate projects to be completed within the year / operational plan.

See below for the breakdown of tasks:

- Council's GIS system generates a proposed 4 year works program with budget as the limitation on a year's work.
- Council staff review this list (desktop exercise) for validation.
- Council staff review the first year of the program with a view to:
    - Assess for overlaps with upcoming upgrades or expansion (within or outside of the current asset class)
    - Promote or demote works from/to the year 1 program based on spatial economies (i.e., proximity of works), overlaps identified in step 3a, and/or obvious errors within the matrix computation method.
- All works within the finalised year 1 program are costed and assessed prior to submission for delivery.

Wherever possible, the roads department will work with the Water and Wastewater department to align the capital works program to ensure there is alignment to enhance financial impacts and minimise wastage. This will minimise and remove instances where road renewal/resealing program not being aligned with the water and wastewater capital program. Failure to achieve this may result in in water/wastewater pipes been replaced after the road works has been completed.
Therefore, it is important to identify overlapping capital projects across transport, water, and wastewater capital programs.

Improvement Opportunity

- Develop a capital work prioritisation framework and include renewal ranking criteria.
- Undertake cyclic condition assessments and develop renewal programs based on asset condition.

Summary of 10-Year Transport Asset Renewal, Upgrade and New Program

The following table presents a summary of Council's 10-year transport asset renewal, upgrade, and new programs.

	PROGRAM	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10 Year Total
Renewals	Roads to Recovery	$649,136	$584,038	$584,038	$601,560	$601,560	$601,560	$619,606	$619,606	$619,606	$635,097	**$6,115,807**
	Annual Reseal Program- Sealed Rural and Urban Road	$730,294	$635,000	$725,000	$725,000	$725,000	$725,000	$725,000	$725,000	$725,000	$725,000	**$7,165,294**
	LSC Road Rehabilitation	$476,876	$908,354	$979,000	$979,000	$979,000	$979,000	$979,000	$979,000	$979,000	$979,000	**$9,217,230**
	Sealed Roads Rehabilitation - Heavy Patching and Line-marking	$132,277	$60,000	$125,000	$125,000	$125,000	$125,000	$125,000	$125,000	$125,000	$125,000	**$1,192,277**
	Fixing Local Roads	$164,147	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$164,147**
	Gravel Road Resheeting	$370,000	$450,000	$450,000	$450,000	$450,000	$450,000	$500,000	$500,000	$550,000	$550,000	**$4,720,000**
	Regional Road - MR539	$117,307	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	**$1,917,307**
	Kerb & Gutter	$192,358	$80,000	$0	$0	$0	$0	$0	$0	$0	$0	**$272,358**
	Footpaths	$0	$0	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	**$800,000**
Uprades	Roads to Recovery	$44,661	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$44,661**
	LSC Road Rehabilitation	$0	$339,184	$0	$0	$0	$0	$0	$0	$0	$0	**$339,184**
	Fixing Local Roads	$1,000,000	$1,032,550	$0	$0	$0	$0	$0	$0	$0	$0	**$2,032,550**
	Shoulder Widening Program	$158,962	$0	$150,000	$150,000	$1,150,000	$620,000	$620,000	$620,000	$620,000	$620,000	**$4,708,962**
	Road Upgrades - 11% from R2R and LSC Road Rehabilitation	$139,170	$184,453	$193,185	$195,350	$195,350	$195,350	$197,581	$197,581	$197,581	$199,495	**$1,895,095**
	Pedestrain Accessway/Other Roads	$2,276,970	$80,000	$0	$0	$0	$0	$0	$0	$0	$0	**$2,356,970**
New	Traffic Facilties and Bus Shelter	$55,106	$36,000	$0	$0	$0	$0	$0	$0	$0	$0	**$91,106**
	Footpaths	$604,239	$0	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	**$1,804,239**

Table 18: 10 Year Renewal and Upgrade Budget -Transport Assets

It should be noted that several maintenance works are also planned to be funded by the renewal and upgrade program (Ex: Resealing budget is used for patching). It is therefore necessary to review the maintenance budget to identify gaps to adequately fund the maintenance program. Currently, about 11% of Roads to Recovery and LSC Road Rehabilitation programs are invested in upgrade of road assets. To reflect this funding movement, 11% of these renewal programs have been allocated to upgrade program.

It should also be noted that renewal funding requirements for "Gravel Road Re-sheeting" is not reflected in renewal modelling. Therefore, this funding has been added to the renewal forecast.

Also, annual funding of $1.1M for LSC Road Rehabilitation Program from 2026 onwards is subject to availability of funding and Council approval.

Both Roads to Recovery (R2R) and MR 539 programs are externally funded. The R2R program is funded by the federal government whereas MR 539 is funded by the state government. It is assumed that these funding programs will continue over the next 10 years.

If these two-grant funding source were to be reduced or removed, it will create a renewal funding deficit.

Improvement Opportunity
Review transport asset maintenance programs for adequacy and identify gaps in funding.

Renewal Modelling Assumptions

The analysis to determine future asset renewal requirements is based on the best available information held by Council. The future funding forecasts will be revised and refined to best represent the performance of the asset base as the maturity of the asset management practices progresses.

The renewal funding projections presented within this asset management plan are based on the following assumptions:

- The renewal costs are based on the asset data register as of 1 July 2020.
- Asset quantities, condition data and financial information within the current asset registers are assumed to be correct.
- Intervention standards is based on providing a balanced level of service before assets reach "very poor" condition.
- Useful lives for transport assets are Council's adopted lives and are assumed to be a reasonable estimate of the life of the transport assets.
- All projections are in present dollar value.
- There is no significant increase to the existing asset base over the next ten (10) years.
- Future renewal funding levels are derived from the Financial Plan.
- Service levels are based on current service levels and may not reflect community expectations or Council's strategic goals and objectives.

Asset Useful Lives

The following table shows a high-level summary of useful lives of transport assets.

Transport Asset	Class	Material	Useful Life (Years)
Road Surface	1	Bitumen	15
	1, 2,3	Asphalt	20
	2,3,4	Bitumen	20
	5	Bitumen	25
	4	Asphalt	30
Road Base	4	Gravel	20
	5 (Unsealed)	Gravel	30
	2	Crushed Rock	50
	1	Crushed Rock	40
	4, 5	Crushed Rock	70
Footpaths & Cycleways		Concrete	100
		Bitumen	40
Kerb & Gutter	70		
Car Parks - Pavement	60		
Car Parks - Seal	20		
Bridge - Kerb	40		
Bridge - Pavement	80 - 100		
Bus Stops -Pavement	40		
Bus Stops - Seal	20		
Bike Training Facility	40		
Speedhump - Pavement	10		
Speed Cushion	20		
Industrial Parking Lane - Pavement	60		
Industrial Parking Lane - Seal	40		
Parking Lane - Pavement	60		
Parking Lane - Seal	20		
Medians/Pedestrian Refuge Median	50		
Medians/Pedestrian Refuge Median	50		
Roundabout - Pavement	40		
Roundabout - Kerb	40		

Table 19: Useful Life - Transport Assets

Road Surface Renewal Forecast and Budget

The back log of road surfaces about 17%; mainly class 4 and 5 bitumen surfaces require immediate renewal intervention that is worth about $2.5M. Current funding levels will bring the asset above intervention level down to 2% over the next 10-year period.

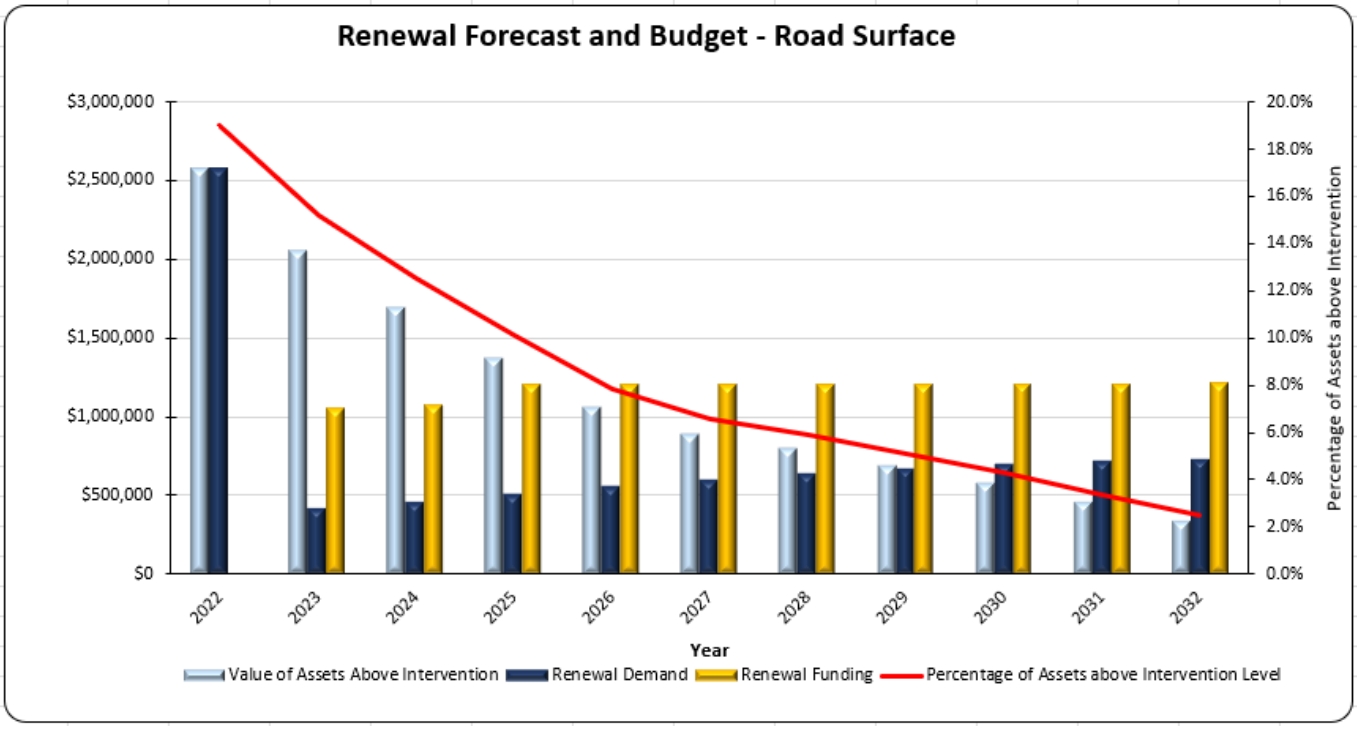

Figure 18: Renewal Forecast and Budget - Road Surface

The forecast condition profile for road surface shows current funding levels allocated in the financial plan are sufficient to gradually improve the condition profile over the next 10 years with about $300K worth of assets in very poor condition at the end of this period.

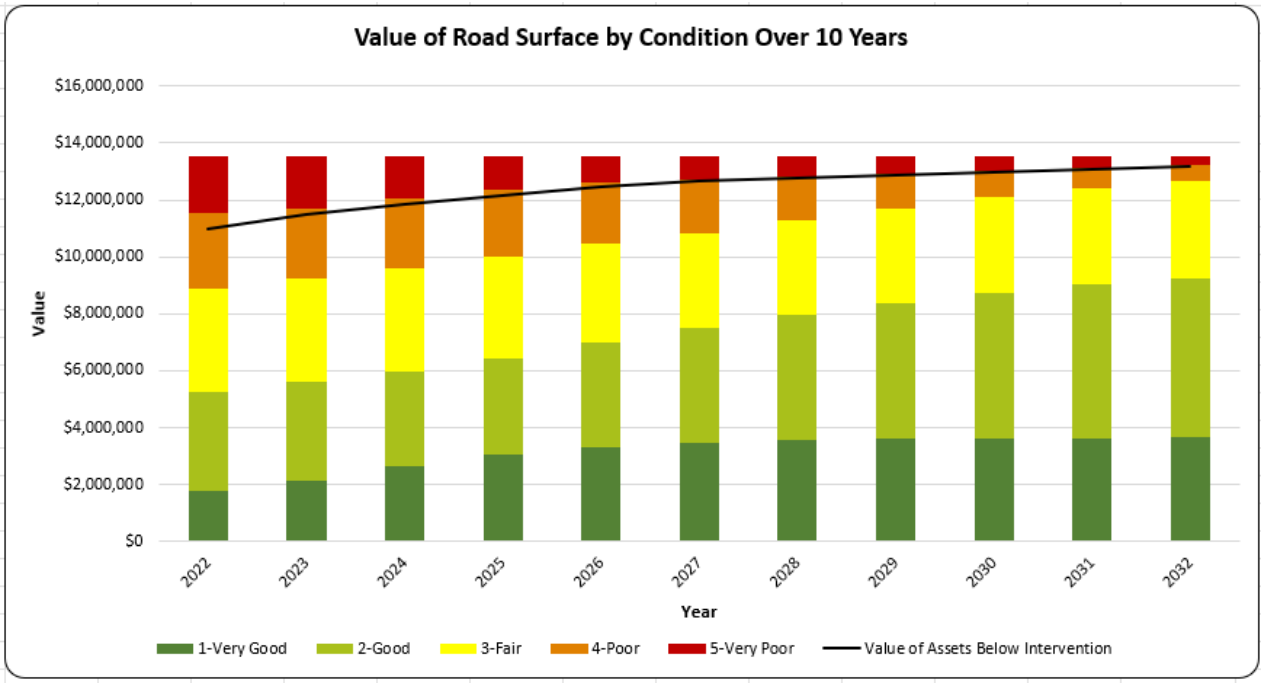

Figure 19 : Value of Road Surface By Condition Over 10 Years

Road Base Renewal Forecast and Budget

The back log of road pavements; class 1, class 2, class 4 & 5 (sealed road) pavements require immediate renewal intervention that is worth about $3M.

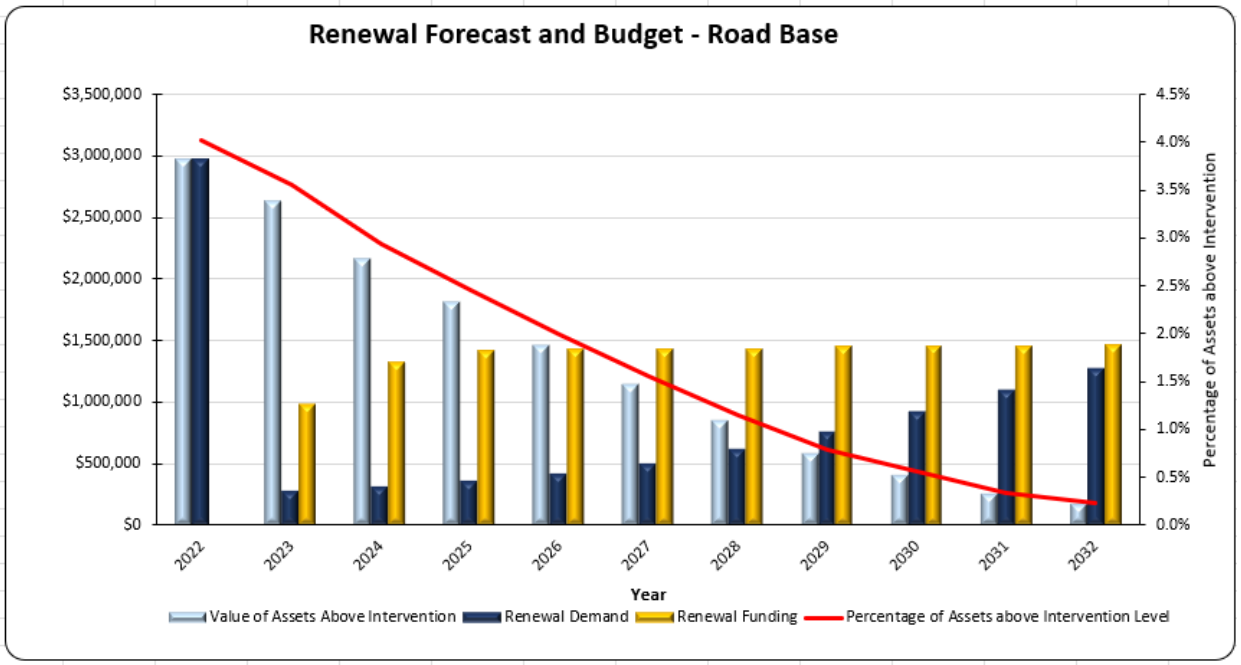

Figure 20: Renewal Forecast and Budget – Road Base

Current funding levels are more than adequate to maintain the condition of our entire road base to provide current level of service. Therefore, it is important to revise the budget based on condition once the next cyclic condition assessment is complete to enable efficient distribution of renewal funding across the entire asset base.

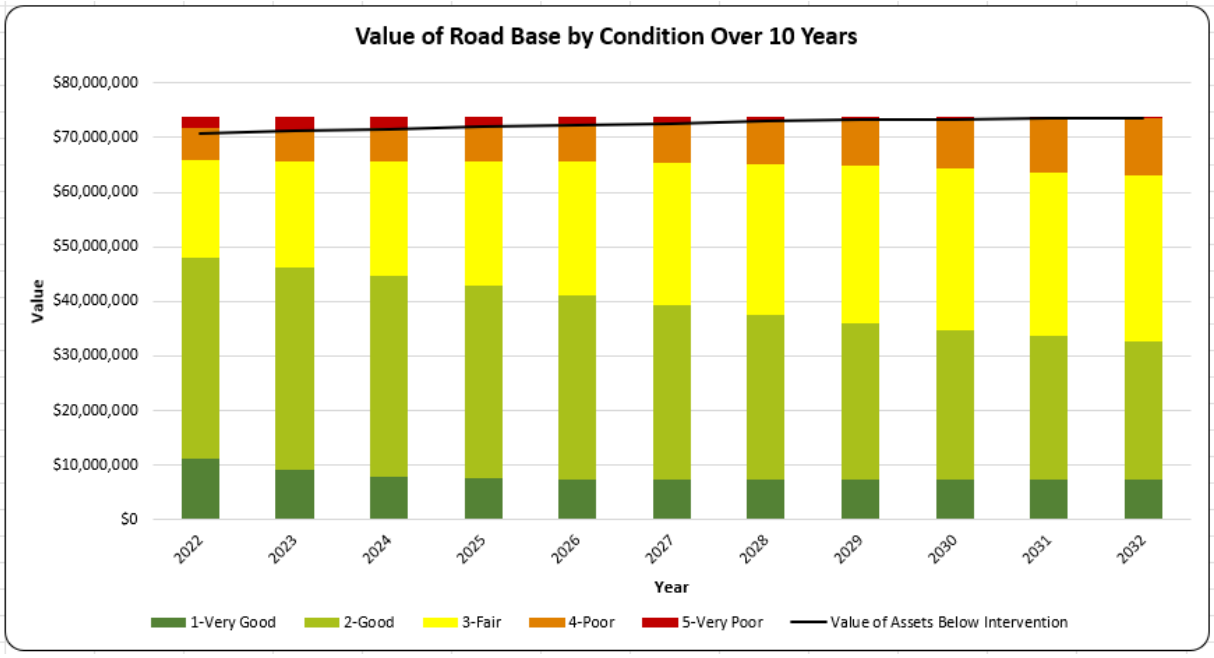

Figure 21: Value of Road Base by Condition Over 10 Years

Kerb & Gutter Renewal Forecast

Our kerb & guttering require a significant amount of renewal funding for the next 10 years.10-year renewal demand is about $ 2.2M with an initial back log of renewals worth about $ 0.45M. Renewal budget for kerb & Gutter over the next 10-year period is about $300k which is inadequate to meet the current renewal demand.

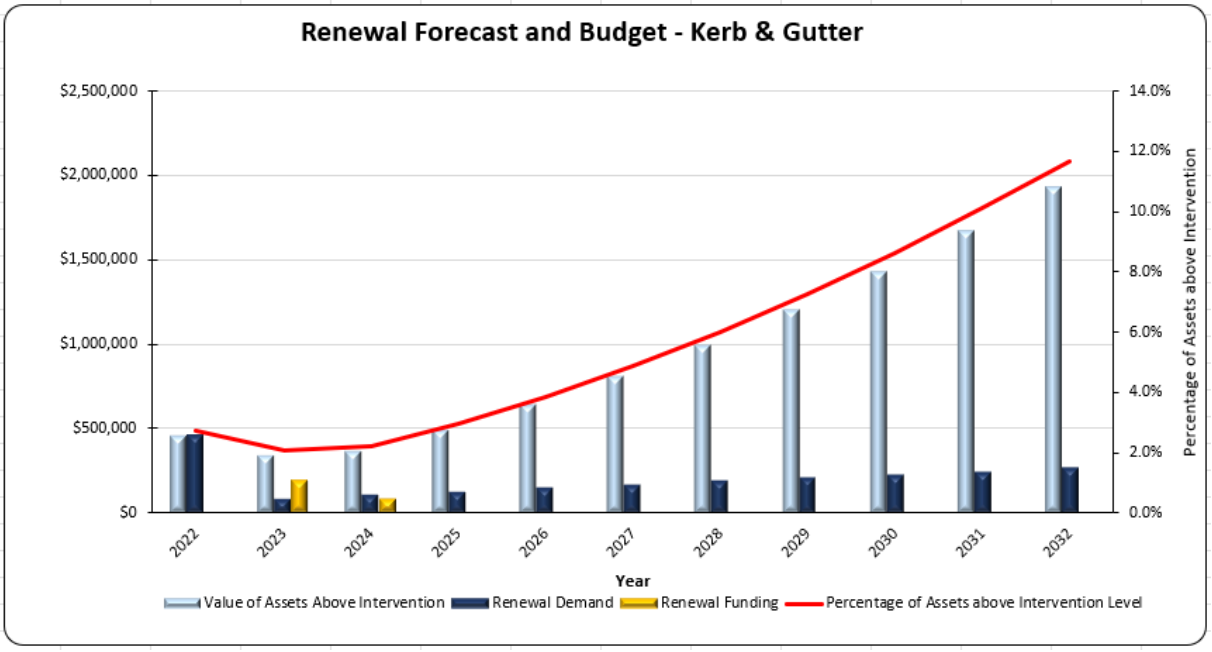

Figure 22: Renewal Forecast and Budget

Due to the distribution of funding for kerb & gutter renewal, it is forecasted that assets in very poor condition will increase from $300k to $1.8M over the next 10 years.

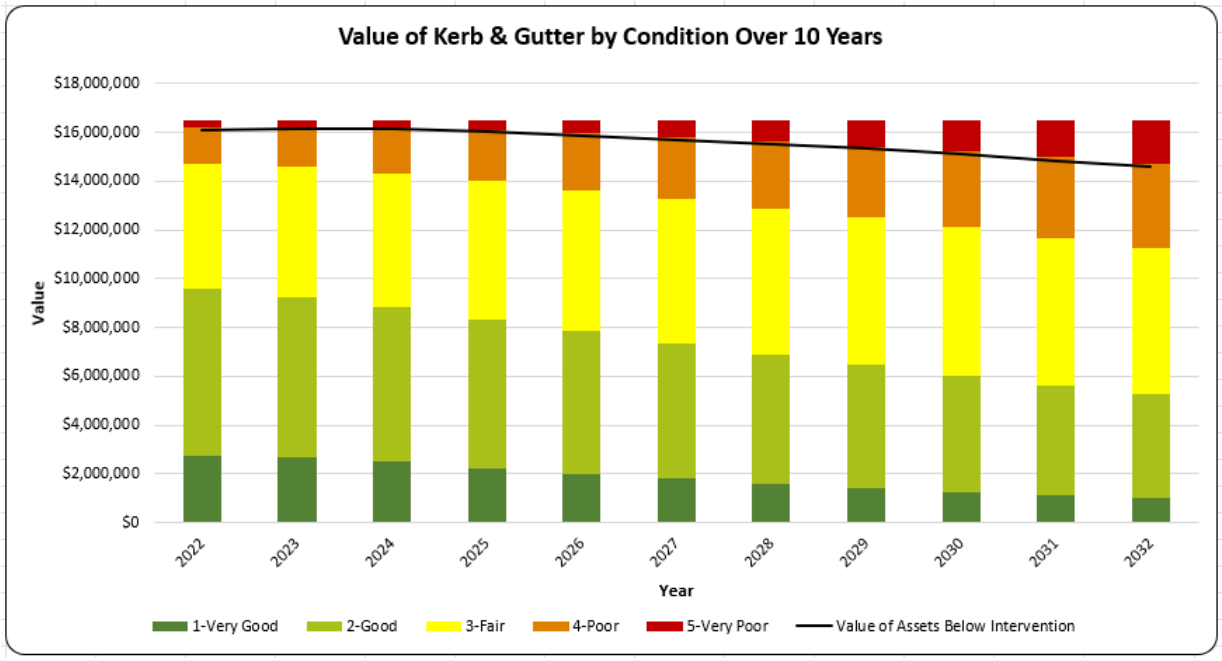

Figure 23: Value of Kerb and Gutter by Condition Over 10 Years

Footpaths & Cycleways Renewal Forecast

Our footpaths and cycleways only require minimal intervention over the next 10 years. The total renewal forecast over the next 10 years is about $0.12M. it appears that current renewal funding levels are overservicing footpath network and need to be reviewed once the next condition assessment of footpaths is completed.

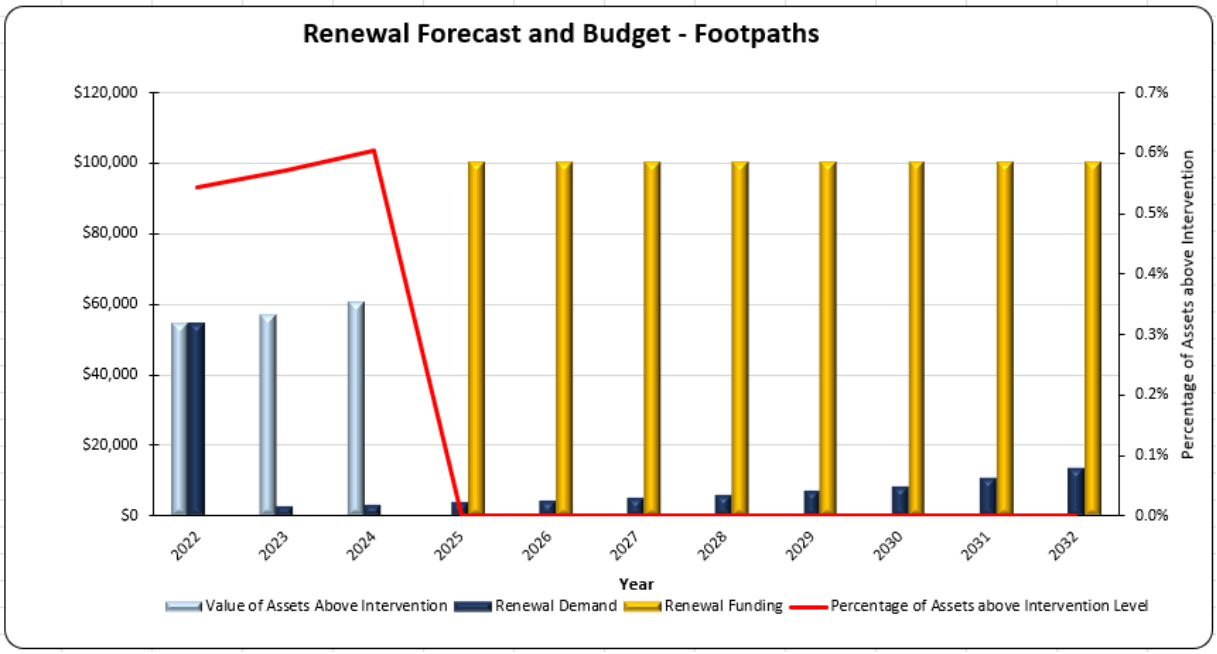

Figure 24: Renewal Forecast and Budget - Footpaths & Cycleways

Footpaths & cycleways require a little or no renewal funding for the next 10 years based on the 10-year condition profile. Therefore, current funding levels need to be reviewed.

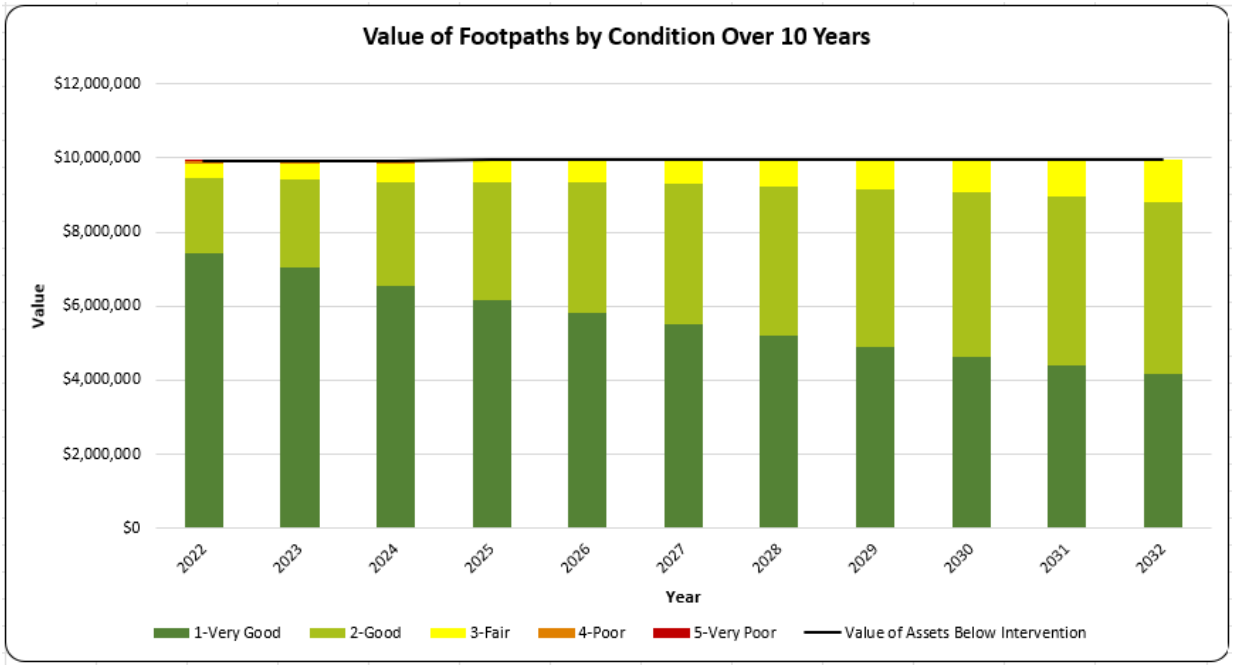

Figure 25: Value of Footpaths & Cycleways by Condition Over 10 Years

Car Parks Renewal Forecast

Our car parks only require minimal intervention over the next 10 years. The total renewal forecast over the next 10 years is about $0.5M. However, no funding has been allocated for car parks renewals over the next 10 years.

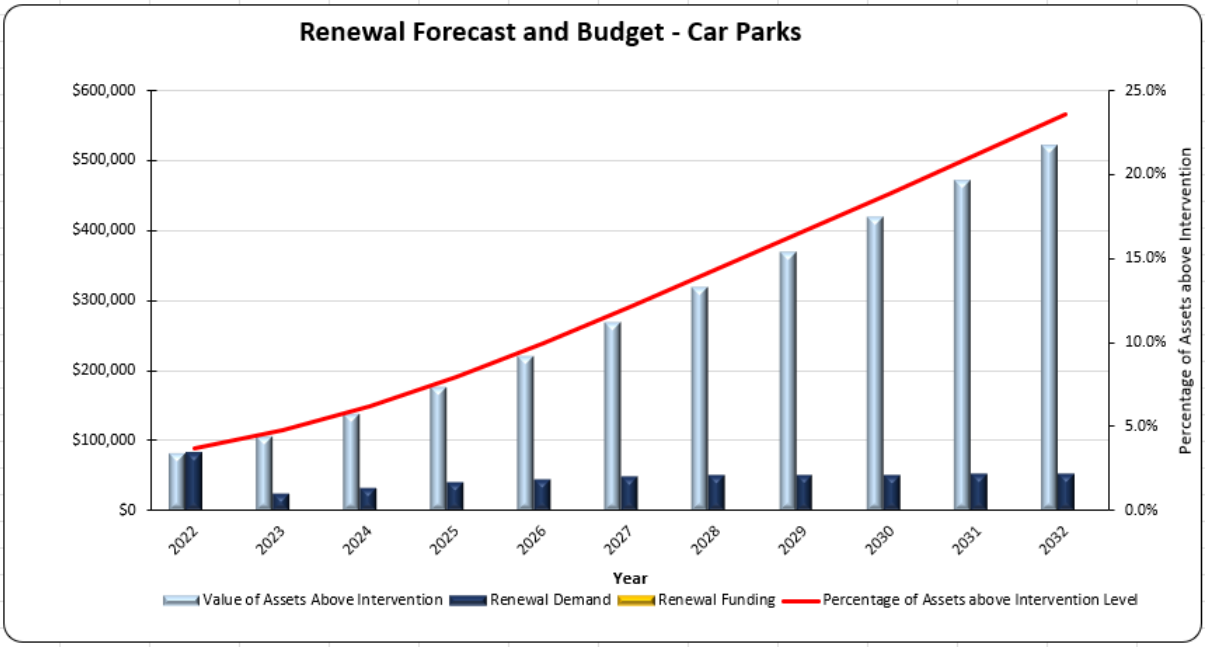

Figure 26: Renewal Forecast and Budget - Car Parks

10-year forecast condition profile for carparks shows relatively significant decline in condition for carparks for the next 10 years.

Therefore, it is important that car parks renewal program is prioritised based on current condition to maintain very good to fair condition over the next 10 years.

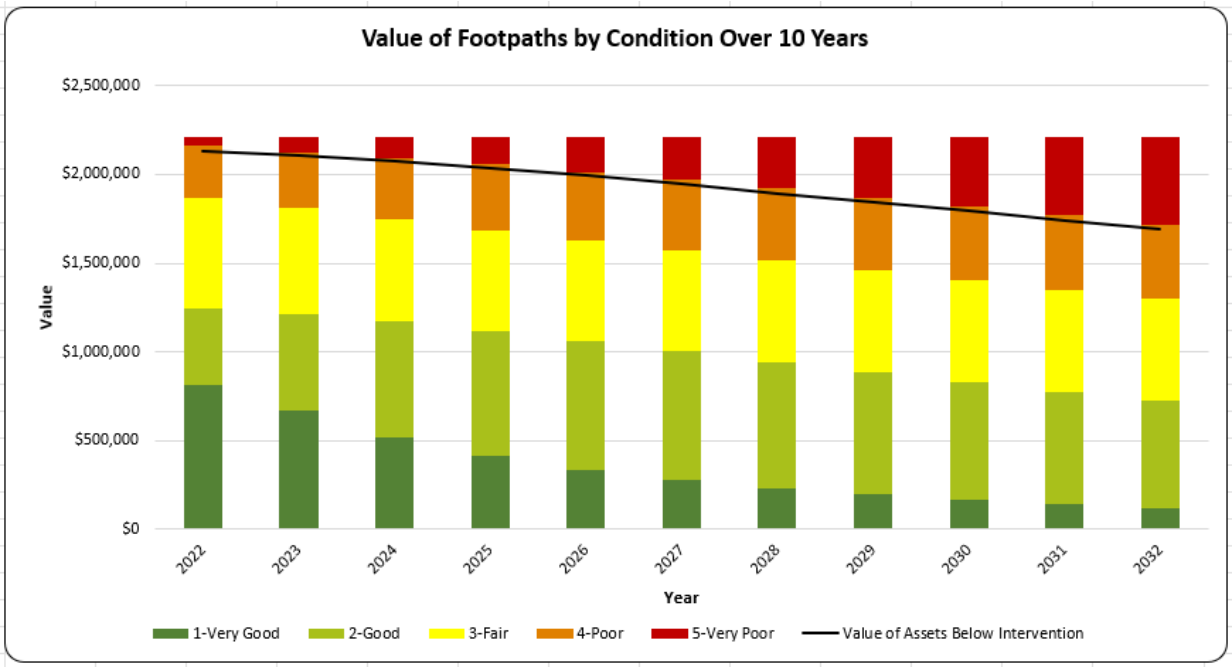

Figure 27: Value of Car Parks by Condition Over 10 Years

Bridge Renewal Forecast

Our bridges and major culverts only require minimal intervention over the next 10 years. The total renewal forecast over the next 10 years is about $0.2M. it should be noted that bridges have not been included in 2020 valuations. However, supporting information provided in 2020 valuation have been used for renewal modelling. Over the next 10-year period, funding has not been allocated for bridge renewals.

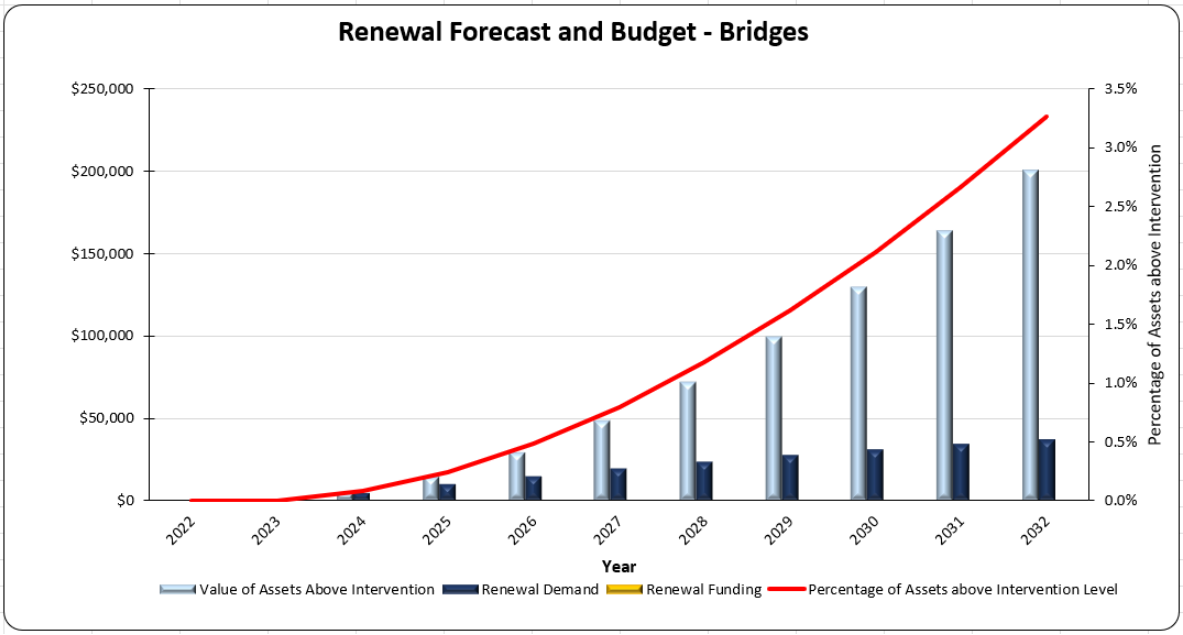

Figure 28: Renewal Forecast and Budget - Bridges

Based on the 10-year condition profile forecast, bridges only require a minimal renewal intervention.

However, it is important that the current level of service is continued to maintain our bridges in good condition over the next 10 years.

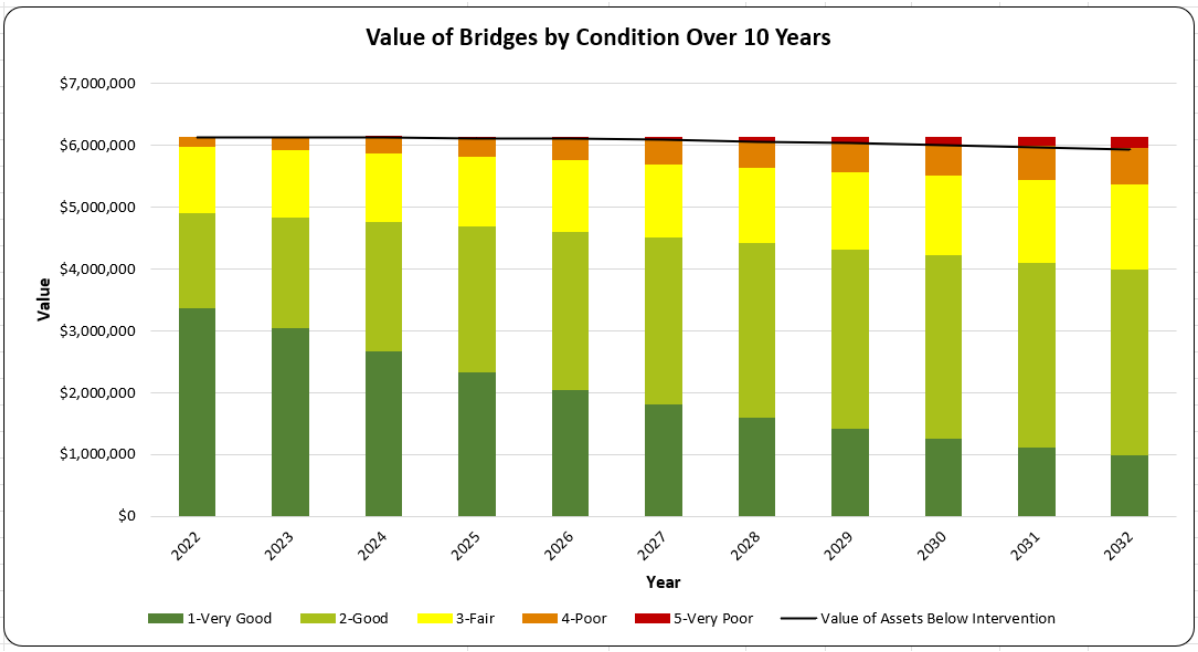

Figure 29: Value of Bridges by Condition Over 10 Years

Bus Stop Renewal Forecast

Our bus stops also do not require significant renewal intervention over the next 10 years. The total renewal forecast over the next 10 years is about $0.5M. Over the next 10-year period, funding has not been allocated for bus stop renewals.

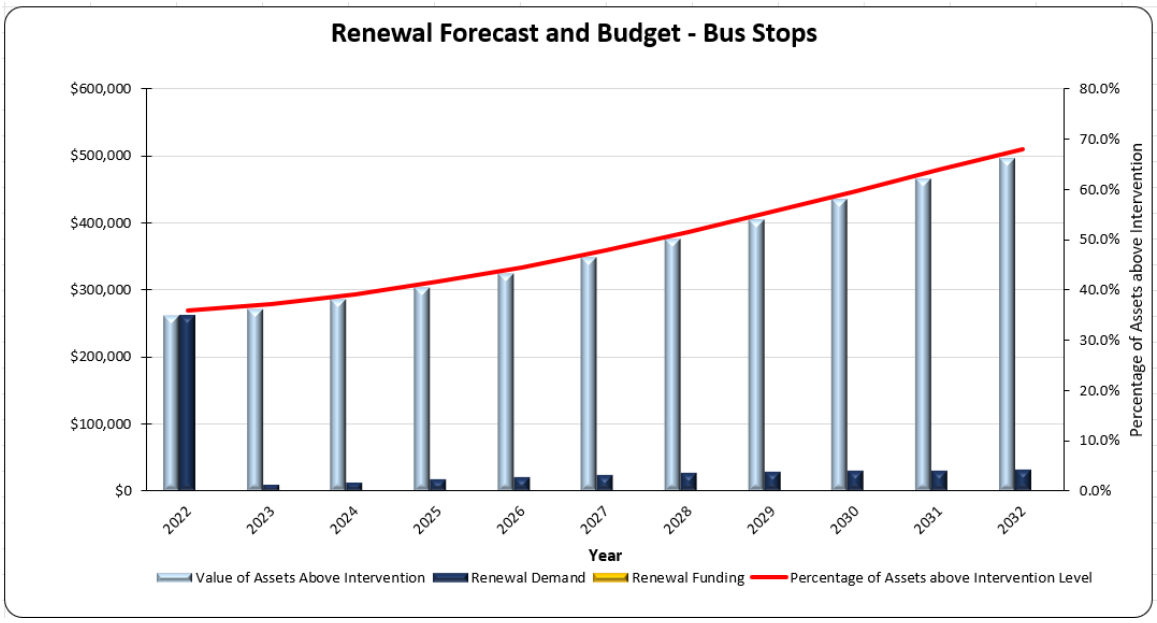

Figure 30: Renewal Forecast and Budget - Bus Stops

Condition of our bus stops will start to rapidly decline and the value of assets in very poor condition will increase from 225k to 480k over the next 10 years if adequate funding is not allocated for renewals.

Therefore, it is important that bus stop renewal program is prioritised based on the condition and fund renewals to maintain the current level of service.

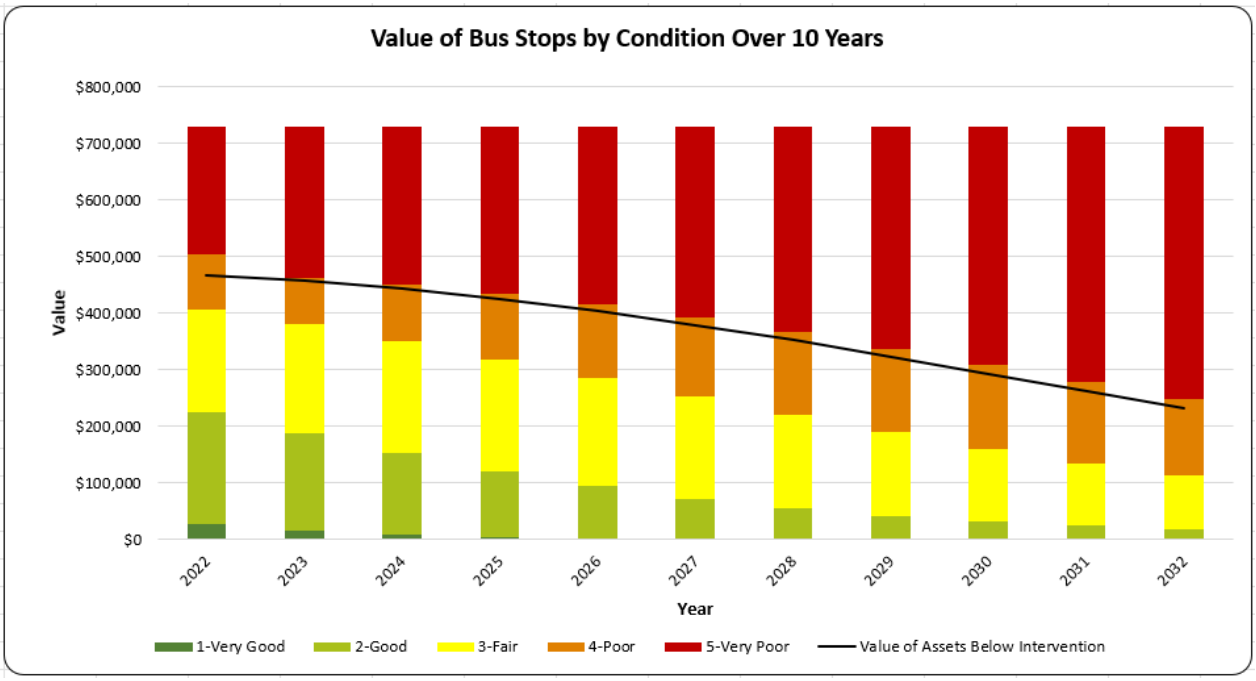

Figure 31: Value of Bus Stops by Condition Over 10 Years

Traffic Management Asset Renewal Forecast

Our traffic management assets require about $1M for renewal over the next 10 years. The current funding levels do not adequately fund out traffic management assets.
Therefore, it is important to revise the current budget and allocate sufficient funding for renewal of these assets.

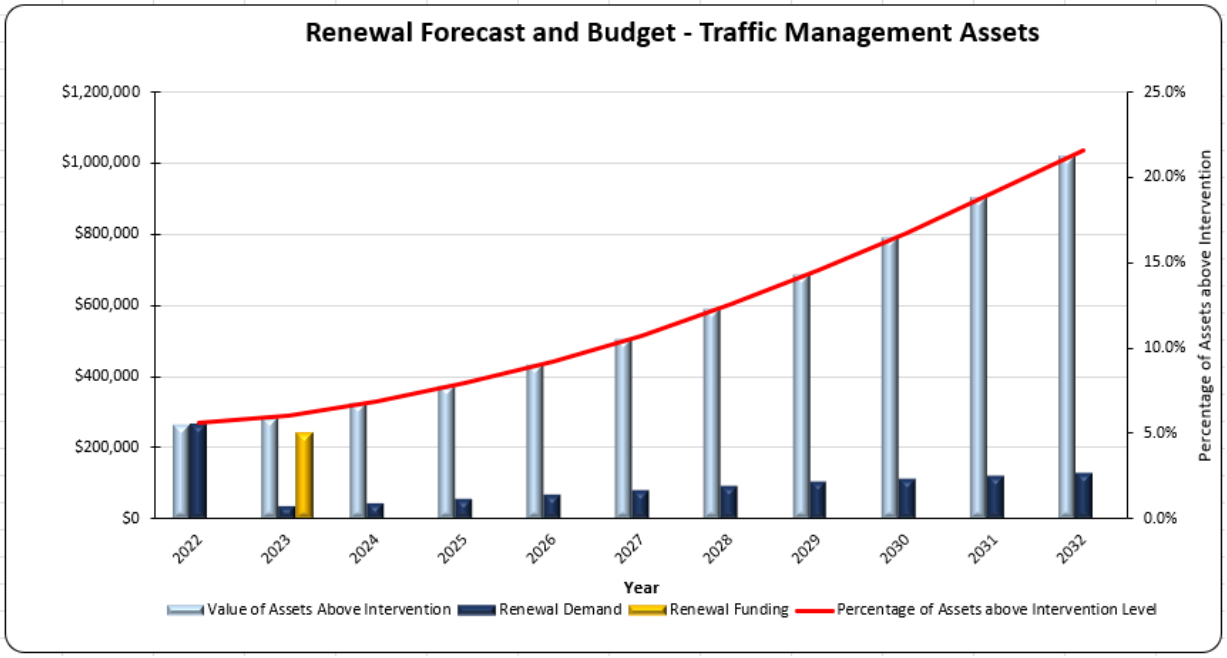

Figure 32: Renewal Forecast and Budget - Traffic Management Assets

Condition of our traffic management assets will start to decline if adequate funding is not allocated for renewals. Therefore, it is important that this renewal program is prioritised based on the condition and fund renewals adequately to maintain the current level of service.

Value of assets in very poor condition will increase from $190k to $958k over the next 10 years.

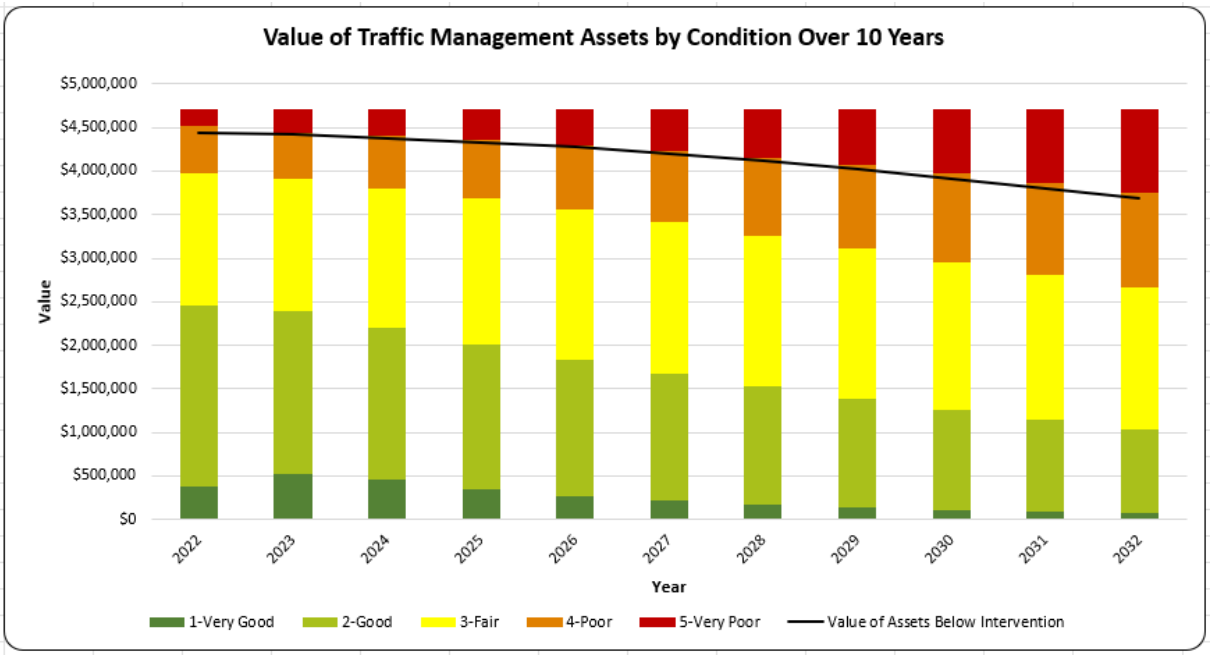

Figure 33: Value of Traffic Management Assets by Condition Over 10 Years

6.5 Overall Renewal Forecast and Budget – Transport Assets

The following graph shows a comparison between the:

- Level of funding required to renew transport assets to achieve our service level objectives; and
- The amount of funding which we are planning to commit to renewing these assets from our current Long Term Financial Plan.

The renewal forecasts show Council's renewal program is adequately funded or in some instances over fund (eg: Footpaths) renewals over the next 10 years. However, it should be highlighted that the condition information used for renewal modelling forecast was from 2020 valuation data.

It is, therefore, important to conduct a condition assessment of all transport assets to develop and prioritise 4-to-5-year renewal program. Condition based renewal program will allow for the distribution of renewal funding across all transport assets based on the actual renewal requirements.

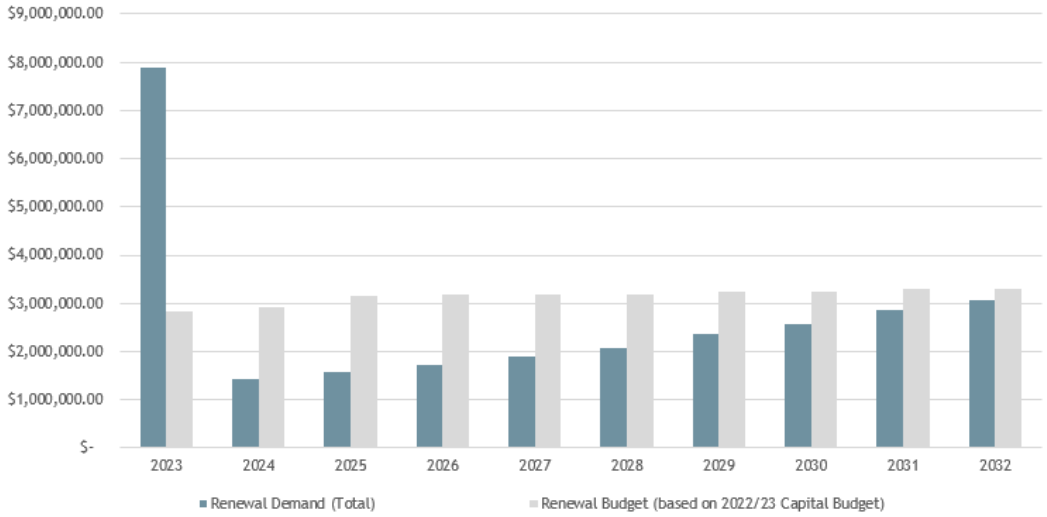

Figure 34: Renewal Forecast Vs Renewal Budget

Based on this renewal demand forecast the average annual renewal demand over the next 10 years is $ 2.75M. The average annual renewal demand serves as an indicative measure, rather than an exact year-to-year requirement. Some years will require higher than average annual renewal demand, others will require lower than average annual renewal demand.

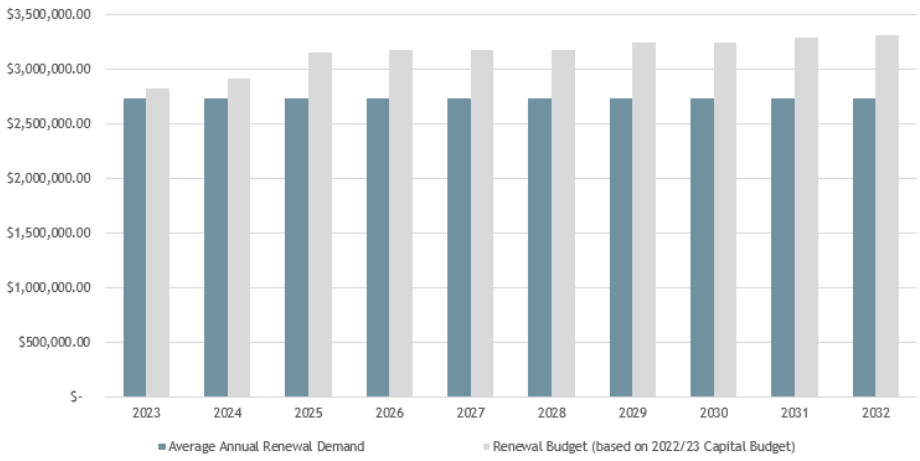

Figure 35: Average Annual Renewal Demand vs Budget

6.6 Acquisition/Upgrade/Expansion Plan

Decisions pertaining to the acquisition, upgrade, and expansion of an asset is carried out considering of full lifecycle costing of the planned asset.

Leeton Shire Council follows the following criteria when budget proposal is prepared.

- Capital cost of the asset,
- Total borrowing costs associated with acquisition of the asset (if any),
- Total capital outlay required for the asset (sum of the above),
- Expected annualised maintenance & operational costs associated with the asset,
- Expected reduction in any existing annualised maintenance & operational costs via efficiency gains or asset rationalisations,
- Expected annualised renewal costs associated with the asset,
- Total annualised lifecycle cost (sum of the above annualised costs),
- Total lifecycle cost (total annualised cost times useful life),
- Forecasted net position after acquisition, and consequences of not acquiring the asset.

The current forecast is based on transport new and upgrade capital projects included in the LTFP. Total forecast expenditure on transport new and upgrade projects totals $9.8M over the next 10 years which is an average $1M per annum. The following list shows the assets that that will be upgraded and new assets that will be added to our transport asset base.

Upgrades	New
Wamoon Urban Road- Bourke Road	New Bus Shelters
Wamoon Urban Road- Oxley Road	Traffic Facilities
Wamoon Urban Road- Brisbane Road	Footpaths - Palm Ave West
Fixing Local Roads - Canal Street	Footpaths -Maiden Av
Wattle Road Shoulder Widening Works	Corbie Hill Footpath Installation
Euroley Road works for WR Connect access	Golf Club Shared Footpath
CBD Enhancement Project Stage 2	Footpaths - Karri Road and Cassia Road
CBD Enhancement Stage 3 - Chelmsford Place	Footpaths - Petersham Road and Fivebough Road
CBD Enhancement Project Stage 1	

Projected upgrade/new asset expenditures are shown in the graph below.

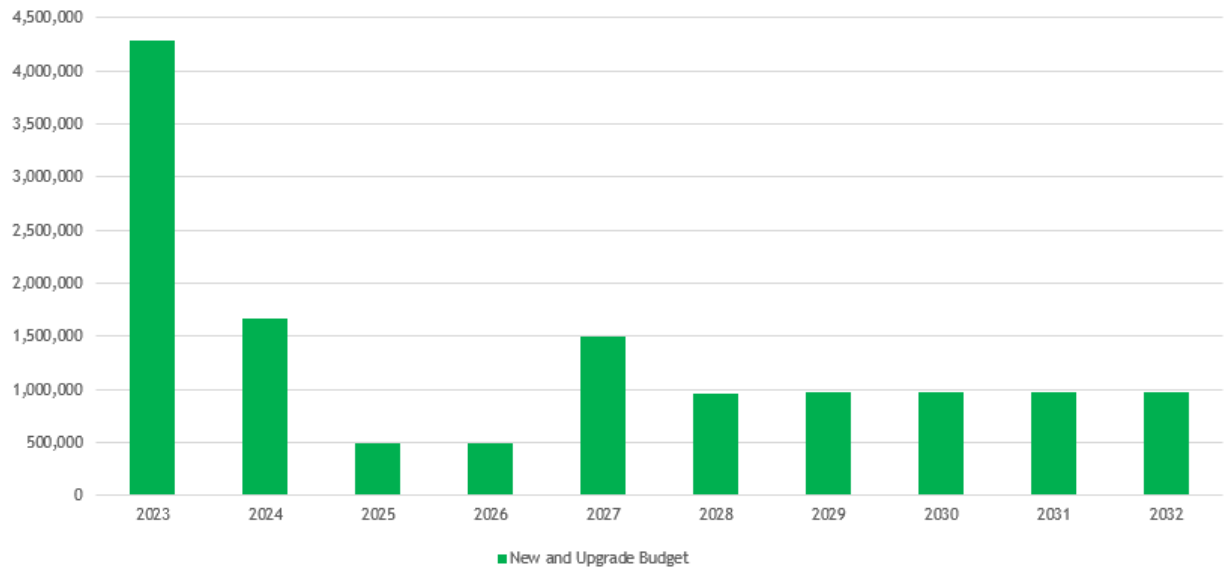

Figure 36: Budget - New & Upgrade Budget

Improvement Opportunities

- Undertake condition assessment program of all transport assets to inform renewal program development.
- Refine the Project Management Framework and include a framework for Acquisition (New), Upgrade, and Expansion of assets.

6.7 Deliverability of the Capital Program

Council's capital program is delivered by Council staff and Council appointed contractors. A significant amount of capital works is delivered by the contractors. These contracts need to be properly managed to ensure effective and efficient delivery of projects.

Council should continue to review and identify gaps within the staffing structure to ensure these crucial functions are being managed correctly.

Improvement Opportunities

Review current resource allocations for capital work project management, procurement and contract management.

6.8 Disposal Plan

The strategy for the development of an asset disposal plan is to first identify those transport assets, or parts thereof, that are either:

- Surplus to requirements;
- Technologically obsolete;
- No-longer meeting community needs; or
- Have reached the end of their useful life and there is no demand for renewal or replacement.

Where appropriate, such assets should also be considered for consolidation and rationalisation based on service needs and community benefit prior to being placed in the Disposal Plan. When disposal does occur, recognition needs to be made in the recurrent/operating budget of the reduction of associated operating or maintenance costs of the decommissioned assets, as well as any disposal costs. Costs associated with the sale, demolition or relocation of decommissioned assets and any associated works are to be included as part of the Disposal Plan.

Associated works could include any necessary site remediation or rehabilitation.

Improvement Opportunity

Develop an Asset Disposal Process and identify a mechanism to streamline the asset disposal process.

6.9 Summary of Asset Expenditure Requirements

Council is projecting a negligible surplus in capital and operational funding when compared to the level of funding that we predict will be required over the forthcoming 10-year period.

Key Financial Performance Indicators for Current Projected Funding	
Total Lifecycle Costs over next 10 years (projected demand)	$68,435,799
Total Lifecycle Budget over next 10 years (from Financial Plan)	$69,112,204
Total Lifecycle Funding Surplus	$676,405
Average Lifecycle Funding Surplus per annum	$67,640
Percentage Lifecycle Funding Being Met	101%

However, we need to ensure that our forecasts are correct and need to put effort into reviewing our asset condition and useful lives where appropriate and the funding we are proposing to set aside in our long-term plans.

It should be noted that 2020 valuation and condition data has been used for renewal modelling. Therefore, it is important that Council undertake condition assessment of all transport assets to validate these forecasts. We also need to focus on determining appropriate and affordable levels of service in consultation with the community. Council is committed to achieving financial sustainability via sustainable asset management across the transport network.

7. RISK MANAGEMENT

The purpose of this section is to describe the basis of our strategic risk and investment policies and the way it will manage risk associated with our transport assets.

7.1 Risk Management Process

Our risk management framework and processes are in accordance with AS/NZS ISO 31000:2009 – Risk Management – Principles and Guidelines.
The Framework is designed to provide the architecture for a common platform for all risk management activities undertaken by Council and is used to identify specific risks associated with our delivery of services and management of assets.

The objective of the risk management process with regards to our assets is to ensure that:

- All significant operational and organisational risks are understood and identified,
- the highest risks that need to be addressed in the short to medium term are identified,
- strategies and treatments to address risks are identified and applied.

An assessment of risks associated with service delivery from infrastructure assets has identified the most critical risks we face in relation to our transport asset portfolio.

The risk assessment process identifies and assesses risks, develops a risk rating, and develops a risk treatment plan for non-acceptable risks. This process help determine the risks associated with transport assets by identifying the use, priority, and timeframes to be considered.

The principal objectives of this risk management process in relation to transport assets include:

- To provide safe traffic facilities for the public,
- To enable a system of proactive maintenance (where possible),
- To identify areas that require maintenance through a systematic and prioritised inspection system,
- To facilitate scheduling and resource allocation where required, and
- To establish a priority system for carrying out maintenance works.

Risk Assessment

There are four (4) types of inspections that Council carries out with respect to risk identification and assessment.

They are,

- Routine Inspections,
- supplementary Inspection,
- external Inspection Request,
- internal Inspection Request.

Routine Inspections are the primary type of inspection carried out by Council and represent a proactive method of risk identification.

The supplementary inspections are performed in addition to routine inspections. These inspections may be performed for the following reasons:

- Following a storm event, flood, bushfire
- Review / audit of previously completed Routine Inspections
- Inspection seeking a specific defect type
- An inspection completed while driving to or from a routine inspection on a different asset
- Unauthorised third-party repairs
- Criticality of asset

External inspection requests are the requests from the public on condition and risks associated with our transport assets. These inspection requests are registered by Council's Customer Request Management (CRM) system and assigned to the appropriate council officer for action.

Internal inspection requests are generated by councillors, council staff & other council representatives. These requests are handled in the same manner as an External Inspection Requests.

Risk Control

During Inspections Control of "risk exposure" requires control measures to be implemented. Some of the control measures that Council will be able to use to lessen our exposure to risk are,

- Use of warning signs, warning paint, and lights to alert pedestrians of potential hazard.
- Erection of temporary barriers or barricades and lights around the area until the risk is eliminated.
- Planning and allocating resources for the long-term replacement.
- Eliminate the risk by asset repair.

All requests are assigned a typical response time based on the criticality of asset.

Risk Event and Cause	Risk Rating	Possible Risk Mitigation Practice	Residual Risk*
Roads-Unsealed Road Grading Not meeting maintenance targets. Current grading program delivers about 70% of the program annually due to weather and availability of graders.	High	• Identify resource requirements and develop a strategy to complete the full road grading program every year. • Implement the resourcing strategy.	Low
Roads – Increase in Heavy vehicles Increase in farmlands and associated activities within the shire has resulted in increase in heavy vehicles using the road network that is not built for heavy vehicle use	High	• Design, upgrade/build roads suitable for heavy vehicles	Medium
Road Treatment Methods Current practises do not take into consideration of the whole of life costing, useful lives and the local soil conditions leading to use of uneconomical treatment methods. (clay in Whitton region and sand south towards the river. Towards Griffith is rocky and this impacts the road foundation and base sub bases.	High	• Review current design standards with consideration given to, whole of life costings, useful life of assets, and the local condition. • Use revised standards to determine funding requirements	Medium
Roads-Limited Budget **Budget -Sealing gravel roads** Due to budget constraints gravel road sealing budget is also used for resheeting resulting in lower level of service. **Budget - Road rehabilitation program** Due to budget constraints heavy patching and pothole program is often funded through road rehabilitation program resulting in lower level of service	High	Assess funding requirements for sealing gravel roads, road rehabilitation, re-sheeting, heavy patching and pothole programs. Develop and implement a funding strategy based on criticality of assets and the defects.	Low
Inability/inadequate resourcing for Maintenance and inspection programs Inability to identify and intervene proactively	High	Identify resource requirements to fully implement maintenance and inspection programs.	Low
Asset Ownership – Culverts Uncertainty of ownership of large number of culverts due to privatisation of Murrumbidgee Irrigation	High	Form a working group to liaise with Murrumbidgee Irrigation to resolve the ownership, handover, and the conditions of handover of culverts	Medium
Flooding Due to Failure of Channels alongside Roads Channels owned by Murrumbidgee Irrigation need to be well maintained to prevent leakage and flooding which result in damage to the road network.	High	Form a working group to liaise with Murrumbidgee Irrigation to discuss and find a long-term resolution	Medium

Table 20: Risk Register

7.2 Critical Assets

Assets which have a high consequence of failure are identified as critical assets. Generally, criticality frameworks assess assets against the following areas outlined in Risk Management Framework:

- Service interruption
- Public safety
- Environmental impact
- Environmental Incident impact
- Financial Impact
- Reputation/ Complaints and Legal Action Impact
- Political Impact
- Obligation/ Legislative/ Standard Compliance Impact

7.3 Climate Change Risk

The impacts of climate change have the potential to have a significant impact on the assets that we manage and the services that are provided. 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 impacts on assets can vary significantly depending on the location and the type of asset and services provided, as will how we respond and manage these impacts.

Adaption and mitigation strategies for our transport assets are developing as we understand the climate change impacts in greater detail. As a minimum we consider how to manage our existing assets given potential climate change impacts for our region.

Climate change indicators, potential impacts as they relate to transport assets and suitable management actions have been identified in the table below:

Climate Change Indicator	Potential Impact on Transport Assets and Services	Management Actions
Heatwaves	- Thermal expansion causing melting and cracking of materials used in roads	– Use climate risk modelling to identify when and where road assets are most likely to be exposed to heat stress. – Initiate increased inspection frequency of road pavements in high risk /use areas. Repair cracking and remediate assets to allow for more thermal expansion at identified stress points. – Increase use of trees for shading along footpaths/cycle paths/shared pathways.
Extreme rainfall (riverine flooding and pluvial flooding)	- Accelerated degradation of road infrastructure, reduced life expectancy, increased lifecycle costs and road safety being compromised. - Scouring of road surface and road shoulder/verge, more potholes.	– Identify when and where road assets are most likely to be exposed to increased frequency and intensity of riverine and pluvial flooding through asset risk modelling. Undertake flood mapping of road levels to identify hot spots. – Prioritise those assets for review, including projected hydrological changes specifically to that site and identify condition and type of materials used in road construction. – Reactive and proactive maintenance – to identify and initiate repairs where needed to maintain/improve asset integrity now. – Plan for alternative routes and easy deployment of signage advising on safe routes or other safety measures (e.g., lower speed in conditions of flooding, flood water height, etc). – Assess the condition of key road and footpath infrastructure, including unsealed roads, following a flooding or storm event and undertake any remedial works deemed necessary.

	- Accelerated material degradation. - Failure of drainage systems.	– Factor future flooding impacts into design and maintenance program. – Construct and maintain WSUD assets to manage and slow stormwater runoff where possible.
Soil Subsidence	- Soil expansion and contraction causing road surface and pavement damage.	– Use climate risk modelling to identify when and where road assets are most likely to be exposed to soil subsidence. – Understand the prevalence of clay soils and changes to the wetting and drying climate cycles. – Inspection of roads for cracks and cracking and if possible, treat the site through reinforcing structures, improving site drainage and/or filling subsided and cracked soils.
Drought	- Drier conditions resulting in road surface cracking and deterioration.	– Plan for additional maintenance requirements and costs as a result of the impacts of drier condition on our road network (increased degradation). – Increase use of native hardy trees for shading along footpaths/cycle paths/shared pathways.
Bushfires	- Destruction of road signs and line makings. - Damage and loss of trees within the road reserve, risk of trees falling onto road.	– Use climate risk modelling to identify when and where road assets are most likely to be exposed to bushfire. – Use improved quality of bitumen alternative to ensure that roads have a longer useful life and require less maintenance over their life. – Plan for rapid assessment of fire impacted assets to ensure that drainage and road structures have maintained integrity post event. – Train staff for assessment tasks particularly for priority asset classes.
Extreme wind	- Trees and debris falling on to road surfaces, blocking roads and damaging vehicles.	– Identify when and where road assets are most likely to be exposed to increased frequency and intensity of extreme wind through asset risk modelling. – Where possible initiate ongoing management of vegetation to reduce risk of trees and debris impacting on the road surface. – Initiate regular inspection of drains to ensure structures remain clear of debris and can continue.
Higher Carbon Emissions	- Legislative requirements to reduce emissions.	– Use low embodied energy materials for road repairs. – Adopt circular economy principles where appropriate, in the management and rehabilitation of road, bike-path and footpath related infrastructure. – Convert to LED for all public lighting and purchase green power and other renewable energy sources for lighting.

Table 21: Managing the Impact of Climate Change on Transport Assets

7.4 Building Resilience into New and Upgraded Assets

Additionally, the way in which we construct new assets should recognise that there is opportunity to design and build in resilience to climate change impacts.

Building resilience in our transport assets will have the following 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.
- Potentially increasing asset life and protecting financial investment returns.

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

The table below summarises transport asset climate change resilience opportunities.

New Asset Description	Climate Change Risk Event	Transport Asset Resilience Opportunities
Road Infrastructure	Accelerated degradation and structural damage due to climate change	– Review engineering standards to ensure more robust climate resilient structures. – Use improved bitumen alternative. – Factor in coefficient of thermal expansion for materials used in roads and footpaths infrastructure (increased movement allowances). – Use trenchless technologies when installing new services within the road reserve to ensure that the integrity of the road and footpath pavements are not compromised.
	High rainfall and storm events	– Use materials that will weather and withstand future conditions, that is materials that are stronger, can withstand longer periods of wetting, are more resistant to thermal expansion and contraction, and are more durable in acid and saline conditions. – Plan for vegetated swales and bioretention swales to convey stormwater from road reserves and provide removal of course and medium sediment.
	Increased frequency and intensity of flooding/storm	– Design roads above flood levels or outside of flood zones, low-lying areas, and areas vulnerable to rising water table. i.e., design roads for future predicted flooding (not historical) using a high emission scenario flood level. – Consider balance between faster deterioration of unsealed road against lower cost of repair than a sealed road after flooding events. – Use higher specification materials during the construction of roads to increase tolerance to waterlogging. – Elevate essential road surfaces above flood levels as a last resort (high fail cost).
	Drought	– Favour higher quality construction materials and methods to minimise cracking. – Ensure reactive soils (particularly acid sulphate soils) are identified during design and design is altered accordingly.
	Bushfires	– Design roads with bushfire risk in mind (for evacuation / emergency access), coordinating with emergency management planning. – Design road structures and assets that are cheap and replaceable in localities that are likely to experience multiple and frequent climate risks. – Design at risk roads with thicker bitumen using best practice road

New Asset Description	Climate Change Risk Event	Transport Asset Resilience Opportunities
		standards. Review engineering standards to ensure more robust climate resilient structures.
	Heatwaves	– Investigate using lighter colour road materials to absorb less heat (than dark bitumen). – Use low coefficient of expansion aggregates. – Consider using improved bitumen standards, alternatives or increase thickness to prevent melting. Selection of binders suited to hotter conditions. – Use rut resistant surfacing (road surfacing material selection to minimise surface melting and / or structural damage). – Increase use of trees for shading along footpaths/cycle paths/shared pathways.
	Reduced carbon emissions	– Use low embodied energy materials for new roads. – Adopt circular economy principles where appropriate, in the planning of road infrastructure
Bike paths and shared paths	Reduced carbon emissions	– Establish more on-road and off-road bicycle paths and shared paths for non-motorised local transportation to increase use of sustainable transport modes and minimise impact on environment where possible – Adopt circular economy principles where appropriate, in the planning of bike path, shared paths and footpath related infrastructure.
Public lighting	Reduced carbon emissions	– Use either LED or solar LED public lighting and purchase green power and other renewable energy sources for lighting.

Table 22: Climate Change Resilience Opportunities – Transport Assets

8. FINANCIAL SUMMARY

Our Long-Term Financial Plan provides a view of the resources that we expect to be available to us and how these will be allocated and prioritised over the next ten (10) years. Our Financial Plan identifies our current and projected financial capacity to continue delivering high quality services, facilities, and infrastructure while identifying critical new capital investment to support our community's prosperity and to respond to our future challenges. This Transport Asset Management Plan will inform the budgets and projections outlined in our Financial Plan for transport asset management. Ongoing affordability and financial sustainability are our key objectives and the Long-Term Financial Plan in combination with Asset Management Plans support in achieving these objectives.

This section contains the financial information resulting from all the information presented in the previous sections of this Asset Management Plan. The financial forecasts made will be refined as we improve our understanding of future asset performance and required levels of service.

8.1 Financial Statements and Projections

Asset Valuations

The value of transport assets covered by this Transport Asset Management Plan as recorded in our financial asset register as of 30 June 2020 are shown below.

2020 Replacement Cost (Fair Value)	$151,074,585
Accumulated Depreciation	$52,757,609
Depreciated Replacement Cost (Fair Value)	$98,316,976
Annual Average Asset Consumption	$2,978,384

Asset Sustainability

We use the following indicators to measure asset sustainability:

- Asset renewal funding ratio, and
- Projected funding requirements compared with budget allocations (Long Term Financial Plan)

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio	102%

The Asset Renewal Funding Ratio is the most important indicator and shows that over the next ten (10) years we are expected to have 102% of the funds required for the optimal renewal and replacement of assets. The Asset Renewal Funding Ratio is calculated as the ratio between the calculated asset renewal forecast and allocated renewal funding.

It should be noted that 2020 valuation and condition data has been used for renewal modelling. Therefore, it is important that Council undertake condition assessment of all transport assets to help refine these forecasts.

Projected Expenditure for Long Term Financial Plan

Our Asset Management Plans and Long-Term Financial Plan are the foundation of our long-term resource planning. These plans work together to ensure that expectations are achievable and sustainable. We are working to improve the integration between our Asset Management Plans and Long-Term Financial Plan. The Asset Management Plans inform the Long-Term Financial Plan by identifying the amounts that are required to renew, maintain, and improve our assets over their lifecycle. The Long-Term Financial Plan determines how much funding is available to support our assets. It incorporates knowledge of the condition of our assets, and risk assessment issues, as well as the impact of reviewing and setting intervention and service levels for our infrastructure.

The financial projections from this Asset Management Plan are shown in Figure 37 and Table 24. This covers the full lifecycle costs over the next ten (10) years to sustain current levels of service. 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 the funding that is forecast to be available.

These amounts need to be verified against affordable levels of expenditure as determined through our Long-Term Financial Plan and cyclic condition assessment of transport assets. The gap between these informs the discussion on achieving the balance between services, costs, and risk to achieve best value outcomes.

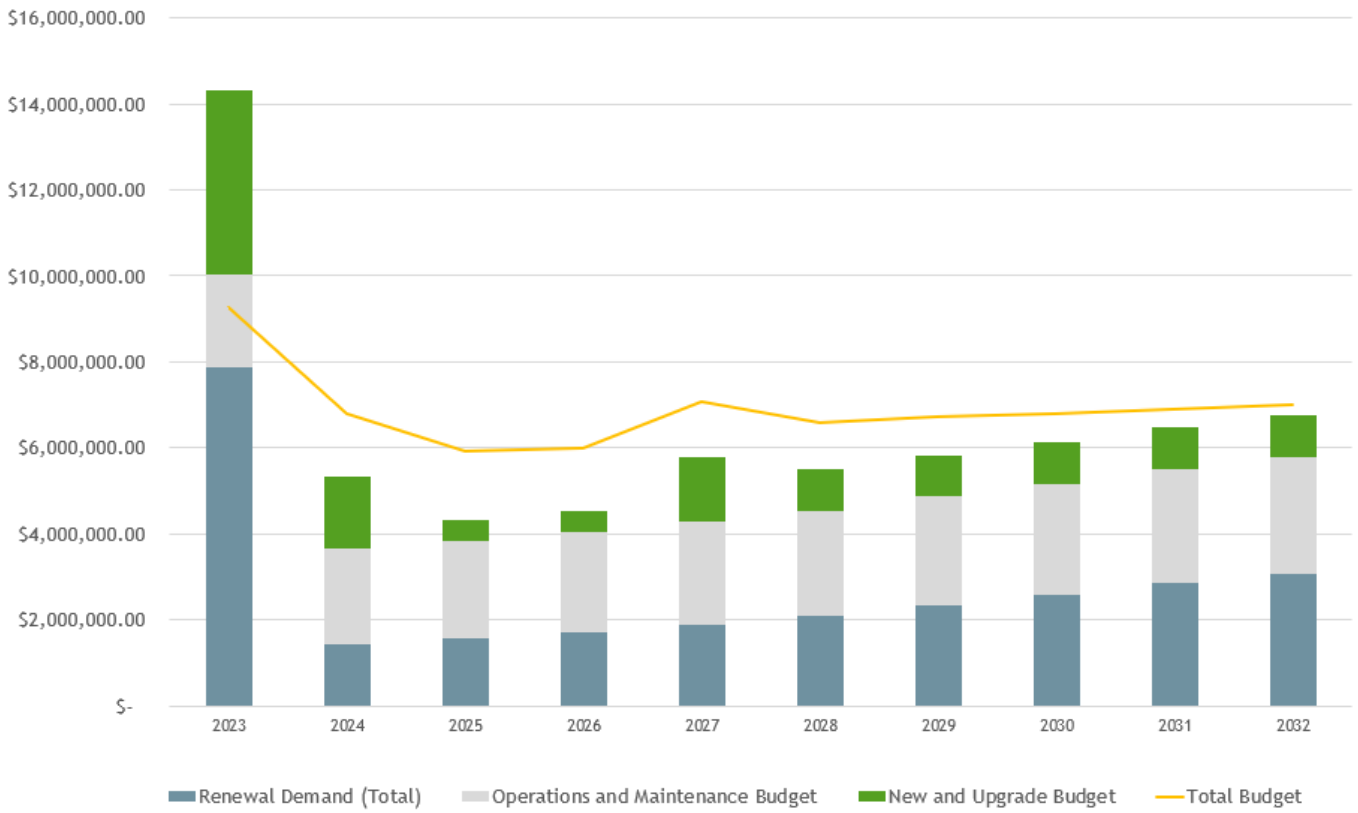

Figure 37: Total Lifecycle Cost Demand - Transport Assets

Year	Renewal Forecast	Renewal Budget	New and Upgrade	Operation & Maintenance	Total Lifecycle Cost
2022	$7,881,085	$2,832,395	$4,279,108	$2,166,758	$9,278,261
2023	$1,430,016	$2,917,393	$1,672,187	$2,220,927	$6,810,507
2024	$1,563,546	$3,163,038	$493,185	$2,276,450	$5,932,673
2025	$1,717,045	$3,180,560	$495,350	$2,333,361	$6,009,271
2026	$1,891,601	$3,180,560	$1,495,350	$2,391,695	$7,067,605
2027	$2,086,865	$3,180,560	$965,350	$2,451,488	$6,597,397
2028	$2,351,774	$3,248,606	$967,581	$2,512,775	$6,728,962
2029	$2,577,681	$3,248,606	$967,581	$2,575,594	$6,791,781
2030	$2,858,630	$3,298,606	$967,581	$2,639,984	$6,906,171
2031	$3,080,699	$3,314,097	$969,495	$2,705,984	$6,989,575
Total	**$27,438,940**	**$31,564,421**	**$13,272,767**	**$24,275,017**	**$69,112,204**

Table 23: 10 Year Renewal Forecast and Current Capital Budget (22/23)- All Transport Assets

However, it should be noted that a desktop indexation of fair values undertaken in 2021 and 2022 by valuers show a cumulative fair value movement of 12.57% in transport assets. Therefore, the true renewal forecast for this 10-year period is ***$30,888,015***.

It has been assumed that at least 22/23 Operation and Maintenance budget is available for transport asset operation and maintenance over the next 10 years.

8.2 Funding Sources

Funding for assets is provided from our annual budget and Financial Plan. Our financial strategy determines how funding will be provided, whereas the Asset Management Plan communicates how and when this will be spent, particularly in the area of renewal investments. Major funding sources to maintain, renew and improve our transport assets are shown in the table below.

Activity	Funding Source
Maintenance and Operations	– Council's own source funds – General Purpose Grant - Roads – MR80 - Ordered Work and Maintenance – Grant MR539 – Grant - RMS Road Safety
Renewal	– Council's own source funds – Government Grant Schemes – Roads to Recovery (R2R)
Capital Improvement (i.e., new, upgrade, and expansion)	– Council's own source funds – Government grants – Roads to Recovery (R2R)

Table 24: Funding Sources

8.3 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.

Key assumptions made in this Asset Management Plan are:

- Current levels of service reflect community needs.
- Future funding levels are derived from the Long-Term Financial Plan.
- No known legislative changes or other influences that will impact on or demand a change in level of service and associated funding throughout the period of the plan.
- Adequate funds to maintain transport are provided to maintain the current level of service.
- 2020 valuation data including the condition of assets are accurate and valid for current year.

9. IMPROVEMENT PLAN

Number of improvements for overall asset management at Leeton Shire Council have been identified in this Transport Asset Management Plan. It is important that these improvement actions are prioritised based on the business needs/ongoing projects and sufficiently resourced.

9.1 Improvement Plan

The asset management improvement plan generated from this Asset Management Plan is shown in Table below.

Item No.	Task	Responsibility	Priority
1	– Review current resources allocated for the annual road grading program. – Identify resource requirements and develop a strategy to complete the full road grading program every year. – Implement the resourcing strategy.	Manager Roads and Drainage	Medium
2	Review road design standards with consideration given to, – increase in number of heavy vehicles recently. – most economical useful life that can be achieved with current and future financial constraints.	Manager Roads and Drainage	High
3	Undertake cyclic transport asset condition assessment program (every4-5 years).	Manger Water & Wastewater/ Asset Management Coordinator	High
4	Develop and prioritise renewal programs based on condition of the assets.	Manger Water & Wastewater/ Asset Management Coordinator	High
5	– Assess funding requirements for sealing gravel roads, road rehabilitation, re-sheeting, heavy patching and pothole programs. – Develop and implement a funding and prioritisation strategy based on criticality of assets and the defects.	Manager Roads and Drainage	High
6	– Review current road design standards with consideration given to, whole of life costings, useful life of assets, local conditions, and current legislative requirements.	Manager Roads and Drainage	High

Item No.	Task	Responsibility	Priority
	– Use revised standards to determine funding requirements.		
7	Form a working group to liaise with Murrumbidgee Irrigation to, – Resolve asset ownership, asset handover, and condition of road culverts impacting Councils Road network. – To discuss and find a long-term resolution to maintenance of channels alongside roads owned by Murrumbidgee Irrigation. Achieve an MOU with Murrumbidgee Irrigation Limited regarding bridges and culverts structures by 2024	Manager Roads and Drainage	High
8	– Develop a capital work prioritisation framework and include demand drivers as part of the prioritisation criteria. – Develop a Project Management Framework and include framework for Acquisition (New), Upgrade, and Expansion of assets.	Asset Management Coordinator	Medium
9	Develop an Asset Disposal Policy and identify a mechanism to streamline the asset disposal process.	Asset Management Coordinator /Manager Finance	High
10	Review current level of service including response times of unplanned maintenance work	Manager Roads and Drainage	High
11	– Review current inspection program/associated budget and develop a program for the entire transport asset portfolio	Manager Roads and Drainage	High

Item No.	Task	Responsibility	Priority
12	– Review current maintenance program/associated budget and develop a program for the entire transport asset portfolio	Manager Roads and Drainage	High
13	– Continue implementation of "Univerus Assets" asset and work order management system to centralise asset data management.	Asset Management Coordinator	High
14	– Increase to community consultation	Manger Water & Wastewater/ Asset Management Coordinator	High
15	Align roads capital works program, water main and wastewater main replacement program to avoid roads being replaced in quick succession	Manger Water & Wastewater/Manager Roads & Drainage	High

Table 25: Transport Asset Management Improvement Plan

9.2 Monitoring and Review – Improvement Actions

Prioritisation and Implementation of the improvement plan of this Transport Asset Management Plan will be the responsibility of the Manager Assets with the support and guidance from the Executive Management Team.

10. Appendix A

Defect Description	Priority	Class	Position in Road Reserve		
			Traffic Lane		
Wearing Surface					
Bleeding area picking up on vehicle tyres	High	1	7 days	30 days	60 days
		2	30 days	60 days	60 days
		3	60 days	60 days	90 days
		4	60 days	90 days	180 days
		5	90 days	90 days	180 days
Seal stripping and/or cracking	High	1	30 days	60 days	60 days
		2	60 days	60 days	90 days
		3	60 days	90 days	180 days
		4	90 days	180 days	180 days
		5	90 days	180 days	365 days
Crocodile cracking plate size less than 100mm	Low	1	90 days	180 days	180 days
		2	180 days	180 days	365 days
		3	180 days	365 days	365 days
		4	365 days	365 days	-
		5	365 days	-	-
Edge Break					
Heavy edge break greater than 200mm	High	1	21 days	30 days	60 days
		2	30 days	60 days	60 days
		3	60 days	60 days	90 days
		4	60 days	90 days	180 days
		5	90 days	180 days	180 days
Moderate edge break between 100mm and 200mm	High	1	30 days	60 days	90 days
		2	60 days	90 days	90 days
		3	90 days	90 days	180 days
		4	90 days	180 days	180 days
		5	180 days	180 days	365 days
Heavy edge drop off greater than 100mm	High	1	21 days	30 days	60 days
		2	30 days	60 days	60 days
		3	60 days	60 days	90 days
		4	60 days	90 days	180 days
		5	90 days	180 days	180 days
Moderate edge drop off between 50mm and 100mm	High	1	30 days	60 days	90 days
		2	60 days	90 days	90 days
		3	90 days	90 days	180 days
		4	90 days	180 days	180 days

		5	180 days	180 days	365 days
Potholes					
Large pothole of depth greater than 100mm	High	1	21 days	30 days	60 days
		2	30 days	60 days	60 days
		3	60 days	60 days	90 days
		4	60 days	90 days	180 days
		5	90 days	180 days	180 days
Moderate pothole of depth between 50mm and 100mm	High	1	30 days	60 days	60 days
		2	60 days	60 days	90 days
		3	60 days	90 days	180 days
		4	90 days	180 days	180 days
		5	180 days	180 days	365 days
Small pothole of depth less than 50mm	Medium	1	60 days	90 days	90 days
		2	90 days	90 days	180 days
		3	90 days	180 days	365 days
		4	180 days	365 days	365 days
		5	180 days	365 days	-
Shoving / Failures					
Failure of depth greater than 100mm	Medium	1	30 days	60 days	90 days
		2	60 days	90 days	90 days
		3	90 days	90 days	180 days
		4	90 days	180 days	365 days
		5	180 days	365 days	365 days
Failure of depth less than 100mm	Medium	1	60 days	90 days	90 days
		2	90 days	90 days	180 days
		3	90 days	180 days	365 days
		4	180 days	365 days	365 days
		5	365 days	365 days	-
Gravel Surface					
Corrugations greater than 100mm	High	1	21 days		60 days
		2	60 days		90 days
		3	60 days		90 days
		4	90 days		180 days
		5	90 days		365 days
Corrugations between 50mm and 100mm	Medium	1	60 days		90 days
		2	60 days		90 days
		3	90 days		180 days
		4	90 days		365 days
		5	180 days		365 days
Rutting greater than 100mm	Medium	1	60 days		90 days

		2	60 days	180 days
		3	90 days	180 days
		4	180 days	365 days
		5	180 days	365 days
Loose gravel or Surface Deformation greater than 100mm	Medium	1	60 days	90 days
		2	60 days	180 days
		3	90 days	180 days
		4	180 days	365 days
		5	180 days	365 days
Potholes or Localised Surface Deformations greater than 100mm	Medium	1	60 days	90 days
		2	60 days	180 days
		3	90 days	180 days
		4	180 days	365 days
		5	180 days	365 days
Rutting between 50mm and 100mm	Low	1	60 days	180 days
		2	90 days	180 days
		3	180 days	365 days
		4	180 days	-
		5	365 days	-
Loose gravel or Surface Deformation between 50mm and 100mm	Low	1	60 days	180 days
		2	90 days	180 days
		3	180 days	365 days
		4	180 days	-
		5	365 days	-
Potholes or Localised Surface Deformations between 50mm and 100mm	Low	1	60 days	180 days
		2	90 days	180 days
		3	180 days	365 days
		4	180 days	-
		5	365 days	-
Dry Weather Only Roads (Formed Surface)				
Road Cross-Section substantially out of shape (un-trafficable)	Low	1	90 days	
		2	90 days	
		3	180 days	
		4	180 days	
		5	365 days	
Road Cross-Section Moderately out of shape (trafficable)	Low	1	90 days	
		2	180 days	
		3	180 days	
		4	365 days	
		5	365 days	

Bridges & Safety Barriers					
Accident damage to safety barrier	High	1	21 days		60 days
		2	30 days		60 days
		3	60 days		90 days
		4	60 days		180 days
		5	90 days		180 days
Bridge scuppers, expansion joints or other non-structural elements require cleaning	Medium	1	60 days		90 days
		2	90 days		180 days
		3	90 days		365 days
		4	180 days		365 days
		5	180 days		-
Missing/damaged chevron on face of the guard rail	Medium	1	60 days		90 days
		2	90 days		180 days
		3	90 days		365 days
		4	180 days		365 days
		5	180 days		-
Guideposts					
Missing or Damaged on Bridge (4 Posts)	Medium	1			90 days
		2			90 days
		3			180 days
		4			365 days
		5			365 days
Missing or Damaged on Culvert (2 Posts)	Medium	1			90 days
		2			90 days
		3			180 days
		4			365 days
		5			365 days
Missing or Damaged on curve/crest	Medium	1			90 days
		2			180 days
		3			180 days
		4			365 days
		5			365 days
Missing or Damaged on straight	Low	1			180 days
		2			180 days
		3			365 days
		4			-
		5			-
Loose Materials					
Road surface has loose or slippery material	High	1	7 days	30 days	60 days
		2	30 days	60 days	60 days

		3	60 days	60 days	90 days
		4	60 days	90 days	180 days
		5	90 days	90 days	180 days
Medians/K&G					
Water ponding due to misalignment of kerb and/or gutter	Low	1	90 days	90 days	180 days
		2	90 days	180 days	180 days
		3	180 days	180 days	365 days
		4	180 days	365 days	-
		5	365 days	-	-
Noticeable vertical or horizontal projections causing trip hazard greater than 20mm	Low	1	90 days	90 days	180 days
		2	90 days	180 days	180 days
		3	180 days	180 days	365 days
		4	180 days	365 days	-
		5	365 days	-	-
Noticeable displaced paving or concrete in median creating a trip hazard greater than 20mm	Low	1	90 days	90 days	180 days
		2	90 days	180 days	180 days
		3	180 days	180 days	365 days
		4	180 days	365 days	-
		5	365 days	-	-
Obstructions					
Large sized object with a maximum dimension of greater than 200mm	Extreme	1	1 day	1 day	1 day
		2	1 day	1 day	7 days
		3	1 day	7 days	21 days
		4	7 days	21 days	30 days
		5	21 days	30 days	60 days
For speed zones 50 km/h and under, sight distance less than 50m	Extreme	1	7 days	21 days	30 days
		2	21 days	30 days	60 days
		3	30 days	60 days	90 days
		4	60 days	90 days	90 days
		5	60 days	90 days	180 days
For 50 km/h > speed zone < 80 km/h, sight distance less than 80m	Extreme	1	7 days	21 days	30 days
		2	21 days	30 days	60 days
		3	30 days	60 days	90 days
		4	60 days	90 days	90 days
		5	60 days	90 days	180 days
For 80 km/h ≥ speed zone ≤ 90 km/h, sight distance less than 120m	Extreme	1	7 days	21 days	30 days
		2	21 days	30 days	60 days
		3	30 days	60 days	90 days
		4	60 days	90 days	90 days
		5	60 days	90 days	180 days

For speed zones > 90 km/h, sight distance less than 200m	Extreme	1	7 days	21 days	30 days
		2	21 days	30 days	60 days
		3	30 days	60 days	90 days
		4	60 days	90 days	90 days
		5	60 days	90 days	180 days
Small sized object with a maximum dimension is less than 200mm	High	1	21 days	30 days	60 days
		2	30 days	60 days	60 days
		3	60 days	60 days	90 days
		4	60 days	90 days	180 days
		5	90 days	180 days	180 days
Pavement Markings					
Longitudinal line faded or damaged	Low	1	90 days	180 days	180 days
		2	180 days	180 days	365 days
		3	180 days	365 days	365 days
		4	365 days	365 days	-
		5	365 days	-	-
Transverse line faded or damaged	Low	1	90 days	180 days	180 days
		2	180 days	180 days	365 days
		3	180 days	365 days	365 days
		4	365 days	365 days	-
		5	365 days	-	-
Symbol markings faded or damaged	Low	1	90 days	180 days	180 days
		2	180 days	180 days	365 days
		3	180 days	365 days	365 days
		4	365 days	365 days	-
		5	365 days	-	-
Pavement markers missing or damaged	Low	1	90 days	180 days	180 days
		2	180 days	180 days	365 days
		3	180 days	365 days	365 days
		4	365 days	365 days	-
		5	365 days	-	-
Signs					
Missing warning or regulatory sign faces (Yellow, Red or Speed Signs) or structure	Extreme	1			7 days
		2			21 days
		3			30 days
		4			60 days
		5			60 days
Warning or regulatory sign faded or damaged (Yellow, Red or Speed Signs) or alignment	Extreme	1			30 days
		2			60 days
		3			90 days
		4			90 days

		5			180 days
Sign face dirty or marked so to reduce legibility (including graffiti)	High	1			60 days
		2			60 days
		3			90 days
		4			180 days
		5			180 days
Missing guide sign faces (Green, brown or other signs) or structure	Medium	1			90 days
		2			90 days
		3			180 days
		4			365 days
		5			365 days
Trees obstructing sign face	Medium	1			90 days
		2			90 days
		3			180 days
		4			365 days
		5			365 days
Guide sign faded or damaged (Green, brown or other signs) or alignment	Medium	1			90 days
		2			180 days
		3			180 days
		4			365 days
		5			365 days
Spilled Materials					
Spills of oil, wet clay or other slippery substance	Extreme	1	1 day	21 days	30 days
		2	21 days	30 days	60 days
		3	30 days	60 days	60 days
		4	60 days	60 days	90 days
		5	60 days	90 days	180 days
Paper Roads (Unformed Surface)					
Road substantially out of shape (in-trafficable)	Low	1	90 days		
		2	180 days		
		3	180 days		
		4	365 days		
		5	365 days		
Vegetation Heavy (Trees)					
Dead or diseased trees in danger of falling on roadway	High	1	21 days	30 days	60 days
		2	30 days	60 days	60 days
		3	60 days	60 days	90 days
		4	60 days	90 days	180 days
		5	90 days	180 days	180 days
	High	1	21 days	30 days	60 days

Broken limbs in danger of collapse onto roadway		2	30 days	60 days	60 days
		3	60 days	60 days	90 days
		4	60 days	90 days	180 days
		5	90 days	180 days	180 days
The clearance height above traffic lanes or shoulders is less than 5m	High	1	30 days	60 days	60 days
		2	60 days	60 days	90 days
		3	60 days	90 days	180 days
		4	90 days	180 days	180 days
		5	90 days	180 days	365 days
Vegetation Light (Slashing)					
Grass and weeds Height greater than 500mm (obstructing vision)	High	1	30 days	60 days	60 days
		2	60 days	60 days	90 days
		3	60 days	90 days	180 days
		4	90 days	180 days	180 days
		5	90 days	180 days	365 days