



ASSET MANAGEMENT PLAN

Stormwater

QUALITY ASSURANCE

Draft: May 2023

Version: V2.0

DOCUMENT CONTROL

Prepared by: Asset Management Officer

Reviewed by: Asset Management Steering Committee

Previous Versions

Rev No.	Date	Revision Details	Prepared by	Adopted
1.0	Oct-19	Adopted by Council	KLB	Council
1.1	Feb-23	DRAFT	BFJ	
2.0	May-23	Adopted by Council	BFJ	Council

Table of Contents

1	EXECUTIVE SUMMARY.....	7
1.1	THE PURPOSE OF THE PLAN.....	7
1.2	ASSET DESCRIPTION.....	7
1.3	LEVELS OF SERVICE	7
1.4	FUTURE DEMAND	8
1.5	LIFECYCLE MANAGEMENT PLAN.....	8
1.5.1	<i>What does it Cost?</i>	8
1.6	FINANCIAL SUMMARY	8
1.6.1	<i>What we will do</i>	8
1.6.2	<i>What we cannot do</i>	8
1.6.3	<i>Managing the Risks</i>	9
1.7	ASSET MANAGEMENT PLANNING PRACTICES	9
1.8	MONITORING AND IMPROVEMENT PROGRAM	9
2	INTRODUCTION	12
2.1	BACKGROUND	12
2.1.1	<i>Purpose</i>	12
2.1.2	<i>Related Documents</i>	12
2.1.3	<i>Infrastructure Assets</i>	13
2.1.4	<i>Key Stakeholders</i>	14
2.1.5	<i>Organisation Structure</i>	15
2.2	GOALS AND OBJECTIVES OF ASSET OWNERSHIP.....	16
3	LEVELS OF SERVICE	18
3.1	COMMUNITY RESEARCH AND EXPECTATIONS	18
3.2	STRATEGIC AND CORPORATE GOALS	18
3.3	LEGISLATIVE REQUIREMENTS	22
3.4	COMMUNITY VALUES.....	23
3.5	COMMUNITY LEVELS OF SERVICE.....	24
3.6	TECHNICAL LEVELS OF SERVICE.....	25
4	FUTURE DEMAND	28
4.1	DEMAND DRIVERS.....	28
4.2	DEMAND FORECAST	28
4.2.1	<i>Population</i>	28
4.2.2	<i>Ageing Infrastructure</i>	29
4.2.3	<i>Condition of Infrastructure</i>	30
4.2.4	<i>Community Expectations</i>	30
4.2.5	<i>Climate Change</i>	30
4.3	DEMAND IMPACT AND DEMAND MANAGEMENT PLAN.....	30
4.4	ASSET PROGRAMS TO MEET DEMAND	31
4.5	CLIMATE CHANGE ADAPTATION	31
5	LIFECYCLE MANAGEMENT	33
5.1	BACKGROUND DATA.....	33
5.1.1	<i>Physical Parameters</i>	33
5.1.2	<i>Asset Capacity and Performance</i>	33
5.1.3	<i>Asset Condition</i>	33
5.2	OPERATIONS AND MAINTENANCE PLAN.....	34
5.2.1	<i>Operations and Maintenance Strategies</i>	34
5.2.2	<i>Maintenance Budget</i>	35

5.3	RENEWAL PLAN	36
5.4	SUMMARY OF FUTURE CAPITAL COSTS	37
5.5	ACQUISITION PLAN.....	39
5.6	DISPOSAL PLAN	39
5.7	SUMMARY OF ASSET FORECAST COSTS.....	39
5.7.1	<i>Forecast Acquisition Costs</i>	<i>39</i>
5.7.2	<i>Forecast Operation and Maintenance Costs.....</i>	<i>40</i>
5.7.3	<i>Forecast Renewal Costs</i>	<i>41</i>
5.7.4	<i>Forecast Disposal Costs.....</i>	<i>41</i>
6	RISK MANAGEMENT PLANNING	43
6.1	CRITICAL ASSETS	43
6.2	RISK ASSESSMENT	43
6.3	INFRASTRUCTURE RESILIENCE APPROACH.....	43
6.4	SERVICE AND RISK TRADE-OFFS	44
6.4.1	<i>What we cannot do.....</i>	<i>44</i>
6.4.2	<i>Service trade-off.....</i>	<i>44</i>
6.4.3	<i>Risk trade-off</i>	<i>44</i>
7	FINANCIAL SUMMARY	46
7.1	FINANCIAL SUSTAINABILITY AND PROJECTIONS	46
7.1.1	<i>Sustainability of service delivery</i>	<i>46</i>
7.1.2	<i>Forecast Costs (outlays) for the long-term financial plan</i>	<i>46</i>
7.2	FUNDING STRATEGY	47
7.3	VALUATION FORECASTS.....	48
7.3.1	<i>Asset valuations.....</i>	<i>48</i>
7.3.2	<i>Valuation forecast.....</i>	<i>50</i>
7.4	KEY ASSUMPTIONS MADE IN FINANCIAL FORECASTS	50
7.5	FORECAST RELIABILITY AND CONFIDENCE	50
8	PLAN IMPROVEMENT AND MONITORING	53
8.1	STATUS OF ASSET MANAGEMENT PRACTICES.....	53
8.1.1	<i>Accounting and financial data sources</i>	<i>53</i>
8.1.2	<i>Asset management data sources.....</i>	<i>53</i>
8.2	IMPROVEMENT PLAN	53
8.3	MONITORING AND REVIEW PROCEDURES	53
8.4	PERFORMANCE MEASURES	53
9	REFERENCES	54
10	APPENDICES	56

List of Tables

Table 1: Stormwater Infrastructure Summary	7
Table 2: Adopted Stormwater Infrastructure Values as of 1 July 2022	14
Table 3: Stakeholders	14
Table 4: Strategic Plan Alignment.....	19
Table 5: Community Values	23
Table 6: Customer Levels of Service	24
Table 7: Technical Levels of Service	25
Table 8: Average of Accounting Remaining Useful Life for Stormwater Assets	29
Table 9: Building Asset Resilience to Climate Change.....	31
Table 10: Asset Condition Rating Description	34
Table 11: Routine Maintenance Inspections and Actions.....	35
Table 12: Renewal Program Identification Process	36
Table 13: Renewal Strategy.....	37
Table 14: Forecast Acquisitions.....	40
Table 15: Redundant Assets.....	41
Table 16: Forecast Costs (Outlays) for the Long-Term Financial Plan	47
Table 17: Asset Useful Life and Unit Rate	49
Table 18: Data Confidence Grading System	51
Table 19: Data Confidence Assessment for Data.....	51

List of Figures

Figure 1: Strategic Asset Management Framework	13
Figure 2: Organisation Chart specific to management and operation of Stormwater.....	16
Figure 3: Historic Capital and Operational Expenditure.....	35
Figure 4: Bathtub failure curve model	36
Figure 5: Fatigue Failure Curve	37
Figure 6: Forecast Capital Expenditure for the next 10 years	38
Figure 7: Forecast Capital Expenditure for the next 10 years by New, Upgrade, and Renewal	39
Figure 8: Forecast Operational Expenditure for the next 10 years	41
Figure 9: Forecast Depreciation Expense for the next 10 years.....	47

EXECUTIVE SUMMARY

1 Executive Summary

1.1 The Purpose of the Plan

This Asset Management Plan (AMP) documents the management of stormwater assets to achieve the required levels of service to the community. This plan defines the provision and maintenance of the stormwater infrastructure and outlines Wattle Range Council's (Council) asset management practices and lifecycle strategy for the next ten years. Council has previously adopted a Stormwater Drainage Asset Management Plan in 2019. This current iteration of AMP expands upon the principles set in 2019 and develops them further to equal the level of maturity and detail that is required within this asset class moving forward. This AMP is focused around risk management and has seen the formation of the Stormwater Risk Register (Appendix 2) which is an improvement upon the previous AMP.

1.2 Asset Description

Council owns and maintains stormwater assets in the townships of Beachport, Coonawarra, Glencoe, Kalangadoo, Millicent, Mount Burr, Nangwarry, Penola, Rendelsham, Rocky Camp, Southend, and Tantanoola. Council's stormwater assets consist of end structures, pits (grated inlet, side entry, soakage, and junction), road culverts, gross pollutant traps (GPT's), drains (pipes), open drains (swale, open, and detention basins), infiltration devices (runaway bores), and mechanical (sumps). Table 1 gives an overview of the stormwater assets.

Table 1: Stormwater Infrastructure Summary

Location	Infrastructure							
	Pits	Drains	End Structures	GPT's	Open Drains	Infiltration Devices	Culverts	Mechanical (Pumps)
Millicent	365	364	5	2	34	7	3	6
Penola	157	331	32	-	222	6	3	2
Beachport	83	69	3	-	10	4	1	4
Tantanoola	34	43	4	-	18	-	-	-
Kalangadoo	29	90	28	-	88	20	5	-
Mount Burr	16	13	2	-	2	2	-	-
Southend	25	25	-	-	-	-	-	-
Nangwarry	26	22	1	-	-	-	-	-
Glencoe	11	23	10	-	2	4	-	-
Rendelsham	7	7	1	-	2	-	-	-
Coonawarra	1	1	-	-	-	-	-	-
Rocky Camp	3	18	7	-	14	-	4	-

The total replacement cost of the infrastructure is \$14,293,604 as of 1 July 2022.

1.3 Levels of Service

Council has developed both customer and technical levels of service to ensure the safe and reliable management of stormwater.

Customer levels of service monitor the quality, reliability, and safety of the systems, whilst the technical levels of service consider the operations, maintenance, and renewal of the assets.

1.4 Future Demand

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

- Static population growth
- Legislation changes
- Ageing infrastructure
- Condition of infrastructure
- Community expectations
- Economic factors
- Seasonal changes
- Climate change

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

- Optimise the utilisation / performance of existing assets.
- Reduce or defer the need for new assets.
- Meet the organisation's strategic objectives.
- Deliver a more sustainable service.
- Respond to customer needs.

1.5 Lifecycle Management Plan

1.5.1 What does it Cost?

The forecast lifecycle costs necessary to provide the services covered by this AMP includes operation, maintenance, renewal, acquisition, and disposal of assets. Although the AMP 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 AMP is the forecast of 10 year total outlays, which for the stormwater infrastructure is estimated as \$580,381 on average per year.

1.6 Financial Summary

1.6.1 What we will do

Estimated available funding for the 10 year period is expected to be 90-110% of the cost to sustain the current level of service at the lowest lifecycle cost.

The infrastructure reality is that only what is funded in the Long-Term Financial Plan can be provided. The informed decision making depends on the AMP emphasising the consequences of Planned Budgets on the service levels provided and risks.

1.6.2 What we cannot do

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

- Projects where Council budget is not sufficient to cover the full project cost and therefore external funding is required for the project to proceed; if external funding is not approved, the projects are not undertaken but deferred until a time where suitable funds are available.

- Where large capital new/upgrade projects are identified in this AMP which are discretionary in nature will be considered individually each financial year and as such future capital expenditure profile documented in this AMP will change.
- Avoid all instances of flooding during significant rainfall events in the short to medium term due to financial constraints.
- Provide Stormwater Management Plans for all townships.
- Upgrade all open channel systems to buried pipe.

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:

- Work Health Safety (WHS) in relation to undertaking maintenance on stormwater pits that have heavy concrete or cast-iron lids
- Economic in relation to
 - The unknown condition and location of underground assets
 - The poor data or details available for the infrastructure
 - The uncertainty around system capacity and demand
- Service levels in relation to
 - Hidden failures in the network
 - Localised flooding or road and/or property during high-intensity rainfall events

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

- Routine inspections and proactive maintenance programs
- Timely response to customer requests and defining service levels
- Optimised management and operation of network

1.7 Asset Management Planning Practices

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

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

The Asset Register was used to forecast the renewal lifecycle costs for this AMP.

This AMP is based on a low level of confidence information.

This plan aligns with key organisational documents including the current Council Strategic Plan, Annual Business Plan, and Asset Policy.

1.8 Monitoring and Improvement Program

This plan is a living document that is owned by the Manager Assets and Environment and will be internally reviewed annually. A full review will be undertaken to coincide with asset revaluation and condition assessments, which are scheduled to occur every four years, and to meet the requirements of the *Local Government Act 1999*.

Key areas of improvement include:

- Collection of asset condition data to inform operations, renewal and valuation
- Collection of asset details to enable accurate asset register to be developed
- Capacity and demand assessment of the stormwater infrastructure to understand future capacity and upgrade /renewal timeframes
- Development and implementation of scheduled maintenance programs including pit and drain inspections, gutter (street sweeping) and pit cleaning, sump pump maintenance, and open drain and easement cleaning
- Clear documented processes for stormwater management for residential and commercial developments
- Clear documented processes for building over or adjacent to underground infrastructure
- Develop and document community levels of service with community consultation and key stakeholders

INTRODUCTION

2 Introduction

2.1 Background

In South Australia, Council's responsibility for stormwater infrastructure is a result of the Local Government Act which states one of Council's functions is to *"provide infrastructure for its community and for development within its area (including infrastructure that helps to protect any part of the local or broader community from any hazard or other event, or that assists in the management of any area)"*. Within Wattle Range Council's boundary the townships of Beachport, Coonawarra, Glencoe, Kalangadoo, Millicent, Mount Burr, Nangwarry, Penola, Rendelsham, Rocky Camp, Southend, and Tantanoola contain a network of stormwater assets to ensure the needs of the community are met. In addition, stormwater assets in the form of culverts (under roads) are located throughout Council's jurisdiction.

The stormwater network is quite extensive, primarily in the townships listed above, comprising of various open drains, pipes, pits, culverts, and detention basins. A summary of all stormwater assets is compiled in Table 1. Council stormwater infrastructure is complimented by the South Eastern Water Conservation and Drainage Board (SEWCDB) open drain network. Much of the stormwater runoff in the region ultimately ends up in this network of drains, generally flowing from east to west. The main issue Council faces is how to get the stormwater runoff to the open drain network, or to detention basins where it is not possible to connect to open drains.

It's worth noting that while most of Council's stormwater infrastructure drains into the SEWCDB network, this AMP covers Council assets only.

2.1.1 Purpose

This asset management plan documents the management of stormwater assets to achieve the required levels of service to the community. This plan defines the provision and maintenance of the stormwater infrastructure and outlines Council's asset management practices and lifecycle strategy for the next ten years.

This asset management plan communicates the requirements for the financially sustainable delivery of services through management of assets, compliance with regulatory requirements, and required funding to provide the appropriate levels of service.

2.1.2 Related Documents

Council's Strategic Asset Management Framework (Figure 1) illustrates the relationship of this asset management plan with relevant documentation. The following Wattle Range Council documents are directly related to this plan.

- Strategic Plan 2018-2021
- Annual Business Plan
- Asset Management Strategy
- Proposed Long Term Financial Plan 2023-2033
- Asset Policy
- Records Management Policy
- Requests for Service Procedure
- Procurement Policy
- Safety Reliability Maintenance and Technical Management Plan (SRMTMP)
- Stormwater Drainage Asset Management Plan October 2019

- Kalangadoo Township Stormwater Drainage Management Plan 2004
- Penola Township Stormwater Drainage Management Plan 2010

This asset management plan has been developed in line with the principles laid out in ISO 55000:2014, ISO 55001:2014 and ISO 55002:2018 that prescribe the international standards for asset management. This plan has been documented following the NAMS+ Asset Management Plan Template which provides guidance on how to meet the ISO principles.

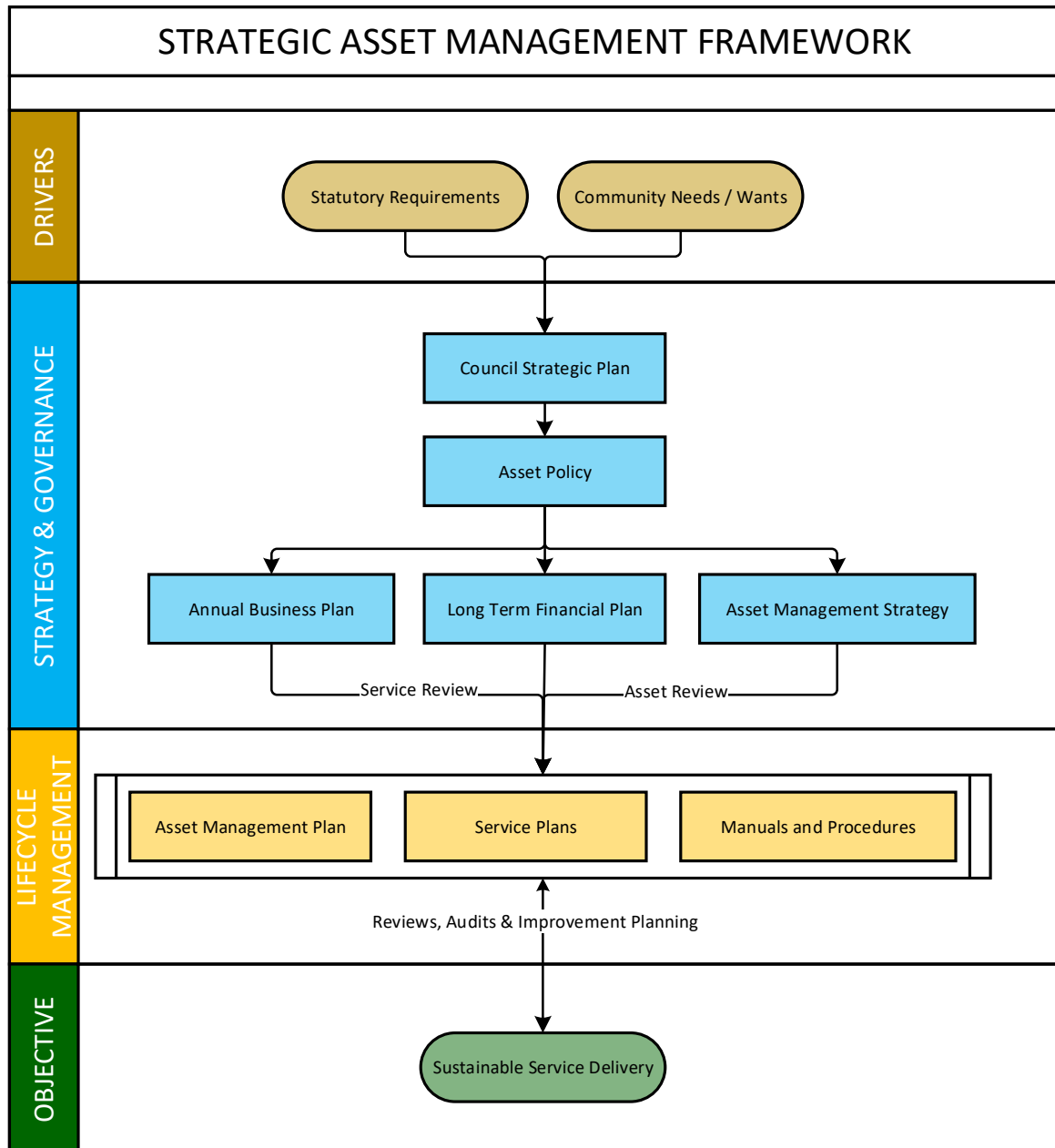


Figure 1: Strategic Asset Management Framework

2.1.3 Infrastructure Assets

This plan covers the asset management of the stormwater infrastructure summarised in Table 1 and further detailed in Section 0. It includes the collection network of stormwater drains and pits, open drains and swale drains, culverts and end structures, GPT's, detention basins, infiltration devices, and sumps.

Table 2 shows the accepted audited values of these assets as at 1 July 2022.

Table 2: Adopted Stormwater Infrastructure Values as of 1 July 2022

Location	Replacement Cost (\$)	Depreciated Replacement Cost (\$)	Accumulated Depreciation (\$)	Depreciation Expense (\$)
Beachport	745,868	488,366	257,502	7,301
Coonawarra	6,138	4,808	1,330	49
Glencoe	221,014	138,725	82,290	1,816
Kalangadoo	530,741	332,717	198,024	4,659
Millicent	5,837,407	3,644,901	2,192,507	49,158
Mount Burr	403,280	249,867	153,413	3,283
Nangwarry	389,248	245,880	143,368	3,116
Penola	4,753,538	3,453,977	1,299,560	40,567
Rendelsham	71,601	47,554	24,047	576
Rocky Camp	256,943	158,644	98,299	2,175
Southend	389,976	292,301	97,675	3,120
Tantanoola	687,849	427,999	259,849	5,590
Total	14,293,604	9,485,738	4,807,865	121,409

2.1.4 Key Stakeholders

Best practice asset management is seen as a whole of organisation activity, that is, it impacts on or involves staff from across the organisation who are involved with the lifecycle management of the Council's assets or delivering services supported by those assets.

The Council, Executive Leadership Team, and key asset management staff have defined roles, responsibilities and commitments within the Council's Asset Policy.

Table 3: Stakeholders

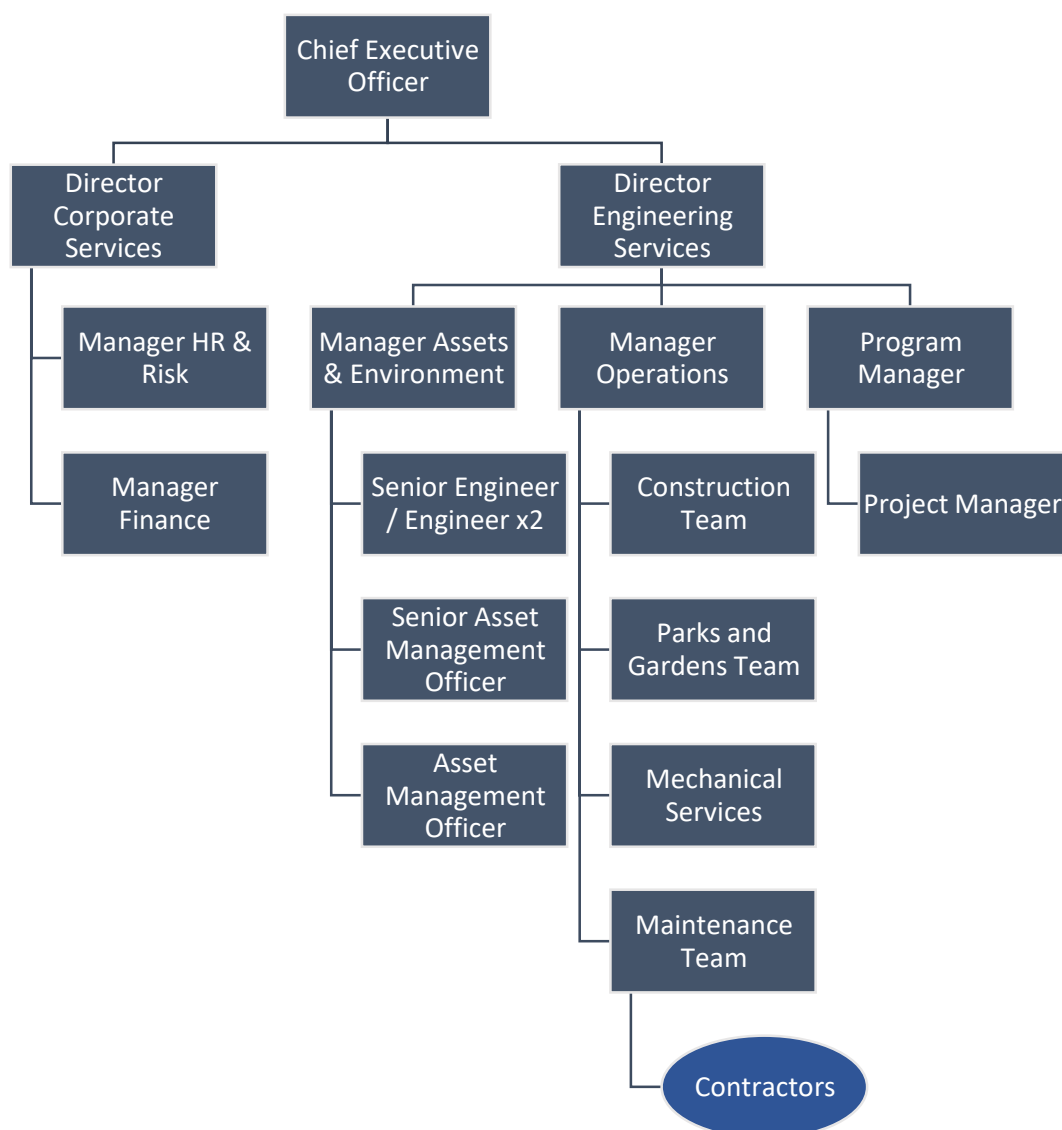
Stakeholder	Responsibilities
Council	<p>To act as stewards for infrastructure assets.</p> <p>To set corporate asset management policy and vision with linkage to the Strategic Plan (available on Council's public website).</p> <p>To set levels of service, risk and cost standards.</p> <p>Ensure the development of asset management plans and improvement strategies and monitor the outcomes.</p> <p>To ensure appropriate resources and funding for asset management activities are made available to integrate asset management policies and asset management plans into the corporate governance framework.</p> <p>Conduct maintenance on stormwater assets.</p>
Asset Management Steering Committee	<p>Internal Council Committee which contribute to and review Asset Management Plans and asset management business rules and guide the implementation of asset management strategies.</p>
Maintenance Contractor	<p>Preventative maintenance as directed by Council staff.</p>

Stakeholder	Responsibilities
State Government (Including but not limited to: Environment Protection Authority, Essential Services Commission of South Australia, Office of the Technical Regulator, Department for Health and Wellbeing, Department of Primary Industries and Regions South Australia, Department of Environment and Water)	Legislators / Regulators / Licensing.
Community (residents and visitors)	Provide review and input of the AMP. Discharge of stormwater into the network. Feedback on community level of service i.e. customer requests.
Local businesses	Discharge of stormwater into network.
Ratepayers	General rates contribute to the funding for capital works and operational maintenance programs. Feedback on community level of service i.e. customer requests.

2.1.5 Organisation Structure

Figure 2 illustrates the organisational structure within Council that has the responsibility for the service delivery from the stormwater infrastructure.

Figure 2: Organisation Chart specific to management and operation of Stormwater



2.2 Goals and Objectives of Asset Ownership

Council operates and maintains the stormwater infrastructure to ensure safe and responsible management of stormwater assets within the Council boundary.

Council's key goals and objectives for operating and maintaining stormwater infrastructure include:

- Providing a defined level of service and monitoring performance
- Monitoring capacity to meet demand, including during increased rainfall periods
- Identifying, assessing and appropriately controlling risks
- Having a Long-Term Financial Plan to meet appropriate maintenance, renewal, and upgrade requirements

LEVELS OF SERVICE

3 Levels of Service

3.1 Community Research and Expectations

As stormwater is an essential service, residents and businesses expect that adequate stormwater services will be provided at all times, with minimal disruptions due to planned maintenance or emergency responses. It is also expected that Council manages the stormwater collected in accordance with legislative requirements to minimise the risks to public health and the environment.

Council's Request for Service Procedure defines the service standards for customer requests. Council monitors the number and nature of customer service requests recorded each financial year to determine the standard of community expectations. Furthermore, Council addresses complaints as per the Customer Experience Policy and Compliments and Complaints Handling Procedure and maintains a Complaints Register in accordance with legislative requirements.

3.2 Strategic and Corporate Goals

This plan has been prepared with consideration to Council's vision, mission, values, themes and objectives. Table 4 identifies how this plan links to Council's themes and objectives as set in the Strategic Plan 2018-2021. It is noted that the draft Strategic Plan 2023-27 is currently being developed and once adopted, will be updated in this AMP during the annual review process.

Table 4: Strategic Plan Alignment

Theme		Objective	Strategy	Action	Alignment
1	Community Vibrancy & Presentation	Generate and support community vibrancy through advocacy and maintenance of community services and enhanced public facilities.	1.2 Through appropriate planning, develop vibrant, presentable townships throughout the Wattle Range area.	No specific action listed.	This AMP ensures that stormwater from public spaces is planned and constructed to ensure maintenance of community services.
			1.3 Continue to provide sustainable, vibrant community facilities.	No specific action listed.	This AMP ensures that stormwater from public spaces is appropriately and sustainably managed.
			1.7 Support and advocate for improved infrastructure that enhances and creates economic and business opportunities.	No specific action listed.	This AMP ensures that necessary or recommended stormwater works for commercial development zones are captured and documented in the Risk Register and are advocated for.
2	Economic Prosperity	A sustainable and prosperous economy that supports local businesses and industry and creates employment and prosperity for the region.	No strategy relating to stormwater.	No specific action listed.	No alignment to stormwater.
3	Environmentally Sustainable	Protect the natural assets and infrastructure of the region by leveraging additional environmental programs that will protect the environment for future generations.	3.1 Protect Council's natural assets, through proactive planning in climate adaptation and structured infrastructure, replacement, and enhancements.	No specific action listed.	This AMP ensures the correct management of stormwater within legislated parameters, with limited impact to the surrounding environment, and using the most cost-effective approach.

Theme		Objective	Strategy	Action	Alignment
			3.2 Maintain strong and positive relationships with Federal and State Government Departments, advocating for increased investment in coastal and environmental protection within the Council area.	No specific action listed.	This AMP encourages positive relationships with Government Departments through consultation and notification, and advocacy for investment funding for required stormwater works.
4	Infrastructure and Asset Sustainability	Provide functional, safe, fit for purpose assets that meet the changing needs of the community.	4.1 Create a sustainable stock of assets, with appropriate long-term asset planning and optimal use.	Develop and review biennially asset management plans for all main asset categories.	This AMP prioritises work based on consumption, condition, and best practice across the asset class in a single document for easy reference and transparency. It also defines the strategic objectives to be reflected in the operational plans.
			4.2 Plan and provide for a safe local road network that meets the future and current needs of our community.	No specific action listed.	This AMP highlights areas of concern regarding localized flooding of property and/or road infrastructure and ensures that the risks are captured and documented in the relevant AMP.

Theme		Objective	Strategy	Action	Alignment
5	Organizational Excellence	A great place to work where innovation and efficiency is expected and customers are our focus.	5.1 Streamline operational decision making processes through technology based improvements.	Pursue and implement information technology solutions such as Business Intelligence (BI) reporting, NBN and mobility solutions that enable greater analysis, operating efficiency and improve the delivery of general and financial reporting and resilience of the information technology network.	This AMP explores utilising innovative technology and software for capturing asset and maintenance data remotely by developing the Maintenance module within Council's Asset Register software, Brightly. Using this technology will mean an increase in data accuracy for financial reporting and will streamline maintenance and renewal programs.
			5.3 Increase community input into Council decision making, through adoption of quality community engagement principles and practices.	No specific action listed.	Draft AMP's are made publicly available for consultation prior to adoption which increases community engagement and input.
			5.4 Optimise Council operation of businesses and assets, to ensure value for money is returned to the community.	No specific action listed.	This AMP and associated Risk Register employs a risk-based approach to development of the works program to ensure optimisation of Council assets and value for money.

3.3 Legislative Requirements

Wattle Range Council complies with the South Australian legislation relating to stormwater wherever practical. This includes:

- *Aboriginal Heritage Act 1988*
- *Environment Protection (Water Quality) Policy 2015*
- *Natural Resources Management Act 2004*
- *South Eastern Water Conservation and Drainage Act 1992*
- *Development Act 1993*
- *Road Traffic Act 1961*
- *Essential Services Commission Act 2002 and Regulations 2019*
- *Environment Protection Act 1993*
- *Landscape South Australia Act 2019* and associated regulations
- *Work Health and Safety Act 2012 and Regulations 2012*
- *Local Government Act 1999* and associated regulations

There are a wide range of codes, standards, policies and guidelines relating to the management of stormwater in South Australia. Where practical, Council seeks to operate within these guidelines, including:

- *AS ISO 19600:2015 – Compliance Programs*
- *Australian Accounting Standards*
- *Building Code of Australia 2007*
- *Environment Protection (Water Quality) Policy 2003*
- *AS/NZS 3500.3:2021 Plumbing and drainage, Part 3: Stormwater drainage*
- *AS/NZS 5667: Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the handling of samples.*
- *AS/NZS 2031: Water quality – Sampling for microbiological analysis (ISO 19458:2006, MOD)*
- *AS/NZS ISO 3100: Risk management – Principles and Guidelines*
- *The National Construction Code (NCC) Volume 3 Plumbing Code of Australia (PCA) including South Australian Variations and/or Additional Provisions.*

3.4 Community Values

Community values indicate:

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

Table 5: Community Values

Service Objective	Community Values	Community Satisfaction Measure
Stormwater assets have capacity to meet existing flows	No loss of service	Number of complaints/customer requests
Respond to flooding events in a reasonable timeframe	No loss of service	Number of complaints/customer requests

3.5 Community Levels of Service

Council is committed to the safe and reliable management of our stormwater assets to meet and exceed community expectations within financial and other practical constraints. Council has identified two levels of service categories: Community Levels of Service and Technical Levels of Service. Community levels of service measures the community's expected level of service from the stormwater assets, while technical levels of service measures the actual service that Council provides. The two levels of service can be compared to each other and used to identify areas of improvement. Table 6 identifies the existing and target community levels of service. Current performance is based on the last full reporting year prior to preparation of the AMP.

Table 6: Customer Levels of Service

Activity	Service Objective	Performance Measure	Current Performance	Target Performance
Quality	Stormwater is collected from public spaces, roadways, and residential and commercial properties and dispersed in accordance with legislative requirements	Number of flooding event complaints reported by community	12 flooding complaints in 2021/22 financial year 23 flooding complaints in 2020/21 financial year	Less than 15 flooding event complaints reported by community per year
Capability	Stormwater infrastructure has capacity to meet existing and projected flows	Number of flooding event complaints reported by community	12 flooding complaints in 2021/22 financial year 23 flooding complaints in 2020/21 financial year	Less than 15 flooding event complaints reported by community per year
Responsiveness	Customer complaints and reported issues are dealt with in line with Council's customer service standards	Number of days to action complaints or resolve issues	Not previously recorded, however the introduction of Datascape as the new corporate software provides for this to be captured in the future.	To be developed along with the capability of recording the measurable data in Datascape

Activity	Service Objective	Performance Measure	Current Performance	Target Performance
Safety	Respond to flooding events in a reasonable timeframe	Time taken for initial attendance at flooding events Time taken to resolve flooding event	Not previously recorded, however the introduction of Datascape as the new corporate software provides for this to be captured in the future.	Initial attendance within 8 hours Resolution of flooding event within 7 days (e.g. address cause)

3.6 Technical Levels of Service

These technical measures relate to the activities and allocation of resources needed to achieve the desired customer outcomes and demonstrate effective performance. Table 7 identifies the existing and target technical levels of service. Current performance is based on the last full reporting year prior to preparation of the AMP.

Table 7: Technical Levels of Service

Activity	Service Objective	Performance Measure	Current Performance	Target Performance
Capability	Stormwater infrastructure has capacity to meet existing and projected flows	Number of flooding event complaints reported by community	12 complaints in 2021/22 financial year 23 complaints in 2020/21 financial year	Less than 15 flooding event complaints reported by community per year

Activity	Service Objective	Performance Measure	Current Performance	Target Performance
Maintenance	Existing infrastructure is maintained in a suitable condition that is fit for purpose	Number of reactive service requests	Reactive repair of breaks and blockages	<15 customer reactive service requests across all areas
		Visual assessment undertaken to determine condition of stormwater pits	Undertaken in ad hoc manner in known problem areas	Annual programmed inspection of stormwater pits to understand if cleaning of pits is required
		Assessment of asset condition	Desktop revaluation completed as at 1 July 2020	Full valuation and condition assessments undertaken every 4 years
		Operating and Maintenance budget	Predominant work is undertaken as reactive	90% of maintenance is planned for in the annual budget process
Renewal	Stormwater infrastructure is fit for purpose and is upgraded or replaced as needed	Age and performance of network Outcomes of condition assessment	Planned renewals on assets	Major replacement work is planned for in the annual budget process Future work program is informed by condition assessment
Safety	Preventable hazards are identified and managed in accordance with Council's risk management policy	Risk register maintained	Initial review of networks for hazards completed in 2023	Annual review of risk register to update with new hazards or amend existing hazards

FUTURE DEMAND

4 Future Demand

4.1 Demand Drivers

The key factors that directly impact the demand for services and related infrastructure include:

- Static population growth
- Legislation changes
- Ageing infrastructure
- Condition of infrastructure
- Community expectations
- Economic factors
- Seasonal changes
- Climate change

4.2 Demand Forecast

4.2.1 Population

The most recent data available is from the Australian Bureau of Statistics (ABS) 2021 census. According to this data, Wattle Range Council area has a population of 11,888, with Millicent being home to approximately 40% of the district's population, and Penola being the second largest township. Coastal townships of Beachport and Southend see a large increase in population (namely holidaymakers) during peak summer holiday season. Overall, the population in Wattle Range Council area remains stable with no significant growth since the 2016 census, however, should the population significantly increase, it is likely to have an impact on stormwater infrastructure placing a greater demand on existing infrastructure or acquiring additional infrastructure through development.

4.2.1.1 *Millicent*

While Millicent's population between the 2016 census and the 2021 census only increased by one person, there was a notable increase in the number of private dwellings, from 2,473 to 2,551. It is acknowledged that generally an increase in dwellings will result in an increase in stormwater runoff. The Wattle Range Strategic Land Use Plan 2022 summarises that Millicent has a substantial amount of land that could see an increase in urban development, particularly subdivision of rural living allotments that is currently used as agricultural land. These areas outskirt the main township and generally have no stormwater infrastructure. It is unlikely that residential development in these areas would require installation of stormwater infrastructure due to current lack of available services (i.e. area is not serviced by SA Water therefore residents would likely utilise stormwater catchment from dwellings for water supply) and well-draining soil. Swale drains or culvert infrastructure is not likely to be required in these instances.

There are pockets of residential and commercial expansion potential within Millicent township limits. The largest of which are areas behind Millicent High School, Teagle's Excavations, and Bolton Oval Reserve, and opposite the Pines Service Station on Mount Gambier Road. For private land subdivision developments, the developer is required to provide stormwater infrastructure for the new allotments and does so in agreement and consultation with Council. It is noted that Council does not pay for installation of this infrastructure but will inherit the assets from the developer after the agreed defect liability period has been met. For this reason, ongoing maintenance costs and depreciation of the new

stormwater assets will need to be considered. Development in any of the above-mentioned areas is likely to significantly increase stormwater catchment in the open drain network.

4.2.1.2 Penola

Penola topographical area is low-lying and flat. The soil type is not as well-draining as Millicent. Due to these factors, stormwater in Penola is most-commonly captured through either kerb and pipe infrastructure flowing into several detention basins and open drains, or swale drains in the absence of kerbing. There is some residential sub-division potential within Penola, the development of which would result in some increased stormwater run-off to the catchment areas.

There are existing issues with the stormwater network within Penola, particularly surrounding new private developments. The Risk Register (Appendix 2) noted this issue which has resulted in an action for Council to develop standards for stormwater management for new developments. This will occur as Council's asset register and spatial data is developed, and it is anticipated that this action will prevent future instances of residential or commercial development without approved stormwater management plans.

4.2.1.3 Other Townships

The remaining eleven townships generally consist of smaller house allotments close to the town centre, with larger lifestyle allotments or farming land on the town fringes. There is the potential for very minor increases to the population in some townships due to the sale of agricultural land for residential development or subdivision. Wattle Range Council generally has more land zoned for rural living than other Local Government areas. In areas known to have drainage issues, such as Kalangadoo and Glencoe, additional stormwater infrastructure may be required to be installed by Council to allow adequate levels of service in areas of new development. It is possible that industry or commercial development may also occur in these areas. Like residential development, the commercial developer is responsible for providing stormwater services on the site, however for larger developments, Council may be required to either install or inherit stormwater infrastructure such as culverts. Council acknowledges that these assumptions are very subjective on the nature of the development.

4.2.2 Ageing Infrastructure

Most of the stormwater assets would be expected to fail with age or general wear and tear, with the exception to mechanical assets which could fail early due to faulty parts. As a result, consideration should be given to replacement or renewal of ageing infrastructure towards end of useful life. As shown in Table 8, Council's stormwater assets do not meet end of useful life in this iteration of AMP, with the exception to mechanical assets, of which the renewal and maintenance programs have been captured in the Risk Register. Council will address renewal of ageing infrastructure in future revisions of this AMP.

Table 8: Average of Accounting Remaining Useful Life for Stormwater Assets

Asset Category	Average Remaining Useful Life (Years)
Culverts	65
Infiltration Devices	66
Mechanical	8
Open Drains and Rain Gardens	44
Stormwater Drains	82
Stormwater End Structures	63
Stormwater GPTs	65
Stormwater Pits	83

4.2.3 Condition of Infrastructure

It can be extremely difficult to assess the condition of underground stormwater infrastructure such as pipes and pits. Consequently, at the time of the development of this AMP, the actual condition of the stormwater assets was not known. The asset conditions could be calculated from useful life and age, however this was deemed to not be a reliable method to determine the asset condition therefore the risk of this uncertainty has been captured in the Risk Register (Appendix 2) and an action item has been proposed to work towards obtaining reliable and accurate asset condition data. Council currently relies on staff knowledge of known service deficiencies to give an indication of the condition of infrastructure.

4.2.4 Community Expectations

The community's expectations of Council for stormwater management may change in the future, possibly driven by advancing technologies, environmental awareness, or population growth/housing development. Council acknowledges that changes to community expectations are likely to occur and plan to recognise any changes in future revisions of this AMP.

4.2.5 Climate Change

With the increased volatility of Australia's weather patterns, there is an increased likelihood of infrastructure damage by natural disasters. Following any natural disaster event, any damaged stormwater infrastructure will need to be assessed and replaced/renewed accordingly. Due to the reactive nature of these works, Council will often be required to divert resources away from the routine cycle of renewal and maintenance works for stormwater infrastructure, which can create infrastructure renewal backlogs.

In addition to any natural disaster events that may occur, stormwater infrastructure within the Council area may be impacted by changes in rainfall intensity. According to the Department for Environment and Water's Guide to Climate Projections for Risk Assessment Planning in South Australia 2022, the state can expect the number and intensity of heavy rainfall events to increase. Council acknowledges that this could increase the pressure on some townships' stormwater systems, particularly in the lower-lying, marshland areas such as Kalangadoo and Penola, or where it has been identified that drainage needs to be improved to meet service level standards. Alternatively, drought may mean that stormwater harvesting and reuse is considered in the future.

Council acknowledges that climate change could also influence coastal erosion and rising sea levels in coastal and low-lying townships, such as Beachport and Southend, which may result in loss or destruction to property and assets. This will need to be considered when assessing upgrade or renewal work.

4.3 Demand Impact and Demand Management Plan

The objective of demand management is to actively seek to modify community demands for services in order to:

- Optimise the utilisation / performance of existing assets.
- Reduce or defer the need for new assets.
- Meet the organisation's strategic objectives.
- Deliver a more sustainable service.
- Respond to community needs.

It is vital to the success of the plan that demand factors be analysed comprehensively, and their impact quantified in terms of the following:

- The effect of the growth of the asset network.
- Any possible future need to increase or decrease infrastructure.
- The implementation of non-asset solutions, such as managing demand.
- Insuring against risks and managing failures.

Currently the stormwater infrastructure can meet the demands and generally provides the expected level of service to the community.

4.4 Asset Programs to Meet Demand

The new assets required to meet demand may be acquired, donated, or constructed. Council will capture expected investment to maintain, renew and upgrade as appropriate all stormwater infrastructure in the reviewed Long Term Financial Plan. It is acknowledged that historically, proactive maintenance has been minimal.

4.5 Climate Change Adaptation

The impacts of climate change may have a significant impact on the stormwater assets 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 impacts on assets will vary depending on the location and the type of services provided, as will the way in which we respond and manage those impacts. As a minimum, consideration is given how to manage existing assets given potential climate change impacts for the region. Risk and opportunities identified to date are shown in the Risk Register (Appendix 2).

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

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

Table 9 summarises some asset climate change resilience opportunities.

Table 9: Building Asset Resilience to Climate Change

New Asset Description	Climate Change impact These assets?	Build Resilience in New Works
All new assets in Beachport and Southend	Coastal erosion, rainfall intensity	Locate new infrastructure out of the identified coastal erosion zone. Consider capacity of collection network to accept increased stormwater.
All new assets in other townships	Rainfall intensity	Consider capacity of collection network to accept increased stormwater.

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

LIFECYCLE MANAGEMENT PLAN

5 Lifecycle Management

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

5.1 Background Data

Wattle Range Council maintains an extensive stormwater system across the district, comprising of various open channels, drains, pipes, and pits. A full summary of the stormwater assets covered by this AMP is contained in Table 1. The stormwater network is complemented by a unique drainage network owned and maintained by SEWCDB. Much of the stormwater runoff in the region ultimately ends up in this network of drains. The main issue faced by Council is how to get the stormwater runoff to these drains and other detention areas.

5.1.1 Physical Parameters

The assets covered by this AMP are summarised in Table 1.

5.1.2 Asset Capacity and Performance

The stormwater network across the main township areas generally performs to an acceptable level during average rainfall events. The deficiencies within the network generally appear after a single intensive event, however over a relatively short period of time the excess stormwater does drain away. This is particularly evident in the township of Millicent where a large portion of the land is relatively flat and well-draining.

The township of Penola faces a slightly different challenge, in that much of the stormwater infrastructure is via overland surface flows. The Penola township is very flat, thus utilising overland flow paths can be problematic particularly during short, intense rainfall events. A Stormwater Management Plan for the Penola Township has been compiled, identifying catchment zones and concept designs to improve stormwater management in the area through construction of underground pipes. The Penola Stormwater Management Plan was completed in 2010 and now requires updating. This has been identified in the Risk Register in Appendix 2.

Assets are generally provided to meet design standards where these are available. There are some service deficiencies within the stormwater network. These service deficiencies were identified from system knowledge by asset operators and captured as assessed risks in the Risk Register (Appendix 2).

5.1.3 Asset Condition

Council will be undertaking revaluation and condition assessments of asset classes in accordance with the Asset Policy on a four-yearly cycle. This data will be kept in Council's asset register, currently maintained in the Brightly software system (formerly Assetic). The data will be used to assist in prioritising future capital works and maintenance programs.

At the time of the development of this AMP, the actual condition of the stormwater assets was not known. The asset conditions could be calculated from useful life and age, however this was deemed to not be a reliable method to determine the asset condition therefore the risk of this uncertainty has been captured in the Risk Register (Appendix 2) and an action item has been proposed to work towards obtaining reliable and accurate asset condition data.

Condition ratings will be based on a six-point scale as detailed in Table 10.

Table 10: Asset Condition Rating Description

Condition	Description	Remaining Useful Life
0 Brand New	Asset is brand new or in brand new condition	100%
1 Excellent	Asset has no defects, asset is new, within defect liability period. Subject to preventative maintenance only.	99% - 92%
2 Good	Asset exhibits normal wear and tear, minor defects, minor signs of deteriorated surfaces finishes. Minor maintenance required (about 5% of asset).	91% - 80%
3 Fair	Asset is in an average condition, building services are functional. Building fabric displays sign of defects, signs of deterioration to surface finishes requiring attention with intervention levels for building fabric triggered. Repairs are required to prevent faster degradation of asset life. Significant maintenance required (about 5-20% of asset).	79% - 60%
4 Poor	Asset has deteriorated badly, serious problems with building services, general appearance of building fabric is poor and can be associated with cracks. The asset is still functional but shows signs of major wear and tear and defects, backlog maintenance work exists. Significant renewal work required (about 20-50% of asset).	59% - 26%
5 Very Poor	Asset has reduced functionality. Asset has significant defects affecting many components, deteriorated surfaces require significant attention, services are functional but failing spasmodically, major backlog maintenance work exists. Over about 50% of asset requires replacement.	25% - 10%
6 End of Life	Asset has reached the end of its useful life. Asset requires replacement.	0%

5.2 Operations and Maintenance Plan

Council employees oversee the operational and maintenance aspects of managing the stormwater infrastructure. Currently maintenance is largely reactive; however, Council aims to review and improve inspection programs, and improve quality of asset data which will assist in implementing a proactive approach to maintenance going forward. Council also aims to implement Brightly Maintenance module which will capture maintenance works against the asset where historically this data has not been captured. This implementation will assist to shape future maintenance programs.

5.2.1 Operations and Maintenance Strategies

General maintenance strategies include:

- Ensuring the infrastructure is maintained in accordance with agreed levels of service,
- Deferring maintenance work and grouping in the capital improvement program annually unless urgent or safety related.

Currently maintenance has been undertaken reactively, only when issues are observed during inspections, or customer complaints are received. This plan outlines the work required to transition the asset class into a data driven renewal and maintenance program to assist Council in meeting its

obligations to regulators and community. Implementing a proactive maintenance program should also allow Council to reduce maintenance costs and strategically tender for services and goods.

Table 11 identifies the standard maintenance activities including frequency and responsible agent.

Table 11: Routine Maintenance Inspections and Actions

Activity	Frequency	Responsibility
Cleaning GPT at Millicent Main Drain	Annually	Contractor
Street Sweeping Program	Fortnightly	Council

5.2.2 Maintenance Budget

It is difficult to be precise in determining true maintenance needs. Even if a process of zero-based budgeting was undertaken, maintenance is subject to many variables including extremes of weather, ground disturbance and unpredictable loadings.

Historical data from previous financial years maintenance and capital works funding to maintain, renew and upgrade the stormwater infrastructure is presented in Figure 3. With the implementation of Datascape, it is expected that greater granularity of stormwater expenditure will be captured in the future.

All figure values are shown in current day dollars.

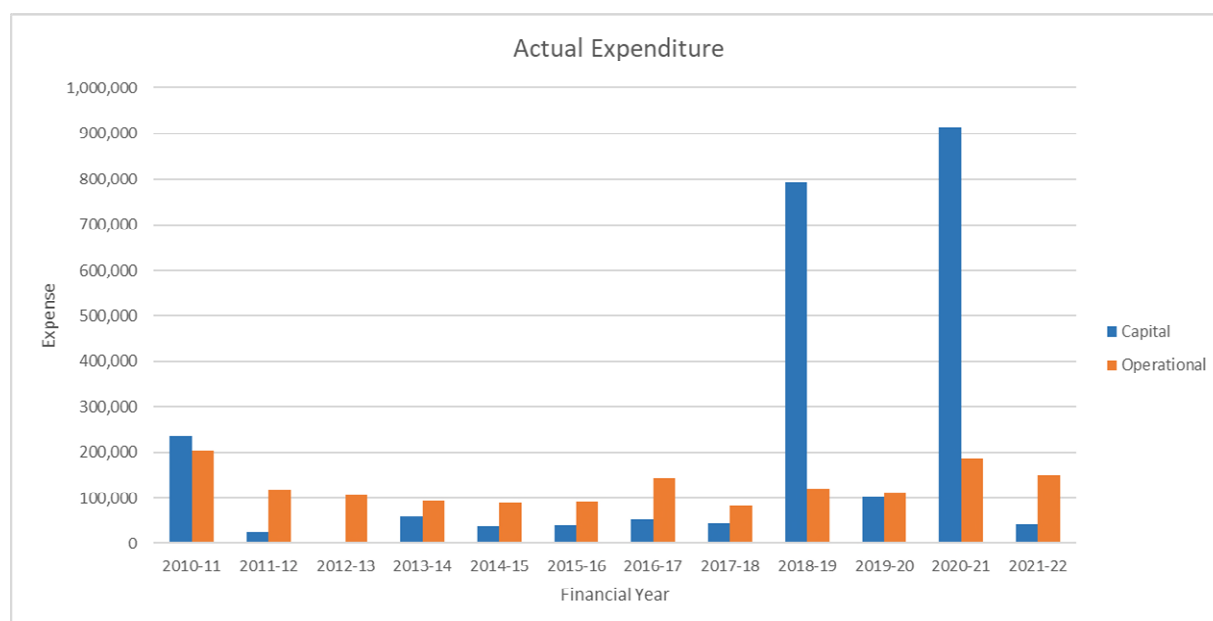


Figure 3: Historic Capital and Operational Expenditure

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 AMP and service risks considered in the Risk Register (Appendix 2). With the implementation of Datascape it is expected that greater granularity of maintenance budget expenditure will be captured in the future.

5.3 Renewal Plan

As per Council's Asset Policy, the objective of asset management is to ensure the assets deliver the required level of service in the most effective and efficient manner now and into the future. Minor renewal works will be undertaken annually with larger or longer-term projects identified as part of the 10-year Long Term Financial Plan. The table below identifies the considerations when setting the renewal programs.

Table 12: Renewal Program Identification Process

Step	Description
1	Potential renewal projects identified from the: <ul style="list-style-type: none">• Condition rating and remaining useful life• Monthly maintenance inspections
2	Projects are prioritized into the ten-year program
3	The ten-year program is referred to the Long-Term Financial Plan for inclusion
4	At the start of the budget process, the next years projects are inspected to verify the current condition to ensure both appropriate calculation of expected costs and the programed project still requires renewal above other components

Asset renewal is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate, or
- To ensure the infrastructure is of sufficient quality to meet the service requirements.

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.

The sump pumps and electrical infrastructure of the stormwater network would be expected to follow the bathtub failure curve model. This model accounts for early failure which would be consistent with faulty mechanical parts followed by low failure rates until an increased wear out of components at the end of their expected useful lives.



Figure 4: Bathtub failure curve model

All other infrastructure such as pipes, culverts, pits, and end structures would be expected to have a fatigue failure curve and be expected to fail with age or general wear and tear.



Figure 5: Fatigue Failure Curve

As assets begin to reach the end of their lifecycle it would be expected that condition assessments would generally be undertaken more regularly to ensure increased maintenance, renewal work or replacements could be scheduled before failure occurred.

Pipe and pit infrastructure would be the exception to this, as condition assessment of underground assets is both expensive and time consuming. Council will undertake initial condition assessments of the drainage network via internal CCTV gradually from 2022-2026. The results of these assessments will determine the long-term strategy for the underground infrastructure.

The renewal strategy at the time of this AMP identified for specific stormwater assets has been described in Table 13. Stormwater renewals will be assessed to determine the appropriate scope of works. This means that both the infrastructure being replaced, and the replacement approach will be assessed to establish whether replacement should be like-for-like, a renewal, an upgrade, replacement with significantly different infrastructure, or a redundancy. This will ensure that the outcome is fit-for-purpose and cost effective.

Table 13: Renewal Strategy

Asset Description	Strategy	Justification
Pumps	Run to fail	The quantity, size and cost of the assets enables for readily available replacement from suppliers without significant lead time or loss of service.
Pump ancillaries	Run to fail	The quantity, size and cost of the assets enables for readily available replacement from suppliers without significant lead time or loss of service.
Stormwater underground mains	Condition based	Condition will be used to plan renewals as these assets are underground and cannot be easily accessed.
Underground valves	Condition based	Assets are underground and cannot be easily accessed.

At the time of this AMP, Council has not identified any stormwater assets which will not be renewed when end of useful life is attained.

5.4 Summary of Future Capital Costs

Forecast renewal costs are projected to increase over time if the asset stock increases.

Annual capital expenses predicted for the stormwater infrastructure for the next 15 years were investigated from the perspective of remaining accounting useful life and current replacement costs of the assets. The data demonstrated that the sole use of accounting useful life to predict future capital expenses leads to an uneven spread of expenses over the years and could not be solely relied upon for future capital planning. Council's budget would be a constraint to these predictions as well as the capacity to undertake the works within the timeframes. Moving forward, detailed asset condition assessments will be completed and this data will be utilised to update asset useful life and

plan renewals. This forecast of expenditure will be adjusted as the Council budget is reviewed annually and as condition assessments are undertaken to inform the renewals.

The forecast capital expenditure for the next 10 years for new and upgrade works is higher than that of renewal works. This is due to the long useful lives attributed to the stormwater infrastructure that has resulted in deferred renewal expenditure as the assets are not nearing end of useful life in this iteration of AMP. Council's current focus is to improve upon and complement the existing stormwater network through new or upgrade development as identified by operator knowledge and documented in the Risk Register (Appendix 2), or by prior Asset Management Plans and Township Stormwater Management Plans.

As documented in section 6.4.1, what Council cannot achieve due to budget constraints in relation to discretionary projects (new and upgrade), the forecast capital expenditure profile will change if projects are deferred. These changes will be incorporated into this AMP in the documents annual review.

The forecast capital expenditure for the next 10 years has been presented in Figure 6, and is based on system knowledge and known deficiencies. The forecast capital expenditure for the next 10 years by new, upgrade, and renewal is shown in Figure 7. The list of the projects that make up the forecast capital expenditure is supplied in Appendix 4.

All figure values are shown in current day dollars and do not account for CPI.

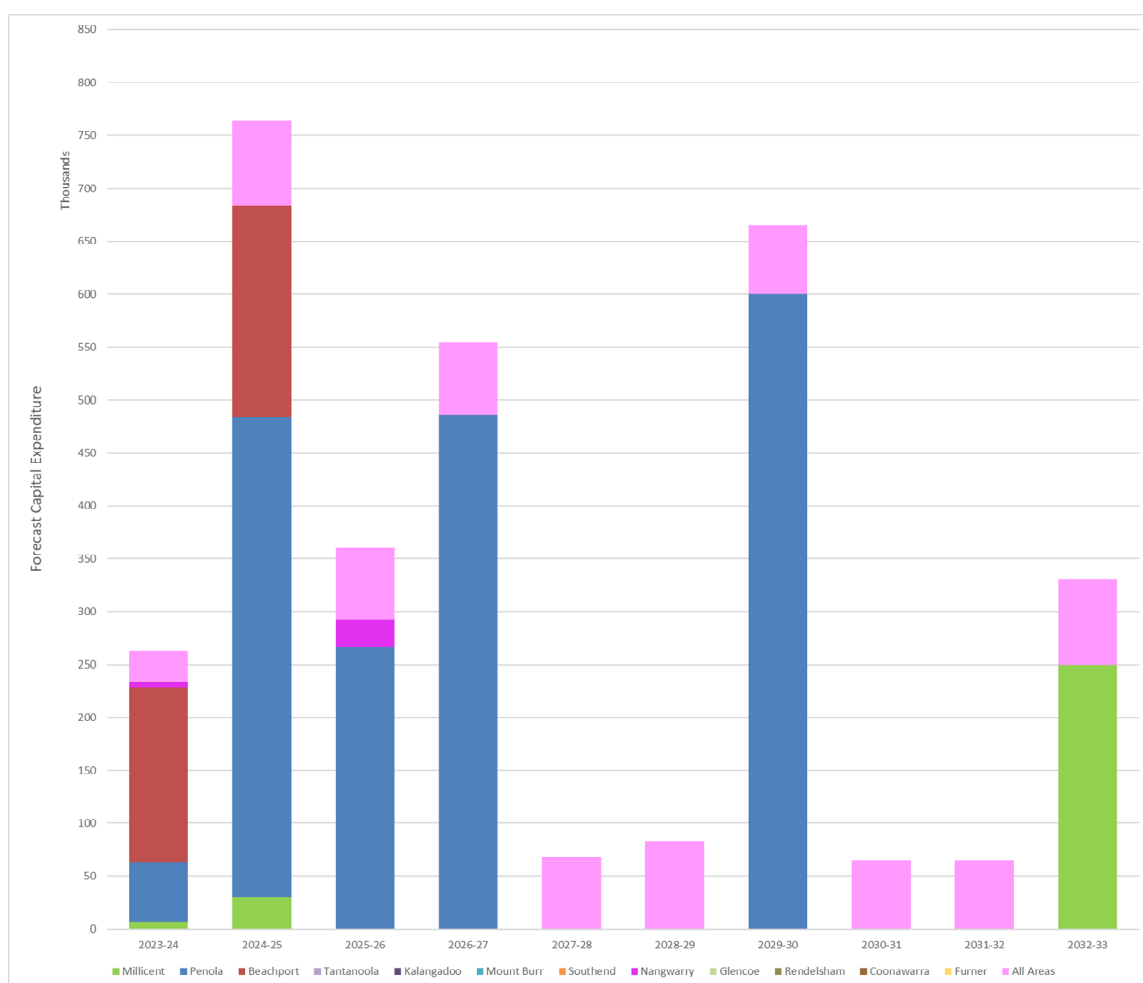


Figure 6: Forecast Capital Expenditure for the next 10 years

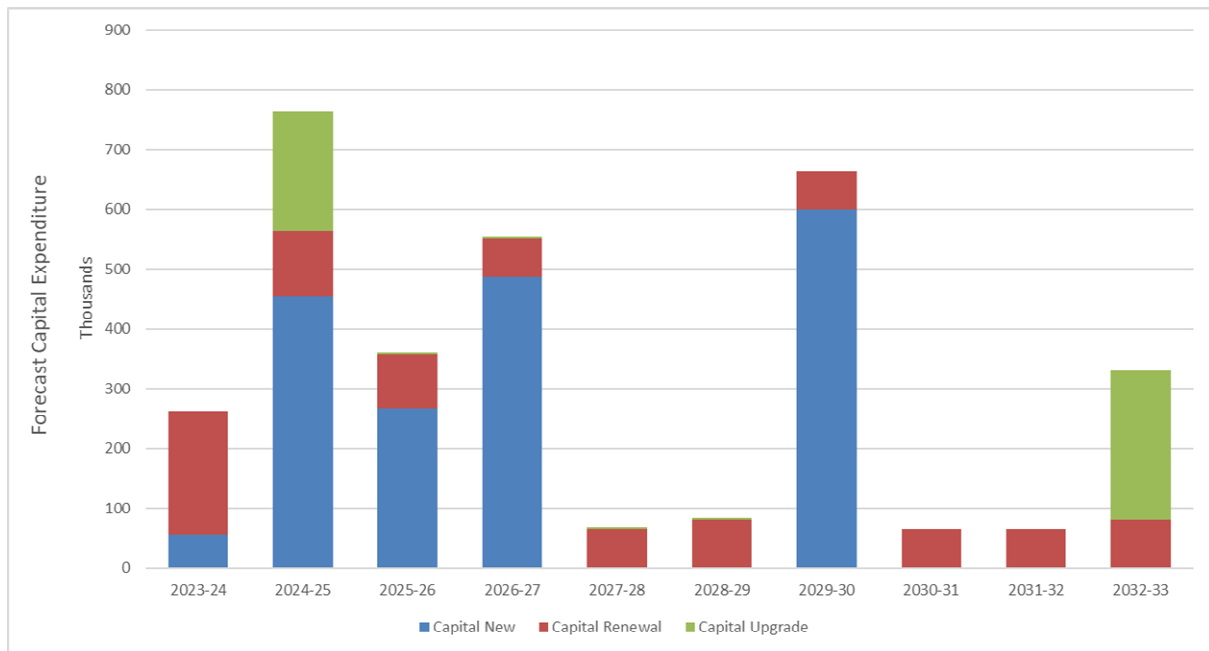


Figure 7: Forecast Capital Expenditure for the next 10 years by New, Upgrade, and Renewal

5.5 Acquisition Plan

Council's Asset Policy outlines the need to make decisions for service delivery focused on asset renewal, rationalising underutilised assets and non-asset solutions as far as practicable, to achieve a cost-effective asset base and deliver financial sustainability. Upgrades and new expenditure will be undertaken as required to accommodate growth only where full lifecycle costs can be accommodated.

The current stormwater infrastructure has sufficient capacity for expected residential growth during the life of this plan. Where additional infrastructure is required for residential development or upgrades are required for commercial or industrial development, it will be the responsibility of the developer to invest in the capital.

5.6 Disposal Plan

Council's Contracts and Tenders – Sale of Assets Policy outlines the procedure to be undertaken when disposing of Council's assets including all stormwater infrastructure. Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition, or relocation.

5.7 Summary of Asset Forecast Costs

The financial projections from this asset plan are discussed in the sections 5.7.1 to 5.7.4. These projections include forecast costs for acquisition, operation and maintenance, renewal, and disposal.

5.7.1 Forecast Acquisition Costs

The acquisitions forecast at the time of this plan have been captured in Table 14. Much of the stormwater capital and operational works programs allow for initial investigative works to first identify the problem prior to addressing it because the full extent of the works is not yet known. As a result, there will be some acquisitions that are not identified in this AMP.

Council is currently aware of a private subdivision development in Penola of which some stormwater assets will be inherited as Council assets from the developer. The value and description of these assets is unknown at the time of this AMP and therefore have not been included in the forecast acquisitions.

Table 14: Forecast Acquisitions

Location	Asset Description	Timing
Penola	New stormwater pit on Arthur Street, Penola in front of VIC	2025-26
Penola	Installation of stormwater pipes and pits for Ellen Street	2026-27
Penola	Portland Street/John Street stormwater construction	2029-30
Beachport	Installation of kerbing at Foster Street and South Terrace, and French Street and South Terrace, and drainage works on Foster Street	2022-23
Beachport	Somerville Street, Beachport, drainage works including kerb and channel	2024-25
Penola	Stage 1 - Construction of new stormwater infrastructure along Queen Street and South Terrace, Penola	2023-24
Penola	Stage 2 - Construction of new stormwater infrastructure along Queen Street and South Terrace, Penola	2024-25
Penola	Stage 3 - Construction of new stormwater infrastructure along Queen Street and South Terrace, Penola	2025-26
Penola	Stage 4 - Construction of new stormwater infrastructure along Queen Street and South Terrace, Penola	2026-27
Millicent	Bolton Oval/Mount Gambier Road drainage works	2032-33

5.7.2 Forecast Operation and Maintenance Costs

The forecast operational expenditure for the next 10 years has been presented in Figure 8, based on system knowledge. This forecast of expenditure will be adjusted annually as Council budget is reviewed. The list of the projects that were identified for incorporation in the forecast operational expenditure is supplied in Appendix 5.

All figure values are shown in current day dollars and do not account for CPI.

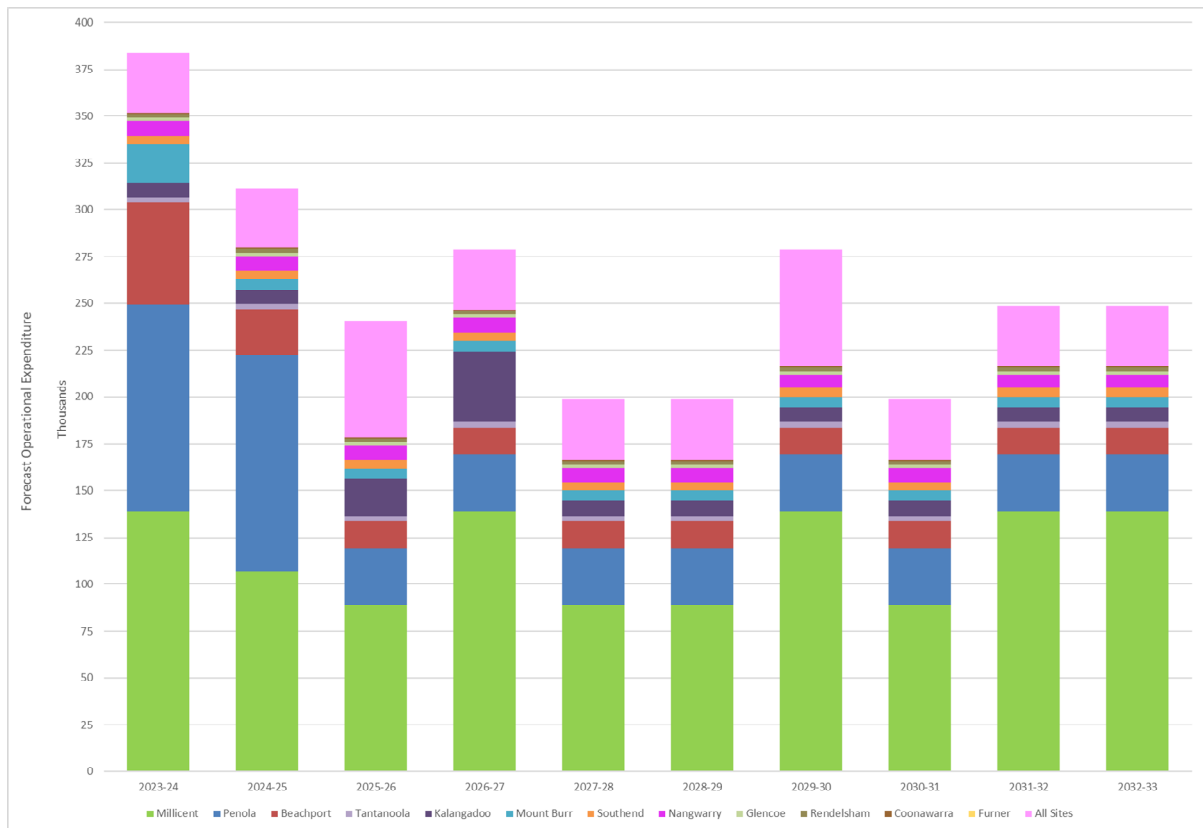


Figure 8: Forecast Operational Expenditure for the next 10 years

5.7.3 Forecast Renewal Costs

The forecast renewal costs have been captured and described in section 5.4.

5.7.4 Forecast Disposal Costs

Disposal costs will be incurred through renewals and upgrades and through removal of redundant assets. Due to the nature of the capital upgrade and renewal program, loss on disposal is unable to be calculated at the time of this AMP.

Assets identified as not in use and not providing a service function but are still physically in situ awaiting removal and disposal are described as redundant. The assets which have been identified as redundant at the time of this AMP are listed in Table 15.

Table 15: Redundant Assets

Location	Asset Description
Millicent	Fencing around Clinton Lane Detention Basin

RISK MANAGEMENT PLANNING

6 Risk Management Planning

This document utilises principles established in the ISO 31000:2018. The overall objectives of a formal risk management approach are to:

- Outline the process by which Council manages risk associated with its assets, so that all risks can be identified and evaluated in a consistent manner.
- Identify operational and organisational risks at a broad level.
- Allocate responsibility for managing risks to specific staff to improve accountability.
- Prioritise the risks to identify the highest risks that should be addressed in the short to medium term.

6.1 Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service.

At the time of this AMP, no critical stormwater assets have been identified by Council, however, with improvements to the quality and quantity of data, we hope to identify critical infrastructure for future revisions of this AMP.

6.2 Risk Assessment

Risk assessments are undertaken in accordance with Council's Risk Management Policy and utilising Council's Risk Matrix. Council maintains an online Corporate Risk Register, which is regularly reviewed by staff, ELT and the Audit and Risk Committee. The Audit and Risk Committee is comprised of elected members, Council staff and suitably qualified independent community members.

The only practical means of readily identifying risk is by regular monitoring and inspections of our assets. This process should enable significant risks to be discovered and remedied in advance of possible injury or incident. Implementing the maintenance inspections and completing the actions as captured in Table 11 enables the identification of risks related to the stormwater assets.

The Stormwater Asset Risk Register has been provided in Appendix 2. The hazards that are assessed to have a residual risk of High (H15 – H20) or Extreme (E21 – E25) will inform Council's Corporate Risk Register.

6.3 Infrastructure Resilience Approach

The resilience of the stormwater infrastructure is vital to the ongoing provision of services to community. To adapt to changing conditions the 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.

Section 4.5 details the adaptations that are being implemented to build resilience to climate change. Resilience will be built into new developments with each development application being assessed individually on a case-by-case basis.

Further resilience will be investigated for implementation after the growth forecasts and land use planning are adopted for each location. Adoption of the land use planning will allow for capacity assessments and options studies to be performed.

The plan to commence asset condition assessments of the stormwater infrastructure will further benefit the approach to resilience.

6.4 Service and Risk Trade-Offs

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

6.4.1 What we cannot do

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

- Projects where Council budget is not sufficient to cover the full project cost and therefore external funding is required for the project to proceed; if external funding is not approved, the projects are not undertaken but deferred until a time where suitable funds are available.
- Where large capital new/upgrade projects are identified in this AMP which are discretionary in nature will be considered individually each financial year and as such future capital expenditure profile documented in this AMP will change.
- Avoid all instances of flooding during significant rainfall events in the short to medium term due to financial constraints.
- Provide Stormwater Management Plans for all townships.
- Upgrade all open channel systems to buried pipe.

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. These service consequences include:

- Hidden failures in the network
- Localised flooding during high-intensity rainfall events
- Decrease in community satisfaction and service levels

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:

- Work Health Safety (WHS) in relation to undertaking maintenance on stormwater pits that have heavy concrete or cast-iron lids
- Economic in relation to
 - The unknown condition and location of underground assets
 - The poor data or details available for the infrastructure
 - The uncertainty around system capacity and demand
- Decrease in Community Levels of Service

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

- Routine inspections and proactive maintenance programs
- Timely response to customer requests and defining service levels
- Optimised management and operation of network

These actions and expenditures are considered and included in the forecast costs, and in the Risk Register (Appendix 2).

FINANCIAL SUMMARY

7 Financial Summary

7.1 Financial Sustainability and Projections

7.1.1 Sustainability of service delivery

There are two key indicators of sustainable service delivery:

- 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).

7.1.1.1 *Asset Renewal Funding Ratio*

Asset Renewal Funding Ratio¹ 90-110%

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.

7.1.1.2 *Medium term – 10 year financial planning period*

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

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

The forecast operations, maintenance and renewal costs over the 10 year planning period is \$580,381 on average per year.

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

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

Table 16 shows the forecast costs (outlays) required for consideration in the 10 year Long-Term Financial Plan.

Providing services in a financially sustainable manner requires a balance between the forecast outlays required to deliver the agreed service levels and the planned budget allocations in the Long-Term Financial Plan.

A gap between the forecast outlays and the amounts allocated in the financial plan would indicate that further work is required to review service levels in the AMP (including possibly revising the Long-Term Financial Plan).

The 'gap' will be managed by developing this AMP to provide guidance on future service levels and resources required to provide these services in consultation with the community.

Forecast costs are shown in current day dollars and do no account for CPI.

¹ AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

Table 16: Forecast Costs (Outlays) for the Long-Term Financial Plan

Financial Year	Capital New (\$)	Capital Upgrade (\$)	Capital Renewal (\$)	Operational (\$)
2023-24	56,155	-	207,000	383,613
2024-25	453,692	200,000	110,000	311,613
2025-26	267,334	3,000	90,000	240,613
2026-27	486,501	3,000	65,000	278,613
2027-28	-	3,000	65,000	198,613
2028-29	-	3,000	80,000	198,613
2029-30	600,000	-	65,000	278,613
2030-31	-	-	65,000	198,613
2031-32	-	-	65,000	248,613
2032-33	-	250,000	80,000	248,613
Total	2,028,682	462,000	727,000	2,586,126

The forecast depreciation expense taking into account renewals, disposals, and acquisitions has been provided in Figure 9.

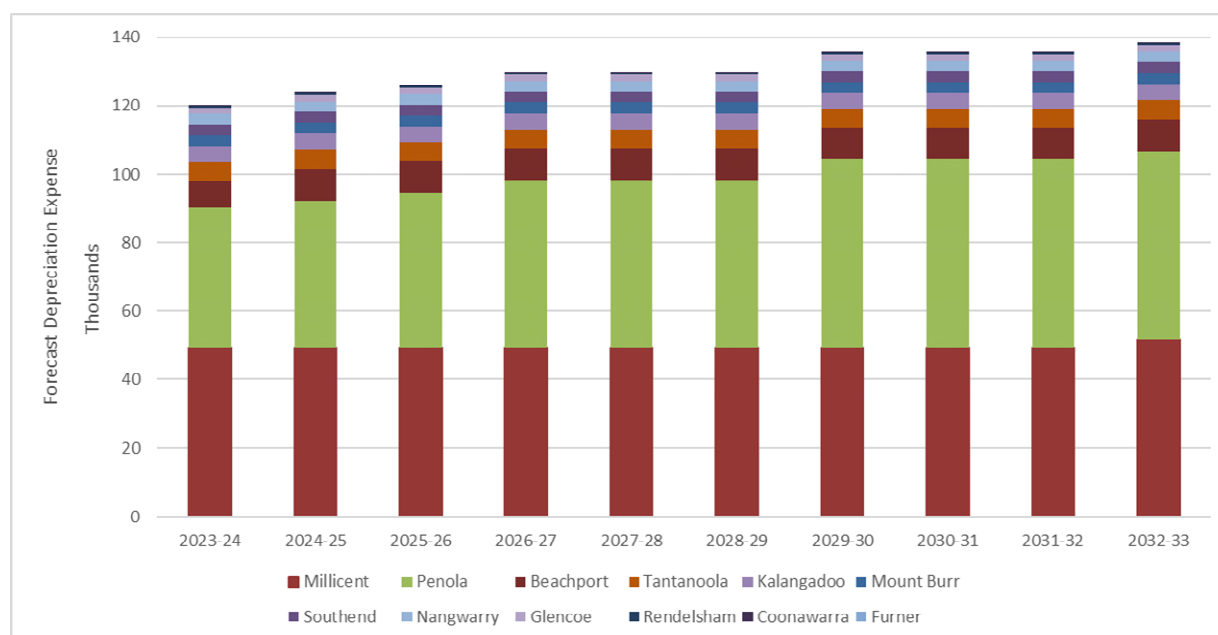


Figure 9: Forecast Depreciation Expense for the next 10 years

7.2 Funding Strategy

Funding for assets is outlined in the Council's annual budget and Long-Term Financial Plan.

Council's financial strategy determines how funding will be provided, whereas the AMP communicates how and when this will be spent, along with the service and risk consequences of various service alternatives.

There are three main sources of funding for the stormwater infrastructure renewals and maintenance;

- General rates,
- Loan borrowings, and

- External grants from State Government and/or the LGA.

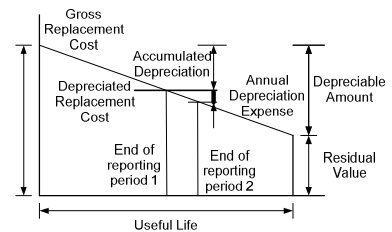
Expenses from operational and capital works are taken from a reserve account that holds excess funds collected through general rates and the cost of loans and loan interest payments are also drawn off the reserve account.

7.3 Valuation Forecasts

7.3.1 Asset valuations

The best available estimate of the value of assets included in this AMP are shown below and in Table 2. The assets are valued using the application of unit rates as detailed in Sections 7.3.1.1 to 7.3.1.3.

Current (Gross) Replacement Cost	\$14,293,604
Depreciable Amount	\$4,807,865
Depreciated Replacement Cost ²	\$9,485,738
Depreciation	\$121,409



7.3.1.1 Useful Life

The recent stormwater asset valuation and methodology prepared by Tonkin as of 1 July 2020 applied the useful life to the assets as per Table 17. The useful lives were generated based on the service standard determined by Council. The valuation noted that Council's useful lives are longer than those of some other Councils. The condition assessment showed that 87% of the assets were in good condition. This condition demonstrates that most of the assets are performing at a satisfactory level for the current useful lives and indicates that the longer useful lives is not inappropriate in the current situation. Future condition assessments and monitoring will continue to provide Council with further evidence to support the longer useful lives.

² Also reported as Written Down Value, Carrying or Net Book Value.

Table 17: Asset Useful Life and Unit Rate

Asset Description	Unit Rate (\$)	Network Measure	Useful Life (Years)
150mm Pipe (PVC)	145	Length (metre)	125
225mm Pipe (PVC)	196	Length (metre)	125
300mm Pipe (RCP)	339	Length (metre)	125
375mm Pipe (RCP)	378	Length (metre)	125
450mm Pipe (RCP)	440	Length (metre)	125
675mm Pipe (RCP)	667	Length (metre)	125
750mm Pipe (RCP)	741	Length (metre)	125
825mm Pipe (RCP)	815	Length (metre)	125
900mm Pipe (RCP)	930	Length (metre)	125
1050mm Pipe (RCP)	1,113	Length (metre)	125
300mm Box Culvert	461	Length (metre)	100
Single Side Entry Pit (900mm x 600mm)	2,231	Quantity (each)	125
Double Side Entry Pit (1800mm x 600mm)	3,765	Quantity (each)	125
Single Grated Inlet Pit (900mm x 600mm)	2,231	Quantity (each)	125
Double Grated Inlet Pit (1800mm x 600mm)	3,780	Quantity (each)	125
Junction Box (600mm x 600mm)	2,038	Quantity (each)	125
SW Junction Box (1200mm x 900mm)	4,993	Quantity (each)	125
SW Junction Box (1500mm x 1200mm)	6,448	Quantity (each)	125
SW Grated Inlet Pit / Junction Box (600mm x 600mm)	2,038	Quantity (each)	125
SW Headwall (300mm x 450mm)	7,766	Quantity (each)	100
Pump Sump (1200mm diameter)	6,294	Quantity (each)	125
Drainage Bore (0-45m Deep)	5,782	Quantity (each)	100
Drainage Bore (45-100m Deep)	12,463	Quantity (each)	100
Soakage Pit	6,078	Quantity (each)	100
Gross Pollutant Trap	56,817	Quantity (each)	100
Stormwater Pump	4,796	Quantity (each)	15
Basin	45	Length (metre)	100
Open Drain	32	Length (metre)	70
Outfall Open Channel	105	Length (metre)	100

Following the review and implementation of the stormwater data structure and cleansing, Council hope to have more granularity of useful lives down to asset type.

7.3.1.2 Unit Rates

Unit rates for the assets as of 1 July 2020 were largely generated from Rawlinsons Australian Construction Handbook – Edition 38 2020 (Rawlinsons). Where a suitable rate was not available within Rawlinsons, manufacturer's pricing was obtained. Unit rates are provided in Table 17.

7.3.1.3 Revaluation Methodology

Asset Group	Replacement Cost =	Accumulated Depreciation =
Length based assets i.e. pipes, (depth for Bore etc)	Length of asset * applicable unit rate	Replacement Cost * consumed useful life
Quantity based assets i.e. pits, pumps, headwalls	Applicable unit rate	Replacement Cost * consumed useful life

7.3.2 Valuation forecast

Asset values are forecast to increase as additional assets are constructed as per the projected operational and capital works programs. The proposed large-scale capital projects for Penola will significantly increase the valuation of this asset class.

Additional assets will generally add to the operations and maintenance, future renewals, and depreciation forecasts. An increase to valuations will have an effect on all streams of expenditure. Annual depreciation and maintenance will both increase. Due to the long useful lives of the stormwater infrastructure, it is not anticipated to have a short-medium term effect on renewal expenditure.

7.4 Key Assumptions Made in Financial Forecasts

Key assumptions made in this AMP for financial forecasts are:

- The Long-term Financial Plan will contain sufficient budget allocations to meet 90-110% of the planned capital and operational works. This is dependent on the approval of the Long-term Financial Plan prior to the end of the financial year 2023-24.
- Current asset age and useful life are accurate.
- Where acquisitions were predicted, average depreciation expense was utilised for depreciation expense forecasting.
- Where acquisitions and renewals were forecast, a best estimate useful life has been utilised for depreciation expense forecasting as the actual infrastructure to be installed is not known at the time of this plan.
- Financial projections are based on historical expenditure averages and revenue trends with little or no change in the future.
- Legislative requirements will remain the same.

7.5 Forecast Reliability and Confidence

The forecast costs, proposed budgets, and valuation projections in this AMP are based on the best available data at this point in time. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is classified on a A - E level scale³ in accordance with Table 18.

³ IPWEA, 2015, IIMM, Table 2.4.6, p 2 | 71.

Table 18: Data Confidence Grading System

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

The estimated confidence level for and reliability of data used in this AMP is shown in Table 19.

Table 19: Data Confidence Assessment for Data

Data	Confidence Assessment	Comment
Demand drivers	C. Medium	Operator knowledge of the systems is reliable and accurate, but not documented.
Growth projections	B. High.	Recent Strategic Land Use Plan 2022 and ABS Census data 2021.
Acquisition forecast	E. Very Low	These are predicted based on local knowledge at the time of this plan with little to no stormwater project scope details.
Operation and Maintenance forecast	D. Low	Currently most work is undertaken as reactive maintenance this does not allow any level of confidence in the future needs
Renewal forecast - Asset values	D. Low	No condition data or on site verification of assets has been completed.
- Asset useful lives	E. Very Low	No condition data or on site verification of assets has been completed.
- Condition modelling	E. Very Low	No condition modelling has been undertaken at the time of this plan
Disposal forecast	E. Very Low	It has been assumed that where renewals have been forecast that all the in situ infrastructure will be disposed.

The estimated confidence level for and reliability of data used in this AMP is considered to be Low.

PLAN IMPROVEMENT AND MONITORING

8 Plan Improvement and Monitoring

8.1 Status of Asset Management Practices

8.1.1 Accounting and financial data sources

This AMP utilises accounting and financial data. The source of the data is Council's financial and records software system, Synergy and Brightly (formerly Assetic). Synergy contains accounting and financial data up to financial year 2020/21 whilst Brightly contains the asset specific financial data. In 2021/22 Council transitioned to Datascope software for finance.

8.1.2 Asset management data sources

This AMP also utilises asset management data. The source of the data is Brightly. Brightly is the asset management system that holds the asset register and the asset relevant financial data. Data in Brightly is managed by Manager Assets and Environment, Senior Asset Management Officer, and Asset Management Officer.

8.2 Improvement Plan

The improvement plan generated from the Risk Register is provided in Appendix 3.

8.3 Monitoring and Review Procedures

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

The AMP will be reviewed annually and updated if there is a significant change to the current service level, asset values, forecast operations, maintenance, renewals, acquisition and asset disposal costs and planned budgets. These forecast costs and proposed budget will be incorporated into the Long-Term Financial Plan. Annual review changes to the AMP do not warrant public consultation and adoption by Council, but instead will be recognised as an amendment. Changes where the document is revised will be subject to the mandated public consultation period and adoption by Council.

This AMP will be reviewed upon changes to related documents, including but not limited to Long-Term Financial Plan and Strategic Plan.

The AMP has a maximum life of 4 years and will be reviewed within 2 years of a Local Government election or a complete revision within 2 years of an asset financial revaluation.

8.4 Performance Measures

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

- The degree to which the required forecast costs identified in this AMP are incorporated into the Long-Term Financial Plan,
- The degree to which the 1-5 year detailed works programs, budgets, business plans and corporate structures consider the 'global' works program trends provided by the AMP,
- The degree to which the existing and projected service levels and service consequences, risks and residual risks are incorporated into the strategic planning documents and associated plans,
- The Asset Renewal Funding Ratio achieving the Organisational target (this target is often 90 – 110%).

9 References

- Australian Building Codes Board (ABCB), The National Construction Code (NCC) Volume Three Amendment 1, 2019
- Australian Bureau of Statistics (ABS), Wattle Range 2021 Census of Population and Housing, Time Series Profile
- Australian Bureau of Statistics (ABS), Wattle Range Census of Population and Housing, 2016
- Australian Taxation Office (ATO), TR 2021/3 - Income tax: effective life of depreciating assets
- Department for Environment and Water, Guide to Climate Projections for Risk Assessment Planning in South Australia 2022
- Institute of Public Works Engineering Australasia (IPWEA), Australian Infrastructure Financial Management Manual (AIFMM), 2015, Version 1.0, Financial Sustainability Indicator 3 Sec 2.6, p 9.
- Institute of Public Works Engineering Australasia (IPWEA), International Infrastructure Management Manual 2020
- Institute of Public Works Engineering Australasia (IPWEA), NAMS+ Asset Management Plan Template V11, May 2021
- International Organization for Standardization (ISO), ISO 31000:2018 Risk Management – Principles and Guidelines
- International Organization for Standardization (ISO), ISO 55000:2014 Asset Management – Overview, principles and terminology, 2014-07
- International Organization for Standardization (ISO), ISO 55001:2014 Asset Management – Management systems - requirements, 2014-07
- International Organization for Standardization (ISO), ISO 55002:2018 Asset Management – Management systems – Guidelines for the application of ISO 55001, 2020-06
- Landscape South Australia Act 2019
- Local Government Association of South Australia, Financial Sustainability Paper 9 Financial Indicators, May 2015
- Rawlinsons Australian Construction Handbook 2021 (Rawlinsons)
- South Australia Environment Protection (Water Quality) Policy 2003
- South Australia Environment Protection Act 1993
- South Australia Essential Services Commission Act 2002
- South Australia Essential Services Commission Regulations 2019
- South Australia Local Government Act 1999
- South Australia Public Health Act 2011
- South Australia Water Industry Act 2012
- South Australia Water Industry Guideline No 1 – Compliance System and Reporting
- South Australia Water Industry Guideline No 3 – Regulatory Information for Minor & Intermediate Retailers
- South Australia Water Industry Regulations 2012
- South Australia Water Retail Code – Minor & Intermediate Retailers
- South Australia Work Health and Safety Act 2012
- South Australia Work Health and Safety Regulations 2012
- South Australian Recycled Water Guidelines (DHA)
- Standards Australia, AS ISO 19600:2015 – Compliance Programs
- Standards Australia, AS/NZS 2031: Water quality – Sampling for microbiological analysis (ISO 19458:2006, MOD)
- Standards Australia, AS/NZS 3500: Plumbing and drainage
- Standards Australia, AS/NZS 5667: Water quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the handling of samples.
- Standards Australia, AS/NZS ISO 3100: Risk management – Principles and Guidelines
- Tonkin Consulting, Wattle Range Council Penola Township Stormwater Management Plan, 22/04/2010
- Tonkin Consulting, Wattle Range Council Stormwater Drainage Kalangadoo Township, 31/08/2004

Wattle Range Strategic Land Use Plan 2022
 Wattle Range Council, Annual Business Plan 2021-22, WRC 2021
 Wattle Range Council, Asset Management Strategy, 2022
 Wattle Range Council, Asset Policy, 21/12/2021, V4, Policy 95
 Wattle Range Council, Compliments and Complaints Handling, 12/11/2019, V2, Procedure 142
 Wattle Range Council, Contracts and Tenders – Sale of Assets Policy, 15/01/2013, Ref. No. 1.29
 Wattle Range Council, Customer Experience Policy, 12/11/2019, V3, Policy 28
 Wattle Range Council, Long Term Financial Plan 2020-2029
 Wattle Range Council, Policy Framework, 14/11/2019, V2, Guideline 273
 Wattle Range Council, Procurement Policy, 28/11/2017, V5, Policy I.30
 Wattle Range Council, Records Management Policy, 10/11/2015, GF/9.63.1/4
 Wattle Range Council, Requests for Service Procedure, 12/11/2019, V2
 Wattle Range Council, Risk Management Policy, 12/05/2020, V5, Policy 1.11
 Wattle Range Council, Risk Matrix, 03/03/2016, V3
 Wattle Range Council, *Safety Reliability Maintenance and Technical Management Plan (SRMTMP)*,
 WRC 2022, V5.1 dated 04/05/2022
 Wattle Range Council, Stormwater Drainage Asset Management Plan, October 2019, V1.0
 Wattle Range Council, Strategic Plan 2018-2021

10 Appendices

Appendix 1 List of Definitions.....	57
Appendix 2 Stormwater Asset Risk Register	59
Appendix 3 Improvement Program	70
Appendix 4 Forecast Capital Projects	77
Appendix 5 Forecast Operational Projects	79

Appendix 1 List of Definitions

Term	Definition
ABCB	Australian Building Codes Board
ABS	Australian Bureau of Statistics
AIFMM	Australian Infrastructure Financial Management Manual
AMP	Asset Management Plan
ATO	Australian Taxation Office
Channel	Open Channel Drain
Council	Wattle Range Council
Detention Basin	Manages stormwater by temporarily storing stormwater and releasing gradually until completely drained
DHA	former Department of Health and Ageing, now Department for Health and Wellbeing
DHW	Department for Health and Wellbeing formerly Department of Health and Ageing (DHA)
DSEP	Double Side Entry Pit
ELT	Wattle Range Council Executive Leadership Team Made up of Chief Executive Officer, Director Corporate Services, Director Development Services, Director Engineering Services, and Executive Assistant
EPA	Environment Protection Authority
EPHC	Environment Protection and Heritage Council
ESCOSA	Essential Services Commission of South Australia
GIP	Grated Inlet Pit
GPT	Gross Pollutant Trap
IPWEA	Institute of Public Works Engineering Australasia
ISO	International Organisation for Standardization
KPI	Key Performance Indicator
LGA	Local Government Association
LGASA	Local Government Association of South Australia
LTFP	Long-Term Financial Plan
NAMS+	A subscription-based product designed to provide high value/low cost infrastructure planning and decision support for any asset intensive organisation irrespective of size
NCC	National Construction Code
NPV	Net Present Value
NRMMC	National Resource Management Ministerial Council
OTR	Office of the Technical Regulator
PCA	Plumbing Code of Australia
PIRSA	Department of Primary Industries and Regions South Australia
Pit	Stormwater pit
Rawlinsons	Rawlinsons Australian Construction Handbook 2021
Redundant	The asset is not providing a service function but is physically still in situ. The asset is not intended to return to use but will have to be maintained for WHS concerns until it is physically removed.
Retention Basin	Usually lined, designed to permanently hold stormwater runoff

Term	Definition
SA	South Australia
SEP	Side Entry Pit
SEWCDB	South Eastern Water Conservation and Drainage Board
SCADA	Supervisory Control and Data Acquisition
SRMTMP	Safety Reliability Maintenance and Technical Management Plan
SSEP	Single Side Entry Pit
SW	Stormwater
Swale Drain	Shallow drain which collects stormwater and allows to soak into groundwater aquifer
WHS	Work Health Safety
WSAA	Water Services Association of Australia

Appendix 2 Stormwater Asset Risk Register

ID				STAKEHOLDER DRIVERS		HAZARD			MAXIMUM RISK - NO INTERVENTION			PREVENTATIVE MEASURES	RESIDUAL RISK - AFTER INTERVENTION			RISK TREATMENT	
Risk ID	SW Element	Location	Component	Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Likelihood	Conseq.	Risk	INTERVENTION	Likelihood	Conseq.	Residual Risk	Comments	Action/Task
	Urban Drainage	Beachport	All	Asset Owner	Asset is providing it's expected service	Infiltration of sand and sediment into stormwater infrastructure reducing capacity and causing blockages / poor flow conditions	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Almost certain	Moderate	High (H20)	Install appropriate signage in local flooding events	Almost certain	Moderate	High (H20)	Rotunda to Lagoon	A9 - CCTV stormwater from Rotunda to Lagoon for potential blockages caused by sand.
	Rural Drainage	All	Culverts	Asset Owner	Knowledge of location, quantity and condition of assets	Poor or no data on assets	Unknown value of assets and unknown quantity of works required to maintain service levels	Economic	Almost certain	Minor	High (H19)		Almost certain	Minor	High (H19)	Penola catchments are undefined and connections not developed or understood. Do not include table drains/swales as part of scope.	A2 - Develop and implement a program to identify, audit and capture the culvert assets in the asset management system.
	Urban Drainage	Penola	Pits, Pipes	Asset Owner	Asset is providing it's expected service	Stormwater between Arthur St public toilets and Visitor Information Centre is not draining away into nearby pits.	Stormwater does not efficiently drain and may cause localised flooding and issues with traffic/parking.	Stakeholder Service Levels	Almost certain	Minor	High (H19)	Install appropriate signage in local flooding events	Almost certain	Minor	High (H19)	Trees are likely cause	A13 - Installation of stormwater pipes and pit on Arthur Street Penola in front of VIC.
	Rural Drainage	All	Culverts	Asset Owner	Asset is constructed / installed fit-for-purpose and as per current standards	Historic standard of construction does not meet current day standard for both installation and material quality	Culverts are installed with insufficient depth resulting in asset damage from vehicles leading asset renewal. Culvert material is poor quality resulting in asset failure that leads to asset renewal.	Economic	Possible	Moderate	Medium (M11)	Reactive replacement of damaged/broken culvert	Rare	Moderate	Low (L3)		A4 - During the rural culvert audit ensure depth of culvert is captured along with material, condition and sedimentation issues
	Urban Drainage	Penola	All	Asset Owner	Asset is providing it's expected service	Flat swale drain has been blocked by driveway construction on private property i.e. no culvert under driveway causing backup and damming of stormwater e.g. Ellen Street	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Almost certain	Minor	High (H19)		Almost certain	Minor	High (H19)	Construction required to drain water possibly to Robe Road open drain network	A16 - Installation of stormwater pipes and pits for Ellen Street, Penola. A17 - Work with Development services to ensure stormwater management is captured at the development stage.

ID				STAKEHOLDER DRIVERS		HAZARD			MAXIMUM RISK - NO INTERVENTION			PREVENTATIVE MEASURES	RESIDUAL RISK - AFTER INTERVENTION			RISK TREATMENT	
Risk ID	SW Element	Location	Component	Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Likelihood	Conseq.	Risk	INTERVENTION	Likelihood	Conseq.	Residual Risk	Comments	Action/Task
	Rural & Urban Drainage	All	All	Asset Owner	Asset is providing it's expected service	Drainage infrastructure is undersized	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Economic	Unlikely	Moderate	Medium (M8)		Unlikely	Moderate	Medium (M8)	Walker Street through to McMorran open drain catches the flow from Mt Gambier Road Park Terrace next to Boral open drain capacity to drain pipes etc from road Open drains risk - check for condition and maintenance required - within town boundary are Council assets and not drainage board assets Water running through larger rural living blocks - easements? - Rogan St to Gordon St open drains at back of property - inspections of open drains - easements!	A6 - Identify drainage infrastructure that is undersized through CCTV and visual inspections and program works to perform upgrades or construct alternative drainage options.
	Urban Drainage	Millicent	All	Asset Owner	Asset is providing it's expected service	Drainage infrastructure is undersized	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Economic	Unlikely	Moderate	Medium (M8)		Unlikely	Moderate	Medium (M8)		A7 - CCTV Stormwater near Ireland Street intersection on Mount Gambier Road. Suspect infrastructure is undersized or blocked.
	Urban Drainage	Millicent	All	Asset Owner	Asset is providing it's expected service	Drainage infrastructure is undersized	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Economic	Unlikely	Moderate	Medium (M8)		Unlikely	Moderate	Medium (M8)		A8 - CCTV investigation of drainage infrastructure on Park Terrace, Millicent.

ID				STAKEHOLDER DRIVERS		HAZARD			MAXIMUM RISK - NO INTERVENTION			PREVENTATIVE MEASURES	RESIDUAL RISK - AFTER INTERVENTION			RISK TREATMENT	
Risk ID	SW Element	Location	Component	Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Likelihood	Conseq.	Risk	INTERVENTION	Likelihood	Conseq.	Residual Risk	Comments	Action/Task
	Urban Drainage	All	All	Asset Owner	Asset is providing it's expected service	Stormwater flows down driveway on property at lowest house / low side of street i.e. driveway channels road stormwater down it rather than building the driveway higher than road / kerb	Stormwater does not efficiently drain and localised flooding of property results.	Stakeholder Service Levels	Likely	Moderate	High (H18)		Likely	Moderate	High (H18)	Particular areas of concern are Matheson Road, Millicent.	A17 - Work with Development services to ensure stormwater management is captured at the development stage. A19 - Add to current standard driveway crossover drawing to account for properties on a lower level than road.
	All	All	All	Public Road User	Road is trafficable Increased communication between stormwater stakeholders	No customer service standards around pooling water on the road	Not meeting expected community levels of service	Stakeholder Service Levels	Almost certain	Moderate	High (H20)		Almost certain	Moderate	High (H20)		A20 - Develop customer service standards around localised flooding events.
	Urban Drainage	Mount Burr	Swale Drain, Retention Basin	Asset Owner	Asset is providing it's expected service	Stormwater works for recent road upgrades have not been completed to suitable standard	Stormwater erodes swale drain and retention basin with future works being required to address erosion	Stakeholder Service Levels	Almost certain	Minor	High (H19)		Almost certain	Minor	High (H19)	Service road 2, swale drain and detention basin.	A37 - Install appropriate rocks and landscaping to address erosion concerns for swale drain and detention basin at service road 2, Mount Burr.
	Urban Drainage	Penola	Pits, pipes, culverts, end structures	Asset Owner	Asset is providing it's expected service	Inadequate drainage by the church at the intersection of Arthur and Queen Streets, Penola	Stormwater is not flowing freely through existing infrastructure resulting in localised flooding of road and private property during periods of heavy rainfall	Stakeholder Service Levels	Almost certain	Moderate	High (H20)		Almost certain	Moderate	High (H20)	Tonkins Penola Township Stormwater Management Plan 22/04/2010 states "The church on the corner of Queen Street and Arthur Street has been identified as one of the most flood prone buildings within Penola."	A38 - Stormwater construction at intersection of Arthur and Queen Street, Penola, to install infrastructure that is fit for purpose.

ID				STAKEHOLDER DRIVERS		HAZARD			MAXIMUM RISK - NO INTERVENTION			PREVENTATIVE MEASURES	RESIDUAL RISK - AFTER INTERVENTION			RISK TREATMENT	
Risk ID	SW Element	Location	Component	Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Likelihood	Conseq.	Risk	INTERVENTION	Likelihood	Conseq.	Residual Risk	Comments	Action/Task
	Urban Drainage	Penola	All	Asset Owner	Stormwater assets are providing expected service, are adequate for current and future expected rain levels and an overall plan is achieved and able to be followed and implemented	Stormwater issues and maintenance are attended to ad hoc and no masterplan is considered/followed	Lack of stormwater masterplan could result in delayed maintenance/upgrade works or small scale individual works being conducted independent of each other increasing risk of flooding to road and/or property	Stakeholder Service Levels	Likely	Moderate	High (H18)		Likely	Moderate	High (H18)		A39 - Review and update Penola Township Stormwater Management Masterplan. (Tonkin report 2010)
	Urban Drainage	Kalangadoo	All	Asset Owner	Stormwater assets are providing expected service, are adequate for current and future expected rain levels and an overall plan is achieved and able to be followed and implemented	Stormwater issues and maintenance are attended to ad hoc and no masterplan is considered/followed	Lack of stormwater masterplan could result in delayed maintenance/upgrade works or small scale individual works being conducted independent of each other increasing risk of flooding to road and/or property	Stakeholder Service Levels	Likely	Moderate	High (H18)		Likely	Moderate	High (H18)		A49 - Review and update Kalangadoo Township Stormwater Management Masterplan. (Tonkin report 2004)
	Urban Drainage	Beachport	All	Asset Owner	Service levels are being maintained and road is trafficable	Insufficient drainage on Somerville Street, Beachport	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Almost certain	Moderate	High (H20)	Install appropriate signage in local flooding events	Almost certain	Moderate	High (H20)		A41 - Somerville Street, Beachport, drainage works including CCTV to identify existing drainage, and kerb and channel.
	Urban Drainage	Beachport	All	Asset Owner	Asset is providing it's expected service	Stormwater flows down driveway on property at lowest house / low side of street	Stormwater does not efficiently drain and localised flooding of property results.	Stakeholder Service Levels	Almost certain	Moderate	High (H20)		Almost certain	Moderate	High (H20)	Pretty Street, Beachport	Noted. Will be addressed in Roads, Kerbs, and Footpaths AMP.
	Urban Drainage	Beachport	All	Asset Owner	Assets are providing their expected level of service and roads are trafficable	There is not kerb and channel infrastructure on Mabel Street	Stormwater does not efficiently drain and localised flooding of road and/or property results and damage to road infrastructure.	Stakeholder Service Levels	Likely	Moderate	High (H18)	Install appropriate signage in local flooding events	Likely	Moderate	High (H18)		Risk noted. Mabel Street requires installation of kerb and channel. Works to happen prior to reseat but will await condition assessment first. Will be addressed in Roads, Kerbs, and Footpaths AMP.

ID				STAKEHOLDER DRIVERS		HAZARD			MAXIMUM RISK - NO INTERVENTION			PREVENTATIVE MEASURES	RESIDUAL RISK - AFTER INTERVENTION			RISK TREATMENT	
Risk ID	SW Element	Location	Component	Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Likelihood	Conseq.	Risk	INTERVENTION	Likelihood	Conseq.	Residual Risk	Comments	Action/Task
	Urban Drainage	Beachport	All	Asset Owner	Assets are providing their expected level of service and roads are trafficable	Lack of stormwater infrastructure (kerb and channel) results in localised flooding and long-term damage to road infrastructure	Stormwater does not efficiently drain and localised flooding of road and/or property results and damage to road infrastructure.	Stakeholder Service Levels	Likely	Moderate	High (H18)	Install appropriate signage in local flooding events	Likely	Moderate	High (H18)		Risk noted. Many roads in Beachport require kerb and channel. Will be addressed in Roads, Kerbs and Footpaths AMP. Will reseal affected roads in the interim.
	Urban Drainage	Furner	All	Asset Owner	Knowledge of location, quantity and condition of assets	Poor or no data on assets	Unknown value of assets and unknown quantity of works required to maintain service levels	Economic	Almost certain	Moderate	High (H20)		Almost certain	Moderate	High (H20)		A23 - Develop and implement a program to identify, audit and capture the urban drainage assets in Furner in the asset management system.
	Urban Drainage	All	Pits, Pipes, Culverts, Pumps, Open Drains, Retention Basins & Bores	Asset Owner	Knowledge of location, quantity and condition of assets	Poor or no data on assets	Unknown value of assets and unknown quantity of works required to maintain service levels	Economic	Almost certain	Moderate	High (H20)		Almost certain	Moderate	High (H20)	Do not include table drains/swales as part of scope.	A24 - Develop and implement a program to identify, audit and capture the urban drainage assets in the asset management system. A25 - Identify which assets belong to Council, DIT, or Drainage Board and define rules around ownership and using mapping/GIS and mark up where ownership changes at Millicent township boundary and then consult with Drainage Board.
	Urban Drainage	Nangwarry	Culverts	Asset Owner	Asset is providing it's expected service	27 Blesing Street, Nangwarry, floods during heavy rainfall periods. Possibly due to work done in opposite paddock resulting in a redirection of water flow.	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Likely	Minor	Medium (M13)		Likely	Minor	Medium (M13)	Should investigate if culvert opposite SEP at 27 Blesing Street is blocked and if this is the cause.	A1 - Ascertain if blocked culvert on Blesing Street, Nangwarry, is cause of flooding. If blocked, schedule works to unblock. If not blocked, investigate alternative stormwater management options to resolve issue.
	Rural Drainage	All	Culverts	Asset Owner	Asset is constructed / installed fit-for-purpose and as per current standards	Culvert fall is opposite to that required for water to drain and there is no culvert end/head wall or the end/head wall is in poor condition.	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Unlikely	Minor	Low (L5)		Possible	Minor	Medium (M10)		A3 - During the rural culvert audit assess presence of and condition of end walls or wing walls and assess direction of flow.

ID				STAKEHOLDER DRIVERS		HAZARD			MAXIMUM RISK - NO INTERVENTION			PREVENTATIVE MEASURES	RESIDUAL RISK - AFTER INTERVENTION			RISK TREATMENT	
Risk ID	SW Element	Location	Component	Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Likelihood	Conseq.	Risk	INTERVENTION	Likelihood	Conseq.	Residual Risk	Comments	Action/Task
	Urban Drainage	All	Pits	Asset Owner	Pit lids are pit for purpose and are not risk to Council staff	Old concrete pit lids are heavy or not fit for purpose to undertake maintenance	Risk of injury to Council staff	WHS	Likely	Moderate	High (H18)		Likely	Moderate	High (H18)	Lagoon Street Beachport	A28 - develop a program to replace concrete pit lids with fibreglass pit lids
	Urban Drainage	Millicent	Swimming Lake Drainage Connection	Asset Owner	Plug in stormwater line preventing swimming lake draining remains in situ unless in use	Plug in connecting pipe between swimming lake drain and stormwater infrastructure is removed / dislodged	Swimming lake empties	Economic	Rare	Minor	Low (L2)		Rare	Minor	Low (L2)		A29 - Replace or service valve at Millicent Swimming Lake and secure valve so it can't be accessed by public.
	Rural Drainage	All	Culverts	Asset Owner	Asset is providing it's expected service	Road has been widened without consideration of lengthening the culvert asset and the culvert asset is blocked.	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Possible	Minor	Medium (M10)	Prior to resheet of rural roads the culverts are inspected and maintenance undertaken.	Unlikely	Minor	Low (L5)		A5 - Identify rural culverts that are blocked due to road widening and program works to address the issues.
	Urban Drainage	All	Pumps	Asset Owner	Asset is providing it's expected service	Power outage and no generator connections available for stormwater pumps	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Possible	Moderate	Medium (M11)	Reactive use of diesel pumps mounted on trailer	Rare	Moderate	Low (L3)	Belt Road stormwater pump has large catchment and is high risk if pump is not operational. Aberle Street has pump. Plunket Terrace Nangwarry? Mowbray Street Mayell Street	A10 - Investigate options to retrofit switchboards to enable generator plugins on as needs basis.
	Urban Drainage	Kalangadoo	All	Asset Owner	Asset is constructed / installed fit-for-purpose and as per current standards	Majority of stormwater is directed to the CWMS infrastructure and drains through the CWMS infrastructure	CWMS system is overwhelmed and overflows to the environment or private property resulting in a reportable incident	Stakeholder Service Levels	Unlikely	Minor	Low (L5)	CWMS currently has capacity to contain stormwater flow	Rare	Minor	Low (L2)	This is assessed in more detail and will be reviewed in CWMS AMP.	A11 - Engage consultant to undertake Stormwater System Analysis in Kalangadoo to establish an upgrade plan. A12 - CCTV pipes on North-East Terrace, Kalangadoo, to identify where stormwater drains to.

ID				STAKEHOLDER DRIVERS		HAZARD			MAXIMUM RISK - NO INTERVENTION			PREVENTATIVE MEASURES	RESIDUAL RISK - AFTER INTERVENTION			RISK TREATMENT	
Risk ID	SW Element	Location	Component	Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Likelihood	Conseq.	Risk	INTERVENTION	Likelihood	Conseq.	Residual Risk	Comments	Action/Task
	Urban Drainage	All	Pits, Pipes	Asset Owner	Asset is providing it's expected service	Blockages from leaf litter & rubbish	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Almost certain	Minor	High (H19)	Street sweeping and pit cleaning	Possible	Minor	Medium (M10)		A14 - Identify common areas on concern and review street sweeping schedule to pick up debris on a regular basis during Autumn and consider emptying pits at the same time, not just street sweeping. A15 - Develop a stormwater pit routine maintenance and inspection program.
	Urban Drainage	Penola	All	Residential Client	Stormwater assets are directing runoff away from roadways and property	Stormwater ponding, not draining away	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Likely	Moderate	High (H18)	Install appropriate signage in local flooding events	Likely	Moderate	High (H18)		A34 - Portland St/John St, Penola, stormwater construction
	Urban Drainage	Penola	All	Residential Client	Stormwater assets are directing runoff away from roadways and property	Stormwater ponding, not draining away	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Almost certain	Moderate	High (H20)	Install appropriate signage in local flooding events	Almost certain	Moderate	High (H20)		A35 - Construction of new stormwater infrastructure along Queen Street and South Terrace, Penola. A50 - Acquire accurate costings for Queen Street Stormwater Project.
	Urban Drainage	All	All	Asset Owner	Asset is providing it's expected service	Development in known problem areas without plans for stormwater management	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Possible	Moderate	Medium (M11)		Possible	Moderate	Medium (M11)		A17 - Work with Development services to ensure stormwater management is captured at the development stage. A18 - Develop spatial stormwater data.
	Urban Drainage	Nangwarry	Retention Basin, Pumps	Asset Owner	Asset is providing it's expected service	Laffer Street, Nangwarry, low point in street floods in heavy rain events. Pump station on Jenkins Tce pumps to retention basin north-east of the town. When basin is full, water can't be pumped out resulting in street and property flooding. Water was returning through the pipe due to no non-return valve.	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Unlikely	Moderate	Medium (M8)	Non-return valve temporarily installed on pump	Unlikely	Moderate	Medium (M8)	retention basin needs to be cleaned up of grass and debris to better allow for stormwater in heavy rain events.	A21 - Remove excess organic material and dig out detention basin in Nangwarry. A22 - Install non-return valve at pump in Nangwarry that is fit for purpose.

ID				STAKEHOLDER DRIVERS		HAZARD			MAXIMUM RISK - NO INTERVENTION			PREVENTATIVE MEASURES	RESIDUAL RISK - AFTER INTERVENTION			RISK TREATMENT	
Risk ID	SW Element	Location	Component	Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Likelihood	Conseq.	Risk	INTERVENTION	Likelihood	Conseq.	Residual Risk	Comments	Action/Task
	Urban Drainage	Mt Burr	Retention Basin	Asset Owner	Asset is providing it's expected service	Catchment of retention basin behind the shop in Mt Burr is not understood and capacity of retention basin is not understood	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Possible	Moderate	Medium (M11)	Unblock bore and lower level of bore (temporarily)	Rare	Moderate	Low (L3)	Some works still to be undertaken at retention basin	A26 - Bore needs to be permanently lowered at Mt Burr detention basin (capital project) and replace correct grate. Landscaping works (tree planting)
	Urban Drainage	Kalangadoo	Retention Basin	Asset Owner	Asset is providing it's expected service	Catchment of retention basin on Ann Street Kalangadoo is not understood and capacity of retention basin is not understood	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Possible	Moderate	Medium (M11)	Bore installed, but not permanently connected	Unlikely	Moderate	Medium (M8)		A27 - Permanently connect bore to Ann Street, Kalangadoo, detention basin
	Urban Drainage	All	Open Drains	Asset Owner	Asset is providing it's expected service	Insufficient drainage flow through open drain network (including main and minor drains)	Stormwater does not efficiently drain	Stakeholder Service Levels	Possible	Minor	Medium (M10)		Possible	Minor	Medium (M10)		A30 - Schedule regular cleaning/excavation program of Millicent main and minor drains, and open drain and easement annual cleaning of all areas.
	All	All	All	Asset Owner	Data is accurate, clean and logically ordered	Asset category, type and subtype to not accurately reflect assets	Can affect outcomes of reporting and skew data	Economic	Almost certain	Minor	High (H19)		Almost certain	Minor	High (H19)		A40 - Cleanse Stormwater Asset Category, Type and Subtype data
	Urban Drainage	All	Pits	Asset Owner	Asset is providing it's expected service	Stormwater pits equalise stormwater network and may discharge rather than take away stormwater	Stormwater does not efficiently drain and localised flooding of road and/or property results.	Stakeholder Service Levels	Unlikely	Minor	Low (L5)		Unlikely	Minor	Low (L5)	Some pits don't connect to drains but are bottomless to allow for soakage of stormwater Pits on George Street, Holzgreffe Street and Ninth/Eight Street discharge rather than drain away	A31 - Drainage renewal program (already budgeted for in capital works program 2022/23)
	Urban Drainage	Millicent	Retention Basin	Asset Owner	Asset is providing it's expected service	Detention basin is in disrepair, overgrown and unsightly	Stormwater does not efficiently drain and may result in localised flooding.	Stakeholder Service Levels	Possible	Minor	Medium (M10)	Install appropriate signage in local flooding events	Possible	Minor	Medium (M10)	Includes removal of fencing	A32 - Upgrade Clinton Lane detention basin in Millicent so it is fit for purpose.
	Urban Drainage	All	Sump Pumps	Asset Owner	Asset is providing it's expected service	Sump pumps are unable to pump out stormwater	Sump pumps are replaced on an as-need basis upon failure of pump, there is a risk of inability to provide expected service levels, may result in localised flooding	Stakeholder Service Levels	Unlikely	Moderate	Medium (M8)		Unlikely	Moderate	Medium (M8)		A33 - Develop a sump pump renewal program to renew assets before end of life, and regular sump pump maintenance program.

ID				STAKEHOLDER DRIVERS		HAZARD			MAXIMUM RISK - NO INTERVENTION			PREVENTATIVE MEASURES	RESIDUAL RISK - AFTER INTERVENTION			RISK TREATMENT	
Risk ID	SW Element	Location	Component	Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Likelihood	Conseq.	Risk	INTERVENTION	Likelihood	Conseq.	Residual Risk	Comments	Action/Task
	Urban Drainage	Millicent	Open drains, pits, pipes	Asset Owner	Asset is providing it's expected service	Open drain on Bolton Oval reserve has been filled in/disconnected from nearby drainage network	May affect drainage in surrounding areas resulting in localised flooding of road and/or property	Stakeholder Service Levels	Possible	Moderate	Medium (M11)	Install appropriate signage in local flooding events	Possible	Moderate	Medium (M11)	A10 - (CCTV of intersection of Ireland Street and Mount Gambier Road) to occur first to investigate if insufficient drainage through the Bolton Oval Reserve may be the cause of localised flooding at intersection	A36 - Bolton Oval/Mount Gambier Road, Millicent, drainage works.
	Rural Drainage	All	Culverts	Asset Owner	Service levels are being maintained	Service levels are not defined	Maintenance and renewal programs are adhoc and not able to be scoped and planned with a consistent approach	Stakeholder Service Levels	Likely	Minor	Medium (M13)		Likely	Minor	Medium (M13)	Rural culvert service level not defined. E.g. Bouchers, Witmitz, Bells - drainage board drains flood over road, drain needs to be cleared out of debris	A42 - Define rural culvert service levels and incorporate into AMP
	All	All	All	Regulator	Accurate asset register with up to date values and conditions	Asset renewals and upgrades are misdirected	Funding incorrectly allocated	Economic	Likely	Moderate	High (H18)	As per Asset Policy and Asset Management Strategy, external consultants engaged every 4 years to conduct condition audit and valuation of assets	Rare	Moderate	Low (L3)		A48 - Schedule regular condition assessments and revaluations as per the Asset Management Strategy.
	Rural Drainage	All	Drainage Board Open Drains	Asset Owner	Increased communication and understanding from Community, reporting directly to Drainage Board	Community expectations about stormwater catchment on rural property which is the property owners responsibility, not Councils i.e. water pooling in paddocks or open drain network flooding paddocks	Stock movements and paddock access are restricted	Stakeholder Service Levels	Rare	Insignificant	Low (L1)		Rare	Insignificant	Low (L1)	Relates to Drainage Board assets therefore Council have to responsibility, but often field complaints.	A43 - Establish communication channel with Drainage Board to notify when private property or roads are affected by flooding. A20 - Develop customer service standards around localised flooding events.

ID				STAKEHOLDER DRIVERS		HAZARD			MAXIMUM RISK - NO INTERVENTION			PREVENTATIVE MEASURES	RESIDUAL RISK - AFTER INTERVENTION			RISK TREATMENT	
Risk ID	SW Element	Location	Component	Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Likelihood	Conseq.	Risk	INTERVENTION	Likelihood	Conseq.	Residual Risk	Comments	Action/Task
	Rural Drainage	All	Drainage Board Open Drains	Public Road User	Road is trafficable	Water over the road / road flooding due to overflow from open drains	Road closure due to water over the road / road flooding	Stakeholder Service Levels	Possible	Minor	Medium (M10)	Road is Council asset however open drain and culvert/bridge is Drainage Board asset that has poor to not maintenance Install appropriate signage	Possible	Minor	Medium (M10)	Roads regularly affected Witmitz Road, Hatherleigh (32b Drain) Bells Road, Hatherleigh (32b2 Drain) Bourchiers Road, Hatherleigh (34b Drain)	A43 - Establish communication channel with Drainage Board to notify when private property or roads are affected by flooding.
	Urban Drainage	Beachport	All	Regulator	Discharges to environment / ocean are undertaken in accordance with permissible parameters	Stormwater discharged to ocean with no treatment	Quality of stormwater does not meet limits for ocean discharge	Environmental	Rare	Moderate	Low (L3)	Primary treatment of settling in Beachport Lagoon	Rare	Moderate	Low (L3)		Risk Noted, no further action at this time.
	Rural Drainage	All	Culverts	Public Road User	Road is trafficable	Water over the road / road flooding due to road level being the same as surrounding land and no drainage infrastructure is able to be installed due to culvert depth considerations	Road closure due to water over the road / road flooding	Stakeholder Service Levels	Possible	Minor	Medium (M10)	Reactively raise level of road and assess need to install rural culvert	Unlikely	Minor	Low (L5)	The majority of the rural culverts have the purpose of equalising the level of the water on both the sides of the road and do not necessarily perform a drainage function to move stormwater away from the road	A44 - Assess Smiths Road, Coonawarra for level rise or upgrade to sealed road and installation of culverts. Naracoorte Lucindale Road section is sealed and direction of trucking has changed to use unsealed section more. A45 - Assess Hinze Lane, Coonawarra/Penola for level rise and installation of culverts. A46 - Assess Rogers Road and Sunnymede Road for level rise and installation of culverts. A47 - Assess Considine Road, German Flat, for suspected collapsed culverts (x4).

ID				STAKEHOLDER DRIVERS		HAZARD			MAXIMUM RISK - NO INTERVENTION			PREVENTATIVE MEASURES	RESIDUAL RISK - AFTER INTERVENTION			RISK TREATMENT	
Risk ID	SW Element	Location	Component	Stakeholder	Stakeholder Desired Outcome	Hazardous Event & Source of Hazardous Event	Description of Risk	Risk Category / Driver	Likelihood	Conseq.	Risk	INTERVENTION	Likelihood	Conseq.	Residual Risk	Comments	Action/Task
	All	All	All	Asset Owner	Asset is providing it's expected service	Climate change causes increased rainfall intensity and the threat of rising sea levels	Stormwater does not efficiently drain and localised flooding of road and/or property results. Loss of Council assets.	Stakeholder Service Levels	Possible	Moderate	Medium (M11)	Install appropriate signage in local flooding events	Possible	Moderate	Medium (M11)		Prioritisation is given to fixing known problems/issues identified in this risk register, consideration should to be given to climate change and future proofing but no further action at this time.

Appendix 3 Improvement Program

Task	Task Description	Responsibility	Resources Required	Proposed Commencement Year (FY)	Status
A1	Ascertain if blocked culvert on Blesing Street, Nangwarry, is cause of flooding. If blocked, schedule works to unblock. If not blocked, investigate alternative stormwater management options to resolve issue.	Manager Operations	Manager Operations, Operations Staff	2023-24	Proposed
A2	Develop and implement a program to identify, audit and capture the culvert assets in the asset management system.	Manager Assets and Environment	Manager Assets and Environment, Manager Operations, Senior Asset Management Officer, Asset Management Officer	2023-24	Proposed
A3	During the rural culvert audit assess presence of and condition of end walls or wing walls and assess direction of flow.	Manager Assets and Environment	Manager Assets and Environment, Manager Operations	2023-24	Proposed
A4	During the rural culvert audit ensure depth of culvert is captured along with material, condition and sedimentation issues	Manager Assets and Environment	Manager Assets and Environment, Manager Operations	2023-24	Proposed
A5	Identify rural culverts that are blocked due to road widening and program works to address the issues	Manager Operations	Manager Operations, Operations Staff	2023-24	Proposed
A6	Identify drainage infrastructure that is undersized through CCTV and visual inspections and program works to perform upgrades or construct alternative drainage options.	Manager Assets and Environment	Manager Assets and Environment, Senior Asset Management Officer, Asset Management Officer	2022-23	In Progress
A7	CCTV Stormwater near Ireland Street intersection on Mount Gambier Road and Park Terrace. Suspect infrastructure is undersized or blocked.	Manager Assets and Environment	Manager Assets and Environment	2024-25	Proposed

Task	Task Description	Responsibility	Resources Required	Proposed Commencement Year (FY)	Status
A8	CCTV investigation of drainage infrastructure on Park Terrace, Millicent.	Manager Assets and Environment	Manager Assets and Environment	2024-25	Proposed
A9	CCTV stormwater from Rotunda to Lagoon for potential blockages caused by sand.	Manager Assets and Environment	Manager Assets and Environment	2024-25	Proposed
A10	Investigate options to retrofit switchboards to enable generator plugins on as needs basis.	Manager Assets and Environment	Manager Assets and Environment, Building Services Officer	2025-26	Proposed
A11	Engage consultant to undertake Stormwater System Analysis in Kalangadoo to establish an upgrade plan.	Manager Assets and Environment	Manager Assets and Environment	2028-29	Proposed
A12	CCTV pipes on North-East Terrace, Kalangadoo, to identify where stormwater drains to.	Manager Assets and Environment	Manager Assets and Environment	2025-26	Proposed
A13	Installation of stormwater pipes and pit on Arthur Street Penola in front of VIC.	Manager Operations	Manager Operations, Operations Staff	2025-26	Proposed
A14	Identify common areas on concern and review street sweeping schedule to pick up debris on a regular basis during Autumn and consider emptying pits at the same time, not just street sweeping.	Manager Operations	Manager Operations, Operations Staff	2022-23	In Progress
A15	Develop a stormwater pit routine maintenance and inspection program.	Manager Operations	Manager Operations, Operations Staff	2022-23	In Progress

Task	Task Description	Responsibility	Resources Required	Proposed Commencement Year (FY)	Status
A16	Installation of stormwater pipes and pits for Ellen Street, Penola.	Manager Assets and Environment	Manager Assets and Environment, Manager Operations, Senior Asset Management Officer, Asset Management Officer	2026-27	Proposed
A17	Work with Development services to ensure stormwater management is captured at the development stage.	Manager Assets and Environment	Manager Assets and Environment, Senior Asset Management Officer, Asset Management Officer	2023-24	Proposed
A18	Develop spatial stormwater data.	Manager Assets and Environment	Manager Assets and Environment, Senior Asset Management Officer, Asset Management Officer	2022-23	In Progress
A19	Add to current standard driveway crossover drawing to account for properties on a lower level than road.	Manager Assets and Environment	Manager Assets and Environment, Engineer	2023-24	Proposed
A20	Develop customer service standards around localised flooding events.	Manager Assets and Environment	Manager Assets and Environment	2023-24	Proposed
A21	Remove excess organic material and dig out detention basin in Nangwarry.	Manager Operations	Manager Operations, Operations Staff	2023-24	Proposed
A22	Install non-return valve at pump in Nangwarry that is fit for purpose.	Manager Operations	Manager Operations, Operations Staff	2023-24	Proposed

Task	Task Description	Responsibility	Resources Required	Proposed Commencement Year (FY)	Status
A23	Develop and implement a program to identify, audit and capture the urban drainage assets in Furner in the asset management system.	Manager Assets and Environment	Manager Assets and Environment, Senior Asset Management Officer, Asset Management Officer	2023-24	Proposed
A24	Develop and implement a program to identify, audit and capture the urban drainage assets in the asset management system.	Manager Assets and Environment	Manager Assets and Environment, Senior Asset Management Officer, Asset Management Officer	2023-24	Proposed
A25	Identify which assets belong to Council, DIT, or Drainage Board and define rules around ownership and using mapping/GIS and mark up where ownership changes at Millicent township boundary and then consult with Drainage Board.	Manager Assets and Environment	Manager Assets and Environment, Manager Operations, Senior Asset Management Officer, Asset Management Officer	2023-24	Proposed
A26	Bore needs to be permanently lowered at Mt Burr detention basin (capital project) and replace correct grate. Landscaping works (tree planting)	Manager Operations	Manager Operations, Operations Staff	2022-23	In Progress
A27	Permanently connect bore to Ann Street, Kalangadoo, detention basin	Manager Operations	Manager Operations, Operations Staff	2022-23	In Progress
A28	Develop a program to replace concrete pit lids with fibreglass pit lids	Manager Operations	Manager Operations, Operations Staff	2024-25	Proposed
A29	Replace or service valve at Millicent Swimming Lake and secure valve so it can't be accessed by public.	Manager Operations	Manager Operations, Operations Staff	2023-24	Proposed
A30	Schedule regular cleaning/excavation program of Millicent main and minor drains, and open drain and easement annual cleaning of all areas.	Manager Operations	Manager Operations, Operations Staff	2023-24	Proposed

Task	Task Description	Responsibility	Resources Required	Proposed Commencement Year (FY)	Status
A31	Drainage renewal program (already budgeted for in capital works program 2022/23)	Manager Operations	Manager Operations, Operations Staff	2022-23	In Progress
A32	Upgrade Clinton Lane detention basin in Millicent so it is fit for purpose.	Manager Operations	Manager Operations, Operations Staff	2024-25	Proposed
A33	Develop a sump pump renewal program to renew assets before end of life, and regular sump pump maintenance program.	Manager Operations	Manager Operations, Asset Management Officer, Operations Staff	2022-23	In Progress
A34	Portland St/John St, Penola, stormwater construction	Manager Assets and Environment	Manager Assets and Environment	2029-30	Proposed
A35	Construction of new stormwater infrastructure along Queen Street and South Terrace, Penola.	Manager Assets and Environment	Manager Assets and Environment	2023-24	Proposed
A36	Bolton Oval/Mount Gambier Road, Millicent, drainage works.	Manager Assets and Environment	Manager Assets and Environment	2032-33	Proposed
A37	Install appropriate rocks and landscaping to address erosion concerns for swale drain and detention basin at service road 2, Mount Burr.	Manager Assets and Environment	Manager Assets and Environment, Technical Officer	2023-24	Proposed
A38	Stormwater construction at intersection of Arthur and Queen Street, Penola, to install infrastructure that is fit for purpose.	Manager Assets and Environment	Manager Assets and Environment	2024-25	Proposed

Task	Task Description	Responsibility	Resources Required	Proposed Commencement Year (FY)	Status
A39	Review and update Penola Township Stormwater Management Masterplan. (Tonkin report 2010)	Manager Assets and Environment	Manager Assets and Environment	2024-25	Proposed
A40	Cleanse Stormwater Asset Category, Type and Subtype data	Manager Assets and Environment	Manager Assets and Environment, Senior Asset Management Officer, Asset Management Officer	2022-23	In Progress
A41	Somerville Street, Beachport, drainage works including CCTV to identify existing drainage, and kerb and channel.	Manager Assets and Environment	Manager Assets and Environment	2023-24	Proposed
A42	Define rural culvert service levels and incorporate into AMP	Manager Assets and Environment	Manager Assets and Environment	2023-24	Proposed
A43	Establish communication channel with Drainage Board to notify when private property or roads are affected by flooding.	Manager Assets and Environment	Manager Assets and Environment	2023-24	Proposed
A44	Assess Smiths Road, Coonawarra for level rise or upgrade to sealed road and installation of culverts. Naracoorte Lucindale Road section is sealed and direction of trucking has changed to use unsealed section more.	Manager Operations	Manager Operations, Operations Staff	2023-24	Proposed
A45	Assess Hinze Lane, Coonawarra/Penola for level rise and installation of culverts.	Manager Operations	Manager Operations, Operations Staff	2023-24	Proposed
A46	Assess Rogers Road and Sunnymeade Road for level rise and installation of culverts.	Manager Operations	Manager Operations, Operations Staff	2023-24	Proposed

Task	Task Description	Responsibility	Resources Required	Proposed Commencement Year (FY)	Status
A47	Assess Considine Road, German Flat, for suspected collapsed culverts (x4).	Manager Operations	Manager Operations, Operations Staff	2023-24	Proposed
A48	Schedule regular condition assessments and revaluations as per the Asset Management Strategy.	Manager Assets and Environment	Manager Assets and Environment, Senior Asset Management Officer, Asset Management Officer	2025-26	Proposed
A49	Review and update Kalangadoo Township Stormwater Management Masterplan. (Tonkin report 2004)	Manager Assets and Environment	Manager Assets and Environment, Senior Asset Management Officer, Asset Management Officer	2026-27	Proposed
A50	Acquire accurate costings for Queen Street Stormwater Project.	Manager Assets and Environment	Manager Assets and Environment, Senior Asset Management Officer, Asset Management Officer	2023-24	Proposed

Appendix 4 Forecast Capital Projects

Location	Improvement Program Action	Description	Proposed Commencement Year (FY)
Kalangadoo	A27	Install bore at Anne Street Drainage Reserve	2022-23
Beachport		Installation of kerbing at Foster Street and South Terrace, and French Street and South Terrace, and drainage works on Foster Street	2022-23
Mount Burr	A26	Drainage Renewal Works - Mount Burr Detention Basin	2022-23
Millicent	A31	Drainage renewal program - Mount Gambier Road and Enderby Lane Stormwater	2022-23
Glencoe	A31	Drainage renewal program - Glencoe West Road Culverts	2022-23
Millicent	A31	Drainage renewal program - Railway Terrace and Holzgreffe Street Stormwater Pits	2022-23
Millicent	A31	Drainage renewal program - Millicent Pump Station	2022-23
Beachport		Centennial Park - Stormwater Pump	2022-23
All Areas	A28	Stormwater Pit Lid Replacements	2024-25
Nangwarry	A21, A22	Detention basin upgrade, including installing non-return valve at pump that is fit for purpose.	2023-24
All Areas	A10	Retrofit switchboards to enable generator plugins	2025-26
Penola	A13	Installation of stormwater pipes and pit on Arthur Street Penola in front of VIC.	2025-26
Penola	A16	Installation of stormwater pipes and pits for Ellen Street, Penola	2026-27
All Areas	A1, A3, A4, A5, A44, A45, A46, A47	Culvert renewals	2023-24
Millicent	A29	Replace or service valve at Millicent Swimming Lake and secure valve so it can't be accessed by public.	2023-24

Location	Improvement Program Action	Description	Proposed Commencement Year (FY)
Millicent	A32	Upgrade Clinton Lane detention basin in Millicent so it is fit for purpose.	2024-25
All Areas	A33	Stormwater sump pump renewals	2024-25
Penola	A34	Portland St/John St stormwater construction	2029-30
Penola	A38	Stormwater construction at intersection of Arthur and Queen Street, Penola, to install infrastructure that is fit for purpose.	2024-25
Penola	A35, A50	Staged construction of new stormwater infrastructure along Queen Street and South Terrace, Penola.	2023-24
Beachport	A41	Somerville Street, Beachport, drainage works including kerb and channel	2024-25
Millicent	A36	Bolton Oval/Mount Gambier Road drainage works	2032-33

Appendix 5 Forecast Operational Projects

Location	Improvement Program Action	Description	Proposed Commencement Year (FY)
Millicent		Cleaning of GPT in Main Drain	2022-23
Kalangadoo	A11, A49	Engage consultant to undertake Stormwater System Analysis in Kalangadoo to establish an upgrade plan and review and update Kalangadoo Township Stormwater Management Masterplan	2026-27
Rendelsham	A14	Annual Street Sweeping	2022-23
Mount Burr	A14	Annual Street Sweeping	2022-23
Kalangadoo	A14	Annual Street Sweeping	2022-23
Nangwarry	A14	Annual Street Sweeping	2022-23
Tantanoola	A14	Annual Street Sweeping	2022-23
Southend	A14	Annual Street Sweeping	2022-23
Glencoe	A14	Annual Street Sweeping	2022-23
Coonawarra	A14	Annual Street Sweeping	2022-23
Beachport	A14	Annual Street Sweeping	2022-23
Penola	A14	Annual Street Sweeping	2022-23
Millicent	A14	Annual Street Sweeping	2022-23
Millicent	A30	Main and Minor Drain Cleaning Program	2023-24
All Sites	A30	Open Drain and easement Annual Cleaning, excluding Millicent	2023-24
All Sites	A14	Pit cleaning	2023-24
All Sites	A15	Pit maintenance	2022-23
Penola	A38	Design for stormwater at intersection of Arthur and Queen Streets, Penola	2023-24
Penola	A34	Portland St/John St stormwater survey and design	2024-25
All Sites	A48	Condition assessments and revaluations	2025-26
All Sites	A33	Sump pump maintenance program	2022-23
Mount Burr	A37	Install appropriate rocks and landscaping to address erosion concerns for swale drain and detention basin	2023-24
Penola	A39	Review and update Penola Township Stormwater Management Masterplan	2024-25

Location	Improvement Program Action	Description	Proposed Commencement Year (FY)
Beachport	A41	Design for Somerville Street, Beachport, drainage works	2023-24
Millicent	A36	Design for Bolton Oval/Mount Gambier Road drainage works	2031-32
Millicent	A7, A8	CCTV Stormwater near Ireland Street intersection on Mount Gambier Road and Park Terrace	2024-25
Beachport	A9	CCTV stormwater from Rotunda to Lagoon for potential blockages caused by sand	2024-25
Kalangadoo	A12	CCTV pipes on North-East Terrace, Kalangadoo, to identify where stormwater drains to.	2025-26
Beachport	A41	CCTV Somerville Street, Beachport, from French Street to Lagoon	2023-24
Penola	A16	Design for stormwater infrastructure on Ellen Street, Penola	2023-24