



Stormwater Network Asset Management Plan

PLANNING FOR OUR PEOPLE
OUR PLACE OUR FUTURE

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1. EXECUTIVE SUMMARY

Context

Cessnock City Council provides a Stormwater network in partnership with Hunter Water and neighbouring Councils to provide protection of life, property, and transport networks from both riverine and local catchment flooding and overland flow paths.

Council's Stormwater Network comprises of a mix of approx.:

- 5.7 km of Culverts
- 121 km of Pipes
- 4966 Pits

Major culverts are included in the Bridge and Major Culvert Asset Management Plan.

These infrastructure assets have a replacement value of approximately **\$73,827,000.00**

What does it Cost?

To determine the projected outlays necessary to provide the services covered by this Asset Management Plan (AM Plan/AMP) including; operations, maintenance, renewal and upgrade of existing assets over the 10 year planning period, Council has developed two funding scenarios.

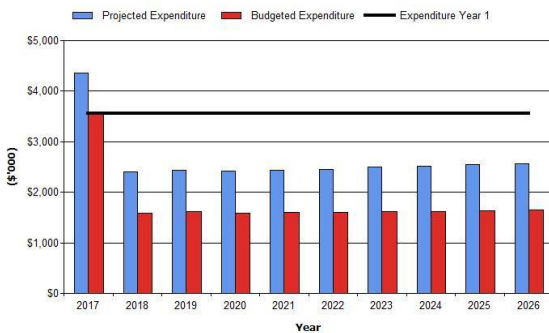
Scenario 2, based on feedback received from Community Consultation undertaken in 2015, is the funding required to keep the asset stock in condition 3 "average" or better. Scenario 3 is developed from the available funds outlined in Councils' Long Term Financial Plan. The following tables highlight Councils' financial position when considering the projected outlays of scenario 2 "S2" or scenario 3 "S3":

2017 Stormwater_S2_V2	
Executive Summary - What does it cost?	(\$000)
10 year total cost [10 yr Ops, Maint, Renewal & Upgrade Proj Exp]	\$26,626
10 year average cost	\$2,663
10 year total LTFP budget [10 yr Ops, Maint, Renewal & Upgrade LTFP Budget]	\$18,064
10 year average LTFP budget	\$1,806
10 year AM financial indicator	68%
10 year average funding shortfall	\$-856

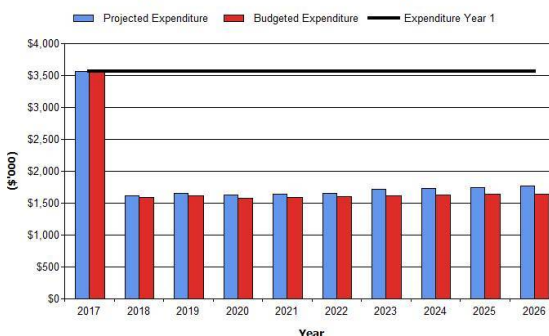
2017 Stormwater_S3_V2	
Executive Summary - What does it cost?	(\$000)
10 year total cost [10 yr Ops, Maint, Renewal & Upgrade Proj Exp]	\$18,716
10 year average cost	\$1,872
10 year total LTFP budget [10 yr Ops, Maint, Renewal & Upgrade LTFP Budget]	\$18,064
10 year average LTFP budget	\$1,806
10 year AM financial indicator	97%
10 year average funding shortfall	\$-65

The following graphs show the projected expenditure required to provide services in this AMP, which have been developed from the outlays of scenario 2 & 3. It should be noted that capital construction/upgrade projects, as well as accounting for contributed assets from development will have an influence on projected expenditure. There has been no consideration given to the potential offset that may be possible from additional revenue that Council could generate from these developments.

Cessnock CC - Projected and Budget Expenditure for (2017 Stormwater_S2_V2)



Cessnock CC - Projected and Budget Expenditure for (2017 Stormwater_S3_V2)



What we will do

We plan to provide the following stormwater network services within the 10 year planning period of this AMP:

- On-going operation, maintenance, renewal and upgrade of stormwater assets to meet service levels set by Council in annual budgets.
- Annual stormwater Renewal & Construction Programs

What we cannot do

We do **not** have enough funding to provide all services at the desired service levels. Works and services that cannot be provided under present funding levels are:

- The optimised annual stormwater renewal and replacement programs to achieve an overall condition 3 (average/fair) or better.

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:

- Stormwater system failure leading to flood risk to the community and expensive rehabilitation costs
- Under capacity network as a result of redevelopment
- Negative public perception/political risk

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

- Increasing asset inspections.
- Increasing response levels to repair stormwater assets where possible
- Increasing renewal programs as an early intervention strategy to reduce the need for more expensive replacement costs.

Confidence Levels

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

The Next Steps

The actions resulting from this Asset Management Plan are:

- Engage the community on Levels of Service (LoS) and funding matters identified in this AM Plan
- Incorporate the agreed LoS into the future planning, design, operational, maintenance and construction activities relating to stormwater assets.

Questions you may have:

What is this plan about?

This Asset Management Plan covers the infrastructure assets that serve the Cessnock City Council community’s stormwater network needs. These assets include pits, pipe, culverts, swales and detention basins that are provided throughout the community area to enable the effective and efficient runoff of stormwater, minimising flooding potential.

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 Council's stormwater network was constructed by previous Councils through historical development of the LGA and government grants, often without consideration of ongoing operations, maintenance and replacement needs.

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 network 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 the stormwater network, the service level reduction may include:

- Reduction in stormwater maintenance cycles.
- Decrease in LoS for stormwater assets, examples below.





What can we do?

We can develop options, costs and priorities for future stormwater network services and consult with the community to plan these services to match the community service needs with ability to pay for services and maximise community benefits against costs.

2. INTRODUCTION

2.1 Background

This Asset Management Plan is required 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 10 year planning period.

The Asset Management Plan follows the format for AM Plans recommended in Section 4.2 of the International Infrastructure Management Manual¹. The Asset Management Plan is to be read with Council's Asset Management Policy, Asset Management Strategy and the following associated planning documents:

- Cessnock 2027 - Cessnock Community Strategic Plan
- Cessnock City Council Delivery Plan 2017-2021
- Cessnock City Council Operational Plan 2017-2018
- Cessnock City Council Annual Reports
- Infrastructure Asset Revaluation Manual 2014/15
- NSW OLG Integrated Planning Guidelines and manual 2013
- Cessnock City Council 2016 Resident Satisfaction Survey Results
- Cessnock City Council 2015 Asset Management Research Satisfaction Survey Results

The infrastructure assets covered by this Asset Management Plan are shown in Table 2.1. These assets are part of the stormwater network used to provide effective and efficient runoff of stormwater, minimising flooding potential.

Table 2.1: Assets covered by this Plan

Asset category	Quantity
Pits	4966
Pipes	121 km
Culverts	5.7 km

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
Councillors	<ul style="list-style-type: none"> • Represent needs of the community, • Allocate resources to meet the Council's objectives in providing services while managing risks. • Ensure the Council is financially sustainable. • Provide stewardship by ensuring the protection of assets for current and future generations.
General	<ul style="list-style-type: none"> • Ensure the development and implementation of Council's Asset Management

¹ IPWEA, 2015, Sec 4.2. Example of an Asset Management Plan Structure, pp 4|21 – 33.

Key Stakeholder	Role in Asset Management Plan
Manager	Policy, Plans and Processes and for their integration with Council's Integrated Planning and Reporting Framework under the Local Government Act. <ul style="list-style-type: none"> • Report on the status and effectiveness of Asset Management within Council.
Council Staff	<ul style="list-style-type: none"> • Development and implementation of Council's Asset Management Plans and Processes and for their integration with Council's Integrated Planning and Reporting Framework under the Local Government Act. • Ensure integration and compliance of the Asset Management Policy and Strategy with other policies and business processes of Council. • Ensure compliance with legal obligations. • Ensure sound business principles are reflected in the Asset Management strategies and plans that are developed. • Implementation of activities in the Plans. • Engage up to date technologies, methodologies and continuous improvement processes. • Facilitate "Best Appropriate Practice in Asset Management".
Community	<ul style="list-style-type: none"> • Provides input into the services required and the cost the community is prepared to pay

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 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.

2.3 Plan Framework

Key elements of the plan are:

- **Section 3** - Levels of service – specifies the services and levels of service to be provided by Council;
- **Section 4** - Future demand – how this will impact on future service delivery and how this is to be met;
- **Section 5** - Life cycle management – how Council will manage its existing and future assets to provide defined levels of service;
- **Section 6** - Financial summary – what funds are required to provide the defined services;

- **Section 7** - Asset management practices;
- **Section 8** - Monitoring – how the plan will be monitored to ensure it is meeting organisation’s objectives;
- **Section 9** - Asset management improvement plan.

A road map for preparing an Asset Management Plan is shown below.

Road Map for preparing an Asset Management Plan

Source: IPWEA, 2015, IIMM, Fig 4.2.2, p 4126.



2.4 Core and Advanced Asset Management

This Asset Management Plan is prepared as a ‘core’ Asset Management Plan over a 10 year planning period in accordance with the International Infrastructure Management Manual. 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

This ‘core’ Asset Management Plan is prepared to facilitate community consultation initially through feedback on public display of draft Asset Management Plans prior to adoption by Council. Future revisions of the Asset Management Plan will incorporate community consultation on service levels and costs of providing the service. This will assist Council and the community in 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. LEVELS OF SERVICE

3.1 Customer Research and Expectations

Cessnock Council has engaged Micromex Research to undertake community research. In 2016 a telephone survey poll sample of residents on their level of satisfaction with the Council’s services, and of the Stormwater assets identified, the following satisfaction levels were reported:

Table 3.1: Community Satisfaction Survey Levels

Performance Measure	Satisfaction Level				
	Very Satisfied	Fairly Satisfied	Satisfied	Somewhat satisfied	Not satisfied
Stormwater Drainage					
Flood Prevention					

Council also engaged Micromex Research in March of 2015 to undertake further Community Consultation. This was to determine what the community finds as an acceptable condition state of the assets. The concluding evidence from this survey found: *“The majority of residents indicated that ‘Condition 3 or better’ was the acceptable condition for all assets”*. This has therefore been incorporated into “scenario 2” modelling within this amp.

3.2 Strategic and Corporate Goals

This Asset Management Plan is prepared under the direction of Council’s vision, mission, goals and objectives.

Our vision is:

“Cessnock will be a cohesive and welcoming community living in an attractive and sustainable rural environment with diversity of business and employment opportunities supported by accessible infrastructure and services which effectively meet community needs”.

In summary, the vision is:

“Cessnock - thriving, attractive and welcoming”.

The 2017-21 Delivery Program has five Desired Outcomes as identified in the Community Strategic Plan, Cessnock 2027.

They are:

- 1. A connected, safe and creative community;**
- 2. A sustainable and prosperous economy;**
- 3. A sustainable and healthy environment;**
- 4. Accessible infrastructure, services and facilities;**
- 5. Civic leadership and effective governance.**

Relevant Council goals and objectives and how these are addressed in this Asset Management Plan are:

Table 3.2: Council’s Goals and how these are addressed in this Plan

Goal	Objective	How Goal and Objectives are addressed in AM Plan
Protecting and enhancing the natural environment and the rural character of the area		
Objective 3.1 – Protecting and enhancing the natural environment and the rural character of the area	3.1.9 – Commence implementation of the priority recommendations from flood studies and risk management plans for major catchments in the local government area.	Results of flood studies identify areas where stormwater is required to be installed and/or upgraded. Council’s Asset Management Plan informs Stormwater Renewal and Upgrade Programs.
	3.1.10 – Continue implementation of Council’s Trunk Stormwater Drainage Strategy to protect and enhance the natural environment.	This strategy will help to develop future capital works programs in line with both the strategy and this AMP.

Goal	Objective	How Goal and Objectives are addressed in AM Plan
Accessible infrastructure, services and facilities		
Objective 4.1 – Better Transport Links	4.1.7 – Complete the preparation of a City Wide Section 94 Contributions Plan.	S94 Contribution plans used to develop information for section 4 of this AMP.
	4.1.8 – Adopt the City Wide Section 94 Contributions Plan.	S94 Contribution plans used to develop information for section 4 of this AMP.
Objective 4.2 – Improving the Road Network	4.2.1 – Develop prioritised capital works programs in line with adopted Asset Management Plans.	Council's Asset Management Plan informs Stormwater Renewal and Upgrade Programs.
	4.2.3 – Continue to improve support services and facilities to assist works delivery and service provision.	The AMP provides information on maintenance and capital services provided by Works Delivery to provide LOS.

Council will exercise its duty of care to ensure public safety is accordance with the infrastructure risk management plan prepared in conjunction with this Asset Management Plan. Management of infrastructure risks is covered in Section 5.2.

3.3 Legislative Requirements

Council has to meet many legislative requirements including Australian and State legislation and State regulations. These include:

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act 1993	<p>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.</p> <p>The purposes of this Act are as follows:</p> <ul style="list-style-type: none"> (a) to provide the legal framework for an effective, efficient, environmentally responsible and open system of local government in New South Wales, (b) to regulate the relationships between the people and bodies comprising the system of local government in New South Wales, (c) to encourage and assist the effective participation of local communities in the affairs of local government, (d) to give councils: <ul style="list-style-type: none"> • the ability to provide goods, services and facilities, and to carry out activities, appropriate to the current and future needs of local communities and of the wider public; • the responsibility for administering some regulatory systems under this Act; • A role in the management, improvement and development of the resources of their areas. <p>To require councils, councillors and council employees to have</p>

Legislation	Requirement
	<p>regard to the principles of ecologically sustainable development in carrying out their responsibilities.</p> <p>DLG Integrated Planning NSW – As part of the LG Act 1993</p> <ul style="list-style-type: none"> • Key requirement is integrated community plans with operational and delivery plans.
<p>Local Government Act Annual Report Section 428(2)(d)</p>	<p>(d) A report of the condition of the public works (including public buildings, public road and water sewerage and drainage works) under the control of council as at the end of that year; together with</p> <p>(i) An estimate (at current values) of the amount of money required to bring the works up to a satisfactory standard; and</p> <p>(ii) An estimate (at current values) of the annual expense of maintain the works at that standard; and</p> <p>(iii) The Council's programme for maintenance for that year in respect of the works.</p>
<p>Public Works Act 1912</p>	<p>Sets out the role of Council in the planning and construction of new assets.</p>
<p>Environmental Planning and Assessment Act 1979</p>	<p>An Act to institute a system of environmental planning and assessment for the State of New South Wales. Among other requirements the Act outlines the requirement for the preparation of Local Environmental Plans (LEP), Development Control Plans (DCP), Environmental Impact Assessments (EIA) and Environmental Impact Statements.</p>
<p>Work Health and Safety Regulations 2011</p>	<p>Implement the model Work Health & Safety Regulations & form part of a system of nationally harmonised occupational health & safety laws. They apply to the Commonwealth, public authorities and, for a period, non-Commonwealth licensees. Some of the chapters covered include: Chapter 2 representation & participation. Chapter 3 general risks & workplace management. Chapter 4 hazardous work; including specific tasks such as manual handling, confined spaces, demolition, electrical work and diving. Chapter 5 plant and structures and Chapter 6 Construction work.</p>
<p>Work Health and Safety Act 2011</p>	<p>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.</p>
<p>Threatened Species Conservation Act 1995</p>	<p>An Act to conserve threatened species, populations and ecological communities of animals and plants.</p>
<p>Protection of the Environment Operations Act 1997</p>	<p>Council is required to exercise due diligence to avoid environmental impact and among others are required to develop operations emergency plans and due diligence plans to ensure that procedures are in place to prevent or minimise pollution.</p>
<p>Road Transport (Safety and Traffic Management) Act 1999</p>	<p>Facilitates the adoption of nationally consistent road rules in NSW, the Australian Road Rules. It also makes provision for safety and traffic management on roads and road related areas including alcohol and other drug use, speeding and other dangerous driving, traffic control devices and vehicle safety accidents.</p>
<p>Road Transport (General) Act 2005</p>	<p>Provides for the administration and enforcement of road transport legislation. It provides for the review of decisions made under road transport legislation. It makes provision for the use of vehicles on</p>

Legislation	Requirement
	roads and road related areas and also with respect to written off and wrecked vehicles.
Roads Act 1993	Sets out rights of members of the public to pass along public roads, establishes procedures for opening and closing a public road, and provides for the classification of roads. It also provides for declaration of the RMS and other public authorities as roads authorities for both classified and unclassified roads, and confers certain functions (in particular, the function of carrying out roadwork) on the RMS and other roads authorities. Finally it provides for distribution of functions conferred by this Act between the RMS and other roads authorities, and regulates the carrying out of various activities on public roads.
Disability Discrimination Act 1992	The Federal Disability Discrimination Act 1992 (D.D.A.) provides protection for everyone in Australia against discrimination based on disability. It encourages everyone to be involved in implementing the Act and to share in the overall benefits to the community and the economy that flow from participation by the widest range of people.
Native Vegetation Act 2003	This Act regulates the clearing of native vegetation on all land in NSW, except for excluded land listed in Schedule 1 of the Act. The Act outlines what landowners can and cannot do in clearing native vegetation.
Local Government (Highways) Act 1982	An Act to consolidate with amendments certain enactments concerning the functions of the corporations of municipalities with respect to highways and certain other ways and places open to the public.
AS 1742	Australian Standard 1742 which refers to a variety of road and traffic issues.

Council will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan linked to this AM Plan. Management of risks is discussed in Section 5.2.

3.4 Community Levels of Service

Service levels can be defined in two terms, community 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?*

The Council's current and expected community service levels are detailed in Tables 3.4 and 3.5. Table 3.4 shows the agreed expected community levels of service, which has been based on; Cessnock City Council 2027 Community Strategic Plan, resource levels in the current long-term financial plan, and community consultation/engagement undertaken to date. A detailed community

consultation is yet to be undertaken on community service levels specific to each asset class, this will form part of the improvement plan for the next iteration of the AMP's.

Table 3.4: Community Level of Service

Service Attribute	Service Objective	Performance Measure Process	Current Performance	Desired Performance
COMMUNITY LEVELS OF SERVICE				
Quality	Stormwater system is working and not causing nuisance flooding of roads and/or footpaths	Customer Survey 2016 Condition rating	24% satisfaction level (8% very satisfied and 16% satisfied) 99% in condition 1,2,3	To Be Determined 100% in condition 1,2,3
Function	Flooding of private property is minimised.	Flooding of residences	4215 properties are subject to flood related development controls based on existing flood studies.	To be determined
Capacity/Utilisation	Stormwater system is able to convey all flows in a minor storm event	Customer service requests relating to inadequate capacity	278 flooding or drainage service requests were received in 2016	To be determined

3.5 Technical Levels of Service

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 service (e.g. pit and conduit cleaning, inspections, cleaning of water quality devices etc).
- **Maintenance** – the activities necessary to retain an asset as near as practicable to an appropriate service condition (e.g. conduit repair, pit repair, periodic servicing of mechanical assets etc).
- **Renewal** – the activities that return the service capability of an asset up to that which it had originally (e.g. pipe and pit replacement, relining of conduit, pump replacement etc).
- **Upgrade** – the activities to provide a higher level of service (e.g. replacing pipe with a larger diameter) or activities to provide a new service that did not exist previously (e.g. extending the stormwater system to provide inlets at a new location).

Works Delivery and Asset Managers through the AMP’s implement and control technical service levels to influence the customer service levels².

Table 3.5 shows the technical level of service expected to be provided under this Asset Management Plan.

Table 3.5: Technical Levels of Service

Service Attribute	Service Objective	Performance Measure Process	Current Performance	Desired Performance
TECHNICAL LEVELS OF SERVICE				
Operations	Infrastructure meets user’s needs.	Defects inspections	Pits and pipes are inspected on an ad hoc and reactive basis	Pits and pipes inspected on a reoccurring routine cycle
		Cleaning frequency of pipes, open channels and inlet pits	Pipes, box culverts, open channels, and pits are cleaned on a reactive basis	Pipes, box culverts, open channels, and pits are cleaned on a reoccurring routine cycle
Maintenance	Drainage infrastructure is suitable for purpose	Maintenance service request completed within adopted time frames	278 flooding or drainage service requests were received in 2016. 88% completed within 90 days.	75% of repairs completed within 90 working days
Renewal	Drainage infrastructure is suitable for purpose	Condition of pipes and structures	At 2015 pipes and structures in Poor and Very Poor Condition (Condition 4 and 5): 1%	Pipes and structures in Poor and Very Poor Condition (Condition 4 and 5): 1%
Upgrade/New	Flooding of private property is minimised in minor storm events	The number of properties inundated by 1 year Average Recurrence Interval (ARI) storm	Council has not quantified the number of properties inundated by 1 year ARI storm – to be developed using existing flood studies (as an improvement in future revisions of this AMP)	To Be Determined

² IPWEA, 2015, IIMM, p 2.22

4. FUTURE DEMAND

4.1 Demand Drivers

Drivers affecting demand include population change, changes in demographics, seasonal factors, vehicle ownership rates, consumer preferences and expectations, technological changes, economic factors, agricultural practices, environmental awareness, etc.

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
Population	50,840 as at the 2011 Census	The projected population for 2031 is 68,364 ³ (low scenario) and 101,9872 (high scenario)	Population growth will increase infrastructure needs, putting further pressure on existing stormwater infrastructure
Climate Change	Scientific evidence supporting the notion of climate change	Increase Severity of Weather events Temperature Rise Rise in Sea Level	Cessnock stormwater infrastructure will need to adapt to new climate risks to ensure appropriate infrastructure investment decisions are made to reduce long-term costs
Residential Development	Increase in demand for residential land and infrastructure	Estimated Increase by 2031 in population of between 18,120 (low scenario) and 51,740 (high scenario)	Increase in demand for maintenance of stormwater infrastructure assets
Changes in Land use	Changes in land use will result from rezoning and higher density developments	As part of State Govt policy higher density developments will be encouraged in the Hunter Valley Area. The current levels of growth (although small) are anticipated to continue	Increased loading on existing infrastructure from development works (construction works can cause significant damage to existing infrastructure)

³ Source: Cessnock City Council, Community Planning Unit (current as at August 2015).

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. Examples of non-asset solutions include providing services from existing infrastructure such as aquatic centres and libraries that may be in another LGA or public toilets provided in commercial premises. Opportunities identified to date for demand management are shown in Table 4.4. Further opportunities will be developed in future revisions of this asset management plan.

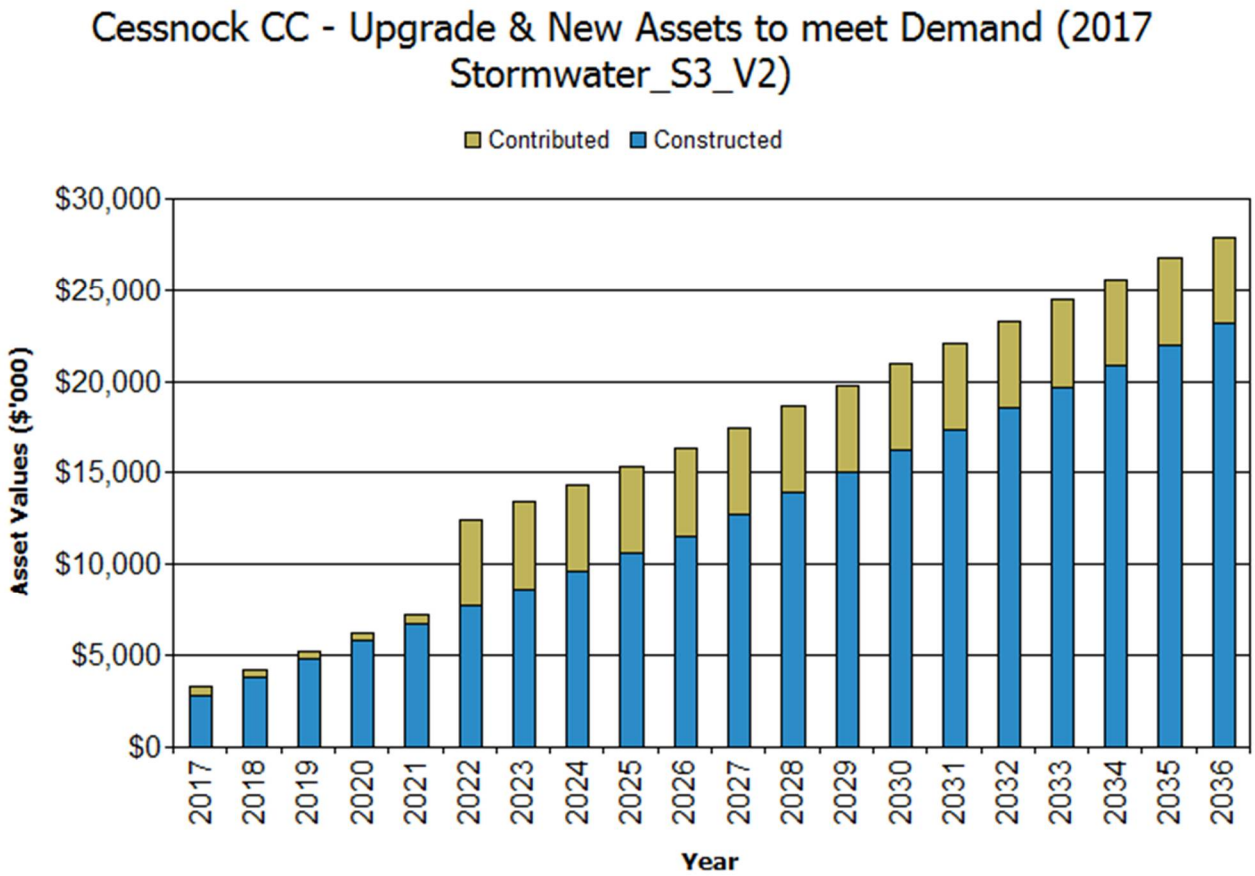
Table 4.4: Demand Management Summary

Demand Driver	Impact on Services	Demand Management Strategy
Optimised Delivery Program	Decrease maintenance and reduce the need for more expensive renewal	Study stormwater condition rating from this plan and prioritise a list of assets to be included in the annual renewal program. Investigate alternative treatments to lower life cycle costs e.g. relining pipes.
New Subdivisions & higher density developments	Increased impervious areas leading to a greater requirement for stormwater drainage infrastructure.	Implement enhanced quality control measures for donated assets. Review S94 and seek contributions towards future stormwater upgrades or new as a result of development.
Community Engagement – Explore community demand for Stormwater	Community expectation may increase	Engage with the community to identify justifiable community needs from other expectations and consider only community needs consistent with Council’s charter.
Capital Works	Potential decrease in maintenance	Schedule long-term capital works program. New projects will need to be assessed with a balance between competing demands for investment to renew existing assets, as well as providing expenditure for new assets to meet growing demand.

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



The year 2022 shows an increase due to the contributed assets from the development at Huntlee.

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.

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.

Table 2.1: Assets covered by this Plan

Asset category	Quantity
Pits	4966
Pipes	121 km
Culverts	5.7 km

Stormwater assets are componentised into the following elements:

Pipes	All pipes and minor culverts that are <2500mm diameter. Note: major culverts are included in the bridge Asset Management Plan.	
Pits	All kerb entry pits, junction boxes, etc.	
Culverts which include the Inlets/Outlets & Headwalls	Points where water enters or exit the system and typically where headwalls are located.	
Structures/Open Channels/Detention Basins	Any other man-made structure not classified above including gross pollutant traps, tanks, lined channels, open channels, detention basins etc are currently not recorded in the asset database, and will be a considered for the next revaluation of the stormwater asset class.	

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
Open Swales	Earth swales in old subdivisions are now under-capacity and no longer meet the functional requirement of the stormwater network required in these areas
Connection of network	Areas identified where links of stormwater pipework have not been completed, causing overflow into private property
Capacity	Pit, pipe, culvert under capacity for the required runoff/overflow

The above service deficiencies were identified from safety and technical inspections undertaken by Cessnock City Council engineers and qualified/ experienced staff.

5.1.3 Asset condition

The condition profile of Council’s stormwater assets as at June 2015 is shown below in figure 3, and figure 3.1:

Fig.3. Stormwater Pipes Assets Condition Rating

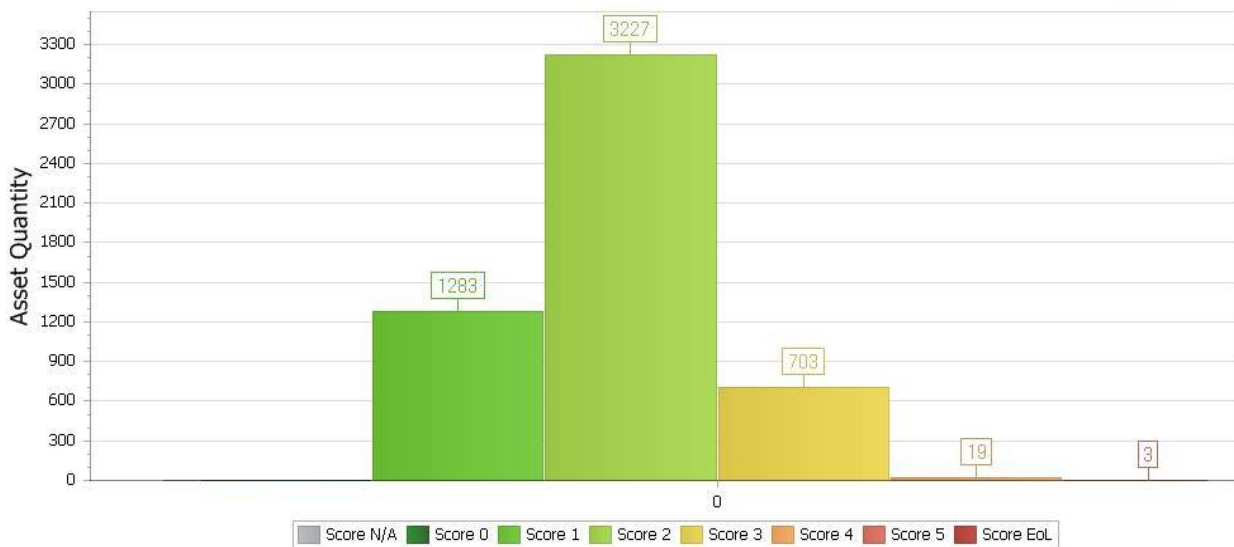


Fig.3.1 Stormwater Pits Assets Condition Rating



Council has a documented condition assessment manual to condition rate Stormwater Assets. This manual assists staff and contractors to assess the condition of Council’s Stormwater Assets. This gives a basis for consistent assessment of stormwater assets. This enables Council to determine the overall condition of its stormwater network as well as identify those assets that require repair or renewal in future years. Condition is measured using a 1 – 5 grading system with the addition of condition state 0 to represent newly constructed assets, and end of life (EOL) for assets out of service, see table 5.1.3 below:

Table 5.1.3: Condition Rating Description

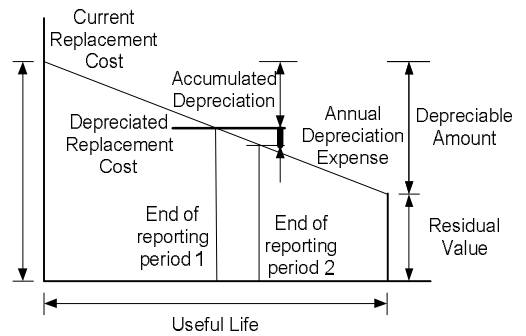
Condition Index	Age or Visual Condition	Condition Description
0	Constructed	Asset that is newly constructed and/or is less than 12 months in age.
1	As New	Components are in a very good condition with limited signs of wear. Components do not require any special attention. Pipe is fully serviceable.
2	Good	Components are in a reasonably good condition with superficial deterioration. Pipe line may have minor blockages.
3	Fair	Evidence of significant deterioration. Stormwater pipe length is operational but displays efficiency deficiencies. Routine maintenance and/or minor refurbishment is required.
4	Poor	Evidence of major or serious deterioration, with frequent blockages. Stormwater pipe is not operating and major problems are imminent. Major maintenance or rehabilitation is required.
5	Very poor	Component has failed, is about to fail, has major blockages or has stopped working. The asset is unserviceable. Rehabilitation or renewal is required immediately or within 12 months.
End of Life		Asset out of service.

The stormwater assets with known service performance deficiencies are listed in Table 5.1.2. Council’s proposed 10-year-projected capital renewal, replacement, and upgrade works program is yet to be developed.

5.1.4 Asset valuations

The value of assets recorded in the asset register as at 30 June 2016 covered by this Asset Management Plan is shown below. Assets were revalued at 30 June 2016. Assets are valued using replacement cost method (based on unit rates and dimensions).

	(\$000)
Current Replacement Cost	\$73,827
Depreciable Amount	\$73,827
Depreciated Replacement Cost	\$57,547
Annual Depreciation Expense	\$588



Useful lives were reviewed in June 2015 by benchmarking CCC values against industry standards. The stormwater assets category was revalued in 2014/15, key assumptions made in preparing the 2014/15 valuations were:

- Current condition of assets is based on 2014/15 revaluation and condition assessment exercise;
- The depreciation matrix has been assumed to be straight line condition based throughout all stormwater assets in the network.

Major changes from previous valuations are due to:

- Revised unit rates for various stormwater asset types
- Additional found assets
- Reviewed and updated useful life’s of all assets

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 (Annual depreciation exp/Depreciable amount)	0.8%
Rate of Annual Asset Renewal (Capital renewal exp/Depreciable amount)	0.2%
Rate of Annual Asset Upgrade/New (Capital upgrade exp/Depreciable amount)	3.8%

In 2017 Council plans to renew assets at 25.3% of the rate they are being consumed and will be increasing its asset stock by 4.4% in the year.

5.1.5 Historical Data

Table 5.1.5.1: Expenditure for Stormwater Assets

	2012	2013	2014	2015	2016
Maintenance	\$525,266	\$546,643	\$565,917	\$566,025	\$716,528
Capital Renewal	\$14,801	\$16,486	\$32,239	\$14,369	\$64,477
Capital New	\$133,210	\$148,371	\$290,149	\$273,023	\$1,225,076

5.2 Infrastructure Risk Management Plan

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 shock’ to Council. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

Critical risks, being those assessed as ‘Very High’ - requiring immediate corrective action and ‘High’ – requiring prioritised corrective action identified in the Infrastructure Risk Management Plan, together with the estimated residual risk after the selected treatment plan is operational are summarised in Table 5.2. These risks are reported to management and Council.

Table 5.2: Critical Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Stormwater Pipes, culverts, pits	Damage, collapse or compromised capacity of assets due to poor quality, age, unknown condition, tree root intrusion and/or inadequate funding for renewal or maintenance of assets.	Medium	Regular inspections & maintenance. Continual improvement of condition inventory in asset register, and locating through GPS.	Medium	Mitigated in current budgets.
Stormwater Pipes, culverts, pits	Blockage from debris in stormwater network, flooding, inadequate controls on development.	Medium	Regular inspections & maintenance. Clear blockages through reactive maintenance.	Medium	Mitigated in current budgets.
Stormwater Pipes, culverts, pits	Insufficient capacity resulting in flooding due to climate change, development, aged infrastructure.	Medium	Undertake flood management studies	Medium	Mitigated in current budgets.

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. drainage cleaning.

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

Operational⁴ activities affect service levels including quality and function through frequency (e.g. street sweeping, and grass mowing), intensity (e.g. spacing of street lights) 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. Cracked pit lid replacement, but excluding the full replacement of the pit. Maintenance may be classified into reactive and planned work activities.

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

Planned Maintenance is repair work that is identified and managed using the customer request system and/or 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.

Actual past maintenance expenditure is shown in Table 5.3.1.

Table 5.3.1: Maintenance Expenditure Trends

Year	Maintenance Expenditure	
	Planned	Unplanned (Reactive)
2011/12	Not identified separately	\$525,266
2012/13	Not identified separately	\$546,643
2013/14	Not identified separately	\$565,917
2014/15	Not identified separately	\$566,025
2015/16	Not identified separately	\$716,528

Council does not currently distinguish between planned and unplanned works.

Required Maintenance is considered to be the amount of funding originally budgeted for in the adopted Long Term Financial Plan, this is reviewed annually. Future iterations of this AMP will further define the required maintenance.

Maintenance expenditure levels are considered to be underfunded to meet projected service levels required in the medium to long term. Where maintenance expenditure levels are such that will

⁴ Council is currently reviewing what is recorded as operation maintenance in comparison to planned or reactive maintenance and will be incorporated into the next iteration of this AMP.

result in a lesser level of service, the service consequences have been identified and highlighted in this AM Plan.

Assessment and prioritisation of reactive maintenance is undertaken by Council staff using experience and judgement.

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. Report 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 is still in the process of developing hierarchies for its stormwater network and these will be incorporated into the improvement plan.

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, Council 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
Stormwater Pipes, culverts, pits	Structural Failure	A critical assets management plan to be drafted as part of a future improvement task of this AMP.
Pipes and Culverts	Washout	A critical assets management plan to be drafted as part of a future improvement task of this AMP.
Retarding Basins	Dam Collapse failure	A critical assets management plan to be drafted as part of a future improvement task of this AMP.

Standards and specifications

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

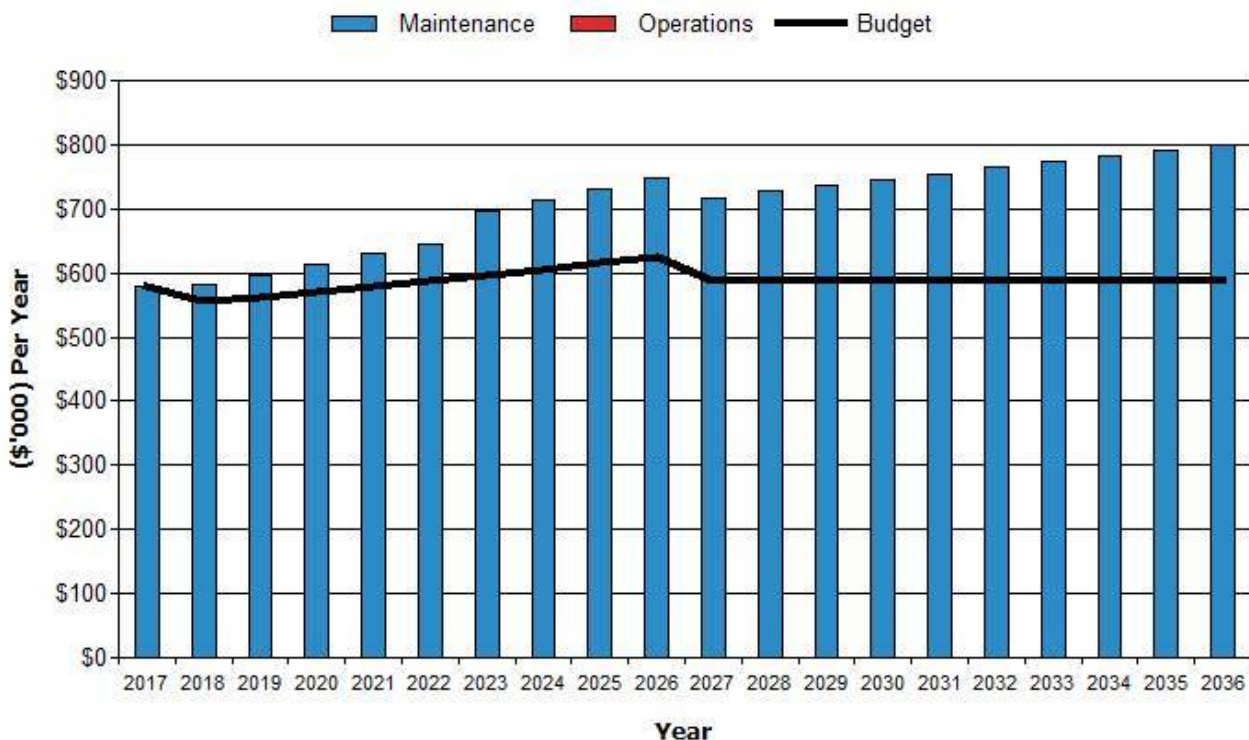
- CCC Engineering Guidelines for Design
- Austroads Standards/Specification
- Australian Standards/Specification
- IPWEA Standards/Specification
- Roads and Maritimes – Design Guide

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 dollar values (i.e. real values).

Figure 4: Projected Operations and Maintenance Expenditure

Cessnock CC - Projected Operations & Maintenance Expenditure (2017 Stormwater_S3_V2)



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.

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 asset managers knowledge of network and external condition modelling systems (such as Asset 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'.

Methods 2 and 3 are both used for this Asset Management Plan.

The useful lives of stormwater assets used to develop the projected asset renewal expenditures are shown in Table 5.4.1. Asset useful lives were last reviewed on 30th June 2015. This is monitored annually but a full review is only undertaken in line with the revaluation cycle. For this asset category the next revaluation will be undertaken in 2019/20.

Table 5.4.1: Useful Lives of Assets

Asset (Sub)Category	Useful Life (Yrs.)
Stormwater Pits – All design types	120
Stormwater Pipes and Culverts – All design types	120

Renewal Standards

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

- CCC Engineering Guidelines for Design
- Austroads Standards/Specification
- Australian Standards/Specification
- IPWEA Standards/Specification
- Roads and Maritimes – Design Guide

In addition to these legislative standards and codes of practices, maintenance works and standards are intuitive to staff who have had a number of years undertaking this type of work. Council will however, endeavour to formally document these standards in future revisions of this Plan.

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 option 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).⁵

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,
- Have high operational or maintenance costs, and
- Where replacement with modern equivalent assets would yield material savings.⁶

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

⁵ IPWEA, 2015, IIMM, Sec 3.4.4, p 3 | 60.

⁶ Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3 | 66.

Table 5.4.2: Renewal and Replacement Priority Ranking Criteria

Criteria	Weighting
Development Density in catchment above site	11%
Condition of Drain/Natural watercourse	11%
Problems caused by flooding	16%
Public Safety Risk	22%
Number of Properties affected	11%
Customer Requests	5%
Legal Matters	11%
Resolution of Council/Section 94 Plan	13%
Total	100%

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. Figure 5 & 5.1 below summarise future projected expenditure, fig.5 utilising scenario 2 financial outlays (based on community desired condition state) and fig 5.1 scenario 3 (LTFP outputs). Note that all amounts are shown in real values. The projected capital renewal and replacement program is shown in Appendix B.

Fig 5: Projected Capital Renewal and Replacement Expenditure – Scenario 2

Cessnock CC - Projected Capital Renewal Expenditure (2017 Stormwater_S2_V2)

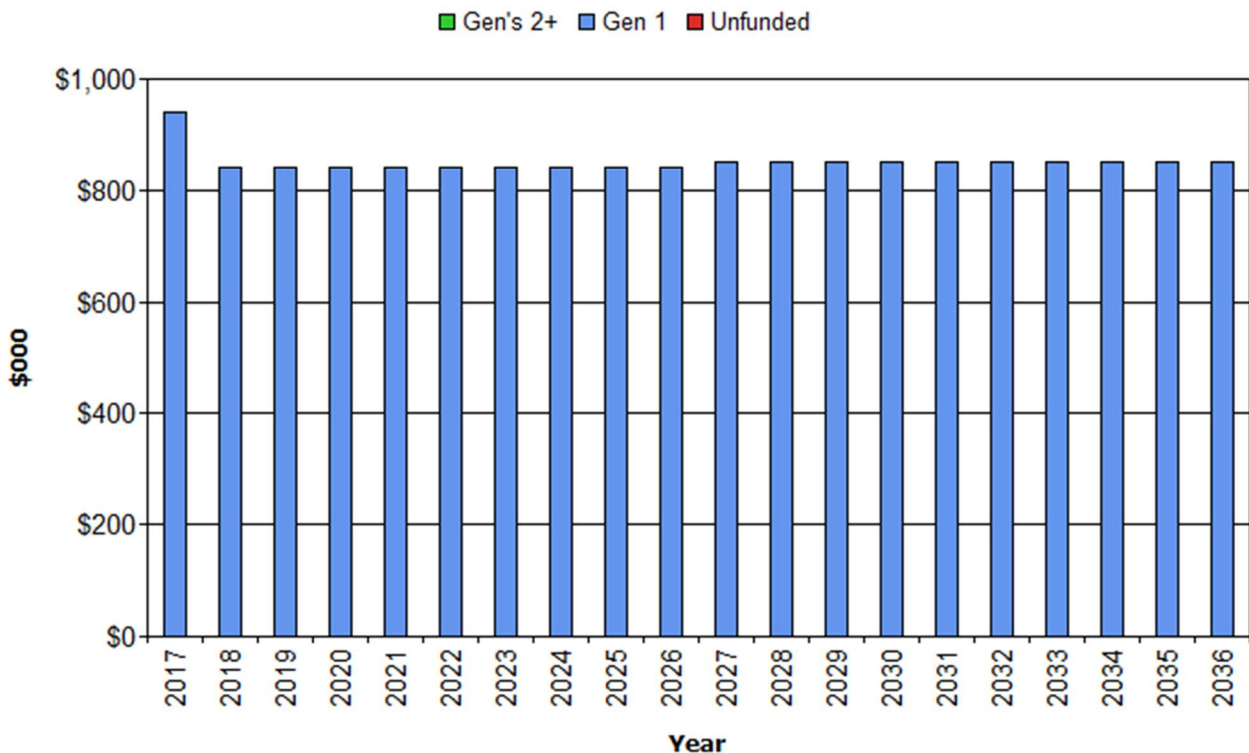
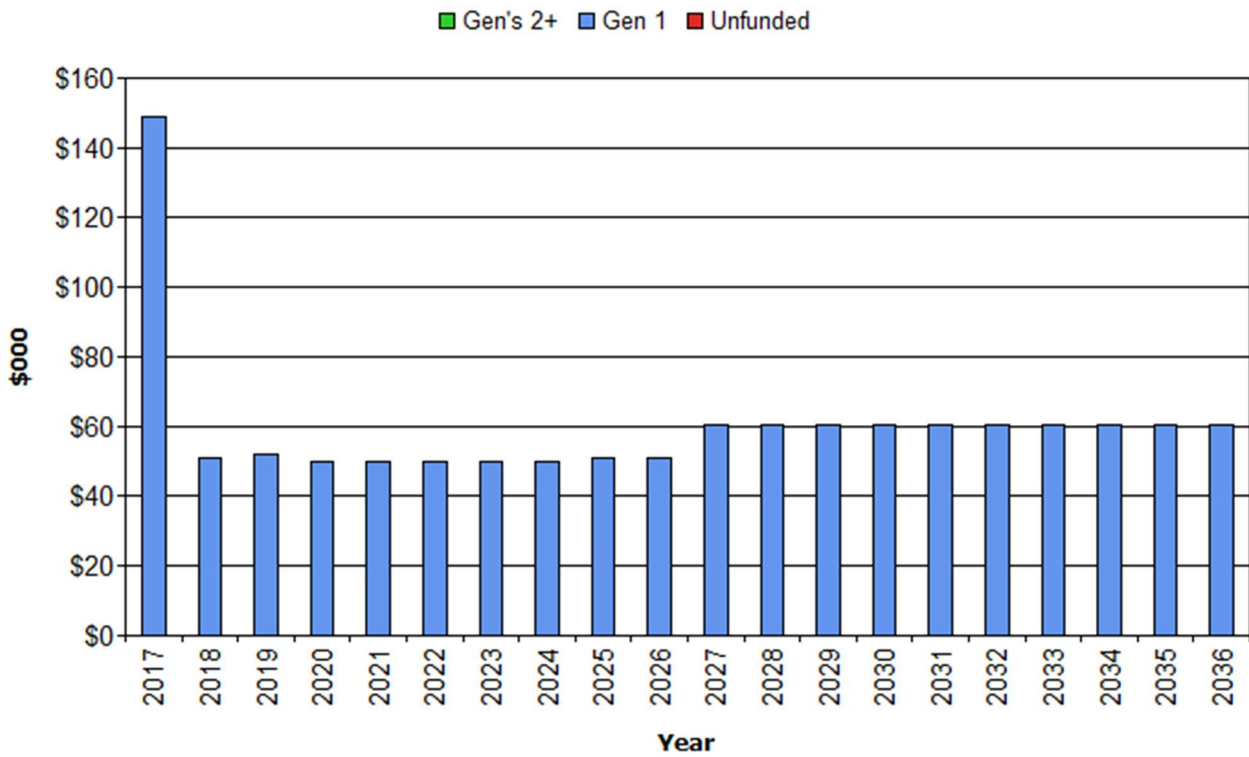


Fig 5.1: Projected Capital Renewal and Replacement Expenditure – Scenario 3

Cessnock CC - Projected Capital Renewal Expenditure (2017 Stormwater_S3_V2)



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 or community input into IP&R process, proposals identified by strategic plans, or proposals for partnerships with other Councils. 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 below, this will be utilised for developing future programs from the date of adoption of this plan.

Table 5.5.1: New Assets Priority Ranking Criteria

Criteria	Weighting
Development Density in catchment above site	11%
Condition of Drain/Natural watercourse	11%

Criteria	Weighting
Problems caused by flooding	16%
Public Safety Risk	22%
Number of Properties affected	11%
Customer Requests	5%
Legal Matters	11%
Resolution of Council/Section 94 Plan	13%
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.

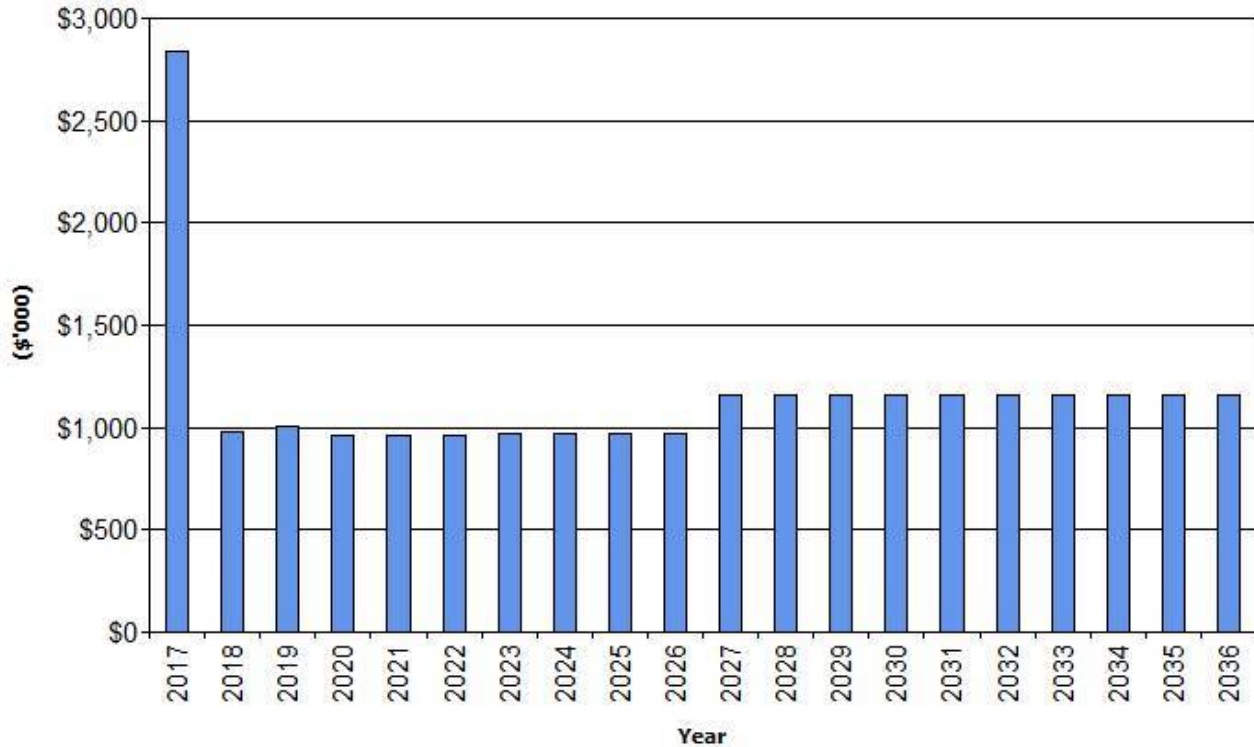
Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.4.2.

5.5.3 Summary of future upgrade/new assets expenditure

Projected upgrade/new asset expenditures are summarised in Fig 6. The projected replacement/expansion/new capital works program is shown in Appendix B. All amounts are shown in real values.

Fig 6: Projected Capital Upgrade/New Asset Expenditure

Cessnock CC - Projected Capital Upgrade/New Expenditure (2017 Stormwater_S3_V2)



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.

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 investigated to determine the required levels of service and see what options are available for alternate service delivery, if any. Revenue gained from asset disposals is accommodated in Council’s long term financial plan.

Table 5.6: Assets Identified for Disposal

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

5.7 Service Consequences and Risks

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

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

The development of scenario 1 and scenario 2 Asset Management Plans provides the tools for discussion with 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).

Scenarios 2 & 3 has been developed for this AMP.

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:

- All of the required renewal and maintenance items required annually for all stormwater assets to stay in average/fair condition (3) or better
- Increase in the required maintenance for assets to achieve their useful life

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:

- Potential increase in stormwater failure, localised flooding, and inefficient drainage as a result of insufficient stormwater renewal funding.

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:

- Potential increase in risk to the community through stormwater that is under capacity, and/or structural failure of assets with insufficient funding to renew or upgrade network.
- Increase in future funding required to renew/maintain stormwater assets as a result of insufficient ongoing maintenance expenditure.
- Negative public perception / political risk

These risks have been included with the Infrastructure Risk Management Plan summarised in Section 5.2 and risk management plans actions and expenditures included within projected expenditures.

6. FINANCIAL SUMMARY

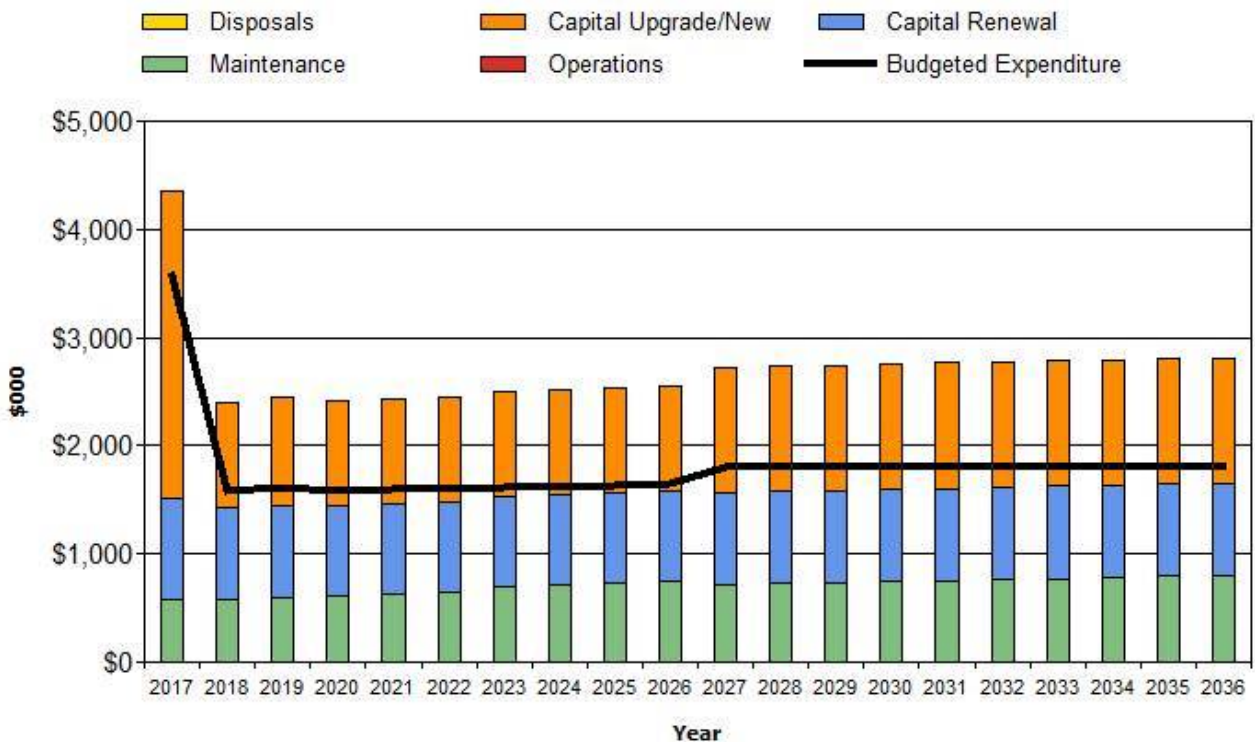
This section contains the financial requirements resulting from all the information presented in the previous sections of this Asset Management Plan. The financial projections will be improved as further information becomes available on desired levels of service and current and projected future asset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

6.1 Financial Statements and Projections

The financial projections are shown in Fig 7 (scenario 2) and 7.1 (scenario 3) for projected operating, maintenance, and capital expenditure, including; renewal and upgrade/expansion/new assets. Note that all costs are shown in real values.

Fig 7: Projected Operating and Capital Expenditure – Scenario 2

Cessnock CC - Projected Operating and Capital Expenditure (2017 Stormwater_S2_V2)



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 \$1,241,000 per year (average operations and maintenance expenditure plus depreciation expense projected over 10 years).

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 \$648,000 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 **-\$593,000** per year (-ve = gap, +ve = surplus).

Life cycle expenditure is 52% 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.

Knowing the extent and timing of any required increase in outlays and the service consequences if funding is not available will assist Council in providing services to their communities in a financially sustainable manner. 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 \$713,000 on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is \$648,000 on average per year giving a 10 year funding shortfall of **-\$65,000** per year. This indicates that Council expects to have 91% 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 \$670,000 on average per year.

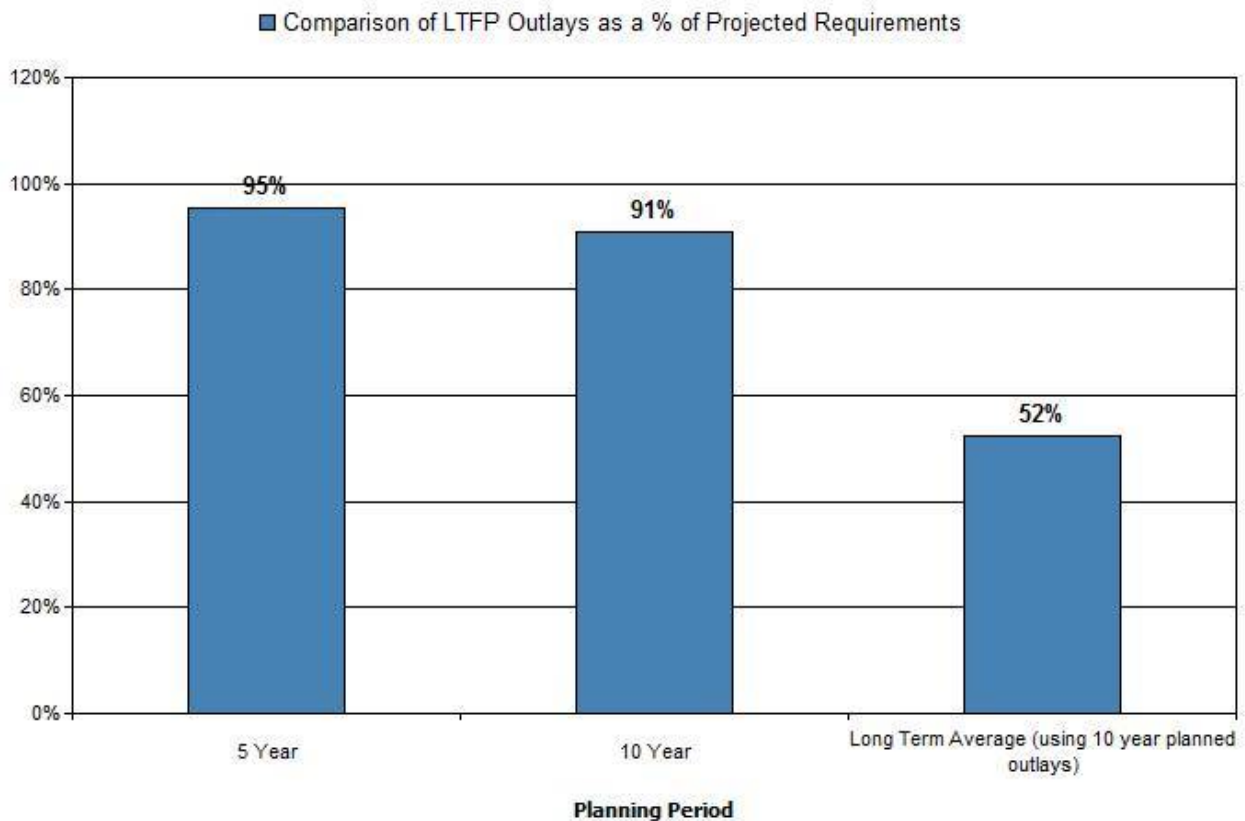
Estimated (budget) operations, maintenance and capital renewal funding is \$640,000 on average per year giving a 5 year funding shortfall of **-\$30,000**. This indicates that Council expects to have 95% of projected expenditures required to provide the services shown in this Asset Management Plan.

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 7A: Asset Management Financial Indicators

Cessnock CC - AM Financial Indicators (2017 Stormwater_S3_V2)



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 required from Scenario 2 over a 20 year planning period. The projected asset renewal and replacement expenditure is compared to planned renewal and replacement expenditure in the capital works program, which is accommodated in the long term financial plan.

Figure 8: Projected Renewal Expenditure Scenario 2 against LTFP Budget

Cessnock CC - Projected & LTFP Budgeted Renewal Expenditure (2017 Stormwater_S2_V2)

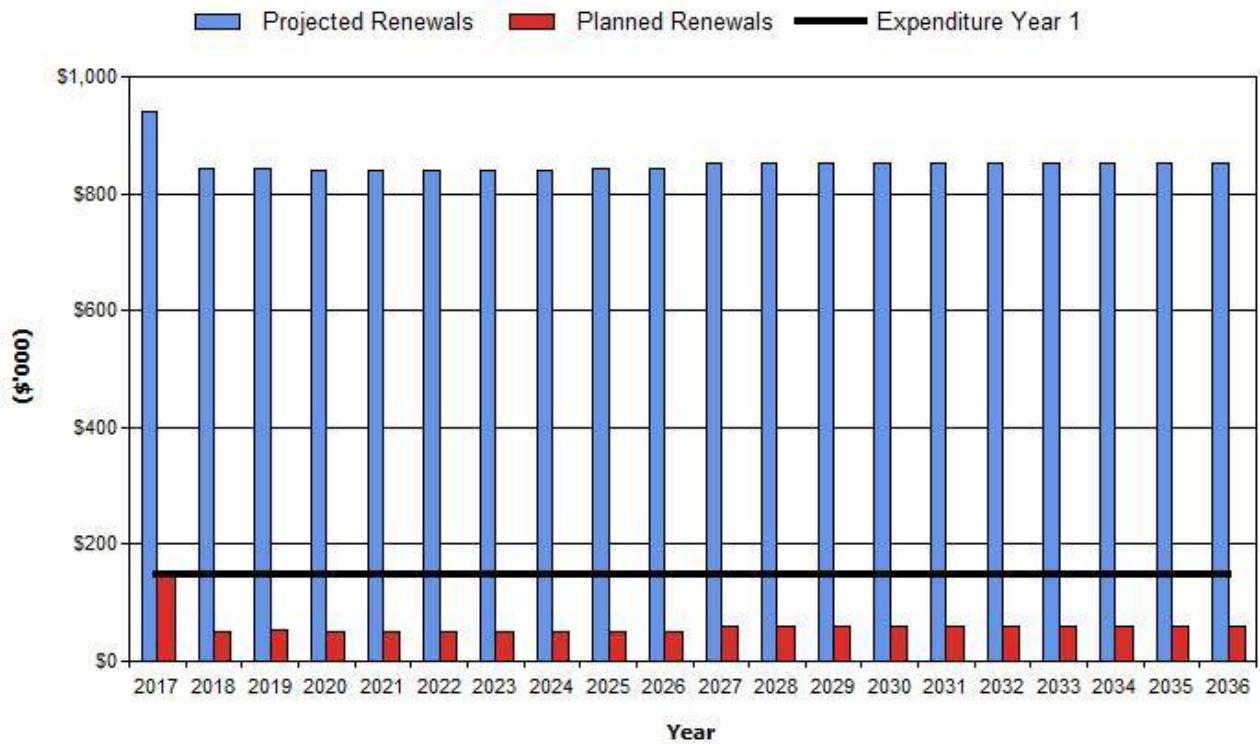


Table 6.1.1 shows the shortfall between projected renewal and replacement expenditures required from scenario 2 and expenditure accommodated in long term financial plan. Budget expenditures accommodated in the long term financial plan are shown in Appendix A.

Table 6.1.1: Projected and LTFP Budgeted Renewals and Financing Shortfall – Scenario 2

Year End June 30	Projected Renewals (\$'000)	LTFP Renewal Budget (\$'000)	Renewal Financing Shortfall (- gap, + surplus) (\$'000)	Cumulative Shortfall (- gap, + surplus) (\$'000)
2017	\$940	\$149	\$-791	\$-791
2018	\$842	\$51	\$-791	\$-1,582
2019	\$843	\$52	\$-791	\$-2,373
2020	\$841	\$50	\$-791	\$-3,164
2021	\$841	\$50	\$-791	\$-3,955
2022	\$841	\$50	\$-791	\$-4,746
2023	\$841	\$50	\$-791	\$-5,537
2024	\$841	\$50	\$-791	\$-6,328
2025	\$842	\$51	\$-791	\$-7,119
2026	\$842	\$51	\$-791	\$-7,910
2027	\$851	\$60	\$-791	\$-8,701

Year End June 30	Projected Renewals (\$'000)	LTFP Renewal Budget (\$'000)	Renewal Financing Shortfall (- gap, + surplus) (\$'000)	Cumulative Shortfall (- gap, + surplus) (\$'000)
2028	\$851	\$60	\$-791	\$-9,492
2029	\$851	\$60	\$-791	\$-10,283
2030	\$851	\$60	\$-791	\$-11,074
2031	\$851	\$60	\$-791	\$-11,865
2032	\$851	\$60	\$-791	\$-12,656
2033	\$851	\$60	\$-791	\$-13,447
2034	\$851	\$60	\$-791	\$-14,238
2035	\$851	\$60	\$-791	\$-15,029
2036	\$851	\$60	\$-791	\$-15,820

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

Should the Council wish to meet the community demand for assets to improve to a minimum of condition 3, in order to be sustainable in meeting this service level, there will be a requirement to match projected asset renewal and replacement expenditure with the corresponding capital works program accommodated in the long term financial plan.

A gap between projected asset renewal/replacement expenditure and amounts accommodated in the LTFP indicates that further work is required on reviewing service levels in the Asset Management Plan before finalising the Asset Management Plan to manage required service levels and funding to eliminate any funding gap (including possibly revising the LTFP in future).

We will manage the 'gap' by developing this Asset Management Plan to provide guidance on future service levels and resources required to provide these services, and review future services, service levels and costs with the community.

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 real values.

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

Year	Operations	Maintenance	Projected Capital Renewal	Capital Upgrade/New	Disposals
2017	\$0	\$578	\$940	\$2,838	\$0
2018	\$0	\$581	\$842	\$979	\$0
2019	\$0	\$597	\$843	\$1,003	\$0
2020	\$0	\$613	\$841	\$960	\$0
2021	\$0	\$630	\$841	\$965	\$0
2022	\$0	\$645	\$841	\$965	\$0

2023	\$0	\$696	\$841	\$966	\$0
2024	\$0	\$713	\$841	\$967	\$0
2025	\$0	\$730	\$842	\$969	\$0
2026	\$0	\$747	\$842	\$970	\$0
2027	\$0	\$718	\$851	\$1,158	\$0
2028	\$0	\$727	\$851	\$1,158	\$0
2029	\$0	\$736	\$851	\$1,158	\$0
2030	\$0	\$746	\$851	\$1,158	\$0
2031	\$0	\$755	\$851	\$1,158	\$0
2032	\$0	\$764	\$851	\$1,158	\$0
2033	\$0	\$773	\$851	\$1,158	\$0
2034	\$0	\$782	\$851	\$1,158	\$0
2035	\$0	\$792	\$851	\$1,158	\$0
2036	\$0	\$801	\$851	\$1,158	\$0
All dollar values are in (\$'000)'s					

6.2 Funding Strategy

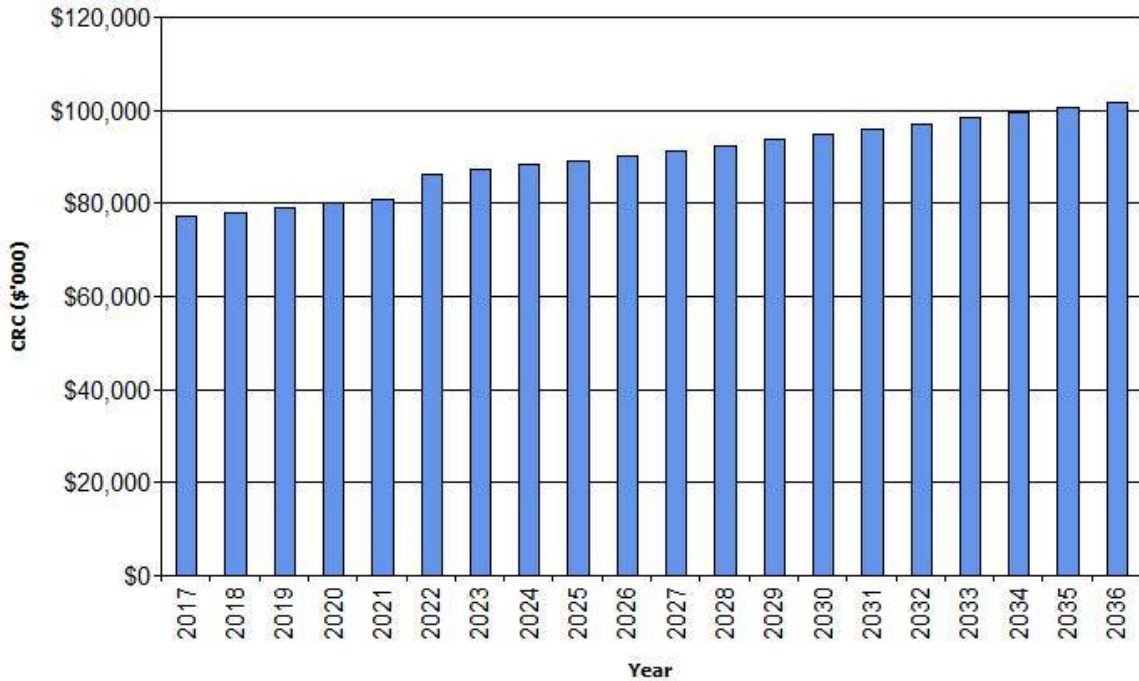
After reviewing service levels, as appropriate to ensure ongoing financial sustainability projected expenditures identified in Section 6.1.2 will be accommodated in Council's 10 year long term financial plan, and reviewed where necessary.

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 9: Projected Asset Values

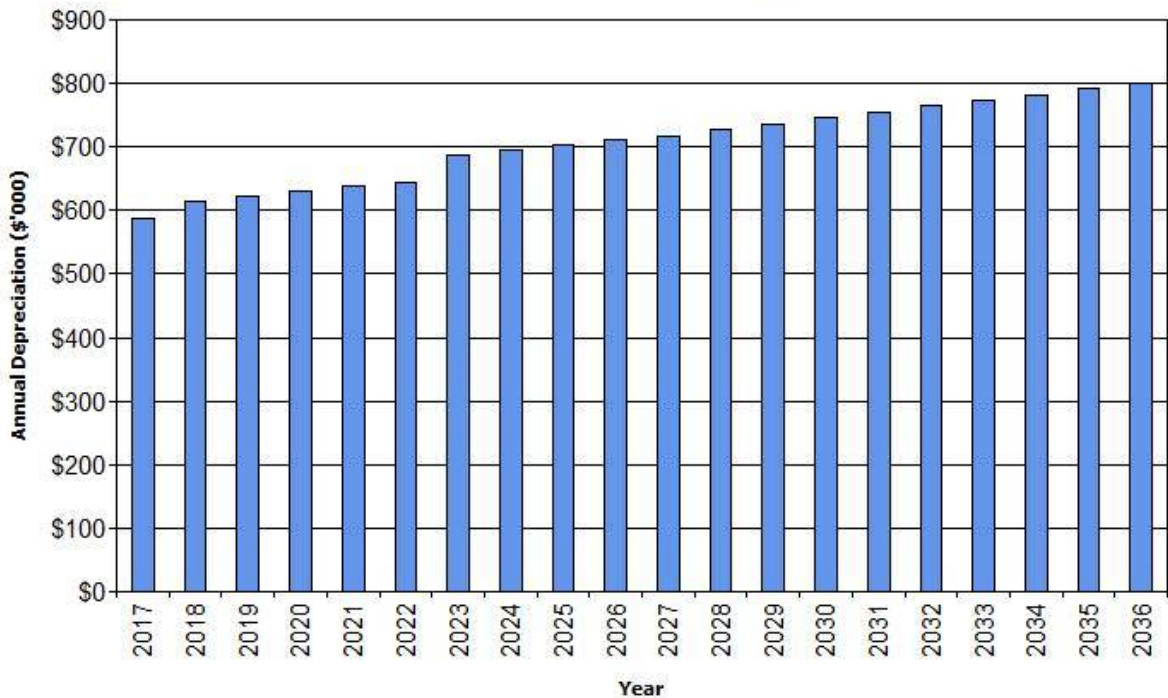
Cessnock CC - Projected Asset Values (2017 Stormwater_S3_V2)



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

Figure 10: Projected Depreciation Expense

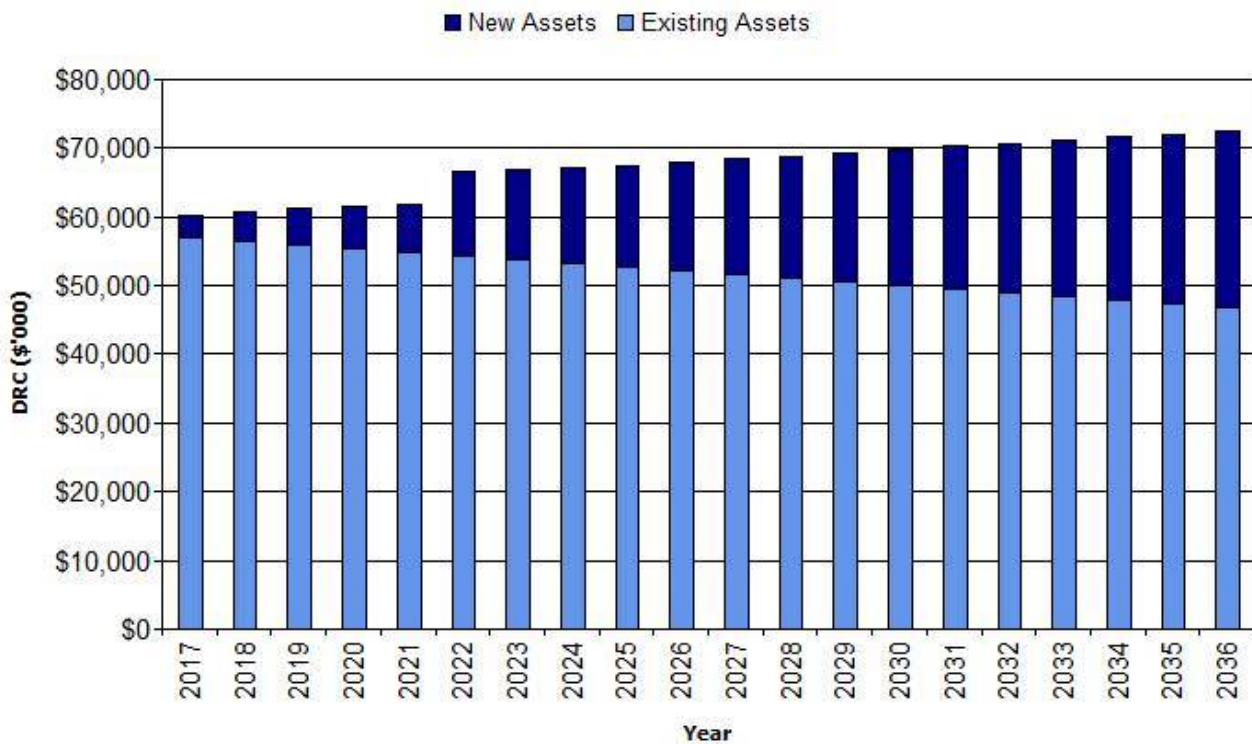
Cessnock CC - Projected Depreciation Expense (2017 Stormwater_S3_V2)



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 11: Projected Depreciated Replacement Cost

Cessnock CC - Projected Depreciated Replacement Cost (2017 Stormwater_S3_V2)



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
Use of existing inventory and condition data as at 30 June 2015.	Condition data was last compiled during the revaluation exercise undertaken in 2014/15.
Use of 2014/15 Infrastructure Asset Revaluation Manual.	This Asset Management Plan is based on asset revaluation undertaken in 2014/15 that would be subject to change during desktop revaluations annually, or as part of the next revaluation in 2020/21.

Planned expenditure values obtained from current budgets and Council's four year delivery program (2017-2021), and Council's updated LTFP 2017 – 2027.	The four year Delivery Program and LTFP may change in the future. Any changes in funding, planned capital and maintenance will be reflected in future asset management plans.
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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 scale⁷ 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	B	Based on demographic analysis undertaken in 2014 and State Government projections.
Growth projections	B	Based on demographic analysis undertaken in 2014 and State Government projections.
Operations expenditures	B	Council financial records.
Maintenance expenditures	B	Council financial records.
Projected Renewal exps. Asset values	B	Assets reviewed in 2014/15 and renewal costs determined from Benchmark Rates.
Asset useful lives	B	Useful lives based on industry standards.
Condition modelling	B	Condition assessment based on 2014/15 revaluation exercise.
Network renewals	B	Based on Renewal and Replacement Priority Ranking Criteria Table 5.4.2

⁷ IPWEA, 2015, IIMM, Table 2.4.6, p 2 59

Defect repairs	B	Developed from customer requests and officer inspections.
Upgrade/New expenditures	A	Based on known capital allocations from State Government Grand funding.
Disposal expenditures	A	Nil assets identified for disposal.

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

7. PLAN IMPROVEMENT AND MONITORING

7.1 Status of Asset Management Practices

7.1.1 Accounting and financial systems

Council's accounting and financial system is CIVICA/Authority.

Accountabilities for financial systems

The financial systems are primarily managed by Council's Finance section within the Corporate and Community Services Directorate.

Accounting standards and regulations

In accounting for Cessnock City Council assets the following statutory requirements shall be adhered to:

- Australian Accounting Standards (AASB116).
- NSW Local Government Act 1993.
- NSW Code of Accounting Practice and Financial Reporting (updated annually).
- Australian Infrastructure Management Guideline

Capital/maintenance threshold

A summary of capital / maintenance threshold for stormwater assets is provided in Table 7.1.

Table 7.1: Capital / Maintenance Threshold for Stormwater Assets

	Operations	Maintenance and Repair	Capital Renewal	Capital New
Stormwater Assets	<ul style="list-style-type: none"> • Clearing drains and pits. • Street sweeping. • Mowing 	<ul style="list-style-type: none"> • Reactive maintenance to drainage assets (pipe repair, pit repair). • Component replace/renew <\$5,000. • Components replace/renew <20% of asset 	<ul style="list-style-type: none"> • Component renewal to same standard. Or >\$5,000 • Component replace/renew >20% of asset 	<ul style="list-style-type: none"> • New assets/upgrade assets • Land acquired for stormwater catchment • Replacement with higher standard (>same standard)

Required changes to accounting financial systems arising from this AM Plan

In order to assist with future iterations of this AMP it is recommended that the accounting ledger be restructured to better reflect the different types of expenditure more accurately, i.e. operational, maintenance, capital renewal and capital upgrade. It is also recommended that the work order system is improved for more accurate job planning and control.

7.1.2 Asset management system

Cessnock City Council Asset Management Implementation Project includes the deployment of a software tool; MyData (Assetic Software Package) Asset Management System.

ASSETIC – MyData

MyData, is an 'Asset Management System' (AMS) designed to assist with the management of all infrastructure assets as well as the potential to expand to non-infrastructure assets such as fleet, plant, computer, etc.

The MyData register has the ability to:

- Assign global formulae for remaining life based on age and/or condition.
- Use predictive modelling as basis for defensible valuations (written down value and remaining life).
- Automatically update annual or monthly valuations.
- Add or remove assets but maintain an archived list.
- Perform audit trails for changes between two valuations.
- Import and export reports.
- Apply a range of unit replacement costs across asset categories.
- Classify each asset class into various sub-classes.

Asset registers

The key information flows into this Asset Management Plan are:

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

Linkage from asset management to financial system

The key information flows from this Asset Management Plan are:

- The assumed asset renewal profile and trends;
- The resulting budget, valuation and depreciation projections;
- The useful life analysis.

These will impact the Long Term Financial Plan, Strategic Business Plan, annual budget and unit plans and budgets.

Accountabilities for asset management system and data maintenance

See Asset Management Strategy.

Required changes to asset management system arising from this AM Plan

Changes to the asset management system resulting from this Asset Management Plan may include:

- Modification of asset categories or sub-categories to assist in maintenance management systems;
- Improving the work order system for job planning and control;
- Improving the quality of specific data;

- Improving software systems and links to other systems (e.g. GIS and Authority to MyData, and;
- Adopting a more frequent reconciliation cycle between the financial and technical asset registers.

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	Review Levels of Service for responding to customer requests for maintenance, faults and breakdowns.	Works & Infrastructure/Assets	In-house	Prior to 2018 adoption
2	Review finance system to provide clear separation of capital expenditure into renewal, upgrade / expansion, and new works. Provide a clear separation of stormwater and road maintenance recording in the finance system.	Works & Infrastructure/Assets and Finance	In-house	Prior to 2018 adoption
3	Develop hierarchies for stormwater assets.	Works & Infrastructure/Assets	In-house	Prior to 2018 adoption
4	Develop a critical asset management plan and further define critical assets	Works & Infrastructure/Assets	In-house	Prior to 2018 adoption
5	Undertake community consultation specific to each asset class, and review the community levels of service in this AMP.	Works & Infrastructure/Assets	In-house	June 2017
6	Continue with Flood Mitigation Risk Analysis to develop capacity and functionality condition to assist in identifying future works.	Works & Infrastructure/Assets	In-house Resources & Budget Allocation	Prior to 2018 adoption
7	Review future demand impacts, ranking criteria and weightings of this Asset Management Plan in consultation with internal staff.	Works & Infrastructure/Assets	In-house	Prior to 2018 adoption
8	Document Service Level Targets for all assets in each Asset Management Plan	Works & Infrastructure/Assets / Finance & Admin Services Manager / Service Delivery Managers	In-house	Prior to 2018 adoption

NOTE: In 2015, an independent assessment was undertaken by an external consultant on Councils' overall asset maturity TRIM reference number DOC2015/020878. Council is intending to obtain another review of their asset maturity by the end of 2018.

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 AMP is to be reviewed annually in line with the budget, and a full revision undertaken during the year after the asset class is revalued.

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 Council's Strategic Plan and associated plans;
- The Asset Renewal Funding Ratio achieving the target of 1.0.

8. REFERENCES

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

IPWEA, 2015, 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australia, Sydney, www.ipwea.org.au/AIFMG.

IPWEA, 2015, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney, www.ipwea.org.au/IIMM

Cessnock City Council, Asset Management Policy

Cessnock City Council, Asset Management Strategy

Cessnock Community Plan (Cessnock 2027)

Cessnock City Council Community Research Report 2016

Cessnock City Council 2016 Resident Satisfaction Survey Results

Cessnock City Council 2015 Asset Management Research Satisfaction Survey Results

Cessnock City Council, Delivery Program 2017-2021

Cessnock City Council, Operational Plan 2016-2017

9. APPENDICES

Appendix A LTFP Budgeted Expenditures Accommodated in AM Plan

Appendix B Draft Capital Renewal and Replacement Works Program

Appendix C Abbreviations

Appendix D Glossary

Appendix A Budgeted Expenditures Accommodated in LTFP

Projected Expenditure	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Capital Expenditure on Renewal/Replacement of existing assets	\$940	\$842	\$843	\$841	\$841	\$841	\$841	\$841	\$842	\$842
Capital Expenditure on Upgrade/New assets	\$2,838	\$979	\$1,003	\$960	\$965	\$965	\$966	\$967	\$969	\$970
Operational cost of existing assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance cost of existing assets	\$578	\$555	\$563	\$571	\$580	\$588	\$597	\$606	\$615	\$625
Operational cost of New assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance cost of New assets	\$0	\$26	\$34	\$42	\$50	\$57	\$99	\$107	\$115	\$122
Disposal of Surplus assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Appendix B Draft Capital Renewal and Replacement Works Program

DRAINAGE CONSTRUCTION PROGRAM (CDR)		FUNDING YEAR							
LOCATION	PROJECT	2017/18		2018/19		2019/20		2020/21	
Aberdare	Congewai St investigation							\$60,000	CDR-2021-001
Aberdare	Rawson St investigation and design							\$15,000	CDR-2021-006
Abermain	Ridley St construction			\$300,000	CDR-2019-001				
Administration	Operational costs associated with the program	\$122,000		\$122,000		\$122,000		\$122,000	
Branxton	Cessnock St investigation and design							\$15,000	CDR-2021-008
Branxton	Railway St construction					\$120,000	CDR-2020-001		
Branxton	Thomas St investigation and design	\$10,000	CDR-2018-002						
Branxton	Thomas St drainage construction			\$200,000	CDR-2019-002				
Cessnock	Margaret & James Sts - investigation and design stage 1	\$10,000	CDR-2018-003						
Greta	Anvil St construction			\$200,000	CDR-2019-003				
Greta	Whitburn Estate Stage 2 - trunk drainage construction	\$880,000	CDR-2018-001						
Greta	Whitburn Estate Stage 3 & 4 - trunk drainage construction					\$250,000	CDR-2020-002	\$250,000	CDR-2021-002
Heddon Greta	Cooper St Stage 1 construction			\$150,000	CDR-2019-004				
Heddon Greta	Cooper St Stage 2 investigation and design							\$35,000	CDR-2021-009
Heddon Greta	Clift St - investigation and design			\$10,000	CDR-2019-007				
Kurri Kurri	Edward St investigation and design			\$10,000	CDR-2019-006				
Kurri Kurri	Heddon St construction					\$150,000	CDR-2020-003		
Kurri Kurri	Booth St investigation and design					\$60,000	CDR-2020-004	\$385,000	CDR-2021-003
Kurri Kurri	Coronation St Stage 2 investigation and design							\$50,000	CDR-2021-004
Kurri Kurri	Lang & Mulbring Sts drainage investigation and design					\$50,000	CDR-2020-005		
Millfield	Portland St trunk drainage detail design							\$75,000	CDR-2021-005
North Rothbury	Thomas St stage 1 construction					\$250,000	CDR-2020-006		
Nulkaba	Tallowood Ave construction			\$55,000	CDR-2019-005				
	TOTAL	\$1,022,000		\$1,047,000		\$1,002,000		\$1,007,000	
<i>Funding Source:</i>	Loan	\$636,100		\$659,600		\$541,100		\$514,600	
	Stormwater Levy	\$385,900		\$387,400		\$460,900		\$492,400	

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

Borrowings

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

Capital expenditure

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

Capital expenditure - expansion

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

Capital expenditure - new

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

Capital expenditure - renewal

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

Capital funding

Funding to pay for capital expenditure.

Capital grants

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

Capital investment expenditure

See capital expenditure definition

Capitalisation threshold

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

Carrying amount

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

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 arm's 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, e.g. roads, drainage, footpaths and cycle ways. 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, e.g. road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

- **Planned maintenance**
Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what

was done to develop a maintenance history and improve maintenance and service delivery performance.

- **Reactive maintenance**
Unplanned repair work that is carried out in response to service requests and management/ supervisory directions.
- **Specific maintenance**
Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.
- **Unplanned maintenance**
Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

Maintenance 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 e.g. the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

Non-revenue generating investments

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

Operations

Regular activities to provide services such as public health, safety and amenity, e.g. 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, e.g. power, fuel, staff, plant equipment, on-costs and overheads but excludes maintenance and depreciation. Maintenance and depreciation is on the other hand included in operating expenses.

Operating expense

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

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 (e.g. 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, e.g. public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

Risk management

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

Section or segment

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

Service potential

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

Service potential remaining

A measure of the future economic benefits remaining in assets. It may be expressed in dollar values (Fair Value) or as a percentage of total anticipated future economic benefits. It is also a measure of the percentage of the asset's potential to provide services that are 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 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 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 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 **