



# ASSET MANAGEMENT PLAN 2021

Road, Footpath and Kerb



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

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

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

DISCLAIMER: This draft report has been prepared for educational purposes only as part of undertaking a Professional Certificate in Asset Management Planning. The data and conclusions have not been reviewed for accuracy nor endorsed or adopted by the organisation.

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## 1.0 EXECUTIVE SUMMARY

### 1.1 The Purpose of the Plan

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

This asset management plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost-effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services generally over a 10-year planning period.

This plan covers the infrastructure assets that provide services across the Roads, Footpath and Kerb network.

### 1.2 Asset Description

These assets include:

The Road, Footpath and Kerb network comprises:

Asset Category	Dimensions	Replacement Value
Sealed Road Surface Network	608 kilometres network length	\$36,866,799 Valued – 30/6/2020
Pavement Road Network	608 kilometres network length	\$158,758,870 Valued – 30/6/2020
Unsealed Surface Road Network	401 kilometres network length	\$24,832,163 Valued – 30/6/2020
Footpath Network	115 kilometres network length	\$14,840,674 Valued – 30/6/2020
Kerb and Water Table	253.4 kilometres network length	\$40,379,263 Valued – 30/6/2020
Sealed Road Surface Shoulders	561,161 m <sup>2</sup>	\$19,424,817 Valued – 30/6/2020
<b>Totals</b>		<b>\$295,102,586</b>

### 1.3 Levels of Service

The plan acknowledges that in general residents and the community value their road and footpath networks as a key service to go about their daily lives.

Our present projected funding levels are insufficient to continue to provide existing services at current service levels in the next ten years.

The main service consequences of the Planned Budget (currently funded in the 2020/21 Long Term Financial Plan) are:

- The extent of road pavement deteriorating over time to condition 5 will likely increase.
- On-going community expectation to provide more footpath sealed network
- Current levels of shoulder maintenance inadequate

## 1.4 Future Demand

The main demands for new services are created by:

- Increased recreation with the provision to access paths and trails that include links within our footpath network
- Increased tourism in line with projects such as Fabrik.
- Community requests for new footpaths and sealing of unsealed roads.
- Residential and Industrial development within rural areas

## 1.5 Lifecycle Management Plan

### 1.5.1 What does it Cost?

The forecast lifecycle costs necessary to provide the services covered by this Road Footpath and Kerb Asset Management Plan (AM Plan) including operation, maintenance, renewal, acquisition, and disposal of assets over the 10-year planning period is \$86,654,889 or \$8,665,489 on average per year.

## 1.6 Financial Summary

### 1.6.1 What we will do

Estimated available funding for this period is \$83,040,534 or \$8,304,053 on average per year as per the Long Term Financial Plan or budget forecast.

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

The anticipated planned budget leaves a shortfall of \$ 361,435 on average per year of the forecast lifecycle costs required to provide services in the AM Plan compared with planned budget currently included in the Long Term Financial Plan. This is shown in the figure below.

This additional required funding is primarily driven by the renewal requirement of our sealed road network. The current proposed asset strategy is to ensure the long life of our sealed road pavements requires additional investment in the road sealed surface. This will also require increase targeted pavement works including about 5% of the area on average within resurfaced areas to address the pavement distress and failure that are evident right across the network. This investment approach will lower the cost per annum of the life of these long lived assets of providing the sealed road service to the community.

**Forecast Lifecycle Costs and Planned Budget**

**: Lifecycle Summary**  
 Footpaths 2021 V2,Pavement 2021 V2,Road Seal 2021 V2,Shoulders 2021 V2,Unsealed 2021 V2

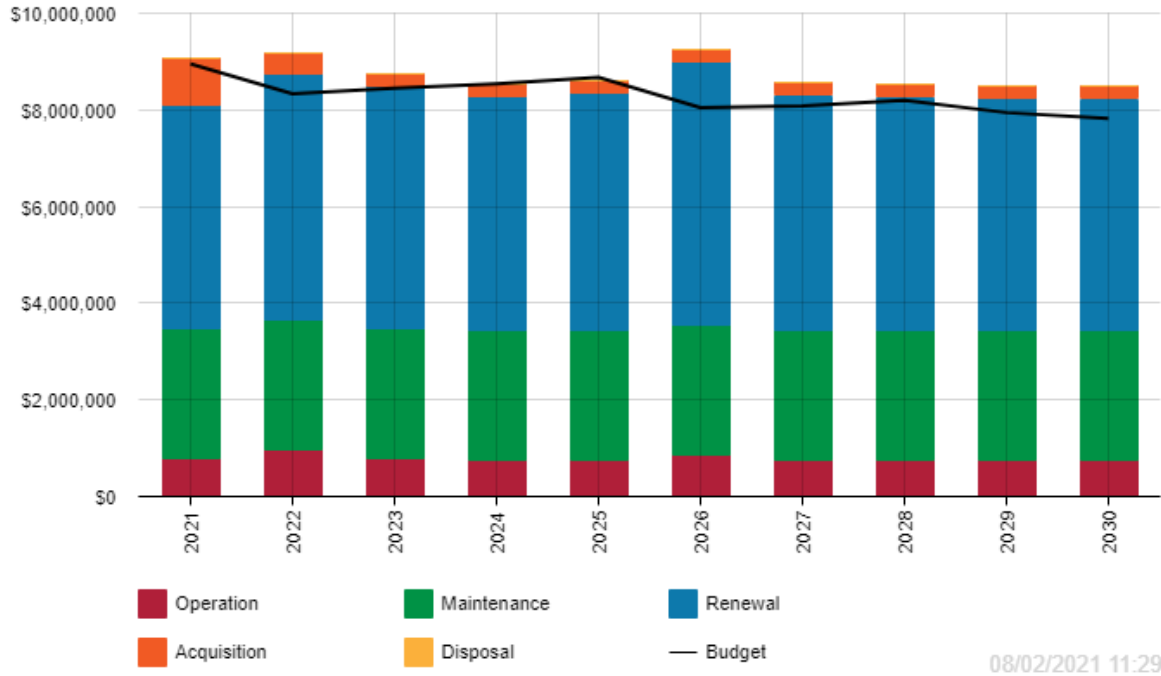


Figure Values are in current 2020 dollars.

We plan to provide across the Road, Footpath and Kerb network the services for the following:

- Operation, maintenance, renewal and upgrade of Roads, Footpath and Kerb assets to meet service levels set by in annual budgets including;
  - Extension of the footpath network by about 1km per annum
  - Grading of at least 75% of the unsealed road network at least once per annum
  - Re-Sealing of the sealed surface road network at a rate of greater than 20km per annum
  - Re-sheet about 20 to 25km of the unsealed road network per annum
- Improve footpath network for High to Very High usage areas, improve unsealed road practices and manage shoulders more sustainably within the 10-year planning period.

### 1.6.2 What we cannot do

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

- We will not be able to seal a sufficient amount of the sealed road surface to ensure protection of the underlying pavement structures.
- We will not be able to maintain seal road pavements at the present funding levels – that is, it is anticipated an increasing amount of our network will show signs of distress and failures.
- We will not be able to provide new and upgraded footpaths to a level that the community is expecting.

### 1.6.3 Managing the Risks

Our present budget levels contained in the LTFP (2020) are insufficient to continue to manage risks in the medium term.

The main risk consequences are:

- Our sealed road network will deteriorate and there is a risk of future generations needing to pay more for the services.
- Seal & Pavement will potentially pose a higher road safety risk
- Footpath renewal v new/upgrade is competing for funding
- Shoulder network is receiving minimal maintenance, increasing edge breaks and loss of seal
- The existing processes for identifying asset defects for footpath, kerb and seal is generally via Customer complaints.

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

- Work to proactively identify road, kerb & footpath defects sooner to intervene and rectify faults through the roll out of additional field devices as part of the Confirm Enterprise Asset Management System
- Implement systems to work towards increased planned maintenance versus reactive maintenance
- Ensure that High Use & Medium use Roads/Footpaths are a priority over lower usage assets

## 1.7 Asset Management Practices

Our systems to manage assets include:

- Open Office Finesse
- Confirm Enterprise Asset Management System

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

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

The Alternate Method was used to forecast the renewal life cycle costs for this asset management plan.



## 1.8 Monitoring and Improvement Program

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

- Review and revise customer values for these asset and level of service measures
- Improve condition information across footpath, shoulder, kerb & water table and unsealed roads through internal and external audits.
- Undertake a full detailed sealed road network high speed data collection to correlate against 2015 metrics to review network deterioration.
- Review and update useful lives for sealed surfaces, shoulders and kerb & water table

## 2.0 Introduction

### 2.1 Background

#### 1. Introduction

The Adelaide Hills Council delivers services to our residents, visitors and businesses that support the distinctive culture, creativity and accessibility of our community and region, and the transportation network includes footpaths, kerbs, unsealed and sealed roads that provide functionality and an appropriate quality that enables us to utilise these assets to deliver a wider range of services to our community.

This asset management plan communicates the actions required for the responsive management of these assets and services, compliance with regulatory requirements, and funding needed to provide the levels of service over a 10-year planning period, and the value of these assets is approximately \$295 million.

The Road, Footpath and kerb AMP is a projection of the likely future funding requirements over the next 10 years, considering the state of our current assets, the community values and outcomes contained in the Strategic Plan 2020 – 2024. The document is not a detailed budget, but a key strategic document that informs the Long Term Financial Plan and hence the financial sustainability of Council over the long term.

The asset management plan is to be read with the Adelaide Hills Council planning documents. This should include the Asset Management Policy and developed along with other key planning documents:

- Adelaide Hills Council 2020-2024 Strategic Plan
- Adelaide Hills Council 2020-2021 Annual Business Plan
- Adelaide Hills Council 2020-2021 Long Term Financial Plan

The asset management plan outlines the responsibilities and management of assets to maximise their value to deliver the services to the community and to meet our obligations under the Local Government Act 1999 in preparation of asset management plans.

Throughout this journey we review the lifecycle of our assets, develop renewal strategies and analyse risks through condition audits, customer feedback, forecasting and integration into existing strategic documents to provide confidence that the community's asset base is sustainably funded and allows for minor or major challenges across the network. Minor impacts recently have included changes in operations for the Cuddle Creek Bushfire and also adaptation in providing services through the Covid-19 phase.

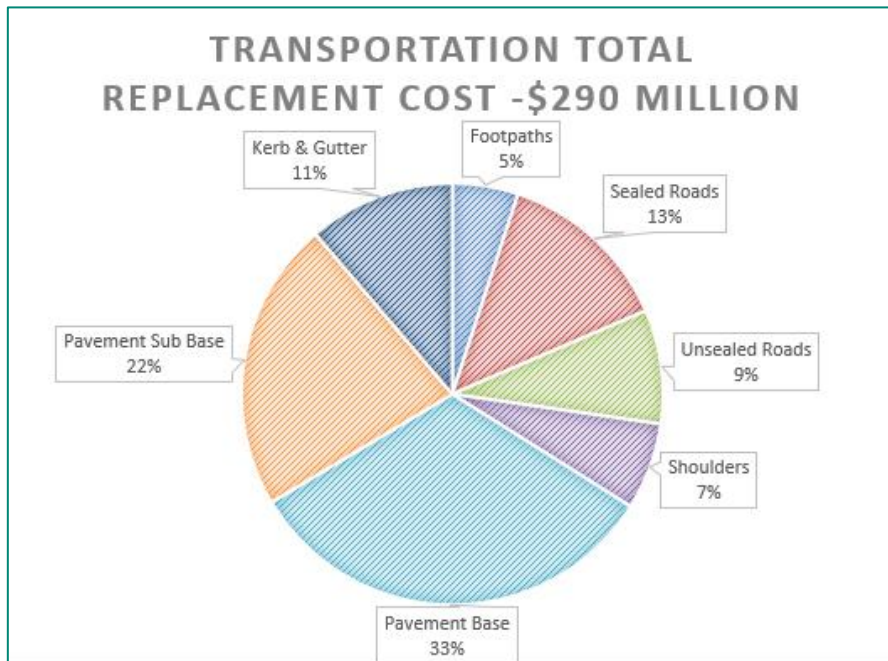
A changing climate and implementing sustainable products including recycled asphalt for road sealing, rejuvenation and recycled plastics for roads, as well as consideration of priorities for age friendly access, whilst still keeping the Adelaide Hills lifestyle at heart are what fundamentally drives the resilience of the asset management plan.

The asset management plan is to be reviewed on a regular basis and provides the detail for services levels, and the levels of funding that drive the renewal strategies for Adelaide Hills Councils Road, Footpath and Kerb assets.

The AMP is a projection of the likely future funding requirements over the next 10 years, considering the age and state of the current assets, the community values and outcomes contained in the Strategic Plan 2020 – 2024. The document is not a detailed budget, but a key strategic document that informs the Long Term Financial Plan and hence the financial sustainability of Council over the long term.

## 2. Our Road, Footpath and Kerb assets: what do we own?

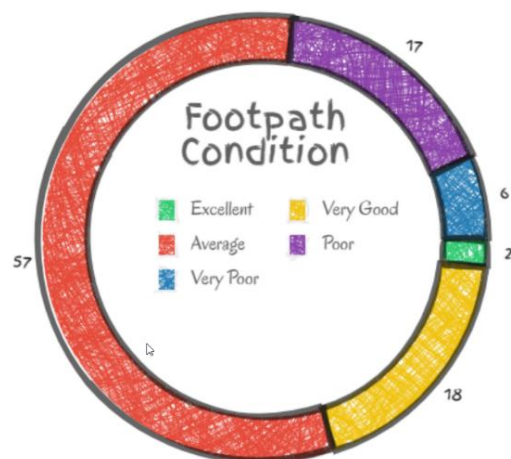
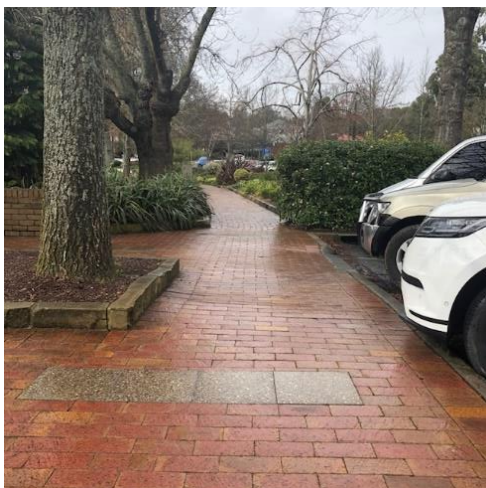
Here is a snapshot of the Road, Footpath and Kerb assets and their value that provide services to the community.



***What assets do we own, what are they worth and what services do they provide?***

### ***Footpaths***

Councils footpath network consists of over 115km of footpath that provides pedestrian access across a broad range of terrain, central business districts and key priority areas, focusing on schools, aged friendly destinations, recreation areas and encompasses a combination of rubble/natural surface that is amenable to Adelaide Hills terrain, durable asphalt paths and paving around towns and villages.



## Road Seals and Pavement

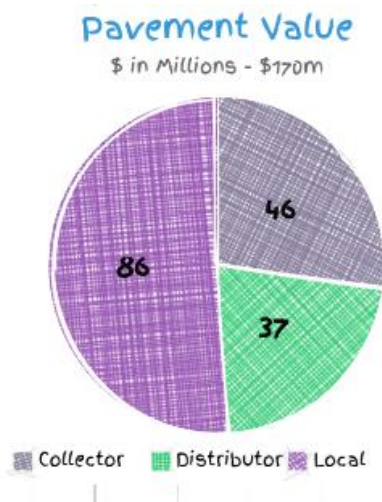
We have over 608kms of sealed road within the district and the two key components are the seal, which is the road surface (black stuff) that protects the underlying road pavement which provides the strength for all roads around the globe. Adelaide Hills Council receives its fair share of rain and it is the role of the road seal to protect the pavement underneath, this is why Council has a strong focus on ensuring roads are sealed at the optimum time to ensure the life of both assets (the road surface and the road pavement) .

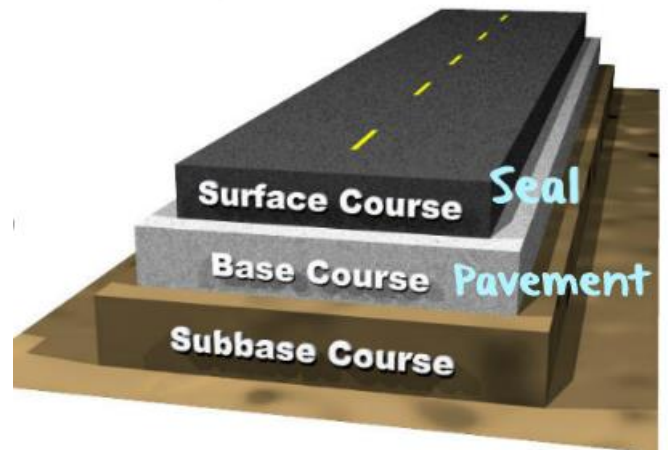
Regular sealing of the surface is very important to ensure that the underlying pavement last as long as it possible can. Water is one of the main enemies of a road pavement and the sealing of the surface keeps water from getting to the road pavement. Reconstruction of the road pavement is very expensive and impacts residents and businesses during the period that the roadworks are occurring.

Therefore, quite often you will ask the question of the Council as to why are you sealing my road? It looks in good condition? Council has a specialised assessment process that surveys the entire 608kms of road that detects minute cracks, service trenches, bitumen deterioration, and over 20 types of defects and anomalies.

This information allows us to prioritise and intervene at the correct time before the pavement below is damaged but is the optimum time to reseal the road. Council has approximately \$37 million dollars' worth of seal and \$160 million dollar investment into the pavement, so it is important that this pavement is protected.

Council currently utilises a range of strategies across the sealing of roads that includes sustainable options including RAP – Recycled Asphalt (reused toner cartridges, plastics, glass and recyclable materials), rejuvenation treatments to extend the life of seals, and a combination of fit for purpose seals to mitigate skidding, noise and durability across its network.





### ***Unsealed Roads***

Across the region our unsealed roads distribute a variety of terrain, rainfall, and the services, including local traffic through to light/medium and heavy freight for fruit production. Grape harvesting and distribution, through to sport and recreation for tourists and locals as they access parks and sporting facilities or undertake gravel cycling, all these services need to be considered.

Council has over 400kms of unsealed roads to manage and the priorities consist of meeting demands and the uses mentioned whilst providing a safe smooth ride where possible, keeping dust to a minimum and implementing grading practices that are optimum for prolonging the life of the unsealed road. It is best practice to facilitate patrol grading to utilise the existing material within the road corridor and continue this process until we undertake regular surveys and the unsealed road requires a re-sheeting to restore it to its former serviceability.



### ***Kerb & Watertable***

The purpose of the kerb and watertable (or gutter) is to channel water to the stormwater network, or redirect away from other infrastructure, and remove water from the seal whilst also protecting the seal edge.

There is approximately 115km of kerb, comprising of generally concrete kerbs worth an estimate \$40 million dollars across the network. A portion of kerb is currently asphalt that whilst serves the purpose of usually mitigating driveway/resident flooding it is an option that is not sustainable and Council will be working towards reducing the maintenance required across these kerbs in the future.

Street sweeping is an example of an operational activity undertaken as a component of our road, footpath and kerb asset management to capture leaves and the build-up of sediment that impacts the function of the kerb and this is increased in the autumn months as appropriate. This also has a dual impact on the amount of debris that gets into our stormwater systems and how these systems function.



*Hillside Road, Longwood*

*Prior – Cracked, retaining water and causing bitumen to break away*

*After – Clean kerb that allows the flow of water to the stormwater network*

## Road Shoulders



Shoulders are important in providing integrity to the seal, and as you can see above once the shoulder begins to fail it impacts the seal of the road. The shoulder is constructed as part of the road and provides protection to the seal, improves drainage and can be formed of natural material, cement treated or sealed depending on the intended purpose.

Sealed shoulders generally are extended out past the original seal to provide additional structure to the seal as well as safety. Cement treated shoulders whilst a cheaper method are generally used to improve drainage and funnel water away, and natural shoulders like the image above require additional maintenance to keep the rubble against the seal for additional protection. Overall each road throughout the hills has a variety of treatments depending on traffic conditions, volumes and usages.

Adelaide Hills Council is responsible for over 560,000 square metres of shoulders across the district and is proactively looking at ways to increase the maintenance of these assets. Council needs to prioritise through its maintenance programs an increased level of shoulder maintenance in the future to continue to protect the road seal and reduce edge break and loss of the seal asset.

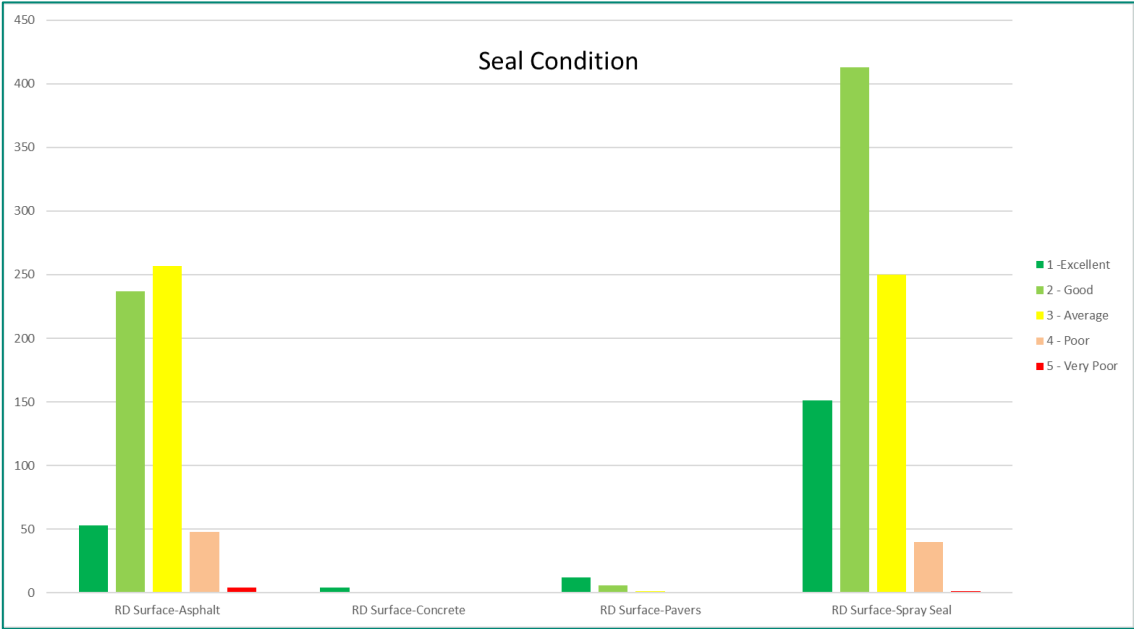


### 3. How healthy are our assets?

*How do we keep track of the condition of our assets?*

Council regularly assesses the condition of their assets utilising different techniques, depending on the different types of assets, which may consist of a visual inspections, technically driven assessments, or understanding the age of the infrastructure and/or utilising existing knowledge of staff or systems. This information is utilised in the effective management of our assets and the condition assessment methodology is broken down into a simple 1 to 5 condition rating:

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



*Seal Condition across various seal types  
(Note: Condition data from 2015)*

In general, condition assessments are undertaken depending on the asset class (and generally based on risk – a bridge audit takes precedent over a kerb audit) every four to six years depending on the requirements and level of detail.

Utilising the 1 to 5 methodology above the process applied to footpaths condition assessment is outlined below to provide ratings and examples of where the footpath is in its lifecycle or effectively how long before it needs to be replaced (its remaining life)



### **Footpaths**

Our footpath network is generally in good condition, though the asphalt paths previously utilised bitumen in the past and the longevity of current asphalt treatments is not as superior, and does not generally perform as well and thus have a shorter overall life. The asphalt footpaths are a good mix for the terrain types across the district involving quite often steep sections and are fit for purpose across the Adelaide Hills.

Council is always looking for alternatives, or sustainable treatments to integrate into various footpath networks across the region, and has implemented a priority based system that takes numerous factors into account (schools, aged friendly, CBD), condition and age, to determine renewal and upgrade strategies.

### **Kerb & Watertable**

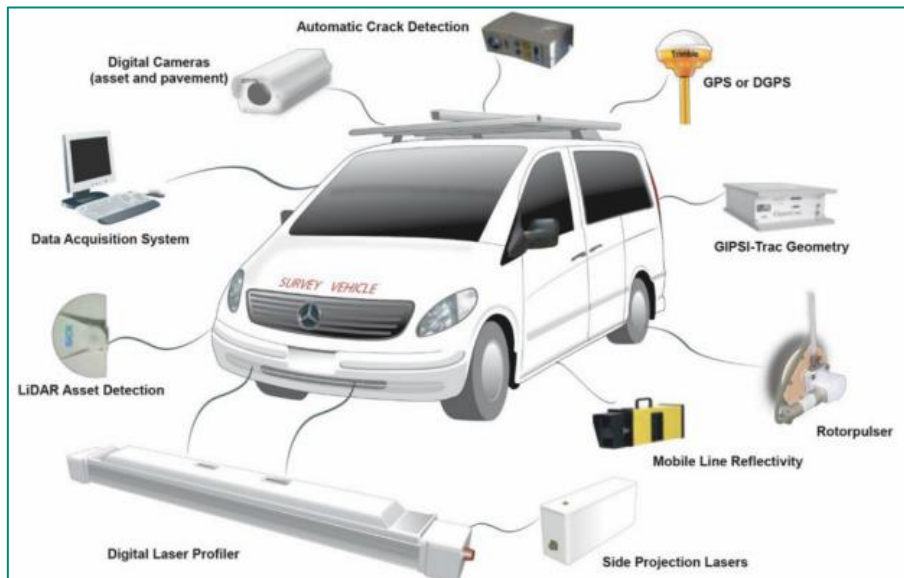
The overall condition of the concrete kerb network and this is the majority of the network is in good shape. A condition assessment is due to be undertaken and considerable work in simplifying the management of the assets in various systems has been completed to improve the renewal strategies going forward. The lifecycle of the asphalt kerbs has been highlighted for review in order to provide additional maintenance strategies to integrate these asset types into future planned works.

Concrete kerbs are a long lived asset, generally lasting between 60-100 years depending on the location and impact from trees and traffic factors so a long term approach in managing the condition is warranted.

### **Seal (Asphalt, Spray Seal & Rejuvenation Treatments)**

Council undertakes an internationally recognised method of assessing the road network using High Speed Data which involves a vehicle that collects over 20 different data sets at 10 metre intervals for every sealed road in the district. This information provides a SCI (Seal Condition Index) as a measure to determine the condition of the road and where it is in its life and indicatively indicates whether it should technically be renewed.

The overall condition of Council's seal is above average but with roughly 5% of the network in bad shape that equates to over 20kms per year that requires resealing to ensure the seal is renewed and protects the underlying pavement. Utilising improved measures and treatment types Council, moving forward, has increased the number of segments being resealed from 35-40 to 40-45 over the next four year asset management plan lifecycle.



*High Speed Data Vehicle – Provides detailed information about the seal condition*



*Lobethal – Seal Condition across each road based on the High Speed Data Collection.*

### ***Pavement (Below the seal)***

Undertaking the condition of the road pavement below the surface of the seal is akin to trying to establish how a piece of wood is holding up under a coat of paint. How can this be achieved? There are several options, you can dig up the road, take a core sample, utilise some technology that thumps the road at intervals, but these are all expensive or unpractical options.

The High Speed Data process outlined above provides some key assumptions as to the quality and or the condition of the pavement based on key failures or tell-tale defects including extended sections of crocodile cracking, indicating water has penetrated the seal, seeped into the pavement and over time it had deteriorated into a pothole, or large depression. Similar to how the paint on wood will bubble, go brittle or water has allowed the wood to rot underneath, the same issues are indicative of the pavement.

Utilising these defects software, engineering expertise and site inspections provide Council with a Pavement Condition Index along the road sections that fundamentally highlight failed pavement. Whilst this may affect a small section of the road it is practical and economic to replace the sections that have failed.

So the overall condition of Council's pavement is above average, there are over 33,000 square metres of failed sections identified which is around 5% of the network. Pavement renewal is expensive due to its nature, and Council has taken an approach to targeting sections for renewal rather than investing in full construction of individual roads as this is an optimised approach and can be undertaken in advance, or during the resealing process.

In addition to the targeted major road patching program, over the next 10 years Longwood Road (Stirling), Tiers Road (Lenswood), Carey Gully Road (Mt George), Miller Road (Lobethal) are highlighted as requiring extended treatments or full reconstructions of the pavement and seal.

In both the resealing and the pavement renewal process there are several other factors taken into consideration including asset age, seal type, field inspections, customer requests, internal field staff input, treatment and optimum time to intervene in the assets life.

Please refer to the Pavement and Seal Review Appendix 1 that has been compiled by the Strategic Assets Team.



*Woodside – Targeted Pavement Works – Before and After*

### **Unsealed Roads**

Council's unsealed road network is in above average condition and this has been attributed to regular inspections across the district each year prior to prioritising the re-sheeting program, distribution of improved material (wet conditioned from supplier – reducing water cartage, moisture control) and implementation of unsealed road hierarchy moving forward.

There has been significant investment in the road surface of the unsealed network in the past several years. However, to ensure that this investment reaches its full potential additional resource is required to patch and grade these roads to ensure maximum life of the unsealed surfaces. Given that Council internal resources undertake both the re-sheeting program and the maintenance a good operational understanding of the condition and performance exists in the team. This has driven our decision to reduce the capital expenditure to allow additional resource time to maintain the previous increase investment undertaken.

It is recognised that a reduction in the budget for this asset class will not overall effect the condition of the asset class or reduce the level of service as it has been of a high standard for a number of years.

### **Shoulders**

Our overall shoulder condition is average to poor, and edge breaks identified need to be addressed through increased maintenance that is currently being investigated by the Infrastructure and Operations directorate.

Shoulders play an underestimated role in both providing structural support for the sealed road edge but also assist with road safety by providing an area for vehicles to recover.

Shoulders in their nature can be subject to changing conditions from storm events or overrun of vegetation, and it is recognised that further work is required increasing the maintenance of these assets.

*Key Findings*

Assets within Adelaide Hills Council are in a reasonable condition based on last audits conducted, though the network is old and ongoing high levels investment is required particularly in the sealed road network.

A decrease in the overall spending on unsealed roads will have minimal impact on the condition, and targeted pavement works will not generally improve the condition but extend the life of the asset.

#### **4. Levels of service: what do we provide and how well are we doing it?**

By developing performance measures around services, we can establish the expectations that we deliver to the community. We do this in two ways: customer levels of service and technical levels of service.

Customer levels of service are derived from what aspects of the service is important to the customer (is the ride bumpy), whether they see value in the service being provided (the road I traverse every day is not potholed or sections missing), and what is the likely trend over time based on the current budget (this road is getting bumpier, and the potholes have increased – or – the road has been resealed and I have a smooth journey).

We generally engage the community and undertake review of the customer request system to monitor the customer's expectation. We need to improve our engagement with the community to further understand their expectations.

Technical levels of service are performance measures relating to how Road, Footpath and Kerb assets are managed to deliver customer services. They are linked to activities covering the operation, maintenance and renewal of existing assets, and the upgrade or acquisition of new assets to deliver new services.

Technical levels of service generally refer to technical specifications, establishing the end of life for a footpath would utilise existing technical specifications or publications recognised as industry standard. For footpath condition assessments the IPWEA Footpath Condition Assessment Guidelines 2018 would be the technical reference for defining condition and intervention levels.

##### ***What are we doing well?***

- Implementing corporate wide asset system to provide a repository for condition, construction dates, imagery, documentation and mobile collection and assessment across a broad range of Road, Footpath and Kerb assets.
- Improved the overall function of delivering unsealed roads to the broader community.
- Transitioned to a rolling capital works program for Roads, Footpath and Kerb assets to incorporate road, footpath and kerb works into co-ordinated process.
- Targeted approach to pavement works.
- Increased inspections around road seal and pavement works.
- Implemented prioritised footpath renewal and upgrade system with endorsement from Council.

##### ***Where can we improve?***

- Identify and implement long term renewal for pavement works.
- Review missing key footpath linkages across the network in conjunction with trail strategies.
- Improve maintenance practices across the shoulder assets.
- Practical approach to minimising the practice of asphalt rollover kerb usage.

##### ***What is planned?***

- Undertake condition assessments across key Road, Footpath and Kerb assets.
- Maximise usage of mobile asset system for data collection and maintenance activities.
- Identify key pavement and structural patching requirements for distributor and collector roads.
- Implement unsealed road hierarchy into maintenance and renewal activities.

## 5. Future Demands:

Council gets in the order of 15 - 20 requests for footpath each year and currently many of these are unable to be funded. It is expected that customers will continue to request more sealed footpaths across the Council area.

## 6. Lifecycle Management: how much do the services cost to deliver?

To deliver the recognised services, resourcing is allocated across the following four areas:

- **Operations/Maintenance:** regular activities to provide services. Examples of typical operational activities include patrol grading, project management, street sweeping, asset inspection, plant & fleet, and utility costs.
- **Renewal/Replacement:** major works to restore, rehabilitate, replace or renew an existing asset to its original service intention. Changes to its intent or improvement on design or capacity is classed as an upgrade/enhancement.
- **Upgrades/New Works:** improving or creating a new asset, increasing its capacity to provide an additional service has an impact on operations and maintenance, and broader implications for long term renewal and budgeting strategies.
- **Acquisition:** Usually gifted or handed over from developers or government agencies, inherited assets require eventual renewal and operations and maintenance in order to deliver services at existing levels additional resourcing is required.

## 7. Financial: How will we pay for these services?

This section contains the financial requirements from the previous sections in this document, and sourced from the Road, Footpath and Kerb Asset Management Plan (TAMP). The detailed information within the TAMP ultimately provides options for delivery of assets and services to the community with a sustainable funding strategy at the forefront.

What does this mean? Council funds the renewal of existing assets by determining where the asset is within its lifecycle. As an asset approaches the end of its useful life funding is allocated through the TAMP and the Long Term Financial Plan to ensure that adequate funds are available to renew the asset. As assets are inspected on a regular basis quite often the asset may be performing better than anticipated, or may have deteriorated quicker than expected so assets fluctuate and this is adjusted for both in the annual budget, the TAMP and this flows through to the Long Term Financial Plan.

So in order to provide serviceable assets that meet the community's expectation whilst performing within their as technical design, funding is allocated through the Long Term Financial Plan and these amounts fluctuate over its 10 years cycle, and this is where a portion of rates, grants, businesses and co-contributions pay to provide these assets to the community.

### ***Risk Management and Critical Assets***

As part of the risk assessment, we identify critical risks that will result in significant loss, financial shock or a reduction in service. The critical risks are those assessed with 'Very High' (requiring immediate corrective action) and 'High' (requiring corrective action) risk ratings.

Adelaide Hills Council has identified through the risk assessment process that are deemed 'High' impact to either services or assets, and appropriate action plans would be required.

A potential high risk service impact identified is a Major Bushfire where severe impact on the road network could impede traffic flow and access to transportation services. The recommended proactive measures is a Bushfire Action Plan which may provide mitigation strategies across the network.

***Critical assets*** identified throughout the Road, Footpath and Kerb Asset Management Plan include major roads that may deteriorate or 'sudden' failures may result in unplanned budget allocation or reduced access to locations within the hills and extended delays. The strategy to tackle these failures is target treatments and regular inspections.



## 8. Key Take Aways

The key take aways are summarised below that have been the primary drivers of the Roads, Footpath and Kerb Asset Management Plan

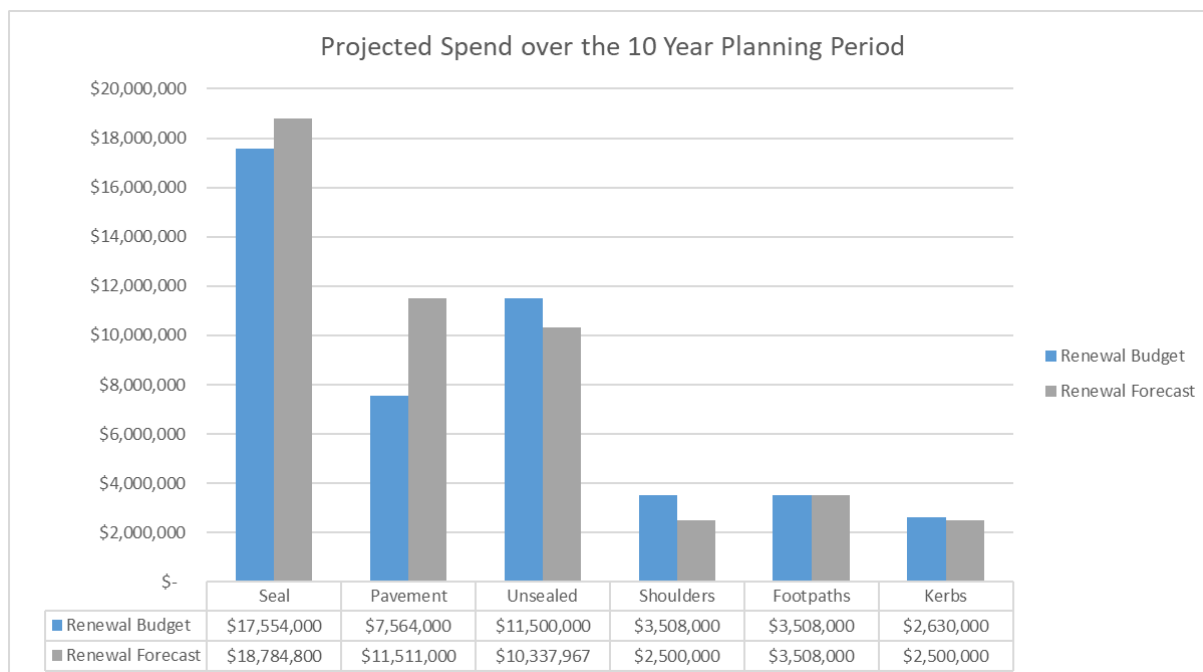
- **What we own:** Adelaide Hills Council has a broad range of assets, spread across various terrain types, extensive number of towns or villages (52 in total) and provide a sustainably funded distribution of Roads, Footpath and Kerb assets to its community.
- **Condition**
  - Councils asset base is currently in a reasonable condition and now requires further investment to ensure these assets are replaced at their optimum time. Further work is required and condition may decrease as further audits across the road, kerb and footpath asset classes are undertaken.
  - The pavement which is a long lived asset, but expensive to renew has provided challenges in the strategy for delivering the level of service with the current model of renewal. Recent changes in the targeted approach to patching and pre-planning has increased the volume of work being undertaken for this asset class. The plan continues this strategy over the 10 years.
- **Service Levels**
  - We understand that the community generally value their road and footpath network and our assumption is that they wish to have the service provided at the lowest long term costs. We assume that this is what our customers would expect us to do and we should.
  - The levels of service across the network are considered reasonable for the majority of asset classes, and further refinement is required on how we report, gather and understand to how we respond and engage has been highlighted through the AMP process.
  - The community has a high level of expectation on delivering new assets especially footpaths which in turn increase the overall asset base and adversely effects depreciation, operation and maintenance costs, and the eventual renewal of assets for future generations.
- **Lifecycle and Funding**
  - Whilst additional funding has been identified for seal and pavement in this AMP, further work is required in understanding the criticality of key assets, fine tuning intervention points and improved reporting of maintenance activities. These issues have been identified in the improvement plan and Council is actively working towards these goals.

## 9. Improvement Planning

Throughout the asset management planning process the key areas which require improvement, data is immature, or resources have not been allocated are built into the framework for delivery into the next phase of the AMP process. Where we believe we need to work towards is listed below:

Task	Task	Responsibility	Resources Required	Timeline
1	Redevelop footpath hierarchy model to include new drivers within existing network	Sustainable Assets	Sustainable Assets/Infrastructure Operations	2020/21
2	Seal – Review Hierarchy	Sustainable Assets/Infrastructure Operations		2021/22
3	Unsealed – Review Hierarchy	Sustainable Assets/Infrastructure Operations	Sustainable Assets/Infrastructure Operations	2020/21
4	Undertake Customer Satisfaction Surveys across asset classes	Sustainable Assets/Communications	Internal	2020/21
5	Undertake Condition Assessments – Seal & Pavement	Sustainable Assets	External	2021/22
7	Undertake Condition Assessments - Kerb & Footpath – Migrate Ramps from Kerbs to Footpaths	Sustainable Assets	Internal	2020/21
8	Maintenance Guidelines – Roads, Kerb & Footpath	Sustainable Assets/Infrastructure Operations	Internal	2021/22
9	New Assets Priority Ranking Criteria	Sustainable Assets	Internal	2022/23
10	Shoulder and Pavement Data Cleanse and Migrate Shoulders into Pavement and revalue	Sustainable Assets	Internal	2022/23
11	Intervention Analysis & Predictive Modelling	Sustainable Assets	Internal/External	2023/24
12	Undertake review of re-sheeting, patrol grading and shoulder strategies across the network to improve efficiencies within the existing constraints.	Sustainable Assets/Infrastructure Operations	Internal	2022/23
13	Capture relevant maintenance data across asset classes to understand where, when, how and how much we spend on assets	Sustainable Assets/Infrastructure Operations	Internal	2022/23

## 10. Forecast Spending and where is it being allocated?



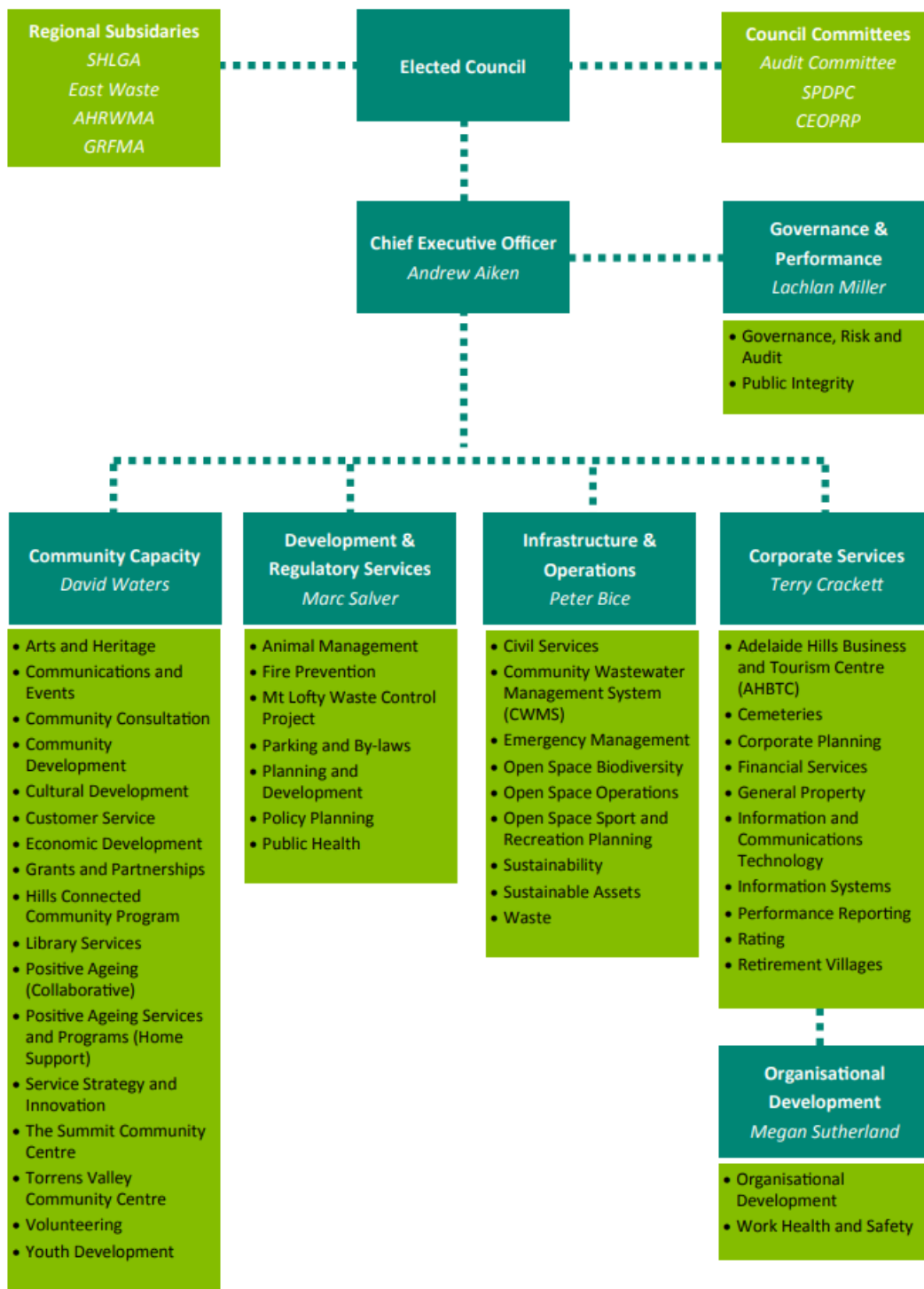
The infrastructure assets included in this plan have a total replacement value of \$295,102,586

Key stakeholders in the preparation and implementation of this asset management plan are shown in Table 2.1.

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

Key Stakeholder	Role in Asset Management Plan
Councillors	<ul style="list-style-type: none"> <li>■ Represent needs of community/shareholders,</li> <li>■ Establish the strategic vision and budget</li> <li>■ Allocate resources to meet the organisation’s objectives in providing services while managing risks,</li> <li>■ Ensure organisation is financial sustainable.</li> </ul>
CEO/Directors	<ul style="list-style-type: none"> <li>■ Implement the strategic vision and budget set out by the elected Council</li> <li>■ Establish the operational vision and policy</li> <li>■ Oversee delivery of services</li> </ul>
Engineering and Sustainable Assets Department	<ul style="list-style-type: none"> <li>■ Development of delivery of the Transport Asset Management Plan through the Infrastructure &amp; Operations Directorate</li> </ul>
Community	<ul style="list-style-type: none"> <li>■ Service levels through consultation, representation and expectation and the customer request system.</li> </ul>

Our organisational structure for service delivery from infrastructure assets is detailed below,



## 2.2 Goals and Objectives of Asset Ownership

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

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,

- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing and appropriately controlling risks, and
- Linking to a long-term financial plan which identifies required, affordable forecast costs and how it will be allocated.

Key elements of the planning framework are

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

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

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

A road map for preparing an asset management plan is shown below.

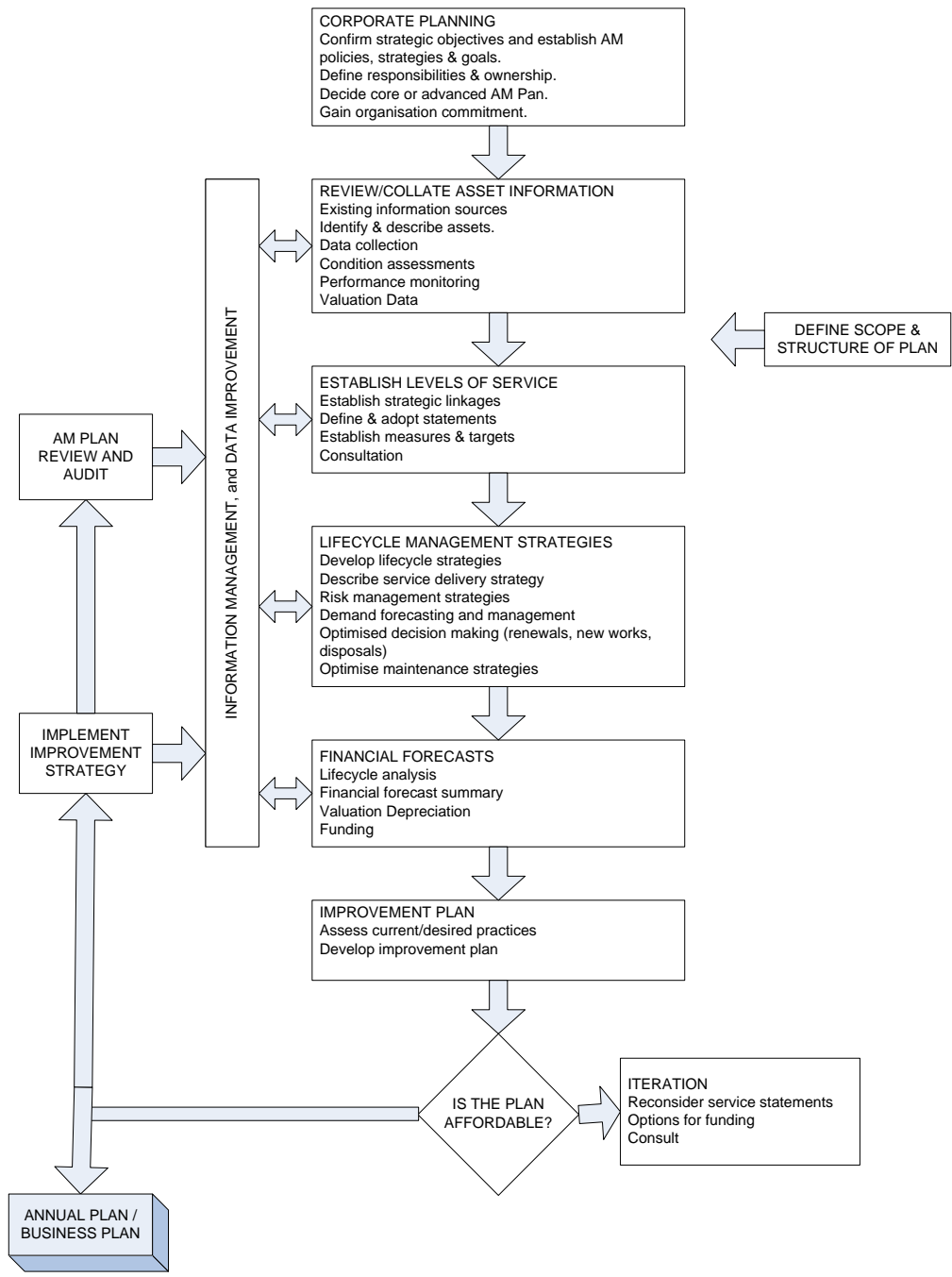
***Road Map for preparing an Asset Management Plan***

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

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

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



### 3.0 LEVELS OF SERVICE

#### 3.1 Customer Research and Expectations

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

We currently have no research on customer expectations. This will be investigated for future updates of the asset management plan. Currently we extrapolate data from the Customer Request System to provide an indicative expectations and requests from the community.

#### 3.2 Strategic and Corporate Goals

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

*Our goal is:*

A functional built environment.

- Consider external influences in our long term asset management and adaptation planning
- Sustainable management of our built assets ensures a safe, functional and well serviced community

Strategic goals have been set by the Adelaide Hills Council. The relevant goals and objectives and how these are addressed in this asset management plan are summarised in Table 3.2.

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

Goal	Objective	How Goal and Objectives are addressed in the AM Plan
1B1.5	Provide accessibility for the full range of users by ensuring Council's road, footpath and trails network is adequately maintained and service levels for all users are developed and considered	Providing funding and fit for purpose assets that are well serviced and responsive to the changing needs of the community.
1B3.2	Aim to achieve 100% renewable energy use for our corporate operations and strive towards carbon neutrality	Continue to investigate carbon reducing initiatives in usage of Recycled Asphalt surfacing
1B3.3	Investigate and source recyclable materials for asset renewal projects wherever practical and in doing so promote the circular economy.	Reuse of materials in capital works projects in conjunction with the Circular Economy Investment

#### 3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. Legislative requirements that impact the delivery of the Roads, Footpath and Kerb service are outlined in Table 3.3.

**Table 3.3: Legislative Requirements**

Legislation	Requirement
Local Government Act (1999)	Sets out the role, responsibilities and powers of local governments including the preparation of long term financial plan supported by infrastructure and asset management plans for sustainable service delivery
Road Traffic Act (1961)	The act provides legislative requirements on the use of roads by vehicles and other road users.
Australian Road Rules	Requirements for users of the roads to obey
Australian Standards	Various standards that provide guidance and specifications for the management of transport assets
Native Vegetation Act (1991)	Management of the roadside will require an understanding of this act.
Australian Accounting Standards	Sets out the requirements to sustainably protect the environment during both the construction and life of the asset.

### 3.4 Customer Values

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

**Customer Values** indicate:

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

**Table 3.4: Customer Values**

Service Objective:			
Customer Values	Customer Satisfaction Measure	Current Feedback	Expected Trend Based on Planned Budget
Safe & traversable footpaths	Customer Surveys & Complaints	Average of 146 requests per year via CRM's	Increase as footpath renewals are pushed out and network increased through new or upgrades
Seal ride quality	Customer Surveys & Complaints	Moderate number of complaints relating to failures and potholing	With the current budget and deterioration in pavement there is likely to be an increase in complaints
Kerb & Water Table functionality	Customer Complaints	Moderate requests for asphalt kerbing to mitigate water damage into property	Likely to increase due to removal of service moving forward
Unsealed Roads Surface and Ride	Customer Complaints	Moderate number of requests for grading	Likely to reduce the number of complaints if increase in patrol grading undertaken as recommended. Less capital and re-sheeting may result in greater deterioration in the outer years as corrugations etc develop more readily on an older network



### 3.5 Customer Levels of Service

The Customer Levels of Service are considered in terms of:

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

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

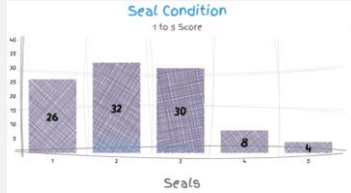
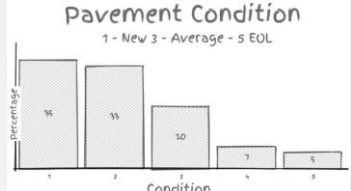
**Capacity/Use**      Is the service over or under used ... do we need more or less of these assets?

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

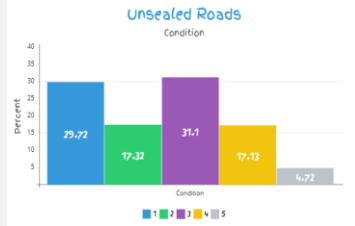
These are measures of fact related to the service delivery outcome e.g. number of occasions when service is not available, condition %'s of Very Poor, Poor/Average/Good, Very Good and provide a balance in comparison to the customer perception that may be more subjective.

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

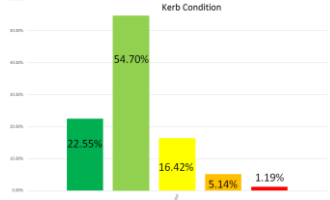


Asset Class	Type of Measure	Level of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget
Seal & Pavement	Condition	Condition of Seal & Pavement  Provides a smooth ride.	Undertake High Speed Data Assessment Utilising SCI & PCI	<p>Seal – SCI (2015)</p>  <p>Pavement – PCI (Audit 2015)</p>  <p>Condition 5 consists of approximately 33km of the network.</p>	<p>Seal – In the short term the seal requires additional funding to mitigate deterioration the aged spray seal network</p> <p>Pavement – Appropriate levels of funding have been forecast through the plan including targeted patching programs and selective treatments of failed sections to prolong the life of the overall asset base.</p> <p>The extent of failures are likely to increase and overall the life of the road pavement may be reduced if additional funding is not provided.</p>
		<b>Confidence levels</b>		<p>High-Medium</p> <p>High (Professional Judgement supported by extensive data)</p> <p>Medium (Professional judgement supported by data sampling and field testing)</p> <p>Data set is getting towards end of life and is planned to be recollected in 21/22</p>	<p>Medium</p> <p>Medium (Professional judgement supported by data sampling and field testing)</p>
	<b>Function</b>	Measure of the asset is appropriate for its intended use.	Road Hierarchy	<p>Breakdown of current hierarchy</p> <p>Distributor –19%</p> <p>Collector – 7%</p> <p>Local – 73%</p> <p>Other-1%</p>	<p>Seal – Trend may see an increase the amount of coverage of the network, economic value and sustainability outcomes.</p> <p>Pavement – Minimal impact on heavy vehicle movements increasing or expected volumes due to population increase.</p>
		<b>Confidence levels</b>		<p>Medium</p> <p>Medium (Professional judgement supported by data sampling)</p>	<p>Medium</p> <p>Medium (Professional judgement and an industry push towards sustainable practices)</p>

	<b>Capacity</b>	Whether the capacity of the assets are sufficient	Traffic Count averages for vehicle types reflect the capacity designated for that road type – Distributor, Collector or Local	Traffic Counts across network averages for each road class	Minimal impact on capacity, and likely planned budget will not be effected until additional road data sampling undertaken in 21/22
		<b>Confidence levels</b>		Medium  Medium (Professional judgement supported by data sampling) Council has reasonably good data for traffic counts across its network.	Medium  Medium (Professional judgement supported by data sampling)

Asset Class	Type of Measure	Level of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget
Unsealed Roads	Condition	Condition of unsealed network	Condition rating of asset class  Patrol Grading	Unsealed roads are currently performing well across the network   <p>Audit 2015 Current maintenance for patrol grading is around 55% of the network</p>	Transition from reduction in Renewal to Maintenance will increase asset lifecycle.  Increase in patrol grading to 75% of the network per year is envisaged. Increase in budget maintenance expected, reduction in capital re-sheeting for the next 10 years
		<b>Confidence levels</b>		Medium  Medium (Professional judgement supported by field supervisor input and annual inspections)	Medium  Medium (Professional judgement supported by field supervisor input and annual inspections)
	Function	Measure of the asset is appropriate for its intended use.	Road Hierarchy	Majority of assets are fit for purpose.	Existing budget will reduce over time and stabilise based on new hierarchy
		<b>Confidence levels</b>		Medium (Professional judgement supported by field supervisor input and annual inspections)	Medium (Professional judgement supported by field supervisor input and annual inspections)
	Capacity	Whether the capacity of the assets are sufficient	Traffic volumes	Unsealed network is in good condition and is well funded.	No changes or impact on budget in relation to capacity. No major industries identified that will impact network capacity.
		<b>Confidence levels</b>		Medium  Medium (Professional judgement supported by data sampling) Council has reasonably good data for traffic counts across its network, indicating the types of vehicles access its unsealed network.	Medium  Medium (Professional judgement and existing growth)
Asset Class	Type of Measure	Level of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget

<b>Footpaths</b>	<b>Condition</b>	Condition of Footpath Network	Condition rating of asset class	Nearly 25% of the network is heading towards end of life  Audit 2015	The footpath network is expanding at roughly 2% per year, and the existing renewal level has been reduced due to the extended life of the asphalt treatments within the Council network.  This planned amount may change once a condition assessment is undertaken in 22/23
		<b>Confidence levels</b>		Medium  Medium (Professional judgement supported by data sampling and field inspections)  Data set is due for recollection	Medium  Medium (Professional judgement supported by data sampling and field inspections)  Existing budget is supporting new assets
	<b>Function</b>	Measure of the asset is appropriate for its intended use.	Footpath Priority Zoning	Majority of assets are fit for purpose, however there is an increasing proportion not meeting expectations	The pressure to install additional footpaths is recognised and a system is being reviewed to reprioritise the network.  There is an increase in requests for dual usage cycle/walkway/footpaths so the intended use will need to be linked to existing strategies and trail studies.
		<b>Confidence levels</b>		Medium  Medium (Professional judgement)	Medium  Medium (Professional judgement)
	<b>Capacity</b>	Whether the capacity of the assets are sufficient	Footpath widths measured against priority zones	No analysis has been undertaken across capacity, where possible assets are delivered to standard or to suit location	Slight impact on budget as capacity is likely to be increased to meet community expectations.
		<b>Confidence levels</b>		Medium  Medium (Professional judgement supported by data sampling) Council has reasonably good data for traffic counts across its network.	Medium  Medium (Professional judgement supported by data sampling)
<b>Asset Class</b>	<b>Type of Measure</b>	<b>Level of Service</b>	<b>Performance Measure</b>	<b>Current Performance</b>	<b>Expected Trend Based on Planned Budget</b>

<b>Kerb &amp; Water table</b>	<b>Condition</b>	Condition of Kerb & Water Table Network	Condition rating of asset class	Small section of network is in poor or end of life scenario 	Slight increase as asset delivered to higher standard as a reduction in treatment type, and allowance may be required if the asphalt assets are to be renewed through renewal budgets.
		<b>Confidence levels</b>		Low  Low (Professional judgement with no data evidence)  Data set is due for recollection	Low  Low (Professional judgement with no data evidence)  Data set is due for recollection
	<b>Function</b>	Measure of the asset is appropriate for its intended use.	Condition rating of the asset class	Majority of assets are fit for purpose.	Increased level of targeted replacement with seal and footpath works
		<b>Confidence levels</b>		Medium  Medium (Professional judgement supported by data sampling)	Medium  Medium (Professional judgement supported by data sampling)
	<b>Capacity</b>	Whether the capacity of the assets are sufficient	Ensure that kerb is appropriate to manage drainage to the stormwater system	No analysis has been undertaken across capacity.  Local operational knowledge is used to determine where kerb and gutter may create drainage issues that may be from kerb and gutter capacity.	No capacity assessment undertaken
		<b>Confidence levels</b>		Medium  Medium Professional judgement and operational knowledge	Medium  Medium Professional judgement and operational knowledge

### 3.6 Technical Levels of Service

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

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

- **Acquisition** – the activities to provide a higher level of service (e.g. widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (e.g. a new library).

- **Operation** – the regular activities to provide services (e.g. opening hours, cleansing, mowing grass, energy, inspections, etc).
- **Maintenance** – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. road patching, unsealed road grading, building and structure repairs),
- **Renewal** – the activities that return the service capability of an asset up to that which it had originally provided (e.g. road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),

Service and asset managers plan, implement and control technical service levels to influence the service outcomes.<sup>3</sup>

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

**Table 3.6: Technical Levels of Service**

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
<b>TECHNICAL LEVELS OF SERVICE -Pavement, Sealed &amp; Unsealed Roads</b>				
<b>Acquisition</b>	New or Gifted assets fit for purpose (sealed subdivisions)	Condition assessed at time of acquisition	No planned maintenance for early life cycle	Ensure appropriate resources are supported operationally to derive asset condition at acquisition.  Various assets gifted for The Crest at Inverbrackie & Woodforde Estates
		<b>Acquisition Budget</b>	<i>\$0.00</i>	<i>\$860,000 increase to asset base</i>
<b>Operation</b>	Project Management Support in Delivering Seal Renewals, Pavement & Unsealed Roads	Pavement, Seal and Unsealed renewed at optimum time  Pavement Investigation	Internal Project Management Cost – Linked to Seal, Pavement & Unsealed delivery PM Costs - \$607k per annum on average across the 10 year period  Pavement Investigation \$30k per annum	Detailed Support in Project Delivery – Intervention, Treatment Types & ROI.  PM Costs - \$607k per annum on average across the 10 year period  Pavement Investigation \$30k per annum
		<b>Operations Budget</b>	<i>\$637,000k per annum</i>	<i>\$637,000 per annum No change to budget as recommended change is linked to a % of delivery</i>

<sup>3</sup> IPWEA, 2015, IIMM, p 2|28.



Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance**
<b>Maintenance</b>	Maintain Unsealed Road Surfaces	Length of network Patrol Graded (km)	240kms Annually	Increase to 340 km's due to minimising re-sheeting practices and reduction in capital program over 10 year program.
	Maintain Sealed Surfaces (Seal & Pavement)	Patching(Pavement)  Crack Sealing(Seal)	<i>\$45,000 Per Year</i>  <i>\$0.00</i>	<i>Suggest removal due to increase in patching across network through Capital Pavement Budget</i>  <i>\$25,000 Crack Sealing Per annum proposed (potentially funded from operations budget)</i>
		<b>Maintenance Budget</b>	<b><i>Unsealed - \$10,800,000 for the Total 10 Years</i></b>  <b><i>Sealed - \$10,300,000 for the Total 10 Years</i></b>  <b><i>Pavement - \$2,100,000 for the Total 10 Years</i></b>	<b><i>Unsealed - \$10,800,000 Total for the 10 Years – (An increase is suggested and should be undertaken after maintenance review)</i></b>  <b><i>Sealed - \$10,300,000 for the Total 10 Years</i></b>  <b><i>Pavement - \$2,150,000 for the Total 10 Years</i></b>
<b>Renewal</b>	Sealed Surfaces	Condition Assessment Based	Numerous seals are beyond their useful life across asphalt and spray seal network.	Increased spending required to address aging assets and spray seal binder condition
	Pavement	Condition Assessment Based	Currently identified 33,000 square metres of pavement that is in poor condition.	Increased funding required to address targeted pavement failures
	Unsealed Surfaces	Re-sheeting	Currently re-sheeting 5-6% per year of the network	Reduced budget to transfer to increase maintenance practices
		<b>Budget</b>	<b><i>Unsealed - \$11,500,000 for the Total 10 Years</i></b>	<b><i>Unsealed - \$10337,967 Total for the 10 Years (A suggested reduction should be undertaken after maintenance review)</i></b>

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
			<i>Sealed -\$17,554,000 for the Total 10 Years</i>  <i>Pavement - \$7,564,,000 for the Total 10 Years</i>	<i>Sealed - \$18,784,000 \$for the Total 10 Years</i>  <i>Pavement - \$11,511,000 for the Total 10 Years</i>
<b>Disposal</b>	Unsealed & Sealed Roads	Nil	No disposals planned	No disposals planned
	Sealed Roads	Boundary Realignment	608kms	Potential Removal of 26kms of seal from network
		<b>Budget</b>	Nil	Reduced seal network & budget

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
<b>TECHNICAL LEVELS OF SERVICE - Shoulders, Footpaths &amp; Kerb/Water Table</b>				
<b>Acquisition</b>	New or Gifted assets fit for purpose (sealed subdivisions)	Condition assessed at time of acquisition	No planned maintenance for early life cycle	Ensure appropriate resources are supported operationally to derive asset condition at acquisition.  Various assets gifted for The Crest at Inverbrackie & Woodforde Estates
		<b>Acquisition Budget</b>	\$0.00	<i>\$250k Footpaths per annum</i> <i>\$1.9million projected gifted over 10 years</i>
<b>Operation</b>	Project Management Support in Delivering Shoulders, Kerb & Footpaths Renewals	Footpaths, Shoulders & Kerb renewed at optimum time	Internal Project Management Cost – Linked to Footpath, Kerb & Shoulder delivery PM Costs - \$153k per annum on average across the 10 year period  Condition Assessment (21/22) - \$0	Support for various audits and proactive programs to maximise renewal and linked maintenance strategies  PM Costs - \$153k per annum on average across the 10 year period  Approx \$50k for Condition Assessment
		<b>Operations Budget</b>	\$153,000	<i>\$1,583,000 Total for the 10 Years</i>

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
<b>Maintenance</b>	Maintain Footpath Network	Maintenance activity requests undertaken	150 request (CRMS) per year	Performance Review after 21/22 Condition Assessment undertaken – No changes proposed
	Maintain Kerb & Water Table Network	Maintenance Activities	No performance measures available	Performance Review after 20/21 Condition Assessment undertaken – No changes proposed
	Maintain Shoulder Network	Maintenance Activities	No performance measures available	Increase in maintenance practices to improve overall shoulder maintenance strategy to minimise edge breaks and planned maintenance across the network
		<b>Maintenance Budget</b>	<p><i>Footpaths - \$810,000 for the Total 10 Years</i></p> <p><i>Kerb &amp; Water Table - \$620,000 for the Total 10 Years</i></p> <p><i>Shoulders - \$2,100,000 for the Total 10 Years</i></p>	<p><i>Footpaths - \$810,000 for the Total 10 Years</i></p> <p><i>Kerb &amp; Water Table - \$620,000 for the Total 10 Years (To be realigned after Condition Assessment)</i></p> <p><i>Shoulders - \$2,100,000 for the Total 10 Years (increase based on capital reduction)</i></p>
<b>Renewal</b>	Footpaths	Condition Assessment Based	Based on age, condition and priority	Renewal strategy to be developed to link renewal and maintenance planning to improve lifecycle.
	Kerb & Water Table	Condition Assessment Based	<p>Currently undertake visual and professional judgement across network to define renewals</p> <p>Existing renewal works general undertaken in conjunction with seal and footpath program renewals.</p>	<p>Renewal strategy to be developed once condition assessment undertaken.</p> <p>Increased targeted replacement</p>

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
	Shoulders	Condition Assessment Based	ARRB (2015) 5-7% Network Edgebreaks 10% Grading Required 3% Network Breakthrough > 20%	Reduced capital expenditure and increase operational effort into Shoulder Maintenance
		<b>Renewal Budget</b>	<i>Footpaths - \$3,508,000 for the Total 10 Years</i>  <i>Kerb &amp; WT - \$2,630,000 for the Total 10 Years</i>  <i>Shoulders - \$3,508,000 for the Total 10 Years</i>	<i>Footpaths - \$3,508,000 Total for the 10 Years</i>  <i>Kerb &amp; WT - \$2,500,000 for the Total 10 Years (Condition Assessment may change renewal targets)</i>  <i>Shoulders - \$2,500,000 for the Total 10 Years</i>
<b>Disposal</b>	Footpaths Kerb & Water Table Shoulders	Nil Nil Nil <b>Budget</b>	No disposals planned No disposals planned No disposals planned Nil	No disposals planned No disposals planned No disposals planned Nil

Note: \* Current activities related to planned budget.

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

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

## **4.0 FUTURE DEMAND**

### **4.1 Demand Drivers**

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

### **4.2 Demand Forecasts**

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

### **4.3 Demand Impact and Demand Management Plan**

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

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

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

**Table 4.3: Demand Management Plan**

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
Increased Heavy Vehicle Movements	Monitor via Traffic Count and Hierarchy of Network	Increased load on the transport network testing capacity	Reduced life of seal and pavement, thus increased cost	<ul style="list-style-type: none"> <li>- Continually assess network capacity and traffic flows. Address network capacity issues with improved capacity</li> <li>- Improve design standards to provide longer lasting pavements to cope with increased capacity and provide longevity</li> </ul>
Provision of Footpaths	Priority Based System based on Key Drivers	Increases in request for footpaths across the network to improve linkages to key facilities	Construction of new footpaths increases pressure on renewals of existing network.	<ul style="list-style-type: none"> <li>- Continue to provide new footpaths in keeping with the current policy and expenditure levels</li> </ul>
Boundary Realignment	Council has a known position on its asset network, income and renewal budgets	Potential for LGA Boundary Realignment imposed by the State Government, decreasing rate revenue.	Impact on numerous asset classes and reduction of service to compensate for loss of income	<ul style="list-style-type: none"> <li>- Scenarios developed to provide scoping around impacted areas.</li> </ul>
Sealing Unsealed Roads	Clear Policy defining criteria for sealing	Increased community requests or policy changes to seal township or freight routes	Increase in seal asset base, but reduced maintenance for unsealed	<ul style="list-style-type: none"> <li>- Analysis across potential routes or upgrades to determine benefit from upgrade.</li> <li>- Review of existing policy to focus on increased service for residential and hard to maintain areas.</li> </ul>

#### 4.4 Asset Programs to meet Demand

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

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

## 4.5 Climate Change and Adaption

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

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

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

Opportunities identified to date for management of climate change impacts on existing assets are shown in Table 4.4. Table 4.4 Managing the Impact of Climate Change on Assets

Climate Change Description	Projected Change	Potential Impact on Assets and Services	Management
Storm Intensity	More extreme weather events	Potentially more localised flooding  Unsealed road side drain impacted	Ensure table drains are well maintenance for the sealed and unsealed network  Kerb & Water table audits drive maintenance to reduce premature pavement failure
Rainfall	A drier climate is anticipated	Cost of water will increase  Seal life reduced due to drier climate and impact from sun & temperature rise	Budget for increased cost of water supply. Plan for reduction in useful lives of asset base and increased cost of delivery

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

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

Table 4.5 summarises some asset climate change resilience opportunities.

**Table 4.5 Building Asset Resilience to Climate Change**

New Asset Description	Climate Change impact These assets?	Build Resilience in New Works
Sealed Network	Increased heat – cracking, and reduced life	Activating circular economy and investigation into suitable materials
All water usage	By nature treatments are water intensive	Use water reuse where available, or reduction at site to minimise cartage.
Asset Design	Fit for purpose	Building resilience into assets at design will increase the asset life based on climate impacts, and also lower the carbon impact due to longer lasting assets if built with resilience in mind.

The impact of climate change on assets is a new and complex discussion and further opportunities will be developed in future revisions of this asset management plan.

## 5.0 LIFECYCLE MANAGEMENT PLAN

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

### 5.1 Background Data

#### 5.1.1 Physical parameters

The assets covered by this asset management plan are shown in Table 5.1.1.

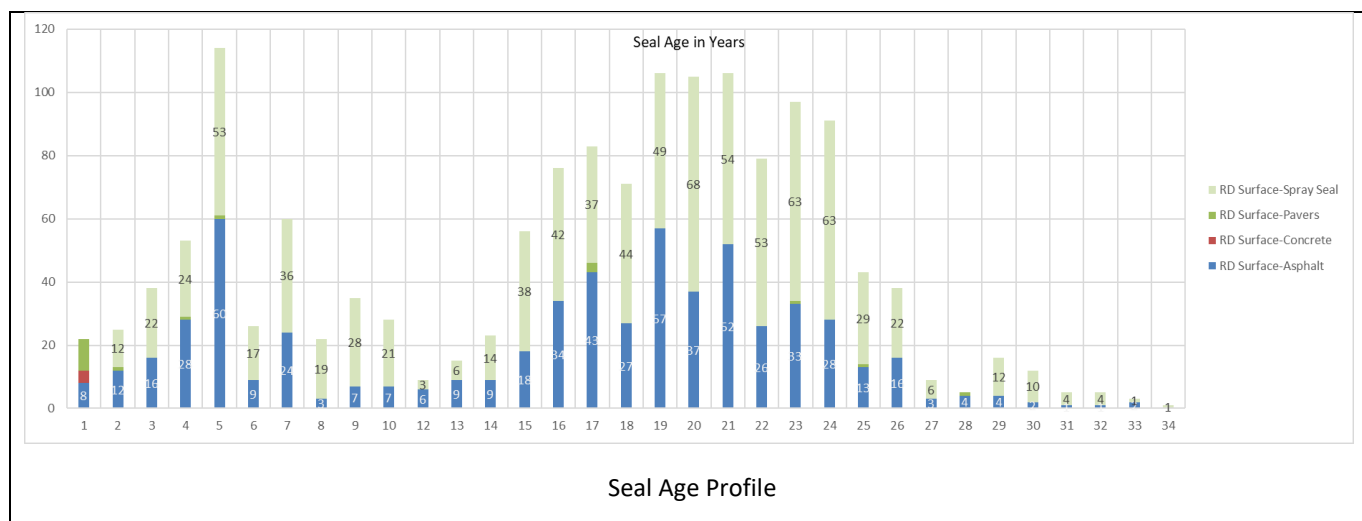
These assets include sealed, pavement, unsealed, footpath, kerb & water table and shoulders

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

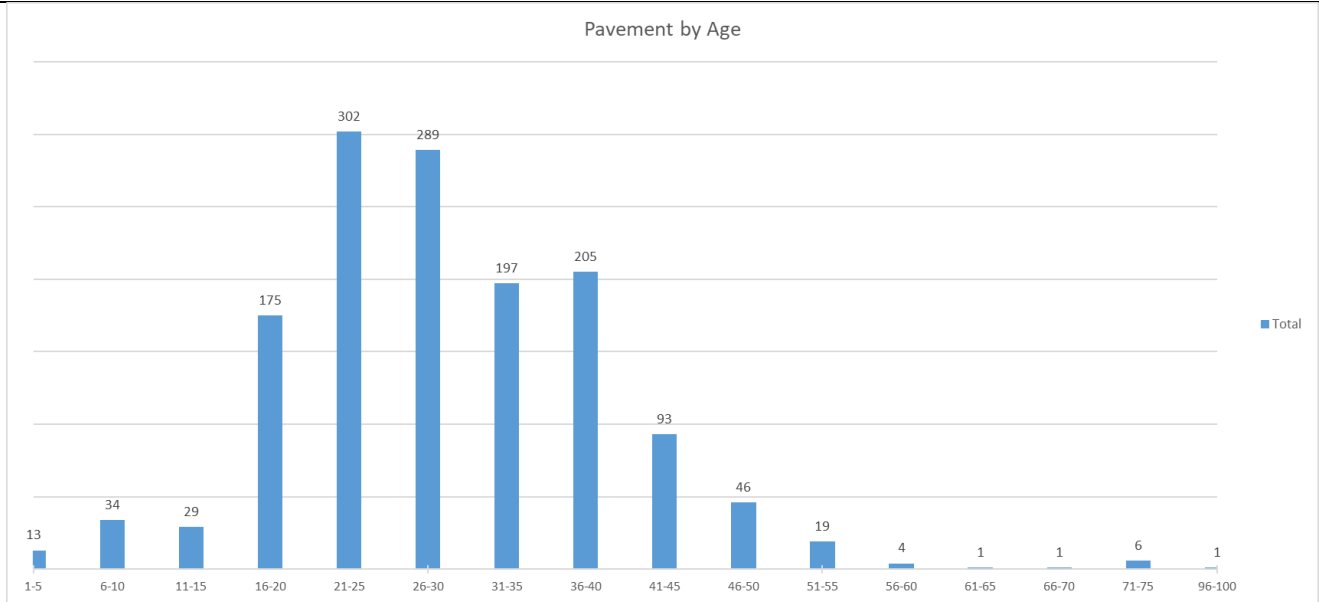
**Table 5.1.1: Assets covered by this Plan**

Asset Category	Dimensions	Replacement Value
Sealed Road Surface Network	608 kilometres network length	\$36,866,799 Valued – 30/6/2020
Pavement Road Network	608 kilometres network length	\$158,758,870 Valued – 30/6/2020
Unsealed Surface Road Network	401 kilometres network length	\$24,832,163 Valued – 30/6/2020
Footpath Network	115 kilometres network length	\$14,840,674 Valued – 30/6/2020
Kerb and Water Table	253.4 kilometres network length	\$40,379,263 Valued – 30/6/2020
Sealed Road Surface Shoulders	561,161 m2	\$19,424,817 Valued – 30/6/2020
<b>Totals</b>		<b>\$295,102,586</b>

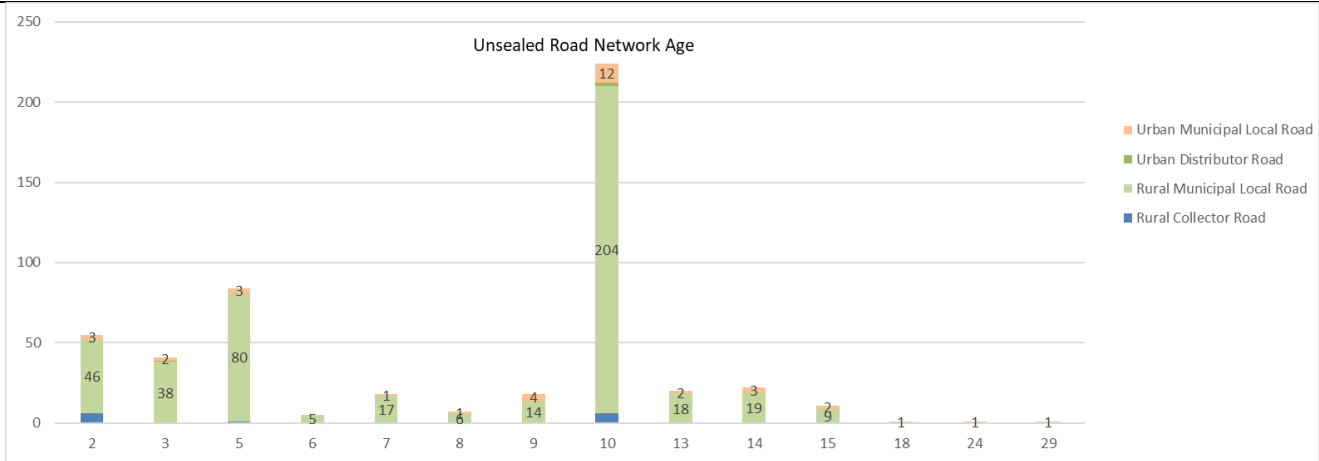
**Figure 5.1.1: Asset Age Profile**



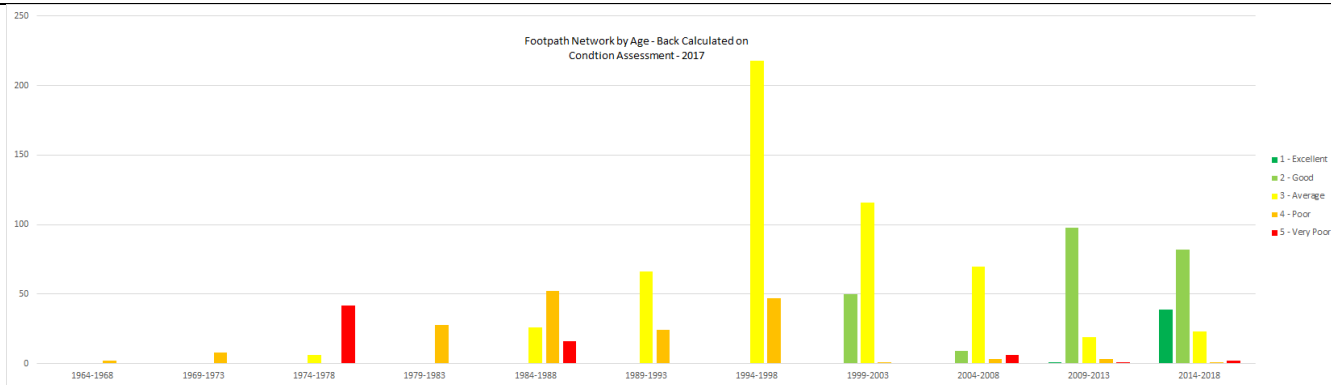




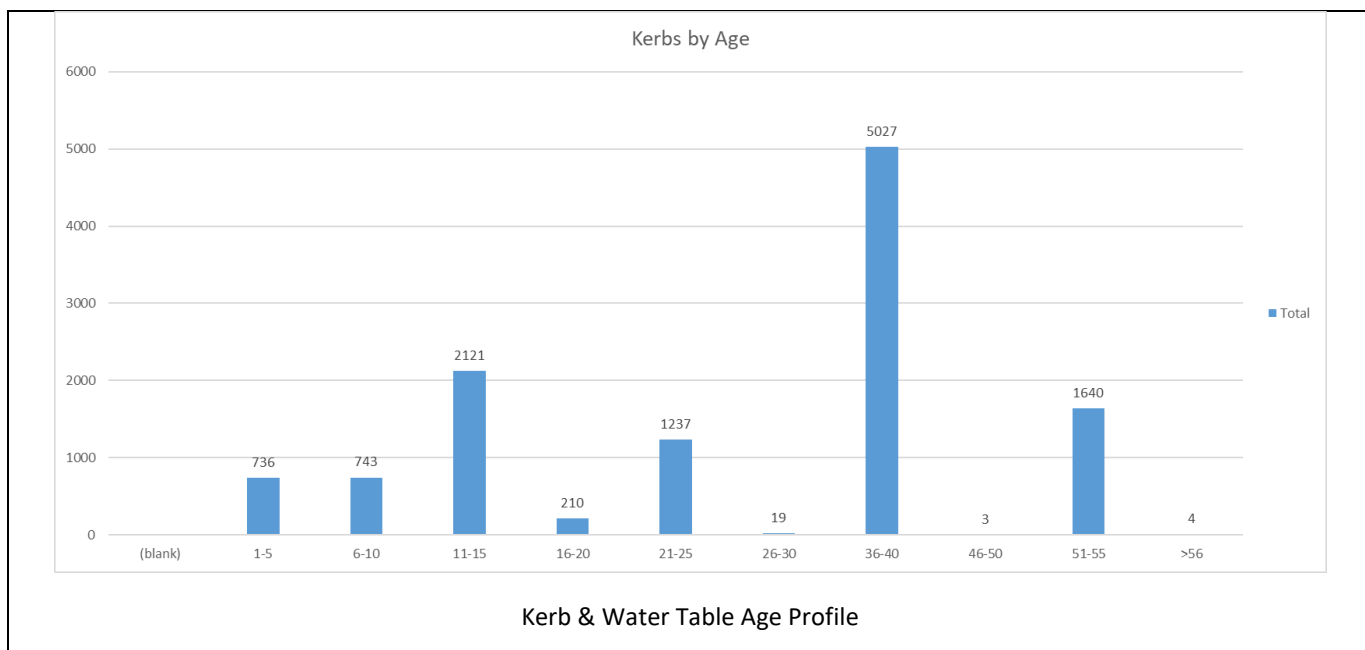
Pavement Age Profile/Shoulders (Tied to Pavement Profile)



Unsealed Age Profile



Footpath Age Profile



All figure values are shown in current (real) dollars.

Adelaide Hills Council has an aging asset profile across its Sealed Roads and Footpath network, and useful lives are relatively realistic to what is on the ground, and assets have outperformed their useful lives or previous construction dates have been re-aligned to fit the condition of the asset base. Having an aging asset base and continuing to construct new infrastructure or extend useful lives leads to major peaks in the future and require careful management and intervention to avoid impacts on the future.

It is important to recognise that robust condition assessments drive key intervention points where early intervention with maintenance can reduce significant investment in the future. Understanding the age profile is a key driver for planning over the long term and the impacts on new investment over renewal are a challenge that is to be considered to remain sustainable.

### 5.1.2 Asset capacity and performance

Assets are generally provided to meet design standards where these are available. However, there is insufficient resources to address all known deficiencies. Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

**Table 5.1.2: Known Service Performance Deficiencies**

Location	Service Deficiency
Seal	Known portion of network has dead binder identified
Seal	Identified segments of edge break not being maintained
Pavement	Identified segments of failure
Kerb & Water Table	Existing asphalt rollover kerb
Maintenance Recording	Numerous asset classes within this plan do not have maintenance information this reduces the confidence in planning and maintenance forecasting and reliably understanding how, when & where maintenance is undertaken

The above service deficiencies were identified from ARRB Condition Assessment 2015 (Seal & Pavement), Kerb & Water Table – Internal Decision to minimise asphalt kerb renewals/maintenance.

**5.1.3 Asset condition**

Condition is currently monitored through a combination of external and internal condition assessments. The list below identifies where the last full condition audit of the Roads, Footpath and Kerb asset classes were undertaken.

- Seal & Pavement – ARRB 2015 – Planned 21/22
- Unsealed – 2014 – Yearly inspections being undertaken
- Footpath Network – 2014 – Planned 21/22
- Kerb & Water Table – 2009 – Planned 20/21
- Shoulders – ARRB 2015 – Planned 21/22

Condition is measured using a 1 – 5 grading system<sup>4</sup> as detailed in Table 5.1.3. It is important that consistent condition grades be used in reporting various assets across an organisation. This supports effective communication. At the detailed level assets may be measured utilising different condition scales, however, for reporting in the AM plan they are all translated to the 1 – 5 grading scale.

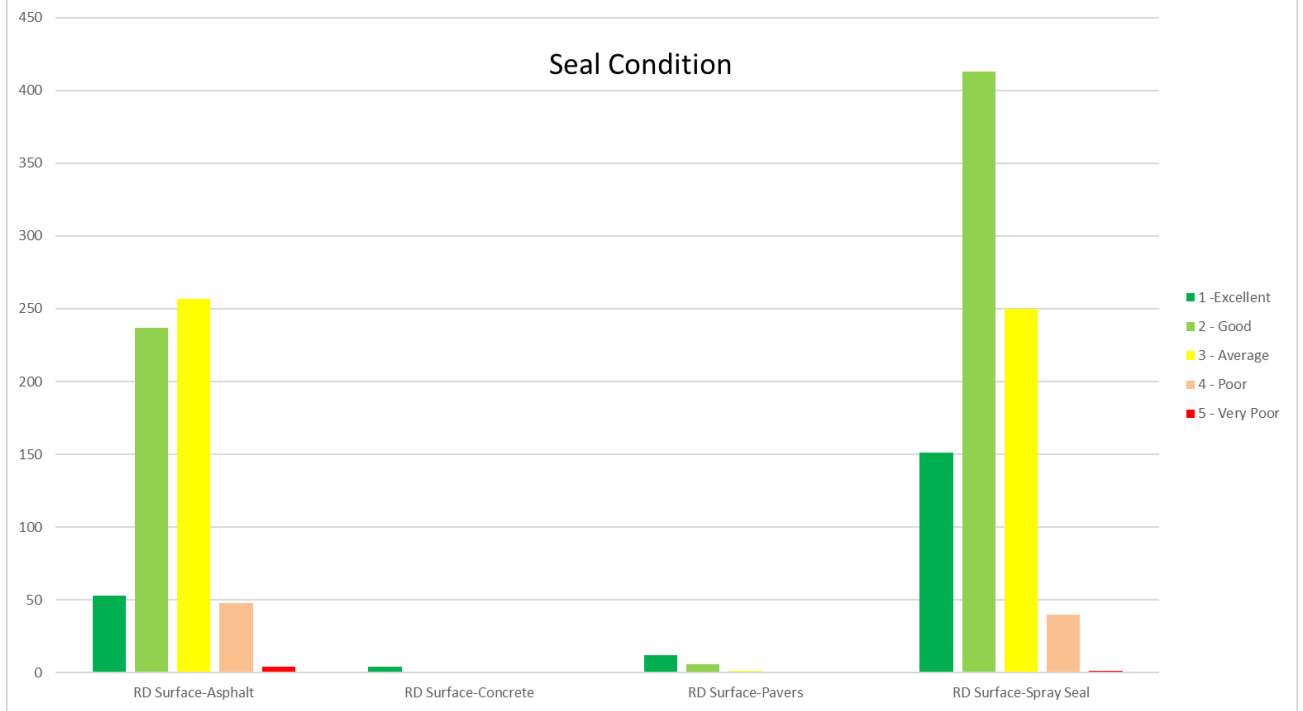
**Table 5.1.3: Simple Condition Grading Model**

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

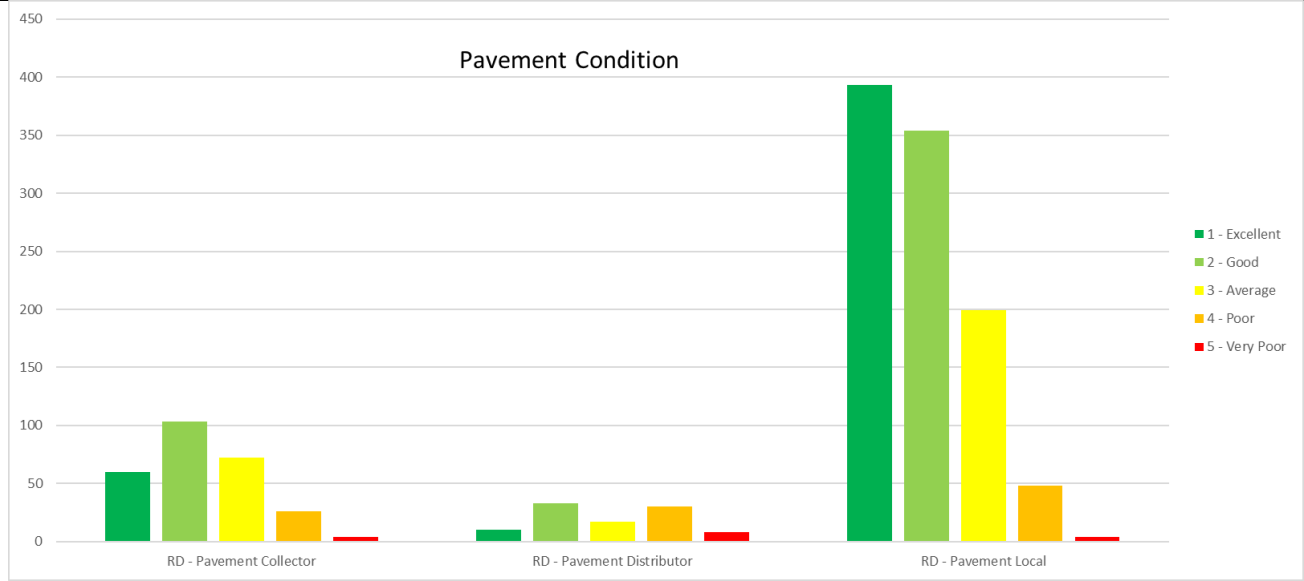
The condition profile of our assets is shown in Figure 5.1.3.

**Figure 5.1.3: Asset Condition Profile**

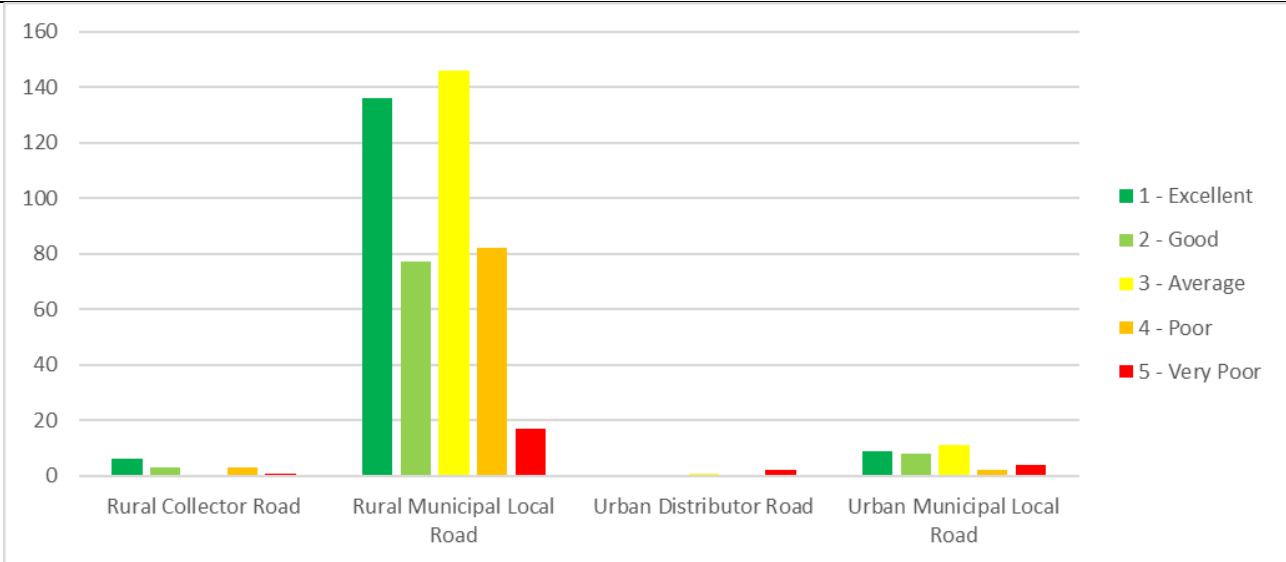
<sup>4</sup> IPWEA, 2015, IIMM, Sec 2.5.4, p 2|80.



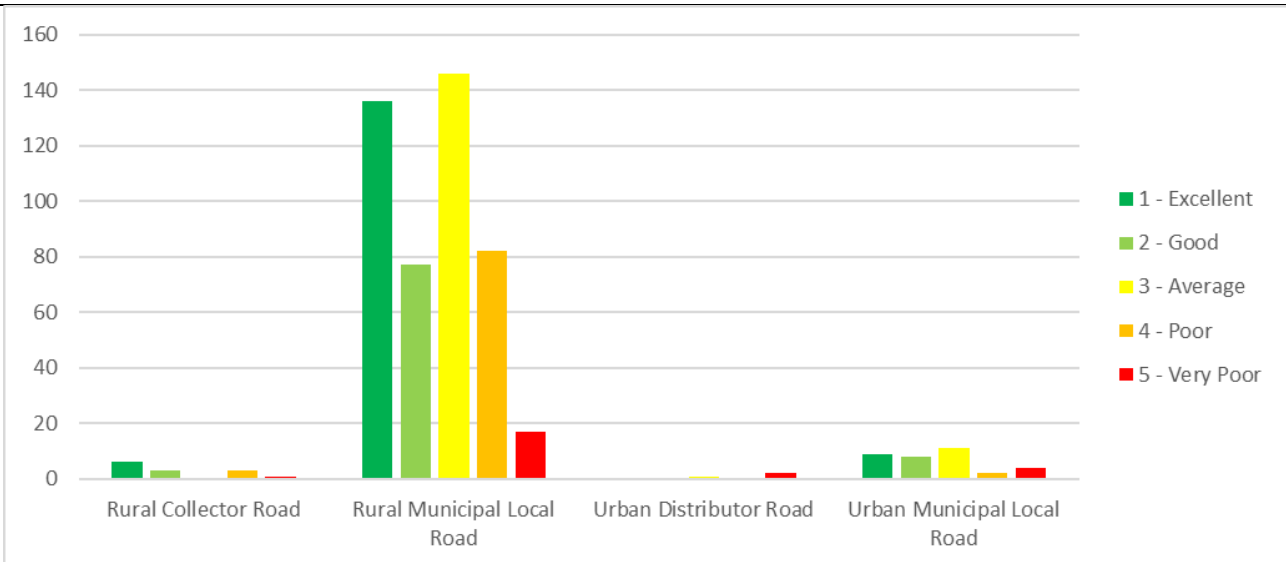
**Seal Condition Profile  
(2015 Condition Data)**



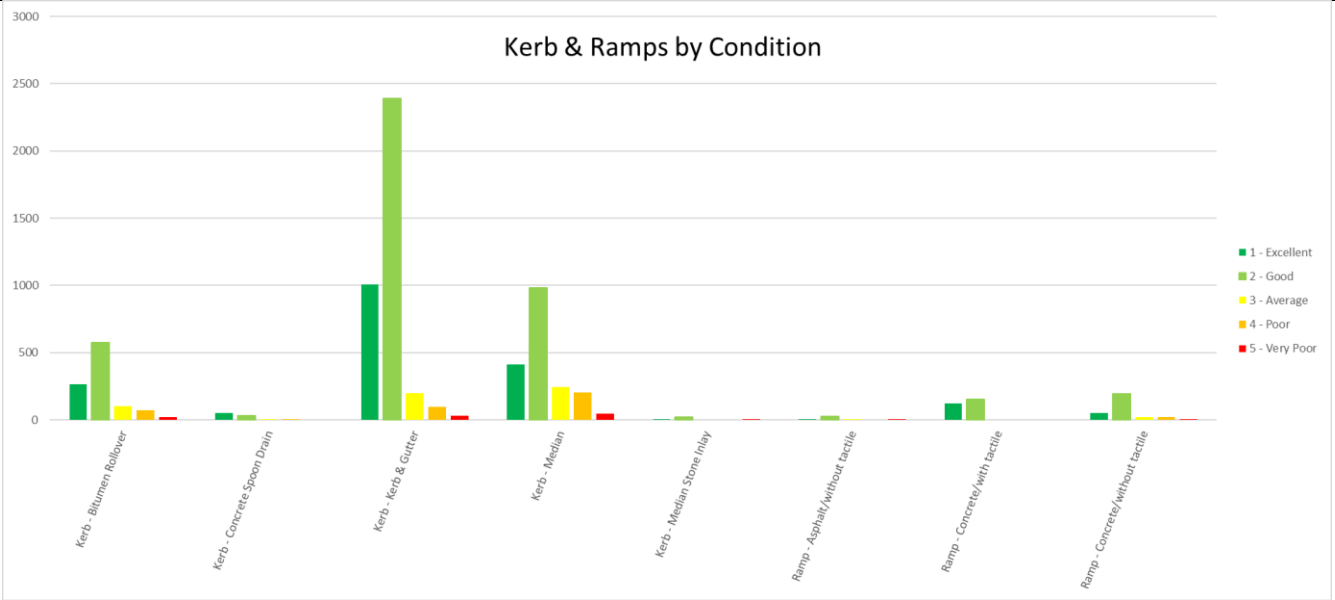
**Pavement Condition Profile  
(2015 Condition Data)**



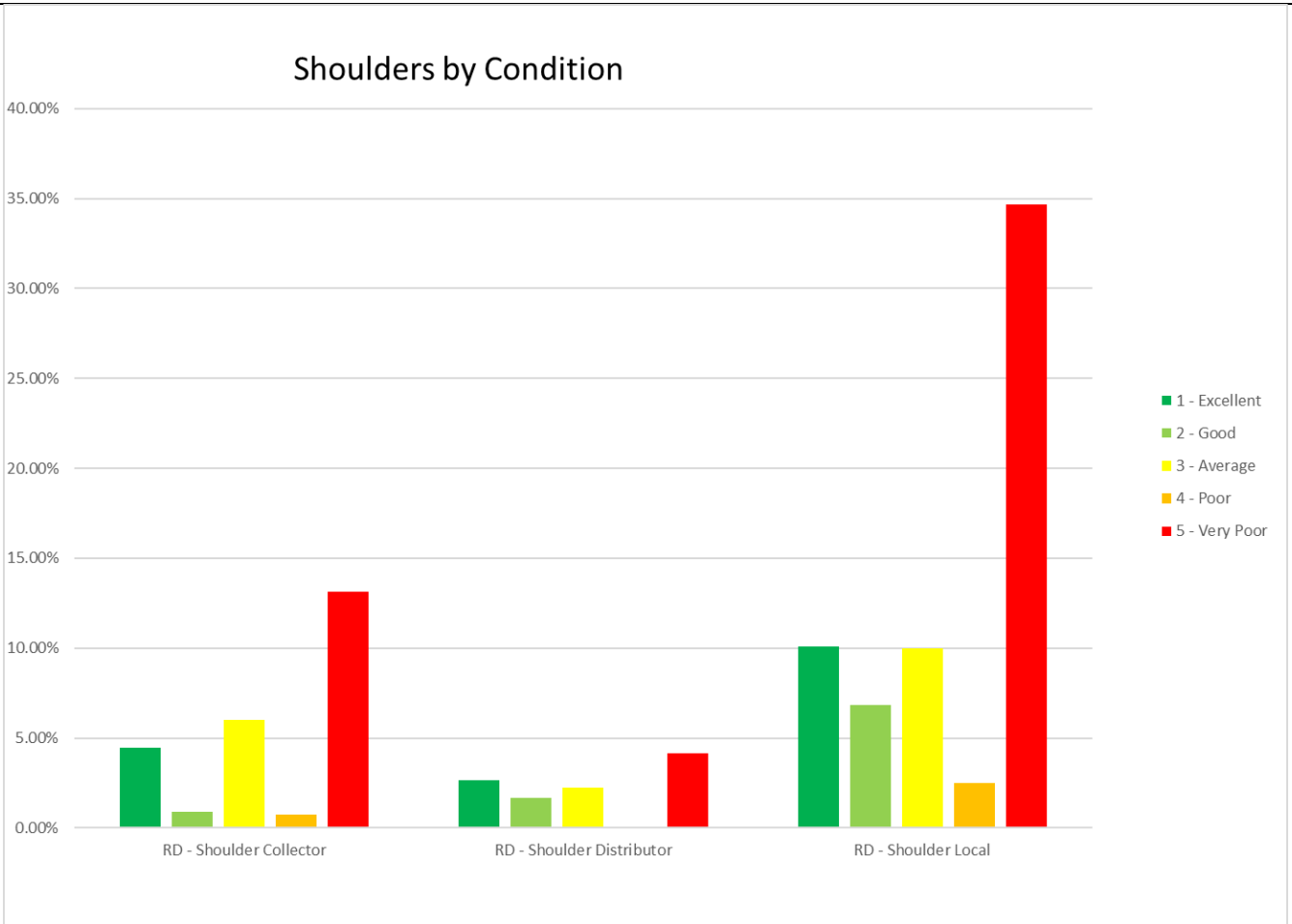
Unsealed Condition Profile  
(2014 Condition Data)



Footpath Condition Profile  
(2014 Condition Data)



Kerb & Water Table Condition Profile  
(2009 Condition Data)



Shoulders Condition Profile  
(2015 Condition Data)

The condition of Councils Road, Footpath and Kerb assets range from a high level of confidence through to low, and where a low condition of confidence is highlighted, professional judgement is the overriding factor in determining condition.

Footpath, Kerb & Shoulder condition all require revalidating through the condition assessment process and is included in the improvement plan in section 8.

## 5.2 Operations and Maintenance Plan

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

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating. Examples of typical maintenance activities include pipe repairs, asphalt patching, and equipment repairs.

The trend in maintenance budgets are shown in Table 5.2.1.

**Table 5.2.1: Maintenance Budget Trends**

Year	Maintenance Budget \$
19/20 Financial Year	\$2,547,000
20/21 Financial Year	\$2,592,460
21/22 Financial Year	\$2,766,716

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

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

### Asset hierarchy

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

The service hierarchy is shown in Table 5.2.2.

**Table 5.2.2: Asset Service Hierarchy**

Service Hierarchy		Service Level Objective
Road Seal/Pavement/Unsealed	Urban Distributor	Urban Distributor Roads are roads that link suburbs, towns or areas that provide a direct link through a town or area or act as a bypass route around a town or urban area.
	Urban Collector	Urban Collector roads collect traffic from suburban areas and channel traffic directly to town centres or major points of activity. They may also link suburbs or towns directly to distributor roads.

		Urban Collector roads are appropriate for heavy vehicle traffic but B-Double and heavy transport movements are generally restricted.
	Urban Local	Urban Local roads carry low traffic volumes and provide access within an urban area or town and should not be thoroughfares and should be designed with traffic calming features to discourage through traffic and high speed traffic.
	Rural Distributor	Rural Distributors are roads that directly link rural areas and/or towns. They are bitumen sealed and carry large medium to volumes of traffic and are designed as freight routes.
	Rural Collector	Rural Collector roads collect traffic from rural areas and channel traffic to rural towns or to Rural Distributor roads. Rural Collector roads are suitable for heavy vehicles and farm machinery and are generally bitumen sealed but may be unsealed.
	Rural Local	Rural Local roads have low traffic volumes and link rural properties and areas to Rural Distributor and Rural Collector roads. Rural Local roads are generally unsealed and require a regular grading or maintenance program, unsealed roads policy derives the criteria for upgrading these to seal.
Footpath	Priority Zone 1	Highly trafficked footpaths, such as the Central Business Districts
	Priority Zone 2	Footpaths with medium levels of pedestrian traffic and/or those that are located near vulnerable users, such as: <ul style="list-style-type: none"> <li>• Aged care centres</li> <li>• Senior citizen centres</li> <li>• Schools</li> <li>• Car parks</li> <li>• Doctors surgeries</li> </ul>
	Priority Zone 3	Footpaths in local access streets
	Priority Zone 4	Footpaths with low levels of pedestrian traffic in cul-de-sacs
	Priority Zone 5	Unformed, minimal access or inaccessible/unfeasible location for installation
Kerb & Watertable	Linked to Road Hierarchy	
Shoulders	Linked to Road Hierarchy	





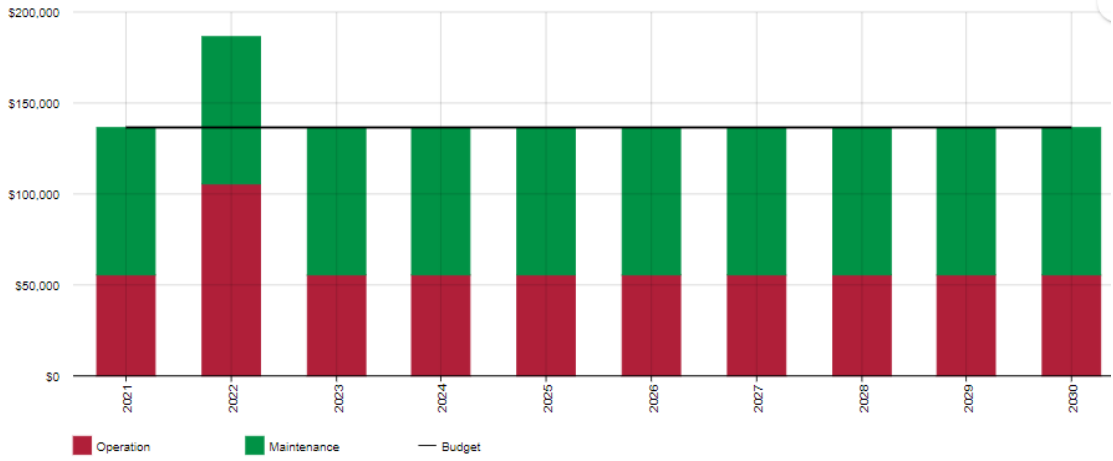
**Summary of forecast operations and maintenance costs**

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

**Figure 5.2: Operations and Maintenance Summary**

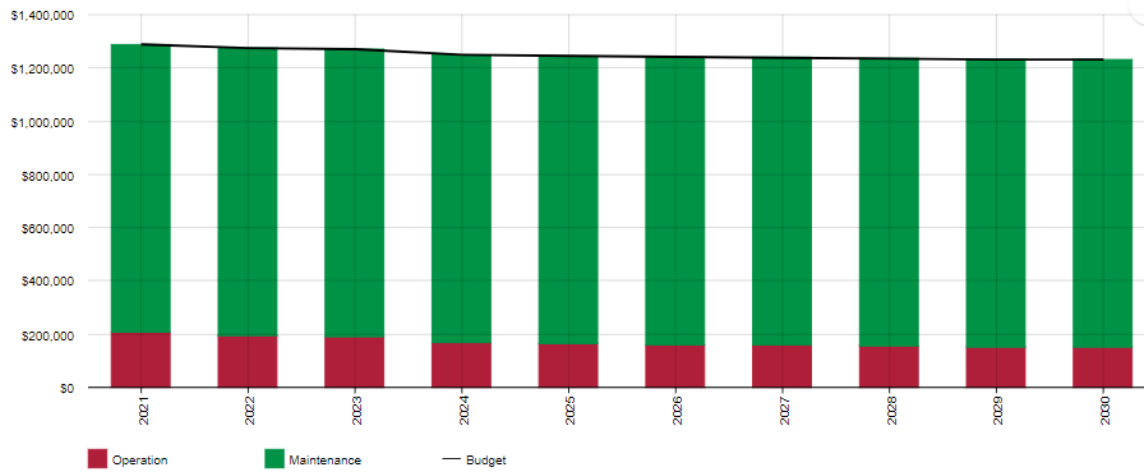


Operation and Maintenance Summary



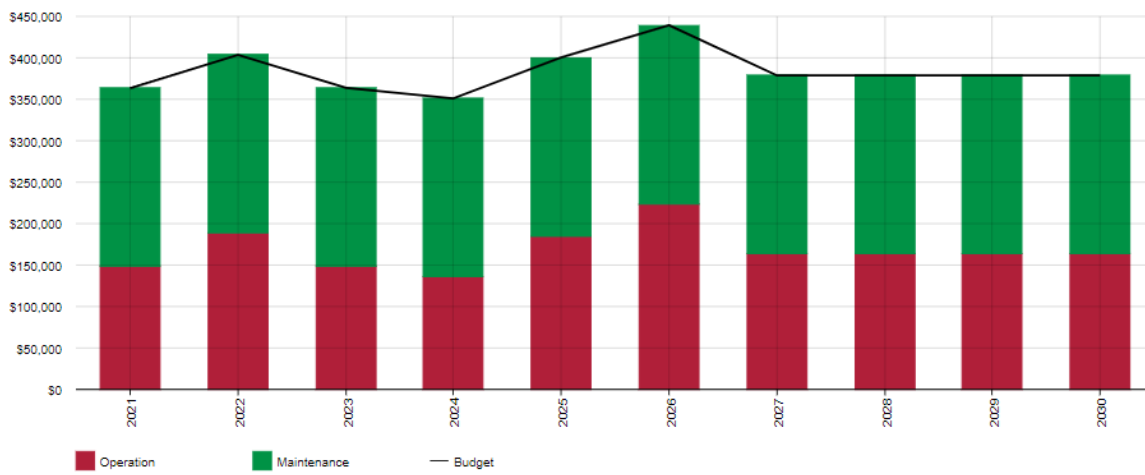
Footpaths

Operation and Maintenance Summary

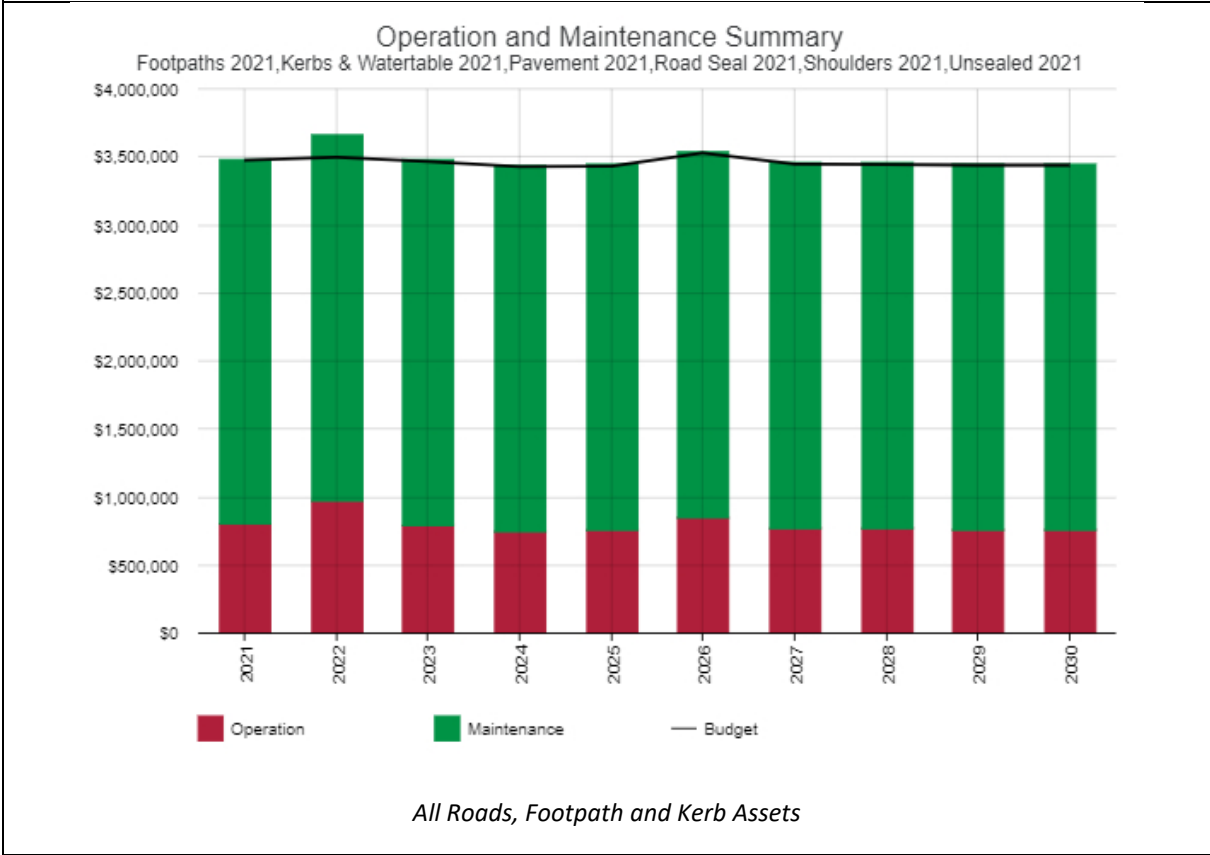
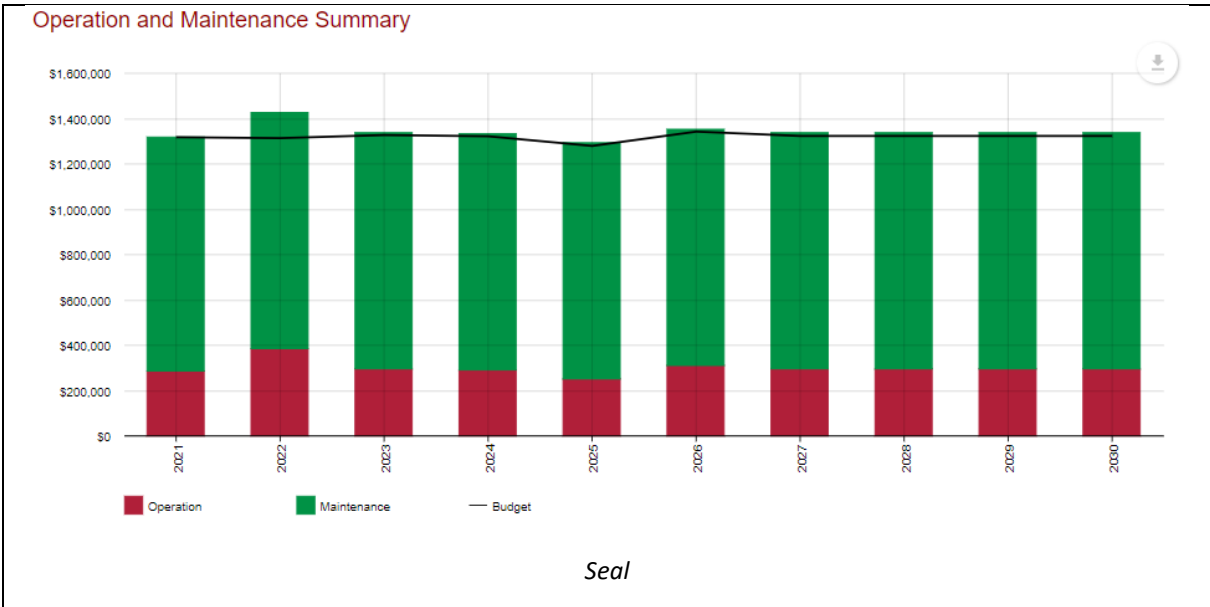


Unsealed

Operation and Maintenance Summary



Pavement



All figure values are shown in current (real) 2020 dollars.

Increased maintenance is expected across the seal, pavement and footpath networks in areas already identified.

Unsealed road maintenance increase is expected whilst a reduction in renewal is also planned.

**5.3 Renewal Plan**

Renewal is major capital work which does not significantly alter the original service provided by the asset, but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and

above restoring an asset to original service potential is considered to be an acquisition resulting in additional future operations and maintenance costs.

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

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

The typical useful lives of assets used to develop projected asset renewal forecasts are shown in Table 5.3. Asset useful lives were last reviewed on February 2019

**Table 5.3: Useful Lives of Assets**

Asset (Sub)Category		Useful life	
Road Seal	Distributor - Spray Seal	20	\$10.36 m2
	Local Collector – Spray Seal	20	\$7.03 m2
	Distributor – Asphalt	30	\$28.61 m2
	Local Collector – Asphalt	30	\$15.89 m2
	Pavers	50	\$28.61 m2 **
	Concrete	60	\$28.61 m2 **
Road Pavement	Pavement Base Local	95	\$27.24 m2
	Pavement Base Collector	80	\$27.24 m2
	Pavement Base Distributor	65	\$27.90 m2
	Pavement Sub-Base Local	190	\$14.01 m2
	Pavement Sub-Base Collector	160	\$21.01 m2
	Pavement Sub-Base Distributor	130	\$38.52 m2
Unsealed Road	Rural/Urban	15-20	\$11.68 m2
Footpath	Brick Paved	50	\$124.14 m2
	Asphalt	30	\$89.40 m2
	Concrete	80-100	\$125.21 m2
	Rubble	50	\$19.84 m2
	Pram Ramps	60	\$1250 each
Kerb & Water Table	Upright Kerb	100	\$195.00 m2
	Semi Mountable	100	\$150.10 m2
	Mountable - Stone Inlay	100	\$251.38 m2
Shoulders	Distributor, Collector & Local	65-95	\$31.00 m2

\*\* Note that Council currently has about 5,000m<sup>2</sup> out of 3,600,000 m<sup>2</sup> of road seal that is concrete or pavers. Council has assumed that the rate for these assets are the same as for Distributor – Asphalt.

The estimates for renewals in this asset management plan were based on the asset register or an alternate Method.

### 5.3.1 Renewal ranking criteria

Asset renewal is typically undertaken to either:

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

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

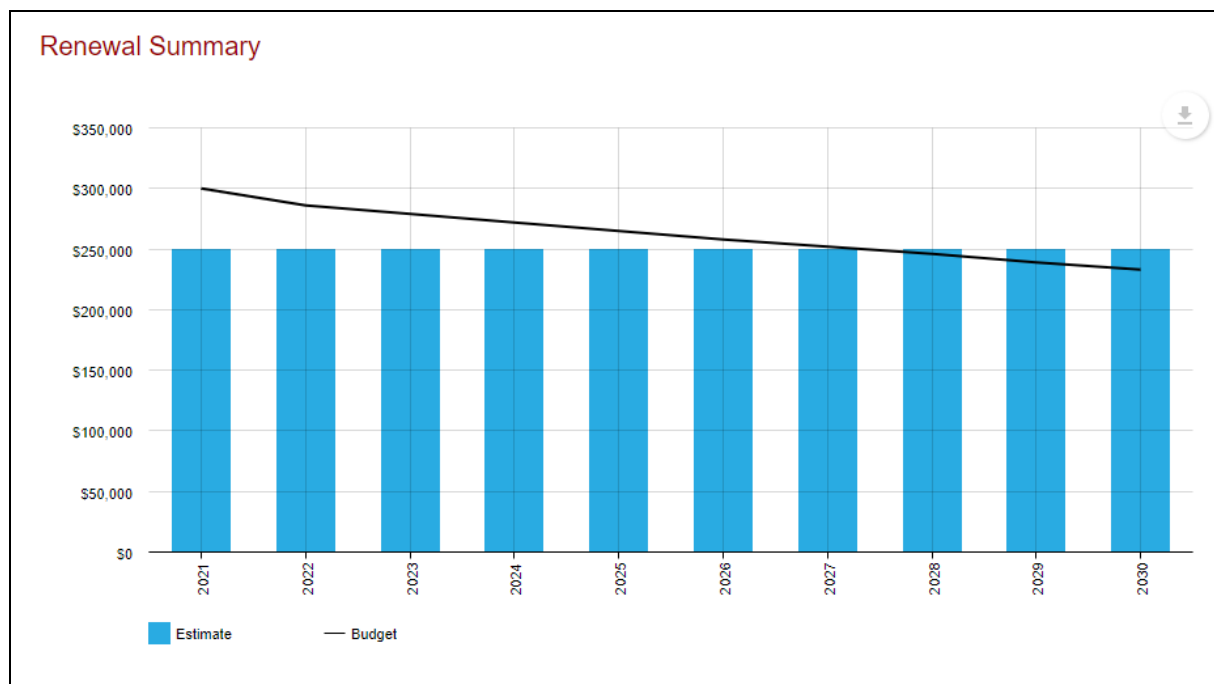
- Have a high consequence of failure,
- Have high use and subsequent impact on users would be significant,
- Have higher than expected operational or maintenance costs, and
- Have potential to reduce life cycle costs by replacement with a modern equivalent asset that would provide the equivalent service.<sup>6</sup>

This renewal ranking criteria is to be reviewed through the improvement plan,

### 5.4 Summary of future renewal costs

Forecast renewal costs are projected to increase over time if the asset stock increases. The forecast costs associated with renewals are shown relative to the proposed renewal budget in Figure 5.3.2. A detailed summary of the forecast renewal costs is shown in Appendix A.

**Figure 5.3.2: Forecast Renewal Costs**

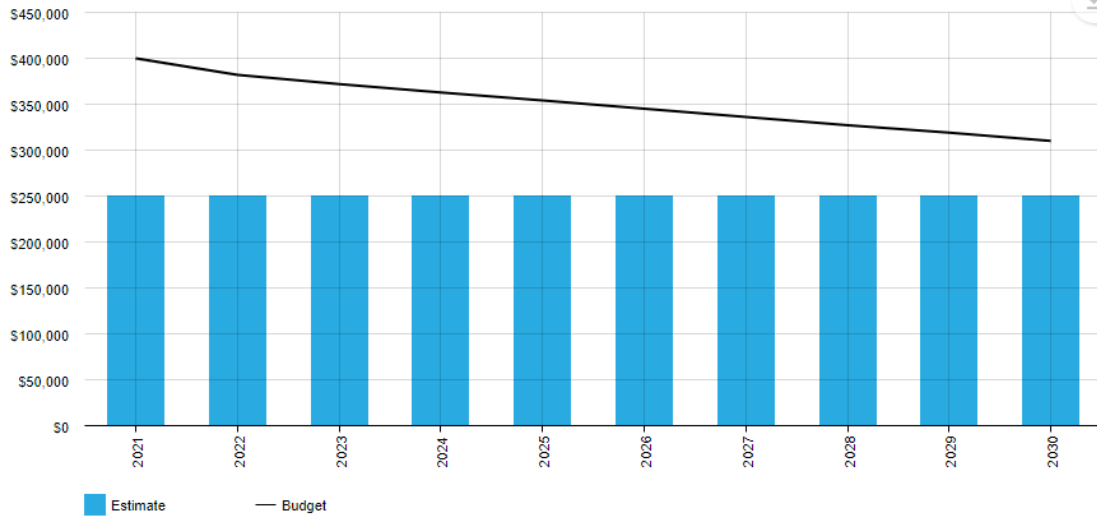


<sup>5</sup> IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.

<sup>6</sup> Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

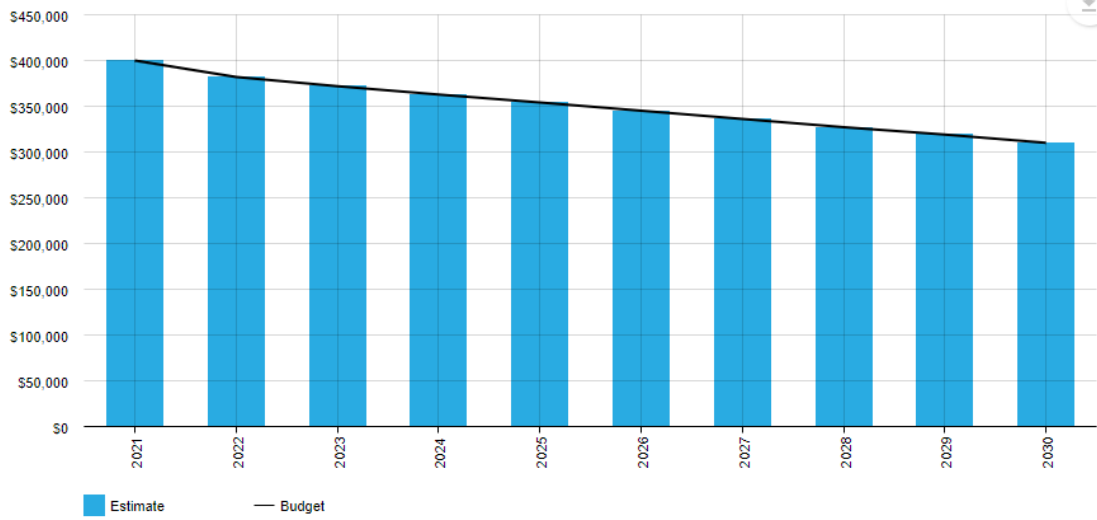
Kerb & Water Table

Renewal Summary



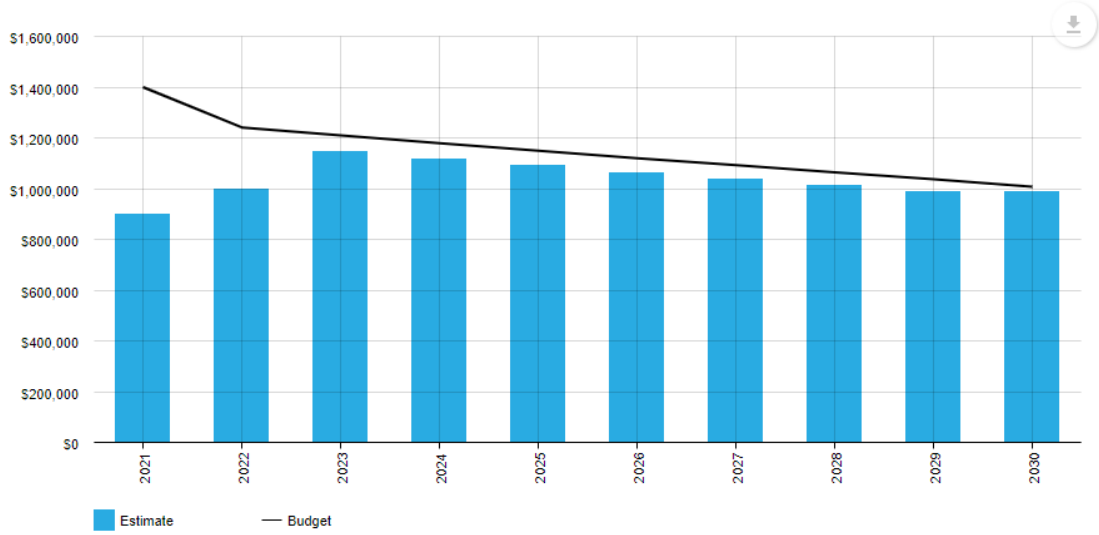
Shoulders

Renewal Summary



Footpaths

### Renewal Summary



*Unsealed*

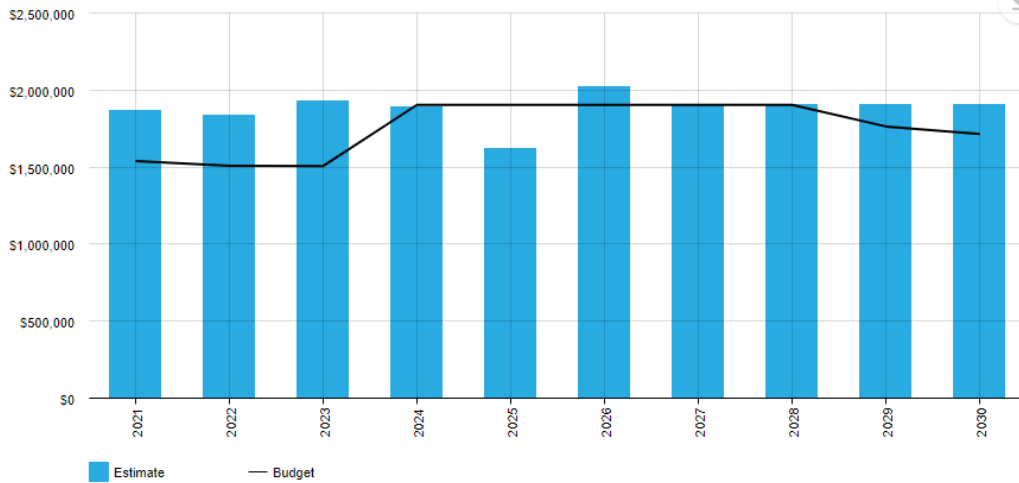
### Renewal Summary



*Pavement*



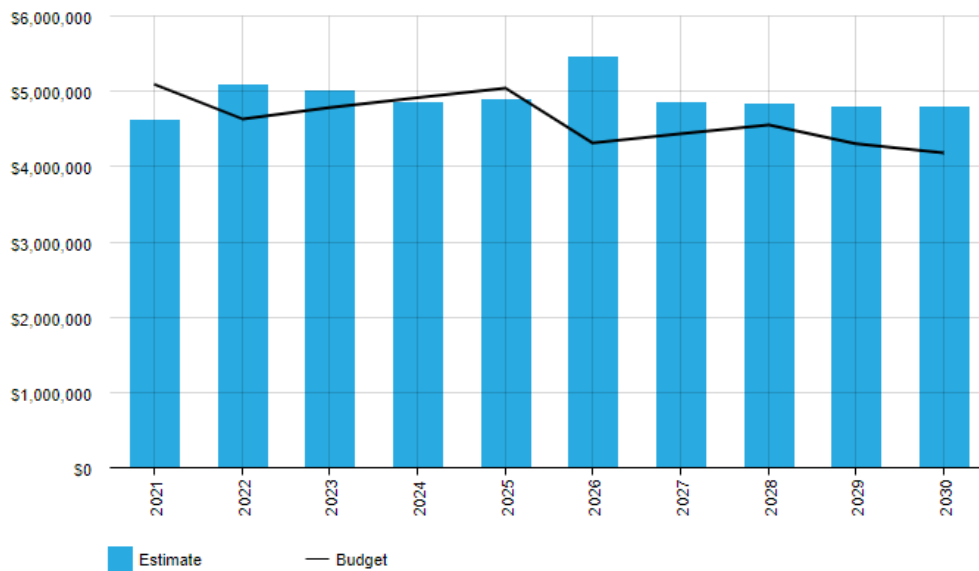
### Renewal Summary



### Seal

### : Renewal Summary (Alternate Method)

Footpaths 2021 V2, Pavement 2021 V2, Road Seal 2021 V2, Shoulders 2021 V2, Unsealed 2021 V2



### All Roads, Footpath and Kerb Assets

All figure values are shown in current (real) dollars.

#### Notes:

Kerb & Water Table – Renewals likely to change based on condition assessment being undertaken and amalgamation of assets within existing database – new renewal model after 2020

Shoulders – Reduction in shoulder capital renewal and a move to a maintenance based approach is reviewed

Unsealed Roads – Reduction in renewals over time to increase the focus on patrol grading to extend the life of existing assets and promote best practice across network.

Seal – Forecast likely to change from 2021/22 when road condition assessment is undertaken to provide new renewal strategy. Currently shows overfunding but underfunded existing for portions of the network across spray seal and aging seal.

Pavement - Significant work has been undertaken to strengthen the parity between the pavement and seal in terms of aligning the preparation work required prior to sealing being funded from the pavement budget which in term reduces the overall cost of the unit rate of the seal work being undertaken, but also provides planning opportunities to target failed pavement prior to reseal.

There are recognised sections of pavement reconstruction across the network including Tiers Road (Lenswood), Longwood Road (Heathfield), Pfeiffer Road (Woodside), Carey Gully Road (Mt George) and Sturt Valley Road (Stirling). The approach to these sections is to deliver the work over numerous years to place minimal impact on the budget.

## **5.5 Acquisition Plan**

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

### **5.5.1 Selection criteria**

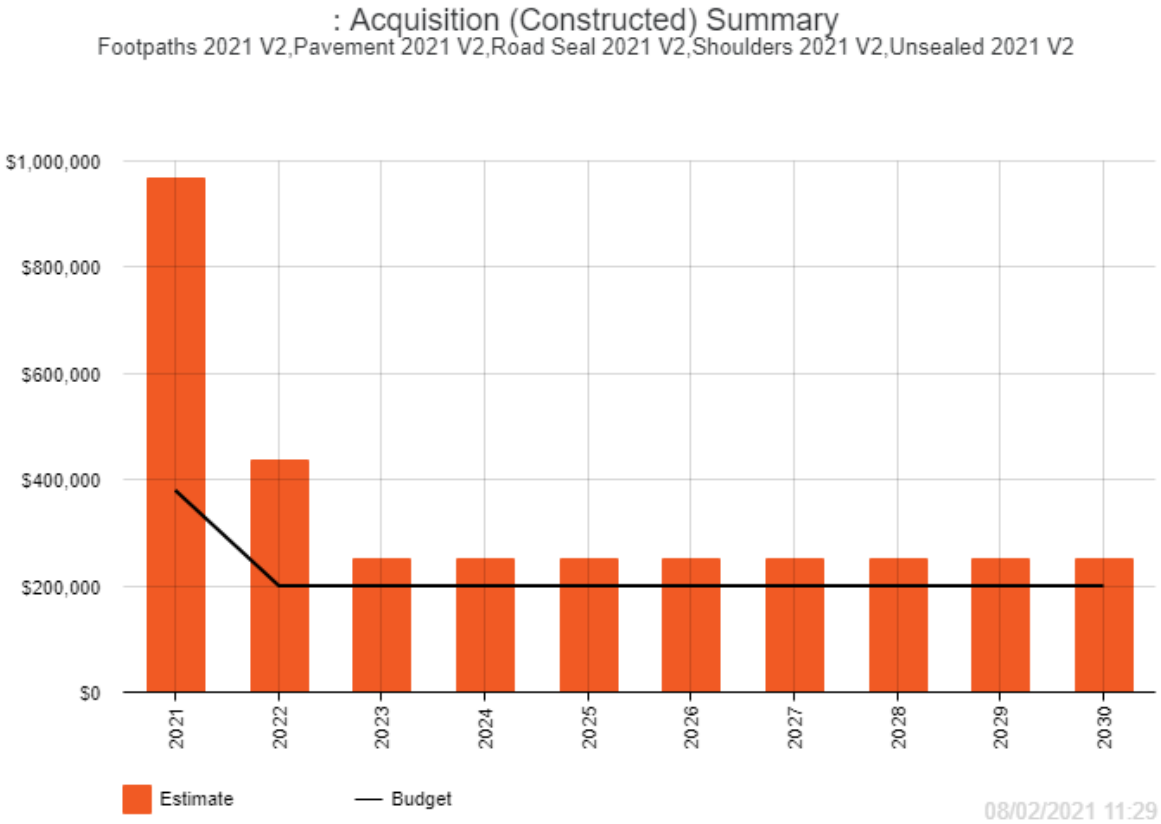
Proposed upgrade of existing assets, and new assets, are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. Potential upgrade and new works should be reviewed to verify that they are essential to the Entities needs. Proposed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

The Priority Ranking Criteria has been added to the improvement plan in section 8.

**Summary of future asset acquisition costs**

Forecast acquisition asset costs are summarised / summarised in Figure 5.4.1 and shown relative to the proposed acquisition budget. The forecast acquisition capital works program is shown in Appendix B.

**Figure 5.4.1: Acquisition (Constructed) Summary**



*All Roads, Footpath and Kerb Assets (2020 increase – New Footpath Initiatives, Woodforde Estate and The Crest at Inverbrackie*

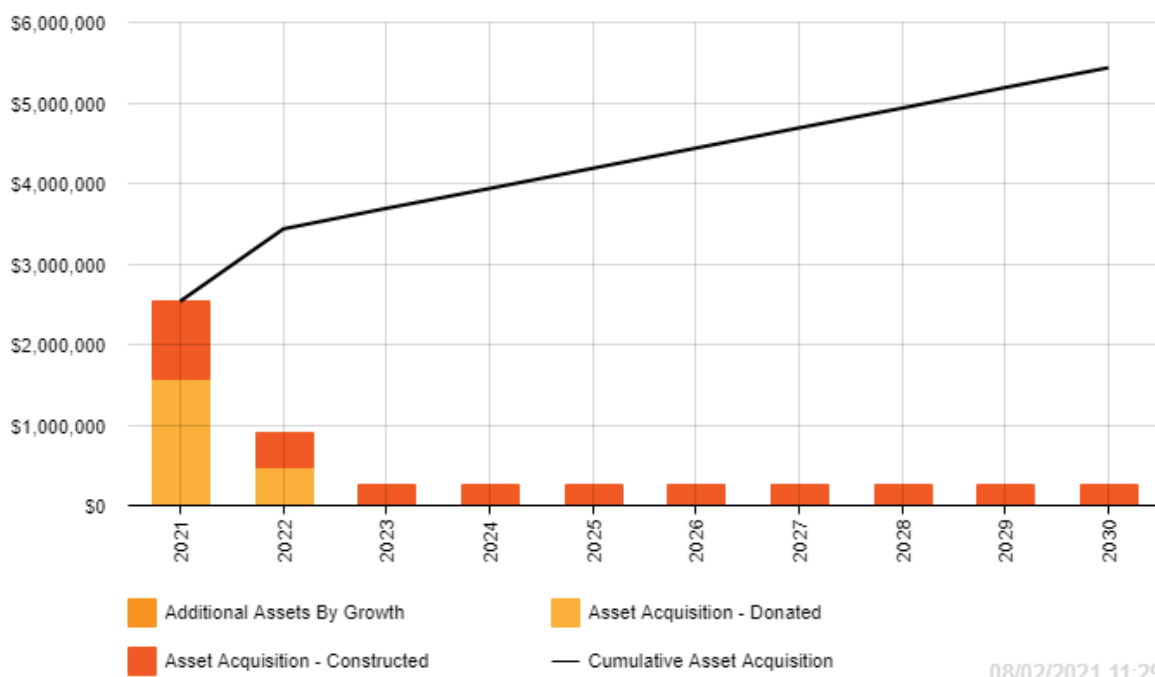
Inverbrackie, an old army base within the Adelaide Hills Council will be gifted to the Council in 2020 and comes with a significant existing asset base consisting pavement, seal, kerb and water table, stormwater and footpath assets that will be added to the register once values are established and ownership is transferred and these assets will be included in forth coming revaluations.

All figure values are shown in current (real) dollars.

When an Adelaide Hills Council commits to new assets, they must be prepared to fund future operations, maintenance and renewal costs. They must also account for future depreciation when reviewing long term sustainability. When reviewing the long-term impacts of asset acquisition, it is useful to consider the cumulative value of the acquired assets being taken on by the Entity. The cumulative value of all acquisition work, including assets that are constructed and contributed shown in Figure 5.4.2.

**Figure 5.4.2: Acquisition Summary**

: Acquisition Summary  
 Footpaths 2021 V2, Pavement 2021 V2, Road Seal 2021 V2, Shoulders 2021 V2, Unsealed 2021 V2



08/02/2021 11:29

*All Road, Footpath and Kerb Assets*

All figure values are shown in current (real) dollars.

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

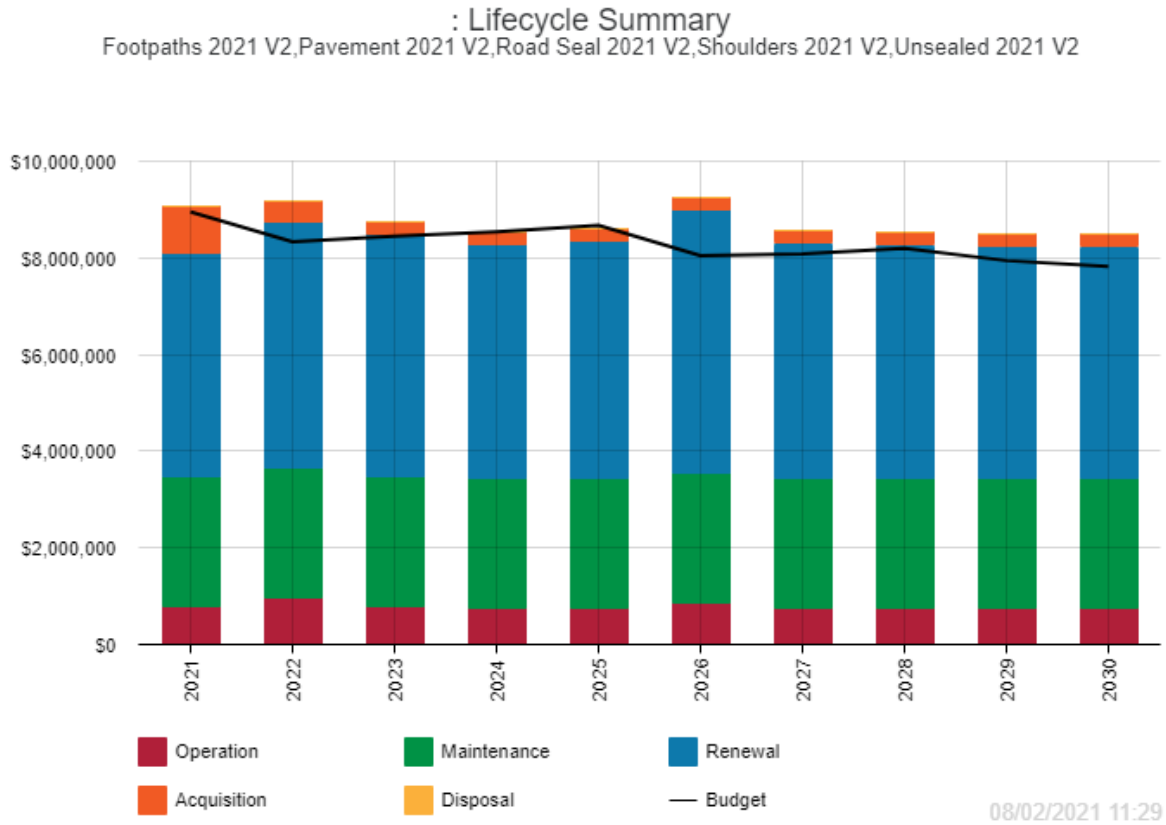
Council currently has committed to new assets in high priority areas across its footpath network. There are minimal upgrades or new assets planned across the other asset classes as its key focus is on renewal.

**Summary of asset forecast costs**

The financial projections from this asset plan are shown in Figure 5.4.3. These projections include forecast costs for acquisition, operation, maintenance, renewal, and disposal. These forecast costs are shown relative to the proposed budget.

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

**Figure 5.4.3: Lifecycle Summary**



*All Roads, Footpath and Kerb Assets*

## 5.6 Disposal Plan

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.6. A summary of the disposal costs and estimated reductions in annual operations and maintenance of disposing of the assets are also outlined in Table 5.6. Any costs or revenue gained from asset disposals is included in the long term financial plan.

**Table 5.6: Assets Identified for Disposal**

Asset	Reason for Disposal	Timing	Disposal Costs	Operations & Maintenance Annual Savings
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No Assets Identified

## 6.0 RISK MANAGEMENT PLANNING

The purpose of infrastructure risk management is to document the findings and recommendations resulting from the periodic identification, assessment and treatment of risks associated with providing services from infrastructure, using the fundamentals of International Standard ISO 31000:2018 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2018 as: ‘coordinated activities to direct and control with regard to risk’<sup>7</sup>.

An assessment of risks<sup>8</sup> associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a ‘financial shock’, reputational impacts, or other consequences. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, and the consequences should the event occur. The risk assessment should also include the development of a risk rating, evaluation of the risks and development of a risk treatment plan for those risks that are deemed to be non-acceptable.

### 6.1 Critical Assets

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

**Table 6.1 Critical Assets**

Critical Asset(s)	Failure Mode	Impact
Beyond useful life asphalt footpaths in high pedestrian areas or high risk areas	Degradation through age to the extent that they pose a potential danger to the walking public	Maintenance inspections to proactively identify risks and defects. Patching where required to provide a safe surface
Distributor roads	‘Sudden’ failure of pavement base within condition assessment periods resulting in unplanned budget allocation/and/or reduce access to locations within the hills with lengthy detours	Regular inspection of distributor roads within condition assessment periods.

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

### 6.2 Risk Assessment

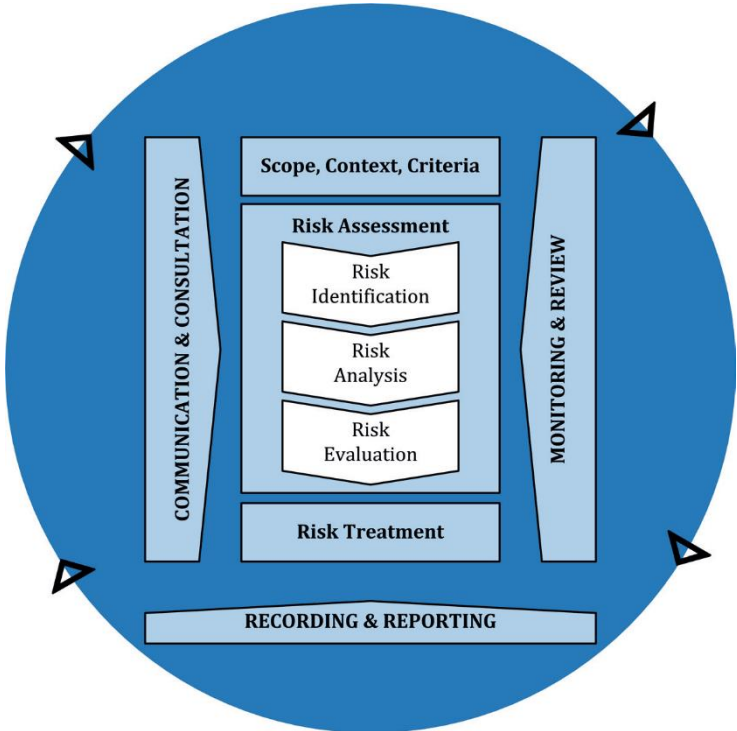
The risk management process used is shown in Figure 6.2 below.

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

<sup>7</sup> ISO 31000:2009, p 2

<sup>8</sup> REPLACE with Reference to the Corporate or Infrastructure Risk Management Plan as the footnote

The process is based on the fundamentals of International Standard ISO 31000:2018.



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

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

An assessment of risks<sup>9</sup> associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a ‘financial shock’, reputational impacts, or other consequences.

Critical risks are those assessed with ‘Very High’ (requiring immediate corrective action) and ‘High’ (requiring corrective action) risk ratings identified in the Infrastructure Risk Management Plan. The residual risk and treatment costs of implementing the selected treatment plan is shown in Table 6.2. It is essential that these critical risks and costs are reported to management and the Elected Members

<sup>9</sup> REPLACE with Reference to the Corporate or Infrastructure Risk Management Plan as the footnote

**Table 6.2: Risks and Treatment Plans**

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

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Sealed Network	Defect or Failures not identified before intervention	High	Undertake Planned Audits or High Speed Data Acquisition	Medium	\$100,000
Transportation	Major Bushfire	High	Bushfire Action Plan	Medium	\$50,000
Shoulders/Unsealed	Significant Storm Event	High	System Config. to capture defects, cost and claim	Low	\$20,000
Climate Change Impacts	Asset Lives Reduced	Medium	Produce plan on predicted impacts on Transport Assets	Medium	\$20,000

### 6.3 Infrastructure Resilience Approach

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

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

Our current measure of resilience is shown in Table 6.3 which includes the type of threats and hazards and the current measures that the organisation takes to ensure service delivery resilience.

**Table 6.3: Resilience**

We do not currently measure our resilience in service delivery. This will be included in future iterations of the asset management plan.

### 6.4 Service and Risk Trade-Offs

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

#### 6.4.1 What we cannot do

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

- Provide sealed footpaths to all areas of the network – increase in spending to deliver service to a minimum of Priority 3 upgrades exceeds \$3.2 million.
- Current budget does not allow for service improvement to footpaths



- Fund all pavement renewals at the current funding level, so a targeted approach at known defect locations will be employed.

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

If there is forecast work (operations, maintenance, renewal, acquisition or disposal) that cannot be undertaken due to available resources, then this will result in service consequences for users. These service consequences include:

- Perceived reduction in service for footpaths where Council has not funded new or upgraded footpath service
- Reduced service across footpath network
- Underfunded pavement renewals will reduce service, rideability, ponding and increased cost to the business in the long term.

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

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

- Increase in footpath complaints and or injury
- Pavement failures increase to public safety

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

## 7.0 FINANCIAL SUMMARY

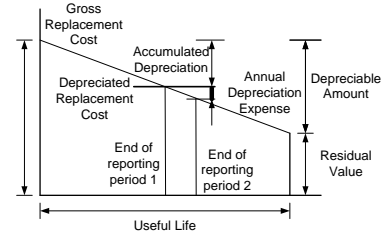
This section contains the financial requirements resulting from the information presented in the previous sections of this asset management plan. The financial projections will be improved as the discussion on desired levels of service and asset performance matures.

### 7.1 Financial Statements and Projections

#### 7.1.1 Asset valuations

The best available estimate of the value of assets included in this Asset Management Plan are shown below. The assets are valued at fair value.

Current (Gross) Replacement Cost	\$ 295,102,592
Depreciable Amount	\$ 295,102,592
Depreciated Replacement Cost <sup>10</sup>	\$ 176,254,448
Depreciation	\$ 5,069,743



#### 7.1.2 Sustainability of service delivery

There are two key indicators of sustainable service delivery that are considered in the asset management plan for this service area. The two indicators are the:

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

##### Asset Renewal Funding Ratio

Asset Renewal Funding Ratio<sup>11</sup> 94.15%

The Asset Renewal Funding Ratio is an important indicator and illustrates that over the next 10 years we expect to have 94.15% of the funds required for the optimal renewal of assets.

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

Provision of the additional renewal expenditure proposed in this plan will achieve an Asset Renewal Funding Ratio of 100%.

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

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

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

The forecast operations, maintenance, renewal and upgraded/ new project costs over the 10 year planning period is \$8,665,489 on average per year.

Estimated available funding with the LTFP for this period is \$ 8,304,053 on average per year as per the Long Term Financial Plan or budget.

<sup>10</sup> Also reported as Written Down Value, Carrying or Net Book Value.

<sup>11</sup> AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

The current planned budget leaves a shortfall of 316,433 on average per year of the forecast lifecycle costs required to provide services in the AM Plan compared with planned budget currently included in the Long Term Financial Plan. This is shown in the figure below.

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

**7.1.3 Forecast costs for long term financial plan**

Table 7.1.3 shows the forecast costs for the 10 year long term financial plan.

Forecast costs are shown in 2019 real values.

*Table 7.1.3: Forecast Costs for Long Term Financial Plan*

Year	Forecast Acquisition	Forecast Operation	Forecast Maintenance	Forecast Renewal	Forecast Disposal
2021	\$380,000	\$ 797,393	\$2,678,000	\$4,618,000	\$ -
2022	\$250,000	\$ 969,507	\$2,687,436	\$5,076,000	\$ -
2023	\$250,000	\$ 789,054	\$2,688,244	\$5,011,417	\$ -
2024	\$250,000	\$ 749,702	\$2,688,244	\$4,848,056	\$ -
2025	\$250,000	\$ 753,242	\$2,688,244	\$4,895,296	\$ -
2026	\$250,000	\$ 851,295	\$2,688,244	\$5,446,126	\$ -
2027	\$250,000	\$ 768,393	\$2,688,244	\$4,854,532	\$ -
2028	\$250,000	\$ 764,916	\$2,688,244	\$4,820,500	\$ -
2029	\$250,000	\$ 761,516	\$2,688,244	\$4,788,020	\$ -
2030	\$250,000	\$ 761,516	\$2,688,244	\$4,779,020	\$ -

**7.2 Funding Strategy**

The proposed funding for assets is outlined in the Entity’s budget and long term financial plan.

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

**7.3 Valuation Forecasts**

Asset values are forecast to increase as additional assets are added to the network

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

Increase in valuations will be due to acquisition for Woodforde Estate and potentially Inverbrackie. Further increase in valuations will be incurred as the footpath and kerb networks are condition assessed and revalued.

## 7.4 Key Assumptions Made in Financial Forecasts

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

Key assumptions made in this asset management plan are:

- Renewal forecasts have been made by professional judgement, condition assessments & existing datasets
- No % uplift has been included for maintenance, operations or renewal over the long term forecast.
- Current day dollars

## 7.5 Forecast Reliability and Confidence

The forecast costs, proposed budgets, and valuation projections in this AM Plan are based on the best available data. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is classified on a A - E level scale<sup>12</sup> in accordance with Table 7.5.1.

**Table 7.5.1: Data Confidence Grading System**

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

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 6.5.1.

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

Data	Confidence Assessment	Comment
Demand drivers	C	Professional Judgement
Growth projections	B	Strategic Plan
Acquisition forecast	B	Minimal assets recognised as being acquired (known subdivisions, excluded DPTI targets)
Operation forecast	B	Included in the long term financial plan
Maintenance forecast	C	Included in the long term financial plan, targeted approach to capturing maintenance information
Renewal forecast	B-C	Professional Judgement

<sup>12</sup> IPWEA, 2015, IIMM, Table 2.4.6, p 2 | 71.

- Asset values		
- Asset useful lives	B	Professional Judgement
- Condition modelling	C	Professional Judgement
Disposal forecast	B	Included in the long term financial plan

The estimated confidence level for and reliability of data used in this AM Plan is considered to be Medium-Low

## 8.0 PLAN IMPROVEMENT AND MONITORING

### 8.1 Status of Asset Management Practices<sup>13</sup>

#### 8.1.1 Accounting and financial data sources

This asset management plan utilises accounting and financial data. The source of the data is Finesse Financial Suite

#### 8.1.2 Asset management data sources

This asset management plan also utilises asset management data. The source of the data is Confirm Asset Management System

### 8.2 Improvement Plan

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

**Table 8.2: Improvement Plan**

Task	Task	Responsibility	Resources Required	Timeline
1	Redevelop footpath hierarchy model to include new drivers within existing network	Sustainable Assets	Sustainable Assets/Infrastructure Operations	2020/21
2	Seal – Review Hierarchy	Sustainable Assets/Infrastructure Operations		2021/22
3	Unsealed – Review Hierarchy	Sustainable Assets/Infrastructure Operations	Sustainable Assets/Infrastructure Operations	2020/21
4	Undertake Customer Satisfaction Surveys across asset classes	Sustainable Assets/Communications	Internal	2020/21
5	Undertake Condition Assessments – Seal & Pavement	Sustainable Assets	External	2021/22
7	Undertake Condition Assessments - Kerb & Footpath – Migrate Ramps from Kerbs to Footpaths	Sustainable Assets	Internal	2020/21
8	Maintenance Guidelines – Roads, Kerb & Footpath	Sustainable Assets/Infrastructure Operations	Internal	2021/22
9	New Assets Priority Ranking Criteria	Sustainable Assets	Internal	2022/23
10	Shoulder and Pavement Data Cleanse and Migrate Shoulders into Pavement and revalue	Sustainable Assets	Internal	2022/23
11	Intervention Analysis & Predictive Modelling	Sustainable Assets	Internal/External	2023/24
12	Undertake review of re-sheeting, patrol grading and shoulder strategies across the network to improve efficiencies within the existing constraints.	Sustainable Assets/Infrastructure Operations	Internal	2022/23

<sup>13</sup> ISO 55000 Refers to this the Asset Management System

13	Capture relevant maintenance data across asset classes to understand where, when, how and how much we spend on assets	Sustainable Assets/Infrastructure Operations	Internal	2022/23
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### 8.3 Monitoring and Review Procedures

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

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

The AM Plan has a maximum life of 4 years and is due for complete revision and updating 1 year within a Council Election.

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

- The degree to which the required forecast costs identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which the 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences, risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the Organisational target (this target is often 1.0).

## 9.0 REFERENCES

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
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- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney
- ISO, 2018, ISO 31000:2018, Risk management – Guidelines
- Annual Business Plan, Budget and Long Term Financial Plan
- Adelaide Hills Strategic Plan - A brighter future: Strategic Plan 2020-24
- Adelaide Hills Annual Business Plan – 2019 & 2020
- Adelaide Hills District Master Plan – 2015
- Albert Street Gumeracha Main Street Masterplan 2019



## 10.0 APPENDICES

### Appendix A Acquisition Forecast

Acquisition forecast includes contributed assets from Woodforde estate and newly constructed footpath program.

*Table A1 - Acquisition Forecast Summary*

Year	Constructed	Contributed	Growth
2021	\$ 380,000	\$ 2,106,268	\$ -
2022	\$ 250,000	\$ 650,838	\$ -
2023	\$ 250,000	\$ -	\$ -
2024	\$ 250,000	\$ -	\$ -
2025	\$ 250,000	\$ -	\$ -
2026	\$ 250,000	\$ -	\$ -
2027	\$ 250,000	\$ -	\$ -
2028	\$ 250,000	\$ -	\$ -
2029	\$ 250,000	\$ -	\$ -
2030	\$ 250,000	\$ -	\$ -

**Appendix B    Operation Forecast**

Planned audits including road seal/pavement, kerb & water table and footpaths

**Table B1 - Operation Forecast Summary**

Year	Operation Forecast	Additional Operation Forecast	Total Operation Forecast
2021	\$797,393	\$ -	\$797,393
2022	\$969,507	\$ -	\$969,507
2023	\$789,054	\$ -	\$789,054
2024	\$749,702	\$ -	\$749,702
2025	\$753,242	\$ -	\$753,242
2026	\$851,295	\$ -	\$851,295
2027	\$768,393	\$ -	\$768,393
2028	\$764,916	\$ -	\$764,916
2029	\$761,516	\$ -	\$761,516
2030	\$761,516	\$ -	\$761,516

**Appendix C    Maintenance Forecast**

*Table C1 - Maintenance Forecast Summary*

Year	Maintenance Forecast	Additional Maintenance Forecast	Total Maintenance Forecast
2021	\$2,678,000	\$9,436	\$2,678,000
2022	\$2,687,436	\$ 809	\$2,687,436
2023	\$2,688,244	\$ -	\$2,688,244
2024	\$2,688,244	\$ -	\$2,688,244
2025	\$2,688,244	\$ -	\$2,688,244
2026	\$2,688,244	\$ -	\$2,688,244
2027	\$2,688,244	\$ -	\$2,688,244
2028	\$2,688,244	\$ -	\$2,688,244
2029	\$2,688,244	\$ -	\$2,688,244
2030	\$2,688,244	\$ -	\$2,688,244

**Appendix D    Renewal Forecast Summary**

*Table D1 - Renewal Forecast Summary*

Year	Renewal Forecast	Renewal Budget
2021	\$4,618,000	\$5,094,000
2022	\$5,076,000	\$4,634,000
2023	\$5,011,417	\$4,784,000
2024	\$4,848,056	\$4,916,000
2025	\$4,895,296	\$5,042,000
2026	\$5,446,126	\$4,315,000
2027	\$4,854,532	\$4,435,000
2028	\$4,820,500	\$4,556,000
2029	\$4,788,020	\$4,304,000
2030	\$4,779,020	\$4,184,000

**Appendix E Disposal Summary**

*Table E1 – Disposal Activity Summary*

Year	Disposal Forecast	Disposal Budget
2021	\$ -	\$ -
2022	\$ -	\$ -
2023	\$ -	\$ -
2024	\$ -	\$ -
2025	\$ -	\$ -
2026	\$ -	\$ -
2027	\$ -	\$ -
2028	\$ -	\$ -
2029	\$ -	\$ -
2030	\$ -	\$ -

**Appendix F Budget Summary by Lifecycle Activity**

*Table F1 – Budget Summary by Lifecycle Activity*

Year	Acquisition	Operation	Maintenance	Renewal	Disposal	Total
2021	\$ 380,000	\$ 797,393	\$ 2,678,000	\$ 5,094,000		\$ 8,949,393
2022	\$ 250,000	\$ 819,507	\$ 2,678,000	\$ 4,634,000		\$ 8,331,507
2023	\$ 250,000	\$ 789,054	\$ 2,678,000	\$ 4,784,000		\$ 8,451,054
2024	\$ 250,000	\$ 749,702	\$ 2,678,000	\$ 4,916,000		\$ 8,543,702
2025	\$ 250,000	\$ 753,242	\$ 2,678,000	\$ 5,042,000		\$ 8,673,242
2026	\$ 250,000	\$ 851,295	\$ 2,678,000	\$ 4,315,000		\$ 8,044,295
2027	\$ 250,000	\$ 768,393	\$ 2,678,000	\$ 4,435,000		\$ 8,081,393
2028	\$ 250,000	\$ 764,916	\$ 2,678,000	\$ 4,556,000		\$ 8,198,916
2029	\$ 250,000	\$ 761,516	\$ 2,678,000	\$ 4,304,000		\$ 7,943,516
2030	\$ 250,000	\$ 761,516	\$ 2,678,000	\$ 4,184,000		\$ 7,823,516