City of Cockburn
wetlands to waves

Drainage Asset Management Plan
2020–2024

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Front cover page photo is taken at Jakovich Park, Atwell; the stormwater drainage system.

Document Control					
Version No	Date	Version Details	Author	Reviewer	Approver
1	Dec 2012	Draft to Managers	Asset Services	Road Services	
2	Feb 2013	Final version for Adoption	Asset Services	Manager Engineering Services	Council
3	Aug 2015	Final version 2014-2017	Asset Services	Manager Engineering Services	Executive Group
4	June 2018	Final Version 2017-2020	Asset Services	Manager Engineering Services	Executive Group
6	Sept 2021	Final version for 2020-2024	Property & Asset Services	Manager Engineering Services	Executive Committee (ExCo)

Acknowledgement of Country

The Mayor, Councillors and staff of the City of Cockburn acknowledge the Whadjuk Nyungar people of Beeliar boodja as the traditional custodians of this land. We pay our respect to the Elders, past, present and emerging.

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Glossary

ASPEC (M, O, R, D) Specification
ASPEC data Specification and the City's operational register classification i.e. Marina and Coastal Infrastructure, Open Space, Road and Drainage Specification.

Asset
A physical component of a facility which has value enables a service to be provided and has an economic life of greater than 12 months.

Asset Class
Groupings of assets of similar nature and use in a local government's operations (AASB 166.37)

Asset Classification
A division of the asset class regarded as having particular shared characteristics

Asset Type
Defines the range of assets held in the asset classification ie ASpec

Asset Condition
Is a measure of the asset's physical integrity to enable prediction of maintenance, rehabilitation and renewal requirements.

Asset Management
The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.

Capital Renewal Expenditure
Expenditure/ works on an existing asset which returns the service potential or the life of the asset to that which it had originally.

Capital New Expenditure
Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential.

Capital Upgrade Expenditure
Expenditure which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally.

Current Replacement Cost (CRC)
The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate equivalent asset.

Depreciation
The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes.

*The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.

Depreciated Replacement Cost
The replacement cost of an existing asset less an allowance for wear and consumption, having regard for the remaining economic life of the existing asset.

Expenditure
The spending of money on goods and services.

Fair value
Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

Funding gap *
Difference between estimated budgets and projected expenditures from the Long Term Financial Plan for maintenance and renewal of assets, totalled over a defined time.

Gap Analysis
A method of assessing the gap between a business's current asset management practices and the future desirable asset management practices.

Integrated Planning and Reporting
A framework for establishing community priorities and linking this information into different parts of a local government's functions.

Level of service *
The defined service quality for a particular activity or service area against which service performance can be measured. Service levels usually relate to quality, quantity, reliability,

responsiveness, environmental, acceptability and cost.

Life Cycle Management
The total cost of an asset throughout its life including costs for planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal.

Long Term Financial Plan (LTFP)
Supported by the Asset Management Planning Process the LTFP is a ten year rolling plan that informs the Corporate Business Plan to activate Strategic Community Plan priorities. From these planning processes, Annual Budgets that are aligned with strategic objectives can be developed.

Maintenance
All actions necessary for retaining an asset as near as practicable to its original condition but excluding rehabilitation or renewal.

Non-Asset Solution
The process used to identify the alternative methods of addressing, reducing and/ or increasing demand for services other than by adjusting asset capacity.

Operating expenditure *
Recurrent expenditure, which is continuously required excluding maintenance and depreciation, eg power, fuel, staff, plant equipment, on-costs and overheads.

Planned Maintenance *
Repair work that is identified and managed through a maintenance management system, activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Reactive maintenance *
Unplanned repair work that is carried out in response to service requests and management/supervisory directions.

Remaining life*
The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining life is economic life.

Replacement Cost
The cost of replacing an existing asset with a substantially identical new asset.

Risk Management *
The application of a formal process to determine the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probable occurrence.

Strategic Community Plan
The strategy and planning document that reflects the longer term (10+ year) community and local government aspirations and priorities.

Useful life *
Either:
(a) the period over which an asset is expected to be available for used; or
(b) the number of production or similar units (i.e. intervals, cycles) that is expected to be obtained from the asset.

Source: **Government** of WA Asset management framework and guidelines, Glossary
***Source:** DVC 2006, Glossary 'Asset Investment Guidelines'

1. Executive Summary

With the implementation of the City's Integrated Corporate Planning Framework, the Drainage Asset Management Plan (DAMP) has been developed to establish sustainable financial management, robust governance, continuous improvement and best practice management of the City's infrastructure assets.

The DAMP covers the 2020-2021 to 2023-2024 financial years, outlines the services provided by the Operations & Maintenance Service Unit in delivering strategic and operational asset management activities for communities that utilise the City's Infrastructure assets.

The Drainage Asset Management Plan (DAMP) covers the drainage Pipes, Pits and Sump Fencing. The data utilised in the creation of the DAMP is based on the City's operational asset register and is considered to be approximately 85% accurate.

The DAMP is one of eight AMPs developed by the City and forms part of the City's Strategic Asset Management Planning Framework. The DAMP will be developed every four years in alignment with the Corporate Planning Framework ensuring that the City's long-term financial planning (LTFP) is supported by timely and accurate asset information and financial projections derived from a structured and strategic asset management planning process

The DAMP improvement strategy will guide the Operations & Maintenance Service Unit to continuously improve services provided, establishing best practice strategic and operational asset management methodologies across people, processes and systems.

Further details of the City's stormwater Infrastructure assets are listed below.

Table 1.1 Drainage Infrastructure Assets Summary Table as at August 2020

Asset Classification	13/14	13/14	16/17	16/17	19/20	19/20
	Quantity	Replacement value	Quantity	Replacement value	Quantity	Replacement value
Pits	18,449	$52.62m	20,418	$58.97m	22,099	$64.34m
Pipes	455 km	$175.63m	497 km	$194.2m	527 km	$224.01m
Sub Total		**$228.25m**		**$253.17m**		**$288.35m**
Fences	15.2 km	$0.91m	13.5km	$1.01m	13.5 km	$1.64m
TOTAL		**$229.16m**		**$254.18m**		**$289.94m**

The key messages from the 2020 Drainage Asset Management Plan are summarised below:

Asset Data & Condition Analysis

- The data utilised to develop the DAMP is considered to be approximately 85% accurate and of medium confidence.

- The DAMP Infrastructure assets are in an excellent to moderate condition with 64% of the assets in condition 1, 28% in condition 2 and 6% in condition 3.

See **(Section 5 - Page 26)** for further information

Level of Service, Risk Management and Performance Deficiencies

Level of Service is a measurable target which determines the type and extent of services delivered to the Community.

- An increase in customer service requests from the community has been recorded since the last DAMP.

Asset Capacity and Performance

- With an estimated replacement cost of $32m, 13% of the pipe network are under 300mm diameter and are considered substandard potentially requiring replacement.

- With total estimated replacement cost of $314,465, 10 reserves/parks require the installation of a Gross Pollutant Trap (GPT). These have been scheduled at one installation per year. During last three years five GPTs have been installed by the City and 14 GPTs handed over by developers.

See **(Section 3 - Page 13)** for further information

Future Growth and Demand Management

Projected future growth is supported by the City's Strategic Planning Business Unit's population and demographic research study's, whilst demand management is catered for by the upgrade and construction of existing and new assets through the delivery of the City's adopted Major Capital Work strategies, programs and plans.

- A cumulative growth of $29.6m has been added to the Drainage network over 5 years since 2015. This represents an average growth of 2% per annum and an increase in replacement cost of $5.9m per year.

Factors impacting the drainage system:

- Demographics are expecting higher density developments reflecting an increase in impervious areas and capacity required for runoff.
- The changing weather patterns have increased the frequency of intense storm events resulting in flooding and the requirement for larger capacity systems.

See **(Section 4 - Page 20)** for further information

Lifecycle Management

The lifecycle management section details how the City plans to manage and operate both current and future assets to an appropriate level of service whilst optimising life cycle costs.

- Maintenance expenditure needs to consider the Drainage Management Strategy to meet appropriate service levels.
- From 2011-12 to 2019-20 the total operating and maintenance expenditure has increased from $772,384 to $1,109,032
- By 2029-30 required expenditure for Operations and Maintenance is expected to be around $1.53m per year.

See **(Section 5 - Page 25)** for further information

Financial Analysis

Drainage Asset Renewal Forecasts

The City has developed a 10-year renewal program which will drive the budget planning process and form the basis to the City's long-term financial planning.

- 10-year projected renewal expenditure totalling $17m.
- Due to the adoption of the City's LTFP and funding strategy budgeted renewals has been limited to $ 16.3m

See **(Section 6 – Page 36)** for further information

See **(Appendix C - Page 52)** for the 10-year renewal program

Sustainability of Service Delivery

The City will compile and report its Drainage assets performance in relation to the Dept. of Local Government's Asset Management Guidelines and Framework.

Based on actual expenditure in 2019-20, Table 1.2 indicates the City's performance in managing Drainage infrastructure assets as at August 2020.

Table 1.2 Drainage Infrastructure Asset Ratio Summary Table

Asset Class	Consumption Ratio 2019-20	Sustainability Ratio 10 Years	Renewal Funding Ratio 10 Years
Drainage Infrastructure	80.51%	50%	96%
Dept of LG Standard	Met	Not Met	Met

Sustainability ratios for Drainage infrastructure have been forecast for the next 10 years to reflect the improvements the City will make following the completion of the LTFP. The sustainability ratio for 2029-30 is predicted to be 50%, the renewal funding ratio for the same period is predicted to be 96%.

See **(Section 6.3 – Page 37)** for further information

AMP Improvement Strategy and Monitoring

A number of strategic improvements have been identified that will improve future revisions of the plan and provide greater financial alignment with the Long Term Financial Plan 2020-21-2029-30.

The 2019-20 planning process has identified the following improvements:

- Digitising absent sumps and catchments in GIS and updating the Operational asset registers.
- Develop the Asset Information system to monitor performance measures against levels of service targets by linking the desired budget allocation to the level of service.
- Continue to undertake condition assessments of the drainage assets including sumps.

See **(Section 8 - Page 45)** for further information

2. Introduction

2.1 Background

This asset management plan has been developed to assist the Property & Assets Services unit to outline the management of assets, compliance with regulatory requirements and to highlight the funding required to provide the appropriate Levels of Service. The assets covered by this plan are summarised in Table 2.1.1.

Figures as at August 2020 have been extracted from Council's Technology One Enterprise Asset Management System (EAM).

Table 2.1.1 Drainage Infrastructure Assets Covered by this Plan

Asset Classification	Asset Type	Length (m) / No. of
PIPES	Dia. <300	66,366
	Dia. 300 - 550	416,618
	Dia. 600 - 1200	37,516
	Dia. - 1350 - 2050	6,187
	TOTAL (m)	**526,686**
PITS	Bubble up Pit	379
	Combined catch pit and side entry pit (SEP)	49
	Double graded Pit	26
	Double Gully SEP	26
	Double side entry Pit	85
	End wall/Head wall	640
	Gatic Cover Pit	46
	Grated Gully Pit	3407
	Grated Pit	275
	Gross pollutant trap	139
	Grated side entry pit	207
	Grated Soak Well	21
	Gully Pit	158

	Infiltration Chamber Pit	114
	Asset Type	**Length (m) / No. of**
	Junction Pit	6291
	Junction with Chamber	14
	Junction Pit with Drop	1
	Side Entry Pit	8957
	Side Entry / Gully Pit	948
	Soak Well	315
	Weir	1
	TOTAL (No. of)	**22099**
SUMPS	Basin	117
	Chamber	8
	Lake	10
	Open Drain	67
	Retention Basin	1
	Spillway	6
	Storage Tank	19
	Sump	207
	Swale	53
	Wetland	1
	TOTAL (No. of)	**489**
FENCES	Colorbond	1927
	Chain Wire / Mesh	8681
	Fibrous Cement	506
	Railings	354
	Wall (Brick / Stone)	2046
	TOTAL (m)	**13,514**

The AMP is to be read in conjunction with the following associated planning documents:

City of Cockburn Strategic Community Plan 2020 – 2030

City of Cockburn Corporate Business Plan 2016-17 to 2019-20

City of Cockburn Annual Business Plan 2019 – 2020

City of Cockburn Long Term Financial Management Plan 2020-21 to 2020-30

Key stakeholders in the preparation and implementation of this asset management plan are shown in Table 2.1.2

Table 2.1.2 Key Stakeholders in the AM Plan

ENTITY	NATURE OF INVOLEMENT
INTERNAL STAKEHOLDERS:	
The Elected Council	Community representation
Chief Executive Officer (CEO)	Asset management direction and leadership
Executive Committee (ExCo)	Executive management endorsement, sign off and executive ownership
Manager Property & Assets	Review and strategic management sign off
Manager Civil Infrastructure	Review and line management sign off and implementation of the AMP maintenance actions
Property & Assets	Asset Management Plan development, review and continuous improvement
EXTERNAL STAKEHOLDERS:	
Insurers	Assist to manage financial risk of the City
City of Cockburn community, Business Perceptions Survey Community	Road/drainage and service users
City of Cockburn businesses, Police, Fire and Emergency Services	Road/drainage and service users
State Emergency Services	Attendance to call-outs and security

2.2 Goals and Objectives of Asset Management

The City of Cockburn exists to deliver services to its community supported by the City's infrastructure assets. The City acquires infrastructure assets by 'purchase', 'contract', construction by council and by handover of 'donated' assets constructed by developers in order to meet the increased demand for services.

The City of Cockburn's 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,
- Understanding and meeting the demands of growth through demand management and infrastructure investment,
- Managing risks associated with asset failures,
- Sustainable use of physical and financial resources,
- Continuous improvement in asset management practices.

This AMP is prepared under the direction of the City's vision, mission, goals and objectives.

The City of Cockburn's vision is:

Cockburn, the best place to be

The City of Cockburn's purpose is:

Support our communities to thrive by providing inclusive and sustainable services which reflect their aspirations

The 5 key outcomes as detailed in the Strategic Community Plan (SCP) 2020-2030 are:

- Local Economy,
- Environmental Responsibility,
- Community, Lifestyle & Security,
- City Growth and Moving Around,
- Listening and Leading

The relevant goals and objectives as outlined in the Strategic Community Plan and how these are addressed in this asset management plan are detailed in Table 2.2.1.

Table 2.2.1 Council Goals and how these are addressed in this Plan

Strategic Goal	Objective	How Outcomes and Objectives are addressed
Local Economy: A sustainable and diverse local economy that attracts increased investment and provides local employment	1. A City that is 'easy to do business with'.	**Future Growth and Demand:** Section 4
Environmental Responsibility: A leader in environmental management that enhances and sustainably manages our local natural areas and resources	1. Sustainable resource management including waste, water and energy.	**Future Growth and Demand:** Section 4
Community, Lifestyle and Security: A vibrant, healthy, safe, inclusive and connected community	1. Accessible and inclusive community, recreation and cultural services and facilities that enrich our community.	**Levels of Service:** Section 3
City Growth and Moving Around: A growing City that is easy to move around and provides great places to live	1. An attractive, socially connected and diverse built environment.	**Future Growth and Demand:** Section 4
Listening and Leading: A community focused, sustainable, accountable and progressive organisation	1. Best practice Governance, partnerships and value for money.	**Financial Analysis:** Section 6

2.3 Plan Framework

Key elements of the AMP are:

- Levels of Service and Enterprise Risk Management – outlines the levels of service provided by Council and identifies risks to the City.
- Future Growth and Demand – how this will impact on future service delivery and how this is to be met.
- Lifecycle Management – how the City will manage its existing and future assets to provide the required services.
- Financial Analysis – what funds are required to provide the required services.
- Asset management practices.
- Asset management monitoring and improvement plan - how the plan will be monitored and improved to ensure it is meeting Council's objectives.

2.4 Asset Management Maturity

The 2020-2024 AMP has been developed in accordance with the International Infrastructure Management Manual (IIMM) and complies with the Department of Local Government and Communities Asset Management Framework.

As part of the City's Strategic Asset Management Framework, the DAMP will formalise the City's future forecasting for DAMP Infrastructure, enabling the organisation to determine future budgeting requirements, sustain the current and future asset base, whilst ensuring that optimisation of activities and programs facilitate for the capture and reporting of adopted service levels.

The DAMP has reached an 'intermediate' level of maturity as it integrates seamlessly with the City's Long Term Financial Plan, provides Executive level monitoring and reporting of key improvement areas from the Improvement Strategy.

With the continued implementation of the Strategic Asset Management Framework, the City will commence measuring service levels for planned and reactive maintenance to determine operational performance and asset utilisation.

The City strives to improve its strategic and operational asset management practices and to continue its journey towards advanced asset management. The Department of Local Government, Sport and Cultural Industries (DLGSC) has developed the Western Australia Local Government Integrated Planning and Reporting Framework. The future direction and need for advanced level practices are continually assessed in accordance

with this and the City's Asset Management Policy. The Integrated Planning and Reporting Framework is shown Figure 2.4.1.

Figure 2.4.1 The City's Integrated Corporate Planning Framework

The DAMP forms part of the City's Assets Informing Strategies, which consists of the following strategy and asset management plans:

Asset Management Strategy – 2017 - 2024

Buildings AMP - 2020 - 2024

Cockburn Aquatic and Recreation Centre (ARC) AMP - 2020 - 2024

Footpath AMP - 2020 - 2024

Fleet and Plant AMP - 2020 - 2024

Marina and Coastal Infrastructure MCAMP - 2020 - 2024

Parks & Environment AMP - 2020 - 2024

Road Infrastructure AMP - 2020 – 2024

2.5 Asset Management Plan – Data confidence assessment

Each section of the DAMP was reviewed to determine the accuracy and maturity of the City's asset data, with stakeholders rating the data confidence level as highly reliable.

AMP	Contents	Data Accuracy
Section 2	Strategic goals & objectives	A
Section 3	Levels of Service Risk Management	A
Section 4	Growth, Demand, New Assets	A
Section 5	Asset data; Age, Condition Operating & Maintenance Expenditure, Renewal Expenditure	A
Section 6	Financial statements; Renewals Gap, Ratios	A

Ratings are based on the following criteria / inputs.

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

3. Levels of Service

To support the management of drainage assets the City has developed industry best practice asset management and customer focussed levels of service (LOS) for infrastructure assets and associated services. These LOS's provide the City with a mechanism to deliver operational activities that endeavour to meet community expectations in the most cost-effective manner possible.

The City administers Community and Technical Services levels to ensure that quality service provision is provided in accordance with the City's customer Service Charter and Community Engagement Framework, whilst Technical Services are sustainable, and adhere to all relevant compliance and safety industry standards.

The DAMP community and technical levels of service are defined to an asset group level and enable the City to monitor and report operational performance against adopted community and technical targets.

Similar to the City's existing Asset Management Plans, future DAMP Service level reporting will be derived from the City's Enterprise Asset Management System (EAM). The Implementation of the EAM will establish improved reporting of operational and maintenance budget expenditure providing increased confidence in projecting future budget needs.

3.1 Current Levels of Service

The City of Cockburn has defined service levels in two terms:

- Community Levels of Service relate to how the community receives the service in terms of safety, quality, quantity, reliability, responsiveness, cost efficiency and legislative compliance.

- Supporting the community service levels are operational or technical measures of performance developed to ensure that at least the minimum community levels of service are met. Technical Levels of Service relate to how the City provides the service using technical terms

Tables from 3.1.1 to 3.1.3 outline the City's current Community and Technical Service Levels objectives, measures and performance demonstrating the diversity and quality of services provided by the City's Drainage Services Team.

Key to status reported below:

- Increase in results of 3% or more
- Change in results of 2% or less
- Drop in results of 3% or more

Current Levels of Service – DRAINAGE

1. Ensure that drainage meets natures requirements

Community – Total number of Customer Requests extracted from customer service system relating to drainage flooding is presented in Table 3.1.1

Table 3.1.1 Community Levels of Service

Community	2011-12	2012-13	2013-14	2016-17	2018-19	Status
Total	97	35	114	39	79	

Technical –

- All new drainage to meet Councils standard, the City's Engineering Design Guidelines.
- Sump upgrades via Capital Works budget

2. Provide safe suitable drainage systems, free from hazards i.e. damaged structures (fence, pits)

Community – Total number of Customer Requests extracted from customer service system relating to drainage structures is presented in Table 3.1.2

Table 3.1.2 Community Levels of Service

Community	2011-12	2012-13	2013-14	2016-17	2018-19	Status
Total	127	138	146	134	157	

Technical –

- Roads are swept 3 times per year, preventing debris build-up
- Pits educted –9,000 per year

3. Maintain drainage by proactive repairs

Technical – Lower percentage of maintenance costs done by reactive repairs

Table 3.1.3 Technical Levels of Service

Technical	2014-15	2015-16	2016-17	2018-19	Status
Reactive maintenance	35.51%	30.27%	41.63%	41.00%	
Planned maintenance	64.49%	69.73%	58.37%	59.00%	

To better monitor these performance measures it has been identified in the Improvement Strategy that revision of the customer requests and surveys will provide better results.

3.2 Enterprise Risk Management

In 2015 the City implemented a Risk Management & Safety System (RMSS) in which all operational and strategic risks are captured, rated and receives ongoing monitoring based on their level of risk.

Additionally, in 2017 the Risk Management Framework was adopted with the aim of supporting an integrated and effective organisational wide approach to risk management.

The implementation of the Framework sought to:

- Ensure a consistent approach to the risk management process across Council;
- Establish a structured process for undertaking the risk management process to identify, assess and control/treat risks;
- Encourage the integration of risk management into the strategic and operational process across all Business Units of the Council

There are currently no Extreme or High Risks associated with the Drainage Infrastructure.

The City uses a matrix based approach when addressing risk level, treatment and responsibility as detailed in Table 3.3.1.

Table 3.3.1 Risk Treatment Matrix

Risk Level	Code	Criteria	Treatment	Responsibility
LOW	L	Risk acceptable with adequate controls, managed by routine procedures. Subject to annual monitoring or continuous review throughout project lifecycle.	Management through routine operations/project, Risk Registers to be updated.	Service Unit Manager/Project Manager
MODERATE	M	Risk acceptable with adequate controls, managed by specific procedures. Subject to semi- annual monitoring or continuous review throughout project lifecycle.	Communication and awareness of increasing risk provided to SM, Risk Registers to be updated.	Senior Manager/Project Manager
SUBSTANTIAL	S	Accepted with detailed review and assessment. Action Plan prepared and continuous review.	Assess impact of competing Service Unit/Business Unit Projects. Potential redirect of Service Unit/Business Unit resources. Risk registers to be updated.	Director/Steering Committee
HIGH	H	Risk acceptable with effective controls, managed by senior management/executive. Subject to quarterly monitoring or continuous review throughout project lifecycle.	Escalate to CEO, report prepared for Audit & Strategic Finance Committee. Quarterly monitoring and review required. Risk Registers to be updated.	Executive/ Steering Committee/Project Sponsor
EXTREME	E	Risk only acceptable with effective controls and all treatment plans to be explored and implemented where possible, managed by highest level of authority and subject to continuous monitoring.	Escalate to CEO, report prepared for Audit & Strategic Finance Committee. Monthly monitoring and review required. Risk Registers to be updated.	CEO/Council/Project Sponsor

Each of the risks are reviewed with current and proposed control measures being assessed yearly to ensure industry standards and potential advancements are considered and are incorporated as required.

3.3 Legislative Requirements

The City of Cockburn has to meet many legislative requirements including Australian and State legislation and regulations.

See (Appendix A) for the Legislative Requirements

The City of Cockburn's stormwater drainage systems are to meet the City's Engineering Design Guidelines and Standards.

See (Appendix B) for Guidelines and Standards

3.4 Asset Capacity and Performance

The City of Cockburn commissioned Cardno Consulting in 2017 to undertake a review of the drainage catchments to identify system deficiencies and provide a prioritised list of upgrade projects that could be undertaken to improve the aesthetics, performance and efficiency of stormwater disposal. The Drainage Catchments Study (DCS) report also identified opportunities to rationalise and combine drainage disposal structures in particular to free excess land for other purposes.

Locations where deficiencies have been identified are in Table 3.4.

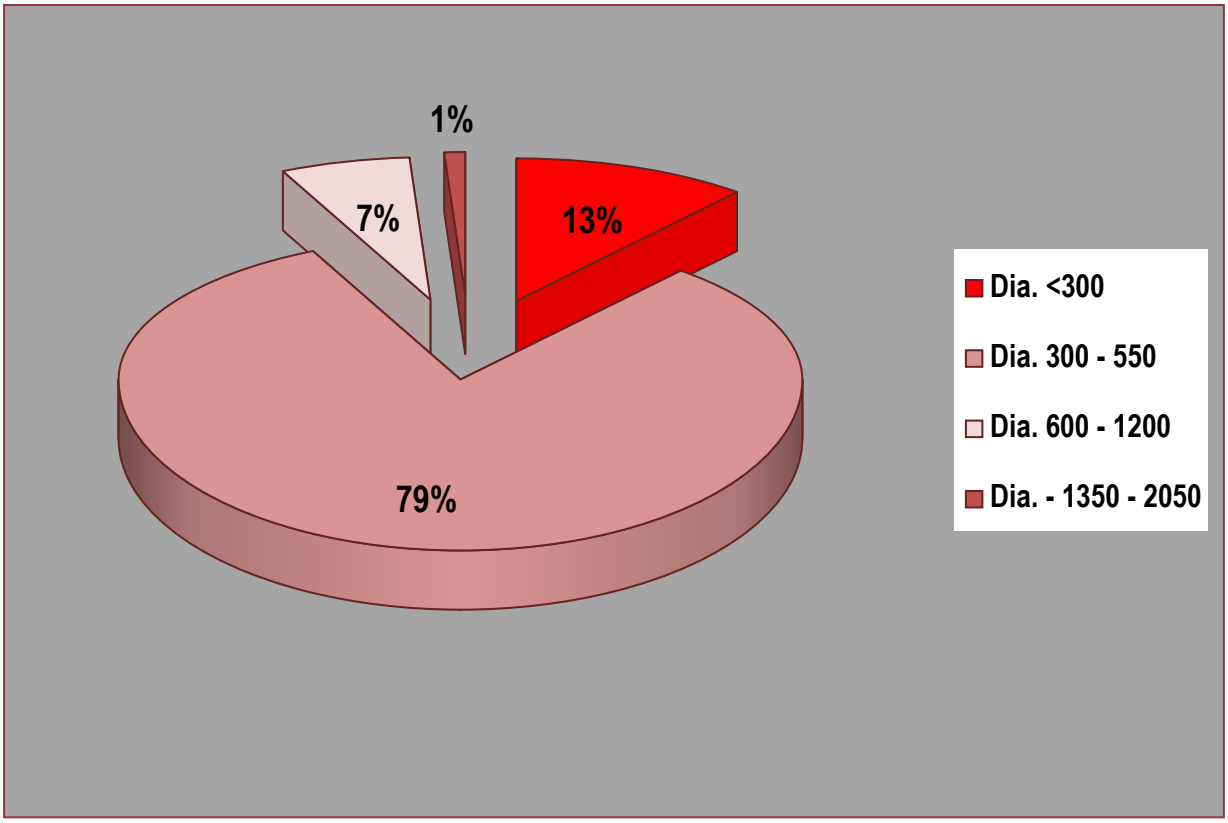
Table 3.4 Known Capacity & Performance Deficiencies

Location	Service Deficiency
City of Cockburn jurisdiction	Most of the stormwater drainage systems were designed for a 1 in 5-year storm and at some locations flooding is evident. New subdivisional guidelines and standards require stormwater drainage systems to be designed to hold a 1 in 10-year storm. A program to upgrade the Substandard Pipes up to 300mm diameter is to be considered.
DCS report – recommendations City of Cockburn jurisdiction - mostly situated around Hamilton Hill. Then Coolbellup, Coogee, Yangebup & South Lake.	Prioritised recommendations are detailed on pages 16 to 35 of the DCS report. The order of cost totalling $5,608,200. Highest priority assigned to catchments where the existing disposal is inadequate ie Sump capacity inadequate. The following works have been completed from the DCS recommendation; Jacovich Park upgrade $245,000, Hartley St, Coolbellup Sump - $145,000, Crossville way drainage - $44,135 and Tolley Court, Hamilton Hill Sump - $344,000 for completion 20/21.
City of Cockburn Jurisdiction City of Cockburn Jurisdiction South Lake Broadwater Gardens Reserve Spearwood Penn Lake Drive	Not enough information about new underground infiltration units, difficult to determine scheduled maintenance and levels of service Open drains accessibility and maintenance access has become restricted as urbanisation continues Require a Gross Pollutant Trap (GPT) as untreated/ unmanaged water going into lake systems are having an environmental impact on the service

The DCS reported and the highest priority has been assigned to a 10-year program to upgrade the capacity of underperforming sumps upon further investigation and analysis of the network.

In line with these works, there is an element of upgrading by renewing the pipes to meet the required standards of drainage design to allow efficient flow of the stormwater systems. It has been identified that 13% of the pipes network are less than 300mm diameter making them substandard and some need replacing. Analysis of the areas of flooding recognised by customer requests further clarifies the deficiency locations and a need to provide an adequate level of service to reduce or mitigate the risk of damage to properties.

Graph 3.4 Pipes with diameter less than 300mm



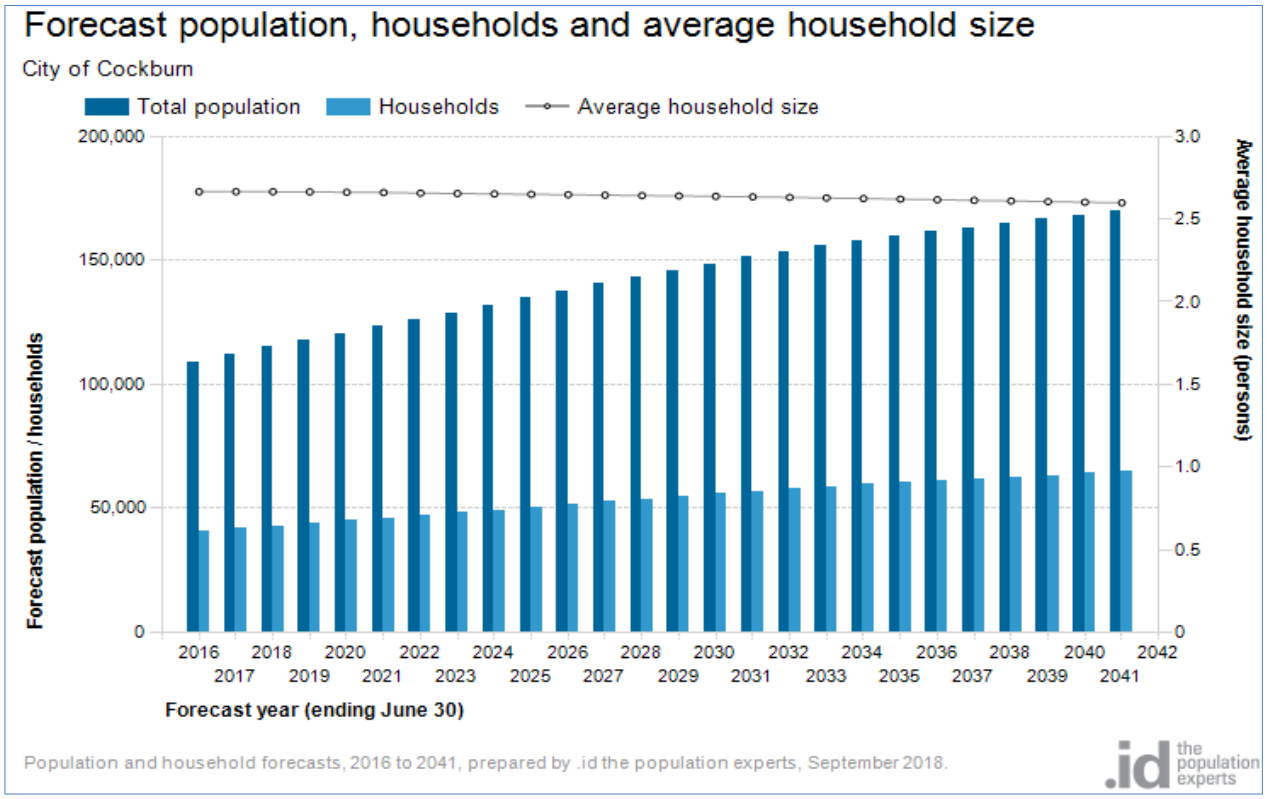
The Drainage Management Strategy (2018 - 2028) has been developed by the Roads Services Unit to provide a framework to detail and examine existing management practices of drainage infrastructure, and to form the basis of an improvement program, progressively meeting identified deficiencies.

4. Future Growth and Demand

4.1 Growth Forecast

Cockburn is one of the major Coastal Cities found in the state of Western Australia, totalling 170 square kilometres. This coastal City is renowned for its historical and tourism features along with agriculture and ship building industries.

The City of Cockburn's 2020 forecasted population and dwelling is 120,417 and 46,800 dwellings respectively. The population is forecast to reach 169,700 by 2041, an increase of 40.92%.



Growth factor trends and the impacts these have on service delivery across the City are summarised in Table 4.1.

Table 4.1 Growth, Projections and Impact on Services

Demand factor	Present position	Projection	Impact on services
Population	117,513 as at June 2019	Change between 2019 and 2041 is projected to be 52,176 a 44.4% increase at an average 2% per annum.	Increased population demand for new developments additional drainage assets results additional maintenance & renewal costs.
Demographics	Aging population selling existing residential dwellings	Between 2016 and 2026 the age structure forecasts indicate 50.6% increase in the population of retirement age.	Existing dwellings potentially redeveloped at a higher density further increasing demand and requirement for drainage infrastructure.
Industry	Existing industrial areas are expanding and reaching full potential	Extensive new industrial and commercial areas focused around Jandakot Airport and Latitude 32 Industrial area.	Requirement for freight routes and upgrading of existing roads. Increase in impervious areas resulting in requirement for effective drainage and stormwater management infrastructure.
Land use	Basins and Sumps are taking more land space	New developments with onsite stormwater management using UWSD concepts and rationalisation of sumps as per DCS report.	Stormwater is managed according to legislative framework with reduced pollutants and more land available as public open space.

Perhaps the biggest influence on future stormwater drainage networks is the expected rate of development and population increase, and the resulting stormwater runoff increases. Recent forecast population figures illustrate an annual population growth rate of approximately 2.87. It is projected to have an increase of 17,000 dwellings from now to 2026. Assuming this level of development will continue in the coming years, this is expected to greatly increase the total impervious area within the urbanized areas.

The impact of global warming was considered as part of the study; however information regarding predicted effects on the rainfall patterns in the south west of the State are inconclusive and as such no definitive conclusions on the impact could be reached at that time.

4.2 Changes in Technology

Technology changes for the drainage infrastructure as a result of growth and demand include:

Table 4.2 Changes in Technology

Technology Change	Effect on Service Delivery
Water Sensitive Urban Design (WSUD)	Reduced flow rates from new developments. Higher quality runoff. Greater detention storage and re-use of stormwater.
New pipe materials	Poly products are lighter and can bend around corners making it easier and cheaper to lay but harder to capture the location of. Only used in noncommercial/ industrial areas and areas of low load forces e.g. Parks and gardens. Poly products has cleaning/maintenance implications and possibly a shorter economic life (25-30 years). Reinforced concrete fibre – lighter and easier to install, more cost effective.
Aquifer storage	Water as a commodity can be harvested and stored underground only to be retrieved at a later time when required to irrigate reserves, etc.
New side entry pits	New pits come with grates to make it easier and more cost effective to inspect, maintain and clean. Life-cycle costs could be greatly reduced.
Underground Infiltration Systems	Reduce quantity of storm water runoff that gets discharged from a location.

4.3 Demand Management Plan

Demand management strategies provide alternatives to the creation of new assets in order to meet demand, and look at ways to modify customer demands so that the utilisation of existing assets is maximised and the need for new assets deferred or reduced. The objective of demand management is to actively seek to modify customer demands for services in order to;

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

The opportunities identified to date for demand management, the impact these drivers may have on future service delivery and the utilisation of these assets are shown in the Table 4.3.1.

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

Table 4.3.1 Demand Management Plan Summary

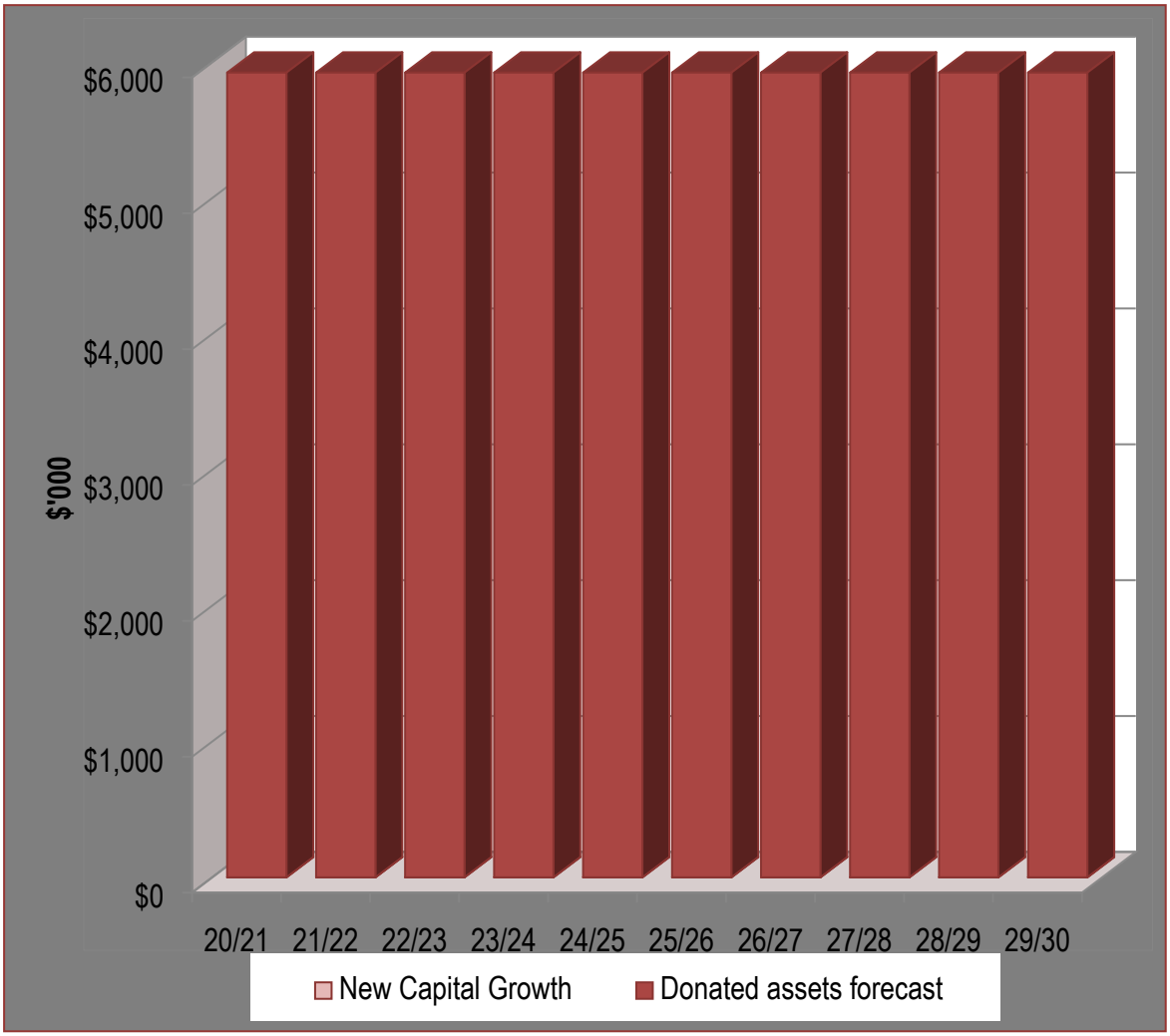
Service Activity	Demand Management Plan
Planning/ Design	WSUD – More overland flow, green swales, local detention basins, less impervious areas on new developments Redesign earthworks, drainage and sewer layout to avoid Acid Sulfate Soils disturbance Offer a water tank subsidy Greater compliance for surface water runoff pollution particularly on new developments to reduce the silting up of pits, pipes and other water ways More use of GPTs on private property to arrest pollutants before they reach the Council network Increased use of stormwater to wetlands as a 'natural' recreational asset Increased re-use of stormwater in localised areas i.e. where it falls is where it is used
Upgrading	Increase system capacity with larger pits and pipes Re-lining old pipes with poly inserts to prolong life Incorporating WSUD into existing drainage system to be more cost effective than upsizing sumps and pipes
Maintenance	Greater cleaning and flushing of all the pits to ensure full capacity is realised. Clearing and widening of natural waterways to increase capacity and therefore their role in the stormwater drainage network
Education	Implement a herbicide, pesticide and fertiliser use community education campaign Staff training in WSUD

The City of Cockburn is a participant in the International Council for Local Environmental Initiatives (ICLEI) Water Campaign and is committed to the sustainable management of water resources. The City has developed a Water Conservation Plan, Irrigation Operating Strategy and Local Water Action Plan and has set water management targets to help reduce water consumption and improve water quality in Cockburn.

4.4 New Assets from Growth

The new assets required to meet growth will be mainly acquired from new land developments and upgraded works. This may also include some minor construction works being completed by the City.

Graph 4.4 New Assets from Growth



The forecast for donated assets likely received from developers over the next five years has been calculated by averaging out the previous 5 years total donated assets from subdivisions. This equates to approx. $5.92m per year of drainage assets, these figures have been used throughout this AMP where growth has been considered. There is no New Capital Growth planned.

5. Lifecycle Management

The lifecycle management area details how the City of Cockburn plans to manage and operate the drainage assets while optimising life cycle costs. The data is based on the City's financial and operational asset registers.

5.1 Asset Data

5.1.1 Asset Valuations

The value of assets as at August 2020 covered by this asset management plan are summarised in Table 5.1.1 below. Assets were last re-valued in June 2020 in line with current Schedule of Rates used by the former Roads Service Unit and Rawlinson's Australian Construction Handbook 2020 when required. The valuation was provided to the Finance Business Unit for auditing of the City's underlying methodology, quality controlled process and provides evidence as to the production of the Asset Revaluation Report 2019-20

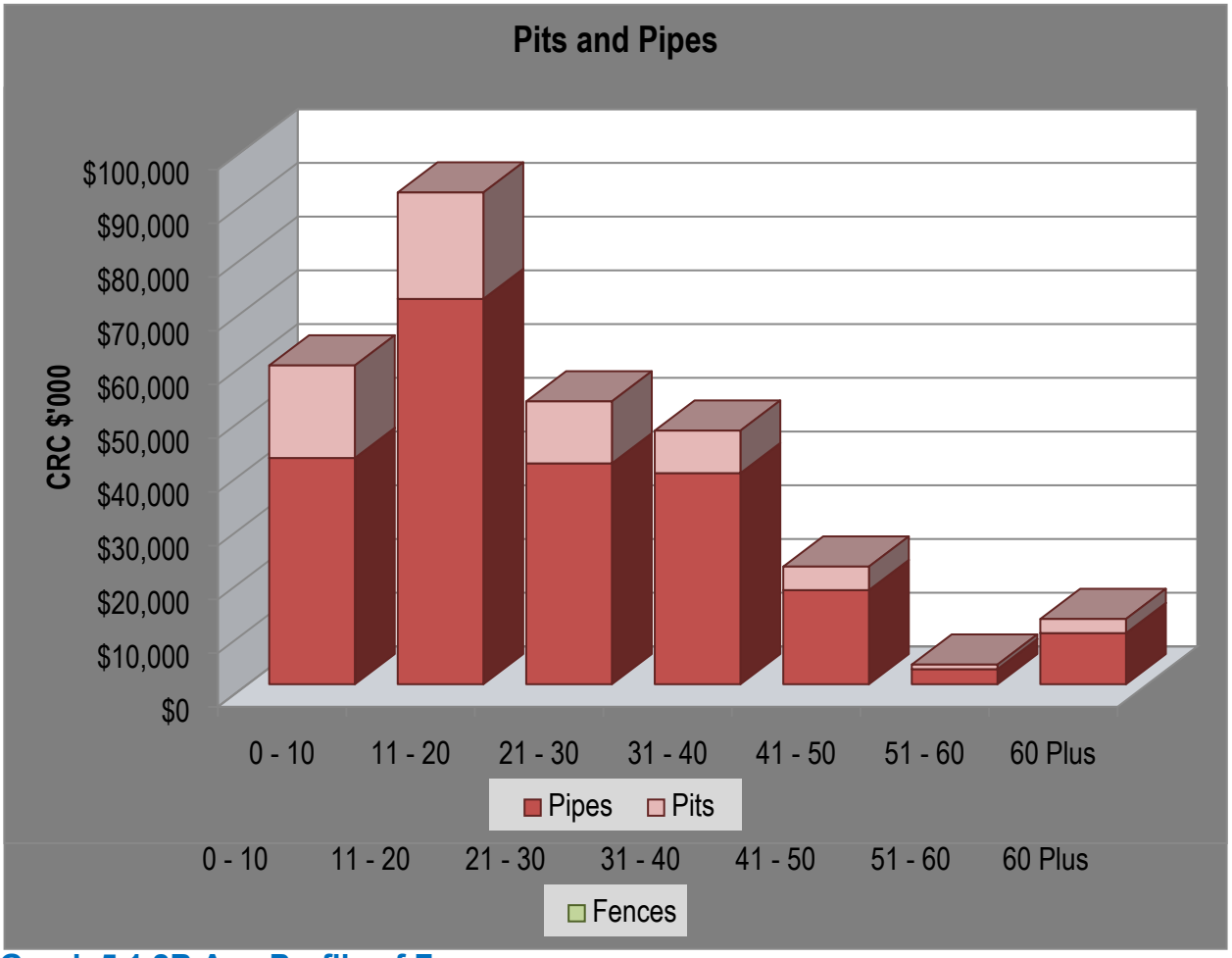
Table 5.1.1 Asset Values

Asset	Current Replacement Cost (CRC)	Fair Value (WDV)	Depreciation	Annual Depreciation
Pits	$64,342,402	$52,317,033	$12,025,369	$643,424
Pipes	$224,007,884	$180,051,281	$43,956,603	$2,240,079
SUB TOTAL	**$288,350,287**	**$232,368,315**	**$55,981,972**	**$2,883,503**
Fences	$1,736,447	$1,186,768	$549,679	$61,270
TOTAL	**$290,086,733**	**$233,555,082**	**$56,531,651**	**$2,944,772**

5.1.2 Asset Age

The Age profile for the drainage infrastructure has been derived from As-constructed drawings. Due to a lack of historical records prior to 1950 the City's former Roads Service Unit has assumed the age of some assets however still provides a confidence rate of 85% of the records accuracy. It is evident in Graph 5.1.2A that a majority of drainage construction was undertaken in the past 20 years; 52% overall of the network.

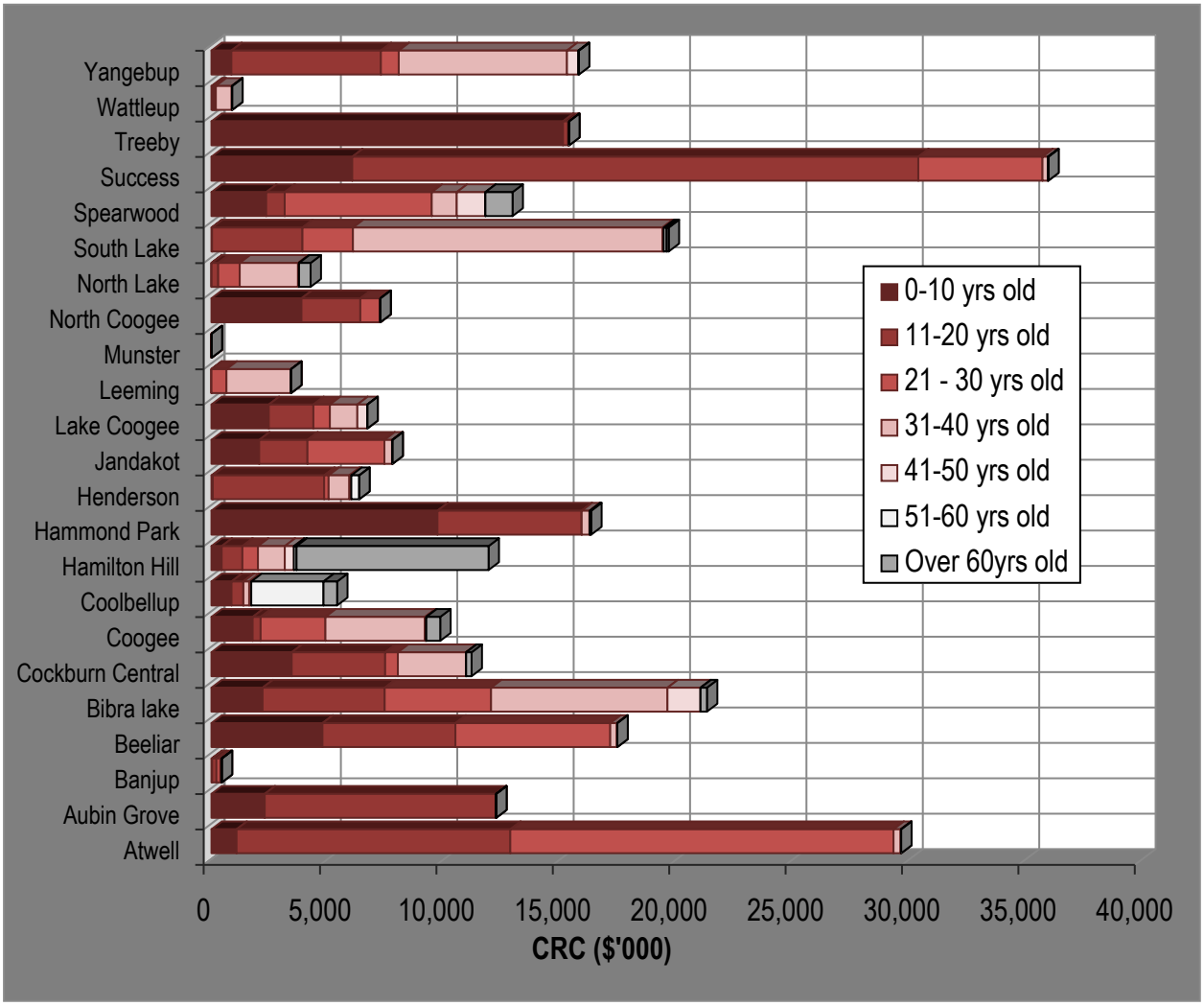
Graph 5.1.2A Age Profile for Drainage Type



Graph 5.1.2B Age Profile of Fences

The age profile per suburb using the CRC values has been provided in Graph 5.1.2C.

Graph 5.1.2C Age Profile and CRC per Suburb



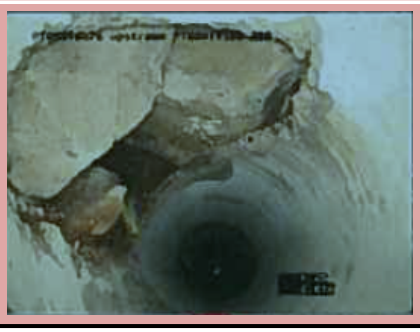
The Useful Life used for this plan has been based on the City of Cockburn's depreciation policy as represented in Table 5.1.2. The useful life of assets is to be reassessed in the future using deterioration modelling to better predict the useful life of the drainage assets.

Table 5.1.2 Drainage Infrastructure Useful Life

Asset Classification	Useful Life
Pits & Pipes	100 years
Fences – Timber,	25 years
Colorbond, Chain	30 years
Brick, Fibre, Cement, Metal, Stone	75 years

5.1.3 Asset Condition

The Condition profile of the City of Cockburn's infrastructure assets is measured using a 1 to 5 rating system outlined below.

Rating	Condition description		
1	Excellent		A new asset or an asset in overall excellent condition with full service life ahead. Should not present problems for 10 to 20 years.
2	Good		An asset in overall good condition with no obvious faults. Bulk of service life ahead. Low priority for inspection and condition grading.
3	Moderate		Common rating for most stormwater drainage assets. Some defects at specific sites but generally serviceable. Deserves cyclic inspection as can rapidly progress to critical stage. Failure not likely under 10 years.
4	Poor		Final stage before life expired Serviceability becoming a key issue Structural failure expected within 5 to 10 years.
5	Very poor		Very poor to actually failed. May still fulfil level of service requirements despite being in a hazardous state. Serviceability now a major hazard. Major remediation work looming.

Drainage assets in the asset register have an assumed condition rating based on the construction date and useful life as detailed in Table 5.1.3A below. Some fences have been audited and condition assessed in August 2019 providing a true condition of these assets.

Table 5.1.3A Assumed Age / Condition of Assets

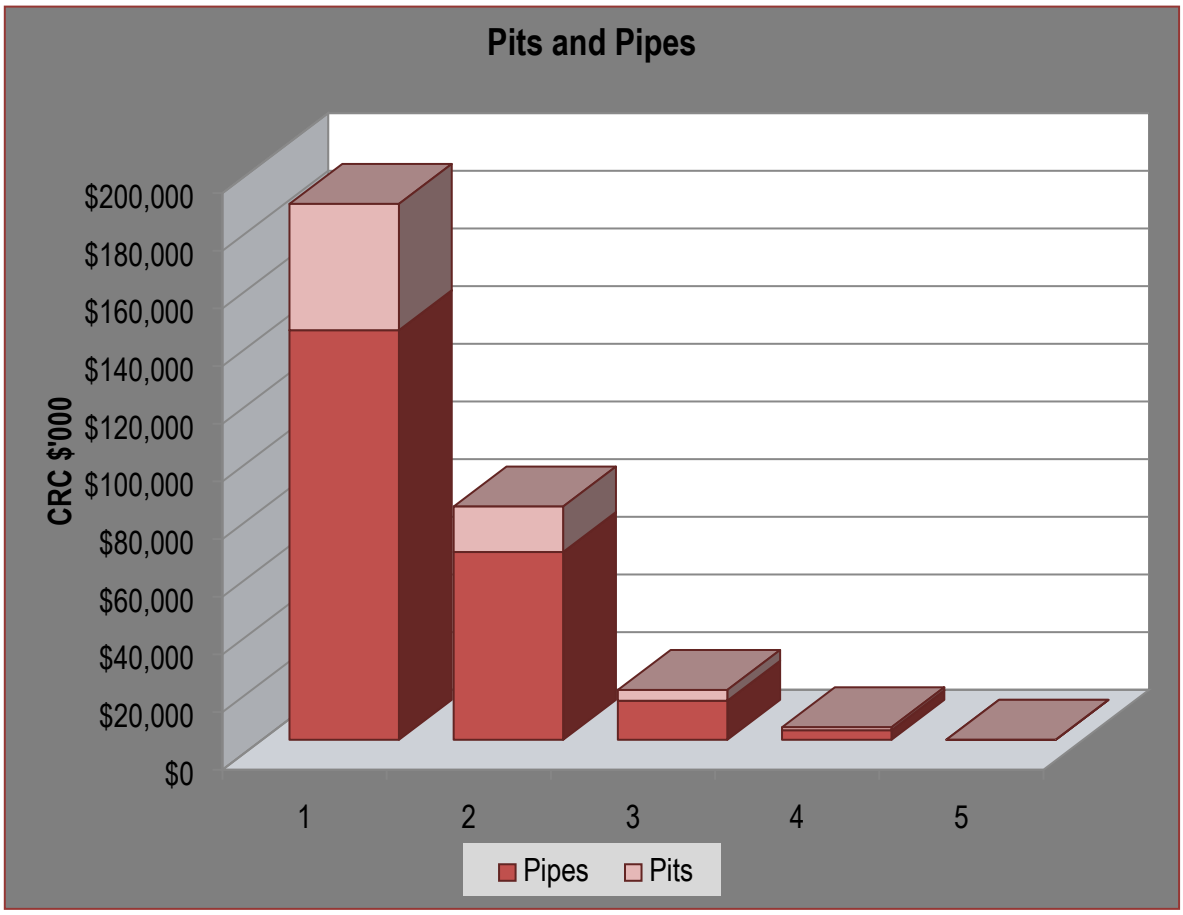
Useful life	100 years
Condition	Assumed Age between
1	1 to 20
2	21 to 40
3	41 to 60
4	61 to 80
5	81 to 100

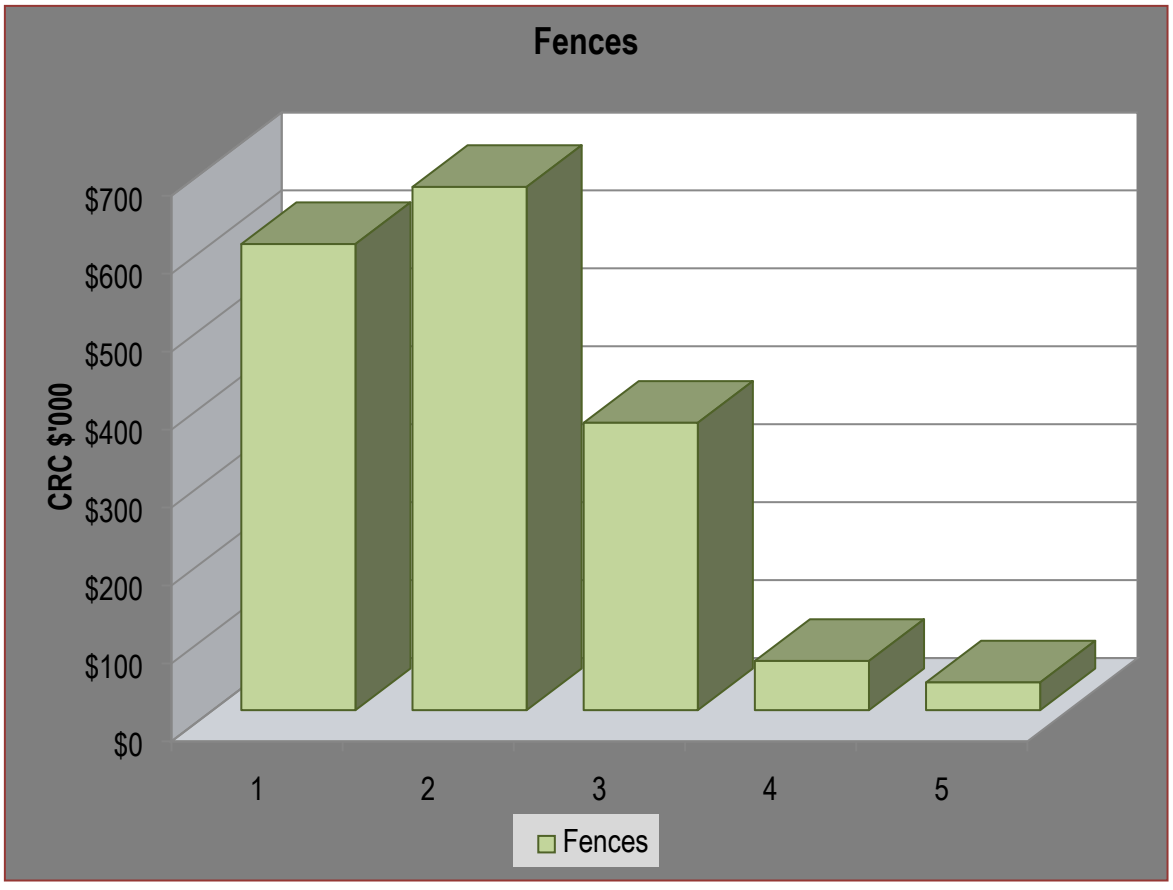
The condition profile for each asset category are shown below in Graph 5.1.3

- Fences around the sumps provide 94% in excellent to moderate condition (1 to 3) and only fencing in very poor condition totalling $35,552.

- The 100-year useful life of the drainage pipes and pits highlights the drainage infrastructure is very young with 93% still in condition 1 and 2.

Graph 5.1.3 Condition Profile for Pipes and Pits & Fences





5.2 Routine Maintenance Plan

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again.

5.2.1 Maintenance plan

Maintenance includes reactive and planned maintenance work activities. Maintenance and Operating expenditure trends are shown in Table 5.2.

Table 5.2 Maintenance Expenditure Trends

Year	Maintenance Expenditure			Operating Expenditure	Total Operating & Maintenance	Annual Budget
	Reactive	Reactive %	Planned			
2010-11	$73,430	16%	$376,796	$27,299	**$477,525**	**$500,000**
2011-12	$241,757	34%	$464,170	$52,470	**$772,384**	**$523,860**
2012-13	$187,115	34%	$363,808	$15,117	**$566,040**	**$626,888**
2013-14	$254,669	32%	$531,142	$57,158	**$842,969**	**$651,155**
2014-15	$304,850	36%	$553,520	$69,781	**$928,151**	**$647,932**
2015-16	$231,675	30%	$533,621	$82,233	**$847,529**	**$860,617**
2016-17	$358,906	42%	$503,162	$80,812	**$942,880**	**$1,029,912**
2018-19	$479,113	41%	$675,911	$85,505	**$1,240,529**	**$1,226,228**
2019-20	$393,497	35%	$708,869	$6,846	**$1,109,032**	**$980,389**

Planned maintenance work is 65% of the total maintenance expenditure. Most of this expenditure is a maintenance process known as educting; which removes sand, debris, and water from pipe systems, which stops the material from progressing further and creating a problem downstream. The City has developed a program which represents the educting of 50% of the pits, approximately 9,000 per year.

With the development of the Drainage Management Strategy the City has identified the following actions to ensure the adequate service levels are met:

- Cleaning – gullies, junction pits, sumps and swales yearly
- Cleaning – bubble ups every 3 years
- Pipe jetting and flushing – 5% of pipes
- CCTV investigation – 50% of pipes jetted
- Investigating reactive work

5.2.2 Summary of future maintenance expenditures

Future maintenance and operating expenditure are forecast to grow in line with the value of the asset stock. With the City's continued asset growth, maintenance and

operating expenditure needs to be budgeted to ensure new drainage is maintained to the service levels identified in section 3. This is further discussed in Section 6.2 of the Financial Analysis.

5.2.3 Standards and specifications

Maintenance, renewals and upgrade work are carried out in accordance with the Standards and Specifications listed in Appendix B.

5.3 Renewal/Replacement Plan

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.

The projected 10 Year Renewals program is detailed in Appendix C. Renewals are incorporated into the City's capital works program. This is further explored in Section 6.2.

5.3.1 Renewal plan

The drainage pits and pipes useful life of 100 years expects renewals after the year 2050, however based on their reactive nature renewals are expected prior to 2050. A level of expenditure will be required to address localised issues.

Further investigation and auditing of the drainage pits and pipes over the coming years will assist in the prioritisation of the renewal expenditure program; this has been recognised and noted in the Improvement Strategy.

Assets identified for the renewal plan have been aligned to the DCS report, as discussed in section 3 and are a proportion of the recommended upgrades based on capacity deficiency. Appendix C details the Preliminary 10-year Renewal Program.

5.4 New and Upgrade Plan

New works are those works that create 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. These assets from growth are forecasted at 9.2 kilometres of pipe and 577 pits, an estimated $5.9 million per year.

The City's network strategy aims to identify when stormwater capacity needs to be increased and these deficiencies in service performance as mentioned in section 3.5 will be investigated and need to be addressed accordingly. A more detailed report on the drainage catchment systems can be reviewed in the DCS report.

Planned upgrade/new asset expenditure for drainage is summarised in Graph 4.4 and detailed in Appendix D in the Preliminary 10 year New/Upgrade program.

5.5 Disposal Plan

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

There are no drainage assets identified for decommissioning or disposal at this time, as the infrastructure matures and the asset base ages along with increased consumption, asset disposals will be updated.

6. Financial Analysis

The Financial Analysis section of this report provides the recommended financial forecasts for the next 10 years. This section brings together the various types of expenditure described throughout the previous sections of the AMP and provides recommended budgets for Council to achieve the appropriate level of service through Municipal funding.

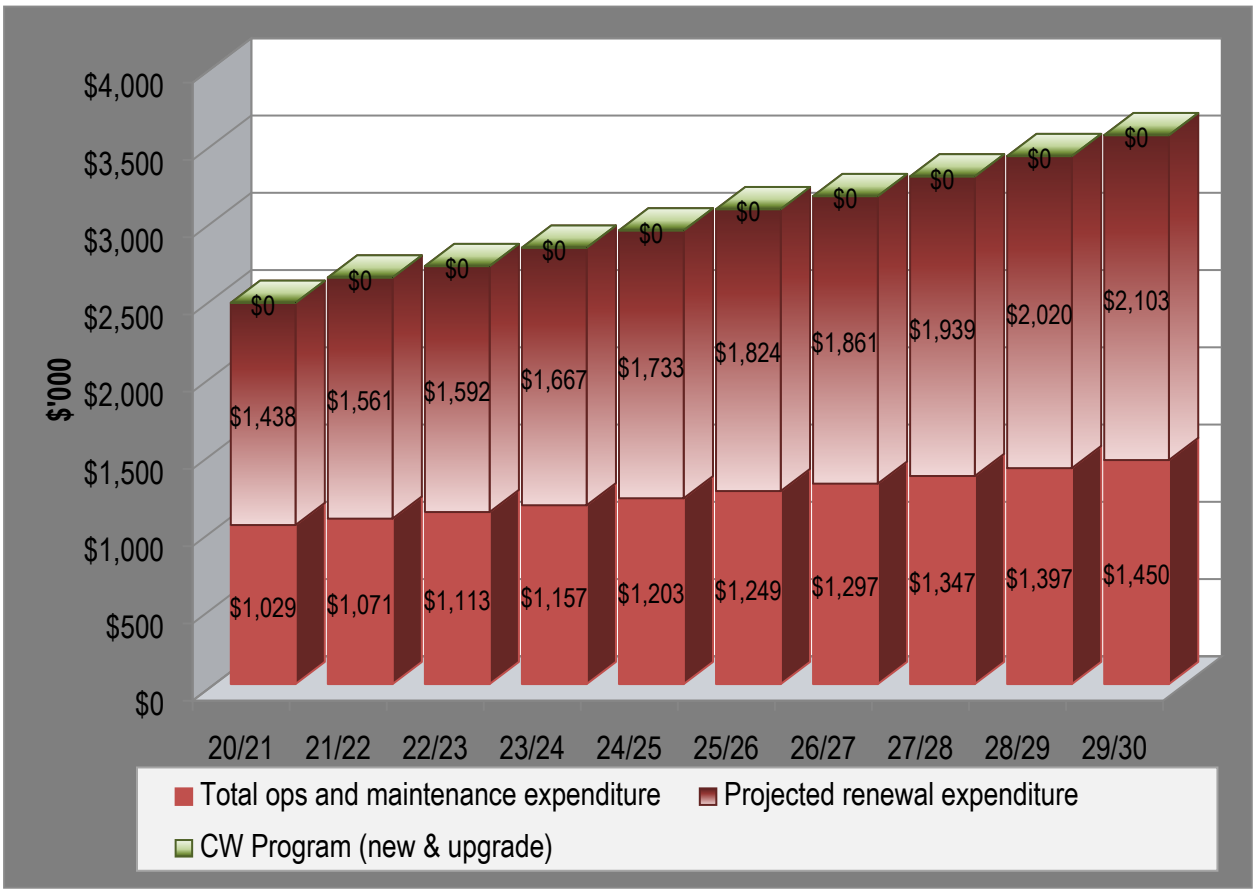
6.1 Financial Statements and Projections

From the financial asset register, the value of assets as covered by this asset management plan are summarised in Table 6.1.1 Current Replacement Cost and Depreciation. The current replacement cost, fair value (also known as written down value or depreciated replacement cost), depreciation and the annual depreciation values are shown. As mentioned in 5.1.1 figures are from the 2019-20 revaluation.

Table 6.1.1 Current Replacement Cost and Depreciation

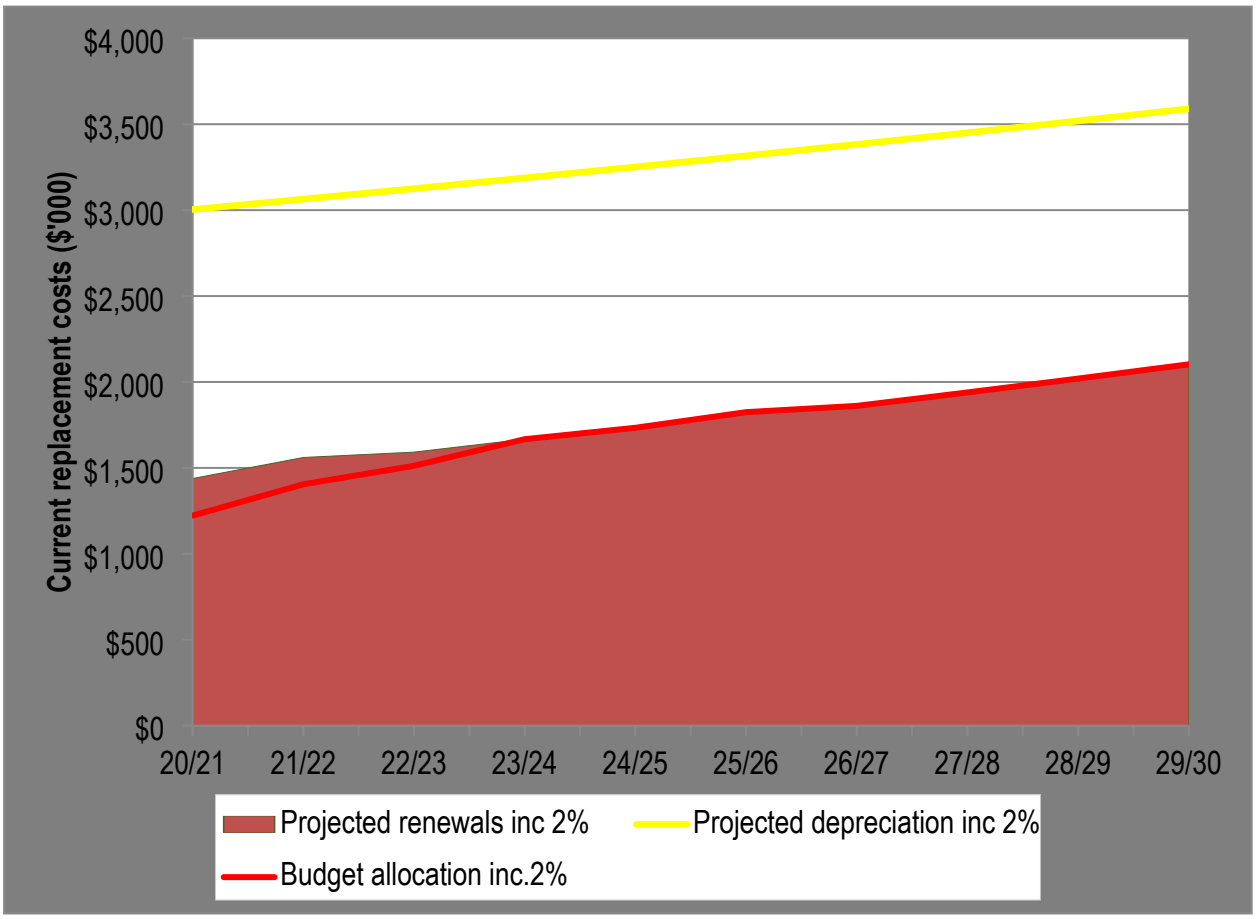
Asset	Current Replacement Cost (CRC)	Fair Value (WDV)	Depreciation	Annual Depreciation
Pits	$64,342,402	$52,317,033	$12,025,369	$643,424
Pipes	$224,007,884	$180,051,281	$43,956,603	$2,240,079
SUB TOTAL	**$288,350,287**	**$232,368,315**	**$55,981,972**	**$2,883,503**
Fences	$1,736,447	$1,186,768	$549,679	$61,270
TOTAL	**$290,086,733**	**$233,555,082**	**$56,531,651**	**$2,944,772**

Graph 6.1.1 Forecast Operating and Capital Expenditure



The financial projections are shown in Graph 6.1.1 for forecasted operating (operations and maintenance) and capital expenditure (renewal and upgrade/ new assets). The costs shown are in 2020 dollar replacement values and also include the 2% CPI increase. There is no Capital Works program as the drainage Management Strategy had not been created and the Cardno Catchment Survey is renewals and upgrades to existing infrastructure.

Graph 6.1.2 Projected Renewals and Annual Depreciation



In Graph 6.1.2 the projected renewal figures are in-line with the drainage management strategy prepared by road services team and incorporates the results from Drainage Catchment Study prepared by Cardno. The renewals include drainage pipe and sump works in Appendix C. The projected depreciation expense considers all new assets. These costs are shown in 2020 dollar values and also include 2% CPI increase per year forward.

Figures detailed in the LTFP Budget column were derived from the funding strategies within the LTFP and were manually distributed over the 10 year program.
Please Note: All Figures within table 6.1.2 are subject to change as the City's AMP's are revised and each annual budget process is completed and includes 2% CPI.

Table 6.1.2 Projected renewals and budget allocation gap

Year	Projected Renewals	Proposed Budget Allocation from LTFP	Funding gap	Cumulative gap
2020-21	$1,438,200	$1,222,470	$215,730	$215,730
2021-22	$1,560,600	$1,404,540	$156,060	$371,790
2022-23	$1,591,812	$1,512,221	$79,591	$451,381
2023-24	$1,666,946	$1,666,946	$0	$451,381
2024-25	$1,733,407	$1,733,407	$0	$451,381
2025-26	$1,824,383	$1,824,383	$0	$451,381
2026-27	$1,860,871	$1,860,871	$0	$451,381
2027-28	$1,939,096	$1,939,096	$0	$451,381
2028-29	$2,019,706	$2,019,706	$0	$451,381
2029-30	$2,102,765	$2,102,765	$0	$451,381
Total	**$17,737,786**	**$17,286,405**	**$451,381**	

The 10-year cumulative funding gap for drainage infrastructure is a deficit of $451,381.

6.2 Funding Strategy

Projected expenditure identified in Section 6.1 is to be funded from the City's capital budgets. The funding strategy is detailed in the City's Long Term Financial Plan.

In order to provide effective management of the drainage infrastructure asset base it is imperative that LTFP funding strategies are adequate and timely to support asset renewal projections and new projects outlined within the DAMP.

6.3 Sustainability of Service Delivery

There are three key performance indicators for financial sustainability as recommended in the Department of Local Government (LG) Asset Management National Framework and Guidelines that have been considered in the analysis of the drainage infrastructure financial data.

The aim of the Framework is to enhance the sustainable management of Local Government assets by encouraging 'whole of life' and 'whole of organisation' approaches and the effective identification and management of risks associated with the use of the assets.

6.3.1 Asset Consumption Ratio (ACR)

- This ratio shows the written down current value of the City's depreciable assets relative to their 'as new' value in up to date prices.
- These values are calculated by dividing the fair value by the current replacement cost. These figures are shown below.

Asset Classification	Consumption Ratio					Standard Achieved
	11/12	12/13	13/14	16/17	19/20	
Pits	82%	79.38%	79.47%	80.56%	81.31%	Standard is Met
Pipes	82%	81.46%	80.09%	80.62%	80.38%	Standard is Met
Fences	73%	75.07%	71.74%	70.37%	68.34%	Standard is Met
TOTAL	**82%**	**80.91%**	**79.92%**	**80.61%**	**80.51%**	Standard is Met

The target ratio should be between 50% and 75%. A ratio of less than 50% indicates a rapid deterioration of the asset base, whilst a ratio greater than 75% may indicate an over investment in the asset base.

Integrated Planning and Reporting Advisory Standard KPI targets are outlined below.

Standard is not met if ratio data cannot be identified or ratio is less than 50%.

Standard is met if ratio data can be identified and ratio is 50% or greater.

Standard is improving if this ratio is between 60% and 75%.

6.3.2 Asset Sustainability Ratio (ASR)

- This ratio indicates whether assets are being replaced or renewed at the same rate that the overall asset stock is wearing out.

- It is calculated by dividing the annual capital expenditure spent on replacements (reserve funding required) by the annual depreciation expense. If capital expenditure on renewing or replacing assets is at least equal to depreciation on average over time, then the value of the existing stock will be maintained. If capital expenditure on existing assets is less than depreciation then underspending on replacement of assets will occur and this is likely to result in additional maintenance costs for assets that have exceeded their useful life that may exceed the cost of renewal or replacement.

- This ratio can only be measured accurately if an assessment is made of the total amount spent on capital renewal and replacement. The City does not presently undertake an accurate breakdown of its upgrade expenditure and the portion of this that would be replacement is not known and has therefore not been considered. A breakdown of upgrade expenditure is part of the improvement strategy.

The target ratio should be between 90% - 110%. The forecast asset sustainability ratios shown below have been calculated on an accumulative basis.

Asset	ACTUAL ASR	Forecast Asset Sustainability Ratio									
	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
ALL Drainage	39%	40%	42%	44%	45%	47%	48%	49%	49%	50%	50%

The ratios for the drainage infrastructure indicate that the annual expenditure is low and that overall the ASR standard is not met this is due to the nature of assets and the lack of requirements for renewals.

Integrated Planning and Reporting Advisory Standard KPI targets are outlined below

Standard is not met if ratio data cannot be identified or ratio is less than 90%.

Standard is met if ratio data can be calculated and ratio is 90% or greater.

Standard is improving if this ratio is between 90% and 110%

This ratio can only be measured accurately if an assessment is made of the amount spent on capital renewal.

6.3.3 Asset Renewal Funding Ratio (ARFR)

- This is an indicator as to the ability of the City to fund the projected asset renewals and replacements in the future and therefore continue to provide existing levels of service, without additional operating income or reductions in operating expenses, or an increase in net financial liabilities above that currently projected.

- The ratio is calculated by dividing the planned capital expenditure (from the Long Term Financial Plan) on renewals over the next 10 years by the required (projected) capital expenditure on renewals over the same period.

- The standard is met if the ratio is between 75% and 95%.

The forecast asset renewal funding ratios shown below have been calculated on an accumulative basis.

Asset	ACTUAL ARFR	Forecast Asset Renewal Funding Ratio									
	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
ALL Drainage	84%	85%	86%	89%	91%	93%	94%	95%	95%	96%	96%

The target ratio should be between 95% and 105% which indicates that adequate provision / expenditure is being made for the future renewal and replacement of assets. Overall, the standard is improving.

Integrated Planning and Reporting Advisory Standard KPI targets are outlined below

Standard is not met if ratio data cannot be identified or ratio is less than 75%

Standard is met if the ratio is between 75% and 95%.

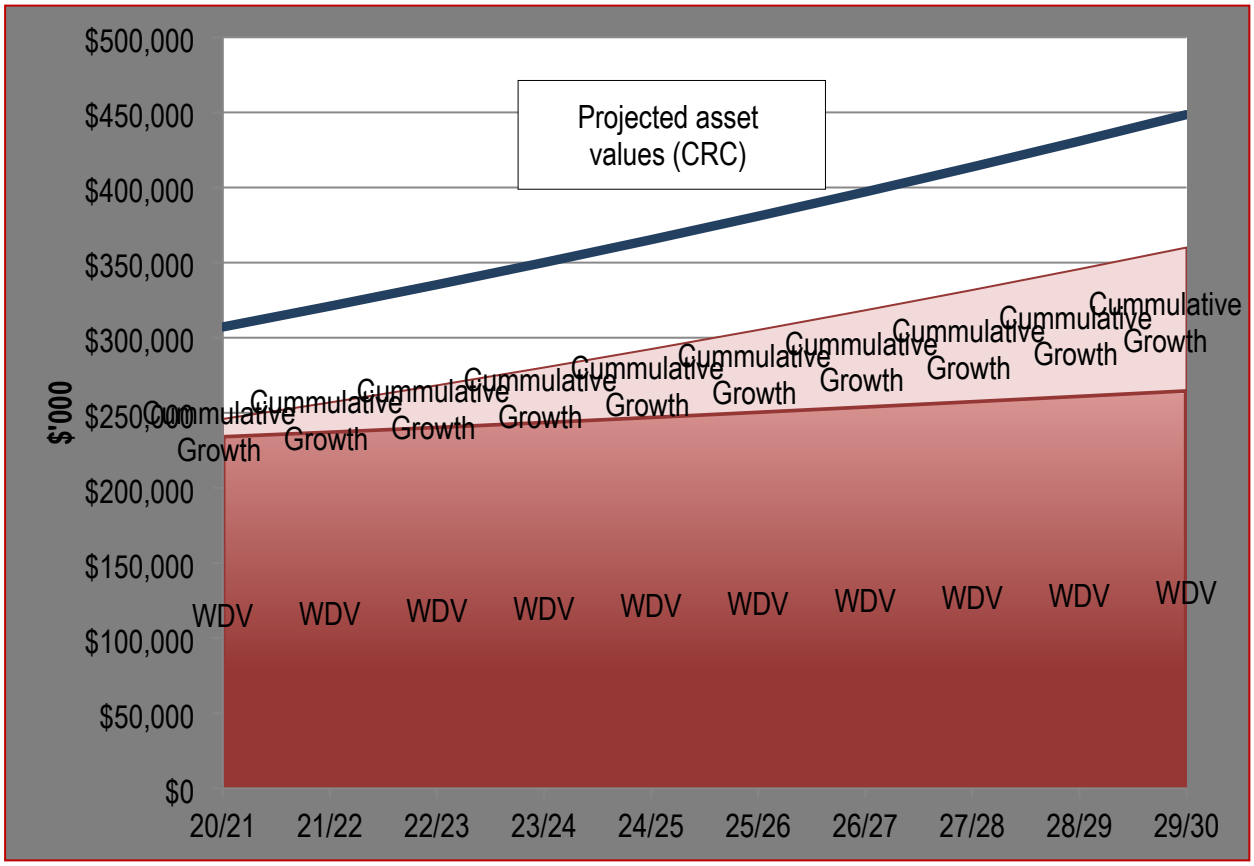
Standard is improving if this ratio is between 95% and 105% and the ASR falls within the range 90% to 110% and ACR falls within the range of 50% to 75%.

6.4 Valuation Forecasts

Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers then donated to Council.

Graph 6.4.1 below shows the projected current replacement cost/ asset values over the next 10 years and the fair value also known as the depreciated replacement cost (WDV) is the current replacement cost less accumulated depreciation. These figures include the projected growth and capital upgrade / new as mentioned in section 6.1.

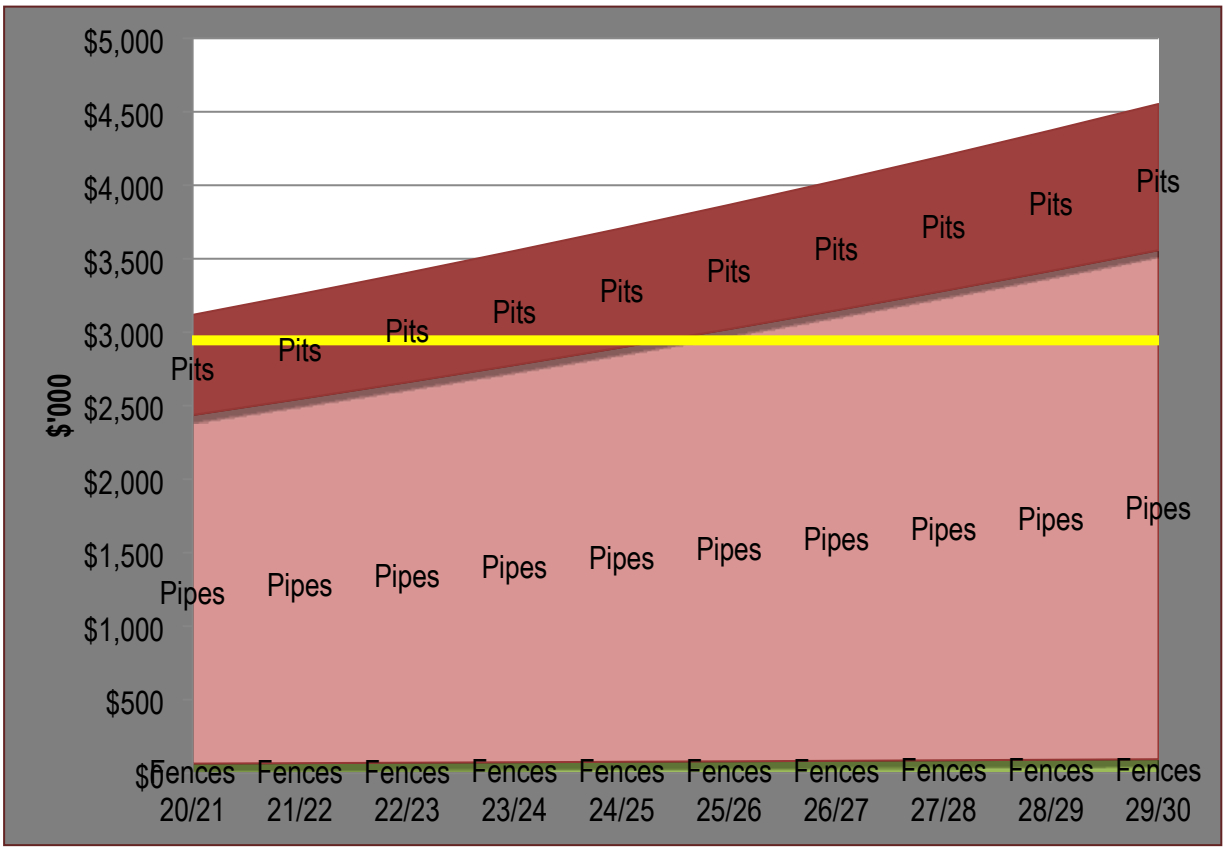
Graph 6.4.1 Projected Asset Values (CRC) and Fair Value (WDV)



The fair value will vary over the forecast period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets.

Depreciation expense values are forecast to trend in line with asset values as shown in the Graph 6.4.2. The yellow highlighted line provides the current depreciation expense. Note that all costs are shown in current 2020 dollar values and a 2% CPI increase per year forward.

Graph 6.4.2 Projected Depreciation Expense



6.5 Key Assumptions made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this asset management plan and in preparing forecasts of required operating and capital expenditure and asset values, depreciation expense and carrying amount estimates. 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 asset management plan are:

- The data supplied was as accurate as possible at the time of compilation of this asset management plan.
- The breakdown of the actual reactive, planned and operational expenditure is considered accurate.

7. Asset Management Practices

7.1 Accounting/Financial Systems

7.1.1 Summary of Accounting & Financial Systems

Technology One Financials version 11.09.19.011

7.1.2 Accountabilities and Responsibilities for Financial System

Financial Services - for the accounts and costing methodologies

7.1.3 Accounting Standards / Regulations / Guidelines

- Australian Accounting Standards including:
  - AASB116 - Property, Plant and Equipment
  - AASB13 Fair Value Measurement
  - AASB136 - Impairment of Assets
  - AASB 140 Investment Property
  - AASB 5 Non-current Assets Held for Sale and Discontinued Operations
- Local Government Act 1995
- Local Government (Financial Management) Regulations 1996
- Local Government (Functions & General) Regulations 1996

7.2 Asset Management Information Systems (EAM)

7.2.1 Summary of Asset Management System

Technology One Enterprise Asset Management version 11.09.19.011

Technology One Intramaps 8.1

7.2.2 Summary of how the Enterprise Asset Management System aligns to the Accounting / Financial system

The operational asset register within the Enterprise Asset Management system acts as the master for determining renewal projections, future refurbishment and Asset Valuations and reporting. The financial registers values are updated yearly from the operational asset register as part of Assets Services revaluation procedures.

7.2.3 Accountabilities and Responsibilities for AM System (s)

Project & Asset Services is accountable and responsible for the EAM system, with other service areas assisting with the currency and maintenance of the data sets within the system databases.

7.2.4 Changes to the Asset Management Systems resulting from the AMP

All proposed/agreed system changes will be documented in Section 8 Plan Improvement and Monitoring.

7.3 Information Flow Requirements and Processes

The key information flows *into* this asset management plan are:

- The asset register data on size, age, value, remaining life of the network;
- The unit rates for categories of work/material;
- The adopted service levels;
- Projections of various factors affecting future demand for services;
- Correlations between maintenance and renewal, including decay models;
- Data on new assets acquired by council.

The key information flows *from* this asset management plan are:

- The assumed Works Program and trends;
- The resulting budget, valuation and depreciation projections;
- The useful life analysis.

These will impact the Long Term Financial Plan, Strategic Community Plan, annual budget and departmental business plans and budgets.

7.4 Standards and Guidelines

Asset Management Policy Statement (SC 39) 2017

8. Plan Improvement and Monitoring

8.1 Performance Measures

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required cash flows identified in this asset management plan are incorporated into Council's Long Term Financial Plan and Strategic Management Plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and organisational structures consider the 'global' works program trends provided by the asset management plan, and
- The degree to which existing and projected service levels and consequences, risks and residual risks are incorporated into Council's plans.

8.2 Improvement Strategy

The improvements completed since the last DAMP are detailed in table 8.2.1

Table 8.2.1 Improvements completed

Section	Project	Responsibility	Task	Status
5.3	Investigate improvements of recording donated assets versus the Council funded assets	Project & Asset Services	• To be reviewed as part of the 'as-constructed' drawing process (external and internal)	Completed
5.3	Investigate recording of Capital Works expenditure	Project & Asset Services, Finance Services	• Alter CW program templates to identify upgrade, renewals and new • Improve reporting from Technology One to reflect reactive versus planned expenditure	Completed
6.1, 6.5	Improve asset revaluation process	Project & Asset Services, Road Services & Finance Services	• Continue to develop plan to better reflect acquisitions, renewals, upgrades and disposals • Ensure the financial and operational asset registers replicate the same data	Completed
6.2	Review Funding Strategy	Finance Services, Project & Asset Services	• Report increase from 20% to 80% depreciation for renewal	Addressed in LTFP 2012-13-2021-22

			of assets	
6.3	Dept of LG Sustainability Ratios	Finance Services, Project & Asset Services	• Improve financial reporting on renewal and upgrade expenditure	Completed

The asset management improvement plan generated from this asset management plan is shown in table 8.2.2.

Table 8.2.2 Improvement Strategy 2020 to 2024

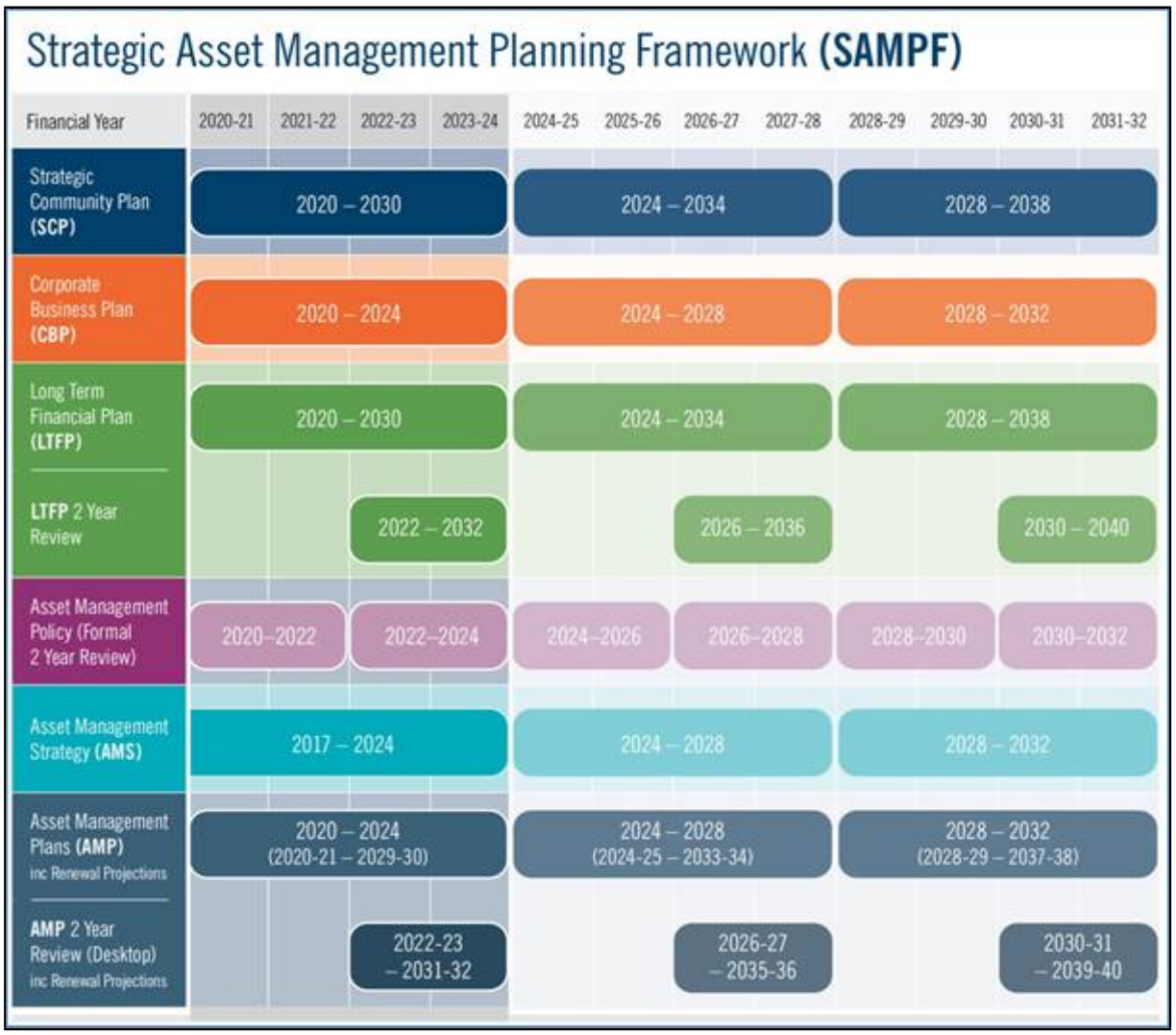
Section	Project	Responsibility	Task	Timeline
3.2	Monitoring performance measures against levels of service targets	Project & Asset Services, Business Systems	• Investigate customer request configuration & reporting • Link budget allocation to levels of service • Service Level Analysis Workshops to review service delivery	2021-22
5.2, 5.3	Condition & performance assessment of drainage assets (catchments, sumps)	Project & Asset Services & Road Services	• External contractor to audit • Link to performance deficiency • Consider remaining life	2022-23
5.2	Maintenance Expenditure Trends	Project & Asset Services, Finance Services	• Improve allocation of budget to better represent maintenance types	2022-23
5.1	Digitising the missing sumps	Project & Asset Services	• Using Aerial maps and DCS document	2021-22
5.1	Documenting 3D as construction drawings for sump earthworks	Road Services	• Ensure drainage sumps are installed according to design and ensure subdivisional Ascon drawings are handed over to the City	2021-22
5.1	Digitising the missing drainage catchments	Project & Asset Services & Road Services	• Analysing the existing drainage catchment layer in GIS and adding/ updating the drainage	2022-23

8.3 Monitoring and Review Procedures

The DAMP forms part of the City's Strategic Asset Management Planning Framework (SAMPF), covers four financial years (2020-21 – 2023-24) and acts as an informing strategy to the City's Corporate Planning Framework.

Future iterations of the DAMP will be developed every 4 year and be subject to a 2-year desktop review. The DAMP review will focus on core elements required by the LTFP, for example asset valuations, growth projections, financial analysis including operating, sustainability ratios and 10-year renewals. This will ensure that future revisions of the LTFP will be derived from a structured AMP development cycle which has received Executive and or Council approval, increasing confidence and integration of asset management data and methodologies into the City's long term financial planning.

The following diagram provides a visual representation and timeline of the Strategic Asset Planning Frameworks plans and strategies.



The formalisation and alignment of the City's SAMPF (Asset Management Policy, Strategy and AMP's) within the Integrated Corporate Planning Framework reflects the City's increasing maturity and recognises the importance of Asset Management in supporting the City in delivering long term financial sustainability of services and capital asset renewal.

Supported by the relevant business area and the Asset Management Sections of the Project & Asset Service Unit, the Project & Asset Manager has overall responsibility and management for each of the Improvement Strategies identified within section 8 of the DAMP.

References

City of Cockburn – Asset Management Strategy 2017 – 2024

City of Cockburn – Strategic Community Plan 2020 – 2030

City of Cockburn – Long Term Financial Plan 2020-2021 to 2029-2030

City of Cockburn – Management Budget 2020 - 2021

City of Cockburn – Enterprise Risk Management

City of Cockburn – Drainage Management Strategy 2018 – 2028

City of Cockburn – Drainage Catchments Study by Cardno – 2017

City of Cockburn - Population forecast - https://forecast.id.com.au/cockburn/population-age-structure

IPWEA, 2011, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney, www.ipwea.org.au

Government of Western Australia, Department of The Premier and Cabinet - Western Australian Legislation - Acts in force

The Local Government and Municipal Knowledge Base - LGAM Knowledge Base

Main Roads Western Australia - Welcome - Main Roads Western Australia

DVC, 2006, 'Asset Investment Guidelines', 'Glossary', Department for Victorian Communities, Local Government Victoria, Melbourne, http://www.dvc.vic.gov.au/web20/dvclgv.nsf/allDocs/RWP1C79EC4A7225CD2FCA257170003259F6?OpenDocument

Local Government of Western Australia – Asset Management Framework and Guidelines

Appendices

Appendix A Legislative Requirements

Legislation	Requirement
Local Government Act 1995	Provides for a system of Local Government by describing the functions of and providing a framework for the administration and financial management of Local Governments.
Main Roads Act 1930	Consolidates and amends the law relating to and making provision for the construction, maintenance and supervision of highways, main and secondary roads, and other roads and the control of access to roads.
Main Roads WA – Code of Practice for traffic management for works on roads (April 2011)	To promote safe and consistent traffic management practice at work sites on roads in accordance with state legislation and national standards. Requires general compliance with the Australian Standard 1742.3-2009 and associated field guides, provides details of additional requirements necessary to meet WA requirements. Also outlines the competency requirements for personnel responsible for managing traffic on work sites.
Planning and Development Act 2005	Provides for a system land use planning and development in the State and for related purposes.
Transport Co-ordination Act 1966	Provides for the co-ordination, planning and advancement of all forms of transport in WA, to provide for the review, control and licensing of transport services and for incidental and other purposes.
Environmental Protection Act 1986	Provides for an Environmental Protection Authority, for the protection, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected to the foregoing.
Environment Protection and Biodiversity Conservation Act 1999	Provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, defined in the Act as matters of national environmental significance.
Contaminated Sites Act 2003	Provides for the identification, recording, management and remediation of contaminated sites, to consequentially amend certain other Acts and for related purposes.
Conservation and Land Management Act 1984	Makes better provision for the use, protection and management of certain public lands and waters and the flora and fauna thereof, establishes authorities to be responsible therefore, and for incidental or connected purposes.
Soil and Land Conservation Act 1945	Relates to the conservation of soil and land resources, and to the mitigation of the effects of erosion, salinity and flooding.
Rail Safety Act 2010	Requires Local Governments to develop an Interface Agreement with the rail manager/operator for every rail/road crossing in their area of responsibility by 1 February 2014

Legislation	Requirement
Fire and Emergency Services Authority of WA Act 1998	Establishes an Authority with functions relating to the provision and management of emergency services, and for related purposes.
Aboriginal Heritage Act 1972	Provision for the preservation on behalf of the community of places and objects customarily used by or traditional to the original inhabitants of Australia or their descendants
Native Title Act 1993 and amendments 1998	Provides for the recognition and protection of native title and to establish ways in which future dealings affecting native title may proceed.
Occupational Safety and Health Act 1984 (WA)	Provides for the promotion, coordination, administration and enforcement of Safety and Health in WA. Places emphasis on the prevention of accidents and injury
Disability Services Act 1993	An Act for the establishment of the Disability Services Commission and the Ministerial Advisory Council on Disability, for the furtherance of principles applicable to people with disabilities, for the funding and provision of services to such people that meet certain objectives, for the resolution of complaints by such people, and for related purposes.
Code of Practice Working Hours 2006	Provides guidance for employers and workers on the management of Safety and Health hazards and risks commonly associated with working hour arrangements.
Australian Standards	Standards are published documents setting out specifications and procedures designed to ensure products, services and systems are safe, reliable and consistently perform the way they were intended to. They establish a common language which defines quality and safety criteria.
Western Australian Planning Commission Act 1985	An Act to establish a body with responsibility for urban, rural and regional land use planning and land development and related matters in the State, and for connected purposes.
Local Government Guidelines for Subdivisional Development, 2011	To provide greater clarity and certainty of subdivisional engineering requirements, the Department of Planning has partnered with the Institute of Public Works Engineering Australia (WA Division) (IPWEA) to produce Edition No. 2.1 of the Local Government Guidelines for Subdivisional Development, 2011. These 2011 Guidelines are intended to underlie, and support subdivision conditions applied by the Western Australian Planning Commission pursuant to the Planning and Development Act 2005. The Guidelines encompass current legislation and best practice minimum engineering standards.

Appendix B Standards and Specifications

- Australian Rainfall & Runoff (ARR) published by the Institution of Engineers, Australia
- Stormwater Management Manual for Western Australia
- AS/NZS 3500.3.2003 Plumbing and Drainage Part 3: Stormwater Drainage
- City of Cockburn GUIDELINES AND STANDARDS for the Design, Construction and Handover of Subdivisions within the Municipality
- City of Cockburn road construction and maintenance service specification
- City of Cockburn road construction and maintenance service standards
- Road Services: Standards, procedures and checklists manual
- Road Services: Best practice manual for road asset management
- Road Services Unit: Code of Practice - Local road asset and risk management system
- Public Utilities Code of Practice 2011
- Restoration and Reinstatement Specification for Local Government 2011
- City of Cockburn - Excavation Reinstatement Standards 2003”
- AS 1742.3 – Australian Standard Manual of uniform traffic control devices
- Austroads Guide to Traffic Engineering Practice Parts 1 & 15
- Austroads Guide to Road Design
- Main Roads WA – Standard Drawings and Documentation

Appendix C Preliminary 10 Year Upgrade/Renewal

Suburb	Location	Action	Cost ($)	Year
Spearwood	14B Scales Wy, Spearwood	Construction	129,350	20/21
Hamilton Hill	157 Clontarf Rd and 52 Tolley Ct	Construction	403,000	20/21
South Lake	North Lake Road Drainage Basins	Study/Construct	350,000	20/21
Western Suburbs Sporting Precinct Study	Dalmatinac and Lucius Reserve, Beale Park, Watsons and Edwardes Reserve, Santich Park	Study	300,000	20/21
Various	Minor Drainage Improvements	Study	227,650	20/21
		Total 20/21	**1,410,000**	
		Total 20/21 inc 2% CPI	**1,438,000**	
Hammond Park	Russell Road	Construction	111,150	21/22
Hamilton Hill	19B Jean St, Hamilton Hill	Construction	293,800	21/22
Coolbellup	18 Hartley Street, Coolbellup	Construction	273,000	21/22
Banjup	868 Armadale Road	Construction	65,000	21/22
Bibra Lake	Cascara Cnr	Construction	172,250	21/22
Hamilton Hill	Grand Pre Crescent	Study/Construct	175,000	21/22
Success	Success Open Drains	Study	75,000	21/22
Cockburn Central	Cockburn Central Open Drains	Study	80,000	21/22
Various	Minor Drainage Improvements	Study/Construct	254,800	21/22
		Total 21/22	**1,500,000**	
		Total 21/22 inc 2% CPI	**1,560,600**	
Coolbellup	Cordelia Ave	Construction	195,000	22/23
Spearwood	273 Spearwood Ave	Construction	426,400	22/23
Yangebup	111 Plover Dr	Construction	323,700	22/23
Various	Minor Drainage Improvements	Study/Construct	319,900	22/23
Wattleup	Power Avenue	Study	100,000	22/23
Atwell	Atwell Open Drains	Study	85,000	22/23
Spearwood	Fitzwater Way	Study	50,000	22/23
		Total 22/23	**1,500,000**	
		Total 22/23 inc 2% CPI	**1,591,812**	
Spearwood	15 Scroop Wy	Study/Construct	162,500	23/24
Coolbellup	Rinaldo Pl	Study/Construct	338,000	23/24
Beelair	L'Aquila Cr	Re development	221,000	23/24
Coogee	22 Maritime Tce	Re development	221,000	23/24
Various	Minor Drainage Improvements	Study/Construct	557,500	23/24
		Total 23/24	**1,500,000**	
		Total 23/24 inc 2% CPI	**1,623,648**	
Hamilton Hill	27 Clara Rd	Study/Construct	168,350	24/25
Spearwood	86 Edeline St	Study/Construct	445,900	24/25
Hamilton Hill	Joyce Ave	Re development	221,000	24/25
Various	Minor Drainage Improvements	Study/Construct	664,750	24/25
		Total 24/25	**1,500,000**	
		Total 24/25 inc 2% CPI	**1,656,121**	
Coolbellup	Varna Place	Re development	268,000	25/26
North Lake	Allendale Entrance	Re development	252,850	25/26
Various	Minor Drainage Improvements	Study/Construct	979,150	25/26
		Total 25/26	**1,500,000**	
		Total 25/26 inc 2% CPI	**1,689,244**	
Hamilton Hill	Corner of Redmond Rd and Healy Rd	Study/Construct	689,000	26/27
South Lake	Allamanda Dve	Re development	340,600	26/27

Suburb	Location	Action	Cost ($)	Year
Various	Minor Drainage Improvements	Study/Construct	470,400	26/27
		Total 26/27	**1,500,000**	
		Total 26/27 inc 2% CPI	**1,723,029**	
Success	Makjanich Place	Redevelopment	286,650	27/28
Various	Minor Drainage Improvements	Study/Construct	1,213,350	27/28
		Total 27/28	**1,500,000**	
		Total 27/28 inc 2% CPI	**1,757,489**	
Hamilton Hill	391 Carrington St	Study/Construct	689,000	28/29
Hamilton Hill	Rodd Place	Redevelopment	232,050	28/29
Various	Minor Drainage Improvements	Study/Construct	578,950	28/29
		Total 28/29	**1,500,000**	
		Total 28/29 inc 2% CPI	**1,792,639**	
Coogee	101 Mills St	Redevelopment	273,000	29/30
Hamilton Hill	60 Healy Rd	Study/Construct	280,800	29/30
Aubin grove	Princeton Circuit	Re development	244,400	29/30
Various	Minor Drainage Improvements	Study/Construct	701,800	29/30
		Total 29/30	**1,500,000**	
		Total 29/30 inc 2% CPI	**1,828,492**	

The above preliminary new capital works program is prepared using the information from Drainage Management Strategy, Page 26, Table-3 and Drainage Catchment Study, Page 16, Section 5.1.

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