

# Town of Unity



## Water Network

# Asset Management Plan



Scenario 2 Version 1

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# 1. EXECUTIVE SUMMARY

## Context

The Town of Unity is situated in central Saskatchewan, the location of Unity provides for ready access to both larger centres and recreational facilities.

The water network is an essential core service offered by the Town of Unity. It includes a water distribution network, water reservoir, water treatment plant, and wells. The water network services residential, commercial, and industrial areas.

### The Water Service

The water network comprises:

- Water Mains
- Water Reservoir
- Water Treatment Plant
- Wells

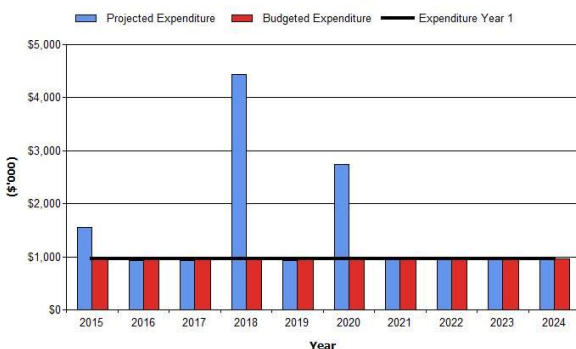
These infrastructure assets have a replacement value of \$12,964,000.

### 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 \$15,486,000 or \$1,549,000 on average per year.

Estimated available funding for this period is \$9,586,000 or \$959,000 on average per year which is 62% of the cost to provide the service. This is a funding shortfall of -\$590,000 on average per year. Projected expenditure required to provide services in the AM Plan compared with planned expenditure currently included in the Long Term Financial Plan are shown in the graph below.

Unity - Projected and Budget Expenditure for (Water\_S2\_V1)



## What we will do

We plan to provide water services for the following:

- Operation, maintenance, renewal and upgrade of water mains, reservoir, water treatment plant, and wells to meet service levels set by Council in annual budgets.
- Cleaning and relining of the water reservoir, 2 blocks of water main replacement, 8<sup>th</sup> street subdivision, and replacement of the water treatment plant within the 10 year planning period.

## What we cannot do

We do **not** have enough funding to provide all services at the desired service levels or provide new services.

Works and services that cannot be provided under present funding levels are:

- Increase the current levels of service
- Increase the number of serviced lots
- Major renewal of aging infrastructure
- Changes in water treatment system

## 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:

- Loss of source water/wells
- Break on main from wells to water treatment plant
- Fire/Damage to our water treatment facility
- Break/damage to water storage towers
- Contamination to treated water/storage
- Unknown break/leakage

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

- To have our 4<sup>th</sup> well come on stream
- Check main from wells on a more regular interval
- Monitor water usage. If there is significant variances, to investigate any leakages
- To have fire extinguishers at our water treatment plant
- Replace all old water mains

## Confidence Levels

This AM Plan is based on Low – Medium level of confidence information.

## The Next Steps

The actions resulting from this asset management plan are:

- Creation of an Asset Management Committee comprising of two councillors, the Chief Administrative Officer, the Director of Finance, the Director of Economic Development, The Director of Public works, The Director of Recreation and Culture and possibly one-two residents
- Introduction of a five year strategic/financial plan to ensure that funding is available for all necessary replacements of water mains
- Development of a detailed plan for the water distribution network
- Monitoring useful lives of the water network assets to replace them accordingly.
- Revisiting the strategic/financial plan in the event of any major failure.
- Ensuring water utility is self-sustaining and auto finances its assets replacement.

## Questions you may have

### What is this plan about?

This asset management plan covers the infrastructure assets that serve the Town of Unity's water needs. These assets include water mains, reservoir, water treatment plant, and wells throughout the community area that enable people to have safe and reliable potable water.

### What is an Asset Management Plan?

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

An asset management plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services.

### Why is there a funding shortfall?

Most of the Town's water network was constructed by developers and from government grants, often provided and accepted without consideration of ongoing operations, maintenance and replacement needs.

Many of these assets are approaching the later years of their life and require replacement, services from the assets are decreasing and maintenance costs are increasing.

Our present funding levels are insufficient to continue to provide existing services at current levels in the medium term.

### What options do we have?

Resolving the funding shortfall involves several steps:

1. Improving asset knowledge so that data accurately records the asset inventory, how assets are performing and when assets are not able to provide the required service levels,
2. Improving our efficiency in operating, maintaining, renewing and replacing existing assets to optimize life cycle costs,
3. Identifying and managing risks associated with providing services from infrastructure,
4. Making trade-offs between service levels and costs to ensure that the community receives the best return from infrastructure,

5. Identifying assets surplus to needs for disposal to make saving in future operations and maintenance costs,
6. Consulting with the community to ensure that water services and costs meet community needs and are affordable,
7. Developing partnership with other bodies, where available to provide services,
8. Seeking additional funding from governments and other bodies to better reflect a 'whole of government' funding approach to infrastructure services.

### What happens if we don't manage the shortfall?

It is likely that we will have to reduce service levels in some areas, unless new sources of revenue are found. For water, the service level reduction may include increased break rates and potentially a reduction in water reliability and quality.



### What can we do?

We can develop options, costs and priorities for future water services, consult with the community to plan future services to match the community service needs with ability to pay for services and maximise community benefits against costs.

## 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 organization’s Asset Management Policy (once developed), Asset Management Strategy (once developed) and the following associated planning documents:

- Official Community Plan
- Zoning Bylaws
- Multi Year Capital Plan (under development)

The infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to provide potable water services to its community.

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

Asset category	Dimension	Replacement Value
Water Mains	24 km	\$9,633,400
Water Reservoir	2	\$50,000
Water Treatment Plant	1	\$3,000,000
Wells	3	\$280,800
<b>TOTAL</b>		<b>\$12,964,200</b>

Key stakeholders in the preparation and implementation of this asset management plan are: Shown in Table 2.1.1.

**Table 2.1.1: Key Stakeholders in the AM Plan**

Key Stakeholder	Role in Asset Management Plan
Mayor/Councilors	<ul style="list-style-type: none"> <li>• Represent needs of community/shareholders,</li> <li>• Allocate resources to meet the organization’s objectives in providing services while managing risks,</li> <li>• Ensure organization is financial sustainable.</li> </ul>
CAO/Managers	<ul style="list-style-type: none"> <li>• Provide financial expertise</li> <li>• Provide insights into community</li> </ul>
Foreman	<ul style="list-style-type: none"> <li>• Provide advice and expertise on current state of the infrastructure, lead maintenance and construction projects</li> </ul>

<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 organization 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>

## 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 organization,
- 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 organization's objectives,
- Asset management improvement plan.

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

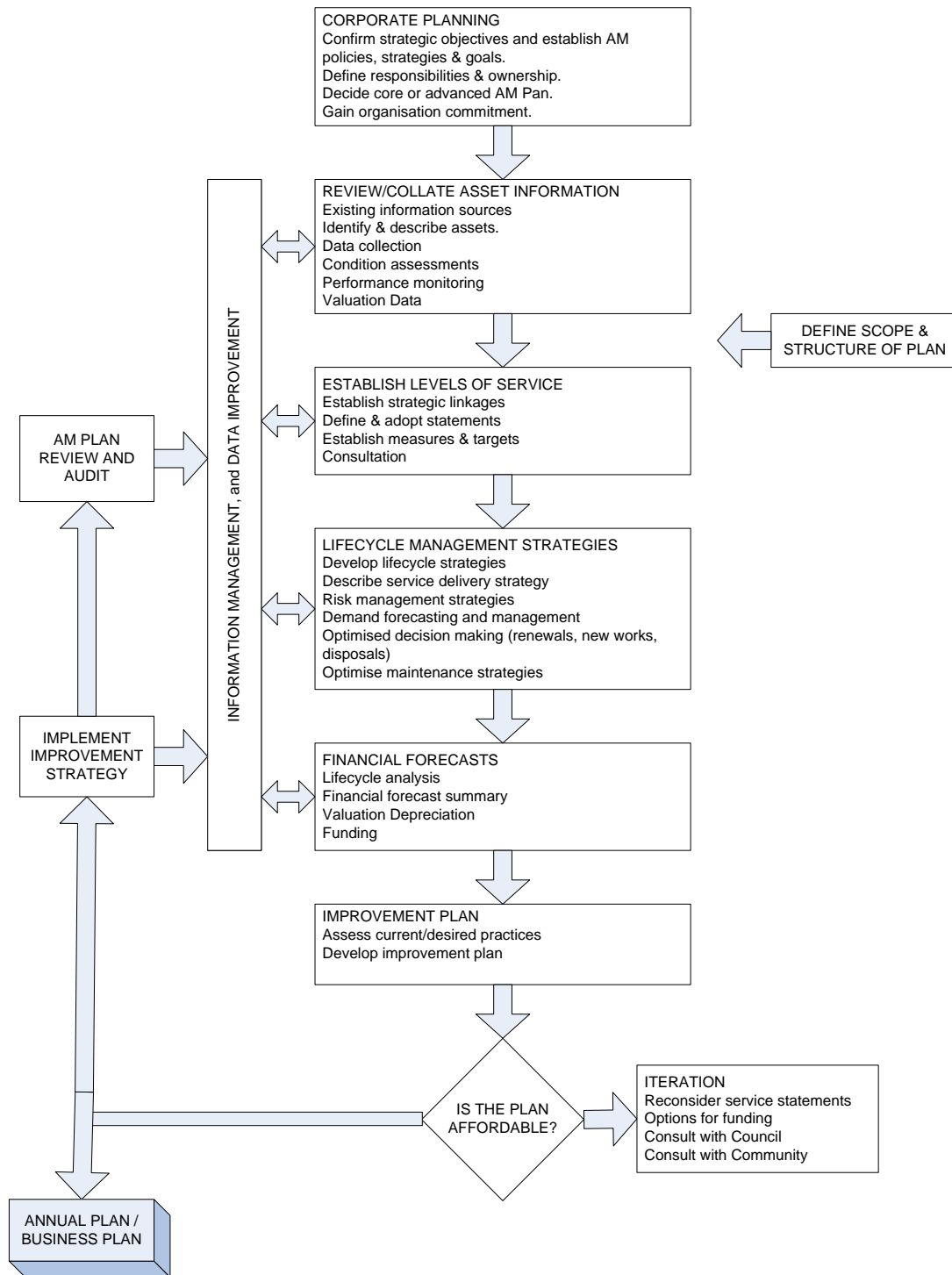
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<sup>2</sup> Based on IPWEA, 2011, IIMM, Sec 1.2 p 1|7.



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

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



## 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 organizational 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 optimization of activities and programs to meet agreed service levels in a financially sustainable manner.

## 2.5 Community Consultation

This 'core' asset management plan is prepared to facilitate community consultation initially through feedback on public display of 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

The organization has not carried out any research on customer expectations. This will be investigated for future updates of the asset management plan.

### 3.2 Strategic and Corporate Goals

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

Our vision is:

**To be determined.**

Our mission is:

**To be determined.**

Relevant organizational goals and objectives and how these are addressed in this asset management plan are:

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

Goal	Objective	How Goal and Objectives are addressed in AM Plan
To be determined.	--	--

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

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

### 3.3 Legislative Requirements

The organization has to meet many legislative requirements including Canadian Federal and Provincial legislation and regulations. These include:

**Table 3.3: Legislative Requirements**

Legislation	Requirement
The Municipalities Act	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.
PSAB 3150	Accounting and reporting of tangible capital assets set out by the public sector accounting board.
The Environmental Management and Protection Act, 2002	Protects the air, land and water resources of the province through regulating and controlling potentially harmful activities and substances.
The Public Health Act, 1994	The Public Health Act, 1994
The Fisheries Act, 1994	Enables sustainable management of fisheries resources by affirming provincial ownership of fish, creating a provincial licensing system, and regulating allocation of fish resources, fish marketing, aquaculture, sport fishing and commercial fishing.
Water Appeal Board Act	Establishes the Water Appeal Board and enables the board to hear appeals regarding water, sewage and drainage issues.
The Occupation Health and Safety Act, 1993	An Act respecting occupational health and safety
The Highways and Transportation Act, 1997	Outlines the requirements respecting the use of highways throughout the province as well as all other public transportation and transportation systems. The Act outlines requirements for setting speed limits, weight and dimension requirements for vehicles, dangerous goods provisions and minimum road construction requirements.

The organization 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.

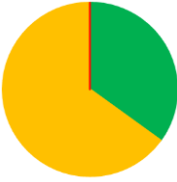
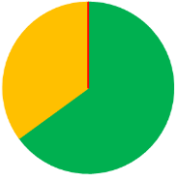




Community Levels of Service measure how the community receives the service and whether the organization is providing community value.

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/Utilization	Is the service over or under used?

The organization'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	Service Objective	Performance Measure Process	Current Performance	Expected position in 10 years based on current LTFP
<b>COMMUNITY OUTCOMES</b>				
Provide sufficient quality and capacity of potable water.				
<b>COMMUNITY LEVELS OF SERVICE</b>				
Quality	Water tastes and looks good	Service requests	A few taste complaints. Hardness an issue and a lot of corrosion	Expected to improve.
	Organizational measure Confidence levels Low		 <small>■ Good ■ Fair ■ Poor</small>	 <small>■ Good ■ Fair ■ Poor</small>
Function	Service is provided with minimal interruptions	Service requests	Negligible.	Expected to improve.
	Organizational measure Confidence levels Low		 <small>■ Good ■ Fair ■ Poor</small>	 <small>■ Good ■ Fair ■ Poor</small>
Capacity/ Utilization	Sufficient capacity and meets standards.	Meets provincial standards	Meet standards.	Expected to stay the same.
	Organizational measure Confidence levels Low		 <small>■ Good ■ Fair ■ Poor</small>	 <small>■ Good ■ Fair ■ Poor</small>

### 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 organization undertakes to best achieve the desired community outcomes and demonstrate effective organizational 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	Service Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost **	Agreed Sustainable Position ***
<b>TECHNICAL LEVELS OF SERVICE</b>					
Operations	Treatment	Frequency.	Daily.	Adequate.	
	Regular Testing	Frequency.	Daily.	Adequate.	
	Hydrant Flushing	Frequency.	2 times per year.	Adequate.	
	Valve Operation	Frequency.	Annually.	Adequate.	
	Reservoir Cleaning	Frequency.	As needed.	Bi-Annually.	
		<b>Budget</b>	<b>\$250,850</b>		
Maintenance	Minor Main Repairs	Amount.	As needed.	Adequate.	
		<b>Budget</b>	<b>\$77,200</b>		
Renewal	Replacement of lines	Amount.	As needed.	Review possibility of joint sewer line re-lining and water line work.	
	Replacement of Water Treatment	Amount.	As needed.	Adequate.	
	Replacement of Reservoir	Amount.	As needed.	Adequate.	
		<b>Budget</b>	<b>\$588,480</b>		
Upgrade/New	Water mains	Amount.	With development.	Adequate.	
	Reservoir	Amount.	As required.	Adequate.	
	Water Treatment	Amount.	As required.	Adequate.	
		<b>Budget</b>	<b>\$42,060</b>		

Note: \* Current activities and costs (currently funded).

\*\* Desired activities and costs to sustain current service levels and achieve minimum life cycle costs (not currently funded).

\*\*\* Activities and costs communicated and agreed with the community as being sustainable (funded position following trade-offs, managing risks and delivering agreed service levels).

## 4. FUTURE DEMAND

### 4.1 Demand Drivers

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.

### 4.2 Demand Forecast

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

### 4.3 Demand Impact on Assets

The impact of demand drivers that may affect future service delivery and utilization 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
Population growth	2,398	2,500	Increased level of demand. Increase level of stress on staffs.
Changing regulations	Meet regulations	Unknown	Increased standards and requirements for quality.

### 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 organization 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>. 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**

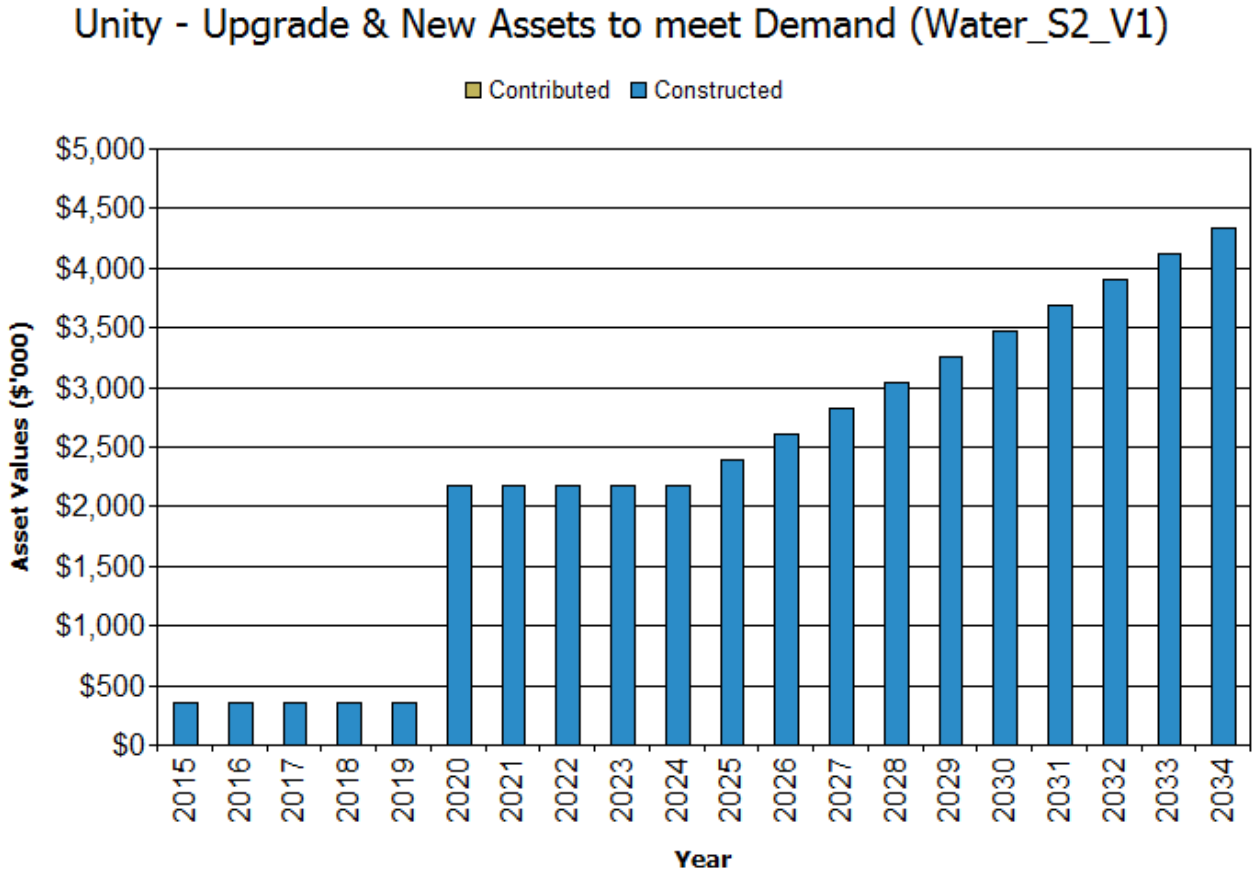
Demand Driver	Impact on Services	Demand Management Plan
Population growth	Increased level of demand. Increase level of stress on staffs.	Building of a new water treatment plant to meet the new level of demand. Ensure there is an improved water distribution system Recruit more staffs.
Changing regulations	Increased standards and requirements for quality.	Monitor any changes in standards.

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

#### 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 organization. New assets constructed/acquired by the organization are discussed in Section 5.5. The cumulative value of new contributed and constructed asset values are summarized in Figure 1.

Figure 1: Upgrade and New Assets to meet Demand



The figure above shows the cumulative value of new assets acquired by the organization. These new assets include those that are both contributed and constructed assets.

Acquiring these new assets will commit the organization 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 in Section 5.



## 5. LIFECYCLE MANAGEMENT PLAN

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

### 5.1 Background Data

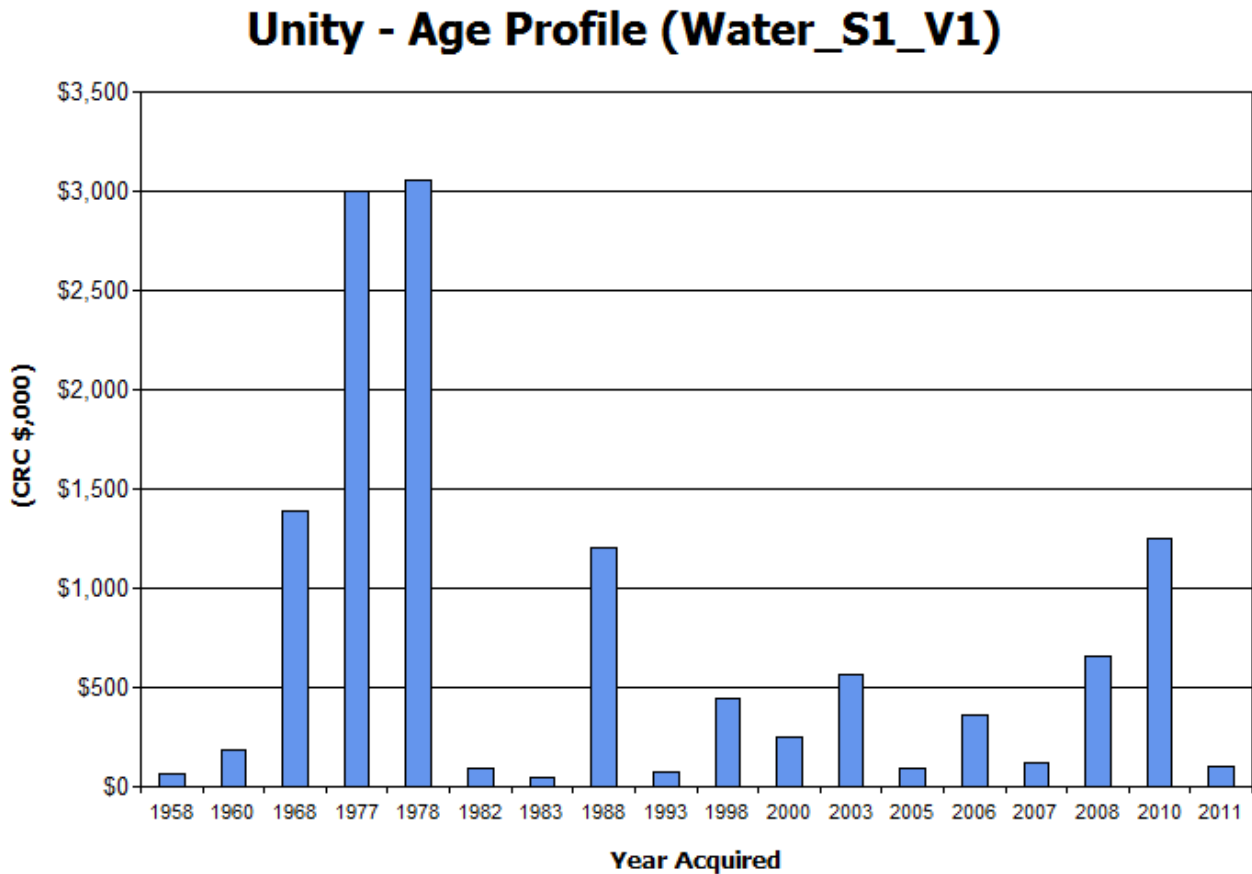
#### 5.1.1 Physical parameters

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

The water network in the Town of Unity consists of more than 24 km of water mains, 3 wells, 2 reservoirs, and a water treatment plant.

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

Figure 2: Asset Age Profile



The figure above illustrates the current replacement cost of the assets along with the year that they were constructed or acquired. This graph can be helpful in illustrating peaks and troughs in past infrastructure investment which may be reflected in future peaks and troughs of required infrastructure renewal.

Plans showing the water assets are:

- Town Map

5.1.2 Asset capacity and performance

The organization’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
Lagoon	Restriction to growth in water network or changes in water system due to lagoon capacity.
Water main network	Increasing break rate due to aging infrastructure.
Transmission line breaks	Increasing breaks in transmission line from wells to water plant.

The above service deficiencies were identified from Town staff.

5.1.3 Asset condition

Condition is not currently monitored.

Condition is measured using a 1 – 5 grading system<sup>6</sup> as detailed in Table 5.1.3.

**Table 5.1.3: Simple Condition Grading Model**

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

5.1.4 Asset valuations

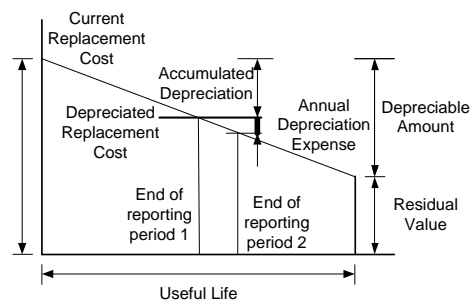
The value of assets recorded in the asset register as at Spring 2015 covered by this asset management plan is shown below. Assets were last revalued at 2015. Assets are valued at current replacement cost.

Current Replacement Cost	\$12,964,000
Depreciable Amount	\$12,964,000
Depreciated Replacement Cost <sup>7</sup>	\$5,633,000
Annual Depreciation Expense	\$243,000

Useful lives were reviewed in Spring 2015 by Town staff.

Key assumptions made in preparing the valuations were:

- Estimated replacement costs were based on replacement under ‘normal’ circumstances.
- Estimated replacement costs were based on most recent work completed.



<sup>6</sup> IPWEA, 2011, IIMM, Sec 2.5.4, p 2 | 79.

<sup>7</sup> Also reported as Written Down Current Replacement Cost (WDCRC).

Major changes from previous valuations are due to the fact that traditional valuations were based on historical costs and policy useful lives.

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)	1.9%
Rate of Annual Asset Renewal (Capital renewal exp/Depreciable amount)	4.5%

In 2015 the organization plans to renew assets at 242.5% of the rate they are being consumed and will be increasing its asset stock by 2.8% in the year.

**5.1.5 Historical Data**

This is the first asset management plan that has been completed for the Town of Unity.

This infrastructure is also outlined in the Town of Unity’s Tangible Capital Asset Financial Report.

**5.2 Infrastructure Risk Management Plan**

An assessment of risks<sup>8</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 organization. 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 prioritized corrective action identified in the Infrastructure Risk Management Plan, together with the estimated residual risk after the selected treatment plan is operational are summarized in Table 5.2. These risks are reported to management and Council.

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

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Water Network	Insufficient Pressure	H	Use of booster pump to bring back pressure level	M	TBD
Water Network	Water contamination	H	To identify and isolate the contamination source	H	TBD
Water Network	Damage to a main from the wells	VH	Adding another water well	L	\$ 1,500,000
Wells	Fire/Damage of the well	H	To have a well dedicated in the event of such a hazard	M	TBD

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

**5.3 Routine Operations and Maintenance Plan**

Operations include regular activities to provide services such as public health, safety and amenity, eg cleansing, street sweeping, grass mowing and street lighting.

<sup>8</sup> There is currently no Infrastructure Risk Management Plan.

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, prioritizing, 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 but may require a specific budget allocation.

Actual past maintenance expenditure is shown in Table 5.3.1.

**Table 5.3.1: Maintenance Expenditure Trends**

Year	Maintenance Expenditure
	Planned and Specific and Unplanned
2015	\$77,200

Planned maintenance work is currently not tracked separately from reactive maintenance expenditure.

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

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

### 5.3.2 Operations and Maintenance Strategies

The organization 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,

- Review current and required skills base and implement workforce training and development to meet required operations and maintenance needs,
- Review asset utilization to identify underutilized assets and appropriate remedies, and over utilized 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.

**Asset hierarchy**

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

The organization’s service hierarchy is shown in Table 5.3.2.

**Table 5.3.2: Asset Service Hierarchy**

Service Hierarchy	Service Level Objective
Water Treatment and Reservoir	Minimal interruptions.
Water Source	Minimal interruptions.
Watermains	Minimal interruptions.
Water Laterals	Limited interruptions.

**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, organizations 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
Wells	Physical	Regular operating and maintenance activities.
Feeder mains	Physical	Regular operating and maintenance activities.
Water Treatment plant	Physical	Regular operating and maintenance activities.
Storage reservoirs	Physical	Regular operating and maintenance activities.

**Standards and specifications**

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

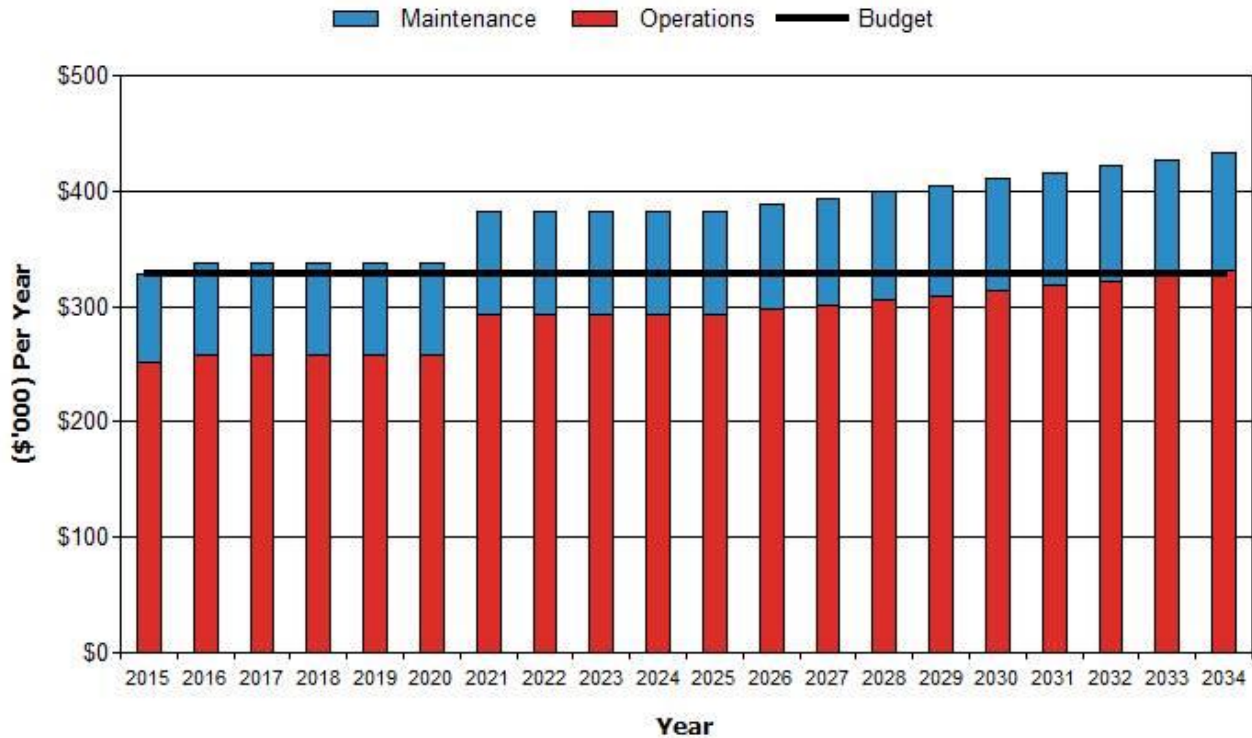
- According to local expertise and judgement.
- According to legislation.

**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 2014 dollar values (ie real values).

Figure 4: Projected Operations and Maintenance Expenditure

## Unity - Projected Operations & Maintenance Expenditure (Water\_S1\_V1)



The figure above illustrates the annual operating and maintenance costs. These costs are based on current operating and maintenance expenditures. If there is an increase in the anticipated operating and maintenance costs over the time period it is due to an increase in the infrastructure network.

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'.

Methods 1 and 2 were used for this asset management plan.

The useful lives of assets used to develop projected asset renewal expenditures are shown in Table 5.4.1. Asset useful lives were last reviewed on Summer 2014.<sup>9</sup>

**Table 5.4.1: Useful Lives of Assets**

Asset (Sub)Category	Useful life
Water Mains	60 years
Water Reservoir	30 years
Water Treatment Plant	40 years
Wells	45-55 years

#### 5.4.2 Renewal and Replacement Strategies

The organization will plan capital renewal and replacement projects to meet level of service objectives and minimize 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 organization, 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,
- 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>10</sup>

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 utilization and subsequent impact on users would be greatest,
- The total value represents the greatest net value to the organization,
- Have the highest average age relative to their expected lives,
- Are identified in the AM Plan as key cost factors,

<sup>9</sup> No formal review of Useful Life of Assets has been completed.

<sup>10</sup> IPWEA, 2011, IIMM, Sec 3.4.4, p 3 | 60.

- Have high operational or maintenance costs, and
- Where replacement with modern equivalent assets would yield material savings.<sup>11</sup>

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 5.4.2.

**Table 5.4.2: Renewal and Replacement Priority Ranking Criteria**

Criteria	Weighting
Fit with Strategic Plan	To be determined.
Capacity	To be determined.
Classification (Main / Branch)	To be determined.
Material Type	To be determined.
Age / Condition	To be determined.
<b>Total</b>	<b>100%</b>

#### Renewal and replacement standards

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

- According to local expertise and judgement.
- According to legislation.

#### 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 summarized in Fig 5. Note that all amounts are shown in real values.

The projected capital renewal and replacement program is shown in Appendix B.

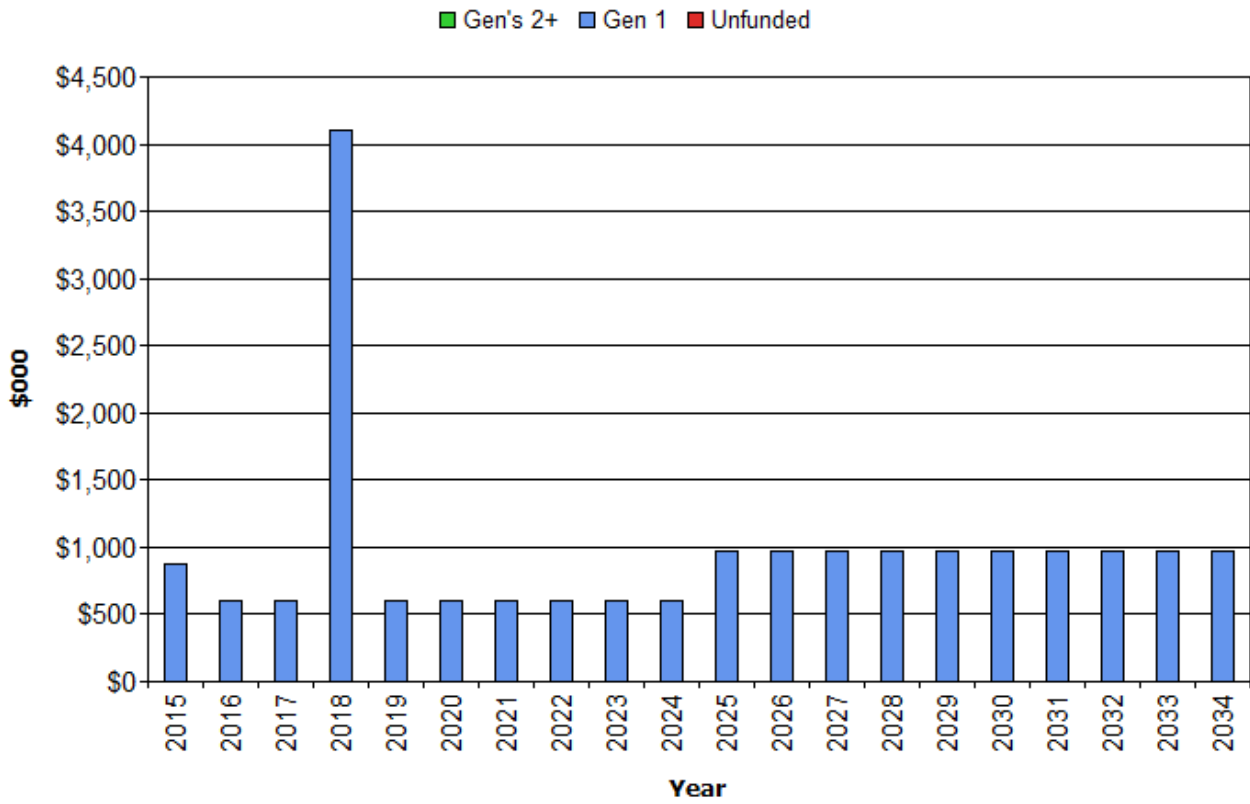
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<sup>11</sup> Based on IPWEA, 2011, IIMM, Sec 3.4.5, p 3|66.



Fig 5.1: Projected Capital Renewal and Replacement Expenditure (Projections of Upcoming Work)

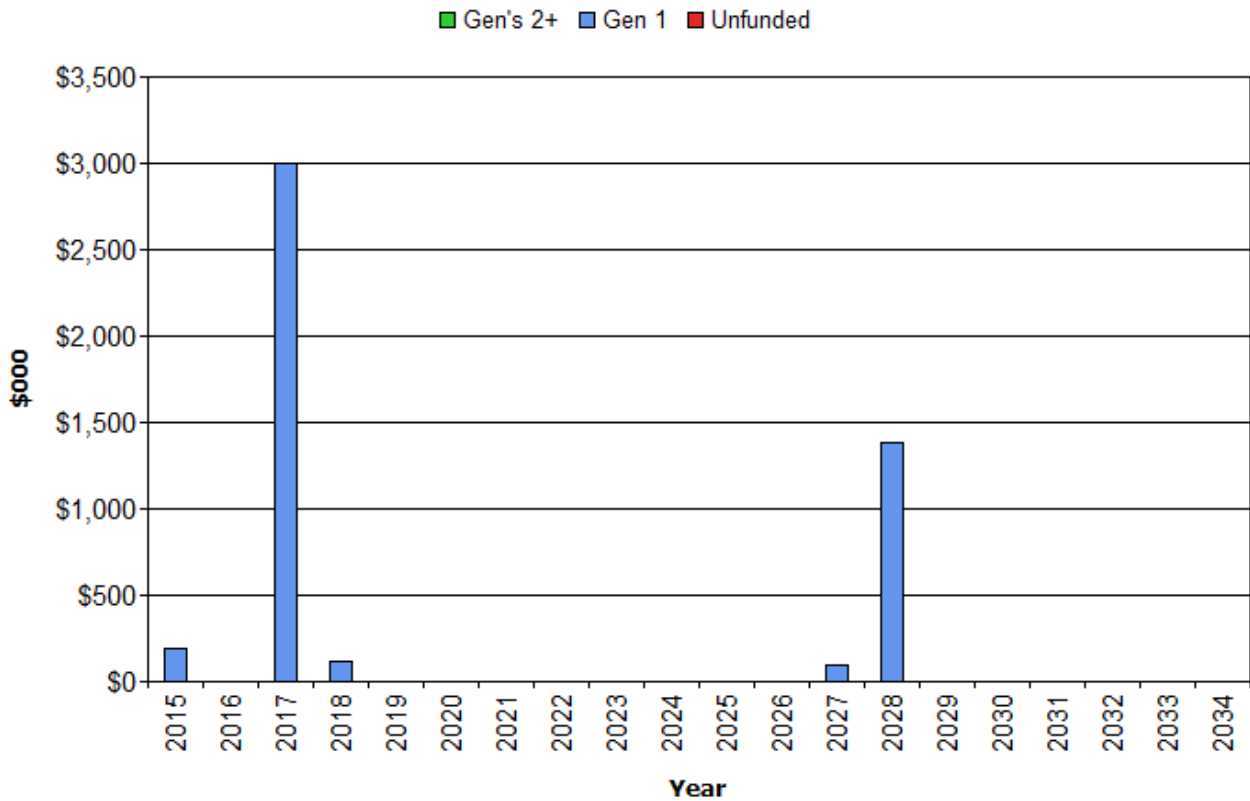
### Unity - Projected Capital Renewal Expenditure (Water\_S2\_V1)



The projected renewals used for the projected work throughout this plan were based on projected upcoming work as defined by Town staff judgment and expertise, this is seen in Fig. 5.1. A second method was reviewed for the estimates of the renewals which was based on the Town TCA asset register. The renewals from the asset register shown in Fig. 5.2 are estimated by adding the expected useful life to the year of acquisition for each asset and then summed together at the network level. There is a significant difference between the projected renewals based on staff estimates and the projected renewals based on the asset register, this indicates that the asset register may not be to a sophisticated of a level to be used for planning purposes.

Fig 5.2: Projected Capital Renewal and Replacement Expenditure (Asset Register)

## Unity - Projected Capital Renewal Expenditure (Water\_S1\_V1)



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.

Renewals and replacement expenditure in the organization’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 organization 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 councilor or community requests, proposals identified by strategic plans or partnerships with other organizations. 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
Fit with Strategic Plan	To be determined.
Capacity	To be determined.
Classification (Main / Branch)	To be determined.
Material Type	To be determined.
<b>Total</b>	<b>100%</b>

### 5.5.2 Capital Investment Strategies

The organization will plan capital upgrade and new projects to meet level of service objectives by:

- Planning and scheduling capital upgrade and new projects to deliver the defined level of service in the most efficient manner,
- Undertake project scoping for all capital upgrade/new projects to identify:
  - the service delivery ‘deficiency’, present risk and required timeline for delivery of the upgrade/new asset,
  - the project objectives to rectify the deficiency including value management for major projects,
  - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
  - management of risks associated with alternative options,
  - and evaluate the options against evaluation criteria adopted by Council, and
  - select the best option to be included in capital upgrade/new programs,
- Review current and required skills base and implement training and development to meet required construction and project management needs,
- Review management of capital project management activities to ensure Council is obtaining best value for resources used.

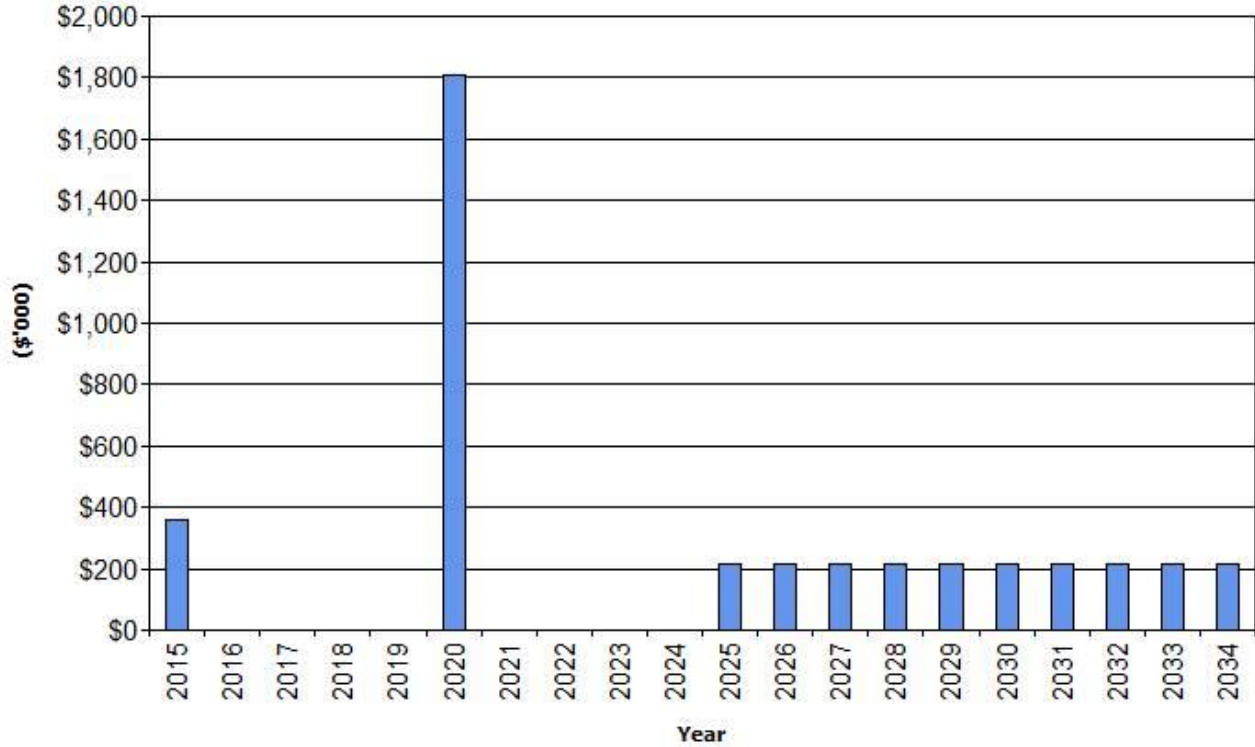
Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.4.2.

### 5.5.3 Summary of future upgrade/new assets expenditure

Projected upgrade/new asset expenditures are summarized in Fig 6. The projected upgrade/new capital works program is shown in Appendix C. All amounts are shown in real values.

**Fig 6: Projected Capital Upgrade/New Asset Expenditure**

### Unity - Projected Capital Upgrade/New Expenditure (Water\_S2\_V1)



The figure above illustrates planned capital upgrades and new infrastructure over the next 10 years. The following 10 years illustrate the average expenditure on capital upgrade and new expenditure over the first 10 years.

Expenditure on new assets and services in the organization’s capital works program will be accommodated in the long term financial plan. This is further discussed in Section 6.2.

#### 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.

Where cashflow projections from asset disposals are not available, these will be developed in future revisions of this asset management plan.

**Table 5.6: Assets Identified for Disposal**

Asset	Reason for Disposal	Timing	Disposal Expenditure	Operations & Maintenance Annual Savings
None Identified.	--	--	--	--

## 5.7 Service Consequences and Risks

The organization has prioritized decisions made in adopting this AM Plan to obtain the optimum benefits from its available resources. Decisions were made based on the development of 3 scenarios of AM Plans.

**Scenario 1** - What we would like to do based on asset register data

**Scenario 2** – What we should do with existing budgets and identifying level of service and risk consequences (ie what are the operations and maintenance and capital projects we are unable to do, what is the service and risk consequences associated with this position). This may require several versions of the AM Plan.

**Scenario 3** – What we can do and be financially sustainable with AM Plans matching long-term financial plans.

The development of scenario 1 and scenario 2 AM Plans provides the tools for discussion with the Council and community on trade-offs between what we would like to do (scenario 1) and what we should be doing with existing budgets (scenario 2) by balancing changes in services and service levels with affordability and acceptance of the service and risk consequences of the trade-off position (scenario 3).

### 5.7.1 What we cannot do

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

- The replacement of the water treatment plant is planned work, however, there is no committed to funding in place at this point for the project.

### 5.7.2 Service consequences

Operations and maintenance activities and capital projects that cannot be undertaken will maintain or create service consequences for users. These include:

- If the water treatment plant is not replaced as planned, then it is expected that water aesthetics may become an issue, as well as capacity, and the inability to meet any increases in water standards.

### 5.7.3 Risk consequences

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

- There would be additional risks if the water treatment plant is not replaced. This could include increased disruption of water service.

These risks have been included with the Infrastructure Risk Management Plan summarized in Section 5.2 and risk management plans actions and expenditures included within projected expenditures.

## 6. FINANCIAL SUMMARY

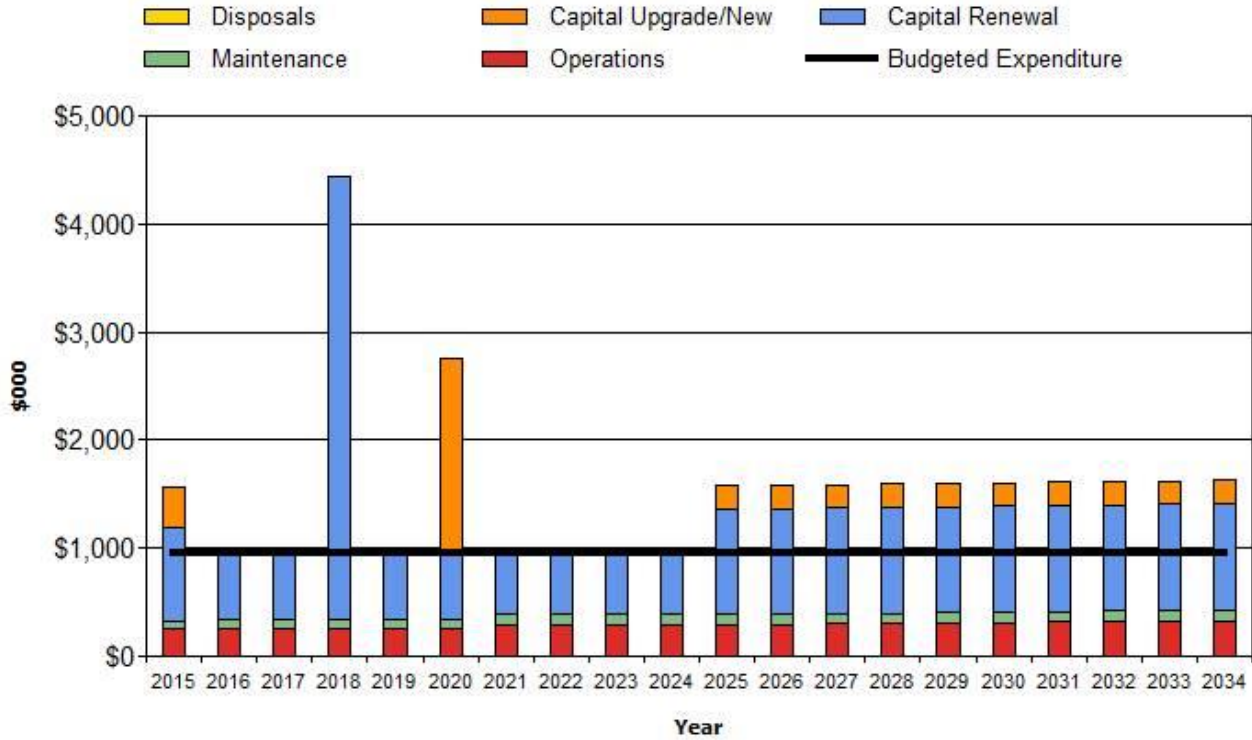
This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan. The financial projections will be improved as further information becomes available on desired levels of service and current and projected future asset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

Fig 7.1: Projected Operating and Capital Expenditure (Projected Work)

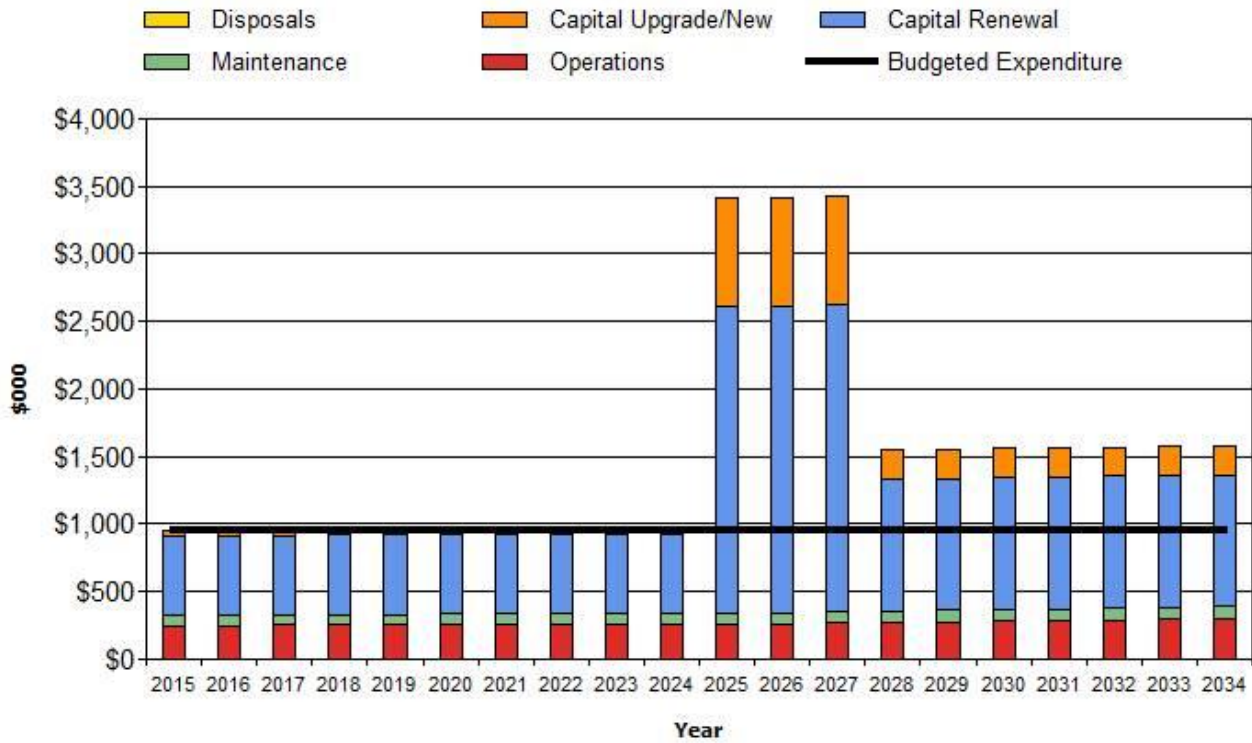
## Unity - Projected Operating and Capital Expenditure (Water\_S2\_V1)



The figure above illustrates all of the projected expenditures for this asset class including operations, maintenance, renewals, and upgrade/new. The figure also illustrates the projected available budget. This scenario represents the planned work, however, there is currently not a sufficient budget to cover all of the planned work. If there are not additional funds made available the work will not be completed and will be expected to be delayed outside of the 10 year planning period (shown as a spike in year 11). The constrained by the budget scenario is shown in the figure below.

Fig 7.2: Projected Operating and Capital Expenditure (Constrained by Budget)

## Unity - Projected Operating and Capital Expenditure (Water\_S3\_V1)



### 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.

#### Asset Renewal Funding Ratio

Asset Renewal Funding Ratio<sup>12</sup>                      59%

The Asset Renewal Funding Ratio is the most important indicator and reveals that over the next 10 years, Council is forecasting that it will have 59% of the funds required for the optimal renewal and replacement of its assets.

#### Long term - 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 \$597,000 per year (average operations and maintenance expenditure plus depreciation expense projected over 10 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

<sup>12</sup> AIFMG, 2012, Version 1.3, Financial Sustainability Indicator 4, Sec 2.6, p 2.16

expenditure over the 10 year planning period is \$917,000 per year (average operations and maintenance plus capital renewal budgeted expenditure in LTFP over 10 years).

A shortfall between life cycle cost and life cycle expenditure is the life cycle gap. The life cycle surplus for services covered by this asset management plan is \$319,000 per year (-ve = gap, +ve = surplus).

Life cycle expenditure is 154% of life cycle costs.

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 organizations 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.

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

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

These projected expenditures may be compared to budgeted expenditures in the 10 year period to identify any funding shortfall. In a core asset management plan, a gap is generally due to increasing asset renewals for ageing assets.

The projected operations, maintenance and capital renewal expenditure required over the 10 year planning period is \$1,332,000 on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is \$917,000 on average per year giving a 10 year funding shortfall of -\$415,000 per year. This indicates that Council expects to have 69% of the projected expenditures needed to provide the services documented in the asset management plan.

#### Medium Term – 5 year financial planning period

The projected operations, maintenance and capital renewal expenditure required over the first 5 years of the planning period is \$1,689,000 on average per year.

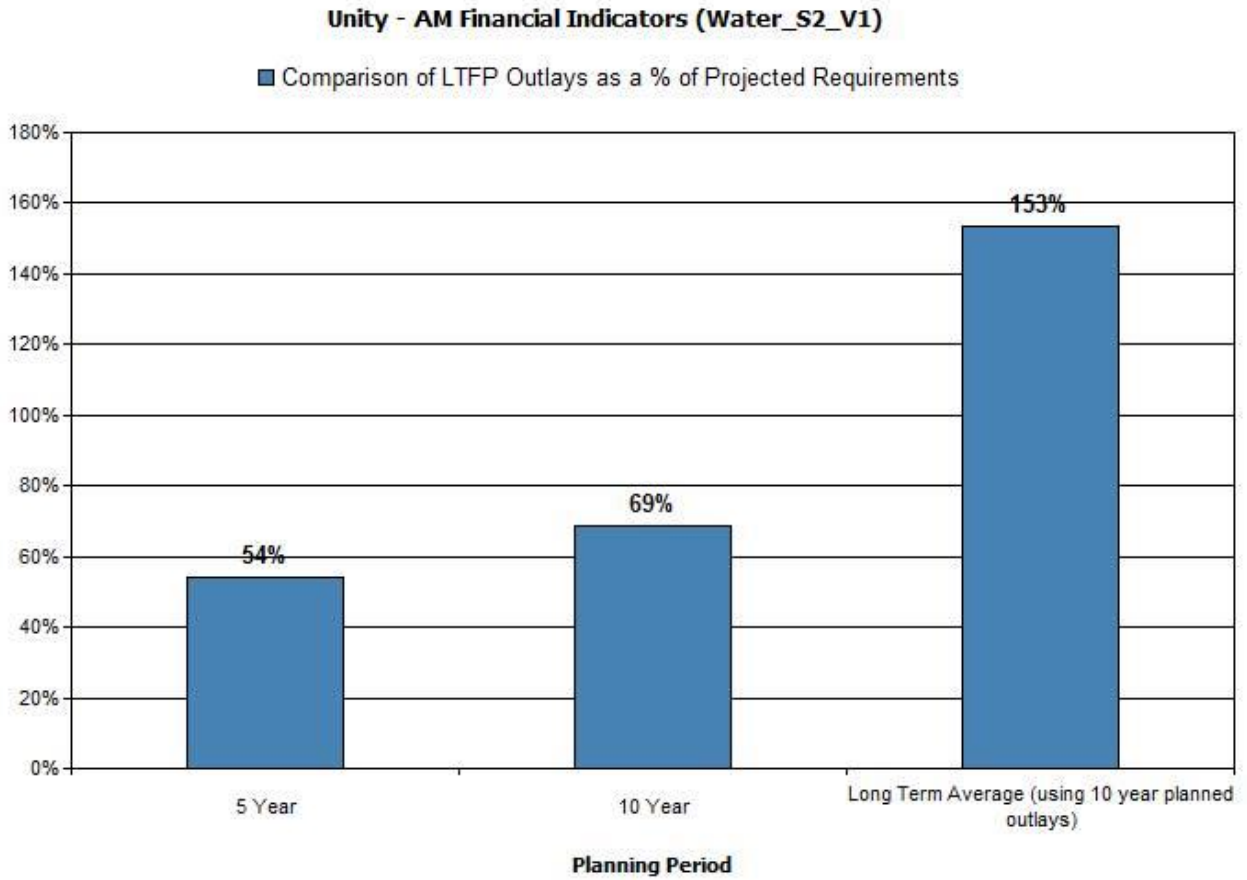
Estimated (budget) operations, maintenance and capital renewal funding is \$917,000 on average per year giving a 5 year funding shortfall of -\$773,000. This indicates that Council expects to have 54% of projected expenditures required to provide the services shown in this asset management plan.

#### 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**



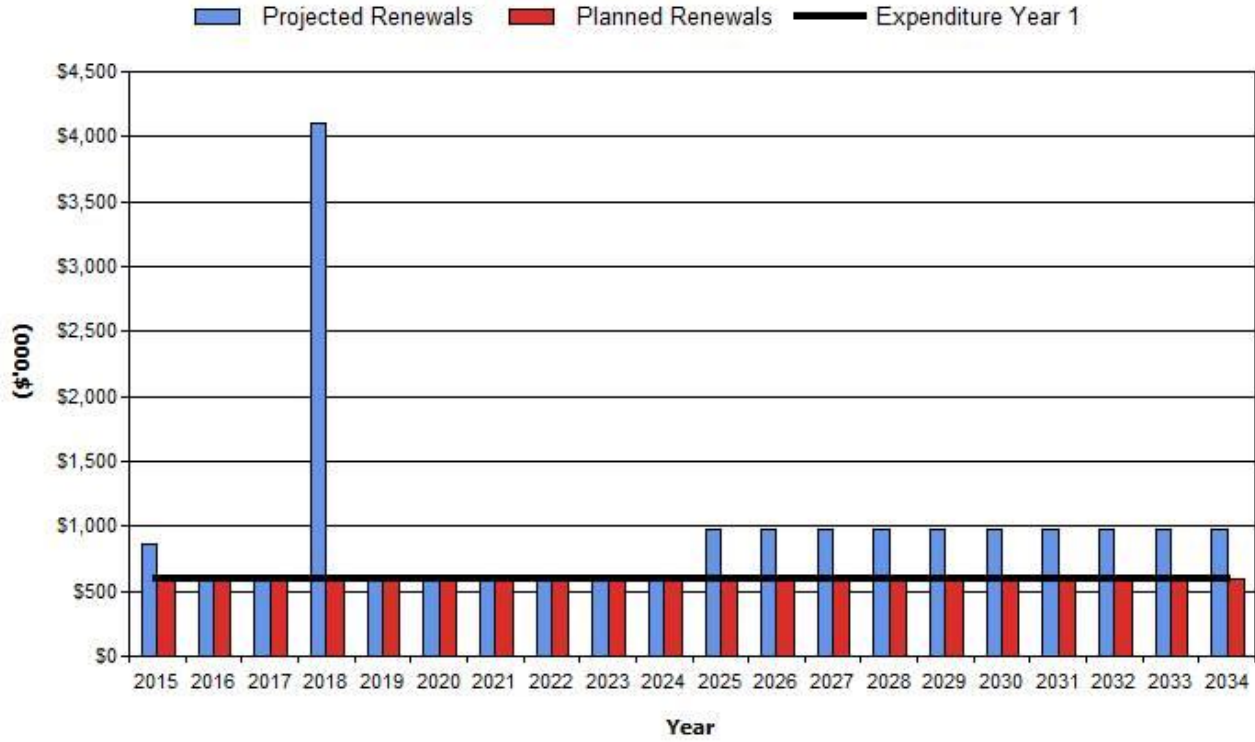
The figure above illustrates the percentage of the projected work that is covered by the current budget in the 5 year period, 10 year period, and long term average. This percentage looks at sustaining current services and as such only includes the operating, maintenance, and renewals costs.

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

### Unity - Projected & LTFP Budgeted Renewal Expenditure (Water\_S2\_V1)



The figure above illustrates the planned renewals expenditures along with the projected budget for renewals.

Table 6.1.1 shows the shortfall between projected renewal and replacement expenditures and expenditure accommodated in long term financial plan. 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 and Financing Shortfall**

Year	Projected Renewals (\$000)	LTFP Renewal Budget (\$000)	Renewal Financing Shortfall (\$000) (-ve Gap, +ve Surplus)	Cumulative Shortfall (\$000) (-ve Gap, +ve Surplus)
2015	\$870	\$588	\$-282	\$-282
2016	\$600	\$588	\$-12	\$-293
2017	\$600	\$588	\$-12	\$-305
2018	\$4,100	\$588	\$-3,512	\$-3,816
2019	\$600	\$588	\$-12	\$-3,828
2020	\$600	\$588	\$-12	\$-3,839
2021	\$600	\$588	\$-12	\$-3,851
2022	\$600	\$588	\$-12	\$-3,862
2023	\$600	\$588	\$-12	\$-3,874
2024	\$600	\$588	\$-12	\$-3,885
2025	\$977	\$588	\$-389	\$-4,274
2026	\$977	\$588	\$-389	\$-4,662
2027	\$977	\$588	\$-389	\$-5,051
2028	\$977	\$588	\$-389	\$-5,439
2029	\$977	\$588	\$-389	\$-5,828
2030	\$977	\$588	\$-389	\$-6,216
2031	\$977	\$588	\$-389	\$-6,605
2032	\$977	\$588	\$-389	\$-6,993
2033	\$977	\$588	\$-389	\$-7,382
2034	\$977	\$588	\$-389	\$-7,770

*Note: A negative shortfall indicates a financing gap, a positive shortfall indicates a surplus for that year.*

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.

A gap between **projected asset renewal/replacement expenditure and amounts accommodated in the LTFP** indicates that **further work is required on reviewing service levels in the AM Plan (including possibly revising the LTFP)** before finalizing the asset management plan to manage required service levels and funding **to eliminate any funding gap**.

We will manage the ‘gap’ by developing this asset management plan to provide guidance on future service levels and resources required to provide these services, and review future services, service levels and costs with the community.

### 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 2015 real values.

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

Year	Operations (\$000)	Maintenance (\$000)	Projected Capital Renewal (\$000)	Capital Upgrade/ New (\$000)	Disposals (\$000)
2015	\$251	\$77	\$870	\$360	\$0
2016	\$258	\$79	\$600	\$0	\$0
2017	\$258	\$79	\$600	\$0	\$0
2018	\$258	\$79	\$4,100	\$0	\$0
2019	\$258	\$79	\$600	\$0	\$0
2020	\$258	\$79	\$600	\$1,810	\$0
2021	\$293	\$90	\$600	\$0	\$0
2022	\$293	\$90	\$600	\$0	\$0
2023	\$293	\$90	\$600	\$0	\$0
2024	\$293	\$90	\$600	\$0	\$0

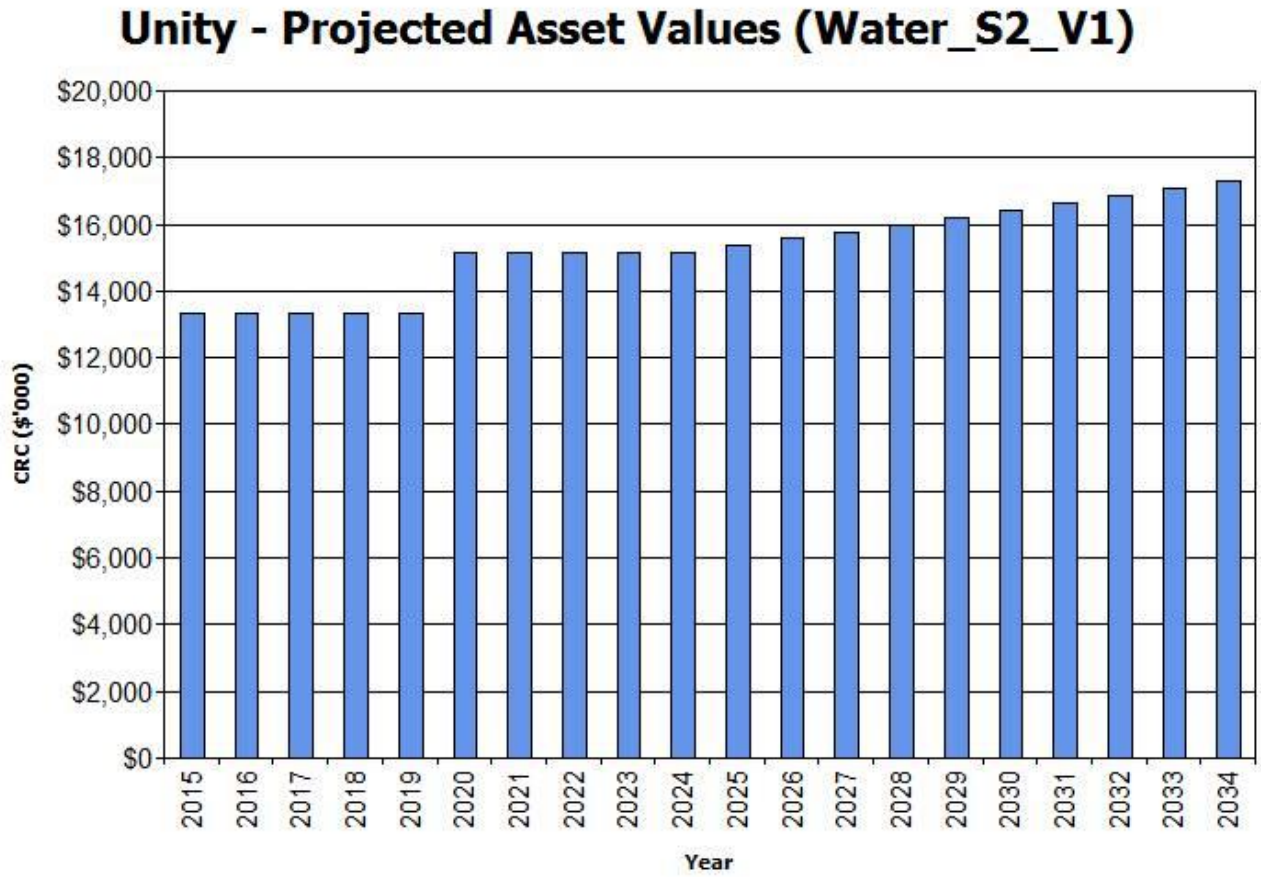
## 6.2 Funding Strategy

After reviewing service levels, as appropriate to ensure ongoing financial sustainability projected expenditures identified in Section 6.1.2 will be accommodated in the Council’s 10 year long term financial plan.

## 6.3 Valuation Forecasts

Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by the Town and from assets constructed by land developers and others and donated to the Town. Figure 9 shows the projected replacement cost asset values over the planning period in real values.

Figure 9: Projected Asset Values

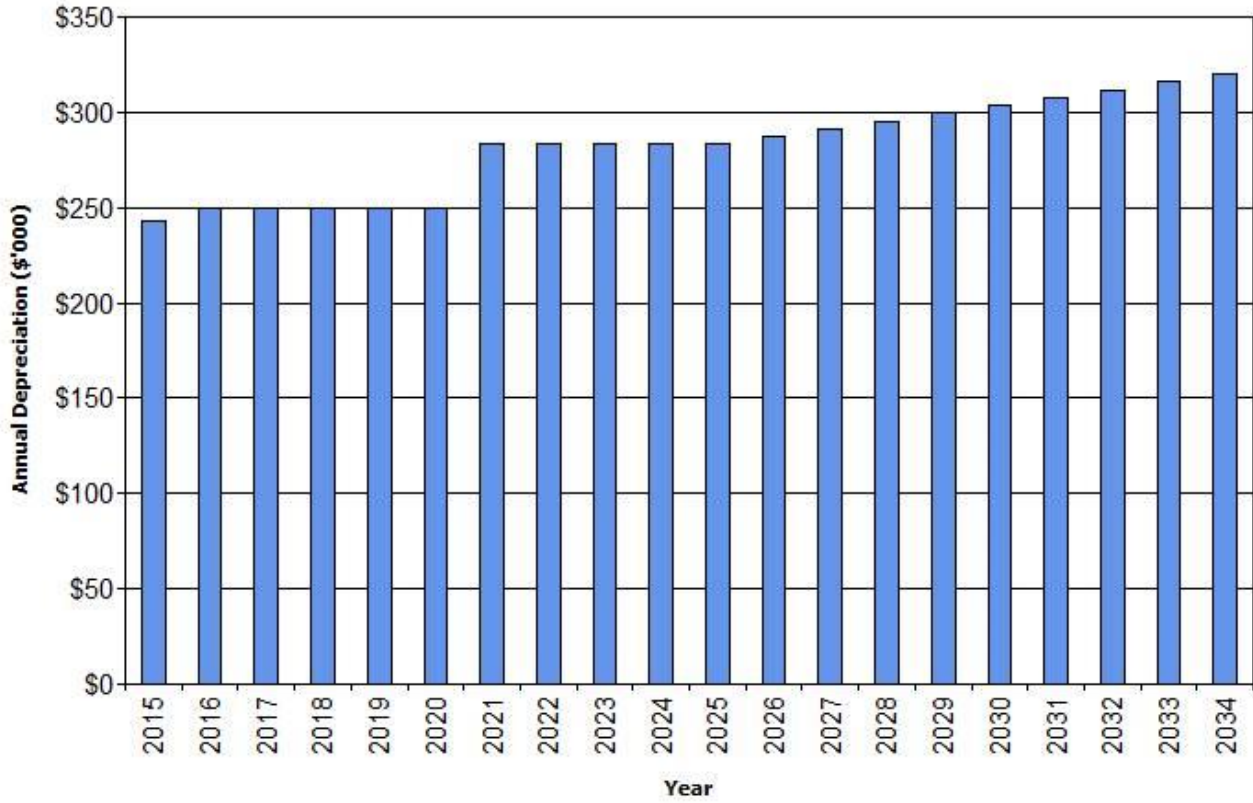


The figure above illustrates the total value of the asset network. The value will increase over the planning period to reflect the increase in the network due to new assets.

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

**Figure 10: Projected Depreciation Expense**

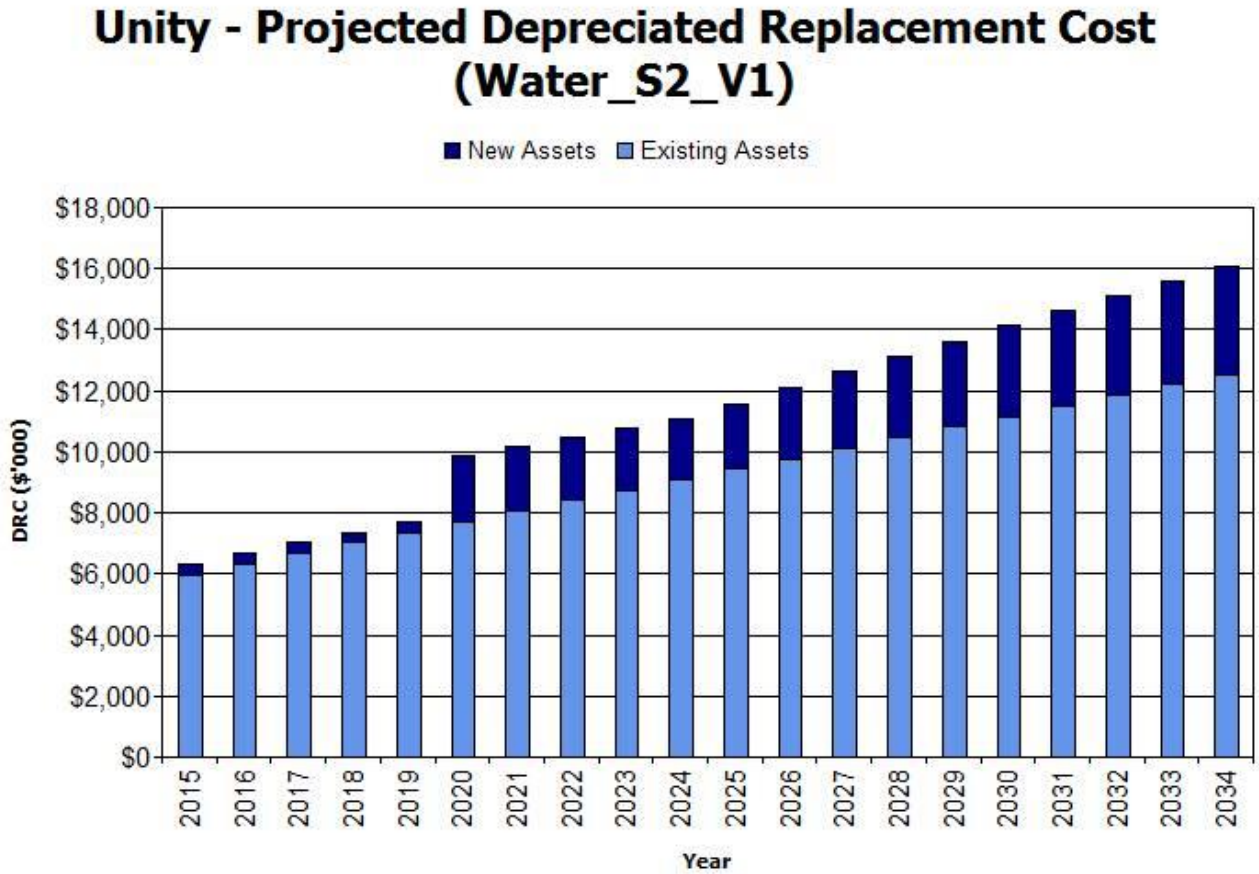
### Unity - Projected Depreciation Expense (Water\_S2\_V1)



The figure above demonstrates the annual depreciation of the network based on the current replacement cost and expected lives of the assets.

The depreciated replacement cost will vary over the forecast period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets. Forecast of the assets’ depreciated replacement cost is shown in Figure 11. The depreciated replacement cost of contributed and new assets is shown in the darker colour and in the lighter colour for existing assets.

Figure 11: Projected Depreciated Replacement Cost



#### 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
Growth assumptions	Amount of new infrastructure required.
Replacement Cost estimates	May not reflect actual cost of work.
Useful life estimates	May under or overestimate the asset useful lives
Available Budget	Budget is based on previous years allocations.
Required Renewals	The projection funding requirements timing and amount could change.

## 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>13</sup> in accordance with Table 6.5.

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

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

**Table 6.5.1: Data Confidence Assessment for Data used in AM Plan**

Data	Confidence Assessment	Comment
Demand drivers	Reliable	
Growth projections	Uncertain	The population growth is directly dependent on how well the oil sector does in this area. And at the moment it is not looking very good.
Operations expenditures	Reliable	These expenditures have been almost consistent over the past years. As such they are fairly reliable
Maintenance expenditures	Reliable	These expenditures have been almost consistent over the past years. As such they are fairly reliable
Projected Renewal exps. - Asset values	Reliable	These expenditures have been almost consistent over the past years. As such they are fairly reliable
- Asset residual values	Reliable	We have our assets values assessed every year for insurance purposes. As such they are fairly quoted
- Asset useful lives	Reliable	The assets lives were estimated by our engineers and other professional valuers. As such they are reasonably estimated
- Condition modelling	Unknown	We did not really understand as to what is being asked here
- Network renewals	Reliable	We have plans laid out for the network renewals. And are confident of carrying them out on the set dates.
- Defect repairs	Reliable	We have plans laid out for the network renewals. And are confident of carrying them out on the set dates.
Upgrade/New expenditures	Uncertain	With the uncertainty regarding the oil sector and population growth, it is difficult to confidently state that all planned upgrade/new expenditures will be carried out as at this point we prefer to look after the existing assets.
Disposal expenditures	Uncertain	With the uncertainty regarding the oil sector and population growth, it is difficult to confidently state that all planned disposals will be carried out as at this point. As disposals of assets will have to be replaced by new assets.

Over all data sources the data confidence is assessed as Medium confidence level for data used in the preparation of this AM Plan.

<sup>13</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**

Munisoft software.

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

Management is responsible for the preparation of the financial statements. Council is responsible for overseeing management in the performance of its financial reporting responsibilities.

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

Generally accepted accounting principles.

##### **Capital/maintenance threshold**

Council has set a threshold of \$5,000 for items considered capital expenditures. Any purchases below the threshold are expensed.

##### **Required changes to accounting financial systems arising from this AM Plan**

Future updates are to be determined.

#### **7.1.2 Asset management system**

Council currently uses an Asset Management spreadsheet.

##### **Asset registers**

Asset data is held in a summary form in an excel spreadsheet and updated as necessary.

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

Linkage from the asset management system is currently manual.

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

The office staff are responsible for the asset management system and its data.

##### **Required changes to asset management system arising from this AM Plan**

Review of accuracy of information.

## 7.2 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	Review of new assets projected.			
2	Review of useful lives.			
3	Review of current replacement costs.			
4	Review of risks.			
5	Review of levels of service.			
6	Review of upcoming work.			
7	Track maintenance expenditures.			
8	Completion of Capital Strategic Plan			
9				
10				

## 7.3 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget planning processes and amended to recognize 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 organization’s long term financial plan.

The AM Plan has a life of 4 years (Council election cycle) and is due for complete revision and updating within 1 year of each Council election.

## 7.4 Performance Measures

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

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into Council’s long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and organizational structures take into account the ‘global’ works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Council’s Strategic Plan and associated plans,
- **The Asset Renewal Funding Ratio achieving the target of 1.0.**

## 8. 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)

## **9. APPENDICES**

- Appendix A Maintenance Response Levels of Service
  
- Appendix B Projected 10 year Capital Renewal and Replacement Works Program
  
- Appendix C Projected 10 year Capital Upgrade/New Works Program
  
- Appendix D LTFP Budgeted Expenditures Accommodated in AM Plan
  
- Appendix E Abbreviations
  
- Appendix F Glossary

## **Appendix A Maintenance Response Levels of Service**

To be developed.

**Appendix B Projected 10 year Capital Renewal and Replacement Works Program**

To be developed.

**Appendix C Projected Upgrade/Exp/New 10 year Capital Works Program**

**Unity  
Projected Capital Upgrade/New Works Program - Water\_S2\_V1**

(\$000)

Year	Item	Description	Estimate
2015	1	8th st subdivision	\$360
	2		
<b>2015</b>		<b>Total</b>	<b>\$360</b>

(\$000)

Year	Item	Description	Estimate
2016	1		
<b>2016</b>		<b>Total</b>	<b>\$0</b>

(\$000)

Year	Item	Description	Estimate
2017	1		
<b>2017</b>		<b>Total</b>	<b>\$0</b>

(\$000)

Year	Item	Description	Estimate
2018	1		
<b>2018</b>		<b>Total</b>	<b>\$0</b>

(\$000)

Year	Item	Description	Estimate
2019	1		
<b>2019</b>		<b>Total</b>	<b>\$0</b>

(\$000)

Year	Item	Description	Estimate
2020	1	11th Ave subdivision	\$610
	2	4th Well	\$1,200
	3		
<b>2020</b>		<b>Total</b>	<b>\$1,810</b>

(\$000)

Year	Item	Description	Estimate
2021	1		
<b>2021</b>		<b>Total</b>	<b>\$0</b>

(\$000)

Year	Item	Description	Estimate
------	------	-------------	----------

2022	1		
<b>2022</b>		<b>Total</b>	<b>\$0</b>

(\$000)

<b>Year</b>	<b>Item</b>	<b>Description</b>	<b>Estimate</b>
2023	1		
<b>2023</b>		<b>Total</b>	<b>\$0</b>

(\$000)

<b>Year</b>	<b>Item</b>	<b>Description</b>	<b>Estimate</b>
2024	1		
<b>2024</b>		<b>Total</b>	<b>\$0</b>



## Appendix D Budgeted Expenditures Accommodated in LTFP

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### Water\_S2\_V1

### Asset Management Plan



Water First year of expenditure projections **2015** (financial yr ending)

#### Asset values at start of planning period

Current replacement cost	\$12,964 (000)
Depreciable amount	\$12,964 (000)
Depreciated replacement cost	\$5,633 (000)
Annual depreciation expense	\$243 (000)

Calc CRC from Asset Register

\$0 (000)

This is a check for you.

#### Operations and Maintenance Costs for New Assets

Additional operations costs	1.93%
Additional maintenance	0.60%
Additional depreciation	1.87%

% of asset value

Planned renewal budget (information only)

You may use these values calculated from your data or overwrite the links.

#### Planned Expenditures from LTFP

##### 20 Year Expenditure Projections

Note: Enter all values in current **2015** values

Financial year ending	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000
<b>Expenditure Outlays included in Long Term Financial Plan (in current \$ values)</b>										
<b>Operations</b>										
Operations budget	\$251	\$251	\$251	\$251	\$251	\$251	\$251	\$251	\$251	\$251
Management budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
AM systems budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total operations</b>	\$251	\$251	\$251	\$251	\$251	\$251	\$251	\$251	\$251	\$251
<b>Maintenance</b>										
Reactive maintenance budget	\$77	\$77	\$77	\$77	\$77	\$77	\$77	\$77	\$77	\$77
Planned maintenance budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Specific maintenance items budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total maintenance</b>	\$77	\$77	\$77	\$77	\$77	\$77	\$77	\$77	\$77	\$77
<b>Capital</b>										
Planned renewal budget	\$588	\$588	\$588	\$588	\$588	\$588	\$588	\$588	\$588	\$588
Planned upgrade/new budget	\$42	\$42	\$42	\$42	\$42	\$42	\$42	\$42	\$42	\$42
<b>Non-growth contributed asset value</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Asset Disposals</b>										
Est Cost to dispose of assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Carrying value (DRC) of disposed assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Additional Expenditure Outlays Requirements (e.g from Infrastructure Risk Management Plan)</b>										
Additional Expenditure Outlays required and not included above	2015 \$000	2016 \$000	2017 \$000	2018 \$000	2019 \$000	2020 \$000	2021 \$000	2022 \$000	2023 \$000	2024 \$000
Operations	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital Renewal	to be incorporated into Forms 2 & 2.1 (where Method 1 is used) OR Form 2B Defect Repairs (where Method 2 or 3 is used)									
Capital Upgrade	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
User Comments #2										
<b>Forecasts for Capital Renewal using Methods 2 &amp; 3 (Form 2A &amp; 2B) &amp; Capital Upgrade (Form 2C)</b>										
Forecast Capital Renewal from Forms 2A & 2B	2015 \$000	2016 \$600	2017 \$600	2018 \$4,100	2019 \$600	2020 \$600	2021 \$600	2022 \$600	2023 \$600	2024 \$600
Forecast Capital Upgrade from Form 2C	\$360	\$0	\$0	\$0	\$0	\$1,810	\$0	\$0	\$0	\$0

## **Appendix E    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 F 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 organization'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 organization'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 organization'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 recognized 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 recognized 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 optimized 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 organizations 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, prioritizing 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 organization 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 councilors (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 \*