



STORMWATER

ASSET MANAGEMENT PLAN 2020



Welcome



Amanda Wilson
Mayor
City of Holdfast Bay

Asset Management Plans are important documents that help us to plan and invest wisely to maintain our assets and infrastructure so we can continue to deliver valuable services for our community now and into the future.

Assets are the foundation stones of the City of Holdfast Bay and include the streets we drive on, the parks and reserves our family play on, the stormwater network we rely on, and the community and sporting facilities we enjoy across Holdfast Bay.

Here we present the Stormwater Asset Management Plan, which covers 70 kilometres of underground pipes and over 2,000 pits and junction boxes.

Asset Management Plans provide a snapshot of the current and future state of our Council's infrastructure. The plans ensure we maintain and renew assets in a cost-effective and sustainable manner that meets our community's expectations.

In the management of assets, we have to balance the service standard expectations of the community with the cost of delivering the service. While we would all like the highest standard of our assets this comes at a cost, the long-term impact of which needs to be carefully considered.

Behind the plans is a significant amount of investigation, planning and financial modelling to help Council staff to maintain our assets cost-effectively. The Asset Management Plans also highlight that when we build new assets or upgrade assets, we must plan for the ongoing maintenance and ultimate replacement of the assets at the end of their life.

I encourage you to have a look at the Asset Management Plans and review whether the service levels presented here are consistent with your vision for the future of Holdfast Bay.

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TRADITIONAL CUSTODIANS

We acknowledge the Kurna people as the traditional custodians of this land. We respect their spiritual relationship with the country that has developed over thousands of years, and the cultural heritage and beliefs that remain important to the Kurna people today.

Abbreviations

Asset Management Plan	AMP
Levels of Service	LoS
Long Term Financial Plan	LTFP
Double Side Entry Pit	DSEP
Side Entry Pit	SEP
Gross Pollutant Traps	GPT
Water Sensitive Urban Water Design	WSUD
Headwall	HW
Junction Box	JB
Average Recurrence Intervals	ARI

Executive Summary

The City of Holdfast Bay is reliant on a well-planned and extensive stormwater drainage network to provide flood protection to properties. We maintain 70 kilometres of underground pipes with sizes between 100mm diameter and 3.6m wide culverts and over 2,000 pits and junction boxes. In addition, Council has various stormwater assets including water sensitive urban design, pumps, rising mains and gross pollutant traps. The total replacement value of this infrastructure is estimated at \$58.5 million.

Much of underground pipe system was installed in the 1960s and 1970s, so is 50–60 years through a useful life of between 80 and 120 years. Due to the aggressive marine environment, some pipes will not last as long depending on their proximity to the coast. Our trunk stormwater pipe network drains low areas behind the former sand dunes and are generally at shallow grades which leads to increased blockages and maintenance. In addition, the beach outlets require constant maintenance to keep them free of sand.

Council needs to invest in major stormwater upgrades to increase the capacity of our stormwater system to reduce flood risk for properties. This is reflected in the forecast acquisition costs outlined in this Asset Management Plan. Our stormwater catchment includes significant portions of the City of Marion who contribute financially to upgrade works. These works are identified in the *Cities of Holdfast Bay and Marion Stormwater Management Plan (2014)*. In addition, works to improve the quality of water and reduce the volume of stormwater entering the marine environment are required. This includes gross pollutants traps, water sensitive urban design and options to reuse stormwater.

As a significant amount of the stormwater assets are buried it is difficult and costly to assess the condition. Based on a CCTV sample, our stormwater assets are in fair condition and further inspections are required to confirm this. The relatively low replacement costs forecast over the next 10-years reflects this fair condition and long useful life. There is a large replacement program anticipated from 2040 onwards.

When Council needs to replace or upgrade portions of the underground infrastructure other options such as pipe relining or upgrade on new alignments will be investigated to reduce inconvenience to residents and risk.



Stormwater Asset Management Plan

We will drive a systematic approach to the development, maintenance and replacement of our assets and ensure that these assets meet the needs of our community.

TOTAL VALUE OF ASSETS: \$58.5M



DRAINS
\$47.4M



SUMPS
\$11.2M

LEVELS OF SERVICE



COMMUNITY

- › Quality
- › Function
- › Capacity
- › Safety



TECHNICAL

- › Condition
- › Function/Capacity
- › Safety

IMPROVEMENT PLAN

Develop a rolling 3 year works program identifying assets to be renewed.

Implement risk mitigation strategies identified in this AMP.

Investigate pipe conditions using CCTV.

Review Stormwater Asset Management Plan.

Improve street tree management to reduce kerb lift & associated stormwater issues.



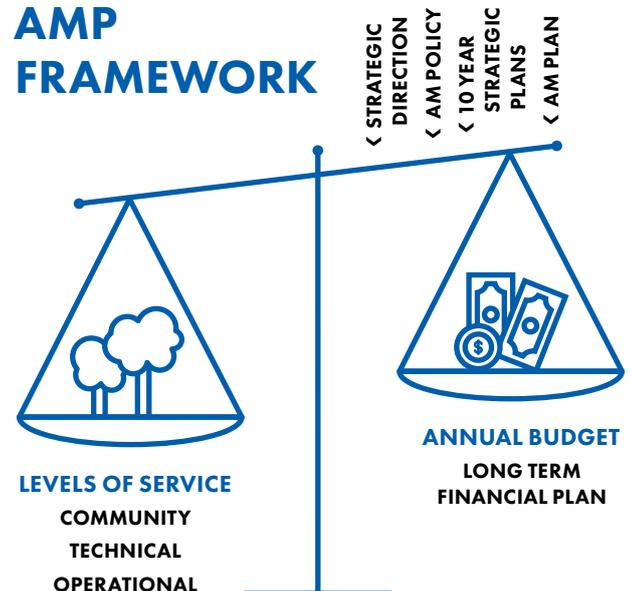
A community connected to our natural environment

- › Reduce flash flooding within our city during rain events
- › Reduce stormwater discharge to the marine environment

An effective customer-centred organisation

- › Providing customer centred services
- › Enabling high performance
- › Being financially accountable
- › Supporting excellent, efficient operations

AMP FRAMEWORK

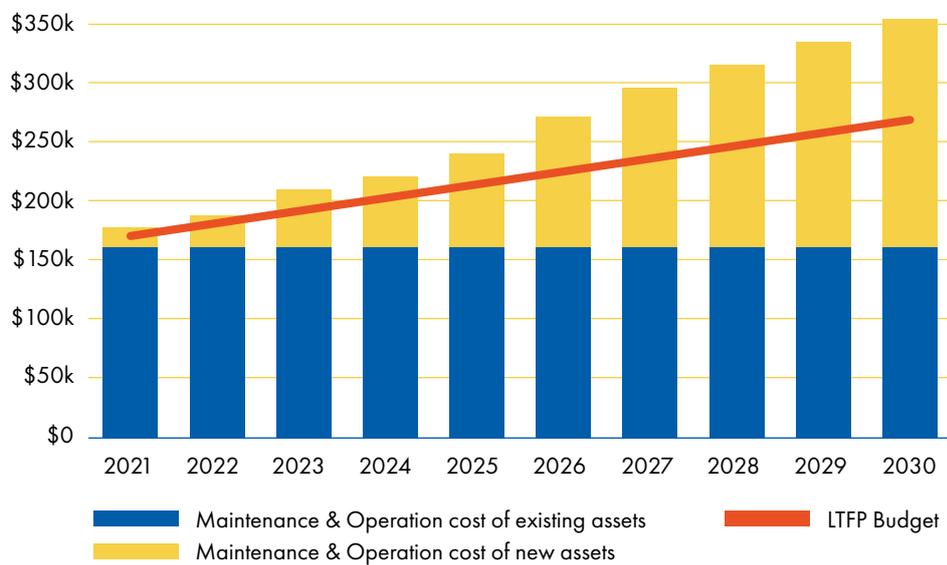


ASSET RENEWAL FUNDING RATIO: 100%

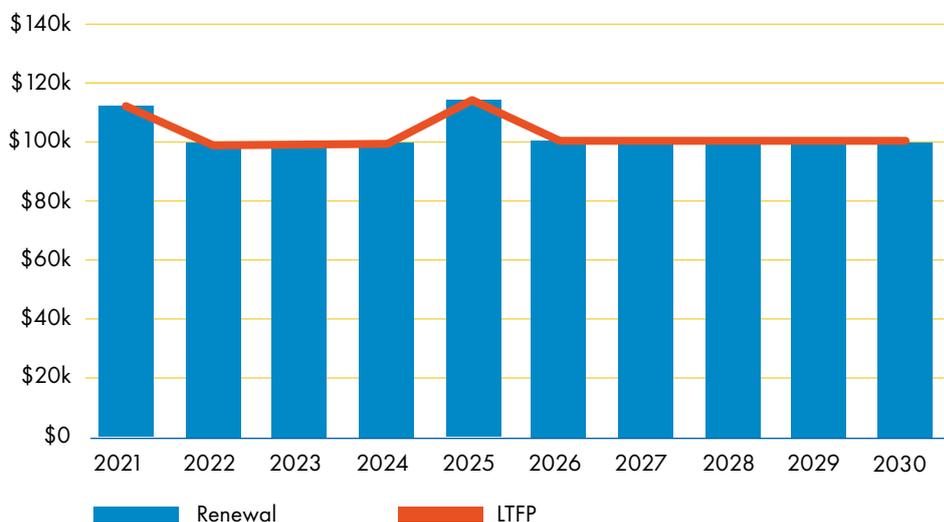
The Asset Renewal Funding Ratio indicates whether Council has the financial capability to fund the asset management strategy in this 10 year plan. Over the next 10 years of forecasting, City of Holdfast Bay expects to have 100% of the funds required for the optimal renewal and replacement of stormwater assets.

COUNCIL TARGET:
90–110%
OVER 5 YEARS

10 YEAR OPERATIONAL & MAINTENANCE FORECAST



10 YEAR RENEWAL FORECAST



1. Introduction



ENVIRONMENT

A community connected to our natural environment

In accordance with the *Local Government Act 1999* (the Act) and the Strategic Plan (*Our Place 2030*), the Council provides a range of community services to the members of the local community and visitors. The services include transport services, waste management services, environmental services, social and recreational services, open space services, stormwater drainage services, and coastal and beach management services.

Under the Act, Council is required to develop and adopt an infrastructure and asset management plan covering a period of at least 10 years. In addition, Council is required to adopt a long-term financial plan associated with such service plans also covering a period of at least 10 years. There is a direct link between the development and implementation of these two plans, with the Long Term Financial Plan (LTFP) updated to reflect forecast expenditure as detailed within these plans. Variations to the scheduled works within the AMP and the LTFP may be adjusted as the need arises.

The primary intent of asset management is to meet a required level of service in the most cost-effective way, through the creation, acquisition, maintenance, operation, rehabilitation, and disposal of assets to provide for present and future community needs. The Stormwater Asset Management Plan will be a living document over the next 3 to 4 years complying to all legislative requirements, and to communicate funding required to provide the required levels of service over a 10-year planning period.

This plan aims to align with ISO 55000 (international standard for asset management) but does not seek to become accredited as an ISO document or process. This document aims to align the delivery of asset management activities with the organisation’s goals and objectives; this process is known as the “line of sight” with asset management. This plan also aims to create transparency and accountability through all aspects of asset management; this process ensures that all stakeholders understand their roles and responsibilities of achieving the intentions of the plan.

The Stormwater Asset Management Plan works in conjunction with the following Council’s plans, strategies and policies (Table 1.1.1).

Plans, Strategies and Policies

<i>Adelaide’s Living Beaches – 2005–2025</i>	<i>Planning SA’s Coast Park</i>
<i>Asset Management Policy</i>	<i>Quality of Life and Business Confidence Reports</i>
<i>Beach Wrack (Seagrass) Removal Policy</i>	<i>Resilient South Regional Plan</i>
<i>Disposal policy</i>	<i>Stormwater Management Plan 2014</i>
<i>Long Term Financial Plan</i>	<i>The Annual Business Plan</i>
<i>Open Space and Public Realm Strategy 2018–2030</i>	<i>Water Sensitive Urban Development Plan</i>
<i>Our Place 2030 Strategic Plan</i>	

Table 1.1.1 Plans, Strategies and Policies





DEFINITIONS

Asset: A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. This typically includes infrastructure, property, buildings, plant and equipment.

Infrastructure assets: Physical assets that contribute to meeting the needs of organisations or the need for access to major economic and social facilities and services, e.g. roads, drainage, footpaths, cycle-ways, stormwater drainage, and buildings.

Level of service: The defined service quality for a particular service/activity against which service performance may be measured.

Operational: Activities undertaken to ensure efficient operation and serviceability of the assets. This will ensure that the assets retain their service potential over the course of their useful life. Includes cleaning and minor repairs, such as stormwater GPT cleaning, street sweeping, and pothole repairs. Includes overheads, such as wages and utility costs incurred during operational activities.

Renewal: Provides a program of progressive renewal of individual assets. Deteriorating asset condition primarily drives renewal needs, with increasing maintenance costs also considered.

Acquisition: Provides a program of works to create new assets or substantially upgrade existing assets. This is primarily driven by community, growth, social and/or environmental needs/desires.



1.1 LEGISLATION AND RELEVANT ACTS

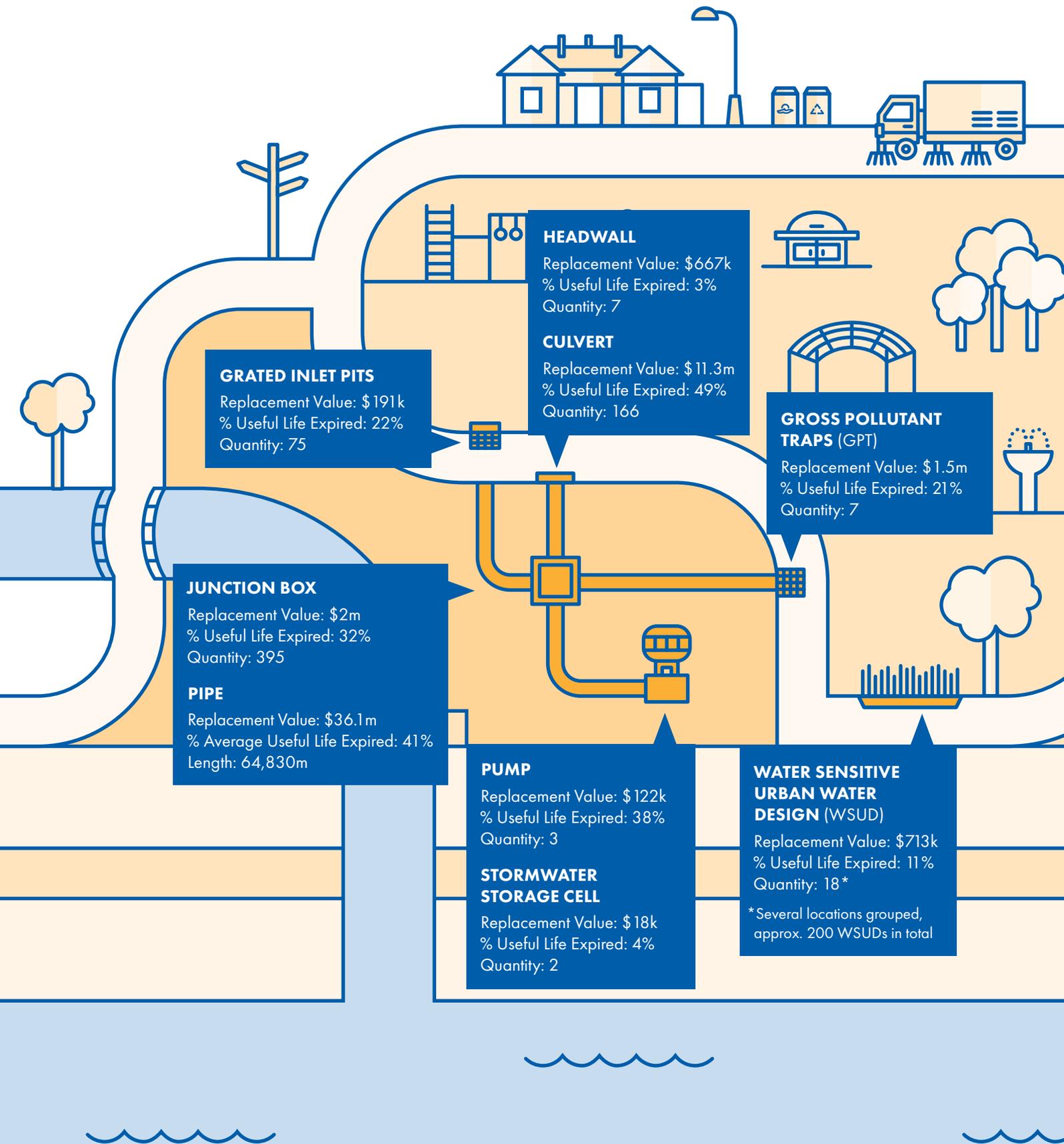
Council also adheres to and maintains assets in alignment with the following Acts:

Legislation	Requirements
<i>Australian Accounting Standards</i>	Standards applied in preparing financial statements, relating to the valuation, revaluation, and depreciation of stormwater assets.
<i>Environmental Protection Act</i>	An Act to provide the protection of the environment; to establish the Environment Protection Authority and define its functions and powers; and for other purposes. Consideration of this Act should be undertaken for the provision, development, or management of open space.
<i>Local Government Act 1999</i>	Sets out role, purpose, responsibilities and powers of local governments including the preparation of Long Term Financial Plan supported by asset management plans for sustainable service delivery.
<i>Work Health and Safety Act 2012</i>	An Act to provide for the health, safety, and welfare of persons at work; and for other purposes.
<i>Landscape South Australia Act 2019</i>	An Act to promote sustainable and integrated management of the State's natural resources; to make provision for the protection of the State's natural resources.
<i>Local Government (Stormwater Management) Amendment Act 2007</i>	Act empowering the Stormwater Management Authority.
<i>National Construction Code 2014</i>	Sets out minimum standards for stormwater management for property development.
<i>Emergency Management Act 1994</i>	Requires lifeline utilities to function at the fullest possible extent during and after an emergency and to have plans for such functioning (business continuity plans).
<i>Local Government Stormwater Management Act 2007</i>	Outlines the Stormwater Management Agreement between State and Local Governments, establishment of the Stormwater Management Authority and preparation of Stormwater Management Plans.

Table 1.1 Stormwater Asset Management Plan Legislative Requirements

2. Asset Class Information

STORMWATER ASSET CLASS

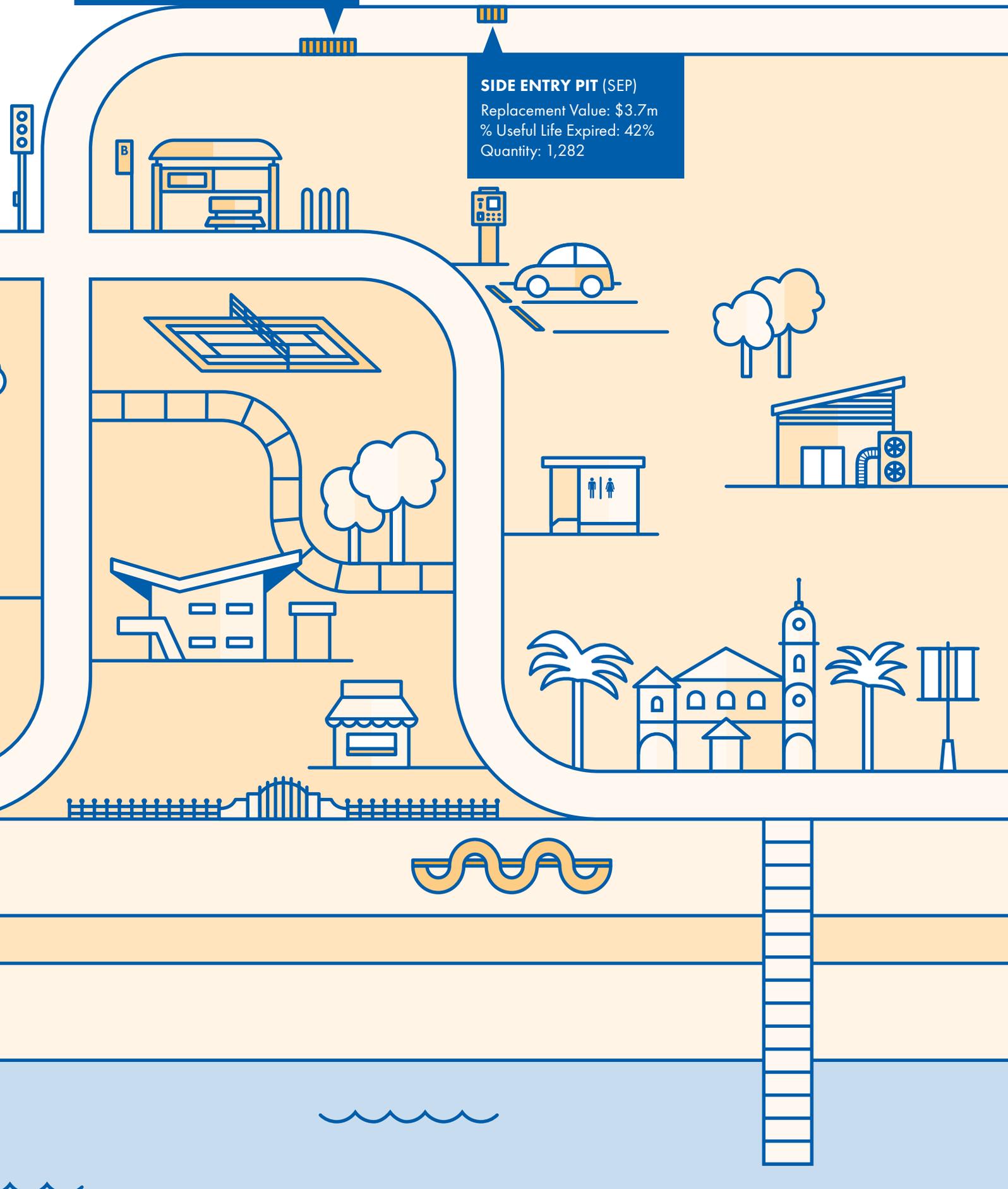


DOUBLE SIDE ENTRY PIT (DSEP)

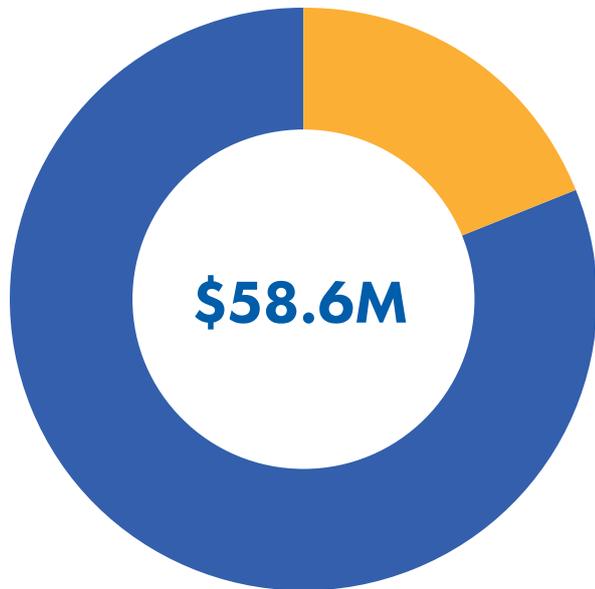
Replacement Value: \$2.3m
% Useful Life Expired: 38%
Quantity: 392

SIDE ENTRY PIT (SEP)

Replacement Value: \$3.7m
% Useful Life Expired: 42%
Quantity: 1,282



TOTAL CURRENT REPLACEMENT COST OF STORMWATER



Drains	\$47,361,160	●
Sumps	\$11,223,118	●



CONDITION RATING



2.1 PHYSICAL PARAMETER

This AMP covers the class of stormwater assets for the City of Holdfast Bay. A stormwater asset is defined as any construction, structure, or device with fixed and permanent foundations or footings, that is a part of the stormwater drainage network.¹

Stormwater assets are divided into functional categories as they provide different roles within the stormwater network. These are standardised to the Southwest Drainage Scheme data scheme and at a higher level include Drains and Sumps. These are further classified into sub categories as displayed in Tables 2.1.1 to and 2.1.2.

Stormwater Categories	Number of Assets	Diameter/ Size (mm)	Length (m)	Replacement Value	% of Useful Life Expired
Pipes	93	100–250	1,438.72	\$240,964	33.48
Pipes	2,052	300–600	37,929.19	\$12,220,801	37.10
Pipes	712	600+	29,935.61	\$34,899,395	46.49
Total	2,587		69,304	\$47,361,160	40.49

Table 2.1.1 Stormwater Pipe Categories

Stormwater Categories	Number of Assets	Type	Replacement Value	% of Useful Life Expired
Sump	1,282	SEP	\$3,718,875	42.06
Sump	392	DSEP	\$2,250,492	37.93
Sump	75	GP	\$190,862	22.39
Sump	7	GPT	\$1,538,010	20.57
Sump	7	Major HW ⁺	\$666,863	3
Sump	395	JB	\$2,005,442	32.07
Sump	3	Pump	\$121,565	37.5
Sump	2	Stormwater Storage Cell	\$18,420	4
Sump	18 [*]	WSUD	\$712,589	11.33
Total	2,181		\$11,223,118	30.49

Table 2.1.2 Stormwater Sump Categories

* A number of locations grouped, approx. 200 WSUDs total

+ Beach Headwalls are included in the Open Space and Coastal Asset Portfolio

1. Note, although a critical asset, trees are not currently assessed as 'infrastructure', and have not been included in this AMP. Management of natural assets is through Council's Environment Strategy.

DRAINS

Our drains are constructed using:

- > Pipes
- > Culverts

The material for pipes and culverts used are mainly pre-cast concrete and unplasticised polyvinyl chloride (uPVC).

Drains

Illustrated View

Pipes and Culverts:
Pre-cast Concrete



Pipes: PVC



Table 2.1.3 Pipes and Culvert materials

SUMPS

Sumps are divided into nine different functionality categories:

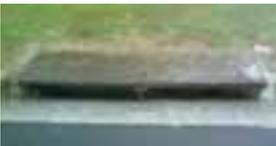
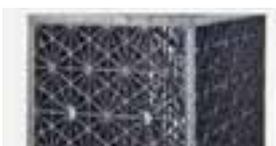
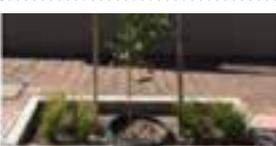
Sumps	Illustrated View	Sumps	Illustrated View
Side Entry Pit (SEP)		Gross Pollutant Traps (GPT)	
Double Side Entry Pit (DSEP)		Headwall (HW)	
Grated Inlet Pit (GP)		Junction Box (JB)	
Pump		Stormwater Storage Cell	
Water Sensitive Urban Design (WSUD) ²			

Table 2.1.4 Sumps – Sub Categories

The extent of the City of Holdfast Bay's stormwater network is shown in Appendix 1.

2.2 ASSET HIERARCHY

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

There are two processes to determining stormwater criticality, criticality for upgrade and existing renewal.

Several reports have modelled the current stormwater network performance and determined criticality of upgrades (*Stormwater Management Plan, Stormwater Management Plan Glenelg to Marino 2014*). Key factors included:

- › Flood risk mitigation
- › Age
- › Impact on Properties
- › Catchment Size.

These findings have later been refined internally and New Initiative programs developed (*Stormwater Strategy 2020, Stormwater Policy 2020*).

Table 2.2.1 below summarises Council's service levels for each level of hierarchy.



Hierarchy Level	Criticality	Description
A	High	5-Yr ARI Over Floor Flooding, high impact on number of properties and/or those critical to the core operations of council. Or issue is an urgent safety hazard.
B	Mid	100-Yr ARI Over Floor Flooding with medium impact on number of properties and/or community facilities. Persistent water pooling that impacts a number of stakeholders.
C	Low	Low risk of flooding, low impact on properties, functional.

Table 2.2.1 Asset Hierarchy

Each criticality has different service level agreements. These are outlined in detail in Appendix 2. This framework was produced internally, and as part of Council's Stormwater Asset Improvement Plan, community consultation will be undertaken upon the next criticality framework review.

2.3 ASSET EXPECTED LIFE

All assets are provided with a baseline straight line useful life value (blue line), used for the purposes of lifecycle cost planning and accounting for asset valuation and depreciation. This straight-line depreciation is used in Council’s financial reporting.

The service life of transport assets differs from the standard design life and the useful life, as it also accounts for the ongoing maintenance and renewal of the asset to maintain a designated technical level of service (black line). The setting of service levels will be undertaken by council staff in consultation with the community and elected members, to optimise whole of life costs for the assets.

As upkeep of the asset is made through the capital renewal & maintenance budgets, the condition should be maintained at the desired level to ensure assets reach their optimal service life (black line). If no regular maintenance occurs the potential asset life will not be reached (red line).

Figure 2.3.1 shows that the deterioration curves, red and black, show a true reflection on an assets aging profile, as it typically deteriorates faster towards the end of its life.

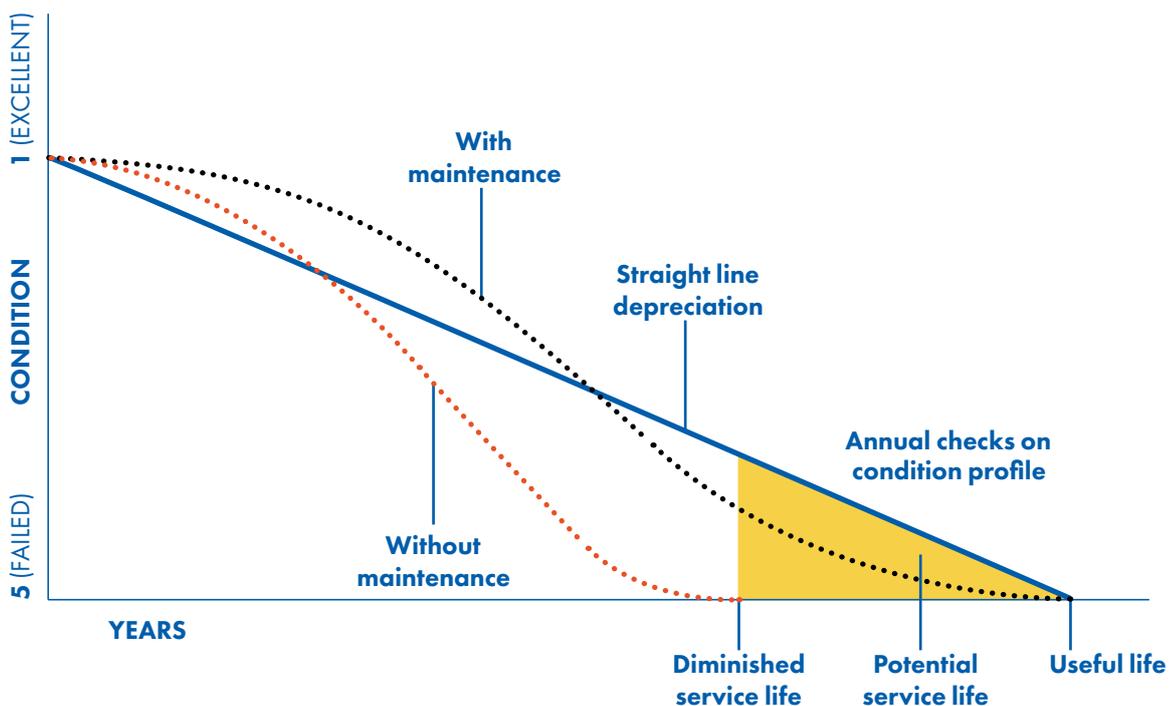


Figure 2.3.1 Asset Ageing Profile

2.4 ASSET QUALITY AND DISTRIBUTION

The City of Holdfast Bay has a responsibility to maintain the appropriate condition of stormwater assets as defined by the levels of service.

This includes:

- › Forward works planning – capital and maintenance program
- › Overseeing works undertaken
- › Organising regular surface inspections of stormwater assets.

Internal CCTV inspections of stormwater assets will be undertaken progressively throughout the network over a 10-year period, starting with high criticality stormwater assets as defined in Table 2.2.1. This will ensure we maintain an up to date database of condition, maintenance, and risk.

Stormwater assets incorporate a 1–5 condition rating score (Table 2.4.1) for each asset.



CONDITION RATING



Condition Rating	Condition Description	Actions
1	Very Good	No action required
2	Good	Minor defects only
3	Fair	Maintenance required to return to accepted level of service
4	Poor	Consider renewal
5	Very Poor	Approaching unserviceable

Table 2.4.1 Condition Assessment System (based on International Infrastructure Management Manual 2015, IIMM)

3. Stakeholders

Key stakeholders in the preparation and implementation of this Stormwater Asset Management Plan are shown in Table 3.1.

Key Stakeholders	Roles in Asset Management Plan
Residents and Ratepayers	<ul style="list-style-type: none">› Ultimate beneficiaries of the AMP process› Feedback collected throughout the year› Annual satisfaction survey undertaken
Visitor / Tourists	<ul style="list-style-type: none">› Regular satisfaction surveys undertaken, and feedback collected
Business Owners; Traders; Service Providers	<ul style="list-style-type: none">› Play a significant role in providing services› Feedback is collected through regular consultation› Suppliers provide the goods and services to manage the assets and infrastructure
Council	<ul style="list-style-type: none">› To act as custodians of community assets› To set Asset Management Policy and vision› Allocate resources to meet Council objectives in providing services while managing risks
Chief Executive Officer/ Senior Leadership Team	<ul style="list-style-type: none">› To provide leadership and strategic direction› Review Asset Management Policy and Asset Management Strategies› To ensure that community needs and the outcomes of service reviews are incorporated into asset management planning and Long-Term Financial Plan› To ensure that training of Councillors and staff in financial and asset management practices is provided› To ensure that accurate and reliable information is presented to Council› To ensure appropriate delegations and approval processes are followed



Key Stakeholders Roles in Asset Management Plan

Asset Management Leadership Team	<ul style="list-style-type: none"> › Facilitate development of Asset Management Plans › To oversee the implementation of the Asset Management Policy and Asset Management Strategies › To oversee the ongoing development and review of service plans and Asset Management Plans › To ensure that community needs and the outcomes of service reviews are incorporated into Asset Management Plans › To promote and raise awareness of asset management within the organisation › To ensure relevant health and wellbeing, human rights and equity principles and strategies are taken into consideration › To develop and implement Asset Management Improvement Plan › To provide and manage the asset management information system(s) › Integrate asset management and financial plans and reporting
Asset Manager(s) and Staff	<ul style="list-style-type: none"> › To lead the development of the Asset Management Plans › To develop and implement maintenance, renewal and capital works programs in accordance with the Asset Management Policy, Strategy, Plans, as well as budget allocations › Develop Specific Management Plans (upgrade, renewal, maintenance, operations, disposal) › To deliver levels of service to agreed risk and cost standards and expectations › To report asset related risk and damage › To establish and monitor asset compliance and risk inspection regimes › To manage asset condition assessments › To provide technical expertise to Asset Management Leadership Team

Table 3.1 Stormwater Asset Management Plan Key Stakeholders

4. Current and Desired Levels of Service (LoS)

Levels of Service or objectives and the way these are benchmarked and measured annually and quarterly, are the single biggest point of difference between previous asset management plans and ISO 55000 standard plans. By its very definition, ISO 55000 is measurable and definable outcome that typifies an outcome-based paradigm.

The *International Infrastructure Management Manual* describes Levels of Service (LoS) as ‘defined service quality for an activity or service area against which service performance may be measured’.

The City of Holdfast Bay have 2 defined levels of service:

- › Customer (Community) Level of Service
- › Technical Level of Service

These Levels of Service are designed to support continued performance and function of the stormwater assets (and all their components) to a reasonable standard. They are also intended to ensure the future economic sustainability of City of Holdfast Bay’s stormwater network is considered and unreasonable costs are not being placed on future Asset Plans.

Currently only the 5-year and 100-year average recurrence interval (ARI) flood risk and commission age of assets has been assessed. This can be used for the Technical Level of Service, as well as qualitative results from Customer Complaints System. However, moving forward other indicators of levels of service, including condition scores, quantitative number of customer complaints, works system, and live performance monitoring will be integrated with asset records, allowing for a more mature Levels of Service assessment.

Community Level of Service

Strategic Goal(s)	Performance Measure	Level of Service Objective	Performance Measure	KPI
Culture: Supporting excellent, efficient operations	Quality	Stormwater network is generally unobstructed.	Percentage of assets that are better than our service level targets (Appendix 2: Stormwater Service Levels).	Above 95%
Culture: Supporting excellent, efficient operations	Function/Capacity	Stormwater functions to required level (i.e. no flash flooding in events less than a 5-Yr ARI).	Percentage of assets that are better than our service level targets (Appendix 2: Stormwater Service Levels).	Above 95%
Culture: Supporting excellent, efficient operations	Responsiveness	Provide services with determined response time.	Time taken to respond to requests are better than our service level targets (Appendix 2: Stormwater Service Levels).	Above 95%



Technical Level of Service

Strategic Goal(s)	Performance Measure	Level of Service Objective	Performance Measure	KPI
Culture: Supporting excellent, efficient operations	Condition	Physical state of stormwater assets is in serviceable condition.	Percentage of assets that are better than our service level targets (Appendix 2: Stormwater Service Levels).	Above 95%
Placemaking: Creating lively and safe places Placemaking: Developing walkable, connected neighbourhoods	Function/Capacity	Stormwater assets have the capacity to meet the community need.	Percentage of assets that are better than our service level targets (Appendix 2: Stormwater Service Levels). Number of customer complaints reduced.	Above 95%
Placemaking: Creating lively and safe places	Safety	Stormwater assets are safe and free of hazards.	Number of injury or accidents.	0

5. Future Demand

The community’s demand for the services changes over time. The reason for change can be varied, some of the common drivers are population, demographics, environmental and technology. As service demand changes, the Council’s assets may also need to change to meet the changing demand.

Current Position	Demand Forecast	Demand Impact	Demand Management Plan	Impact on Assets
Population increase: › Total estimated population: 36,520.	Planned to accommodate for 40,313 by 2031.	Greater impervious areas through increased infill development has the potential to cause local flooding problems.	Audit and management of stormwater drainage. Installation of water sensitive urban design features. Implementation of regional Stormwater Catchment Management Plan.	Increase demand on stormwater assets which may lead to blockages and capacity issues.



Current Position	Demand Forecast	Demand Impact	Demand Management Plan	Impact on Assets
Council and the community are increasingly aware of our impact to the environment and Council's role in environmental sustainability.	Council is committed to pursuing, supporting, and creating an environment that will sustain current and future generations. This goal is shared by our community and is a primary objective of most governments across the world.	We are committed to using fewer of our precious resources, reducing our carbon footprint, and looking for smarter ways to achieve this objective.	Implement actions from the environmental strategy. Climate Adaptation Risk Assessment.	Higher costs associated with construction methods that are environmentally sustainable.
Increase of severe weather events including droughts, storms, storm surges, high tide, and sea level rise.	Severe weather events to increase based on current trends. Increase in sea level.	More intense rainfall events are likely to place increased pressure on the drainage network to carry larger volumes of stormwater runoff. Sea level rise will reduce capacity of drainage network adjacent to coast.	Potential for design standard definitions change through the increase rainfall intensity. This will decrease the standard for our existing infrastructure. Sand retention and management. Audit of sea wall condition. Water storage, recycling, reclamation, and management. Use of improved irrigation technology. Usage of A-Class reclaimed water.	In future larger pipes may be required to meet the same design standard as the definitions change. Upgrading current capacity of current systems may also be required.
Testing new research and technologies being developed for stormwater management.	Looking for efficient and effective ways to improve stormwater management.	Taking advantage of opportunities through studies and grants to progress stormwater management technology.	Using new technologies to control stormwater flows within catchments to eliminate localised flooding. Funding received from Department of Environment and Water for the introduction of detention to delay flows and the use of smart tanks.	Introduction of new products and systems, rather than like-for-like replacement, will incur additional cost.

Table 5.1 Future Demands

6. Life Cycle Planning/Strategies

The lifecycle management plan details how the City of Holdfast Bay plans to manage and operate the assets at the agreed Levels of Service while managing life cycle.

The assets covered by this Stormwater Asset Management Plan is shown in section 2, Asset Class Information.

This section presents an analysis of Council's available stormwater assets information and the life cycle management plans covering the 4 key work activities to manage stormwater assets.

- › **Routine Maintenance** – Activities undertaken to ensure efficient operation and serviceability of the assets. This will ensure that the assets retain their service potential over the course of their useful life.
- › **Capital Renewal/Replacement** – Provides a program of progressive renewal of individual assets. Deteriorating asset condition primarily drives renewal needs, with increasing maintenance costs also considered.
- › **Decommission** – Any activity associated with the disposal of a decommissioned asset including sale, demolition, or relocation. Any costs or revenue gained from asset disposals is included in the Long Term Financial Plan.
- › **Creation/Acquisition** – Provides a program of works to create new assets or substantially upgrade existing assets. This is primarily driven by community, growth, social and/or environmental needs/desires.

Variability of these stages also exists within different stormwater categories, as stormwater function may influence the renewal versus replacement strategies.

The major stages can be further divided into specific processes as listed in Figure 6.1. In each stage of the lifecycle, varying events will trigger the need to begin the next phase of the cycle. Further details on the processes of these lifecycle stages for stormwater assets is provided in the following sections.

6.1 OPERATIONS & MAINTENANCE PLAN

Operations include regular activities to provide services. An example of a typical operational activity is cleaning gross pollutant traps.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating. This work is not capitalised and does not increase the service life of the asset.

An example of a typical maintenance activities is repairing pit lids and pipe junctions.

As the years progress, the maintenance budget is projected to increase due to inflation and an asset portfolio growing in size, complexity and age.

6.2 RENEWAL PLAN

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

Assets requiring renewal are identified using the asset register data to project the renewal costs (current replacement cost) and renewal timing (acquisition year plus updated useful life to determine the renewal year).

In the 10-year Forecast Renewal Program Council will include:

- › Annual WSUD Program
- › Annual Minor Stormwater Program
- › Farrell Street Pump Station.

It is anticipated the renewal program will be adjusted once the CCTV condition assessment has been received. However initial results indicate no major capital renewal works are required in the 10-year window.

6.2.1 RENEWAL RANKING CRITERIA

Asset renewal is typically undertaken to either:

- › Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate, 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.¹

The ranking criteria used to determine priority of identified renewal proposals are detailed in Table 6.2.1

Criteria	Weighting
Service Level Hierarchy (High, Med, Low)	50%
Risk rating: Social, political, environmental implications of failure	25%
Potential to reduce life cycle costs by replacement with a modern equivalent	25%
Total	100%

Table 6.2.1 Renewal Priority Ranking Criteria

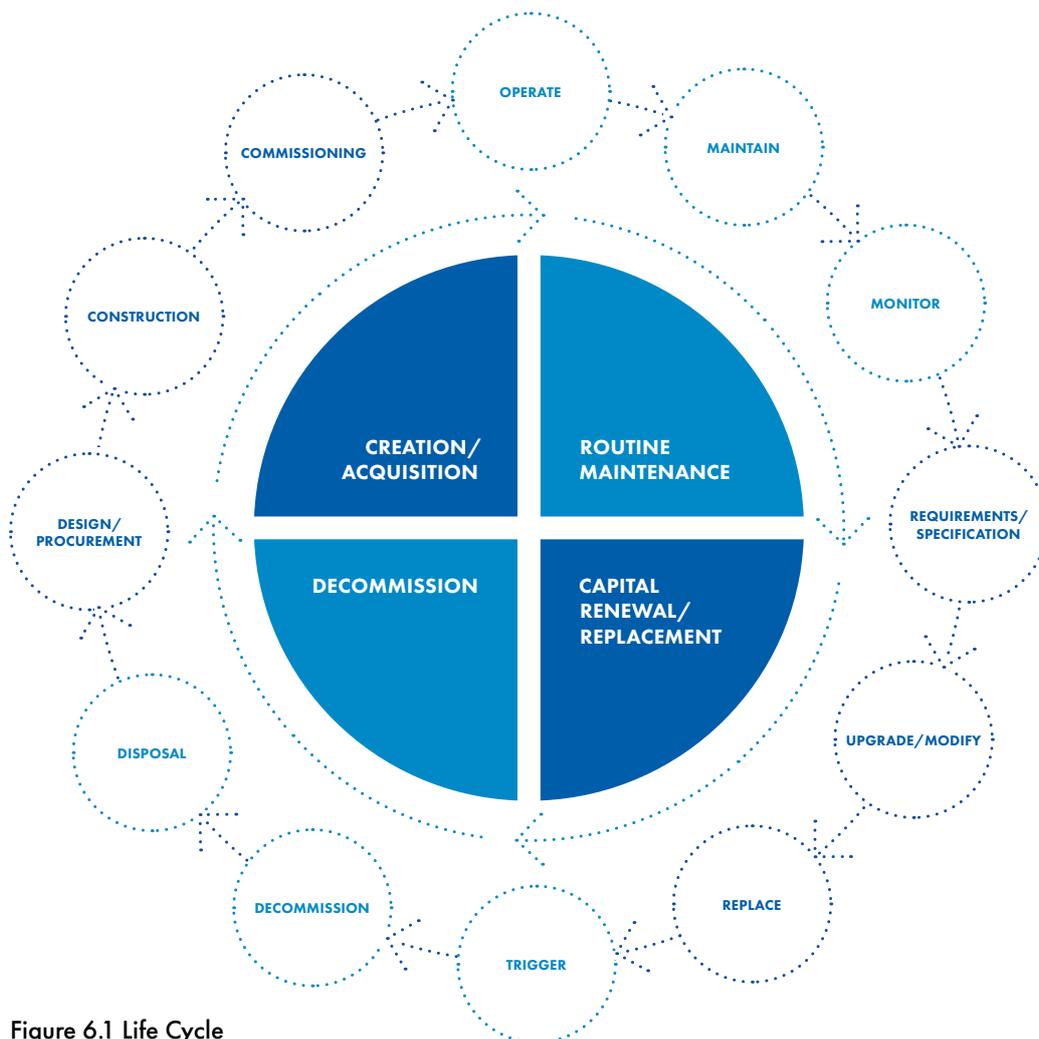


Figure 6.1 Life Cycle Management Plan

1. Based on IPWEA, 2015, IIMM, Sec 3.4.5, p3|97

6.3 ACQUISITION PLAN

Acquisitions are new assets that did not previously exist or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, demand, social or environmental needs.



6.3.1 SELECTION CRITERIA

Proposed upgrade of existing assets, and new assets, are identified from various sources such as:

- › City of Holdfast Bay Stormwater Management Plan;
- › Water Sensitive Urban Design (WSUD) Plan;
- › Customer feedback, depot information about nuisance flooding hotspots;
- › Proposals identified by Strategic Plans.

Potential upgrade and new works should be reviewed to verify that they are essential to the entities needs.

When Council commits to new assets, they must be prepared to fund future operations, maintenance, and renewal costs. They must also account for future depreciation when reviewing long term sustainability. This is outlined in City of Holdfast Bay's Asset Management Policy (Section 3.3.3):

Future life cycle costs will be reported and considered in all Council decisions relating to new services and assets and upgrading of existing assets. If actual costs are not known, an estimate will be applied to the upgrade portion of the project, based upon the Asset Management Plan's life cycle forecast (%).

Major upgrade projects forecast in the next 10 years include:

- › Wattle Gross Pollutant Trap
- › Gully Masterplan Implementation
- › College Road stormwater upgrade.

The full table of projected acquisition projects for the next 10 years is displayed in Appendix 3.

6.4 DISPOSAL PLAN

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. Council Disposal of Assets Policy outlines this process.

Council has no upcoming disposals for stormwater assets. As such, there is no funding required or expected from the decommissioning of any assets at this point in time.

7. Budget

This section contains the financial requirements resulting from all the information presented in the previous sections of this Asset Management Plan. The financial projections will be improved as further information becomes available with the introduction of a new strategic asset management modelling system in future AMPs, on desired Levels of Service and current and projected future asset performance.

7.1 ASSET VALUATIONS

Valuations are undertaken in alignment with Australian Accounting Standard 'AASB 13 Fair Value', and 'AASB 116 Property Plant and Equipment'. These valuations are required every three to five years, with an independent audit required every five years. Valuations are undertaken to satisfy the financial reporting requirements and to understand the cost to replace assets.

The valuation of Council's stormwater assets is summarised in Table 7.1.1:

Asset Category	Replacement Cost	Accumulated Depreciation	Written Down Value
Drains	\$47,361,160	\$19,176,534	\$28,184,626
Sumps	\$11,223,118	\$3,421,929	\$7,801,189
Total	\$58,584,278	\$22,598,463	\$35,985,815

Table 7.1.1 Stormwater Asset Valuation



7.2 MAINTENANCE AND OPERATIONS TRENDS AND FORECASTS

Figure 7.2.1 displays the maintenance and operational trend of City of Holdfast Bay’s stormwater assets.

The maintenance budget was predominately used for pit lids and water sensitive urban design (WSUD) and the operational budget was used for the cleaning of gross pollutant traps (Figure 7.2.1).

There was a significant increase in the operational expenditure in 2019–2020 due to a backlog works program for gross pollutant trap cleaning and stormwater repairs. This program is now concluded and it is expected that the budget for 2021 will be \$100,000 for operational costs and \$61,000 for maintenance.

It is anticipated the maintenance and operational budget will increase slightly in the medium to long term as demand on assets increases as well as extreme storm events associated with climate change.

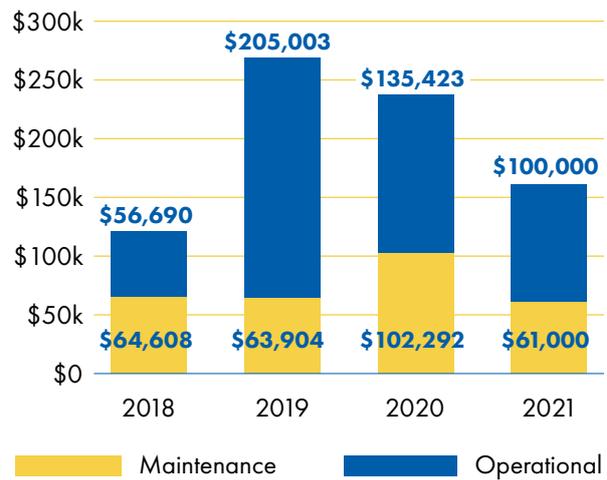


Figure 7.2.1 Maintenance and Operational Budget Trend Graph



7.3 FUTURE OPERATIONS AND MAINTENANCE FORECAST

Forecast operations and maintenance costs are expected to vary in relation to the total value of the asset portfolio. If additional assets are acquired, the future operations and maintenance costs are forecast to increase. If assets are disposed of the forecast operation and maintenance costs are expected to decrease. Figure 7.3.1 shows the forecast operations and maintenance costs exceeds the proposed operations and maintenance LTFP budget.

The operation and maintenance costs on Council's stormwater assets are forecast to increase (cumulatively) by approximately \$987,900 over the next 10 years.

- › Additional maintenance cost of \$987,900 is required for newly acquired assets.

Council has allowed for an additional 1% of its acquisition (total project cost) costs to be added to maintenance and options budget (Figure 7.3.1).

The above additional costs will need to be addressed through the Improvement Plan for operational and maintenance planning efficiencies and process in future years.

10 YEAR OPERATIONS & MAINTENANCE FORECAST

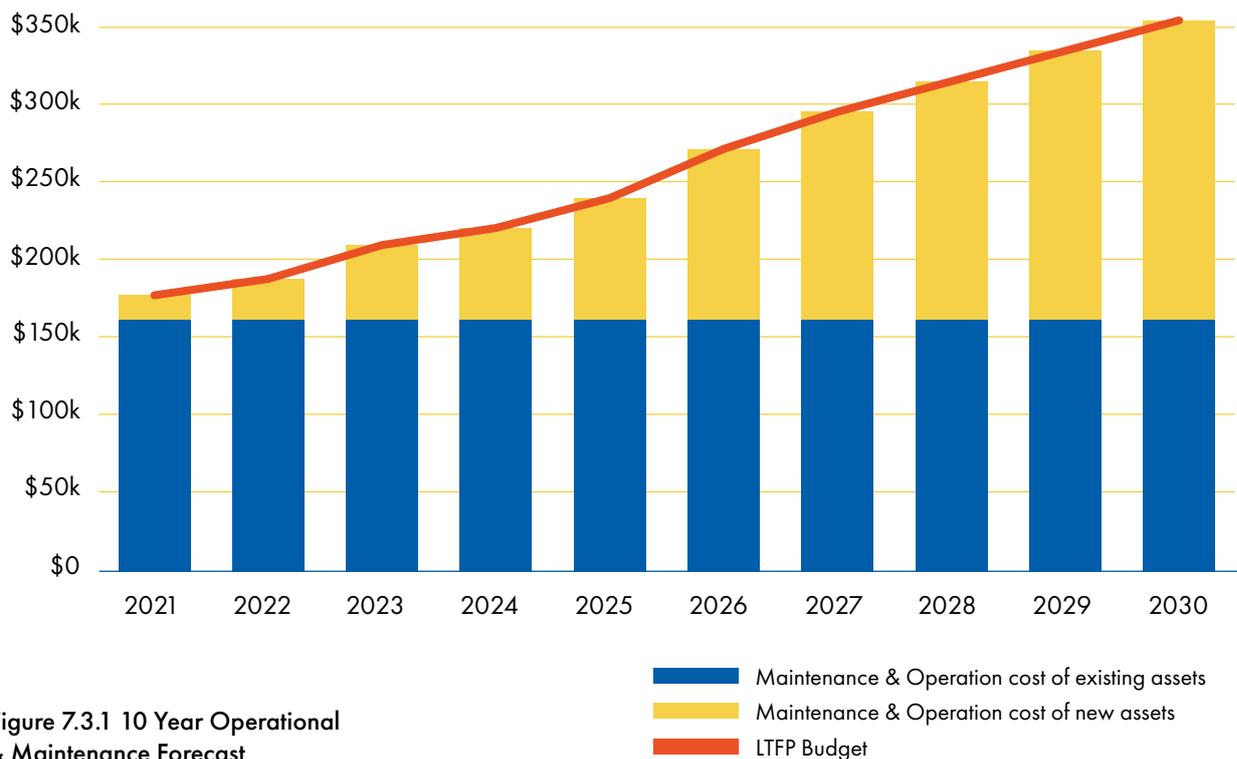


Figure 7.3.1 10 Year Operational & Maintenance Forecast

7.4 FUTURE RENEWAL FORECAST

The forecast renewal costs are consistent with the planned LTFP budget over the next 10 years. This is because Council has committed to adopting the renewals as detailed in the Asset Management Plan.

The 10 year renewals are very low, when compared to the stormwater portfolio. This is due to the long life of stormwater assets, and the relatively good condition. It is anticipated there will be a substantial increase in renewal budgets required from 2040 onwards. The ongoing CCTV investigations may also identify renewals that are required in the 10 year window. It is recommended this renewal forecast is reviewed annually to allow for this.

Council's LTFP renewal forecast for the next 10 years is displayed in Figure 7.4.1.

7.5 FUTURE ACQUISITION FORECAST

The forecast acquisition costs are consistent with the planned LTFP budget over the next 10 years. This is because Council has supported the acquisition as detailed in the Asset Management Plan.

Council's acquisition forecast and LTFP budget for the next 10 years is displayed in Figure 7.5.1.

The acquisition (total project cost) program has been derived from the Stormwater Strategy 2020 and represents a whole project cost.

The actual expenditure by Council is anticipated to reduce significantly after these contributions, as reflected in the Appendix 3: Financial Summary. However, it is important to include the entire asset costs to account for appropriate maintenance and operation requirements (Section 7.3).

Acquisition project details are listed in Appendix 3.

7.6 ASSUMPTIONS

The following key assumption(s) were applied in this financial forecast:

- › Remaining life-based renewal program.
- › The annual shortfall over 10 years is caused by the increased maintenance and operational expenditure required by the acquisitions, a 3.32% increase in asset stock.
- › No decommissioning of existing assets.
- › Operational and Maintenance Budget fixed – using average of previous 5 years actuals.

7.7 DATA CONFIDENCE

The expenditure and valuations projections in this Asset Management Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. This stormwater data confidence is classified as 'C – Uncertain' based on the IPWEA data confidence scale (Table 8.5). 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 $\pm 25\%$.

See Appendix 4 for data confidence grading system.



10 YEAR RENEWAL FORECAST

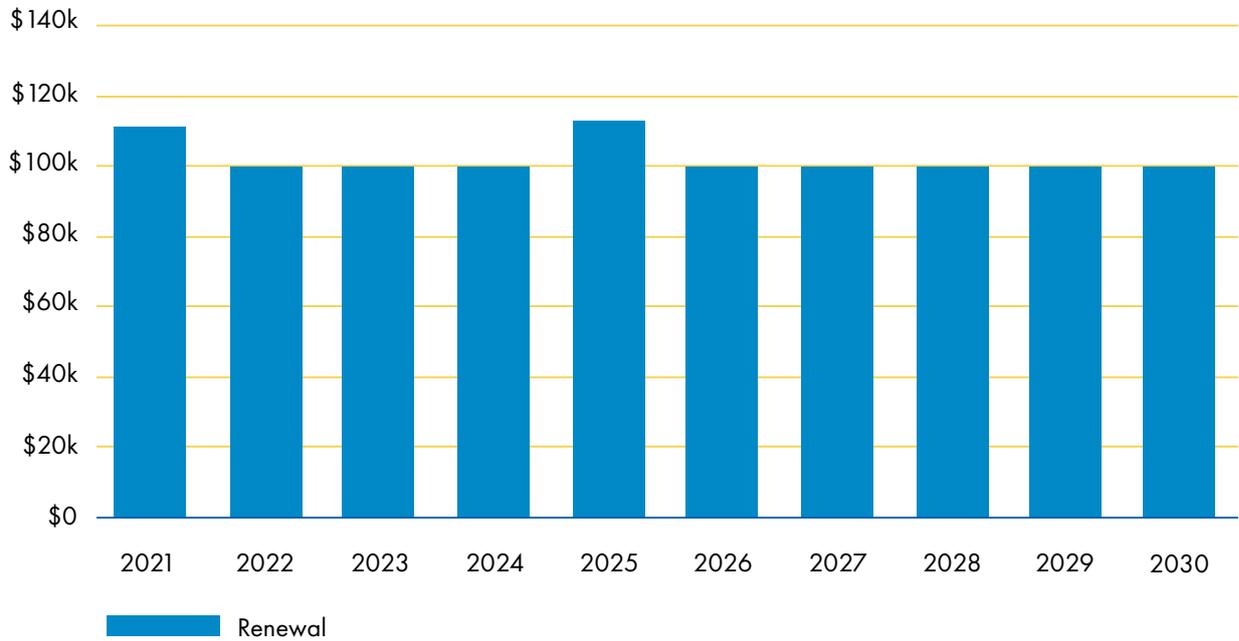


Figure 7.4.1 10 Year Renewal Forecast

10 YEAR ACQUISITION FORECAST

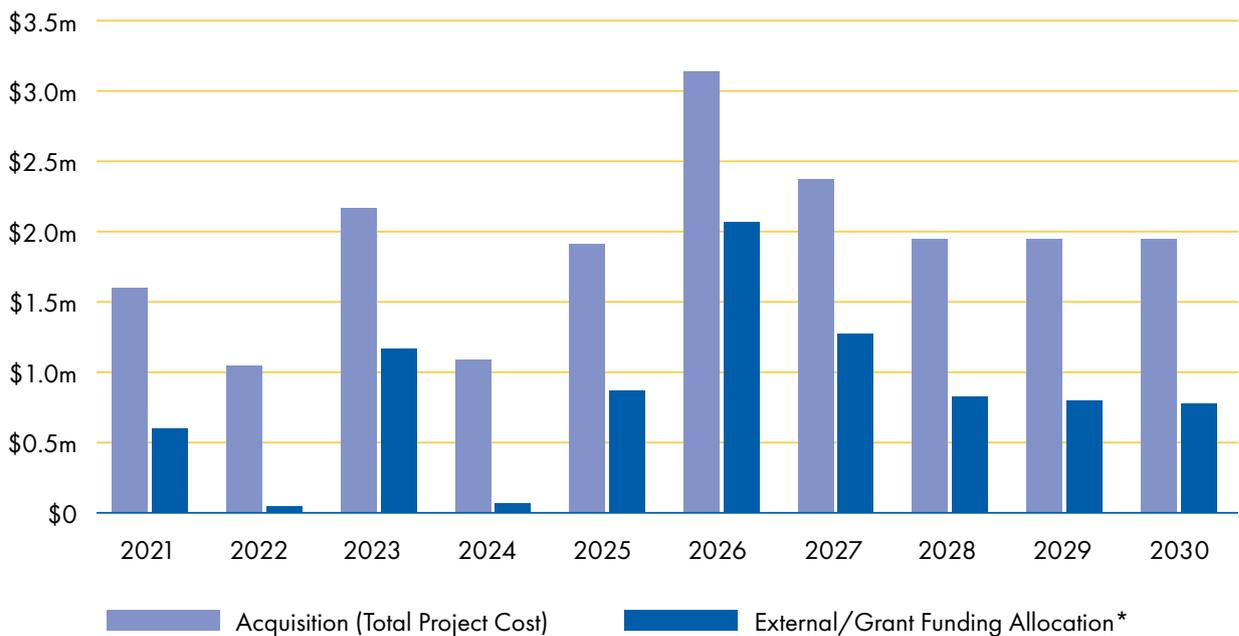


Figure 7.5.1 10 Year Acquisition Forecast

*Grant funding is subject to relevant approvals.



8. Risk Management

The objective of the risk management process with regards to stormwater assets is to ensure that:

- › All significant operational and organisational risks are understood and identified
- › The highest risks that need to be addressed in the short to medium term are identified
- › Strategies and treatments to address risks are identified and applied.

An assessment of risks associated with service delivery from stormwater assets has identified the most critical risks to Council. The risk assessment process identifies and assesses risks, develops a risk rating, and develops a risk treatment plan for non-acceptable risks.

High and Very High Risks that have been identified are:

- › There is a risk of stormwater flooding due to capacity issue in the stormwater network. Adopting and funding the actions in the Stormwater Strategy, as outlined in this plan, will help mitigate this risk.
- › There is a risk of local flooding caused by blockages from heavy collection debris inside the pipes and pits. Fully funding required GPT cleaning, and gradually increasing this funding over time, will help mitigate this risk. As will continuing CCTV inspections of critical stormwater assets.
- › Poor coordination between Council and Third Parties, such as neighbouring councils and SA Water, leading to re-work or re-design.
- › Climate Change – material useful lives may reduce and early failure occur. Participating in the Resilient South's Climate Adaptation Risk Assessment, will help better understand this risk. In addition, sea level rise may impact on outfall capacity.
- › Economics – Council unable to fund required capital and maintenance. This is a significant risk for the stormwater portfolio given the forecast increases in capital, maintenance, operations, and new initiative funding required over the short to medium term.

A risk treatment action has been included in the forecast costs for this asset plan, and in some cases is already underway. For a full list of risks and treatment plans see Appendix 5.

9. Plan Improvement and Monitoring

9.1 MONITORING AND REVIEWING

The Stormwater Asset Management Plan is not a one-off document but part of the Council's business planning process. For this reason, it is necessary to review and update any key assumptions, strategic change or budget decision that may affect the planned service levels and future expenditure requirements. To keep this AMP current, Council will schedule the plan review into its strategic and annual planning and budget processes. This asset management plan has a life of 4 years.



9.2 IMPROVEMENT PLAN

Improvement items identified in the previous AMP that form a part of Council's ongoing business as usual improvements include:

- › Continue to refine asset register - review useful lives and unit rates used for valuation purposes
- › Generate project based rolling works program spanning 3 to 5 years for stormwater drainage system assets based on detailed visual inspection
- › Ensure Maintenance Standards and Plan align with agreed Levels of Service
- › Ensure appropriate budget lines to capture maintenance expenditures
- › Implement regular internal inspections of stormwater drainage system.

Specific Business Improvement Actions that will be a focus for the next three years include:

- › Review and improve street tree management, to reduce kerb lift and associated stormwater issues
- › Continue CCTV investigation of pipe condition for critical assets and update AMP to reflect findings
- › Participate in Resilient South's Climate Adaptation Risk Assessment
- › Review and integration of historical asset failures into asset management planning
- › Ensure design of WSUDs is appropriate, and establish proactive maintenance and operations

All improvement actions have been included in the forecast costs for this asset plan, and in some cases are already underway. For a full list of improvement items see Appendix 6.

Appendix 1

Stormwater Network

- SUMPS
- PIPES
- ROADS



Appendix 2

Stormwater Service Levels

Asset Hierarchy Level	Purpose	Maintenance & Operations	Renewal Thresholds
High – Drains/Sumps	Assets or stormwater runoff zones with a high risk of flooding (5-YR ARI), servicing a large number of residents and visitors, where failure could compromise Council's core business.	These assets are maintained at a high standard, with annual CCTV inspections and prioritisation of repairs.	<ul style="list-style-type: none"> › Overall Condition rating is 4 (poor) or higher › Safety is compromised › Functionality and amenity are below required levels › No overfloor flooding for 20 YR event for properties
Medium – Drains/Sumps	Assets or stormwater runoff zones with a medium risk of flooding (100-YR ARI), servicing a number of stakeholders, where failure would have an impact on the community.	These assets are maintained at a moderate standard, with inspections as required and repairs to be completed as resource become available.	<ul style="list-style-type: none"> › Overall Condition rating is 4 (poor) or higher › Safety is compromised › Functionality and amenity are below required levels › No overfloor flooding for 100 YR event for properties
Low – Drains/Sumps	Assets or stormwater runoff zones with a low risk of flooding, servicing a small number of stakeholders.	These assets are maintained at a safe standard, with inspections as required and repairs where safety is compromised.	<ul style="list-style-type: none"> › Overall Condition rating is 4.5 (very poor) or higher › Safety is compromised





Appendix 3

Financial Summary

AMP 2020

Year	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Acquisition (Total Project Cost)	\$1,602,500	\$1,045,000	\$2,167,500	\$1,090,000	\$1,915,000	\$3,140,000	\$2,375,000	\$1,950,000	\$1,950,000	\$1,950,000
Maintenance & Operation cost of existing assets	\$161,000	\$161,000	\$161,000	\$161,000	\$161,000	\$161,000	\$161,000	\$161,000	\$161,000	\$161,000
Maintenance & Operation costs of new assets	\$16,025	\$10,450	\$21,675	\$10,900	\$19,150	\$31,400	\$23,750	\$19,500	\$19,500	\$19,500
Renewal	\$110,637	\$100,000	\$100,000	\$100,000	\$114,875	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Disposal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL COST	\$1,890,162	\$1,316,450	\$2,450,175	\$1,361,900	\$2,210,025	\$3,432,400	\$2,659,750	\$2,230,500	\$2,230,500	\$2,230,500
External/Grant Funding Allocation	-\$602,500	-\$45,000	-\$1,167,500	-\$67,000	-\$866,000	-\$2,065,000	-\$1,275,000	-\$825,000	-\$800,000	-\$775,000
COUNCIL FUNDING REQUIRED	\$1,287,662	\$1,271,450	\$1,282,675	\$1,294,900	\$1,344,025	\$1,367,400	\$1,384,750	\$1,405,500	\$1,430,500	\$1,455,500

Figures are in nominal (current Year) values.

AMP 2020 ACQUISITION WORKS (TOTAL PROJECT COST) *

Year	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
GPT – Construction						\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
GPT – Harrow Road Concept, Design			\$90,000							
GPT – Harrow Road Construction						\$510,000				
GPT – Pine Avenue Concept, Design		\$60,000								
GPT – Pine Avenue Construction				\$340,000						
GPT – Wattle Construction			\$500,000							
Gully Masterplans – Barton Gully scour protection Concept, Design		\$15,000								
Gully Masterplans – Barton Gully scour protection Construction								\$85,000		
Gully Masterplans – Gilbertson Gully creek and WSUD Concept, Design, Construction					\$100,000					
Harrow Road stormwater outfall headwall upgrade (construct with GPT) Construction					\$250,000					



Financial Summary (cont.)

AMP 2020 ACQUISITION WORKS (TOTAL PROJECT COST) *

Year	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Improved access for maintenance – extra JB access points, gate valve to Wigley outfall Concept, Design	\$7,500									
Improved access for maintenance – extra JB access points, gate valve to Wigley outfall Construction		\$42,500								
Major Outfalls – Edward Street Brighton Design								\$425,000		
Major Outfalls – Whyte and Tarlton Street Design		\$150,000								
Minor Upgrades – College Road Somerton Park Construction						\$400,000				
Minor Upgrades – College Road Somerton Park Design	\$400,000									
Minor Upgrades – High Street South Brighton, Concept						\$35,000			\$595,000	
Minor Upgrades – High Street South Brighton, Design									\$70,000	

AMP 2020 ACQUISITION WORKS (TOTAL PROJECT COST) *

Year	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Minor Upgrades – Kauri Parade Kingston Park Upstream of Pine Gully Construction						\$680,000				
Minor Upgrades – Kauri Parade Kingston Park Upstream of Pine Gully Design		\$80,000								
Minor Upgrades – Moore Street Somerton Park Concept, Design			\$120,000							
Minor Upgrades – Moore Street Somerton Park Construction				\$680,000						
Minor Upgrades – Rudford Street Brighton Concept, Design	\$90,000									
Minor Upgrades – Rudford Street Brighton Construction			\$510,000							
Minor Upgrades – Walkers Street South Brighton, Concept, Design		\$165,000								
Minor Upgrades – Walkers Street South Brighton, Construction						\$935,000				
Minor Upgrades – Walsh Street Concept, Design			\$75,000							



Financial Summary (cont.)

AMP 2020 ACQUISITION WORKS (TOTAL PROJECT COST)*

Year	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Minor Upgrades – Walsh Street Construction							\$425,000			
Pine Masterplans – Pine Gully creek and WSUD Concept, Design		\$37,500								
Pine Masterplans – Pine Gully creek and WSUD Construction			\$212,500							
Pump station Improvements – Yarrum Grove Somerton Park	\$15,000									
Pump station Improvements – Yarrum Grove Somerton Park Construction		\$85,000								
Stormwater data collection – flows, quality and rainfall	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000					
Stormwater Design 2025–26 (Estimate)				\$300,000						
Stormwater Design 2026–27 (Estimate)					\$300,000					
Stormwater Design 2027–28 (Estimate)						\$300,000				

AMP 2020 ACQUISITION WORKS (TOTAL PROJECT COST) *

Year	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Stormwater Design 2028–29 (Estimate)						\$300,000				
Stormwater Design 2029–30 (Estimate)							\$300,000			
Stormwater Design 2030–31 (Estimate)								\$300,000		
Stormwater Design 2031–32 (Estimate)										\$300,000
Stormwater SMP update – flood modelling			\$200,000							
TBA – Construction Major SWMP						\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
WSUD – Anzac Highway Carpark Median Concept, Design		\$7,500								
WSUD – Anzac Highway Carpark Median Construction							\$42,500			
WSUD – Augusta Street Glenelg Stage 2 Construction		\$50,000								
WSUD – Brighton and Seacliff Yacht Club and SLSC Seacliff Concept, Design		\$7,500								



Financial Summary (cont.)

AMP 2020 ACQUISITION WORKS (TOTAL PROJECT COST) *

Year	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
WSUD – Brighton and Seacliff Yacht Club and SLSC Seacliff Construction		\$42,500								
WSUD – Construction					\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
WSUD – Dover Square South Brighton Concept, Design			\$7,500							
WSUD – Dover Square South Brighton Construction				\$42,500						
WSUD – Leak/Blackburn Avenue Glenelg North Concept, Design				\$7,500						
WSUD – Leak/Blackburn Avenue Glenelg North Construction					\$42,500					
WSUD – North Esplanade Glenelg North Concept, Design				\$7,500						
WSUD – North Esplanade Glenelg North Construction					\$42,500					
WSUD – Winton Avenue Hove Concept, Design				\$7,500						

AMP 2020 ACQUISITION WORKS (TOTAL PROJECT COST) *

Year	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
WSUD – Winton Avenue Hove Construction				\$42,500						
TOTAL	\$1,602,500	\$1,045,000	\$2,167,500	\$1,090,000	\$1,915,000	\$3,140,000	\$2,375,000	\$1,950,000	\$1,950,000	\$1,950,000

* Upgrade component of project only. Replacement costs of existing is already included in renewal budget.

Note: Some projects are design and investigation in preparation for construction. Project values include contributions from the City of Marion and Stormwater Management Authority. Project is subject to annual budget approval.



Financial Summary (cont.)

AMP 2020 RENEWAL WORKS

Year	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Annual Minor Stormwater Works	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000
Annual WSUD Program	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000
Pump station – Confined Space – Farrell Street	\$0	\$0	\$0	\$0	\$14,875	\$0	\$0	\$0	\$0	\$0
SW Pipe – 300mm Precast Concrete – Drain 18 – Augusta Street	\$2,449	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Underground Soakage Pit – James Place – Pit	\$8,188	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Type L – Other Size/Type SW Pit – Underground Soakage Pit										
TOTAL	\$110,637	\$100,000	\$100,000	\$100,000	\$114,875	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000

Appendix 4

Data Confidence Grading System

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



Appendix 5

Stormwater Risk Plan

Service or Asset at Risk	What can Happen	Risk Rating	Risk Treatment Plan	Responsibility	Completion Date
Stormwater Drains	Local flood because of blockage due to heavy collection debris inside the pipes and pits.	High	CCTV investigation of critical pits and pipes.	Asset Manager(s) and Staff	2025
All	Poor coordination between Council and Third Parties, such as neighbouring councils and SA Water, leading to re-work or re-design.	Moderate	<p>Explore proprietary works software.</p> <p>Where possible establish direct data share arrangement with 3rd parties.</p> <p>Become a DBYD vendor.</p> <p>Have a standard reinstatement detail for works and adequate resourcing to monitor and inspect works.</p>	Asset Management Leadership Team	2023
All	Climate Change – material useful life may reduce and early failure occur.	High	<p>Undertake the 'Incorporating Climate Risk into Asset Management Project'.</p> <p>Integrate IPWEA Practice Note 12.1. into our project planning and design processes.</p>	Asset Manager(s) and Staff	2023
Stormwater Network	Capacity reduced due to sea level rise and obstructions of coastal outlets.	High	<p>Improve maintenance of coastal outlets.</p> <p>Develop long term strategy to reduce risk to coastal outlets.</p>	Asset Manager(s) and Staff	2025

Service or Asset at Risk	What can Happen	Risk Rating	Risk Treatment Plan	Responsibility	Completion Date
Stormwater Network	Stormwater flooding due to capacity issue in the stormwater network.	High	Assess and improve capacity of network through implementation of Acquisition Program (Draft Stormwater Strategy)	Asset Manager(s) and Staff	2025
Gross Pollutant Traps (GPTs)	Increase pollutants entering the marine environment.	Moderate	Install GPTs on major coastal outlets.	Asset Manager(s) and Staff	2025
Gross Pollutant Traps (GPTs)	Local flood because of blockage due to heavy collection debris inside the GPTs.	Moderate	Maintain a high standard of GPT cleaning and maintenance – regular testing to ensure debris is kept to within standards.	Asset Manager(s) and Staff	2022
Water Sensitive Urban Design (WSUD) Landscape	Increase pollutants entering the marine environment.	Moderate	Install WSUDs where practical to improve water quality, as per Stormwater Strategy.	Asset Manager(s) and Staff	2023
Water Sensitive Urban Design (WSUD) Landscape	WSUDs cause local floods due to ineffectual design, operations or maintenance.	Moderate	Develop and implement design specification standard. Ensure designs consider flood risk.	Asset Manager(s) and Staff	2023
Development assessment and control	Damage to private property and council infrastructure from private stormwater.	Moderate	Work with internal staff, developers and contractors to improve design. Enforce agreed minimum standards.	Asset Manager(s) and Staff	2023

Stormwater Risk Plan (cont.)

Service or Asset at Risk	What can Happen	Risk Rating	Risk Treatment Plan	Responsibility	Completion Date
Development assessment and control	Increase risk of flood due to increased impervious areas.	Moderate	Work with internal staff, developers and contractors to improve design. Enforce agreed minimum standards.	Asset Manager(s) and Staff	2023
All	Loss of Key Staff	Moderate	Develop succession plans.	Chief Executive Officer/ Senior Leadership Team	2023
All	Economics – Council unable to fund required capital, maintenance, or operational expenditure.	Moderate	Regularly monitor, review, and prioritise critical works. Move towards a 20-year review of upcoming works for stormwater.	Asset Management Leadership Team	2022
All	Insufficient capacity for increased housing density.	Moderate	Review Stormwater Management Plan.	Asset Manager(s) and Staff	2025



Appendix 6

Stormwater Improvement Plan

Task No	Task	Responsibility	Resources Required	Established	Due
1	Develop a rolling 3 year works program identifying assets to be renewed. Publish this for community information.	Asset Manager(s) and Staff	Medium	2020	2022
2	Implement the risk mitigation strategies identified in this plan	Asset Leadership Team	Medium	2020	2023
3	Review and improve street tree management, to reduce kerb lift and associated stormwater issues	Asset Manager(s) and Staff	Low	2020	2025
4	Add Life Cycle Costs (%) for operational and maintenance expenses to all New Capital Bids based on AMP figures, where actual costs are not known	Asset Manager(s) and Staff	Included in Project Costs	2020	2020
5	Review the Stormwater Management Plan	Asset Manager(s) and Staff	Medium	2020	2024
6	CCTV investigation of pipe condition for critical assets	Asset Manager(s) and Staff	Medium	2020	2030
7	Ensure design of WSUDs is appropriate, and establish proactive maintenance and operations	Asset Manager(s) and Staff	Low	2020	2022
8	Further develop formal criticality framework for renewals and maintenance	Asset Management Leadership Team	Low	2020	2025
9	Climate adaptation risk assessment and integration of historical asset failures	Asset Management Leadership Team	Low	2020	2024
10	Stormwater data sharing arrangement across Southwest Drainage Scheme Councils	Asset Management Leadership Team	Low	2020	2022
11	Facilitate annual reviews and provide report to CEO	Asset Leadership Team	Low	2020	2022

