

Infrastructure Asset Management Plan

Stormwater Assets

Barunga West Council

12 May 2020
Ref: 20191224DR4A



Building exceptional
outcomes together



Document History and Status

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1 Introduction

1.1 Background

Barunga West Council is situated within the Mid North region of South Australia on the Spencer Gulf coast, approximately 180km north of Adelaide. The council covers an area of approximately 1,528km² and has a population of approximately 2,500 people.

Barunga West Council is responsible for maintaining stormwater asset networks within the townships of Port Broughton, Bute and Tickera. The majority of Council's stormwater assets including two pumping stations are in Port Broughton. The Port Broughton stormwater network consists of a series of 16 stormwater drainage networks that drain across the town in a westerly direction to outlets situated along the coast. The two pumping stations are situated on Line 3 and Line 5. In Bute and Tickera there are only a small number of stormwater drains and headwall outlets.

An overview of the stormwater infrastructure assets covered by this asset management plan are shown in Table 1 and Figure 1.

Table 1 Assets covered by this plan

Stormwater Asset Category	Quantity	Replacement Value as at 1/7/2019
Port Broughton		
Stormwater drains and pumping mains	5,298m	\$1,960,671
Stormwater pits and headwalls	190	\$518,876
Stormwater pumping stations	2	\$315,036
Port Broughton Total		\$2,794,583
Bute		
Stormwater pipes and open drains	466m	\$160,331
Stormwater headwalls	20	\$16,552
Bute Total		\$176,883
Tickera		
Stormwater pipes	40m	\$8,000
Stormwater pits	3	\$6,561
Tickera Total		\$14,561
Total		\$2,986,028



Barunga West Stormwater Infrastructure

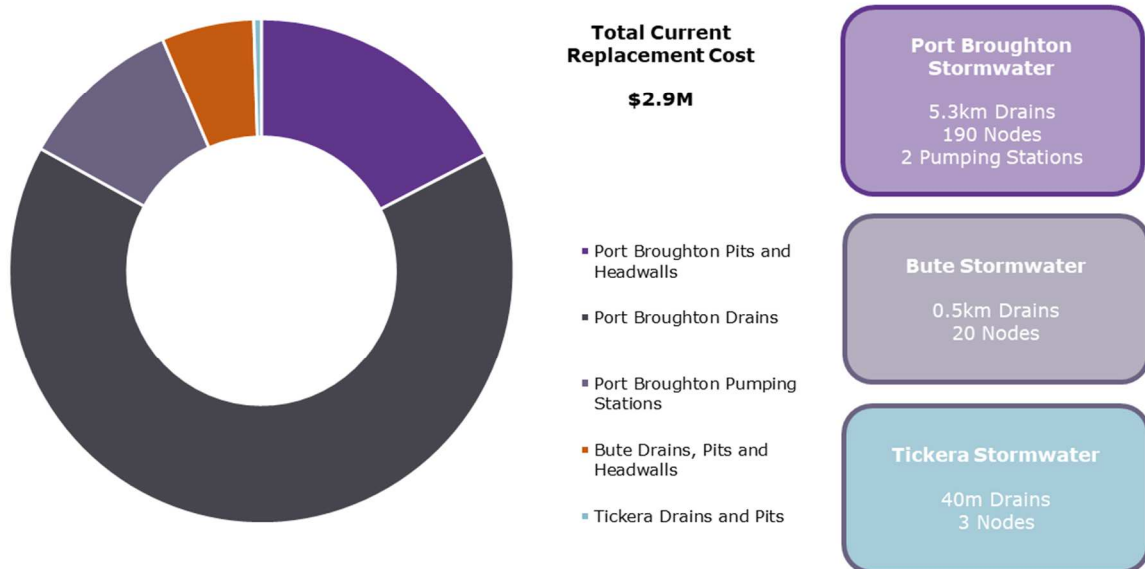


Figure 1 Distribution of Stormwater Assets by Replacement Value as at 1 July 2019

1.2 Plan Framework

This stormwater infrastructure asset management plan is based on the fundamental structure of the IPWEA NAMS 3 Asset Management for Small, Rural or Remote Communities template and has been simplified to minimise the content to suit Barunga West Council.

Barunga West Council provides services for the community in part through the provision of infrastructure assets. Council have acquired these assets directly through construction by Council staff or contractors and by donation of assets constructed by developers and others over time.

The goal in managing infrastructure assets is to meet the required level of service in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Taking a life cycle approach.
- Developing cost-effective management strategies for the long term.
- Providing a defined level of service and monitoring performance.
- Managing risks associated with asset failures.
- Sustainable use of physical resources.



Key elements of the plan are:

- Levels of service – specifies the services and levels of service to be provided by Council.
- Future demand - how this will impact on future service delivery and how this is to be met.
- Life cycle management – how the organisation will manage its existing and future assets to provide the required services.
- Financial summary – what funds are required to provide the required services.
- Plan improvement and monitoring – how the plan will be monitored to ensure it is meeting the organisation’s objectives.

This asset management plan is prepared under the direction of Council’s vision and mission statements.

Council’s vision is:

A welcoming, supportive, growing community with a sustainable lifestyle and environment

Council’s mission is:

Through community engagement and collaboration effectively deliver the community’s needs in a sustainable manner



2 Levels of Service

The community generally expect that Council will provide stormwater networks which meets the required Australian and State legislative regulations. Council has defined service levels in two terms and provides the level of service objective, performance measure process and service target in Table 2 and Table 3.

2.1 Community Levels of Service

Community levels of service relate to the service outcomes that the community wants in terms of quality reliability, responsiveness, amenity, safety and financing.

Table 2 Community Levels of Service

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
Performance	Rainfall and runoff is managed within Council's existing stormwater infrastructure with negligible on the public and to property	Customer feedback and community satisfaction	No complaints per year
Reliability	Drainage system operation without blockage	Reporting or identification of blockages, customer feedback and requests	Assess any issues within 1 day and rectify within appropriate timeframe as required
Safety	Stormwater system free of preventable hazards	Identify and address stormwater risks in Council's Safety, Reliability and Technical Management Plan	No lost time injury associated with stormwater drainage
Condition	Management of asset condition to minimise incidents	No successful claim increase against Council	No claims against Council



2.2 Technical Levels of Service

Technical levels of service support the community service levels. They are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities that the Council undertakes, in order to best achieve the desired community outcomes.

Table 3 Technical Levels of Service

Key Performance Measure	Level of Service Objective	Performance Measure Process	Service Target
Operations	Efficiently utilise assets	Reinspection process developed and managed	Reinspection program linked to maintenance and renewal programs Reinspection program linked with customer complaints registered
Maintenance	Assets are maintained free of debris and are in working condition suitable for effective drainage of stormwater	Maintenance program developed and managed	Reinspection program with maintenance activities identified and undertaken
Renewal	Asset renewal is planned prior to end of useful life and assets are replaced with assets of equivalent capacity	Program developed and managed	Meet and maintain planned renewal expenditures
Upgrade	Stormwater assets are upgraded to ensure capacity requirements are met and flooding of properties is minimised	Stormwater capacity requirements are assessed and upgrades works are undertaken as required	Avoidance of property inundation by 1% ARI storm event
Capacity	Ensure adequate capacity for future growth forecasts	System planning based on growth forecasts and development planning	Manage as required



3 Future Demand

3.1 Demand Forecast

Factors affecting demand include population change, changes in demographics, seasonal factors, vehicle ownership, consumer preferences and expectations, economic factors, agricultural practices, environmental awareness, etc. Demand factor trends and impacts on service delivery are summarised in Table 4.

Table 4 Demand Factors, Projections and Impact on Services

Demand Driver	Present Position	Projection	Impact on Services
Population Growth	Port Broughton: Estimated population growth of 1% per annum	Estimated population growth in accordance with historical background growth	Port Broughton: Increased loading on existing stormwater assets
	Bute: Estimated population growth of 0% per annum		Bute: Negligible impact on existing stormwater service
Climate Change	Sea levels currently reach several stormwater outlets and affect stormwater drainage	Increase number of high sea level events and risk of concurrent rain event and high sea level event	Potential interruption of stormwater drainage into Gulf causing inundation of low lying properties



3.2 Demand Management Plan

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Council will determine the ability of the existing assets to manage stormwater flows within existing serviced areas and in newly developed areas. Developers will be required to provide additional stormwater drainage infrastructure for the existing network and upgrade where necessary to ensure adequate stormwater disposal. Opportunities identified to date for demand management are shown in Table 5. Further opportunities will be developed in future revisions of this asset management plan.

Table 5 Demand Management Plan Summary

Service Activity	Demand Management Plan
Stormwater Drainage	Capacity assessment of stormwater drainage system Evaluation of impact of new allotments on existing infrastructure Consideration of on-site retention of storm flows in new development areas to limit discharge to pre-development discharge flows Developer contributions as per Council assessment Negotiated developer system augmentations where required. Planning to incorporate any identified growth over asset life Incorporate in future iterations of the Asset Management Plan as requirements are known
Climate Change*	Assessment of issues related to potential higher sea levels and higher intensity storm events and the effect of the stormwater drainage system to provide adequate drainage. Planning to address identified risks to current stormwater drainage system due to climate change.

*It should be noted that the Yorke and Mid-North Regional Climate Change Action Plan notes that "As a result of an increasingly warmer and drier climate, our region faces more intense and frequent bushfires, droughts and heatwaves; a shift in rainfall seasonality and decrease in frost incidence. In addition, we will see increasing ocean temperature and acidification, more frequent coastal storm surge, inundation and erosion." The key climate change projections relevant to the design and function of stormwater systems are a predicted increased in the intensity of extreme rainfall events and rising sea levels. For the Barunga West Region, despite a projected decrease in average annual rainfall, the rainfall intensities are projected to increase by 8% for a low emissions scenario and by up to 12% for a high emissions scenario. By the end of the century, it is projected that sea levels may be 0.6m above 1990 levels.



4 Life Cycle Management

The life cycle management plan details how Council plans to manage and operate the assets at the agreed levels of service (defined in Section 2) while optimising life cycle costs.

4.1 Background Data

Barunga West Council's Stormwater assets are located in the townships of Port Broughton, Bute and Tickera and the assets covered by this asset management plan are shown in Table 1. The age profile of the stormwater assets shown by Current Replacement Cost (CRC) included in this plan is shown in Figure 2.

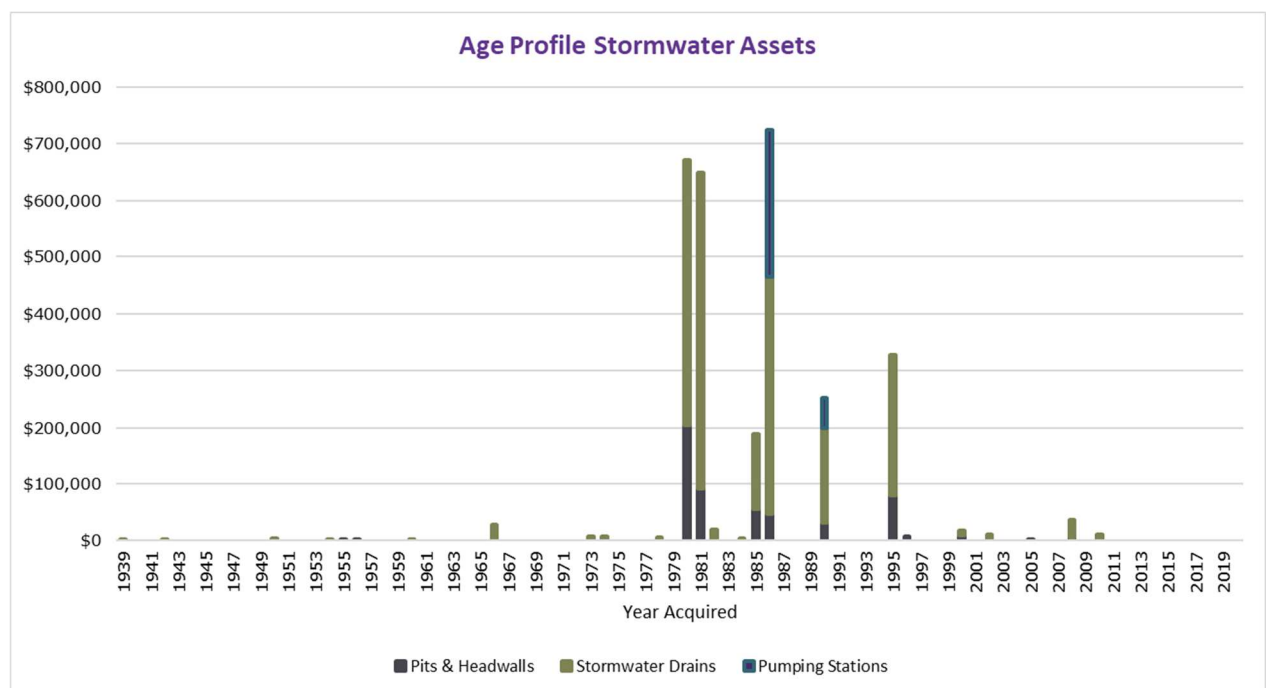


Figure 2 Stormwater Asset Age Profile

The majority of the stormwater assets were constructed between 1980 and 1995. The two stormwater pumping stations in Port Broughton were constructed in 1986 and 1990 and the shorter life assets at these two pumping stations feature in the 10 year plan for renewal.

4.1.1 Asset Capacity and Performance

Council's services are generally provided to meet design standards where these are available. Locations where deficiencies in service performance are known are detailed in Table 6.

Table 6 Known Service Deficiencies

Location	Service Deficiency
Stormwater Outfalls	Only some of the stormwater outlets into the Gulf have floodgates. Further assessment is required to determine whether additional floodgates should be installed at some or all of the remaining stormwater outlets in order to avoid inundation of the stormwater drains with seawater during high tides.



4.1.2 Asset Condition

Limited asset condition information is available for the Port Broughton, Bute and Tickera Stormwater systems. The remaining life for all assets has been measured from the date of construction and the standard useful life of each asset. For those assets where the age and standard useful life calculation would indicate that the asset had expired, a manual expiry date has been assigned based on the expected remaining useful life of the asset if the asset is still in service.

Council may plan to undertake collection of condition data for the stormwater assets, particularly the electrical and mechanical assets at the two stormwater pumping stations, in the future. This information will inform the valuation and renewal planning for the stormwater assets.

4.1.3 Asset Valuations

The value of the Stormwater assets in Port Broughton, Bute and Tickera as at 1 July 2019 that are covered by this asset management plan is shown below.

Current Replacement Cost	\$2,986,028
Accumulated Depreciation	\$926,352
Written Down Value	\$2,059,675
Annual Depreciation Forecast	\$43,766

The Annual Depreciation Forecast shown is the 2019/2020 forecast as reported at the 1 July 2019 revaluation.

The current rate of consumption (annual depreciation / depreciable amount) for stormwater assets is 1.5%. This indicates on average over the life of the asset that 1.5% of the depreciable amount is consumed annually. The translation of this consumption rate into renewals is subject to a decision on funding, service level determination, timing of renewal and condition.

4.2 Risk Management

An assessment of risks associated with service delivery from stormwater infrastructure assets has been undertaken by Council and a contingency plan for the identified risks is addressed in the Safety, Reliability and Technical Management Plan that is reviewed every two years.

4.3 Required Expenditure

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

4.3.1 Operation and Maintenance

Maintenance is the regular on-going work that is necessary to keep assets in operating order, including instances where portions of the asset fail and need immediate repair to make the asset operational again. Maintenance includes routine planned maintenance such as cleaning and servicing equipment, reactive (unplanned) maintenance such as repairing faulty equipment, and specific maintenance work activities that may only be required on an occasional basis. Assessment and prioritisation of reactive maintenance is undertaken by operational staff using experience and judgement.

Operation costs include the ongoing costs associated with the asset group such as stormwater pumping costs.

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Table 7 and Figure 3. A general allowance of \$5,000/annum for cleaning and general maintenance has been included. Additional allowance of \$2,000 every three years to maintain the



pumps at the two stormwater pumping stations and \$5,000 in 2020/21 to undertake some repairs works at Duffield Rd Pumping Station have also been included. The average annual operation and maintenance cost over a 10 year planning period (medium term) is \$6,300.

Table 7 Projected Operations and Maintenance Expenditure

Financial Year	Operation & Maintenance
2020-21	\$12,000
2021-22	\$5,000
2022-23	\$5,000
2023-24	\$7,000
2024-25	\$5,000
2025-26	\$5,000
2026-27	\$7,000
2027-28	\$5,000
2028-29	\$5,000
2029-30	\$7,000
Total	\$63,000

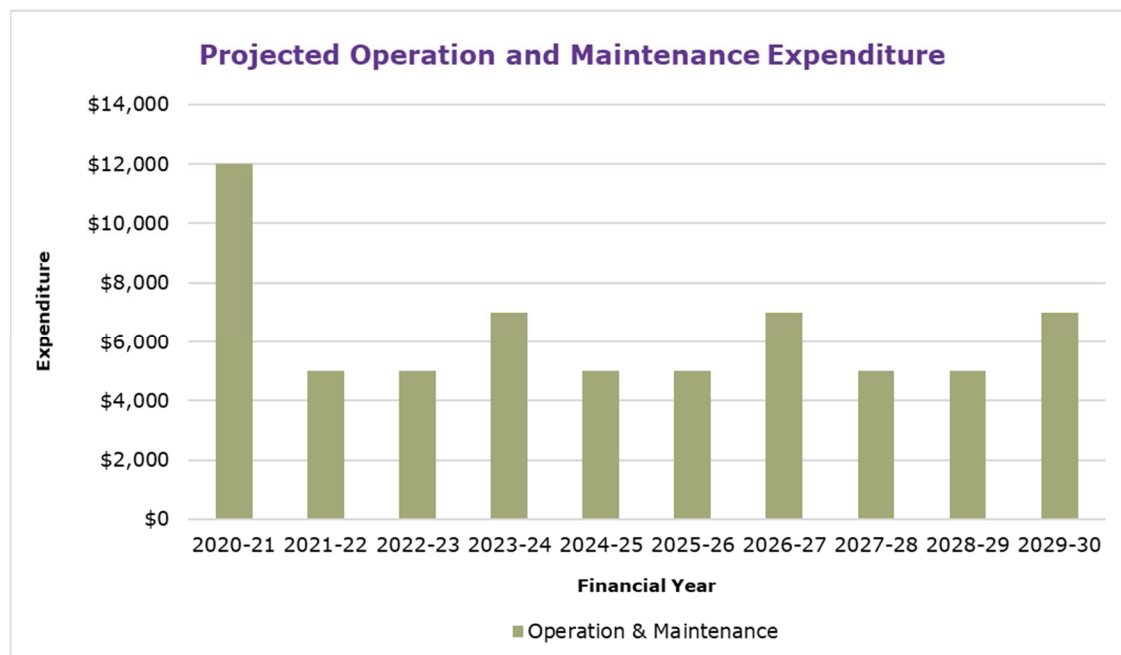


Figure 3 Projected Operations and Maintenance Expenditure



4.3.2 Capital Renewal

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

The renewal plan is based on the stormwater asset register and uses the renewal costs and the renewal year based on age and useful life of the asset or the expected remaining life of older assets to develop a capital renewal plan for stormwater assets. The costs associated with the renewals have been aggregated for each financial year over a 10 year planning period (medium term) and shown in Table 8 and Figure 4. The average annual capital renewal cost over the medium 10 year term is \$6,859.

Table 8 Required Capital Renewal Expenditure

Financial Year	Projected Capital Renewal Expenditure
2020-21	\$0
2021-22	\$67,943
2022-23	\$0
2023-24	\$0
2024-25	\$0
2025-26	\$646
2026-27	\$0
2027-28	\$0
2028-29	\$0
2029-30	\$0
Total	\$68,589

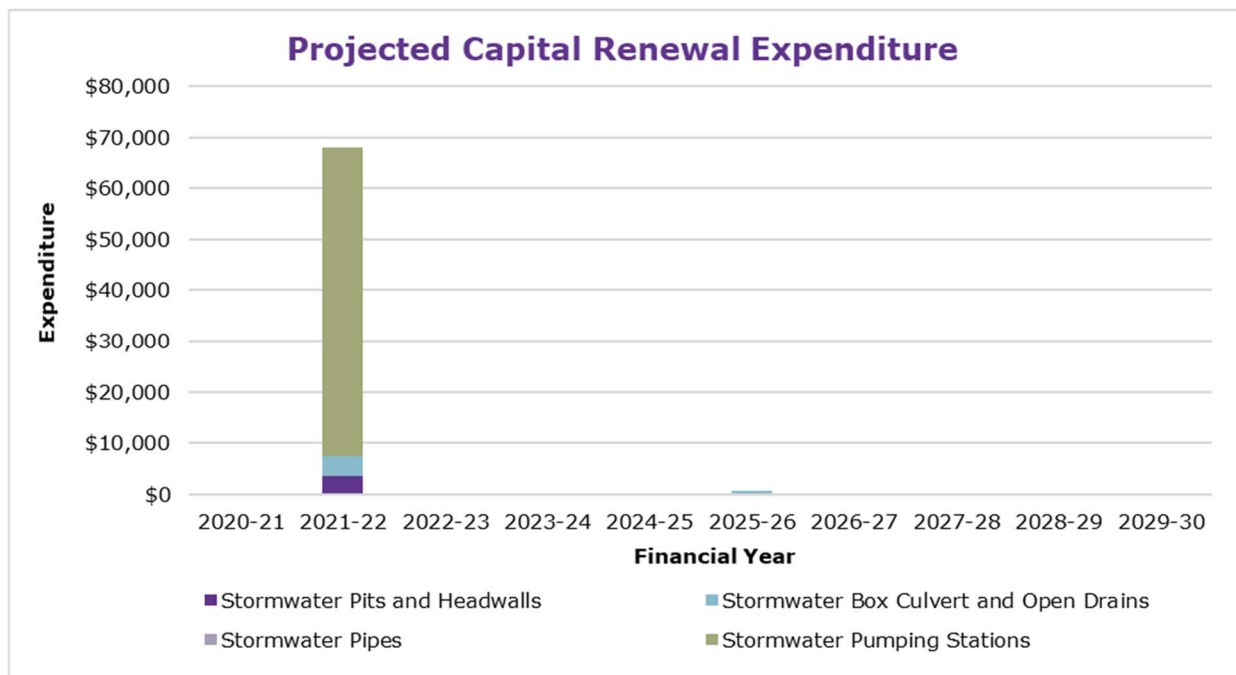


Figure 4 Required Capital Renewal Expenditure

The Projected capital renewal program is shown in Appendix A.

4.3.3 Capital New/Upgrade and Acquisition

New/upgrade expenditure is major work that creates a new asset that did not previously exist, or works which upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost to the Council from land development. There are currently no capital new/upgrade works planned for the stormwater systems in the 10Year planning period.

Table 9 Budgeted New/Upgrade Expenditure

Financial Year	Capital New/Upgrade Expenditure
2020-21	\$0
2021-22	\$0
2022-23	\$0
2023-24	\$0
2024-25	\$0
2025-26	\$0
2026-27	\$0
2027-28	\$0
2028-29	\$0



2029-30	\$0
Total	\$0

4.3.4 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Council has not identified any Stormwater infrastructure assets to be disposed in the 10 year planning period (medium term).

4.3.5 Financial Projections

The financial projections are shown in Table 10 and Figure 5 for projected operating (operations and maintenance), capital renewal, capital upgrade and estimated budget funding.

Table 10 Operating and Capital Expenditure

Financial Year	Operations and Maintenance	Capital Renewal	Capital Upgrade	Estimated Budget Funding
2020-21	\$12,000	\$0	\$0	\$12,000
2021-22	\$5,000	\$67,943	\$0	\$72,943
2022-23	\$5,000	\$0	\$0	\$5,000
2023-24	\$7,000	\$0	\$0	\$7,000
2024-25	\$5,000	\$0	\$0	\$5,000
2025-26	\$5,000	\$646	\$0	\$5,646
2026-27	\$7,000	\$0	\$0	\$7,000
2027-28	\$5,000	\$0	\$0	\$5,000
2028-29	\$5,000	\$0	\$0	\$5,000
2029-30	\$7,000	\$0	\$0	\$7,000
Total	\$63,000	\$68,589	\$0	\$131,589

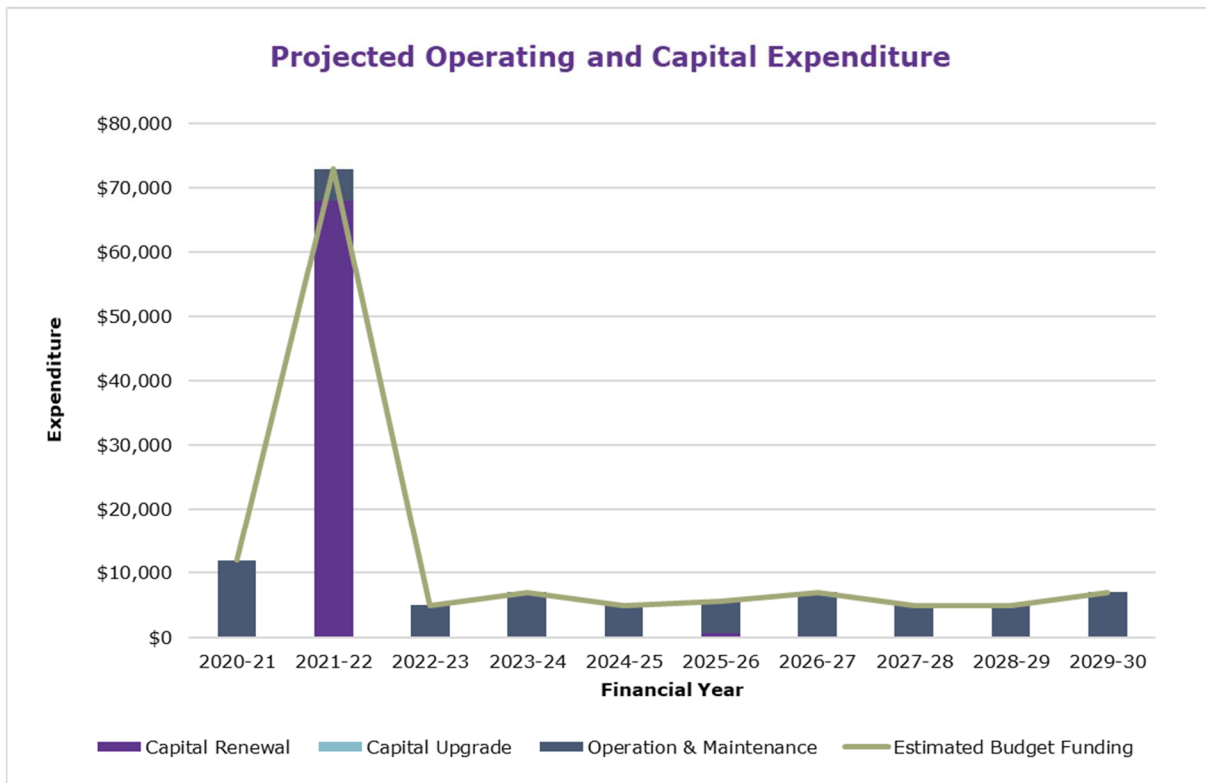


Figure 5 Projected Operating and Capital Expenditure over the Medium Term (10 Years)

The average projected operations, maintenance and capital expenditure required over the 10 year planning period is \$13,200 per year.



5 Plan Improvement and Monitoring

The following tasks have been identified for improving future versions of the plan. Council should assign responsibilities and recourses to these tasks as part of the endorsement of the plan.

Table 11 Tasks identified for improving future versions of the plan

Task No.	Task	Responsibility
1.	Consider risks associated with the stormwater drainage networks managed by Council. Incorporate risks and mitigation strategies into future iterations of the plan.	Council
2.	Consider digitising the stormwater drainage system to improve the accuracy of the stormwater asset register and to enable assessment of the drainage capacity for current and future requirements.	Council
3.	Visual condition assessment of stormwater assets and update renewal plan. Stormwater assets are currently age based within the asset register.	Council

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

This plan has a life of 4 years and is due for revision and updating within 2 years of each Council election.



6 References

IPWEA, 2006, *NAMS.PLUS3 Asset Management*, Institute of Public Works Engineering Australia, Sydney, www.ipwea.org

IPWEA, 2011, *Asset Management for Small, Rural or Remote Communities Practice Note*, Institute of Public Works Engineering Australia, Sydney, www.ipwea.org

Barunga West Council Stormwater Asset Valuation 1 July 2019 report (20191224DR001A)



Appendix A – Projected 10 Year Capital Renewal



Town	Asset Group	Key	Asset Name	Useful Life (years)	Planned Renewal Year	Renewal Cost (\$)
Bute	Headwall	SW062F	Small SW Pipe Headwall	60	2021-22	\$719
Bute	Headwall	SW062G	Small SW Pipe Headwall	60	2021-22	\$719
Bute	Headwall	SW062K	Small SW Pipe Headwall	60	2021-22	\$719
Bute	Headwall	SW062S	Small SW Pipe Headwall	60	2021-22	\$719
Bute	Headwall	SW063C	Small SW Pipe Headwall	60	2021-22	\$719
Bute	Box Culvert	SW066A	Small SW Box Culvert	80	2021-22	\$1,739
Bute	Box Culvert	SW066D	Small SW Box Culvert	80	2021-22	\$2,108
Port Broughton	Pump Station	Duffield Rd Pump Station	Submersible Pump	25	2021-22	\$18,575
Port Broughton	Pump Station	Duffield Rd Pump Station	Isolation Valve	25	2021-22	\$2,649
Port Broughton	Pump Station	Duffield Rd Pump Station	Non Return Valve	25	2021-22	\$3,169
Port Broughton	Pump Station	Duffield Rd Pump Station	Switchboard & Controls	30	2021-22	\$10,751
Port Broughton	Pump Station	Duffield Rd Pump Station	Control Cabinet	30	2021-22	\$7,278
Port Broughton	Pump Station	Duffield Rd Pump Station	Pump Controls	30	2021-22	\$3,000
Port Broughton	Pump Station	East Terrace Pump Station	Submersible Pump	25	2021-22	\$9,665
Port Broughton	Pump Station	East Terrace Pump Station	Isolation Valve	25	2021-22	\$1,116
Port Broughton	Pump Station	East Terrace Pump Station	Non Return Valve	25	2021-22	\$1,298
Port Broughton	Pump Station	East Terrace Pump Station	Pump Controls	30	2021-22	\$3,000
Sub total 2021-22						\$67,943
Bute	Box Culvert	SW068B	Concrete Spoon Drain	60	2025-26	\$646
Sub total 2025-26						\$646
Total 10 Year Renewal Plan						\$68,589