

# *Asset Management Plan*

## *Community Wastewater Management System*



2023 - 2032

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

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

This Infrastructure Asset Management Plan (AM Plan) details information about Community Wastewater Management System (CWMS) infrastructure assets with actions required to provide an agreed level of service in the most cost-effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide the required services over the 10 year planning period. The AM Plan will link to a Long-Term Financial Plan which typically considers a 10 year planning period.

### **1.2 Asset Description**

This plan covers the infrastructure assets that provide wastewater services to 7 township areas and 1850 customers.

Council operates a Community Wastewater Management System (CWMS) and associated infrastructure in Stirling, Verdun, Woodside, Charleston, Kersbrook, Birdwood and Mount Torrens. The Woodside, Charleston, Verdun and Stirling effluent is transferred to SA Water's network where SA Water provides the wastewater treatment and disposal path under a bulk discharge agreement with Council. SA Water treats Councils wastewater at the Bird in Hand, Hahndorf or Heathfield Wastewater Treatment Plant. Wastewater from Councils Birdwood, Mt Torrens and Kersbrook CWMS is treated at the Council owned wastewater treatment facilities at Birdwood and Kersbrook, which also provide recycled water supply to third party users as the primary disposal path for treated water.

All of Council's CWMS are septic tank effluent disposal schemes with septic tanks installed at each premises prior to the CWMS connection point, the septic tanks provide primary treatment and containment of solid matter prior to effluent discharge into the network. The septic tanks are installed and maintained by the private property owner. Commercial premises generating trade waste may also require further pre-treatment devices to ensure the protection of infrastructure, public and environmental health and the wastewater treatment process.

The Community Wastewater Management Scheme (CWMS) network comprises:

The Stirling CWMS consists of the following major components:

1.79 km of 100 mm diameter uPVC gravity drains

1.98 km of 50mm diameter uPVC rising mains

2 effluent pump stations

54 connections

The Verdun CWMS consists of the following major components:

2.2 km of 100 mm diameter uPVC gravity drains

2.21 km of 80mm diameter uPVC rising mains

2 effluent pump stations

45 connections

The Woodside CWMS consists of the following major components:

16.01 km of 100 mm diameter and 150 mm uPVC gravity drains

2.21 km of 80mm diameter uPVC rising mains

3 effluent pump stations

915 connections

The Charleston CWMS consists of the following major components:

3.6 km of 100 mm diameter uPVC gravity drains

2.35 km of 80 mm diameter uPVC rising mains

1 effluent pump stations (includes the lift pump station)

141 connections

The Kersbrook CWMS collection network consists of the following major components:

4.07 km of 100 mm and 150 mm diameter uPVC gravity drains

1.8 km of 100 mm diameter uPVC rising mains

1 effluent pump stations

171 connections

Kersbrook Waste Water Treatment Facility (WWTF)

The Kersbrook WWTF consists of the following major components

1 facultative lagoon (capacity 5184 m)

4 storage/evaporative lagoons/ Recycled water storage tanks and irrigation pump shed

Associated pipework and valve infrastructure.

The Mt Torrens CWMS consists of the following major components:

4.11 km of 100 mm and 150 mm diameter uPVC gravity drains

5.21 km of 75 mm diameter uPVC rising mains

2 effluent pump stations

263 connections

The Birdwood CWMS collection network consists of the following major components:

- 1.69 km of 100 mm and 150 mm diameter uPVC gravity drains
- 3.06 km of 75 mm diameter uPVC rising mains
- 1 effluent pump station
- 402 connections

The Birdwood Wastewater Treatment Facility (WWTF)

The Birdwood WWTF consist of the following components

- Sequencing Batch Reactor (SBR) (includes balance and sludge tanks)
- Three storage/evaporation lagoons lined with HDP liner
- Tertiary Filtration and disinfection plant
- Separate Pump station for recycled water
- Recycled water infrastructure and associated pumps and pipework

Asset Groups	Replacement.
CWMS Filtration	\$ 314,510
CWMS Gravity Network	\$ 10,881,523
CWMS Irrigation Pump Station	\$ 281,889
CWMS Irrigation System	\$ 224,211
CWMS Network Pump Station	\$ 2,442,536
CWMS Pressure Network	\$ 1,817,014
CWMS Pump Station - Dam Overflow	\$ 19,266
CWMS SBR - WWTP	\$ 683,220
CWMS Treatment Lagoon-Evaporation	\$ 4,150,047
CWMS Treatment Lagoon-Oxidation	\$ 202,722

The above infrastructure assets have replacement value estimated at \$21,046,000 (June 2022)

**1.3 Levels of Service**

The allocation in the planned budget is sufficient to continue providing existing services at current levels for the 10 year planning period.

The main service consequences of the Planned Budget are:

- No increase in existing service levels to be provided.

The current planned budget is considered sufficient to continue to provide the level of service that minimises disruption of services and meets our technical and regulatory obligations.

## **1.4 Future Demand**

The factors influencing future demand and the impacts they have on service delivery are created by:

- Level of development within existing catchments (a low level of demand is anticipated given the current planning requirements within the townships that have a CWMS service)
- Any change in land use that may place higher demands on the system
- Regulatory change

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

- Update Council's water balance and system capacity models and review capacities
- Liaison with SA Water as the receiver of wastewater for Stirling, Verdun, Woodside, and Charleston
- Continue to liaise with the regulatory bodies regarding asset requirements to meet our obligations.

## **1.5 Lifecycle Management Plan**

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

The forecast lifecycle costs necessary to provide the services covered by this AM Plan includes operation, maintenance, renewal, acquisition, and disposal of assets. Although the AM Plan may be prepared for a range of time periods, it typically informs a Long-Term Financial Planning period of 10 years. Therefore, a summary output from the AM Plan is the forecast of 10 year total outlays, which for the CWMS is estimated as is estimated as \$12,209,400 or \$1,220,940 on average per year



## 1.6 Financial Summary

### 1.6.1 What we will do

1.6.2 Estimated available funding for the 10 year period is \$11,128,000 or \$1,112,800 on average per year as per the Long-Term Financial plan or Planned Budget. This is 91.14% of the cost to sustain the current level of service at the lowest lifecycle cost.

1.6.3 The infrastructure reality is that only what is funded in the long-term financial plan can be provided. The Informed decision making depends on the AM Plan emphasising the consequences of Planned Budgets on the service levels provided and risks.

1.6.4 The anticipated Planned Budget for CWMS Asset Group leaves a shortfall of \$ 108,140 on average per year of the forecast lifecycle costs required to provide services in the AM Plan compared with the Planned Budget currently included in the Long-Term Financial Plan. This is shown in the figure below.

### Forecast Lifecycle Costs and Planned Budgets

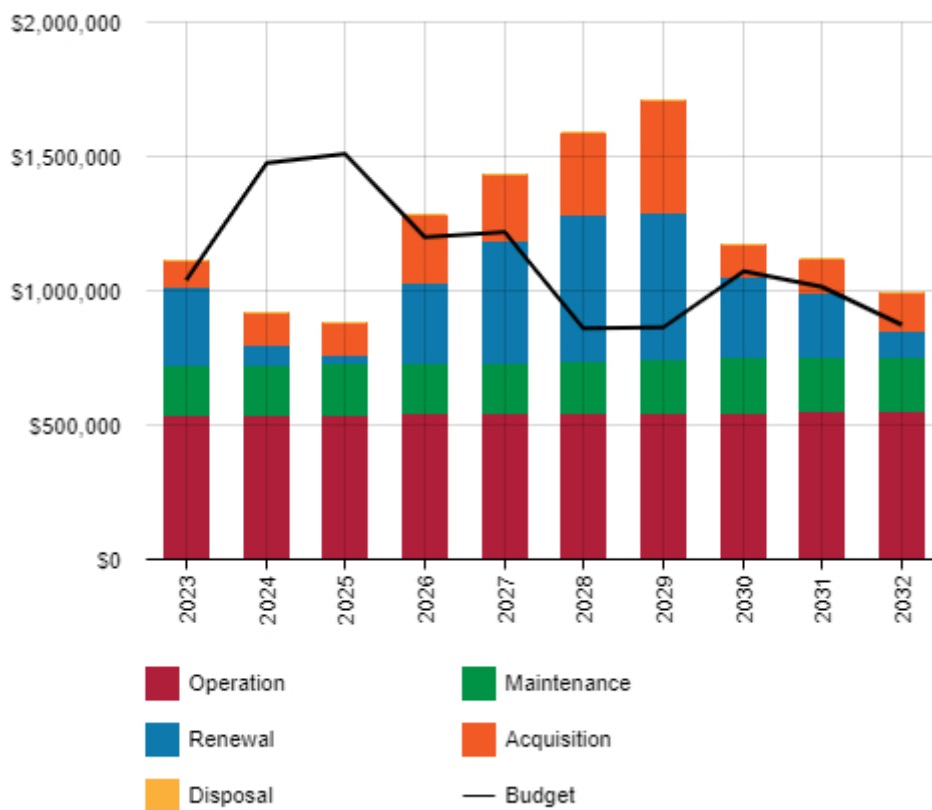


Figure Values are in current (2022) dollars.

We plan to provide services for the following:

- Operation, maintenance, renewal and acquisition of all CWMS assets to meet service levels set by Adelaide Hills Council in annual budgets. This includes pump out of septic tanks at 5 year intervals, management of treatment facilities at Birdwood and Kersbrook and associated pump stations via a maintenance contract, blockages and main repairs via a service agreement with Civil Services as an internal supplier. All regulatory fees and licences, utility costs, direct and indirect salaries to service customers, manage contracts, billing and accounts.
- Replacement/ Upgrade of key gravity mains in Woodside and Birdwood, replacement of within the 10 year planning period.

- Renewal of identify control cabinets/ panels/ pumps/ telemetry/ valves and other assets that have been identified for anticipated replacement over the 10 year planning period.

### 1.6.5 What we cannot do

We currently adopt a full cost recovery model currently for both operational and capital expenditure. Therefore, we currently are able to fund all the known maintenance and renewal from within this cost recovery.

Based on the current level of funding we will not be able to sufficiently manage the additional operational and maintenance costs that is driven by the current contracts and provision of demand even though modest.

### 1.6.6 Managing the Risks

There are risks associated with providing the service and being able to complete all identified activities and projects. We have identified our major risks and consider that our present budget levels are sufficient to continue to manage risks in the medium term.

The main risk consequences are:

- Power outages
- Stormwater infiltration
- Lack of irrigation pathway for recycled waste water

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

- Investment in back up power generator for large CWMS pump stations and portable generators
- Investment in surge tanks and emergency pump out contractor on standby
- Third party irrigator agreements are current

## 1.7 Asset Management Planning Practices

Key assumptions made in this AM Plan are:

- Similar low level of growth demand will continue
- Gravity mains are in good condition given likely construction dates.
- Regulatory requirements do not change substantially

Assets requiring renewal are identified from either the asset register or an alternative method.

- The timing of capital renewals based on the asset register is applied by adding the useful life to the year of acquisition or year of last renewal,
- Alternatively, an estimate of renewal lifecycle costs is projected from condition modelling systems and may be supplemented with, or based on, operational and expert knowledge.

The Alternate Method was used to forecast the renewal lifecycle costs for this AM Plan.

This AM Plan is based on a reliable level of confidence information especially for all of our above ground assets. There is substantial operational knowledge from the Civil Services operational staff and long-time contractor associated with the treatment facilities at Birdwood and Kersbrook.

## **1.8 Monitoring and Improvement Program**

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

- Contractor Management of Pump Stations
- Yearly audit with contractor for treatment facilities to identify preventative maintenance and early intervention replacements that benefit whole of life costs
- Continue to monitor maintenance costs and identify anomalies and investigate interventions.
- Updated condition rating of active above ground visible assets

## **2.0 Introduction**

### **2.1 Background**

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

The AM Plan is to be read with other planning documents. This should include the Asset Management Policy along with other key planning documents:

- Strategic Plan 2020 - 2024
- LTFP 2022\_23
- CWMS Service Charter

Asset Management is at a core level of maturity in the Organisation and on-going continuous improvement is required to ultimately maximise the life cycle costs associated with the delivery of services with the CWMS infrastructure assets.

The infrastructure assets covered by this AM Plan include all treatment facilities, lagoons, pump stations, gravity and pumping mains, tanks and control panels. For a detailed summary of the assets covered in this AM Plan refer to Table in Section 5.

These assets are used to provide waste water services from township properties in Kersbrook, Birdwood, Mt Torrens, Charleston, Woodside, Verdun and Golf Links Road in Stirling.

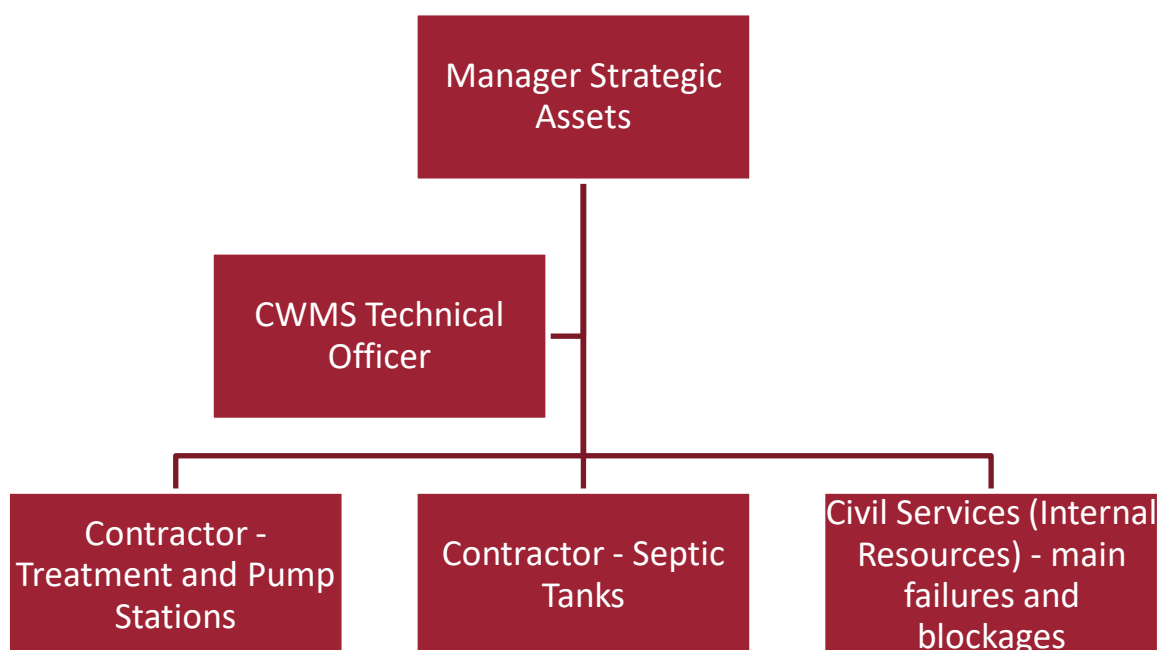
The infrastructure assets included in this plan have a total replacement value of \$21,046,000. (June 2022)

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

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

Key Stakeholder	Role in Asset Management Plan
Elected Members of Council	<ul style="list-style-type: none"> <li>▪ Represent needs of community/shareholders,</li> <li>▪ Allocate resources to meet planning objectives in providing services while managing risks,</li> <li>▪ Ensure service sustainable.</li> </ul>
CEO and Executive Team	Ensure that sufficient resources are available to meet the regulatory and customer expectations.
CWMS Customers	Direct feedback on asset performance.
Office of Technical Regulator	Regulatory Partner
Essential Services Commissioner of South Australia	Regulatory Partner

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



## 2.2 Goals and Objectives of Asset Ownership

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

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

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

Key elements of the planning framework are

- Levels of service – specifies the services and levels of service to be provided,
- Risk Management,
- 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>

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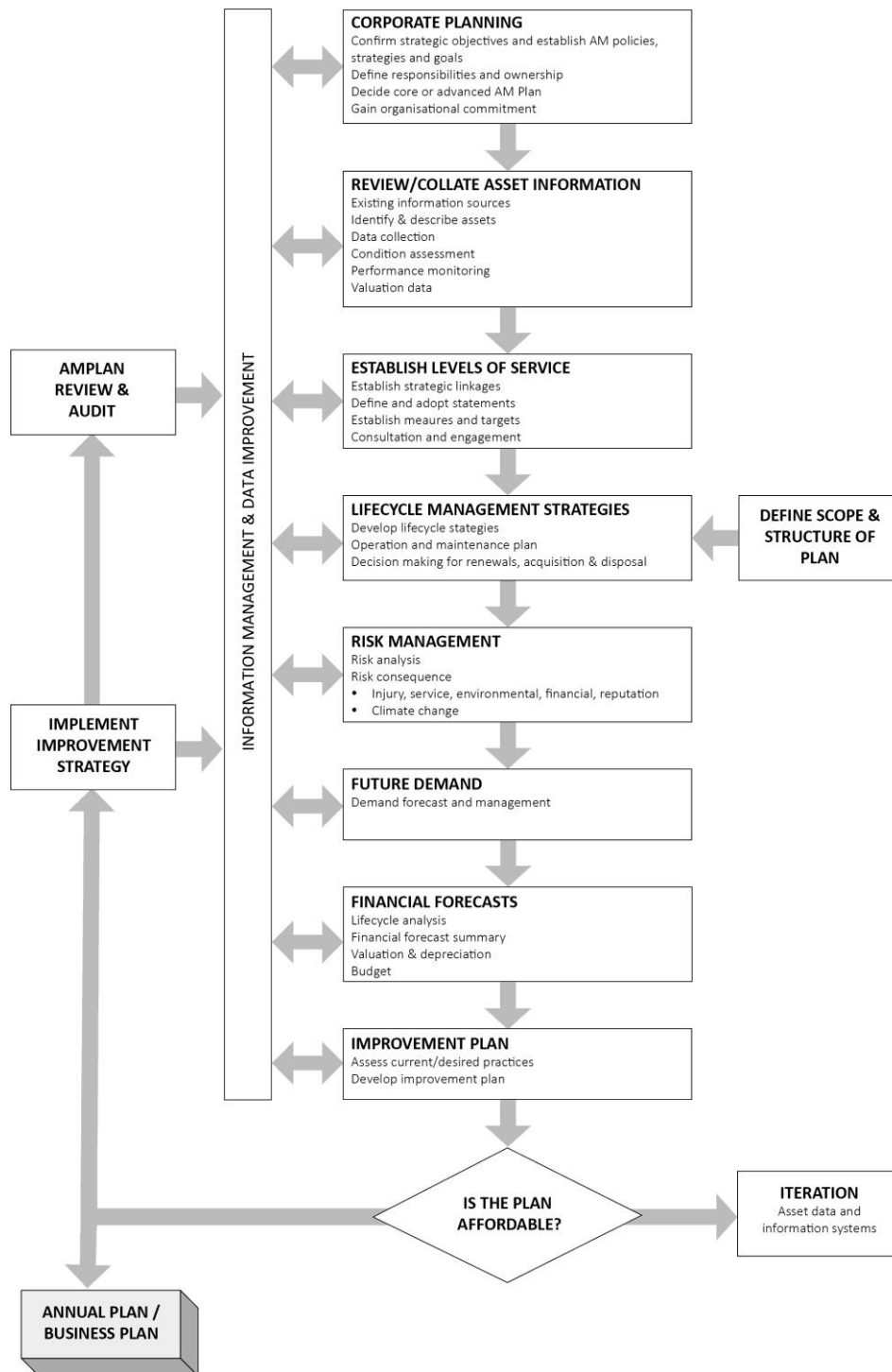
<sup>1</sup> Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2 | 13

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

A road map for preparing an AM Plan is shown below.

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

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



### 3.0 LEVELS OF SERVICE

#### 3.1 Customer Research and Expectations

This AM Plan is prepared to facilitate consultation prior to adoption of levels of service by the Elected Members of Council. Future revisions of the AM 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.

#### 3.2 Strategic and Corporate Goals

Strategic goals have been set by the Strategic Plan 2020 - 2024. The relevant goals and objectives and how these are addressed in this AM 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
A functional BUILT ENVIRONMENT	Sustainable management of our built assets ensures a safe, functional and well serviced community	Provision of energy efficient and safe systems of effluent management
A prosperous ECONOMY	Provide local infrastructure to drive growth and productivity	Renewal and upgrade CWMS assets to account for increased demand and growth
A progressive ORGANISATION	Our organisation is financially sustainable for both current and future generations	Ensure renewal of assets and associated maintenance is based on current asset management plans which consider reviewed service level and whole of life costing

#### 3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. Legislative requirements that impact the delivery of the Community Waste Water service are outlined in Table 3.3.

**Table 3.3: Legislative Requirements**

Legislation	Requirement
Water Industry Act 2012	Water Industry Entity Licence
SA Public Health Act 2011 Regulations (Waste water) 2013	Legislative
Environment Protection Act 1993	Legislative Licence
Community Waste water Management Code 2013	Prescribed Code
Guidelines, Design Criteria and Standards for Community Waste water Management System Code (LGA)	Code of Practice/Guideline
SA Recycled Water Guidelines	Guideline
AS/NZS Plumbing and Drainage Code	Prescribed Code
Work Health & Safety Act 2012 and Regulations 2012	Legislative
Water Retail Code	Code of Practice



### 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**

<b>Service Objective:</b>			
<b>Customer Values</b>	<b>Customer Satisfaction Measure</b>	<b>Current Feedback</b>	<b>Expected Trend Based on Planned Budget</b>
CWMS enables the safe collection and disposal of domestic wastewater in accordance with Regulatory and Industry Standards	Customer requests, complaints and feedback	Minimal complaints, requests and feedback	No anticipated change

### 3.5 Customer Levels of Service

The community generally expect the Council will have the necessary infrastructure and operation and maintenance practices in place to manage Councils Community Wastewater Management System.

Levels of service relate to outcomes the customer receives in terms of quality, quantity, responsiveness and performance as provided by the asset. These are developed in line with Council’s strategic and corporate goals and legislative requirements

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 ....Does it meet users need??

**Capacity/Use**      Is the service over or under used?

**Responsiveness**    How responsive are Council to customer requests?

**Safety**                Does the service achieve appropriate levels of public and environmental safety?

In Table 3.5 under each of the service measures types (Condition, Function, Capacity/Use Responsiveness, safety) there is a summary of the performance measure being used, the current performance, and the expected performance based on the current budget allocation.

These are measures of fact related to the service delivery outcome (e.g. number of occasions when service is not available or proportion of replacement value by condition %'s) to provide a balance in comparison to the customer perception that may be more subjective.

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

Type of Measure	Level of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget
<b>Condition</b>	Provide efficient and suitable wastewater collection and disposal system	No. of requests relating to CWMS maintenance	Very few customer requests and acceptable compliance with all regulatory agencies	Continue to operate a well maintained service to existing and future customers
	<b>Confidence levels</b>	High	High	High
<b>Function</b>	The CWMS meets the needs of existing residents	Customer complaints	Low number of customer complaints received regarding CWMS	Expected to continue
	<b>Confidence levels</b>	High	High	High
<b>Capacity</b>	Provide appropriate capacity levels to meet customers present and future needs	New land and sub divisions are able to connect into existing infrastructure with minimal upgrade to capacity required.	Most land divisions are well tolerated and larger sub divisions may need additional pumps to support the increase in flows. Future capacity is considered when sewer main upgrades are planned	Existing capacity should be well tolerated as population within existing serviced townships not expected to increase significantly.
<b>Response</b>	Response time to customer requests and time taken to complete requests	Respond to requests in line with AHC Customer Service Framework	Most requests are responded to within 24 hours	Expected to continue
	<b>Confidence levels</b>	High	High	High
<b>Safety</b>	Provide CWMS service that is low risk to the public and environment	Ensure all safety and legislative requirements are met and complied with	Low number of overflow events relating to CWMS network and all recycled waste water irrigation is compliant with the regulatory agencies	Expected to continue
	<b>Confidence levels</b>	High	High	High

### 3.6 Technical Levels of Service

**Technical Levels of Service** – Technical Levels of Service support the Customer Levels of Service and are operational or technical measures of performance. These technical levels of service 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. upgrading the size of a gravity main or pump station to take additional waste water inflows
- **Operation** – the regular activities to provide services such as monitoring waste water treatment, energy usage and utility costs, contract management, licencing fees, SA Water treatment fees.
- **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 regular pump and valve servicing, pumping out of septic tanks, repairing failed main sections)
- **Renewal** – the activities that return the service capability of an asset up to that which it had originally provided (e.g. replacement of pumps and air valves)

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 10 year Planned Budget allocation, and the Forecast activity requirements being recommended in this AM Plan.

**Table 3.6: Technical Levels of Service**

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
<b>TECHNICAL LEVELS OF SERVICE</b>				
<b>Acquisition</b>	Ensure continuity of service to customer and upgrade infrastructure to meet future needs	Limited number of service interruptions and ability to service new connections	Some townships service is vulnerable during storm events and increase in township infill has put pressure on capacity of gravity main	CWMS system should operate with minimal service interruptions due to power outages and sewerage mains should have adequate capacity for future township needs
	Targeted capital works to address capacity or other critical infrastructure	Increased back-up pump capacity	Only Woodside Pump Station has back-up power and pumping	Increase back-up capacity of pump station network.
		<b>Budget</b>	\$ 1,665,000	\$ 1,940,000
<b>Operation</b>	Provide a cost effective and efficient community waste water management	Monitor energy usage and number of pump failures and interruption's to service	Installation of solar panels at the Birdwood WWTP and current monitoring of energy usage.	The Operation activities we would like to do as per the Lifecycle Forecast

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

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
	system to the community in line with regulatory responsibilities		Minimal interruption's to CWMS service.	
	Cleaning of septic tanks to protect Councils infrastructure and reduce blockages	Septic tanks are cleaned out once every 5 years	All septic tanks are pumped out once every 5 years	Development of trade waste management plan to manage trade waste flows that can damage critical CWMS infrastructure
	Regular inspections of pumps and other WWTP infrastructure	Inspect and test control panels and operation of pumps	Weekly inspection of treatment plant and pump station undertaken.	This weekly inspection to continue.
	Treatment of waste water	Ensure treatment process are operational and chemicals are undertaken to meet water quality requirements	Water quality requirements met,	Installation of additional monitoring of treatment train to enhance intervention to have greater assurance of water quality
	Undertake testing of waste water in lagoon for disposal via recycled network	Undertake on-site sampling	On-site testing undertaken on weekly basis at treatment plants.	This testing to continue.
		<b>Budget</b>	\$ 4,650,000	\$ 5,438,800
<b>Maintenance</b>	Regular inspections of pumps and other WWTP infrastructure	Targeted maintenance including monthly inspections and cleaning of WWTP infrastructure and weekly visual inspections of CWMS Pump Stations	Quarterly servicing of CWMS pumps located at each pump station. Monthly visual inspections and cleaning of WWTP infrastructure.	Pumps stations and WWTP operate efficiently and effectively with minimal interruptions
	Undertake routine minor maintenance of treatment plant and pump station infrastructure	To ensure that identified minor maintenance is undertaken as identified and	Contractor to undertake reactive and routine maintenance of assets up to \$ 1000 per item. Report to council monthly on minor maintenance activities	Contractor to continue to reactively and proactively undertaken minor maintenance activities on a weekly basis as identified. Report to Council monthly with invoices for payment.

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
	Undertake reactive or identified major maintenance	To ensure that critical infrastructure continues to provide services.	Contractor to organise works for major maintenance activities (<\$ 1,000) after Confirmation with Council officers.	Continue to undertake
	Regular ground clearing and weed management	Weeds and grass cleared on a regular basis	WWTP are regularly maintained however pump stations are not included in regular weed maintenance	Include CWMS pump stations in weed management program
		<b>Budget</b>	\$ 1,850,000	\$ 1,947,600
<b>Safety</b>	Sampling of waste water from lagoons to meet Regulatory and safety requirements	Sampling occurs on monthly basis	Current sampling meets regulatory requirements	Expected to continue to meet these requirements
	Planned renewal if WHS risk is evident	Identified during routine inspections	Renewal occurs as and when required	Expected to continue
<b>Renewal</b>	Renewal of existing assets at an optimum time in their lifecycle	Monitor the performance and condition of CWMS infrastructure and maintain a 10 year capital works program that is renewed annually	Council as a 10 year capital works program based on useful life and performance	As and where required from visual inspections and capacity requirements
	Targeted capital works to address capacity or other critical infrastructure	Planned capital works	Capital works program	As and where required from visual and performance inspections
		<b>Budget</b>	\$2,963,300	\$2,883,000

Note: \* Current activities related to Planned Budget.

\*\* Expected performance related to forecast lifecycle costs.

It is important to monitor the service levels regularly as circumstances can and do change. Current performance is based on existing resource provision and work efficiencies. It is acknowledged changing circumstances such as 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, climate change, technical changes, consumer expectations and economic factors.

### 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 AM Plan.

The township areas that are covered by the CWMS assets and services are within the Adelaide Watershed Policy zone. Therefore the opportunity for new development and additional demand on the system is limited. The majority of demand will come from in-fill development within existing township limits.

Council has identified key gravity mains for upgrades within Birdwood and Woodside that will deal with the previous year's growth and ensure that capacity remains for the expected future in-fill.

**Table 4.3: Demand Management Plan**

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
Township In-fill	Known area of allowed development	Not expected to change	Nil	Investment in capacity upgrades of known constraints
SA Water requirements	Disposal path of effluent to SA Water treatment facilities	Greater quality control by SA Water	Costs could increase as waste may require additional treatment if trade waste not managed	Trade Waste Policy

### 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 CWMS 2023 - 2032 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 Adaptation

The impacts of climate change and local and international events may have a significant impact on the assets we manage and the services they provide. For example, the Covid pandemic has disrupted supply chains and the ability to get critical material of infrastructure. In the context of the Asset Management Planning process climate change and the pandemic can be considered as both a future demand and a risk.

How climate change impacts on assets will vary depending on the location and the type of services provided, as will the way in which we respond and manage those impacts.<sup>4</sup>

The recent pandemic may also bring some challenges to asset management. The inability to source critical infrastructure due to supply chain delays and material shortages may make the CWMS system more vulnerable in the future.

As a minimum we consider how to manage our existing assets given potential climate change and pandemic impacts in our region.

Risk and opportunities identified to date are shown in Table 4.5.1

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

Climate Change Description	Projected Change	Potential Impact on Assets and Services	Management
Heat	Increased temperature and heat in region	Potential deterioration of HPDE liners in lagoons.]	Increased monitoring of impact and investigate treatments to sustain design expected life
Rain	Higher intensity storms	Capacity of system breached more often	Capacity upgrades proposed for known constraints – monitor flow meters

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

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

Table 4.5.2 summarises some asset climate change resilience opportunities.

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

New Asset Description	Climate Change impact These assets?	Build Resilience in New Works
Gravity Mains	Greater flow in system	Ensure capacity upgrades consider higher peak flows.
Back-up power supply	Greater power failure due to extreme heat/storms	Ensure vulnerable pump stations have access to diesel back-up generator
Solar panels installed at WWTP	Power failures	Less reliance on power and increases energy efficiency

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

<sup>4</sup> IPWEA Practice Note 12.1 Climate Change Impacts on the Useful Life of Infrastructure

## 5.0 LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the CWMS 2023 - 2032 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 AM Plan are shown in Table 5.1.1.

The asset are in the townships of Kersbrook, Birdwood, Mt Torrens, Charleston, Woodside, Verdun and Golf Links Road, Stirling. Pipe and pumps distribute wastewater from Kersbrook, Birdwood and Mt Torrens to Council's treatment facilities at Kersbrook and Birdwood (wastewater from Mt Torrens is pumped to the Birdwood treatment facility)

The remaining townships or areas of Charleston, Woodside, Verdun and Stirling are transferred to the SA Water network for treatment at their facilities. These includes Bird in Hand (Woodside and Charleston), Hahndorf (Verdun) and Heathfield (Stirling) SA Water treatment facilities.

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

Asset Category	Dimension (number of unless m demoting length)	Replacement Value
CWMS Access Chamber	55.00	\$ 247,836.54
CWMS Access Platform	1.00	\$ 3,175.79
CWMS Aerator	1.00	\$ 52,929.95
CWMS Air Vent	4.00	\$ 99,236.39
CWMS Bore Pump	1.00	\$ 8,574.65
CWMS Bore Structure	1.00	\$ 12,703.19
CWMS Control Cabinet	3.00	\$ 107,394.86
CWMS Control Panel	20.00	\$ 527,854.23
CWMS Disinfectant Sample Point	2.00	\$ 5,293.00
CWMS Dosing Pump	4.00	\$ 15,349.66
CWMS Dosing Tank	2.00	\$ 1,693.76
CWMS Filtration	5.00	\$ 209,904.61
CWMS Flushing Point	864.00	\$ 573,469.54
CWMS Gantry	1.00	\$ 8,468.79
CWMS Instrumentation Sensor	19.00	\$ 84,889.09



CWMS Irrigation Pump Station	2.00	\$	-
CWMS Irrigation System	1.00	\$	147,251.12
CWMS Lagoon Liner	8.00	\$	1,462,158.10
CWMS Lagoon Structure	8.00	\$	556,674.86
CWMS Pipe	84,678.52 m	\$	8,174,063.17
CWMS Pipework & Fittings	20.00	\$	263,273.59
CWMS Pump	47.00	\$	332,196.23
CWMS Pump Stn - Dam Overflow	2.00	\$	6,605.66
CWMS Recycled Water Auto Valve	1.00	\$	9,633.25
CWMS Remote Monitoring	16.00	\$	83,566.47
CWMS Safety Shower	3.00	\$	6,351.60
CWMS Tank	16.00	\$	451,280.72
CWMS UV Disinfection System	1.00	\$	68,808.93
CWMS Valve	37.00	\$	123,935.65
CWMS Well Chamber	13.00	\$	260,817.39
CWMS-LL Access Chamber	44.00	\$	139,734.76
CWMS-LL Bore Structure	1.00	\$	8,468.79
CWMS-LL Dam Overflow	2.00	\$	9,485.04
CWMS-LL Lagoon Structure	8.00	\$	2,226,699.45
CWMS-LL Pipe	47,512.13 m	\$	3,937,744.43
CWMS-LL Tank	8.00	\$	250,676.30
CWMS-LL Well Chamber	13.00	\$	169,418.21

All figure values are shown in current day dollars.

Much of the initial CWMS System were built in the late 1970s and 1980s. Therefore the pipe network at its oldest is generally 40 to 50 years of age. As the townships have developed additional network has been added

as the townships expanded. The initial treatment facilities were simple lagoon systems. In the past 15 years investment into the treatment and disposal path of the treated waste water has been undertaken. This has included recycled water treatment and infrastructure and also enhanced treatment at the Birdwood site with the inclusion of a Sequencing Batch Reactor for primary treatment.

The more active asset components such as pumps and valves and similar have shorter service lives and are replaced on a more regular basis.

**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
Woodside Gravity Main (Jacaranda Drive to Pump Station 1)	Existing pipe nearing technical capacity requirements and monitoring on growth required to ensure upgrades timed in line with actual growth
Birdwood Gravity Main (Lange Crescent to Church Street Pumps Station)	Existing pipe nearing technical capacity requirements and monitoring on growth required to ensure upgrades timed in line with actual growth
Spring Street Pump Station	High level of infiltration and excessive pumping and greater risk of asset failure

The above service deficiencies were identified from internal operational knowledge.

**5.1.3 Asset condition**

Condition is currently monitored via a variety of on-site observations. This includes;

- weekly inspections of the pump stations by the contracted operator,
- detailed monthly testing of pumps and switchboards
- 6 monthly servicing of pumps if required
- Weekly visual and monthly cleaning inspections by operations and maintenance contractor at the Birdwood and Kersbrook treatment facilities.
- 5 yearly external independent condition audit as part of a revaluation of the asset base.

Condition is measured using a 1 – 5 grading system<sup>5</sup> as detailed in Table 5.1.3. It is important that a consistent approach is used in reporting asset performance enabling effective decision support. A finer grading system may be used at a more specific level, however, for reporting in the AM plan results are translated to a 1 – 5 grading scale for ease of communication.

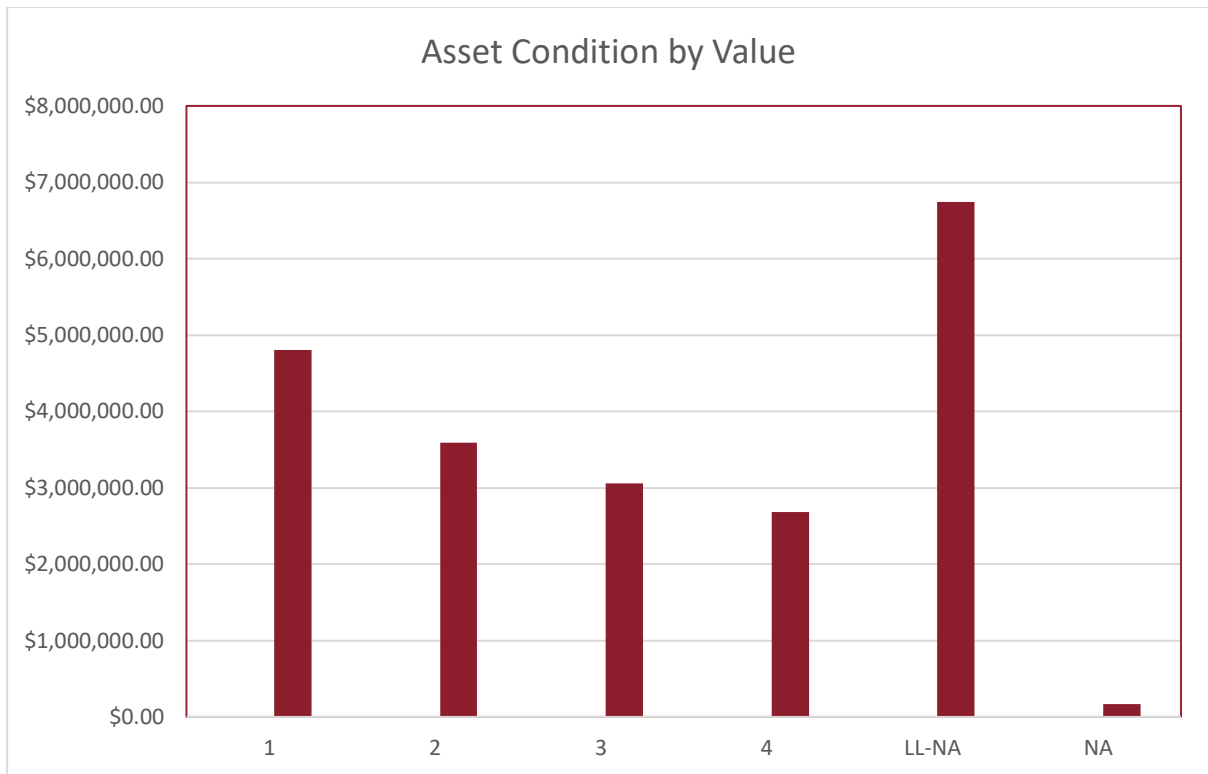
**Table 5.1.3: Condition Grading System**

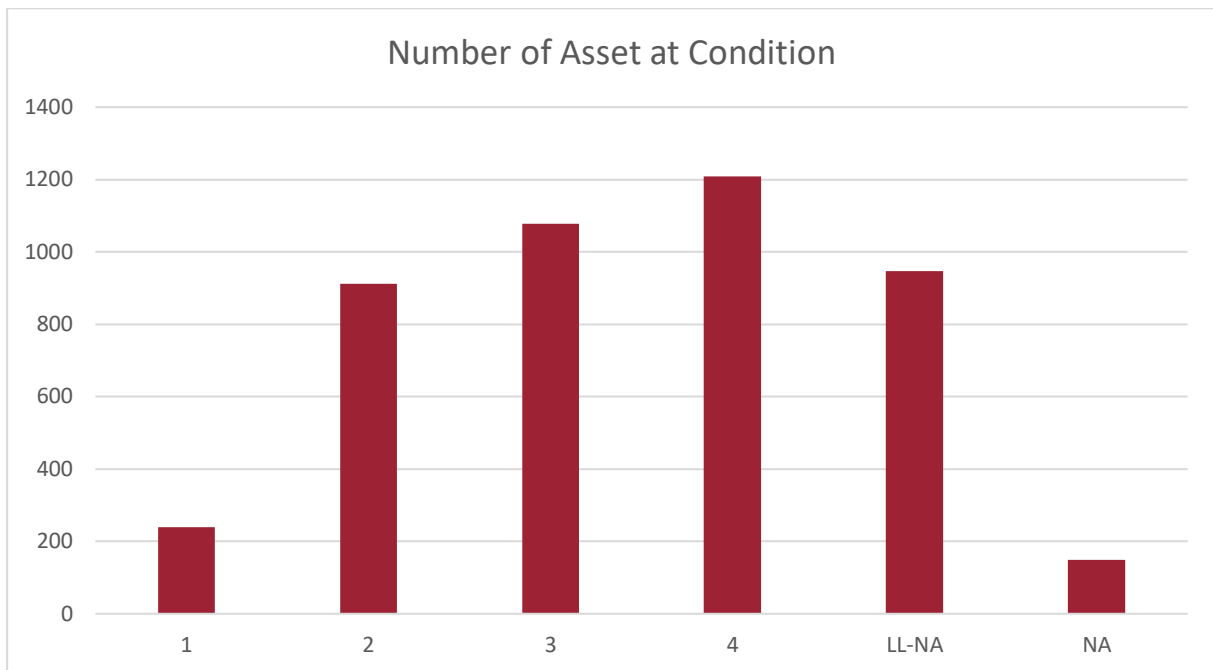
<sup>5</sup> IPWEA, 2015, IIMM, Sec 2.5.4, p 2|80.

Condition Grading	Description of Condition
1	<b>Very Good:</b> free of defects, only planned and/or routine maintenance required
2	<b>Good:</b> minor defects, increasing maintenance required plus planned maintenance
3	<b>Fair:</b> defects requiring regular and/or significant maintenance to reinstate service
4	<b>Poor:</b> significant defects, higher order cost intervention likely
5	<b>Very Poor:</b> physically unsound and/or beyond rehabilitation, immediate action required

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

**Figure 5.1.3: Asset Condition Profile**





The LL-NA column relates to Long Life assets such as the earthworks for the lagoons and as such with very long-life allocated these have not been given a subsequent condition. With these long-life components there is an associated short/ life component associate with these assets. In the example of the lagoon the liners are the shorter life assets that will be renewed several times over the life of the long-life asset component.

Whilst there is a significant number of assets showing as condition 4 (1207) in the asset register, the majority of these assets are gravity pipes, flushing points and connections (1167). The overall value of these assets at condition 4 is about \$ 2.6m. Given many of these assets are in ground asset, the condition rating has been based on the estimated age on construction and not the physical inspection.

Many of these assets are long life assets, for example, the gravity main for instance at a condition 4 could have up to 20 years of remaining life.

All figure values are shown in current day (2022) dollars.

## 5.2 Routine Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety and amenity. Examples of typical operational activities include asset inspections, water sampling and pipe cleaning.

Routine mmaintenance 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, pump servicing and septic sludge removal.

Planned maintenance is repair work that is identified and managed through a maintenance management plan. This type of maintenance is usually scheduled and ongoing. Reactive maintenance is unplanned repair work that is not scheduled and usually undertaken as a priority as it may affect the service deliver to customers.

Specific higher value component maintenance is usually included planned for and undertaken as part of the capital works program. Examples of this include new CWMS control cabinets and replacement of effluent lagoon liners.

The trend in operations and maintenance budgets are shown in Table 5.2.1.

**Table 5.2.1: Maintenance Budget Trends (Actual Real \$\$ in Year)**

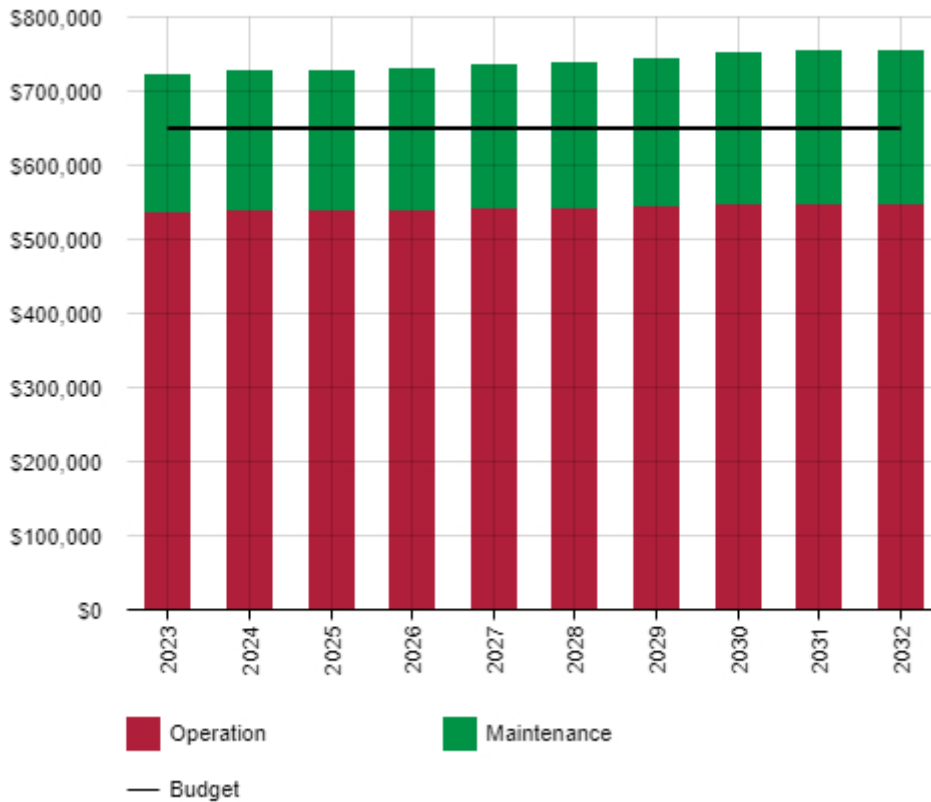
Year	Maintenance Budget \$
2018/19	\$ 1,043,514
2019/20	\$ 1,009,311
2020/21	\$ 1,121,313
2021/22	\$ 1,032,637
2022/23	\$ 1,067,000

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

**Summary of forecast operations and maintenance costs**

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

**Figure 5.2: Operations and Maintenance Summary**



All figure values are shown in current day dollars.

The operational costs are reasonable constant and a significant amount of these costs are associated with salaries and contractors. The current contracts for the treatment facilities, pump stations and septic tank pumping are long term contract with price increases in line with CPI. There are also licensing fees and the effluent disposal costs into the SA Water network that are assumed to generally align with CPI increases going forward.

Council in liaison with our contractor is considering and repairing and maintaining assets on a monthly basis. A review of historic maintenance expenditure shows a decrease in this expenditure. The current level of maintenance expenditure provided for in the current budgets are considered appropriate given the regular investment in asset renewals for high use items such as pumps.

The current operating budgets will not allow for the council to fully meet its operational costs associated with acquisition and growth. In addition, the budget do not allow for the operational costs of undertaking asset condition revaluation by external parties.

### 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). (Alternate Method)

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 30 June 2022.<sup>6</sup> (Initial useful life estimated in the 2017 report and were last reviewed in June 2022 as part of the annual internal process and found to be still appropriate)

**Table 5.3: Useful Lives of Assets**

Asset (Sub)Category	Useful life
Gravity Pipes	80 years
Pumping Mains	80 years
Mono Pumps	10 – 15 years
Submersible Pumps	3 – 5 years
Control Panel/ Cabinet	30 years
Flushing Points/ Manholes	80 years
SBR Plant	50 years
Lagoons (liner)	30 years

<sup>6</sup> APV CWMS Revaluation 2017

The estimates for renewals in this AM Plan were based on the alternate method.

### 5.3.1 Renewal ranking

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. size of pump to meet peak demand), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g.

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>7</sup>

Council is continuing to monitor the asset maintenance costs and liaise with its contractors to ensure that operational performance is not being impeded by older failing infrastructure that has high maintenance costs. An example of this is a review of the age of submersible pumps when a failure occurs and a full replacement is undertaken where greater than 70% of the expected life of this pump has been exceeded. That is, many of our submersible pumps are relatively costs effective to undertake a full replacement as the costs associated with process to undertake maintenance of an existing pumps can be 30 – 40% of the costs of installing a new pumps outright.

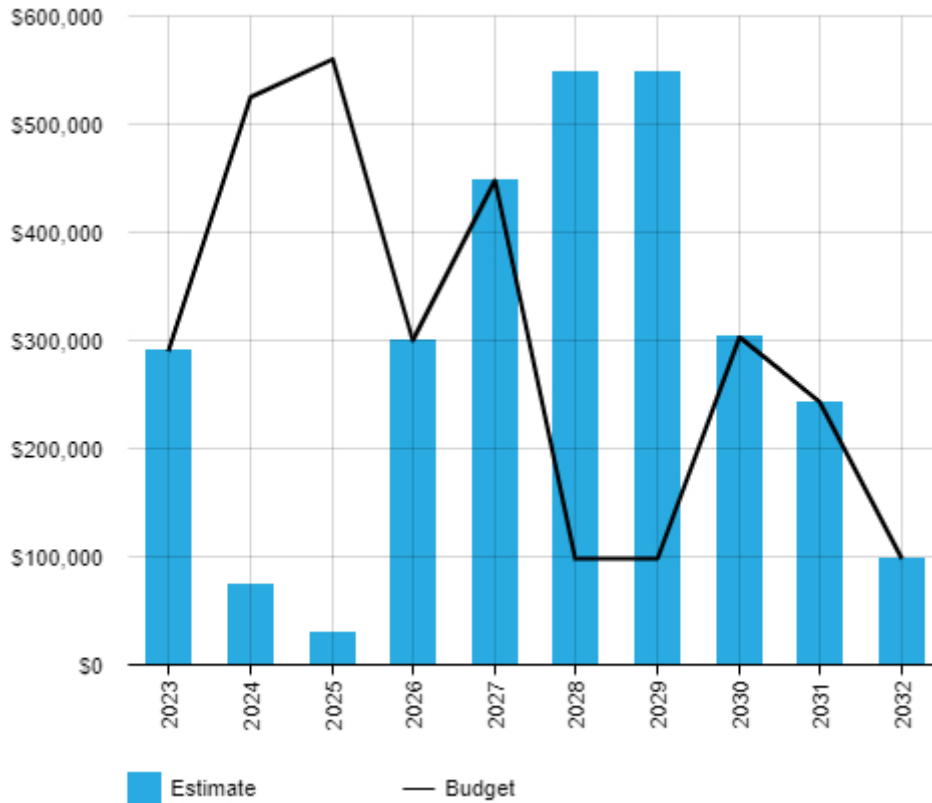
## 5.4 Summary of future renewal costs

Forecast renewal costs are projected to increase over time if the asset stock increases. The forecast costs associated with renewals are shown relative to the proposed renewal budget in Figure 5.4.1. A detailed summary of the forecast renewal costs is shown in Appendix D.

**Figure 5.4.1: Forecast Renewal Costs**

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



All figure values are shown in current day dollars.

The current proposed renewal costs have been adjusted to reflect a review into the system capacity at Woodside and the delay in the upgrade in capacity requirements.. Council undertakes ongoing discussion with its operators on the condition of the assets to validate and determine the remaining useful life of assets. This is based on their age and subsequently any performance or additional maintenance requirement identified.

### 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 Council as part of land development.

Council does not currently expect to expand it service delivery to its community. In 2022 Council considered the possibility of undertaking a CWMS expansion to the Townships of Summertown, Uraidla and Mylor. The Council determined not to progress with these systems at this time. Whilst a future Council may determine to revisit these potential township expansions no allowance has been made in this Asset Management Plan for acquisition of new assets.

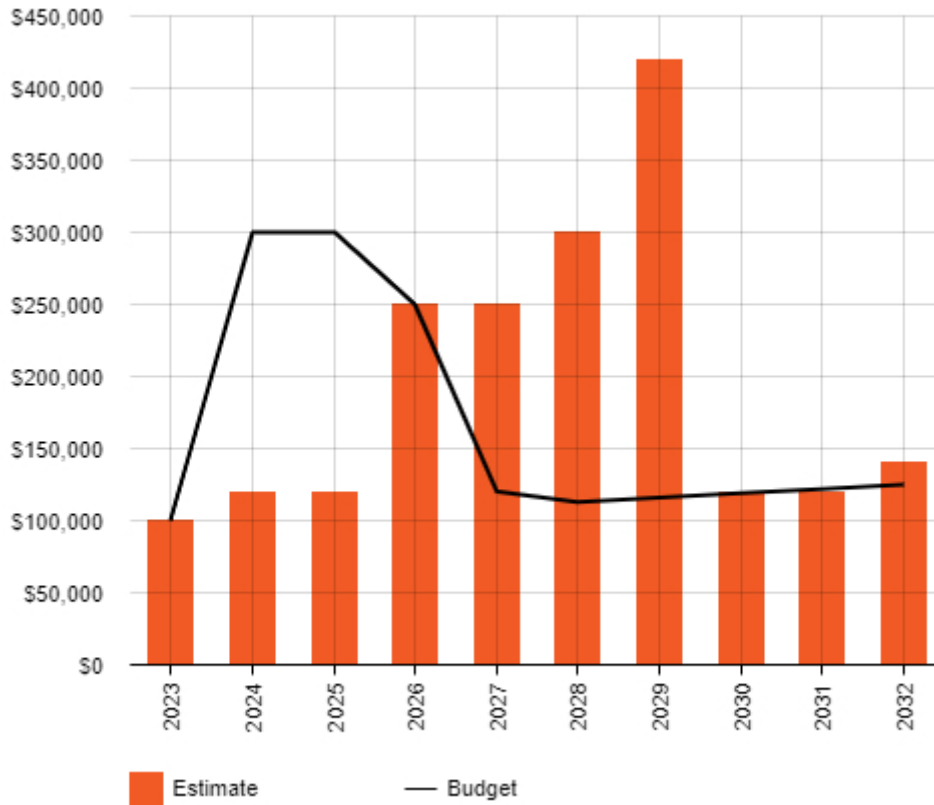
Council has identified existing gravity mains in Woodside and Birdwood that will required capacity upgrades. This is due to their age and the additional in-fill and growth that has occurred in these townships since the original systems were installed.

#### Summary of future asset acquisition costs

Forecast acquisition asset costs are summarised / summarized in Figure 5.5.1 and shown relative to the proposed acquisition budget.

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



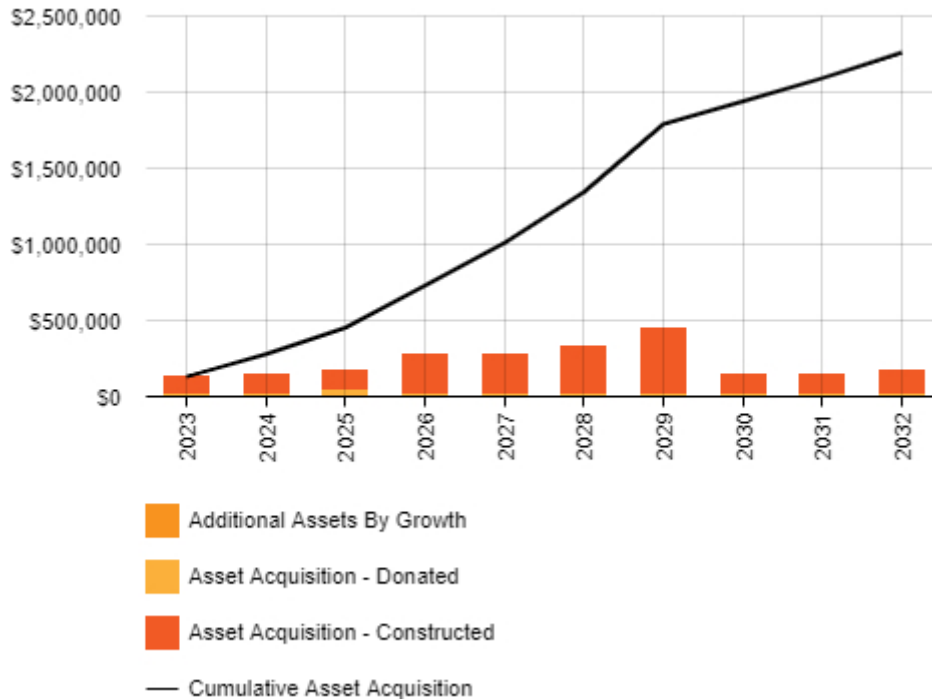


All figure values

are shown in current day dollars.

When 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 5.5.2.

**Figure 5.5.2: Acquisition Summary**



All figure values are shown in current dollars.

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

Whilst council has low growth in its available land there are still associated long term costs that result in these typically donated additional assets. The increase in operational costs may be somewhat dependent on where the growth occurs. That is, in Woodside and Charleston the additional land parcels will require additional SA Water fees for each allotment as part of the treatment process.

It should be noted that additional allotments do in some instances assist in the spreading of the cost base across additional customers, however the overall costs of delivering the services will cost more as more connections to the network occur.

Council has not included the potential growth from 2 major developments that may ultimately feed into the CWMS. These potential developments in Wick Winery Function Centre (Approved) and Stirling Golf Course redevelopment (Proposal). Should these developments eventuate then some changes to the acquisition summary and subsequent operations and maintenance changes would need to be updated in this plan.

## 5.6 Disposal Plan

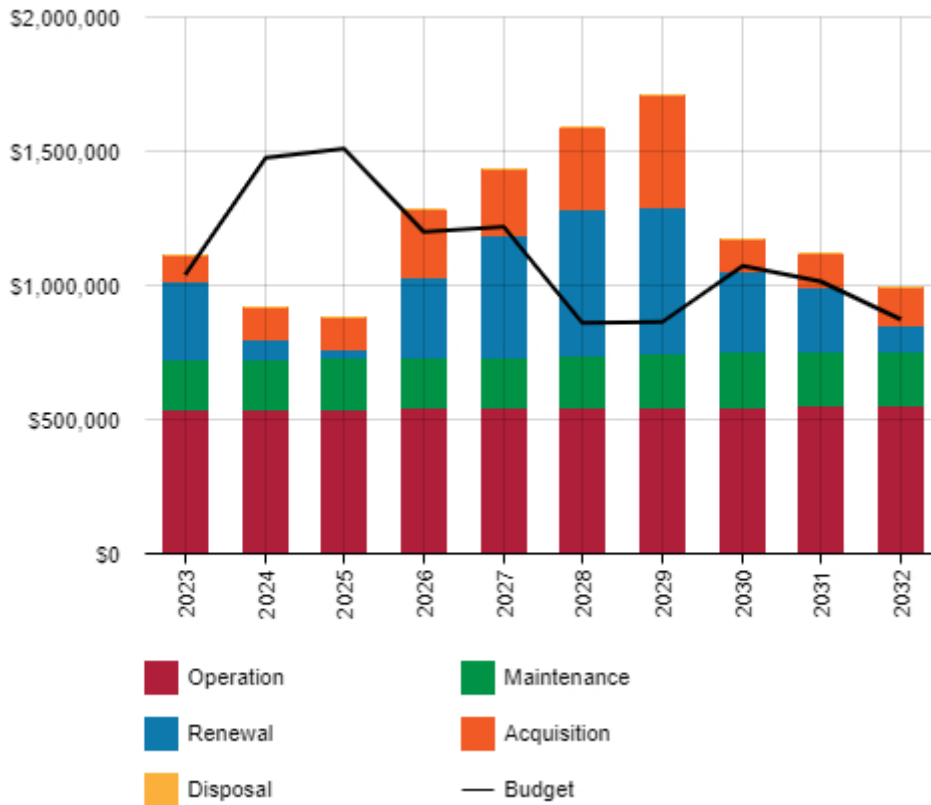
Council is currently reviewing the woodlot irrigation at the Birdwood Waste Water Treatment Plant (WWTP) in relation to the on-going requirement or all or part of this irrigation network. The irrigation system was initially installed to provide a disposal path for the treated waste water from Birdwood and Mount Torrens from the WWTP. Since the installation of the woodlot irrigation system, disposal paths to the Oval and to a private dam for irrigation purposes have been established. The irrigation system has not been utilized for several years. Significant renewal and maintenance costs may not be required if this system in full or part can be decommissioned. Whilst no allowance has been made in this version of the AMP for a decommissioning of this asset, investigations will be undertaken and any changes to this assets will be updated in future reviews of this document.

## 5.7 Summary of asset forecast costs

The financial projections from this asset plan are shown in Figure 5.7.1. 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 5.7.1: Lifecycle Summary**



All figure values are shown in current day dollars.

The available planned budget (currently adopted LTFP) is slightly less than what is considered necessary. The majority of the shortfall is associated with the operations and maintenance cycles, with additional direct costs for the operation and management of pumps stations being a component of the shortfall. The plan also includes additional funding for growth and acquisition associated operational and maintenance that was not previously modelled and subsequently considered in the planned budget. Given that the planned budget estimated a CPI of 2.5%, this updated draft AMP reflects the higher CPI and considers this in the actual required costs for the AMP.

## 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>8</sup>.

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. 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
SBR Plant	Tank failure	Effluent not treated to appropriate level before ponds
Treatment/ Storage Lagoons	Structural wall failure or lagoon lining	Effluent discharge to water courses
Pump Stations	Pump failure	Waste water discharge to water course/stormwater
Recycled Waste Water irrigation Systems	Contract failures with third parties	Waste water discharge to watercourse

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

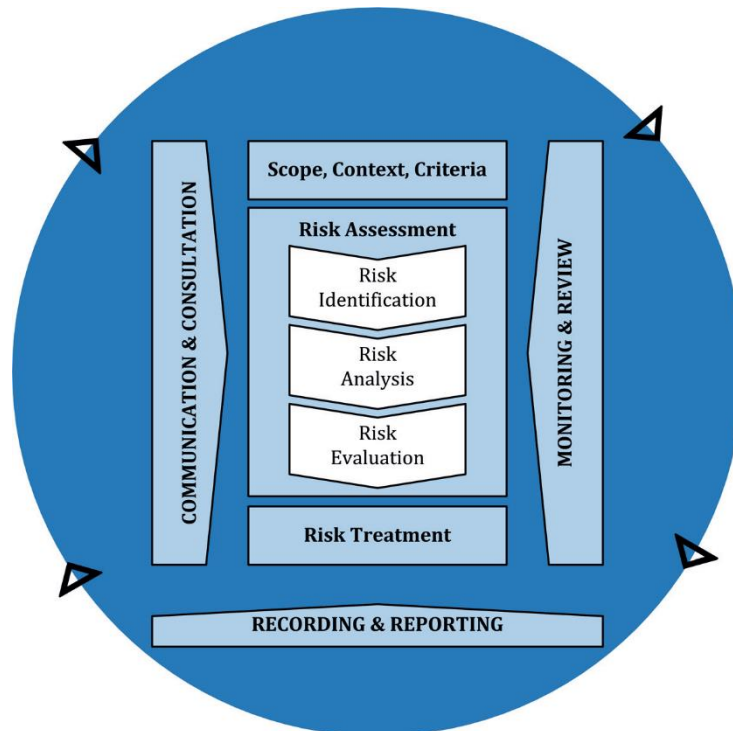
The risk management process used is shown in Figure 6.2 below.

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.

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

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

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



**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>10</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 ‘Extreme’ (requiring immediate corrective action) and ‘Major’ (requiring corrective action) risk ratings. 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 of the Adelaide Hills Council.

<sup>10</sup> REPLACE with Reference to the Corporate or Infrastructure Risk Management Plan as the footnote

**Table 6.2: Risks and Treatment Plans**

Service or Asset at Risk	What can Happen	Risk Rating	Risk Treatment Plan	Residual Risk *	Treatment Costs
CWMS pump station overflow or effluent line blockage	Discharge into water course/environment	Major	Installed high level alarms, upgraded CWMS pump stations with surge tanks and overflow dam. On call staff to manage overflows should they occur	Moderate	Pump out contractor on standby during storm events. Blockages attended to asap
CWMS pump station – pump failure due to power outages	Discharge into water course	Major	Regular servicing of pumps and renewal program. Back up and portable diesel generators	Moderate	Continue to Invest in backup generators at vulnerable sites
Treatment Lagoon Overflow	Discharge into environment/water course	Major	Third party agreements to supply recycled effluent to irrigators	Moderate	Continue to engage with current third party irrigators
Treatment Lagoon/Pump station overflow due to inadequate capacity	Discharge to Environment	Major	Future demand considerations/ renewal of infrastructure	Moderate	Identify areas where future increase in capacity is likely

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

## 7.0 FINANCIAL SUMMARY

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

### 7.1 Financial Sustainability and Projections

#### 7.1.1 Sustainability of service delivery

There are two key indicators of sustainable service delivery that are considered in the AM 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> 100.0%

The Asset Renewal Funding Ratio is an important indicator and illustrates that over the next 10 years we expect to have 100.0% of the funds required for the optimal renewal of assets.

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

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

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

This forecast work can be compared to the proposed budget over the first 10 years of the planning period to identify any funding shortfall.

The forecast operations, maintenance and renewal costs over the 10 year planning period is \$1,026,940 average per year.

The proposed (budget) operations, maintenance and renewal funding is \$946,300 on average per year giving a 10 year funding shortfall of \$80,640 per year. This indicates that 92.15% of the forecast costs needed to provide the services documented in this AM Plan are accommodated in the proposed budget. Note, these calculations exclude acquired assets.

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

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

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

Providing services in a financially sustainable manner requires a balance between the forecast outlays required to deliver the agreed service levels with the planned budget allocations in the long-term financial plan.

Forecast costs are shown in 2022 dollar values.

**Table 7.1.2: Forecast Costs (Outlays) for the Long-Term Financial Plan**

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

Year	Acquisition	Operation	Maintenance	Renewal	Disposal
2023	100000	539000	185000	290000	0
2024	120000	539650	186300	75000	0
2025	120000	540400	187800	30000	0
2026	250000	541250	189500	300000	0
2027	250000	542650	192300	448000	0
2028	300000	544050	195100	548000	0
2029	420000	545700	198400	548000	0
2030	120000	547950	202900	303000	0
2031	120000	548700	204400	243000	0
2032	140000	549450	205900	98000	0

## 7.2 Funding Strategy

The proposed funding for assets is outlined in the Entity's budget and Long-Term financial plan.

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

The cost to deliver the service and undertake the renewals over the 10 year period is used as the lower bound limit to set a base price to charge customers. Council determines the final annual service fee following the annual review of the operations and maintenance and subsequent fair value of asset and the return on capital over and above the lower bound limit. The service is funded directly by the customer through the annual service fee.

Whilst the recommendation of this AMP is to increase the operations and maintenance expenditure to meet the service requirement, this does not necessarily directly change by the same magnitude to the customer. Any change to the base cost does reset the lower bound limit for recovery of costs. However, the customer price is set at the upper bound limit that also includes indirect costs/ overheads and a return on the cost of capital of the fair value of the asset base.

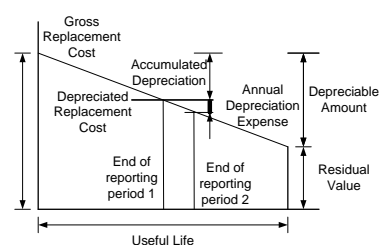
Council proposes to continue to fund its CWMS business on a full cost recovery model in line with the ESCOSA water pricing principles.

## 7.3 Valuation Forecasts

### 7.3.1 Asset valuations

The best available estimate of the value of assets included in this AM Plan are shown below. The assets are valued at Fair Value at replacement costs (2022) of existing service delivery;

Replacement Cost (Current/Gross)	\$21,046,000
Depreciable Amount	\$21,046,000
Depreciated Replacement Cost <sup>12</sup>	\$13,779,000
Depreciation	\$410,200,000



### 7.3.2 Valuation forecast

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

<sup>12</sup> Also reported as Written Down Value, Carrying or Net Book Value.



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

#### 7.4 Key Assumptions Made in Financial Forecasts

In compiling this AM 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 AM Plan are:

- Contract rates will increase by CPI over the term of the AMP
- No additional SA Water charges are included in the effluent disposal charge currently in place
- No changes to the regulatory environment that result in additional operational/ maintenance or capital
- Assumed that the passive (underground) assets are performing in a consistent and expected state based on the asset age.

#### 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>13</sup> in accordance with Table 7.5.1.

**Table 7.5.1: Data Confidence Grading System**

Confidence Grade	Description
A. Very High	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. High	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. Medium	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. Low	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. Very Low	None or very little data held.

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 7.5.2.

<sup>13</sup> IPWEA, 2015, IIMM, Table 2.4.6, p 2 | 71.

**Table 7.5.2: Data Confidence Assessment for Data used in AM Plan**

<b>Data</b>	<b>Confidence Assessment</b>	<b>Comment</b>
Demand drivers	High	
Growth projections	Very High	The townships that are services by the CWMS are in the watershed protection zone so there is well known limitations on growth to some in-fill. Council has determined not to expand the CWMS to other townships.
Acquisition forecast	High	CWMS system capacity well understood and modelled – currently deficiencies have been included in plan
Operation forecast	High	Long term contracts in place for defined services
Maintenance forecast	High	Regular inspections and routine and cyclic maintenance in place
Renewal forecast		
- Asset values	Medium	2017 valuation and subsequent indices increase annually.
- Asset useful lives	Medium	Survey of remaining useful life required to validate current useful life assumptions
- Condition modelling	Medium	Modelling a combination of asset register and operational input and validation.
Disposal forecast	High	

The estimated confidence level for and reliability of data used in this AM Plan is considered to be High/ Medium Confidence Level.

## 8.0 PLAN IMPROVEMENT AND MONITORING

### 8.1 Status of Asset Management Practices

#### 8.1.1 Accounting and financial data sources

This AM Plan utilises accounting and financial data. The source of the data is Finesse.

#### 8.1.2 Asset management data sources

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

### 8.2 Improvement Plan

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

**Table 8.2: Improvement Plan**

Task	Task	Responsibility	Resources Required	Timeline
1	Document asset maintenance plan for treatment and pump stations	CWMS Technical Officer	Existing internal and Council Contractor	2022
2	Revaluation of asset and condition audit of above ground active assets	Manager Strategic Assets	External Valuer	2023
3	CCTV inspection of select underground services to validate condition assumptions of gravity and pressure network	Manager Strategic Assets	External specialized inspection company	2025
4	Consider real time monitoring of effluent treatment via 'Trility software'	Manager Strategic Assets	Contractor Trility	2022/23
5	Consider CCTV at treatment plant to have live feed to assess and management of alarm notification.	Manager Strategic Assets	Contractor Trility	2022/23
6	Update compliance plan to align with feedback from ESCOSA annual reporting.	CWMS Technical Officer	Existing	2022
7	Review and update trade waste policy to ensure disposal compliance reduce impact on assets	CWMS Technical Officer	Existing	2022/23
8	CCTV inspection of select underground services to validate condition assumptions of gravity and pressure network	Manager Strategic Assets	External specialized inspection company	2029
9				
10				

### 8.3 Monitoring and Review Procedures

This AM 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, acquisition and asset disposal costs and planned 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 within 2 years of each Adelaide Hills Council election.

#### **8.4 Performance Measures**

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

- The degree to which the required forecast costs identified in this AM 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 consider the 'global' works program trends provided by the AM Plan,
- The degree to which the existing and projected service levels and service consequences, risks and residual risks are incorporated into the Strategic Planning documents and associated plans,
- The Asset Renewal Funding Ratio achieving the Organisational target 90 – 110%.

## 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)
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- IPWEA, 2014, Practice Note 8 – Levels of Service & Community Engagement, Institute of Public Works Engineering Australasia, Sydney, <https://www.ipwea.org/publications/ipweabookshop/practicenotes/pn8>
- ISO, 2014, ISO 55000:2014, Overview, principles and terminology
- ISO, 2018, ISO 31000:2018, Risk management – Guidelines
- Strategic Plan 2020 – 2024,
- Annual Plan and Budget 2021\_22.

## 10.0 APPENDICES

### Appendix A Acquisition Forecast

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

The acquisition relates to increase capacity of the old network that has since its initial construction has in sections reached capacity due to greater density of housing across the townships. The outer years reflect on-going investment to reduce the potential impact associated with power and pump failures and the risk of discharge to the environment.

#### A.2 – Acquisition Project Summary

The project titles included in the lifecycle forecast are included here.

Year	Project	\$ Estimate
2023	Church Street Backup	100000
2024	Capacity Backup - Birdwood	120000
2025	Backup Power Charleston and Felix Street	120000
2026	Lange Crs to Church Street Pump Station	250000
2027	Stage 2 Birdwood gravity Main	250000
2028	Stage 1 jacaranda to Pump Station 1	300000
2029	Stage 2 jacaranda to Pump Station 1	300000
2029	Capacity and Backup	120000
2030	Capacity and Backup	120000
2031	Capacity and Backup	120000
2032	Capacity and Backup	120000
2032	Minor Dev	20000

#### A.3 – Acquisition Forecast Summary

*Table A3 - Acquisition Forecast Summary*

Year	Constructed	Donated	Growth
2023	100000	30000	0
2024	120000	30000	0
2025	120000	50000	0
2026	250000	30000	0
2027	250000	30000	0
2028	300000	30000	0
2029	420000	30000	0
2030	120000	30000	0
2031	120000	30000	0
2032	140000	30000	0

**Appendix B    Operation Forecast**

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

There is an assumption that as the number of allotment increase additional operational costs will apply – this includes additional pump outs, costs to SA Water for treatment and similar direct costs associated with each new customer.

**B.2 – Operation Forecast Summary**

*Table B2 - Operation Forecast Summary*

Year	Operation Forecast	Additional Operation Forecast	Total Operation Forecast
2023	465000	650	539000
2024	465000	750	539650
2025	465000	850	540400
2026	465000	1400	541250
2027	465000	1400	542650
2028	465000	1650	544050
2029	465000	2250	545700
2030	465000	750	547950
2031	465000	750	548700
2032	465000	750	549450

**Appendix C Maintenance Forecast**

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

As the amount of customers increase it is considered that some additional maintenance will be required as the active components of the system such as pumps are working more to deal with the additional inflow and treatment.

**C.2 – Maintenance Forecast Summary**

*Table C2 - Maintenance Forecast Summary*

Year	Maintenance Forecast	Additional Maintenance Forecast	Total Maintenance Forecast
2023	185000	1300	185000
2024	185000	1500	186300
2025	185000	1700	187800
2026	185000	2800	189500
2027	185000	2800	192300
2028	185000	3300	195100
2029	185000	4500	198400
2030	185000	1500	202900
2031	185000	1500	204400
2032	185000	1500	205900



**Appendix D    Renewal Forecast Summary**

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

The renewal plan is a combination of the most recent condition valuation audit of 2017 that is the basis for the asset register and then the operational knowledge of the internal civil service team that have managed the pump stations and also advice on current condition of assets from the treatment facilities contractor.

**D.2 – Renewal Project Summary**

The project titles included in the lifecycle forecast are included here.

Year	Project	\$ Estimate
2023	Control cabinets	100000
2023	Pump Renewals	60000
2023	Lagoon Fencing	80000
2023	Kersbrook Pond Rehabilitation	50000
2024	Pump Renewal	40000
2024	Control Cabinet (SCADA)	35000
2025	Pump Renewal	30000
2026	Includes Birdwood Stage 1 Gravity	300000
2027	Includes Stage 2 Gravity Main Birdwood	448000
2028	General Renewal including Pumps	98000
2028	Woodside Gravity Main Stage 1	450000
2029	Woodside Gravity Main Stage 2	450000
2029	General Renewal including Pumps	98000
2030	Includes liner primary pond Birdwood	303000
2031	includes secondary lagoon Birdwood	243000
2032	General Renewal including Pumps	98000

**D.3 – Renewal Forecast Summary**

*Table D3 - Renewal Forecast Summary*

Year	Renewal Forecast	Renewal Budget
2023	290000	290000
2024	75000	525000
2025	30000	560000
2026	300000	300000
2027	448000	448000
2028	548000	98000
2029	548000	98000
2030	303000	303000
2031	243000	243000
2032	98000	98000

**Appendix E    Disposal Summary**

*Table E3 – Disposal Activity Summary*

<b>Year</b>	<b>Disposal Forecast</b>	<b>Disposal Budget</b>
2023	0	0
2024	0	0
2025	0	0
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0
2031	0	0
2032	0	0

**Appendix F      Budget Summary by Lifecycle Activity**

*Table F1 – Budget Summary by Lifecycle Activity*

<b>Year</b>	<b>Acquisition</b>	<b>Operation</b>	<b>Maintenance</b>	<b>Renewal</b>	<b>Disposal</b>	<b>Total</b>
2023	100000	465000	185000	290000	0	1040000
2024	300000	465000	185000	525000	0	1475000
2025	300000	465000	185000	560000	0	1510000
2026	250000	465000	185000	300000	0	1200000
2027	120000	465000	185000	448000	0	1218000
2028	113000	465000	185000	98000	0	861000
2029	116000	465000	185000	98000	0	864000
2030	119000	465000	185000	303000	0	1072000
2031	122000	465000	185000	243000	0	1015000
2032	125000	465000	185000	98000	0	873000