

# Drainage (Stormwater) Strategic Asset Management Plan

*April 2018*



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# 1 EXECUTIVE SUMMARY

## 1.1 Portfolio Description

Burdekin Shire Council's drainage portfolio comprises mainly underground pipes, box culverts and associated inlets and pits to convey storm water away from public and private land to natural watercourses. In addition, there are a number of lined and unlined channels, and flood mitigation structures.

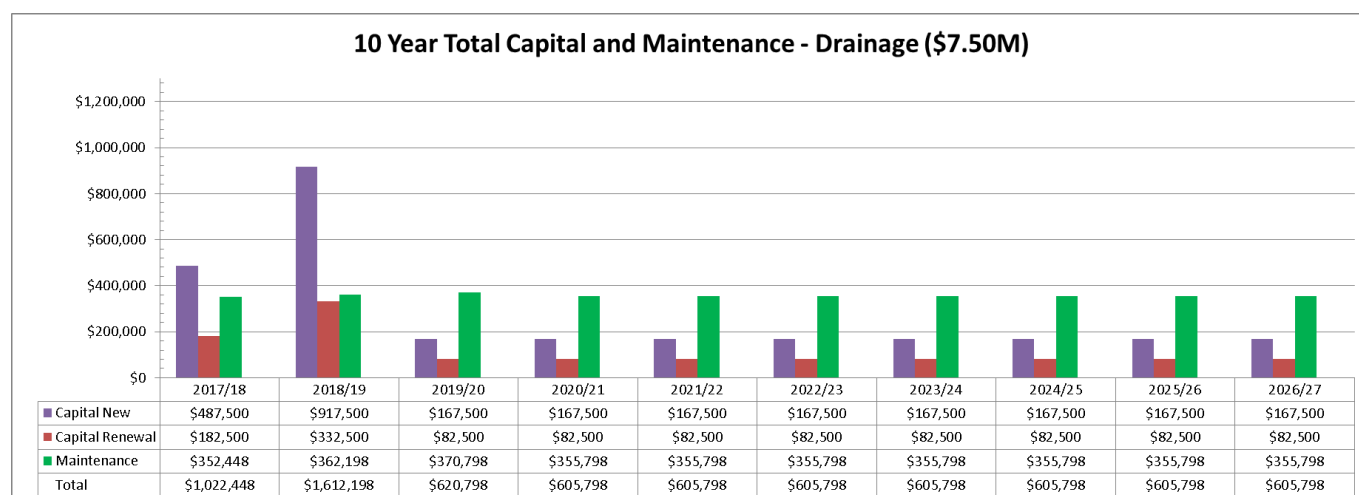
Overall, there are 39.3km of underground pipes and culverts, 2.6km of lined open channels and 965 access / inlet pits.

The total replacement value of Council's drainage portfolio as provided in the financial asset register at 30 June 2017 was \$41.7M.

## 1.2 Expenditure Forecast

The following chart provides a summary level view of Council's planned capital renewal, capital new, and maintenance expenditure over the outlook period.

*Figure 1.1 Capital and Maintenance Forecast*



The drainage asset base is expected to increase by \$2.7M over the forecast period. The consequential impact on maintenance budgets now includes an allowance for new capital works undertaken during the previous financial year. Annual reviews will take into account any revised forecasts for maintenance.

Key comparison figures reviewed against the planned capital renewals expenditure are as follows:

Planned capital renewals over the next ten years.	\$1.18M
The cumulative annual depreciation over the forecast period.	\$5.53M
What the financial asset register says should be renewed (remaining life based).	\$1.77M

### 1.3 Financial Performance Measures

The following financial performance measures are based on the long term financial plan (LTFP) budget.

*Table 1.2 Financial Performance Measures*

Performance Measure	Current Plan
Asset Sustainability Ratio (Average)	21.2%
Future Renewal Funding Ratio	66.2%
Asset Consumption Ratio	65.0%

Local Government Regulation 2012 Chapter 5 - Financial planning and accountability [Section 169] provides key indicators to determine how well a Local Government manages infrastructure assets.

The current target for the Asset Sustainability Ratio as per the Financial Management (Sustainability) Guideline 2013 is 90% (on average over a ten year period). The asset sustainability ratio as well as the future renewals funding ratio are both low.

Appendix A contains a summary of adopted Long Term Financial Plan (LTFP) drainage capital projections. Appendix B provides a chart showing the long term renewals forecast generated from long term models over 50 years is \$40.9M. Over the next 10 years, \$1.77M in renewals is forecast, whilst over the next 20 years, \$5.13M is the anticipated expenditure.

While the ratio currently indicates that Council's drainage renewals are not keeping pace with depreciation, ongoing review of valuations, asset condition and asset lives including functionality and capacity assist in the development of a renewal program. This work, along with an extensive inspection program ensures that drainage assets are being maintained at an average condition of level 3 or better for the outlook period.

### 1.4 The Next Steps

The key actions and improvements resulting from this strategic asset management plan are:

- Continue CCTV and localised inspections of higher risk conduits to confirm condition and update renewals forecasts; and
- Schedule drainage upgrades to address higher risk areas and align with roads upgrade program.

### 1.5 Plan Adoption Date

***This strategic asset management plan was formally adopted by Burdekin Shire Council on 22nd May 2018, Item number 10.1).***

## 2 INTRODUCTION

### 2.1 Purpose

This strategic asset management plan defines Burdekin Shire Council's strategy for the responsible management of its drainage assets in a manner that is compliant with regulatory requirements and is sustainable within available resources. This plan will also be used to communicate any need for additional funding in order to provide the required levels of service.

This plan should be read in conjunction with Council's Executive Level Strategic Asset Management Plan, which contains a number of sections describing Council's approach to asset management that is common across all strategic asset management plans.

### 2.2 Overview of this Plan

This plan focuses on providing the following key information to assist long term planning for infrastructure and property assets to support and sustain service standards:

- Portfolio Description – provides an understanding of the current asset base used to deliver services to the community.
- Future Demand – provides an understanding of the current and future changes in demand over the forecast period to allow for the inclusion in financial planning for any growth related capital works.
- Levels of service and performance – provides the strategic-level asset performance targets and current performance to drive required capital or maintenance intervention works.
- Financial Forecasts and Sustainability Measures – provides forecast for both unrestricted and restricted budgets and their resulting impacts and implications regarding the long term sustainability of services standards.
- Asset Management Improvements – provides a listing of key action items and improvements proposed to enable future versions of this plan to improve accuracy or confidence in the forecasts made.

### 2.3 Portfolio Description

Burdekin Shire Council's drainage portfolio comprises mainly underground pipes, box culverts and associated inlets and pits to convey stormwater away from public lands to natural watercourses. In addition, there are a number of lined and unlined channels, and flood mitigation works.

The total replacement value of Council's drainage portfolio as provided in the financial asset register is \$41.7M.



The following table provides a summary level view of the drainage portfolio by asset types

*Table 2.1 Drainage Asset Summary*

Description	Current Asset Cost	Current Units
<b>Channel</b>	<b>\$4,166,770</b>	<b>2,635</b>
Lined [Large]	\$3,204,970	2,164
Lined [Small]	\$375,522	467
Unlined	\$586,277	4
<b>Concrete Invert</b>	<b>\$552,729</b>	<b>3,735</b>
Concrete Invert	\$552,729	3,735
<b>Conduit</b>	<b>\$29,920,119</b>	<b>39,307</b>
Box Culvert	\$9,265,429	7,706
Drainage Pipe	\$20,654,690	31,601
<b>Flood Mitigation</b>	<b>\$1,117,973</b>	<b>4</b>
Mitigation Structure	\$899,686	2
Mitigation Telemetry	\$218,287	2
<b>Gross Pollutant Trap</b>	<b>\$170,554</b>	<b>1</b>
Gross Pollutant Trap	\$170,554	1
<b>Inlet Pit</b>	<b>\$3,814,133</b>	<b>643</b>
Inlet Pit Large	\$554,923	75
Inlet Pit Medium	\$55,215	6
Inlet Pit Small	\$3,203,995	562
<b>Manhole</b>	<b>\$1,896,038</b>	<b>322</b>
Manhole (Large)	\$260,800	24
Manhole (Medium)	\$404,373	64
Manhole (Small)	\$1,230,865	234
<b>Outlet Structure</b>	<b>\$22,617</b>	<b>1</b>
Outlet Structure	\$22,617	1
<b>Grand Total</b>	<b>\$41,660,931</b>	<b>46,647</b>

## 2.4 Condition Summary

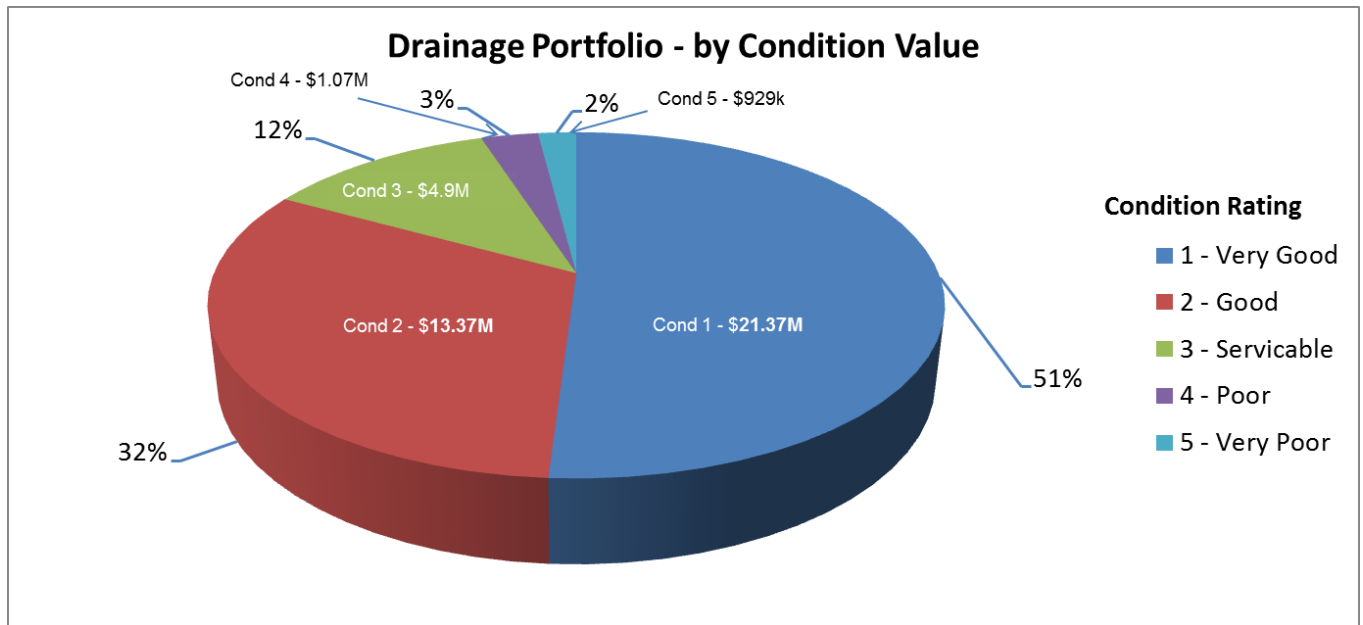
The following table and chart provide an overall view of the condition profile for the stormwater portfolio by value.

*Table 2.2 Condition Summary*

Condition Score	Current Asset Cost	Condition %age	No of Units
1 - Very Good	\$21,373,708	51%	21,600.73
2 - Good	\$13,373,574	32%	16,725.51
3 - Serviceable	\$4,906,502	12%	6,070.82
4 - Poor	\$1,077,905	3%	1,142.28
5 - Very Poor	\$929,242	2%	1,107.67
<b>Grand Total</b>	<b>\$41,660,931</b>	<b>100%</b>	<b>46,647.01</b>



Figure 2.3 Condition Pie Chart



Assets in condition 5 are considered in very poor condition and likely to be scheduled for refurbishment or renewal within the near future. Assets in condition 4 are approaching the end of their service life and may require refurbishment or complete or partial renewal within the 10-year forecast period.

As can be seen from the previous table and chart above Council has 2% of its portfolio (\$929k) in condition 5. These are various pipes, culverts and pits, whose condition is based on inspections and revaluations over past years.

One of Council's key service standards is to maintain the portfolio's overall condition index (OCI) in a condition state of 3.0 or better.

The current OCI is 1.8 and is hence well above the target minimum of 3.0.

### 3 FUTURE DEMAND

#### 3.1 Demand Forecast

The future demand for services is derived from Council's Priority Infrastructure Plan, soon to be updated to the Local Government Infrastructure Plan (LGIP) as per the Sustainable Planning Act 2009.

The Executive Level Strategic Asset Management Plan describes the growth forecast for Burdekin Shire Council and results indicate only minor growth over the forecast period.

As such, any minor increase in demand for services can be accommodated within the capacity and capability of the existing portfolio of assets. In addition, Council's proposed urban renewal programs include an allowance for additional new expenditure that replaces low capacity existing infrastructure with larger capacity drainage configurations.

#### 3.2 Demand Management Plan

The demand for stormwater services is principally governed by the ability of the system to effectively, and efficiently, safely convey stormwater from public and private lands to natural watercourses whilst capturing and removing refuse and hard wastes entering the system. As such, the management of demand is addressed by the achievement of the levels of service specified within this plan.

The development of a stormwater strategy is currently in progress. The aim of this strategy is to identify urban areas experiencing inundation and develop a method to prioritise projects to improve the level of service provided by Council drainage networks. The strategy will also consider future development areas included in the proposed Planning Scheme and Local Government Infrastructure Plan.

## 4 LEVELS OF SERVICE

### 4.1 Community Research and Expectations

Investigations to date regarding community expectations and satisfaction levels have been directed towards Council's overall performance rather than performance for this particular asset portfolio. Overall customer performance measures are provided in the Executive Level Strategic Asset Management Plan as well as the Community and Technical levels of service recorded in the following tables.

### 4.2 Community Levels of Service

Community Levels of Service relate to how the community (or users) receive the service in terms of safety, quality, quantity, reliability, accessibility and responsiveness to requests.

Burdekin Shire Council is predominantly low lying flat country where it is the norm that minor flooding will occur from heavy storm events. Water is generally slow to drain away due to the low grades of pipes and watercourses. The majority of customers therefore, are generally accepting of minor flooding as long as water drains away within a reasonable timeframe.

*Table 4.1 Stormwater Level of Service - Community*

Key Performance Measure	Level of Service	Performance Measure	Performance Measure Process	Performance Target	Current Performance
<b>Responsiveness</b>	User is satisfied with the responsiveness of the Council to their works request.	Compliance with targets defined in Levels of Service manual.	Regular reporting on completion of customer requests (CRM) within defined targets.	95% of responsiveness targets met annually.	TBA
<b>Safety</b>	Public to be kept safe	Number of locations identified where public is at high risk.	Customer requests, staff knowledge.	All locations made safe, where practical, or flood protection installed.	TBA
<b>Capacity</b>	Flooding from stormwater into habitable rooms.	Number of customer complaints regarding flooding of habitable rooms.	Customer request reports.	Zero events.	TBA

Please note the following:

- Water escaping from natural waterways causing flooding is excluded from these performance measures.
- Flooding from overland flow, before reaching Council's drainage system is also excluded from this performance measure.

### 4.3 Technical Levels of Service

The following technical measures are used to support the community levels of service.

*Table 4.2 Stormwater Level of Service - Technical*

Key Performance Measure	Level of Service	Performance Measure	Performance Measure Process	Performance Target	Current Performance
<b>Compliance</b>	Compliance with all legislative, regulatory and other mandatory standards for storm drainage and waterways management.	Number of non-compliances.	Periodic review of environmental and other compliances.	< 10 non-compliances per review.	TBA
<b>Condition</b>	Maintain assets in an acceptable condition standard.	Average portfolio condition score.	Ongoing condition audits.	Average portfolio condition =<3.0.	1.8
		Number of high-risk assets in poor condition.	Risk matrix – condition v criticality.	Zero extreme or high-risk assets in condition 5.	Nil

## 5 LIFECYCLE MANAGEMENT STRATEGY

The lifecycle management plan details how Council plans to manage and maintain its assets at the agreed levels of condition and service whilst optimising life cycle costs. Council's Asset Management Strategy provides further details on the processes and systems employed to develop this asset class plan.

### 5.1 Renewal/Replacement Plan

Council maintains an asset register of all drainage assets. Assets are typically broken down into component parts for valuation and renewals planning such as:

- Conduits – pipes and box culverts
- Manholes (small, medium and large)
- Pits – inlet pits and access pits (large, medium and small)
- Gross pollutant traps
- Channels – lined and unlined
- Flood mitigation structures

Component assets are revalued periodically by Council staff, based upon first principles and condition scores obtained for observable assets. Depending upon movement in asset cost indices and materiality thresholds, revaluations will occur for the asset class from time to time. Updated indices data is sourced from suppliers, valuers, and other Councils.

Revised condition and financial data update asset registers, which provide extracts for modelling software to generate a draft list of renewal works for the outlook period. The model projects the year each component asset will reach condition score 5 (end of life) in defining the draft renewals forecast.

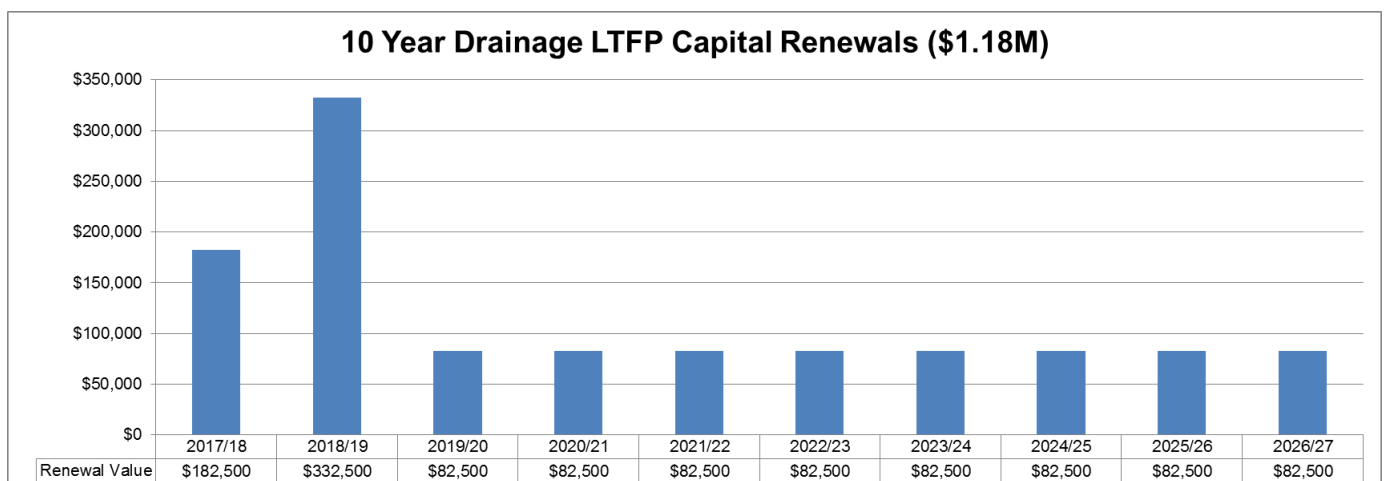
This forecast is provided to the relevant asset manager to assess and make decisions on what projects shall be included in the capital bids submission.

Results presented here compare and discuss the draft capital renewals program against the draft forecast proposed by modelling software.

#### 5.1.1 Projected Drainage Renewals

Figure 5.1 and Appendix B present capital renewal projects that have been adopted by Council in accordance with the Long Term Financial Plan (LTFP), with an amount totalling \$1.18M over the 10-year forecast period.

*Figure 5.1 –Capital Renewals Chart - Drainage*

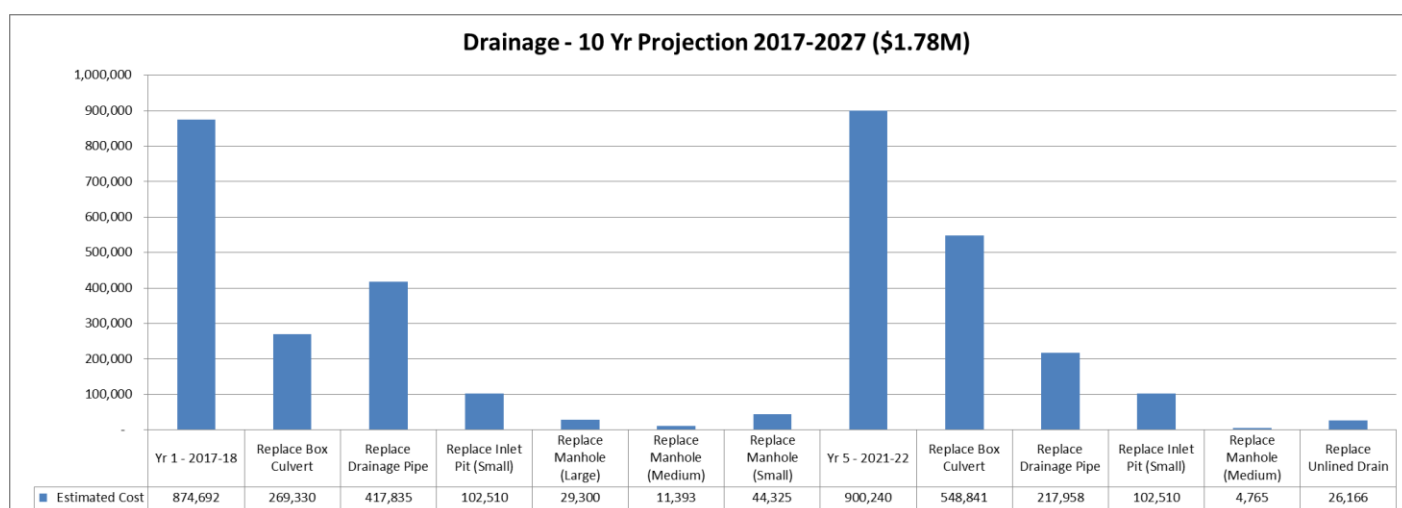


## 5.1.2 Analysis

The expenditure forecast is to address all stormwater assets that are in condition 5 (end of life) as described in the asset register's renewal projections. There are a total of 64 pipes, culverts or pits in condition 5. Major cost contributors to this value are:

- Edwards Street Renewals \$463,540
- Queen Street Renewals \$549,952

*Figure 5.2 - Asset Register 10 Year Capital Renewals Chart*



## 5.2 Creation/Acquisition/Upgrade Plan

Renewal and Upgrade Projects included in Council's 10-year capital bids Plan are enclosed in Appendix A.

Council propose to undertake a number of drainage upgrade works over the next ten years to address drainage deficiencies or risks starting with the duplication of the Edward Street main drainage line.

## 5.3 Maintenance Planning

Maintenance is the regular on-going work that is necessary to keep assets operating, within its normal serviceable physical condition, including rectification works to restore the asset back to an acceptable standard.

### Scheduled and Unscheduled Maintenance

Council's response to maintenance on drainage infrastructure is defined in Council's Stormwater Level of Service Manual. Within this manual are details of the service standards plus response times to particular event types.

The majority of Council's maintenance expenditure is for unscheduled maintenance activities carried out in response to service requests, condition audits and management/supervisory directions.

Council does not at present budget or report separately on scheduled and unscheduled maintenance, however, with the development of the TechnologyOne works management system this will be gradually introduced over coming years.

## Future Maintenance Expenditures

The drainage asset base is expected to increase by \$2.7M over the forecast period. The consequential impact on maintenance budgets now includes an allowance for new capital works undertaken during the previous financial year. Annual reviews will take into account any revised forecasts for maintenance.

The scheduled maintenance budget presented in the following table is estimated to be approximately 90% Scheduled, and 10% Unscheduled of the overall maintenance budget.

Maintenance expenditure trends are shown in Table 5.3 below:

*Table 5.3 – Maintenance Expenditure Trends*

Years	Maintenance Expenditure		
	Scheduled Maintenance	Unscheduled Maintenance	Total
2017/18	\$317,203	\$35,245	\$352,448
2018/19	\$325,978	\$36,220	\$362,198
2019/20	\$333,718	\$37,080	\$370,798
2020/21	\$320,218	\$35,580	\$355,798
2021/22	\$320,218	\$35,580	\$355,798
2022/23	\$320,218	\$35,580	\$355,798
2023/24	\$320,218	\$35,580	\$355,798
2024/25	\$320,218	\$35,580	\$355,798
2025/26	\$320,218	\$35,580	\$355,798
2026/27	\$320,218	\$35,580	\$355,798
		<b>10Yr Total</b>	<b>\$3,576,030</b>

## 5.4 Disposal Plan

Disposal includes any activity associated with disposal of or decommissioning an asset including sale, demolition or relocation.

No stormwater assets are currently under consideration for disposal.



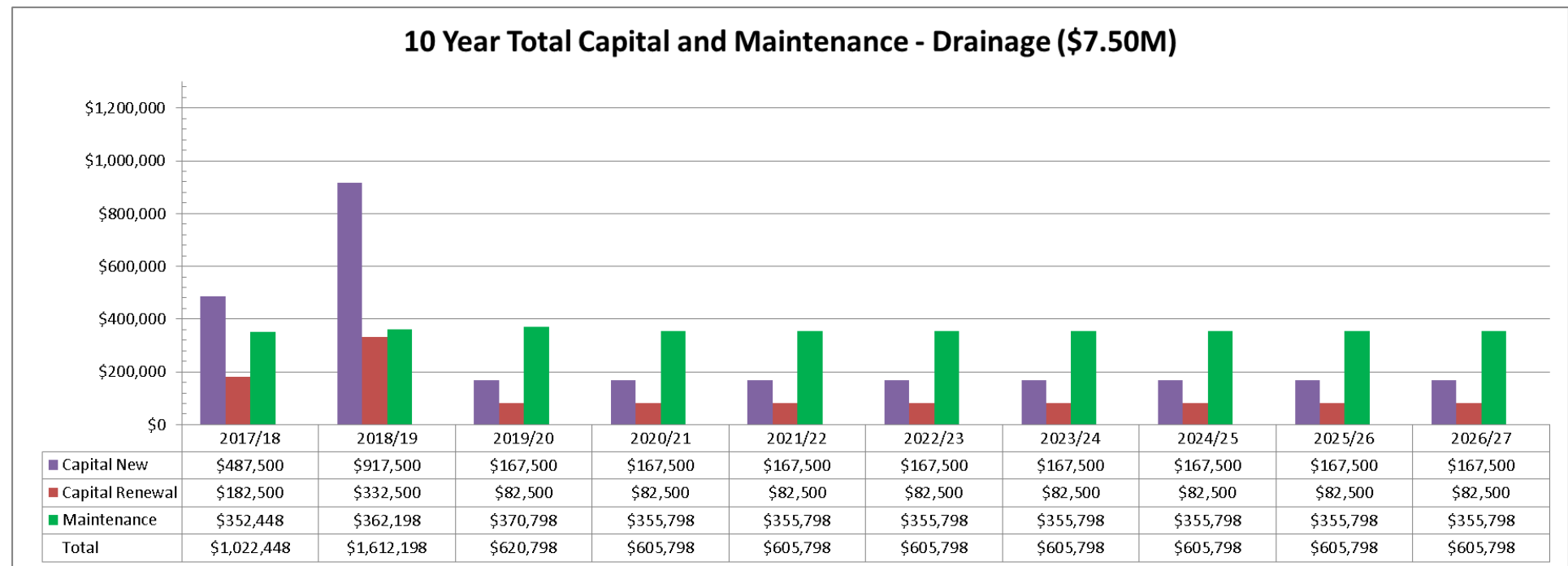
## 6 FINANCIAL SUMMARY

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

### 6.1 10 Year Expenditure Projection

The following figure identifies the planned maintenance and capital expenditure proposed to provide an agreed level of service to the community over the 10 year forecast period.

*Figure 6.1 Drainage 10-Year Expenditure Forecast*



## 6.2 Financial Performance Measures

This section reports on the financial sustainability of the proposed forward capital works program.

Refer to the Executive Level Strategic Asset Management Plan for detailed description of each performance measure.

Council's projected depreciation expense for FY 2017/18 is \$534,300.

### 6.2.1 Asset Sustainability Ratio

Asset sustainability ratio - is capital renewal expenditure divided by the depreciation expense, expressed as a percentage.

- Asset Sustainability Ratio =  $\$117,500 / 553,491 = 21.2\%$
- Previous asset management plan performance (2012) was 92.79%
- The current target for the Asset Sustainability Ratio, as per the Financial Management (Sustainability) Guideline 2013 is 90% (on average over a ten year period)

Indications are that this level of renewal funding over the next ten years will not sustain the overall portfolio, however reviewing the long term renewals requirements beyond the 10-year outlook indicate a significant increase in renewal for stormwater assets. As such, the renewals are not required in the short term (10 years) but will be required in the longer term. Refer Appendix B.

### 6.2.2 Future Renewal Funding Ratio

Future Renewal Funding Ratio is the Net present value (NPV) of planned capital expenditure over the 10-year forecast period divided by the NPV of the required capital expenditure over the same period within this strategic asset management plan.

- Future Renewal Funding Ratio =  $\$1,175,000 / \$1,774,931 = 66.2\%$ .
- Previous asset management plan performance (2012) was 55.7%

Renewals funding ratios will need to be monitored closely beyond the 10-year outlook period, as a high number of conduits and channels may require replacement within 30 years.

### 6.2.3 Asset Consumption Ratio

Depreciated replacement cost (DRC) divided by the current replacement cost (CRC), expressed as a percentage.

- Asset Consumption Ratio =  $\$27,088,883 / \$41,660,931 = 65.0\%$
- Previous asset management plan performance (2012) was 65.4%

A healthy measure for this portfolio is retaining almost two thirds of its service potential or value.

### 6.2.4 Impact of Inflation

Figures presented over the 10-year forecast period are expressed in current year terms and have not been indexed to consider inflation.

### 6.3 Funding Strategy

The projected expenditure identified is to be funded from Council's operating and capital budgets. The funding strategy is detailed in Council's 10-year long-term financial plan.

Capital projects beyond the next financial year are prefaced on receiving state or federal grants to combine with Council's own funding for the works to proceed.

### 6.4 Key Assumptions made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this strategic asset management plan and in preparing forecasts of required operating and capital expenditure. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Key assumptions made in this strategic asset management plan are:

- Drainage upgrade capital works proposed start with \$487.5k (FY1), \$917.5k (FY 2) and \$167.5k for the remainder of the 10-year period, which is estimated to address the identified upgrade works.
- Renewals capital works proposed start with \$182k (FY1), \$332k (FY 2) and \$82.5k for the remainder of the 10-year period,
- Figures are presented in current year dollars and have not been indexed over the 10-year forecast.
- Maintenance expenditures have been indexed at a rate of 2% for new capital works and are cumulative costs over the 10-year period.

## 7 ASSET CLASS RISKS AND IMPROVEMENT PLAN

### 7.1 Risk Management Plan

The following table lists the risks specific to this asset class and their current and proposed risk management controls. Refer to the Executive Level Strategic Asset Management Plan for Risks that are applicable across all asset classes. These risks are described in alignment with Council's Enterprise Risk Management Policy and associated Risk Matrix as documented in Council's Asset Management Strategy.

Figure 7.1 – Corporate Risk Management Plan

					RESIDUAL RISK RATING		
ITEM NO.	RISK	CAUSES	CURRENT CONTROLS	ADDITIONAL CONTROLS (TO BE RECORDED IN 'CURRENT CONTROLS' ONCE IMPLEMENTED)	LIKELIHOOD	CONSEQUENCE	RISK RATING
1	Stormwater does not drain away within an adequate timeframe.	Blockages, excessive rain event, asset failures.	Regular pit cleaning program Condition assessment program Open drain and table drain cleaning program.	Planned network upgrades in priority areas susceptible to flooding risks.	POSSIBLE – 5	MODERATE - 11	MEDIUM – 16
2	Premature failure or reduced performance of subterranean infrastructure.	Premature degradation, damage caused by terrain or soil movement, vehicular stresses.	Video CCTV inspection program.	Identification of high-risk areas or common causes used to develop future inspection programs.	POSSIBLE – 5	MINOR - 6	MEDIUM – 11
3	Localised flooding and unexpected road closures during significant rain events.	Overland flow paths disrupted by private property owners.	Non-regular monitoring and observations of existing flow paths.	Monitoring and reporting of unexpected flooding. Determination of remedial works and possible intervention.	LIKLEY - 7	MINOR - 6	MEDIUM – 13

## 7.2 Improvement Plan

The asset management improvement plan generated from this strategic asset management plan is shown below.

*Table 7.2 – Improvement Plan*

Task No	Task	Responsibility	Timeline
1.	Develop Stormwater Drainage Strategy	Manager Technical Services	December 2019
2.	Schedule drainage upgrades to address higher risk areas and align with roads upgrade program.	Manager Technical Services	December 2019

## 7.3 Monitoring and Review Procedures

This strategic asset management plan will be reviewed and refined during annual budget preparation and amended/updated to recognise any changes in service levels and/or resources available to provide those services as a result of the budget decision process.

## 8 SUPPORT / REFERENCE DOCUMENTS

The following describes the relevant documents that support the production of this strategic asset management plan.

Please refer to the Executive Level Strategic Asset Management Plan, which describes the hierarchy of asset management related documents across Council.

### 8.1 Stormwater Levels of Service & Intervention Levels Manual

This manual describes the list of assets that make up this portfolio and includes the desired response times to both customer and other requests for work that vary depending on the priority rating applied to the asset or asset type.

## 9 APPENDICES

### 9.1 Appendix A Council's 10 Year Capital Works Projects

The following table details the capital works projects as described in Council's capital bids spreadsheet divided into renewal and other project costs. Other costs generally align with augmentation or expansion type works.

*Table 9.1 – Capital Project Listing*

Fin Year	Description	Drainage Renewal	Drainage Other
2017-18	Ayr Industrial Estate Expansion Project - Drainage		\$20,000
	Edward Street Drainage	\$100,000	\$300,000
	Major Drainage Schemes	\$82,500	\$167,500
2018-19	Edwards Street Drainage	\$250,000	\$750,000
	Major Drainage Schemes	\$82,500	\$167,500
2019-20	Major Drainage Schemes	\$82,500	\$167,500
2020-21	Major Drainage Schemes	\$82,500	\$167,500
	Technical Design Drainage Software - DRAINS Unlimited ILSAX replacement	\$5,000	
2021-22	Major Drainage Schemes	\$82,500	\$167,500
2022-23	Major Drainage Schemes	\$82,500	\$167,500
2023-24	Major Drainage Schemes	\$82,500	\$167,500
2024-25	Major Drainage Schemes	\$82,500	\$167,500
2025-26	Major Drainage Schemes	\$82,500	\$167,500
2026-27	Major Drainage Schemes	\$82,500	\$167,500
<b>Grand Total</b>		<b>\$1,180,000</b>	<b>\$2,745,000</b>



## 9.2 Appendix B Asset Register Derived Long Range Renewals Forecast

The following chart provides an indication of the potential drainage renewal requirements beyond the 10-year outlook period covered by this strategic asset management plan. Broad level conclusions can be drawn regarding the level of expenditure that may be required for future strategic asset management plans.

*Figure 9.2 – Long Range Asset Renewals Chart*

