ASSET MANAGEMENT PLAN
Community Wastewater Management System

(CWMS)

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1.0 Introduction

1.1 Background

The goal and purpose of this Community Wastewater Management System (CWMS) Asset Management Plan is to improve Council's long-term strategic management of its CWMS assets in order to cater for the community's desired levels of service in the future, in accordance with Council's key strategic documents and demonstrate reasonable management in the context of Council's available financial and human resources.

The CWMS Plan is maintained and managed in accordance with all regulatory requirements under the South Australian Water Act 2012, the Essential Services Commission of South Australia (ESCOSA) the Office of the Technical Regulator (OTR) and Local government Act 1999.

Council will continue to develop service levels and asset renewal projects to ensure needs for the community are delivered. These service levels have been set in accordance with user needs, regulations, industry practice and legislative codes of practice.

The Asset Management Plan is to be read with Asset Management Policy and Asset Management Strategy, where developed, along with other key planning documents:

- Strategic Plan
- Annual Business Plan
- Long Term Financial Plan

The basic function of a CWMS network is to convey household and commercial wastewater from sinks, bathrooms and toilets (everything that goes down the drain) to a point of disposal being a lagoon and/or treatment plant, prior to disposing of the wastewater.

This infrastructure asset management plan covers the following infrastructure assets owned by the Adelaide Plains Council:

- Pump stations (9) and associated assets (including mechanical, civil and electrical assets)
- Gravity Drainage Network
- Pumping Stations
- Rising Mains Network
- Wastewater Treatment Plants
- Lagoons
- Reuse Systems

This CWMS Infrastructure Asset Management Plan provides for Councils Community Wastewater Management System network and has been developed using an asset register which was digitised using historical plans and field collection during 2020. The register was valued as at 30 June 2020 and has been updated with 2021/2022 capital works to the value of $80,000.

The infrastructure assets included in this plan have a total replacement value of $6,575,990

Asset	Quantity	Renewal Value	Total Value
Pump Stations	9	$205,291	$205,291
Air Valve/Scour Valve	15	45,066	$45,066
CWMS Tanks	10	$108,369	$108,369
Domestic Pumps/Sumps	20	$393,393	$393,393
Gravity Pipes	74	$1,414,146	$1,414.146
Irrigation	31	$544,286	$544,286

Pump Chambers	5	$142,817	$142,817
Maintenance Holes	69	$114, 969	$114,969
Various CWMS Infrastructure Assets	Items	$5,020,385	$5,020,385
Total			**$6,575,990**

Key stakeholders in the preparation and implementation of this AM Plan are shown in Table 1.1.1

Table 1.1.1: Key Stakeholders in the AM Plan

Key Stakeholder	Role in Asset Management Plan
Residents and Ratepayers	■ Ultimate beneficiaries of the AMP process ■ Feedback collected throughout the year ■ Annual satisfaction survey undertaken
Insurers	■ Local Government Mutual Liability Scheme
Lessees	■ Leases operating who provide feedback on services, and have a range of maintenance responsibilities
State Government	■ SA Health Authority ■ Environment Protection Authority ■ Essential Services Commission of South Australia (ESCOSA) - Office of the Technical Regulator (OTR)
Visitor / Tourists	■ Regular satisfaction surveys undertaken, and feedback collected
Council	■ To act as custodians of community assets ■ To set Asset Management Policy and vision ■ Allocate resources to meet Council objectives in providing services while managing risks
Executive Management Team	■ Responsible for the development, management and review of an Asset Management Strategy, associated plans, practices and reporting on the status and effectiveness of Council's asset management ■ To monitor and review the performance of employees in achieving the asset management strategy, plans and practices ■ To ensure sufficient resources are applied to manage the assets to legislative requirements; and ■ Accountable for the management of assets within their areas of responsibility
Asset Manager and Staff	■ To lead the development of the Asset Management Plans ■ To develop and implement maintenance, renewal and capital works programs in accordance with the Asset Management Policy, Strategy, Plans, as well as budget allocations ■ Develop Specific Management Plans (upgrade, renewal, maintenance, operations, disposal)

Key Stakeholder	Role in Asset Management Plan
	■ To deliver levels of service to agreed risk and cost standards and expectations ■ To report asset related risk and damage ■ To establish and monitor asset compliance and risk inspection regimes ■ To manage asset condition assessments ■ To provide technical expertise to the Executive Management Team

1.2 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:

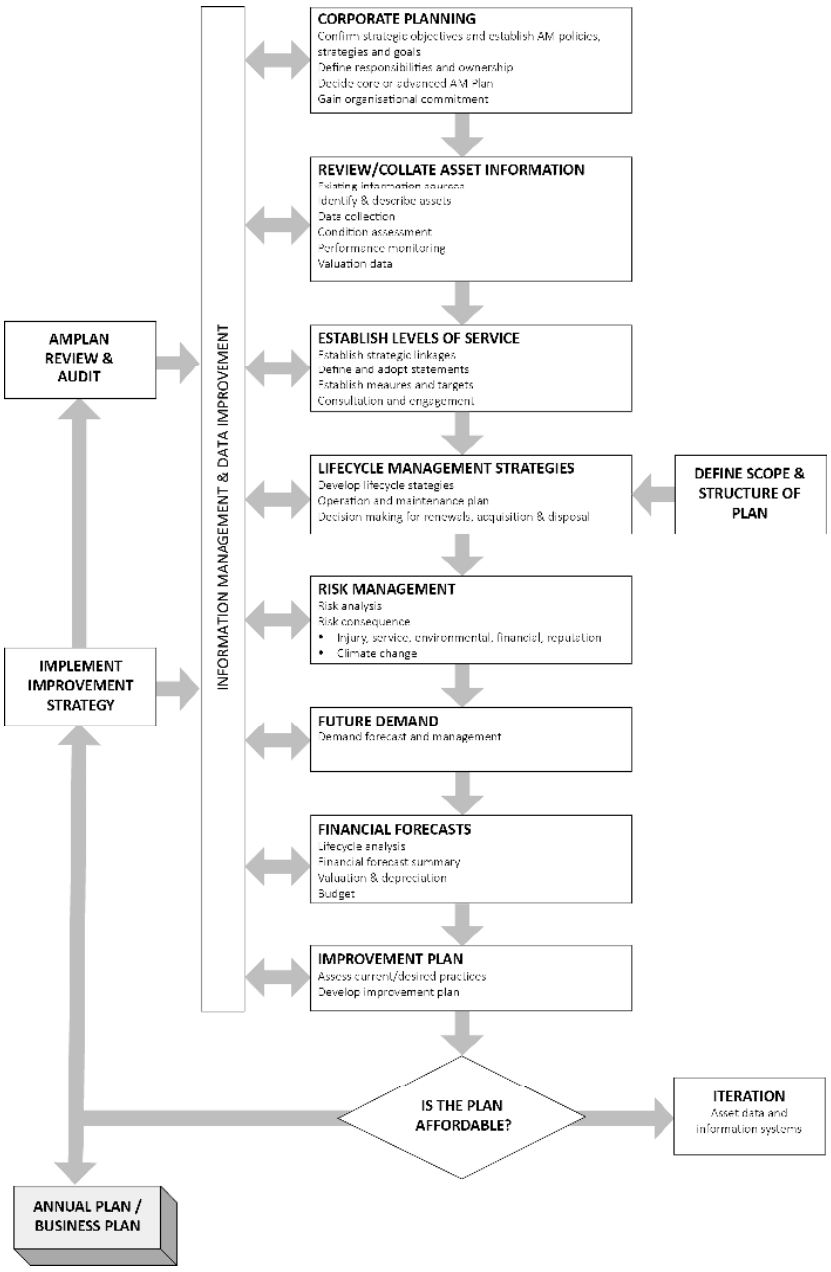
- International Infrastructure Management Manual 2015 [1]
- ISO 55000[2]

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

[1] Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2| 13
[2] ISO 55000 Overview, principles and terminology

Road Map for preparing an Asset Management Plan

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



2.0 LEVELS OF SERVICE

The community generally expect that 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, they area developed in line with Councils strategic and corporate goals and legislative requirements.

Community Levels of Service relates to the service outcomes that the community wants in terms of quality, quantity, responsiveness, amenity, safety and financing.

Table 2.1.1 Community Levels of Service

Key Performance Measure	Level of Service Objective	Performance Measure Process	Current Level of Service	Desired Level of Service
CUSTOMER (COMMUNITY) LEVEL OF SERVICE				
Quality	Well maintained and suitable wastewater collection and disposal system	Number of customer requests relating to CWMS maintenance	Acceptable compliance to SA Health and EPA requirements	Continuing to meet the service delivery needs of the community
Function	Meet SA Health Department & EPA standards	Compliance to approval conditions compliance to approval conditions	All uncontrolled releases from the network stopped within 4 hours of being reported	Continuing to meet community expectations
Responsiveness	Response time to customer requests & time taken to complete requests	> 90% of all requests adequately responded to and dealt with within 4 hours of being notified (excluding parts supply)	Acceptable compliance to SA Health and EPA requirements	Continuing to meet capacity requirements
Safety	Low level of risk to personal and environmental health	Overflows within the pipe network, treatment plant and/or at pump stations	Acceptable Compliance to SA Health and EPA requirements	Continuing to provide a low risk service to the community

Technical Levels of Service support the community service levels and are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities that the Council undertakes to best achieve the desired community outcomes.

Table 2.1.2 Technical Levels of Service

TECHNICAL LEVEL OF SERVICE				
Operations Cost Effectiveness	Provide cost effective Community Wastewater Management System to meet Department of Health and EPA guidelines	Monitor energy usage	Energy usage maintained to current or below current levels	Review periodically - energy usage
Maintenance	Periodic visual assessment and servicing of access points Periodic visual assessment to determine condition and function of drains	Routine removal and inspection of access lids CCTV inspection (when required) and drain flushing	Ongoing inspections and flushing at intervals of not more than 12 months As per contract with Light Regional Council	Access to all reported blockages available within the 4 hour timeframe Ongoing inspections and flushing at intervals of not more than 12 months
Condition	Network assets in good condition to ensure Community Wastewater Management System has appropriate design capacity	Continuous monitoring of pump stations operating hours	No pump station to operate for more than 12 hours per day as per SA Health guidelines	No pump station to operate for more than 12 hours per day as per SA Health guidelines
Renewal	Renewal of existing assets at an optimum time in their lifecycle Planned works that requires replacement identified as part of periodic inspection	CCTV inspection and drain flushing Planned renewal works	100% of network inspected at intervals of not more than 6 years As and where required as identified and planned from periodic visual inspection	100% of network inspected at intervals of not more than 6 years As and where required as identified and planned from periodic visual inspection.
New/Upgrade	Targeted capital works if capacity or Work Health and Safety issue	Planned capital works	As and where required as identified and planned from periodic visual inspection	Developer liaison

Function	Odour control from Wastewater Treatment Plant lagoon storage	Periodic monitoring level of odour near Wastewater Treatment Plant lagoon & storage	No reported incidents, monitor	Monitor
	Septic Tank Cleaning (Middle Beach)	Septic Tank Cleaning Program (Middle Beach)	100% of Septic Tanks cleaned on a 4 yearly cycle (Middle Beach)	Action 100% of Septic Tanks cleaned on a 4 yearly cycle (Middle Beach)
Safety	Planned renewal if Work Health and Safety component Treated water quality	Planned renewal works	As and where required as identified and planned from periodic visual inspection	As and where required as identified and planned from periodic visual inspection
		Compliance to reclaimed water guidelines	Number of samples taken meet Department of Health and EPA guidelines	Number of samples taken meet Department of Health and EPA guidelines

In addition to these, Council's Licence Agreement conditions in terms of operating the CWMS System require that APC contractor provide a monthly monitoring program to ensure that the water quality meets the Health Department and EPA Requirements.

A detailed analysis of the water quality monitoring program and sampling requirements are stored in Council's Electronic Document Management System.

3.0 FUTURE DEMAND

3.1 Demand Forecasts

Drivers affecting demand include population change, changes in demographics, seasonal factors, consumer preferences and expectations, technological changes, economic factors, agricultural practices and environmental awareness. The impact of these trends are regularly examined and demand management strategies are recommended as a technique to modify demand without compromising customer expectation. The Population Projections by Local Government Area predicts the Estimated Resident Population will increase as follows:

There is predicted to be stronger growth in Two Wells, Mallala and Dublin Townships, with a probable population of up to 19,358 people within the Adelaide Plains Council by 2050.

In forecasting on the future integration of land use and Community Wastewater Management System (CWMS) planning, the following are being reviewed:

- Opportunities for provision of reuse water to Council open space and recreation parks.
- Land use effluent disposal demand
- Effluent reuse
- Irrigation
- Urban Boundary Growth

Factors affecting demand include changes in demographics, customer preferences & expectations and economic factors, etc. Demand factor trends and impacts on service delivery are summarised in Table 3.1.1

Table 3.1.1 Demand Factors, Projections and Impact on Services

Present Position	Demand Forecast	Demand Impact (Projection)	Impact on Services
Population increase	Planned to accommodate for 19,358 by 2050. (source, APC Strategic Plan 2020-2024)	Increased demand and use of CWMS assets will affect the useful life of the assets which will increase the maintenance and renewal program.	A review needs to be undertaken to confidently determine capacity currently exists to accommodate potential future demand from zoned residential land.
Population	2016 Census (ABS) 8,801 Average growth rate of 5.5% per year between 2011-2016. (source, APC Strategic Plan 2020-2024)	It is projected to grow by 10,557 persons to a population of 19,358 by 2050 at 1.2% per annum. (source, APC Strategic Plan 2020-2024)	
Demographics	Population Growth - It is projected to grow by 10,557 persons to a population of 19,358 by 2050 at 1.2% per annum. (source, APC Strategic Plan 2020-2024)	Future growth rate will depend on timing of rezoning and servicing of additional land located in existing townships not connected to be investigated.	Potential impact from new land developments.

3.2 Demand Impact and Demand Management Plan

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. Council will determine the ability of the existing systems to manage increased requirements. Opportunities identified to date for demand management are shown in Table 3.1.2.

Further opportunities will be developed in future revisions of this asset management plan.

Table 3.1.2 Demand Management Plan

Service Activity	Demand Management Plan
Wastewater Collection	Investigate Capacity assessment of each pump station.
	Evaluation of impact of new allotments on existing infrastructure.
	Assess Developer contributions per Council policy.
	Negotiated developer system augmentations where required.
Wastewater Treatment, Storage and Reuse	Review capacity assessment of wastewater harvesting facilities.
	Capacity assessment of wastewater treatment processes, transfer and storage of treated wastewater.
	Evaluation of impact of new irrigation areas.
	Plan to incorporate any identified growth of treated effluent demand for irrigation.
Trade Waste Discharge	Increased stormwater inflow into the wastewater network.
	These impacts will be minimised by applying strict water quality discharge limits on all trade waste connections to the system.
Stormwater inflow	Focused flow monitoring of system and smoke testing targeted areas.
	Public education plays a significant role in the minimisation of rainwater inflow into the wastewater network. Increasing community awareness on the effects of the excessive inflow rates will help in reducing the number of faulty private drains and illegal stormwater connections.

The new assets required to meet growth will be acquired free of cost from the land developments and constructed/acquired by Council.

4.0 LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the Council plans to manage and operate the assets at the agreed levels of service (Refer to Section 2) while managing life cycle costs.

4.1 Background Data

Adelaide Plains Council's Community Wastewater Management System (CWMS) assets are located throughout the Adelaide Plains Council.

- Pump stations (9) and associated assets (including mechanical, civil and electrical assets)
- Gravity Drainage Network
- Pumping Stations
- Rising Mains Network
- Wastewater Treatment Plants
- Lagoons
- Reuse Systems

4.2 Asset Capacity and Performance

Council's services are generally provided to meet design standards where these are available. Locations where deficiencies in service performance are known are detailed in Table 4.2.1

Table 4.2.1: Known Service Performance Deficiencies

Assets	Service Deficiency
Future Demand	Providing new assets to meet demand.
Wastewater Treatment, Storage and Reuse	Plan to incorporate any identified growth of treated effluent demand for irrigation use.

The above service deficiencies were identified and are being considered and prioritised. Refer to above Demand Management Plan.

4.3 Asset Condition

Condition is currently monitored via field collection of CWMS at the time of asset revaluation.

Condition is measured using a 1 – 5 grading system[3] as detailed in Table 4.3.1. 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.

[3] IPWEA, 2015, IIMM, Sec 2.5.4, p 2|80.

Table 4.3.1: Condition Grading System

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

The overall condition score and subsequent consumption of the CWMS assets has been estimated based on a combination of available data such as age and the standard useful life of the asset.

Table 4.3.2: Asset Standard Useful Lives

Asset	Standard Useful Life
Inspection, Maintenance Points and Holes	70 years
Return, Air & Scour Valves	30 years
Property Connection Pipe – 100 & 150mm	75 years
Gravity Pipes	60 years
Rising Mains	60 years
Irrigation & Pressure Pipes	60 years
Pump Chambers	50 years
Pump Stations	15 years
Pump Station Controller (Electrical)	30 years
Treatment Lagoon Lining	30 years
Irrigation Pumps	15 years

4.4 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 and cleaning.

The trend in operations and maintenance budgets are shown in Tables 4.4.1 and 4.4.2

Table 4.4.1: Maintenance Budget Trends

Year	Maintenance Budget $
2019 - 2020	$74,815 (Actual)
2020 - 2021	$86,431 (Budget)
2021 - 2022	$95,872 (Budget)

Table 4.4.2: Operations Budget Trends

Year	Operations Budget $
2019 - 2020	$182,221 (Actual)
2020 - 2021	$161,003 (Budget)
2021 - 2022	$196,632 (Budget)

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.

4.5 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 4.5.1. Asset useful lives were last reviewed on 30 June 2020.

Table 4.5.1: Useful Lives of Assets

Asset	Standard Useful Life
Inspection, Maintenance Points and Holes	70 years
Return, Air & Scour Valves	30 years
Property Connection Pipe – 100 & 150mm	75 years
Gravity Pipes	60 years
Rising Mains	60 years
Irrigation & Pressure Pipes	60 years
Pump Chambers	50 years
Pump Stations	15 years
Pump Station Controller (Electrical)	30 years
Treatment Lagoon Lining	30 years
Irrigation Pumps	15 years

The estimates for renewals in this AM Plan were based on Method 2.

4.4.1 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).[4]

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.[5]

The ranking criteria used to determine priority of identified renewal proposals is detailed in Table 4.5.2

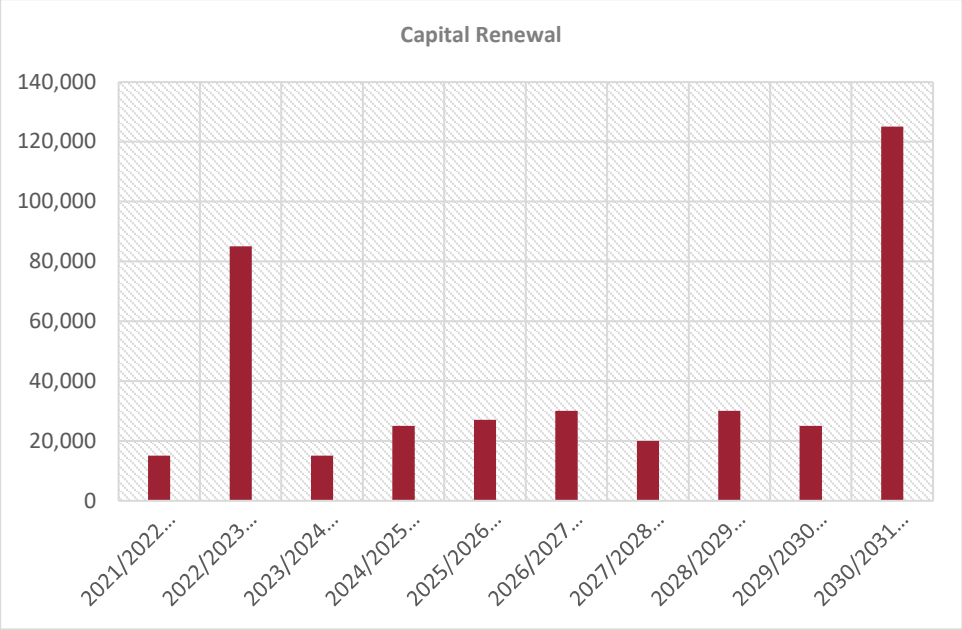
Table 4.5.2: Renewal Priority Ranking Criteria

Criteria	Weighting
End of Useful Life	20
Risks – Residual risk high or extreme	30
Safety and Compliance	50
Total	**100%**

4.5 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 4.5.1. A detailed summary of the forecast renewal costs is shown in Appendix D.

Figure 4.5.1 Forecast Renewal Costs



[4] IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.
[5] Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

All figure values are shown in current day dollars.

4.6 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, gifted to Council.

4.6.1 Selection criteria

Proposed acquisition of new assets, and upgrade of existing assets, are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. Potential upgrade and new works should be reviewed to verify that they are essential to the Entities needs. Proposed upgrade and new work analysis should also include the development of a preliminary renewal estimate to ensure that the services are sustainable over the longer term. Verified proposals can then be ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed in Table 4.6.1.1

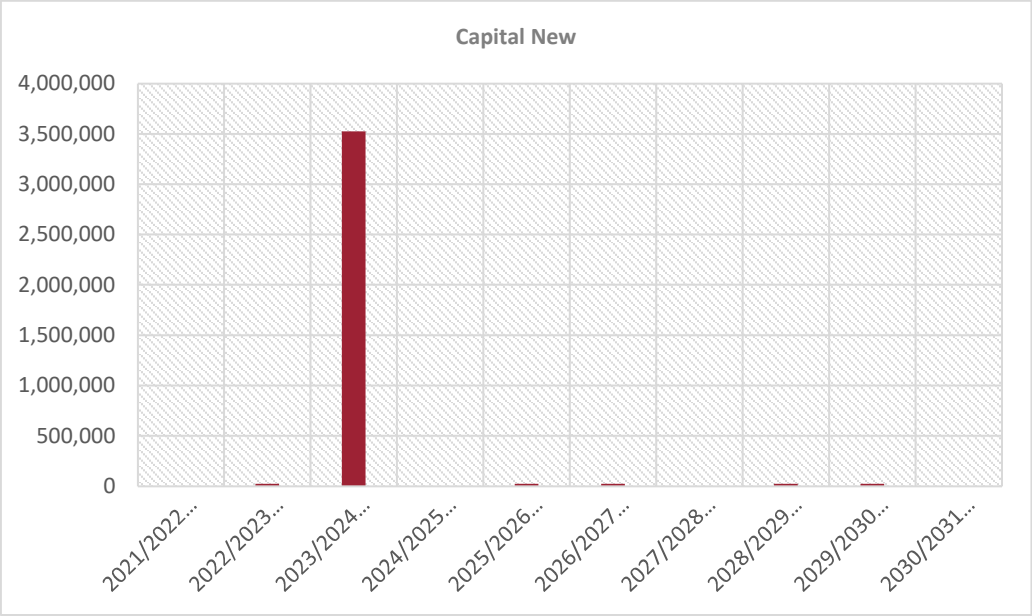
Table 4.6.1.1: Acquired (New) Assets Priority Ranking Criteria

Criteria	Weighting
Safety and Compliance	20
Risks – Residual risk high or extreme	20
Demand	60
Total	**100%**

Summary of future asset acquisition costs

Forecast acquisition asset costs are summarised / summarized in Figure 4.6.1.2 and shown relative to the proposed acquisition budget. The forecast acquisition capital works program is shown in Appendix A.

Figure 4.6.1.2: Acquisition New (Constructed) Summary



All figure values are shown in current day dollars.

4.7 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 4.7.1. A summary of the disposal costs and estimated reductions in annual operations and maintenance of disposing of the assets are also outlined in Table 4.7.1. Any costs or revenue gained from asset disposals is included in the long-term financial plan.

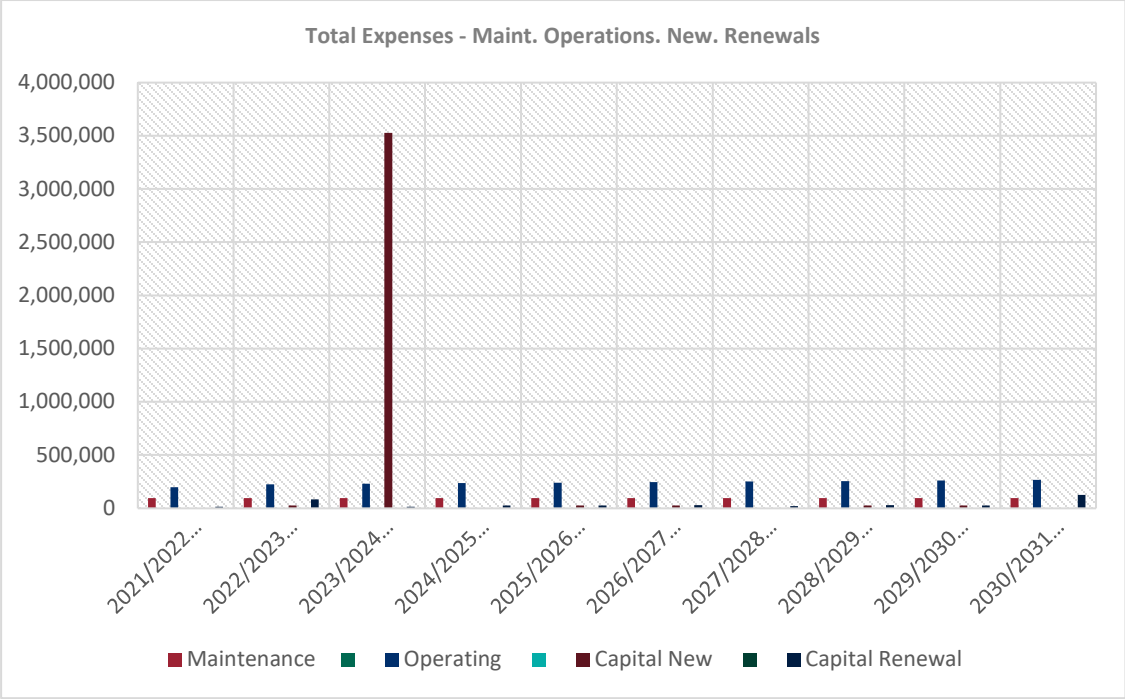
Table 4.7.1: Assets Identified for Disposal

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

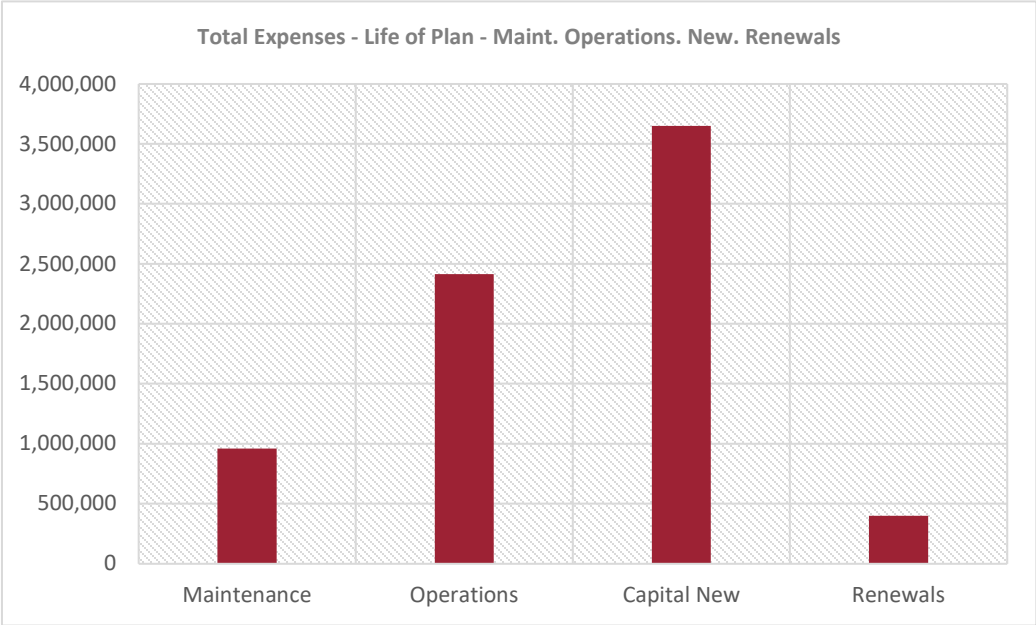
4.8 Summary of asset forecast costs

The financial projections from this asset plan are shown in Figure 4.8.1. These projections include forecast costs for acquisition, operation, maintenance, renewal, and disposal. These forecast costs are shown relative to the proposed budget.

Figure 4.8.1: Lifecycle Summary



All figure values are shown in current day dollars.



All figure values are shown in current day dollars.

5.0 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'[6].

An assessment of risks[7] 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.

5.1 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 5.1.1. Failure modes may include physical failure, collapse or essential service interruption.

Table 5.1.1 Critical Assets

Critical Asset(s)	Failure Mode	Impact
Pump Stations	Breakdowns	Possible Overflows
Treatment Lagoons	Over Topping	Possible Overflows

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.

5.2 Risk Assessment

The risk management process used is shown in Figure 5.2.1 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.

[6] ISO 31000:2009, p 2

[7] REPLACE with Reference to the Corporate or Infrastructure Risk Management Plan as the footnote

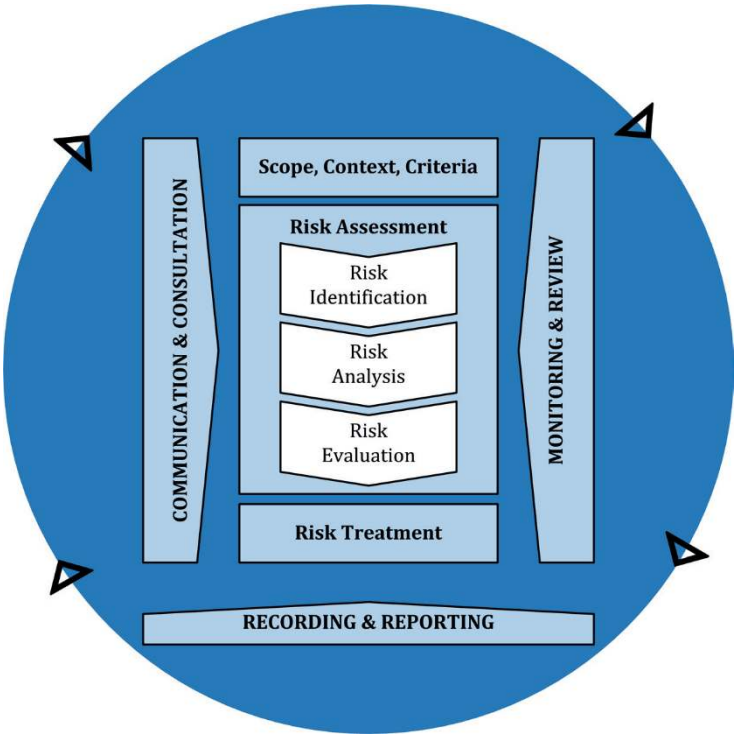


Fig 5.2.1 Risk Management Process – Abridged
Source: ISO 31000:2018, Figure 1, p9

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[8] 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 5.2.2. It is essential that these critical risks and costs are reported to the Executive Management Team.

[8] REPLACE with Reference to the Corporate or Infrastructure Risk Management Plan as the footnote

Table 5.2.2: Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Treatment Plant	Discharge to environment from inadequacy capacity	High	Upgrade plant capacity/emergency flow storages.	L	Investigate costs.
Effluent Lines	Blockage	High	Program regular flushing of lines and inspections.	Low	Currently performed – service agreement with RL Council.
Pump Stations	Blockage	High	Program regular flushing of lines and inspections.	Low	Currently performed – service agreement with RL Council.
Pump Stations	Pump Failure	High	Upgrade telemetry monitoring, emergency response plan, determine requirements for emergency generator, emergency portable pump.	High	Investigate, APC own a mobile diesel generator.
Effluent Lines	Infrastructure damaged by excavation	High	Add GIS CWMS data to Dial Before You Dig service.	Low	Investigate cost.
Effluent Lines	Deterioration of existing lines	High	Systematic cleaning and inspection of drain and replace or repair when required.	High	Known at time before replacement occurs.

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

5.3 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[9] in accordance with Table 5.3.1.

[9] IPWEA, 2015, IIMM, Table 2.4.6, p 2|71.

Table 5.3.1: 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 ± 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 ± 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 ± 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 ± 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 5.3.2.

Table 5.3.2: Data Confidence Assessment for Data used in AM Plan

Data	Confidence Assessment	Comment
Demand drivers	Very High	Council trends available, Refer to Council Strategic Plan 2020-2024
Growth projections	Very High	Council trends available, refer to Council Strategic Plan 2020-2024
Acquisition forecast	Very High	Council trends available, refer to Council Strategic Plan 2020-2024. Align to LFTP – Capital Works Program
Operation forecast	High	Extrapolated from previous years
Maintenance forecast	High	Extrapolated from previous years
Renewal forecast - Asset values	Very High	Council trends available, refer to Council Strategic Plan 2020-2024. Align to LFTP – Capital Works Program
- Asset useful lives	Very High	Reviewed in accordance via revaluation schedule
- Condition modelling	Very High	Reviewed in accordance via revaluation schedule and condition ratings
Disposal forecast	N/A	N/A

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

6.0 PLAN IMPROVEMENT AND MONITORING

6.1 Status of Asset Management Practices[10]

6.1.1 Accounting and financial data sources

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

6.1.2 Asset management data sources

This AM Plan also utilises asset management data. The source of the data is Conquest.

6.2 Improvement Plan

It is important that council 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 6.2.1.

Table 6.2.1: Improvement Plan

Task	Task	Responsibility	Timeline
1	Annually review 10 year capital works program, renewals and new	Council Administration	October/November each year
2	Continue CWMS scheduled and programmed maintenance requirements	Council Administration/CWMS Officer	Ongoing
3	Review service levels	Council Administration	As required
4	Long Term Financial Plan and Asset Management Plan align	Council Administration	As required
5	Review & Document Asset Management Plan Risks	Council Administration	Ongoing

6.3 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 council election.

6.4 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,

[10] ISO 55000 Refers to this as the Asset Management System

- The Asset Renewal Funding Ratio achieving the Organisational target (this target is often 90 – 110%).

7.0 REFERENCES

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMM.
- IPWEA, 2020 'International Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney
- IPWEA, 2018, Practice Note 12.1, 'Climate Change Impacts on the Useful Life of Assets', Institute of Public Works Engineering Australasia, Sydney
- IPWEA, 2012, Practice Note 6 Long-Term Financial Planning, Institute of Public Works Engineering Australasia, Sydney, https://www.ipwea.org/publications/ipweabookshop/practicenotes/pn6
- 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
- Adelaide Plains Council Strategic Plan 2020 - 2024
- Adelaide Plains Council Annual Plan and Budget
- Maintenance Service Agreement with Regional Light Council

8.0 APPENDICES

Appendix A Acquisition Forecast (New)

FINANCIAL YEAR:	2021/2022 $	2022/2023 $	2023/2024 $	2024/2025 $	2025/2026 $	2026/2027 $	2027/2028 $	2028/2029 $	2029/2030 $	2030/2031 $	Total
CWMS Capital New											
Two Wells - New Community Waste Management System	0	0	3,500,000	0	0	0	0	0	0	0	3,500,000
Two Wells - Eden and Liberty Estates, Recycled Water Reuse (reserves & parks)	0	25,000	25,000	0	25,000	25,000	0	25,000	25,000	0	150,000
TOTAL CWMS NEW	0	25,000	3,525,000	0	25,000	25,000	0	25,000	25,000	0	3,650,000

Appendix B Operation Forecast

FINANCIAL YEAR:	2021/2022 $	2022/2023 $	2023/2024 $	2024/2025 $	2025/2026 $	2026/2027 $	2027/2028 $	2028/2029 $	2029/2030 $	2030/2031 $	Total
CWMS Operating											
Materials, Power, Water, Dep & Insurance etc..	196,352	196,352	196,352	196,352	196,352	196,352	196,352	196,352	196,352	196,352	1,963,520
Two Wells - Liberty and Eden Estates, Recycled Water Costs (parks & reserves) - Allocation	0	30,000	35,000	40,000	45,000	50,000	55,000	60,000	65,000	70,000	450,000
TOTAL CWMS OPERATING	196,352	226,352	231,352	236,352	241,352	246,352	251,352	256,352	261,352	266,352	2,413,520

Appendix C Maintenance Forecast

FINANCIAL YEAR:	2021/2022 $	2022/2023 $	2023/2024 $	2024/2025 $	2025/2026 $	2026/2027 $	2027/2028 $	2028/2029 $	2029/2030 $	2030/2031 $	Total
CWMS Maintenance											
External Service Maintenance Contract Provider (RL Council)	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	**600,000**
Contractors Repairs	22,040	22,040	22,040	22,040	22,040	22,040	22,040	22,040	22,040	22,040	**220,400**
Internal Maintenance Staff	13,832	13,832	13,832	13,832	13,832	13,832	13,832	13,832	13,832	13,832	**138,320**
TOTAL CWMS MAINTENANCE	**95,872**	**95,872**	**95,872**	**95,872**	**95,872**	**95,872**	**95,872**	**95,872**	**95,872**	**95,872**	**958,720**

Appendix D Renewal Forecast Summary

FINANCIAL YEAR:	2021/2022 $	2022/2023 $	2023/2024 $	2024/2025 $	2025/2026 $	2026/2027 $	2027/2028 $	2028/2029 $	2029/2030 $	2030/2031 $	Total
CWMS Capital Renewal											
Mallala - Replacement of Property Pumps	15,000	15,000	15,000	15,000	20,000	20,000	20,000	20,000	25,000	25,000	190,000
Middle Beach - CWMS Shed	0	0	0	0	7,000	0	0	0	0	0	7,000
Middle Beach - Irrigation Pump	0	0	0	0	0	0	0	0	0	40,000	40,000
Middle Beach - Allocation	0	10,000	0	10,000	0	10,000	0	10,000	0	10,000	50,000
Mallala Treatment Plant (Chamber Protection Coating)	0	60,000	0	0	0	0	0	0	0	0	60,000
Two Wells - Allocation	0	0	0	0	0	0	0	0	0	50,000	50,000
TOTAL CWMS RENEWAL	15,000	85,000	15,000	25,000	27,000	30,000	20,000	30,000	25,000	125,000	397,000