IPSWICH CITY COUNCIL

DRAINAGE & FLOOD MITIGATION NETWORK
ASSET MANAGEMENT PLAN
2020 - 2029

Version 1.0

July 2019

How to use this Plan

- The Drainage and Flood Mitigation Asset Management Plan (DFM AMP) is a tactical document to support the purpose defined above. The AMP is set out in the following format to support easy navigation of its contents such that specific information can be readily identified to suit the readers need.
- Executive summary – This provides an overview suitable for obtaining a high-level understanding of the key issues and outcomes of the AMP. This is intended for senior decision makers and is supported by the detail in the following sections that make up the body of the AMP.
- Introduction – This section is the introduction that defines the plans purpose, its scope and how the AMP aligns with corporate objectives and goals. It 'sets the scene' for the AMP and how it relates to the wider organisational plan framework.
- Levels of Service, Growth and Risk - Focus on the definition of service levels, current risks and demand considerations that have been used in developing this AMP. This is the basis on which the following sections have been developed.
- Life Cycle Management Plan – This is the detailed 'output' of the AMP development process. It provides forecasts over a 10-year horizon, of the works required to maintain the current service levels, mitigate identified risks and cater for service growth and increased demand. Data details for this AMP – Defines the AMP's Data inputs and assumptions. It includes Asset Summary, Prior Year Infrastructure Delivery, Asset Age, Asset Condition Assessment criteria and results summary, Asset profiling, Hierarchy, Useful Life and Data Confidence ratings
- Forecast Expenditure and Performance Ration and Sustainability - Focus on the financial aspects of delivering these service levels including anticipated 'financial sustainability' performance. This section is particularly relevant to inform decision making and guide continual improvement in both the AMP and meeting corporate goals.
- Findings – Provides a summary of the key issues and actions to be considered by Council. It includes a statement on the reliability and confidence of information to also be considered.
- Improvement Plan – Provides an action plan to improve future iterations of the AMP, particularly the improvement of the plan's accuracy and reliance as a decision-making tool.
- Appendices – Information which is required in the AMP as reference is in the appendices. It also includes detailed works programs for new and renewal capital works that align with funding requirements and are to be aligned with short to medium term detailed operational planning.

Document Control

Revision History

Rev No	Date	Revision Details	Author	Reviewer	Approver
1.0	19 July 2019	Final	GHealy BAu-Yeung	Helen Coles	

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Executive Summary

Purpose

The purpose of this Asset Management Plan (AMP) is to consolidate council's understanding of its drainage and flood mitigation (DFM) assets, service levels, risks, and to provide operational and capital expenditure forecasts that will deliver the community outcomes detailed in the Corporate Plan.

The plan will support informed decision making, guide long term financial forecast budget requirements and provide a path to further improve the accuracy and confidence in future iterations of this Plan.

Scope

This Asset Management Plan (AMP) covers the drainage and flood mitigation assets (the Assets) that support the delivery of services to the Ipswich's community. It has been prepared based on the *International Infrastructure Management Manual (IIMM)* the recognised guideline for asset management in Australia.

This AMP uses data available within council including the physical asset register, council's audited financial asset register and recent asset revaluation information. Where possible, the financial forecast has been supplemented by historical condition data.

The Assets

The current asset replacement cost of DFM assets as at 3 July 2019 is ~$844.59m and are apportioned into asset categories as detailed in Table 1.

Table 1 - Drainage Assets Summary

Asset Class	Asset Group	Asset Type	Quantity	Replacement Value ($'000)
Piped Network	Drainage Mains	Drainage Mains	1,201 km	$668,680
Piped Network	Drainage Structures	Manhole / Chamber, Gully Pits, Headwall, Gross Pollutant Trap, Trash rack, Culvert.	43,681 ea	$135,082
Open Drain Network	Open Drains, Inverts and Levee Banks	Open drains, invert, levee banks	881,840 sqm	$29,353
Flood Mitigation	Detention & Bio Detention Basins	Detention Basin, Bio Retention Basin, Spillway, Sediment Pits.	357 ea	$10,268
Flood Mitigation	Flood Monitoring Station	Flood Monitoring Station	36 ea	$1,208
			Total	**$844,591**

Asset Condition

The condition of the DFM assets has been calculated from the asset's age and remaining life. The results are shown in Figure 1 and summarised below:

Percentage of Very Poor assets	0.99%	~$8.15m
Percentage of Poor assets	3.23%	~$26.57m
Total	4.23%	~$34.7m

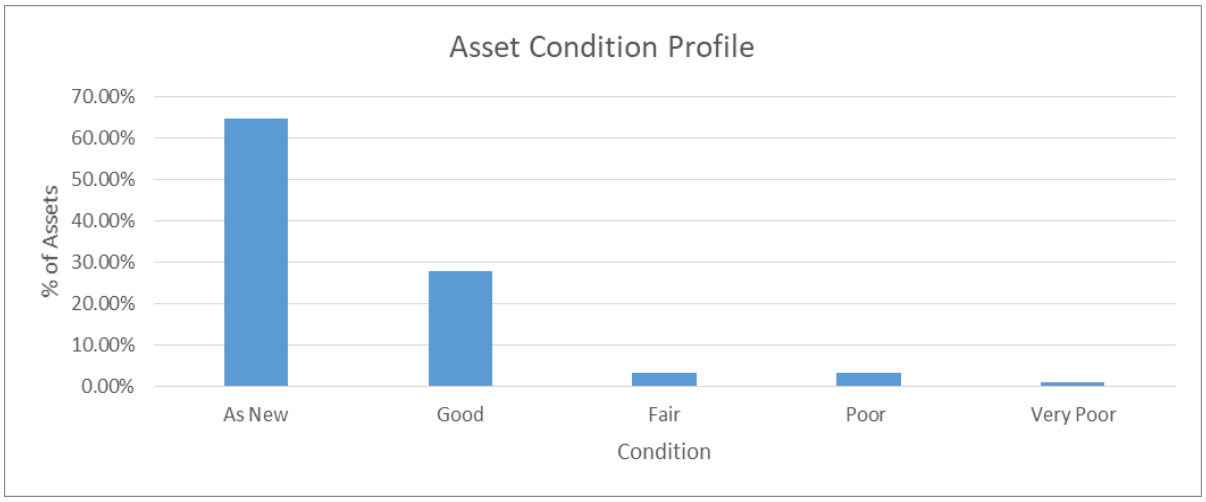


Figure 1 - DFM Assets Condition Profile

The piped network is 95% of the drainage network (by value) and has been identified as the major source of assets in poor and very poor condition based on the age condition profile performed. (Figure 7 - Condition Profile by Drainage and Flood Mitigation Asset Class). These assets will continue to be monitored and included in any programed maintenance or rehabilitation programs.

Are We Meeting Our Adopted Service Levels?

The maintenance and operations expenditure projections in this AMP are based on historical spending to achieve the current adopted service levels, and therefore it may be assumed that similar future funding and if supported with appropriate investment in renewals will continue to provide current service levels. Council have adopted Service Levels, the objectives and performance indicators of clearly outlined in Corporate Goals and Objectives Table 8, Community Levels of Service Table 9, and Technical Levels of Service Table 10. This level of planned investment will continue to improve with the introduction of a new asset management system.

Are We Managing Growth?

The growth generated through developer contributed assets has been included in the operations, maintenance and financial forecasts. The contributed assets estimates are based on council's *Local Government Infrastructure Plan (LGIP)* population forecasts and the long-term financial forecast (LTFF)

The cost for the provision of trunk drainage infrastructure to support development have not been included at this time.

Are We Managing Our Risks?

Council has a 'duty of care' to the community, its customers, in relation to the management of the assets. There are numerous types of risks council is concerned about, including financial, service and safety. The risks were assessed by council based on their likelihood and consequences to generate solutions to mitigate or eliminate them. It is expected that the current maintenance activities will continue to assist in mitigating the service risks to an acceptable level. Additional funding is required to mitigate risks associated with asset management (AM) practices and reliance on this AMP.

The Financials

Based on renewing current assets at the end of their useful lives, meeting current levels of service and to meet the forecast annual demand growth over the next 10 years, the projected asset expenditure requirements are:

- renewals (end of life)
- new and upgrade
- operations and maintenance.

This gives a total required expenditure of ~$103.76m as shown in Table 2.

Table 2 - 10-Year Forecast Expenditure

Financial Year Ending	Risk Treatment ($'000)	New or Upgrade ($'000)	Operations ($'000)	Maintenance ($'000)	Planned Renewals ($'000)	Total ($'000)
2020	$0	$993	$819	$2,593	$5,275	$9,680
2021	$0	$1,705	$869	$2,751	$5,746	$11,070
2022	$0	$1,810	$921	$2,917	$3,640	$9,288
2023	$0	$2,809	$977	$3,094	$4,173	$11,053
2024	$0	$3,052	$1,036	$3,282	$2,180	$9,550
2025	$0	$2,775	$1,099	$3,481	$2,220	$9,576
2026	$0	$2,825	$1,166	$3,694	$2,260	$9,945
2027	$0	$2,900	$1,238	$3,919	$2,320	$10,377
2028	$0	$2,975	$1,313	$4,159	$2,679	$11,127
2029	$0	$3,050	$1,394	$4,414	$3,240	$12,098
Total	**$0**	**$24,894**	**$10,833**	**$34,303**	**$33,733**	**$103,763**

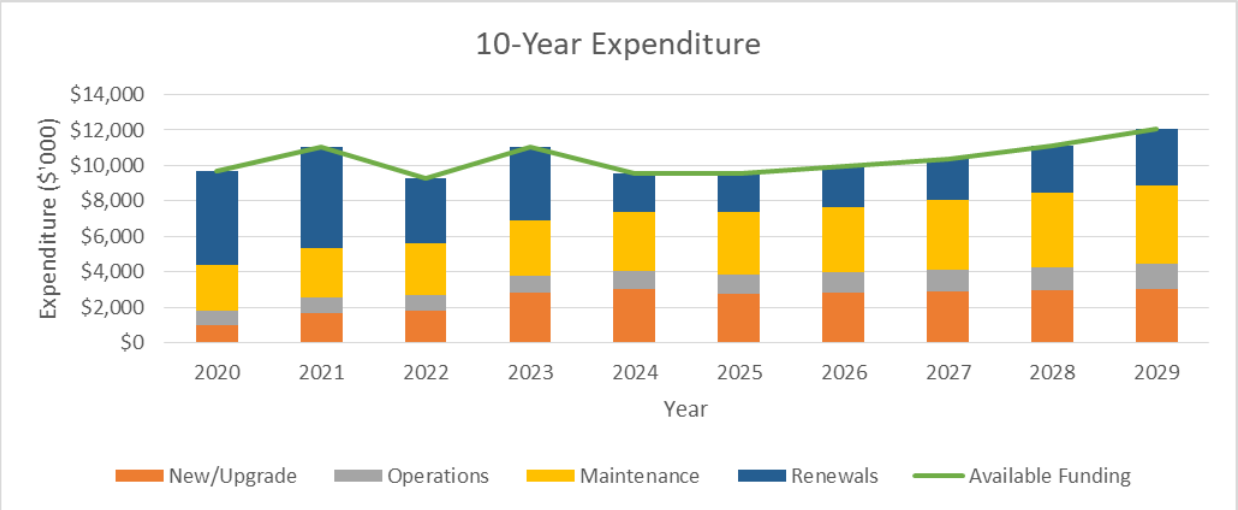


Figure 2 - 10 Year Expenditure Forecasts

What Funding is available in the LTFF?

Council's existing LTFF has allocated funding for DFM capital expenditure as shown in Table 3 below. In preparing this plan is has been assumed that the current levels of operation and maintenance funding will continue.

Table 3 - Long Term Financial Forecast

Financial Year Ending	New/Upgrade ($'000)	Operation & Maintenance ($'000)	Renewals ($'000)	Total ($'000)
2020	$993	$3,412	$5,275	$9,680
2021	$1,705	$3,619	$5,746	$11,070
2022	$1,810	$3,838	$3,640	$9,288
2023	$2,809	$4,071	$4,173	$11,053
2024	$3,052	$4,318	$2,180	$9,550
2025	$2,775	$4,581	$2,220	$9,576
2026	$2,825	$4,860	$2,260	$9,945
2027	$2,900	$5,157	$2,320	$10,377
2028	$2,975	$5,473	$2,679	$11,127
2029	$3,050	$5,808	$3,240	$12,098
Total	**$24,894**	**$45,136**	**$33,733**	**$103,763**

Can We Financially Sustain our Current Levels of Service?

Based on the analysis of council's expenditure requirements for asset renewal, operations and maintenance, there is sufficient funding in the LTFF to sustain current service levels.

Operations and Maintenance	Fully funded
Asset Renewals	Fully Funded
New/upgrade CAPEX	Fully Funded

What Are Our Options?

Currently the focus of future DFM expenditure is on the building of new or upgrading existing DFM assets, not on the maintaining of current service levels. Council has the following options:

- relocate the funding within the asset class
- increase the expenditure on renewal works and reduce the new/upgrade expenditure
- review service levels and associated expenditure
- review and revise the LTFF assumptions and forecast
- improve the data accuracy, in particular the condition of assets.

Other Considerations and Critical Assumptions

The renewals requirements are based on valuation data which uses a 'straight line' deterioration or consumption model. Although the assets are approaching the end of their theoretical lives this has not generally been verified through observation. Decisions made using this AMP should consider appropriate reliance on this data. The data is considered 70% accurate. A significant amount of the condition data is estimated using physical age rather than inspection results.

The financial reporting of operations, maintenance and capital expenditure is not adequate to support detailed asset management activities and planning. This AMP includes assumptions for the allocation of spending to this asset class.

This AMP currently does not include the actual amount of funding required to support the improvement initiatives identified necessary to improve accuracy and reliance. Most of the improvement initiatives and tasks will be undertaken as part of the business as usual operation with in house resources.

The number of assets with 5 years of remaining life suggests that there is a backlog of asset renewal works with assets being maintained beyond their performance life.

It is anticipated that the accuracy of financial forecasts may be improved in future revisions of the AMP by ongoing and refinement of the following areas:

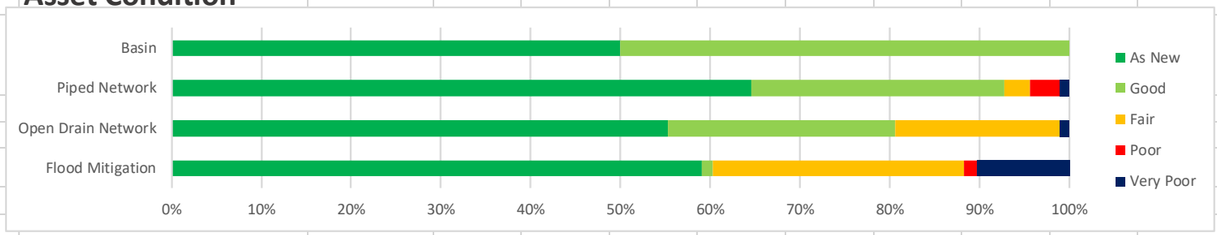
- depreciable amounts and depreciation methodologies
- data accuracy in physical asset register (PAR), asset useful lives and consumption
- annual capital and operational budget
- condition assessment methodologies and ratings
- desired levels of service.

Ipswich City Council
State of the Assets - Drainage and Flood Mitigation
19-Jul-19

Asset Value

Asset Class	Replacement Cost ($000)	Accumulated Depreciation ($000)	Current Value ($000)	Average Annual Asset Consumption ($000)
Basin	$10,268	$459	$9,809	$157
Flood Mitigation	$1,208	$427	$781	$80
Open Drain Network	$29,353	$6,446	$22,908	$219
Piped Network	$803,762	$201,541	$602,221	$8,321
Total	**$844,591**	**$208,873**	**$635,718**	**$8,778**

Asset Condition



The asset condition is predominately based on the age profile of the asset. Due to the nature of the asset, it is expensive to complete a detailed asset inspection for the entire network. A proactive inspection program is currently in place for high risk areas which covers approximately 5% of network. It is planned to expand this program to cover approximately 30% of the network over the next 5 years via a risk model that is currently being developed based upon location and soil type (for example) and will be included in future versions of the Drainage and Flood Mitigation AMP.

Critical Assumptions

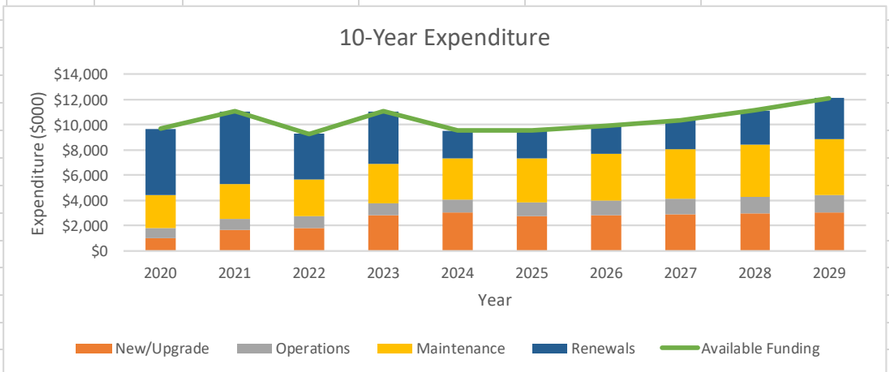
Financial details are based on current asset valuations, information from the Fixed Asset Register (FAR) as at 3 July 2019 and assumptions from the 2019-2020 financial year long-term financial forecast (LTFF).

Current Levels of Service

The current levels of service that transport assets deliver have been defined and are based on council's goals and objectives in the Corporate Plan and detailed in the Services Catalogue. Council is currently reviewing the current Services Catalogue, any amendments to it will be communicated and updated in the next version of the Asset Management Plan (AMP).

Conclusion

As part of the LTFF, Council has funded all planned renewals based on known defects and age replacement profile. As condition data become available from proactive inspection of the network, an improved renewal program will be developed. Allocation of fund includes an allowance for any emergent works identified during the proactive inspections.



Financial Forecasts

Expenditure ($000)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Renewal	$5,275	$5,746	$3,640	$4,173	$2,180	$2,220	$2,260	$2,320	$2,679	$3,240	**$33,733**
New/Upgrade	$993	$1,705	$1,810	$2,809	$3,052	$2,775	$2,825	$2,900	$2,975	$3,050	**$24,894**
Maint. & Ops	$3,412	$3,619	$3,838	$4,071	$4,318	$4,581	$4,860	$5,157	$5,473	$5,808	**$45,136**
Total	**$9,680**	**$11,070**	**$9,288**	**$11,053**	**$9,550**	**$9,576**	**$9,945**	**$10,377**	**$11,127**	**$12,098**	**$103,763**

Long Term Financial Forecast											
Renewal	$5,275	$5,746	$3,640	$4,173	$2,180	$2,220	$2,260	$2,320	$2,679	$3,240	**$33,733**
New/Upgrade	$993	$1,705	$1,810	$2,809	$3,052	$2,775	$2,825	$2,900	$2,975	$3,050	**$24,894**
Maint. & Ops	$3,412	$3,619	$3,838	$4,071	$4,318	$4,581	$4,860	$5,157	$5,473	$5,808	**$45,136**
Total	**$9,680**	**$11,070**	**$9,288**	**$11,053**	**$9,550**	**$9,576**	**$9,945**	**$10,377**	**$11,127**	**$12,098**	**$103,763**
Surplus	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Cumulative Surplus	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	

Sustainability

		Target	Value
Consumption Ratio	Indicates the Written Down Value of Council's Depreciable assets relative to their 'as new' value in up to date prices (highlights aged condition)	40%-80%	**76%**
Sustainability Ratio	Indicates whether Council's funding for Infrastructure asset class is sufficient for the long-term delivery of current service levels	>90%	**140%**
New/Upgrade Funding Ratio	Indicates the extent to which the planned new/upgrade projects are funded in the long-term budget allocation.	100%	**100%**
Renewal Funding Ratio	Indicates the extent to which the proposed renewal works are funded in the long-term budget allocation.	>90%	**100%**
Operations & Maintenance	Assumed that current expenditure levels for operations and maintenance actibities will be maintained for the 10-year planning period.	100%	**100%**

The funding ratios compare the levels of funding in the 10-year LTFF against the CCTV defects, assumed assets condition and estimated remaining lives of the DFM asset. The sustainability ratio is based on limited network information, in particular condition data for stormwater drainage mains.

Introduction

Purpose

The purpose of this Asset Management Plan (AMP) is to:

- consolidate councils understanding of its assets within this asset class
- document levels of service and risk
- provide short and medium-term capital works plans
- support informed decision making and guide long-term financial forecast (LTFF) and budget requirements
- provide a plan to work towards improved accuracy and confidence in future iterations of this Plan.

Scope

The Drainage and Flood Mitigation Asset Management Plan (DFMAMP) incorporates the infrastructure asset types outlined in Table 4.

Table 4 - DFMAMP Infrastructure Assets

Asset Class	Asset Group	Asset Types	Quantity	Replacement Value ($'000)
Piped Network	Drainage Mains	Drainage Mains	1,201 km	$668,680
Piped Network	Drainage Structures	Manhole / Chamber, Gully Pits, Headwall, Gross Pollutant Trap, Trash rack, Culvert.	43,681 ea	$135,082
Open Drain Network	Open Drains, Inverts and Levee Banks	Open drains, invert, levee banks	881,840 sqm	$29,353
Flood Mitigation	Detention & Bio Detention Basins	Detention Basin, Bio Retention Basin, Spillway, Sediment Pits.	357 ea	$10,268
Flood Mitigation	Flood Monitoring Station	Flood Monitoring Station	36 ea	$1,208
		Total		**$844,591**

The financial asset register (FAR) is current as at 3 July 2019. The physical asset register (PAR) has been updated as the "as-constructed" details become available. Quantities and replacement values in this AMP are derived from PAR, FAR and infrastructure asset valuation reports. The asset types are presented in accordance with their functional and operational management characteristics.

Corporate Context

The Council exists to provide services to its community. Some of these services are provided by infrastructure assets. Council has acquired infrastructure assets through a range of processes, including:

- purchase
- contract
- construction by council staff
- donation of assets constructed by developers and others.

The basis of Council's ownership of infrastructure assets is to deliver services outlined in Council's vision, mission, goals and objectives as set out in *Advance Ipswich* and the *Corporate Plan 2017-2022*.

Council's vision:

Our vision, looking forward 20 years, is that people are emotionally connected with a strong sense of belonging and pride in the City. Jobs growth keeps pace with population growth. The City's rate of employment is higher than the Queensland average. Urban development has maximised the opportunities to use public and active transport.

Council's mission:

Ipswich City Council will:

- use the competitive advantages of the Ipswich economy to provide jobs for the growing population and prosperity for the city through business diversification, adapting and responding to technological advances and creating an attractive economic environment for business investment
- plan and develop a vibrant and sustainable city that accommodates the needs of a diverse and growing population and economy
- create a city that values its past and embraces opportunities to work together for the betterment of the community
- important areas of native habitat are conserved, the city's important waterways are protected and their water quality enhanced, and the city responds appropriately to climate change and uses resources prudently
- visionary and accessible leadership is provided that consults and communicates on key decisions and delivers sound financial management and good governance outcomes.

Relationship to Other Council Documents and Objectives

This AMP aligns with and should be read in conjunction with the Asset Management Framework of council documents as shown in Figure 3 and Table 5 below.

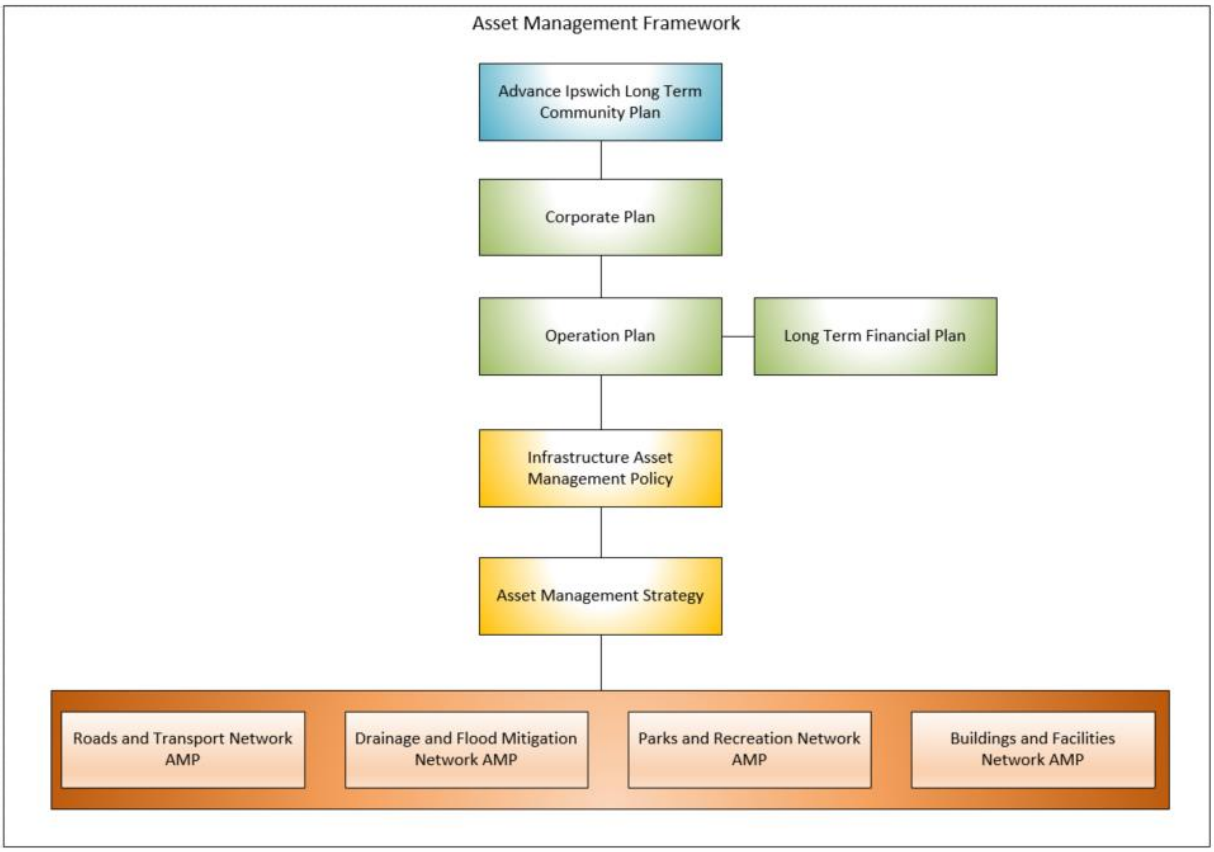


Figure 3 - Asset Management Document Hierarchy

Table 5 below shows the key documents that support this AMP:

Table 5 - Key Documents

Document	How Related	Reference
AMP Related Documents		
Asset Management Policy	The Asset Management Policy defines council's overall intentions and guiding principles in relation to infrastructure asset management. It provides a formal policy position for council to operate and manage infrastructure assets in accordance with defined levels of service, whilst minimising lifecycle costs.	Council website
Asset Management Strategy	The Asset Management Strategy includes specific strategies and implantation plan to ensure the asset management objectives are delivered and achieved.	Council website
Asset Management Framework	The Asset Management Framework is to assist council in defining and improving the way it delivers services from infrastructure. It is to establish a framework off governance documents, planning documents, operational procedures and standards of how council manage and operate infrastructure assets.	Council website

Document	How Related	Reference
Defect and Condition Assessment Plan	CCTV proactive annual contains the methodologies, defect assessment procedures, and intervention level used to formally assess the structural integrity and appearance of assets.	Appendix D
Maintenance and Operational Specifications	Contains all maintenance and operational specification requirements for assets under this AMP. Details within this document are used to inform inspection and maintenance schedule.	Appendix C
Enterprise Risk Management Framework	The fundamental risk framework used evaluate the risks applicable to this AMP.	Council website
Risk Register	Contains all identified asset related risks applicable to this AMP	Council website
Other Related Documents		
Local Government Infrastructure Plan (LGIP)	Contains details regarding areas of growth within the council area and guides technical Levels of Service regarding the provision of assets	Council website
Standard Drawings	Contains design and construction details for new assets	Council website
Land Development Guidelines	Contains design and construction details for new assets	Council website

Stakeholder Input

Key stakeholders in the asset management process for drainage and flood mitigation assets are listed in Table 6 below.

Table 6 - Key Stakeholders – DFMAMP

Position Title	Principal Involvement in Parks and Recreation Network AMP
Councillors	Represent needs of community; Allocate resources to meet Council's objectives in providing services while managing risks; Ensure organisation is financially sustainable; and Custodians of the assets and services, providing the interface with the community regarding the levels of service and good governance and management practices.
CEO	Manage organisation operational activities and future planning strategic direction.
General Manager, Infrastructure and Environment Department	Department Head and nominal asset owner.
Treasury Accounting Manager	Responsible for Council's budget preparation and advice on financial assumptions.
Infrastructure Strategy and Planning Manager	Manager responsible for the design and delivery of new parks and recreation assets.
Asset Management Manager	Responsible for departmental budget preparation, Asset Management issues and review of the AMP.
City Maintenance Manager	Responsible for the overall maintenance of the assets.
Principal Officer (Asset Management)	Responsible for the management of all assets and contribution to Drainage and Flood Mitigation AMP preparation.
Senior Spatial Officer	Responsible for advice on asset and spatial information of Asset Management issues.
Senior Planning Officer (Asset Management)	Contribution to the AMP preparation.
Planning Officer (Asset Management)	Contribution to the AMP preparation.
Spatial Officer	Responsible for the preparation of asset and financial data for the AMP.
Principal Officers (City Maintenance)	Responsible for the maintenance of assets. Contribution to the AMP preparation and advice on level of services and maintenance issues.

The Queensland Government recently passed the *Local Government* (*dissolution of Ipswich City Council) Act 2018*, enabling government to dismiss Ipswich City Council's mayor and ten divisional councillors immediately and appoint an Interim Administrator to manage Council until the next scheduled local government elections on Saturday, 28 March 2020.

Newly appointed Interim Administrator and the part-time Interim Management Committee (IMC) are now working collaboratively with council's Chief Executive Officer (CEO), Executive Leadership Team and staff to bring positive, ethical change to Ipswich City Council.

Council services will continue to operate efficiently and on time, with its internal administration from the CEO down remaining in place. Reports on all facets of council operations continue to be presented to Committees, with the Interim Administrator making decisions in a similar monthly forum as previous, with advice from the IMC.

Legislative Requirements

Council has to meet many legislative requirements including, but not limited to, Federal and State legislation and regulations as outlined in Table 7.

Table 7 - Legislative Requirements

Legislation / Regulation	Requirement
Local Government Act 2009	The purpose of this Act is to provide for: the way in which a local government is constituted and the nature and extent of its responsibilities and powers; and a system of local government in Queensland that is accountable, effective, efficient and sustainable.
Local Government (Finance, Plans and Reporting) Regulation 2012	This regulation is about community planning and financial management for local governments, including: names of local government areas; classifications of local government areas; boundaries of local government areas and divisions; engaging the community; planning community growth and development; local government rates and charges; the financial accounts, documents, policies, records and reports of a local government; local government contracts; and allocating funds received by the State from the Commonwealth for local government purposes.
Local Government (Dissolution of Ipswich City Council) Act 2018	This Act enables government to dismiss Ipswich City Council's mayor and ten divisional councillors immediately and appoint an Interim Administrator to manage Council until the next scheduled local government elections on Saturday, 28 March 2020.
Planning Act 2016	The purpose of this Act is to establish an efficient, effective, transparent, integrated, coordinated, and accountable system of land use planning (planning), development assessment and related matters that facilitates the achievement of ecological sustainability; protecting ecological processes and natural systems; achieving economic development includes achieving diverse, efficient, resilient and strong economies, including local, regional and State economies, that allow communities to meet their needs but do not compromise the ability of future generations to meet their needs; and to maintain the cultural, economic, physical and social wellbeing of people and communities.
Environmental Protection Act 1994	The objective of this Act is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development).

Legislation / Regulation	Requirement
Disaster Management Act 2003	The main objectives of this Act are to help communities mitigate the potential adverse effects of an event; prepare for managing the effects of an event; and effectively respond to, and recover from, a disaster or an emergency situation; to provide for effective disaster management for the State; and to establish a framework for the management of the State Emergency Service and emergency service units to ensure the effective performance of their functions.
State Planning Policy 4/10 Healthy Water	The purpose of this Planning Policy is to ensure that development is planned, designed, constructed and operated to manage stormwater and waste water in ways that help protect the water environmental values specified in the Environmental Protection (Water) Policy 2009.
Workplace Health and Safety Act 2011	The main object of this Act is to provide for a balanced and nationally consistent framework to secure the health and safety of workers and workplaces
Native Title Act 1993	The objective of this Act are to provide for the recognition and protection of native title; and to establish ways in which future dealings affecting native title may proceed and to set standards for those dealings; and to establish a mechanism for determining claims to native title; and to provide for, or permit, the validation of past acts, and intermediate period acts, invalidated because of the existence of native title.
Nature Conservation Act 1992	The objective of this Act is the conservation of nature while allowing for the involvement of indigenous people in the management of protected areas in which they have an interest under Aboriginal tradition or Island custom.

Plan Framework

The DFMAMP is structured in accordance with the key elements outlined below:

Levels of Service – specifies the range and level of services to be provided by Council's roads and transport infrastructure network.

Future Demand – describes the anticipated future demand for, and related impact upon, service delivery and how this is proposed to be addressed.

Lifecycle Management Plan – outlines how Council proposes to manage its existing and future roads and transport infrastructure assets to provide the defined levels of service.

Financial Summary – specifies the level of funding required to provide the defined levels of service.

Asset Management Practices – describes the systems and processes Council applies to the management of its roads and transport infrastructure assets.

Risk Management – describes how risks associated with roads and transport infrastructure assets and service delivery have been identified and managed.

Environmental Management – outlines how environmental issues are addressed in the ongoing management of roads and transport infrastructure assets and service delivery.

Plan Improvement and Monitoring – describes the asset management improvement strategies proposed by the DFMAMP, as well as how the DFMAMP will be monitored over time to ensure it is continuing to meet Council's objectives.

Figure 4 provides an overview of the general steps undertaken in preparation of the DFMAMP:

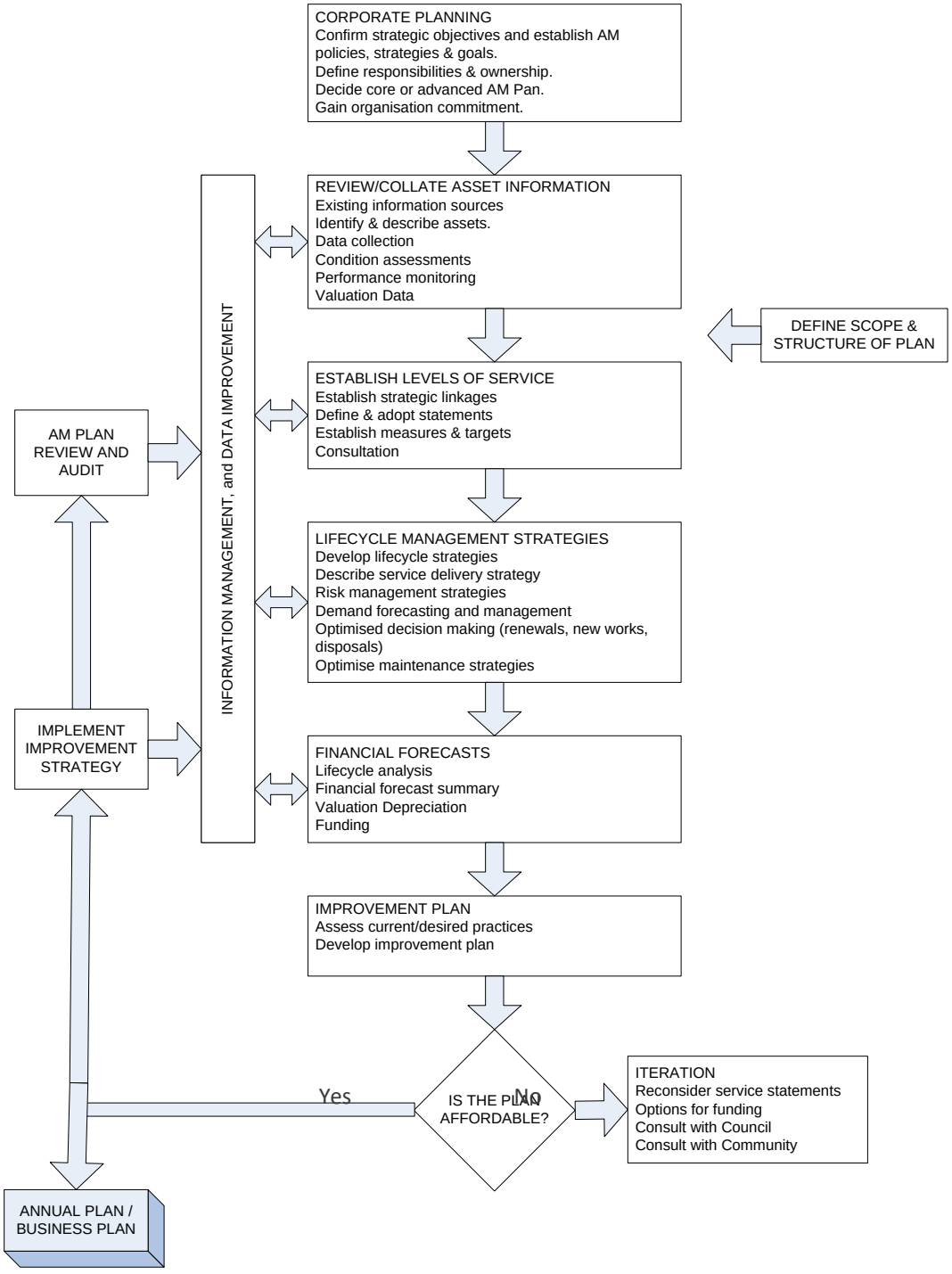


Figure 4 - Road Map for Preparing an Asset Management Plan

Core and Advanced Asset Management

The current DFMAMP can be defined as a 'core' Asset Management Plan in accordance with the International Infrastructure Management Manual (IIMM, 2015). It has been prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long-term financial planning and reporting. Core asset management is a 'top down' approach where analysis is applied at the 'system' or 'network' level.

The IIMM (p. xiii) defines Core Asset Management as:

'Asset management which relies primarily on the use of an asset register, maintenance management systems, job/resource management, inventory control, condition assessment, simple risk assessment and defined levels of service, in order to establish alternative treatment options and long-term cashflow predictions.'

Future revisions of the DFMAMP will move towards 'advanced' asset management. Using a 'bottom up' approach for gathering asset information on individual assets, such an approach will support the optimisation of activities and programs in meeting defined service levels. Progress toward the advanced DFMAMP will include actioning of the items identified in Section 10. Plan Improvement and Monitoring.

The IIMM (p. xii) defines Advanced Asset Management as:

'Asset management which employs predictive modelling, risk management and optimised decision-making techniques to establish asset lifecycle treatment options and related long-term cashflow predictions.'

Levels of Service

Service levels are the link between satisfying community needs and the cost of providing the service. Generally, a higher level of service (LOS) costs more to deliver than a lower LOS, although there may be economies of scale. A decision to provide an increased LOS will generally require additional funding to provide the service, while a decision to reduce funding will generally result in lower service levels. Appropriate service levels are defined on the basis of:

- customer expectations
- legislative requirements
- strategic organisational mission and objectives
- availability of resources and financial constraints.

Levels of Service and Performance measurement Documents

Community Plan/Corporate Plan

The Community Plan informs the Corporate Plan and establishes, through community consultation, council's aspirational goals and objectives for the delivery of transport services.

Asset Management Plan

This Asset Management Plan (AMP) develops technical measures against which the aspirational goals and objectives can be measured (Technical Levels of Service).

Service Level Agreement

The service level agreement (SLA) is a formal agreement between those responsible for the assets and the services they deliver, and the operational areas of council charged with maintaining, operating, and upgrading existing assets or constructing new infrastructure.

Activity Specification

The activity specification defines the target performance measures for maintenance, operations, or construction activities. It sets routine inspection and maintenance frequencies and for reactive maintenance sets intervention levels, response times, and activity duration targets.

Maintenance Management Plan

The Maintenance Management Plan (MMP) details how each activity is to be completed and may include the following:

- standard operating procedures
- work Instructions
- hazard risk assessment
- references to maintenance manuals (particularly fleet, plant, mechanical and electrical assets).

Corporate Goals and Objectives

Relevant Council goals and objectives as formulated in *Council's Corporate Plan 2017-2022* and how these are generally addressed in the DFMAMP are set out in Table 8.

Table 8 - Contribution to Corporate Goals and Objectives – DFMAMP

Goals	Strategy	How Goal and Objectives are addressed in AMP
Goal 2 - Plan and develop a vibrant and sustainable city that accommodates the needs of a diverse and growing population and economy.	**Strategy 2** - Provide adequate land and infrastructure to support community development and economic activity.	The AMP facilitates infrastructure planning and delivery arrangements with key stakeholders to ensure infrastructure is delivered in a timely and efficient manner to meet the levels of services and demand from community. The AMP ensures infrastructure assets are managed and maintained to conserve city's heritage. Accessibility for the open space network is considered during any rehabilitation and renewal works.
	Strategy 4 – The city's heritage is conserved.	
	Strategy 5 - Provide an integrated open space network that is accessible and meets the recreational needs of residents and visitors.	
Goal 3 - Create a city that values its past and embraces opportunities to work together for the betterment of the community.	**Strategy 7** - Invest in social infrastructure to build a distinctive Ipswich identity and to maximise economic and social outcomes.	The AMP facilitate infrastructure planning and delivery arrangements with key stakeholders to ensure social infrastructure is delivered in a timely and efficient manner to support the demand of the community. The AMP requires council to identify levels of service associated with specific asset classes and requires council to identify what it costs to deliver that level of service.
Goal 4 - Important areas of native habitat are conserved, the city's important waterways are protected and their water	**Strategy 1** – Secure and protect areas of native habitat and vegetation.	The AMP ensures infrastructure assets are managed and maintained to protect area of native habitat, vegetation, waterways, and enhanced environmental,
	Strategy 2 – Develop and implement an integrated	

Goals	Strategy	How Goal and Objectives are addressed in AMP
quality enhanced, and the city responds appropriately to climate change and uses resources.	approach to planning and management of nature conservation matters in partnership with the community, private land owners and government agencies.	ecological and water quality outcomes. The AMP provides a transparent process of how council manage and maintain assets to ensure more effective utilisation of assets.
	Strategy 3 – Protected and manage waterways to achieve enhanced environmental, ecological and water quality outcomes.	
	Strategy 4 – Enhance urban greening.	
	Strategy 5 – Use resources effectively and sustainably.	
Goal 5 - Visionary and accessible leadership is provided that consults and communicates on key decisions and delivers sound financial management and good governance outcomes.	**Strategy 2** – Provide comprehensive and meaningful community engagement to inform Council decision making.	The AMP requires council to identify the levels of service associated with specific asset classes. Council must then ascertain what level of service it can sustainably provide to customers.
	Strategy 4 – Maintain a financially sustainable and resilient approach to budgeting.	
	Strategy 6 – Maintain a consistent and efficient approach to laws and compliance activities across the city.	The AMP requires council to identify future rehabilitation and new capital funding to ensure financial sustainability to continue delivery the agreed levels of service and infrastructure.

Source: Ipswich City Council Advance Ipswich and Corporate Plan 2017-2022

Management of Council's drainage and flood mitigation infrastructure assets is targeted at meeting defined levels of service in the most cost effective manner for present and future generations. 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 resources; and
- Continuous improvement in asset management practices.

Community Levels of Service

Community Levels of Service relate to subjective service delivery outcomes that the community wants in terms of safety, quality, quantity, reliability, responsiveness, value and legislative compliance. Community levels of service measures used in the service management plan are:

- Quality - How good is the service?
- Function - Does it meet users' needs?
- Capacity/Utilisation - Is the service over or under used?

These community levels of service promised by Council are outlined in Table 9.

Table 9 - Community Levels of Service

Service Level Outcome	Principle Activity	Strategic Elements	Performance Outcome	Assessed by
Reliability	Reliability and capacity of pipe network.	Reduce pipe breakages and increase response to reported complaints.	Reduce pipe breakages per annum. Reduce response to breakages and written correspondence follow up time.	Response time and number of pipe breakages.
	Capacity of drainage network is adequate.	Risk of flood damage mitigated.	Reduce pipe breakages per annum No OFP obstructions.	Number of pipe breakages and OFPs obstructed.
Quality	No flooding or ponding.	Reduce flooding.	No floodwater related complaints per annum.	Number of floodwater related complaints per annum.
Function	Meet drainage and water reuse standards.	Drain floodwater effectively and efficiently.	Reduce number of pipe breakages.	Number of flood instances and pipe breakages.
Condition	Provide appropriate levels of operations, maintenance and renewal to provide a reliable service.	Survey and condition assess Network.	Network is surveyed regularly.	Frequency with which all assets checked.
	Provide appropriate levels of operations, maintenance and renewal to provide a reliable service.	Maintain drainage assets in usable condition.	Survey pipes regularly.	Frequency with which all infrastructure is checked.

Technical Levels of Service

Technical levels of service support the community levels of service by turning subjective requirements into objective assessments. These technical measures aim to quantify the performance of the assets and services they provide.

Quantifying performance outcomes gives Council valuable insight into the service delivery of the assets and how to best allocate resources to meet desired service outcomes. These technical Levels of Service are outlined in Table *10*.

Table 10 - Technical Levels of Service

Classification	Drainage		
Service Statement	Cost effective improvement of drainage and flood water transport, treatment and disposal with minimal environmental impact		
Service Factors	**Service Objective**	**Technical Levels of Service**	**Performance Measures**
Operation and Maintenance	Stormwater drainage network is maintained in a functioning condition with effective floodwater transport and treatment	Proactive Drainage CCTV • Carry out proactive CCTV inspection of drainage assets and defect logging in accordance with inspection plan (Appendix D).	85% of the proactive inspection are carried out on time and meet the maintenance specifications and standards.
		Stormwater System • Inspection and cleaning of high risk stormwater devices – Prior to predicted wet weather events and monthly between November and March.	100% inspected.
		Gross Pollutant Traps • Inspection and cleaning of pollutant Traps.	100% inspected and cleaned.
		Major Culverts • Proactive Level 2 Inspection – 4 Yearly	100% inspected.
		Referable Dam • routine Inspection and defect logging – Bi-Monthly • annual Inspection and defect logging • comprehensive Inspection – 5 yearly.	100% inspected.
		Reactive inspections and maintenance are carried out in accordance with Council's Service Catalogue and Standards.	85% of reactive inspection and maintenance are completed on time in accordance to Council's Service Catalogue and Standards.
Renewal and Rehabilitation	Drainage and flood mitigation assets are renewed that suit for the purpose, capacity and design standards.	Assets are inspected and assessed in accordance to the agreed defect intervention levels. Works are scoped in project with key stakeholder consultation and high level cost estimate for budget preparation.	90% of the identified rehabilitation works are funded each year. All priority 1 projects are fully funded each year.

New / Upgrade	Drainage and flood mitigation assets are planned that suit for the purpose, capacity and design standards.	Provide new / upgraded infrastructure to cater for community growth in accordance with the Local Government Infrastructure Plan and community demand.	90% of the identified new / upgrade works are funded each year. All new / upgrade infrastructure are designed and constructed in accordance to current standards and requirements.
Function			
Environmental Compliance, affordability and whole of life management	Drainage and floodwater meets all relevant environmental guidelines. Asset whole of life is considered collection Drainage, transport and treatment remains affordable.	Provide new/upgraded infrastructure as required to comply with industry standards or statutory requirements. Ensure new/upgraded infrastructure is designed and constructed in accordance with Council's Guidelines. Ensure asset whole of life is considered for the maintenance and management of the drainage and flood mitigation assets.	90% of identified of new delivery of CAPEX programs 100% Compliance with design standards, guidelines and statutory requirements. Asset whole of life is considered for all works.
Utilisation			
Floodwater re-use	Optimise the reuse of floodwater.	Ensure floodwater reuse is considered during the maintenance, renewal, new / upgrade of the drainage and flood mitigation assets.	100% Compliance with design standards and guidelines. Promote water reuse where possible.

Growth

Demand Forecast

Factors affecting demand on Drainage Network services can include, but are not necessarily limited to, population / demographic changes, modes of transport, vehicle ownership, location of employment / commercial areas and environmental awareness. Of particular significance to the City of Ipswich is the extent of future growth forecast for the area.

Table 11 below provides an overview of population and dwelling projections through to 2029, as derived from the council's 2019–2020 financial year long-term financial forecast (LTFF) assumptions. The growth projection prepared in this AMP has been refined to reflect the actual growth rates and realistic infrastructure growth from development applications and activities, hence the figures in below tables may not align completely with the Local Government Infrastructure Plan (LGIP) projections.

Table 11 - Population and Dwelling Projections

Projection	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029
Dwellings	83,181	86,481	89,881	93,381	96,981	100,681	104,481	108,381	112,381	116,481
Population	224,589	233,499	242,679	252,129	261,849	271,839	282,099	292,629	303,429	214,499

A brief overview of the anticipated demand factors and possible related impacts on drainage and flood mitigations network service delivery is provided in Table 12 below.

Table 12 - Projected Impact of Future Demand on Service Delivery

Demand factor	Current (2019)	Projected (2029)	Possible Impact on Services
Population growth	~224,589	~314,499	Increased demand on existing network infrastructure and services. Considerable increase in physical asset stock and related increase in network lifecycle costs.
Dwelling growth	~83,181	~116,481	
Employment growth and containment	~5,055,478 sqm	~8,502,929 sqm	
Climate change	Changes in weather event frequency and intensity		Change in network design and construction standards
Build environment	Increase in impervious surface area		Increase volume and intensity of flows into network and waterways

Changes in Technology

Anticipated technological changes are forecast to affect the delivery of services covered by the DFMAMP in the manner outlined in Table 13.

Table 13 - Anticipated Changes in Technology

Technology Change	Effect on Service Delivery
Ongoing configuration, utilisation and enhancement of and related asset management processes.	Accurate, timely and cost-effective works management for the Drainage and Flood Mitigation Network.
Development and implementation CCTV program also mobile solution for field staff. (Mobile forms)	Enhanced ability to operate independent of location.
Increased sophistication and capacity in asset data capture.	More reliable and timely updating of asset attributes, including condition, performance and defects.
Increased availability and utilisation of asset behaviour / lifecycle modelling solutions.	Improved analysis and forecasting of asset lifecycle behaviour and requirements.
Modification and improvements to infrastructure asset construction and rehabilitation techniques.	Reduction / changes in materials usage and cost as a result of more advanced recycling and construction techniques / processes.

Demand Management Plan

Demand for new services can be addressed through a combination of managing existing assets, upgrading of existing assets, provision of new assets and implementation of demand management techniques. Demand management can include non-asset solutions, insuring against risks and managing failures.

Currently identified opportunities for drainage and flood mitigation network demand management are outlined in Table 14 below. Further opportunities for demand management will be identified in future revisions of the DFMAMP.

Table 14 - Demand Management Plan

Service Activity	Demand Management Plan
Planning	Undertake annual CCTV program for future work. This can be used to prioritise upgrades, rehabilitation and program for new works installation to meet the changing population and demographic.

New Assets from Growth

The new assets required to meet growth demands will be acquired from land developments and constructed by council. The new asset values as forecast by the LGIP assumptions from development contributed assets are summarised in Figure 5 below.

Acquiring these new assets will commit council to fund ongoing operating and maintenance costs for the period during which the related service provision is required. These future costs are identified and considered in developing forecasts of future operating and maintenance expenditure.

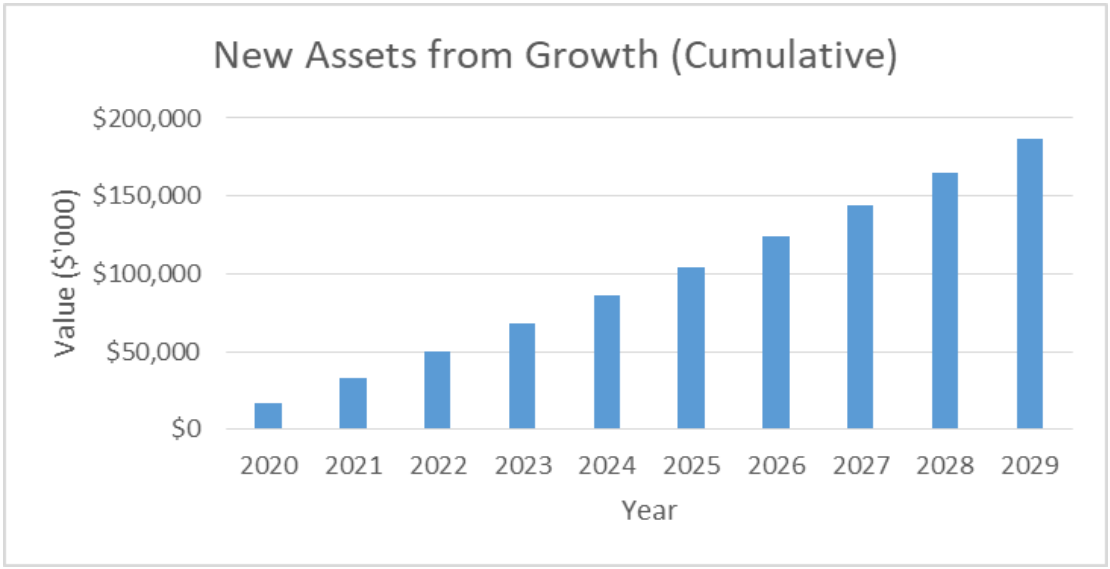


Figure 5 - Annual value of Contributed Assets

Risk Management

Risk Management Objectives

Council is committed to managing identified risks by logically and systematically identifying, analysing, evaluating, treating, monitoring and communicating all risks that directly or indirectly impact positively or negatively on Council's ability to achieve the strategic objectives outlined in Advance Ipswich, Corporate and Operational Plans.

The following objectives are included but not limited to the management if risks under this AMP:

- maintain levels of service
- mitigate risks to the public
- reduce the number and magnitude of unplanned asset failures.

Asset Criticality

In drainage and flood mitigation infrastructure network, the most critical assets are drainage basins which have been classified as referable dams.

A dam is referable if a failure impact assessment demonstrates there would be 2 or more people at risk if the dam was to fail.

As the owner of the referable dams, there are strict legislative and statutory requirements that council as the dam owner has to complied with and follow, including but not limited to:

- establish an emergency action plan
- mandatory inspection and management guidelines.

There are three referrable dams located in the Ipswich Local Government Area:

- Marburg detention basin
- Rosewood detention basin
- Limestone Park detention basin.

Asset Related Corporate and Directorate Risks

Table 15 outlines asset related corporate and directorate risks related to the assets and services covered within this AMP.

Table 15 - Corporate and Directorate Risks

Risk No	Risk Description
1	Flood Damage due to Surface and Sub Surface drainage failure.
2	Failure of an Infrastructure Asset.
3	Loss or Damage to Property/Infrastructure/Life from flooding as a result of incorrect forecasting / modelling.
4	Severe injury or death of staff member / member of the public while working remotely in the field.

Risk Management Approach

Risks associated with service delivery provided by the drainage and flood mitigation network have been identified and assessed in accordance with council's Enterprise Risk Management Framework. The risk assessment and impact factor matrices utilised are outlined in Table 16 and Table 17.

Table 16 - Risk Assessment Matrix

	Consequences				
Likelihood	**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
Rare	L	L	L	M	M
Unlikely	L	L	M	M	M
Possible	L	M	M	M	H
Likely	M	M	H	H	E
Almost Certain	M	M	H	E	E

E	Extreme Risk	Immediate corrective action
H	High Risk	Prioritised action required
M	Medium Risk	Planned action required
L	Low Risk	Manage by routine procedures

Table 17 - Risk Impact Matrix

RISK CATEGORIES	Minimal (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Financial	• Financial loss (fines, lost revenue/funding, increased cost) ≤$500,000	• Financial loss (fines, lost revenue/funding, increased cost) >$500,000 - ≤$2M.	• Financial loss (fines, lost revenue/funding, increased cost) >$2M - ≤$10M.	• Financial cost (fines, lost revenue/funding, increased cost) >$10M - ≤$50M.	• Financial cost (fines, lost revenue/funding, increased cost) >$50M.
Legal & Governance	• Low level legal issues (such as mediated contractual disputes), negligible failure to meet statutory timeframes, non-compliances and/or breaches of regulation/agreements; or • Low level potential for complaints; or • Negligible governance failure impacting on the achievement of corporate objectives.	• Minor legal issues (such as litigated contractual disputes, minor personal injury/ workers' compensation claims), failure to meet statutory timeframes, non-compliances and/or breaches of regulation/agreements; or • Potential for complaints; or • Minor short term governance failure impacting on the achievement of corporate objectives.	• Serious legal issues (such as serious litigation, major personal injury/workers compensation claims), failure to meet statutory timeframes, non-compliances and/or breach of regulation/agreements; or • Complaint or report to applicable authority with investigation pursued; or • Moderate / serious governance failure impacting on the achievement of corporate objectives.	• Major legal issues, failure to meet statutory timeframes, non-compliances and/or breach of regulation/agreements (such as those resulting in Council decision/action being declared unlawful, requiring significant resources to remediate. (eg widespread impact on Council decisions/actions, or major injunctions/specific performance orders); or • Numerous complaints or reports to applicable authority with investigation pursued; or • Major governance failure impacting on the achievement of corporate objectives requiring significant resource allocation to resolve.	• Extensive legal issues, failure to meet statutory timeframes, non-compliances and/or breach of regulations/agreements (such as those arising from class actions, or with widespread and substantial retrospective impact on Council decisions/actions, or extensive injunctions/specific performance orders); or • Extensive governance failure impacting on the achievement of a large number of corporate objectives.
Political / Reputation	• Minimal short term adverse local publicity; or • Minimal adverse impact on Council partnerships.	• Temporary degradation in public image; or • Minor adverse local publicity; or • Escalation to impacted Councillor; or • Minor and temporary adverse impact on Council partnerships, easily rectified.	• Degradation of public image requiring effort/resources to regain; or • Extended adverse local and state publicity; or • Escalation to non-impacted Councillors and Mayor; or • Moderate adverse impact on significant Council partnerships requiring moderate effort to rectify.	• Degradation of public image requiring major effort/resources to regain; or • Significant and longer term adverse local, state and national publicity; or • Major adverse impact on strategic Council partnerships requiring significant effort to rectify; or • Serious community unrest.	• Large scale and permanent degradation of public image; or • Sustained adverse local, state, national and international publicity; or • Loss of strategic Council partnerships; or • Widespread community unrest.
Community and Environment	• No lasting detrimental or negligible / isolated impact on the health and wellbeing of the community; or • Environmental damage that is contained on-site and is fully recoverable with no permanent effect on the environment. It will take less than 6 months for full recovery.	• Minor, short-term isolated impact on the health and wellbeing of the community; or • Localised environmental damage that can be mitigated onsite. It will take less than 2 years for full recovery.	• Moderate, medium-term, widespread impact on the health and wellbeing of the community; or • Significant environmental damage requiring remedial action. It will take up to 10 years for full recovery.	• Serious, long-term, widespread impact on the health and wellbeing of the community; or • Major environmental damage for a matter of environmental significance (local, state or federal).	• Severe / extensive on-going, widespread impact on the health and wellbeing of the community; or • Irreversible Catastrophic environmental damage for a matter of environmental significance (state, local or federal). No remediation, mitigation or offset action can undo environmental damage caused and matters of environmental significance may undergo local extinctions.

	Minimal (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Health & Safety	• Injuries treatable with first aid, no other medical treatment required; or • Incident or compensable injury without time lost	• Medical Treatment not requiring hospitalisation; or • Compensable injury requiring medical treatment.	• Medical Treatment requiring hospitalisation; or • Extensive Injuries; or • Notifiable to regulatory authority; or • Compensable injury resulting in permanent impairment of 5 – 20% and/or damages claim.	• Permanent Disabilities; or • Single fatality; or • Compensable injury resulting in permanent impairment > 20% and/or damages claim.	• Multiple permanent disabilities and/or fatalities.
Service Delivery / Business Continuity	• Non-essential customer-facing services cannot be delivered for < 1 hour.	• Essential customer-facing services cannot be delivered for < 1 hour; or • Essential customer-facing service(s) experience 50% degradation for < 1day; or • Non-essential customer-facing services cannot be delivered for 1 hour – 1 day.	• Essential customer-facing services cannot be delivered for 1 hour – 1 day; or • Essential customer-facing service(s) experience 50% degradation for 1 day-1 week; or • Non-essential customer-facing services cannot be delivered for 1 day – 1 week.	• Essential customer-facing services cannot be delivered for 1 day – 1 week; or • Essential customer-facing service(s) experience 50% degradation for 1 week-4 weeks; or • Non-essential customer-facing services cannot be delivered for 1 – 4 weeks.	• Essential customer-facing services cannot be delivered for more than 1 week; or • Non-essential customer-facing service(s) experience 50% degradation for more than 4 weeks; or • Non-essential customer-facing services cannot be delivered for more than 4 weeks.
Information Confidentiality, Integrity and Accessibility	• Low-level non-compliance with privacy principles/regulations, (such as localised release or unauthorised access to non-personal confidential information) with no lasting detrimental or negligible impacts; or • Low-level permanent compromise of non-business-critical information (data corruption, errors, inaccuracies, inconsistencies) with negligible impacts; or • Localised permanent loss of non-business-critical information; or • Minimal, short-term disruption of access to information impacting: ○ small customer numbers (< 1 hr.); or ○ non-critical internal operations.	• Minor non-compliance with privacy principles/regulations, (such as localised release or unauthorised access to sensitive non-personal confidential information) with limited detrimental or negligible impacts; or • Localised permanent compromise of non-business-critical information (data corruption, errors, inaccuracies, inconsistencies) with minor impacts; or • Semi-localised permanent loss of non-business-critical information; or • Minor, short-term disruption of access to information impacting: ○ most customers (< 1hr.); or ○ small customer numbers (1 hr. - 1 day); or ○ business-critical internal operations (< 1 day).	• Moderate non-compliance with privacy principles/regulations, (such as widespread release or unauthorised access to highly sensitive non-personal information); or • Widespread permanent compromise of non-business-critical information (data corruption, errors, inaccuracies, inconsistencies) with moderate impacts; or • Permanent and widespread loss of non-business-critical information; or • Moderate short-term disruption of access to information impacting: ○ most customers (1hr. – 1 day); or ○ small customer numbers (1 day – 1 week); or ○ business-critical internal operations (1 day – 1 week).	• Major non-compliance with privacy principles/regulations, (such as localised release or unauthorised access to personal information); or • Localised permanent compromise of business-critical information (data corruption, errors, inaccuracies, inconsistencies) with major impacts; or • Permanent and localised loss of business-critical information; or • Major, medium-term disruption of access to information impacting: ○ most customers (1 day - 1 week); or ○ small customer numbers (1 – 4 weeks); or ○ business-critical internal operations (1-6 weeks).	• Catastrophic non-compliance with privacy principles/regulations, (such as widespread release or unauthorised access to personal information); or • Widespread permanent compromise of business-critical information (data corruption, errors, inaccuracies, inconsistencies) with catastrophic impacts; or • Permanent and widespread loss of business-critical information; or • Catastrophic long-term disruption of access to information impacting: ○ most customers (more than 1 week); or ○ small customer numbers (> 4 weeks); or ○ business-critical internal operations (> 6 weeks).

Identified Risks

Identified risks, ratings and planned responses: A detailed overview of the risk identification and analysis is provided Table 18.

Table 18 - Risk Management Plan – Drainage & Flood Mitigation Network

Asset Type						
Risk	**Possible Cause/s**	**Existing Controls**	**Likelihood**	**Consequence**	**Risk Rating**	**Response**
Stormwater Mains						
Structural failure / collapse	Loss of bedding material, poor construction, inappropriate materials, material degradation, service authority activities	Design / construction standards, inspections (incl. CCTV), dial before you dig service	Rare	Major	Medium	Formalised routine inspection and maintenance processes.
Blockage	Trees, litter, erosion, sedimentation, vandalism	Inspections (incl. CCTV)	Likely	Minor	Medium	Formalised routine inspection and maintenance processes.
Inter-Allotment Drainage						
Structural failure / collapse	Residential building activity, loss of bedding material, poor construction, inappropriate materials, material degradation	Development controls	Possible	Insignificant	Low	Acceptable risk. Continue to manage through existing development controls.

Asset Type						
Risk	**Possible Cause/s**	**Existing Controls**	**Likelihood**	**Consequence**	**Risk Rating**	**Response**
Blockage	Residential building activity, trees, litter, erosion, sedimentation, vandalism	Development controls	Possible	Insignificant	Low	Acceptable risk. Continue to manage through existing development controls.
Stormwater Structures						
Structural failure	Poor construction, material degradation	Design / construction standards, inspections	Rare	Insignificant	Low	Acceptable risk. Continue to manage through design / construction standards and inspection / maintenance processes.
Blockage	Residential building activity, trees, litter, erosion, sedimentation, vandalism	Design / construction standards, development controls	Likely	Moderate	High	Design / construction standards and development controls.
Stormwater Quality Devices						
Blockage	Excessive litter, storm event	Inspections and cleaning	Possible	Moderate	High	Routine inspection and cleaning processes.
Open Drains						
Loss of cross-section through erosion or sedimentation	Storm event, loss of grass cover, poor design or construction	Design / construction standards, inspections and maintenance	Possible	Minor	Medium	Acceptable risk. Continue to manage through design / construction standards and inspection / maintenance processes.

Asset Type						
Risk	**Possible Cause/s**	**Existing Controls**	**Likelihood**	**Consequence**	**Risk Rating**	**Response**
Levee Banks						
Loss of cross-section through erosion or damage	Storm event, loss of grass cover, poor design or construction, nearby building / construction activity	Design / construction standards, inspections and maintenance	Unlikely	Moderate	Medium	Acceptable risk. Continue to manage through design / construction standards and inspection / maintenance processes.
Culverts						
Structural failure / collapse	Excessive wheel loading, loss of cover, material degradation	Design / construction standards, inspections	Rare	Moderate	Medium	Acceptable risk. Continue to manage through design / construction standards and inspection / maintenance processes.
Separation of joints	Reactive soils, poor construction, storm events	Design / construction standards, inspections	Unlikely	Moderate	Medium	Acceptable risk. Continue to manage through design / construction standards and inspection / maintenance processes.
Blockage	Upstream erosion, storm events	Design / construction standards, inspections	Possible	Minor	Medium	Acceptable risk. Continue to manage through design / construction standards and inspection / maintenance processes.
Overtopping	Storm events, insufficient design capacity	Design / construction standards	Possible	Minor	Medium	Acceptable risk. Continue to manage through design / construction standards.

Asset Type						
Risk	**Possible Cause/s**	**Existing Controls**	**Likelihood**	**Consequence**	**Risk Rating**	**Response**
Floodways						
Structural failure / damage	Poor design or construction	Design / construction standards	Unlikely	Minor	Low	Acceptable risk. Continue to manage through design / construction standards.
Vehicle and / or person washed away	Reckless behaviour, inadequate or missing signage	Signage	Possible	Major	High	Provision, inspection and maintenance of adequate signage.
Detention Basins						
Overtopping	Blockage in low-flow outlets, catchment changes affecting design capacity, loss of capacity resulting from ground movement or material loss	Design / construction standards, inspections	Rare	Moderate	Medium	Application of design / construction standards and routine inspections.
Structural failure	Inappropriate / unauthorised earthworks, trees, poor construction, livestock, reduced grass cover	Design / construction standards, inspections, restricted access	Rare	Moderate	Medium	Application of design / construction standards, routine inspections and restricted access
Drowning	Reckless behaviour, inadequate or missing signage	Signage	Unlikely	Major	Medium	Provision, inspection and maintenance of adequate signage.

Asset Type						
Risk	**Possible Cause/s**	**Existing Controls**	**Likelihood**	**Consequence**	**Risk Rating**	**Response**
Flood Monitoring Stations						
Malfunction	Fauna, software / hardware, damage from debris	Remote monitoring, visual inspections	Possible	Major	High	Application of remote monitoring and routine visual inspections.
Drainage and Flood Mitigation Network						
Deferred maintenance backlog	Available funding levels, currency / completeness of asset information	Inspections, defect logging, maintenance budgeting	Almost Certain	Minor	High	Monitor and respond through future revisions of the DFMAMP.
Deferred renewal backlog	Available funding levels, currency / completeness of asset information	Inspections, defect logging, capital budgeting	Almost Certain	Minor	High	Monitor and respond through future revisions of the DFMAMP.

These risks are controlled through business as usual activities and therefore no addition budget allocation is required.

Lifecycle Management Plan

The lifecycle management plan details how Council intends to manage and operate the DFM assets at the defined service levels while optimising lifecycle costs.

Existing Infrastructure Base

Asset Summary

The physical parameters of assets covered by the AMP are outlined in Table 19 below.

Table 19 - Physical Parameters – Drainage and Flood Mitigation Network

Asset Class	Asset Group	Quantity	Replacement Value ($'000)
Piped Network	Drainage Mains	1,201 km	$668,680
Piped Network	Drainage Structures	43,681 ea	$135,082
Open Drain Network	Open Drains, Inverts and Levee Banks	881,840 sqm	$29,353
Flood Mitigation	Detention & Bio Detention Basins	357 ea	$10,268
Flood Mitigation	Flood Monitoring Station	36 ea	$1,208
Total			**$844,591**

Asset Hierarchy and Useful Life

An asset's useful life is defined as the period over which a depreciable asset is expected to be fully consumed. This period can be significantly impacted by council's maintenance practices.

The useful life of an asset is initially based on the manufacturer's or industry's recommended (expected) life. This is subject to change however based on historical evidence of the impact of the local environment on the expected life.

The hierarchy and useful lives of council's assets are provided in Table 20 - Asset Lives and Hierarchy.

It is a standard practice that for assets reaching the end of their standard life the remaining useful life is extended by between 5 and 15 years. The condition of the asset is considered where it is available, however formal procedures to reassess the standard life for the asset type based on local environmental parameters or asset characteristics have not been developed. Therefore, this practice needs further scrutiny and formalisation with its impact on depreciation rates determined.

Table 20 - Asset Lives and Hierarchy

Asset Class	Asset Group	Useful Life	Description
Piped Network	Drainage Mains	100	Drainage Mains - Concrete and RCBC
		80	Drainage Mains - MSCL, Steel and Polyethylene
		70	Drainage Mains - PVC (All) and DICL
		60	Drainage Mains - AC, Brick and Cast Iron
	Drainage Structures	70	Drainage Structures - Gross Pollutant Trap
		100	Drainage Structures - Manhole, Pit, Headwall
		20	Drainage Structures - Trash Rack
Road Drainage	Culvert	100	Drainage Mains - Concrete and RCBC
		80	Drainage Mains - MSCL, Steel and Polyethylene
		70	Drainage Mains - PVC (All) and DICL
		60	Drainage Mains - AC, Brick and Cast Iron
Open Drain Network	Open Drains	100	Open Drain - Concrete / Rock
		80	Open Drain Inverts Concrete
	Levee Bank	Non-Depreciable	Open Drain Inverts Rock
		Non-Depreciable	Open Drain - Earth & Grass
Flood Mitigation	Detention & Bio Detention Basins	Non-Depreciable	DC Detention/Retention Basins
		Non-Depreciable	DC Bio Retention/Filtration Drainage and Pipework under Filter Media
		Non-Depreciable	Drainage Structures - Spillway Concrete
		Non-Depreciable	Drainage Structures - Spillway Rock
		Non-Depreciable	Drainage Structures - Sediment Forebay Concrete
	Flood Monitoring Station	15	Flood Alert Equipment (Gauge, weather station, etc)

Asset Condition

Council has adopted a condition assessment method using a 5-point scale rating, varying from 'Very Good' to 'Very Poor' condition as can be seen in Table 21 below.

Table 21 - Structural Condition Grading Model

Grade	Condition	%Remaining Useful Life	Description
1	Very Good	>70%	Sound physical condition. No signs of deterioration Only normal maintenance required.
2	Good	70% - >50%	Acceptable physical condition; minor deterioration visible, no short-term failure risk. Minor defects only. Only minor work required, if any.
3	Fair	50% - >10%	Acceptable physical condition; minimal short-term failure risk but potential for deterioration in long-term. Minor defects only. Minor components or isolated sections of the asset may need replacement or repair now but asset functions safely at adequate level of service. Work may be required but asset is serviceable. Maintenance required to restore the asset to an acceptable level of service.
4	Poor	10% - >4%	Significant deterioration evident. Failure likely in short-term. Likely need to replace most or all of the asset. No immediate risk to health or safety but works are required to ensure asset remains safe. Substantial work required in short-term, asset barely serviceable. Asset requires renewal – works to be programmed.
5	Very Poor	<4%	Failed or failure imminent. Immediate need to replace most or the entire asset. Health and safety hazards exist which present a possible risk to public safety, or asset cannot be serviced/operated without risk to personnel. Asset is effectively unserviceable. Major work or replacement required urgently.

The condition ratings are derived from recent infrastructure asset valuations. These ratings were collaboratively determined by the valuer and council representatives. Sample visual inspections were undertaken by the valuer to confirm the ratings allocated, therefore the ratings have been assessed as a percentage of the age of the asset and the total life of the asset. The total life being the sum of the asset age and the remaining life.

Therefore, the condition ratings are suitable for financial purposes but not suitable for the development of maintenance and renewal programs.

CCTV investigation works have been undertaken to identify asset defects with renewal and maintenance programs based on defects. The number of defects is not an indication of the condition of the asset, therefore the CCTV records need to be re-assed to determine a condition rating for the drainage assets. This data has been used for the development and prioritising of 10-year renewal programs and annual budget preparation.

Table 22 - Current Condition Summary

Asset Type	Condition (% 0f total Asset Base)					Total
	As New	Good	Fair	Poor	Very Poor	
Monitoring Station	0.08	0.00	0.04	0.00	0.01	0.14
Open Drain	1.45	0.04	0.01	0.00	0.00	1.50
Open Drain Invert	0.37	0.79	0.60	0.00	0.03	1.78
Box Culvert	4.29	1.98	0.32	0.08	0.17	6.84
Box Culvert-STEEL	0.03	0.00	0.00	0.00	0.00	0.03
Gross Pollutant Trap	0.17	0.00	0.00	0.00	0.00	0.17
Headwall	1.05	0.48	0.07	0.05	0.00	1.65
Manhole	2.89	1.25	0.08	0.25	0.03	4.50
Pipe	46.93	20.72	1.94	2.68	0.71	72.97
Pit	6.20	2.44	0.20	0.15	0.03	9.02
Trash Rack	0.02	0.03	0.06	0.03	0.00	0.14
Bio Retention Basin	0.46	0.05	0.00	0.00	0.00	0.51
Detention Basin	0.70	0.00	0.00	0.00	0.00	0.70
Retention Basin	0.04	0.00	0.00	0.00	0.00	0.04
Total	**64.67**	**27.78**	**3.32**	**3.23**	**0.99**	**100.00**

Figure 6 - Condition Profile Drainage and Flood Mitigation Network provides an overview of the asset condition profile as a percentage of the current replacement cost for the Drainage and Flood Mitigation Network.

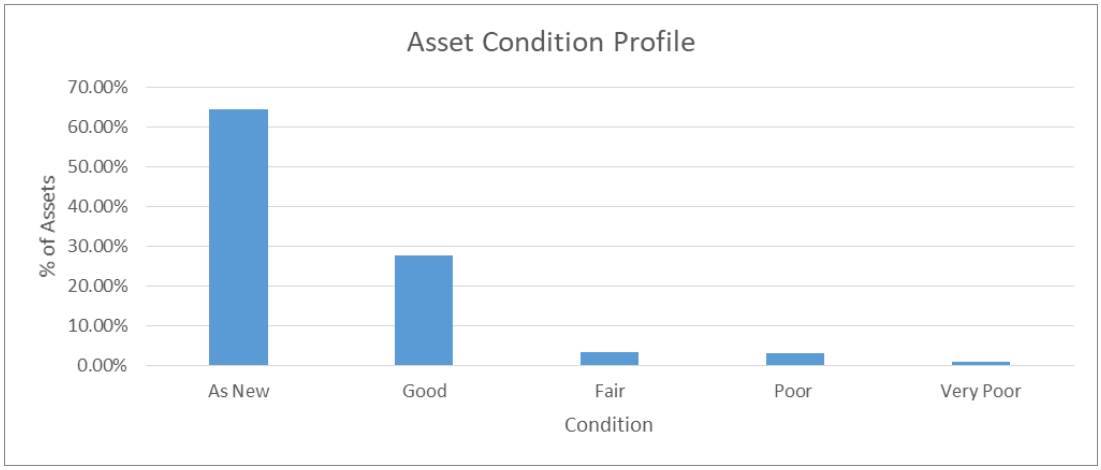


Figure 6 - Condition Profile Drainage and Flood Mitigation Network

Of the assets that have been condition assessed, the condition results show that:

Percentage of Very Poor assets	0.99%	~$8.15m
Percentage of Poor assets	3.23%	~$26.57m
Total	4.23%	~$34.7m

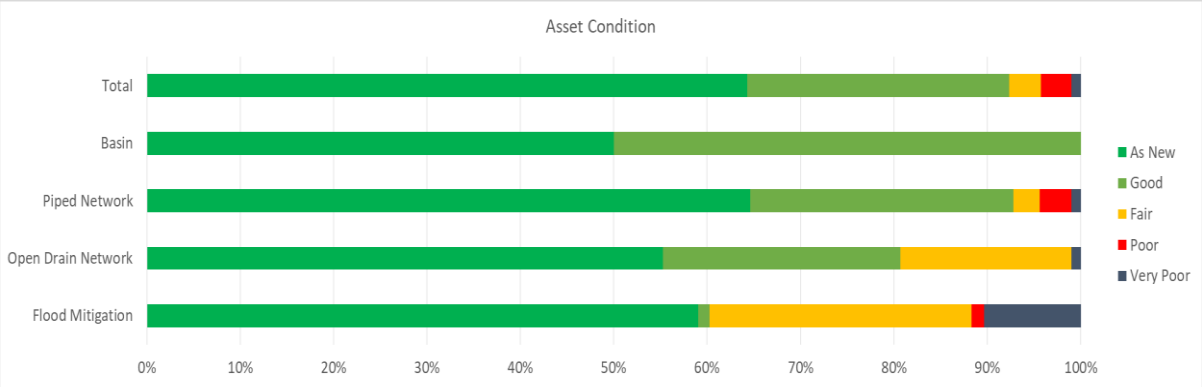


Figure 7 - Condition Profile by Drainage and Flood Mitigation Asset Class

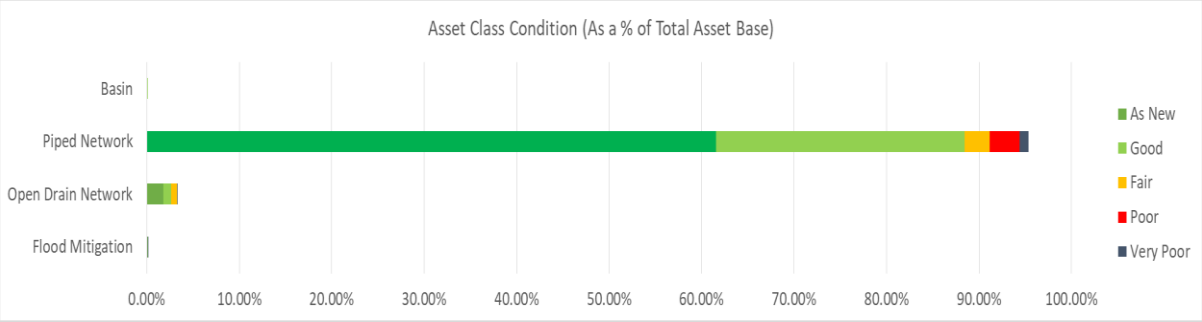


Figure 8 - Condition Profile by Asset Class

Figure 6 and Figure 7 indicates that approximately 4.23% of the drainage and flood mitigation assets are in poor to very poor condition. However, this may not be a true indication of the actual asset condition due to the accuracy of the condition data. The condition information used in this AMP is estimated by physical age/construction date rather than inspection results. It has been identified in the improvement plan as a high priority task to improve the accuracy of the condition information. Recent CCTV inspections are assisting to identify and locate defects and therefore provide more accurate condition assessments of our stormwater assets, in some circumstances assets have been found to be in a condition less than that assessed by age alone. The inclusion of asset conditions in the physical asset registers has been highlighted as a very high priority in the improvement plan and a summary of status will be made available in the future version of the AMP.

Proposed improvements in our asset management including a whole-of-council system will provide the necessary improvements in our data management and close the existing current data gaps.

Figure 8 highlights that the pipe network is 94% of the DMF assets by value. Whilst Figure 8 emphasises the need to address the flood monitoring assets in very poor condition, these assets form only 0.01 % of the asset base.

Age Profile

The age profile of the assets can be seen in Figure 9.

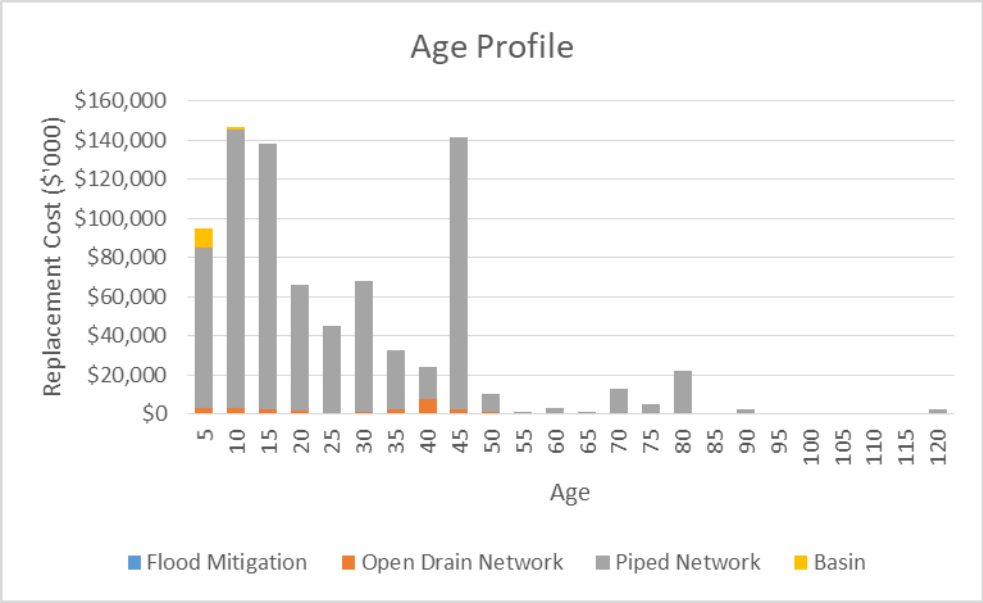


Figure 9 - Asset Age Profile

Asset Remaining Useful Life

The remaining useful lives of the assets are based on:

- inspections by a suitable qualified person
- calculated from supplied construction dates and adopted asset lives
- estimated from the condition of the asset as a percentage of the expected life.

Figure 10 provides an overview of the remaining useful life profile as a percentage of the replacement cost for the Drainage and Flood Mitigation Network.

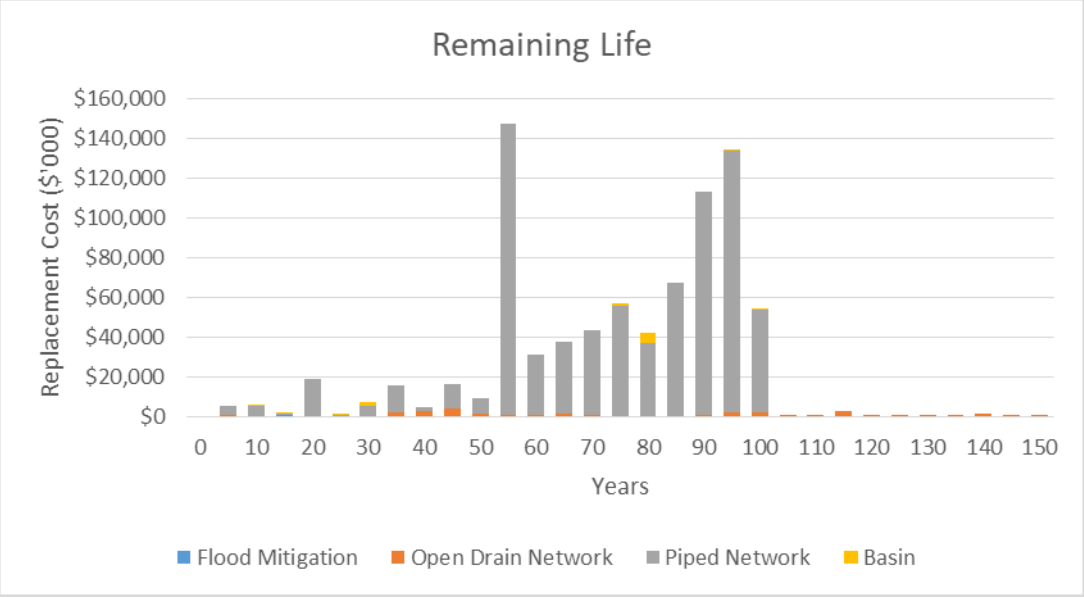


Figure 10 - RUL Profile Drainage and Flood Mitigation Network

The remaining life data indicates that there is no backlog of drainage and flood mitigation works with $5.26m renewals forecast for the next five (5) years. This result has been achieved by ensuring, where possible, that any asset reaching its end of life has the remaining life extended.

The condition data indicates that $34.7m of Drainage and flood mitigation assets are failing or have failed. This does not compare with the remaining life forecasts, therefore, there is a mis-alignment between the financial asset data and the technical asset details.

Data Confidence

The lifecycle assessment is only as precise as the accuracy of the data Council holds. This data includes, revaluation data of the assets, financial data and asset register details.

Table 23 - Data Confidence Rating

Grade	Description	Accuracy
1	Accurate	100%
2	Minor Inaccuracies	95%
3	50% Estimated	80%
4	Significant Data Estimated	70%
5	All Data Estimated	60%

(Section 4.3.7 of the IIMM, Version 3.0, 2006)

Confidence rating for the data provided is grade 4 (70%). There appears to be significant estimates of the data necessary for asset management and poor alignment between the technical data and the financial data. In particular, the overall condition data and completeness of key attributes for the basins. It is important to note that the long term financial forecast is being review and the planned capital program is still in draft.

Proposed improvements in our asset management including a whole-of-council system will provide the necessary improvements in our data management and close the existing current data gaps.

Available Funding

The funding strategy is detailed in Council's 10-year long term financial plan in Table 24.

Table 24 - Long Term Financial Plan

Financial Year Ending	Available Funding ($'000)			
	New/Upgrade	Operation & Maintenance	Renewals	Total
2020	$993	$3,412	$5,275	$9,680
2021	$1,705	$3,619	$5,746	$11,070
2022	$1,810	$3,838	$3,640	$9,288
2023	$2,809	$4,071	$4,173	$11,053
2024	$3,052	$4,318	$2,180	$9,550
2025	$2,775	$4,581	$2,220	$9,576
2026	$2,825	$4,860	$2,260	$9,945
2027	$2,900	$5,157	$2,320	$10,377
2028	$2,975	$5,473	$2,679	$11,127
2029	$3,050	$5,808	$3,240	$12,098
Total	**$24,894**	**$45,136**	**$33,733**	**$103,763**

The operations and maintenance funding assumes that the current funding levels deliver the level of service council requires and this funding will continue for the duration of the plan. In addition, as the asset base increases due to contributed assets the level of funding as increased in alignment with current percentages.

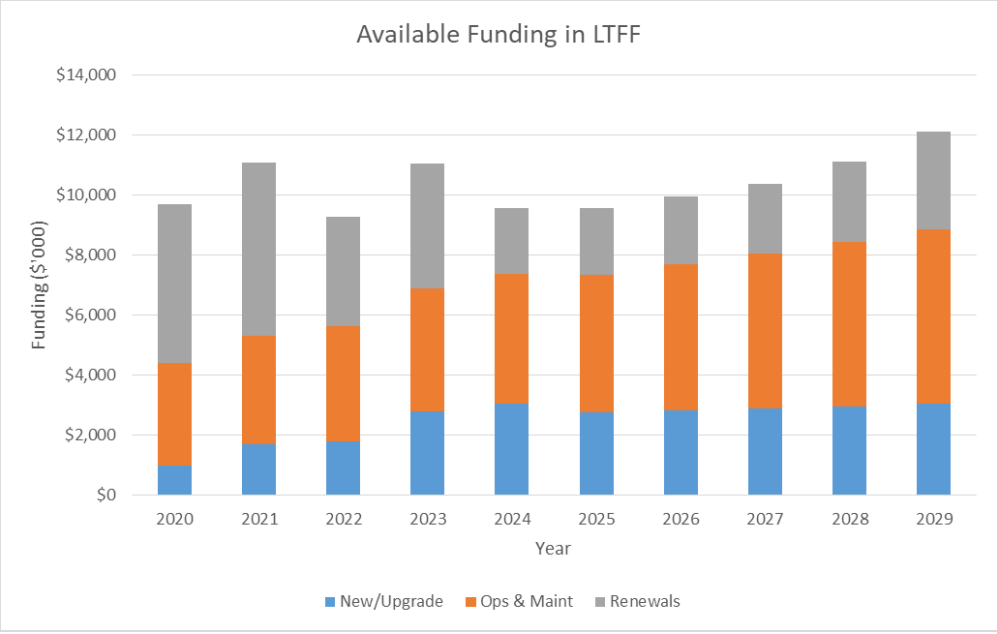


Figure 11 - Available Funding for the Drainage and Flood Mitigation Network

Operations & Maintenance

This section is to be based on operations and maintenance requirements as identified from changes in levels of service, funding Issues identified via operations and maintenance and consideration of the growth in the asset portfolio

Currently maintenance is managed based on historical information and trends. The maintenance service objectives are to:

- maintain council's infrastructure in a safe, serviceable and aesthetic condition to the satisfaction of council and the community
- maintain and preserve the functionality and value of the existing assets
- provide and maintain a safe environment for the community within the constraints of council's financial capacity and resource capability, while displaying a reasonable "duty of care"
- ensure the provision of a high standard of customer service and that customer requests are responded to quickly and efficiently.

Functions related to the day-to-day running and upkeep of assets, the costs of which are particularly significant for dynamic/short-lived assets.

Maintenance Specifications

The links below contain the maintenance specification details.

Maintenance Specification Details			
Assets covered	**Status**		**Document Reference**
CCTV Drainage Mains	Up to Date		A5442744 (Objective)
FCR (Intervention Levels)	Up to date		A5501043 (Objective)

Maintenance includes routine, reactive, planned and cyclic work activities.

Routine maintenance is the regular ongoing 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. This can also be called **Cyclic maintenance**. Currently there is no routine stormwater maintenance

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

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

Standards and Specifications

Maintenance work is carried out in accordance with the Council's Asset Management and Maintenance Section Work Instructions, which are available upon request.

These Work Instructions are specific to each work activity and include the relevant Restoration Standard applicable to the activity in question.

Operations & Maintenance Forecast

Figure 12 provides an overview of forecast operations and maintenance expenditure for the Drainage and Flood Mitigation Network. Total forecast annual operations and maintenance expenditure across all Drainage and Flood Mitigation asset types is shown in Table 25.

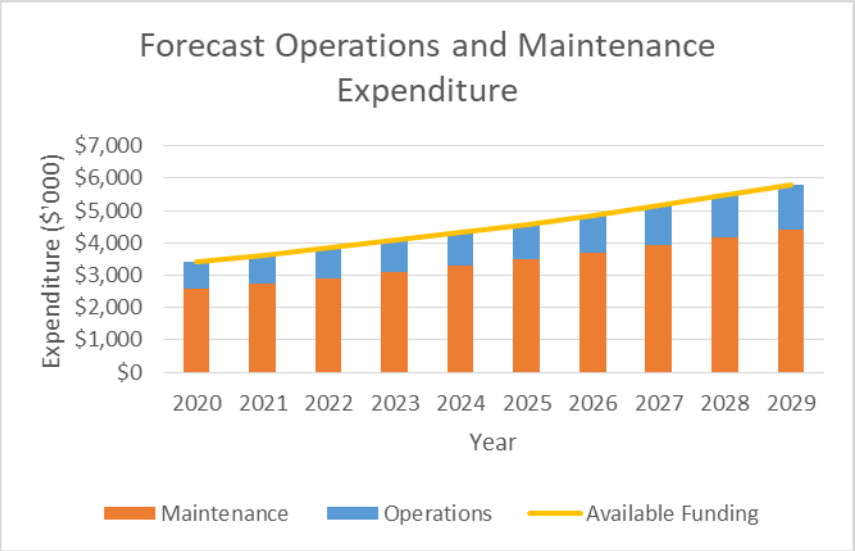


Figure 12 - Planned Operations and Maintenance Budget, Drainage and Flood Mitigation Network

Table 25 - Planned Operations and Maintenance Budget, Drainage and Flood Mitigation Network

Financial Year Ending	Operations ($'000)	Maintenance ($'000)	Non-Recurrent ($'000)	Total ($'000)
2020	$819	$2,593	$0	$3,412
2021	$869	$2,751	$0	$3,619
2022	$921	$2,917	$0	$3,838
2023	$977	$3,094	$0	$4,071
2024	$1,036	$3,282	$0	$4,318
2025	$1,099	$3,481	$0	$4,581
2026	$1,166	$3,694	$0	$4,860
2027	$1,238	$3,919	$0	$5,157
2028	$1,313	$4,159	$0	$5,473
2029	$1,394	$4,414	$0	$5,808
Totals	**$10,833**	**$34,303**	**$0**	**$45,136**

Maintenance Funding Ratio	100%

The current maintenance funding levels appear to be sufficient when compared to the depreciation expense, however appear low as a percentage of the asset base.

There is enough funding in the LTFF to maintain the current operations and maintenance activity levels. Additional work in the form of an activity-based budget review is required to determine if the current activities meet councils desired service levels. It is anticipated in the future years that the maintenance cost will be increased to cater for the increase of relining stormwater mains as prefer repair method, instead of replacement.

Renewals Planning

Significant refurbishment / rehabilitation / replacement of an asset or component to restore the asset to its required conditional and functional performance, through the identification of an optimal long-term solution.

Approach to Renewals Planning

A number of factors were considered in order to provide a holistic approach to prioritising End of Life Renewal programs and projects for this AMP. A brief summary of the considerations taken into account are documented below:

- An assessment into legislative and Australian Standard compliance was undertaken, to ensure programs and projects associated with assets not currently meeting statutory or standard requirements were prioritised over programs and projects that already do.
- Asset criticality was undertaken to identify projects with assets that are more critical to ensuring levels of service are maintained. Some projects were identified as being located within Critical land use warranted prioritisation over other projects.
- Once Asset Profiling was completed, a risk assessment was undertaken to identify projects with assets that entailed higher risk and criticality than others in accordance to Council's Enterprise Risk Management Framework.
- Asset condition and defect information was analysed, with higher priority given to projects that involved assets in poor condition or end of life asset, over those that were in reasonable condition.
- Project dependency was investigated. Projects that required other projects to be completed before others gave rise to re-prioritising some.

Table 26 provides an overview, by asset type, of the method and / or criteria for identification and selection of renewal projects in the future capital works program.

Table 26 - Renewal Planning Methods / Criteria

Asset Type	Method / Criteria for Identification / Selection
Stormwater Mains	Evaluation of inspection and maintenance history against the intervention levels for renewal.
Inter-Allotment Drainage	Evaluation of inspection and maintenance history against the intervention levels for renewal.
Stormwater Structures	Evaluation of inspection and maintenance history against the intervention levels for renewal.
Stormwater Quality Devices	Evaluation of inspection and maintenance history against the intervention levels for renewal.
Open Drains	Evaluation of inspection and maintenance history against the intervention levels for renewal.
Levee Banks	Evaluation of inspection and maintenance history against the intervention levels for renewal.
Culverts	Evaluation of inspection and maintenance history against the intervention levels for renewal.
Floodways	Evaluation of inspection and maintenance history against the intervention levels for renewal.
Detention Basins	Evaluation of inspection and maintenance history against the intervention levels for renewal.
Flood Monitoring Stations	Evaluation of inspection and maintenance history against the intervention levels for renewal.

PRIORITISATION METHODOLOGY:

Drainage Rehabilitation projects are prioritised in accordance with the risk posed to persons and/or property, as determined by the road hierarchy (when located in road reserve) or land use of the property. The relative priorities are outlined in Table 27.

Table 27 - Drainage rehabilitation prioritisation criteria

Priority	Road Hierarchy	Land Use
1	Arterial	CBD, Major Centre, Railway Corridor, Referrable Dam
2	Sub-Arterial	CBD, Major Centre, Railway Corridor, Referrable Dam
3	Major Collector	Tertiary / Secondary Education
4	Minor Collector	Primary Education
5	Local	Local Commercial Centre
6	Local	Park / Reserve Strategic
7	Local	Park / Reserve District
8	Local	Park / Reserve Local
9	No Through	Residential
10	No Through	Drainage Reserve
11	No Through	Vacant

Renewal will be undertaken using 'low-cost' renewal methods where practical. The aim of 'low-cost' renewal is to restore the service potential or future economic benefits of the asset by renewing the asset at a cost less than replacement cost.

Renewal Standards

Renewal work is carried out in accordance with council's work instructions and annual budget process, which are available upon request.

These work instructions are specific to each work activity and include the relevant restoration standard applicable to the activity in question.

Comparative analysis of renewal approaches

The planned renewals program was compared to the asset records using 3 different approaches as follows:

Depreciation Renewals

This is a 'top down' approach that uses the depreciation or 'consumption' rate as a guide to how much council should be investing in renewals to effectively maintain the assets. This is calculated from the financial register using valuation data. This does not necessarily reflect the technical condition of the assets or the potential impact on the life of the asset due to changes in maintenance and operational practices.

Condition Renewals

This is a more rigorous 'bottom up' approach that uses the condition of each asset and develops a renewal program on timely investment of expenditure to renew the asset at the end of its life. The forecast renewal expenditure is then more representative of when the expenditure is required.

Planned Renewals

Council's planned renewal expenditure included in the 10-year CAPEX program which is included in Appendix B.

A comparison of the results from the 3 renewal forecasting models is shown in Figure 13 and Table 28.

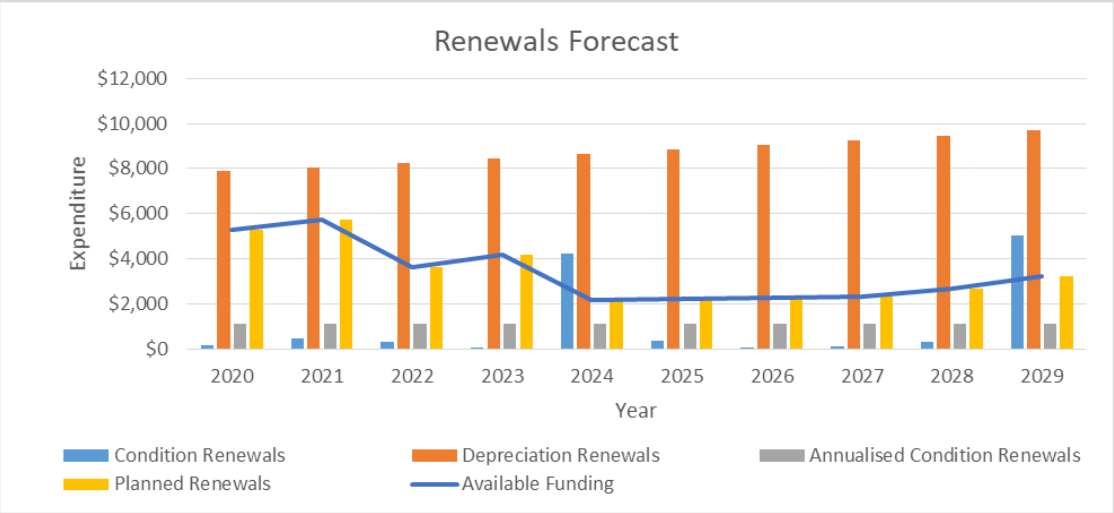


Figure 13 - Comparison of Forecast Renewal Expenditure

Table 28 - Forecast renewal expenditure

Financial Year Ending	Condition Renewals ($'000)	Annualised Condition Renewals ($'000)	Planned Renewals ($'000)	Depreciation Renewals ($'000)
2020	$154	$1,119	$5,275	$7,900
2021	$470	$1,119	$5,746	$8,067
2022	$316	$1,119	$3,640	$8,241
2023	$75	$1,119	$4,173	$8,429
2024	$4,244	$1,119	$2,180	$8,626
2025	$389	$1,119	$2,220	$8,825
2026	$67	$1,119	$2,260	$9,031
2027	$131	$1,119	$2,320	$9,243
2028	$314	$1,119	$2,679	$9,463
2029	$5,030	$1,119	$3,240	$9,689
Total	**$11,188**	**$11,188**	**$33,733**	**$87,513**

The 10-year LTFF funding for renewals is ~$33.7m which is sufficient to fund any of the renewal forecasts.

Renewals Program

Council's planned renewal program has been developed from the CCTV inspection program and validated by Council's suitable qualified staff. The adopted program is attached as Appendix B.

There is sufficient funding in the existing LTFF to fund the DFM assets planned for renewal However, the planned renewal program is reviewed during the annual budget preparation process. Catchment Management Plan (CMP) will be required for older suburbs where the design of the network is out-of-date and under capacity has been identified.

The assumptions of the LTFF is currently being reviewed to considered the under capacity of the CBD drainage network and it is anticipated that the renewal shortfall will be significantly reduced in future version of the AMP with improved condition data which will result in better estimation of depreciation values and renewal timeframe.

It should be noted that the asset condition records do not support the current planned level of renewal expenditure. The results of the CCTV visual inspection has not been used to update the asset register condition data. The improvement work has been identified and included in the improvement plan.

Creation / Acquisition / 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 Council from land development.

Provide a brief summary of the considerations taken into account when prioritising new/upgrade Projects. The discussion may include some example criteria as documented below:

- New/upgrade projects that involved legislative drivers were prioritised over others that did not, to ensure compliance with statutory requirements.
- Once the legislation assessment was completed, projects were assessed against alignment with approved Council plans, policies, and strategies. This was essential to ensure projects were not being developed outside the scope of strategic Council documents.
- A risk assessment was undertaken, to identify projects with higher risk. This was necessary to identify the consequences and impacts if projects were not undertaken. Projects identified as higher risk were prioritised over those with a lower risk.
- An assessment of community growth and demand based on technical levels of service on services within the Council area was undertaken. This highlighted that projects associated with growth areas such as the northern growth corridor warranted being prioritised over those not located in such an area.
- For projects concerning the upgrade of existing assets, these were given priority over new assets in order to maximise / enhance existing infrastructure before investing in new, additional assets
- Include evidence of a value management approach taking into consideration the Whole of Life costs of each project.

Selection Criteria

New assets and the upgrade / expansion of existing assets are identified from a range of sources including, but not limited to, councillor or community requests, proposals identified by strategic plans and / or partnerships with other organisations. Table *29* provides an overview, by asset type, of the method and / or criteria for identification and selection of new works projects in the future capital works program. Table 30 provide an overview of the methodology and impact ranking rating used for prioritising new drainage works.

Table 29 - New Works Planning Methods / Criteria

Asset Type	Method / Criteria for Identification / Selection
Stormwater Mains	In accordance with Strategic / Local Government Infrastructure Plans and functional requirements associated with drainage upgrades.
Stormwater Structures	In accordance with Strategic / Local Government Infrastructure Plans and functional requirements associated with drainage upgrades.
Stormwater Quality Devices	In accordance with Strategic / Local Government Infrastructure Plans and functional requirements associated with drainage upgrades.
Open Drains	In accordance with Strategic / Local Government Infrastructure Plans and functional requirements associated with drainage upgrades.
Levee Banks	Identified need as a result of inundation.
Culverts	In accordance with Strategic / Local Government Infrastructure Plans and functional requirements associated with drainage upgrades, or identified need as a result of inundation.
Floodways	Identified need from analysis of flood events.
Detention Basins	In accordance with Strategic / Priority Infrastructure Plans and functional requirements associated with drainage upgrades.
Flood Monitoring Stations	Identified need from analysis of flood events.

Table 30 - New Drainage Priority and Impact Rating

Categories	Characteristic Rating (CR)	Characteristic	Impact Rating (IR)	Impact
Drainage Issues	4	Council infrastructure contributing	5	Directly Responsible
			2	Contributing
	2	Existing drainage (including K&C)	3	Under capacity
			2	Inefficient (e.g. too flat)
	5 Further multiply if multiple properties affected	Stormwater enters property (not caused by flooded Creeks/Rivers)	5	Habitable dwelling
			3	Non-habitable structure
			1	Land only
	3	Safety	5	Pedestrian and vehicular
			3	Vehicular
			2	Pedestrian
Environmental Issues	2	Erosion / scour / sediment	5	Severe
			3	Major
			2	Moderate
			1	Minor
	2	General	5	Deep ponding water
			3	Shallow ponding water
			2	Overgrown
			1	Unsightly

Categories	Characteristic Rating (CR)	Characteristic	Impact Rating (IR)	Impact
	3	Maintenance history	3	Frequent
			1	Occasional / reactive
Other	2	Road classification (if issue is with the road only)	5	Arterial
			4	Sub-arterial
			3	Major collector
			2	Minor collector
			1	Local
	2	Nearby public infrastructure likely to be affected by issue	5	School
			5	Shopping centre
			5	Hospital
			3	Transport
			3	Park

Standards and Specifications

New works are carried out in accordance with the relevant design / construction standards, Main Roads specifications, the Queensland Urban Drainage Manual (QUDM) and approved construction plans which are available upon request.

Summary of Future Upgrade / New Assets Expenditure

Figure 14 provides an overview of future planned upgrade / new assets expenditure in accordance with the current 10 year forward plan.

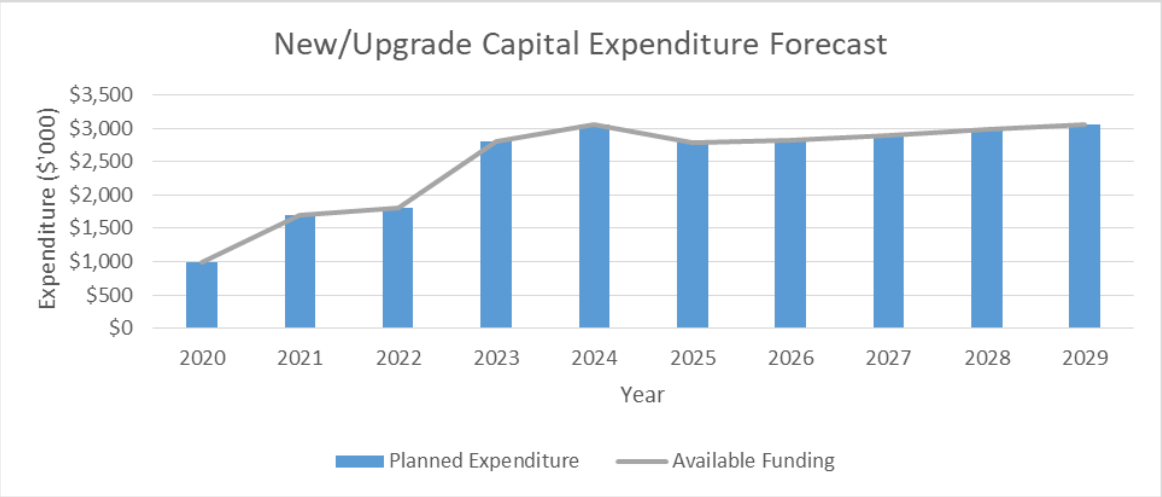


Figure 14 - Planned New Works / Upgrade Expenditure Drainage and Flood Mitigation Network

New assets are to be funded from council's capital works program and grants where available.

The LTFF has enough funding to support the Planned New/Upgrade CAPEX program. The New/Upgrade works programme is attached in Appendix B.

Disposal / Rationalisation

Review of the configuration, type and location of assets and the service delivery process relevant to the activity, when an asset becomes uneconomical to maintain or rehabilitate, or is no longer required.

Disposals and Transfers

There is currently no information regarding any assets that may have been disposed of. It has been assumed that all assets on the register are in use

Disposals Program

There have been no assets identified for disposal however some asset recorded in the asset register no longer exist, therefore a disposal plan will need to be developed once the asset data issues have been addressed. Current asset disposal for drainage assets is considered on a case-by-case scenario during asset rehabilitation and detail design. The disposal cost is included as part of the overall rehabilitation project.

Forecast Expenditure

This section outlines the financial requirements resulting from the information presented in the previous sections of the DFMAMP. The financial projections will be further refined in future revisions of the DFMAMP, as more detailed information becomes available on desired service levels and current / future asset performance.

Financial Summary

The forecast expenditure to deliver the planned new/upgrade program, the planned renewals and sustain the current level of operations and maintenance is outlined in Table 31 below. This gives a 10-year total of ~$103.7m.

Table 31 - 10-Year Forecast Expenditure

Financial Year Ending	Risk Treatment ($'000)	New or Upgrade ($'000)	Operations ($'000)	Maintenance ($'000)	Planned Renewals ($'000)	Total ($'000)
2020	$0	$993	$819	$2,593	$5,275	$9,680
2021	$0	$1,705	$869	$2,751	$5,746	$11,070
2022	$0	$1,810	$921	$2,917	$3,640	$9,288
2023	$0	$2,809	$977	$3,094	$4,173	$11,053
2024	$0	$3,052	$1,036	$3,282	$2,180	$9,550
2025	$0	$2,775	$1,099	$3,481	$2,220	$9,576
2026	$0	$2,825	$1,166	$3,694	$2,260	$9,945
2027	$0	$2,900	$1,238	$3,919	$2,320	$10,377
2028	$0	$2,975	$1,313	$4,159	$2,679	$11,127
2029	$0	$3,050	$1,394	$4,414	$3,240	$12,098
Total	**$0**	**$24,894**	**$10,833**	**$34,303**	**$33,733**	**$103,763**

The estimated available funding forecast is outlined in Table 24 in previous section.

The comparison of the projected 10-year expenditure and the funding included in the LTFF can be seen in Figure 15 below.

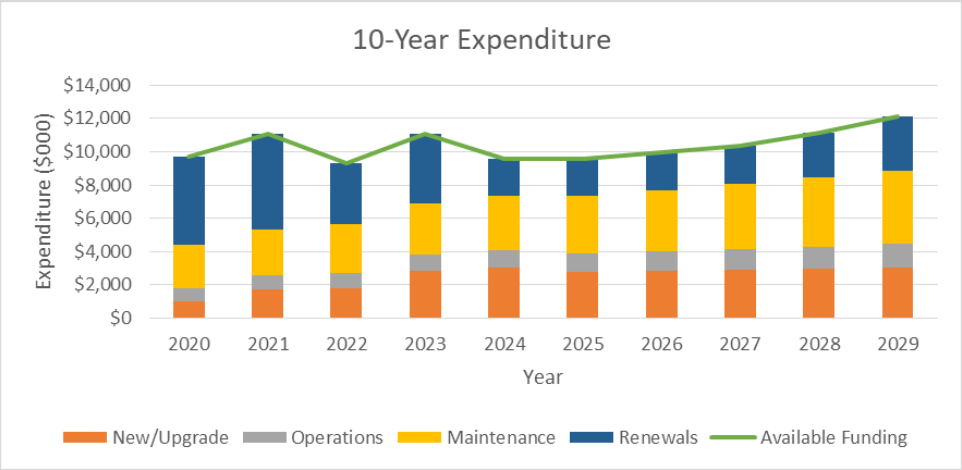


Figure 15 - Expenditure Forecast

Key Assumptions in Financial Forecasts

This section details the key assumptions made in preparing and presenting the forecasts of required operating and capital expenditure, asset values, depreciation expense and carrying amounts contained in the DFMAMP. It is presented to provide an understanding of the levels of confidence in the information behind the financial forecasts.

Key elements of the financial forecasts (asset values, depreciable amounts, useful lives, asset condition and consumption) have been derived from recent valuations and the FAR as at 3 July 2019. It is currently assumed that the planned renewal expenditure provides a better indication of requirements, being based on considerable 'on the ground' experience and information.

The valuation report described above utilised available condition assessment information (verified by sample visual condition assessments) with a corresponding assessment of both the phase and rate of asset consumption. It is anticipated that future enhancements in the determination and utilisation of asset condition information may result in revisions to depreciable amounts and estimated remaining useful lives. Such revisions would alter the scale and timing of projected renewal expenditure.

Planned maintenance and renewal expenditures are based on assumed / inferred levels of service for the drainage and flood mitigation network resulting from experience to date in providing these services to the community. Future anticipated community engagement may result in adjustments to the desired levels of service and thus impact upon future financial forecasts.

Forecasts of growth in physical assets are based on currently available assumptions in population or dwelling projections and related sequencing. Further, to enhance consistency with existing planning instruments, the forecasts have been derived from the 2019-2020 financial year council's LTFF assumptions and capital works program. The future forecast used in this AMP has been refined to reflect the actual growth rates and realistic infrastructure growth from development applications and activities, hence the forecast may not align completely with the published LGIP projections. As such, any future revisions to these assumptions and underlying projections or sequencing will impact the financial forecasts of this AMP.

It is anticipated that the accuracy of financial forecasts may be improved in future revisions of the AMP by ongoing review and refinement of the following actions:

- depreciable amounts and depreciation methodologies
- asset useful lives and consumption
- annual capital and operational budget
- condition assessment methodologies and ratings
- growth factors and estimates
- desired levels of service.

Asset Values

The valuation is based on:

- a review of the asset registers
- council's construction costs and published rates
- annual infrastructure asset valuation and indexation
- condition assessments to determine remaining useful life.

Asset values are forecast to increase in accordance with the growth in physical infrastructure assets resulting from construction / acquisition by Council and contributions from developers**.** The current replacement cost, accumulated depreciation, fair value and annual depreciation for drainage and flood mitigation network assets from the fixed asset register as at 3 July 2019 are outlined in Table 32.

Table 32 - Asset Valuations

Asset Class	Current Replacement Cost ($'000)	Accumulated Depreciation ($'000)	Fair Value ($'000)	Annual Depreciation ($'000)
DFM Assets	$844,591	$208,873	$635,718	$8,778

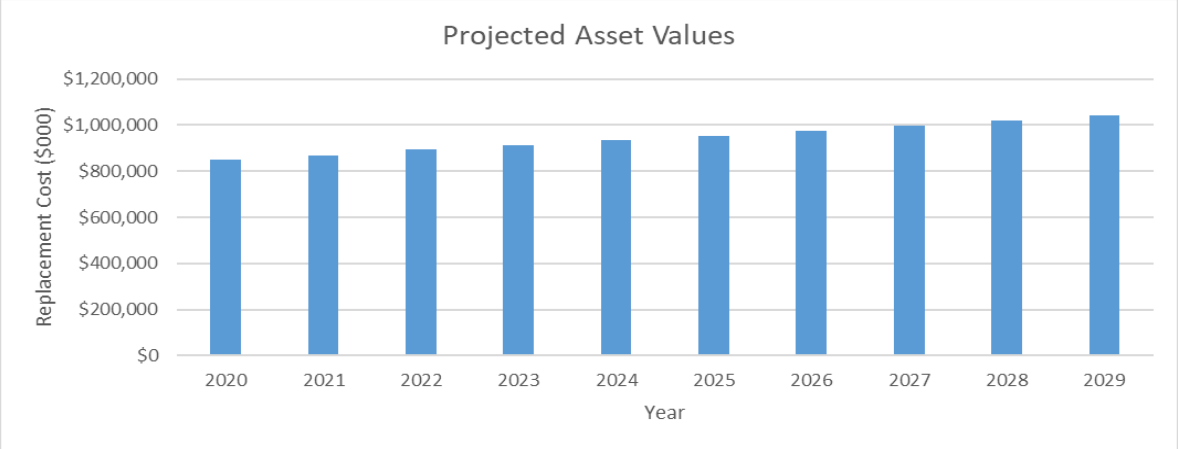


Figure 16 - Asset Valuation Forecast

Asset values are forecast to remain the same no new/upgrade capital works are planned at this stage. Figure 16 shows the projected asset values over the planning period. The depreciation expense can be seen in Figure 17 below.

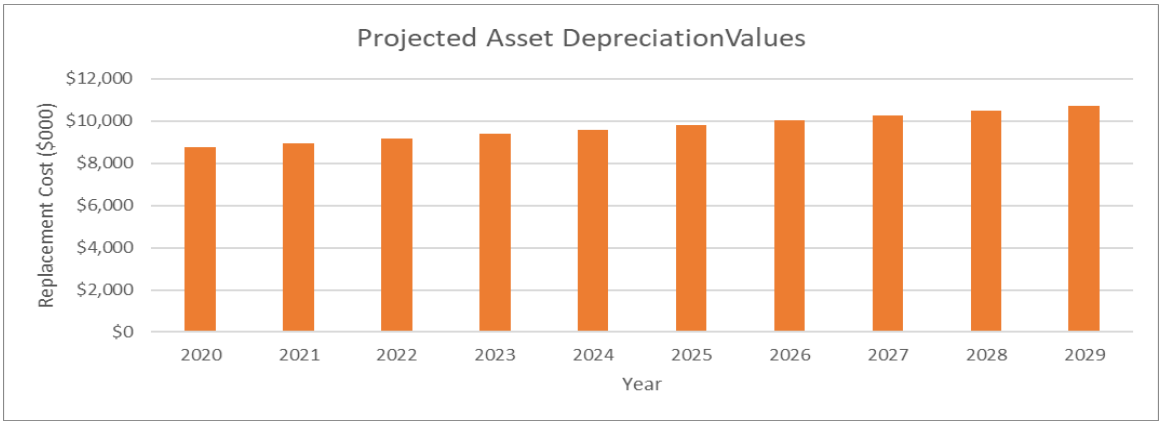


Figure 17: Projected Depreciation Expense

The value of the depreciated assets will vary over the planning period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets. The projected value of the depreciated assets is expected to increase as the expenditure on renewals is more than the depreciation rate, this can be seen in Figure 18.

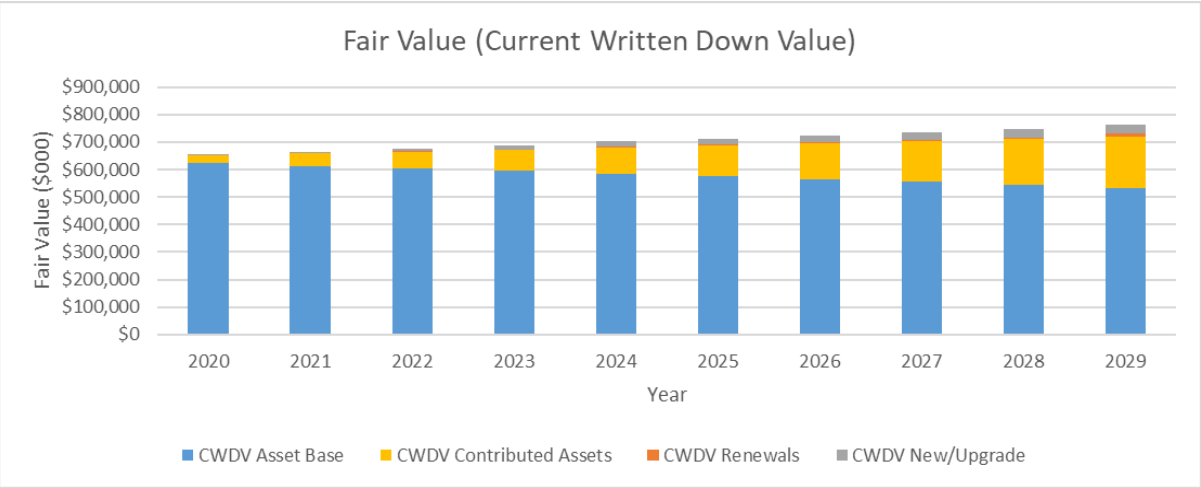


Figure 18 - Projected Value of Depreciated Assets

Performance Ratios and Sustainability

The 'financial sustainability' outputs are provided to demonstrate the trends that the currently anticipated expenditure will have on key measures. Capital Expenditure for 2018-19 is shown in Table 33.

Table 33 - Capital Expenditure 2018-19

Year	Capital Renewal Expenditure ($000)	Capital New/Upgrade Expenditure ($000)	Total Capital Expenditure ($000)
2018-2019	*$2,021	*$765	*$2,786

*Please note. This is based on the 2018-2019 financial year approved budget.

Consumption Ratio

The consumption ratio provides a measure of the percentage of the asset base consumed to date and an indication of how fast the assets are being consumed each year and whether investment may require adjustment.

FORMULA
Written down value of assets/
Gross current renewal costs

IN OTHER WORDS
The current value of the assets divided by What it would cost to renew them

TARGET
improvement over time
(40% - 80%)

Council = 75.77%

Table 34 - Annual Asset Consumption

Annual Asset Consumption (Depreciation/Depreciable Amount)	1.05%

The Annual Asset Renewal Ratio provides a measure of the rate of investment in renewals and can be an indication of surpluses or shortfalls in expenditure relative to asset age and rates of deterioration.

Table 35 - Annual Asset Renewal

Annual Asset Renewal (Capital Renewal Expenditure/Depreciable Amount)	0.25%

The Annual New & Upgrade ratio provides an indication of the rate of growth of the asset base.

Table 36 - Annual New & Upgrade Ratio

Annual New/Upgrade (Capital New & Upgrade / Depreciable Amount)	0.09%

Service Level Sustainability Ratio

There are two key indicators for service level sustainability that have been considered in the analysis of the services provided by this asset category, these being long term life cycle costs and medium-term costs over the 10-year financial planning period.

Long term - Life Cycle Cost

Life cycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the longest asset life. Life cycle costs include maintenance and asset consumption (depreciation expense).

Life cycle costs can be compared to life cycle expenditure to give an indicator of sustainability in service provision. Life cycle expenditure includes maintenance plus capital renewal expenditure. Life cycle expenditure will vary depending on the timing of asset renewals.

A gap between life cycle costs and life cycle expenditure gives an indication as to whether present consumers are paying their share of the assets they are consuming each year. The purpose of this AMP management plan is to identify levels of service that the community needs and can afford and develop the necessary long-term financial plans to provide the service in a sustainable manner.

Medium term – 5-year and 10-year financial planning period

This asset management plan identifies the estimated maintenance and capital expenditures required to provide an agreed level of service to the community over a 10-year period for input into a 10-year financial plan and funding plan to provide the service in a sustainable manner.

This may be compared to existing or planned expenditures in the 10-year period to identify any gap. In a core asset management plan, a gap is generally due to increasing asset renewals.

Knowing the extent and timing of any required increase in outlays and the service consequences if funding is not available will assist council in providing services to their communities in a financially sustainable manner.

Generally, the condition renewals program is used in the determination of the sustainability ratios, however due to the confidence issues in the quality of the condition data and remaining life estimates the ratios have been based on the planned renewal expenditure estimates.

Future iterations of this plan will use the condition renewals once the data confidence issues are addressed

The service sustainability indicators are:

FORMULA
Life Cycle Costs (Ops, Maint, Renewal)
Funding Allocation

IN OTHER WORDS
Average annual ops, maint, and renewal costs
Average allocated funding

TARGET
A percentage greater than 90%

Council
5-year = 164%
10-year = 140%
Whole of Life = 60%

Table 37 - Service level Sustainability

	Condition Based 5 Year Financial Planning Period ($'000)	Condition Based 10 Year Financial Planning Period ($'000)	Condition Based Annualised Whole of Life Costs ($'000)
Forecast Expenditure	$24,515	$56,324	$13,109
Forecast Budget	$40,271	$78,869	$7,887
Funding Surplus	$15,757	$22,545	-$5,222
Funding Ratio	1.64	1.4	0.6

	Planned Works 5 Year Financial Planning Period ($'000)	Planned Works 10 Year Financial Planning Period ($'000)
Forecast Expenditure	$40,271	$78,869
Forecast Budget	$40,271	$78,869
Funding Surplus	$0	$0
Funding Ratio	1.0	1.0

Based on the current available data, the funding ratios seen in Table 37 indicate that based on the target funding ratio of 0.9 or 90% of the depreciation amount, council is considered sustainable between 5 to 10 years. However, council, is not sustainable over the whole of life of the current assets based on current condition data presented in the PAR. Future improvement works is required to enhance the quality and accuracy of the condition information for the drainage and flood mitigation assets.

Plan Improvement

Performance Measures

The effectiveness of the DFMAMP can be assessed by the following means:

- The degree to which the required operational and maintenance expenditures identified in the DFMAMP are incorporated into council's LTFF; and
- The degree to which the detailed works programs, budgets, business plans and organisational structures take into account the asset management requirements, trends and opportunities identified in the DFMAMP.
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the council's Strategic Plan associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

Monitoring and Review Procedures

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

Improvement Plan

In preparation of the DFMAMP, a range of opportunities for improvement to asset management information, systems and processes have been identified and are outlined in Table 10.1 below.

Table 38 - Improvement Plan

Task No.	Task	Importance	Responsibility	Resources Required	Timeline
1	Review and confirm methodology for condition assessment of all drainage and flood mitigation assets.	Very High	Asset Management	In-house resources	Dec 2019
2	Review, refine and record asset conditions for all drainage infrastructure assets.	Very High	Asset Management	In-house and external resources	Dec 2019
3	Establish information confidence level measures for all asset types and establish an appropriate continuous improvement program in accordance with asset criticality rankings.	High	Asset Management	In-house resources	On-going
4	Probably document the levels of service and support information (intervention levels, maintenance program and specifications, standard operating procedures, etc.)	High	Asset Management City Maintenance	In-house resources	On-going
5	Systematically review and document the current status of information, system and process requirements by asset type.	High	Asset Management	In-house resources	On-going
6	Identify and undertake amendments to physical asset register data structures and records to rectify identified anomalies and progress advanced asset management information requirements.	High	Asset Management	In-house resources	On-going
7	Identify and undertake enhancements to the availability and configuration of corporate / line-of-business applications to progress advanced asset management system requirements.	High	Asset Management	In-house resources and external resources	On-going
8	Identify and undertake enhancements to business processes in support of advanced asset management and system requirements.	High	Asset Management	In-house resources	On-going
9	Review and enhance Drainage and Flood Mitigation as-constructed processes to support the ongoing currency and completeness of infrastructure asset information.	High	Asset Management Planning and Development	In-house resources	On-going
10	Undertake Catchment Management Plan for areas which are under capacity and determine the rehabilitation requirements and costings.	High	Asset Management	In-house resources and external resources	On-going
11	Develop an appropriate methodology for, and undertake, asset-specific research on desired levels of service for Drainage and Flood Mitigation assets.	Medium	Asset Management	In-house resources	On-going

Task No.	Task	Importance	Responsibility	Resources Required	Timeline
12	Review and refine asset depreciable amounts, useful lives and consumption patterns.	Medium	Asset management and Corporate Finance	In-house resources	On-going
13	Review and enhance routine inspection, defect logging and maintenance processes in response to asset risk assessments.	Medium	Asset Management City Maintenance	In-house resources	On-going
14	Monitor and respond to backlogs in asset information processing to ensure the ongoing currency and completeness of infrastructure asset information.	Medium	Asset Management	In-house resources	On-going
15	Introduce risk and criticality ratings in physical asset data in support of the prioritisation of assets and works management activities (including defect management).	Medium	Asset Management	In-house resources	On-going
16	Prepare 'advanced' asset management plans for Drainage and Flood Mitigation asset groups / types.	Medium	Asset Management	In-house resources	On-going
17	Review and refine growth factors, estimates and sequencing.	Medium	Asset Management Planning and Development	In-house resources	On-going

Summary of findings

Risk Identification

Identified service delivery and public safety risks are being mitigated in the current budget submissions and funding. No additional risk funding has been identified, however this may change as the asset data and the AMPs maturity.

Asset Data

The financial asset register (FAR) is current as at 3 July 2019 and may include contributed assets from the development industry for which no "as-constructed" details have been received, therefore these assets have not been included in the physical asset register (PAR) or included in the PAR with incomplete information. The physical asset information is based on the PAR and has been updated as the "as-constructed" details become available.

The condition information used in this AMP is estimated by physical age / construction date rather than inspection results. It has been identified in the improvement plan as a high priority task to improve the accuracy of the condition information. From recent CCTV inspections, the assets in some locations are actually in a much worst condition.

Maintenance

The maintenance works, and planned renewal program has been developed through regular inspection of the Drainage and Flood Mitigation assets.

Renewals

Council's planned renewal program has been developed from the CCTV inspection program and validated by Council's suitable qualified staff. Decisions made using this AMP should consider appropriate reliance on this data. The data is considered 70% accurate. A significant amount of the data is based on estimation, in particular the asset condition data. This has significantly affected the accuracy of the remaining useful life and depreciation of the assets.

The condition renewals analysis is based on valuation data which uses a 'straight line' deterioration or consumption model. Although the assets are approaching the end of their theoretical lives this has not generally been verified through observation.

There is sufficient funding in the existing LTFF to fund the DFM assets planned for renewal However, the planned renewal program is reviewed during the annual budget preparation process. Catchment Management Plan (CMP) will be required for older suburbs where the design of the network is out-of-date and under capacity has been identified.

The assumptions of the LTFF is currently being reviewed to considered the under capacity of the CBD drainage network and it is anticipated that the renewal shortfall will be significantly reduced in future version of the AMP with improved condition data which will result in better estimation of depreciation values and renewal timeframe.

It should be noted that the asset condition records do not support the current planned level of renewal expenditure. The results of the CCTV visual inspection has not been used to update the asset register condition data. The improvement work has been identified and included in the improvement plan.

Financials

The financial reporting of operations, maintenance and capital expenditure is not adequate to support detailed asset management activities and planning. This AMP includes assumptions for the allocation of spending to this asset class.

This AMP does not include funding required to support the improvement initiatives identified necessary to improve accuracy and reliance.

The number of assets with 5 years of remaining life suggests that there is a backlog of asset renewal works with assets being maintained beyond their performance life. A financial accounting decision has been made to extend the asset life by 5 years if the asset is still in service. Future inclusion of the condition information will significantly improve the accuracy of the remaining useful life and the subsequent renewal forecast.

The apportionment of funding in the LTFF requires revision. Any review must consider that the capacity of the drainage network in the CBD is below current design standards and any renewals must address upgrade requirements. The estimation of the contributed assets requires revision, in particular the assumptions of future growth.

Ratios

Consumption ratio is within target.

Sustainability ratios for 5 and 10 year are above target. The asset whole of life sustainability ratio is below target due to inadequate condition data.

Plan Improvements

In preparation of this AMP, a range of opportunities for improvement to asset management information, systems and processes have been identified and are outlined in the Improvement Plan.

References

Institute of Public Works Engineering Australia, 2015, International Infrastructure Management Manual

Institute of Public Works Engineering Australia, 2015, IPWEA Condition Assessment & Asset Performance Guidelines – Practice Note 5 v2

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Ipswich City Council, 2019, Service Catalogue, https://wire.ipswich.qld.gov.au/Documents/CS/Services%20Catalogue.pdf

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Ipswich City Council, Operational Plan 2018/2019, https://wire.ipswich.qld.gov.au/Documents/CS/Operational%20Plan%202018-2019.pdf

Ipswich City Council, Strategic and Service Delivery Framework, http://intranet/documents/f&cs/delivery_framework.pdf

Appendix A – Asset Management Practices

Accounting / Financial Systems

Council utilises the Oracle eBusiness suite of financial systems in support of its accounting and financial reporting requirements. Council maintains a general ledger and project accounting ledger within Oracle.

General Ledger

The General Ledger (GL) is Council's key financial register of transactions for operational and capital activities. Its main function is to capture sufficient detail in order for Council to build a Statement of Comprehensive Income (i.e. Profit or Loss) and Statement of Financial Position (i.e. Balance Sheet of assets and liabilities). It also allows for budgeting for key expenses and revenues for a period.

Project Accounting Ledger

The Project Accounting (PA) module of Oracle allows Council to dissect financial transactions in greater detail across different functions and organisations within Council. Project Accounting allows estimates of pieces of work to be captured by project and tasks associated with the project.

Asset Management Systems

Council utilises a range of systems in support of the asset management process, a brief overview of which is provided below.

- The **Fixed Asset Register (FAR)** is Council's financial record of the current valuations and depreciation characteristics for its infrastructure assets (see also Section 7.1. Accounting / Financial Systems).
- **Oracle Spatial** is a database containing the registers of all infrastructure assets, their location and their physical attributes (e.g., size, age, material, composition, etc.).
- **Mobile Form Manager and Mobile Form** is the asset / works management system which supports the issuing work activities, scheduling and assignment of resources to work, recording of work metrics / quality information, and recording of asset condition data. It also provides a range of asset-based reporting functions and is linked by asset number to the physical asset register in Oracle Spatial.
- **MapInfo** is the Geographic Information System (GIS) interface to the physical asset registers in Oracle Spatial for asset data maintenance and updates.
- **iKnow** is the Corporate Geographic Information System (GIS) interface to the physical asset registers in Oracle Spatial for accessing asset information.
- **DATS** is a job management system for asset data management and update of the physical asset registers.

Links to Financial Systems

The Fixed Asset Register (FAR) does not have a one-to-one relationship with the Oracle Spatial physical asset registers. The physical asset registers hold all the detailed attributes and can be readily aligned to a smaller number of aggregated records within the financial asset register, while still retaining all necessary financial reporting capabilities. Financial recognition of new assets is done independently but in coordination with the 'as constructed' process and is processed at a higher level (generally asset group). The assets of the drainage and flood mitigation network are formally valued by qualified asset valuer every 5 year. It is understood that the intervening revaluations will be achieved by the indexation of values by asset group in the FAR.

Accountabilities and Responsibilities for Systems

The Information and Communications Technology Branch of Council's Finance and Corporate Services Department is currently responsible for the maintenance and support of all corporate systems, under

Service Level Agreements with the relevant departments. Further, the Spatial Team of WPR is currently responsible for the maintenance and update of Physical Asset Registers in Oracle Spatial.

Information Flow Requirements and Processes

The key information flows *into* the DFMAMP are:

- Community outcomes and desired levels of service from the long term Community Plan (Advance Ipswich), Corporate Plan and community engagement processes.
- Technical outcomes and desired levels of service from construction, maintenance and operational guidelines, standards and experience.
- Service Requests from the Customer Engagement System (CES) in relation to the maintenance of and / or enhancement to the Drainage and Flood Mitigation Network.
- Legislative and regulatory requirements from associated instruments.
- Future demand for and growth in infrastructure assets and services from planning instruments and associated projections / sequencing.
- Physical parameters of Drainage and Flood Mitigation assets from Physical Asset Registers (PAR) and related engineering systems.
- Financial parameters of Drainage and Flood Mitigation assets from the Fixed Asset Register (FAR) and related financial systems.
- Financial and condition information from Asset Valuation Report.
- Planned capital and maintenance expenditures from the current budget and forward estimates.

Financial expenditure forecast from the Long Term Financial Plan.

The key information flows *from* the DFMAMP are:

- An overview of current asset systems, processes and responsibilities.
- An analysis of lifecycle costs and projected and planned expenditure, with related assessments of sustainability.
- An analysis of the risks associated with delivering and maintaining the service levels currently defined for Drainage and Flood Mitigation assets.
- An analysis of the environmental management issues associated with delivering and maintaining the service levels currently defined for Drainage and Flood Mitigation assets.
- An overview of the assumptions / limitations in existing information, systems, processes and responsibilities, with suggestions for future enhancement and refinement of the DFMAMP.

It should be noted that the current version of the DFMAMP has been developed on the basis of existing information relative to asset parameters / performance, inferred levels of service and planned maintenance and capital works programs. As such, the extent of information flows *from* the DFMAMP are restricted accordingly. Future revisions of the DFMAMP will directly inform the planned maintenance / capital budgets and related financial modelling in response to enhanced information and analysis, desired levels of service and asset optimisation strategies

Appendix B – 10 Year Planned Capital Program

Please refer to the adopted 2019-2020 financial year capital works program for project breakdown and details.

Service	Asset Class	Project Name	Details	Priority	Expenditure Type	Expenditure ($'000)										
						2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Drainage and Flood Mitigation	Piped Network	Drainage Rehabilitation	Repair, reline or replace of drainage mains and structures from programmed inspection		Renewal	$5,016	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,016
Drainage and Flood Mitigation	Piped Network	Drainage Rehabilitation	Repair, reline or replace of drainage mains and structures from programmed inspection		Renewal	$0	$5,746	$0	$0	$0	$0	$0	$0	$0	$0	$5,746
Drainage and Flood Mitigation	Piped Network	Drainage Rehabilitation	Repair, reline or replace of drainage mains and structures from programmed inspection		Renewal	$0	$0	$3,640	$0	$0	$0	$0	$0	$0	$0	$3,640
Drainage and Flood Mitigation	Piped Network	Drainage Rehabilitation	Repair, reline or replace of drainage mains and structures from programmed inspection		Renewal	$0	$0	$0	$4,173	$0	$0	$0	$0	$0	$0	$4,173
Drainage and Flood Mitigation	Piped Network	Drainage Rehabilitation	Repair, reline or replace of drainage mains and structures from programmed inspection		Renewal	$0	$0	$0	$0	$2,180	$0	$0	$0	$0	$0	$2,180
Drainage and Flood Mitigation	Piped Network	Drainage Rehabilitation	Repair, reline or replace of drainage mains and structures from programmed inspection		Renewal	$0	$0	$0	$0	$0	$2,220	$0	$0	$0	$0	$2,220
Drainage and Flood Mitigation	Piped Network	Drainage Rehabilitation	Repair, reline or replace of drainage mains and structures from programmed inspection		Renewal	$0	$0	$0	$0	$0	$0	$2,260	$0	$0	$0	$2,260
Drainage and Flood Mitigation	Piped Network	Drainage Rehabilitation	Repair, reline or replace of drainage mains and structures from programmed inspection		Renewal	$0	$0	$0	$0	$0	$0	$0	$2,320	$0	$0	$2,320

Service	Asset Class	Project Name	Details	Priority	Expenditure Type	Expenditure ($'000)										
						2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Drainage and Flood Mitigation	Piped Network	Drainage Rehabilitation	Repair, reline or replace of drainage mains and structures from programmed inspection		Renewal	$0	$0	$0	$0	$0	$0	$0	$0	$2,679	$0	$2,679
Drainage and Flood Mitigation	Piped Network	Drainage Rehabilitation	Repair, reline or replace of drainage mains and structures from programmed inspection		Renewal	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,240	$3,240
Drainage and Flood Mitigation	Basin	Water Quality Rehabilitation	Water Quality Rehabilitation - Repair of basins		Renewal	$259	$0	$0	$0	$0	$0	$0	$0	$0	$0	$259
Drainage and Flood Mitigation	Flood Mitigation	Flood Mitigation and Drainage	Flood mitigation new and upgrade capital works		New	$250	$0	$0	$0	$0	$0	$0	$0	$0	$0	$250
Drainage and Flood Mitigation	Flood Mitigation	Flood Mitigation and Drainage	Flood mitigation new and upgrade capital works		New	$0	$1,020	$0	$0	$0	$0	$0	$0	$0	$0	$1,020
Drainage and Flood Mitigation	Flood Mitigation	Flood Mitigation and Drainage	Flood mitigation new and upgrade capital works		New	$0	$0	$1,040	$0	$0	$0	$0	$0	$0	$0	$1,040
Drainage and Flood Mitigation	Flood Mitigation	Flood Mitigation and Drainage	Flood mitigation new and upgrade capital works		New	$0	$0	$0	$2,279	$0	$0	$0	$0	$0	$0	$2,279
Drainage and Flood Mitigation	Flood Mitigation	Flood Mitigation and Drainage	Flood mitigation new and upgrade capital works		New	$0	$0	$0	$0	$2,507	$0	$0	$0	$0	$0	$2,507
Drainage and Flood Mitigation	Flood Mitigation	Flood Mitigation and Drainage	Flood mitigation new and upgrade capital works		New	$0	$0	$0	$0	$0	$2,220	$0	$0	$0	$0	$2,220
Drainage and Flood Mitigation	Flood Mitigation	Flood Mitigation and Drainage	Flood mitigation new and upgrade capital works		New	$0	$0	$0	$0	$0	$0	$2,260	$0	$0	$0	$2,260
Drainage and Flood Mitigation	Flood Mitigation	Flood Mitigation and Drainage	Flood mitigation new and upgrade capital works		New	$0	$0	$0	$0	$0	$0	$0	$2,320	$0	$0	$2,320
Drainage and Flood Mitigation	Flood Mitigation	Flood Mitigation and Drainage	Flood mitigation new and upgrade capital works		New	$0	$0	$0	$0	$0	$0	$0	$0	$2,380	$0	$2,380

Service	Asset Class	Project Name	Details	Priority	Expenditure Type	Expenditure ($'000)										
						2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Drainage and Flood Mitigation	Flood Mitigation	Flood Mitigation and Drainage	Flood mitigation new and upgrade capital works		New	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,440	$2,440
Drainage and Flood Mitigation	Piped Network	Flood Mitigation and Drainage	Local drainage new and upgrade capital works		New	$649	$0	$0	$0	$0	$0	$0	$0	$0	$0	$649
Drainage and Flood Mitigation	Piped Network	Flood Mitigation and Drainage	Local drainage new and upgrade capital works		New	$0	$685	$0	$0	$0	$0	$0	$0	$0	$0	$685
Drainage and Flood Mitigation	Piped Network	Flood Mitigation and Drainage	Local drainage new and upgrade capital works		New	$0	$0	$770	$0	$0	$0	$0	$0	$0	$0	$770
Drainage and Flood Mitigation	Piped Network	Flood Mitigation and Drainage	Local drainage new and upgrade capital works		New	$0	$0	$0	$530	$0	$0	$0	$0	$0	$0	$530
Drainage and Flood Mitigation	Piped Network	Flood Mitigation and Drainage	Local drainage new and upgrade capital works		New	$0	$0	$0	$0	$545	$0	$0	$0	$0	$0	$545
Drainage and Flood Mitigation	Piped Network	Flood Mitigation and Drainage	Local drainage new and upgrade capital works		New	$0	$0	$0	$0	$0	$555	$0	$0	$0	$0	$555
Drainage and Flood Mitigation	Piped Network	Flood Mitigation and Drainage	Local drainage new and upgrade capital works		New	$0	$0	$0	$0	$0	$0	$565	$0	$0	$0	$565
Drainage and Flood Mitigation	Piped Network	Flood Mitigation and Drainage	Local drainage new and upgrade capital works		New	$0	$0	$0	$0	$0	$0	$0	$580	$0	$0	$580
Drainage and Flood Mitigation	Piped Network	Flood Mitigation and Drainage	Local drainage new and upgrade capital works		New	$0	$0	$0	$0	$0	$0	$0	$0	$595	$0	$595
Drainage and Flood Mitigation	Piped Network	Flood Mitigation and Drainage	Local drainage new and upgrade capital works		New	$0	$0	$0	$0	$0	$0	$0	$0	$0	$610	$610
Drainage and Flood Mitigation	Piped Network	Local Amenity - Divisional Allocation - Tristania Street Drainage	Drainage improvements		New	$94	$0	$0	$0	$0	$0	$0	$0	$0	$0	$94

Appendix C - Asset Defect and Condition Assessment Plan

PURPOSE

The purpose of a CCTV stormwater inspection is that the operator shall investigate, describe, identify and report on the defects or features in accordance with the criteria prescribed.

Where required, specialised instruments, apparatus and/or software shall be used to facilitate measurement of parameters in compliance with requirements.

DATA COLLECTION AND CODING OF OBSERVATIONS

This Section refers to the Operational requirements including the following:

- accreditation of operators
- minimum requirements of the CCTV equipment
- operation specification of the CCTV equipment
- reporting.

Accreditation of Operators and Supporting Staff

Operators responsible for identifying and recording defects, preparing reports and operating equipment shall hold a suitable qualification issued by a Registered Training Organisation (RTO). Refer to **WSA 05-2008 Section 2.2 Training and Accreditation of Personnel**

CCTV Camera

Generally specification is as per **WSA 05-2008 Section 2.5 - CCTV Camera** and therefore includes the following:

- capability (steerable) refer **WSA 05-2008 Section 2.5.2**
- picture quality refer **WSA 05-2008 Section 2.5.3**
- video format refer **WS.A 05-2008 Section 2.10.3**
- photographs refer **WSA 05-2008 Section 2.10.4.**

Camera Operation

Standardised operation of the CCTV camera is to be operated as per **WSA 05-2008 Section 2.6 Camera Operation**.

Particular care is to be taken with regards to the following:

Camera Position

- The camera lens shall be maintained centrally (within +/- 10%) of the diameter or vertical and horizontal dimensions.

- Care will be required in conduits when a considerable amount of silt or debris is present. In some cases it may be acceptable to lower the camera lens to avoid the camera toppling over.
- For additional information, refer **WSA 05-2008 Section 2.6.1**

Camera Speed

- The maximum speed of the camera travelling within the conduit (all sizes) is 0.2 metres per second.
- The speed of the camera is to be such that the operator can anticipate arrival at all defects and features, which is dependent of the condition and/ or cleanliness of the conduit.
- For additional information, refer **WSA 05-2008 Section 2.6.2**

Pipe Survey or Observation Procedure

- At the start of the survey, the Maintenance Hole (MH) is to be checked for attributes and defects. There are a number of observations, attributes and defects that must be addressed before proceeding.
- The Survey and therefore the video are to start as close as possible to the face of the MH. As a standard MH has a diameter of 1 050mm, the start chainage should be approximately 0.6m.
- Before proceeding along the conduit, the camera is to focus on the surface of the conduit and check for defects whilst rotating the camera through 3 60 degrees paying particular attention at the 3, 6, 9 & 12 o'clock positions for the start of Longitudinal Cracks or Fractures.
- While the camera is travelling between each joint, the camera is to view (or point) directly along the conduit axis while ensuring that the surface of the conduit at 45 degrees to the axis is in focus at all times. While the camera is travelling along the conduit, the operator is to pay particular attention to the 3, 6, 9 & 12 o'clock positions for any defects.
- If defects are observed while the camera is travelling along the conduit, the operator is to stop the travel of the camera and record the defect.
- All joints must be checked for defects whilst rotating the camera through 360 degrees paying particular attention at the 3, 6, 9 & 12 o'clock positions for the start of Longitudinal Cracks.
- If the start of a Longitudinal Crack or Fracture has been recorded, particular attention must be taken to record the finish chainage.
- If a Longitudinal Crack or Fracture has been observed whilst travelling along the conduit midway between joints, the camera is to be rotated to focus on the crack and then the camera is reversed to locate the start chainage of the crack.
- During the survey, if up to 20% or central focal area of the lens is covered by cobweb, dirt or other substance, which is preventing a clear view of the conduit and defects, the lens is to be cleaned. If the camera is withdrawn to clean the lens, then the survey can be resumed from the chainage where the camera was withdrawn, however the video must be a single video file.
- Just prior to the end of the conduit, before entering into the maintenance hole (MH), the camera is to focus on the surface of the conduit and check for defects whilst rotating the camera through 360 degrees paying particular attention at

the 3, 6, 9 & 12 o'clock positions for the finish of any Longitudinal Cracks or Fractures.
- While the camera is positioned in the end MH, the MH is to be observed and any defects to be recorded in the MH section of the Wincan reporting system.
- Defects recorded are to be in accordance with the ICC defects list at the end of this document.

Linear Measurement

Generally specification for Linear Measurement is as per **WSA 05-2008 Section 2.7 Linear Measurement**

Data Display during Video Playback

For further information, refer to **WSA 05-2008 Section 2.8 Data Display during Video Playback**

For the start of the video the following information is to be displayed for a period of not less than 30 seconds:

- Gasset Number, e.g. 998201
- Start MH or Node Number, e.g. 12345
- Finish MH or Node Number, e.g. 12346
- Direction of Inspection, e.g. Upstream
- Date of inspection, e.g. 22-03-2010
- Time, e.g. 13:16
- Street, e.g. Queen St
- Suburb, e.g. Goodna
- Pipe Shape, e.g. Round (or Box)
- Pipe Diameter/Height (mm), e.g. 450 (or 1200 x 600)
- Pipe Material, e.g. Concrete
- Company & Operator, e.g. ABC-John Doe
- Camera, e.g. Instaphoto Compact

During the survey, the following data is to be displayed:

- The camera's longitudinal position (chainage) along the conduit, automatically updated
- MH or Node reference numbers and direction, e.g. 12345 _12346
- Direction of Inspection, i.e. a dial or graphical indicator that shows the camera's position with respect to the viewing angle.

Maximum Depth of Flow

Conduit inspections are to be carried out in dry weather so that the invert can be inspected. Water flowing down the conduit is not to be recorded as a water level, only water that is ponding and therefore not flowing, is to be recorded as a water level. If water begins to flow during the course of an inspection and it is safe to do so, the inspection can be completed.

If the pipe is sagged and the water level increases as the camera travels along the conduit, record the water level in increments of 10%. Only continue after the camera is submerged if it is likely that the camera will become unsubmerged in a short distance. This defect is to be reported immediately for possible urgent maintenance action.

Refer to **WSA 05-2008 Section 2.9 Maximum Depth of Flow** for further information.

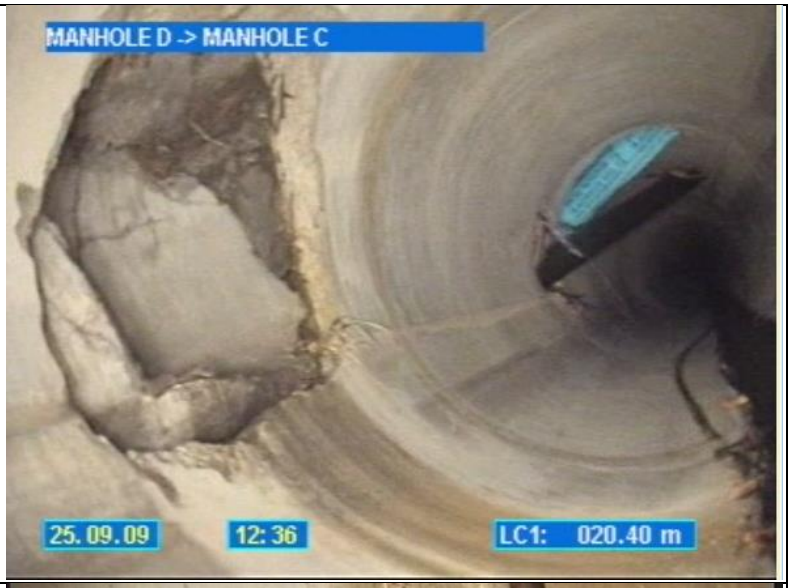
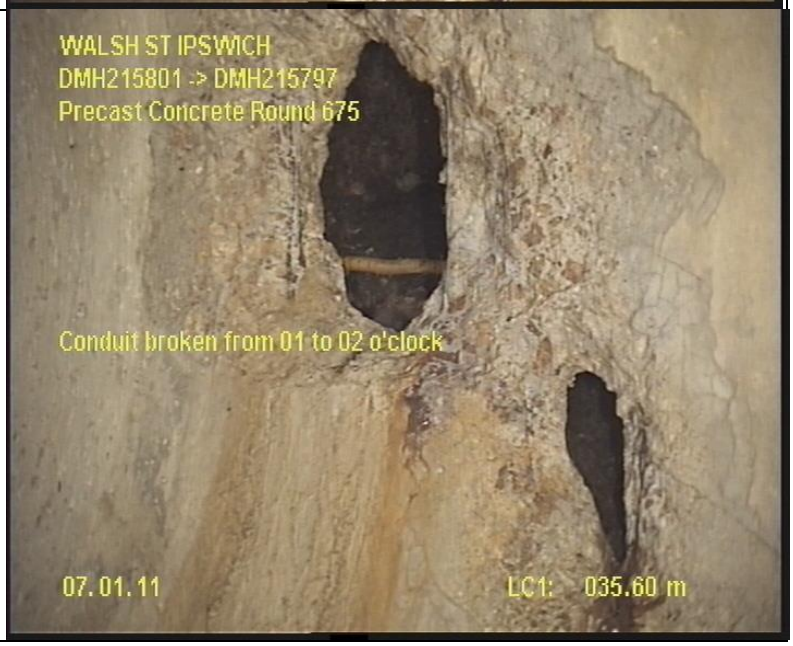
Inspection Report

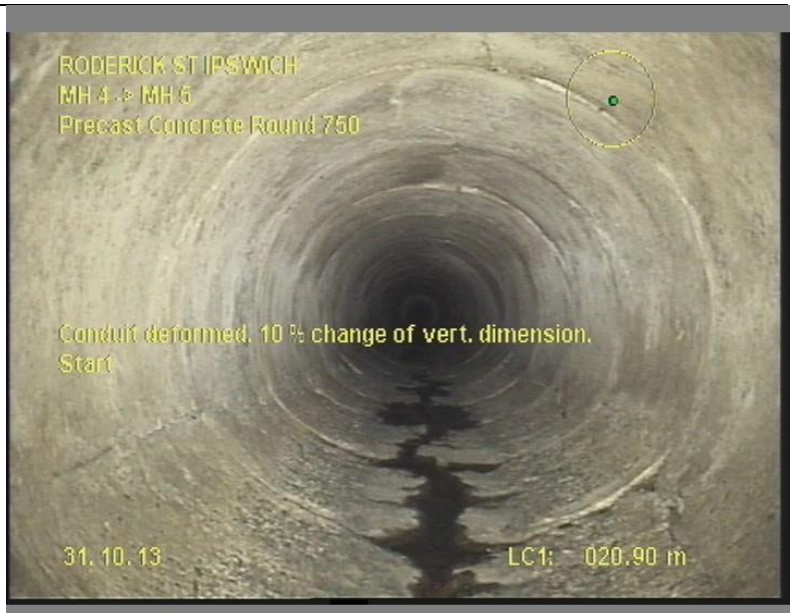
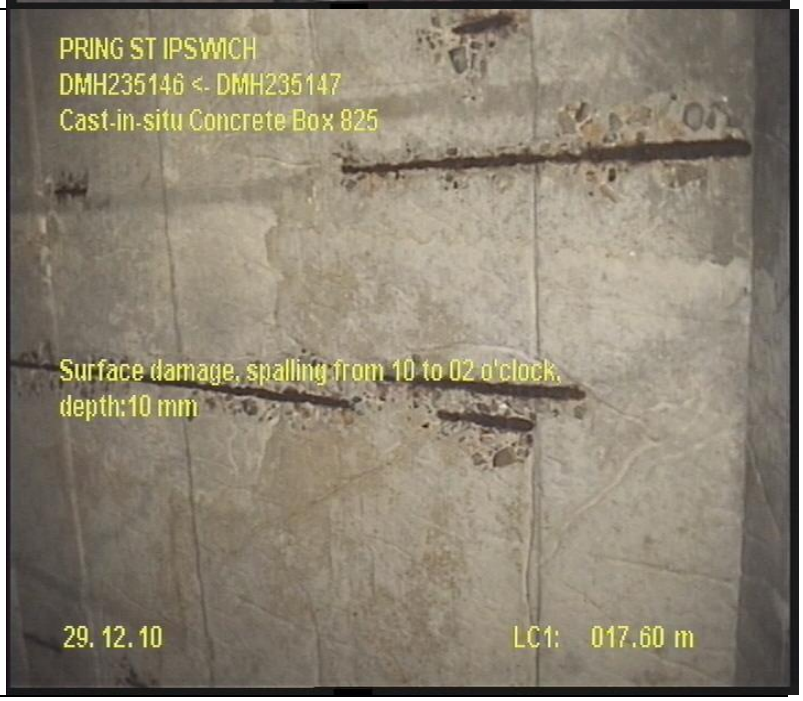
Refer to **WSA 05-2008 Section 2.10 Inspection Report**.

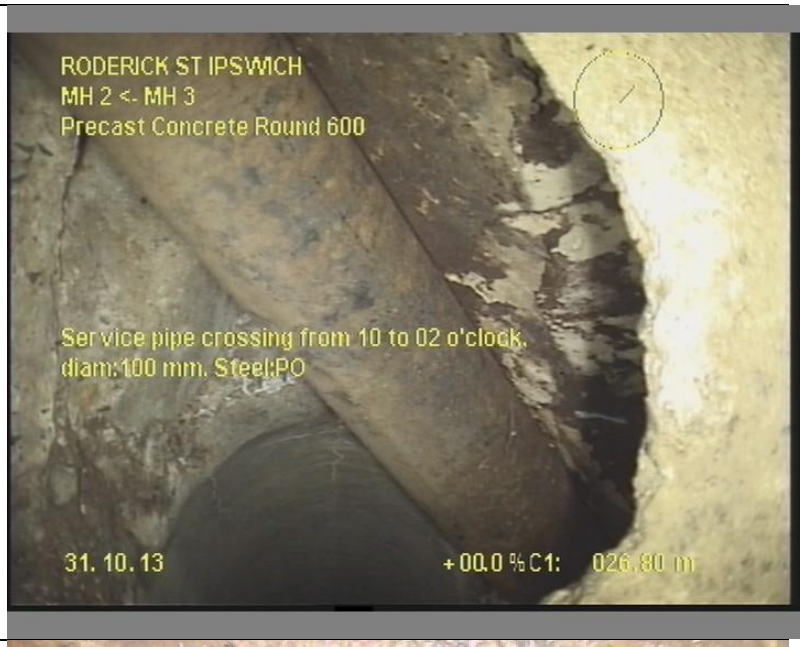
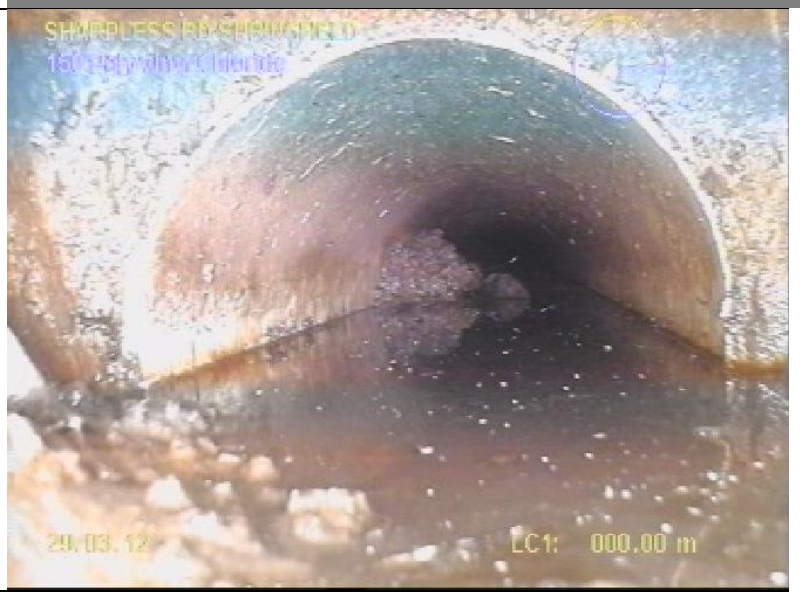
Defects are to be recorded in the manner above described for all defect types listed below.

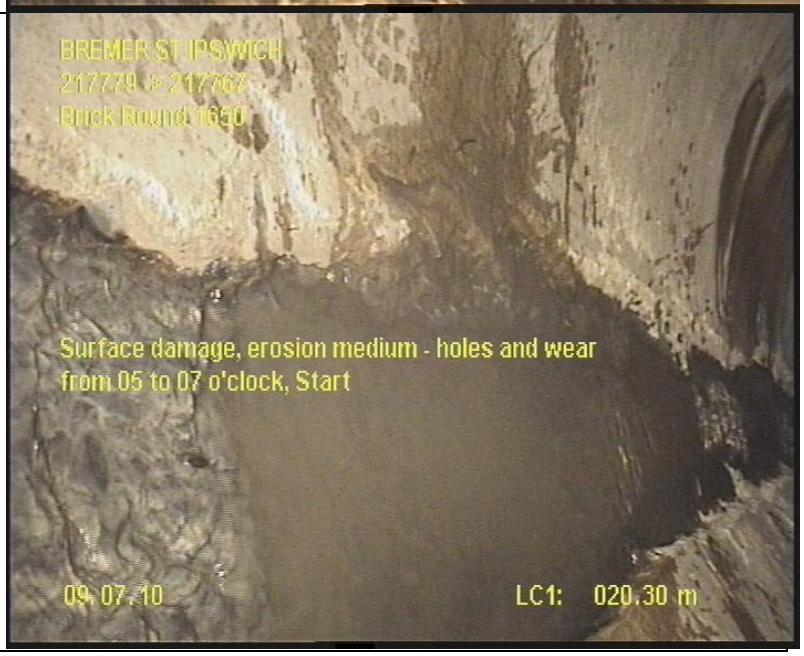
The ICC Defect Types for Stormwater Assets

Defect Type	Intervention Level	Examples
Crushed Conduit	**Any**	

Intrusion by Services Allowing Loss of Material	**Any**	
Joint Displacement Allowing Loss of Material	**Any**	
Hole in Conduit Allowing Loss of Material	**Any**	

Ovoid Shape (Deformed Intact Conduit)	**Any**	
Radial Cracking Allowing Loss of Material	**Any**	
Reinforcing Exposed	**Any**	

Intrusion by Services Blocking Cross Section	**>20%**	
Debris Buildup Blocking Cross Section	**>20%**	

Intrusion by tree roots	**Any**	
Invert Scour or Erosion	**>10mm Depth**	

Longitudinal Cracking Allowing Lost of Material	**Any**	
Crocodile Cracking Allowing Loss of Material	**Any**	

References

Condition Assessment & Asset Performance Guidelines (Practice Note 5)

Stormwater Drainage (IPWEA-NAMS.AU)

Reference No: WSA 05-2008

Appendix D – Maintenance and Operation Specifications

(Source: City of Ipswich Services Catalogue)

Service	Activity	Service Level	Target
INFRASTRUCTURE ASSET IMPROVEMENT			85% of requests is completed on time.
Respond to Requests for Drainage Improvements	Respond to requests for investigation to install and/or significantly improve drainage infrastructure such as new or improved stormwater, pipes, headwalls, gully pits/traps etc.	60 business days	
ASSET MANAGEMENT PLANNING			
Establish Asset-Related Service Levels	Establish desired levels of service (customer and technical) for infrastructure asset-related service provision.	Review Annually	
Plan Drainage	Develop, implement, monitor and update plans, strategies and policies that will inform and shape long term investment and sustainable development of the City's drainage network.	Review Annually	
Disaster Management and Response Planning (External)	Maintain Disaster Management Plan Development and review of a disaster management plan to achieve interagency co-ordination and address response and recovery issues.	Review Plans Annually	
Develop Creek Corridor/Improvement Plan	Develop and implement creek corridor/improvement plans for local waterways, including the coordination and monitoring of activities in relation to the management of local waterways.	1 x sub-catchment per year	
Floodplain Management	Develop, implement, monitor and update plans, studies, strategies and policies that will inform and shape long term flood management and mitigation.	Reviewed and report on annually	

Coordinate Riparian Revegetation Projects	Work in partnership with land holders and community groups to revegetate riparian corridors.	In accordance with grant requirements	
Stormwater and Drainage Planning	Develop, implement, monitor and update plans, strategies and policies that will inform and shape long term investment and sustainable development of the City's drainage network.	Review and report annually	
Water Cycle Planning	Develop, implement, monitor and update plans, studies, strategies and policies that will inform and shape long term investment and sustainable management of the water cycle in Ipswich.	Review and report annually	
OPERATION AND MAINTENANCE SERVICES			
Inspect and Maintain Gross Pollutant traps	Inspection and cleaning of pollutant Traps	6 Monthly	
Maintain Stormwater Systems	Inspection and cleaning of high risk stormwater devices	Prior to predicted storm event. Monthly during November to march	
Respond to Requests for Drainage Maintenance	Respond to requests for maintenance missing / damaged repair clearing / cleaning blocked / blockage of drainage systems or infrastructure: flooding road, footpath, stormwater easements, box culverts, in/outlets, pipe crossing roof water / runoff, manhole / grates.	High risk: Inspect and make safe 1 business day. High risk: Repair within 30 business days. Non-urgent: Inspect within 4 business days. Non-urgent: Repair within 30 business days.	

Respond to Council Facility Plumbing	Requests	Urgent: 1 Business Day Non-Urgent: 30 Business Days New Minor Work: 30Business Days	
Inspection and Condition Assessment			
Service	**Activity**	**Current Service Level / Frequency**	**Performance Target**
Stormwater			
Inspection - CCTV Program	inspections and defect logging	Annually	85%
Inspection - CCTV	Condition assessment	5 years	85%
Culverts			
Inspection - Minor Culverts	Routine inspections and defect logging	Reactive	85%
Inspection - Major Culverts	Routine inspections and defect logging	Reactive	85%
	Proactive Level 2 inspections	4 years	100%
Dams			
Inspection - Dams Referable	Routine inspections and defect logging	BI-Monthly	100%
	Annual Inspection	Annually	100%
	Comprehensive Inspection	5 years	100%
Detention Basins			
Inspection – Detention Basins	Routine inspections and defect logging	Reactive	85%
Open Drains			
Inspection - Open Drain and Channel	Routine inspections and defect logging	Reactive	85%
Wetlands			
Inspection - Wetlands	Routine inspections and defect logging	Reactive	85%

Appendix E - Acronyms

AAAC	Average annual asset consumption
AMP	Asset Management Plan
ARI	Average Recurrence Interval
CRC	Current Replacement Cost
CWMS	Community Wastewater Management Systems
DA	Depreciable Amount
EF	Earthworks/Formation
IRMP	Infrastructure Risk Management Plan
LCC	Life Cycle Cost
LCE	Life Cycle Expenditure
LGIS	Local Government Infrastructure Services
MMS	Maintenance Management System
PCI	Pavement Condition Index
RV	Residual Value
Vph	Vehicles per hour

Appendix F – Glossary

Annual Service Cost (ASC)

Reporting actual cost. The annual (accrual Cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.

For investment analysis and budgeting. An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operations, maintenance, depreciation, finance/opportunity and disposal costs, less revenue.

Asset

A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. Infrastructure assets are a sub-class of property, plant and equipment which are non-current assets with a life greater than 12 months and enable services to be provided.

Asset class

A group of assets having a similar nature or function in the operations of an entity, and which, for purposes of disclosure, is shown as a single item without supplementary disclosure.

Asset condition assessment

The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

Asset management (AM)

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.

Average annual asset consumption (AAAC)*

The amount of a council's asset base consumed during a reporting period (generally a year). This may be calculated by dividing the depreciable amount by the useful life (or total future economic benefits/service potential) and totalled for each and every asset OR by dividing the carrying amount (depreciated replacement cost) by the remaining useful life (or remaining future economic benefits/service potential) and totalled for each and every asset in an asset category or class.

Borrowings

A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided**.**

Capital expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital expenditure - expansion

Expenditure that extends the capacity of an existing asset to provide benefits, at the same standard as is currently enjoyed by existing beneficiaries, to a new group of users. It is discretionary expenditure, which increases future operations and maintenance costs, because it increases the Council's asset base, but may be associated with additional revenue from the new user group, e.g. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

Capital expenditure - new

Expenditure which creates a new asset providing a new service/output that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operations and maintenance expenditure.

Capital expenditure - renewal

Expenditure on an existing asset or on replacing an existing asset, which returns the service capability of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it generally has no impact on revenue, but may reduce future operations and maintenance expenditure if completed at the optimum time, e.g. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval.

Capital expenditure - upgrade

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. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the Council's asset base, e.g. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

Capital funding

Funding to pay for capital expenditure.

Capital grants

Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or new investment proposals.

Capital investment expenditure

See capital expenditure definition

Capitalisation threshold

The value of expenditure on non-current assets above which the expenditure is recognised as capital expenditure and below which the expenditure is charged as an expense in the year of acquisition.

Carrying amount

The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Component

Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.

Cost of an asset

The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, including any costs necessary to place the asset into service. This includes one-off design and project management costs.

Current replacement cost (CRC)

The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Depreciable amount

The cost of an asset, or other amount substituted for its cost, less its residual value.

Depreciated replacement cost (DRC)

The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset.

Depreciation / amortisation

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

Economic life

See useful life definition.

Expenditure

The spending of money on goods and services. Expenditure includes recurrent and capital.

Fair value

The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arm's length transaction.

Funding gap

A funding gap exists whenever an entity has insufficient capacity to fund asset renewal and other expenditure necessary to be able to appropriately maintain the range and level of services its existing asset stock was originally designed and intended to deliver. The service capability of the existing asset stock should be determined assuming no additional operating revenue, productivity improvements, or net financial liabilities above levels currently planned or projected. A current funding gap means service levels have already or are currently falling. A projected funding gap if not addressed will result in a future diminution of existing service levels**.**

Heritage asset

An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

Impairment Loss

The amount by which the carrying amount of an asset exceeds its recoverable amount.

Investment Property

Property held to earn rentals or for capital appreciation or both, rather than for:

a) Use in the production or supply of goods or services or for administrative purposes; or
b) Sale in the ordinary course of business.

Key performance indicator

A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.

Levels of service

The defined service quality for a particular service/activity against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental impact, acceptability and cost.

Life Cycle Cost

1. Total LCC. The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2. Average LCC. The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises annual operations, maintenance and asset consumption expense, represented by depreciation expense. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure

The Life Cycle Expenditure (LCE) is the actual or planned annual operations, maintenance and capital renewal expenditure incurred in providing the service in a particular year. Life Cycle Expenditure may be compared to average Life Cycle Cost to give an initial indicator of life cycle sustainability.

Maintenance

All actions necessary for retaining an asset as near as practicable to its original condition, including regular ongoing day-to-day work necessary to keep assets operating, e.g. road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

Planned maintenance

Repair work that is identified and managed through a maintenance management system (MMS). MMS 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.

Significant maintenance

Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.

Unplanned maintenance

Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

Maintenance and renewal gap

Difference between estimated budgets and projected required expenditures for maintenance and renewal of assets to achieve/maintain specified service levels, totalled over a defined time (e.g. 5, 10 and 15 years).

Maintenance and renewal sustainability index

Ratio of estimated budget to projected expenditure for maintenance and renewal of assets over a defined time (e.g. 5, 10 and 15 years).

Maintenance expenditure

Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

Materiality

The notion of materiality guides the margin of error acceptable, the degree of precision required and the extent of the disclosure required when preparing general purpose financial reports. Information is material if its omission, misstatement or non-disclosure has the potential, individually or collectively, to influence the economic decisions of users taken on the basis of the financial report or affect the discharge of accountability by the management or governing body of the entity.

Modern equivalent asset

Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently available asset which will provide the same stream of services as the existing asset is capable of producing. It allows for technology changes and, improvements and efficiencies in production and installation techniques

Net present value (NPV)

The value to the Council of the cash flows associated with an asset, liability, activity or event calculated using a discount rate to reflect the time value of money. It is the net amount of discounted total cash inflows after deducting the value of the discounted total cash outflows arising from e.g. the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

Non-revenue generating investments

Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to Council, e.g. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operations expenditure

Recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, e.g. power, fuel, staff, plant equipment, on-costs and overheads but excludes maintenance and depreciation. Maintenance and depreciation is on the other hand included in operating expenses.

Operating expense

The gross outflow of economic benefits, being cash and non-cash items, during the period arising in the course of ordinary activities of an entity when those outflows result in decreases in equity, other than decreases relating to distributions to equity participants.

Pavement management system

A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

PMS Score

A measure of condition of a road segment determined from a Pavement Management System.

Rate of annual asset consumption

A measure of average annual consumption of assets (AAAC) expressed as a percentage of the depreciable amount (AAAC/DA). Depreciation may be used for AAAC.

Rate of annual asset renewal

A measure of the rate at which assets are being renewed per annum expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade

A measure of the rate at which assets are being upgraded and expanded per annum expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

Recoverable amount

The higher of an asset's fair value, less costs to sell and its value in use.

Recurrent expenditure

Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operations and maintenance expenditure.

Recurrent funding

Funding to pay for recurrent expenditure.

Remaining useful life

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

Residual value

The estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

Revenue generating investments

Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate some savings or revenue to offset operating costs, e.g. public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

Risk management

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

Section or segment

A self-contained part or piece of an infrastructure asset.

Service potential

The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset. A measure of service potential is used in the not-for-profit sector/public sector to value assets, particularly those not producing a cash flow.

Service potential remaining

A measure of the future economic benefits remaining in assets. It may be expressed in dollar values (Fair Value) or as a percentage of total anticipated future economic benefits. It is also a measure of the percentage of the asset's potential to provide services that is still available for use in providing services (Depreciated Replacement Cost/Depreciable Amount).

Strategic Longer-Term Plan

A plan covering the term of office of councillors (4 years minimum) reflecting the needs of the community for the foreseeable future. It brings together the detailed requirements in Council's longer-term plans such as the service management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where Council is at that point in time, where it wants to go, how it is going to get there, mechanisms for monitoring the achievement of the outcomes and how the plan will be resourced.

Specific Maintenance

Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including pothole repairs, replacement of pump equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

Sub-component

Smaller individual parts that make up a component part.

Useful life

Either:

a) the period over which an asset is expected to be available for use by an entity, or
b) the number of production or similar units expected to be obtained from the asset by the entity.

It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by council.

Value in Use

The present value of future cash flows expected to be derived from an asset or cash generating unit. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate net cash inflows, where the entity would, if deprived of the asset, replace its remaining future economic benefits.

Source: IPWEA, 2009, Glossary