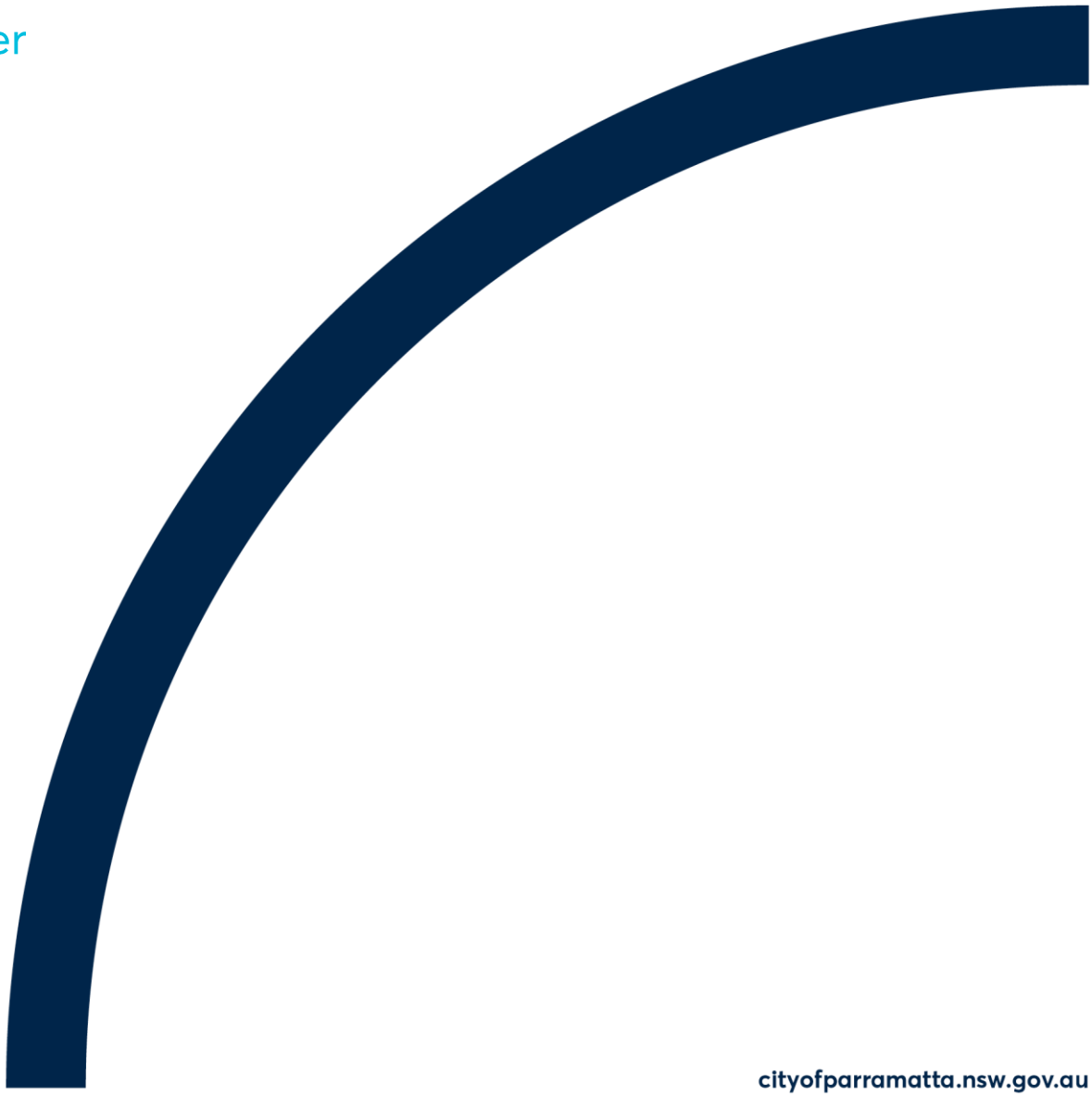
CITY OF PARRAMATTA

Asset Management Plan

Stormwater

2023-2033



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1 EXECUTIVE SUMMARY

1.1. The Purpose of the Plan

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

This Asset Management Plan details information about stormwater infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services over a 10-year planning period.

1.2. Asset Description

Council provides stormwater drainage systems within its Local Government Area to manage the quantity and quality of stormwater runoff to protect downstream environments, limit flooding of public and private property, and ensure stormwater generated from developed catchments causes minimal nuisance, danger and damage to people property and the environment.

City of Parramatta Council is responsible for the care and maintenance of a stormwater drainage portfolio with a replacement value of $697,540,000 (as at 30/06/2022).

1.3. Lifecycle Management Plan

1.3.1. What does it Cost?

The projected outlays necessary to provide the services covered in this Asset Management Plan (AM Plan), including operations, maintenance, renewal and upgrade of existing assets over the 10-year planning period, is $137m or $13.7m on average per year excluding major new and upgraded assets. Council has a relatively small new stormwater asset development pipeline in the next 3 years, which does not materially affect the stormwater portfolio, however small cumulative additions to the stormwater network from new developments will add to the total.

1.3.2. What we will do

We plan to provide the following stormwater drainage services:

- Undertake a proactive condition rating program of our underground stormwater drainage network in accordance City of Parramatta's stormwater pipe condition inspection program (draft)
- Continue proactive and reactive pipe and pit cleaning of the stormwater drainage network so it can operate at maximum capacity
- Renew pipes where condition inspections reveal any deficiency in the network.
- Inspect all council declared dams (1-3 times per week), non-declared flood detention systems, and levees at minimum specified internals (6 months)
- Explore all avenues for grants and subsidies to increase expenditure on the stormwater assets
- Review capital works programmes annually and prioritise works accordingly;
- Ensure new works are planned for and receive renewal and maintenance at required intervals to ensure projected useful lives of the asset are achieved;
- Improve the underlying information with an annual review of service level trends.
- Approximately $35.4m in renewal spending on existing stormwater assets within the 10-year planning period.

1.3.3. What we cannot do

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

- Replace and upgrade all pipe and pits within the network
- Retro-fit properties with rear-of-allotment drainage networks.

1.3.4. Plans for the future

Council plans to operate and maintain stormwater drainage assets to achieve the following strategic objectives.

- Ensure the network is maintained at a safe and functional standard as set out in this AM plan;
- Maximise the asset's useful life whilst minimising life cycle expenditure;
- Maintain the asset's functionality to ensure that it remains 'fit for purpose' and compliant with statutory requirements;
- Allow for future expansion of the network as development and demand increases over time

1.3.5. How Council measures performance

Quality - Stormwater drainage assets will be maintained to an acceptable physical condition. The acceptable condition for most stormwater assets is condition 3 on Council's 0-5 rating scale, and the current average is 1.8 by stormwater replacement value.

As asset management practices become more advanced, the acceptable condition has been refined to consider data based on stormwater catchment criticality and priority, function and risk hierarchy. Stormwater assets categorised as 'high risk' will be maintained to a higher standard due to their organisational and community importance and/or consequences of failure. Further information regarding the hierarchy and functional classification of the assets can be found in the main body of this asset management plan.

Function - Council's stormwater assets are essential in providing drainage to property in the area and ensure quantity and quality of stormwater is managed appropriately.

The key functional objectives that will be met are:

- To ensure that all stormwater drainage assets are maintained at a safe and functional standard;
- To investigate improvement requests and, if considered appropriate, make safe and repair in a timely manner as defined in Council's maintenance response target levels of service;

The main functional consequence of failures in any stormwater asset varies based on the risk, location and criticality of the asset.

Safety – Stormwater assets are inspected by CCTV through numerous inspection programs within council. Frequency of inspections and routine maintenance may vary depending on the functional classification or risk of the asset.

These frequencies are currently set at infrequent levels and not applied to individual assets. Inspection frequencies and intervention levels are set out in Council's maintenance levels of service. Defects are prioritised and repaired in accordance with Council's documented response times in the customer service charter and the maintenance levels of service.

Councils non-declared dams and levees are generally inspected on a 6 monthly basis. Declared Dams are inspected at varying rates such as monthly, quarterly and multiple times a week in addition to inspections following major storm events.

1.3.6. Managing the Risks

There are risks associated with providing the stormwater drainage service and not being able to complete all identified activities and projects. The major risks identified are:

- Blockages within the network
- Failures of high-risk pipelines

- Flow capacity of the underground pipe network.
- Critical asset failure and flooding

Council will manage these risks, within available funding, in the following ways:

- Proactive CCTV inspections of underground pipe network
- Proactive cleaning of inlet structures and pipes within the network
- Hydraulic modelling of problems areas of the network updated as required
- Proactive inspection regimes of all declared dams, non-declared flood detention systems, and levees

1.4. Asset Management Practices

Works have been carried out to identify the performance of the stormwater portfolio over the next 10 years using service requests, CCTV inspections and analysis of growth areas. It has been identified that in order to maintain the levels of service desired by the community, funding levels need to be maintained for the next 10 years. A decrease in funds to carry out a combination of renewal and new works will result in levels of service decreasing and certain council assets may fail and become unfit for purpose.

1.5. Monitoring and Improvement Program

The next steps resulting from this AM plan to improve asset management practices are:

- Continue to improve asset information and knowledge.
- Continue to develop the 10 year forward programme of stormwater maintenance and renewal activities necessary to achieve a satisfactory level of service
- Monitor the provision and capacity of stormwater infrastructure alongside the risks of flooding and growth due to development
- Conduct a pro-active CCTV inspection program for high risk assets in high priority and critical catchments

2. INTRODUCTION

2.1. Background

Parramatta is experiencing a changing demographic profile from a suburban community with an employment centre into a diverse, urban location with major employment, residential, recreation and education facilities.

The City of Parramatta Council (CoP) provides a range of services to its immediate community as well as well as the wider community. To deliver these services it operates and maintains an extensive network of stormwater drainage assets throughout the Local Government Area (LGA). Council has acquired these assets through a variety of means, such as purchase, construction or by contribution from developers and others.

The CoP Stormwater Asset Management Plan (AM Plan) documents the current management, financial and technical practices by Council for its existing stormwater portfolio, as well as provides information on strategies and programs that will affect future asset outcomes. The fundamental purpose of this Stormwater AM Plan is to improve Council's long-term strategic management of its stormwater drainage assets in order to cater for services into the future.

Council's stormwater portfolio currently encompasses:

- 543 km of underground pipes of various sizes and materials including a small number of open channels and culverts
- 23,292 pits of various sizes including headwalls and converter structures
- Numerous "Other Structures" within the stormwater water network including dams, levees, Gross pollutant traps, spillways and more.
- 1 Declared Dam Structure with a High A critical consequence Category

with a Gross Replacement Cost of $697,540,000 (as at 30/06/2022). Council's stormwater portfolio is classed broadly into stormwater conduits, stormwater structures, and stormwater other assets.

CoP engaged an independent contractor (Total Drain Clean) in 2019/20 to perform a condition assessment of a 5% sample of the stormwater portfolio. This condition data has been extrapolated to represent the overall health of the stormwater network assets.

Key issues for the Stormwater Network Assets include:

- Delivering on our customer's numerous requirements detailed in the Community Strategic Plan, Community Infrastructure Strategy and water quality plans;
- Coordinating a diverse stormwater network that is continually ageing and evolving from the delivery of new stormwater assets from both internal and external sources;
- Maintaining asset renewal metrics and ensuring capital works are optimised to maintain service levels; and
- Understanding the future capacity required from the increase of development and associated stormwater runoff due to the increase in impermeable surfaces within the Council area;
- Realignment of priorities including the balance between environmental considerations, budget constraints, stormwater quality, and capital improvements

This asset management plan communicates the actions required for the responsive management of assets (and services provided from assets), compliance with regulatory requirements, and funding needed to provide the required levels of service over a 10 year planning period.

2.2. Purpose of Asset Management Plans

Asset Management Plans are a means for documenting the management, financial, engineering and technical practices to ensure that the level of service required by the community from a class of infrastructure assets is provided at the lowest long term cost.

The identification of future needs, management options and cash flows provides the ability to even out peak funding demands. In this way, AM Plans assist the Council and Executive in making informed decisions in relation to the allocation of resources and to communicate this information to the public.

This AM Plan provides the framework to ensure that City of Parramatta Council's Drainage assets are operated, maintained, renewed and upgraded to ensure that Council's Building related levels of service are achieved in the most cost effective and sustainable way.

2.3. Scope of this Asset Management Plan

The scope of this asset management plan covers the following asset types:

- Drainage Pipe, Pit and Culverts – Pipes range in size and material type. Culverts in minor drainage networks generally similar in size to pipes in minor drainage networks. Pits comprise of grated inlet and junction access types.
- Trunk and Major Drainage – Large box culverts and concrete lined open drainage channels.
- Gross Pollutant Traps – These include litter traps (below ground), pit baskets, end of pipe nets, trash racks and floating litter booms.
- Water Sensitive Urban Design – These include swales, rain gardens, bio-filtration beds.
- Flood Mitigation Structure – These include both prescribed and non-prescribed detention basins, levees and weirs.
- Dams, flood detention systems and levees – i.e. Lake Parramatta Dam

The above assets may cross public road and reserves or private owned land.

These assets service Council's needs in addressing the management of water quality, local drainage, major drainage and flood mitigation actions to comply with local and State Government requirements.

Figure 2.1: Aggregated View of Council's Stormwater Assets

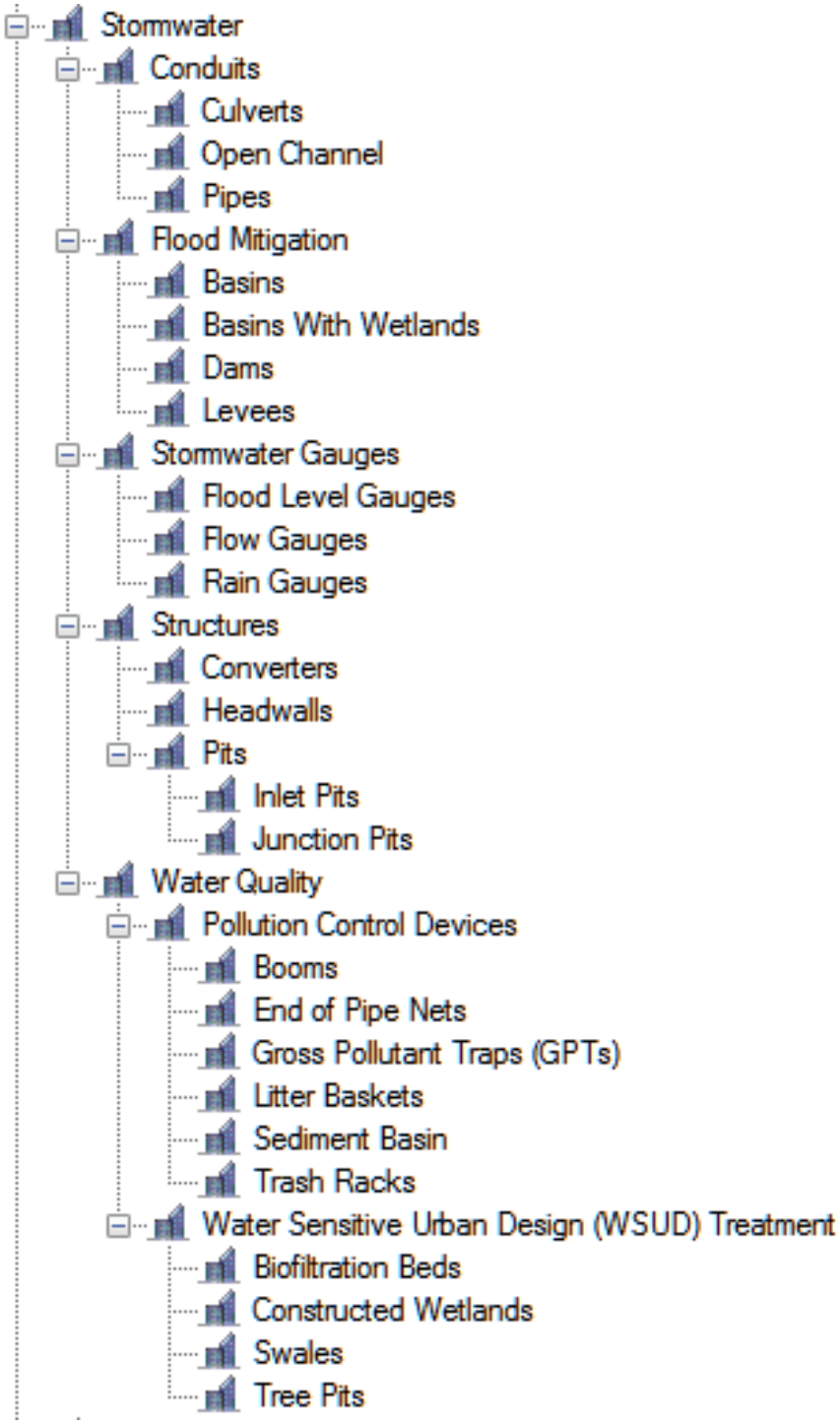
Items of Exclusion in Plan

The assets excluded from this plan are those:

- Owned and maintained by other authorities such Road and Maritime Service (RMS), Sydney Water etc. An example of this would be stormwater drainage pits and pipes located on State Government Roads and Sydney Water trunk drainage channels.
- Represented in other asset plans, for example large culvert road crossings (greater than 6m span along centreline) that may be classified as a bridge.

These drainage assets may also appear in Council's TechnologyOne asset management system and on Council's GIS system with asset ownership assigned to the appropriate authority. The aggregated assets in Council's formal asset management system are set out in the Figure 1 below.

Figure 2.2. Aggregated Assets


Stormwater
Conduits
Culverts
Open Channel
Pipes
Flood Mitigation
Basins
Basins With Wetlands
Dams
Levees
Stormwater Gauges
Flood Level Gauges
Flow Gauges
Rain Gauges
Structures
Converters
Headwalls
Pits
Inlet Pits
Junction Pits
Water Quality
Pollution Control Devices
Booms
End of Pipe Nets
Gross Pollutant Traps (GPTs)
Litter Baskets
Sediment Basin
Trash Racks
Water Sensitive Urban Design (WSUD) Treatment
Biofiltration Beds
Constructed Wetlands
Swales
Tree Pits

The plan provides a rational and controlled framework for asset lifecycle management, risk management and financial management to be conducted effectively and to the satisfaction of stakeholders. By providing a framework to detail and examine existing management practices for stormwater assets, City of Parramatta Council is better equipped to meet community service expectations, and is able to form the basis of an improvement program to progressively meet identified gaps in asset management.

This plan has been developed considering available information, input from Council Officers and in association with asset data collection, condition assessment, and maintenance and operational costs for stormwater assets across the Council area.

The AM Plan follows the format for AM Plans recommended in Section 4 of the International Infrastructure Management Manual[1].

The AM Plan is to be read with the City of Parramatta Asset Management Framework and Integrated Planning and Reporting Framework documents. This includes the Asset Management Policy, Asset Management Strategy, Delivery Program, Operational Plan, and Resourcing Strategy, which work together to translate the overarching vision of the Community Strategic Plan.

The infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to support a broad range of services to the community, along with Council's administrative and operational activities.

Table 2.3: Assets covered by this Plan

Asset Category	Dimension	Replacement Value	Accumulated Depreciation ($)	Fair Value ($)	Estimated Annual Depreciation ($)
Conduits	543km	$585,526,938	$172,100,153	$413,426,785	$4,862,403
Structures	23292 items	$100,891,378	$30,032,898	$70,858,480	$1,004,913
Other Assets	103 items	$11,121,684	$4,047,948	$7,073,735	$103,684
Total		$697,540,000	$206,180,999	$491,359,000	$5,971,000

2.3.1. How does the Stormwater Drainage System work?

The City of Parramatta is divided into 31 catchments as per Table 2.5

2.5: City of Parramatta Council Catchments

Catchment ID	Catchment Priority	Catchment Name	Pipe Length (m) (Approx)	No. of Structures (Approx)
1	Low	Model Farms Creek	5284	188
2	Low	Quary Branch Creek/Northmead Gully	16943	723
3	High	Toongabbie Creek	44136	1767
4	Low	Girraween Creek & Blacktown	1856	60
5	High	Pendle Hill Creek	14214	475
6	Medium	Bogalara Creek	13427	500

[1] IPWEA, 2015, Sec 4.2, Example of an Asset Management Plan Structure, pp 4|37 – 39.

7	Low	Coopers Creek	11951	430
8	Low	Finlaysons Creek	3401	136
9	High	Milsons Creek	3073	125
10	Low	Domain Creek	9765	375
11	Low	Darling Mills Creek	21286	919
12	Medium	Hunts Creek	39643	1778
13	Medium	Brickfield Creek	26414	1041
14	High	Upper Parramatta River	17844	835
15	High	Clay Cliff Creek	28814	1212
16	Medium	Vineyard Creek	27807	1154
17	Low	Ponds Creek	30930	1341
18	High	Devlins Creek	59627	2596
19	Medium	Terrys Creek	25589	1239
20	Medium	Subiaco Creek	22749	976
21	High	Parramatta River	31484	1227
22	Medium	A'Becketts Creek	30881	1306
23	High	Duck Creek	37684	1459
25	High	Duck River	30770	1365
28	Medium	Blue Gum Creek – New	13611	548
29	High	Haslams Creek – New	24793	1118
30	Low	Rifle Range Creek – New	6211	244
31	Low	Stevensons Creek – New	79	9

*The catchment priority rating of high, medium, low is based on the flood risk

**The catchment area of any point is defined by the limits from where surface runoff will make its way, either by natural or manmade paths, to this point. Consideration is given to likely changes to individual catchment areas due to the full development of the catchment.

2.3.2. Drainage Principles

The drainage network within the City of Parramatta is a combination of roof drainage, pipes, open channels, natural waterways and road reserves. The main objective of a drainage network is to safely collect and convey stormwater to receiving waters with minimal nuisance, property damage or personal injury.

Drainage systems are usually designed as two separate elements. The underground pipe network transports flows up to a nominated storm event. The pipe network is often referred to as the minor drainage system and has sufficient capacity to contain normal expected flows, below ground. These pipes prevent stormwater damage to properties and limit the frequency and quantity of storm water runoff above ground, which can cause nuisance to motorists, pedestrians and cyclists.

The major drainage system caters for flows in excess of the pipe network and usually consists of overland flow paths, road reserves and natural waterways, which contain the storm water unable to enter the piped system above ground. The frequency at which the overland drainage system operates will be determined by the design criteria of the pipe network. Major drainage systems are usually designed to cater for a maximum 1% AEP storm event.

2.3.3. Drainage Asset Types

The following types of drainage assets comprise of the City of Parramatta Council drainage system.

Underground Drainage

Pipes which are located underground within the roadway or nature strip generally range in size from 225mm in diameter to greater than 1,200mm in diameter. On the basis of the capacity of the stormwater they have been designed to cater for underground.

Pits provide points of entry for stormwater from the above ground drainage system to the underground drainage system. Pits generally fall into two main categories being entry pits and junction pits. The entry pits are typically located as part of the kerb and channel, spoon drain or roadway (i.e. in the centre of the road) and are strategically constructed at the lowest point of the roadway to allow for water to take its natural course so that it may freely enter the underground drainage system on its own accord by gravity. Junction pits are constructed to provide for changes in the direction of the pipe, provide for connection of the pipe and/or to allow for a point of entry to inspect and clean the underground drainage system.

Above Ground Drainage

Open channels (such as kerb and channel, spoon drains and swale drains) acts as a drainage channel, directing stormwater road surface flows into the underground stormwater drainage network via drainage pits.

Retarding basins are constructed to provide temporary stormwater storage and thus ease stormwater runoff peaks that are generated by significant storm events for flood protection of downstream urban areas. Retarding basins can also provide additional purposes such as water quality treatment and landscape amenity.

Water Quality Devices or Water Sensitive Urban Drainage (WSUD)

Gross Pollutant Traps (GPT) capture litter and other rubbish left in the streets that can be washed down stormwater drains prior to entering the receiving waterways

Wetlands are an area that is regularly wet or flooded and has a water table that stands at or above the land surface for at least part of the year.

Sedimentation ponds are constructed to provide for treating the stormwater prior to its disposal into receiving waterways.

Flood mitigation

Prescribed dams, Flood Detention and Levees generally to store and control water, prevent the overflow of a river or water body, and protect against flooding.

2.4. Key Stakeholders

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

2.6: Key Stakeholders in the AM Plan

Key Stakeholder	Role in Asset Management Plan
Councillors	• Represent needs of community/shareholders, • Allocate resources to meet planning objectives in providing services while managing risks, • Ensure Council services are sustainable. • Provide stewardship by ensuring the protection of assets for current and future generations.

Key Stakeholder	Role in Asset Management Plan
Council Staff	• Report on the status and effectiveness of Asset Management within Council. • 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 sound business principles are reflected in the Asset Management strategies and plans that are developed. • Management and determination of fair value valuations at end of financial year, provision of budgets from the long-term financial plan, forecasting and consideration of projections relating to expenditure gaps.
Dam Safety NSW	• As per the Dams Safety Act 2015 and the Dams Safety Regulation 2019 which commenced on 1 November 2019 • The Regulation sets out the operational details for the Act, and safety standards that declared dam owners (Council) must comply with.
Ratepayers/ Community Present & Future Citizens	• Will ultimately provide input into the services required and the cost the community is prepared to pay

2.5. Parramatta Local Government Area

The City of Parramatta is located at the head of the Parramatta River 24km west of Sydney Harbour and covers an area of 61 square kilometres. Parramatta takes its name from the Burramatta Clan, the traditional owners of this area. Parramatta was the first self-sustaining European settlement and the local community of today reflects the diversity of the broader Australian people. The City of Parramatta is the gateway to Western Sydney, an area that is home to 1 in 10 Australians. It is the fastest growing region of NSW with the population projected to grow by another 600,000 by 2036. The City of Parramatta population is estimated to be 260,296 as of the 30th June 2021, and is forecast to grow to 487,037 by 2041.

Parramatta is home to Sydney's second CBD which contributes to the economic, social, cultural, health and educational sectors of the local area, as well as to Western and the Greater Sydney areas. The Parramatta LGA is a provider of medical, legal, educational and professional services, being the largest concentration of financial and business services institutions outside the Sydney CBD.

These functions will only strengthen over the next twenty years as NSW government and Council plans for the city's future development are realised. Through a combination of urban renewal, rezoning and reuse of government land, up-zoning within the CBD and expansion of city boundaries, the residential and worker population will be significantly increased.

These changes will also be accompanied by changes to the demographic and cultural composition of the city's populations. The City of Parramatta is now planning to ensure there will be sufficient community facilities located within close proximity to Parramatta's CBD to support the wellbeing of these new populations.

Council currently is a significant provider of community facilities within the Parramatta LGA, as well as providing regional services to Western Sydney residents. It is anticipated that the LGA will continue to provide significant community services (both government and non-government) to local and regional residents, reflecting its significance as a key regional centre in Greater Western Sydney.

Designated as the premier Regional City in the Government's Metropolitan Plan for Sydney 2036, Parramatta is uniquely positioned to support the need to establish 280,000 additional jobs in Western Sydney by 2036. Parramatta is the cultural and commercial capital of one of Australia's most significant economic regions. Our City is a provider of medical, legal, educational and professional services, the largest concentration of financial and business services institutions outside the Sydney CBD and home to over 60 government departments. The Parramatta Square development, one of the biggest urban redevelopments in Australia, will provide additional central business facilities, office space for up to 13,000 workers, a new public domain and more retail and dining options

2.6. Goals and Objectives of Asset Management

City of Parramatta 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.

Council's goal in managing infrastructure assets is to meet the defined level of service 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
- Linking to a long-term financial plan which identifies required, affordable expenditure and how it will be financed.[2]

Key elements of the planning framework are

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

Other references to the benefits, fundamentals principles and objectives of asset management are:

- International Infrastructure Management Manual 2015[3]
- ISO 55000, ISO 55001 and ISO 55002[4]

2.7. What will this Asset Management Plan achieve?

The focus of this Stormwater AM Plan is manage Council's assets and resources pro-actively. It will enable Council to:

- Have precise knowledge of what Council owns or has responsibility or legal liability for;
- Record and extract information on all assets in a register down to an identifiable level;
- Report on our annual depreciation and asset consumption at an asset component level;

[2] Based on IPWEA 2015 IIMM, Sec 1.3, p 1| 8
[3] Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2| 13
[4] ISO 55000 Overview, principles and terminology

- Measure and monitor the condition, performance, utilisation and costs of assets down to the managed component level and aggregate this data up to give outputs of cost and performance at the portfolio level;
- Understand and record the current levels of service in terms of responsiveness and performance;
- Understand the likely future levels of service required based on population growth, demographic changes and community expectations;
- Understand the long term (10 years) funding needs of Council's stormwater drainage asset portfolio to meet strategic expectations in both capital and maintenance expenditure;
- Measure, monitor and report on the condition, performance and functionality of Council assets against prescribed service levels and regulatory requirements;
- Develop and maintain uniform processes across the whole organisation for the evaluation of any investment in:
    - Renewal, upgrades and expansions of existing assets.
    - Creation of new assets.
    - Maintenance of existing assets.
    - Operational expenditure to deliver services

2.8. Plan Framework

In the application of this AM Plan, Council has developed a whole of life approach to the management of its stormwater drainage infrastructure. Council has focused on providing an interdisciplinary view of asset management with the development of an Asset Management Policy and framework for the organisation.

The specific elements considered in this AM Plan are to:

- Demonstrate accountability and responsible stewardship of Drainage assets;
- Identify least-cost options to provide agreed levels of service;
- Assess existing Drainage asset stocks and their capacity, condition and functional adequacy;
- Document the Levels of Service that will be provided to the community;
- Identify future demand for drainage assets;
- Manage the risks of drainage asset failures and risks of capacity failures;
- Undertake Life Cycle Management;
- Provide the basis for long-term financial planning; and
- Monitor the plan to ascertain if it is meeting Council's objectives.

2.9. Parramatta Strategic Objectives

Parramatta will be the driving force and heart of Australia's most significant economic region; a vibrant home for diverse communities and a centre of excellence in research, education and enterprise.

To achieve this, the Community Strategic Plan outlines six strategic objectives and details how these objectives can be achieved:

1. Parramatta's economic growth will help build the City as a centre of high, value-adding employment and the driving force behind the generation of new wealth for Western Sydney.
2. Parramatta will be an eco-efficient city that effectively manages and uses the City's growth to improve and protect the environment.
3. Parramatta will be a city with fast, reliable transport and digital networks that connect people to each other, to the information and services they need and to where they need to go.
4. Parramatta will be a world-class city at the centre of Sydney that attracts a diversity of people: a city and its neighbourhoods where people can learn, succeed and find what they need; a city where people live well, get together with others, feel like they belong and can reach their potential.
5. Parramatta will be a place where people want to be: a place that provides opportunities to relate to one another, the City and the local area; a place that celebrates its cultural and sporting heritage; and a place that uses its energy and cultural richness to improve quality of life and drive positive growth and joy.

6. Parramatta will be widely known as a great city, a centre of excellence and an effective capital of Western Sydney, with inspirational leadership and good governance.

The Stormwater AM Plan will take into consideration, align and deliver where possible those items that have been identified within the six strategic objectives of Parramatta 2018-2038. The strategic objectives will be included within the long term planning when considering stormwater assets both current and into the future, as well as during any renewal programs.

Table 2.7: Strategic objective in the Community Strategic Plan

Strategic objective in the Community Strategic Plan	Strategies to achieve objectives	Asset Management Plan
Fair – we can all benefit from the opportunities the City offers	Invest in services and facilities for our growing population Support people to live active and healthy lives Deliver effective, responsible and ethical decision-making, reflective of community needs and aspirations	Provide fit-for-purpose and cost-effective infrastructure that meets community needs Enable provision of infrastructure to enable healthy lifestyles – for example ensuring infrastructure is safe, rainfall managed, and minimising water pollution to remove any limitations from our residents. Engage the community on levels of service and test satisfaction
Accessible – we can all get to where we want to go	Design our City so that it is usable by people of all ages and abilities Make our City more enjoyable and safe for walking and accessing facilities	Council's infrastructure provides places to walk, ride and drive, and meeting points for the community. Using drainage to minimise any major, or localised flooding to make areas more accessible to walking and accessibility requirements
Green – we care for and enjoy our environment	Protect and enhance our natural environment Prepare for and lessen the impacts of extreme weather events	Promote ecologically sustainable development, meeting the needs of the present without compromising the ability of future generations to meet their own needs Support conservation and enhancement of the City's environment, and promote energy, water and waste efficiencies Help to manage the impact of planned and unplanned events on existing assets

Thriving – we benefit from having a thriving CBD and local centres	Plan and deliver a vibrant, attractive and safe CBD and local centres	Facilitate and support the growth of our City, businesses and community through the provision of infrastructure
Welcoming – we celebrate culture and diversity – past, present, and future	Recognise that Parramatta has always been a gathering place, and our diversity is our strength	Provide and advocate for facilities that are inclusive, enabling people and communities to connect
Innovative – we collaborate and champion new ideas to create a better future	Embrace technology, creativity and innovation to solve complex problems and improve our City Manage the City's assets and financial resources in a responsible manner and provide the best possible services for the community	Improve our knowledge management to ensure appropriate data is accessible and supports asset management activities Keep Council accountable, responsible, and sustainable when planning our future infrastructure needs Ensure asset management drives Council strategy for asset creation, use, management, maintenance, renewal, rationalisation and disposal of assets through strong integration with Council policies and strategies, levels of service, and Council's Long Term Financial Plan Provide risk management and decision-making frameworks

The Stormwater AM Plan will take into consideration, align and deliver where possible those items that have been identified within the six strategic objectives of the Community Strategic Plan. The strategic objectives will be included within the long term planning when considering stormwater assets both current and into the future, as well as during any renewal programs.

In addition to the Community Strategic Plan, other existing Council strategies and plans such as the Revitalising Parramatta: Civic Improvement Plan, Amendment No.4, Social Infrastructure Priority Needs: Parramatta CBD, Parramatta CBD Planning Strategy, Community Facilities: Policy Framework and Future Directions and the Early Education and Care Services Needs Analysis for the Parramatta LGA provide additional information for consideration on community needs and interests as well as identify issues relating to community needs and facility gaps.

2.9.1. Economic Strategies

The economic strategies for 2018-2038 focus on the benefits of making the City work and spreading these benefits to surrounding centres and neighbourhoods and Western Sydney as a whole. The key strategies are:

1. Identity: establish a competitive identity that differentiates Parramatta from other locations and increase investment
2. Business: develop the capacity of local firms to grow, specialise and employ more local people, as described in Parramatta 10,000
3. Labour: educate, retain and attract quality people with skills aligned to meet the needs of local employers
4. Property: develop land and property assets to promote and accommodate jobs growth and

increase land values, including through Parramatta Square and Council's new Operations Centre and Central Library

5. Urban vitality: plan for vibrant streets and precincts in Parramatta CBD and local centres that will attract people and business, including the redevelopment of Auto Alley, Woodville Road, Parramatta Road, Rydalmere and Westmead – all priorities for the four years.

2.9.2. Environmental Strategies

Parramatta 2018-2038 builds on Parramatta's focus on natural areas and includes strategies for the natural and the built environment, and to manage environmental risks. The key strategies are:

1. Natural environment: improve, protect and value our natural heritage and systems, including the extensive network of parks and bushland reserves; continue to protect biodiversity while improving connections between these areas and people; and focus on:
   - waterways rehabilitation
   - biodiversity and bushland management
   - local air quality
   - land and soil management

2. Built environment: invest in and create a low-impact, eco-efficient urban environment that supports Parramatta as an area of significant jobs and residential growth; develop creative responses to improve the efficiency of the City, diversify the source of our resources and help manage increasing energy, water and waste costs; and focus on:
   - efficiency and adaptability of precincts and buildings
   - growth in green jobs and services

3. Risks and resilience: minimise and manage environmental risks, increase resilience, improve recovery times and focus on:
   - preparation for extreme weather events and/or other extreme events that disrupt food, water, energy or other resource supply
   - Identification of risk and putting plans in place to better deal with events when they happen.

2.9.3. Connectivity Strategies

The connectivity strategies for 2018-2038 focus on both local and regional physical connections, and the digital connections Council will need for the future. The key strategies are:

- Local connections within the City and neighbourhoods: promote and support walking, cycling and public transport; provide a legible city centre and local centres with improved access and amenity for pedestrians and cyclists; and manage traffic to minimise its adverse impacts on people, car commuters and through traffic.
- Regional connections for jobs, entertainment and education: continue to lobby for improved public transport, including light rail; develop Local and Regional Ring Roads to better manage traffic flow to more appropriate routes; relocate commuter car parking to the CBD periphery; and develop Park & Ride facilities.

2.9.4. People and Neighbourhood Strategies

The people strategies for 2018-2038 focus on health and recreation, the housing that can be provided, learning and development, and building cohesive, safe neighbourhoods. The key strategies are:

- Health and recreation: help to provide healthy choices and access to services that build on our excellent regional health facilities and help to tackle issues such as obesity; and focus on healthy lifestyles (active living, healthy food and mental health) and health promotion (food safety and environmental hazards]
- Housing: provide a range of housing for people at any stage of life and whatever their aspiration or need; minimise homelessness; and focus on social housing needs, affordable housing and the right mix of dwellings

- Learning and individual development: work with the education sector and Council's libraries to improve access to quality learning opportunities
- Neighbourhood and belonging: celebrate the unique character of local centres, neighbourhoods and City precincts, with a focus on:
    - community safety
    - active citizenship
    - social networks
    - quality neighbourhoods
    - connecting local arts and culture.

2.9.5. Culture and Sport Strategies

- Distinct places: formulate great experiences and recognise, celebrate and promote our dynamic history and heritage and unique places
- Creative industries: use as an economic driver to encourage local creative enterprises, attract events, encourage active engagement, celebrate diverse cultural perspectives and boost the local day and night economy
- Cultural expression and innovation: develop regional facilities like the Riverside Theatres and an art gallery, activate the Parramatta River, and work with partners like the Western Sydney Wanderers, Parramatta Eels, Australian Turf Club (ATC) and Sydney Festival.
- Energy and cultural richness: improve quality of life and drive positive growth through events and by activating areas within the built environment such as laneways, parks, malls and public spaces.

2.9.6. Leadership and Governance Strategies

- Leadership: represent the best interests of the City and its people through a regional City strategy to benefit the City, entire Local Government Area and the region by working systematically with partners to influence positive change
- Capability: build and develop a Council that can deliver strategic priorities; provide high quality service; plan well for the future; be a well-governed, community-focused organisation; and focus on:
    - building a sustainable future for Council by managing finances and assets flexibly within a strong planning and risk management framework
    - recruiting and training great people in a safe workplace
    - placing customers at the centre
    - making business better by adopting innovative practices and being adaptable to change
- Governance: provide a strong framework for transparent and accountable decision-making and compliance with relevant laws, policy and protocols; and develop structures for effective business planning and for meeting statutory obligations and accountability measures.

2.10. Corporate Plan – Major Priorities

The following Major Priorities represent a number of key focus areas for the Council in this term that will significantly advance progress towards our six Strategic Objectives.
In moving towards Councils Community Strategic Plan 2018-2038 Council is undertaking a number of initiatives to grow development, jobs and activity across Parramatta, both in the CBD and in a number of nearby precincts. While Council are doing that, it is important to ensure that Council are delivering important improvements and services for our whole community and that Council maintain the capacity to run our business in a way that is financially sustainable. Below is a breakdown of the Major Priorities in the Corporate Plans and the current projects underway.

2.10.1.Parramatta Square

- Designs developed for all elements of Parramatta Square
- Development Applications approved for all elements of Parramatta Square

- A program for the delivery of all Council facilities, including library
- Public Domain elements delivered and Phive to be opened in 2022

2.10.2. City Centre

- A revitalised Centenary Square and Parramatta Square
- A River City Strategy adopted and staged scheme underway to improve the river foreshore including terracing, moving the sewer pipe, and Improving Water Quality in Parramatta River
- The next group of Design Parramatta priority projects delivered, improving Parramatta's streets, and public spaces
- A review of the CBD planning framework completed, stimulating quality development that delivers jobs, housing, entertainment recreation facilities and shopping and dining experiences
- Investigation of innovative methods to deliver infrastructure including the Voluntary Planning Agreement process and value capture
- A review of the Parramatta Car Parking Strategy
- Preparation of a retail strategy to promote and support diversity in retail and dining experiences

2.10.3. Precinct Renewal

- Establishing effective collaborative relationships with the state government, major land owners, agencies, institutions and developers to make the process happen
- Develop quality precinct master plan, review planning instruments and identify infrastructure needs
- Advocate for investment (public and private) to implement actions
- Investigate innovative methods to deliver infrastructure including the Voluntary Planning Agreement process and value capture
- Key redevelopment sites and infrastructure commenced this Council term

2.10.4. Transport – Parramatta light rail and Sydney Metro West

- Commitment from State Government and private partners to build Western Sydney Light Rail
- Commitment from State Government for staged implementation of regional and Parramatta ring road and WestConnex on/off ramps
- Improved walkable network throughout the city (PAMP Program)
- Advocate for a fast rail connection from Sydney CBD to Parramatta

2.10.5. Digital City

- A Smart City Strategy that provides a framework for investment in technology and positions Parramatta as a "Smart City"
- Improved connectivity in the CBD and neighbourhoods
- Increased clusters of knowledge and high skill jobs

2.10.6. City Activation

- People engaged in the life of the City
- A City perceived as a destination of choice
- Activation that supports commerce and enterprise and stimulates economic activity
- Enhanced perceptions of Parramatta as Australia's Next Great City

2.10.7. Sports & Recreation

- Increased participation in sports and activities that improve health and wellbeing
- Well planned and maintained open spaces, sport and recreation assets
- Integrated approaches to land use and transport planning to improve access to open spaces and recreational opportunities

2.10.8. Destination for Sport & Culture

- Increased recognition of Parramatta's position as a sport and entertainment destination
- Increased visitors to Parramatta's sport and cultural facilities
- Increased opportunities for local residents and businesses to benefit from significant sporting and entertainment events being held in Parramatta
- An agreed precinct Masterplan and advocacy program for development of sport and recreation facilities in North Parramatta

2.10.9. External Communication and Consultation

- Improved stakeholder engagement measured by survey
- Recognition of Parramatta as Australia's Next Great City

2.10.10. Providing Great Services to Our Community

- New Operations Centre with greater service delivery capacity
- Sustained implementation of service improvements and operational capacity improvements to deliver better, more efficient public services
- Smarter ways to do business with our customers using technology
- Continuous improvements to the customer experience

2.10.11. Financial Sustainability

- Net operating position is in surplus
- Prudent financial management of Council resources, debt and insurance, alongside strong record of delivery of our Major Priorities
- Business practices that ensure value for money and unlock efficiencies
- Returns on Council investments exceed benchmark by 10 per cent
- Equitable and efficient rating system.

2.10.12. Ensuring Council is "Fit for the future"

- A considered response to the Local Government Reform proposals that reflects a detailed analysis of Council's position and reflects the views of our community.

2.11. Linkage to Corporate Strategies

The Asset Management Strategy provides guidance to Council's Financial Strategy and to the Community Strategic Plan. The Stormwater Asset Management Plan in turn provides input to the Long Term Financial Plan and the Annual Budget. From this the Capital Works Program for infrastructure maintenance and renewals is developed.

Figure 2.8 outlines the linkages between Council's Community Strategic Plan and the process for the development of AM Plans. The Asset Management Strategy provides guidance to Council's Long Term Financial Plan and to the Community Strategic Plan. Council's role is to locally govern for all residents, visitors and ratepayers, and provide a range of programs and services that meet the needs of our community. This role is encapsulated through the Council's Community Strategic Plan.

The Stormwater Drainage Asset Management Plan in turn provides input to the Financial Plan and the Annual Budget. From this the Capital Works Program for infrastructure maintenance and renewals is developed.

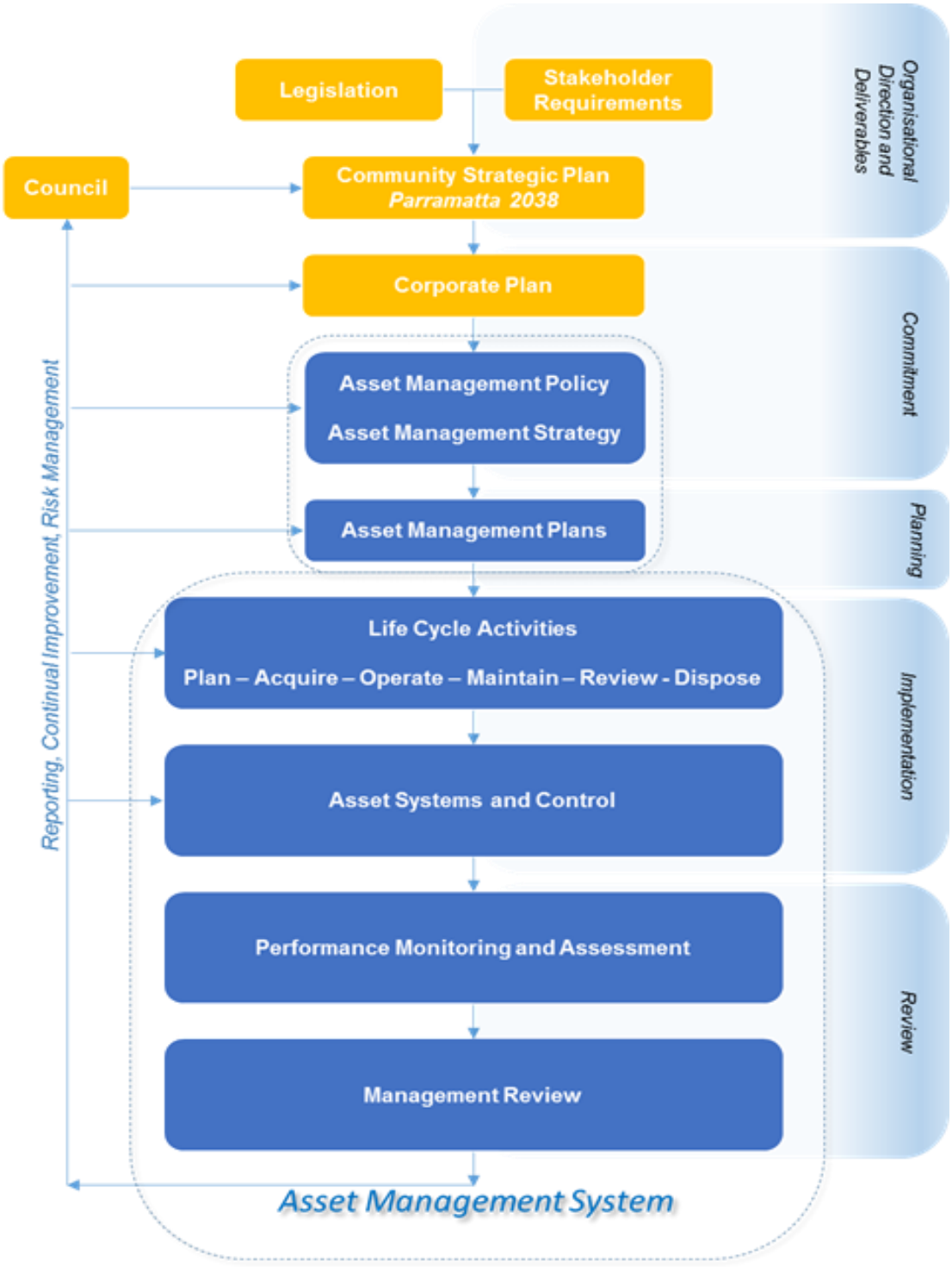


Figure 2.8 Linkages between AM Plan and Key Strategic Documents and Activities

2.12. Purpose of Asset Management Plans

AM Plans are a means for documenting management, financial, engineering and technical practices to ensure that the level of service required by the community from a class of infrastructure assets is provided at the lowest long term cost.

The identification of future needs, management options and cash flows provides the ability to even out peak funding demands. In this way, AM Plans assist the Council and Executive in making informed decisions in relation to the allocation of resources and to communicate this information to the public.

This AM Plan provides the framework to ensure that Parramatta City Council's Stormwater assets are operated, maintained, renewed and upgraded to ensure that Council's Stormwater related levels of service are achieved in the most cost effective and sustainable way.

2.13. Core and Advanced Asset Management

This AM plan is prepared as a 'core' asset management plan over a 10 year planning period in accordance with the International Infrastructure Management Manual[5]. It is prepared to meet minimum legislative and user 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.

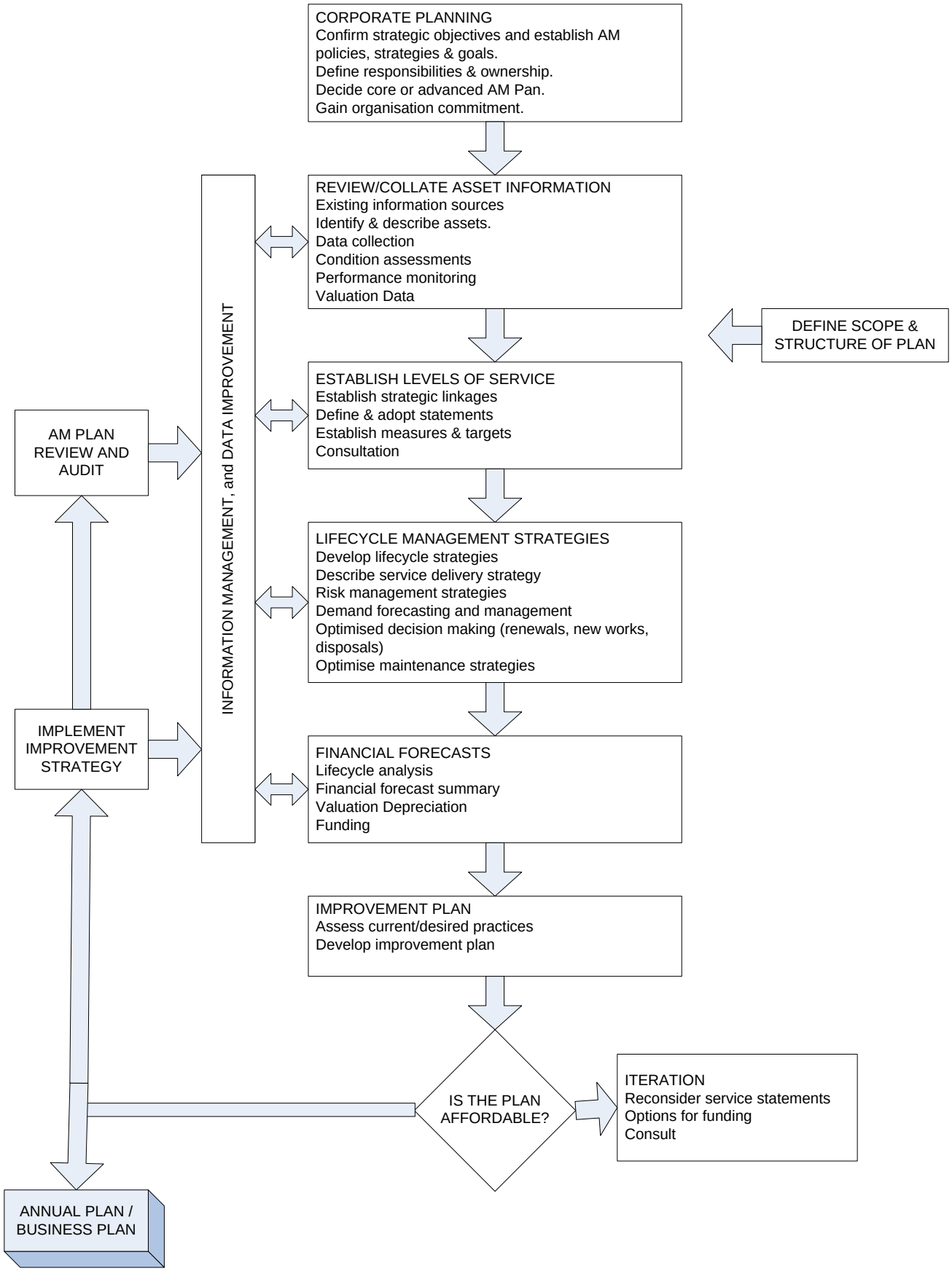
It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is a 'top down' approach where analysis is applied at the 'system' or 'network' level and should be regarded primarily as a snapshot of current practices and strategies. In contrast, advanced asset management is a 'bottom-up' approach, which seeks to optimise activities and programs to meet agreed service standards through development of management tactics based on collection and analysis of key information on asset condition, performance, lifecycle costs, risk costs and treatment options.

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

[5] IPWEA, 2015, IIMM.

Fig 2.10: Road Map for preparing an Asset Management Plan

Source: IPWEA, 2006, IIMM, Fig 1.5.1, p 1.11



3. LEVELS OF SERVICE

The Levels of Service are identified under two key areas:

Strategic or Community Levels of Service – These relate to the protection of residents from the impact of flooding by reducing flood risk and losses after a flood event, identify and address high hydraulic flood areas, development of flood mitigation strategies both structural and non-structural to improve flood risk.

Operational or Technical Levels of Service – These relate to the assessment of the condition and performance of the drainage network on a day-to-day basis to ensure compliance with community expectations.

3.1. Asset Hierarchy

The methodology used to determine the hierarchy of all drainage assets are based on the traditional drainage infrastructure asset component identifiers and their size and nature / importance within the broader network and based on the consequence of failure rating in relation to other private or public owned assets. Drainage classifications describe the various areas drainage may lie under or within.

Table 3.1: Drainage classifications

Council's Classification	NAASRA Road Classification	Description
Residential & Minor Roads	Class 8 & 9	Local Roads
Commercial Roads	Class 7, 8, 9	Commercial Roads
Industrial Roads	Class 5	Industrial Roads
Private Land	-	Over Private Land
Contaminated Land	-	Old industrial sites and land fill sites.
Council Reserves	-	Owned & Care and Control
Regional & Collector and Sydney Water Channels (excluded)	Class 6 & 7	Regional, collector and Sydney Water

In the past Council's approach to asset management has been 'reactive' in responding to maintenance and replacement of its stormwater drainage asset infrastructure as and when identified and required. This is slowly changing towards a more proactive approach.

The methodology used to determine the hierarchy of all drainage assets are based on the following two main principles.

- The traditional drainage infrastructure asset component identifiers and their size and nature / importance within the broader network.
- Based on the consequence of failure rating in relation to other private or public owned assets.

Council's classifications are provided in Tables 3.2 and 3.3 below. Determination of the Target Condition is determined in consideration of the two Tables.

Table 3.2. - Drainage asset hierarchy based on size and nature of stormwater drainage system.

Council's Classification	IPWEA-NAMS.AU Practice Note 5 Identification	Description	Intervention Condition Score	Typical Types of Intervention
Minor Drainage	Gully pits, field inlets, maintenance	Pipe Size diameters 375mm to 600mm	4	Pipe patching, pipe lining, Pipe or

Council's Classification	IPWEA-NAMS.AU Practice Note 5 Identification	Description	Intervention Condition Score	Typical Types of Intervention
	holes, collector pipes.	or box culvert equivalent. Swales, small open drains		culvert replacement. Swale clearing and / or reconstruction
Major Drainage	Main Drains	Pipe Size diameters 600mm / box culvert equivalent and larger. Larger open drains and Swales.	3	Pipe patching, pipe lining, Pipe or culvert replacement. Swale clearing and / or reconstruction
Trunk Drainage	Main Drains	Concrete lined channels and natural creeks and waterways	3	Patching of Concrete panels, treatment of concrete joints
Pollution Control Devices	Gross Pollutant Traps and Screens	Discharge to all Parramatta River & tributaries	3	Regular clearing, repairs and replacement of screens and racks

Table 3.3 - Drainage asset hierarchy based on road classification and land use planning considerations.

Council's Classification	NAASRA Road Classification	Description	Intervention Condition Score
Residential & Minor Roads	Class 8 & 9	Local Roads	4
Commercial Roads	Class 7, 8, 9	Commercial Roads	4
Industrial Roads	Class 5	Industrial Roads	4
Private Land		Over Private Land	3
Contaminated Land		Old industrial sites and land fill sites.	3
Council Reserves		Owned & Care and Control	4
Regional & Collector and Sydney Water Channels (excluded)	Class 6 & 7	Regional, collector and SW	NA

Tables 3.4 and 3.5 provide the Council agreed intervention condition score for each category (Note this does not align with Council's exist Asset Management Policy – Which is to be review to reflect the interventions of this AM Plan in 2022/23). The score represents the condition when intervention action is required to repair or replace the asset.

The type of intervention will be dependent on the specific fault or response necessary to address the issue and improve the assets function and asset life. Table 3.4 also includes the typical types of intervention that can occur. In addition to Table 3.5 above, Council engineers will perform a detailed risk management

assessment in accordance with Section 7: Risk Management of this AM Plan.

The Condition Grades indicated in Tables 3.4 & 3.5 are in accordance with the condition grades of major components of the stormwater drainage system in Appendix 2 of IPWEA Practice Note 5: Condition Assessment and Asset Performance Guidelines for Stormwater Drainage.

A summary of these are provided in following Table 5. Photographic images showing typical condition grade examples are available in Council's Condition Assessment Manuals (In development).

Table 3.4: Summary of Condition Grades as per IPWEA Practice Note 5 and CoP Condition Grade Manuals.

Condition Grade	Description	Structural Description	Serviceability Description
Grade 1	Very Good	Sound physical condition. Insignificant determination. Asset likely to perform adequately without major work for 25 years or more.	No or insignificant loss of hydraulic capacity.
Grade 2	Good	Acceptable physical condition; minor deterioration / minor defects evident.	Minor loss of hydraulic performance. Negligible short-term failure risk but potential for deterioration in long-term (20 years plus). Only minor work required (if any).
Grade 3	Fair	Moderate to significant deterioration evident; Minor components or isolated sections of the asset need replacement or repair now but not affecting short term structural integrity.	Moderate loss of hydraulic performance but asset still functions safely at adequate level of service. Failure unlikely within next 10 years but further deterioration likely and major replacement likely within next 10 to 20 years. Work required but asset is still serviceable.
Grade 4	Poor	Serious deterioration and significant defects evident affecting structural integrity.	Significant loss of hydraulic performance. Substantial work required in short-term to keep asset serviceable. Failure likely in short to medium term. Likely need to replace most or all of asset within 10 years. No immediate risk to health or safety but works required within 10 years to ensure asset remains safe.

Condition Grade	Description	Structural Description	Serviceability Description
Grade 5	Very Poor (Bad)	Failed or failure imminent. Immediate need to replace most or all of asset.	Health and safety hazards exist which present a possible risk to public safety, or asset cannot be serviced / operated without risk to personnel. Major work or replacement required urgently.

Pipe condition broken down by pipe diameter is presented in table 3.5. The results in the table show that the majority of pipes are in condition 1, 2 and 3. 4% of pipe lengths are in condition 4 and 2% in condition 5.

Note – Clarification of condition 5 – It is important to note that a condition 5 asset has failed, however due to the sampling CCTV inspection program and the extrapolation of data, It is likely a % in each condition state may be larger than the real asset base. Any collapse pipes identified was repaired reactively but not updated in this table below

Table 3.6: Pipe Diameter, length and Condition as a Percentage

		Condition % total pipe length				
Pipe Diameter (mm)	Pipe Length (m)	1	2	3	4	5
100	693	0%	34%	66%	0%	0%
150	2,604	0%	26%	74%	0%	0%
225	6,731	6%	28%	66%	0%	0%
300	46,338	16%	1%	68%	9%	7%
375	211,810	6%	19%	69%	5%	1%
450	87,955	17%	19%	58%	3%	3%
525	27,283	22%	52%	18%	7%	1%
600	40,534	14%	31%	39%	10%	7%
675	13,661	13%	55%	31%	0%	1%
750	20,200	48%	31%	19%	2%	0%
825	4,536	30%	32%	35%	0%	3%
900	20,009	18%	62%	18%	0%	1%
1000	1,440	0%	0%	100%	0%	0%
1050	15,387	33%	57%	9%	1%	0%
1200	16,140	36%	51%	13%	0%	0%
1350	6,032	15%	29%	52%	3%	0%
1500	7,662	24%	71%	5%	0%	0%
1650	943	8%	89%	3%	0%	0%
1800	3,200	15%	59%	25%	0%	0%
1950	1,189	34%	66%	0%	0%	0%
2100	3,596	10%	78%	12%	0%	0%
2400	1613	0%	79%	21%	0%	0%
2700	872	0%	22%	78%	0%	0%
3000	296	0%	45%	55%	0%	0%

3300	34	0%	6%	94%	0%	0%
3600	961	13%	10%	77%	0%	0%
3900	54	0%	100%	0%	0%	0%
4000	697	0%	0%	100%	0%	0%
4500	188	0%	43%	57%	0%	0%
5000	128	0%	0%	100%	0%	0%
5100	43	0%	100%	0%	0%	0%
5400	8	0%	100%	0%	0%	0%
6000	560	0%	0%	100%	0%	0%
7000	2	0%	0%	100%	0%	0%
9000	42	0%	0%	100%	0%	0%
15000	14	0%	0%	100%	0%	0%
Total (%)		**14%**	**27%**	**52%**	**4%**	**2%**
Total (m)	**543,455m**	77,773m	147,711m	283,066m	23,885m	11,020m

3.1.1. Catchment criticality and priority

Catchment criticality and priority is used to guide inspection, maintenance and capital project decisions. Council's CCTV inspection program has been prioritised based on an assessment as to whether the sub-catchment area is considered 'critical' or 'non critical' and further assessed based on its priority. In turn, most maintenance and capital works will be prioritised through this program of inspection due to the visual limitations of most stormwater assets.

Critical Catchment Areas are areas containing any of the following elements:

- Local Commercial Areas. These include Parramatta CBD, Epping CBD and other local business areas.
- Future Growth Areas – These have been previously identified by Council's Strategic Planners for the Parramatta River Flood Study and include:
    - Parramatta CBD
    - North Parramatta Urban Renewal Precinct
    - Westmead Biomedical Precinct
    - Rydalmere Knowledge Precinct
    - Camellia Precinct

New areas from Council amalgamations.

Catchment Priority is defined as 'high', 'medium' and 'low' and assessed based on whether it is likely to contain areas planned for major growth and redevelopment in the short, medium or long term. Catchment Priority also factors in impacts on property and existing flood affected areas.

Table 3.6: City of Parramatta Catchments Priority and Criticality

Catchment ID	Catchment Priority	Catchment Criticality	Catchment Name	Pipe Length (m) (Approx)	No. of Structures (Approx)
1	Low	Non Critical	**Model Farms Creek**	5284	188
2	Low	Non Critical	**Quary Branch Creek/Northmead Gully**	16943	723
3	High	Critical	**Toongabbie Creek**	44136	1767
4	Low	Non Critical	**Girraween Creek & Blacktown**	1856	60
5	High	Critical	**Pendle Hill Creek**	14214	475
6	Medium	Non Critical	**Bogalara Creek**	13427	500

7	Low	Non Critical	**Coopers Creek**	11951	430
8	Low	Non Critical	**Finlaysons Creek**	3401	136
9	High	Critical	**Milsons Creek**	3073	125
10	Low	Non Critical	**Domain Creek**	9765	375
11	Low	Non Critical	**Darling Mills Creek**	21286	919
12	Medium	Non Critical	**Hunts Creek**	39643	1778
13	Medium	Critical	**Brickfield Creek**	26414	1041
14	High	Critical	**Upper Parramatta River**	17844	835
15	High	Critical	**Clay Cliff Creek**	28814	1212
16	Medium	Critical	**Vineyard Creek**	27807	1154
17	Low	Non Critical	**Ponds Creek**	30930	1341
18	High	Critical	**Devlins Creek**	59627	2596
19	Medium	Critical	**Terrys Creek**	25589	1239
20	Medium	Critical	**Subiaco Creek**	22749	976
21	High	Critical	**Parramatta River**	31484	1227
22	Medium	Non Critical	**A'Becketts Creek**	30881	1306
23	High	Critical	**Duck Creek**	37684	1459
25	High	Critical	**Duck River**	30770	1365
28	Medium	Critical	**Blue Gum Creek – New**	13611	548
29	High	Critical	**Haslams Creek – New**	24793	1118
30	Low	Non Critical	**Rifle Range Creek – New**	6211	244
31	Low	Non Critical	**Stevensons Creek – New**	79	9

3.2. Levels of Service hierarchy

The levels of service decision-making hierarchy at Council flows from:

- legislative requirements, to
- community expectation, to
- Council strategies.

Council uses the levels of service to measure its performance and establish forward works programs, maintenance schedules and delivery programs for short- and long-term planning.

3.3. Customer Research and Expectations

The AM Plan incorporates community consultation on service levels and costs of providing the service. This assists Council and stakeholders in matching the level of service required, service risks and consequences with the community's ability and willingness to pay for the service.

Council conducts regular Community Surveys to measure satisfaction with services and to identify priorities. This telephone survey polls a sample of residents on their level of satisfaction with Council's services. The most recent customer satisfaction survey that was conducted during 2020 reported performance gaps and priority rankings for the following services. The research provides Council with findings that we can confidently say reflect the attitudes of the broader community including residents, business owners, workers and visitors. The survey polled a sample of residents on their level of satisfaction with Council's services. Stormwater Assets are typically difficult to survey without context and targeted areas/ examples to frame the feedback. Overall the effectiveness of Council's stormwater drainage was rated as 3.77 out of 5 by the community, indicating the community has a high level of satisfaction on the performance of stormwater assets.

The 2019 consultation identified areas where small improvements will have the greatest positive impact upon overall community satisfaction. Providing value for money, including the delivery of efficient services

and facilities from assets, is very important to the community. The following scale details the performance gaps develop by Micromex Research to identify gaps in Residents' Expectations.

Fig 3.7: Services and Facilities –Comparison to Benchmarks[6]

Service/facility	Satisfaction	Benchmark variance
Maintenance of local suburban roads	3.64	0.70
Provision of cycle ways and facilities	3.80	0.63
Condition of Council's car parks	3.48	0.54
Maintenance of footpaths	3.56	0.49
The opportunity to have your say on key issues affecting the community	3.42	0.46
Local traffic management and signs	3.46	0.43
Parramatta Heritage & Visitor Information Centre	3.85	0.38
Public spaces	3.87	0.38
Cleanliness of streets	3.89	0.36
Effectiveness of Council's stormwater drainage	3.77	0.34
Planting of trees in your local area	3.60	0.30
Council-run events & festivals	4.07	0.30
Riverside Theatres	4.00	0.28
Cleanliness of parks	3.98	0.28
Quality of children's playgrounds & equipment	3.98	0.28
Promoting sustainable transport options	3.64	0.26
Maintenance of parks and gardens	3.95	0.25
The provision of information on community issues, developments and initiatives	3.47	0.20
Maintenance of community halls & centres	3.81	0.18

It is important that our community have a say. Obtaining community feedback on the condition of our assets is important for council to understand as it impacts how we prioritise work, allocate Council budget, make recommendations to Councillors on future budget decisions, including the level of rates required to fund important infrastructure and improve safety and quality of life for our community.

Council must maintain community infrastructure to acceptable standards for safety and functional usage. However, when determining the community levels of service, we look beyond the minimum standards and work with the community to define acceptable standards for a range of assets, so we can better align resources with community priorities.

Table 3.8: Community Consultation Performance Gap

Performance Gap	Difference between Councils Performance and Residents' Expectations	Actions
Level 1	High Gap	Requires immediate investigation of the Level of Services as the Community has identified these assets/services as providing the best opportunity for improving overall community satisfaction.
Level 2	Moderate Gap	Monitor the performance of the current Level of Services from these assets/services
Level 3	Performing beyond Community Expectation	Reconsider the current Level of Service as the assets/services are performing beyond the community expectations

[6] Micromex Research, 2019, Community Satisfaction – 2019 Wave

The Community Voice Consultation assists Asset Managers to identifying services, facilities and assets which the community feel should be of highest priority as well as the services areas with lower levels of satisfaction. With this information, the Asset Manager can enhance their decision making, in particular fund allocation (new, renewal and upgrade) and the appropriateness of the current Levels of Services.

The table below are the specific questions asked to the Community regarding Stormwater Asset Levels of Service.

Fig 3.9: Community Consultation – Performance Gaps

Drainage Assets	Level	Comments
Cleanliness of Waterways	1	Council has a large number of water quality control devices that are strategically placed within its catchments areas to intercept pollutants before they enter the waterways. These devices comprise of pit inserts, trash racks, Gross Pollutant Traps (GPTs), end of pipe nets and floating booms that capture litter and fine sediments. These devices require a high degree of effort to keep clean and operating to ensure that materials captured are removed and disposed of effectively before they have a chance to re-enter the system and are checked and cleaned on a regular programed basis and after moderate rain events.
Council efforts to improve your local environment e.g. waterways, bushland	2	Council's Open Space and Natural Resources section has an annual program which includes the management and clearing of vegetation and litter and other materials that collect within the reserves adjacent to natural waterways. Council also has an annual Water Quality Program which identifies new areas for installation of water quality devices to expand its network further into its catchment areas and will assist to further improve the cleanliness of its waterways moving into the future.
Effectiveness of Council's stormwater drainage	2	Council has an ageing stormwater drainage system which can also be affected by material blockage during heavy rain events leading to local flooding problems. Council through its Service Request system records complaints received from the community, investigates the complaint and responds accordingly tracking and recording actions taken to rectify the problem and when work has been completed and problem resolved. On complaints relating to stormwater capacity issues Council investigates the matter determines the nature and extent of works required and includes this for detail investigation, design

Drainage Assets	Level	Comments
		documentation and construction in its annual Works Program.

In addition to the annual survey, Council undertook a comprehensive community consultation exercise in February 2018 on the condition of its infrastructure assets as part of the development of the Community Strategic Plan and Resourcing Strategy.

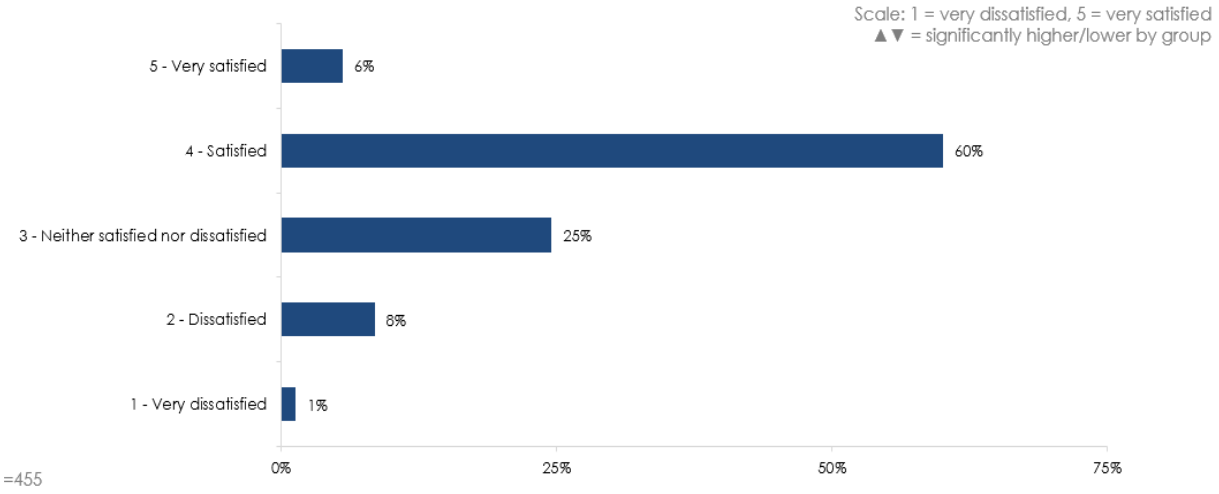
Community Survey results

Council conducted a two-stage quantitative and qualitative community engagement program:

- Quantitative engagement: Telephone survey with an initial 455 residents, followed by 300 re-contact interviews after participants had received and reviewed an asset information pack.
- Qualitative engagement: Five workshops/focus groups:
    - 1 x internal stakeholders workshop
    - 1 x external stakeholders workshop
    - 3 x community focus groups.

Overall, residents are satisfied with the quality of community assets, with two-thirds stating they are "satisfied" or "very satisfied".

Fig 3.10: Community Satisfaction with current community assets



The table below presents the results of the community consultation exercise. It plots the major asset classes against community usage of assets, the minimum acceptable standard of assets, and Council assets identified as requiring more investment. An interesting result worth noting is that while footpaths and local urban roads are the most used assets, they have the highest percentage of the community accepting a fair conditioned asset standard over a good standard asset.

Fig 3.11: Usage, acceptable standards and investment

Asset	Usage % used regularly/ occasionally	Acceptable Standard % good condition	Investment % more investment Pre-info pack (N=300)	 Post-info pack (N=300)
Park amenities (toilets)	37%	48%	44%	64%
Community facilities and buildings	42%	44%	28%	57%
Footpaths	91%	39%	48%	56%
Major town centres	64%	61%	35%	56%
Local suburban roads	95%	37%	50%	55%
Parks infrastructure and sporting fields	72%	58%	55%	55%
Parramatta CBD	52%	65%	30%	53%

3.4. Strategic and Corporate Goals

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

Our vision is:

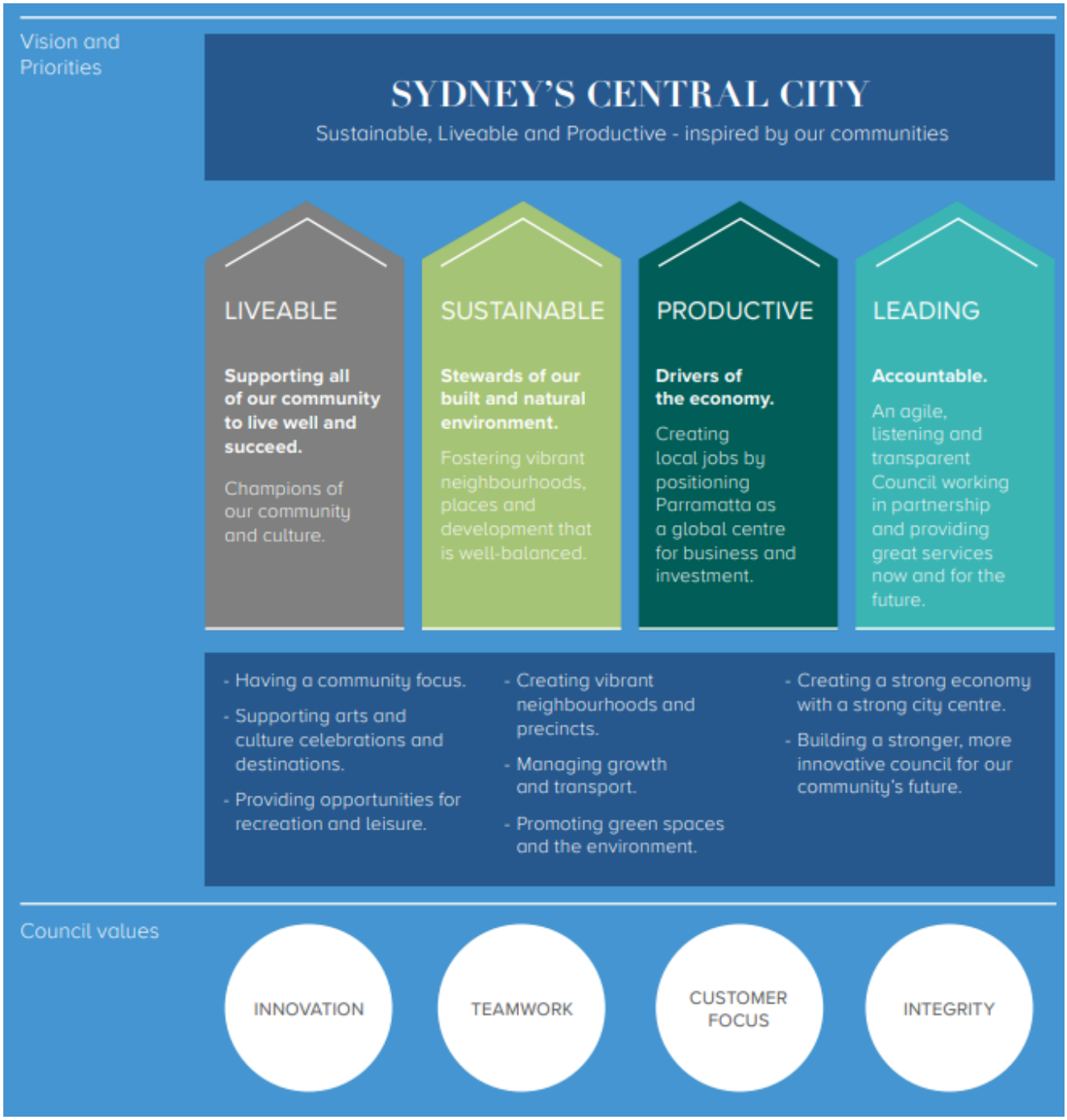
Sydney's central city, sustainable, liveable and productive – inspired by our communities.

Underpinning the City of Parramatta Vision are 6 Key Result Areas (KRAs) that provide the big picture results, which the community would like Council and its many partners to focus on achieving. These KRAs are as follows

- Fair - We can all benefit from the opportunities our City offers
- Accessible - We can all get to where we want to go
- Green - We care for and enjoy our environment
- Welcoming - We celebrate culture and diversity - past, present and future
- Thriving - We benefit from having a thriving CBD and local centres
- Innovative - We collaborate and champion new ideas to create a better future


FAIR
WE CAN ALL BENEFIT FROM THE OPPORTUNITIES OUR CITY OFFERS.
ACCESSIBLE
WE CAN ALL GET TO WHERE WE WANT TO GO.
GREEN
WE CARE FOR AND ENJOY OUR ENVIRONMENT.
WELCOMING
WE CELEBRATE CULTURE AND DIVERSITY - PAST, PRESENT AND FUTURE.
THRIVING
WE BENEFIT FROM HAVING A THRIVING CBD AND LOCAL CENTRES.
INNOVATIVE
WE COLLABORATE AND CHAMPION NEW IDEAS TO CREATE A BETTER FUTURE.

Fig 3.8: City of Parramatta Vision and Priorities Framework[7]



Relevant goals and objectives and how these are addressed in this asset management plan are:

Table 3.12: Priorities and how these are addressed in this Plan

Goal	Objective	How Goal and Objectives are addressed in AM Plan
Building a stronger, more innovative council for our community's	Ensuring we provide high quality services and projects that meet the needs of our community whilst being open and transparent and financially prudent. We will engage and communicate with our	City of Parramatta plan for the total cost of ownership of Council assets and services. Asset management

[7] City of Parramatta, 2017, Our Vision and Priorities

future	community about our plans and progress and ensure that we continue to provide inspirational leadership and good governance. We will provide responsive regulatory functions that address community issues. Be at the forefront of innovation by harnessing leading-edge technology.	governance supports evidence based decision making. Council will utilise predictive modelling in order to model the performance of council's assets
Managing Growth and Transport	Work with government partners to improve connections and traffic flow within and through the City of Parramatta to connect people to jobs and the rest of the region. Managing the parking and transport needs of residents, visitors and workers. Create truly great spaces and places for the community through well managed development. Ensure that green and open spaces are created, protected and maintained in line with population growth. Advocate to State and Federal agencies and business to ensure that there is the right infrastructure at the right time including traffic and transport solutions, schools and open space planning. Harnessing the benefits of growth for all.	Council will maintain community infrastructure as per our asset management policy and strategies and seek to meet and management community expectations around safety, amenity and access.
Promoting green spaces and the environment	To create a green city by creating and maintaining green spaces, bushland and waterways for residents and visitors to enjoy. To create an eco-efficient city that through good planning uses less energy and water whilst recycling more waste efficiently as the City grows – doing more with less. Protect and enhance our natural bushland.	Council will ensure natural areas and bushland is sustainably funded to ensure environment protection outcomes are met.
Providing opportunities for recreation and leisure	Create more active travel options and maintain accessible and high quality facilities to promote healthy and active lifestyles amongst our growing local government area. Maintain the City's reputation as a premier sporting destination.	Council will ensure the provision of open space and recreational areas that our community and residents can utilise to facilitate healthy and active lifestyles.
Creating a strong economy with a strong city centre	Create a centre that can generate jobs for everyone, attract business and investment and provide better services in order to meet the demands of population growth. Create a well-connected, efficient city and neighbourhoods, attract high skill knowledge intensive jobs and promote Parramatta as a	Council will plan for the delivery of major developments to ensure world class public domain areas are maintained to an agreed level of service and contributes to the value adding force behind new

	knowledge hub and a centre for ideas and excellence. Ensure that Parramatta Square Development becomes a key economic driver to deliver world-class office, retail, residential and public space to accommodate growth and stimulate employment. Work with key partners to create a city centre that is a high value-adding, employment hub and driving force behind the generation of new wealth in Western Sydney.	growth in employment and residential populations
Having a community focus	Foster and celebrate a sense of community that is friendly, welcoming and embraces diversity. Respect, protect and celebrate the Aboriginal and European heritage, songlines, stories and history of our city. Create a place that encourages social connectivity and is inclusive and accessible for all. Understand the needs of the community and ensure the provision of relevant, accessible and exceptional services.	Council will maintain and plan for public artworks and heritage interpretation assets within the LGA. This includes ensure maintenance plans and adequate funding is secured to manage these asset types.
Supporting arts and culture celebrations and destinations	Celebrate our cultural life and build positive perceptions of Parramatta by delivering a program of high quality festivals, local and major events and street activities. Provide a variety of cultural experiences and attractions unique to Parramatta which make it a destination of choice for residents and visitors.	No asset related outcome
Creating vibrant neighbourhood and precincts	Drive renewal in key precincts in order to increase jobs, housing, development and transport options including in Epping, Camellia, Westmead, Wentworth Point, the Greater Parramatta to Olympic Park (GPOP). Create welcoming and distinctive local neighbourhoods, that foster a sense of community and local identity for residents right across the Local Government area.	Council will continue to invest in the assets within key precincts including the upgrade of existing assets, planning for new assets, and maintaining/ renewing assets when they underperform

The City of Parramatta will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan prepared in conjunction with this AM Plan. Management of infrastructure risks is covered in Section 7.

3.5. Legislative Requirements

There are many legislative requirements relating to the management of assets. These include:

Table 3.13: Legislative Requirements

Legislation	Requirement
Local Government Act	Sets out role, purpose, responsibilities and powers of local governments. Draft Bill 2009 includes the preparation of a long

	term financial plan supported by asset management plans for sustainable service delivery. The purposes of this Act are as follows: (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: • 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, (e) to require councils, councillors and council employees to have regard to the principles of ecologically sustainable development in carrying out their responsibilities.
Environmental Planning and Assessment Act 1979	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.
Protection of the Environment Operations Act 1997	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.
Australian Standards & Codes of Practice	Various AS relevant to the asset class. Referenced in the Building Code of Australia. Governs a vast range of building construction and management
Crown Lands Act	An Act to provide for the administration and management of Crown land in the Eastern and Central Division of the State of NSW Council has large holdings of Crown land under it care, control and management.
Road Transport (Safety and Traffic Management) Act 1999	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.
Road Transport (General) Act 2005	Provides for the administration and enforcement of road transport legislation. It provides for the review of decisions made under road

Road Transport (General) Amendment Regulation 2008	transport legislation. It makes provision for the use of vehicles on roads and road related areas and also with respect to written off and wrecked vehicles.
Dam Safety	
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 RTA 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 RTA and other roads authorities. Finally it provides for distribution of functions conferred by this Act between the RTA and other roads authorities, and regulates the carrying out of various activities on public roads.
Australian Accounting Standards	Prescribes requirements for recognition and depreciation of property, plant and equipment assets.
Protection of the Environment Operations Act 1997	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.

3.6. Current Levels of Service

3.6.1. Level of Service Description

The 'level of service' is the defined service quality for a particular activity or service area against which service performance can be measured. They provide the basis for the life-cycle management strategies and works programme identified within the AM Plan.

Levels of service support the Organisation's strategic goals and are based on customer expectations and statutory requirements. Levels of Service relate to outcomes the customer receives in terms of quality, quantity, responsiveness and performance as provided by the asset.

Levels of service can be broken down into three basic aspects:

- Function – its purpose for the community.
- Design Parameters – what is required of and from the asset itself.
- Performance & Presentation - the effectiveness of the service and ensuring it is safe, clean and appropriate for use.

The objective of asset management is to enable assets to be managed so that agreed Levels of Service are consistently delivered in the most cost effective way. There are two types of Level of Service:

- 'Community' Levels of Service are related to the service that the customer receives. The community expectations with regard to levels of service are communicated to Council via consultation. These levels of service are also established by Council taking the communities expectations, legislative requirements and available funding into account

- 'Technical' Levels of Service are operational in nature and are the means by which Council officers establish and manage the operation and maintenance required to ensure that the Customer Levels of Service are being achieved

By setting community and technical levels of service, Council can assess and monitor its assets performance. Council can then be held accountable and is able to report to the community on the asset performance. In the long term this will ensure that Council funds are spent where the community want them to be spent and assets are maintained in the most cost effective manner.

As Council's current asset management systems do not allow for detailed reporting on levels of service targets and performance, Council will further develop its ability to manage and report on the levels of service within its Improvement Actions Plan as well as future versions of this AM Plan.

3.7. Customer/ Strategic Levels of Service

Council's drainage infrastructure is maintained sustainably now and over the Long Term Financial Plan. More specifically. Council seeks to deliver services by;

- Managing the ageing materials of the drainage network to be optimally replaced as required
- Ensuring the capital works and maintenance programs are planned and programmed with adequate funding
- Responding to community expectations as measured through Community Voice Customer Research surveys. Whilst the market research is not specific enough to generate actions, it can highlight when waterways have a performance gap.

The Floodplain Risk Management Plans are an ongoing development and consultation process. City Strategy develop these plans collaboratively including customer consultation. Civil Infrastructure as the Asset Manager owns and delivers the actions from the plan when adopted with funding. This could be a mixture of new, renewal and upgrade funding. The key points of these plans are:

- Protect resident from the impacts of flooding by reducing flood risk and losses after a flood event.
- Address and identify high hydraulic flood areas and
- Develop flood mitigation strategies to reduce flood impacts through non- structural measures of improved planning and development controls, community education and structural measures such as flood mitigation structures, detention basins and levees, improved drainage pit and pipe infrastructure.

Council's philosophies in relation to rehabilitation and renewal of drainage assets is that it has developed a hierarchy of determining the relative priority of drainage assets located in various areas where risk and consequences of failure of the drainage system is been considered. For example, some of the factors considered are:

- The position of the asset in relation to building structures
- Possible disruption from failure to the community.
- Environmental considerations e.g. pipe runs through highly contaminated land.
- Disruption to road access etc.

Consideration as to the means and type of rehabilitation is made to ensure appropriate cost effective measures are chosen. The Community Strategic Plan 2038 aims to improve the resilience of the LGA to adverse environmental events e.g. flooding and to substantially improve the water quality in our waterways.

The Strategic levels of service presented in this document are also consistent with Australian Rainfall and Runoff publication by Engineers Australia and the NSW Floodplain Development Manual.

Customer Levels of Service measure how the customer receives the service and whether value to the customer is provided. Customer levels of service measures used in the asset management plan are:

Quality	How good is the service. W*hat is the condition or serviceability of the conduit or stormwater pit?*

Function	Is it suitable for its intended purpose. *Is it the right asset/ flood mitigation solution in place to ensure the provision of services and amenity as required?*
Capacity/Use	Is the service over or under used. D*o we need more or less of these assets? Is pipe capacity adequate?*

The current and expected customer service levels are detailed in Tables 3.14, which shows the expected levels of service based on resource levels in the current long-term financial plan.

Organisational measures are measures related to the service delivery outcome. e.g. number of occasions when service is not available, condition %'s of Very Poor, Poor/Average/Good, Very good. These provide a balance compared to customer perception that can be more subjective and less able to develop actions from.

Table 3.14: Customer Level of Service

	Expectation	Performance Measure Used	Current Performance	Expected Position in 10 Years based on the current budget.
Quality	Provide well maintained assets that are affordable to the Community.	% of Council assets which are poor/very poor condition	97% of assets in condition 1,2 and 3	2% of Council's drainage assets to be in very poor condition.
	To respond to communities need in relation to the effective collection and disposal of stormwater	Letters received from community. Level of satisfaction from Council's annual customer survey Community Voice Customer Research	Provide an acknowledgement to any community request within 14 days.	Expect to maintain current level of satisfaction
Function and Capacity	Provide stormwater systems which have suitable capacity and in condition to convey stormwater	Response to reports in Council's Pathway Service Request System Letters received from community	Appropriately respond to all flood complaints with the aim to have all new drainage systems: Designed and construct to adequately drain 1 in 20 year ARI design flows wherever possible. Ensure overland flow paths are protected and maintained free of obstructions wherever possible to drain 1 in 100 year ARI design flows.	A series of condition and function audits are planned for next 10 years Update of existing mainstream flood studies every 10 years. Undertake local overland flood modelling. Design, document and construct flood and drainage mitigating works.
Safety	Drainage	Number of	Less than 2 incidents	Less than 2 incidents

	infrastructure is designed and maintained safe to community.	reported injuries attributed to drainage asset condition.	per year where Council accepts liability	per year where Council accepts liability
Environmental	Improve quality of stormwater entering waterways.	Provide and maintain pollution control devices.	Record and maintain regular frequent cleaning of pollution capture devices in accordance with agreed service levels.	Record and maintain regular frequent cleaning of pollution capture devices in accordance with agreed service levels.
Responsiveness	Timely response to customer requests.	Time taken to appropriately respond and finalise requests.	Start initial investigation within 30 days. Delivering works program on time and within budget subject to the completion of design.	Start initial investigation within 30 days. Delivering works program on time and within budget subject to the completion of design.

The above performance targets indicated are not always met due to existing resource levels. Work is continuing to improve resourcing issues.

3.8. Technical Levels of Service

Technical Levels of Service - Supporting the customer service levels are operational or technical measures of performance. Detailed Technical Levels of Service are required to assess performance on a day-to-day basis to guide decision making and work flows. The prime objective in setting the Technical or operational Levels of Service is to set targets that will lead to achieving the desired Community-based Service Levels. These include response times, work standards and condition ratings.

These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.
Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. opening hours, cleansing, mowing grass, energy, inspections, etc.
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. road patching, unsealed road grading, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (e.g. a new library).

Service and asset managers plan, implement and control technical service levels to influence the customer service levels.[8]

[8] IPWEA, 2015, IIMM, p 2|28.

Table 3.15 shows the technical levels of service expected to be provided under this AM Plan. The "Desired" position in the table documents the position being recommended in this AM Plan.

Table 3.15: Operational/ Technical Level of Service

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost **
Operations	Stormwater inlet pits are free of sediment and debris	Review of performance of inlet pit cleaning program reports	Not currently measured	Stormwater pits that are critical or of high priority are free of sediment and debris
	Gross Pollutant traps are emptied at optimum frequencies	Reported cleaning frequency and mass of material removed	Cleaning frequency adequate and meeting scheduled maintenance program frequency	Cleaning frequency adequate and meeting scheduled maintenance program frequency
Maintenance	Inspection and maintenance of stormwater infrastructure assets is undertaken as per maintenance plan	Review of performance stormwater infrastructure inspection and maintenance program reports	Expect to maintain current level of service	Expect to maintain current level of service
	Lake Parramatta is managed to meet adequate water quality and water levels, minimise sediment and pollutants to preserve flora and fauna, and suitability for recreational uses	Lake Parramatta Dam bi-daily, weekly, monthly and quarterly inspection and maintenance is carried out Lake Parramatta water quality levels are suitable for recreational swimming and activities	Lake Parramatta inspection program is carried out Lake Parramatta water quality currently meets minimum standards to allow for recreational activities	Lake Parramatta inspection program is carried out Lake Parramatta water quality currently meets minimum standards to allow for recreational activities
Renewal	Renewal of assets is undertaken at the optimal time in lifecycle	Assets are renewed when required under LTFP	90% completion of annual capital renewal programs relating to Council's Stormwater programs	100% completion of annual programs
	Renewal assets are delivered efficiently and fit for purpose	Completion of Council's renewal program, including Major Projects	On-going implementation of capital renewal programs including Major Projects	Assessment has not been carried out
Upgrade/ New	New assets are delivered efficiently and fit for purpose	Completion of Council's upgrade & new assets program, including Major Projects	On-going implementation of capital upgrade programs including Major Projects	Completion of Major Projects

Note: * Current activities and costs (currently funded).
** Desired activities and costs to sustain current service levels and achieve minimum life cycle costs (not currently funded)

It is important to monitor the service levels provided regularly as these will change. The current performance is influences by work efficiencies and technology, and customer priorities will change over time. Review and establishment of the agreed position which achieves the best balance between service, risk and cost is essential.

The above performance targets indicated are not always met due to existing resource levels. Work is continuing to improve resourcing issues.

3.9. Desired Levels of Service

The desired levels of service with respect to delivery of stormwater drainage moving into the future is to build and improve on existing levels of service under the areas of Community and Technical, as summarised below:

Community Level of Service

- Provide a well maintained stormwater drainage system in suitable condition
- Effective collection and disposal of stormwater
- Response time to customer requests
- Designed and maintained safe for the Community
- Improve Water Quality in waterways
- Planning for increased development within CBD and other growth areas.

Technical Level of Service

- Drainage assets in a serviceable condition in accordance with intervention condition (as per Asset Management Plan)
- Improvements to pipe drainage system to achieve 1 in 20 year ARI capacity were possible
- Maintain drainage assets by undertaking preventative maintenance as required. (This includes cleaning, CCTV inspections and condition rating)
- Drainage assets constructed and maintain in accordance with Asset Management Plan and to meet with Council's Work Health and Safety requirements

To enable improvements to Council's drainage asset management systems the additional improvements listed below will also need to be addressed.

Improved Staffing levels - Currently asset management of Council's drainage system has been predominantly based on reactive treatment to reported and known problems. This has been mainly due to limited staffing resources available to undertake planned investigations that go beyond annual works programs.

The aim in future is to progressively move from the predominantly reactive approach to a more planned proactive asset management system. It is proposed to fill this staff shortage by the creation of a dedicated Senior Asset Management Engineer position which will enable the employment of an experienced Drainage Asset Engineer dedicated to respond to Council's asset management needs in this area.

Historic Inhibitors to Change - Historically drainage asset management has not enjoyed the same profile as other asset classes such as road, footpaths, libraries, community buildings, open space and recreational facilities.

This is not uncommon as drainage assets are predominantly structures underground, unseen by the general community and their technical function and performance not commonly understood or appreciated until after the impact of a major flood where any limitations to the drainage system that

results in flood damage and large recovery costs are clearly visible. It is therefore important that funding is continued in the areas of:

- Flood Studies;
- Floodplain Risk Management Study and Plans
- Implementation of Flood Mitigating Works
- Funding for the Continued Maintenance of New and Existing Infrastructure

Ongoing community consultation – Community Consultation that educates residents and property owners of flood risk is essential. It is strongly recommended that a formal community education program be set up and a regular campaign to remind everyone the importance of floodplain risk management and the continued supporting funding to maintain existing drainage infrastructure and to fund new flood mitigating infrastructure is critical.

Further development of the levels of service will be undertaken in consultation with the various business units within Council. These will be documented in future revisions of this AM Plan.

The asset management planning process includes the development of two scenarios to develop Levels of Service that are financially sustainable.

Scenario 1 – What we need to do (spend) in the next 10 years to sustain current service levels plus planned upgrade new / new assets / services aligned with the Long Term Financial Plan, Delivery Program, Operational Plan, and Asset Strategy.

Scenario 2 – What we can do and be financially sustainable with AM Plans matching Long Term Financial Plan (LTFP), identifying major capital renewal and upgrade/new proposals that cannot be done in the next 10 years, determining the service consequences (service levels below desired levels) and service risks associated with the deferral of these proposals.

What options do we have?
Resolving the funding shortfall involves several steps:

- 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;
- Improving our efficiency in operating, maintaining, renewing, and replacing existing assets to optimise lifecycle costs;
- Identifying and managing risks associated with providing services from infrastructure;
- Making trade-offs between service levels and costs to ensure that the community receives the best return from infrastructure;
- Identifying assets surplus to needs for disposal to make saving in future operations and maintenance costs;
- Consulting with the community to ensure that water infrastructure services and costs meet community needs and are affordable;
- Developing partnership with other bodies, where available to provide services; and
- 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 water infrastructure, the service level reduction may include reduction of the frequency of emptying gross pollutant traps, and delay on delivery of water sensitive urban design facilities which provide a lower level of service (environmental sustainability) at a lower operating and maintenance cost. Reduction in maintenance in other areas may accelerate the consumption of some asset groups.

What can we do?
We can develop options, costs, and priorities for future water infrastructure services, consult with the community to plan future services to match the community service needs with ability to pay for services, and maximise community benefits against costs.

4. FUTURE DEMAND

4.1. Demand Drivers

Demand Drivers predominately affecting the stormwater portfolio include things such as population change, regulations, seasonal factors, technological changes, economic factors, agricultural practices, environmental awareness, etc.

Demand for new services is being managed through a combination of managing existing assets, where appropriate upgrading existing assets and providing new assets to meet demand through a variety of delivery mechanisms mentioned within Section 5 of this report.

Council can currently sustainably fund and maintain its existing stormwater portfolio to a satisfactory condition, which will allow it to meet existing community and operational demands. Almost 97% of stormwater assets (by GRC) currently score a condition rating of 3 or better (Satisfactory). Further in-depth long term planning is still required to identify if Council has the required asset in the required place to perform the required function.

The stormwater network is being managed to ensure continued service provision as well as allowing for the future growth. Given Parramatta's geographical significance, planning for both the current and future communities is required and will need to include services for groups outside of the Parramatta LGA, being the wider Sydney region.

Additional in-depth and long term planning is required to identify if Council has the required asset in the required place to perform the required function. To assist in addressing the demand into the future Council is currently undergoing numerous detailed planning studies to ensure that the future growth of the LGA is accounted for. These studies take into consideration the meeting of demand from Council's existing stock, future programmed assets via a range of delivery mechanisms, as well as service delivery via assets owned by other organisations.

Demographic analysis for the Parramatta LGA demonstrates that the population is extremely diverse which results in a need for access to a full range of social infrastructure. Current trends also identify a need for flexible, multi-purpose facilities that cater to a broad range of interests and that can adapt as needs change.

The Parramatta CBD is undergoing a substantial planning review by Council to facilitate the significant growth for the LGA and region. This will have a substantial increase and further concentrate worker and residential population numbers. To address this, Council is also undergoing its own significant property redevelopment program of its CBD assets to facilitate growth of the organisation, community and region. Council's flagship development within its Parramatta CBD projects is the Parramatta Square project which is revitalising 3 Hectares of prime CBD land.

Future versions of this AM Plan will take into consideration the numerous Strategies and Programs currently under development by Council, including the financial considerations for each being Capital New, Renewal, Maintenance and Operational requirements. These Strategies and Programs include but are not limited to:

1. Parramatta Square (PS) Redevelopment
2. Lennox Bridge Car Park Redevelopment
3. Riverside Theatre
4. Parramatta Riverbank
5. Multi Storey Car Park Redevelopment Projects
6. North Parramatta UrbanGrowth Release

It is envisaged that demand identification and management will be further and continually identified though stakeholder engagement within this AM Plan and then delivered through an annual and four year Program consisting of:

- Acquisition and Development
- Capital New and Renewal
- Maintenance and operations

The future demand on the levels of service provided by council are driven by future growth of the Local Government Area and the increased demand it places on the drainage network. The key identified areas are listed below.

Future strategic levels of service for the drainage network

Improving the resilience of the Parramatta Council Area to any future disruptions or disasters is a key task of local government, in cooperation with the State Government. This is reflected in Parramatta's Community Strategic Plan (CSP), which states Council should

- Minimise and manage environmental risks;
- increase resilience;
- improve recovery times

and focus on:

- preparation for extreme weather events and/or other extreme events that disrupt food, water, energy or other resource supply
- identification of risk and putting plans in place to better deal with events when they happen
- flooding risk

In addition, the CSP states that "bringing back swimming to the Parramatta River" is a Council priority. To achieve this vision a key Council task will be to improve the water quality entering waterways via improvements in the drainage network.

In response to these CSP requirements, and other Council Policies such as the Council Floodplain Risk Management Policy, various long term enhancements to the stormwater drainage network are required, and are described below.

Enhancement of the drainage network to meet a universal 5% AEP flow capacity

Councils network of pits, pipes and gutters extends across the whole of the Local Government Area (LGA) with a total pipe length of 543km and 23,292 stormwater pit structures with a combined total Written Down Value (WDV) value $449,229,118. This network has been built up over many decades to a variety of standards. Some parts of the network can cope with storms of 5% AEP intensity (the largest storm that, on average, would be expected to occur every 20 years), whilst others can only cope with storms of 20% AEP intensity.

It is proposed exploring in the future to retrofit those parts of the network with lower standards of service to be able to cope with a 5% AEP storm. A prioritisation program will be developed, with those areas deemed to be most critical (e.g. areas of high density, important public assets like hospitals) upgraded first and then other areas upgraded as funds become available.

Making the Parramatta CBD more flood resistant

The Parramatta CBD is currently the most important economic, social and cultural centre for the Sydney metropolitan area, outside of the Sydney CBD. It is the 6th largest CBD in the nation, with tens of thousands of workers commuting daily to the CBD and with an annual economic output of billions of dollars. In addition a major rezoning of the CBD is currently being planned which is likely to very substantially increase the working and residential population of the CBD as well as the value of public and private assets and the overall importance of the CBD to the national economy.

The Parramatta River runs through the CBD, providing vital open space and recreational activities. However, as with all Rivers, the Parramatta River occasionally floods. In a larger flood it has been estimated that hundreds of millions of dollars of direct and indirect damages could occur in the CBD, along with potential loss of life. This is in spite of some very effective flood mitigation projects that were installed in the 1990s after extensive flooding that occurred in 1986 and 1988.

A new project is starting in 2015 to create a comprehensive and accurate flood model for the whole of the Parramatta River, including the CBD. After the flood model is completed in 2017 an extensive review program will investigate the methods by which damages and risk to life from flooding could be substantially reduced from its current levels. This review is likely to recommend very substantial flood mitigation projects that will need cooperative funding mechanisms to be developed between local, state and federal governments.

Water sensitive urban design

When rain falls on the ground and runs into the drainage network, it picks up any pollutants that are present in the environment such as heavy metals, pesticides, herbicides and potentially dangerous bacteria. These pollutants are then rapidly transported to any nearby creek or river, where they can cause significant environmental damage. One way to reduce the effects of pollution is to install features such as raingardens and grassed areas ("water sensitive urban design, WSUD") in the drainage system that intercept the water and clean it up before releasing the water into the local waterway. In addition to the water cleaning capabilities of WSUD these areas of vegetation look appealing, cool the local area on hot days and provide habitat for the local animals and birds.

At the moment only a relatively small area of the LGA has WSUD installed but we aim to increase WSUD to such a level that the water quality in the Parramatta River is improved enough to allow swimming at selected locations such as the CBD, Little Coogee in Parramatta Park or at Ermington Bay. It has been estimated that about 1% of the total surface area of the LGA would need to have WSUD retrofitted to achieve the aim of returning swimming to the Parramatta River. In response, for all future civic upgrade projects should have at least 1% of the upgrade area dedicated to WSUD.

Management of High Hazard Flood Flows

At some places during a large flood the water is moving so fast that it can sweep people off their feet, wash cars away and damage or destroy any homes in the way, these areas are known as high hazard flood zones. In the 15/16 Financial Year Parramatta Council will be reviewing all known high hazard flood zones to work out which homes are most at risk in a large flood. In subsequent years we will be developing site specific approaches to minimise the risks to those living in the problem areas, which will include drainage system improvements and modifications.

Parramatta Central City Growth

The increase in FSR over the City Centre area. This will have a significant impact on the drainage network. The predicated change in zoning and expansion of the CBD will affect the network and overland flows. This will be mitigated by evaluating the effects of the expansion on the drainage network and floodplain emergency evacuation.

Proposed Light Rail through Parramatta

The NSW Government is undertaking investigations to determine effective proposed routs to improve access between existing rail, bus and other major arterial roads and the M4 Motorway and to connect the Parramatta CBD by light rail to other key employment centres. The location of the light rail network has not been announced at this stage. Adjustments to existing drainage infrastructure and improvements to the drainage systems at locations around the light rail system are anticipated to protect the rail network.

Consideration of local and mainstream flood impacts will need to be incorporated in design of the light rail system to ensure disruption to service and damage to rail asset infrastructure is kept to a minimum.

Pollution control devices on stormwater pipes discharging to waterways

- Council has an existing network of stormwater pollution control devices that the improvement to water quality entering its natural waterways.
- These devices are a mixture of trash screen, CDS units, pit baskets and litter floating booms which are strategically placed within the catchment system to capture pollutants such as litter and sediments.
- Further devices will be planned and more growth and development occurs within the LGA.
- Future specific water quality targets specific to achieve projects such as the introduction to swimming in the Parramatta River will also result in the increase to the number of these devices.
- The growth in pollution control devices will require extending the existing cleaning and maintenance programs and budgets accordingly.

4.2. Changes in Environment

There is continuing discussion about changing climatic conditions, increased rainfall, rising sea levels, fluctuations in wet/dry season and periods. Continued variation in weather patterns and extremes is forecast to occur.

This is likely to impact on condition of assets, place pressure on asset lifecycle costs and potentially reduce asset life, e.g. increased moisture in ground and road pavements. There is also potential for more frequent asset failure, e.g. failure in retaining walls in 2014 at Harris Park Train Station which collapsed causing infrastructure failure of the road above.
When Council is undertaking renewal the following changes in design and procurement practise are implement to mitigate the impact of increased intensity and frequency of extreme weather events;

1. Using higher grade binder in the asphalt which preforms for longer periods in areas with high temperatures.
2. Increasing the capacity of drainage systems and installing more drainage pits to improve the removal of extreme rainwater flow
3. Extreme rainwater travels faster and requires a extended kerb inlet
4. Provision of subsoil drainage system to prevent the ingress of moisture into the pavement and formation.

The most likely changes expected is due to proposed increases in population within the LGA and the impacts leading from increased development. Such impact would require upgrade and modifications to existing pipe drainage and water quality infrastructure, as indicated above.
Other environmental changes could result due to predicted change to rainfall and sea level. This could result in future works being design with greater capacity to account for increased weather extremes.

4.3. Parramatta CBD Planning Study and CBD Planning Proposal

A major Council objective that will impact the demand on Drainage assets within the CBD and surrounds is the current Parramatta CBD Planning Study. The objectives of this Strategy are:

1. To set the vision for the growth of the Parramatta CBD as Australia's next great city.
2. To establish principles and actions to guide a new planning framework for the Parramatta CBD.
3. To provide a clear implementation plan for delivery of the new planning framework for the Parramatta CBD.

The Planning Strategy, which was adopted by Council on 27 April 2015, is effectively a consolidation of the recommendations in the CBD and Auto Alley studies and also reflects previous Council resolutions.

The Parramatta CBD Planning Strategy sets the direction for the project and details the 'Actions' that will inform a future Planning Proposal to amend the planning controls for the CBD. Key actions in the strategy include the following:

1. Expansion of the CBD boundaries
2. Increase in FSRs to predominantly 10:1 and 6:1 across the CBD
3. Removal of any height controls, except in some key areas
4. Investigation of potential sun access controls to key public spaces
5. Expansion of the commercial core and potentially opening it up to some residential uses (subject to commercial also being provided)
6. Setting an employment growth target of 27,000 additional jobs and residential growth target of 7,500 additional dwellings by 2036 for the CBD
7. Investigation of infrastructure needs, including funding mechanisms. This investigation is to include a consideration of city culture, entertainment, events and arts spaces, and also social services and community facilities.
8. Promotion of tower slenderness and design excellence

The work required to implement the identified actions and progress a formal Planning Proposal for the CBD are detailed in the Strategy's 'Implementation Plan'. This includes a number of technical studies, including an infrastructure needs analysis. Most asset classes will require Needs/Impact Studies that will inform the infrastructure needs analysis which Council is currently undertaking as part of the review of the Parramatta CBD Planning Framework.

4.3.1. Implications for the Asset Management Plan

In the 15/16 financial year City Strategy tested the implications of what increases in FSR with no height limits may have on the Parramatta CBD and surrounds (North Parramatta and Harris Park) in terms of required community facilities, traffic, transport, environment, storm water and heritage. This is being referred to as an an Infrastructure Needs Assessment for Social Services, Education & Community Facilities.

The increase in FSR and the impacts upon existing assets will be further considered in detail, including whether the existing assets have appropriate capacity to receive new future additional network demands or if new assets are required to meet service delivery requirements.

As the new planning controls will also allow for the significant growth in workers and residents and in turn impact Council's building and infrastructure network, Council's review process is also identifying all of the required infrastructure that the Parramatta City Centre needs over the next 10 - 20 years in this study area. In doing so, it will also identify the proportion of 7.11 funds that will be required to deliver the Needs Assessment. At the end of this review process there will be a new draft Civic Improvement Plan and 7.11 plan for Parramatta City Centre, with money allocated to different areas of Council for delivery of the works, including Council's building portfolio.

Future building requirements in consultation of the above mentioned process will be identified and included within future versions of this AM Plan.

4.4. Demand Management

Demand Management into the future for Council will need to consider:

- Maximising patronage within existing assets,
- Upgrading existing assets,
- Providing new assets to meet demands, and
- Managing the demand by non-asset solutions.

4.4.1. Population

CoP's population is estimated to be 260,296 in 2020 (confirmed), 287,289 forecasted for 2022 and estimated forecast of 487,731 in 2041 resulting in an increase of 69.77% from 2022-41.

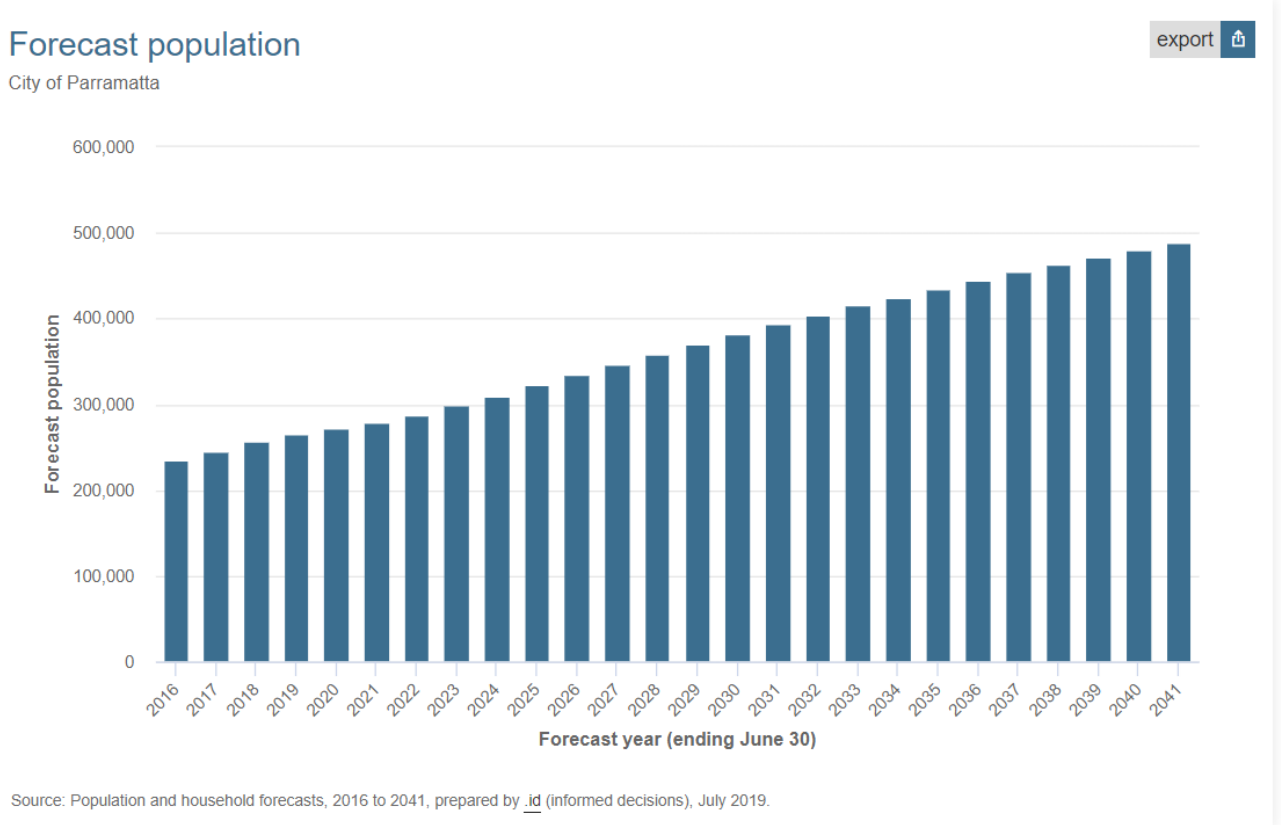


Fig 4.2 – CoP Estimated population to 2041

4.4.2. Demographics

Council has a diverse demographic base which is constantly changing. As identified below, Council needs to consider numerous factors when planning for its drainage assets into the future.

Parramatta's median age in 2016 was 34 and comparatively young when compared to 36 for Greater Sydney and 38 for NSW. Data from the 2016 Census indicated that approximately 74 per cent of Parramatta's residents worked outside the Parramatta local government area; the majority working in the Sydney CBD. Local residents made up less than 20 per cent of our total Parramatta workers. Around 120,000 people are employed in Parramatta, of which more than 43,000 work in the Parramatta city centre, with many coming from Blacktown, The Hills Shire, Holroyd, Penrith, Hornsby and other areas.

City of Parramatta 2016

◂▸ No significant change since previous Census (less than +/-0.5%) ▲ Increased since previous Census ▼ Decreased since previous Census

Median age

34 ▼(-1)

Greater Sydney	36 ◂▸
New South Wales	38 ◂▸
Australia	38 ▲

Aboriginal and Torres Strait Islander Population

0.7% ◂▸ (-0.1%)

Greater Sydney	1.5% ◂▸
New South Wales	2.9% ◂▸
Australia	2.8% ◂▸

Couples with children

38% ▲(2.3%)

Greater Sydney	35% ▲
New South Wales	32% ◂▸
Australia	30% ◂▸

Older couples without children

7% ◂▸ (-0.4%)

Greater Sydney	8% ▲
New South Wales	10% ▲
Australia	10% ▲

Lone person households

19% ▼(-1.9%)

Greater Sydney	20% ▼
New South Wales	22% ▼
Australia	23% ◂▸

Medium and high density Housing

55% ▲(7.8%)

Greater Sydney	44% ▲
New South Wales	33% ▲
Australia	27% ▲

Median weekly household income

$1,755 ▲($302)

Greater Sydney	$1,745 ▲
New South Wales	$1,481 ▲
Australia	$1,431 ▲

Median weekly mortgage repayment

$489

Greater Sydney	$495 ▲
New South Wales	$456 ▲
Australia	$409 ▲

Median weekly rent

$447

Greater Sydney	$447 ▲
New South Wales	$384 ▲
Australia	$339 ▲

Households renting

40% ▲(4.8%)

Greater Sydney	33% ▲
New South Wales	30% ▲
Australia	29% ▲

Households with a mortgage

29% ▼(-2.7%)

Greater Sydney	32% ▼
New South Wales	30% ▼
Australia	32% ▼

Overseas born

50% ▲(5%)

Greater Sydney	37% ▲
New South Wales	28% ▲
Australia	26% ▲

4.4.3. Planning:

In order to understand Demand in more detail into the future, Council is also both internally and through the procurement of various external consultants reviewing and identifying specific community needs. Council is currently reviewing and preparing detailed reports on:

- The community facility needs for the Parramatta CBD and Harris Park Areas given the potential planning amendments increasing the FSR, development potential and community members within these areas.
- The needs of child care facilities throughout the LGA taking into account the provision from both PCC and private organisations.

- The programs, facilities and services required to support the current and future population of over 55's are in place.

Council has also created through its Social Outcomes, City Strategy team a set of Social Infrastructure Guides as a series of high level social infrastructure needs for major development hotspots across the Parramatta LGA, including Parramatta CBD, Granville, Westmead and Epping. The Guides identify the current capacity of social infrastructure within these areas as well as highlighting broad trends and challenges in social infrastructure provision. It is envisaged that this current study will be expanded to other parts of the LGA to assist in asset planning into the future for both the land and building portfolio.

4.5. Demand Impact on Assets

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

Table 4.3: Demand Drivers, Projections and Impact on Services

Demand factor	Present position	Projection	Impact on services	Action
Increased population	The 2018 resident population forecast for the Parramatta City is 251,311 The number of dwellings in the City of Parramatta is forecast to grow 82% from 2019 to 2041 to 487,731. The worker population is forecast to grow from 120,000 in 2011 to	Projected Resident Population of 487,731 by 2041	Requirement for an increase in building assets and accompanying renewal and operating expenditures. Increased usage and changing needs and preferences from additional population requiring upgrade to existing building infrastructure or change in use.	Little Impact of Council's existing level of service for drainage. Potential for greater demand on providing services around water sensitive urban design and environmental initiatives
Changing Demographics	Age: 25-34 highest proportion of age groups at 20.2% Nationality: In 2016, there were 112,198 overseas born people living in the City of Parramatta Income levels: 17.9% of households earned a high income and 20.5% were low income households	Age: 25-34 remains the highest proportion of age groups at 30% Parramatta is likely to continue to attract people born overseas	Increase demand on services in general. As the demographics of the CoP LGA changes, service levels will need to be reviewed to meet the demand shift. Consideration will need to be given to user pays/ capacity to pay.	Little Impact of Council's existing level of service for drainage
Changes in Land Use planning	Current development levels	Increases in permissible land uses and densities	Increased population densities will	May impact Council's drainage

	based on existing land use planning	throughout the LGA - creating more demand on services and assets.	require upgrades of existing assets and services as well as new assets and services	infrastructure that has been designed for an assumed high level of run off. Increased flows in receiving watercourses may increase erosion or flood risk
Increase costs for materials and contracts	Inflation of construction prices exceeds annual increases in building construction expenditure.	Annual increases in construction costs continue to exceed increases in building expenditure,	Increased costs to maintain building assets Reduction in real expenditure will delay maintenance reduce the life cycle of the asset.	Continually review renewal modelling ensuring forecasting is accurate. Appropriate procurement processes to ensure competitive pricing.
Rising Community expectations	Community expectation for standard of buildings services rising.	Desired service level provision increased over time.	Adoption of higher service levels provided for building infrastructure will create service level gaps and increase projects in delivery programs.	Review service levels and regularly undertake community consultation.
Increasing Environmental and Design Standards	Design standards based on State and Federal design standards.	Higher standards for new and renewed infrastructure causing higher costs to build, maintain and operate assets.	Review service levels and ensure appropriate design standards for assets.	Potential for greater demand on providing services around water sensitive urban design and environmental initiatives

4.6. 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.

The objective of demand management is to actively seek to modify customer demands for services in order to:

- optimise the utilisation and performance of existing assets;
- reduce or defer the need for new assets;
- meet the organisations strategic objectives;
- deliver a more sustainable service;
- respond to customer needs.

It is vital to the success of the AM Plan that demand factors be analysed comprehensively and their impact quantified in terms of the following:

- the effect of the growth of the asset network;
- any possible future need to increase or decrease infrastructure;
- the implementation of non-asset solutions, such as managing demand.

In addition to the factors mentioned above, risk affects demand for services and consequently the following must be taken into account:

- the methodology and accuracy of forecasts;
- the uncertainty of forecasts
- any unforeseen natural factors

Non-asset solutions focus on providing the required service without the need for asset ownership 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[9]. Examples of non-asset solutions include providing services from existing infrastructure such as aquatic facilities and libraries that may be in another community area or public toilets provided in commercial premises.

Opportunities identified to date for demand management are shown in Table 4.4. Further opportunities will be developed in future revisions of this asset management plan.

Table 4.4: Demand Management Plan Summary

Demand Driver	Impact on Services	Demand Management Plan
Demographics	Changing service needs and hence changing building requirements, particularly relating to accessibility	On-going delivery of Council's Community Facilities Deferred Maintenance and Upgrade works to provide more inclusive and accessible facilities.
Population	General increase in demand for services provided by Council's buildings	New Developer Contributions Plan has been drafted to take into account the potential future demand for services/assets and these are considered in this AM Plan.
Population – new DCP	Will require initial capital funding from Council to match s94 funding, also results in a projected increase in recurrent operational & maintenance costs and annual asset depreciation costs.	Adoption of new DCP. Explore opportunities to provide additional services/ assets through VPA's or joint ventures. An overarching Property Strategy to be developed.
Regulation	Will add further to the cost of providing, operating, maintaining and renewing buildings	On going assessment of building portfolio as regulations change to determine additional cost.
Construction Costs	The shortage of skilled labour, high labour costs and increasing building costs will impact on the	On-going internal productivity reviews to ensure value for money. Undertake regular testing of the market through standard tendering and procurement processes for external service

[9] IPWEA, 2015, IIMM, Table 3.4.1, p 3|89.

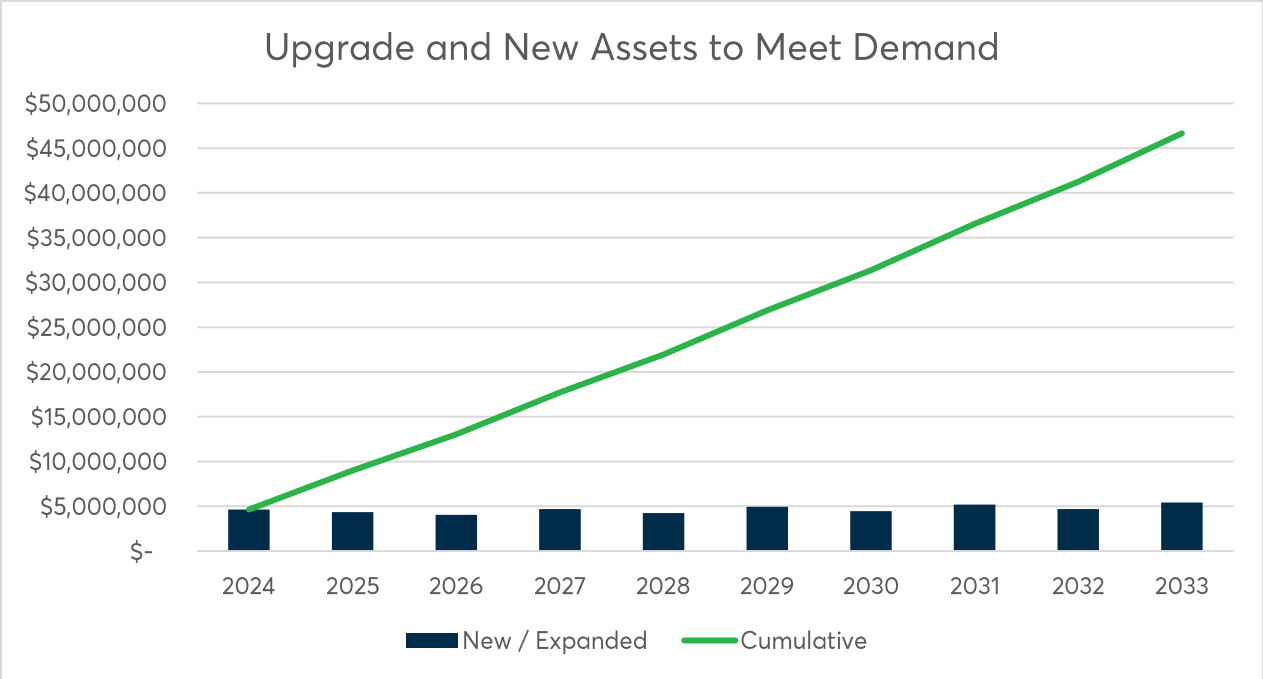
	future management of drainage	provisions.

4.7. Asset Programs to meet Demand

The new assets required to meet growth will be acquired through contributions from developments with additional matched funding from Council. The developer contributions may be from 7.11 funding and/or Voluntary Planning Agreements (VPA's). New assets constructed/acquired are discussed in Section 5. The summary of the cumulative value of new contributed and constructed asset values is shown in the figure below

The financial impact from the proposed new assets that will be constructed and/or acquired by the organisation is discussed in Section 6. The estimated accumulative asset value of the contributed and or constructed new assets anticipated during the next 10 years is summarised in the figure below.

Figure 4.3: Upgrade and New Assets to meet Demand – (Cumulative)



Note that costs are only taken into account once the asset has been commissioned. Multi-year projects will have costs allocated in CoP budgets, however they are not considered in the AM Plan until they are completed.

As shown in future sections of this plan, acquiring new assets will commit 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.

City of Parramatta Council has conducted a sensitivity analysis in 2022 to determine the impact changes in asset values and financial attributes have on assets, and subsequently the ability to maintain current service levels and meet new demand for additional open space assets using current predicted funding. Variables reviewed include fair value, residual values, useful life, asset componentisation and hierarchy, and depreciation method. The sensitivity analysis is a way to predict the outcome of a change if a situation or variable turns out to be different compared to key prediction(s).

Future plan revisions will consider the costs of climate change, water restrictions, technology, urban consolidation, and other possible variables.

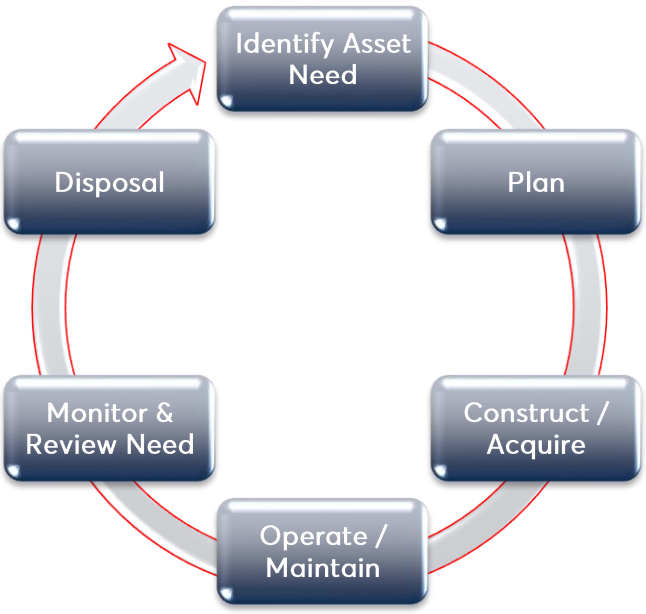
The financial impact from the proposed new assets that will be constructed and/or acquired by the organisation is discussed in Section 5.

5. LIFECYCLE MANAGEMENT PLAN

5.1. Life-Cycle Management Principles

The lifecycle management plan details how the City of Parramatta Council plans to manage and operate the assets at the agreed levels of service (defined in Section 3) while managing life cycle costs. Life-cycle Management is recognised by Council as an essential component of this AM Plan. This section of the Plan provides details of the data and processes required to effectively manage, renew and upgrade Council's asset portfolio. It also documents the analysis that Council undertakes regularly to predict and monitor expected future expenditures required to effectively manage the portfolio. Undertaking life-cycle asset management means considering all management options and strategies as part of the asset life-cycle, starting with the planning phase and ending with disposal. The objective of managing the assets in this manner is to look at long-term cost impacts (or savings) when making asset management decisions. **Error! Reference source not found. Error! Reference source not found.** provides a graphical representation of the asset life-cycle including each of the stages an asset passes through during its life.

Figure 5.1: Life Stages of Infrastructure Assets



5.1.1. Delivery of Council's 10 year Asset Management Plan

The development of Council's Stormwater AM Plan in line with the Asset Management Policy and Strategy allows Council to plan, identify and implement an annual and four year delivery program for Council's stormwater assets in line with a lifecycle management strategy consisting of:

- Acquisition or Development;
- Operating;
- Maintenance; and
- Capital Renewal; or Disposal

Delivery mechanisms of the above and the new asset creation process vary from internal to external resources and includes commissioning through various business units within Council. Future iterations of this AM Plan will further consolidate and refine the various delivery programs.

5.2. Background Data

5.1.2 Asset capacity and performance

Assets 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
All drainage assets	Some sections of the network have less than one in 10 year ARI capacity causing excessive ponding on the roadway surface during minor rainfall events.

5.2.1. Asset condition

Council engaged the services of OPUS International Consultants in 2015 and Total Drain Clean in 2019 to undertake a condition inspection sample survey of Council's stormwater drainage system. The survey comprised of a representative sample of approximately 5% of Council's drainage pipe network.

The inspection methodology included data collection and records of pit condition and pipe condition using Quickview camera video and photographs of the internal drainage system. This information was used to undertake a condition rating of the stormwater drainage pipes using the IPWEA – NAMS.AU Practice Note No.5 Stormwater Drainage assessment framework.

Council currently does not have a formal Assessment Methodology document, however the methodology used to assess the asset condition of its stormwater drainage infrastructure is summarised as follows:

- Typically all above ground drainage structures such as pits, basins etc. are assessed by visual inspection on site. Record of their condition is by photograph of the structure.
- Below ground structures such as pipes, pits (internal component) and culverts are inspected by CCTV, results recorded in a report and video footage and an assessment of the condition of the asset is undertaken on the review of the report and video.

5.2.2. Condition Scores – Stormwater Asset Condition

The Stormwater portfolio's physical componentised condition rating as a percentage of gross replacement cost, being:

1.	As new, requires normal maintenance only:	9.3%
2.	Good condition, requires minor maintenance:	65.7%
3.	Acceptable condition, requires significant maintenance:	22.4%
4.	In very poor condition, requires renewal:	1.7%
5.	Unserviceable or unusable	0.9%

There is a broad range of asset condition. Condition "0" indicates that no condition data is held in the asset register.

Condition is measured using a 1 – 5 grading system[10] as detailed in Table 5.1.3.

[10] IPWEA, 2015, IIMM, Sec 2.5.4, p 2|80.

Table 5.1.3: Simple Condition Grading Model

Condition Grading	Description of Condition
1	**Very Good**: A near new asset with no visible signs of deterioration. Only planned maintenance required.
2	**Good**: An asset in a very good overall condition but with some early stages of deterioration evident. Minor maintenance required plus planned maintenance
3	**Fair**: An asset in fair overall condition. Deterioration in condition would be obvious and there would be some serviceability loss. Significant maintenance required
4	**Poor**: An asset in poor overall condition. Deterioration would be quite severe and would be starting to limit the serviceability of the asset. Maintenance costs would be high and significant renewal/rehabilitation is required
5	**Very Poor**: An asset in extremely poor condition with severe serviceability problems and needing rehabilitation immediately. There would be an extreme risk in leaving the asset in service. Physically unsound and/or beyond rehabilitation

5.3. Measuring the Condition of Council's Assets

5.3.1. Asset Condition Assessment Methodology

Council's drainage network is located within road reserves, open space and through private property.

In addition to the above, within Council's Local Government Area exists approximately 62.6 km of stormwater drainage conduits and 2,390 stormwater pit structures that are owned and managed by the Roads and Maritime Service (RMS) and are located predominantly on RMS roads and reserves.
Of the 336.7kms of stormwater drainage asset stock maintained by Parramatta City Council, the most predominant material type is concrete.

Table 5.3.1: Stormwater Drainage Pipe and Pit Quantities by Hierarchy as at 2020

Stormwater Drainage Hierarchy and Responsibility	Pipe Lengths (m)	Pit Structure Quantity (each)
Commercial	25,978	948
Council Reserve	29,303	1,504
Industrial	22,464	685
Pollution Control Devices	883 each	20
Private Land	84,708	553
Residential & Minor Rd	173,422	10,228
Totals	**336,758**	**13,938**

Figure 5.2- Percentage Distribution of Stormwater Drainage Pipe Network by Hierarchy as at 2020.

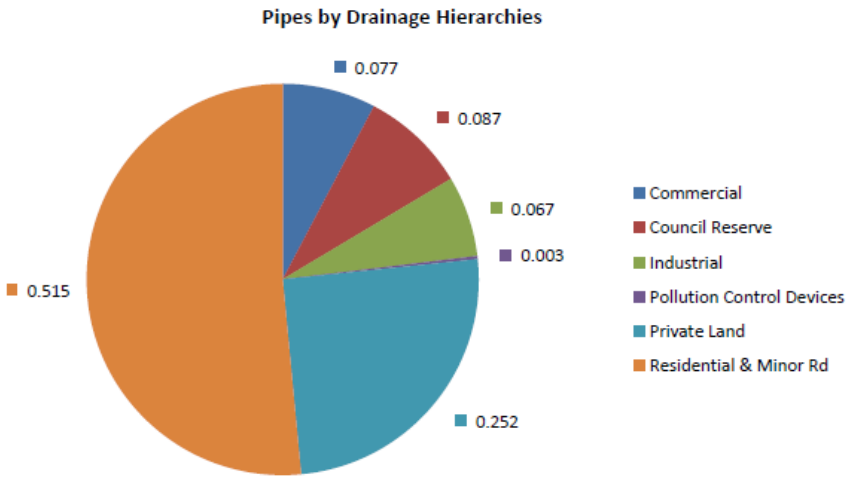
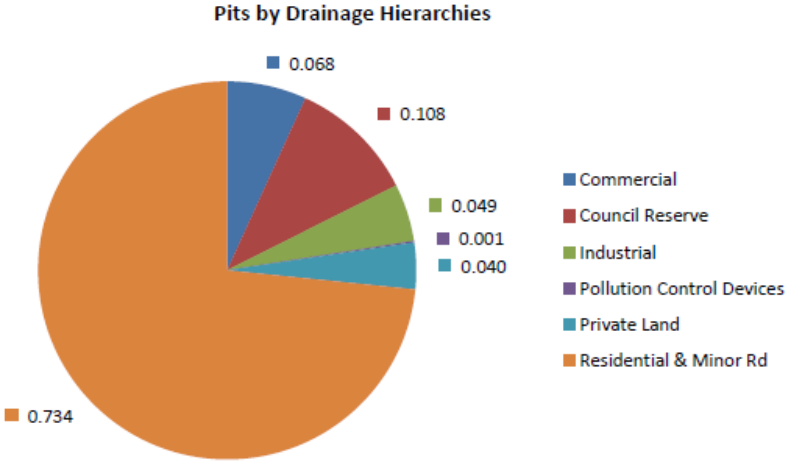


Figure 5.3 - Percentage Distribution of Stormwater Drainage Pit Network by Hierarchy as at 2020.



Material Type

The majority of council's stormwater drainage pipe system is constructed in concrete. This accounts for approximately 97% of the network. Other material types are PVC, vitrified clay, stone and brick.

The majority of council's pits, approximately 99%, are constructed in concrete.

The estimated percentage breakup of the drainage pipe network and pits, based on material type as reported in the OPUS Stormwater Drainage Condition Survey 2015 Condition Inspection report are provided below in the figures below.

Figure 5.4 - Material as a percentage of the known pipe network.

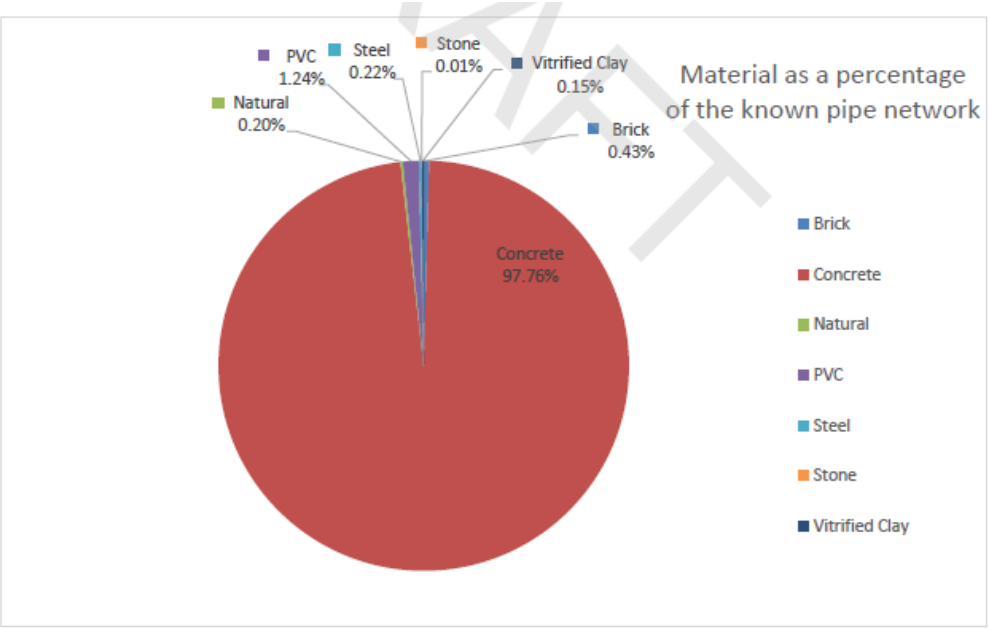
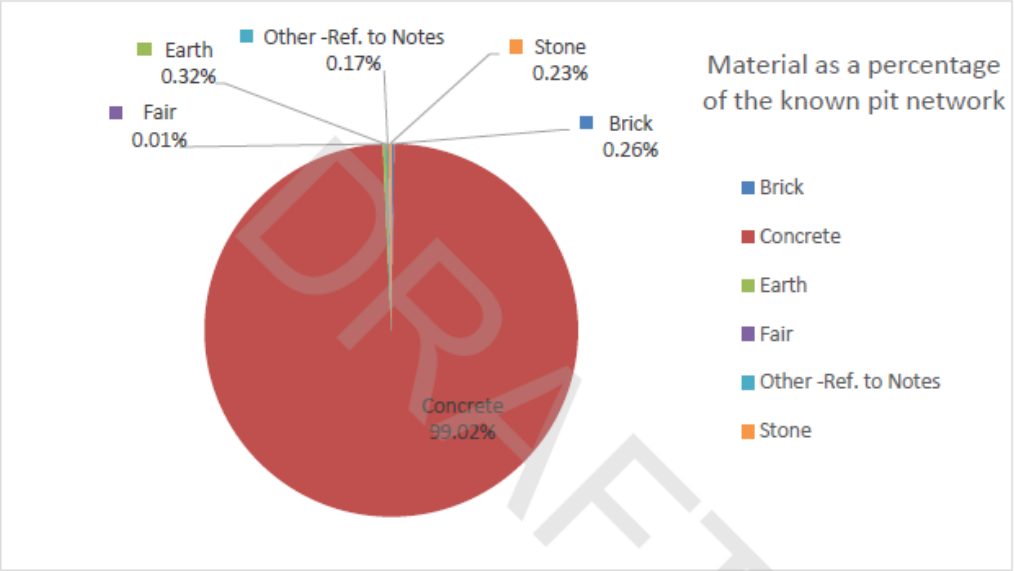


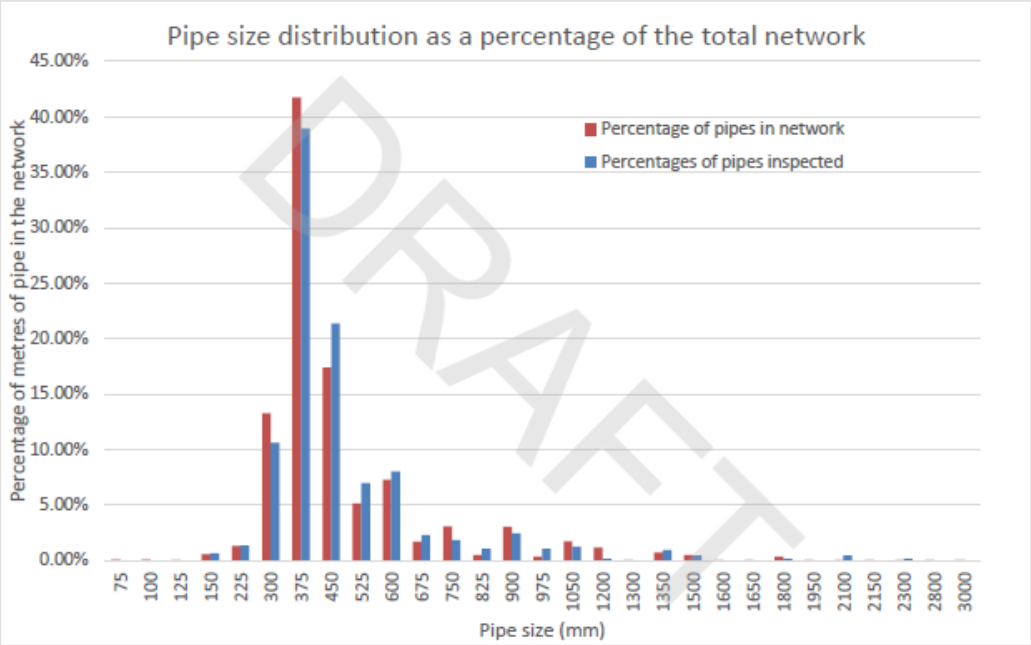
Figure 5.5 - Material as a percentage of the known pit network.



Pipe Size Distribution

Council's stormwater drainage pipe system comprises of a variety pipe size that range typically from 300 mm to 1200 mm and larger. Figure below provides pipe size distribution as a percentage of the total network as reported in the OPUS Stormwater Drainage Condition Survey 2015 Condition Inspection report.

Figure 5.6 – Pipe size distribution as a percentage of the total network



5.4. Operations and Maintenance Plan

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

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

5.2.1 Operations and Maintenance Plan

Operations activities affect service levels including quality and function through the types and timing of activities, and the design of the infrastructure. Examples of these include street sweeping and grass mowing frequency, intensity and spacing of street lights and cleaning frequency and opening hours of building and other facilities.

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

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

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

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

Actual past maintenance expenditure is shown in Table 5.2.1.

Table 5.2.1: Maintenance Expenditure Trends

Year	Maintenance budget
2023/24	$3,467,731

2024/25	$3,581,285
2025/26	$3,630,138

Planned maintenance work as a % of total maintenance expenditure is not identified. Information on this should be developed for the next revision of this asset management plan, as higher proportions of planned maintenance expenditure to reactive maintenance will provide better value.

Maintenance is currently entirely reactive, and mainly involves clearing pipe and pit blockages and emptying SQIDs when they are close to full, or at regular intervals. Council would like to shift to having planned maintenance programs to at least some extent; though due to the unpredictable nature of stormwater drainage, reactive maintenance will continue until proactive CCTV inspections have occurred for several years

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

5.2.2 Operations and Maintenance Strategies

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

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

5.5. Routine Maintenance Plan

Maintenance are those minor works necessary to keep assets on their expected life-cycle path. Failing to carry out necessary maintenance when it is required will result in assets deteriorating faster than expected.
Not achieving the expected life from assets costs the community in the long run as it results in renewal of its assets earlier resulting in higher annual capital renewal expenditures. In addition, as the overall condition of the assets deteriorates the annual maintenance cost will rise as assets in poorer condition require more maintenance.

5.6.1 Operations Practices

Within the overall Stormwater Drainage network asset portfolio, there are specific groups of asset types which have practices for their ongoing operation. These practices relate to the asset's operation and provision, and are separate from maintenance practices dealt with previous sections. However, operational activities are not distinguished from maintenance activities and are included in maintenance expenditure in Council's financial system.

5.6.2 Maintenance plan

Maintenance Activities

The extent of maintenance activities undertaken for stormwater drainage network assets is significant and consists of

- Clean drains/ culverts/ [its
- Repair pipes and culverts
- Repair pits and stormwater drainage structures
- Storm and flood
- Subsoil drainage
- Cleaning and repairing open drains

When determining the required maintenance in year 2022 based on the distribution of the open space asset stock, Council has adopted an 'As a percentage of Replacement Cost' approach to determine the Required Annual Maintenance. This is consistent with the International Infrastructure Management Manual and other industry standards. The percentage of the Replacement Cost adopted for Roads and kerbs assets is as follows.

Council's current 10 Year LTFP allocation of funding to Open Space Maintenance and Operating is broken down in the following table:

	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33
Operations	$3,467,731	$3,581,285	$3,630,138	$3,678,003	$3,788,341	$3,892,405	$3,923,473	$4,109,149	$4,211,885	$4,317,182
Maintenance	$1,613,668	$1,474,130	$1,521,647	$1,570,712	$1,616,124	$1,658,183	$1,571,896	$1,745,603	$1,784,474	$1,824,206

5.6. 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.

The service hierarchy is shown is Table 5.3.2.

Table 5.2.2: Asset Service Hierarchy

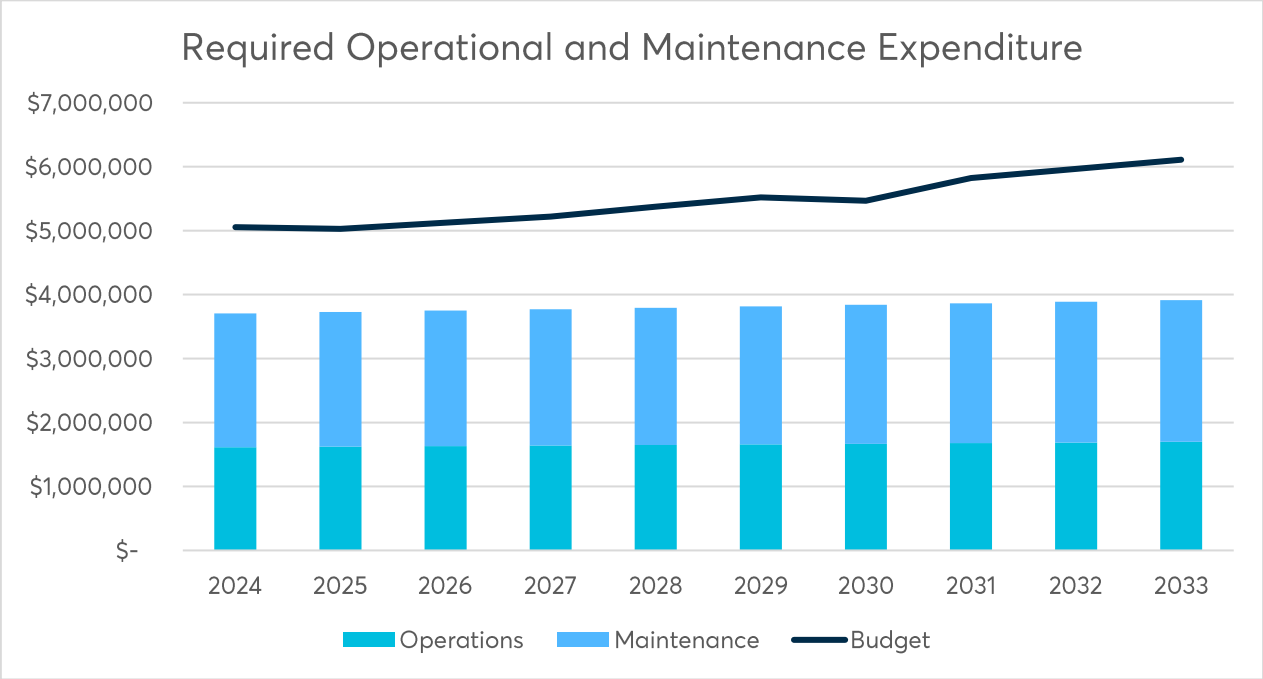
Service Hierarchy	Service Level Objective
Parramatta Dam water levels	Retain static water level at a to be determined level at all times
Surface flow paths for drainage network	Ensure all surface flow paths in city road reserves, easements and Park Lands are retained and unobstructed and provide maximum flood protection to properties.
Stormwater drainage main drainage	Ensure all stormwater main drainage are operating at greater than 80% capacity to minimise flooding to properties and obstruction to road users
Reserves and parks watercourses	Minimise the occurrence of obstructions in water courses

	which diverting creek flows onto adjacent roadways and open space
Stormwater detention basins	Ensure Council's stormwater detention basins remain fully operational at all times
Stormwater drainage network major catchment low points	Operate pipes, inlet and manholes at minimum 80% capacity to minimise flooding of roads and provide maximum protection to properties adjacent low points with significant upstream catchment area
Stormwater drainage network park paths and access roads	Minimise pedestrian and cycling obstructions due to flooding caused by failed stormwater drainage infrastructure
Pollutant management	Operate Council's suite if gross pollutant traps to maximise the interception of litter and organic material from receiving watercourses.

5.2.3 Summary of future operations and maintenance expenditures

Forecast operations and maintenance costs are expected to vary in relation to the total value of the asset stock. If additional assets are acquired, the future operations and maintenance costs are forecast to increase. If assets are disposed of the forecast operation and maintenance costs are expected to decrease. Figure 5.2 shows the forecast operations and maintenance costs relative to the proposed operations and maintenance Planned Budget.

Figure 5.7 - Projected Operations and Maintenance Expenditure



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

Maintenance is funded from the operating budget where available. This is further discussed in Section 7.

5.7. Renewal 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 service potential. Work over and above restoring an asset to original service potential is upgrade or new works expenditure resulting in additional future operations and maintenance costs.

Renewal will be undertaken using 'low cost' renewal methods where practical. The aim of 'low cost' renewals is to restore the service potential or future economic benefits of the asset by renewing the assets at a less cost than actual replacement costs. Typical stormwater renewal works include the replacement of existing:-

- Drainage
- Pits and structures
- Gross Pollutant traps
- Dam components

With infrastructure assets, the lowest total cost of ownership is achieved through developing a Renewal and Replacement Plan around the practice of replacing assets when they are at the end of the life as determined by their condition.

Budgeting for the future based on historical spending has been shown to be unreliable as it does not consider any growth areas within the municipality. Growth means an increasing asset portfolio and this eventually results in increased asset renewal expenditure demands. While the growth has also resulted in an increasing rate base, the demand for increased expenditure lags at least a decade or two behind due to the long lives of infrastructure assets.
The lag in the need to grow the income can be painful for both the Council and the community especially if the period of growth has passed. Hence it is vital that Council tracks the consumption of its assets and forecasts the asset renewal up to 10 years ahead.

5.3.1 Renewal plan

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

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

Method 1 was used for this asset management plan.

It is common that the valuation registers used in Scenario 1 are not developed to a level of maturity where they are reliable for producing a realistic renewal forecast. Ideally when this asset register is sorted by remaining life from 1 to 10 years this should be consistent with the capital renewal program. For City of Parramatta Council the refinement of the asset register to achieve this situation should become an important part of the asset management improvement plan.

Scenario 2 is prepared using the technical estimates of what renewal is required to sustain the current levels of service, plus the known capital upgrade/new expenditures over the 10 year period. It is common that that this estimate will be beyond the current funding capacity of council. Scenario 3 is a reflection of the actual funding available. The difference between Scenario 2 and Scenario 3 represents "what we can't do". The discussion about this "gap" will lead us into a much better informed community discussion about what are achievable and acceptable service levels, as well as giving a focus on managing risk.

The 2015 strategic modelling analysis predicts the deterioration of Council's stormwater drainage asset stock by calculating the results of three different funding options. The length of time predicted for each option was for a period of 10 years until the year 2025. The results of the analysis have been graphed in the following Section.
The overall deterioration of the Parramatta City Council's stormwater drainage asset stock has been established by predicting the behaviour of every individual stormwater drainage segment after allocation of treatments based on the optimised decisions determined for each funding option.

The condition graphs in Section 6.1 illustrate the predicted results of the stormwater drainage asset stock modelling analysis for each of the different funding options. These funding options are described as follows:

Option 1

This funding option models how the stormwater asset stock would improve or deteriorate if Council's current financial budget allocation as outlined in Council's current Long Term Financial Plan is adopted over the following 10 years. Average $30.3 million in Capital Renewal funding allocation over 10 years.

Option 2

This funding option models what would happen to the future condition of the stormwater asset stock if the budget allocation identified in funding Option 3 were to be reduced by 45% each year over the following 10 years. Note that this a baseline strategy to identify what would occur to the asset network condition should funding allocations be reduced to $7 million in Capital Renewal funding allocation over 10 years.

Option 3

This funding option has been based on the financial requirements to achieve and maintain the current stormwater condition (average 2.0 overall condition index) at status over the following 10 years and has been determined by the Optimisation module in the Assetic myPredictor© software. $10.5 million in Capital Renewal funding allocation over 10 years.

All financial funding requirements identified in the following sections relate to renewing like for like assets in terms of their current design, however utilising construction practices of the day. For example Vitrified clay pipes are no longer manufactured and hence when say a 300mm diameter Vitrified clay pipe requires renewal, it will be replaced with a 300mm diameter reinforced concrete pipe. If the pipe size reinstated is larger than original, then this is considered an upgrade which provides a higher level of service.

Council's Works Programs for stormwater drainage capital works is based on the following factors:

- Major Developments or subdivisions such as North Parramatta (UrbanGrowth) and DHA Brownfield development in Ermington.
- Growth in population
- Changes in public transport infrastructure i.e. light rail
- Changes in state infrastructure i.e. Westconnex and urban growth in North Parramatta
- Changes in local infrastructure i.e. Parramatta Square (closure of three roads)
- City Centre Street Scape CIP 10008 ($2m p.a.)

5.3.2 Renewal and Replacement Strategies

City of Parramatta 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 specific requirements of the service provider
    - the service delivery 'deficiency', present risk and optimum time for renewal/replacement,

    - the project objectives to rectify the deficiency,
    - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
    - and evaluate the options against adopted evaluation criteria, 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 the best value for resources used is obtained.

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 or accessibility of facilities).[11]

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 high use and subsequent impact on users would be greatest,
- Have a total value represents the greatest net value,
- 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
- Have replacement with a modern equivalent asset that would provide the equivalent service at a savings.[12]

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 5.3.2.

Table 5.3.2: Renewal and Replacement Priority Ranking Criteria

Criteria	Weighting
Asset condition	40%
Asset capacity	20%
Flood risk	20%
Joint project – i.e. road renewal in same area	20%
Total	100%

Renewal and replacement standards

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

[11] IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.
[12] Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

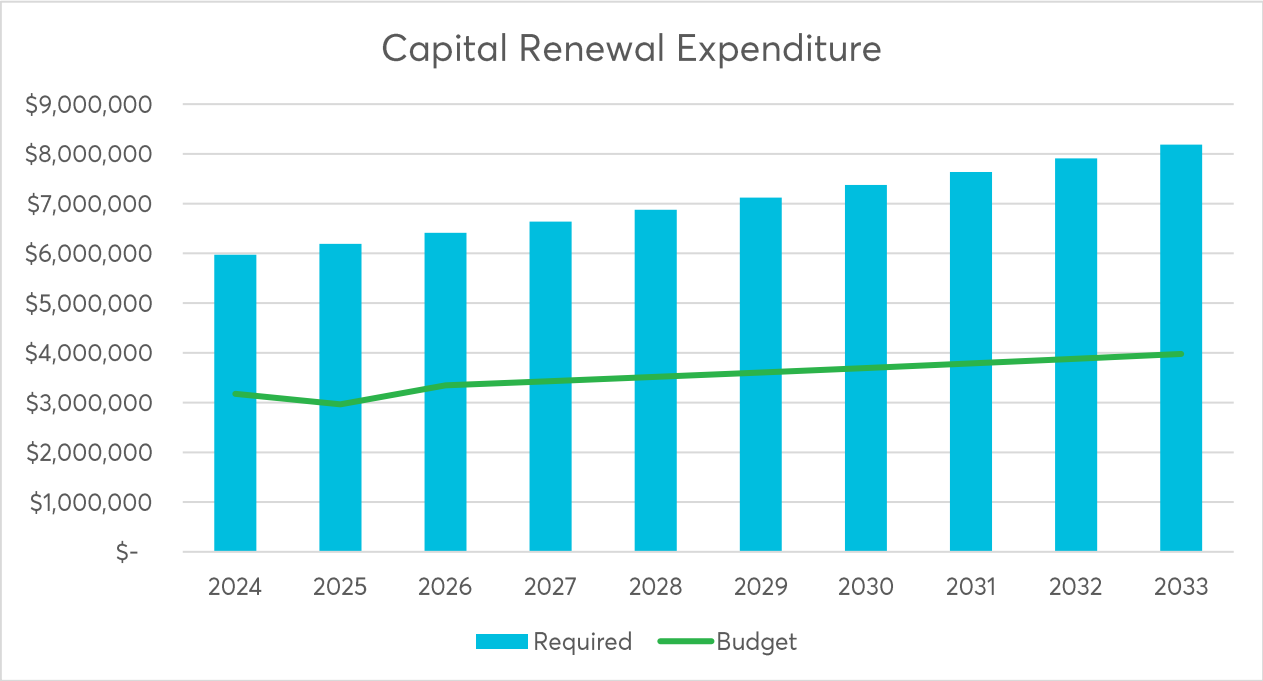
- Parramatta city works guidelines
- Australian Standards – Rainfall and run off 1999
- Relevant Aus Standards (AS3600-2009 Design of Concrete Structures)
- Project Specific Technical Specifications (e.g. NATSPEC)
- Council Planning Regulations and DCP's
- Other Council Policies & Objectives

5.3.3 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time when the asset stock increases. The expenditure is required is shown in Fig 5. Note that all amounts are shown in real values.

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

Fig 5.7: Projected Capital Renewal and Replacement Expenditure



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

Renewals and replacement expenditure in the capital works program will be accommodated in the long term financial plan. This is further discussed in Section 7.

The renewal projection (forecast) in Scenario 1 (Using the asset/valuation register) generates a highly variable renewal profile. Whilst the long term averages and total values from this register are sound, the shorter term renewal forecast are not, and are inconsistent with the known capital renewal plans. This indicates that further refinement of the asset register is required before it is valuable as a capital renewal planning tool. This should be given a high priority in the asset management improvement plan.

5.3.4 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. These additional assets are considered in Section 4.4.

Council has already identified and resolved to undertake a number of upgrade or new asset projects to

support existing services. These upgrade/new works are discussed in the following Sections.

5.4.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. 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.

Table 5.4.1: New Assets Priority Ranking Criteria

Criteria	Weighting
Public safety	45%
Legislative requirement	15%
External partnership – i.e. state government	15%
Community demand	25%
Total	100%

5.4.2 Capital Investment Strategies

Capital upgrade and new projects will be planned to meet level of service objectives by:

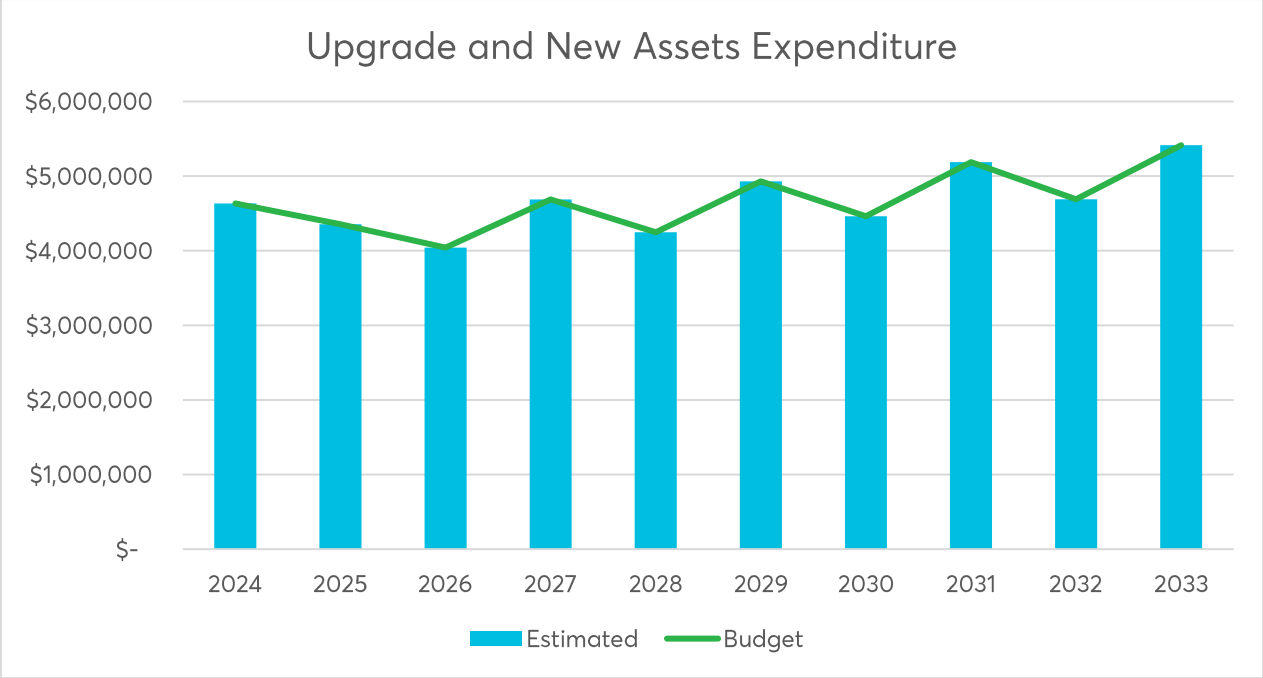
- Continuing to implement Council's major projects
- Finalising a new Developer Contributions Plan
- Planning and scheduling capital upgrade and new projects to deliver the defined level of service in the most efficient manner,
- Undertake project scoping for all capital upgrade/new projects to identify:
    - 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.

5.4.3 Summary of future upgrade/new assets expenditure

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

Fig 5.8: Projected Capital Upgrade/New Asset Expenditure



Expenditure on new assets and services in the capital works program will be accommodated in the long term financial plan. This is further discussed in Section 7.2.

5.8. 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 5.5, together with estimated annual savings from not having to fund operations and maintenance of the assets. These assets will be further reinvestigated to determine the required levels of service and see what options are available for alternate service delivery, if any. Any costs or revenue gained from asset disposals is accommodated in the long term financial plan.

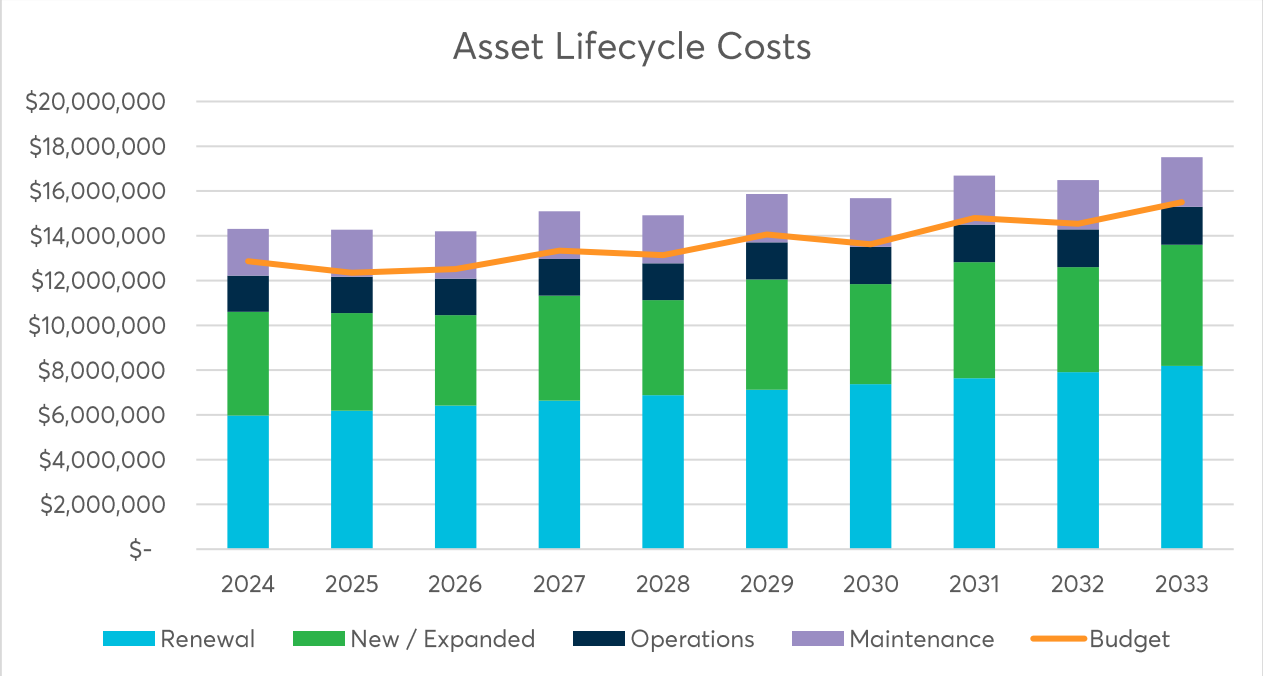
Where cash flow projections from asset disposals are not available, these will be developed in future revisions of this asset management plan.

5.9. Summary of asset forecast costs

The financial projections from this asset plan are shown in Figure 5.7.1. These projections include forecast costs for acquisition, operation, maintenance, renewal, and disposal. These forecast costs are shown relative to the proposed budget.

The bars in the graphs represent the forecast costs needed to minimise the life cycle costs associated with the service provision. The proposed budget line indicates the estimate of available funding. The gap between the forecast work and the proposed budget is the basis of the discussion on achieving balance between costs, levels of service and risk to achieve the best value outcome.

Figure 5.9: Lifecycle Summary



All figure values are shown in current day dollars.

6. RISK MANAGEMENT PLAN

The purpose of infrastructure risk management is to document the results and recommendations resulting from the periodic identification, assessment and treatment of risks associated with providing services from infrastructure, using the fundamentals of International Standard ISO 31000:2009 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2009 as: "coordinated activities to direct and control with regard to risk"[13].

An assessment of risks[14] 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'. 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.

6.1. 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, investigative activities, maintenance plans and capital expenditure plans can be targeted 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 6.1.

Generally the following stormwater drainage and related assets are regarded as 'critical';

- Systems and pipelines in flood prone areas and catchment low points
- Systems running through private property
- Major channels and culverts
- Flood mitigation facilities including detention basins, surcharge pits and relevant components eg spillways, fencing, signage
- Major environmental water quality facilities and devices
- Traffic facilities including facilities on arterial and sub-arterial roads and facilities in commercial/shopping centre and school zones
- Major retaining walls and embankments within the road reserve

Table 6.1: Critical Assets and Service Level Objectives

Critical Assets	Critical Failure Mode	Operations & Maintenance Activities
Lake Parramatta Dam and other major dam structures	Structural Failure	Ensure regular structural and condition inspections are undertaken on all dam structures and appropriate maintenance and renewal activities are carried out
Lake Parramatta Dam and other major dam structures	Failure of water release control system to maintain water level	Ensure Maintenance and Operations plans are executed and control system is operated in accordance with operational manual
Stormwater	Structures fail to restrict flow	Ensure regular inspection and maintenance

[13] ISO 31000:2009, p 2

detention basins	to downstream receiving networks	of Detention Basin structures and water control infrastructure
Stormwater drainage network major catchment low points	Blockage of low point outlet drains – flooding of adjacent properties and roadways	Increased inspections and cleaning of stormwater interception pits at major low points to minimise likelihood of blockage

The full details of Enterprise Risk Management are contained within the associated Policy and Procedures. This Asset Management Plan identifies risks, mitigations and insurance measures contained within this asset class.
To further identify and manage the risks associated with providing services from stormwater drainage assets Council has implemented many management practices and procedures. These include:

- Flood Protection Program (for bridges, roads, contaminated Land) is to be undertaken
- Heat and increased extreme weather events impact on assets
- Operating a reactive maintenance service for all assets and services and migrating to operating a planned maintenance system that reflects the Asset Hierarchy.
- Monitoring condition and remaining service life of assets nearing the end of their service life.
- Renewing and upgrading assets to maintain service delivery (CBD increase)
- Closing and disposing of assets that are not providing the required service level.
- Acquiring or constructing new assets to provide new and improved services.
- Inspections, prioritisation of reactive maintenance based on risk avoidance.
- Acknowledging that no drainage assets are insured therefore relying on maintenance, operating, new drains and upgrades are the only risk mitigations available in the drainage asset class.

6.1.1. Drainage Critical Assets

Critical Drainage and Flood Mitigation assets include:

- Systems and pipelines in flood prone areas and catchment low points
- Systems running through private property
- Major channels and culverts
- Flood mitigation facilities including detention basins, surcharge pits and relevant components eg spillways, fencing, signage
- Major environmental water quality facilities and devices

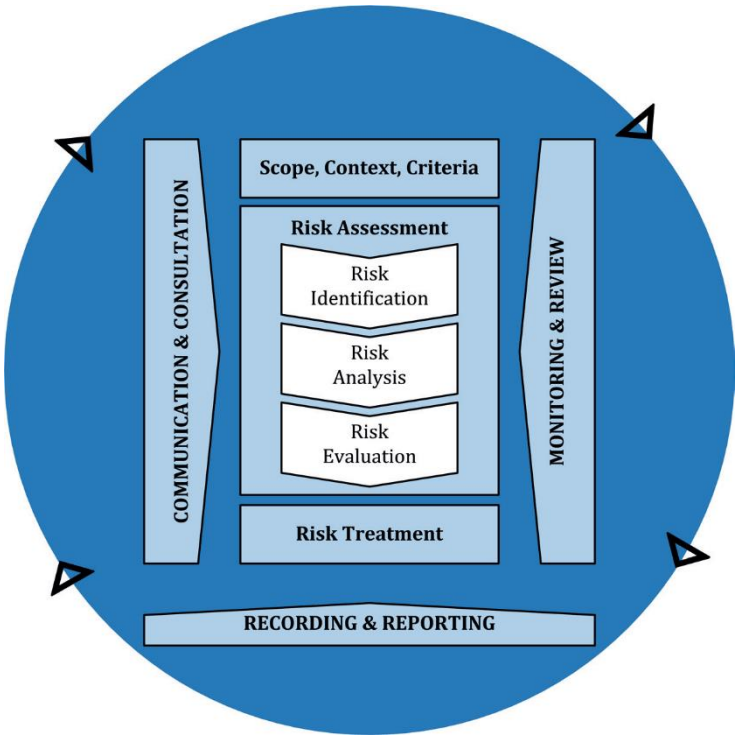
6.2. Risk Assessment

The risk management process used in this project is shown in Figure 6.2 below.

It is an analysis and problem solving technique designed to provide a logical process for the selection of treatment plans and management actions to protect the community against unacceptable risks.

The process is based on the fundamentals of ISO risk assessment standard ISO 31000:2009.

Fig 6.2 Risk Management Process – Abridged



Source: ISO 31000:2018, Figure 1, p9

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.

An assessment of risks[15] associated with service delivery from infrastructure assets has identified the critical risks that will result in significant loss, 'financial shock' or a reduction in service.

Critical risks are those assessed with 'Very High' (requiring immediate corrective action) and 'High' (requiring corrective action) rating identified in the Infrastructure Risk Management Plan. The residual risk and treatment cost after the selected treatment plan is operational is shown in Table 6.2. These risks and costs are reported to management and Council.

Reactive/safety Inspection - Works and services carry out reactive and safety inspections as a result of CRM requests or from observation or planned maintenance programs.

Incident inspections are carried out by the Design & Investigation Section to enable an incident condition report to be prepared for use in legal proceedings and the gathering of information for the analysis of the causes of accidents.

Table 6.3: Risk Rating Matrix

Risk Rating					
Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic

Rare	L	L	M	M	H
Unlikely	L	L	M	M	H
Possible	L	M	H	H	H
Likely	M	M	H	H	VH
Almost Certain	M	H	H	VH	VH

Ref: HB 436:2004, Risk Management Guidelines, Table 6.6, p 55.

6.2.1. Drainage and Flood Mitigation Asset Specific Risk Analysis

Although scientific evidence is limited at this stage, climate change may result in an increase in the frequency and/or intensity of rainfall in the future. This will place increased pressure on the drainage system. This means that drainage systems in some areas may need to be upgraded to accommodate the higher level of rainfall. A revised estimate of the likely impacts of increased frequency of extreme weather events is currently being prepared by industry specialists (eg Australian Rainfall and Runoff). When these new flood studies are available, Council will review and update all relevant standards and design procedures for its drainage network and systems.

Generally, the location of pipes below ground means that they are subject to fewer risks than other assets. The key risks are accidental damage as part of construction works, damage from natural causes (tree roots, drying soils) and damage or failure in extreme rainfall events. Accidental damage due to construction works can be best avoided through clear information on the location of Council's drainage assets. Generally, this is effective and there have been few significant incidences of damage in recent years.

Tree roots can cause significant damage to pipes, resulting in blockages, cracks and potentially breaks. Careful selection of tree species, particularly street trees, and use of root barrier and crack resistant pipe materials can reduce the incidence of this occurring. As many of Council's drainage systems are old and made from potentially porous or brittle material, tree roots remain a problem.

Clay soils, which are present in parts of the City expand and contract in times of rain or drought. This can cause pipes to crack, particularly those made of older, more brittle materials. Drainage system failure generally means that the components of the drainage system do not contain the water generated by a particular rainfall event. This will result in water escaping the drainage system and flooding surrounding areas. This is not usually a significant problem where overland flow paths are available to transport the water to the next section in the drainage system. If overland flow paths are not in place, or are not able to accommodate the volume of water, surrounding properties may flood.

Parramatta has a measurable number of older styled butt jointed pipes which are unable to respond to ground movements and can result in joint displacement. This displacement allows tree roots to enter the pipes and cause blockages to the drainage system, this is the main risk with drainage pipes. The current mitigation is to replace these butt joints with new 'spigot & socket' pipes with rubber ring joints whenever new works are undertaken. Identification of misaligned joints or joints infiltrated by tree roots identified in CCTV inspections are cleared by joint lining

This risk is best addressed by ensuring that drainage structures meet required standards, and that overland flow paths are in place. Council has established standards and DCP requirements for drainage infrastructure, and a Flood Mitigation strategy is in place and is being implemented.

The overall strategies for Council to manage risks are generally to either mitigate, avoid, transfer or accept. These will be further refined in future versions of this AM Plan. As it is envisaged that the strategies will be linked to ISO 31000 as it provides greater detail on how to deal with risk:

- Avoiding the risk by deciding not to start or continue with the activity that gives rise to the risk
- Accepting or increasing the risk in order to pursue an opportunity
- Removing the risk source
- Changing the likelihood
- Changing the consequences
- Sharing the risk with another party or parties (including contracts and risk financing)
- Retaining the risk by informed decision

To further identify and manage the risks associated with providing services from transport assets, Council has implemented many management practices and procedures. These include:

- Land Accuracy Project
- Heat and increased extreme weather events impact on assets
- Operating a reactive maintenance service for all assets and services.
- Operating a planned maintenance system for key assets.
- Monitoring condition and remaining service life of assets nearing the end of their service life.
- Renewing and upgrading assets to maintain service delivery (CBD increase)
- Closing and disposing of assets that are not providing the required service level.
- Acquiring or constructing new assets to provide new and improved services.
- Inspections, prioritisation of reactive maintenance based on risk avoidance
- Insurance policy addresses the critical assets
- Building and Service Continuity Plans

Council can also attempt to limit the ongoing financial risks of managing the stormwater assets portfolio by:

- Simplifying the financial reporting and control structures
- Value engineering the materials they are constructed from
- Simplification and allow for adaptability of future designs
- Updated plant and equipment (when required) with an environmental and cost efficient focus
- Integrate Business Information Modelling (BIM) and improved operating systems in new building assets which will lead to performance efficiencies

6.3. Infrastructure Resilience Approach

The resilience of our critical infrastructure is vital to our customers and the services we provide. To adapt to changing conditions and grow over time we need to understand our capacity to respond to possible disruptions and be positioned to absorb disturbance and act effectively in a crisis to ensure continuity of service.

To enhance our capacity to manage unforeseen or unexpected risk to the continuity of operations we take an infrastructure resilience approach using an 'all hazards' methodology.
The 'all-hazards' approach involves:

- An initial assessment of critical assets;
- A resilience assessment for these assets; and
- Identification of related improvements or interventions

Resilience is built on aspects such as response and recovery planning, financial capacity and crisis leadership.

7. 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.

As discussed in Section 5.4 the expenditure projection (forecast) in Scenario 1 (Using the asset/valuation register) is not consistent with the required works program or the long term financial plan, and is indicative of the continuing work required to improve the asset register.

Funding Sources available for the management of buildings within the AM Plan and Program are as follows:

1. General Revenue
2. Asset Replacement Reserve
3. Special Rates
4. Grants and Contributions
5. Section 7.11 and 7.12
6. Other Reserves
7. Loans (LIRS)

Council is currently reviewing, qualifying and consolidating under the Asset Strategy Unit, all of its financial data and control of funds across all building asset classes with regard to the following:

- Operations, Maintenance & Capital - Actuals, Budget, Benchmarks and Backlog
- Lifecycle Cost Analysis
- Confirming Sustainable Funding Sources
- Adopted Valuation and Depreciation amounts

Lifecycle Expenditure $'000	2023/2024 Budget	2024/2025 Budget	2025/2026 Budget
Operational	$1,613,668	$1,474,130	$1,521,647
Maintenance	$3,467,731	$3,581,285	$3,630,138
Capital renewal	$4,302,500	$4,090,000	$4,471,625
Capital upgrade and new	$3,507,500	$3,230,000	$2,916,375
Total	$12,891,399	$12,375,415	$12,539,785

Table 7.1 City of Parramatta lifecycle budget expenditure for Stormwater assets

*Source: LTFP 2021/22 Delivery Plan
It should be noted that Parramatta is undergoing generational change and urban growth. The projected population growth is the highest in NSW and Western Sydney. Therefore the resource allocation of this AM Plan reflects considerable investment in building facilities to be constructed in the future.

7.1.1 Work Category Definitions

Operations: Operational activities keep the asset utilised but have little to no effect on condition.

Typical operational activities include:

- Cleaning
- Pest control
- Utility costs
- Security services
- Rates & Charges
- Insurance

Maintenance: Maintenance activities are those routine works which keep assets operating to the required service levels. The fall broadly into two categories:

Planned Maintenance (Proactive) - Inspection and maintenance works planned to prevent asset failure; and

Unplanned Maintenance (Reactive) - Reactive action to correct asset faults and failures on an as required basis (ie emergency repairs).
Historically, expenditure on infrastructure assets has generally been considered to be Capital when the asset is being provided from new or is subject to some major change or Maintenance when the expenditure is minor during the life of the asset.

Strategic Asset Management requires more clarity about the effect any expenditure is having on an asset, especially its expected life-cycle. As a consequence, infrastructure asset expenditure is better classified into one of five categories. These categories are set out in **Error! Reference source not found. Error! Reference source not found.**.

Table 7.2: Infrastructure Work Expenditure Categories

Expenditure Type	Description	Typical Work	Effect on Life-cycle
Capital - New	Provision of a new asset.	Construction of a new building.	Commences the asset on its life-cycle path.
Capital - Renewal	Renews a degraded asset back to New or Near New condition.	Replacing a leaking roof.	Resets the asset back to the start of its life-cycle path.
Capital - Upgrade	Improves the functionality of an asset.	Replacing existing lighting with energy efficient fittings.	Resets the asset back to the start of its life-cycle path.
Capital - Expansion	Improves the capacity of an asset.	Adding an additional room to a building.	Commences the expanded portion on its life-cycle path. Any effect on the original portion of the asset depends on any work done on that portion.
Maintenance	Minor repairs.	Repairing a tear in carpet.	Keeps asset on its expected life-cycle path.

It should also be noted that Council through its various business units and service providers, maintains an operational budget for its building portfolio. The Operational category is required to be clearly segregated from the capital and maintenance activities references above from an accounting perspective and can be defined as:

Operation	Recurring expenditure incurred from normal business operations	Utilities, cleaning and staff.	Activities which are necessary to keep the asset appropriately utilised, being running costs to service the asset

Future versions of this AM Plan will take into consideration the numerous Strategies and Programs currently under development by Council, including the financial considerations for each being Capital New, Renewal, Maintenance and Operational requirements.

7.1. Financial Sustainability and Projections

7.1.1. Sustainability of service delivery

There are two key indicators of sustainable service delivery that are considered in the AM Plan for this service area. The two indicators are the:

- asset renewal funding ratio (proposed renewal budget for the next 3 years / forecast renewal costs for next 3 years), and
- medium term forecast costs/proposed budget (over 10 years of the planning period).

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio[16]

	2023/2024	2024/2025	2025/2026
Renewal ratio	72%	66%	70%

The Asset Renewal Funding Ratio is an important indicator and illustrates that over the next 3 years we expect to have 71% of the funds required for the optimal renewal of assets.

Medium term – 10 year financial planning period

This AM Plan identifies the forecast operations, maintenance and renewal costs 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.

This forecast work can be compared to the proposed budget over the first 10 years of the planning period to identify any funding shortfall.

The forecast operations, maintenance and renewal costs over the 10 year planning period is $12,395,377 average per year.

The proposed (budget) operations, maintenance and renewal funding is $13,700,536 on average per year giving a 10 year funding surplus of $130,159 per year. This indicates that 111% of the forecast costs needed to provide the services documented in this AM Plan are accommodated in the proposed budget. Note, these calculations exclude acquired assets.

Providing sustainable services from infrastructure requires the management of service levels, risks, forecast outlays and financing to achieve a financial indicator of approximately 1.0 for the first years of the AM Plan and ideally over the 10 year life of the Long-Term Financial Plan.

7.1.2. Forecast Costs (outlays) for the long-term financial plan

Table 7.1.3 shows the forecast costs (outlays) required for consideration in the 10 year long-term financial plan.

Providing services in a financially sustainable manner requires a balance between the forecast outlays required to deliver the agreed service levels with the planned budget allocations in the long-term financial plan.

[16] AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

A gap between the forecast outlays and the amounts allocated in the financial plan indicates further work is required on reviewing service levels in the AM Plan (including possibly revising the long-term financial plan).

We will manage the 'gap' by developing this AM Plan to provide guidance on future service levels and resources required to provide these services in consultation with the community.

Forecast costs are shown in 2022-dollar values.

Table 7.3: Forecast Costs (Outlays) for the Long-Term Financial Plan

Year	Acquisition	Operation	Maintenance	Renewal	Disposal
2024	$3,507,500	$1,613,668	$3,467,731	$4,302,500	$0
2025	$3,230,000	$1,474,130	$3,581,285	$4,090,000	$0
2026	$2,916,375	$1,521,647	$3,630,138	$4,471,625	$0
2027	$3,561,699	$1,570,712	$3,678,003	$4,555,291	$0
2028	$3,121,894	$1,616,124	$3,788,341	$4,641,048	$0
2029	$3,805,504	$1,658,183	$3,892,405	$4,728,949	$0
2030	$3,337,874	$1,571,896	$3,923,473	$4,819,048	$0
2031	$4,062,049	$1,745,603	$4,109,149	$4,911,399	$0
2032	$3,564,848	$1,784,474	$4,211,885	$5,006,059	$0
2033	$4,288,375	$1,824,206	$4,317,182	$5,103,085	$0

7.2. Funding Strategy

The proposed funding for assets is outlined in the Entity's budget and Long-Term financial plan.

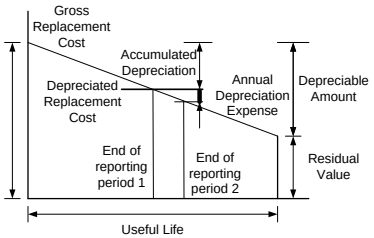
The financial strategy of the entity determines how funding will be provided, whereas the AM Plan communicates how and when this will be spent, along with the service and risk consequences of various service alternatives.

7.3. Valuation Forecasts

7.3.1. Asset valuations

The best available estimate of the value of assets included in this AM Plan are shown below. The assets are valued at Fair Value as of 30 June 2021:

Replacement Cost (Current/Gross)	$697,540,000
Depreciable Amount	$697,540,000
Depreciated Replacement Cost[17]	$491,359,000
Depreciation	$5,971,000



7.3.2. Valuation forecast

Additional assets will generally add to the operations and maintenance needs in the longer term. Additional assets will also require additional costs due to future renewals. Any additional assets will also add to future depreciation forecasts.

[17] Also reported as Written Down Value, Carrying or Net Book Value.

7.4. Key Assumptions Made in Financial Forecasts

In compiling this AM Plan, it was necessary to make some assumptions. This section details the key assumptions made in the development of this AM plan and should provide readers with an understanding of the level of confidence in the data behind the financial forecasts.

Key assumptions made in this AM Plan are:

Table 7.4: Key Assumptions made in AM Plan and Risks of Change

Key Assumptions	Risks of Change to Assumptions
Use of the existing inventory data	Medium-High Risk
Use of existing valuations, useful lives and remaining lives determined from the condition rating	Medium-High Risk
Use of current expenditure information as best as this can be determined	Low-Medium Risk
That the current expenditures are not resulting in a significant decline in the service levels provided in the medium term	Low-Medium Risk

7.5. Forecast Reliability and Confidence

The forecast costs, proposed budgets, and valuation projections in this AM Plan are based on the best available data. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is classified on a A - E level scale[18] in accordance with Table 7.5.

Table 7.5: Data Confidence Grading System

Confidence Grade	Description
A. Very High	Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%
B. High	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. Medium	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. Low	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. Very Low	None or very little data held.

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 7.6.

Table 7.6: Data Confidence Assessment for Data used in AM Plan

[18] IPWEA, 2015, IIMM, Table 2.4.6, p 2|71.

Data	Confidence Assessment	Comment
Demand drivers	B Reliable	Based on Recreation & Community Facilities Needs studies undertaken
Growth projections	A Highly reliable	Based on Census data
Operations expenditures	B Reliable	Expenditure information taken directly from Council's Power Budget system broken down into operations, maintenance, capital renewal and capital upgrade expenditures. This information is sued to populate the LTFP.
Maintenance expenditures	B Reliable	Expenditure information taken directly from Council's Power Budget system broken down into operations, maintenance, capital renewal and capital upgrade expenditures. This information is sued to populate the LTFP.
Projected Renewal expenditures.	B Reliable	Direct from budget, but breakdown into operations and maintenance and renewal is estimated and requires development
Asset values	C Uncertain	Based on 'Fair Value' valuations undertaken. New valuation due 2022.
Asset useful lives	C Uncertain	Estimated using typical values. Further substantiation required for next revision of the AMP
Condition modelling	C Uncertain	Based on condition assessments, creation dates and useful/remaining lives, further substantiation required for next revision of the AMP
Network renewals	B Reliable	Based on corporate knowledge of assest and recent assessments, further substantiation included in the next revision of the AMP
Defect repairs	B Reliable	Based on a number of condition assessments. Also based on corporate knowledge of assets and recent visual assessments, further substantiation included in the next revision of the AMP
Upgrade/New expenditures	B Reliable	Based on findings of the Recreation & Community Facilities Needs studies undertaken, which is included in the draft s94 Plan
Disposal expenditures	A Highly Reliable	Based on actual Council Resolutions

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

8. PLAN IMPROVEMENT AND MONITORING

8.1. Status of Asset Management Practices

8.1.1. Accounting and financial data sources

Council's accounting and financial management system is Technology One.

All operational, maintenance and capital construction cost are recorded in this system
Capital/maintenance threshold
Required changes to accounting financial systems arising from this AM Plan

- Develop reporting on expenditures, with separation of costs for operations as opposed to maintenance and improved reporting on capital expenditures as renewal or upgrade/new,
- Continued input and development of a single corporate asset register, in which financial calculations including calculation of annual depreciation can be undertaken by council.
- Linking of the customer service system/work orders to the corporate asset register to link requests to asset records,
- Improved project cost accounting to record costs against the asset component and develop valuation unit rates.

8.1.2. Asset management data sources

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;
- Projections of various factors affecting future demand for services;
- Correlations between maintenance and renewal, including decay models; Linkage from asset management to financial system

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 departmental business plans and budgets.

Accountabilities for asset management system and data maintenance

- Asset Strategy
- Asset Managers

Required changes to asset management system arising from this AM Plan

- Review of accuracy and currency of asset data,

- Continued development of a single technical asset register as the corporate asset register, in which financial calculations including calculation of annual depreciation can be undertaken by council at an individual asset component level.
- Development of a works costing and maintenance management system to improve works planning and cost recording, in particular to identify expenditure type (operations, maintenance, capital renewal and capital new/upgrade)

Improved project cost accounting to record costs against the asset component and develop valuation unit rates.

8.1.3. Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 8.2.

Table 8.1: Improvement Plan

Ref No.	High Level Strategic Actions	Priority	Deliver by:
1.	Establish transparent and responsible asset management processes that align with best appropriate practice. This includes ensuring consistency across the Asset Management Strategy, Long Term Financial Plan, Technology One asset registers, levels of service for all asset classes, data collection, validation and reporting.	High	2023/24
2.	Review and establish clear assumptions and a consistent approach to calculating depreciation and backlog. Apply this approach across all asset classes to obtain the most accurate backlog. Assess the backlog against Council's infrastructure priorities, financial budgets and Long Term Financial Planning.	High	2023/24
3.	Clearly identify all asset expenditure requirements into four categories: renewals, new, maintenance, and operational. Establish clear budgets and reporting lines for each category.	High	2023/24
4.	Allocate and clarify roles, resources and responsibilities for asset management. This includes establishing a good understanding of asset data, finance and budgets. Establish clear communication protocols between finance and the wider organisation.	High	2023/24
5.	Review and establish agreed levels of services in consultation with the community, outlined in the asset management plans.	Medium	2023/24-2024-25
6.	Review and estimate the future lifecycle costs of all decisions relating to new service levels and new assets, donated or built.	Medium	2023/24
7.	Review the future lifecycle costs and effects of donated assets on financial sustainability and the level of service delivery to the community. Create a disposal and donated assets plan that feeds information into the Long Term Financial Plan.	Medium	2023/24

8.	Prioritise and plan asset renewals to meet agreed service levels based on site inspections, infrastructure priorities and community importance.	Medium	2023/24
9.	Identify and prioritise critical assets for Council and its community. Establish emergency response plans and asset ownership for critical assets.	Medium	2024/25
10.	Create an environment where Council employees take part in the overall management of Council assets by developing asset management awareness and capability throughout the organisation.	Medium	2024/25

8.2. Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget planning processes and amended to show 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 the long term financial plan.

The AM Plan has a life of 4 years (Council election cycle) and is due for complete revision and updating within 1 year of each Council election.

8.3. 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 the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

9. REFERENCES

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMM.
- IPWEA, 2020 'International Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney
- IPWEA, 2018, Practice Note 12.1, 'Climate Change Impacts on the Useful Life of Assets', Institute of Public Works Engineering Australasia, Sydney
- IPWEA, 2012, Practice Note 6 Long-Term Financial Planning, Institute of Public Works Engineering Australasia, Sydney, https://www.ipwea.org/publications/ipweabookshop/practicenotes/pn6
- IPWEA, 2014, Practice Note 8 – Levels of Service & Community Engagement, Institute of Public Works Engineering Australasia, Sydney, https://www.ipwea.org/publications/ipweabookshop/practicenotes/pn8
- ISO, 2014, ISO 55000:2014, Overview, principles and terminology
- ISO, 2018, ISO 31000:2018, Risk management – Guidelines
- Community Strategic Plan
- Delivery Program
- Operational Plan

10. APPENDICES

Appendix A Projected 10 year Capital Renewal and Replacement Works Program

Appendix B LTFP Budgeted Expenditures Accommodated in AM Plan

Appendix C Abbreviations

Appendix D Glossary

Appendix A Projected 10-year Capital Renewal and Replacement Works Program

Appendix B Budgeted Expenditures Accommodated in LTFP

Year	Acquisition	Operation	Maintenance	Renewal	Disposal
2024	$3,507,500	$1,613,668	$3,467,731	$4,302,500	$0
2025	$3,230,000	$1,474,130	$3,581,285	$4,090,000	$0
2026	$2,916,375	$1,521,647	$3,630,138	$4,471,625	$0
2027	$3,561,699	$1,570,712	$3,678,003	$4,555,291	$0
2028	$3,121,894	$1,616,124	$3,788,341	$4,641,048	$0
2029	$3,805,504	$1,658,183	$3,892,405	$4,728,949	$0
2030	$3,337,874	$1,571,896	$3,923,473	$4,819,048	$0
2031	$4,062,049	$1,745,603	$4,109,149	$4,911,399	$0
2032	$3,564,848	$1,784,474	$4,211,885	$5,006,059	$0
2033	$4,288,375	$1,824,206	$4,317,182	$5,103,085	$0

Appendix C Abbreviations

AAAC	Average annual asset consumption
AM	Asset management
AM Plan	Asset management plan
GRC	Gross replacement cost
DA	Depreciable amount
DRC	Depreciated replacement cost
IRMP	Infrastructure risk management plan
LCC	Life Cycle cost
LTFP	Long term financial plan
MMS	Maintenance management system
RV	Residual value

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 (ARFR)

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 [AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9].

Average annual asset consumption (AAAC)*

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

Borrowings

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

Capital expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than

12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital expenditure - expansion

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

Capital expenditure - new

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

Capital expenditure - renewal

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

Capital expenditure - upgrade

Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the 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

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

Capital investment expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months (See capital expenditure definition)

Capitalisation threshold

The value of expenditure on non-current assets above which the expenditure is recorded 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 in the balance sheet after deducting any accumulated depreciation / amortisation and accumulated impairment losses.

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, top-down condition assessment, simple risk assessment and defined levels of service, in order to establish alternative treatment options and a long-term cash flow projection.

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

Those assets that are likely to result in a more significant financial, environment and social cost in terms of impact on organisational objectives.

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 gross replacement cost (GRC) 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.

Gross replacement cost (GRC)

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.

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 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.

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 parameters or combination of parameters that reflect social, political, economic and environmental outcomes that the organisation delivers.
Levels of service statements describe the outputs or objectives an organisation or activity intends to deliver to customers.

Life Cycle

The cycle of activities that an asset (or facility) goes through while it remains an identity as a particular asset i.e. from planning and design to decommissioning or disposal.

Life Cycle Cost (LCC)

Total LCC The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
Average LCC The life cycle cost 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 (LCE)

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.

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.
Maintenance may be classified as:

- **Planned maintenance**

Falls into three categories:
a) Periodic – necessary to ensure the reliability or to sustain the design life of an asset.
b) Predictive – condition monitoring activities used to predict failure.
c) Preventive – maintenance that can be initiated without routine or continuous checking and is not condition based.

- **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. The modern equivalent asset is evidenced by renewal strategies in asset management plans and financing in a long-term financial plan covering at least 10 years.

***Net present value (NPV)**

The value 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, 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 expenditure - renewal.

Remaining useful life

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

Renewal

See capital expenditure - renewal.

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. Residual value reflects consideration receivable from an asset at the end of its useful life to the entity and accordingly would not include cost savings from the re-use of in-situ materials.

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 facilities, sporting and recreation facilities, tourist information facilities, 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).

Strategic Asset Management Plan

A plan that documents and specifies how the organizational objectives are to be converted into AM objectives, the approach for developing AM Plans and the role of the AM system in supporting the achievement of AM objectives.

Strategic Plan

A plan containing the long-term goals and strategies of an organisation. Strategic plans have a strong external focus, cover major portions of the organisation and identify major targets, actions and resource allocations relating to the long-term survival, value and growth of the organisation.

Sub-component

Smaller individual parts that make up a component part.

Useful life

Either:
(a) the period over which an asset is expected to be available for use by an entity, or
(b) the number of production or similar units expected to be obtained from the asset by the entity.
It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the entity.

Valuation

The process of determining the worth of an asset or liability. Assessed asset value which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels, market value for lifecycle costing and optimised deprival value for tariff setting.

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, IIMM & AIFMM 2015, Glossary
Additional and modified glossary items shown *

Appendix E Life Cycle Degradation Profiles

Maintenance response is based on site judgement using the condition and risk associated with the defect and to the extent of the current budget.

Council has selected the following four degradation profiles to simulate the progressive deterioration of the various components that make up a building.

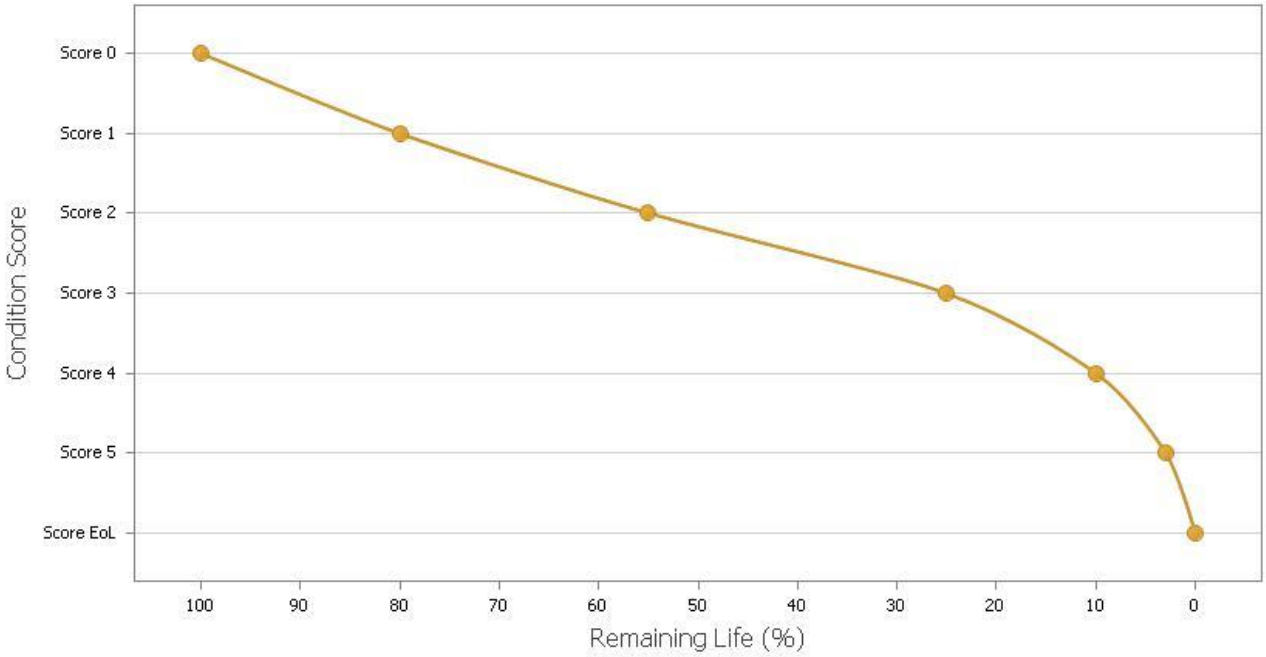


Figure 2 Simulation Curve Representing Overall Deterioration of Sub-structure, Super-structure and Roof components of buildings

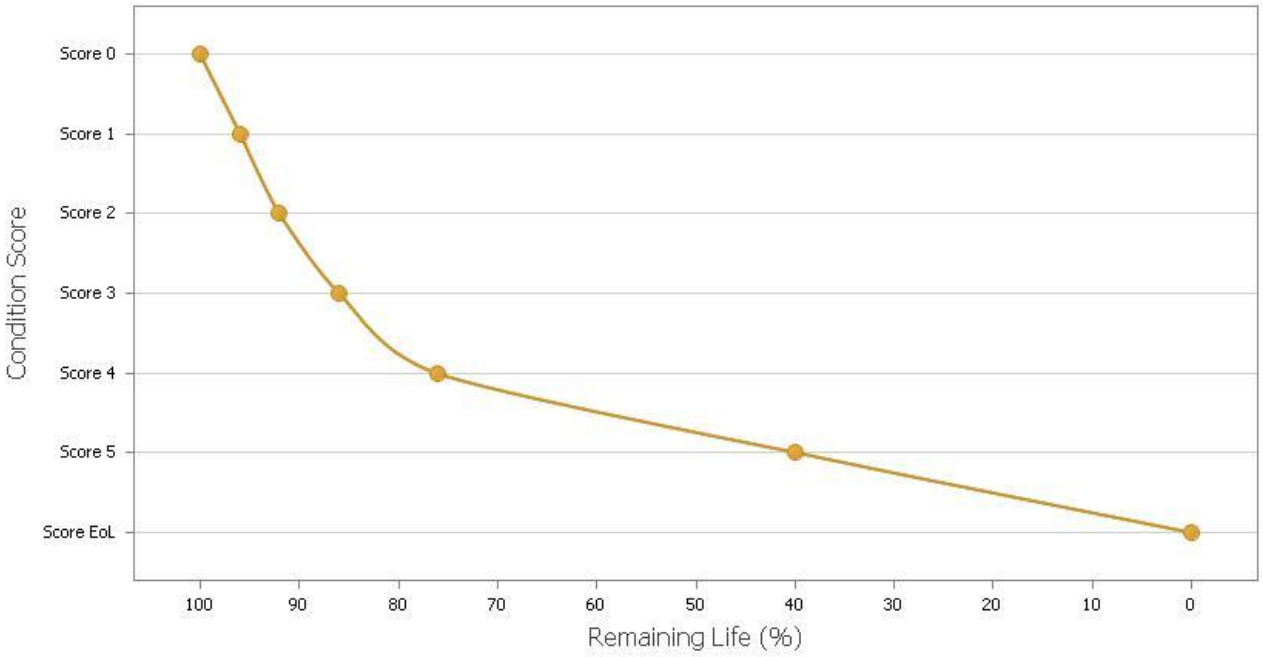


Figure 3 Simulation Curve Representing Overall Deterioration of Fit-out and Fittings components of buildings

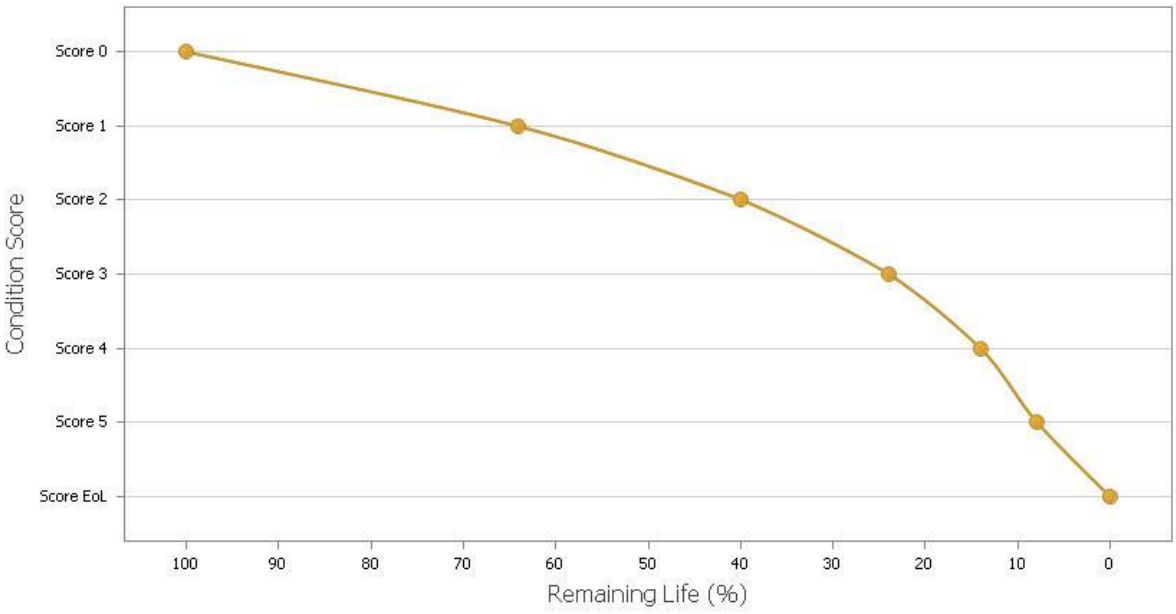


Figure 4 Simulation Curve Representing Overall Deterioration of Electrical, Mechanical (HVAC), Fire, Hydraulic and Transportation (Lift) Services of buildings

Transportation (Lift) Services of buildings