Gawler

Town of Gawler

Stormwater Asset Management Plan

Document Control	Asset Management Plan				
Document ID :					
Rev No	**Date**	**Revision Details**	**Author**	**Reviewer**	**Approver**
	11/08/2021	First Draft	WK	BD	SD

Contents

1.0 EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

Asset management planning is a comprehensive process ensuring delivery of services from infrastructure is financially sustainable.

Asset management provides strategic guidance in the planning, acquisition, operation and maintenance, renewal and disposal or assets. Its objective is to maximise asset service delivery potential, manage related risks and costs over the asset life cycle.

This Asset Management Plan (AM Plan) details information about stormwater infrastructure assets with actions required to provide an agreed level of service to the community in the most cost-effective manner while outlining associated risks and future improvement actions. The plan defines the services to be provided, how the services are provided and what funds are required to provide over the 2020-2039 year planning period. The Asset Management Plan will link to a Long-Term Financial Plan which typically considers a 10 year planning period.

This plan covers stormwater assets under the care, control and ownership of the Town of Gawler and outlines expenditure required in order to effectively manage network service levels into the future to facilitate effective and safe stormwater disposal throughout the Council area through its extensive drainage network.

The Stormwater Asset Management Plan is also required to support Council's Long Term Infrastructure and Asset Management Plan (LTIAMP), meet regulatory requirements of the Local Government Act 1999 and deliver growth goals identified in the Town of Gawler Community Plan 2030+.

The Asset Management Plans have been prepared using NAMS Plus financial modelling and reporting provided by Institute of Public Works Engineers of Australasia (IPWEA), which is considered to be best industry practice. The Asset Management Plans have also been prepared in 2021 following the latest audited financial statements of the Council as recommended by NAMS Plus financial modelling and therefore financial year 2020/21 is considered the first year of the Asset Management Plans.

1.2 Asset Description

The Stormwater Drainage Assets network comprises:

- Pipes
- Pits
- Stormwater Quality Improvement Devices
- Headwalls
- River Outfalls
- Channels
- Detention Basins
- Flood mitigation levee banks and infrastructure along Gawler Rivers have been excluded from this plan as they will be managed under Gawler River Flood Management Authority (GRFMA).

The above infrastructure assets have significant total renewal value estimated at $81 million.

1.3 Levels of Service

Council's present funding levels in the Long Term Financial Plan (LTFP) are sufficient to continue to provide existing services at current service levels over the next 10-year period by renewing and maintaining existing assets and maintaining contributed assets being received from new land developments, however, are not enough for new and upgrade works and operation and maintenance cost arising from new and upgrade works.

The main service consequences of the Planned Budget are:

- There will be no change to existing flood risk for properties identified in various flood studies undertaken by the GRFMA for the Gawler River and by Council as part of Gawler & Surrounds Stormwater Management Plan (in development) & Smith Creek Stormwater Management Plan (in development).
- Stormwater ponding on some roads can create inconvenience to road users as the existing underground drainage network does not extend across the entire urban area and has limited capacity.
- Pollutants enter watercourses in absence of stormwater quality improvement devices in the drainage system.

1.4 Future Demand

The main demands for new services are created by:

- New land developments to meet population growth by 1% to 2% per annum,
- Legislative requirements to improve water quality prior to discharge into riverine environments,
- Existing systems which have limited capacity to dispose of surface water run-off, which can create nuisance ponding and safety hazards as well as lead to breakout flooding into private properties,
- Actions to mitigate climate change.

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

- Ensure new land divisions have stormwater drainage systems that can manage discharge safely.
- Accommodate water sensitive urban design.
- Upgrade existing drainage network and create new drainage networks on a priority basis.

1.5 Lifecycle Management Plan

1.5.1 What does it Cost?

The forecast lifecycle costs necessary to provide the services covered by this AM Plan includes operation, maintenance, renewal, acquisition, and disposal of assets. Although the AM Plan may be prepared for a range of time periods, it typically informs a Long-Term Financial Planning period of 10 years. Therefore, a summary output from the AM Plan is the forecast of 10 year total outlays, which for the stormwater drainage assets service is estimated as $20,173,398 or $2,017,340 on average per year.

1.6 Financial Summary

1.6.1 What we will do

The estimated available funding for the 10 year period is $17,535,600 or $1,753,560 on average per year as per the Council's Long Term Financial Plan or Planned Budget (LTFP). This is 86.92% of the cost to sustain the current level of service at the lowest lifecycle cost.

The available funds to invest in Stormwater infrastructure is limited to only the provision of funds in the LTFP. Informed decision making is reliant on the AM Plan emphasising the consequences of planned budgets on the service levels provided and risks associated.

According to LTFP, the Council has an annual financial capacity of approximately $3,000,000 for new asset acquisitions/upgrades across all asset classes. There is an exception that $40 million has been allocated in LTFP for two year period (2027 & 2028) for an iconic project investment (ie Karbeethan Reserve Master Plan implementation). It is assumed that only $400,000 is available for new stormwater assets acquisitions/upgrades, $1,600,000 for transport assets, $400,000 for open space assets, $300,000 for buildings

assets and $300,000 for other plant/equipment and IT assets. These proportions are based on an review of the Council's expenditure on acquisition (new assets and upgrade works) requirements on each asset class in the recent years. Comparatively a bigger portion of $1.6m has been allocated for transport asset class because more funding is needed for new footpaths, walking & cycling paths and kerb & water table and upgrading of old road pavements and bridge structures, noting this is the largest asset class also.

However the LTFP allows for some flexibility in allocating $3m on any asset class based on the priority of new and upgrade works for any given financial year.

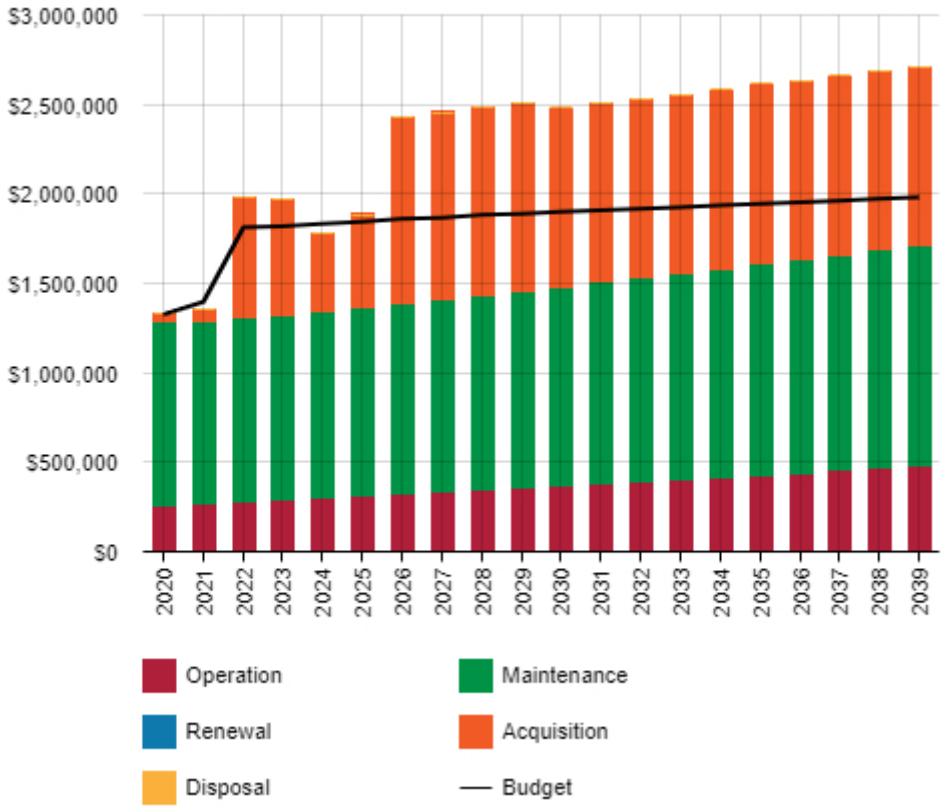
The planned budget for stormwater drainage assets leaves a shortfall of $263,780 on average per year of the forecast lifecycle costs required to provide services in the AM Plan compared with the Planned Budget currently included in the Long-Term Financial Plan. This shortfall is due to the new and upgrade works identified in LTIAMP and subsequent operation and maintenance cost needed for such new and upgrade assets. However, the LTFP has the planned budget for existing asset replacements and renewals identified in LTIAMP. The asset renewal funding ratio is 100% and the overall financial position is shown in the figure below.

There are non-discretionary asset acquisitions and upgrades in the LTIAMP for stormwater assets – They are aquifer storage and recovery system and wetlands creating under Southern Urban Areas Infrastructure Deed, the remainder is discretionary.

Priority funding from $3million will be on non-discretionary capital projects and the rest on the discretionary projects on a priority basis as determined by the council.

Creation of new assets results in additional O&M costs. For existing asset upgrades, O&M cost increase is expected to be low.

Forecast Lifecycle Costs and Planned Budgets



Note: All figure values are shown in 2021 dollars.

Due to the long service life of stormwater assets and current condition, there are no significant renewal costs forecasted in this Stormwater Asset Management Plan.

Stormwater drainage assets funding will provide for the following:

- Operation, maintenance and renewal of existing stormwater drainage assets to meet service levels set by annual budgets.
- Operation, maintenance of contributed stormwater drainage assets to meet service levels set by annual budgets.
- Upgrading some of the existing under capacity drainage network sections as identified in draft Gawler & Surrounds Stormwater Management Plan (GSSMP) and draft Smith Creek Stormwater Management Plan (SCSMP) on priority basis (small to medium size projects).
- Southern Urban Area stormwater harvest and distribution system and miscellaneous drainage improvement works within the 10 year planning period.

1.6.2 What we cannot do

We currently do **not** allocate enough funding in Council's LTFP (i.e. black budget line in the above figure) to provide all new stormwater assets sought in Council's Long Term Infrastructure and Asset Management Plan (LTIAMP). New stormwater assets (i.e. acquisitions), and services these assets provide, that currently cannot be delivered under current funding levels include:

Key underfunded projects:

- Willaston drainage upgrade Stage 2
- Upgrading of all existing under capacity systems. Major projects as identified in draft Gawler & Surrounds Stormwater Management Plan (GSSMP) and draft Smith Creek Stormwater Management Plan (SCSMP)

Key unfunded projects:

- Gawler Racecourse Detention Basin (identified in the draft Gawler and Surrounds Stormwater Management Plan)
- Milne Road drainage upgrade (identified in the draft Smith Creek Stormwater Management Plan)

The above new stormwater assets require funding levels above planned funding levels for the creation of new stormwater assets over the next 10 year period. It is also noted both of the Council's draft Stormwater Management Plans (GSSMP & SCSMP) identify stormwater infrastructure to be upgraded in the future and these assets are not currently included in the Council' LTFP.

There are non-discretionary assets in the LTIAMP under stormwater infrastructure category. They are listed in the Southern Urban Area Infrastructure deed, which includes a Gordon Road detention basin, recycled water scheme and wetland project, remainder is discretionary.

Priority funding from $3million will be on non-discretionary capital projects and the rest on the discretionary projects on a priority basis as determined by the Council.

There are new assets which need additional O&M costs. For existing asset upgrades, O&M cost increase is not significant.

1.6.3 Managing the Risks

Our present budget levels are sufficient to continue to manage risks in the medium term.

The main risk consequences are:

- Delay providing infrastructure for protection from flooding/ponding and minimising nuisance from storm events to the community.
- Postpone upgrades which would improve/ increase assets function/ capacity.
- Delay works for improving stormwater quality before discharging to natural water courses.

- Delays with implementation of Stormwater Management Plan actions.

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

- Temporary road closures when flooding;
- Temporary barriers installed to prevent property flooding;
- Cleaning and clearing of underground network/ overland flow paths at identified critical locations before likelihood of storm events.
- Implement localised drainage network improvements in response to customer enquiries and drainage investigations.
- Inform risk reduction in future developments proposed.
- Proactive maintenance practices such as side entry pit cleaning.

1.7 Asset Management Practices

The Town of Gawler manages its assets using the following systems:

- AssetMaster software for stormwater and transport infrastructure asset management,
- Civica Authority software for financial management and property and open space asset management,
- Microsoft Office software also for open space infrastructure asset management,
- Tree Plotter software for tree management,
- Uniqco software for Plant & Equipment Fleet Management,
- Content Manager Software for record management,
- Skytrust software for risk management.

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

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

The Asset Register data was used to forecast the renewal costs for this Asset Management Plan.

1.8 Monitoring and Improvement Program

AM Plans are considered to be living documents and where improvements to asset management practices are identified these should be documented in the Council's AM Plans. The following items have been identified in the development of the Stormwater Asset Management Plan in order to improve asset management practices:

- Review and agree to an affordable Customer Level of Service,
- Review the Demand Management Plan, Risk Management Plan and Infrastructure Resilience Approach,
- Review asset renewal ranking criteria and new asset priority ranking criteria,
- Review capital expenditure during the Council annual budget preparation and amend to recognise any changes in service levels and/or resources available to provide those services,
- Value assets annually with a book value adjustment and five yearly with a unit rate review consistent with financial auditor requirements,

- Financial Statements and projections to be reviewed and revised based on cost updates after periodical asset financial valuation,
- Review stormwater assets mapped on the corporate GIS system and update layer data where required,
- Schedule a stormwater assets condition audit (such as CCTV inspection) for critical assets in stages,
- Review Council constructed levee asset integrity inspection
- Schedule next update the Council's Stormwater Asset Management Plan based on a four year cycle.

2.0 Introduction

2.1 Background

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

It is to be read with reference to the other strategic documents including but not limited to:

- The Gawler Community Plan 2030+
- Long Term Financial Plan update 2021
- Long Term Infrastructure and Asset Management Plan 2020-2029
- Annual Business Plans 2020-2021 and 2021-2022
- Gawler (CT) Development Plan July 2019
- Gawler and Surrounds Stormwater Management Plan (in progress)
- Smith Creek Stormwater Management Plan (in progress)
- Gawler River Open Space Strategy 2009
- Gawler Urban Rivers Master Plan 2013
- Environmental Management Plan 2016
- Climate Emergency Action Plan (in progress)
- Stormwater Watercourse Management Policy
- Asset Management Policy
- Asset Capitalisation Policy
- Risk Management Policy

Current status of Asset Management in the Organisation

The Council's existing Stormwater Assets Management Plan was adopted by the Council in 2013 and is required to be reviewed and updated.

The infrastructure assets covered by this AM Plan include Pipes, Pits, Stormwater Quality improvement Devices, Headwalls, Channels and Detention Basins.

For a detailed summary of the assets covered in this AM Plan refer to Table in Section 5.

These assets are used to provide safe and effective stormwater disposal services.

The infrastructure assets included in this AM Plan have a total replacement value of $81,499,633.

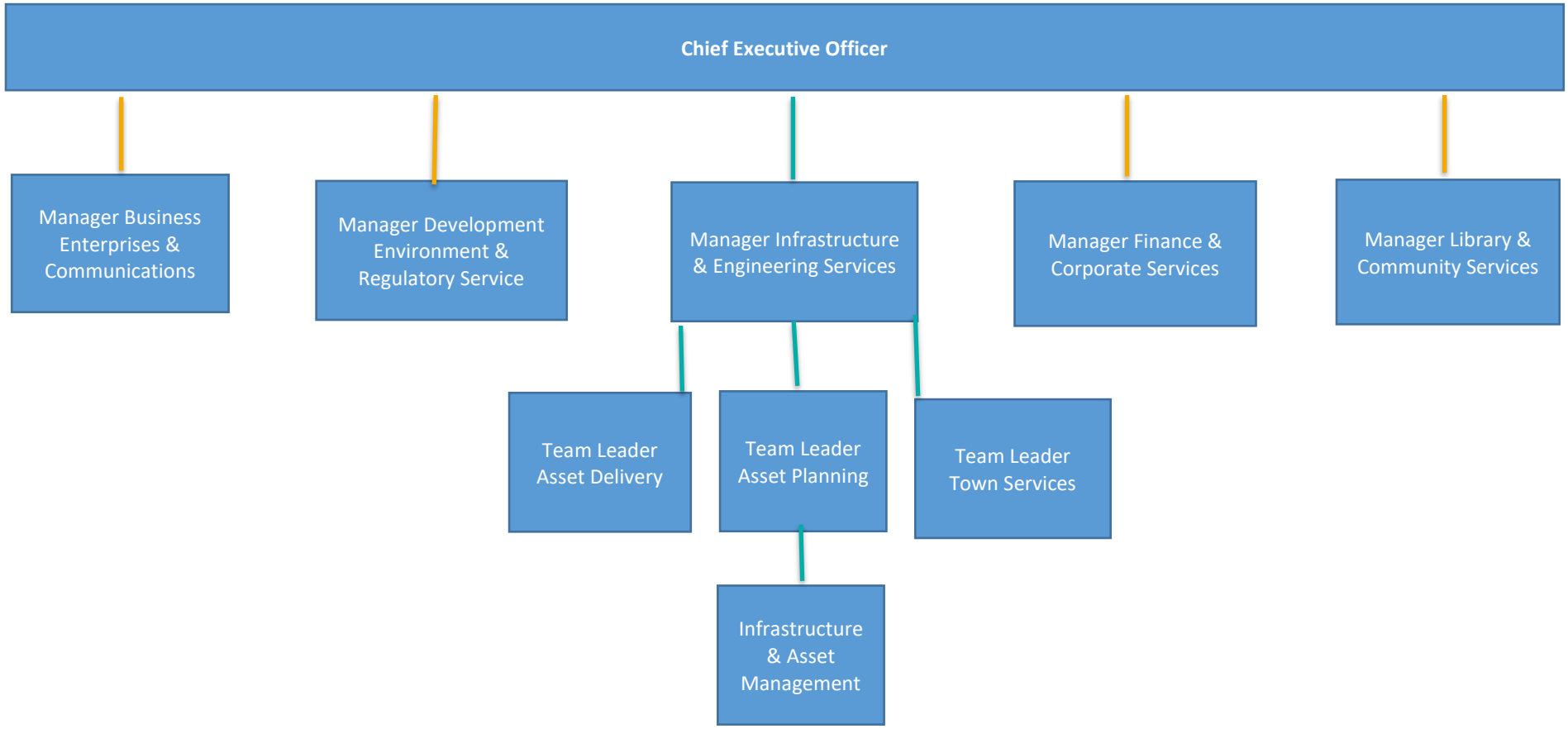
Key stakeholders in the preparation and implementation of this Asset Management Plan are shown in Table 2.1.

Table 2.1: Key Stakeholders in the AM Plan

Key Stakeholder	Role in Asset Management Plan
Council Members	■ Represent needs of community/shareholders, ■ Allocate resources to meet planning objectives in providing services while managing risks, ■ Ensure services provided by assets are financially sustainable, ■ Approval of the AM Plan.
Executive Management	■ Allocate required funds for the implementation of this AM Plan. ■ Oversee implementation of infrastructure planning, delivery and maintenance.
Council Engineering Staff	■ Programming and implementing capital works and making application for funds to meet standards set, within budget constraints.
Council Operation Staff	■ Programming and implementing maintenance works to meet standards set, within budget constraints.
Department for Infrastructure & Transport	■ Operational Instruction 20.1 (*Highways Act 1926*) for managing stormwater drainage under and on road networks under the care and control of the Commissioner of Highways.
Developers	■ Vesting of new stormwater assets in the Council.
External Parties	■ Service level expectations by ▪ Community residents & businesses; ▪ Tourist and Visitors (as occasional users); ▪ Neighbouring Councils; ▪ Emergency Services; ▪ Developers & Utility companies; ▪ Local Businesses and; ▪ Federal and State Government authorities & agencies (i.e. Environmental Protection Agency, Department for Environment and Water and others).

Council's organisational structure for service delivery from infrastructure assets is shown below.

Town of Gawler Organisational Structure for Service Delivery from Infrastructure Assets



2.2 Goals and Objectives of Asset Ownership

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

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

Key elements of the planning framework are

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

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

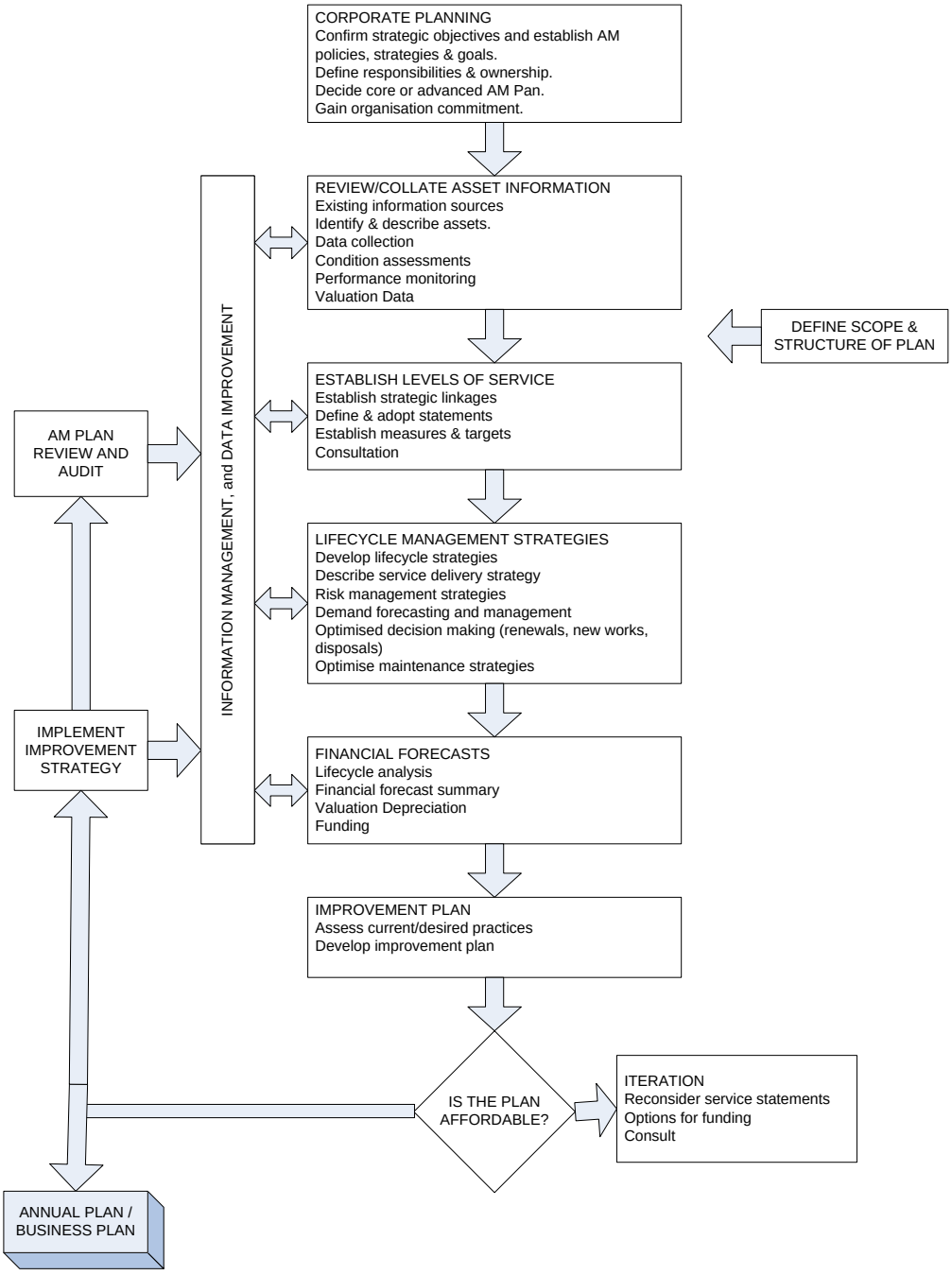
- International Infrastructure Management Manual 2015 [1]
- ISO 55000[2]- Asset Management

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

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

Road Map for preparing an Asset Management Plan

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



3.0 LEVELS OF SERVICE

3.1 Customer Research and Expectations

This AM Plan is prepared to facilitate consultation prior to adoption of levels of service by the Town of Gawler. Future revisions of the AM Plan will incorporate customer consultation on service levels and costs of providing the service. This will assist the Town of Gawler and stakeholders in matching the level of service required, service risks and consequences with the customer's ability and willingness to pay for the service.

We currently have no research on customer expectations. This will be investigated by conducting Customer Satisfaction Survey as a part of public consultation on this AM Plan.

Table 3.1 will summarise the results from the future Customer Satisfaction Survey.

Table 3.1: Customer Satisfaction Survey Levels

Performance Measure	Satisfaction Level				
	Very Satisfied	Fairly Satisfied	Satisfied	Somewhat satisfied	Not satisfied
How satisfied are you that Council is appropriately managing stormwater runoff in the Council area					
Do underground stormwater pipes function adequately to maintain traffic movements and access to properties on roads during rain events?	-	-	-	-	-
Do roadside swales function adequately to maintain traffic movements and access to properties on roads during rain events?	-	-	-	-	-
Are stormwater watercourses, wetlands and basins maintained to perform their function adequately?	-	-	-	-	-
How satisfied are you with stormwater water quality treatment in the Council?	-	-	-	-	-

3.2 Strategic and Corporate Goals

This AM Plan is prepared under the direction of the Town of Gawler vision, mission, goals and objectives.

Our vision is:

A liveable, cohesive, active, innovative and sustainable community.

Our mission is:

The Town of Gawler is committed to fostering a liveable urban environment, taking advantage of the area's natural beauty and accessibility to both Adelaide and the Barossa Valley. We enjoy a cohesive and active local community which Council is proud to support. Moving forward, the Town of Gawler recognises the serious impacts associated with Climate Change on our environment and are committed to more sustainable practices and enduring innovation in this regard.

Our values are:

Teamwork, integrity, inclusion, creativity and happiness.

Strategic goals have been set by the Town of Gawler. The relevant goals and objectives and how these are addressed in this AM Plan are summarised in Table 3.2 below. These goals and objectives are based on the Town of Gawler Community Plan 2030+.

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

Goal	Objective	How Goal and Objectives are addressed in the AM Plan
Managed and Sustainable Growth	Physical and social infrastructure to service our growing population and economy	Prepare plans for demand management, programs for new and renewal of stormwater assets.
To Respect, Protect and Nurture the Environment	Support development that respects the environment and considers the impacts of climate change	Remove pollutants from stormwater before entering watercourses. Incorporate water-sensitive urban design (WSUD) in new infrastructure projects where appropriate.
A Strong, Vibrant Community	Create a safe community environment. Be recognised as a 'best practice' Local Government organisation	Reduce risks from stormwater related hazards for the community. Balance service demand with available resources.

3.3 Legislative Requirements

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

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act 1999	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan and long term infrastructure and asset management plan supported by other asset management plans for sustainable service delivery.
Local Government (Financial Management and Rating) Amendment Act 2005	Impetus for the development of a Strategic Management Plan, comprising an (Infrastructure) Asset Management Plan and Long-term Financial Plan.
Environmental Protection Act SA 1993	An Act to provide for the protection of the environment, and for related purposes.
Planning, Development and Infrastructure Act 2016	An Act to provide for matters that are relevant to the use, development and management of land and buildings, including by providing a planning system to regulate development within the State, rules with respect to the design, construction and use of buildings, and other initiatives to facilitate the development of infrastructure, facilities and environments that will benefit the community.
Landscape SA Act 2019	Set the key framework for managing the state's land, water, pest plants and animals, and biodiversity across the state.

Work Health and Safety Act (2012) & Work Health and Safety Regulations (2012)	The Act and Regulations' objectives include: to secure the health, safety and welfare of persons at work.
South Australian Public Health Act 2011	Objectives include: to protect community from risk to public health from disease and injury and to maintain a healthy environment

3.4 Customer Values

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

Customer Values indicate:

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

Table 3.4: Customer Values

Service Objective:

Customer Values	Customer Satisfaction Measure	Current Feedback	Expected Trend Based on Planned Budget
No flooding of residential and commercial properties during storm events	Customer surveys & Complaints	Minimal number of complaints.	Remain reasonably constant.
All weather access during storm events	Customer surveys & Complaints	Minimal number of complaints.	Remain reasonably constant.
Nuisance from Localised ponding on roads during storm events	Customer surveys & Complaints	Moderate number of complaints related to walking and vehicle accessibility.	Without major capital expenditure this nuisance is not expected to improve.

3.5 Customer Levels of Service

The Customer Levels of Service are considered in terms of:

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

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

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

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

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

Table 3.5: Customer Level of Service Measures

Type of Measure	Level of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget
Condition	Drainage systems meet users' needs	Customer service requests relating to blocked drains	10 requests/ year	Likely to stay as current
	Confidence levels		Medium (Professional judgement supported by data sampling)	Medium (Professional judgement supported by data sampling)
Function	Drainage areas are appropriately serviced	Customer service requests relating to flooding property	5 requests/ year	Likely to stay as current
	Confidence levels		Medium (Professional judgement supported by data sampling)	Low (Professional Judgement with no data evidence)
Capacity	Drainage system capacity is appropriate. Provide service in accordance with the following design standards for stormwater underground drainage systems: 20% AEP (Annual Exceedance Probability) for residential areas (standard pits and pipes). 10% AEP for industrial areas. 5% AEP for town centre areas. 100-year ARI for overland flow paths. Ensure stormwater system has appropriate design capacity	Customer service requests relating to flooding property/ nuisance on roads.	10 requests/ year	Anticipated to increase due to infill developments
	Confidence levels		Medium (Professional judgement supported by data sampling)	Low (Professional Judgement with no data evidence)

3.6 Technical Levels of Service

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

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

- **Acquisition** – the activities to provide a higher level of service (e.g. creation of stormwater infrastructure from land developments and replacing a pipeline with a larger size) or a new service that did not exist previously.
- **Operation** – the regular activities to provide services (e.g. opening hours, plant/equipment costs, utility costs, CCTV inspections, overheads etc.).
- **Maintenance** – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. pipeline cleaning and repairing damaged stormwater pits and pipes).
- **Renewal** – the activities that return the service capability of an asset up to that which it had originally provided (e.g. pipeline replacement).

Asset managers should plan, implement and control technical service levels to influence the service outcomes.[3]

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

Table 3.6: Technical Levels of Service

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
TECHNICAL LEVELS OF SERVICE				
Acquisition	Drainage systems meet community needs and best industry practice	Long Term Financial Plan Budget Allocation	The Acquisitions that can be provided within the current Planned Budget constraints	As recommended in the Long Term Infrastructure & Asset Management Plan (LTIAMP)
		Budget	$330,900 (ten year average from LTFP estimate)	$657,600 (ten year average from LTIAMP)
Operation	Maintain stormwater drainage network assets clear of blockages	Cleaning frequency	The operational activities that can be undertaken within the current Planned Budget constraints; GPT cleaning and periodic cleaning of side pits at critical locations	Operations expenditure increase due to additional assets being created (i.e. associated with growth & capital works) and the ageing of existing assets
	Drainage systems meet community needs	Condition and defect survey frequency	Reactive Inspections undertaken when required and in response to CRM's	Due to aging condition monitoring is required for a portion of assets annually

[3] IPWEA, 2015, IIMM, p 2|28.

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
		Budget	$298,731	$306,149 (ten year average forecast from NAMS+ modelling)
Maintenance	Maintain stormwater drainage network assets to achieve planned service life	Stormwater infrastructure is repaired in a timely manner with minimal disruption to the community	Annual maintenance expenditure in accordance with annual budget constraints	Annual maintenance budget increase due to additional assets being created (i.e. associated with growth & capital works) and the aging of existing assets.
		Budget	$1,028,329	$1,053,591 (ten year average forecast from NAMS+ modelling)
Renewal	Sustain drainage infrastructure to existing condition	Condition of stormwater systems is adequate to maintain function without obstructions	Renewal activities undertaken within the current Planned Budget constraints and condition audit recommendations for lowest Whole of Life cost	Renewal activities undertaken in accordance with Council's Long Term Infrastructure and Asset Management Plan budget allocations.
		Budget	$95,600	10 year Average $95,600 in LTIAMP
Disposal	Disposal of assets no longer in use	Identified assets and cost of disposals after investigations	Annual amount spent on Activity	Annual amount spent on Activity
		Budget	No disposals Planned.	No disposals Planned.

Note: * Current activities related to the annual Planned Budget.

** Forecast required performance related to forecast lifecycle costs.

Funding for operation and maintenance of contributed new assets due to new land development growth has also been included in the LTFP. There is an increase in asset operation and maintenance costs expected over the next 10 year period due to Council's new and upgrade capital works.

It is important to monitor the service levels provided regularly to ensure sustainable ongoing performance of stormwater assets. The current performance is influenced by work efficiencies, technology, and customer priorities, which may all change over time. Review and establishment of the agreed position that achieves a balance between service, risk and cost is essential.

4.0 FUTURE DEMAND

4.1 Demand Drivers

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

4.2 Demand Forecasts

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

4.3 Demand Impact and Demand Management Plan

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

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

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

Table 4.3: Demand Management Plan

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
Population growth	Increased from 17,800 in 2001 to 23,583 persons in 2016	1% to 2% annual increase	Asset availability, capacity & function issues in land developments at built-in areas and greenfield areas. Demand for upgrades/ new assets is likely to be increased significantly	Combination of managing existing assets, upgrading existing assets and providing new assets funded by various parties
Population density increase	Create smaller land allotments that have small private open spaces/ backyards	Ongoing	As above	As above
Change of land use	Urbanisation of rural living areas	Increase urbanisation	Demand for more stormwater infrastructure assets in new urban areas	As above
Action on climate change	Design drainage systems in accordance with best industry practice	Design system allowing for increased rainfall intensity in accordance with the following – - 20% AEP for residential areas	Asset capacity & function issues. Demand for capacity upgrades in existing systems and also new assets	Upgrading existing assets and providing new assets funded by various parties. Use of recycled materials and products

		- 10% AEP for commercial areas - 5% AEP for town centre area.		
Environmental considerations	Untreated stormwater run-off from roads enter natural water courses	Need to install water quality improvement devices at various strategic stormwater discharge points as identified in various SMPs under development	Degradation of downstream receiving environments and watercourse assets	Upgrade existing assets at the end of useful lives and/ or provide new assets to protect downstream receiving environments and watercourses

4.4 Asset Programs to meet Demand

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

Acquiring new assets will commit the Town of Gawler to ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs for inclusion in the LTFP (Refer to Section 5).

4.5 Climate Change and Adaption

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

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

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

Opportunities identified to date for management of climate change impacts on existing assets are shown in Table 4.5.1.

Table 4.5.1 Managing the Impact of Climate Change on Assets

Climate Change Description	Projected Change	Potential Impact on Assets and Services	Management
Storm Intensity	More extreme weather events	Potentially more localised flooding	Ensure stormwater drainage system upgrades and maintenance of drains is included in funded programs
Rainfall extremes	Heavy precipitation exceeds soil infiltration capacity and increases surface runoff	Current systems are under capacity	Ensure stormwater drainage system upgrades and maintenance of drains are included in programs and based on flood modelling and climate change considerations in Stormwater Management Plans (in progress)

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

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

Table 4.5.2 summarises some asset climate change resilience opportunities.

Table 4.5.2 Building Asset Resilience to Climate Change

New Asset Description	Climate Change impact These assets?	Build Resilience in New Works
Underground stormwater infrastructure and outlet structures	More extreme weather events, capacity to service higher intensity storm events	New or upgraded underground pipes have capacity that allows for increased rainfall intensity in accordance with best industry practice/standards
Open channels / Swales	More extreme weather events, capacity to service higher intensity storm events	New or upgraded open channels and swales have capacity that allows for increased rainfall intensity in accordance with best industry practice/standards.
Detention / Retention Basins	More extreme weather events, capacity to service higher intensity storm events and associated volumes	New or upgraded basins have capacity that allows for increased rainfall intensity and volumes in accordance with best industry practice/standards
Watercourses	More extreme weather events, higher intensity storm events and erosion	New or upgraded watercourses have capacity that allows for increased rainfall intensity and have appropriate erosion control measures in accordance with best industry practice/standards
Water quality improvement devices	More extreme weather events, capacity to service frequent flows, volumes and pollutant removal function	Water quality improvement devices are sized to current industry practice/standards allowing for climate change impacts on rainfall intensity, frequency of flows, volumes, and pollutant removal.

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

5.0 LIFECYCLE MANAGEMENT PLAN

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

5.1 Background Data

5.1.1 Physical parameters

The assets covered by this AM Plan are shown in Table 5.1.1.

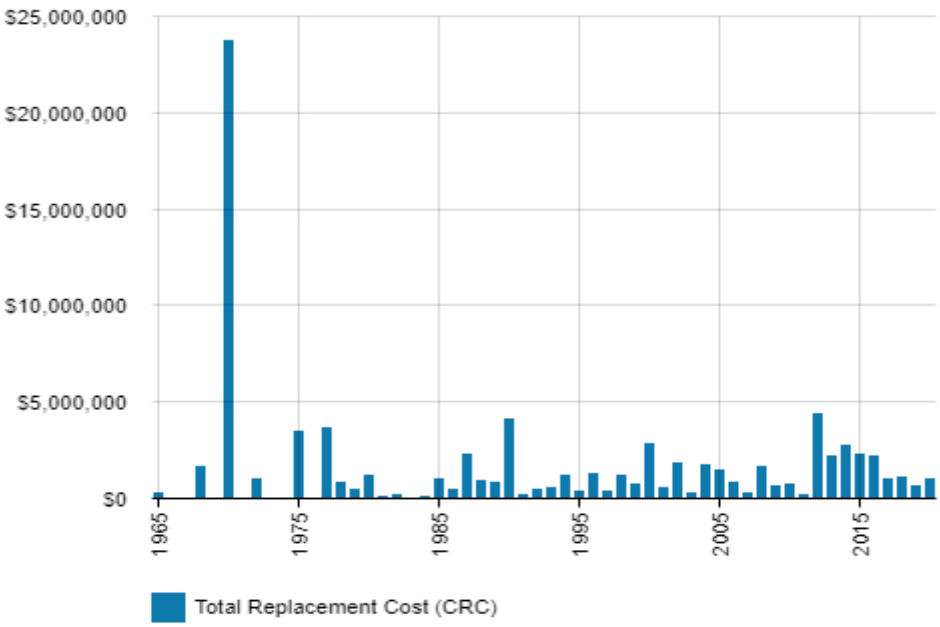
These assets include Pipes, Pits, Stormwater Quality improvement Devices, Headwalls, River Outfalls, Channels and Detention Basins.

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

Table 5.1.1: Assets covered by this Plan

Asset Category	Dimension	Replacement Value ($)
Pipes	126.20 km	$54,416,799
Box Culverts	2.99 km	$6,590,867
Open Channels	5.75 km	$3,382,978
Pits & Water Quality Improvement Devices	5279 nos.	$17,108,989
Detention/Retention Basins	55 nos.	-
TOTAL		**$81,499,633**

Figure 5.1.1: Asset Age Profile



Note: All figure values are shown in 2021 dollars.

As can be seen in this graph, the majority of Council's stormwater network was/estimated to be constructed in the 1970s. Also, there were assets constructed in early part of 1900 and they are indicated as constructed in 1965 in the graph for its clarity on time axis. Stormwater pipe and pits assets have long useful lives. Expected service life of a steel reinforced cement pipe is 100 years and 70 years for a concrete pit. Due to the long anticipated life of stormwater assets, it is therefore anticipated that renewal of these assets based on the condition will not be a major challenge facing Council over the term of this Asset Management Plan. However, assets may need to be upgraded to overcome the capacity deficiencies following the outcomes of the various Stormwater Management Plans underway and to manage the impacts of climate change associated with increase rainfall intensity.

5.1.2 Asset capacity and performance

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

Table 5.1.2: Known Service Performance Deficiencies

Location	Service Deficiency
Underground Pipe Networks	The physical condition of the stormwater asset may have deteriorated and will not achieve its service potential and estimated remaining life. River outfalls sections, Pre-1985 Gawler Council area – subject to CCTV inspection etc.
Underground Pipe Networks	Some of the pipe network sections are under capacity resulting in over topping and risk to adjoining assets/properties. Part of the drainage network on local low-lying area built before 1990. Also identified in the SMP.
Open Channels	Built-up silting and debris in earth channels
Detention/Retention Basins	Built-up silting and debris.

The above service deficiencies were identified from inspections undertaken by Town of Gawler staff and from the draft Gawler and Surrounds Stormwater Management Plan where a map of pipe infrastructure with less than 20% AEP capacity (i.e. I in 5 year ARI) has been prepared.

5.1.3 Asset condition

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

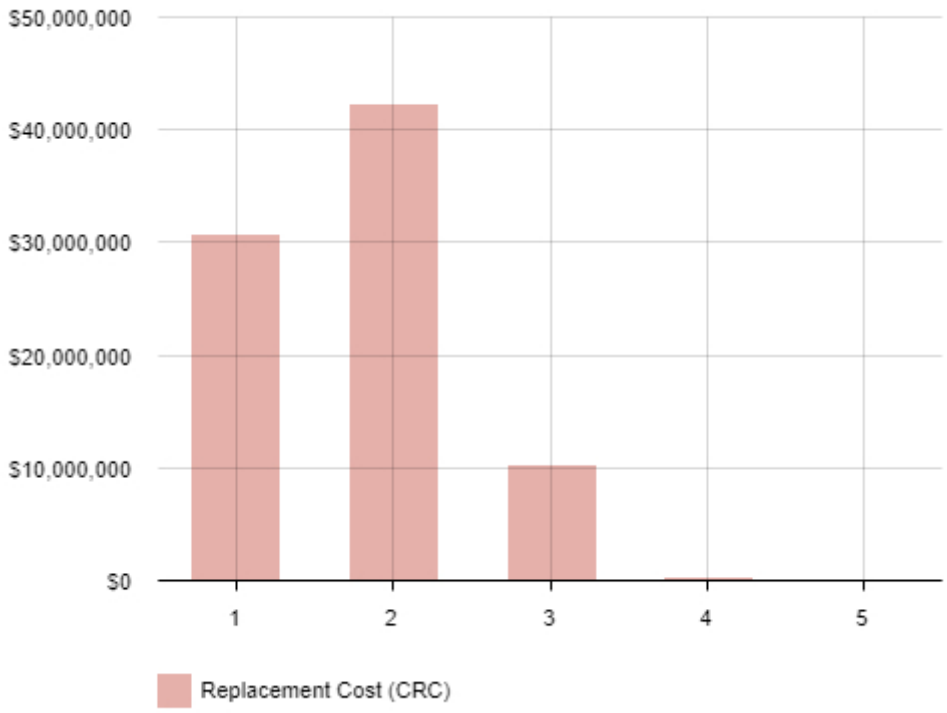
Table 5.1.3: Simple Condition Grading Model

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

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

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

Figure 5.1.3: Asset Condition Profile



Asset Condition has been derived from the estimated useful Life and the consumed life of these long life assets which last 70 – 100 years.

Note: All figure values are shown in 2021 dollars.

5.2 Operations and Maintenance Plan

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

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

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

Table 5.2.1: Maintenance Budget Trends

Year	Operation and Maintenance Budget $
2018/19	$1,207,080
2019/20	$1,258,889
2020/21	$1,282,599

Maintenance budget levels are considered to be adequate to meet projected service levels, which may be less than or equal to current service levels. Where maintenance budget allocations are such that they will result in

a lesser level of service, the service consequences and service risks have been identified and are highlighted in this AM Plan and service risks considered in the Infrastructure Risk Management Plan.

Maintenance work programs

The defects that are identified from routine asset inspections and mainly from customer requests are rectified under reactive maintenance programs.Assessment and priority of reactive maintenance is undertaken by staff using experience and judgement.

Council plans to operate and maintain the Stormwater Assets network to achieve the following strategic objectives.

- Have up to date information on the age and condition of existing drainage infrastructure,
- Ensure all council owned infrastructure is managed and maintained in a sustainable manner to provide a quality experience for our community,
- Ensure the Stormwater assets network is maintained at a safe and functional standard as set out in this AM Plan.
- Develop water-sensitive urban design (WSUD) requirements for the design, function and maintenance spaces,
- Identify flood mitigation measures and to integrate stormwater harvesting and reuse capabilities in existing and new growth areas,
- Generate a holistic approach towards dealing with and utilising stormwater.

Asset hierarchy

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

The service hierarchy is shown is Table 5.2.2.

Table 5.2.2: Asset Service Hierarchy

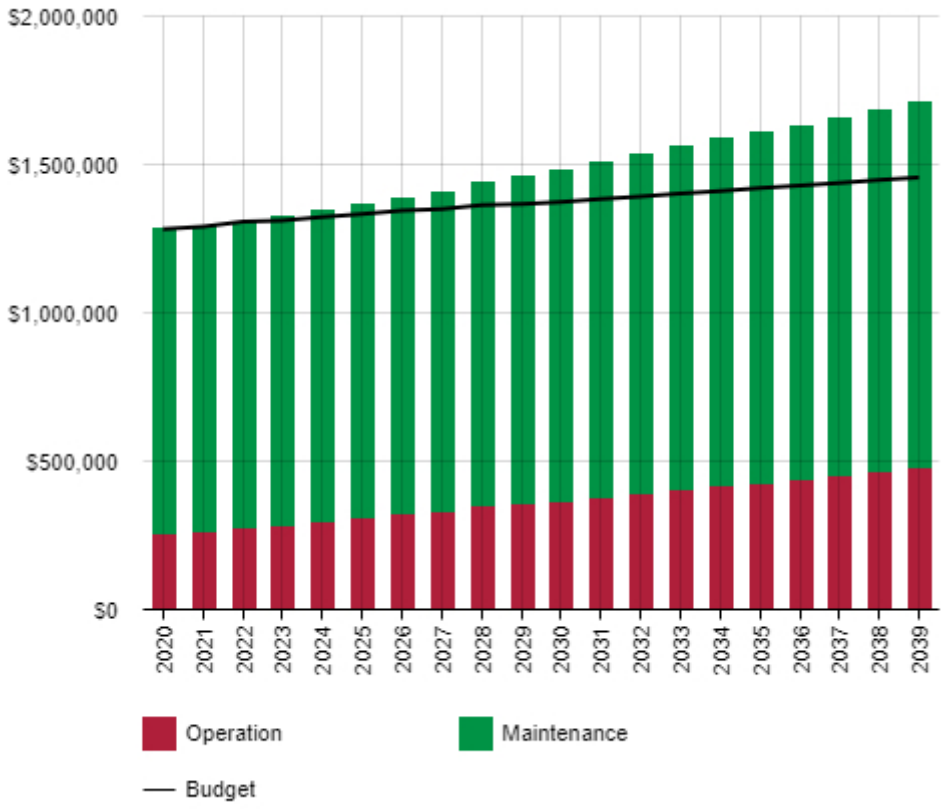
Service Hierarchy	Service Level Objective
Drainage network at Town Centre Area	Underground drainage system to 5% AEP standard for public safety, convenience and comfort. Roads are designed to allow for holding stormwater during more significant rain events - 1% AEP
Drainage network at Commercial Areas outside of the Town Centre	Underground drainage system to 10% AEP standard for public safety and convenience. Roads are designed to allow for holding stormwater during more significant rain events - 1% AEP
Drainage networks at major roads	Underground drainage system to 20% AEP standard for public safety and convenience. Roads are designed to allow for holding stormwater during more significant rain events - 1% AEP
Drainage networks at local roads	Underground drainage system to 20% AEP standard for public safety and convenience. Roads are designed to allow for holding stormwater during more significant rain events - 1% AEP
Drainage pits at localised ponding areas, intersections and critical locations	Minimise water ponding at low points for public safety, convenience and comfort

GPT at outfall locations	Improve water quality entering rivers as per locations identified in SMPs once they are adopted.

Summary of forecast operations and maintenance costs

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

Figure 5.2: Operations and Maintenance Summary



Note: All figure values are shown in 2021 dollars.

The anticipated increase in operations and maintenance is being driven by the need to manage the new assets being constructed as well as the increased requirements due to the aging assets.

Figure 5.2 shows that the projected Operation and Maintenance (O&M) expenditure is gradually increasing over the 20 year period above the budget amount in the LTFP. The LTFP has allowance for O&M costs associated with future assets received from growth over the next 10 year period associated with land development, however due to identified assets acquisitions and upgrade works in the LTIAMP, the O&M cost is increasing at 1.63% on capital cost. This percentage is the ratio of current asset O&M cost to asset replacement cost. Council will need to consider whether it seeks to find extra funding to cover the projected O&M expenditure and alternative options to minimise cost increases or maintain the O&M expenditure at current level by reducing the level of service and deferring acquisitions and upgrades identified in the LTIAMP.

In the LTIAMP, there are two types of capital works identified as non-discretionary and discretionary. The forecast annual average increase of O&M cost for non-discretionary assets is $9,382 whereas the total annual average increase is $34,316.

There are new assets which need additional O&M costs. For existing asset upgrades, O&M cost will not increase.

Deferred maintenance (i.e. works that are identified for maintenance and unable to be funded) are included in the risk assessment and analysis in the infrastructure risk management plan.

5.3 Renewal Plan

Renewal is major capital work which does not significantly alter the original service provided by the asset, but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an acquisition resulting in additional future operations and maintenance costs.

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

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

The typical useful lives of assets used to develop projected asset renewal forecasts are shown in Table 5.3. Asset useful lives were last reviewed in 2016.[5]

Table 5.3: Useful Lives of Assets

Asset (Sub)Category	Useful life
Pipes	100 years
Box Culverts	70 years
Concrete Channels	70 years
Pits & Water Quality Improvement Devices	70 & 50 years
Detention/Retention Basins	150 years

The estimates for renewals in this AM Plan were based on the asset register and investigations undertaken on localised issues on stormwater drainage network. Mainly the localised issues are due to functional and under capacity issues of the existing network.

5.3.1 Renewal ranking criteria

Asset renewal is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (e.g. replacing a section of pipes that has defects), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. condition of a water quality improvement device).[6]

[5] CR16/31408 - Gawler Valuation Review Report Version 8 dated 29-06-2016 by Asset Engineering
[6] IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.

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

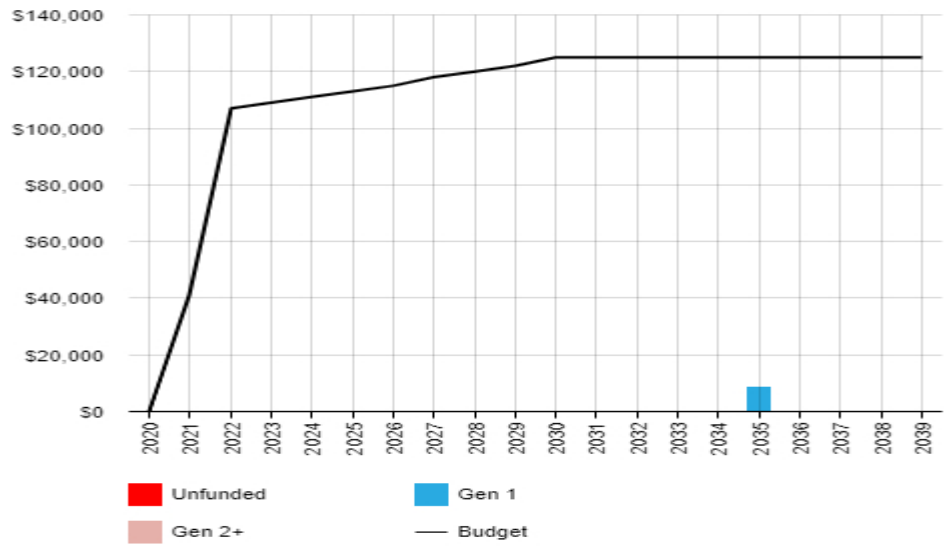
- Have a high consequence of failure,
- Have high use and subsequent impact on users would be significant,
- Have higher than expected operational or maintenance costs, and
- Have potential to reduce life cycle costs by replacement with a modern equivalent asset that would provide the equivalent service.[7]

Asset renewal programs are prepared based on the physical condition of the assets and risk associated with it. Future condition audits will consider asset's physical condition, risk associated with the asset and the criticality of the asset's service when prioritising asset renewals for preparing renewal works program.

5.4 Summary of future renewal costs

Forecast renewal costs are projected to increase over time if the asset stock increases. The forecast costs associated with renewals are shown relative to the proposed renewal budget in Figure 5.4. A detailed summary of the forecast renewal costs is shown in Appendix D.

Figure 5.4: Forecast Renewal Costs



Note: All figure values are shown in 2021 dollars.

Figure 5.4 shows the projected capital renewal expenditure over 20 year planning period according to the asset remaining life prediction based on the asset average useful life as there is no condition assessment data on stormwater network assets. Projected asset renewal in 2035 is the two side entry pits installed in 1965 at a replacement cost of $8765. However renewal is subject to future condition audit outcomes.

Council has not identified assets for renewal based on the condition. Future asset condition assessments will determine the extent of any asset renewal works. Noting this audit will be undertaken in the future (likely to be from 2023/24), this has been highlighted in the risk management planning section of this AMP for further consideration. However, there is a planned budget for renewal works in LTFP which is used to repair and replace damage pipes, pit, pit lids, headwalls for ongoing basis. Also, this funding can be used for renewal of asset failures at extreme weather events or minor improvements on existing stormwater drainage systems.

[7] Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

Deferred renewal and replacement (i.e. 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 capital works program will be accommodated in the LTFP. This is further discussed in Section 7.

5.5 Acquisition Plan

Acquisition reflects a new asset that did not previously exist or works which will upgrade or improve an existing asset beyond the existing capacity. They may result from growth, demand, social or environmental needs. Assets may also be donated to the Town of Gawler (i.e. land developments and infrastructure deeds).

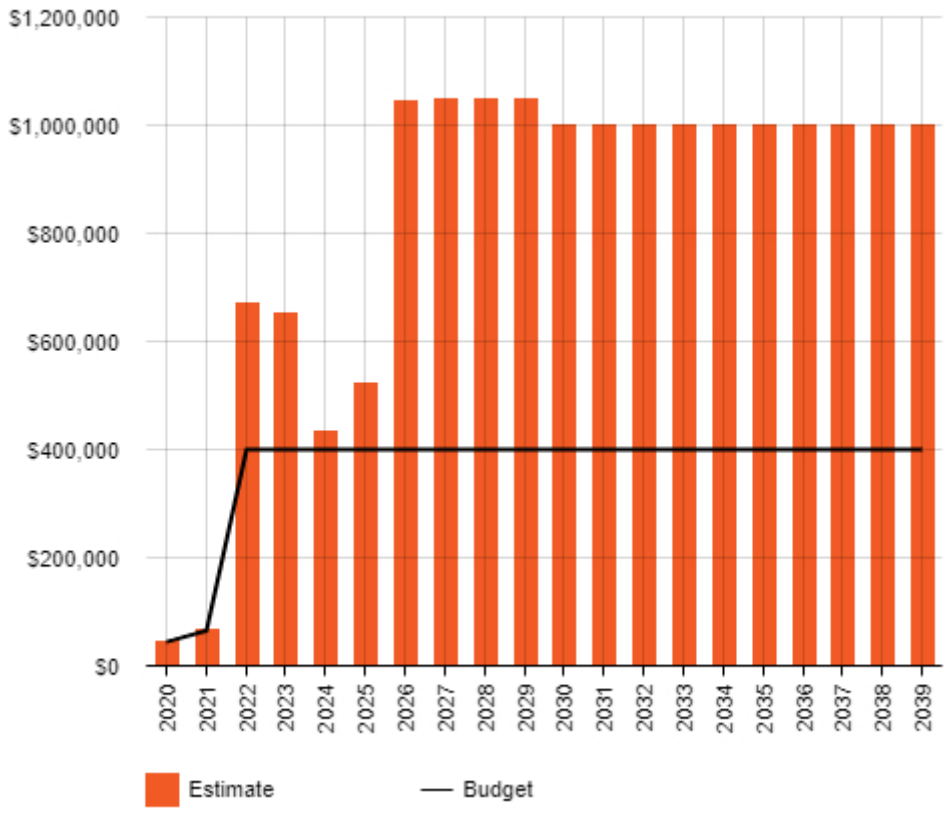
5.5.1 Selection criteria

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

5.5.2 Summary of future asset acquisition costs

Forecast acquisition asset costs are summarised in Figure 5.5.1 and shown relative to the proposed acquisition budget. The forecast acquisition capital works program is shown in Appendix A.

Figure 5.5.2.1: Acquisition (Constructed) Summary



Note: All figure values are shown in 2021 dollars.

Figure 5.5.2.1. excludes cost of donated assets and assets by growth.

It is forecast that an underground drainage network under Main North Road Willaston would be implemented in 2026 to 2029 where the peaks are shown in the above Figure 5.5.1. However, there is no planned budget for the project in the LTFP. It is also likely the underground drainage along Main North Road Willaston would be upgraded at the time the road pavement is upgraded. Council would consider external grant funding opportunities & a partnership with the State Government to support delivery of the project on an arterial road.

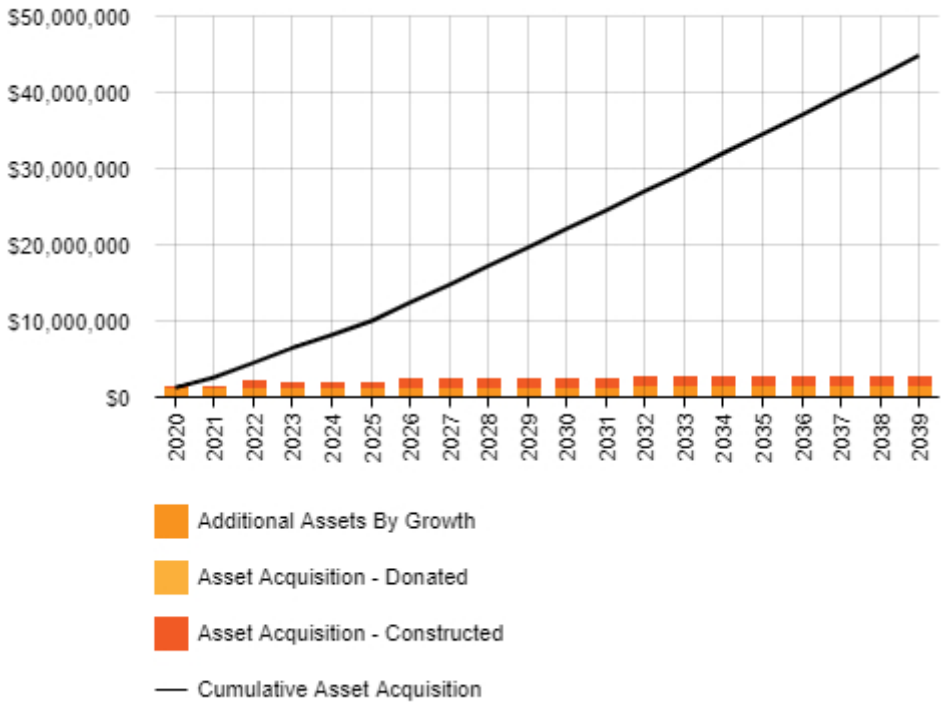
Peaks at 2022 and 2023 are due to non-discretionary projects: Southern Urban Area Infrastructure deed accommodated in LTIAMP (timing subject to change). Other peaks after 2024 are due to discretionary projects: Willaston drainage improvements and projects to be identified from Gawler and Surrounds Stormwater Management Plan (in progress) and Smith Creek Stormwater Management Plan (in progress).

Demand for upgrade and new assets increases due to population growth and to meet service deficiencies and other environmental needs. Therefore, Council may need to upgrade and create new assets to meet service demands in addition to receiving contributed assets from new land developments and external infrastructure upgrades by developers through deeds or separate rate allocations (ie Gawler East). Service deficiencies will be identified and asset upgrade works plan with costing and priority order will be prepared when the various Stormwater Management Plans are completed.

The Stormwater Management Authority (SMA) has commissioned a report: Metropolitan Adelaide Stormwater Infrastructure Valuation and Forecast where it has identified and forecast funding needs for the Councils in South Australia, including Town of Gawler. The SMA may use this finding listed in the report for seeking funding for stormwater drainage improvement works for Councils from the State Government.

The cumulative value of all acquisition work, including assets that are constructed and contributed shown in Figure 5.5.2.2 for the Town of Gawler.

Figure 5.5.2.2: Acquisition Summary



Note: All figure values are shown in 2021 dollars.

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

Acquiring these new assets will commit the funding of ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required.

Currently, new assets are created as a result of the Council's upgrading or constructing new assets to manage growth and from contributed assets associated with land developments (e.g. Gawler East Link Road, Murray Street Upgrades and various assets in new housing estates).

Figure 5.5.2.1 shows that the forecast acquisition costs compared to the planned budget is higher. Therefore, grant funding options are to be explored for implementation of new asset projects (e.g. Main North Road Willaston underground stormwater drainage project).

Land development assets by growth and donated assets are not accounted for capital costs (i.e. vested in the Council) however O&M costs are accounted for. Growth assets are assumed to be associated with general population growth at 1% (i.e. underground drainage networks).

5.6 Disposal Plan

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

Currently, Council has not identified assets for disposal.

Table 5.6: Assets Identified for Disposal

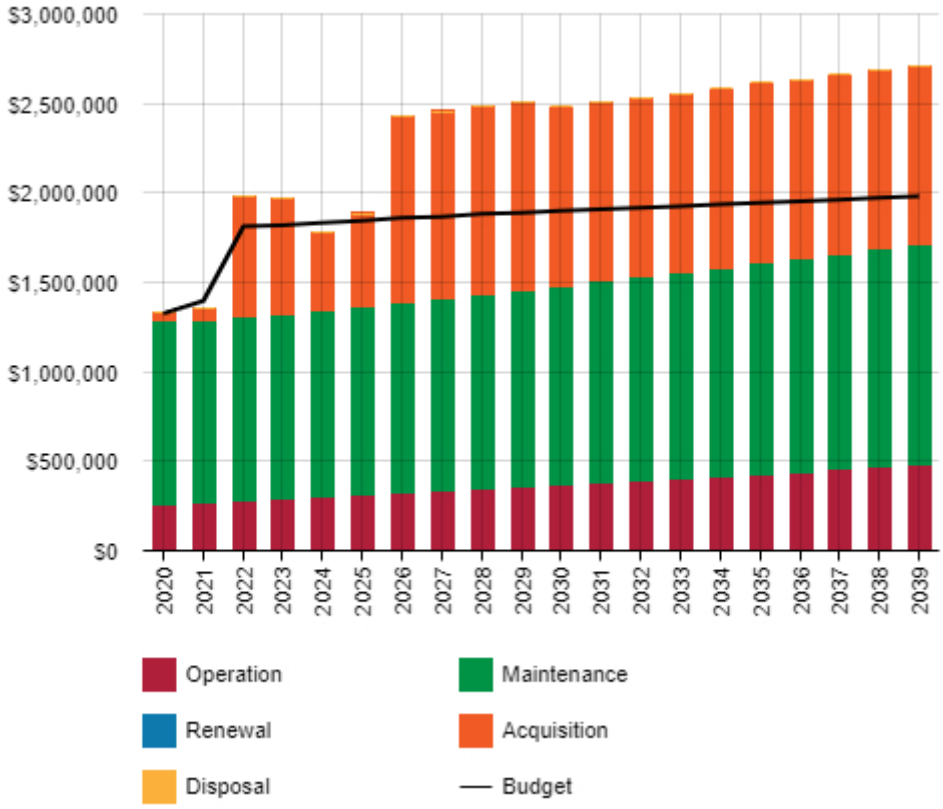
Asset	Reason for Disposal	Timing	Disposal Costs	Operations & Maintenance Annual Savings
Not identified	-	-	-	-

5.7 Summary of asset forecast costs

The financial projections from this asset plan are shown in Figure 5.7.1. These projections include forecast costs for acquisition, operation, maintenance, renewal, and disposal. These forecast costs are shown relative to the proposed budget.

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

Figure 5.7.1: Lifecycle Summary



Note: All figure values are shown in 2021 dollars.

Figure 5.7.1 above shows that first two (2) years of the Plan, Council has planned works to match the available funding in the LTFP. However, specifically during years from 2026 onwards, there is a shortfall of funding to cover the projected capital expenditure. It should be noted that maintenance cost is also gradually increasing over the years. This is due to the need of additional maintenance cost associated with projected new assets creation by Council. The O&M cost for assets contributed by land developers associated with growth is already included in the LTFP however further consideration is required for O&M costs associated with acquisitions and asset upgrades in the next update of the LTFP.

6.0 RISK MANAGEMENT PLANNING

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

Risk Management is defined in ISO 31000:2018 as: 'coordinated activities to direct and control with regard to risk'[8].

An assessment of risks[9] associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a 'financial shock', reputational impacts, or other consequences. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, and the consequences should the event occur. The risk assessment should also include the development of a risk rating, evaluation of the risks and development of a risk treatment plan for those risks that are deemed to be non-acceptable.

6.1 Critical Assets

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

Table 6.1 Critical Assets

Critical Asset(s)	Failure Mode	Impact
Underground drainage network: - Under arterial roadways including major transport entries and exits from the Town Centre - At river crossings	Pipe collapse in roadway or river crossing	Road closure to traffic Inconvenience to road users Public safety hazards
Underground drainage network - Under arterial roadways including major transport entries and exits from the Town Centre - Properties subject to known history of flooding	Pipe blockage	Property flooding Insurance claims Road closure to traffic Inconvenience to road users Public safety hazards

[8] ISO 31000:2009, p 2

[9] The Council's Corporate Risk Management Framework

Critical Asset(s)	Failure Mode	Impact
Wetlands / Basins	Excessive sedimentation, blockage of outlets, pump system failures	Property flooding Insurance claims Vegetation loss Public safety hazards
Watercourses	Erosion of embankments	Private property damage Public land damage Vegetation loss Embankment instability

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

6.2 Risk Assessment

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

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

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

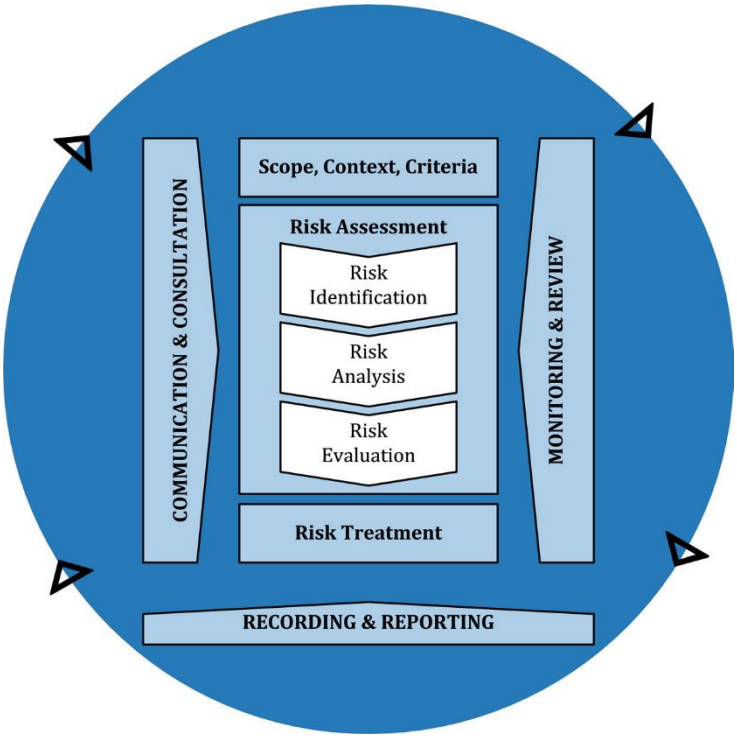


Fig 6.2 Risk Management Process – Abridged
Source: ISO 31000:2018, Figure 1, p9

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

An assessment of risks[10] associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a 'financial shock', reputational impacts, or other consequences.

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

Routine inspections are undertaken for assessing defects and emergency inspections are done for critical assets for asset failure/collapse after extreme events occur.

The risk management process is aligned with ISO 31000 Risk management – Principles and guidelines. It involves risk identification, risk analysis, risk evaluation, risk treatment plans, monitoring and review.

Following the above process, Council will develop a detailed Asset Risk Register.

Table 6.2: Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Key trunk pipes in roadway	May collapse	H	Investigate pipe condition by CCTV survey and develop repair plan	Low	$10,000/annum,
Underground drainage network	Blockage	H	Clean critical sections of the network	Low	$15,000/annum
Wetlands / Basins	Siltation and Blockage of outlets	H	Investigate methods to desilt wetlands / basins	Low	$5,000
Watercourses	Outlet collapse and erosion	M	Complete audit of all outlet structures and watercourse erosion sites	Low	$10,000

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

6.3 Infrastructure Resilience Approach

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

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

[10] The Council's Corporate Risk Management Framework

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

Table 6.3: Resilience

Threat / Hazard	Current Resilience Approach
Road closure due to main pipe in roadway collapse	Temporary closure and implement Council emergency response. Inspect, repair/ renew and reopen.
Flooding due to drainage system blockage	Clear blockage and effect improvement.
Climate Change	Use of alternative materials & methods
Funding shortage	Reprioritise work or Reduce services

6.4 Service and Risk Trade-Offs

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

6.4.1 What we cannot do

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

Key underfunded projects -

- Implementation of Main North Road Willaston underground drainage system within next ten (10) years without external funding assistance,
- Upgrading existing under capacity systems which have been identified in stormwater management plans (in progress).

Key unfunded projects -

- Racecourse detention basin as identified in the Gawler and Surrounds Stormwater Management Plan (in progress),
- Milne Road drainage upgrade as identified in the Smith Creek Stormwater Management Plan (in progress)

It is important to note the Council is committed to the Southern Urban Areas Infrastructure Delivery Deed where stormwater harvesting and distribution infrastructure is expected to vest in the Council over the next 10 year period. Noting Council is committed to the Deed and that the stormwater infrastructure, it is expected Council's LTFP will require updating in order to fund O&M costs associated with this infrastructure once delivered.

6.4.2 Service trade-off

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

- Stormwater ponding on roads can be a nuisance to road users as the existing network does not extend across the entire urban area and has limited capacity,
- Pollutants enter watercourses in the absence of stormwater quality improvement devices in the drainage system,

- Implementation of localised drainage system capital works resulting from small scale engineering investigations would be delayed,
- Implementation of capital renewal works identified in this Stormwater Asset Management Plan would be delayed,
- Implementation of capital works identified in the other Council's draft Stormwater Management Plans would be delayed,
- The condition of stormwater assets would decrease leading to increased future maintenance costs and unplanned capital works costs to repair assets, and
- General deterioration of assets' service,

6.4.3 Risk trade-off

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

- Increase in deterioration of assets and reduce level of service,
- increase in future cost on asset renewal and maintenance,
- Delay providing renewal capital works for Councils drainage system, which would increase the risk of road closures, asset failures and blocking of access to properties.
- Delay providing infrastructure for flood mitigation and reducing nuisance ponding from storm events to the community. Properties would remain at risk of flood damage with no improvement to service level of the drainage system.
- Postponing upgrades that would improve/ increase assets function/ capacity.
- Stormwater quality would not be improved before discharging to natural water courses.
- If there was no financial capacity to maintain the drainage system and respond to localised flooding emergencies, there would be a risk of more frequent road closures, asset failures, and blocking of access to properties.
- Lead to community dissatisfaction and Council subject to public criticism and
- Ramification for public safety.

These actions and expenditures are considered and included in the forecast costs.

7.0 FINANCIAL SUMMARY

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

7.1 Financial Statements and Projections

7.1.1 Sustainability of service delivery

There are two key indicators of sustainable service delivery that are considered in the Asset Management Plan for this service area. The two indicators are the:

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

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio[11] 105%

The Asset Renewal Funding Ratio is an important indicator and illustrates that over the next 10 years we expect to have 100% of the funds required for the optimal renewal of assets.

There are not any forecast asset renewals based on the condition, however there has been identified upgrades based in the capacity issues. In this respect, Council is currently considered to be renewing/ undertaking minor improvement works on its assets in accordance with the asset renewal funding ratio target requirements identified in the Council's LTFP.

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

Medium term – 10 year financial planning period

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

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

The forecast operations, maintenance and renewal costs over the 10 year planning period is $1,359,740 average per year.

The proposed (budget) operations, maintenance and renewal funding is $1,422,660 on average per year giving a 10 year funding excess of $62,920 per year. This indicates that 105% of the forecast costs needed to provide the services documented in this Asset Management Plan are accommodated in the proposed budget. This excludes cost of acquired assets. Excess funds will be used for renewal of asset failures at extreme weather events or minor improvements on existing stormwater drainage systems.

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

Table 7.1.2 shows the forecast costs (outlays) for the 10 year LTFP. The forecast acquisition costs are shown in 2021 dollar values.

[11] AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

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

Year	Acquisition	Operation	Maintenance	Renewal	Disposal
2020	44000	256520	1026079	0	0
2021	65000	264705	1027133	0	0
2022	670000	280384	1028452	0	0
2023	651000	286519	1037394	0	0
2024	433000	299419	1046097	0	0
2025	523000	310755	1052053	0	0
2026	1046000	324497	1059143	0	0
2027	1047000	332719	1072822	0	0
2028	1048000	350096	1086514	0	0
2029	1049000	355876	1100219	0	0
2030	1000000	367334	1113937	0	0
2031	1000000	379682	1127037	0	0
2032	1000000	392030	1140137	0	0
2033	1000000	404378	1153237	0	0
2034	1000000	416726	1166337	0	0
2035	1000000	429074	1179437	8675	0
2036	1000000	441422	1192537	0	0
2037	1000000	453770	1205637	0	0
2038	1000000	466118	1218737	0	0
2039	1000000	478466	1231837	0	0

7.2 Funding Strategy

The proposed funding for assets is outlined in the Entity's budget and LTFP.

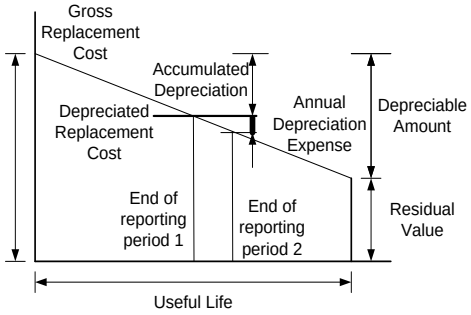
The financial strategy of the entity determines how funding will be provided, whereas the Asset Management Plan communicates how and when this will be spent, along with the service and risk consequences of various service alternatives.

7.3 Valuation Forecasts

7.3.1 Asset valuations

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

Current (Gross) Replacement Cost	$81,499,633
Depreciable Amount	$81,499,633
Depreciated Replacement Cost[12]	$53,494,651
Annual Depreciation	$901,828.00



[12] Also reported as Written Down Value, Carrying or Net Book Value.

7.3.2 Valuation forecast

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

Additional assets will generally add to the operations and maintenance needs in the longer term. Additional assets will also require consideration to future renewals. These assets will also add to future depreciation forecasts.

It is expected to continue the receipt of new assets from land developments over next 20-30 years based on population growth associated with the 30 Year Plan for Greater Adelaide and available residential land supply.

7.4 Key Assumptions Made in Financial Forecasts

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

Key assumptions made in this Asset Management Plan are in Table 7.4:

Table 7.4: Key Assumptions

Assumption	Description
Indexation Rates	The Local Government Price Index (LGPI) and other indexation factors relevant for each asset class are used to determine current cost.
Financial values	Current day dollars
Renewal Cost	Forecasts have been made by professional judgement.
O&M Cost forecast	The current operations and maintenance budgets have been used and only increased in the forecast relative to the acquisition of new assets.
Asset Growth	The relationship between development growth and associated increases in the asset stock.
Level of Service	Current infrastructure service levels will remain for the life of the Plan.
Funding	Indicated capital replacement/renewal funding is provided for within the Long Term Financial Plan.
Useful Life	The average useful lives of the asset groups based on current local knowledge and experience and historical trends.

7.5 Forecast Reliability and Confidence

The forecast costs, proposed budgets, and valuation projections in this AM Plan are based on the best available data. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is classified on an A - E level scale[13] in accordance with Table 7.5.1.

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

Table 7.5.1: Data Confidence Grading System

Confidence Grade	Description
A. Highly reliable	Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate ± 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 ± 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 ± 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 ± 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 7.5.2.

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

Data	Confidence Assessment	Comment
Demand drivers	B	Professional Judgement
Growth projections	B	From 2016 Census
Acquisition forecast	B	From LTFP & Gawler growth
Operation forecast	B	From recent budgets and & Gawler growth analysis
Maintenance forecast	B	From recent budgets and & Gawler growth analysis
Renewal forecast		
- Asset values	B	Asset Register is updated annually
- Asset useful lives	B	Reviewed periodically
- Condition modelling	E	No condition data based on field audits
Disposal forecast	E	Professional Judgement

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

8.0 PLAN IMPROVEMENT AND MONITORING

8.1 Status of Asset Management Practices[14]

8.1.1 Accounting and financial data sources

This Asset Management Plan utilises accounting and financial data. Council uses Civica Authority software as its corporate Accounting/Financial system. There is currently no automated integration between the Civica Authority software and the AssetMaster software used for Asset Management purposes.

The Australian Accounting Standards AA116 and the Local Government (Financial Management) Regulations 2011 provide the statutory benchmark against which Council reports on asset accounting.

The chart of account structure used within the general ledger (i.e. work orders) is designed to facilitate the ease of data extraction required for internal and statutory financial reporting. Currently the existing structure meets the Council's financial reporting needs (including those relating to asset accounting). This structure will be reviewed periodically to ensure that it appropriately meets Council's future financial reporting needs.

The current capitalisation threshold for infrastructure assets is $10,000 in accordance with Council's Asset Capitalisation Policy. The threshold value is reviewed on three yearly basis.

8.1.2 Asset management data sources

This Asset Management Plan also utilises asset management data. One of the Asset management Information Systems, AssetMaster software, is used by the Council for management of its infrastructure asset data. ESRI ArcGIS Pro software is used for asset mapping, ESRI ArcMap as the map viewer and Civica Authority for customer request management.

AssetMaster manages physical and financial asset data including the physical attributes, repair activities carried out on assets, condition and valuation. AssetMaster provides reports on data that is required in order to plan renewal works programs, value assets and forecast depreciation.

When there is a change in asset information, the relevant data is updated into AssetMaster. When new assets are created asset details are recorded periodically in AssetMaster so that at the end of financial year all created assets are registered in AssetMaster for financial valuation. General errors in the day-to-day administration are corrected as required.

Currently, Stormwater Assets are recorded in AssetMaster.

Asset management process flow chart is given in Appendix G.

8.2 Improvement Plan

It is important that an entity recognise areas of their Asset Management Plan and planning process that require future improvements to ensure effective asset management and informed decision making. In March 2021, an external consultant conducted an internal audit on Council's asset management systems and processes. Responding to the audit findings, Council has prepared an action plan. The improvement plan generated from this Asset Management Plan and from the findings of the Internal Audit is shown in Table 8.2.1.

[14] ISO 55000 Refers to this the Asset Management System

Table 8.2.1: Improvement Plan

Task	Task	Responsibility	Resources Required	Timeline
1	Implement Internal Audit Report Action Plan (CM Reference: CR21/57866)	MIES	SAIE , WHS&RMO & Finance	1-3 year
2	Section 3.5 – Review and agree to an affordable Customer Level of Service as a part of community consultation of AMP	MIES	SAIE & Finance	0-1 year
3	Section 4.3 – Demand Management Plan Summary to be reviewed based on Land Development Register and update LTIAMP	MIES	SAIE & Finance	1 year
4	Land Development Register	MIES	TLAP	Annually
5	LTIAMP	MIES	TLAP	Annually
6	Section 6.2 - Risk Assessment to be reviewed. Asset Risk Register to be developed.	MIES	SAIE , WHS&RMO & Finance	4 year
7	Section 6.3 – Infrastructure Resilience Approach to be reviewed	MIES	SAIE & Finance	4 year
8	Review asset renewal ranking criteria and new asset priority ranking criteria	MIES	SAIE	4 year
9	Value assets annually with a book value adjustment and periodically with a unit rate review consistent with financial auditor requirements	MIES	SAIE	Annually
10	Section 7.1 – Financial Statements and projections to be revised based on asset cost updates after periodical asset financial valuation	MIES	SAIE & Finance	Annually
11	Review capital expenditure during the Council annual budget preparation and amend to recognise any changes in service levels and/or resources available to provide those services	MIES	SAIE	Annually
12	Review stormwater assets mapped on the corporate GIS system and update layer data where required	MIES	TLAP	Annually
13	Schedule a condition audit program for aged and critical assets – staged approach	MIES	SAIE	> 2 year
14	Schedule next update the Council's Stormwater Asset Management Plan based on a four year cycle	MIES	SAIE	4 yearly

Note: CEO – Chief Executive Officer, MIES – Manager Infrastructure and Engineering Services, TLAP – Team Leader Asset Planning, SAIE – Senior Assets & Infrastructure Engineer, WHS&RMO – Work Safety Health & Risk Management Officer.

The previous Improvement Plan outlined in the previous Stormwater Asset Management Plan adopted in 2013 by the Council identified a number of items for investigating. As an update on progress, the below Table 8.2.2

provides an update on each of the items identified in that Plan for information purposes and to inform the revised Improvement Plan shown in Table 8.2.1 above.

Table 8.2.2: Implementation Progress of 2013 Improvement Plan

Task	Task	Responsibility	Resources Required	Timeline	Progress Update
1	Section 3.3 – Current levels of service to be developed.	Engineering	Staff Time	June 2015	Will be complete following customer survey in this AMP
2	Section 3.4 – Desired levels of service to be developed.	Engineering	Staff Time	June 2016	Will be complete following customer survey in this AMP
3	Section 4.1 – Review of development needs associated with the rate and location of growth.	Planning	Staff Time	June 2016	Complete
4	Section 4.3 – Demand management summary table to be reviewed.	Engineering	Staff Time	June 2015	Complete
5	Section 5.1.1 – Continue to collect and update asset data.	Engineering	Staff Time	Ongoing	Refer latest Improvement Plan. Some asset data collected in GIS. Condition audit identified as required
6	Section 5.1.2 – Asset capacity and performance table to be reviewed.	Engineering	Staff Time	June 2015	Complete
7	Section 5.1.3 – Undertake condition assessment of stormwater assets to enable improved information for future planning and development of maintenance and Capital programs.	Engineering	Staff Time	June 2015	Refer latest Improvement Plan. Some asset data collected in GIS. Condition audit identified as required
8	Section 5.2 – Risk management plan to be developed.	CEO	Staff Time	June 2016	Refer latest Improvement Plan. Some improvements have been made.
9	Section 5.3.1 & Appendix A – Maintenance response levels of service to be developed.	Engineering	Staff Time	June 2014	Complete
10	Section 5.4.1 – Renewal priority criteria to be developed.	Engineering	Staff Time	June 2014	Complete
11	Section 5.5.1 – Asset priority ranking criteria to be reviewed.	Engineering	Staff Time	June 2014	Complete
12	Section 3 – Carry out consultation to ascertain the community's service needs and preferences and	CEO	Staff Time	June 2015	Will be complete following customer survey in this AMP

	confirm target levels adopted.				
13	Section 3 – Review of the customer request report available in Authority.	DPI/DCCS	Staff Time	June 2015 then annually	Complete and updated into Engineering Investigations Register
14	Section 3.2 – Review of legislative requirements to ensure Council's compliance with the latest legislations and regulations.	DCCS	Staff Time	June 2016	Complete
15	Section 5 - Review of useful life of all stormwater assets based on real time assessment of asset deterioration.	Engineering	Staff Time	June 2015	Refer latest Improvement Plan. Some asset data collected in GIS. Condition audit identified as required
16	Section 7.1 – Review capital expenditure threshold values for stormwater assets.	Finance	Staff Time	Annually	Complete
17	Section 7.1 – Review of financial reporting systems to determine whether any changes are required to meet statutory requirements.	Finance	Staff Time	June 2015	Complete
18	Section 7.2 – Review of current asset management systems for improvement, systems integration and expansion.	Engineering	Staff Time	June 2016	Complete
19	Section 8.2 – Completing the improvement plan by November 2016.	All	Staff Time	Nov 2016	Complete

8.3 Monitoring and Review Procedures

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

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

The AM Plan has a maximum life of four years and is due for complete revision and updating within two years of each Council election.

8.4 Performance Measures

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

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

9.0 REFERENCES

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMM.
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2012 LTFP Practice Note 6 PN Long-Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney
- ISO, 2018, ISO 31000:2018, Risk management – Guidelines
- The Gawler Community Plan 2030+
- Town of Gawler Budget and Business Plan 2020/21
- Town of Gawler Long Term Financial Plan 2020-2029
- Town of Gawler Long Term Infrastructure and Asset Management Plan 2019-2028

10.0APPENDICES

Appendix A Acquisition Forecast

A.1 – Acquisition Forecast Assumptions and Source

There are new and upgrade asset projects are forecast during this plan period. They are upgrades and new drainage network assets to manage stormwater disposal within existing infill development area and rural area. Also there are new assets receiving from new land developments. Timing of some of the works are based on the Gawler East Infrastructure Deed, Southern Urban Area Deed and external funding availability.

A.2 – Acquisition Project Summary

Main projects are stormwater drainage network associated with Gawler East Link Road ($5.5 million), Southern Urban Area ASR and associated works ($600,000), Gordon Road Wetland ($500,000), modification to Dawson Road detention basin and wetland, Lower Willaston drainage network and local stormwater drainage improvements.

A.3 – Acquisition Forecast Summary

Using NAMS+ Outputs, Summary for Acquisition as follows.

Table A3 - Acquisition Forecast Summary

Year	Constructed $	Donated $	Growth $
2020	44000	GELR - 5500000	1222495
2021	65000	0	1240832
2022	670000	0	1259444
2023	651000	0	1278336
2024	433000	0	1297511
2025	523000	0	1316974
2026	1046000	0	1336728
2027	1047000	0	1356779
2028	1048000	0	1377131
2029	1049000	0	1397788
2030	1000000	0	1418755
2031	1000000	0	1440036
2032	1000000	0	1461637
2033	1000000	0	1483561
2034	1000000	0	1505815
2035	1000000	0	1528402
2036	1000000	0	1551328
2037	1000000	0	1574598
2038	1000000	0	1598217
2039	1000000	0	1622190

Appendix B Operation Forecast

B.1 – Operation Forecast Assumptions and Source

Operation and maintenance cost forecast analysis have included those from the $68M Gawler East Link Road project and contributed assets from new land developments by the Council Staff according to the timing of the asset creation and available cost information.

B.2 – Operation Forecast Summary

Using NAMS+ Outputs, Summary for Operation is as follows.

Table B2 - Operation Forecast Summary

Year	Operation Forecast $	Additional Operation Forecast $	Total Operation Forecast $
2020	256520	163	256520
2021	264542	241	264705
2022	279981	2479	280384
2023	283637	2409	286519
2024	294128	1602	299419
2025	303862	1935	310755
2026	315669	3870	324497
2027	320021	3874	332719
2028	333524	3878	350096
2029	335426	3881	355876
2030	343003	3700	367334
2031	351651	3700	379682
2032	360299	3700	392030
2033	368947	3700	404378
2034	377595	3700	416726
2035	386243	3700	429074
2036	394891	3700	441422
2037	403539	3700	453770
2038	412187	3700	466118
2039	420835	3700	478466

Appendix C Maintenance Forecast

C.1 – Maintenance Forecast Assumptions and Source

Operation and maintenance cost forecast analysis has been done on the Gawler East Link Road and contributed assets from new land developments by the Council Staff according to the timing of the asset creation and available cost information.

C.2 – Maintenance Forecast Summary

Using NAMS+ Outputs Summary for Maintenance.

Table C2 - Maintenance Forecast Summary

Year	Maintenance Forecast $	Additional Maintenance Forecast $	Total Maintenance Forecast $
2020	1026079	554	1026079
2021	1026579	819	1027133
2022	1027079	8442	1028452
2023	1027579	8203	1037394
2024	1028079	5456	1046097
2025	1028579	6590	1052053
2026	1029079	13180	1059143
2027	1029579	13192	1072822
2028	1030079	13205	1086514
2029	1030579	13217	1100219
2030	1031079	12600	1113937
2031	1031579	12600	1127037
2032	1032079	12600	1140137
2033	1032579	12600	1153237
2034	1033079	12600	1166337
2035	1033579	12600	1179437
2036	1034079	12600	1192537
2037	1034579	12600	1205637
2038	1035079	12600	1218737
2039	1035579	12600	1231837

Appendix D Renewal Forecast Summary

D.1 – Renewal Forecast Assumptions and Source

The Renewal Forecast is prepared according to on-going risk management analysis.

D.2 – Renewal Project Summary

Stormwater drainage network assets are long living assets. Asset renewal projects have not been identified. Future asset condition audits will identify asset renewals.

The recurrent budget will be used for minor network improvement projects instead of asset renewal at the current time.

D.3 – Renewal Forecast Summary

Using NAMS+ Outputs Summary for Renewal

Table D3 - Renewal Forecast Summary

Year	Renewal Forecast $	Renewal Budget $
2020	0	0
2021	0	41000
2022	0	107000
2023	0	109000
2024	0	111000
2025	0	113000
2026	0	115000
2027	0	118000
2028	0	120000
2029	0	122000
2030	0	125000
2031	0	125000
2032	0	125000
2033	0	125000
2034	0	125000
2035	8675	125000
2036	0	125000
2037	0	125000
2038	0	125000
2039	0	125000

Appendix E Disposal Summary

E.1 – Disposal Forecast Assumptions and Source
At this stage Council has not identified any significant asset disposals.

E.2 – Disposal Project Summary
Council has not identified any asset for disposal.

E.3 – Disposal Forecast Summary
Using NAMS+ Outputs Summary for Disposal

Table E3 – Disposal Activity Summary

Year	Disposal Forecast $	Disposal Budget $
2020	0	0
2021	0	0
2022	0	0
2023	0	0
2024	0	0
2025	0	0
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0
2031	0	0
2032	0	0
2033	0	0
2034	0	0
2035	0	0
2036	0	0
2037	0	0
2038	0	0
2039	0	0

Appendix F Budget Summary by Lifecycle Activity

The following budget summary is based on the Council's current Long Term Financial Plan. It is shown in current dollars. This information is the basis of the Planned Budget used in the Lifecycle Model for this Asset Management Plan.
According to LTFP Council has an annual financial capacity of $3m only for new acquisitions for all asset classes across the Council except that additional $40 million has been allocated for major iconic project: Karbeethan Reserve upgrade in 2028 and 2029. It is assumed that only $400,000 is available for new stormwater assets acquisitions/upgrades.

Table F1 – Budget Summary by Lifecycle Activity

Year	Acquisition	Operation	Maintenance	Renewal	Disposal	Total
2020	44000	256520	1026079	0	0	1326599
2021	65000	264542	1026579	41000	0	1397121
2022	400000	279981	1027079	107000	0	1814060
2023	400000	283637	1027579	109000	0	1820216
2024	400000	294128	1028079	111000	0	1833207
2025	400000	303862	1028579	113000	0	1845441
2026	400000	315669	1029079	115000	0	1859748
2027	400000	320021	1029579	118000	0	1867600
2028	400000	333524	1030079	120000	0	1883603
2029	400000	335426	1030579	122000	0	1888005
2030	400000	343003	1031079	125000	0	1899082
2031	400000	351651	1031579	125000	0	1908230
2032	400000	360299	1032079	125000	0	1917378
2033	400000	368947	1032579	125000	0	1926526
2034	400000	377595	1033079	125000	0	1935674
2035	400000	386243	1033579	125000	0	1944822
2036	400000	394891	1034079	125000	0	1953970
2037	400000	403539	1034579	125000	0	1963118
2038	400000	412187	1035079	125000	0	1972266
2039	400000	420835	1035579	125000	0	1981414

Appendix G Asset Management Process Flow Chart