



## **Community Wastewater Management System**

# **Asset Management Plan**

Scenario 1 Version 5

July 2018

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MID MURRAY COUNCIL CWMS INFRASTRUCTURE ASSETS  
REVALUATION and THIRD PARTY VALIDATION  
of  
COUNCIL'S METHODOLOGIES for their  
ASSET REGISTER and INFRASTRUCTURE MANAGEMENT PLAN  
TO THE AUDITORS

*Mid Murray Council commissioned GPE to revalue and/or certify Council's internal valuation of the above infrastructure assets, and to comment on the suitability of their CWMS Infrastructure Asset Management Plan.*

*From the outset, it has been quite apparent that*

- *Mid Murray Council's approach to task;*
- *the level of commitment exercised by staff;*
- *the concerted efforts to understand the underlying principles;*
- *meticulous record keeping;*
- *attention to detail in testing the cost and life parameters;*
- *allocation of sufficient, suitably qualified and experienced personnel; and*
- *the present, and developing, skill levels of CWMS staff across-the-board*

*have all, frankly, been exemplary.*

*1. GPE input*

*Mr Russell Pilbeam worked in person with the undersigned over a period of many months to seek guidance, test various parameter values, and to work through a*

*series of iterations to produce a robust Asset Register with quality figures on the key parameters.*

*On advice from GPE, particular attention was paid to both*

- the Total Useful Lives of gravity drains (which were understated in light of present industry/ sector-wide knowledge); and*
- unit renewal costs for gravity drains in particular, which were seriously understated. Rates were subsequently provided by GPE from current major-CWMS build contracts.*

*Other useful lives and big-ticket components in aggregate (eg, Rising Mains) were reviewed similarly to the gravity drains.*

*The Asset Register has been re-populated accordingly.*

## *2. Council data*

*Staff have kept meticulous records of renewal costs of mechanical and electrical components in particular, eg, pumps, valves, controllers etc.*

*In addition to ensuring that all costs associated with procurement, replacement and disposal were identified, the “Class” service lives of each failing component have been recorded and reviewed against the standard lives which underpin the Asset Register and its derivative financial measures.*

*At this time, there are more than 35 individual components which have been identified as having longer-than-expected service lives. These are mostly pumps, poly tanks, vent stacks and vent filter units, none of them being over Council’s capitalisation limit in themselves. The “class” lives have not been changed yet, so those particular components are fully written down despite still delivering service. Over the next two years, staff will monitor each such asset component to determine if there is a need to adjust the individual class Useful Life. Whilst not large in \$ figures, increasing a class life would reduce the overall annual depreciation expense.*

*I have included a self-explanatory email exchange trail between GPE and Council staff regarding data quality and recommended adjustments (Appendix 1).*

## *3. Conclusion*

*Usually a GPE revaluation statement would be more detailed and lengthy. However, in this case I can say unequivocally that I am satisfied that the data now entered into the Mid Murray Council CWMS Asset Register are of the highest quality achievable in practice, with very high confidence levels.*

*Further, the predicted Capital Renewal Program derived from the NAMS-based Infrastructure Asset Management Plan is logical and robust, as a sound indicator of likely need for replacement.*

*The applicable Revaluation Date is 1 July 2017.*

**Richard Gayler**

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Principal Engineer/Managing Director



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**3<sup>rd</sup> August 2018**

## TABLE OF CONTENTS

1.	EXECUTIVE SUMMARY .....	1
	Context .....	1
	What does it Cost?.....	1
	What we will do .....	1
	Managing the Risks .....	1
	The Next Steps .....	1
2.	INTRODUCTION.....	2
	2.1 Background.....	2
	2.2 Goals and Objectives of Asset Management .....	3
	2.3 Plan Framework.....	3
	2.4 Core and Advanced Asset Management .....	3
	2.5 Community Consultation.....	4
3.	LEVELS OF SERVICE .....	5
	3.1 Customer Research and Expectations .....	5
	3.2 Strategic and Corporate Goals .....	5
	3.3 Legislative Requirements .....	5
	3.4 Community Levels of Service.....	6
	3.5 Technical Levels of Service .....	7
	3.6 Desired Levels of Service .....	8
4.	FUTURE DEMAND .....	9
	4.1 Demand Drivers.....	9
	4.2 Demand Forecast .....	9
	4.3 Demand Impact on Assets.....	9
	4.4 Demand Management Plan.....	9
	4.5 Asset Programs to meet Demand.....	10
5.	LIFECYCLE MANAGEMENT PLAN.....	11
	5.1 Background Data .....	11
	5.2 Infrastructure Risk Management Plan.....	13
	5.3 Routine Operations and Maintenance Plan .....	14
	5.4 Renewal/Replacement Plan .....	16
	5.5 Creation/Acquisition/Upgrade Plan .....	18
	5.6 Disposal Plan .....	18
6.	FINANCIAL SUMMARY .....	19
	6.1 Financial Statements and Projections .....	19
	6.2 Funding Strategy.....	23
	6.3 Valuation Forecasts .....	23
	6.4 Key Assumptions made in Financial Forecasts .....	24
	6.5 Forecast Reliability and Confidence .....	25
7.	PLAN IMPROVEMENT AND MONITORING .....	26
	7.1 Status of Asset Management Practices .....	26
	7.2 Improvement Program .....	26
	7.3 Monitoring and Review Procedures .....	27
8.	PLAN IMPROVEMENT & MONITORING.....	28
9.	REFERENCES.....	29
10.	APPENDICES .....	30
	Appendix A Asset Data Structure.....	31
	Appendix B CWMS Scheme Summary .....	34
	Appendix C Projected 10 Year Capital Reenwal Program.....	35
	Appendix D Abbreviations.....	41
	Appendix E Glossary .....	42

## 1. EXECUTIVE SUMMARY

### Context

The Mid Murray Council covers 6,266 square kilometres and spans the area from the Riverland through the Murraylands to the eastern slopes of the Mount Lofty Ranges. It includes 220 km of the Murray River and 52 shack groups.

Council owns and maintains 28 community waste management schemes (CWMS) across the district. CWMS enable to extraction, treatment and safe disposal of sewerage and wastewater.

As part of Council's Development Plan, shack sites which contain five or more shack sites must install a CWMS. This, coupled with the freeholding requirements imposed by Crown Lands, have been the major driver in the installation of the CWMS within the Council area. In 2015-16 following receipt of subsidy funding, a new CWMS was installed to service the Truro township. The new CWMS has a communal sump which pumps all effluent to the Barossa Council.

The main aim of managing the CWMS infrastructure is that the required levels of service are met in the most cost effective way, that legislative and licensing conditions are met and that the CWMS are reliable particularly during peak periods.

The CWMS network comprises of:

- 9.5km of subsurface infrastructure
- 1756 property connections
- 31 Hectares of Irrigation/Disposal sites
- Multitude of pump stations, electronic systems and alarms, tanks, pumps and filters.

These infrastructure assets have a replacement value of **\$19,863,305**.

### What does it Cost?

The projected outlays necessary to provide the services covered by this Asset Management Plan (AM Plan) includes operations, maintenance, renewal and upgrade of existing assets over the 10 year planning period is **\$4,171,000** or **\$417,000** on average per year.

Projected expenditure required to provide services in the AM Plan have been used to form the current long term financial plan, meaning there is no shortfall at this stage.

### Executive Summary - What does it cost? (\$000)

<b>Projected</b> - 10 year total cost [10 yr Ops, Maint, Renewal & Upgrade Proj Exp]	<b>\$4,171</b>
10 year average cost	<b>\$417</b>
<b>Planned</b> - 10 year total LTFP budget [10 yr Ops, Maint, Renewal & Upgrade LTFP Budget]	<b>\$4,173</b>
10 year average LTFP budget	<b>\$417</b>
10 year AM financial indicator	<b>100%</b>
10 year average funding shortfall	<b>NIL</b>

### What we will do

We plan to provide CWMS services for the following:

- Operation, maintenance and renewal of CWMS assets as outlines in this report, to meet all requirements laid out by the Essential Services Commission of SA (ESCOSA).

### Managing the Risks

There are risks associated with providing the service and not being able to complete all identified activities and projects. We have identified major risks as:

- Raised River levels
- Aging infrastructure
- Non- conformance with current WHS legislation
- Extended power outage
- Lack of succession planning
- Lack of funding to meet service levels.

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

- Ensuring we have appropriate contingency plans in place and we maintain communication with residents
- Ensure that alarms are installed and working to advise us of power failure
- Plan for the future through developing a succession plan for our CWMS maintenance staff
- Developing a renewal and maintenance program to ensure all legislative requirements and budget needs are met.

### The Next Steps

The actions resulting from this asset management plan are:

- Undertake actions identified in our improvement plan which include updating our contingency plans, and developing a maintenance and renewal program.

## 2. INTRODUCTION

### 2.1 Background

This asset management plan is to demonstrate responsive management of assets (and services provided from assets), compliance with regulatory requirements, and to communicate funding needed to provide the required levels of service over a 20 year planning period.

The asset management plan follows the format for AM Plans recommended in Section 4.2.6 of the International Infrastructure Management Manual<sup>1</sup>.

The asset management plan is to be read with the organisation’s Asset Management Policy, Asset Management Strategy and the following associated planning documents:

- Community Plan
- Annual Business Plan
- Development Plan
- CWMS Risk Management Plans & Contingency Plans
- Long Term Financial Plan

This infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to provide for the removal of wastewater from the Flood Plain.

**Table 2.1: Assets covered by this Plan**

#### Value Summary

Asset Group	Assets	Replacement Value
Irrigation Area	Fencing – 12.6km Irrigation Land – 31 Hectares Subsurface Pipework – 1.2km	\$1,158,563
Pump Station/Treatment Plant	Aerator/Blowers – 17 Control Systems – 45 Electrical Systems – 38 Pumps – 75 Tanks/Sumps - 121	\$8,679,380
Subsurface Infrastructure	Connection Points – 1735 Subsurface Pipework – 93.8km Manholes/Inspection Points - 110	\$8,853,682
<b>TOTAL</b>		<b>\$19,863,305</b>

<sup>1</sup> IPWEA, 2011, Sec 4.2.6, *Example of an Asset Management Plan Structure*, pp 4|24 – 27.

## 2.2 Goals and Objectives of Asset Management

The organisation exists to provide services to its community. Some of these services are provided by infrastructure assets. We have acquired infrastructure assets by 'purchase', by contract, construction by our staff and by donation of assets constructed by developers and others to meet increased levels of service.

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

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing and appropriately controlling risks, and
- Having a long-term financial plan which identifies required, affordable expenditure and how it will be financed.<sup>2</sup>

The goal of this asset management plan is to:

- Document the services/service levels to be provided and the costs of providing the service,
- Communicate the consequences for service levels and risk, where desired funding is not available, and
- Provide information to assist decision makers in trading off service levels, costs and risks to provide services in a financially sustainable manner.

## 2.3 Plan Framework

Key elements of the plan are

- Levels of service – specifies the services and levels of service to be provided by the organisation,
- Future demand – how this will impact on future service delivery and how this is to be met,
- Life cycle management – how Council will 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,
- Monitoring – how the plan will be monitored to ensure it is meeting organisation's objectives,
- Asset management improvement plan.

## 2.4 Core and Advanced Asset Management

This asset management plan is prepared as a 'core' asset management plan over a 20 year planning period in accordance with the International Infrastructure Management Manual<sup>3</sup>. It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is a 'top down' approach where analysis is applied at the 'system' or 'network' level.

Future revisions of this asset management plan will move towards 'advanced' asset management using a 'bottom up' approach for gathering asset information for individual assets to support the optimisation of activities and programs to meet agreed service levels in a financially sustainable manner.

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<sup>2</sup> Based on IPWEA, 2011, IIMM, Sec 1.2 p 1|7.

<sup>3</sup> IPWEA, 2011, IIMM.

## **2.5 Community Consultation**

This 'core' asset management plan is prepared to facilitate community consultation initially through feedback on draft asset management plans prior to adoption by the Council. Future revisions of the asset management plan will incorporate community consultation on service levels and costs of providing the service. This will assist the Council and the community in matching the level of service needed by the community, service risks and consequences with the community's ability and willingness to pay for the service.

### **3. LEVELS OF SERVICE**

#### **3.1 Customer Research and Expectations**

Mid Murray Council has not carried out any research on customer expectations. This will be investigated for future updates of the asset management plan. We do, however, log most of our complaints through our Synergy module for follow-up.

#### **3.2 Strategic and Corporate Goals**

This asset management plan is prepared under the direction of the organisation's vision, mission, goals and objectives.

Our vision is:

***We celebrate our rich and diverse country lifestyle built on a strong economy. Our aim is to encourage a continuing vibrant community, family spirit, the ongoing protection of the River Murray and maintain our precious national, cultural and built heritage.***

Strong jobs growth, industry attraction and skills development is balanced with our commitment to responsible environmental management and protection.

Our mission is:

***We will be:***

***Proactive in planning for and facilitating business and industry investment and economic growth***

***Committed to the protection of our natural and built environment***

***Open and inclusive in encouraging community involvement and partnership in Council plans and policies***

***Advocates for and providers of services and facilities that support community wellbeing***

***An efficient and responsible manager of Council assets, infrastructure and resources in partnership with the community***

***A professional organisation that attracts and retains high quality staff and Elected Members***

The organisation will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan prepared in conjunction with this AM Plan. Management of infrastructure risks is covered in Section 5.

#### **3.3 Legislative Requirements**

The organisation has to meet many legislative requirements including Australian and State legislation and State regulations. These include:

**Table 3.3: Legislative Requirements**

Legislation	Requirement
Local Government Act 1999	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
SA Public Health Act 2011	Establishes design and installation requirements and ongoing treated water parameters
Development Act 1993	Identifies the requirements for the installation of CWMS for private contractors; Provides for the planning and regulation of development in the State.
Environment Protection Act 1993	Monitors the treatment and disposal of wastewater
Work Health and Safety Act 2012	Establishes objectives and parameters to ensure workers' health and safety

The organisation will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan linked to this AM Plan. Management of risks is discussed in Section 5.2.

### 3.4 Community Levels of Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service.

Community Levels of Service measure how the community receives the service and whether the organisation is providing community value.

Community levels of service measures used in the asset management plan are:

Quality	How good is the service?
Function	Does it meet users' needs?
Capacity/Utilisation	Is the service over or under used?

The organisation's current and expected community service levels are detailed in Tables 3.4 and 3.5. Table 3.4 shows the agreed expected community levels of service based on resource levels in the current long-term financial plan and community consultation/engagement.

**Table 3.4: Community Level of Service**

Service Attribute	Level of Service	Performance Measure Process	Desired Level Of Service	Current Level of Service
<b>COMMUNITY OUTCOMES</b>				
Ensure the CWMS's are maintained and operated in a manner that prevents failure.				
<b>COMMUNITY LEVELS OF SERVICE</b>				
Quality	Provide efficient method of collection and disposal of wastewater	EPA inspections Annual SA Health report Not exceed budget	Stay within budget parameters	No current measure
Function	Ensure continuous operation of CWMS	Conduct fortnightly site inspections with inspection reports produced for actioning	Ensure the majority of service issues are resolved before failure	Achieved
Function	Ensure continuous operation of CWMS	Customer complaints are received and actioned.	All complaints followed up within 24 hours	Achieved
Capacity/Utilisation	Provide CWMS that is low risk to the community	All CWMS operating within legislated	Full compliance with SA Health and EPA requirements	Achieved

### 3.5 Technical Levels of Service

**Technical Levels of Service** - Supporting the community service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities that the organisation undertakes to best achieve the desired community outcomes and demonstrate effective organisational performance.

Technical service measures are linked to annual budgets covering:

- Operations – the regular activities to provide services such as opening hours, cleansing, mowing grass, energy, inspections, etc.
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition (eg road patching, unsealed road grading, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (eg frequency and cost of road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),
- Upgrade – the activities to provide a higher level of service (eg widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (eg a new library).

Service and asset managers plan, implement and control technical service levels to influence the customer service levels.<sup>4</sup>

Table 3.5 shows the technical level of service expected to be provided under this AM Plan. The agreed sustainable position in the table documents the position agreed by the Council following community consultation and trade-off of service levels performance, costs and risk within resources available in the long-term financial plan.

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<sup>4</sup> IPWEA, 2011, IIMM, p 2.22

**Table 3.5: Technical Levels of Service**

Service Attribute	Level of Service	Performance Measure Process	Desired Level Of Service	Current Level of Service
<b>TECHNICAL LEVELS OF SERVICE</b>				
Condition	Visual assessments are undertaken regularly to determine condition of CWMS components	Regular inspections are programmed	Inspections are programmed every 5 years.	Achieved
Maintenance	Ensure sufficient maintenance is undertaken	A Maintenance program is developed and implemented	Maintenance program created for each CWMS.	Achieved
		Ensure that a desludging program is in place	Desludging occurs every 4 years	Achieved
Function	Ensure the CWMS has sufficient capacity and meets approval conditions.	Capacity is monitored and water tests are undertaken 3 monthly.	Once capacity is reached, no more connections. Compliance with water testing parameters.	Achieved
Renewal	Ensure renewals of CWMS infrastructure is programmed	Development of a long term renewal plan.	Full compliance with SA Health and EPA requirements	Achieved

## 4. FUTURE DEMAND

### 4.1 Demand Forecast

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

The present position and projections for demand drivers that may impact future service delivery and utilisation of assets were identified and are documented in Table 4.3.

### 4.2 Changes in Technology

Technology changes forecast to affect the delivery of services covered by this plan are detailed in Table 4.2.

**Table 4.2: Changes in Technology and Forecast effect on Service Delivery**

Technology Change	Effect on Service Delivery
Developments in monitoring and data collection	Improved data and monitoring services will improve service delivery and reduce service failure. Expected improvement in efficiency and response times.
Increased efficiencies in water treatment methodology	Better treatment methods at reduced power consumption.
Increased requirements for water treatment	Increased costs associated with higher levels of water treatment.

### 4.3 Demand Impact on Assets

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

**Table 4.3: Demand Drivers, Projections and Impact on Services**

Demand drivers	Present position	Projection	Impact on services
Additional connections	14 additional connections at Rob Loxton	Potential, additional connections at each site, not substantial	Minor
Improvements on energy efficient parts	Status quo	Potentially in the future	Reduction in power and maintenance costs
Improvement in treatment methods	Status quo	Potentially in the future	Reduction in treatment costs

### 4.4 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. Demand management practices include non-asset solutions, insuring against risks and managing failures.

Non-asset solutions focus on providing the required service without the need for the organisation to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures<sup>5</sup>.

<sup>5</sup> IPWEA, 2011, IIMM, Table 3.4.1, p 3 | 58.

Examples of non-asset solutions include providing services from existing infrastructure such as aquatic centres and libraries that may be in another community area or public toilets provided in commercial premises.

Opportunities identified to date for demand management are shown in Table 4.4. Further opportunities will be developed in future revisions of this asset management plan.

**Table 4.4: Demand Management Plan Summary**

<b>Demand Driver</b>	<b>Impact on Services</b>	<b>Demand Management Plan</b>
Stormwater inflow	Increases burden to infrastructure	Educate community about redirecting stormwater away from CWMS
Increase of users of system (ie influx of users in peak seasons vs non-peak seasons)	Increase in treatment, maintenance and monitoring costs	Ensure CWMS are managed accordingly before, during and after peak seasons

#### **4.5 Asset Programs to meet Demand**

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

Acquiring new assets will commit the organisation to fund 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 as part of Section 5.

## 5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the organisation plans to manage and operate the assets at the agreed levels of service (defined in Section 3) while optimising life cycle costs.

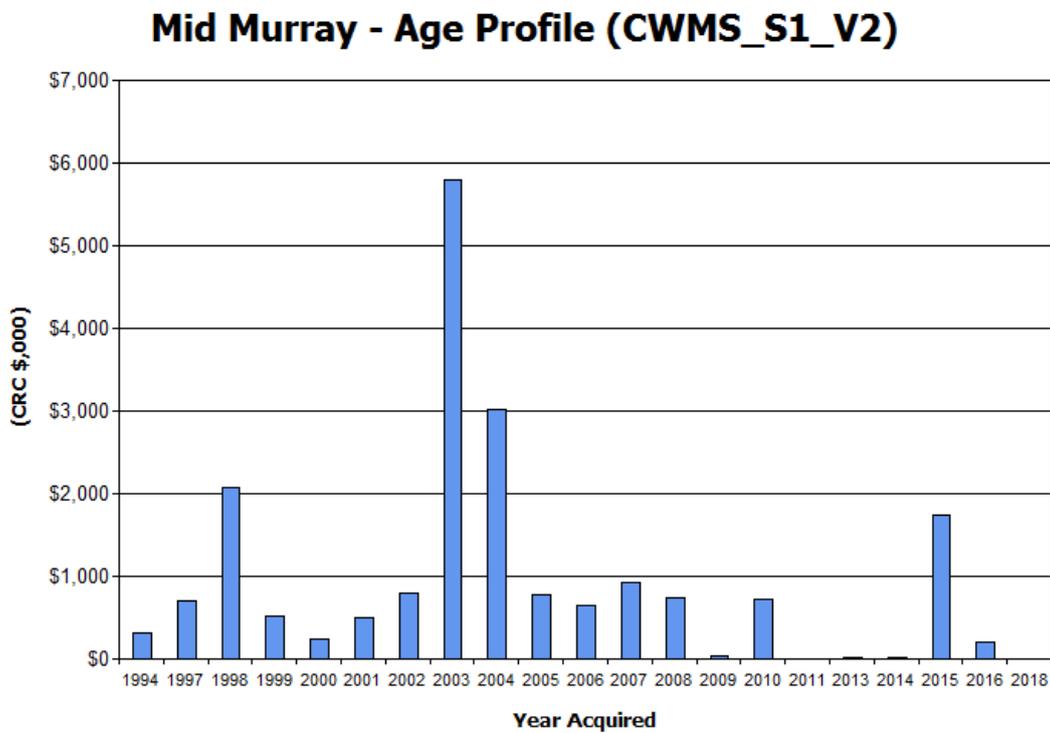
### 5.1 Background Data

#### 5.1.1 Physical parameters

The assets covered by this asset management plan are shown in Table 2.1.

The age profile of the assets include in this AM Plan is shown in Figure 2.

*Figure 2: Asset Age Profile*



#### 5.1.2 Asset capacity and performance

The organisation’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 5.1.2.

**Table 5.1.2: Known Service Performance Deficiencies**

Location	Service Deficiency
High River Level Inundation	During high river levels, some CWMS become inoperable. Further investigation into possible upgrades to counter this scenario is required and will be reported on in future reports

### 5.1.3 Asset condition

Condition is monitored by regular inspections by the CWMS Maintenance Officers and contractors as required. The renewal program has been determined on useful lives against known acquisition. Council will develop a digital system in order to measure future condition assessments against forecast performance/life cycle models. At this stage, condition has not been used to influence the proposed renewal program.

### 5.1.4 Asset valuations

Asset Valuations were undertaken as part of the development of the asset registers in 2016-2018. As Council manages 28 CWMS across the region, the development of common unit rates has been established utilising historic replacement costs and recent quotations received from relevant suppliers and contractors. A list common unit rates and also useful lives can be found in Appendix A.

Useful lives were reviewed between 2016-2018. The useful lives were determined initially on engineers and suppliers recommendations then further reviewed based on historic and current failure rates. This resulted in a number of assets having extended useful lives. The assumption is this due to continuous and robust maintenance work. Future asset plans will review the cost benefit analysis of the influence of current maintenance practices against a more proactive renewal approach. This report presents the scenario against current practices only.

The value of assets recorded in the asset register as at **\$19,863,305** covered by this asset management plan is shown below as dated April 2018.

<b>Current Replacement Cost</b>	<b>\$19,863,305</b>
<b>Depreciable Amount</b>	<b>\$19,863,305</b>
<b>Depreciated Replacement Cost<sup>6</sup></b>	<b>\$13,510,127</b>
<b>Annual Depreciation Expense</b>	<b>\$433,943</b>

Various ratios of asset consumption and expenditure have been prepared to help guide and gauge asset management performance and trends over time.

Rate of Annual Asset Consumption (Depreciation/Depreciable Amount)	2.2%
Rate of Annual Asset Renewal (Capital renewal exp/Depreciable amount)	1%

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<sup>6</sup> Also reported as Written Down Current Replacement Cost (WDCRC).

## 5.2 Infrastructure Risk Management Plan

An assessment of risks<sup>7</sup> associated with service delivery from infrastructure assets has identified critical risks that will result in loss or reduction in service from infrastructure assets or a 'financial shock' to the organisation. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

Critical risks, being those assessed as 'Very High' - requiring immediate corrective action and 'High' – requiring prioritised corrective action identified in the Infrastructure Risk Management Plan, together with the estimated residual risk after the selected treatment plan is operational are summarised in Table 5.2. These risks are reported to management and Council/Board.

**Table 5.2: Critical Risks and Treatment Plans**

Risk No.	Asset providing the Service	What can happen?	Risk Rating	Action required timing	Risk Treatment Plan
1	Electrical Supply	Loss of Power	High	Prioritised action required	Ensure alarms installed have battery backup or are solar powered.
2	CWMS	Flooding	High	Prioritised action required	Ensure contingency plans are up to date and review infrastructure locations.
3	CWMS	Loss of staff	High	Prioritised action required	Investigate succession planning
4	Pumps	Pump failure	Low	Planned action required	Dual pumps installed and alarmed
5	Tanks/Sumps	Treatment tanks damaged	Medium	Planned action required	Ensure bollards are in place and review location of infrastructure.

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

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<sup>7</sup> Mid Murray Council's Infrastructure Risk Management Plan

### 5.3 Routine Operations and Maintenance Plan

Operations include regular activities to provide services such as public health and safety and amenity.

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again.

#### 5.3.1 Operations and Maintenance Plan

Operations activities affect service levels including quality and function through street sweeping and grass mowing frequency, intensity and spacing of street lights and cleaning frequency and opening hours of building and other facilities.

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, eg road patching but excluding rehabilitation or renewal. Maintenance may be classified into reactive, planned and specific maintenance work activities.

Reactive maintenance is unplanned repair work carried out in response to service requests and management/supervisory directions.

Planned maintenance is repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Specific maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacing air conditioning units, etc. This work falls below the capital/maintenance threshold (**\$3,000**) but may require a specific budget allocation.

#### 5.3.2 Operations and Maintenance Strategies

The organisation will operate and maintain assets to provide the defined level of service to approved budgets in the most cost-efficient manner. The operation and maintenance activities include:

- Scheduling operations activities to deliver the defined level of service in the most efficient manner,
- Undertaking maintenance activities through a planned maintenance system to reduce maintenance costs and improve maintenance outcomes. Undertake cost-benefit analysis to determine the most cost-effective split between planned and unplanned maintenance activities (50 – 70% planned desirable as measured by cost),
- Maintain a current infrastructure risk register for assets and present service risks associated with providing services from infrastructure assets and reporting Very High and High risks and residual risks after treatment to management and Council/Board,
- Review current and required skills base and implement workforce training and development to meet required operations and maintenance needs,
- Review asset utilisation to identify underutilised assets and appropriate remedies, and over utilised assets and customer demand management options,
- Maintain a current hierarchy of critical assets and required operations and maintenance activities,
- Develop and regularly review appropriate emergency response capability,
- Review management of operations and maintenance activities to ensure Council is obtaining best value for resources used.

### Critical Assets

Critical assets are those assets which have a high consequence of failure but not necessarily a high likelihood of failure. By identifying critical assets and critical failure modes, organisations can target and refine investigative activities, maintenance plans and capital expenditure plans at the appropriate time.

Operations and maintenance activities may be targeted to mitigate critical assets failure and maintain service levels. These activities may include increased inspection frequency, higher maintenance intervention levels, etc. Critical assets failure modes and required operations and maintenance activities are detailed in Table 5.3.2.1.

**Table 5.3.2.1: Critical Assets and Service Level Objectives**

Critical Assets	Critical Failure Mode	Operations & Maintenance Activities
Pumps	Failure to start, causing overflow	Dual pumps and alarm installed. Alarm checked daily. Pump maintenance undertaken regularly.

### Standards and specifications

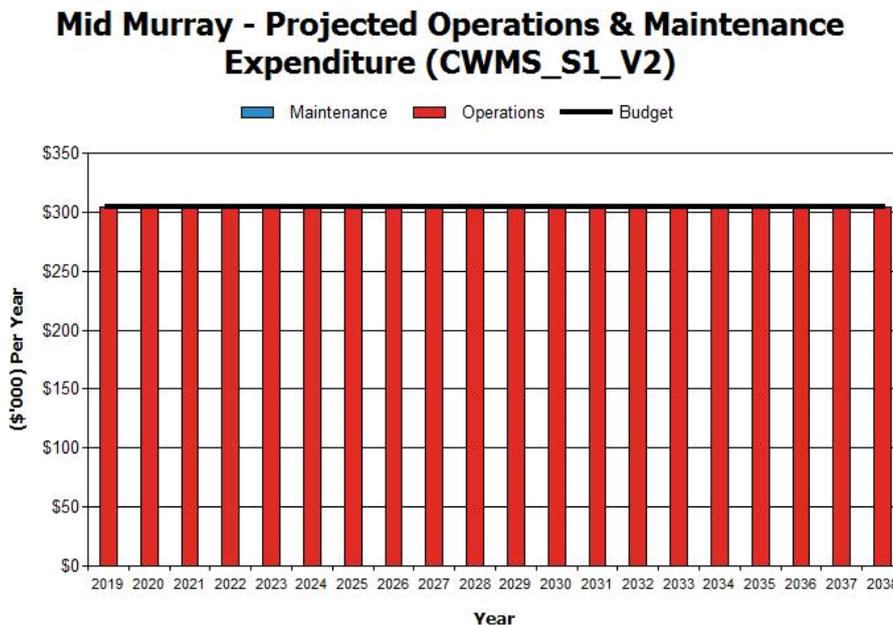
Maintenance work is carried out in accordance with the following Standards and Specifications.

- Various Australian standards
- Various codes from Water Services Association of Australia
- Department of Health Septic Tank Effluent Drainage Scheme ‘Design Criteria’

### 5.3.3 Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 4. Note that all costs are shown in current 2018/2019 dollar values (ie real values).

**Figure 4: Projected Operations and Maintenance Expenditure (note: maintenance and operations shown as one budgetary figure)**



Deferred maintenance, ie works that are identified for maintenance and unable to be funded are to be included in the risk assessment and analysis in the infrastructure risk management plan.

Maintenance is funded from the operating budget where available. This is further discussed in Section 6.2.

## 5.4 Renewal/Replacement Plan

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original or lesser required service potential. Work over and above restoring an asset to original service potential is upgrade/expansion or new works expenditure.

### 5.4.1 Renewal plan

Assets requiring renewal/replacement are identified from one of three methods provided in the 'Expenditure Template'.

- Method 1 uses Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year, or
- Method 2 uses capital renewal expenditure projections from external condition modelling systems (such as Pavement Management Systems), or
- Method 3 uses a combination of average *network renewals* plus *defect repairs* in the *Renewal Plan* and *Defect Repair Plan* worksheets on the 'Expenditure template'.

Method 1 was used for this asset management plan.

### 5.4.2 Renewal and Replacement Strategies

The organisation will plan capital renewal and replacement projects to meet level of service objectives and minimise infrastructure service risks by:

- Planning and scheduling renewal projects to deliver the defined level of service in the most efficient manner,
- Undertaking project scoping for all capital renewal and replacement projects to identify:
  - the service delivery 'deficiency', present risk and optimum time for renewal/replacement,
  - the project objectives to rectify the deficiency,
  - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
  - and evaluate the options against evaluation criteria adopted by the organisation, and
  - select the best option to be included in capital renewal programs,
- Using 'low cost' renewal methods (cost of renewal is less than replacement) wherever possible,
- Maintain a current infrastructure risk register for assets and service risks associated with providing services from infrastructure assets and reporting Very High and High risks and residual risks after treatment to management and Council/Board,
- Review current and required skills base and implement workforce training and development to meet required construction and renewal needs,
- Maintain a current hierarchy of critical assets and capital renewal treatments and timings required ,
- Review management of capital renewal and replacement activities to ensure Council is obtaining best value for resources used.

#### Renewal ranking criteria

Asset renewal and replacement is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (eg replacing a bridge that has a 5 t load limit), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (eg roughness of a road).<sup>8</sup>

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<sup>8</sup> IPWEA, 2011, IIMM, Sec 3.4.4, p 3|60.

It is possible to get some indication of capital renewal and replacement priorities by identifying assets or asset groups that:

- Have a high consequence of failure,
- Have a high utilisation and subsequent impact on users would be greatest,
- The total value represents the greatest net value to the organisation,
- Have the highest average age relative to their expected lives,
- Are identified in the AM Plan as key cost factors,
- Have high operational or maintenance costs, and
- Where replacement with modern equivalent assets would yield material savings.<sup>9</sup>

### Renewal and replacement standards

Renewal work is carried out in accordance with the following Standards and Specifications.

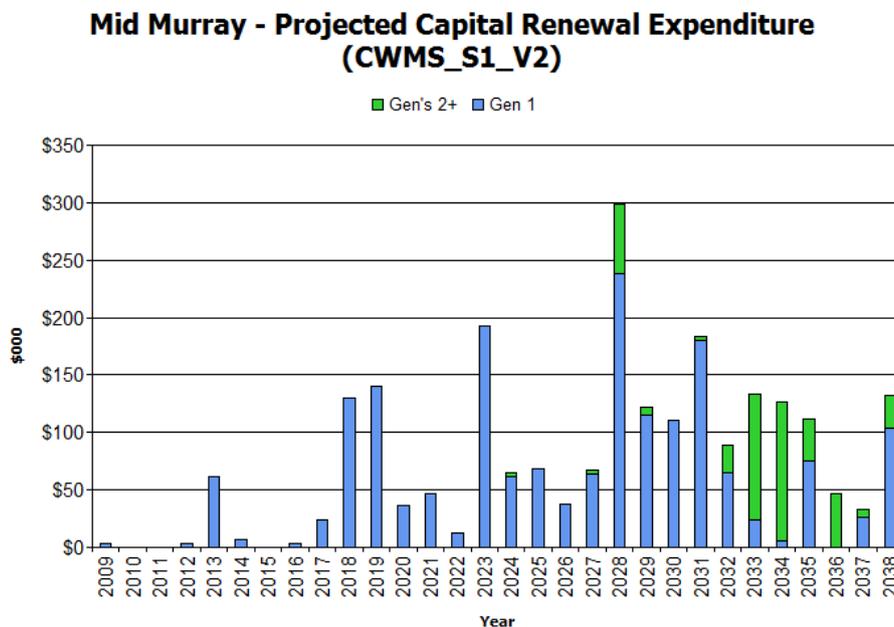
- Various Australian Standards
- Various codes from Water Services Association of Australia
- Department of Health Septic Tank Effluent Drainage Scheme 'Design Criteria'

### 5.4.3 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time as the asset stock increases from growth. The expenditure is summarised in Fig 5. Note that all amounts are shown in real values.

The projected capital renewal and replacement program is shown in Appendix D. The unfunded part of 2018/19 is a result of assets which have exceeded their useful life but as still operating. There asset replacement costs have been factored into future renewals budgets for 2018/19 & 2019/20. As a result, these items will be funded.

**Fig 5: Projected Capital Renewal and Replacement Expenditure**



Deferred renewal and replacement, ie those assets identified for renewal and/or replacement and not scheduled in capital works programs are to be included in the risk analysis process in the risk management plan.

<sup>9</sup> Based on IPWEA, 2011, IIMM, Sec 3.4.5, p 3|66.

Renewals and replacement expenditure in the organisation’s capital works program will be accommodated in the long term financial plan. This is further discussed in Section 6.2.

## 5.5 Creation/Acquisition/Upgrade Plan

New works are those works that create a new asset that did not previously exist, or works which upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost to the organisation from land development. These assets from growth are considered in Section 4.4.

### 5.5.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as known operational deficiencies, community requests, proposals identified by strategic plans or partnerships with other organisations. Candidate proposals are inspected to verify need and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed below.

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

Criteria	Weighting
Upgrade of reticulation services	50%
Upgrade of disposal area	25%
Upgrade to more energy-efficient technology	25%
<b>Total</b>	<b>100%</b>

### 5.5.2 Capital Investment Strategies

Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.4.2.

## 5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.6, together with estimated annual savings from not having to fund operations and maintenance of the assets. These assets will be further reinvestigated to determine the required levels of service and see what options are available for alternate service delivery, if any. Any revenue gained from asset disposals is accommodated in Council’s long term financial plan.

There is currently no disposal plan as it is not applicable for CWMS infrastructure.

## 6. FINANCIAL SUMMARY

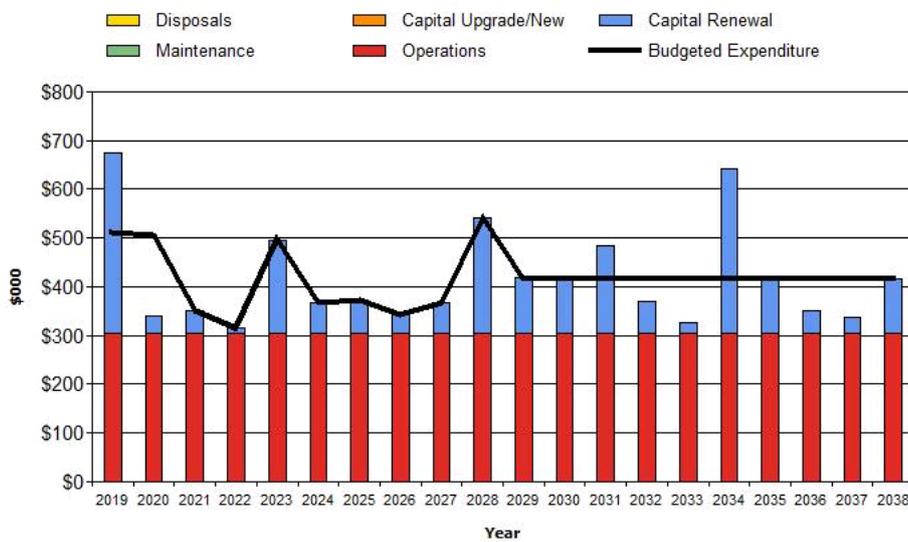
This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan. The financial projections will be improved as further information becomes available on desired levels of service and current and projected future asset performance.

### 6.1 Financial Statements and Projections

The financial projections are shown in Fig 7 for projected operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets). Note that all costs are shown in real values. Note, budget figures for the 10-20 year period are shown as an aggregate of the proceeding 10 years. The current LTFP is a 10 years model and the subsequent longer-term forecasts have simply been averaged for this report.

**Fig 7: Projected Operating and Capital Expenditure**

#### Mid Murray - Projected Operating and Capital Expenditure (CWMS\_S1\_V2)



#### 6.1.1 Sustainability of service delivery

There are four key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the asset renewal funding ratio, long term life cycle costs/expenditures and medium term projected/budgeted expenditures over 5 and 10 years of the planning period.

As Council does not have a renewal budget, this will need to be noted in the Improvement Plan for review.

#### Life Cycle Cost

Life cycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the asset life cycle. Life cycle costs include operations and maintenance expenditure and asset consumption (depreciation expense). The life cycle cost for the services covered in this asset management plan is \$738,000 per year (average operations and maintenance expenditure plus depreciation expense projected over 20 years).

Life cycle costs can be compared to life cycle expenditure to give an initial indicator of affordability of projected service levels when considered with age profiles. Life cycle expenditure includes operations, maintenance and capital renewal expenditure. Life cycle expenditure will vary depending on the timing of asset renewals. The life cycle

expenditure over the 20 year planning period is \$417,000 per year (average operations and maintenance plus capital renewal budgeted expenditure in LTFP over 20 years), meaning there is a shortfall of \$321,000 per year.

Current LTFP figures were based on a now amended 10 year replacement program which has extended the useful lives of a number of assets. In summary, Life cycle expenditure for the long term is 56% of life cycle costs. In the short & medium term it is 100% of the life cycle cost.

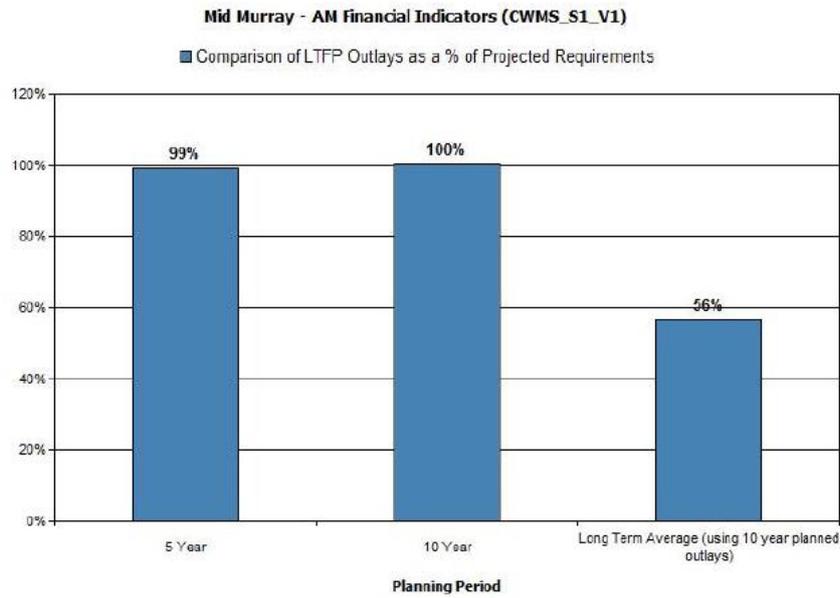
The life cycle costs and life cycle expenditure comparison highlights any difference between present outlays and the average cost of providing the service over the long term. If the life cycle expenditure is less than that life cycle cost, it is most likely that outlays will need to be increased or cuts in services made in the future.

Knowing the extent and timing of any required increase in outlays and the service consequences if funding is not available will assist organisations in providing services to their communities in a financially sustainable manner. This is the purpose of the asset management plans and long term financial plan.

### Asset management financial indicators

Figure 7A shows the asset management financial indicators over the 10 year planning period and for the long term life cycle.

**Figure 7A: Asset Management Financial Indicators**

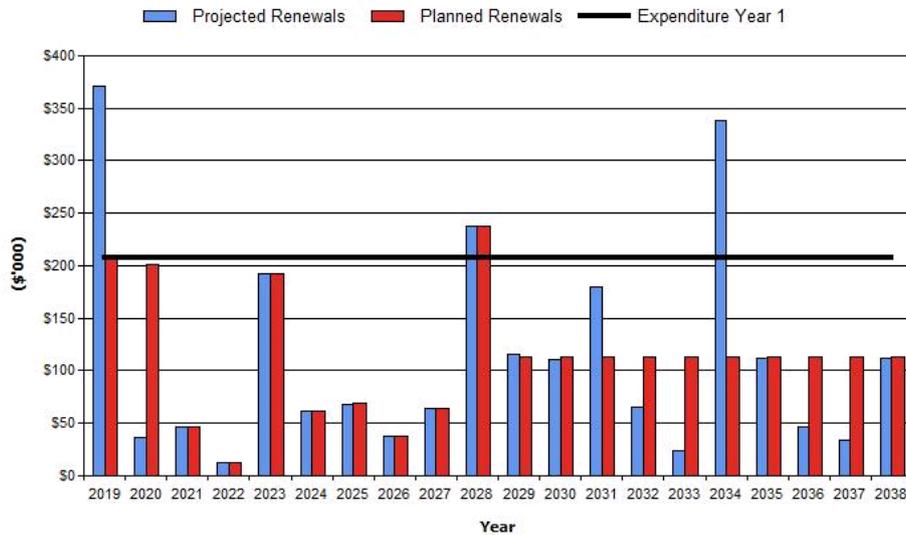


Providing services from infrastructure in a sustainable manner requires the matching and managing of service levels, risks, projected expenditures and financing to achieve a financial indicator of approximately 1.0 for the first years of the asset management plan and ideally over the 10 year life of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

Figure 8 shows the projected asset renewal and replacement expenditure over the 20 years of the AM Plan. The projected asset renewal and replacement expenditure is compared to renewal and replacement expenditure in the capital works program, which is accommodated in the long term financial plan

**Figure 8: Projected and LTFP Budgeted Renewal Expenditure**

**Mid Murray - Projected & LTFP Budgeted Renewal Expenditure (CWMS\_S1\_V2)**



Although Table 6.1.1 shows the shortfall between projected renewal and replacement expenditures and expenditure accommodated in long term financial plan, the current long term financial plan for Council is for a 10 year period only and no expenditure differential exists. Budget expenditures accommodated in the long term financial plan or extrapolated from current budgets are shown in Appendix D.

**Table 6.1.1: Projected and LTFP Budgeted Renewals**

Financial Year	Projected Renewals	LTFP Budget
2018/2019	\$215,000 (inc \$79,000 in backlog)	\$208,000
2019/2020	\$190,000 (inc \$153,000 in backlog)	\$184,000
2020/2021	\$47,000	\$47,000
2021/2022	\$13,000	\$13,000
2022/2023	\$193,000	\$193,000
2023/2024	\$62,000	\$62,000
2024/2025	\$69,000	\$69,000
2025/2026	\$38,000	\$38,000
2026/2027	\$64,000	\$67,500
2027/2028	\$238,000	\$298,800

Providing services in a sustainable manner will require matching of projected asset renewal and replacement expenditure to meet agreed service levels with the corresponding capital works program accommodated in the long term financial plan.

### 6.1.2 Projected expenditures for long term financial plan

Table 6.1.2 shows the projected expenditures for the 10 year long term financial plan.

Expenditure projections are in 2017/2018 real values.

**Table 6.1.2: Projected Expenditures for Long Term Financial Plan (\$000)**

Financial Year	Operations & Maintenance	Projected Renewals	Total
2018/2019	\$304,000	\$215,000 (inc \$79,000 in backlog)	\$519,000
2019/2020	\$304,000	\$190,000 (inc \$153,000 in backlog)	\$494,000
2020/2021	\$304,000	\$47,000	\$351,000
2021/2022	\$304,000	\$13,000	\$317,000
2022/2023	\$304,000	\$193,000	\$497,000
2023/2024	\$304,000	\$62,000	\$366,000
2024/2025	\$304,000	\$69,000	\$373,000
2025/2026	\$304,000	\$38,000	\$342,000
2026/2027	\$304,000	\$64,000	\$368,000
2027/2028	\$304,000	\$238,000	\$542,000

## 6.2 Funding Strategy

Projected expenditure identified in Section 6.1 is to be funded from the primary sources being:

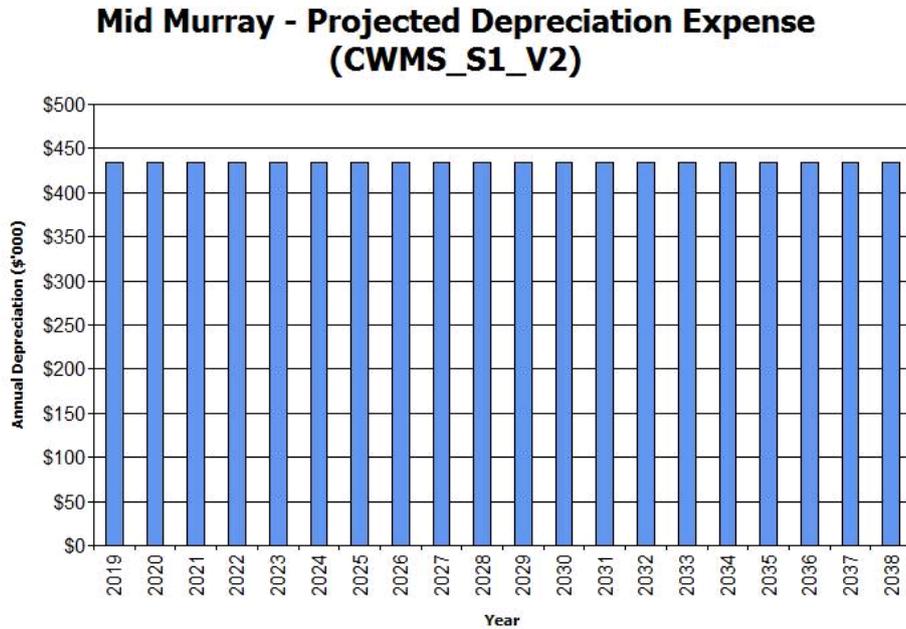
1. Ratepayers paying an annual service charge as allowed for under Section 155 'Community Wastewater Management System Charge' of the Local Government Act 1999;

## 6.3 Valuation Forecasts

Asset values are forecast to remain at current levels for the short to medium term (5 – 10 years). Although there is potential for shack areas, without a current CWMS, to develop a new system. These schemes are likely to be self-funded. Growth in asset valuation for the current register is expected to remain stable.

Depreciation expense values are forecast in line with asset values as shown in Figure 10.

**Figure 10: Projected Depreciation Expense**



**6.4 Key Assumptions made in Financial Forecasts**

This section details the key assumptions made in presenting the information contained in this asset management plan and in preparing forecasts of required operating and capital expenditure and asset values, depreciation expense and carrying amount estimates. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Key assumptions made in this asset management plan and risks that these may change are shown in Table 6.4.

**Table 6.4: Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Estimated useful life	Technological changes may extend useful life or increased use may decrease useful lives
Present service levels will remain consistent	Service levels may increase leading to increased costs
Infrastructure condition is aligned to current age	That the condition rating is lower than expected

## 6.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AM Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale<sup>10</sup> in accordance with Table 6.5. The confidence level in this plan is rated a B. Council has reliable records for CWMS asset performance, cost and useful lives. It is anticipated that confidence levels will be increased once the implementation of the routine inspection reports and aligned to modelled asset conditions. This will create a real-time assessment tool and allow annual corrections to future renewal estimates.

**Table 6.5: Data Confidence Grading System**

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

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<sup>10</sup> IPWEA, 2011, IIMM, Table 2.4.6, p 2|59.

## **7. PLAN IMPROVEMENT AND MONITORING**

### **7.1 Status of Asset Management Practices**

#### **7.1.1 Accounting and financial systems**

Synergy Soft

#### **7.1.2 Accountabilities for financial systems**

Director of Corporate & Financial Services

#### **7.1.3 Accounting standards and regulations**

Council's accounting practices comply with the Local Government Act 1999 and the Local Government (Financial Management) Regulations and applicable accounting standards. Council is also subject to regular independent audits

### **7.2 Asset management system**

#### **7.2.1 Asset management system**

NAMS & Synergy Soft

#### **7.2.1 Asset registers**

CWMS NAMS Register

#### **7.2.3 Linkage from asset management to financial system**

Synergy Soft

#### **7.2.4 Accountabilities for asset management system and data maintenance**

Asset Systems Officer

### **7.3 Information Flow Requirements and Processes**

The key information flows *into* this asset management plan are:

- Council strategic and operational plans,
- Service requests from the community,
- Network assets information,
- The unit rates for categories of work/materials,
- Current levels of service, expenditures, service deficiencies and service risks,
- Projections of various factors affecting future demand for services and new assets acquired by Council,
- Future capital works programs,
- Financial asset values.

The key information flows *from* this asset management plan are:

- The projected Works Program and trends,
- The resulting budget and long term financial plan expenditure projections,
- Financial sustainability indicators.

These will impact the Long Term Financial Plan, Strategic Longer-Term Plan, annual budget and departmental business plans and budgets.

### **7.4 Standards and Guidelines**

Standards, guidelines and policy documents referenced in this asset management plan are:

- Council strategic and operational plans
- Customer service requests
- CWMS Asset Register
- Current service and expenditure levels
- Relevant legislation

## 8. PLAN IMPROVEMENT AND MONITORING

### 8.1 Performance Measures

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

- The degree to which the required cash flows identified in this asset management plan are incorporated into the organisation’s long term financial plan and Community/Strategic Planning processes and documents,
- The degree to which 1-5 year detailed works programs, budgets, business plans and organisational structures take into account the ‘global’ works program trends provided by the asset management plan;

### 8.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 7.2.

**Table 7.2: Improvement Plan**

Task No	Task	Responsibility	Resources Required	Timeline
1	Establish a programmed maintenance schedule	Department of Environmental Services (DES)	Internal Staff time	12 months
2	Establish maintenance responses	DES	Internal Staff time	24 months
3	Further refine useful life	Asset Systems Officer	Internal Staff time	ongoing
4	Review and update asset Register including CRC & Renewal Cost	DES & Asset Systems Officer	Internal Staff time	ongoing

### 8.3 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget planning processes and amended to recognise any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The AM Plan will be updated annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the organisation’s long term financial plan.

## 9. REFERENCES

IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)

IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).

IPWEA, 2009, 'Australian Infrastructure Financial Management Guidelines', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMG](http://www.ipwea.org/AIFMG).

IPWEA, 2011, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)

Mid Murray Council, 'Community Plan 2016 - 2020,

Gayler Services, 2015, '*Managing Council CWMS Assets: Options for LGA Support*'

"CWMS Infrastructure Asset Valuation & Methodology – Version 3 December 2016."

## **10. APPENDICES**

Appendix A      Asset Data Structure

Appendix B      CWMS Scheme Summary

Appendix C      Projected 10 Year Capital Renewal & Replacement Works Program

Appendix D      Abbreviations

Appendix E      Glossary

## Appendix A Asset Data Structure

Asset Type Code	Type Description	Unit Cost	Depreciation Rate	Life Expectancy	Unit Type
A01	ALARM TYPE 1	\$2,500	5.00	20	Each
A02	ALARM TYPE 2	\$3,800	5.00	20	Each
AB01	AERATOR/BLOWER TYPE 1	\$750	16.67	6	Each
AB02	AERATOR/BLOWER TYPE 2	\$2,500	6.67	15	Each
AB03	AERATOR/BLOWER TYPE 3	\$4,000	6.67	15	Each
AB04	AERATOR/BLOWER TYPE 4	\$10,500	6.67	15	Each
AB05	AERATOR/BLOWER TYPE 5	\$20,000	6.67	15	Each
AV01	AIR VALVE	\$1,300	5.00	20	Each
CM01	COMMON MAIN	\$210	1.67	60	Linear Metre
CMF01	CHAIN MESH FENCE	\$100	2.50	40	Linear Metre
CP01	CONNECTION POINT	\$650	1.67	60	Each
DRAI01	CULVERT	\$2,000	1.66	60	Each
DRAI02	DRAINAGE PIT	\$1,100	1.66	60	Each
DRAI03	OPEN DRAIN	\$500	1.66	60	Each
ES01	ELECTRICAL SUPPLY	(Various)	4.00	25	Each
FB01	FLUSH BOX TYPE 1	\$1,100	1.67	60	Each
FB02	FLUSH BOX TYPE 2	\$6,000	1.67	60	Each
FP01	FLUSHING POINT TYPE 1	\$500	1.67	60	Each
FP02	FLUSHING POINT TYPE 2	\$750	1.67	60	Each
FP03	FLUSHING POINT TYPE 3	\$1,000	1.67	60	Each
GL01	GRAVITY LINE 100MM @ 1M DEEP	\$120	1.00	100	Linear Metre
GL02	GRAVITY LINE 100MM @ 2M DEEP	\$150	1.00	100	Linear Metre
GL03	GRAVITY LINE 100MM @ 3M DEEP	\$190	1.00	100	Linear Metre
GL04	GRAVITY LINE 150MM @ 1M DEEP	\$135	1.00	100	Linear Metre
GL05	GRAVITY LINE 150MM @ 3M DEEP	\$220	1.00	100	Linear Metre

<b>IR01</b>	<b>IRRIGATION</b>	<b>\$3</b>	<b>1.67</b>	<b>60</b>	<b>Square Metre</b>
<b>M01</b>	<b>METER TYPE 1</b>	<b>\$1,000</b>	<b>4.00</b>	<b>25</b>	<b>Each</b>
<b>M02</b>	<b>METER TYPE 2</b>	<b>\$1,500</b>	<b>4.00</b>	<b>25</b>	<b>Each</b>
<b>M03</b>	<b>METER TYPE 3</b>	<b>\$2,500</b>	<b>4.00</b>	<b>25</b>	<b>Each</b>
<b>M04</b>	<b>METER TYPE 4</b>	<b>\$3,800</b>	<b>4.00</b>	<b>25</b>	<b>Each</b>
<b>MIP01</b>	<b>MANHOLE/INSPECTION POINT TYPE 1</b>	<b>\$1,500</b>	<b>1.67</b>	<b>60</b>	<b>Each</b>
<b>MIP02</b>	<b>MANHOLE/INSPECTION POINT TYPE 2</b>	<b>\$7,500</b>	<b>1.67</b>	<b>60</b>	<b>Each</b>
<b>NRB01</b>	<b>NON-RETURN BOX</b>	<b>\$1,500</b>	<b>4.00</b>	<b>25</b>	<b>Each</b>
<b>P01</b>	<b>PUMP TYPE 1</b>	<b>\$1,000</b>	<b>6.67</b>	<b>15</b>	<b>Each</b>
<b>P02</b>	<b>PUMP TYPE 2</b>	<b>\$2,500</b>	<b>6.67</b>	<b>15</b>	<b>Each</b>
<b>P03</b>	<b>PUMP TYPE 3</b>	<b>\$3,500</b>	<b>6.67</b>	<b>15</b>	<b>Each</b>
<b>P04</b>	<b>PUMP TYPE 4</b>	<b>\$5,000</b>	<b>6.67</b>	<b>15</b>	<b>Each</b>
<b>P05</b>	<b>PUMP TYPE 5</b>	<b>\$7,500</b>	<b>6.67</b>	<b>15</b>	<b>Each</b>
<b>P06</b>	<b>PUMP TYPE 6</b>	<b>\$10,000</b>	<b>5.00</b>	<b>20</b>	<b>Each</b>
<b>P07</b>	<b>PUMP TYPE 7</b>	<b>\$11,500</b>	<b>6.67</b>	<b>15</b>	<b>Each</b>
<b>P08</b>	<b>PUMP TYPE 8</b>	<b>\$17,500</b>	<b>6.67</b>	<b>15</b>	<b>Each</b>
<b>PLC01</b>	<b>PLC UNIT TYPE 1</b>	<b>\$2,500</b>	<b>4.00</b>	<b>25</b>	<b>Each</b>
<b>PLC02</b>	<b>PLC UNIT TYPE 2</b>	<b>\$8,000</b>	<b>4.00</b>	<b>25</b>	<b>Each</b>
<b>PLC03</b>	<b>PLC UNIT TYPE 3</b>	<b>\$12,000</b>	<b>4.00</b>	<b>25</b>	<b>Each</b>
<b>PLC04</b>	<b>PLC UNIT TYPE 4</b>	<b>\$18,000</b>	<b>4.00</b>	<b>25</b>	<b>Each</b>
<b>PLC05</b>	<b>PLC UNIT TYPE 5</b>	<b>\$20,000</b>	<b>4.00</b>	<b>25</b>	<b>Each</b>
<b>RM01</b>	<b>RISING MAIN 100MM</b>	<b>\$80</b>	<b>1.67</b>	<b>60</b>	<b>Linear Metre</b>
<b>RM02</b>	<b>RISING MAIN 110MM</b>	<b>\$80</b>	<b>1.67</b>	<b>60</b>	<b>Linear Metre</b>
<b>RM03</b>	<b>RISING MAIN 40MM</b>	<b>\$57</b>	<b>1.67</b>	<b>60</b>	<b>Linear Metre</b>
<b>RM04</b>	<b>RISING MAIN 63MM</b>	<b>\$63</b>	<b>1.67</b>	<b>60</b>	<b>Linear Metre</b>
<b>RM05</b>	<b>RISING MAIN 50MM</b>	<b>\$60</b>	<b>1.67</b>	<b>60</b>	<b>Linear Metre</b>
<b>RM06</b>	<b>RISING MAIN 75MM</b>	<b>\$65</b>	<b>1.67</b>	<b>60</b>	<b>Linear Metre</b>
<b>RM07</b>	<b>RISING MAIN 80MM</b>	<b>\$65</b>	<b>1.67</b>	<b>60</b>	<b>Linear Metre</b>

RM08	RISING MAIN 90MM	\$75	1.67	60	Linear Metre
RV01	ROTARY VALVE	\$1,000	4.00	25	Each
SF01	STOCK FENCE	\$20	2.50	40	Linear Metre
SH01	SHED/ENCLOSURE	\$1,000	2.00	50	Square Metre
T01	TANK TYPE 1	\$8,000	2.22	45	Each
T02	TANK TYPE 2	\$10,500	2.22	45	Each
T03	TANK TYPE 3	\$15,000	2.22	45	Each
T04	TANK TYPE 4	\$20,000	2.22	45	Each
T05	TANK TYPE 5	\$25,000	2.22	45	Each
T06	TANK TYPE 6	\$30,000	2.22	45	Each
T07	TANK TYPE 7	\$35,000	2.22	45	Each
T08	TANK TYPE 8	\$40,000	2.22	45	Each
T09	TANK TYPE 9	\$100,000	2.22	45	Each
T10	TANK TYPE 10	\$125,000	2.22	45	Each
T11	TANK TYPE 11	\$250,000	2.22	45	Each
T12	TANK TYPE 12	\$300,000	2.22	45	Each
TC01	TANK COVER	\$8,000	8.33	12	Each
TF01	TANK FAN	\$2,200	6.67	15	Each
VF01	VENT/FILTER TYPE 1	\$1,500	6.67	15	Each
VF02	VENT/FILTER TYPE 2	\$5,000	6.67	15	Each
VF03	VENT/FILTER TYPE 3	\$6,000	6.67	15	Each

- Items in the list highlighted in blue are below the \$3,000 capitalisation threshold. Replacement of these items will be part of ongoing maintenance and not capital works. Connection points have been capitalised as a whole figure, made up of multiple assets. Individual replacements, which result due to damage, will not be capitalised.

## Appendix B CWMS Scheme Summary

CWMS Scheme	Private Connections	Valuation
5 Mile	11	\$293,331
7 Mile	11	\$251,250
Beaumonts & North West Bend	85	\$812,090
Big Bend	26	\$273,890
Blanchetown	235	\$1,811,020
Bolto	44	\$372,720
Bowhill	156	\$1,719,560
Brenda Park & Morphett Flat	133	\$1,370,280
Caloote	43	\$860,050
Caurnamont	72	\$814,180
Greenways	8	\$155,860
Idyll Acres	63	\$656,280
Julanker Holdings & Younghusband	38	\$708,707
Kroehns Landing	6	\$119,318
Marks Landing	142	\$1,369,001
Morgan Caravan Park	N/A	\$617,664
North Punyelroo	12	\$63,091
Old Teal Flat	11	\$230,810
Pelican Point	71	\$777,398
Pellaring Flat	24	\$325,465
Rob Loxton & Walker Flat	150	\$1,249,350
The Rocks	6	\$123,710
Scotts Creek	101	\$988,845
Scrubby Flat	10	\$130,040
South Punyelroo	100	\$1,358,010
Swan Reach	26	\$269,870
Teal Flat	71	\$426,080
Truro	67	\$1,715,435

**Appendix C Projected 10 Year Capital Renewal Project**

ASSET ID	SUB-CATEGORY	ASSET NAME	ASSET TYPE	GROUP	USEFUL LIFE	RENEWAL COST	RENEWAL YEAR
PELL012	PELLARING FLAT	P03-Sump pump	P03	TREATMENT PLANT	15	\$3,500.00	2019
ROBL023	ROB LOXTON	P03-Irrigation	P03	TREATMENT PLANT	15	\$3,500.00	2019
5MIL017	5 MILE	VF02-Vent/Filter	VF02	PUMP STATION/TREATMENT PLANT	15	\$5,000.00	2019
BEAU019	BEAUMONTS	VF02-Vent Stack	VF02	PUMP STATION	15	\$5,000.00	2019
BIGB011	BIG BEND	P03-Pumps	P03	PUMP STATION/TREATMENT PLANT	15	\$3,500.00	2019
BIGB012	BIG BEND	P03-Pumps	P03	PUMP STATION/TREATMENT PLANT	15	\$3,500.00	2019
BOLT026	BOLTO	VF02-Steel vent	VF02	TREATMENT PLANT	15	\$5,000.00	2019
CALO016	CALOOTE	AB05-Receiveal Tank	AB05	TREATMENT PLANT	15	\$20,000.00	2019
CALO017	CALOOTE	P03-Irrigation Tank	P03	TREATMENT PLANT	15	\$3,500.00	2019
CALO018	CALOOTE	P03-Irrigation Tank	P03	TREATMENT PLANT	15	\$3,500.00	2019
CALO021	CALOOTE	VF02-At Sump	VF02	PUMP STATION	15	\$5,000.00	2019
KROE010	KROEHNS LANDING	P03-Irrigation Tank	P03	TREATMENT PLANT	15	\$3,500.00	2019
KROE011	KROEHNS LANDING	P03-Irrigation Tank	P03	TREATMENT PLANT	15	\$3,500.00	2019
GREE015	GREENWAYS	P03-Irrigation Pump	P03	TREATMENT PLANT	15	\$3,500.00	2019
GREE016	GREENWAYS	P03-Irrigation Pump	P03	SUBSURFACE INFRASTRUCTURE	15	\$3,500.00	2019
MORG019	MORGAN CARAVAN PARK	P03-surge pump to Dam	P03	PUMP STATION/TREATMENT PLANT	15	\$3,500.00	2019
BOWH018	BOWHILL	P04-Irrigation Tank	P04	TREATMENT PLANT	15	\$5,000.00	2019
BOWH019	BOWHILL	P04-Irrigation tank	P04	TREATMENT PLANT	15	\$5,000.00	2019
BOWH021	BOWHILL	P07-Sump	P07	TREATMENT PLANT	15	\$11,500.00	2019
BOWH030	BOWHILL	P08-IAT Tank - RAS Pump	P08	TREATMENT PLANT	15	\$17,500.00	2019

BOWH031	BOWHILL	VF02-Pumpstation	VF02	PUMP STATION/TREATMENT PLANT	15	\$5,000.00	2019
SPUN022	SPUN	AB05-sinkair 300 roof mount	AB05	TREATMENT PLANT	15	\$20,000.00	2019
SPUN023	SPUN	AB05-sinkair 300 roof mount	AB05	TREATMENT PLANT	15	\$20,000.00	2019
SPUN027	SPUN	P03-6 pumps in each PS	P03	TREATMENT PLANT	15	\$3,500.00	2019
SPUN028	SPUN	P03-6 pumps in each PS	P03	TREATMENT PLANT	15	\$3,500.00	2019
SPUN029	SPUN	P03-6 pumps in each PS	P03	TREATMENT PLANT	15	\$3,500.00	2019
SPUN030	SPUN	P03-6 pumps in each PS	P03	TREATMENT PLANT	15	\$3,500.00	2019
SPUN031	SPUN	P03-6 pumps in each PS	P03	TREATMENT PLANT	15	\$3,500.00	2019
SPUN032	SPUN	P03-6 pumps in each PS	P03	TREATMENT PLANT	15	\$3,500.00	2019
SPUN037	SPUN	VF02-at sump	VF02	PUMP STATION	15	\$5,000.00	2019
SPUN038	SPUN	VF02-at sump	VF02	PUMP STATION	15	\$5,000.00	2019
SPUN039	SPUN	VF02-at sump	VF02	PUMP STATION	15	\$5,000.00	2019
PELL001	PELLARING FLAT	PLC02-Control system	PLC02	PUMP STATION	25	\$8,000.00	2019
PELL002	PELLARING FLAT	PLC02-Control system	PLC02	PUMP STATION	25	\$8,000.00	2019
PELL003	PELLARING FLAT	ES01-Electrical supply	ES01	PUMP STATION	25	\$4,000.00	2019
CAUR019	CAURNAMONT	P03-At Irrigation tank	P03	TREATMENT PLANT	15	\$3,500.00	2020
CAUR021	CAURNAMONT	AB05-Aerator/Blower	AB05	TREATMENT PLANT	15	\$20,000.00	2020
BREN015	BRENDA PARK	P03-Irrigation Pumps	P03	TREATMENT PLANT	15	\$3,500.00	2020
BREN016	BRENDA PARK	P03-Irrigation Pumps	P03	TREATMENT PLANT	15	\$3,500.00	2020
BREN018	BRENDA PARK	AB05-Sinkair	AB05	TREATMENT PLANT	15	\$20,000.00	2020
MARK026	MARKS LANDING	VF02-PS1	VF02	PUMP STATION	15	\$5,000.00	2020
MARK027	MARKS LANDING	VF02-PS2	VF02	PUMP STATION	15	\$5,000.00	2020
MARK028	MARKS LANDING	P03-PS1	P03	PUMP STATION	15	\$3,500.00	2020
MARK029	MARKS LANDING	P03-PS1	P03	PUMP STATION	15	\$3,500.00	2020

MARK031	MARKS LANDING	P03-PS2	P03	PUMP STATION	15	\$3,500.00	2020
MARK034	MARKS LANDING	P03-Irrigation Tank	P03	PUMP STATION/TREATMENT PLANT	15	\$3,500.00	2020
MARK035	MARKS LANDING	P03-Irrigation Tank	P03	PUMP STATION/TREATMENT PLANT	15	\$3,500.00	2020
MARK038	MARKS LANDING	AB05-Sinkair kW 4	AB05	TREATMENT PLANT	15	\$20,000.00	2020
MARK039	MARKS LANDING	AB05-Sinkair kW 4	AB05	TREATMENT PLANT	15	\$20,000.00	2020
SCOT012	SCOT	P03-irrigation pump	P03	TREATMENT PLANT	15	\$3,500.00	2020
SCOT013	SCOT	P03-irrigation pump	P03	TREATMENT PLANT	15	\$3,500.00	2020
SCOT015	SCOT	AB03-at WWTP	AB03	TREATMENT PLANT	15	\$4,000.00	2020
SCOT016	SCOT	AB03-at WWTP	AB03	TREATMENT PLANT	15	\$4,000.00	2020
7MIL020	7 MILE	P06-APG-50-09-03	P06	TREATMENT PLANT	20	\$10,000.00	2020
7MIL021	7 MILE	P06-APG-50-09-03	P06	TREATMENT PLANT	20	\$10,000.00	2020
BEAU017	BEAUMONTS	AB05-IAT Tank	AB05	TREATMENT PLANT	15	\$20,000.00	2020
BEAU018	BEAUMONTS	VF03-Irrigation tank	VF03	TREATMENT PLANT	15	\$6,000.00	2020
BEAU021	BEAUMONTS	P03-Irrigation tank	P03	TREATMENT PLANT	15	\$3,500.00	2020
BEAU023	BEAUMONTS	P05-Receiveal Sump	P05	TREATMENT PLANT	15	\$7,500.00	2020
IDYL024	IDYLL ACRES	P03-Irrigation Tank	P03	TREATMENT PLANT	15	\$3,500.00	2021
IDYL025	IDYLL ACRES	P03-Irrigation Tank	P03	TREATMENT PLANT	15	\$3,500.00	2021
IDYL026	IDYLL ACRES	P05-PS1	P05	PUMP STATION	15	\$7,500.00	2021
IDYL027	IDYLL ACRES	P05-PS1	P05	PUMP STATION	15	\$7,500.00	2021
IDYL028	IDYLL ACRES	P05-PS2	P05	PUMP STATION	15	\$7,500.00	2021
IDYL029	IDYLL ACRES	P05-PS2	P05	PUMP STATION	15	\$7,500.00	2021
IDYL030	IDYLL ACRES	VF02-On PS1	VF02	PUMP STATION/TREATMENT PLANT	15	\$5,000.00	2021
IDYL031	IDYLL ACRES	VF02-On PS2	VF02	PUMP STATION/TREATMENT PLANT	15	\$5,000.00	2021
PELI017	PELICAN POINT	P03-irrigation pump	P03	TREATMENT PLANT	15	\$3,500.00	2022

PELI018	PELICAN POINT	P03-irrigation pump	P03	TREATMENT PLANT	15	\$3,500.00	2022
ROBL010	ROB LOXTON	ES01-3 phase connection	ES01	TREATMENT PLANT	25	\$6,000.00	2022
ROBL020	ROB LOXTON	AB03-Kawake RB8C-5B0	AB03	TREATMENT PLANT	15	\$4,000.00	2023
ROBL021	ROB LOXTON	AB03-Kawake RB8C-5B0	AB03	TREATMENT PLANT	15	\$4,000.00	2023
BLAN029	BLANCHETOWN	P06-Irrigation Tank	P06	TREATMENT PLANT	20	\$10,000.00	2023
BLAN030	BLANCHETOWN	P06-Irrigation Tank	P06	TREATMENT PLANT	20	\$10,000.00	2023
5MIL005	5 MILE	PLC05-Electrical Control System; Allen Bradley - Micrologics	PLC05	TREATMENT PLANT	25	\$20,000.00	2023
7MIL007	7 MILE	PLC03-at WWTP	PLC03	TREATMENT PLANT	25	\$12,000.00	2023
7MIL008	7 MILE	PLC02-at receival sump	PLC02	TREATMENT PLANT	25	\$8,000.00	2023
7MIL010	7 MILE	ES01-3 phase connection	ES01	TREATMENT PLANT	25	\$5,000.00	2023
BIGB001	BIG BEND	ES01-Electrical	ES01	TREATMENT PLANT	25	\$15,000.00	2023
BIGB007	BIG BEND	PLC03-Electrical	PLC03	TREATMENT PLANT	25	\$12,000.00	2023
CALO006	CALOOTE	ES01-Electrical Supply	ES01	TREATMENT PLANT	25	\$35,000.00	2023
CALO007	CALOOTE	PLC04-At WWTP	PLC04	TREATMENT PLANT	25	\$18,000.00	2023
CALO008	CALOOTE	PLC02-At Sump	PLC02	PUMP STATION	25	\$8,000.00	2023
KROE005	KROEHNS LANDING	PLC02-Control System at WWTP	PLC02	TREATMENT PLANT	25	\$8,000.00	2023
KROE007	KROEHNS LANDING	ES01-Electrical Supply	ES01	PUMP STATION/TREATMENT PLANT	25	\$4,000.00	2023
ROCK003	ROCK	PLC02-at controls	PLC02	TREATMENT PLANT	25	\$8,000.00	2023
ROCK005	ROCK	ES01-single phase to WWTP	ES01	TREATMENT PLANT	25	\$3,500.00	2023
SCRU004	SCRU	PLC02-control system at WWTP	PLC02	TREATMENT PLANT	25	\$8,000.00	2023
BOWH022	BOWHILL	P07-Sump	P07	TREATMENT PLANT	15	\$11,500.00	2024
MARK040	MARKS LANDING	AB05-Sinkair 4 kW	AB05	TREATMENT PLANT	15	\$20,000.00	2024
GREE005	GREENWAYS	PLC04-Control System at WWTP	PLC04	TREATMENT PLANT	25	\$18,000.00	2024
SWAN006	SWAN	ES01-Electrical	ES01	TREATMENT PLANT	25	\$4,500.00	2024

		Supply					
SWAN008	SWAN	PLC02-at WWTP	PLC02	TREATMENT PLANT	25	\$8,000.00	2024
BEAU024	BEAUMONTS	P05-Receiveal Sump	P05	TREATMENT PLANT	15	\$7,500.00	2025
BLAN024	BLANCHETOWN	AB04-Receiveal Tank	AB04	TREATMENT PLANT	15	\$10,500.00	2025
BOWH020	BOWHILL	P03-Receiveal Tank	P03	TREATMENT PLANT	15	\$3,500.00	2025
JULA028	JULANKER	P03-Irrigation Pump	P03	PUMP STATION/TREATMENT PLANT	15	\$3,500.00	2025
JULA029	JULANKER	P03-Irrigation Pump	P03	PUMP STATION/TREATMENT PLANT	15	\$3,500.00	2025
JULA030	JULANKER	P03-Pump at PS1	P03	PUMP STATION/TREATMENT PLANT	15	\$3,500.00	2025
JULA031	JULANKER	P03-Pump at PS1	P03	PUMP STATION/TREATMENT PLANT	15	\$3,500.00	2025
JULA032	JULANKER	P03-Pump at PS 2	P03	PUMP STATION/TREATMENT PLANT	15	\$3,500.00	2025
JULA033	JULANKER	P03-Pump at PS 2	P03	PUMP STATION/TREATMENT PLANT	15	\$3,500.00	2025
JULA034	JULANKER	VF02-At PS 1	VF02	PUMP STATION/TREATMENT PLANT	15	\$5,000.00	2025
JULA035	JULANKER	VF02-At PS 2	VF02	PUMP STATION/TREATMENT PLANT	15	\$5,000.00	2025
ROBL024	ROB LOXTON	P03-Irrigation	P03	TREATMENT PLANT	15	\$3,500.00	2025
OLDT005	OLD TEAL FLAT	PLC02-at WWTP	PLC02	TREATMENT PLANT	25	\$8,000.00	2025
OLDT007	OLD TEAL FLAT	ES01-electrical connection	ES01	TREATMENT PLANT	25	\$4,500.00	2025
BLAN032	BLANCHETOWN	P05-Sump	P05	TREATMENT PLANT	15	\$7,500.00	2026
MORG008	MORGAN CARAVAN PARK	ES01-Electrical Supply/connection	ES01	TREATMENT PLANT	25	\$30,000.00	2026
BOWH039	BOWHILL	TC01-Iron Roof	TC01	TREATMENT PLANT	12	\$8,000.00	2027
BOWH040	BOWHILL	TC01-Iron Roof	TC01	TREATMENT PLANT	12	\$8,000.00	2027
CALO025	CALOOTE	TC01-Irrigation tank new roof	TC01	TREATMENT PLANT	12	\$8,000.00	2027
CAUR004	CAURNAMONT	PLC05-At WWTP	PLC05	TREATMENT PLANT	25	\$20,000.00	2027

CAUR006	CAURNAMONT	ES01-Electrical Supply	ES01	TREATMENT PLANT	25	\$20,000.00	2027
BLAN031	BLANCHETOWN	P05-Sump	P05	TREATMENT PLANT	15	\$7,500.00	2028
OLDT009	OLD TEAL FLAT	P03-Irrigation Tank	P03	TREATMENT PLANT	15	\$3,500.00	2028
OLDT010	OLD TEAL FLAT	P03-vortex sump	P03	TREATMENT PLANT	15	\$3,500.00	2028
BLAN014	BLANCHETOWN	A02-Alarm WWTP	A02	TREATMENT PLANT	20	\$3,800.00	2028
BLAN001	BLANCHETOWN	ES01-Electrical Supply/connection	ES01	TREATMENT PLANT	25	\$12,000.00	2028
BLAN004	BLANCHETOWN	PLC04-control system for Sump	PLC04	PUMP STATION	25	\$18,000.00	2028
BLAN035	BLANCHETOWN	ES01-Supply	ES01	TREATMENT PLANT	25	\$20,000.00	2028
BREN004	BRENDA PARK	ES01-Electrical Supply/connection	ES01	TREATMENT PLANT	25	\$15,000.00	2028
BREN005	BRENDA PARK	PLC05-Control System- Allen Bradley	PLC05	TREATMENT PLANT	25	\$20,000.00	2028
MARK008	MARKS LANDING	PLC05-Allen Bradley @ WWTP	PLC05	TREATMENT PLANT	25	\$20,000.00	2028
MARK009	MARKS LANDING	PLC02-TWE Controls @ PS1	PLC02	PUMP STATION	25	\$8,000.00	2028
MARK010	MARKS LANDING	PLC02-TWE Controls @ PS 2	PLC02	PUMP STATION	25	\$8,000.00	2028
MARK016	MARKS LANDING	ES01-Electrical Connection	ES01	PUMP STATION	25	\$4,500.00	2028
MARK017	MARKS LANDING	ES01-Electrical Connection	ES01	PUMP STATION	25	\$4,500.00	2028
MARK018	MARKS LANDING	ES01-Electrical Connection	ES01	PUMP STATION	25	\$4,500.00	2028
MARK019	MARKS LANDING	ES01-Electrical Connection	ES01	TREATMENT PLANT	25	\$12,000.00	2028
SCOT004	SCOT	PLC05-WWTP Control system	PLC05	TREATMENT PLANT	25	\$20,000.00	2028
SCOT006	SCOT	ES01-Electrical supply	ES01	TREATMENT PLANT	25	\$15,000.00	2028
TEAL007	TEAL	PLC04-at WWTP	PLC04	TREATMENT PLANT	25	\$18,000.00	2028
TEAL009	TEAL	ES01-3 phase at WWTP	ES01	TREATMENT PLANT	25	\$20,000.00	2028

## **Appendix D    Abbreviations**

<b>AAAC</b>	Average annual asset consumption
<b>AM</b>	Asset management
<b>AM Plan</b>	Asset management plan
<b>ARI</b>	Average recurrence interval
<b>ASC</b>	Annual service cost
<b>BOD</b>	Biochemical (biological) oxygen demand
<b>CRC</b>	Current replacement cost
<b>CWMS</b>	Community wastewater management systems
<b>DA</b>	Depreciable amount
<b>DRC</b>	Depreciated replacement cost
<b>EF</b>	Earthworks/formation
<b>IRMP</b>	Infrastructure risk management plan
<b>LCC</b>	Life Cycle cost
<b>LCE</b>	Life cycle expenditure
<b>LTFP</b>	Long term financial plan
<b>MMS</b>	Maintenance management system
<b>PCI</b>	Pavement condition index
<b>RV</b>	Residual value
<b>SoA</b>	State of the Assets
<b>SS</b>	Suspended solids
<b>vph</b>	Vehicles per hour
<b>WDCRC</b>	Written down current replacement cost

## Appendix E Glossary

### Annual service cost (ASC)

- 1) Reporting actual cost  
The annual (accrual) cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.
- 2) For investment analysis and budgeting  
An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operations, maintenance, depreciation, finance/opportunity and disposal costs, less revenue.

### Asset

A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. Infrastructure assets are a sub-class of property, plant and equipment which are non-current assets with a life greater than 12 months and enable services to be provided.

### Asset category

Sub-group of assets within a class hierarchy for financial reporting and management purposes.

### Asset class

A group of assets having a similar nature or function in the operations of an entity, and which, for purposes of disclosure, is shown as a single item without supplementary disclosure.

### Asset condition assessment

The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

### Asset hierarchy

A framework for segmenting an asset base into appropriate classifications. The asset hierarchy can be based on asset function or asset type or a combination of the two.

### Asset management (AM)

The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.

### Asset renewal funding ratio

The ratio of the net present value of asset renewal funding accommodated over a 10 year period in a long term financial plan relative to the net present value of projected capital renewal expenditures identified in an asset management plan for the same period [AIFMG Financial Sustainability Indicator No 8].

### Average annual asset consumption (AAAC)\*

The amount of an organisation's asset base consumed during a reporting period (generally a year). This may be calculated by dividing the depreciable amount by the useful life (or total future economic benefits/service potential) and totalled for each and every asset OR by dividing the carrying amount (depreciated replacement cost) by the remaining useful life (or remaining future economic benefits/service potential) and totalled for each and every asset in an asset category or class.

### Borrowings

A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided.

### Capital expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

### Capital expenditure - expansion

Expenditure that extends the capacity of an existing asset to provide benefits, at the same standard as is currently enjoyed by existing beneficiaries, to a new group of users. It is discretionary expenditure, which increases future operations and maintenance costs, because it increases the organisation's asset base, but may be associated with additional revenue from the new user group, eg. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

**Capital expenditure - new**

Expenditure which creates a new asset providing a new service/output that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operations and maintenance expenditure.

**Capital expenditure - renewal**

Expenditure on an existing asset or on replacing an existing asset, which returns the service capability of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it generally has no impact on revenue, but may reduce future operations and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval.

**Capital expenditure - upgrade**

Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the organisation's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

**Capital funding**

Funding to pay for capital expenditure.

**Capital grants**

Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or new investment proposals.

**Capital investment expenditure**

See capital expenditure definition

**Capitalisation threshold**

The value of expenditure on non-current assets above which the expenditure is recognised as capital expenditure and below which the expenditure is charged as an expense in the year of acquisition.

**Carrying amount**

The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

**Class of assets**

See asset class definition

**Component**

Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.

**Core asset management**

Asset management which relies primarily on the use of an asset register, maintenance management systems, job resource management, inventory control, condition assessment, simple risk assessment and defined levels of service, in order to establish alternative treatment options and long-term cashflow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than detailed risk analysis and optimised decision-making).

**Cost of an asset**

The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, including any costs necessary to place the asset into service. This includes one-off design and project management costs.

**Critical assets**

Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.

**Current replacement cost (CRC)**

The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

**Deferred maintenance**

The shortfall in rehabilitation work undertaken relative to that required to maintain the service potential of an asset.

**Depreciable amount**

The cost of an asset, or other amount substituted for its cost, less its residual value.

### **Depreciated replacement cost (DRC)**

The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset.

### **Depreciation / amortisation**

The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.

### **Economic life**

See useful life definition.

### **Expenditure**

The spending of money on goods and services. Expenditure includes recurrent and capital outlays.

### **Expenses**

Decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or increases in liabilities that result in decreases in equity, other than those relating to distributions to equity participants.

### **Fair value**

The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

### **Financing gap**

A financing gap exists whenever an entity has insufficient capacity to finance asset renewal and other expenditure necessary to be able to appropriately maintain the range and level of services its existing asset stock was originally designed and intended to deliver. The service capability of the existing asset stock should be determined assuming no additional operating revenue, productivity improvements, or net financial liabilities above levels currently planned or projected. A current financing gap means service levels have already or are currently falling. A projected financing gap if not addressed will result in a future diminution of existing service levels.

### **Heritage asset**

An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

### **Impairment Loss**

The amount by which the carrying amount of an asset exceeds its recoverable amount.

### **Infrastructure assets**

Physical assets that contribute to meeting the needs of organisations or the need for access to major economic and social facilities and services, eg. roads, drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no separate market value.

### **Investment property**

Property held to earn rentals or for capital appreciation or both, rather than for:

- (a) use in the production or supply of goods or services or for administrative purposes; or
- (b) sale in the ordinary course of business.

### **Key performance indicator**

A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.

### **Level of service**

The defined service quality for a particular service/activity against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental impact, acceptability and cost.

### **Life Cycle Cost \***

1. **Total LCC** The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2. **Average LCC** The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises average operations, maintenance expenditure plus asset consumption expense, represented by depreciation expense projected over 10 years. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

### **Life Cycle Expenditure**

The Life Cycle Expenditure (LCE) is the average operations, maintenance and capital renewal expenditure accommodated in the long term financial plan over 10 years. Life Cycle Expenditure may be compared to average Life Cycle Cost to give an initial indicator of affordability of projected service levels when considered with asset age profiles.

### **Loans / borrowings**

See borrowings.

### **Maintenance**

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, eg road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

- **Planned maintenance**

Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

- **Reactive maintenance**

Unplanned repair work that is carried out in response to service requests and management/supervisory directions.

- **Specific maintenance**

Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.

- **Unplanned maintenance**

Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

### **Maintenance expenditure \***

Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

### **Materiality**

The notion of materiality guides the margin of error acceptable, the degree of precision required and the extent of the disclosure required when preparing general purpose financial reports. Information is material if its omission, misstatement or non-disclosure has the potential, individually or collectively, to influence the economic decisions of users taken on the basis of the financial report or affect the discharge of accountability by the management or governing body of the entity.

### **Modern equivalent asset**

Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently available asset which will provide the same stream of services as the existing asset is capable of producing. It allows for technology changes and, improvements and efficiencies in production and installation techniques

### **Net present value (NPV)**

The value to the organisation of the cash flows associated with an asset, liability, activity or event calculated using a discount rate to reflect the time value of money. It is the net amount of discounted total cash inflows after deducting the value of the discounted total cash outflows arising from eg the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

### **Non-revenue generating investments**

Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to the Council, eg. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

### **Operations**

Regular activities to provide services such as public health, safety and amenity, eg street sweeping, grass mowing and street lighting.

### **Operating expenditure**

Recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, eg power, fuel, staff, plant equipment, on-costs and overheads but excludes maintenance and depreciation. Maintenance and depreciation is on the other hand included in operating expenses.

**Operating expense**

The gross outflow of economic benefits, being cash and non cash items, during the period arising in the course of ordinary activities of an entity when those outflows result in decreases in equity, other than decreases relating to distributions to equity participants.

**Operating expenses**

Recurrent expenses continuously required to provide a service, including power, fuel, staff, plant equipment, maintenance, depreciation, on-costs and overheads.

**Operations, maintenance and renewal financing ratio**

Ratio of estimated budget to projected expenditure for operations, maintenance and renewal of assets over a defined time (eg 5, 10 and 15 years).

**Operations, maintenance and renewal gap**

Difference between budgeted expenditures in a long term financial plan (or estimated future budgets in absence of a long term financial plan) and projected expenditures for operations, maintenance and renewal of assets to achieve/maintain specified service levels, totalled over a defined time (e.g. 5, 10 and 15 years).

**Pavement management system (PMS)**

A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

**PMS Score**

A measure of condition of a road segment determined from a Pavement Management System.

**Rate of annual asset consumption \***

The ratio of annual asset consumption relative to the depreciable amount of the assets. It measures the amount of the consumable parts of assets that are consumed in a period (depreciation) expressed as a percentage of the depreciable amount.

**Rate of annual asset renewal \***

The ratio of asset renewal and replacement expenditure relative to depreciable amount for a period. It measures whether assets are being replaced at the rate they are wearing out with capital renewal expenditure expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

**Rate of annual asset upgrade/new \***

A measure of the rate at which assets are being upgraded and expanded per annum with capital upgrade/new expenditure expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

**Recoverable amount**

The higher of an asset's fair value, less costs to sell and its value in use.

**Recurrent expenditure**

Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operations and maintenance expenditure.

**Recurrent funding**

Funding to pay for recurrent expenditure.

**Rehabilitation**

See capital renewal expenditure definition above.

**Remaining useful life**

The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining useful life is useful life.

**Renewal**

See capital renewal expenditure definition above.

**Residual value**

The estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

**Revenue generating investments**

Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate some savings or revenue to offset operating costs, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

**Risk management**

The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

**Section or segment**

A self-contained part or piece of an infrastructure asset.

**Service potential**

The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset. A measure of service potential is used in the not-for-profit sector/public sector to value assets, particularly those not producing a cash flow.

**Service potential remaining**

A measure of the future economic benefits remaining in assets. It may be expressed in dollar values (Fair Value) or as a percentage of total anticipated future economic benefits. It is also a measure of the percentage of the asset's potential to provide services that is still available for use in providing services (Depreciated Replacement Cost/Depreciable Amount).

**Specific Maintenance**

Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacement of air conditioning equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

**Strategic Longer-Term Plan**

A plan covering the term of office of councillors (4 years minimum) reflecting the needs of the community for the foreseeable future. It brings together the detailed requirements in the Council's longer-term plans such as the asset management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where the Council is at that point in time, where it wants to go, how it is going to get there, mechanisms for monitoring the achievement of the outcomes and how the plan will be resourced.

**Sub-component**

Smaller individual parts that make up a component part.

**Useful life**

Either:

- (a) the period over which an asset is expected to be available for use by an entity, or
- (b) the number of production or similar units expected to be obtained from the asset by the entity.

It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the Council.

**Value in Use**

The present value of future cash flows expected to be derived from an asset or cash generating unit. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate net cash inflows, where the entity would, if deprived of the asset, replace its remaining future economic benefits.

Source: IPWEA, 2009, Glossary

Additional and modified glossary items shown \*