Clarence City Council

Clarence... a brighter place

Stormwater

Asset Management Plan 2018

Scenario1 Version1

July 2018

Document Control	

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Note: Scenario and Version (S&V) designations relate to the data used in construction of this Asset Management Plan. An explanation of how this information is utilised is included in section 5.7.

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1. EXECUTIVE SUMMARY

Context

Clarence City Council manages an expansive area of land on the eastern shore of the Derwent Estuary from South Arm in the south through to Richmond in the north and as far east as Hobart International Airport. Stormwater characteristics within Clarence are diverse from steep sloping catchments originating in the Meehan Range to flat inhabited townships close to the coastline and riverine flooding potential in Richmond from the Coal River.

Stormwater assets owned and maintained by Council provide a means of draining land to preserve the health and safety of the community. While the age and condition of stormwater assets do not pose an immediate issue for Council, many piped catchments have insufficient capacity to cope with a current 1 in 20 ARI rainfall event.

The Stormwater Service

The Stormwater network comprises:

- Pipes 396 km
- Pits/chambers 16,200 No.
- Pump stations 6 No.
- Gross Pollutant Traps (GPT) 16 No.
- Water Sensitive Urban Design (WSUD) 8 No.

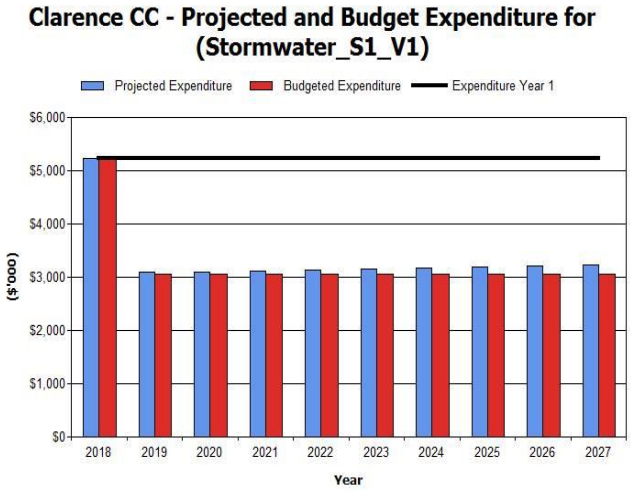
As of 24 August 2017 these stormwater infrastructure assets have a replacement value of **$153,673,100**.

What does it Cost?

The projected outlays necessary to provide the services covered by this Asset Management Plan (AM Plan) includes operations, maintenance, renewal and upgrade of existing assets over the 10 year planning period is **$33,624,000** or **$3,362,400** on average per year.

Estimated available funding for this period is **$32,719,000** or **$3,271,900** on average per year which is **97%** of the cost to provide the service. This is a funding shortfall of **$91,000** on average per year. Projected expenditure required to provide services in the AM Plan compared with planned expenditure currently included in the 10 Year Financial Management Plan (Long Term Financial Plan) are shown in Figure 4, below.

Figure 4: Projected Operations and Maintenance Expenditure (From 5.3.3)



What we will do

We plan to provide stormwater services for the following:

- Operation, maintenance, renewal and upgrade of pipes, pits and chambers to meet service levels set by Council in annual budgets.
- Capacity upgrades in established suburbs within the 10 year planning period.
- Improve stormwater in low lying suburbs.
- Improve water quality outcomes from stormwater discharge to meet requirements of State environmental law.
- Prepare Stormwater Management Plans for the urban catchments to identify under capacities and flood risks.

What we cannot do

As part of a broader budgetary shortfall, Our present funding levels are insufficient to continue to provide existing services at current levels in the medium term therefore; Council cannot increase the pipe capacity of all catchments to current 1 in 20 ARI within the 10 year planning period.

Managing the Risks

There are risks associated with providing the service and not being able to complete all identified activities and projects. We have identified major risks as:

- System capacity,
- Pipe blockages, and
- Pipe collapse.

We will endeavour to manage these risks within available funding by:

- Prioritisation of upgrades, and
- Proactive pipe inspection/condition assessments.

Confidence Levels

This AM Plan is based on a medium level of confidence information.

The Next Steps

The actions resulting from this asset management plan are:

- Collate/interpret asset condition data,
- Reassess useful lives,
- Improve synergies between Asset Management and Finance,
- Further hydraulic modelling of urban piped catchments through stormwater catchment management plans to identify flood risks to the community,
- Subsidise capital requirements for upgrades through a stormwater headworks plan, and
- Collect data on pollution removal rates of GPTs and other WSUD devices to optimise maintenance costs.

Questions you may have

What is this plan about?

This asset management plan covers the infrastructure assets that serve the Clarence City Council community's stormwater needs. These assets include pipes, pits, access chambers, culverts and gross pollutants traps throughout the community area that enable people to invest in their properties with confidence.

What is an Asset Management Plan?

Asset management planning is a comprehensive process to ensure delivery of services from infrastructure is provided in a financially sustainable manner.

An asset management plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services.

Why is there a funding shortfall?

Most of the Council's stormwater network was constructed by developers and from government grants, often provided and accepted without consideration of ongoing operations, maintenance and replacement needs and future upstream growth of the community.

Many of these assets are approaching the later years of their life and require replacement, services from the assets are decreasing and maintenance costs are increasing.

Our present funding levels are insufficient to continue to provide existing services at current levels in the medium term.

What options do we have?

Resolving the funding shortfall involves several steps:

1. Improving asset knowledge so that data accurately records the asset inventory, how assets are performing and when assets are not able to provide the required service levels,
2. Improving our efficiency in operating, maintaining, renewing and replacing existing assets to optimise life cycle costs,
3. Identifying and managing risks associated with providing services from infrastructure,
4. Making trade-offs between service levels and costs to ensure that the community receives the best return from infrastructure,
5. Identifying assets surplus to needs for disposal to make saving in future operations and maintenance costs,
6. Consulting with the community to ensure that stormwater services and costs meet community needs and are affordable,
7. Developing partnership with other bodies, where available to provide services,
8. Seeking additional funding from governments and other bodies to better reflect a 'whole of government' funding approach to infrastructure services.

What happens if we don't manage the shortfall?

It is likely that we will have to reduce service levels in some areas, unless new sources of revenue are found. For stormwater, the service level reduction may include acceptance of a lower design ARI for pipe and culvert capacities.

What can we do?

We can develop options, costs and priorities for future stormwater services, consult with the community to plan future services to match the community service needs with ability to pay for services, identify urban area flood risks and maximise community benefits against costs.

2. INTRODUCTION

2.1 Background

This asset management plan is to demonstrate responsive management of assets (and services provided from assets), compliance with regulatory requirements, and to communicate funding needed to provide the required levels of service over a 20 year planning period.

The asset management plan follows the format for AM Plans recommended in Section 4.2.6 of the International Infrastructure Management Manual[1].

The asset management plan is to be read with Council's Asset Management Policy, Asset Management Strategy and the following associated planning documents:

- Clarence City Council Strategic Plan 2016 to 2026,
- Clarence City Council 10 Year Financial Management Plan (Long Term Financial Plan),
- Clarence City Council Annual Report 2016/2017,
- Clarence City Council Risk Management Policy 2013,
- Clarence City Council Strategic Asset Management Policy.

The infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to collect and carry land drainage and stormwater flows to a suitable discharge location and, to a growing extent, remove pollutants from the stormwater.

Table 2.1: Assets covered by this Plan

Asset category	Dimension	Replacement Value
Pipes/culverts	396 km	$111,081,865
Pits/access chambers	16,200 No.	$40,485,307
Gross Pollutant Traps	16 No.	$506,590
Pump Stations	6 No.	$309,490
Wetlands/WSUD/Detention Basin	8 No.	$1,289,845
TOTAL		**$153,673,100**

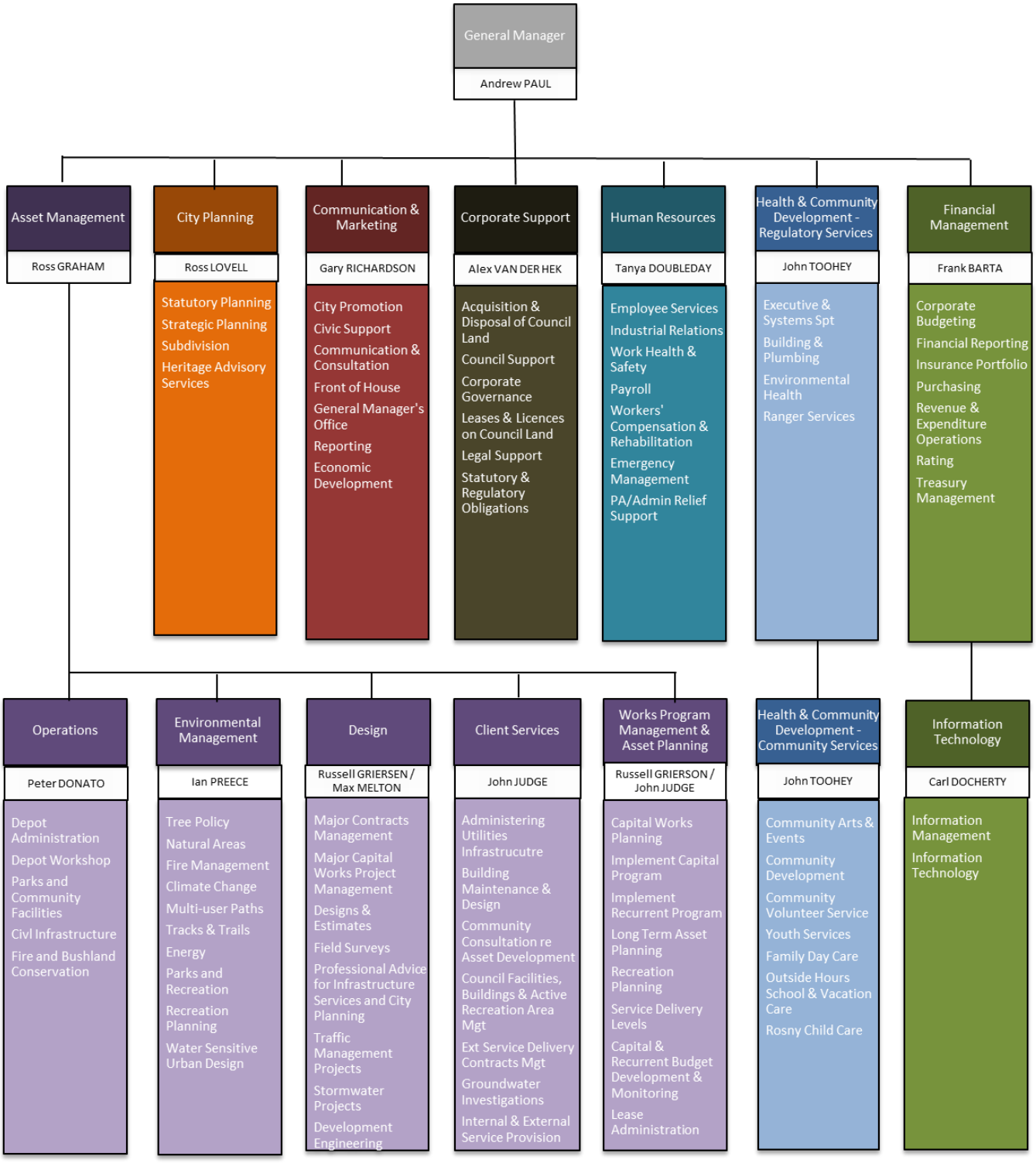
Key stakeholders in the preparation and implementation of this asset management plan are: Shown in Table 2.1.1.

Table 2.1.1: Key Stakeholders in the AM Plan

Key Stakeholder	Role in Asset Management Plan
Aldermen	• Represent needs of community/shareholders, • Allocate resources to meet Council's objectives in providing services while managing risks, • Ensure organisation is financially sustainable, • Accept trade-offs between levels of service and costs.
General Manager	To communicate to Council the service and financial implications arising from the asset management plan.
Group Manager Engineering Services	To determine and identify any implications of not meeting funding requirements identified in this AM Plan i.e. consequences of reducing levels of service.
Manager Finance and Information Management	To determine and identify any implications the AM Plan may have on Council's financial sustainability.

[1] IPWEA, 2011, Sec 4.2.6, *Example of an Asset Management Plan Structure*, pp 4|24 – 27.

Our organisational structure for service delivery from infrastructure assets is detailed below.



2.2 Goals and Objectives of Asset Management

Council exists to provide services to its community. Some of these services are provided by infrastructure assets. We have acquired infrastructure assets by 'purchase', by contract, construction by our staff and by donation of assets constructed by developers/organisations and others to meet increased levels of service.

Our goal in managing infrastructure assets is to meet the defined level of service (as amended from time to time) in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing and appropriately controlling risks, and
- Having a long-term financial plan which identifies required, affordable expenditure and how it will be financed.[2]

2.3 Plan Framework

Key elements of the plan are

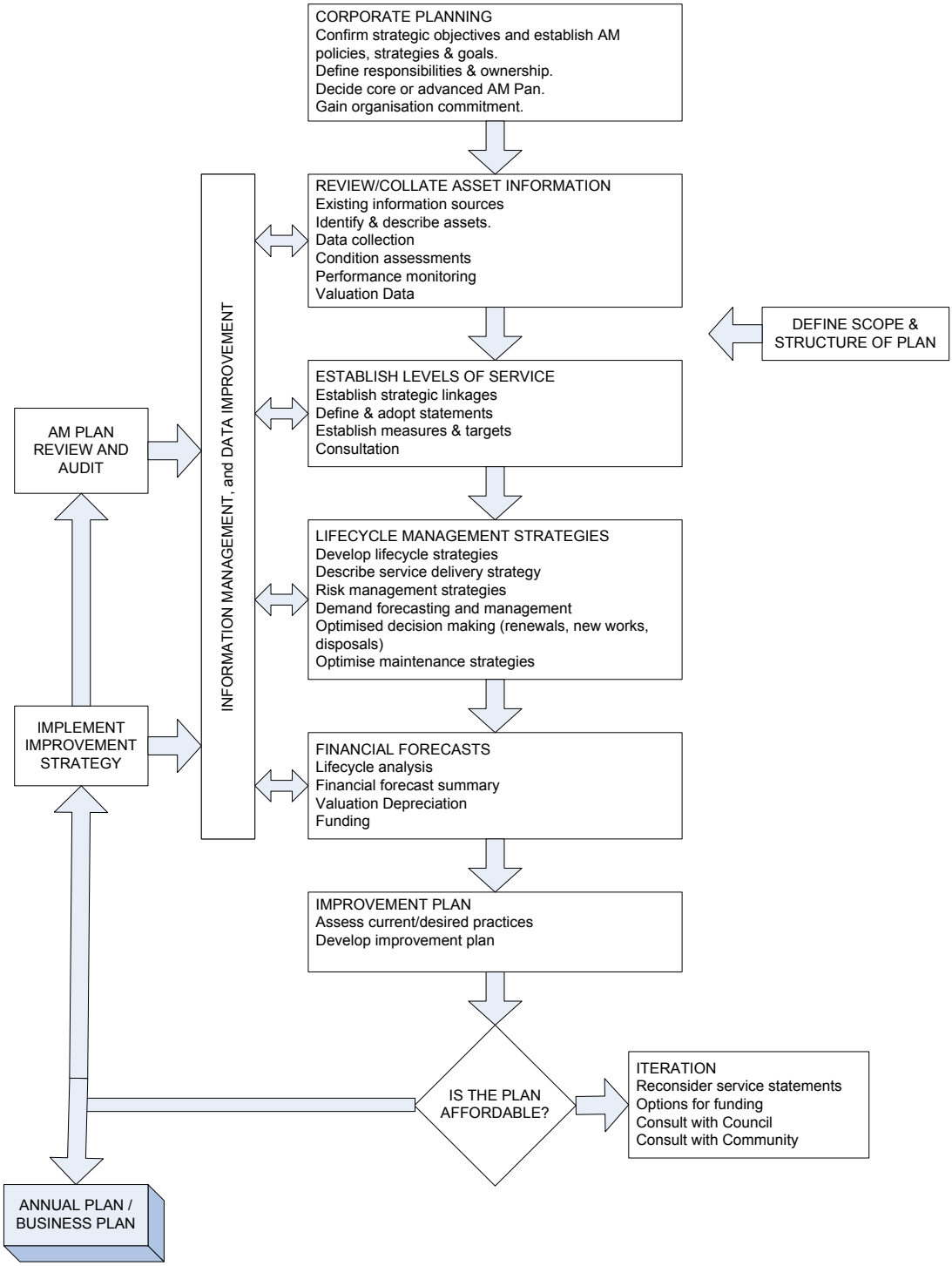
- Levels of service – specifies the services and levels of service to be provided by Council,
- Future demand – how this will impact on future service delivery and how this is to be met,
- Life cycle management – how Council will manage its existing and future assets to provide defined levels of service,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

A road map for preparing an asset management plan is shown below.

[2] Based on IPWEA, 2011, IIMM, Sec 1.2 p 1|7.

Road Map for preparing an Asset Management Plan

Source: IPWEA, 2006, IIMM, Figure 1.5.1, p 1.11.



2.4 Core and Advanced Asset Management

This asset management plan is prepared as a 'core' asset management plan over a 20 year planning period in accordance with the International Infrastructure Management Manual[3]. It is 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.

Future revisions of this asset management plan will move towards 'advanced' asset management using a 'bottom up' approach for gathering asset information for individual assets to support the optimisation of activities and programs to meet agreed service levels in a financially sustainable manner.

2.5 Community Consultation

While community feedback informs the Council's Level of Service quality assessment, no community consultation has been undertaken in the preparation of the Stormwater Asset Management Plan. Future revisions of the asset management plan may incorporate community consultation to assist in Council and the community matching the level of service needed by the community, service risks and consequences with the community's ability and willingness to pay for the service.

[3] IPWEA, 2011, IIMM.

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

We participate in the Service Quality Local Government Customer Satisfaction survey. This telephone survey polls a sample of residents on their level of satisfaction with Council's services. The most recent community satisfaction survey reported satisfaction levels for the following services

Table 3.1: Community Satisfaction Survey Levels

Performance Measure	2016	2014	2012	2010	2008	2006
% of respondents who consider that Council provides and maintains drainage is very important or important.	96	92	94	94	92	90
Performance in the provision and maintenance of drainage (% based on average score out of 10)	69	73	66	68	76	78

The 2006 and 2008 surveys also measured performance for drainage and sewerage, however as of 2008 sewer services are no longer maintained by Tasmanian councils.

Clarence City Council uses this information in developing its Strategic Plan and in allocation of resources in the budget.

3.2 Strategic and Corporate Goals

This asset management plan is prepared under the direction of the Council's vision, mission, goals and objectives.

Our vision is:

To make Clarence a Vibrant, Prosperous and Sustainable City.

Our mission is:

Responding to the changing needs of the community through a commitment to excellence in leadership, advocacy, innovative governance and service delivery.

Clarence City Council's goals and objectives and how these are addressed in this asset management plan are shown in the following table 3.2.

Table 3.2: Organisational Goals and how these are addressed in this Plan

Goal	Objective	How Goal and Objectives are addressed in AM Plan
Governance and leadership - To provide leadership and accessible, responsive, transparent and accountable governance of the City.	Internal operating systems - Ensure appropriate management of risk associated with Council's operations and activities.	The development of this stormwater asset management plan will inform Council of the consequences of its decisions and ensure that the provision and maintenance of the stormwater network is sustainable.
A people city – Clarence is a city which values diversity and encourages equity and inclusiveness, where people of all ages and abilities have the opportunity to improve their health and quality of life.	Community Safety and Well-being – Provide essential infrastructure to support, sustain and enhance community safety and social well-being. Public Spaces and Amenity - Develop and implement Asset Management Plans that respond to the identified needs of local communities.	The development of this Stormwater Asset Management Plan will help identify additional infrastructure needs and plan for the associated financial implications.
A well-planned liveable city - Clarence will be a well-planned liveable city with services and supporting infrastructure to meet current and future needs.	Establish and review a prioritised list of outstanding road transport and alternative transport issues for the City to facilitate the appropriate ranking of projects for capital works planning and funding.	The development of this stormwater asset management Plan will help identify additional infrastructure needs and plan for the associated financial implications.
Council's assets and resources- To efficiently and effectively manage Council's financial, human, and property resources to attain Council's strategic goals and meet statutory obligations.	Financial management – Maintain a financially sustainable organisation, Maintain Council in a sound financial position, Make affordable and equitable rates and charges, and have effective control of financial risk. Human resources management – Provide an equal opportunity workplace, foster an environment that encourages staff development and continuous learning to strengthen workforce capabilities.	The development of this stormwater asset management plan will inform funding decisions and ensure sustainable service delivery in the long term.
A prosperous city – Clarence will develop its economy, improve prosperity, and expand both the level and equity of personal opportunity within its communities.	Economic Development - Provide and plan for essential infrastructure to support economic development.	The development of this Stormwater Asset Management Plan will help identify additional infrastructure needs and plan for the associated financial implications.
An environmentally responsible city – Clarence is a city that values its natural environment and seeks to protect, manage, and enhance its natural assets for the long term environmental, social and economic benefit of the community.	Built Environment - Develop and implement strategic asset management plans for all Council asset classes.	The development of this Stormwater Asset Management Plan will directly address this objective.

3.3 Legislative Requirements

Council has to meet many legislative requirements including Australian and State legislation and State regulations. These legislative requirements are shown in Table 3.3.

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
Environmental Management and Pollution Control Act 1994	An Act to provide for the management and the control of pollution in the State, to repeal the Environmental Protection Act 1973. Provides for the protection of the environment.
Aboriginal Lands Act 1995	An Act to promote reconciliation with the Tasmanian Aboriginal community by granting to Aboriginal people certain parcels of land of historic or cultural significance.
Acts Interpretation Act 1931	An Act to provide certain rules for the interpretation of Acts of Parliament; to define certain terms commonly used therein; and to facilitate the shortening of their phraseology.
Crown Lands Act 1976	An Act to make fresh provisions with respect to the management, sale, and disposal of the lands of the Crown.
Land Acquisition Act 1993	An Act to make provision for the acquisition of land by the Crown, public and local authorities and promoters, to authorize the acquisition of land for undertakings of a public nature, to provide for matters incidental to, and consequential on, that acquisition, and to repeal the *Lands Clauses Act 1857*, the *Lands Resumption Act 1957* and the *Public Authorities' Land Acquisition Act 194.9.*
Land Use Planning and Approvals Act 1993	An Act to make provision for land use planning and approvals.
Nature Conservation Act 2002	An Act to make provision with respect to the conservation and protection of the fauna, flora and geological diversity of the State, to provide for the declaration of national parks and other reserved land and for related purposes.
Work Health and Safety Act 2012 Work Health and Safety Regulation 2012	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.
Other Acts/Policies	State Stormwater Strategy. State Policy on Water Quality Management. Telecommunication, Electricity and Gas Acts. Historic Cultural Heritage Act 1995. Council's Strategic Asset Management Policy and Strategic Funding and Finance Policy.
Urban Drainage Act 2013	An Act to provide for the management of urban drainage and stormwater systems infrastructure.

3.4 Community Levels of Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service.

Community Levels of Service measure how the community receives the service and whether Council is providing community value.

Community levels of service measures used in the asset management plan are:

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

Council's current and expected community service levels are detailed in Table 3.4.

Table 3.4: Community Level of Service

Service Attribute	Service Objective	Performance Measure Process	Current Performance	Expected position in 10 years based on current LTFP
COMMUNITY LEVELS OF SERVICE				
Quality	Provide efficient method of collection and disposal of storm water.	CCC Service Quality Biennial Report.	68%	>90%
	Organisational measure Confidence levels Medium.			
Function	Ensure stormwater system meets community expectations.	Customer requests relating to stormwater infrastructure.	10 per month (2016)	<5 per month
	Organisational measure Confidence levels Medium.			
Capacity/ Utilisation	Provide stormwater system that is low risk to the community.	Number of injuries or accidents reported to Council.	None reported (2017)	<5 pa
	Organisational measure Confidence levels Medium.			

Indications of desired levels of service are obtained from community consultation/engagement. The asset management planning process includes the development of 3 scenarios to develop levels of service that are financially sustainable. Council's knowledge of its stormwater network has not yet reached this level of maturity. As part of the ongoing rollout of OneCouncil, Council will be expanding its capacity to record and evaluate service level data to improve on areas where data is considered to be insufficient. These processes will be detailed in the 2022 version of the AMP, as it is too early in their development to comment on specific implementation details.

3.5 Technical Levels of Service

Supporting the community service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities that Council undertakes to best achieve the desired community outcomes and demonstrate effective organisational performance.

Technical service measures are linked to annual budgets covering:

- Operations – the regular activities to provide services such as cleansing, , inspections, clearing accumulated material etc.
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition (e.g. clearing blockages, overland flow path remediation, structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. pipeline replacement and building component replacement),
- Upgrade – the activities to provide a higher level of service (e.g. replacing a pipeline with a larger size, widening an overland flow path) or a new service that did not exist previously (e.g. constructing a new culvet).

Asset managers plan, implement and control technical service levels to influence the customer service levels.[4]

Table 3.5 shows the technical level of service expected to be provided under this AM Plan. The agreed sustainable position in the table documents the position agreed by the Council following community consultation and trade-off of service levels performance, costs and risk within resources available in the long-term financial plan.

Table 3.5: Technical Levels of Service

Key Performance Measure	Level of Service Objective	Performance Measure Process	Current Performance	Optimal Performance
TECHNICAL LEVELS OF SERVICE				
Condition	Periodic visual assessment to determine condition.	CCTV inspection of pipes Visual inspection of streams/open drains.	0.2% inspected	1% inspected pa 5yr stream maintenance/clearing cycle
Function	Ensure stormwater system has appropriate design capacity.	Number of properties experiencing inundation events.	Not measured	< 10 pa
Design Standard	Residential 20yr Commercial 50yr	Hydraulic modelling of stormwater network.	Preparing stormwater system Management plans with accordance to Urban Drainage Act 2013	90%

[4] IPWEA, 2011, IIMM, p 2.22

4. FUTURE DEMAND

4.1 Demand Drivers

Drivers affecting demand are broader trends of change which may result in unavoidable increases in demand on Council's resources and time, impacting the overall Level of Service Council may be able to provide. .

4.2 Demand Forecast

The present position and projections for demand drivers that may impact future service delivery and utilisation of assets were identified and are documented in Table 4.3.

4.3 Demand Impact on Assets

The impact of demand drivers that may affect future service delivery and utilisation of assets are shown in Table 4.3.

Table 4.3: Demand Drivers, Projections and Impact on Services

Demand drivers	Present position	Projection	Impact on services
Land Use	Council's planning scheme maintains control of areas of future development. Urban in-fill development increasing peak runoff flow rates.	Re-zonings to facilitate new residential/industrial subdivisions. Increased urban in-fill development and increased residential population densities.	Increased peak runoff flow rates will exceed the capacity of existing infrastructure. Development upstream of existing populations will increase demand on existing infrastructure.
Population	55,175 (ABS Estimated resident population June 2016).	70,882 (Projected resident population June 2037 @ 1.2%).	Network expansion required to service growth.
Climate Change - State Stormwater Strategy	Adhoc adoption of WSUD principles.	Requirements for inclusion of WSUD principles in new subdivisions.	Specialised maintenance requirements. Preserving capacity of downstream infrastructure.
Climate Change - Australian Rainfall & Runoff revision	Design for current 1 in 20 ARI event.	Future 1 in 20 ARI event likely to be more intense.	Existing infrastructure fails to cope with updated technical level of service.
Sea Level Rise	Some low-lying, coastal assets inundated during storm surges.	Frequency and duration of inundation likely to increase.	Reduced capacity of stormwater outfalls that are subject to submergence.

4.4 Demand Management Plan

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

Non-asset solutions focus on providing the required service without the need for Council to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures[5]. Examples of non-asset solutions include providing services from existing infrastructure such as aquatic centres and libraries that may be in another community area or public toilets provided in commercial premises.

Opportunities identified to date for demand management are shown in Table 4.4. Further opportunities will be evaluated with each future revision of this asset management plan.

Table 4.4: Demand Management Plan Summary

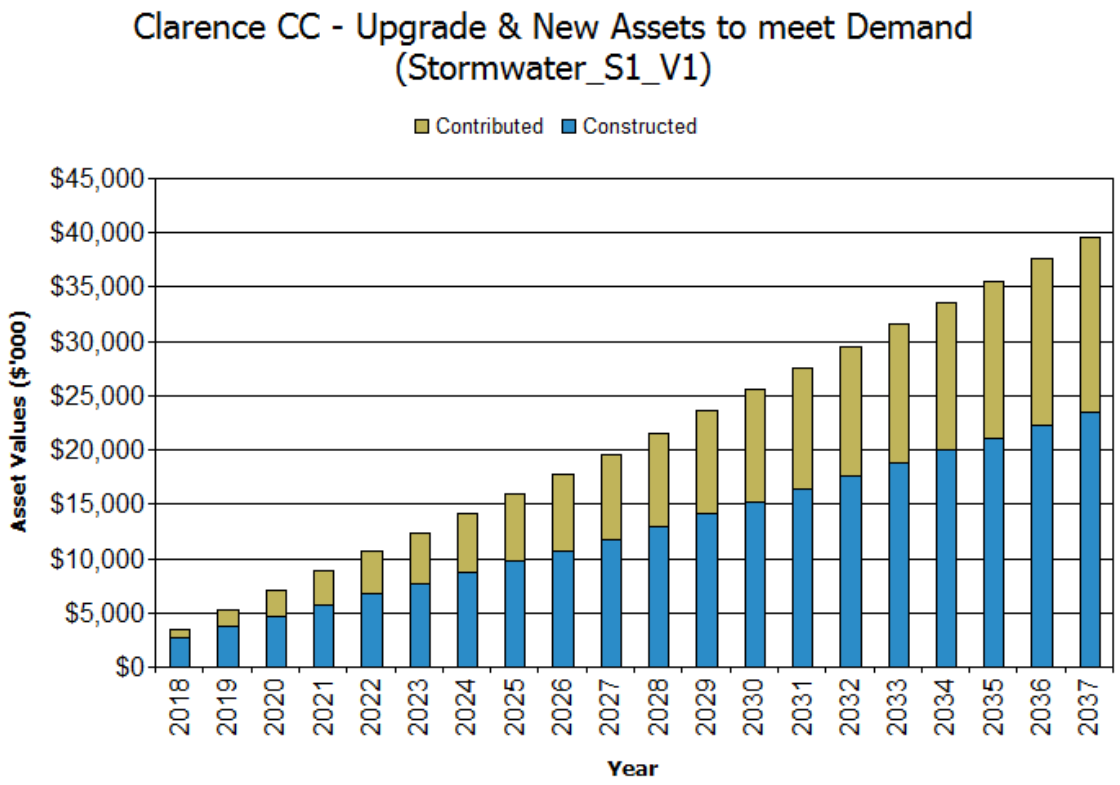
Demand Driver	Impact on Services	Demand Management Plan
Land Use	Increased peak runoff flow rates will exceed the capacity of existing infrastructure. Development upstream of existing populations will increase demand on existing infrastructure.	Encourage on-site detention and infiltration devices. Headworks policy to offset funding requirements for upgrades to downstream infrastructure. Standard present condition for large subdivisions/developments to design so that runoff quantity is no greater than predevelopment.
Population	Network expansion required to service growth.	Headworks policy to offset funding requirements for upgrades to downstream infrastructure.
Climate Change	Increased peak runoff flow rates will exceed the capacity of existing infrastructure.	Improve overland flowpaths where appropriate in lieu of increasing pipe capacities.
Sea Level Rise	Reduced capacity of stormwater outfalls that are subject to submergence.	Provide overland flowpaths where appropriate in lieu of increasing pipe capacities.

[5] IPWEA, 2011, IIMM, Table 3.4.1, p 3|58.

4.5 Asset Programs to meet Demand

The new assets required to meet growth will be acquired free of cost from land developments and constructed/acquired by Council. New assets constructed/acquired by Council are discussed in Section 5.5. The cumulative value of new contributed and constructed asset values are summarised in Figure 1.

Figure 1: Upgrade and New Assets to meet Demand



Acquiring these new assets will commit Council to fund ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs in Section 5.

Constant growth of 1.38% from contributed assets, which is equal to the average value of contributed assets since 2012/13, has been assumed for the purpose of this asset management plan. The actual growth of the stormwater asset stock from contributed assets will vary over time due to demand for/staging of new subdivisions etc.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how Council plans to manage and operate the assets at the agreed levels of service (defined in Section 3) while optimising life cycle costs.

5.1 Background Data

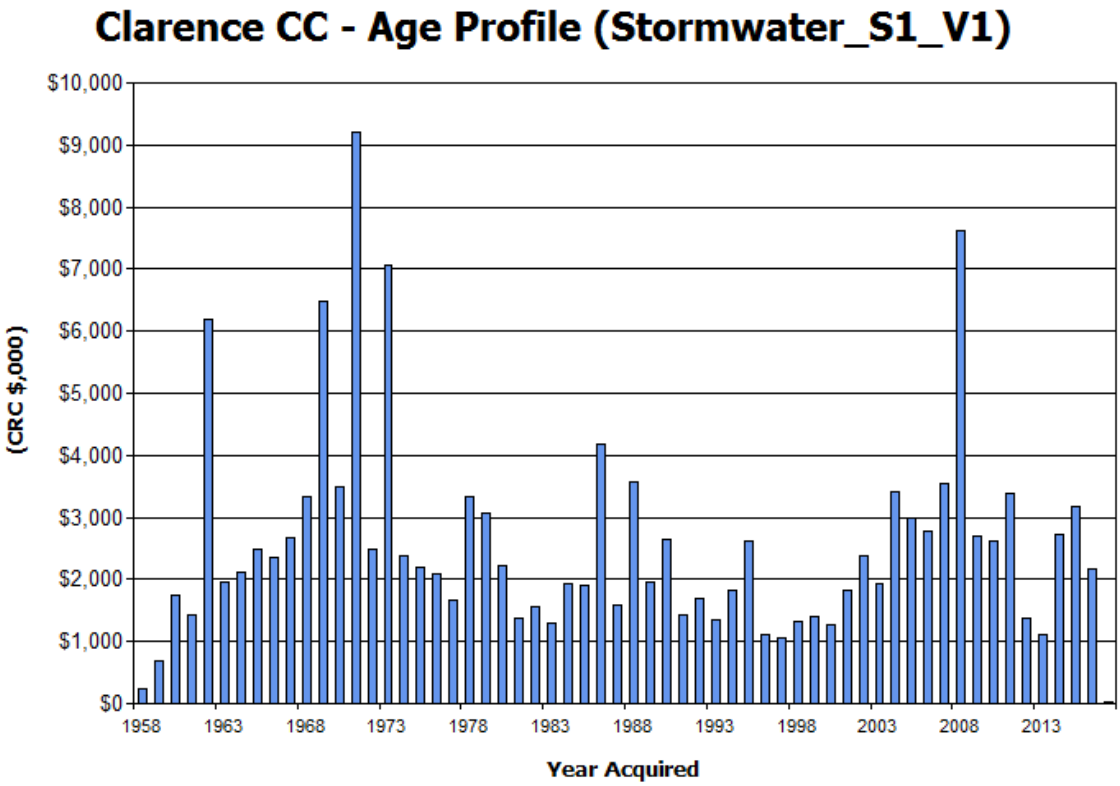
5.1.1 Physical parameters

The assets covered by this asset management plan are shown in Table 2.1.

The majority of Council's stormwater infrastructure is located within piped catchments constructed in the established suburbs of Bellerive, Howrah, Lindisfarne, Risdon Vale and Warrane in the 1960s and 1970s. Clarence also experienced increased subdivision activity from 2000 resulting in a substantial increase to the stormwater asset stock.

The age profile of the assets include in this Asset Management Plan is shown in Figure 2.

Figure 2: Asset Age Profile



5.1.2 Asset capacity and performance

Council's services are generally provided to meet design standards where these are available.

Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

Table 5.1.2: Known Service Performance Deficiencies

Location	Service Deficiency
Bellerive, Howrah, Tranmere, Warrane	Hydraulic capacity of piped networks.
Cremorne, Lauderdale, Seven Mile Beach	Flat topography and high water tables impacting on subsurface discharge.
Mornington Industrial Park	Poor water quality outcomes.

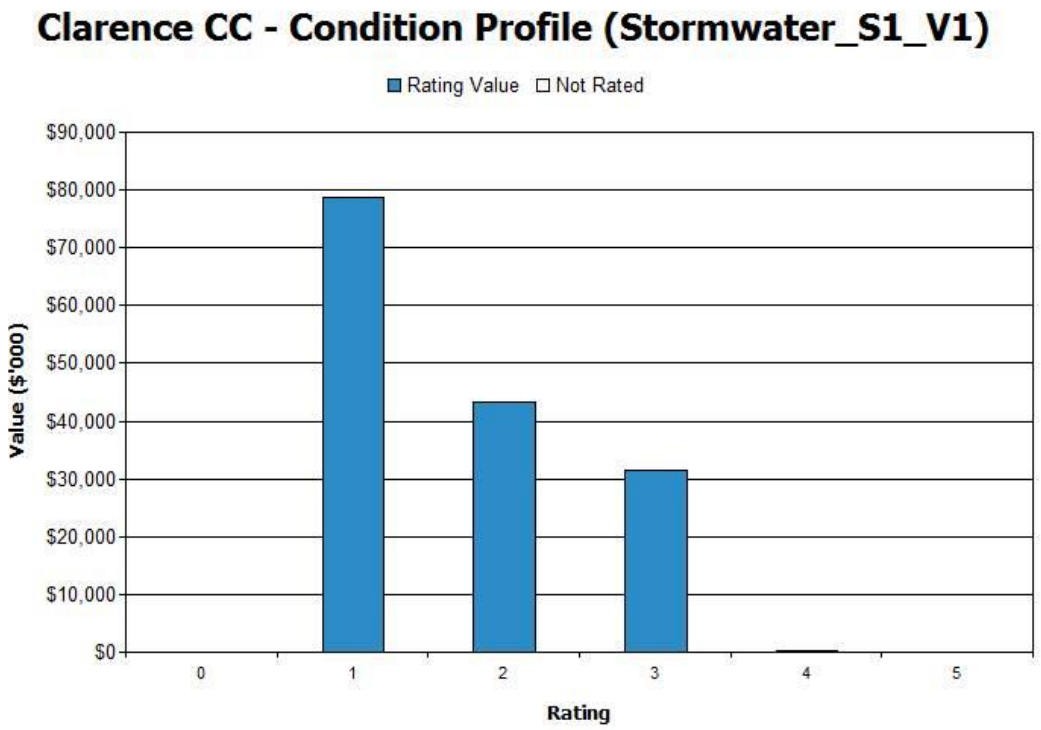
The above service deficiencies were identified through correspondence from the community and Council staff knowledge.

5.1.3 Asset condition

The condition of Council's stormwater infrastructure is not currently monitored. An annual inspection program of a sample of Council's stormwater assets is recommended to gauge the overall condition profile of the network.

A condition profile of Council's stormwater assets has been inferred using a typical deterioration curve based on the age profile of the assets. The theoretical condition profile of Council's stormwater assets is shown in Figure 3. As part of the ongoing rollout of OneCouncil, Council will seek to implement more comprehensive condition evaluation processes for its assets, to be implemented in the 2022 version of this document.

Figure 3: Asset Condition Profile



Condition is measured using a 1 – 5 grading system[6] as detailed in Table 5.1.3.

Table 5.1.3: Simple Condition Grading Model

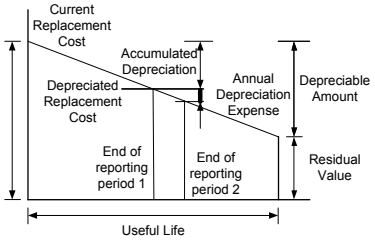
Condition Grading	Description of Condition
1	**Very Good**: only planned maintenance required
2	**Good**: minor maintenance required plus planned maintenance
3	**Fair**: significant maintenance required
4	**Poor**: significant renewal/rehabilitation required
5	**Very Poor**: physically unsound and/or beyond rehabilitation

[6] IPWEA, 2011, IIMM, Sec 2.5.4, p 2|79.

5.1.4 Asset valuations

The value of assets recorded in the asset register as at 30 July 2017 covered by this asset management plan is shown below. Assets were last revalued at 30 July 2017. Assets are valued by averaging rates tendered by contractors for Council projects throughout the prior year. The projects are typically brown field.

Current Replacement Cost	$153,673,000
Depreciable Amount	$153,673,000
Depreciated Replacement Cost[7]	$90,527,000
Annual Depreciation Expense	$1,281,000



Useful lives of stormwater assets is currently assumed to be 75 years. Anecdotal evidence from other councils suggest that the useful life of concrete pipes can be comfortably extended beyond 100 years. The useful lives will be reviewed as asset condition data is collected and interpreted.

Various ratios of asset consumption and expenditure have been prepared to help guide and gauge asset management performance and trends over time.

Rate of Annual Asset Consumption (Depreciation/Depreciable Amount)	0.8%
Rate of Annual Asset Renewal (Capital renewal exp/Depreciable amount)	0.7%
Rate of Annual Asset Upgrade/New (Capital upgrade exp/Depreciable amount)	1.8%
Rate of Annual Asset Upgrade/New (including contributed assets)	2.3%

In 2017/18 Council plans to renew assets at 81.2% of the rate they are being consumed and will be increasing its asset stock by 2.3% in the year.

5.2 Infrastructure Risk Management Plan

A formalised infrastructure risk management plan will be prepared with the next review of this plan. In the meantime, Council currently manages risk by undertaking regular inspections of public open space and the assets within. The resulting remediation action/programs are prioritised according to an assessed level of residual risk.

An assessment of risks associated with service delivery from infrastructure assets has identified critical risks that will result in loss or reduction in service from infrastructure assets or a financial loss to Council. The risk assessment process identifies credible risks, the consequences and likelihood of the associated risk events occurring, the controls available to either eliminate or minimise the risks, and then evaluates the risks and develops a risk treatment plan.

Critical risks, being those assessed as 'Very High' - requiring immediate corrective action and 'High' – requiring prioritised corrective action will be identified in a future developed Infrastructure Risk Management Plan, together with the estimated residual risk after the selected treatment plan is operational as presently summarised in Table 5.2.

[7] Also reported as Written Down Current Replacement Cost (WDCRC).

Table 5.2: Critical Risks and Treatment Plans

Service or Asset at Risk	Risk Event	Consequence	Risk Controls	Likelihood	Residual Risk	Treatment Costs
Pipe	Blockage causing damage to third party.	H	CCTV inspection program.	Possible	L	$144,000 pa
			Hydro jetting partial blockages.	Possible	L	$87,000 pa
			Pit cleaning program.	Likely	M	$55,000 pa
Pipe	Structural failure causing damage or injury.	H	CCTV inspection program.	Possible	L	$144,000 pa
Pit	Blockage causing damage to third party.	H	Pit cleaning program.	Possible	L	$55,000 pa
			Street sweeping program.	Possible	L	$122,000 pa
Stormwater system failure	Road failure.	H	CCTV inspection program.	Possible	L	$144,000 pa
			Open drain/stream maintenance program.	Possible	L	$105,000 pa
Stormwater network inadequate capacity	Inundation of third party property.	H	Hydraulic modelling of catchments and prioritisation of upgrades.	Possible	L	$250,000 pa

Note * The residual risk is the risk remaining after the selected risk treatment plan is operational.

5.3 Routine Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety and amenity, e.g. cleansing, street sweeping, grass mowing and street lighting.

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

5.3.1 Operations and Maintenance Plan

Operations activities affect service levels including quality and function through street sweeping and overland flowpath maintenance frequency, intensity and spacing of street lights and cleaning frequency and opening hours of building and other facilities.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating, e.g. pipe repairs but excluding rehabilitation or renewal. Maintenance may be classified into reactive, planned and specific maintenance work activities.

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

Reactive maintenance for Council's stormwater assets includes the following activities:

- Clearing of blocked pipes;
- Removal of debris from inlet pits/headwalls;
- Removal of debris from open drains/creeks.

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.

Planned maintenance for Council's stormwater assets includes the following activities:

- CCTV inspection of pipe networks;
- Pit cleaning program;
- Open drain/creek clearing program;
- GPT cleaning.

Specific maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including pit relinings or pipe relinings, repainting, replacing air conditioning units, etc. This work falls below the capital/maintenance threshold but may require a specific budget allocation.

Specific maintenance for Council's stormwater assets includes the following activities:

- Wetland maintenance (e.g. replanting vegetation).

Actual past maintenance expenditure is shown in Table 5.3.1.

Table 5.3.1: Maintenance Expenditure Trends

Year	Maintenance Expenditure	
	Planned and Specific	Unplanned
2012/13	$507,012	$194,136
2013/14	$444,469	$207,196
2014/15	$418,335	$200,939
2015/16	$436,322	$197,950
2016/17	$412,644	$197,280

Planned maintenance work in 2016/17 was 67.7% of total maintenance expenditure. Industry figures propose 30-50% unplanned maintenance work is desirable. The council's Stormwater unplanned maintenance expenditure of 22.3% represents an effective Council works program in this area.

Maintenance expenditure levels are considered to be adequate to meet projected service levels, which may be less than or equal to current service levels. If expenditure levels are such that will result in a lesser level of service, the service risks will be identified and service consequences considered in the future Infrastructure Risk Management Plan.

Assessment and prioritisation of reactive maintenance is undertaken by Council staff using experience and judgement. A Maintenance Response Levels of Service schedule is to be developed, as noted in Appendix A.

5.3.2 Operations and Maintenance Strategies

Council will operate and maintain assets to provide the defined level of service to approved budgets in the most cost-efficient manner. The operation and maintenance activities include:

- Scheduling operations activities to deliver the defined level of service in the most efficient manner,
- Undertaking maintenance activities through a planned maintenance system to reduce maintenance costs and improve maintenance outcomes. Undertake cost-benefit analysis to determine the most cost-effective split between planned and unplanned maintenance activities (50 – 70% planned desirable as measured by cost),
- Maintain a current infrastructure risk register for assets and present service risks associated with providing services from infrastructure assets and reporting Very High and High risks and residual risks after treatment to management and Council,
- Review current and required skills base and implement workforce training and development to meet required operations and maintenance needs,
- Review asset utilisation to identify underutilised assets and appropriate remedies, and over utilised assets and customer demand management options,
- Maintain a current hierarchy of critical assets and required operations and maintenance activities,
- Develop and regularly review appropriate emergency response capability,

- Review management of operations and maintenance activities to ensure Council is obtaining best value for resources used.

Asset hierarchy

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

Council's service hierarchy is shown is Table 5.3.2.

Table 5.3.2: Asset Service Hierarchy

Service Hierarchy	Service Level Objective
Pipes	Provide capacity to carry a 5% AEP runoff event.
Pits	Provide adequate inlet capacity and access for maintenance activities.
Pump stations	Provide storage and pumping capacity sufficient for upstream pipes to convey 1 in 20 ARI rainfall events.
Gross Pollutant Traps	To remove gross pollutants from 4 EY runoff event.
WSUD	To improve water quality outcomes, nominally a 80/45/45% reduction in Total Suspended Solids, Total Phosphorous and Total Nitrogen respectively.

Critical Assets

Critical assets are those assets which have a high consequence of failure but not necessarily a high likelihood of failure. By identifying critical assets and critical failure modes, organisations can target and refine investigative activities, maintenance plans and capital expenditure plans at the appropriate time.

Operations and maintenances activities may be targeted to mitigate critical assets failure and maintain service levels. These activities may include increased inspection frequency, higher maintenance intervention levels, etc. Critical assets failure modes and required operations and maintenance activities are detailed in Table 5.3.2.1.

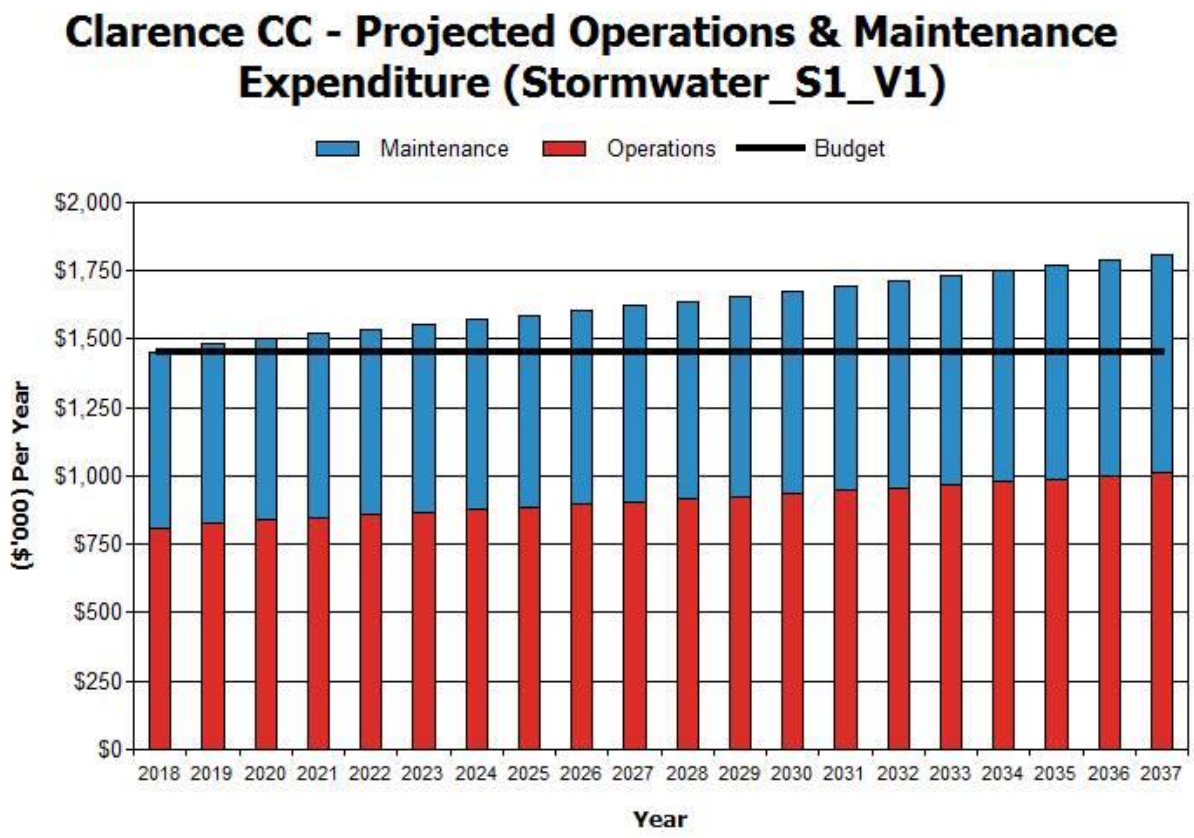
Table 5.3.2.1: Critical Assets and Service Level Objectives

Critical Assets	Critical Failure Mode	Operations & Maintenance Activities
Kangaroo Bay Rivulet – piped section	Blockage	Visual inspection (CCTV) annually
Howrah Road - culvert	Insufficient capacity	Keep free of blockages
Tranmere Road - culvert	Insufficient capacity	Keep free of blockages
Gross Pollutant Traps	Blockage	Monthly inspection/cleaned when required

5.3.3 Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 4. Note that all costs are shown in current 2017 dollar values (i.e. real values).

Figure 4: Projected Operations and Maintenance Expenditure



Deferred maintenance, i.e. works that are identified for maintenance and unable to be funded are to be included in the risk assessment and analysis in the infrastructure risk management plan.

Maintenance is funded from the operating budget where available. This is further discussed in Section 6.2.

5.4 Renewal/Replacement Plan

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

Council implements its asset management programs based on information collected about those assets, either from inspection or from community feedback. For existing assets, maintenance is prioritised primarily based on their evaluated condition from inspection, with priority given to assets which would present a risk to the public if they were not renewed or replaced, to assets with high utilisation and assets with a high level of necessity to the public.

5.4.1 Renewal plan

Assets requiring renewal/replacement are identified from one of three methods provided in the 'Expenditure Template'.

- Method 1 uses Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year, or
- Method 2 uses capital renewal expenditure projections from external condition modelling systems (such as Pavement Management Systems), or
- Method 3 uses a combination of average *network renewals* plus *defect repairs* in the *Renewal Plan* and *Defect Repair Plan* worksheets on the 'Expenditure template'.

Method 1 was used to project renewal expenditure, however due to the long lives of stormwater assets there are very few assets due for replacement in the planning period. There will, however, be ongoing replacement of existing assets as they are upgraded to increase capacity. The capital expenditure of the replacement of these assets has been

split into renewal (the cost to replace the existing asset) and upgrade/new (the extra amount spent to increase the capacity of the asset). Therefore Method 3 was used for this asset management plan.

The useful lives of assets used to develop projected asset renewal expenditures are shown in Table 5.4.1. Asset useful lives were last reviewed on 30 July 2017.[8]

Table 5.4.1: Useful Lives of Assets

Asset (Sub)Category	Useful life
Pipes	75 years
Junction Boxes	75 years
Side Entry Pits	75 years
Headwalls	75 years
Grated Pits	75 years
Gross Pollutant Traps	75 years

5.4.2 Renewal and Replacement Strategies

Council will plan capital renewal and replacement projects to meet level of service objectives and minimise infrastructure service risks by:

- Planning and scheduling renewal projects to deliver the defined level of service in the most efficient manner,
- Undertaking project scoping for all capital renewal and replacement projects to identify:
  - the service delivery 'deficiency', present risk and optimum time for renewal/replacement,
  - the project objectives to rectify the deficiency,
  - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
  - and evaluate the options against evaluation criteria adopted by Council, and
  - select the best option to be included in capital renewal programs,
- Using 'low cost' renewal methods (cost of renewal is less than replacement) wherever possible,
- Maintain a current infrastructure risk register for assets and service risks associated with providing services from infrastructure assets and reporting Very High and High risks and residual risks after treatment to management and Council,
- Review current and required skills base and implement workforce training and development to meet required construction and renewal needs,
- Maintain a current hierarchy of critical assets and capital renewal treatments and timings required ,
- Review management of capital renewal and replacement activities to ensure Council is obtaining best value for resources used.

Renewal ranking criteria

Asset renewal and replacement is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (e.g. replacing a bridge that has a 5 t load limit), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. roughness of a road).[9]

It is possible to get some indication of capital renewal and replacement priorities by identifying assets or asset groups that:

- Have a high consequence of failure,
- Have a high utilisation and subsequent impact on users would be greatest,
- The total value represents the greatest net value to Council,
- Have the highest average age relative to their expected lives,
- Are identified in the AM Plan as key cost factors,

[8] Clarence City Council, 2016, Annual Report, P 56
[9] IPWEA, 2011, IIMM, Sec 3.4.4, p 3|60.

- Have high operational or maintenance costs, and
- Where replacement with modern equivalent assets would yield material savings.[10]

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 5.4.2.

Table 5.4.2: Renewal and Replacement Priority Ranking Criteria

Criteria	Weighting
Condition Rating (4 and 5)	30%
Risks – (residual high and/or extreme risks)	30%
Utilisation	20%
Public Need	20%
Total	**100%**

Renewal and replacement standards

Renewal work is carried out in accordance with the following Standards and Specifications.

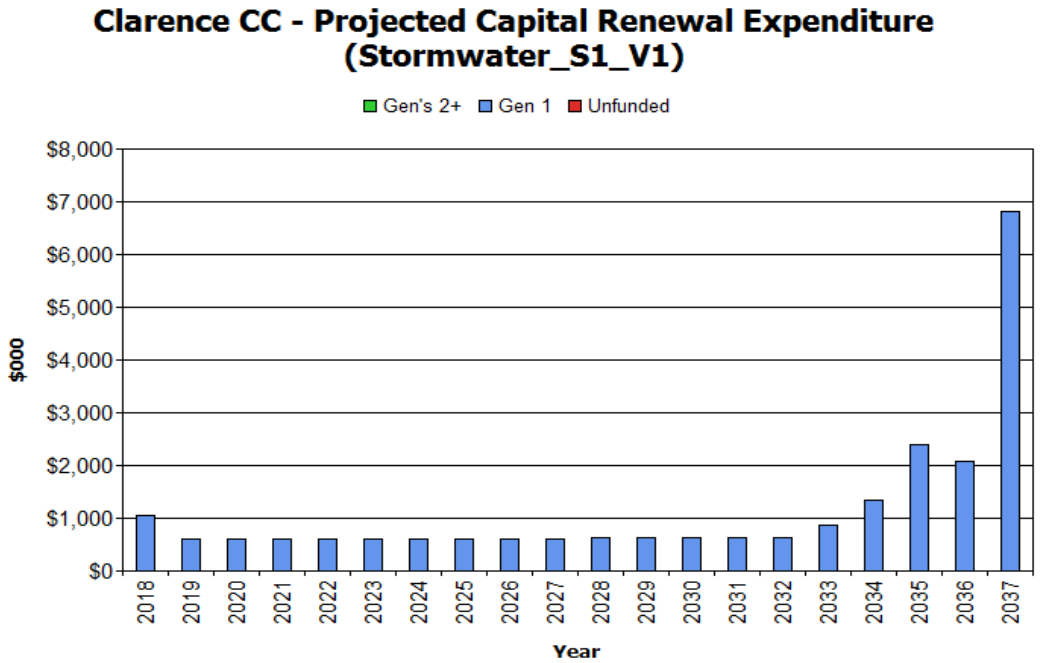
- Clarence City Council: Technical Specification for Construction Works June 2008.
- Australian Rainfall & Runoff.
- Derwent Estuary Program: WSUD Engineering Procedures for Stormwater Management in Tasmania.

5.4.3 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time as the asset stock increases from growth. The expenditure is summarised in Figure 5. Note that all amounts are shown in real values, with 2037 value representing the projected expenditure beyond the current 20 year financial plan.

The projected capital renewal and replacement program is shown in Appendix B.

Figure 5: Projected Capital Renewal and Replacement Expenditure



[10] Based on IPWEA, 2011, IIMM, Sec 3.4.5, p 3|66.

Deferred renewal and replacement, i.e. those assets identified for renewal and/or replacement and not scheduled in capital works programs are to be included in the risk analysis process in the risk management plan.

Renewals and replacement expenditure in Council's capital works program will be accommodated in the long term financial plan. This is further discussed in Section 6.2.

5.5 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. These assets from growth are considered in Section 4.4.

5.5.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as councillor/director or community requests, proposals identified by strategic plans or partnerships with other organisations. Priority is placed on assets which improve the level of service of the Council or the Council's existing assets. Candidate proposals are inspected to verify need and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed in Table 5.5.1.

Table 5.5.1: New Assets Priority Ranking Criteria

Criteria	Weighting
Flood risk	50%
Water quality objectives	35%
Co-ordination with other works i.e. Road reseals	15%
Total	**100%**

5.5.2 Capital Investment Strategies

Council will plan capital upgrade and new projects to meet level of service objectives by:

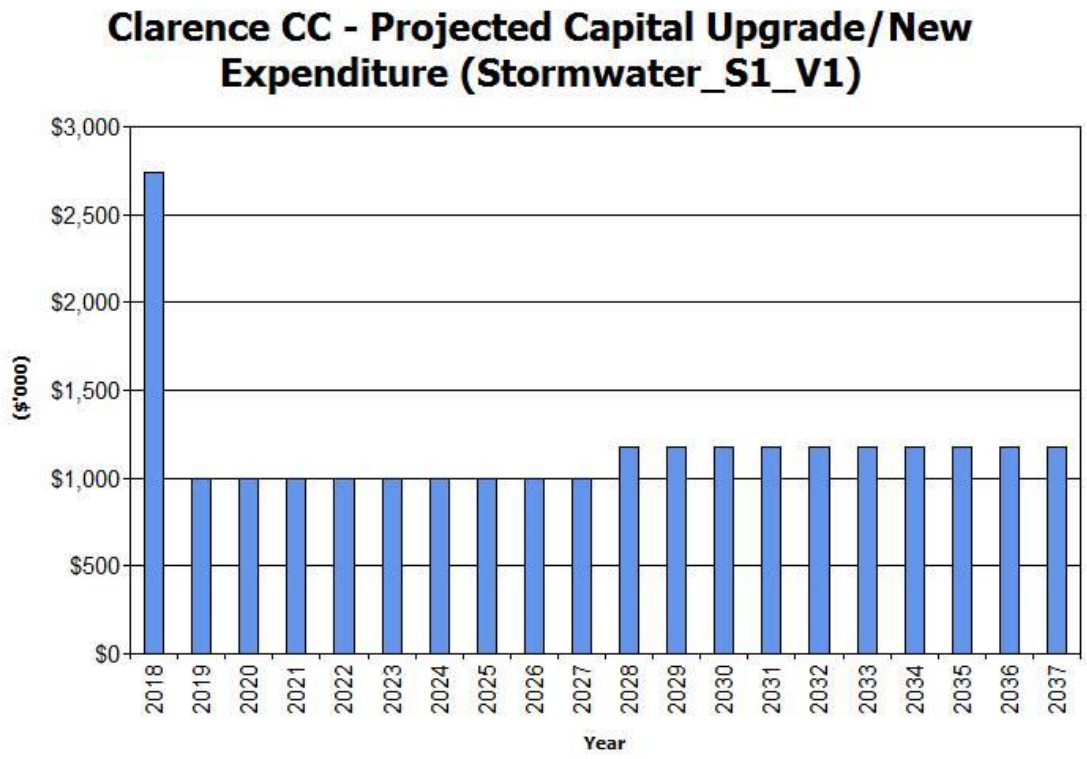
- Planning and scheduling capital upgrade and new projects to deliver the defined level of service in the most efficient manner,
- Undertake project scoping for all capital upgrade/new projects to identify:
    - the service delivery 'deficiency', present risk and required timeline for delivery of the upgrade/new asset,
    - the project objectives to rectify the deficiency including value management for major projects,
    - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
    - management of risks associated with alternative options,
    - and evaluate the options against evaluation criteria adopted by Council, and
    - select the best option to be included in capital upgrade/new programs,
- Review current and required skills base and implement training and development to meet required construction and project management needs,
- Review management of capital project management activities to ensure Council is obtaining best value for resources used.

Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.4.2.

5.5.3 Summary of future upgrade/new assets expenditure

Projected upgrade/new asset expenditures are summarised in Figure 6. The projected upgrade/new capital works program is shown in Appendix C. All amounts are shown in real values, with the 2018 figure representing the balance of carryover expenditure for ongoing projects.

Figure 6: Projected Capital Upgrade/New Asset Expenditure



Expenditure on new assets and services in Council's capital works program will be accommodated in the long term financial plan. This is further discussed in Section 6.2. In some cases, High capital expenditure in the current year reflects the presence of carryover construction from the previous financial year. Council does not currently review the influence of carryover funds on expenditure beyond the current financial year.

5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.6, together with estimated annual savings from not having to fund operations and maintenance of the assets. These assets will be further reinvestigated to determine the required levels of service and see what options are available for alternate service delivery, if any. Any revenue gained from asset disposals is accommodated in Council's long term financial plan.

Where cashflow projections from asset disposals are not available, these will be developed in future revisions of this asset management plan.

There are no stormwater assets currently identified for disposal, however, upgrading of undersized infrastructure will result in early retirement of some assets.

Table 5.6: Assets Identified for Disposal

Asset	Reason for Disposal	Timing	Disposal Expenditure	Operations & Maintenance Annual Savings
Stormwater	None Proposed	N/A	N/A	N/A

5.7 Service Consequences and Risks

Council has prioritised decisions made in adopting this AM Plan to obtain the optimum benefits from its available resources. Decisions were made based on the development of 3 scenarios of AM Plans.

Scenario 1 - What we would like to do based on asset register data.

Scenario 2 – What we should do with existing budgets and identifying level of service and risk consequences (i.e. what are the operations and maintenance and capital projects we are unable to do, what is the service and risk consequences associated with this position). This may require several versions of the AM Plan.

Scenario 3 – What we can do and be financially sustainable with AM Plans matching long-term financial plans.

The development of scenario 1 and scenario 2 AM Plans provides the tools for discussion with the Council and community on trade-offs between what we would like to do (scenario 1) and what we should be doing with existing budgets (scenario 2) by balancing changes in services and service levels with affordability and acceptance of the service and risk consequences of the trade-off position (scenario 3).

5.7.1 What we cannot do

There are some operations and maintenance activities and capital projects that are unable to be undertaken within the next 10 years. These include:

- Upgrade all stormwater systems;
- Replace all stormwater systems.

5.7.2 Service consequences

Operations and maintenance activities and capital projects that cannot be undertaken will maintain or create service consequences for users. These include:

- Flooding of properties and roads.

5.7.3 Risk consequences

The operations and maintenance activities and capital projects that cannot be undertaken may maintain or create risk consequences for Council. These include:

- Legal;
- Property damage due to flooding;
- Insurance Claims;
- Media involvement.

These risks will be included in the Infrastructure Risk Management Plan currently under development, with risk management plans actions and expenditures included within projected expenditures.

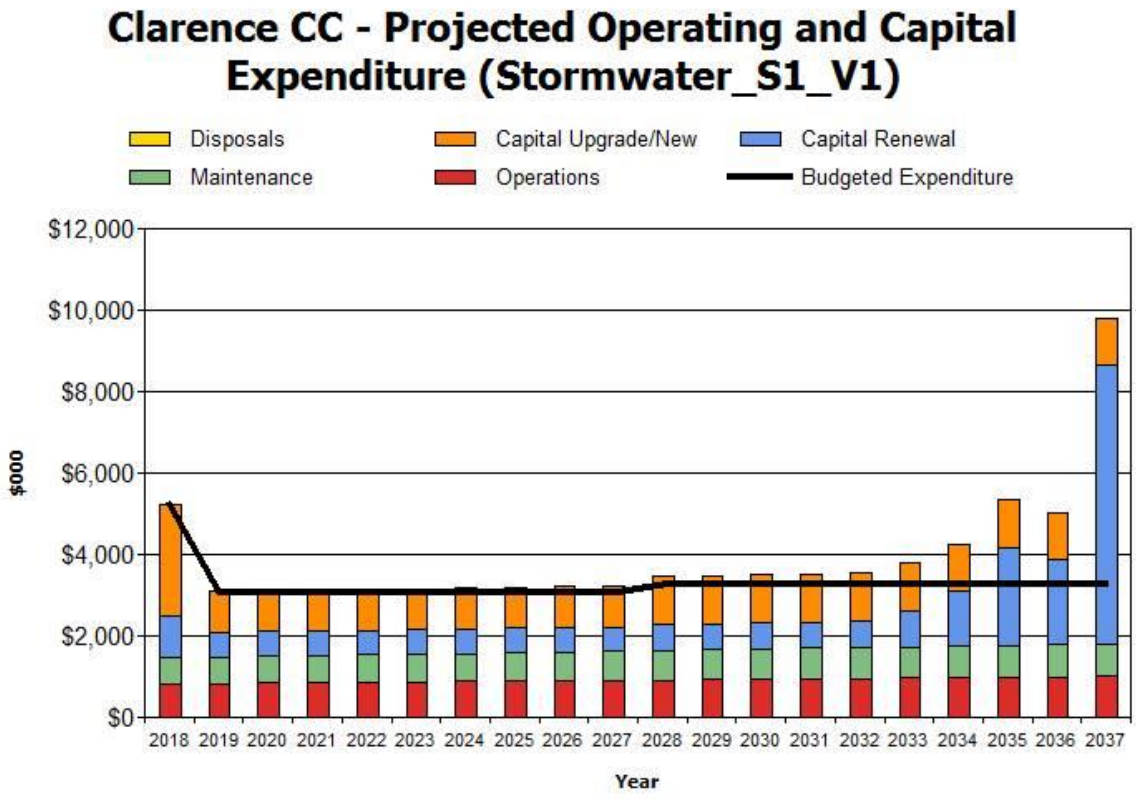
6. FINANCIAL SUMMARY

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

6.1 Financial Statements and Projections

The financial projections are shown in Figure 7 for projected operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets). Note that all costs are shown in real values.

Figure 7: Projected Operating and Capital Expenditure



6.1.1 Sustainability of service delivery

There are four key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the asset renewal funding ratio, long term life cycle costs/expenditures and medium term projected/budgeted expenditures over 5 and 10 years of the planning period.

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio[11] **100%**

The Asset Renewal Funding Ratio is the most important indicator and reveals that over the next 10 years, Council is forecasting that it will have **100%** of the funds required for the optimal renewal and replacement of its assets.

[11] AIFMG, 2012, Version 1.3, Financial Sustainability Indicator 4, Sec 2.6, p 2.16

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 asset life cycle. Life cycle costs include operations and maintenance expenditure and asset consumption (depreciation expense). The life cycle cost for the services covered in this asset management plan is $2,825,000 per year (average operations and maintenance expenditure plus depreciation expense projected over 10 years). The Long Term Financial Plan (LTFP) was developed alongside the Asset Management Plans (AMP) using expenditure projections from the AMP's to underpin a 10 year sustainable funding model for the Council. These AMP projections are quantified in the LTFP in terms of asset value, planned and reactive maintenance expense, life cycle depreciation and asset replacement costs of each asset portfolio.

Life cycle costs can be compared to life cycle expenditure to give an initial indicator of affordability of projected service levels when considered with age profiles. Life cycle expenditure includes operations, maintenance and capital renewal expenditure. Life cycle expenditure will vary depending on the timing of asset renewals. The life cycle expenditure over the 10 year planning period is **$2,098,000** per year (average operations and maintenance plus capital renewal budgeted expenditure in LTFP over 10 years).

A shortfall between life cycle cost and life cycle expenditure is the life cycle gap. The life cycle gap for services covered by this asset management plan is **$-727,000** per year (-ve = gap, +ve = surplus).

Life cycle expenditure is **74%** of life cycle costs.

The life cycle costs and life cycle expenditure comparison highlights any difference between present outlays and the average cost of providing the service over the long term. If the life cycle expenditure is less than that life cycle cost, it is most likely that outlays will need to be increased or cuts in services made in the future. Should Council endorse additional funding to meet the LTFP/AMP's then this needs to take into account staff resourcing, plant, materials and capital works required.

Knowing the extent and timing of any required increase in outlays and the service consequences if funding is not available will assist organisations in providing services to their communities in a financially sustainable manner. This is the purpose of the asset management plans and long term financial plan.

Medium term – 10 year financial planning period

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

These projected expenditures may be compared to budgeted expenditures in the 10 year period to identify any funding shortfall. In a core asset management plan, a gap is generally due to increasing asset renewals for ageing assets.

The projected operations, maintenance and capital renewal expenditure required over the 10 year planning period is **$2,189,000** on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is **$2,098,000** on average per year giving a 10 year funding shortfall of **$-91,000** per year. This indicates that Council expects to have **96%** of the projected expenditures needed to provide the services documented in the asset management plan.

Medium Term – 5 year financial planning period

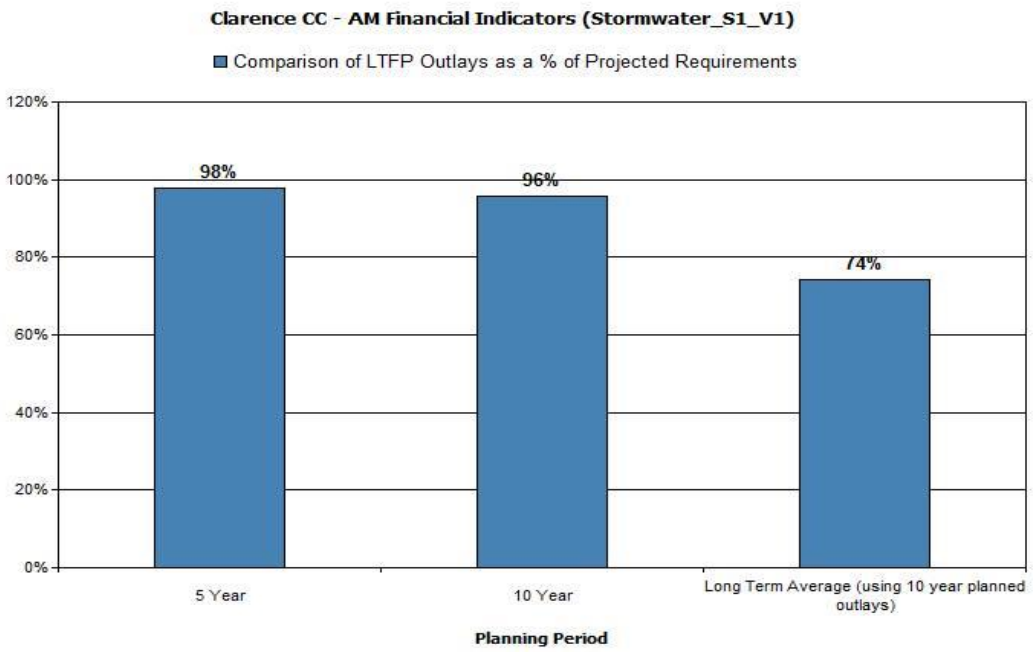
The projected operations, maintenance and capital renewal expenditure required over the first 5 years of the planning period is **$2,189,000** on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is **$2,142,000** on average per year giving a 5 year funding shortfall of **$-47,000**. This indicates that Council expects to have **98%** of projected expenditures required to provide the services shown in this asset management plan.

Asset management financial indicators

Figure 7A shows the asset management financial indicators over the 10 year planning period and for the long term life cycle.

Figure 8: Asset Management Financial Indicators



Providing services from infrastructure in a sustainable manner requires the matching and managing of service levels, risks, projected expenditures and financing to achieve a financial indicator of approximately 1.0 for the first years of the asset management plan and ideally over the 10 year life of the Long Term Financial Plan.

Figure 8 shows the projected asset renewal and replacement expenditure over the 20 years of the AM Plan. The projected asset renewal and replacement expenditure is compared to renewal and replacement expenditure in the capital works program, which is accommodated in the long term financial plan

Figure 9: Projected and LTFP Budgeted Renewal Expenditure

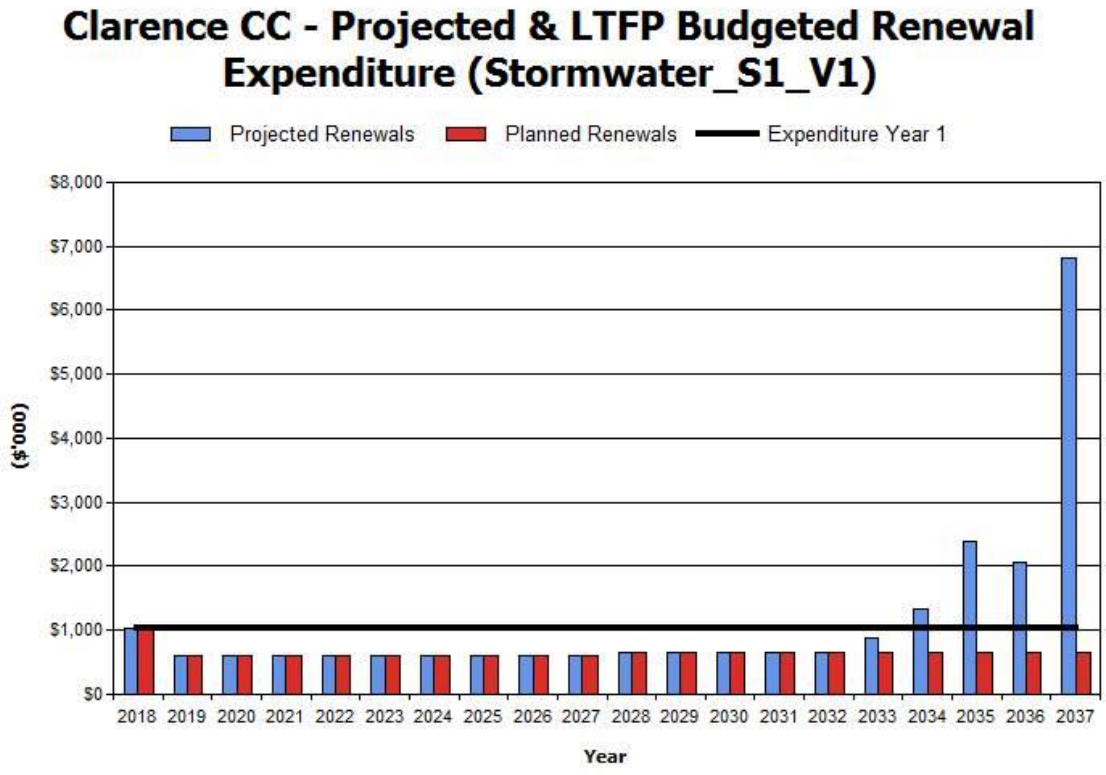


Table 6.1.1 shows the shortfall between projected renewal and replacement expenditures and expenditure accommodated in long term financial plan. Budget expenditures accommodated in the long term financial plan or extrapolated from current budgets are shown in Appendix D.

Table 6.1.1: Projected and LTFP Budgeted Renewals and Financing Shortfall

Year	Projected Renewals ($000)	LTFP Renewal Budget ($000)	Renewal Financing Shortfall ($000) (-ve Gap, +ve Surplus)	Cumulative Shortfall ($000) (-ve Gap, +ve Surplus)
2018	$1,040	$1,040	$0	$0
2019	$600	$600	$0	$0
2020	$600	$600	$0	$0
2021	$600	$600	$0	$0
2022	$600	$600	$0	$0
2023	$600	$600	$0	$0
2024	$600	$600	$0	$0
2025	$600	$600	$0	$0
2026	$600	$600	$0	$0
2027	$600	$600	$0	$0
2028	$644	$644	$0	$0
2029	$644	$644	$0	$0
2030	$644	$644	$0	$0
2031	$644	$644	$0	$0
2032	$644	$644	$0	$0
2033	$878	$644	$-234	$-234
2034	$1,336	$644	$-692	$-926
2035	$2,391	$644	$-1,747	$-2,673
2036	$2,068	$644	$-1,424	$-4,097
2037	$6,826	$644	$-6,182	$-10,278

Note: A negative shortfall indicates a financing gap, a positive shortfall indicates a surplus for that year.

6.1.2 Projected expenditures for long term financial plan

Table 6.1.2 shows the projected expenditures for the 10 year long term financial plan.

Expenditure projections are in 2017 real values.

Table 6.1.2: Projected Expenditures for Long Term Financial Plan ($000)

Year	Operations ($000)	Maintenance ($000)	Projected Capital Renewal ($000)	Capital Upgrade/ New ($000)	Disposals ($000)
2018	$812	$642	$1,040	$2,739	$0
2019	$831	$657	$600	$1,000	$0
2020	$840	$664	$600	$1,000	$0
2021	$849	$671	$600	$1,000	$0
2022	$859	$679	$600	$1,000	$0
2023	$868	$686	$600	$1,000	$0
2024	$878	$694	$600	$1,000	$0
2025	$887	$701	$600	$1,000	$0
2026	$897	$709	$600	$1,000	$0
2027	$906	$716	$600	$1,000	$0
2028	$916	$724	$644	$1,174	$0
2029	$926	$732	$644	$1,174	$0
2030	$937	$740	$644	$1,174	$0
2031	$947	$749	$644	$1,174	$0
2032	$958	$757	$644	$1,174	$0
2033	$968	$765	$1,522	$1,174	$0
2034	$979	$774	$1,980	$1,174	$0
2035	$989	$782	$3,035	$1,174	$0
2036	$1,000	$791	$2,712	$1,174	$0
2037	$1,011	$799	$7,470	$1,174	$0

Providing services in a sustainable manner will require matching of projected asset renewal and replacement expenditure to meet agreed service levels with **the corresponding** capital works program accommodated in the long term financial plan.

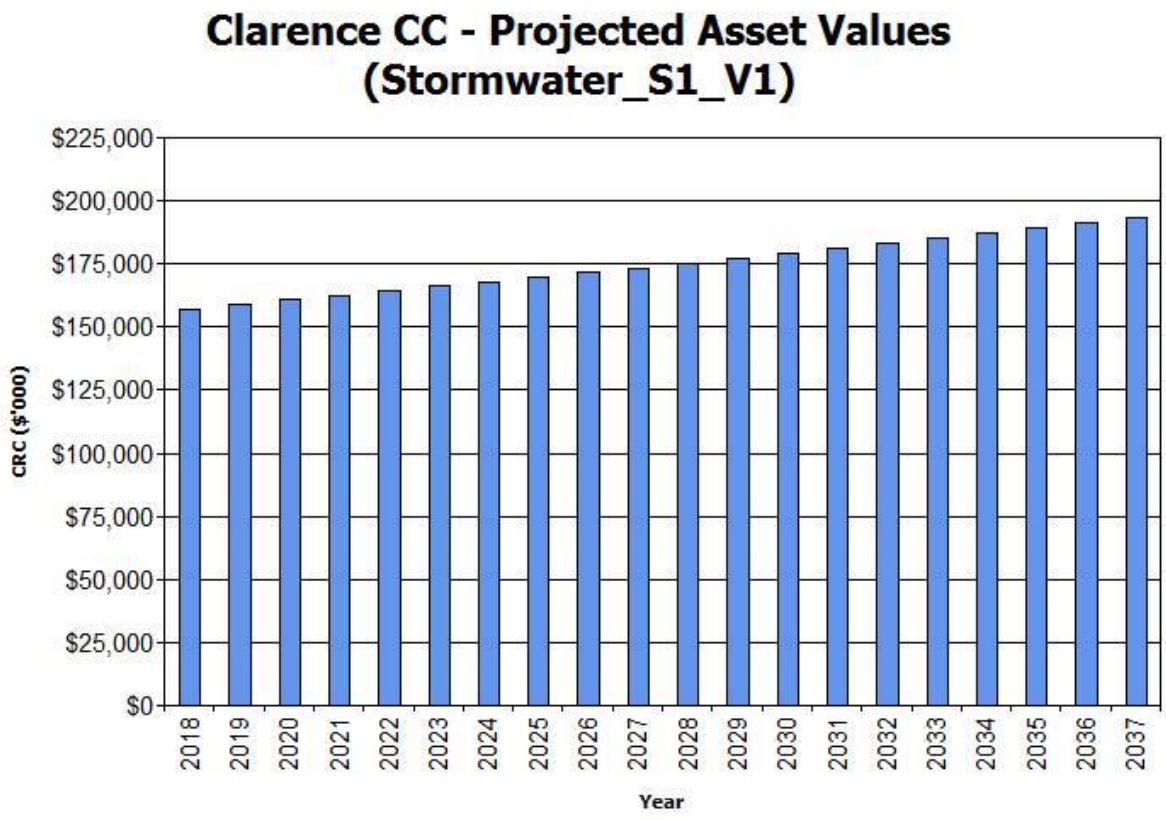
6.2 Funding Strategy

After reviewing service levels, as appropriate to ensure ongoing financial sustainability projected expenditures identified in Section 6.1.2 will be accommodated in the Council's 10 year long term financial plan.

6.3 Valuation Forecasts

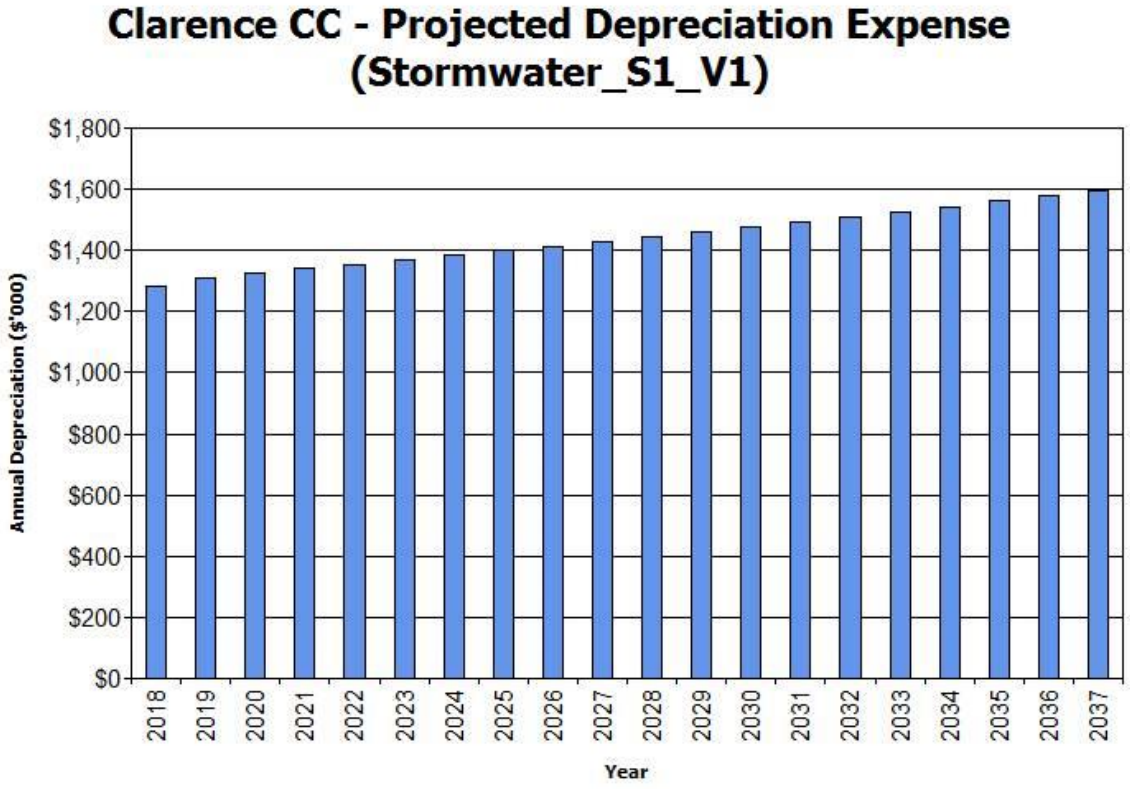
Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers and others and donated to Council. Figure 9 shows the projected replacement cost asset values over the planning period in real values.

Figure 10: Projected Asset Values



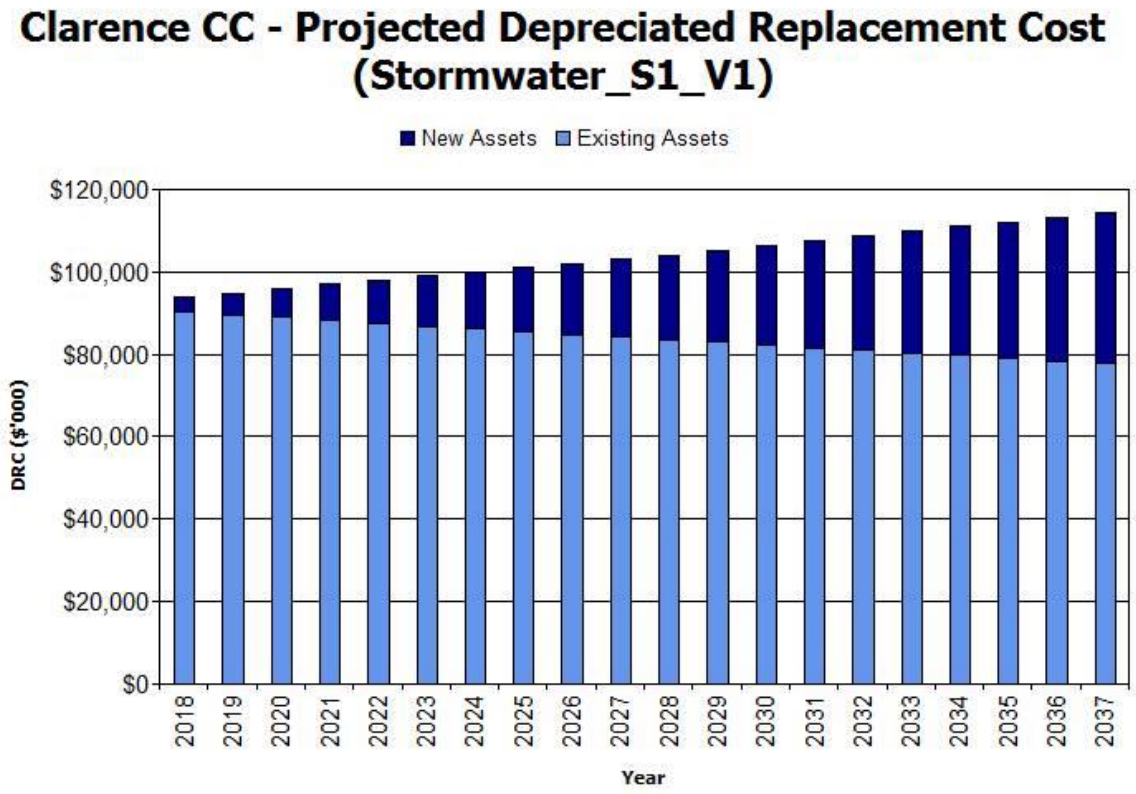
Depreciation expense values are forecast in line with asset values as shown in Figure 10.

Figure 11: Projected Depreciation Expense



The depreciated replacement cost will vary over the forecast period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets. Forecast of the assets' depreciated replacement cost is shown in Figure 11. The depreciated replacement cost of contributed and new assets is shown in the darker colour and in the lighter colour for existing assets.

Figure 12: Projected Depreciated Replacement Cost



6.4 Key Assumptions made in Financial Forecasts

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

Key assumptions made in this asset management plan and risks that these may change are shown in Table 6.4.

Table 6.4: Key Assumptions made in AM Plan and Risks of Change

Key Assumptions	Risks of Change to Assumptions
All expenditure is stated in 2017 dollars with no allowance for inflation.	Upgrade/new expenditure items will need ongoing review to ensure accuracy.
Unit rates for renewal are brownfield.	Negligible.
Renewal of underground assets is by excavation, removal and replacement rather than relining, being consistent with brownfield unit rates.	Negligible.
Useful life of existing assets being achieved.	Low risk. Current useful life estimate is conservative.
All pipes by type will deteriorate at the same rate regardless of environmental factors.	Low risk.
Budget carryovers represent where money is unexpended for the Annual Plan and carried over to the next financial year.	Very low risk of Council budget carryover procedure changing.

6.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AM Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale[12] in accordance with Table 6.5.

Table 6.5: Data Confidence Grading System

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

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 6.5.1.

Table 6.5.1: Data Confidence Assessment for Data used in AM Plan

Data	Confidence Assessment	Comment
Demand drivers	Reliable	-
Growth projections	Reliable	Average of past years donated assets.
Operations expenditures	Reliable	-
Maintenance expenditures	Reliable	-
Projected Renewal exps. - Asset values	Reliable	Asset values derived from current tenders.
- Asset residual values	Reliable	Pipe/pit renewal assumes no residual value i.e. dig up and replace.
- Asset useful lives	Uncertain	Condition data to be collected / interpreted to review useful lives.
- Condition modelling	Unknown	Little condition data.
- Network renewals	Reliable	Age profile fairly complete
- Defect repairs	Uncertain	More inspections required.
Upgrade/New expenditures	Reliable	Based on hydraulic modelling of existing catchments with known capacity issues.
Disposal expenditures	Uncertain	Early renewals of assets requiring upgrade are assumed to be similar to current replacement cost with salvage values assumed to be negligible.

Over all data sources the data confidence is assessed as low to medium confidence level for data used in the preparation of this AM Plan.

[12] IPWEA, 2011, IIMM, Table 2.4.6, p 2|59.

7. PLAN IMPROVEMENT AND MONITORING

7.1 Status of Asset Management Practices

7.1.1 Accounting and financial systems

Council is currently implementing Technology One's OneCouncil system which will meet Council's Financial/Accounting IT requirements. OneCouncil is an integrated system used for all financial and accounting activities, including budget control, purchasing/debtors, invoicing/creditors, taxation and reporting. The system operates on a web browser platform with many employees across Council having regulated access on a needs basis. Finance Management generally operates the Finance modules of the system with other departments utilising it for purchasing tasks and for interrogation and reporting. Records are generally at a high level.

Accountabilities for financial systems

Manager Information and Finance Management is accountable for the finance system.

Accounting standards and regulations

As a State entity, the Audit Act 2008 require that following accounting principles be met:

- Unless otherwise required by any other written law, the financial statements are to be prepared in accordance with the accounting standards and other requirements issued by the Australian Accounting Standards Board.

- Revaluations of a class of assets normally occur at intervals of no greater than 5 years. However, a class of assets will be revalued at such time as there has been a significant movement in the current replacement cost of that asset class relative to the value disclosed in the financial statements. Market indices are applied as appropriate to reflect moderate market movements.

Capital/maintenance threshold

Thresholds determining the treatment of work undertaken on assets will vary according to the nature of the asset and relative scale/type of work undertaken. The judgement of qualified professionals will be obtained to determine the extent to which an activity represents maintenance (which retains the existing service potential of an asset and/or prevents untimely deterioration of the asset) or represents partial or full renewal of an asset. In any event, expenditure below $10,000 will generally be treated as maintenance.

Required changes to accounting financial systems arising from this AM Plan

Following the adoption of this policy, a full revaluation of the asset class will be undertaken (within reasonable time frames) to reflect the asset unit costs and asset lives identified within this policy. This is to ensure appropriate valuations are maintained for financial accounting purposes, and to ensure consistency between asset accounting records and adopted Asset Management Plans.

7.1.2 Asset management system

The OneCouncil system also includes an asset management module, Enterprise asset Management (EAM).

OneCouncil will be used by Engineering Services staff for generating work orders, periodic maintenance scheduling, reporting and maintaining the asset register.

Linkage from asset management to financial system

OneCouncil is a fully integrated enterprise system.

Accountabilities for asset management system and data maintenance

Group Manager Engineering Services is accountable for the asset management system and data maintenance.

Required changes to asset management system arising from this AM Plan

Continual improvement, including the implementation of the Strategic Asset Management module (SAM).

7.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 7.2.

Table 7.2: Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1	Preparation of stormwater headworks plan.	Stormwater Engineer	Staff time, survey, modelling.	Within 3 years
2	GIS mapping of all assets.	Assets officer	Staff time, equipment	Ongoing
3	Implement an inspection program and collect condition data.	Asset Management	Staff time	Within 2 years
4	Review useful lives.	Asset Management	Staff time	Within 4 years
5	Develop a Risk Management Plan for stormwater infrastructure.	Asset Management	Staff time	Within 4 years

7.3 Monitoring and Review Procedures

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

The AM Plan will be updated annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into Council's long term financial plan.

The AM Plan has a life of 4 years (Council election cycle) and is due for complete revision and updating in 2022, within one year of the next Council election.

7.4 Performance Measures

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

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into Council's long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and organisational structures take into account the 'global' works program trends provided by the asset management plan,
- 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 and associated plans,
- **The Asset Renewal Funding Ratio achieving the target of 1.0.**

8. REFERENCES

IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM

IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.

IPWEA, 2009, 'Australian Infrastructure Financial Management Guidelines', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMG.

IPWEA, 2011, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM

Clarence City Council, 'Strategic Plan 2016 – 2026',

Clarence City Council, 'Annual Plan and Budget'.

9. APPENDICES

Appendix A Maintenance Response Levels of Service.

Appendix B Projected 10 year Capital Renewal and Replacement Works Program.

Appendix C Projected 10 year Capital Upgrade/New Works Program.

Appendix D LTFP Budgeted Expenditures Accommodated in AM Plan.

Appendix E Abbreviations.

Appendix F Glossary.

Appendix A Maintenance Response Levels of Service

Service Hierarchy	Service Level Provided
Drains and Drainage	- Respond to drainage emergencies within 24 hours (7 days a week) - Respond to all community seepage / drainage inquiries within 10 days.

Appendix B Projected 10 year Capital Renewal and Replacement Works Program

Clarence CC

Projected Capital Renewal Works Program - Stormwater_S1_V1

($000)

Year	Item	Description	Estimate
2018		**Network Renewals**	
	1	Carry over projects	$605
	2	Renewal component of 17/18 projects	$435
2018		**Total**	**$1,040**

2019		**Network Renewals**	
	1	Estimated SW renewals	$600
2019		**Total**	**$600**

($000)

Year	Item	Description	Estimate
2020		**Network Renewals**	
	1	Estimated SW renewals	$600
2020		**Total**	**$600**

2021		**Network Renewals**	Estimate
	1	Estimated SW renewals	$600
2021		**Total**	**$600**

($000)

Year	Item	Description	Estimate
2022		**Network Renewals**	
	1	Estimated SW renewals	$600
2022		**Total**	**$600**

2023		**Network Renewals**	
	1	Estimated SW renewals	$600
2023		**Total**	**$600**

($000)

Year	Item	Description	Estimate
2024		**Network Renewals**	
	1	Estimated SW renewals	$600
2024		**Total**	**$600**

2025		**Network Renewals**	
	1	Estimated SW renewals	$600
2025		**Total**	**$600**

($000)

Year	Item	Description	Estimate
2026		**Network Renewals**	
	1	Estimated SW renewals	$600
2026		**Total**	**$600**

2027		**Network Renewals**	
	1	Estimated SW renewals	$600
2027		**Total**	**$600**

Appendix C Projected Upgrade/Exp/New 10 year Capital Works Program

Clarence CC

Projected Capital Upgrade/New Works Program - Stormwater_S1_V1

($000)

Year	Item	Description	Estimate
2018	1	Cambridge Oval Stormwater Harvesting Stage 2	$270
	2	Construct SW pipe 10 Thoona St G.Bay	$100
	3	Stormwater Upgrade - Bastick Street & Kellatie Road	$105
	4	Ongoing Drainage Minor Construction and South Terrace Drain Construction	$250
	5	Seven Mile Beach - Sub branch of Acton Creek , SW issues	$100
	6	Stormwater Survey - Review of the Howrah Area	$50
	7	Cremorne Drainage Improvements - design - stage 3	$20
	8	Urban Drainage Act-Catchment Management Plan-Lindisfarne to Rosny, Geilston and Barilla Bay	$250
	9	Carry over projects	$1,594
2018		**Total**	**$2,739**

($000)

Year	Item	Description	Estimate
2019	1	Wentworth Park east outfall	$151
	2	Duntroon Drive, Rokeby	$175
	3	Tranmere	$130
	4	Minor construction	$82
	5	Unallocated	$462
2019		**Total**	**$1,000**

($000)

Year	Item	Description	Estimate
2020	1	Tranmere outfalls	$81
	2	Minor construction	$82
	3	Unallocated	$837
2020		**Total**	**$1,000**

($000)

Year	Item	Description	Estimate
2021	1	Minor construction	$82
	2	Unallocated	$918
2021		**Total**	**$1,000**

($000)

Year	Item	Description	Estimate
2022	1	Minor construction	$82
	2	Unallocated	$918
2022		**Total**	**$1,000**

($000)

Year	Item	Description	Estimate
2023	1	Minor construction	$82
	2	Unallocated	$918
2023		**Total**	**$1,000**

($000)

Year	Item	Description	Estimate
2024	1	Minor construction	$82
	2	Unallocated	$918
2024		**Total**	**$1,000**

($000)

Year	Item	Description	Estimate
2025	1	Minor construction	$82
	2	Unallocated	$918
2025		**Total**	**$1,000**

($000)

Year	Item	Description	Estimate
2026	1	Minor construction	$82
	2	Unallocated	$918
2026		**Total**	**$1,000**

($000)

Year	Item	Description	Estimate
2027	1	Minor construction	$82
	2	Unallocated	$918
2027		**Total**	**$1,000**

Appendix D Budgeted Expenditures Accommodated in LTFP

NAMS.PLUS3 Asset Management **Clarence CC**

Stormwater_S1_V1 **Asset Management Plan**

First year of expenditure projections **2018** (financial yr ending)

Stormwater

Asset values at start of planning period

			Calc CRC from Asset Register
Current replacement cost	$153,673	(000)	$153,673 (000)
Depreciable amount	$153,673	(000)	This is a check for you.
Depreciated replacement cost	$90,527	(000)	
Annual depreciation expense	$1,281	(000)	

Operations and Maintenance Costs for New Assets

	% of asset value	Existing %ages calculated from data in worksheet	
Additional operations costs	0.53%	0.53%	of CRC (10 yr average)
Additional maintenance	0.42%	0.42%	of CRC (10 yr average)
Additional depreciation	0.83%	0.83%	of Dep Amt
Planned renewal budget (information only)		0.68%	of CRC (Year 1 comparison)

You may use these values calculated from your data or overwrite the links.

Planned Expenditures from LTFP

20 Year Expenditure Projections Note: Enter all values in current **2018** values

Financial year ending	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Expenditure Outlays included in Long Term Financial Plan (in current $ values)											**Average of first 10 year Expenditure Outlays from LTFP**									
Operations																				
Operations **budget**	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812
Management **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
AM systems **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total operations	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812	$812
Maintenance																				
Reactive maintenance **budget**	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200	$200
Planned maintenance **budget**	$442	$442	$442	$442	$442	$442	$442	$442	$442	$442	$442	$442	$442	$442	$442	$442	$442	$442	$442	$442
Specific maintenance items **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total maintenance	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642
Capital																				
Planned renewal **budget**	$1,040	$600	$600	$600	$600	$600	$600	$600	$600	$600	$644	$644	$644	$644	$644	$644	$644	$644	$644	$644
Planned upgrade/new **budget**	$2,739	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,174	$1,174	$1,174	$1,174	$1,174	$1,174	$1,174	$1,174	$1,174	$1,174
Non-growth contributed asset value	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Asset Disposals																				
Est Cost to dispose of assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Carrying value (DRC) of disposed assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Additional Expenditure Outlays Requirements (e.g from Infrastructure Risk Management Plan)											**Average of first 10 years Expenditure Outlays required from IRMP**									
Additional Expenditure Outlays required and not included above	2018 $000	2019 $000	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $000	2028 $000	2029 $000	2030 $000	2031 $000	2032 $000	2033 $000	2034 $000	2035 $000	2036 $000	2037 $000
Operations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital Renewal	to be incorporated into Forms 2 & 2.1 (where Method 1 is used) OR Form 2B Defect Repairs (where Method 2 or 3 is used)																			
Capital Upgrade	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
User Comments #2																				

Forecasts for Capital Renewal using Methods 2 & 3 (Form 2A & 2B) & Capital Upgrade (Form 2C)											**Average of first 10 years Capital Renewal & Upgrade Forecasts**									
Forecast Capital Renewal from Forms 2A & 2B	2018 $000	2019 $000	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $000	2028 $000	2029 $000	2030 $000	2031 $000	2032 $000	2033 $000	2034 $000	2035 $000	2036 $000	2037 $000
	$1,040	$600	$600	$600	$600	$600	$600	$600	$600	$600	$644	$644	$644	$644	$644	$644	$644	$644	$644	$644
Forecast Capital Upgrade from Form 2C	$2,739	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,174	$1,174	$1,174	$1,174	$1,174	$1,174	$1,174	$1,174	$1,174	$1,174

Appendix E Abbreviations

AAAC	Average annual asset consumption
AM	Asset management
AM Plan	Asset management plan
ARI	Average recurrence interval
ASC	Annual service cost
BOD	Biochemical (biological) oxygen demand
CRC	Current replacement cost
CWMS	Community wastewater management systems
DA	Depreciable amount
DRC	Depreciated replacement cost
EF	Earthworks/formation
IRMP	Infrastructure risk management plan
LCC	Life Cycle cost
LCE	Life cycle expenditure
LTFP	Long term financial plan
MMS	Maintenance management system
PCI	Pavement condition index
RV	Residual value
SoA	State of the Assets
SS	Suspended solids
vph	Vehicles per hour
WDCRC	Written down current replacement cost

Appendix F Glossary

Annual service cost (ASC)

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

Sub-group of assets within a class hierarchy for financial reporting and management purposes.

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 hierarchy

A framework for segmenting an asset base into appropriate classifications. The asset hierarchy can be based on asset function or asset type or a combination of the two.

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.

Asset renewal funding ratio

The ratio of the net present value of asset renewal funding accommodated over a 10 year period in a long term financial plan relative to the net present value of projected capital renewal expenditures identified in an asset management plan for the same period [AIFMG Financial Sustainability Indicator No 8].

Average annual asset consumption (AAAC)*

The amount of an organisation'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 Council's asset base, but may be associated with additional revenue from the new user group, eg. 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, eg. 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 Council's asset base, eg. 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.

Class of assets
See asset class definition.

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.

Core asset management
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. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than detailed risk analysis and optimised decision- making).

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.

Critical assets
Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.

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.

Deferred maintenance
The shortfall in rehabilitation work undertaken relative to that required to maintain the service potential of an asset.

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 outlays.

Expenses
Decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or increases in liabilities that result in decreases in equity, other than those relating to distributions to equity participants.

Fair value
The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

Financing gap
A financing gap exists whenever an entity has insufficient capacity to finance 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 financing gap means service levels have already or are currently falling. A projected financing 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.

Infrastructure assets
Physical assets that contribute to meeting the needs of organisations or the need for access to major economic and social facilities and services, eg. roads, drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no separate market value.

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.

Level 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 average operations, maintenance expenditure plus asset consumption expense, represented by depreciation expense projected over 10 years. 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 average operations, maintenance and capital renewal expenditure accommodated in the long term financial plan over 10 years. Life Cycle Expenditure may be compared to average Life Cycle Cost to give an initial indicator of affordability of projected service levels when considered with asset age profiles.

Loans / borrowings
See borrowings.

Maintenance
All actions necessary for retaining an asset as near as practicable to an appropriate service condition, including regular ongoing day-to-day work necessary to keep assets operating, eg 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.
- **Specific maintenance**
  Maintenance work to repair components or replace sub-components that need 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 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 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 eg 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 the Council, eg. Parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operations
Regular activities to provide services such as public health, safety and amenity, eg street sweeping, grass mowing and street lighting.

Operating expenditure
Recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, eg 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.

Operating expenses
Recurrent expenses continuously required to provide a service, including power, fuel, staff, plant equipment, maintenance, depreciation, on-costs and overheads.

Operations, maintenance and renewal financing ratio
Ratio of estimated budget to projected expenditure for operations, maintenance and renewal of assets over a defined time (eg 5, 10 and 15 years).

Operations, maintenance and renewal gap
Difference between budgeted expenditures in a long term financial plan (or estimated future budgets in absence of a long term financial plan) and projected expenditures for operations, maintenance and renewal of assets to achieve/maintain specified service levels, totalled over a defined time (e.g. 5, 10 and 15 years).

Pavement management system (PMS)
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 *
The ratio of annual asset consumption relative to the depreciable amount of the assets. It measures the amount of the consumable parts of assets that are consumed in a period (depreciation) expressed as a percentage of the depreciable amount.

Rate of annual asset renewal *
The ratio of asset renewal and replacement expenditure relative to depreciable amount for a period. It measures whether assets are being replaced at the rate they are wearing out with capital renewal expenditure expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade/new *
A measure of the rate at which assets are being upgraded and expanded per annum with capital upgrade/new expenditure 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.

Rehabilitation
See capital renewal expenditure definition above.

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.

Renewal
See capital renewal expenditure definition above.

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, eg 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).

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

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 the Council's longer-term plans such as the asset management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where the 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.

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 the 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

Additional and modified glossary items shown *