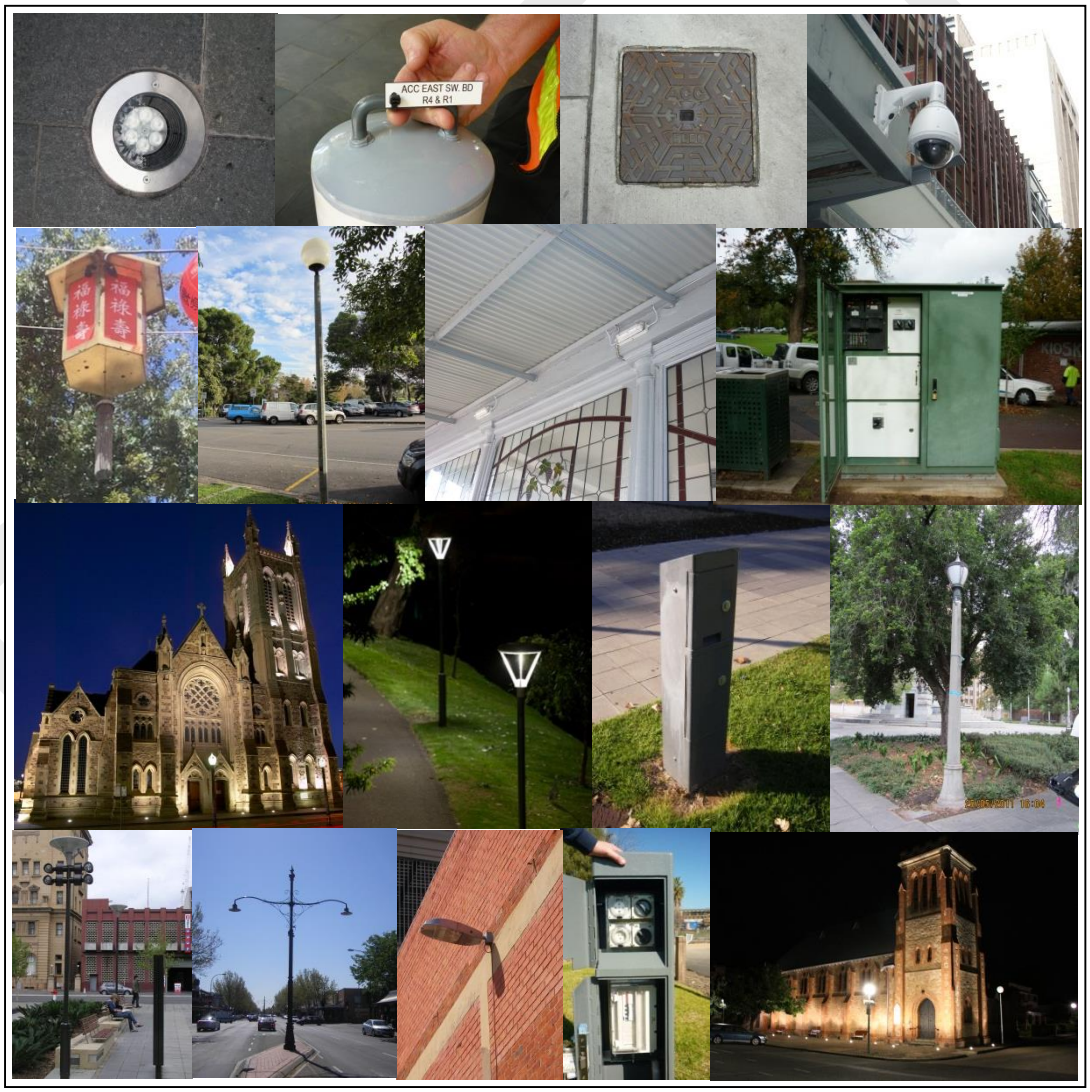
PUBLIC LIGHTING

PUBLIC SAFETY SURVEILLANCE CCTV

ELECTRICITY DISTRIBUTION SYSTEM

Asset Management Plan 2015



Version 1.0

July 2016

Document Control	

Document ID: acc2015 81825 lighting electrical cctv assets asset management plan - 1...

Rev No	Date	Revision Details	Author	Reviewer	Approver
0.1	April 2014	Draft	AF		
0.2	September 2014	Amendments to draft	AF		
0.3	April	External consultant review		External	
0.4	May 2015	Amendments to draft	AF		
0.5	May 2015	Review of executive summary		CB	
0.6	December 2015	Amendments to Levels of Service	AF		
0.7	January 2016	Review of Customer Levels of Service and Overall AMP		CB, PR	
0.8	April 2016	Amendments to draft	AF		
0.9	July 2016	Updated asset register and editing to suit changes made	RE/MJ		
1.0	July 2016	Finalise draft plan	RE/MJ		

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EXECUTIVE SUMMARY

Context

Adelaide City Council's 2016-2020 Strategic Plan, seeks to deliver outcomes for the City and its community in alignment with the following 4 themes:

- Smart
- Green
- Liveable
- Creative

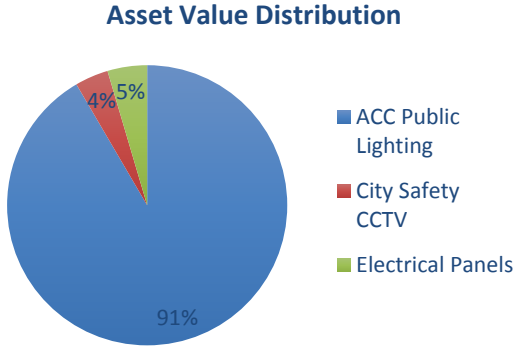
As a result, Council will undergo considerable change over the next 10 years with Council driving an activation of public spaces, significant increases in residents and people visiting the city resulting in greater residential density, demand on open space and connectivity with an emphasis on pedestrians, cyclists and public transport.

This Asset Management Plan (AM Plan) is designed to ensure the essential lighting and electrical infrastructure required to provide these services are delivered now and into the future to underpin the Adelaide economy, lifestyle, experience and way of life. The plan also assists Council to meet financial sustainability obligations under the Local Government Act.

The Lighting and Electrical Asset Class provides services to the entire Council area by allowing safe and secure access and enjoyment of the city and its amenities.

The lighting and electrical network comprises:

- Public Lighting (7,901 lights, 6,993 columns and underground cables)
- City Safety CCTV (101 cameras, controllers and monitoring equipment and fibre optic network)
- Metered Electrical Panels (99 main panels and 26 power bollards for events)

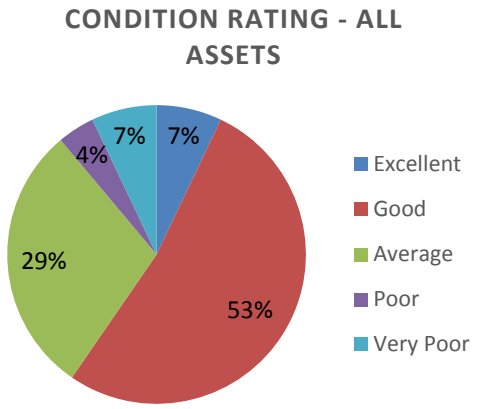


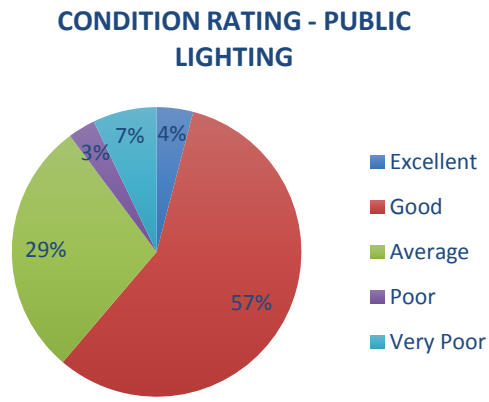
The Lighting and Electrical Asset Class has a replacement value of $68.8M.

In addition to the council-owned lighting, the city also receives public lighting through SA Power Networks (SAPN) infrastructure, predominantly in residential areas.

Within the next 30 years, it is expected that there will be an additional 100,000 people visiting the city per day which will result in increased traffic and pedestrian activity between dusk and dawn. In an effort to keep the management of the network sustainable, the lighting and electrical network will focus on facilitating safe and convenient pedestrian movements as well as increased safety around bicycle and public transport infrastructure as a measure to reduce the overall use of private transportation vehicles within the city.

The lighting and electrical network's health as a whole is in good condition with 89% of the network in *Average* and above condition. The largest asset base within the Lighting and Electrical Asset Class is the Public Lighting network, making up 91% of the overall asset class (as shown in the figure below).





Given the importance of the public lighting network and the future demands identified, maintaining and upgrading this asset is imperative to ensure it can provide the desired levels of service for future generations.

This AM Plan will help council to forecast the challenges ahead, to improve management of the lighting, CCTV and electrical distribution infrastructure and to ensure that all operations, maintenance and capital renewals are undertaken in the most cost effective manner whilst providing a specific level of service.

The following processes have been undertaken in the development of this AM Plan:

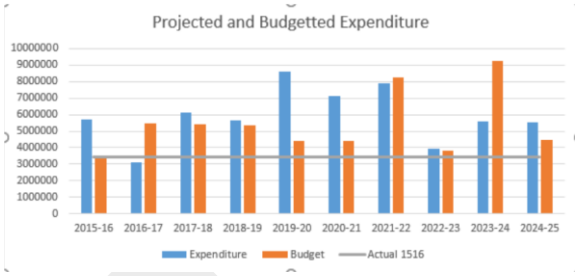
- Improving asset knowledge so that data accurately records the asset inventory, how assets are performing and when assets are not able to provide the required service levels
- Modelling future asset expenditure requirements
- Improving our efficiency in operating, maintaining, renewing and replacing existing assets to optimise life cycle 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 investment
- Consulting with the community to ensure that services and costs best meet community needs and are affordable
- Identifying assets surplus needs and disposal opportunities to reduce costs
- Seeking additional funding from governments and other bodies to better reflect a 'whole of government' funding approach to infrastructure services

What does it cost?

The desired outlays necessary to provide the services covered by this AM Plan includes operations, maintenance, renewal and upgrade of existing assets. Over the 10-year planning period this amounts to $59.3M or $5.93M on average per year.

A comparison of the expenditure required for the services proposed in the AM Plan compared with 2015-16 funding is shown in the graph below. 2015-16 funding levels will contribute $34.3M or $3.43M on average per year or 57% of the cost of the proposed level of service. The shortfall is $2.5M on average per year. Alternatively, this can be expressed as Council owning and operating 43% more assets than it can sustain at the 2015-16 funding levels.

The expenditure data in this revision of the AM Plan will need further refinement in order to refine expenditure predictions.

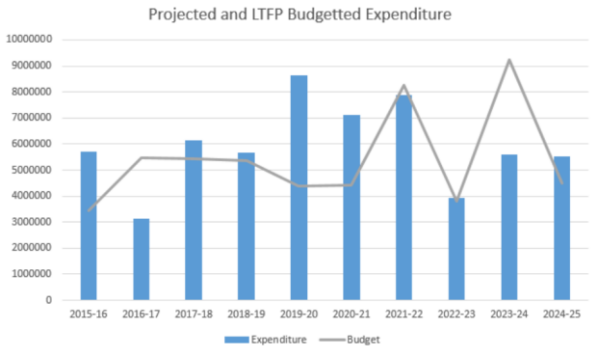


A number of key strategies are proposed in this AM Plan, to achieve the desired service levels sustainably into the future. These include the renewal of existing lights to Smart-Capable LED by 2021, replacement of electrical cabling in water-logged locations and undertaking three new lighting projects under the PLEC Undergrounding program. Increased maintenance funding has also been proposed, along with a shift from reactive maintenance to planned maintenance practices. This will result in proactive identification and response to defects on the network to ensure assets don't fail prematurely and are maintained at the desired service level at minimum cost.

What we cannot do

Based on 2015-16 funding levels, there were insufficient funds to provide all services at the desired service levels.

However, if Council continue to commit to the LTFP adopted in February 2016 there has been a significant increase in the renewal expenditure programmed over 10 years. In contrast to comparisons with 2015-16 budgets there is potential for $54.3M or $5.43M on average per year. This is 91% of the cost of the proposed levels of service.



What we will do

We will provide an AM Plan to meet financial sustainability obligations under the Local Government Act and inform the development of a corresponding long term financial plan (LTFP). The plan includes strategies to operate, maintain and renew lighting, electricity panels and City Safety CCTV at the optimum whole of life cost to best meet service levels.

Asset renewals will be coordinated with key infrastructure upgrades, including projects identified in the City of Adelaide 2016-2020 Strategic Plan such as the joint State Government/Council redevelopment of Currie-Grenfell Streets as a public transport boulevard.

Managing the Risks

There are key risks associated with the ongoing management of the Lighting and Electrical Asset Class, if full funding is not provided:

- Not meeting community expectations for services
- Reduction in asset condition and hence service levels, requiring excessive investment in later years (intergenerational inequity)
- Not being able to manage the impact of increasing electricity costs, public transport and city safety demands the lighting and electrical network
- Increased service standards through the Adelaide Design Manual (ADM) are not fully known and currently unfunded
- Council priorities identified in the 2016-2020 Strategic Plan and corresponding pressure on funding levels
- Increased city visitors and resulting increased maintenance and operating costs

To manage these risks we will:

- Consult with the community, to understand their performance needs
- Improve management and prioritisation of capital renewal and upgrade projects and efficiency of maintenance programs
- Regularly monitor asset condition and update valuations to predict investment levels required to operate, maintain and renew assets in the long term to meet community needs
- Undertake pilot projects incorporating Adelaide Design Manual materials to assess cost impacts
- Coordinate asset renewals with other Council enhancement programs (e.g. greening, smart) where relevant
- Effectively liaise/negotiate with the State Government on precinct activation planning and project funding within the city (including bus lanes, light rail, O-Bahn)
- Investigate alternative cost-effective treatments and implement preventative and proactive maintenance programs to maximise the useful life of the assets
- Focus renewal investment based on risk and asset hierarchy

Confidence Levels

This AM Plan is based on a medium level of confidence in the information. This is due to the asset data available in 2015 for modelling the Long Term Financial Plan (LTFP). The next AMP update will reflect a higher level of accuracy with a corresponding level of confidence.

The Next Steps

The actions resulting from this AM Plan are to:

- Identify opportunities to coordinate infrastructure renewals with enhancement projects (including greening and smart initiatives)
- Review of capital renewal and maintenance strategies for the Lighting and Electrical Asset Class to determine optimal renewal intervention points to provide services at lowest Life cycle costs
- Review customer and technical service levels, after public consultation, to ensure that service delivery is meeting community expectations within funding availability
- Complete a new condition audit for the public lighting system
- Implement inspection, maintenance and reporting activities outlined in the updated Operational and Maintenance Plan for the Lighting and Electrical Asset Class.
- Maintain an annual review of the Lighting and Electrical AM Plan incorporating an update of service level performance, financial projections and risk
- Undertake a review of unit rates and valuation of major infrastructure assets for the Lighting and Electrical Asset Class including sensitivity analysis and comparisons with actual project costs
- Service Levels and unit rates will need to be updated if the ADM is approved by Council
- Incorporate Smart Cities assets and projects in next revision of AM Plan
- Update the AM Plan to include any gifted assets

The Corporation has already undertaken the following improvements in 2015-16:

- Review of customer satisfaction levels

- Review of asset condition, renewal and maintenance strategies for the Lighting and Electrical Asset Class
- Preliminary asset condition audits and valuations
- Scoped and budgeted a detailed compliance audit of underground electrical infrastructure

Questions you may have

What is this plan about?

This plan covers the lighting related infrastructure within the Adelaide City Council area that enable all users to enjoy a pleasant, safe and inviting environment. More specifically, these assets include Public Lighting, City Safety CCTV and Metered Electrical Panels.

What is an AM Plan?

Asset management planning is a comprehensive process to ensure delivery of services from infrastructure is provided in a financially sustainable manner. An AM Plan, details information about infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services.

Why is there a funding shortfall?

Assets deteriorate over time and the level of service they provide decrease and maintenance costs increase. Assets need to be properly maintained and periodically renewed to maintain required service levels for present and future users.

Whilst funding levels in 2014-15 were insufficient to provide existing services at current levels into the future, Council committed to higher funding levels in 2015-16. If Council continue to meet the funding requirements outlined in this AM Plan, as per 2015-16, then service levels will be met.

What options do we have?

Council have the following options available:

1. Continue to fund asset renewal, maintenance and operations as informed by this AM Plan.
2. Accept a reduced level of service as the transportation assets deteriorate due to funding shortfall

What happens if we don't manage potential funding issues?

If Council do not fully fund assets:

- Community satisfaction in asset service levels will decrease
- Efficiency in operating, maintaining, renewing and replacing existing assets will reduce, which impacts long term financial sustainability
- Less funds will be available in the longer term for investment in new or upgraded infrastructure
- Trade-offs between service levels and costs will be required, including adjustment to maintenance intervention levels and response times
- Increased public liability and reputational risks associated with providing infrastructure

What can Council do?

Council will continue to develop options, costs and priorities for future transportation services, consult with the community, plan future services to best match the community service needs with its ability to pay. Council will always seek to maximise overall community benefit against cost.

What can you do?

We will be pleased to consider your thoughts on issues raised in this plan. Any suggested change to the mix of services or levels of service to better match community needs within existing funding is welcome.

2. INTRODUCTION

2.1 Background

This Asset Management Plan is to demonstrate the responsive management of council assets (and services provided from assets), compliance with regulatory requirements, and to communicate the funding needed to provide the required levels of service over the 20 year planning period to 2034.

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

The Asset Management Plan is to be read with the organisation's Asset Management Policy, Asset Management Strategy and the following associated planning documents:

- City of Adelaide Strategic Plan 2012-2016
- The Corporation Plan 2012-2016 One City One Team
- Active City Strategy 2011
- Smart Move – Transport & Movement Strategy 2012-2022
- Park Land Community Land Management Plans
- Adelaide Park Lands Management Strategy Towards 2020
- Development Plan Adelaide (City) – 2014
- International Infrastructure Management Manual 2011

This infrastructure assets covered by this Asset Management Plan are shown in Table 2.1. These assets are used to provide public lighting, reticulated electricity and city safety surveillance CCTV system to the community.

Table 2.1: Assets covered by this Plan

Asset category	Dimension*	Replacement Value**
Public Lighting for roads, paths and public spaces	7,901 Luminaires fitted to columns and brackets, with associated electrical power supply infrastructure.	$59,393,988
CCTV – Public Safety Surveillance system	101 CCTV surveillance cameras, including associated system management, monitoring, control and data storage equipment, and reticulated fibre optic networks.	$3,599,720
Metered electricity distribution panels for and irrigation, events management and recreational facilities	125 Above ground Electrical Distribution Panels & associated cabling, equipment and network supply infrastructure.	$9,230,547
TOTAL		**$72,224,255**

*Dimensions used for Asset Plan differ from Assets used for Valuation. Refer improvement plan for desktop revaluation recommendation.
** Valuations based on 2015 asset register with lower number of assets.

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

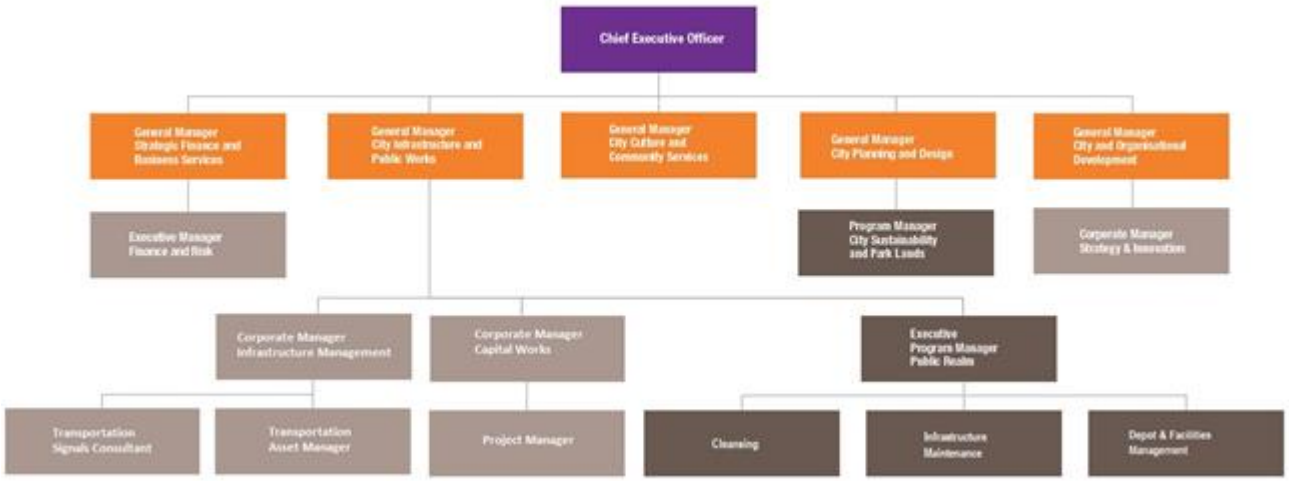
Table 2.1.1: Key Stakeholders in the AM Plan

Key Stakeholder	Role in AM Plan
Councillors	• Represent needs of community/shareholders, • Ensure organisation is financial sustainable.

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

Key Stakeholder	Role in AM Plan
General Public, including road users, pedestrians and cyclists	• Influence levels of service through public consultation • Customer feedback through correspondence
CEO/General Manager	• Executive management endorsement, sign off and executive leadership
Corporate Manager – Infrastructure Management	• Review and approval of AM Plan
Asset Manager - Transportation	• Development, implementation and maintenance of AM Plan to meet community levels of service
Infrastructure Assets Team	• Coordinate future works programming to optimise delivery outcomes and minimise costs across all asset classes
Public Realm	• Provide input and maintain the infrastructure managed under the AM plan to meet technical levels of service
Active City Program	• Development and updating of Active City Strategy, and other relevant plans, strategies for the assets
City Safety and Customer Services Program	• Provide input on safety standards and monitor customer queries for Level of Service review
Finance and Risk Program	• Funding for LTFP
City Planning and Development Program	• Inform long term demand drivers for use in AM Plan
City Design and Transport	• Design, documentation support for Infrastructure Management in delivering the AM Plan
Strategy and Innovation Program	• Development of annual Business Plan and Budget and Strategic Management Plan review
State Government and DPTI	• DPTI will continue to be consulted to coordinate any works affected by imminent State Government plans. The aim is to coordinate works where possible.
Service Authorities (i.e. APA, SA Water, SAPN)	• Service Authorities will continue to be consulted to coordinate any works planned by either Council or the Service Authority so investment in the asset is not compromised.

Our organisational structure is detailed below:



2.2 Goals and Objectives of Asset Management

The organisation exists to provide services to its community, with infrastructure assets being the key elements of many Council services. We have acquired infrastructure assets by 'purchase', by contract, construction by our staff and by the gifting of assets to Council constructed by developers and others to manage service demands.

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

- Providing a defined level of service and monitoring performance,

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

2.3 Plan Framework

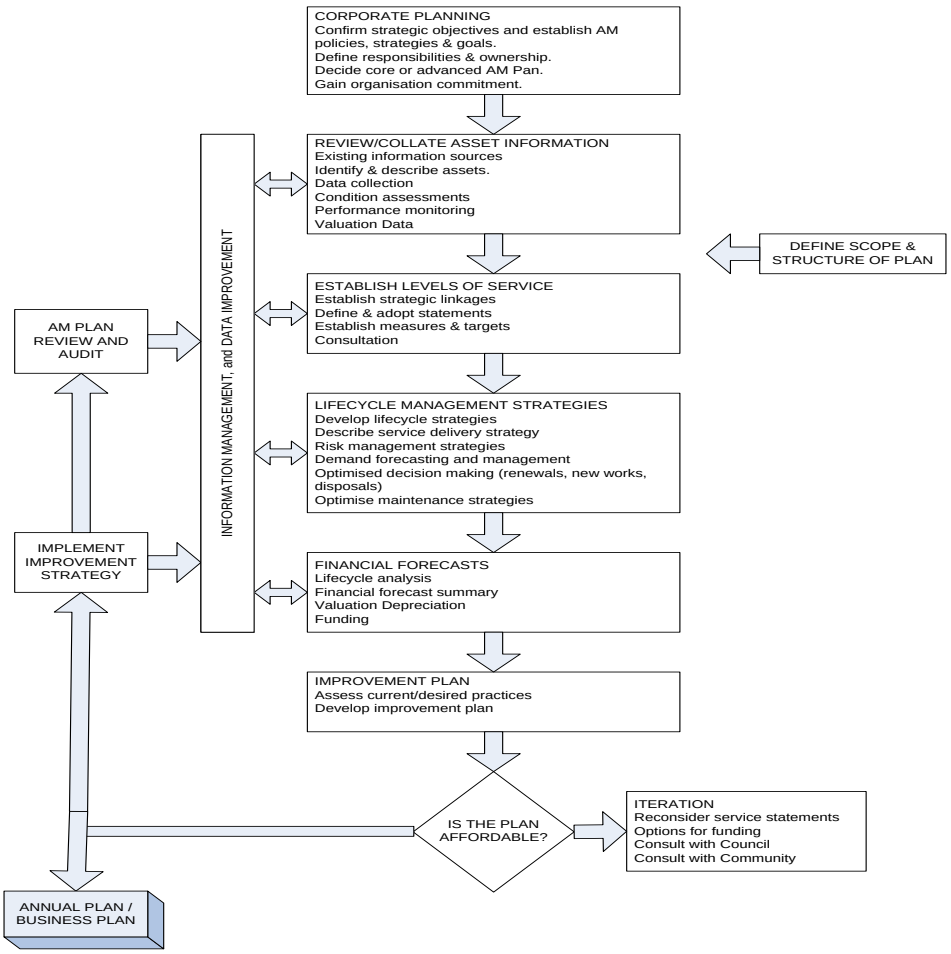
Key elements of the plan are :

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

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

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

Road Map for preparing an Asset Management Plan
Source: IPWEA, 2006, IIMM, Fig 1.5.1, p 1.11.



2.4 Core and Advanced Asset Management

This AM Plan is prepared as a 'core' AM Plan over a 20 year planning period in accordance with the International Infrastructure Management Manual[3]. It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is a 'top down' approach where analysis is applied at the 'system' or 'network' level.

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

2.5 Community Consultation

This 'core' Asset Management Plan is prepared to facilitate community consultation initially through feedback on public display of draft asset management plans prior to adoption by the Council. Future revisions of the Asset Management Plan will incorporate community consultation on service levels and costs of providing the service. This will assist the Council and the community in matching the levels of service as nominated by the community, the associated service risks and consequences with the community's ability and willingness to pay for those services.

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

(Alternative text consistent with the specification for 'core' AM Plan: *As this AM Plan is prepared as a 'core' AM Plan, the analysis applied is at a 'system' or 'network' level. In the progression towards 'advanced' asset management, future AM Plan updates will involve a 'bottom up' approach with agreed Community Levels of Service developed as a key component).*

In November 2015, Council sought stakeholder feedback on a range of services provided by the Lighting and Electrical Asset Class including Public Lighting and City Safety CCTV. To facilitate the consultation process the community were asked for their feedback on the services provided by infrastructure assets in the categories of Streets, Park Lands and Buildings. The Lighting and Electrical Asset Class was covered in the Streets and Park Lands categories. This process assisted Council to measure its services against community expectations and a range of service level criteria including safety, accessibility and cleanliness (based on 2014-15 investment).

A few consistent themes and suggested areas of improvement are presented in the table below.

Asset	Decrease	Adequate	Increase	Comments
Streets				
Footpaths		√	√	Footpaths are considered good in some areas and poor in others. Key pedestrian thoroughfares, such as Bank Street and other laneways between North Terrace and the Central Markets, should be improved. However, the maintenance of other footpaths is adequate.
Bike Paths		√	√	Similarly to footpaths, bike paths are considered good in some areas and poor in others. Clearing of debris, consistent treatment (e.g. green paint) and other details can ensure that cyclist's paths are clearly defined and they can remain in their lane.
Park Lands				
Foot and Cycling Paths		√		Foot and cycling paths are predominantly considered adequate, although lighting should be improved in key areas of pedestrian activity.

[3] IPWEA, 2011, IIMM.

Some key themes captured from this survey are:

- Parklands poorly lit, only safe during the day
- Poorly lit in laneways, River Torrens and Parklands
- Well-lit in some areas
- Bank Street poorly lit
- Festival area poorly lit
- Some people avoid the city area due to inconsistent lighting
- Large numbers of people identified they don't walk at night due to inconsistent lighting and safety
- Some of the parklands are not well lit, including River Torrens heading west
- Safety should be improved at night particularly in more highly trafficked areas with anti social behaviour (e.g. Hindley Street). CCTV around after hours venues (e.g. Hindley Street, Rundle Street, Rundle Mall)
- Lighting, seating, and shades should be improved in the west and south parklands
- Large distances between lights creates nervousness.

From this survey as part of the improvement plan consideration is to be given to establish the required level of lighting and CCTV in the different spaces in the city and parklands and audit the service being delivered in order to identifying the cost to upgrade the lighting to meet these community aspirations.

3.2 Strategic and Corporate Goals

The content of this AM Plan was originally prepared in early 2014 under the direction of ACC's Strategic Plan 2012-16 and associated Corporate Plan (The Corporation Plan 2012-16) and reflects the goals and aspirations of the previous Council Term (November 2010 to October 2014).

With the election of the new Council in October 2014, a new Council Strategic Plan (2016 to 2020) was under development in December 2015 during the finalisation of this AM Plan.

From the preliminary information available, the following Council vision, mission, goals and objectives associated with community services provided by water infrastructure assets have been identified.

Our vision is:

Adelaide is a smart, green, liveable, boutique city full of rich experiences

Our Primary Goal is:

To strengthen the City economy by growing the number of people living, working, playing, visiting and studying in the City every day

As the capital city of South Australia, Adelaide has a vital role to play in shaping the future of our state.

We face unprecedented changes arising from major global, national, and local trends. Reassuringly, our proven record of creativity, innovation, and social transformation sees our city well placed to lead the state in meeting these changes.

Our plan is to enrich Adelaide's lifestyle and boost its growth by becoming one of the world's smartest cities with a globally connected and opportunity rich economy.

We will be one of the world's first carbon neutral cities and a global leader in sustainability and responding to environmental change.

Adelaide will always be a distinctively unique capital city that supports a balanced lifestyle and a strong community. Our authentic and diverse range of experiences will be internationally renowned.

Our mission is:

To achieve the vision, Council has adopted four key outcomes which will guide the organisations projects, plans, policies and strategies including this AM Plan. The four outcomes / mission statements are:

- **SMART** – A world smart city with a globally connected and opportunity rich economy.
- **GREEN** – One of the world's first carbon neutral cities and an international leader in environmental change.
- **LIVEABLE** – A diverse and welcoming capital city with an enviable lifestyle and strong community
- **CREATIVE** – A city of authentic and internationally renowned experiences

Relevant organisational goals and objectives and how these are addressed in this AM Plan are:

Table 3.2: Strategic Plan (2016-2020) Objectives and Actions and how these are addressed in this Plan

Theme	Objectives	Actions	How Actions are addressed in AM Plan
Smart	Total businesses in the City will grow from 5,000 to over 5,300 and workers from 89,000 to 94,000 by 2020, on the way to 7,000 businesses and over 102,000 workers by 2040.	By 2017, we will develop a fully costed plan to implement smart parking technology across the City and North Adelaide to create an expiation free environment	Over 2016/2017 further planning work is needed to determine impact in maintenance, renewal and upgrade plans for lighting and CCTV.
		By 2017, leverage, upgrade and expand our Adelaide Free Wi-Fi network to higher download and upload speeds	
		By 2016, commission a business case through the NBN 'Technology Choice Program' for optical Fibre To The Premise (FTTP) as the new standard of infrastructure	
		Showcase the City as the location of choice for international and national trade and investment through our sister cities and other partnerships and connections, and align with State Government economic targets for increasing foreign investment, service exports and skilled migration	
GREEN	Reduce City carbon emissions by 35% from the 2006-07 baseline, on the way to an 80% real reduction by 2040	Partner with the State Government to implement a Carbon Neutral Adelaide Partnership Framework to pursue the shared aspiration for Adelaide to be the world's first carbon neutral city	Over 2016/2017 Council will remain responsive to adapting its plans for lighting to suit emerging trends and changes as a result of these strategies
		Work with Federal and State Governments to promote sustainable transport options such as public transport, cycling and walking to improve the experience of commuters and reduce transport-related carbon emissions	
		By the end of 2017, complete a study to determine the feasible number of on-street parking bays that will provide electric power recharge points	
	Green space and greenery in the built-up	Increase public and private City greening with street trees, gardens,	From July 2016 include the collection of street-tree / lighting conflicts to plan a reduction in

Theme	Objectives	Actions	How Actions are addressed in AM Plan
	areas of the City to increase by 100,000 square metres by 2020 on the way to a real reduction in City temperatures by 2040.	community gardens, green walls and roofs, vegetable gardens on street verges, providing incentives where appropriate	pruning requirements by actively seeking feasible opportunities for light relocations or adjustments.
		From 2016, Council will commit ongoing funding for powerline undergrounding (PLEC) to assist with greening initiatives	The PLEC-assisted undergrounding program will deliver the Bartels Road undergrounding project, with enhanced design for Council-owned lighting to minimise the number of poles required, thereby minimising the environmental impact to Rymall Park while enhancing the visual presentation of the Park Lands.
LIVEABLE	**The number of people living in the City will grow from 23,000 to 28,000 by 2020, on the way to 50,000* by 2040** ****in line with the target in the current State Government 30 Year Plan for Greater Adelaide***	Create world class infrastructure by adopting a three year rolling capital works program for the City and Park Lands to ensure all new and existing infrastructure are delivered and maintained to high quality standards, incorporating technology, heritage, arts and green elements	The Lighting and Electrical three-year rolling program 2016-19 includes essential condition assessment and renewal works that will improve the serviceability of the existing electricity cabling and associated equipment. This will ensure the ongoing viability of this high-value infrastructure in order to deliver high quality existing services, and facilitate the provision of enhanced services in the future.
		Work with neighboring Councils and the State Government to enhance the facilities, attractions, landscapes and movement networks in the Park Lands to meet the needs and expectations of growing high density communities living in and near the City	We are currently engaged in planning improved access to the Torrens River Linear Park by collaborating with neighbouring councils towards a combined AMP for this area. Review all access points to/from neighbouring Councils for consistency of lighting on roads and paths
	Adelaide is listed in the top three most liveable cities in the world by 2020, on the way to being the most liveable in 2040	Plan and deliver priority walking and cycling routes to provide East-West and North-South cycleways and connections	Our current electrical compliance audit includes works to ensure that all electricity access points along key walking and cycling paths are in serviceable condition, with sufficient capacity to provide the lighting levels required for safe pedestrian and cycling activity during hours of darkness.
CREATIVE	**The number of people attending events in the City and Park Lands has grown by 5% by 2020, on the way to 15% growth by 2040**	Work with neighbouring Councils and the State Government to enhance the role of the Park Lands in supporting artistic, sporting and recreational activities	Undertake an audit and gap analysis to inform an upgrade plan for the next version of the Asset Management Plan
		By 2020, develop build and upgrade infrastructure that supports events and is sensitive to the environment within key event spaces in the City and Park Lands	All electricity supply points for events will have smart metering to ensure sustainable management of electricity, and minimise wasteful consumption. The existing metering will be upgraded to provide real time consumption monitoring, with full reporting facilities to enable accurate records and cost recovery. In addition, it will facilitate direct dialogue with users to assist with the planning of energy efficient events.
		Work with businesses and other partners to bring creativity and smart technology into the everyday experience of our City	We will continue to engage with innovative manufacturers and vendors of smart cities technology such as multi-coloured LED lighting and smart controls, interactive wayfinding signage, and monitored electric vehicle charging points to maximise connectivity to the existing electricity infrastructure and indicate upgrade

Theme	Objectives	Actions	How Actions are addressed in AM Plan
			requirements in future IAMPs once plans for upgrade are determined.
		Attract people from around the world, especially from the growing middle classes in China and India, to spend more time and experience more hospitality activities in the City	Implement the enhanced maintenance plan from July 2016 to ensure the optimal presentation of the city's night-time environment. Continue to invest in the installation of good quality lighting in pedestrian-prioritised locations such as transport terminals and stops, footpaths and cycleways, and Park Lands connections with the surrounding suburbs.
		By 2020, Council will install a network of NBN enabled interactive way-finding stations to build on the current roll out	The current audit and mapping of our fibre optic network will indicate the availability of NBN compatible existing Council-owned fibre optic capacity, and the requirements to fully connect into the NBN network. This will inform further asset plans
	People who say the City has great places to enjoy events, activities, art and culture has grown from 8.4 to 9 out of 10 by 2020 and to 9.5 by 2040	Surprise, delight and attract people to our City by continuing to encourage and support dynamic and changing urban public spaces, heritage, art, laneways, streets, facilities and activities	Maintain the existing electricity and lighting infrastructure in a serviceable condition, with accurate data about the connectivity and capacity for artistic lighting and other compatible initiatives.
		Identify opportunities to use specialised lighting to showcase the City's unique attractions, character and heritage	We will continue to engage with innovative manufacturers and vendors of smart cities technology such as multi-coloured LED lighting and smart controls, and maintain the existing electricity and lighting infrastructure in a serviceable condition, with accurate data about the connectivity and capacity for artistic lighting and other compatible initiatives.

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

3.3 Legislative Requirements

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

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act 1999	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a LTFP supported by AM Plans for sustainable service delivery.
Electricity Act SA 1996	An Act to regulate the generation, transmission and distribution of electricity; it provides for the safety and technical standards for electrical installations;
Occupational Health, Safety and Welfare Act and Regulations, 1986	Sets out roles and responsibilities to secure the health, safety and welfare of persons at work.
Native Vegetation Act, 1991	The Act provides incentives and assistance to landowners in relation to the preservation and enhancement of native vegetation; to control the clearance of native vegetation and for other purposes.
Roads (Opening and Closing) Act, 1991	An Act to provide for the opening and closing of roads and for other purposes.
Environmental Protection Act, 1993	An Act to provide for the protection of the environment: to establish the Environmental Protection Authority and define functions and powers and for other purposes.

Legislation	Requirement
Australian Road Rules, 1999	The Australian Road Rules have been made into Regulations under the Road Traffic Act (SA) and came into operation throughout Australia on 1 December 1999.
Disability Discrimination Act, 1992	A Commonwealth Act relating to discrimination on the grounds of disability.
Emergency Management Act, 1994	Requires lifeline utilities to function at the fullest possible extent during and after an emergency and to have plans for such functioning (business continuity plans).
City of Adelaide Act, 1998	An Act to establish mechanisms to enhance the role of the City of Adelaide as the capital city of South Australia; to make special provision in relation to the local governance of the City of Adelaide; and for other purposes.
Manual of Legal Responsibilities and Technical Requirements for Traffic Control Devices – Part 2 – Code of Technical Requirements, 2012	The Code of Technical Requirements ('the Code') amends the December 1999 version of the Code of Technical Requirements for the Legal Use of Traffic Control Devices. It has been updated to reflect the changes in the 2009 version of AS 1742 Manual of uniform traffic control devices (MUTCD), and recent updates of the Austroads Guides and other standards. The Code forms Part 2 of the Manual of Legal Responsibilities and Technical Requirements for Traffic Control Devices ('the Manual'). The Manual also contains Part 1: Legal Responsibilities ('the Instruments'). All state authorities vary from the standards and guides to reflect differences in legislated requirements set by each state jurisdiction. There are also other variations within each state that are provided to ensure a more consistent presentation of devices to road users.
Development Act, 1993	An act to provide for planning and regulate development in the state; to regulate the use of management of land and building and for other purposes
Public and Environmental Health Act, 1987	An act dealing with Public and Environmental Health; to repeal The Health Act 1935, The Noxious Trades Act 1934, and The Venereal Diseases Act 1947; and for other purposes.
Adelaide Park Lands Act, 2005	Framework that promotes the special status, attributes and character of the Adelaide Park Lands; to provide for the protection of those parklands and their management as a world-class asset to be preserved as an urban park for the benefit of present and future generations.
Linear Parks Act, 2006	An act to provide the protection of the River Torrens Linear Park, as world class assets to be preserved as public parks for the benefit of present and future generations.

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

3.4 Community Levels of Service

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

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

Levels of service are monitored and adjusted from the public consultation process, customer satisfaction surveys and customer service centre feedback. They and are based on:

- Customer expectations for quality of service and willingness to pay
- Legislative requirements; environmental standards, regulations and legislation that impacts the way assets are managed
- Council's strategic objectives as stated in the strategic and corporation plans
- Available resources, particularly financial constraints
- Design Standards and Codes of Practice.

Community levels of service measures used in the AM Plan are:

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

The organisation's current and expected community service levels are detailed in Tables 3.4. This table shows the agreed expected community levels of service based on resource levels in the current LTFP and community consultation/engagement.

Table 3.4.1: Community Level of Service - Public Lighting

Service Attribute	Service Objective	Performance Measure Process	Current Performance	Expected position in 10 years based on current LTFP
COMMUNITY OUTCOMES				
Build Strong Communities - Providing public lighting to people and public property during hours of darkness for safe continued vehicle, cyclist and pedestrian access through Council streets, footpaths, and Parklands pathways. **Activate public spaces and Parklands –** Provide public lighting along key pathways and recreation areas which supports major recreational and cultural events. **Green the City** – Provide public lighting which is energy efficient and unobtrusive as far as practically possible.				
COMMUNITY LEVELS OF SERVICE				
Quality	Provide public lighting in accordance with the Adelaide City Council Lighting Policy	Lighting levels will be measured against industry standards as applicable to the operating environment, e.g. main roads, shopping malls, pedestrian paths, etc.	A mix of infrastructure compliant with previous and current standards is in existence. All upgrades and new projects are designed to meet these.	A higher level of compliance is achieved through the simultaneous upgrading and renewals of existing infrastructure as required meeting customer expectations.
Quality	The visual appearance of infrastructure items is free from significant defects and symptoms of excessive deterioration.	Survey: Customers are satisfied with the presentation of infrastructure assets, e.g. clean, in a good state of repair, etc.	The visual appearance of the majority proportion of visible items is satisfactory and well maintained.	The quality of lighting is expected to be maintained or improved relative to technology improvements and cost efficiencies over this period.
Function	The performance and placement of public lighting infrastructure is effective in meeting the service needs of the community.	Survey: Customers are satisfied that the placement of poles and lights are unobtrusive and adequate for their intended purpose.	Customer surveys have indicated a preference for technologies with improved sustainability performance.	Infrastructure improvements to facilitate improved sustainability outcomes are incorporated as they become sufficiently cost-effective investments.
Capacity/ Utilisation	Localised lighting infrastructure is configured to sustainably meet the service needs of the community at the respective location	Survey: Customers are largely satisfied that the installed lighting infrastructure is sufficient for the needs of the various localities	Customer surveys have indicated there is still some changes to the existing arrangements, e.g. bike lane and Park Lands pathway lighting improvements	Improvements to service coverage will be implemented to meet demand relative to requirements for ensuring public safety as a primary indicator
Safety	Provide lighting to standards that are suitable for a capital city.	Monitoring of customer satisfaction survey levels, safety audits and requests for lighting improvements.	78% of community satisfied with performance. Aim to reduce accident claims and Police related reports related to lighting.	A higher level of compliance for safety is achieved through the simultaneous upgrading and renewals of existing infrastructure as required meeting customer expectations.

Table 3.4.2: Community Level of Service – City Safety CCTV

Service Attribute	Service Objective	Performance Measure Process	Current Performance	Expected position in 10 years based on current LTFP
COMMUNITY OUTCOMES				
Build Strong Communities - Providing CCTV coverage to people and property in designated locations to reduce risk and occurrence of crime.				
COMMUNITY LEVELS OF SERVICE				
Quality	The level of CCTV coverage provides a satisfactory perception of safety and facilitates a proactive approach to crime prevention.	Survey: Stakeholders and the public at large are satisfied with the levels of public safety surveillance provided.	Prioritised service areas are well-serviced.	Agreed levels of service will be met.
Function	The performance and placement of CCTV cameras is effective in meeting the service needs of the community.	Survey: Customers are satisfied that the CCTV system is functioning reliably and effectively.	CCTV deployment, monitoring and maintenance is largely consistent with current service expectations.	Agreed levels of service will be met with SAPOL
Capacity/ Utilisation	Localised CCTV infrastructure is configured to meet the service needs of the community at the respective location in a sustainable manner.	Survey: Customers are satisfied that CCTV coverage is adequate for their security needs.	Customers are largely satisfied with the existing coverage.	Agreed levels of service will be met.

Table 3.4.3: Community Level of Service –Electrical Distribution Panels

Service Attribute	Service Objective	Performance Measure Process	Current Performance	Expected position in 10 years based on current LTFP
COMMUNITY OUTCOMES				
Activate public spaces and Parklands – Provide reticulated electricity in public spaces and recreation areas which supports major recreational and cultural events.				
COMMUNITY LEVELS OF SERVICE				
Quality	All installed electricity infrastructure is safe, serviceable and well presented	Survey: Customers are satisfied that the infrastructure is safe and adequate for their electricity needs.	The infrastructure is safe and serviceable, and conveniently accessible for customer needs.	Agreed levels of service will be met
Function	The performance and adequacy of the infrastructure meets the service needs of the community	Survey: Customers are satisfied that the electricity infrastructure system is functioning reliably.	The current level of functionality is adequate for existing requirements.	Agreed levels of service will be met
Capacity/ Utilisation	The installed infrastructure is located and configured to meet the service needs of the community at the respective locations	Survey: Customers are satisfied that access to the electricity infrastructure system is adequate for their service needs.	The infrastructure is integral to the success of the Events Management business, and performs very well under current service requirements.	Agreed levels of service will be met

3.5 Technical Levels of Service

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

Technical service measures are linked to annual budgets covering:

- Operations – the regular activities to provide services such as opening hours, cleansing, mowing grass, energy and inspections
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition (eg 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 (eg frequency and cost of road resurfacing and pavement reconstruction, pipeline replacement and building component replacement); and
- Upgrade – the activities to provide a higher level of service (eg widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (eg a new library).

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

[4] IPWEA, 2011, IIMM, p 2.22

Table 3..4.3 shows the technical levels of service expected to be provided under this AM Plan. The agreed sustainable position column in the table will be developed by December 2015, following community consultation and a trade-off of service levels performance, costs and risk within resources available in the LTFP.

Table 3.4.3: Technical Levels of Service – Public Lighting

Service Attribute	Service Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost **	Agreed Sustainable Position ***
TECHNICAL LEVELS OF SERVICE					
Operations	Light levels are adequate for safe pedestrian and road usage; Energy usage is aligned with organisation energy-efficiency outcomes	Public lighting levels in ACC-serviced locations are base-lined to AS/NZS 1158, i.e. in general : • Category P1-P4 for all minor roads and footpath locations; • Category P6-P8 in non-traffic public spaces; • Category V1-V3 in main/arterial road locations; • Light levels in SAPN-serviced locations are to a lesser "infrastructure" standard.	Currently lights are replaced on severe deterioration or failure of output, resulting in a significant variance in light output at the location.	New LED lighting and monitoring technologies enable more consistent lighting levels.	Subject to organisation endorsement, a comprehensive shift to LED lighting by 2020.
Maintenance	Maintain satisfactory lighting levels; Respond to Service Requests for repairs	Planned maintenance programs and reactive service requests delivered within mandated timeframes	70% of reported failures are repaired within an acceptable business period.	100% of reported failures are repaired within an acceptable business period; all planned maintenance is completed within an agreed timeframe depending on level of risk.	100% of reported failures are repaired within an acceptable business period; all planned maintenance is completed within an agreed timeframe.
Renewal	Infrastructure meets service needs	Useful life of infrastructure assets	HID Technology lighting is renewed on a 20 year cycle, or as required. HID fittings are changed to LED by 2020 due to accelerated technology obsolescence.	HID fittings are changed to LED by 2020 due to accelerated technology obsolescence.	A detailed LED renewal plan is under development for approval by ACC.
Upgrade/New	Lighting infrastructure consists of industry-standard technology assets	Utilise industry standard technology	Emerging gap between actual information and demand placed by Councils strategy and community expectation and technological developments	Gradual upgrade in line with funding availability	Commence planning for upgrades

*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).*
**** Activities and costs communicated and agreed with the community as being sustainable (funded position following trade-offs, managing risks and delivering agreed service levels).*

Table 3.5.2: Technical Levels of Service – City Safety CCTV

Service Attribute	Service Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost **	Agreed Sustainable Position ***
TECHNICAL LEVELS OF SERVICE					
Operations	CCTV system operates reliably and effectively	Routine inspection frequency	Routine Daily, Weekly, 3-Monthly functionality inspections and camera cleaning	Routine Daily, Weekly, 3-Monthly functionality inspections and camera cleaning	Routine Daily, Weekly, 3-Monthly functionality inspections and camera cleaning
Maintenance	Respond to Service Requests	Reactive service requests within adopted timeframes	90% of reported failures are repaired within an acceptable business period	90% of reported failures are repaired within an acceptable business period; all planned maintenance is completed within an agreed timeframe	90% of reported failures are repaired within an acceptable business period; all planned maintenance is completed within an agreed timeframe
Renewal	Infrastructure meets service needs	Useful life of infrastructure assets	High definition (HD) CCTV technology 10-15 years	HD CCTV technology 10-15 years	HD CCTV technology 10-15 years
Upgrade/New	Additional functionality to incorporate expanded service needs	Utilise industry standard technology	Review of technology advancements such as facial recognition and other service needs to be reviewed by Council in the next 3 years.	Review of technology advancements such as facial recognition and other service needs to be reviewed by Council in the next 3 years.	A detailed CCTV renewal plan to be developed to align with future technology requirements. development.

*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).*

**** Activities and costs communicated and agreed with the community as being sustainable (funded position following trade-offs, managing risks and delivering agreed service levels).*

Table 3.5.3: Technical Levels of Service –Electrical Distribution Panels

Service Attribute	Service Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost **	Agreed Sustainable Position ***
TECHNICAL LEVELS OF SERVICE					
Operations	Electrical system operates reliably and effectively	Routine inspection frequency	Routine 12-18 month functionality and safety inspections;	Routine 6-12 month functionality and safety inspections;	*Assessment has not been carried out. To be developed*
Maintenance	Respond to Service Requests	Reactive service requests within adopted timeframes	90% of reported failures are repaired within an acceptable business period	90% of reported failures are repaired within an acceptable business period; all planned maintenance is completed within an agreed timeframe	*To be developed 90%* of reported failures are repaired within an acceptable business period; all planned maintenance is completed within an agreed timeframe
Renewal	Infrastructure meets service needs	Useful life of infrastructure assets	15-25 Years Reactive renewal driven by faults	*Planned renewal based on condition assessment*	*Ongoing*
Upgrade/New	Additional functionality to incorporate expanded needs	Audit/inspection End user consultation Strategic direction	*Reactive/adhoc upgrades*	*Assessment has not been carried out. Planned upgrades in line with technological advances, obselence and performance*	*Improvement in information to be developed and renewal plan*

*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).*
**** Activities and costs communicated and agreed with the community as being sustainable (funded position following trade-offs, managing risks and delivering agreed service levels).*

4. FUTURE DEMAND

4.1 Demand Drivers

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

As a capital city, all of Council's Lighting and Electrical Asset Class must serve both the local resident population needs as well as the daily commuter and visitor needs to the city. Demand for the services supported by all lighting, CCTV and electrical assets will therefore be influenced by factors external to the fixed resident base.

The influence of other tiers of government, particularly the State Government, is another driver that can impact on the demand for transportation assets or the level of service provided through those assets.

4.2 Demand Forecast

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

4.3 Demand Impact on Assets

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

Table 4.3: Public Lighting Demand Drivers, Projections and Impact on Services

Asset Class	Demand drivers	Present position	Projection	Impact on services
All of the Transportation Asset Class	Forecast Growth	The number of people entering the city on a daily basis has continued to increase annually.	If the 30-year planned growth for the City is realised, there will be an estimated 42% increase in trips, with at least an additional 100,000 people travelling to and around the city.	Demand for expansion of system and lighting levels are expected to increase
Roads	Change in the use of streets (Social/ recreational/leisure demand changes)	Streets more focussed on vehicular traffic movement	Streets to be focussed on pedestrian and cyclist movements, with a reduction in private vehicular traffic.	
	Increase in public transport	6,020 busses per day[5]	8550 buses per day* by 2038, to facilitate the reduction in private vehicular traffic.	
Footpaths	Increase in daily visits	502000[5] per day	654000[5] per day by 2034	

4.4 Demand Management Plan

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

[5] The 30 Year Plan for Greater Adelaide, South Australian Government

Non-asset solutions focus on providing the required service without the need for the organisation to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures[6]. .

Opportunities identified to date for demand management are shown in Table 4.4.1. Further opportunities will be developed in future revisions of this AM Plan.

Table 4.4.1: Public Lighting Demand Management Plan Summary

Asset Class	Demand Driver	Impact on Services	Demand Management Plan
	Demand for improved public lighting services from increasing awareness of crime and technology developments in general	Additional capital investment, and impact on maintenance and operations to be considered	An upgrade plan has commenced and will continue to be refined. Allowance to be made for growth in assets and growth in operational maintenance costs
	Escalating energy costs	Escalating operating costs	Transition to energy-efficient technology at the earliest feasible opportunity. A detailed assessment in operational costs serving to be considered in the future plans
	Population growth, an expanding night time economy, changes of use of existing commercial-only premises to mixed or residential-only usage, implications from the increased uptake of sustainable transport modes; and increased night-time recreational activity	Increased demand for lighting infrastructure assets to facilitate safe and convenient access to amenities, potentially requiring capital enhancements and more frequent maintenance and renewals	Develop and apply a capacity and utilisation auditing matrix for the network to evaluate any potential opportunities for cost-efficient service enhancements from existing infrastructure, as well as methodologies to effectively evaluate drivers for new infrastructure installations
	Increasing community awareness of environmental sustainability	Future lighting infrastructure will require increased sustainability standards consideration	Develop collaborative partnerships with Council and industry stakeholders to deliver sustainability-consistent outcomes related to public lighting services

Table 4.4.3: CitySafety Surveillance CCTV System Demand Management Plan Summary

Demand Driver	Impact on Services	Demand Management Plan
Demand from user groups for additional CCTV services with its increasing awareness of crime and other undesirable behaviours, and the increased perceptions of safety from CCTV coverage	Existing services will continue as is, with additional infrastructure being scheduled in response to expanded demand	Develop more sophisticated governance provisions and criteria for appropriate network expansion, with broadened shared funding or asset gifting arrangements
Decreasing effective lifespan of CCTV equipment due to accelerated obsolescence from technology developments	Functionality and interface compatibility obsolescence is expected to increasingly drive shorter renewal and enhancement timeframes camera equipment;	Keep abreast of technology developments and ensure rigorous and frequent Asset Register, AMP, and Risk Register updates
Increasing government sector interest in the Council CCTV program	Expanded stakeholder interest, e.g. government legislation could direct disproportionate infrastructure expansion demands	Maintain effective engagement with existing and potential stakeholders Allows for growth in asset base and operational maintenance costs

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

Table 4.4.2: Electricity Reticulation Panel Demand Management Plan Summary

Demand Driver	Impact on Services	Demand Management Plan
Patronage and frequency of Adelaide Festival and other public and community events and recreational activity	Capacity and condition pressure is likely to increase consistent with increasing patronage and event deliverables	Maintain an effective level of stakeholder engagement to communicate realistic and relevant expectations, while exploring opportunities for equitable cost recovery through collaborative investment initiatives; Maintain an effective level of industry engagement to ensure a good working knowledge of technology developments is maintained to facilitate good management practices
Regulatory standards for energy metering	Requirements for increasingly sophisticated metering methodology	Manage an an effective risk management programme to ensure that practices are consistent with regulatory requirements and that investments in sophistication are consistent with good management practice
Regulatory standards for electrical safety and risk management alignment	Enhanced specifications to incorporate updated risk management provisions, with consequently higher maintenance and renewal demands.	Manage an effective risk management programme to ensure that practices are consistent with regulatory requirements and that investments in sophistication are consistent with good management practice
Population and Demographics	Increase the environmental, recreational, cultural and environmental value of Park Lands and Open Space	Allowance to continued renewal and upgrade electrical reticulation panels
Community expectation of Park Lands and Open Space	Equitably distributed, accessible, safe, of high quality and provide diverse settings to meet the needs of user groups	
Awareness of natural environment	Need to protect and enhance the natural environment	
Environmental regulatory requirements for energy efficiency management	Likely requirement to demonstrate investment in smart infrastructure	

+ Regularly review and develop future IAMP to consider impact of these demands on infrastructure

4.5 Asset Programs to meet Demand

Public Lighting

The asset plan has made some allowance in forward expenditure predictions in all areas of operations, maintenance and renewals. Allowance is made to shift to LED luminaires within 5 years as part of the renewal plan and budgets have been included for PLEC (impacts on lighting), known deficiencies, special projects, Smart City initiatives, switchboard upgrades and CCTV upgrades. As the asset base expands so too the allowance for maintenance and operations.

At this stage, no allowance has been made for potential operational savings as a result of LED renewal. This can be considered in future plans.

5. LIFECYCLE MANAGEMENT PLAN

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

5.1 Background Data

The assets covered by this AM Plan are shown in Table 2.1. The age profiles presented below have been determined by taking the estimated remaining life of components from the condition rating obtained during audits.

Council's lighting network is made up of 7,901 lights installed across the city, grouped into two categories, i.e. Road Lighting and Pedestrian Lighting.

Table 5.1.1: Lighting Classification

Lighting Classification	Definition
Road Lighting	Lighting installed primarily to facilitate safe vehicle movement along roads in all areas
Pedestrian Lighting	Lighting installed primarily to facilitate safe pedestrian activity in the CBD, Park Lands and residential areas

The following map is an extract of the Lighting Guidelines document and visually depicts the various types of locations serviced by the public lighting system.

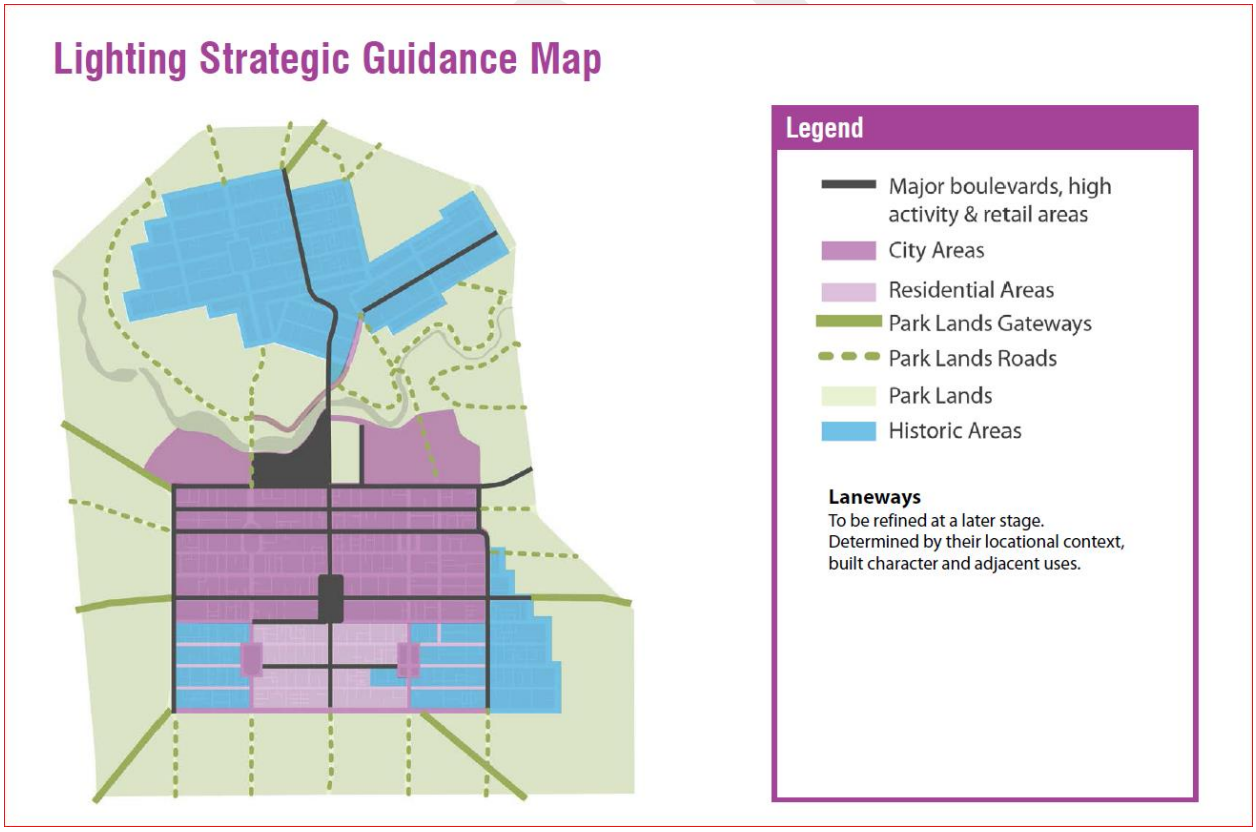


Figure 5.1.1: Lighting Guidance Map

Asset Age

Within Council's current asset register installed date information is available for the Light Poles and the CCTV Camera assets. The age profile of Public Lighting Poles and CCTV is shown in Figure 5.1.2.

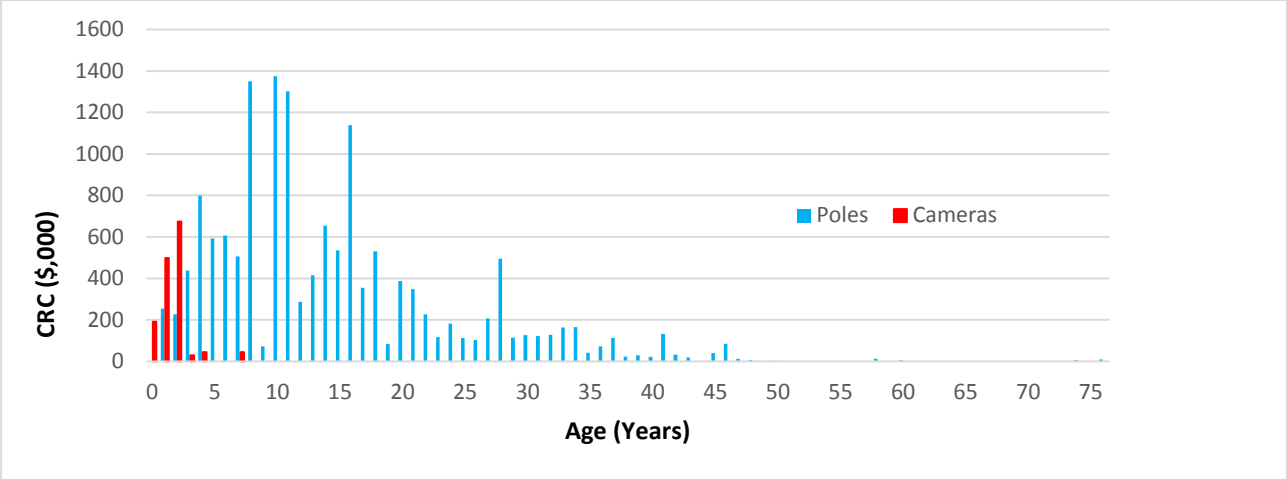


Figure 5.1.2: Asset Age Profile- Public Lighting and CCTV Cameras

A number of the light poles have an asset age greater than 30 years. On an age basis this would indicate that a significant number of these assets have exceeded their useful life of 30 years. However, Light Poles have also been condition assessed and many of these poles are in an Average or Good condition and would be considered to have some remaining useful life on the basis of condition. This highlights the importance of using and improving the nature of condition assessments to use as a basis for calculating the remaining life of the asset.

Much of the Public Lighting, Switchboard and CCTV assets are underground (such as cabling and conduit). These underground assets have been assessed based on the date of installation of the associated above ground asset.

Asset Condition

The condition profile of the Public Lighting assets shown by Current Replacement Cost (CRC) included in this plan is shown in the figure below.

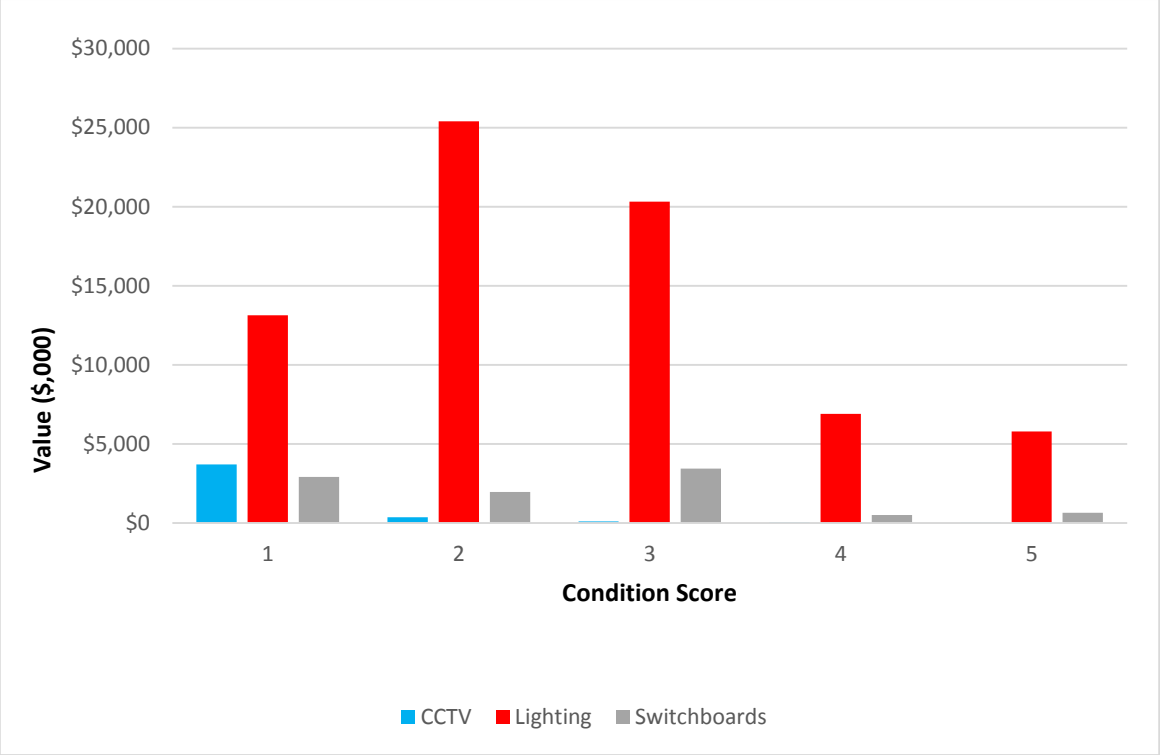


Fig 5.1.3: Asset Condition Profile

The majority of the assets are in Excellent to Average condition. There are a range of Lighting assets that are in Poor or Very Poor condition. These are dominated by below ground assets such as cable and conduit. These below ground assets are yet to have a true condition measurement. As the data currently stands, these assets have been allocated a condition based on date installed of the associated above ground asset. A portion of cable and conduit has been installed for 20 or 30 years and yet for water-logged areas these assets have a useful life of 15 – 25 years, and therefore the Condition has been classified as Poor or Very Poor, until empirical condition data is collected.

The CCTV assets are relatively new, with significant increase in number of cameras over the past 2 years. The condition of much of the CCTV network is considered Excellent. However, given that the useful life adopted for Cameras and associated electrical equipment is 10 years, all of the CCTV assets will feature in the 20 year plan for renewal.

Asset capacity and performance

The organisation's services are generally provided to meet regulatory and design standards where applicable. 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
CBD and North Adelaide Residential Areas	Legacy standard ineffective SAPN overhead lighting systems
CBD prime commercial areas, e.g. North Terrace, Grenfell St, Frome St, Angas St. and other similar locations	Remnants of SAPN overhead lighting systems
Selected locations	Inefficient infrastructure design

The above service deficiencies were identified from ongoing engagement on the issue with Councils maintenance, events management and accounts management personnel areas.

5.1.3 Asset condition assessment

Asset data and condition assessments have been carried out over the period January 2011 – May 2014, and the asset registers uploaded into Council's RAMM asset management program.

Condition is measured using a 1 – 5 grading system[7] as detailed in Table 5.1.3.

Table 5.1.3: Simple Condition Grading Model

Condition Score	Description of Condition	
1	**Excellent**: only planned maintenance required	(0 – 20% consumed)
2	**Good**: minor maintenance required plus planned maintenance	(20 – 40% consumed)
3	**Average**: significant maintenance required	(40 – 60% consumed)
4	**Poor**: significant renewal/rehabilitation required	(60 – 80% consumed)
5	**Very Poor**: beyond rehabilitation and need complete renewal	(80 – 100% consumed)

Condition audits of Council's Public Lighting and City Safety CCTV network were undertaken internally by Council staff, most recently in early-2015. The overall condition was obtained through a visual data collection process, where the extent and severity of a number of defects potentially affecting structural integrity, luminaire function, and camera integrity were used to obtain an overall condition assessment.

Council then internally determined the condition ratings by using the remaining useful life of each asset and the expected physical life of each asset, to calculate a consumption percentage. Assets that were 0-20% consumed were given a condition 1, 20-40% - condition 2, 40-60% - condition 3, 60-80% - condition 4 and 80-100% -condition 5.

In the absence of empirical condition data, the date of installation and the percentage of useful life consumed was used to calculate a condition score for the asset.

A key recommendation in the improvement plan is to develop data collection methodologies and to group assets of similar consumption patterns to improve remaining live predictions.

Asset valuations

The value of Public Lighting assets recorded in the asset register as of 13 April 2015, covered by this asset management plan is shown below in Table 5.1.4. All assets have been valued using a brownfield replacement cost methodology and based on unit rates as at that date.

Various ratios of asset consumption and expenditure have been prepared to help guide and gauge asset management performance and trends over time. These were developed in June 2015 and are also shown in Table 5.1.4 below for each asset class.

Table 5.1.4: Asset Valuation

Asset Valuations	Public Lighting	City Safety CCTV	Metered Electrical Panels
Current Replacement Cost	$59,393,988	$3,599,720	$9,230,547
Accumulated Depreciation	$19,007,340	$171,317	$3,034,929
Written Down Value	$40,386,647	$3,428,403	$6,195,618

A key recommendation in the Improvement Plan is to undertake a desktop revaluation in order to account for the shorter remaining life of luminaires as a result of the LED rollout.

[7] Based on IPWEA, 2011, IIMM, Sec 2.5.4, p 2|79.

5.2 Infrastructure Risk Management Plan

An assessment of risks[8] associated with service delivery from infrastructure assets has identified critical risks that will result in loss or reduction in service from infrastructure assets or a 'financial shock' to the organisation. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

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

Table 5.2: Critical Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
All Lighting and Electrical Assets	*Public Safety:* Death, injury or property damage caused through significant failures in columns, brackets, catenary attachment points and/or electrical equipment	**VH**	Update location-specific asset inspection protocols with responsive maintenance and renewals plans	**H**	Within current LTFP projections. A comprehensive electrical risk assessment is planned.
Public Lighting	*Financial:* Expensive energy and maintenance costs make the network very expensive and unsustainable.	**VH**	Develop a replacement program for the remaining Metal Halide luminaires with LED within the LTFP	**M**	Within current LTFP and IAMP projections

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

The Improvement Plan recommends further work be undertaken on the risk management plan.

5.3 Required Expenditure

This asset management plan identifies the projected operations, maintenance and capital renewal expenditures required to provide an agreed level of service to the community over a 20 year long term financial planning period, this provides input into 20 year financial and funding plans aimed at providing the required services in a sustainable manner.

Note that all costs are shown in 2015/2016 financial year dollar values. These costs are a revision on the April 2015 Public Lighting Revaluation, notably using an asset breakdown which separates the Lighting asset into Luminaire, Pole, Pole Foundation, Underground Cabling, Underground Conduit. The Switchboard assets have also been assessed as Switchboard, Cabling and Conduit. The CCTV assets have been assessed as Cameras, Server Equipment, Cabling, and Conduit.

5.3.1 Routine Operations and Maintenance Plan

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

[8] REPLACE with Reference to the Organisation's Infrastructure Risk Management Plan as footnote

(unplanned), planned and specific maintenance work activities. Assessment and prioritisation of reactive maintenance is undertaken by operational staff using experience and judgement.

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock. The average annual operation and maintenance cost over a 10 year planning period (long term) is $2.54M. This plan includes a 1.5% per annum allowance for asset stock growth. Operations and maintenance have been separated as part of this plan.

Operations and maintenance activities for all the Lighting and Electrical infrastructure include the maintenance of quality and function through prompt lamp replacement, responsive electrical fault and CCTV outage repairs, routine network performance inspections, the intensity and spacing of street lights, CCTV cameras, etc.

Maintenance may be classified into either 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.

Actual past operations and maintenance expenditure is shown in Table 5.3.1.

Table 5.3.1: Operations and Maintenance Expenditure Trends

Year	Operations Expenditure	Maintenance Expenditure
2012	$1,402,808	$715,999
2013	$1,729,796	$691,743
2014	$1,558,896	$845,434
2015	$1,349,796	$736,087
2016	$1,341,113	$944,490

Currently, planned maintenance work is 13% of total maintenance expenditure, leading to an excessively expensive reactive program. In the improvement plan, integrated maintenance programs will reflect a target ratio of 80% Planned / 20% Unplanned works.

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.

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

5.3.2 Operations and Maintenance Strategies

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

- Scheduling operations activities to deliver the defined level of service in the most efficient manner,
- Undertaking maintenance activities through a planned maintenance system to reduce maintenance costs and improve maintenance outcomes. Undertake cost-benefit analysis to determine the most cost-effective split between planned and unplanned maintenance activities (50 – 70% planned desirable as measured by cost),
- Maintain a current infrastructure risk register for assets and present service risks associated with providing services from infrastructure assets and reporting Very High and High risks and residual risks after treatment to management and Council,

- Review current and required skills base and implement workforce training and development to meet required operations and maintenance needs,
- Review asset utilisation to identify underutilised assets and appropriate remedies, and over utilised assets and customer demand management options,
- Maintain a current hierarchy of critical assets and required operations and maintenance activities,
- Develop and regularly review appropriate emergency response capability,
- Review management of operations and maintenance activities to ensure Council is obtaining best value for resources used.

Asset hierarchy

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

The organisation's service hierarchy is shown is Table 5.3.2.

Table 5.3.2: Asset Service Hierarchy

Service Hierarchy	Service Level Objective
Main CBD and North Adelaide shopping and entertainment precincts lighting and CCTV	Provide an amenity of high quality that is kept to a high standard of presentation and safety as it is a show piece for the city and its community.
Premium events areas, e.g. Elder, Rundle, Rymall and Bonython parks electricity and lighting	Provide an amenity of high quality that is operated and maintained to a high standard of service reliability and safety as these are high profile public and community event spaces.
CBD and North Adelaide Main Roads lighting	Provide high quality service and connectivity corridors for transport, business, and general activity maintained to a high standard of service reliability and safety.
General road, pedestrian and public spaces lighting within City precinct	Provide an amenity of high quality that is kept to a high standard of presentation and safety as it is a show piece for the City and event space.

Critical Assets

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

Operations and maintenances activities may be targeted to mitigate critical assets failure and maintain service levels. These activities may include increased inspection frequency, higher maintenance intervention levels, etc. Critical assets failure modes and required operations and maintenance activities are detailed in Table 5.3.3.

Table 5.3.3: Critical Assets and Service Level Objectives

Critical Assets	Critical Failure Mode	Operations & Maintenance Activities
Public lighting, electricity and CCTV services in CBD and North Adelaide shopping and entertainment precincts	Major electricity outage from equipment failure causing	Routine equipment inspections; Defined usage and reactive response protocols for ACC and 3rd-party operation; Prioritised maintenance resources and responses
Elder, Rundle, Rymall and Bonython Park(s) event areas power supplies	Major event power outage from equipment failure causing event disruption	Ongoing engagement with Events Management staff to share planned events programs and maintenance priorities and scheduling; Routine equipment inspections; Defined usage and response protocols for ACC and 3rd-party operation; Prioritised maintenance resources and responses
CBD and North Adelaide Main Roads lighting and	Grouped lighting outages due to power infrastructure failure	Routine distribution equipment maintenance inspections; Maintain accurate asset information and network diagrams;

Critical Assets	Critical Failure Mode	Operations & Maintenance Activities
electricity services in other locations		Prioritised maintenance resources and responses

Standards and specifications

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

- AS/NZS3000 Electrical Installations AS/NZS 3000 Electrical Installations
- AS/NZS 3002 Electrical Installations for Shows & Carnivals
- AS/NZS 3439 Electrical Switchboards
- AS/NZS 2053 Conduit and fittings for electrical installations
- AS/NZS 4806 CCTV Systems
- AS/NZS 1158 Series Lighting for Roads and Public Spaces
- ACC Customised Standards as applicable
- ACC Urban Elements Guidelines
- City Works Guidelines
- SA Electrical Act 1999
- ISO 31000 Risk Management Standard
- AS/NZS 3019 – Electrical installations – periodic verifications
- AS/NZS 3017 – Electrical installations – verifications guidelines

Summary of future operations and maintenance expenditures

There is a projected 1.5% growth in the Public Lighting asset stock on the basis of both strategic and demand-driven growth. Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 5.1.2 and Figure 5.1.3. Note that all costs are shown in current 2016 dollar values (i.e. real values).

Figure 5.3.1: Projected Operations Expenditure

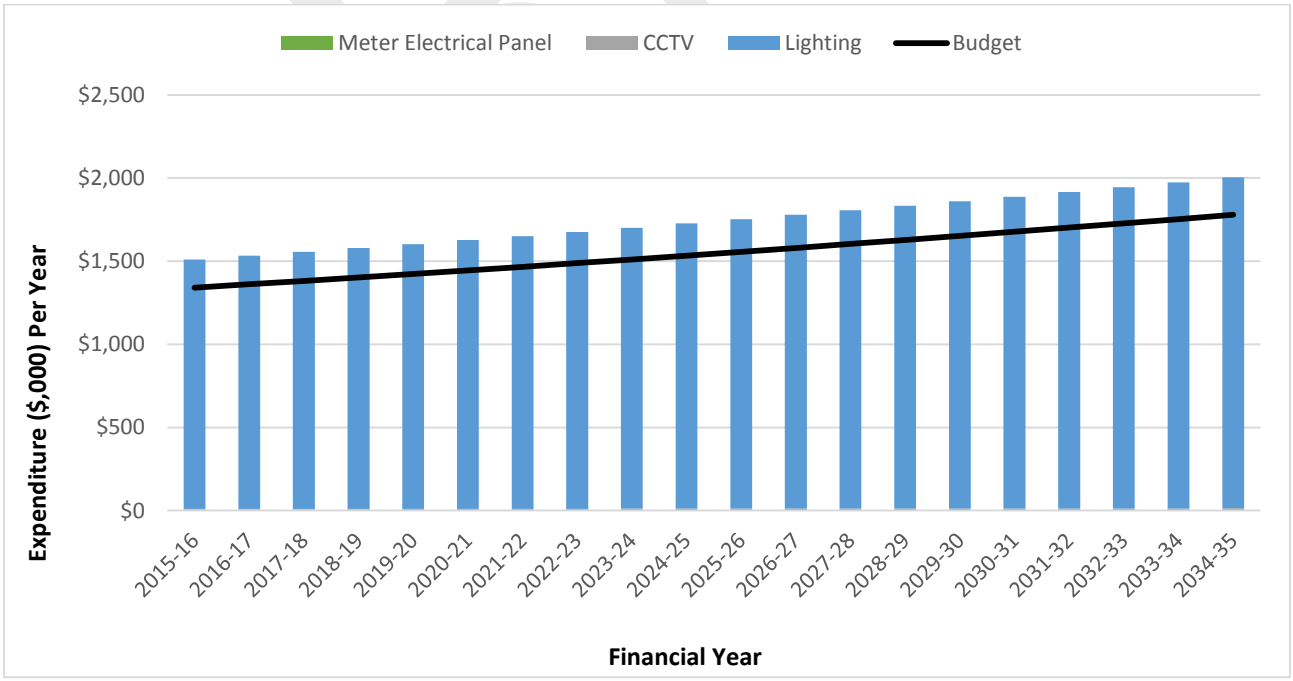


Table 5.3.4: Projected Maintenance Expenditure

Financial Year	Public Lighting	Switchboards	CCTV	Total
2015-16	$1,500,000	$3,000	$7,000	$1,510,000
2016-17	$1,522,500	$3,045	$7,105	$1,532,650
2017-18	$1,545,338	$3,091	$7,212	$1,555,640
2018-19	$1,568,518	$3,137	$7,320	$1,578,974
2019-20	$1,592,045	$3,184	$7,430	$1,602,659
2020-21	$1,615,926	$3,232	$7,541	$1,626,699
2021-22	$1,640,165	$3,280	$7,654	$1,651,099
2022-23	$1,664,767	$3,330	$7,769	$1,675,866
2023-24	$1,689,739	$3,379	$7,885	$1,701,004
2024-25	$1,715,085	$3,430	$8,004	$1,726,519
2025-26	$1,740,811	$3,482	$8,124	$1,752,417
2026-27	$1,766,923	$3,534	$8,246	$1,778,703
2027-28	$1,793,427	$3,587	$8,369	$1,805,383
2028-29	$1,820,329	$3,641	$8,495	$1,832,464
2029-30	$1,847,634	$3,695	$8,622	$1,859,951
2030-31	$1,875,348	$3,751	$8,752	$1,887,850
2031-32	$1,903,478	$3,807	$8,883	$1,916,168
2032-33	$1,932,030	$3,864	$9,016	$1,944,911
2033-34	$1,961,011	$3,922	$9,151	$1,974,084
2034-35	$1,990,426	$3,981	$9,289	$2,003,696
Total	**$34,685,501**	**$69,371**	**$161,866**	**$34,916,737**
Avg	**$1,734,275**	**$3,469**	**$8,093**	**$1,745,837**

Figure 5.3.2: Projected Maintenance Expenditure

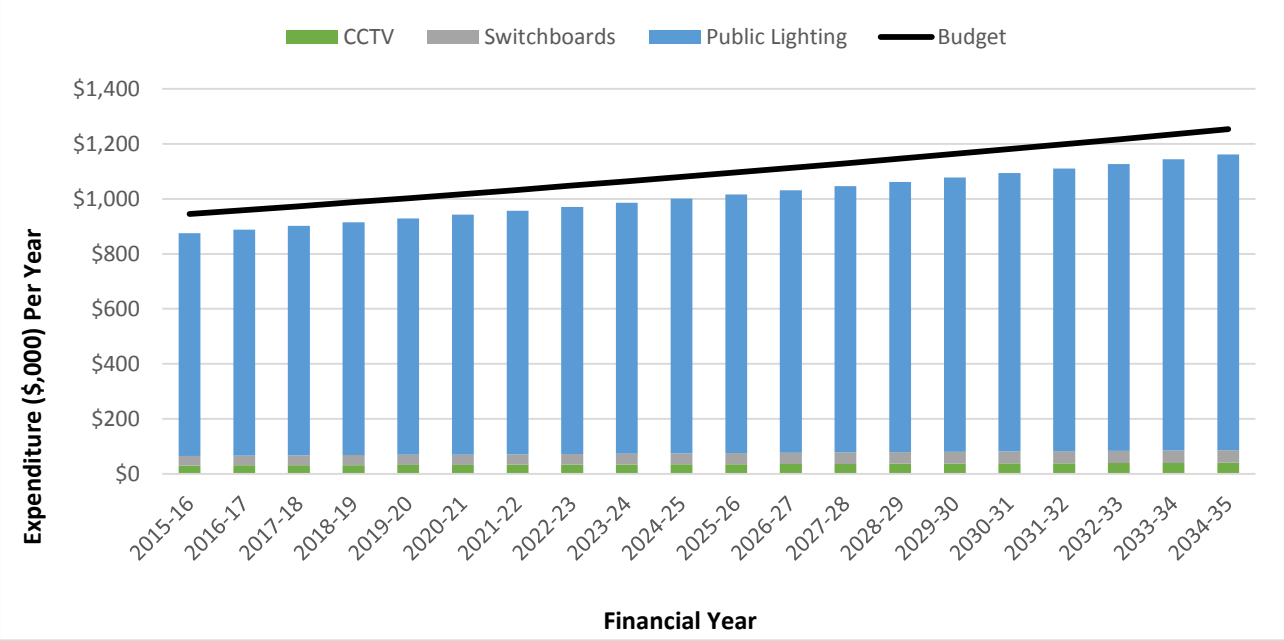


Table 5.3.5: Projected Maintenance Expenditure

Financial Year	Public Lighting	Switchboards	CCTV	Total
2015-16	$810,000	$35,000	$30,000	$875,000
2016-17	$822,150	$35,525	$30,450	$888,125
2017-18	$834,482	$36,058	$30,907	$901,447
2018-19	$846,999	$36,599	$31,370	$914,969
2019-20	$859,704	$37,148	$31,841	$928,693
2020-21	$872,600	$37,705	$32,319	$942,624
2021-22	$885,689	$38,271	$32,803	$956,763
2022-23	$898,974	$38,845	$33,295	$971,114
2023-24	$912,459	$39,427	$33,795	$985,681
2024-25	$926,146	$40,019	$34,302	$1,000,466
2025-26	$940,038	$40,619	$34,816	$1,015,473
2026-27	$954,139	$41,228	$35,338	$1,030,705
2027-28	$968,451	$41,847	$35,869	$1,046,166
2028-29	$982,977	$42,474	$36,407	$1,061,858
2029-30	$997,722	$43,111	$36,953	$1,077,786
2030-31	$1,012,688	$43,758	$37,507	$1,093,953
2031-32	$1,027,878	$44,414	$38,070	$1,110,362
2032-33	$1,043,296	$45,081	$38,641	$1,127,018
2033-34	$1,058,946	$45,757	$39,220	$1,143,923
2034-35	$1,074,830	$46,443	$39,809	$1,161,082
Total	**$18,730,170**	**$809,328**	**$693,710**	**$20,233,209**
Avg	**$936,509**	**$40,466**	**$34,686**	**$1,011,660**

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

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

5.4 Renewal Plan

Renewal expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered upgrade expenditure. The method used to develop the renewal plan uses the asset register data to project the renewal costs for renewal years using acquisition year and useful life (based on installation year or calculated based on condition assessment, or a weighted average of the two).

Council has indicated that the renewal of Metal Halide Luminaires to LED Luminaires will take place in 3 stages over 5 years beginning in 2017-18. This is distinct from Smart City upgrades, such as Luminaire telemetry, sensors, control systems which represent an increase in service level and are considered part of the lighting upgrade expenditure projections.

The costs associated with the renewals have been aggregated for each financial year over a 10 year planning period (long term) and shown in Table 10 and the average annual capital renewal cost over the long term is $2.39M with a potential budget surplus of $3.42M.

Asset Renewal Components

For the purpose of assessing the renewal expenditure plan, the Public Lighting infrastructure was componentized into asset subtypes that formed logical renewal work packages, or that represented asset sub-type with distinctly different useful lives from the assets around it.

Along with material costs, the replacement cost of lighting, switchboard and CCTV sub-types each included disposal, labour and traffic management.

Luminaires

The luminaires were treated as a sub-type, distinct from the Pole, and likely to be replaced independently to the pole. This distinction has immediate importance in projecting the renewal cost of luminaires associated with the LED rollout. The lamp and cabling inside the pole, down to the pole fuse were considered to be the luminaire.

Poles

The poles represent the infrastructure supporting the luminaires. Poles were given different useful lives depending on whether or not they were exposed to wet areas (in parks or green spaces). Pole replacement costs were dependent on pole type and height, luminaire brackets, banner brackets.

Pole Foundations

Pole Foundations were not previously included in the asset base for Public lighting. A useful life and replacement cost was development for the pole types that have a foundation. In the absence of condition or age data for the foundation, the age of the pole was taken as a proxy for the age of the foundation. With a useful life of 50 years, the renewal of many of the pole foundations falls outside the 20-year renewal plan.

Lighting Cabling and Conduit

The local underground cabling and conduit between light poles was treated as separate sub-types. An allowance of length of cable and conduit per pole was assumed. The cable and the conduit were each given different useful lives given that it is expected that cable will need replacement earlier than conduit. The useful life was further reduced if the pole location was in park lands or green spaces where water logging is considered more likely and more frequent.

Lighting Switchboards

Lighting switchboards were given different useful life depending on whether the type of switchboard was located above or below ground.

Lighting Switchboard Cabling

An allowance of length of local cabling and conduit for each lighting switchboards was made. The useful life and replacement cost varied depending on whether the asset was located in a park or green space, and on whether footpath reinstatement works were required.

Metered (Event) Switchboards

Metered Switchboards were all assumed to be in parklands. The replacement cost varied with the type of switchboard or bollard. Local lengths of buried Conduit and Cable were assumed for each switchboard and treated as separate assets sub-types with separate useful lives.

CCTV Cameras

CCTV Cameras included local proximity cabling included as part of the asset.

Server Equipment

All server equipment to support the CCTV cabling was adopted with a single useful life for electrical equipment and replacement costs as per the 2015 revaluation.

CCTV Cabling and Conduit

The 2015 revaluation included 7km of cabling for the CCTV network (additional to the local cabling for the cameras). This length of cable was adopted and separated as conduit, cable and cable pit assets with separate useful lives. The conduit asset replacement cost included trenching costs.

Useful Lives

The useful lives of assets used to develop projected asset renewal expenditures are shown in Table 5.4.1. Asset useful lives were last reviewed as part of the preparation of this Asset Management Plan (July 2016).

Table 5.4.1: Useful Lives of Assets

	Asset (Sub)Category	Useful life	Basis for Remaining Useful Life
Public Lighting	Luminaires (Metal Halide)*	5 Years	Condition
	Luminaires (LED)	25 Years	Condition
	Poles (dry areas)	35 Years	Age
	Poles (wet areas)	30 Years	Age
	Pole Foundation	50 Years	Age
	Local column cabling (below ground – wet areas)	16 Years	Age
	Local column cabling (below ground – dry areas)	30 Years	Age
	Local column conduit (below ground – wet areas)	20 Years	Age
	Local column conduit (below ground – dry areas)	35 Years	Age
Switchboards	Lighting Switchboards (above ground)	35 Years	Condition
	Lighting Switchboards (below ground)	30 Years	Condition

	Lighting Switchboard Underground works (wet areas)	15 Years	Age
	Lighting Switchboard Underground works (dry areas)	25 Years	Age
	Metered Switchboard	30 Years	Condition
	Metered Switchboard Conduit	25 Years	Condition
	Metered Switchboard Cable	15 Years	Condition
Public Safety Surveillance CCTV	Cameras	12 Years	Condition & Age
	Equipment Hub	12 Years	Age
	Fibre Optic Network Cable	30 Years	Age
	Fibre Optic Network Conduit	40 Years	Age
	C-BUS	30 Years	Age

5.4.2 Renewal and Replacement Strategies

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

- Planning and scheduling renewal projects to deliver the defined level of service in the most efficient manner,
- Undertaking project scoping for all capital renewal and replacement projects to identify:
    - the service delivery 'deficiency', present risk and optimum time for renewal/replacement,
    - the project objectives to rectify the deficiency,
    - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
    - and evaluate the options against evaluation criteria adopted by the organisation, 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, implement workforce training and development to meet required construction and renewal needs,
- Maintain a current hierarchy of critical assets and capital renewal treatments and timings required,
- Review management of capital renewal and replacement activities to ensure Council is obtaining best value for resources used.

Renewal ranking criteria

Asset renewal and replacement is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (e.g. replacing a metered electricity distribution panel for reliable events facilitation), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. brightness of public lighting).[9]

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

- Have a high consequence of failure,
- Have a high utilisation and subsequent impact on users would be greatest,
- The total value represents the greatest net value to the organisation,

[9] IPWEA, 2011, IIMM, Sec 3.4.4, p 3|60.

- Have the highest average age relative to their expected lives,
- Are identified in the AM Plan as key cost factors,
- Have high operational or maintenance costs, and
- Where replacement with modern equivalent assets would yield material savings.[10]

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

Table 5.4.2: Renewal and Replacement Priority Ranking Criteria

Criteria	Weighting
High Public Safety Impact	50%
Significant savings from modern equivalent	20%
High Utilisation Factor	10%
High Operational or Maintenance costs	20%
Total	**100%**

Renewal and replacement standards

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

- AS/NZS 3000 Electrical Installations
- AS/NZS 3002 Electrical Installations for Shows & Carnivals
- AS/NZS 3439 Electrical Switchboards
- AS/NZS 4806 CCTV Systems
- As/NZS 1158 Series Lighting for Roads and Public Spaces
- ACC Customised Standards as applicable

5.4.2 Luminaire LED renewal program

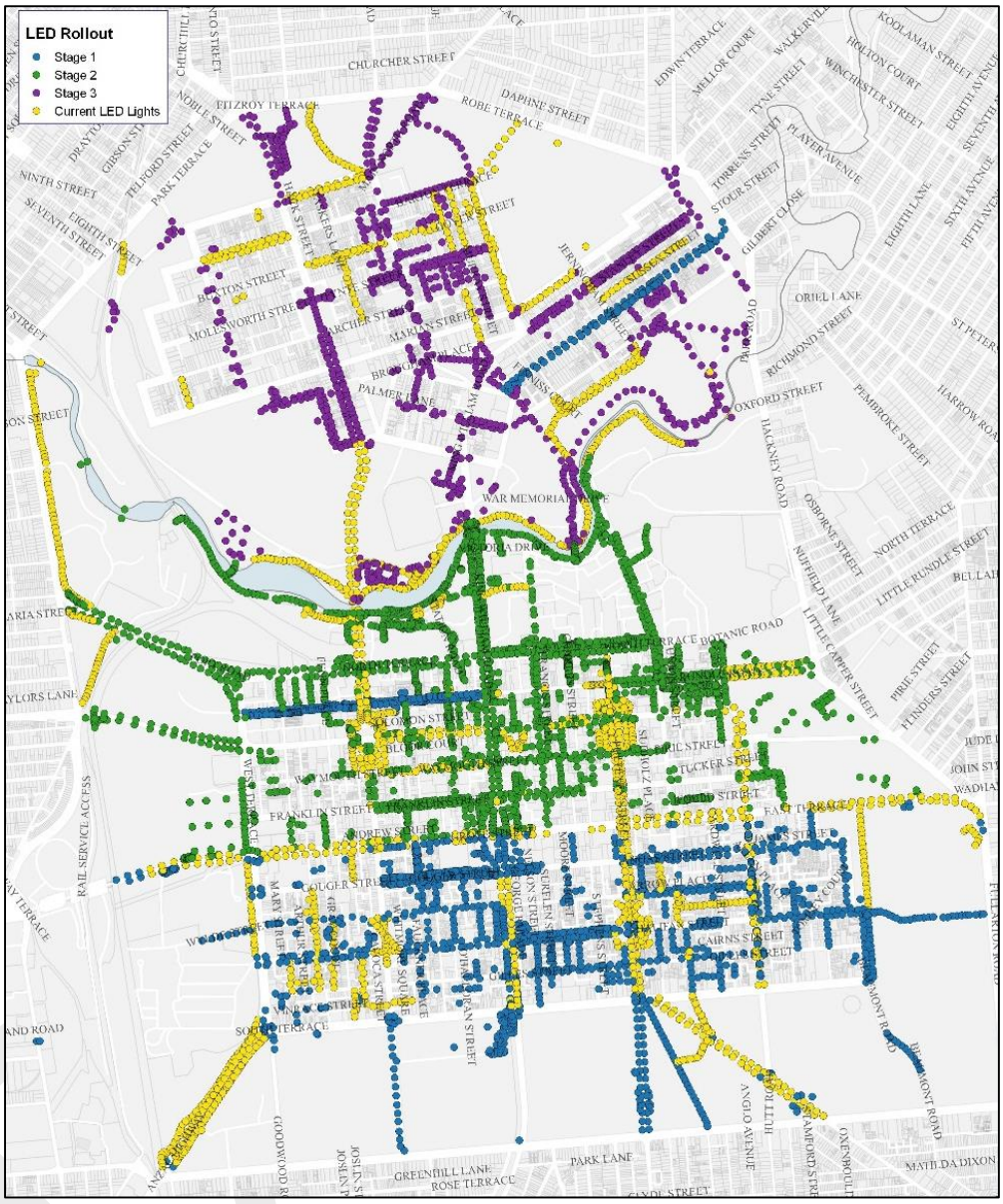
Metal Halide luminaires are increasingly obsolete in light of recent developments of LED lighting technology. Council has a planned renewal of Public lighting luminaires to convert remaining Metal Halide luminaires to LED. A portion of the lighting network has already converted to LED, while the remaining has been assumed to be staged over the next 5 years, with indicative staging indicated in the Figure 5.4.1.

Table 5.4.3: LED Rollout Staging

Stage of LED Rollout	Financial Year
Stage 1	2017-18
Stage 2	2018-20
Stage 3	2020-21

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

Figure 5.4.1: LED Indicative Rollout



5.4.3 Summary of future renewal expenditure

Projected future renewal expenditures are forecast to increase over time as the asset stock increases from growth. The expenditure is summarised in Fig 5. Note that all amounts are shown in real values.

Fig 5.4.2: Projected Capital Renewal Expenditure

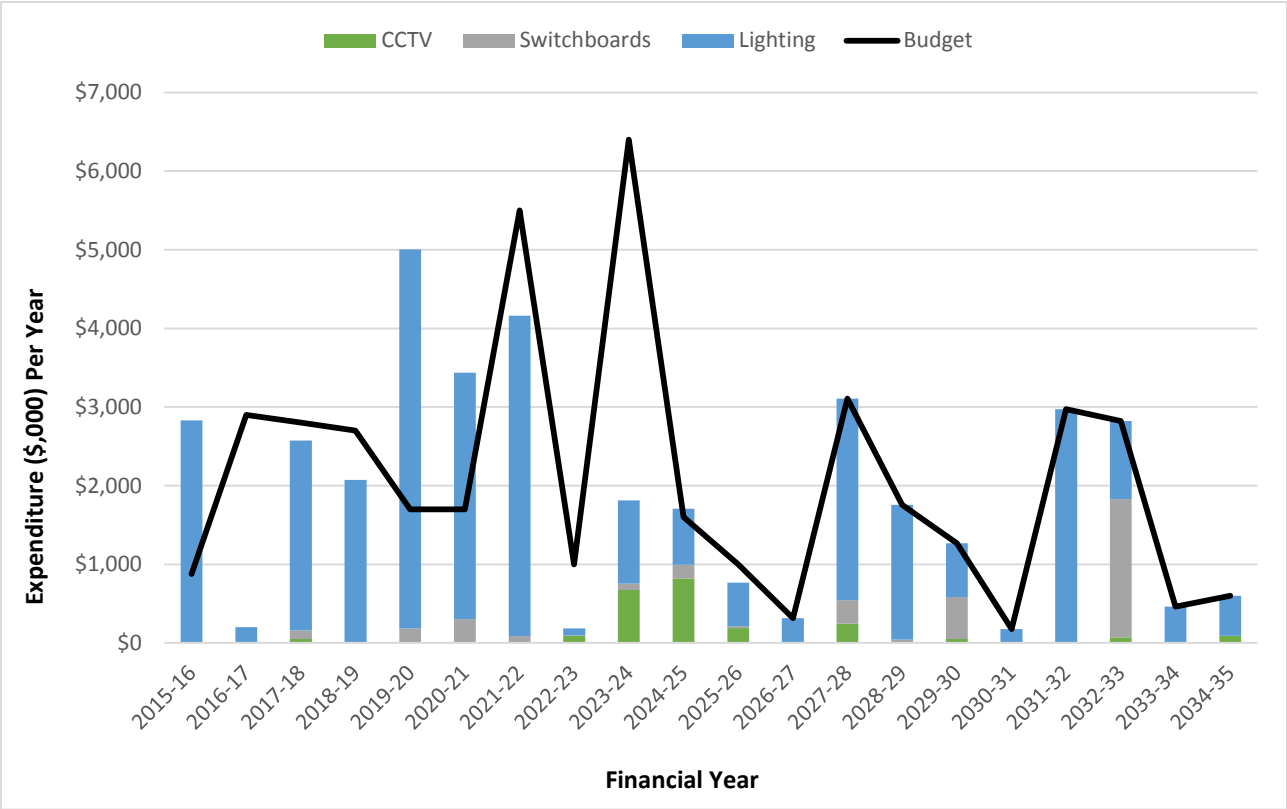


Table 5.4.5 Projected Capital Renewal Expenditure

Financial Year	Public Lighting	Switchboards	CCTV	Total
2015-16	$2,832,065	$0	$0	$2,832,065
2016-17	$198,941	$0	$0	$198,941
2017-18	$2,415,704	$108,597	$50,312	$2,574,612
2018-19	$2,074,857	$0	$0	$2,074,857
2019-20	$4,819,581	$183,914	$0	$5,003,495
2020-21	$3,135,749	$300,928	$0	$3,436,678
2021-22	$4,077,133	$85,200	$0	$4,162,333
2022-23	$91,145	$2,786	$92,282	$186,213
2023-24	$1,059,474	$81,202	$673,503	$1,814,178
2024-25	$709,918	$178,318	$818,132	$1,706,368
2025-26	$551,791	$23,063	$190,338	$765,192
2026-27	$315,748	$0	$0	$315,748
2027-28	$2,564,055	$297,723	$246,738	$3,108,516
2028-29	$1,712,426	$42,600	$0	$1,755,026
2029-30	$683,518	$534,488	$50,312	$1,268,317
2030-31	$174,789	$0	$0	$174,789
2031-32	$2,974,472	$0	$0	$2,974,472
2032-33	$991,864	$1,759,636	$70,000	$2,821,500
2033-34	$459,441	$0	$0	$459,441

2034-35	$507,712	$0	$92,282	$599,994
Total	$32,350,383	$3,598,455	$2,283,897	$38,232,735
Avg	$1,617,519	$179,923	$114,195	$1,911,637

Deferred renewal and replacement, ie 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.

5.5 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 site useage needs. Assets may also be acquired at no cost to the organisation from land development works by private parties. These assets from growth are considered in Section 4.4.

5.5.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as councillor/director or community requests, proposals identified by strategic plans or partnerships with other organisations. Candidate proposals are inspected to verify need and to develop a preliminary upgrade estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed below.

Table 5.5.1: New Assets Priority Ranking Criteria

Criteria	Weighting
Public Safety	30%
Legislative Requirements	15%
External collaborative partnerships, e.g. State / Local Government, Utilities, etc.	20%
Community Demand	35%
Total	**100%**

5.5.2 Capital Investment Strategies

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

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

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

5.5.3 Summary of future upgrade/new assets expenditure

Table 5.5.2: Projected upgrade/new assets

Upgrade Category	Description
PLEC	Council has a 30-year plan to underground power which will require changes to the street lighting infrastructure. While there is no defined plans in place for the purpose of the Asset Plan an allowance has been made to estimate the possible requirements in the planning period. As part of the improvement plan further work will be undertaken to refine this projection.
Deficiencies	Council has been doing some investigations and gaining feedback through customer surveys which suggests there is a need for upgrading lighting infrastructure to both meet customer requirements and also to meet minimum desirable lighting standards. While there is no defined plans in place for the purpose of the Asset Plan an allowance has been made to estimate the possible requirements in the planning period. These upgrades are likely to include lighting gaps in Park Lands, especially around some key cycle paths and event areas. As part of the improvement plan further work will be undertaken to refine this projection.
Special projects	Council has historically undertaken a range of special projects in order to continue to develop the lighting in the City. While there is no defined plans in place for the purpose of the Asset Plan an allowance has been made to estimate the possible requirements in the planning period. These would include contribution to majore projects such as North Terrace, the Riverbank Precinct and Laneways. As part of the improvement plan further work will be undertaken to refine this projection.
Smart City	There is a strategy to develop Smart City technologies which will impact the upgrade plan in the planning periods. Smart City will add wifi and other enhancements to lighting infrastrubure. Further work is needed to quantify this in future asset plan.
Other	Support for Strategic Plan initiatives such as lighting artworks or green areas.
CCTV growth	The CCTV network has grown in recent years, and an allowance has been made to estimate the expected growth in the camera network.
Switchboards upgrades	Special projects, deficiencies or other will require an allowance for growth of lighting switchboards and cabling. Any plan for growth in the metered switchboards or power bollards is included here if it is not covered by other categories.

Expenditure on new assets and services in the organisation's capital works program will be accommodated in the long term financial plan.

Figure 5.5.1: Projected Upgrade Expenditure

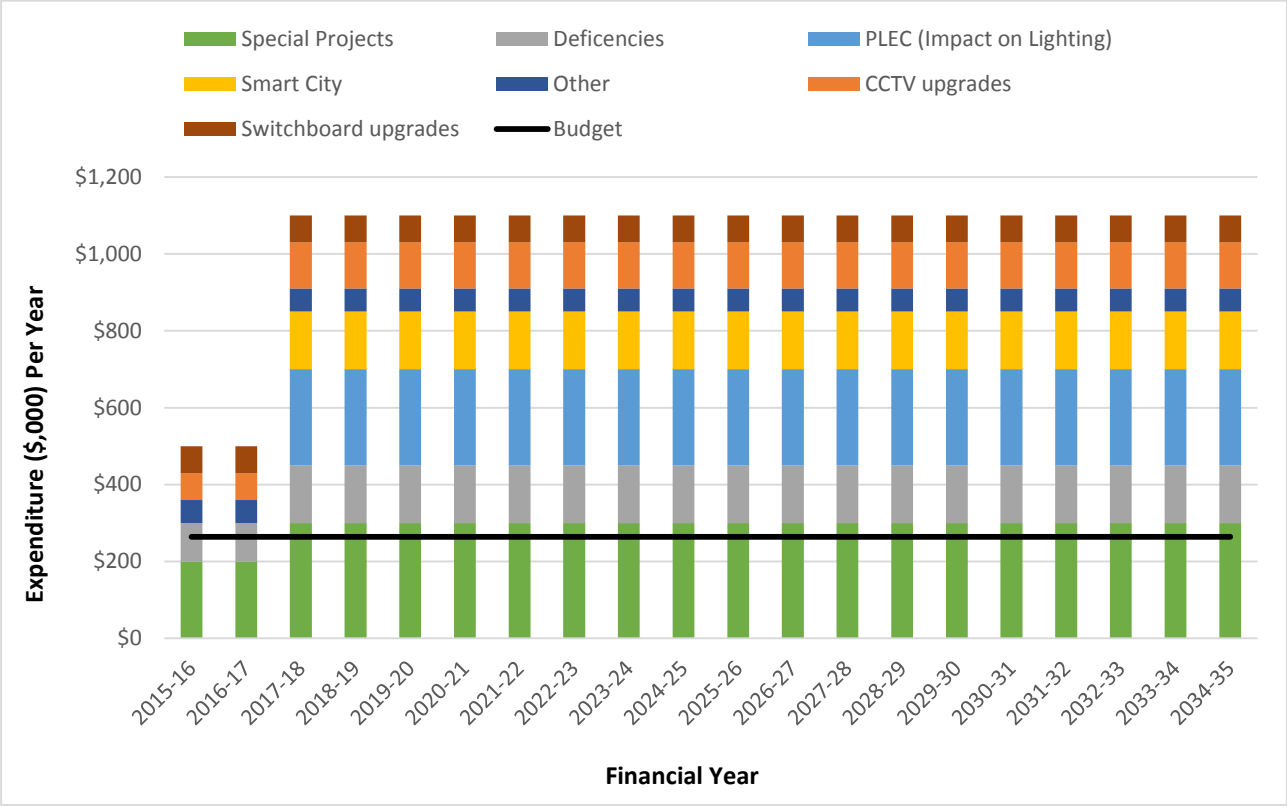


Table 5.5.3: Projected Upgrade Expenditure

Financial Year	PLEC (Impact on Lighting)	Deficencies	Special Projects	Smart City	Other	CCTV upgrades	Switchboard upgrades	Total
2015-16		$100,000	$200,000		$60,000	$70,000	$70,000	$500,000
2016-17		$100,000	$200,000		$60,000	$70,000	$70,000	$500,000
2017-18	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2018-19	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2019-20	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2020-21	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2021-22	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2022-23	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2023-24	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2024-25	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2025-26	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2026-27	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2027-28	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2028-29	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2029-30	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2030-31	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2031-32	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2032-33	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000

2033-34	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
2034-35	$250,000	$150,000	$300,000	$150,000	$60,000	$120,000	$70,000	$1,100,000
Total	$4,500,000	$2,900,000	$5,800,000	$2,700,000	$1,200,000	$2,300,000	$1,400,000	$20,800,000
Avg	$225,000	$145,000	$290,000	$135,000	$60,000	$115,000	$70,000	$1,040,000

5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Council has not identified any Public Lighting infrastructure assets to be disposed in the 20 year planning period (long term).

Whilst the projected LED rollout is due to obsolescence of the Metal Halide Luminaires, the service level remains unchanged with the LED's being installed. This is not considered disposal of the Luminaires, but renewal. The asset and its service is not obsolete, only the technology of the asset is obsolete and requiring renewal.

5.7 Service Consequences and Risks

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

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

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

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

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

5.7.1 What we cannot do

There are no significant operations and maintenance activities and capital projects that are unable to be undertaken within the next 10 years.

5.7.2 Service consequences

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

5.7.3 Risk consequences

The operations and maintenance activities and capital projects that cannot be undertaken may maintain or create risk consequences for the organisation.

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

6. FINANCIAL SUMMARY

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

6.1 Financial Statements and Projections

The financial projections are shown in Fig 6.1.1 to 6.1.2 and Table 6.1.1 for projected operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets). Note that all costs are indicative only based on existing available data, and are shown in real values. Updated information will be included in subsequent reviews.

The projection for public lighting luminaire expenditure is subject to modification pending detailed development of an LED transition program which is likely to spread the expenditure over multiple budgetary periods.

Details of the lighting columns and power projected expenditure currently mirrors the luminaire profile to a large extent; this will be updated to more accurately reflect the specific differences in functionality and management approaches following detailed technical audits and risk analysis projects to be completed in 2016.

For CCTV cameras, the nature of the technology requires a system-wide replacement approach to maintain overall compatibility; renewals are likely to occur within relatively short periods of time compared to other assets.

The fibre-optic network is a stable, low-maintenance, long-life asset, with any significant renewal requirements anticipated beyond the current management period.

The expenditure projections on switchboards will be updated to more accurately reflect the specific differences in functionality and management approaches following detailed technical audits and risk analysis projects to be completed in 2016.

Fig 6.1.1: Projected Budget and Capital Expenditure

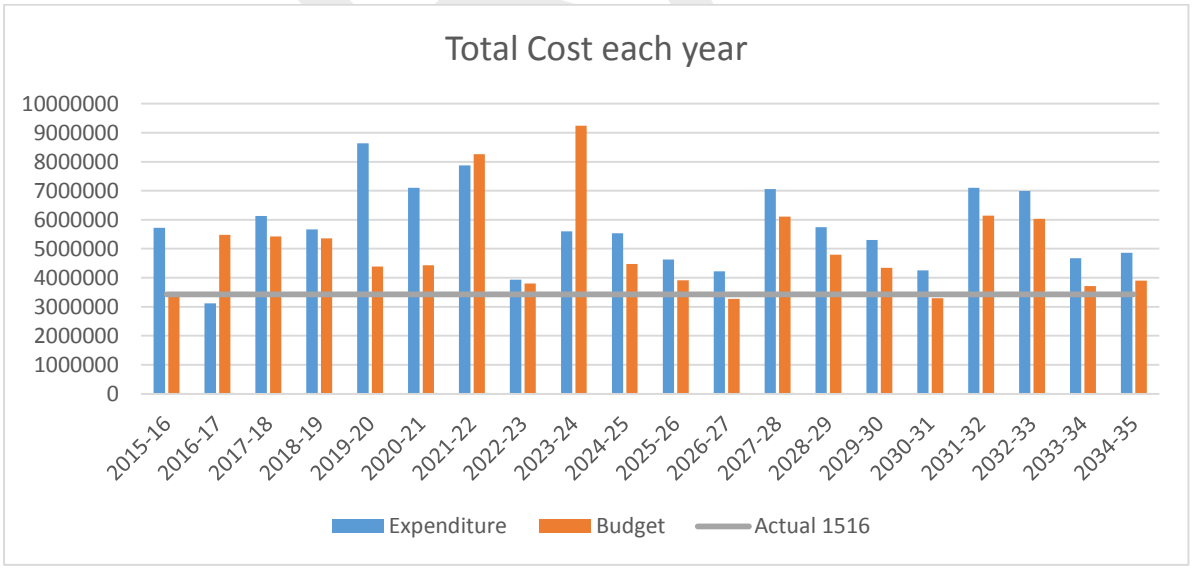


Fig 6.1.2: Projected Budget and Capital Expenditure (Cumulative)

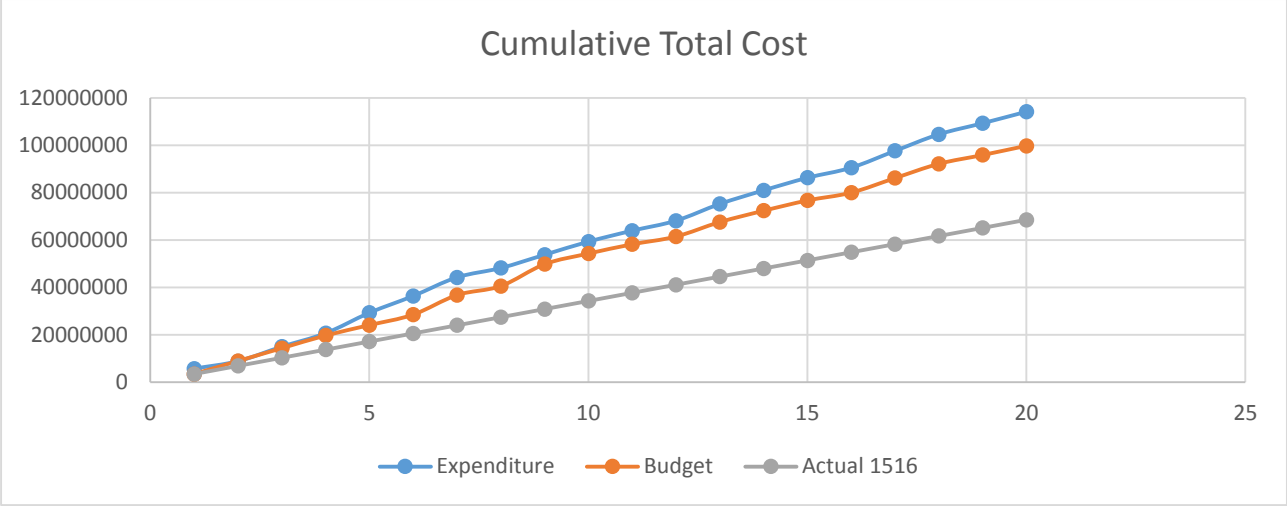


Table 6.1.1 Projected Budget and Capital Expenditure

Financial Year	Operations	Maintenance	Renewal	Upgrade	Total Expenditure	Budget
2015-16	$1,510,000	$875,000	$2,832,065	$500,000	$5,717,065	$3,427,570
2016-17	$1,532,650	$888,125	$198,941	$500,000	$3,119,716	$5,484,168
2017-18	$1,555,640	$901,447	$2,574,612	$1,100,000	$6,131,699	$5,418,966
2018-19	$1,578,974	$914,969	$2,074,857	$1,100,000	$5,668,800	$5,354,287
2019-20	$1,602,659	$928,693	$5,003,495	$1,100,000	$8,634,847	$4,390,137
2020-21	$1,626,699	$942,624	$3,436,678	$1,100,000	$7,106,000	$4,426,525
2021-22	$1,651,099	$956,763	$4,162,333	$1,100,000	$7,870,195	$8,263,458
2022-23	$1,675,866	$971,114	$186,213	$1,100,000	$3,933,193	$3,800,946
2023-24	$1,701,004	$985,681	$1,814,178	$1,100,000	$5,600,863	$9,238,996
2024-25	$1,726,519	$1,000,466	$1,706,368	$1,100,000	$5,533,353	$4,477,617
2025-26	$1,752,417	$1,015,473	$765,192	$1,100,000	$4,633,081	$3,916,817
2026-27	$1,778,703	$1,030,705	$315,748	$1,100,000	$4,225,156	$3,272,353
2027-28	$1,805,383	$1,046,166	$3,108,516	$1,100,000	$7,060,066	$6,105,506
2028-29	$1,832,464	$1,061,858	$1,755,026	$1,100,000	$5,749,348	$4,793,006
2029-30	$1,859,951	$1,077,786	$1,268,317	$1,100,000	$5,306,055	$4,347,903
2030-31	$1,887,850	$1,093,953	$174,789	$1,100,000	$4,256,592	$3,296,604
2031-32	$1,916,168	$1,110,362	$2,974,472	$1,100,000	$7,101,003	$6,139,150
2032-33	$1,944,911	$1,127,018	$2,821,500	$1,100,000	$6,993,428	$6,029,684
2033-34	$1,974,084	$1,143,923	$459,441	$1,100,000	$4,677,448	$3,711,783
2034-35	$2,003,696	$1,161,082	$599,994	$1,100,000	$4,864,772	$3,897,158

7. PLAN IMPROVEMENT AND MONITORING

7.1 Status of Asset Management Practices

7.1.1 Accounting and financial systems

Council's corporate finance system is Technology 1 Enterprise Suite Finance System. Finance transactions relating to Asset Management including operations, maintenance and renewal and capitalisation expenditures are all managed by this system. Financial forecasting including compilations of long term financial plans are undertaken by Councils Finance and Risk Program.

Accountabilities for financial systems

Responsibility for Councils Technology 1 Enterprise Suite Finance System is Councils Finance and Risk Program. Asset Managers are responsible for financial data input and financial forecasts of future capital renewal expenditure.

Accounting standards and regulations

The following accounting standards and regulations have been used in compiling this plan:-

- Australian Infrastructure Financial Management Guidelines 2010
- Australian Accounting Standard AASB-113 Fair Value Measurement
- Australian Accounting Standard AASB-116 Property Plant and Equipment

Capital/maintenance threshold

Corporate Policy for capitalisation threshold is $5,000. This policy is currently under review.

Required changes to accounting financial systems arising from this AM Plan

Accurate recording of operations and maintenance costs against assets.

7.1.2 Asset management system

There is uncertainty on the current focus of Asset Management Systems at Adelaide City Council with Hansen IMS and Road Assessment and Maintenance Management (RAMM) systems both used for recording asset registers and managing asset renewal, depreciation and maintenance. Neither of these systems could provide up to date asset information required to provide accurate asset register data for this Asset Management Plan.

Asset registers

A complete set of Lighting and Electrical Infrastructure asset registers for undertaking the renewal forecasting for this asset management plan was compiled in 2013/14 in an Excel spreadsheet.

These asset registers were modified with acquisitions and disposals from most of the capital handover information in compiling the asset register for this plan. Corporate asset registers will still be require updating with project handover information in the future.

Further consideration is needed for lighting, CCTV and electrical distribution system assets to develop information to reliably predict remaining life of assets. Sound data structures methodology need to be developed to inform future field data collection requirements.

Linkage from asset management to financial system

Selection of a corporate Asset Management System will need to incorporate linkage with Council's Technology 1 financial system particularly in the area of capturing actual operations, maintenance and renewal expenditures to log against assets in the proposed corporate Asset Management System. Clear roles on responsibilities are needed

between field staff, assets and finance teams in order to coordinate the effort of populating the system with relevant and accurate data.

Accountabilities for asset management system and data maintenance

Councils Asset Systems Team is responsible for management of the Asset Management System and data maintenance. Asset Managers and Public Realm staff are responsible for providing data and information for this system including asset handover information for updating asset registers, financial and works information for operations and maintenance, and planning of future renewal expenditures. Leadership and coordination Is needed to ensure consistency in approach for populating and extracting data.

Required changes to asset management system arising from this AM Plan

A clear direction on a future corporate Asset Management System framework is currently being developed and it is understood that this will likely be a group of integrated systems rather than a single corporate Asset Management System. It will be very important to consult with the end users (Asset Managers and Public Realm) during the selection process.

7.2 Improvement Plan

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

Table 7.2: Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1	Desktop revaluation to account for shorter remaining life of luminaires as a result of LED allocation	Senior Asset Consultant Lighting & Electrical , Assets Systems Team,	Internal and external	12 Months
2	Develop methodologies for data collection for poles, cables, switchboard, CCTV and luminaires to provide accurate remaining life	Senior Asset Consultant Lighting & Electrical , Assets Systems Team,	Internal and external	3 Months
3	Complete underground cable condition assessment and complete asset register	Senior Asset Consultant Lighting & Electrical , Assets Systems Team,	Internal and external	12 Months
4	Develop detailed 5 year upgrade plans: PLEC Deficiencies in service Special projects CCTV upgrades Switchboard upgrades	Senior Asset Consultant Lighting & Electrical , Assets Systems Team,	Internal and external	18 Months
5	Ongoing customer feedback and develop of clear service levels	Senior Asset Consultant Lighting & Electrical , Assets Systems Team,	Internal and external	12 Months

Task No	Task	Responsibility	Resources Required	Timeline
6	Over next 3 years commit to an annual review of the asset plan and lighting to take account of the information improvements as a result of the above initiatives	Senior Asset Consultant Lighting & Electrical , Assets Systems Team,	Internal and external	36 Months
7	2016/17: Undertaking a full electrical safety audit and asset condition assessment to establish a risk rating and mitigation plan for the underground electrical assets. This is in addition to the existing routine audits for above-ground assets.	Senior Asset Consultant Lighting & Electrical , Assets Systems Team,	Internal and external	12 Months
8	2016/17: Undertaking a risk assessment of the lighting and other electrical infrastructure currently attached to private properties. This assessment will assess the attachment arrangements relative to the current and ongoing service requirements to establish an effective mitigation plan	Senior Asset Consultant Lighting & Electrical	Internal and external	12 Month
9	2016/17: Undertaking a full network audit will be completed by the end of 2016. This audit will identify all existing infrastructure for the compilation of a RAMM-standard asset register. This information will inform a more detailed assessment to quantify the network capacity and existing opportunities for its optimisation.	Infrastructure Management Team	Internal and external	Late 2015
10	2017/18: Introducing smart meter technology across the electricity network over the period to 2020. This will simplify the accounting and cost recovery processes to enable effective regulatory compliance.	Senior Asset Consultant Lighting & Electrical	Internal and external	36 months
11	Implement the agreed Reactive and Scheduled Maintenance Guidelines from July 2016 onwards to improve electrical compliance, equipment reliability and optimised customer experience.	Senior Asset Consultant Lighting & Electrical, Assets Systems Team, Public Realm	Internal	Ongoing
12	Develop and implement a smart cities infrastructure integration plan in collaboration with ACC internal stake holders to facilitate the Strategic Plan outcomes	Senior Asset Consultant Lighting & Electrical, ,Public Realm Sustainability, ICT and City Design teams	Internal and external	36 Months
13	Undertake community levels of service assessment for Infrastructure Assets, Building Assets and Open Space Assets using IPWEA Practice Note 8.	Senior Asset Consultant Lighting & Electrical, Public Realm	Internal and external	Ongoing
14	Develop and implement management-level KPI's and reporting for the full asset portfolio, including SAPN-provided lighting.	Senior Asset Consultant Lighting & Electrical, in conjunction with Public Realm Sustainability, City Design teams and relevant stakeholder groups	Internal	Ongoing

7.3 Monitoring and Review Procedures

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

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

The AM Plan has a life of 4 years (Council election cycle) and is due for complete revision and updating within 2 years of each Council election.

7.4 Performance Measures

The effectiveness of the Asset Management Plan can be measured in the following ways:

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

8. REFERENCES

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

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

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

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

Sample Council, 'Strategic Plan 2016 – 2020',

Sample Council, 'Integrated Business Plan 2016 – 2017'.

9. APPENDICES

Note – This asset plan has a detailed capital renewal analysis spreadsheet that has been used to provide renewal funding requirements. Future versions of the asset plan may be able to provide a detailed renewal plan, however, with nearly 8000 assets it becomes too much information to present. A soft copy of the spreadsheet can be provided.

Appendix A Abbreviations

Appendix B Glossary

Appendix A Abbreviations

AAAC	Average annual asset consumption
AM	Asset management
AM Plan	Asset management plan
ARI	Average recurrence interval
ASC	Annual service cost
BOD	Biochemical (biological) oxygen demand
CBD	Central business district
CCTV	Closed-circuit television
CRC	Current replacement cost
CWMS	Community wastewater management systems
DA	Depreciable amount
DRC	Depreciated replacement cost
EF	Earthworks/formation
HD	High Definition
IRMP	Infrastructure risk management plan
LCC	Life Cycle cost
LCE	Life cycle expenditure
LTFP	Long term financial plan
MMS	Maintenance management system
MOU	Memorandum of understanding
PCI	Pavement condition index
RV	Residual value
SAPN	South Australian Power Networks
SoA	State of the Assets
SS	Suspended solids
vph	Vehicles per hour
WDCRC	Written down current replacement cost

Appendix B Glossary

Annual service cost (ASC)

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

Asset

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

Asset category

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

Asset class

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

Asset condition assessment

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

Asset hierarchy

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

Asset management (AM)

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

Asset renewal funding ratio

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

Average annual asset consumption (AAAC)*

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

Borrowings

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

Capital expenditure

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

Capital expenditure - expansion

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

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

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

Capital expenditure - upgrade
Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the organisation's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

Capital funding
Funding to pay for capital expenditure.

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

Capital investment expenditure
See capital expenditure definition

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

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

Class of assets
See asset class definition

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

Core asset management
Asset management which relies primarily on the use of an asset register, maintenance management systems, job resource management, inventory control, condition assessment, simple risk assessment and defined levels of service, in order to establish alternative treatment options and long-term cashflow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than detailed risk analysis and optimised decision- making).

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

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

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

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

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

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

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

Economic life
See useful life definition.

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

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

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

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

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

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

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

Investment property
Property held to earn rentals or for capital appreciation or both, rather than for:
(a) use in the production or supply of goods or services or for administrative purposes; or
(b) sale in the ordinary course of business.

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

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

Life Cycle Cost *
1. **Total LCC** The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2. **Average LCC** The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises average operations, maintenance expenditure plus asset consumption expense, represented by depreciation expense projected over 10 years. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure
The Life Cycle Expenditure (LCE) is the average operations, maintenance and capital renewal expenditure accommodated in the long term financial plan over 10 years. Life Cycle Expenditure may be compared to average Life Cycle Cost to give an initial indicator of affordability of projected service levels when considered with asset age profiles.

Loans / borrowings
See borrowings.

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

- **Planned maintenance**
  Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.
- **Reactive maintenance**
  Unplanned repair work that is carried out in response to service requests and management/ supervisory directions.
- **Specific maintenance**
  Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.
- **Unplanned maintenance**
  Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

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

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

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

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

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

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

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

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

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

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

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

Pavement management system (PMS)
A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

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

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

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

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

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

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

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

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

Renewal
See capital renewal expenditure definition above.

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

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

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

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

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

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

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

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

Sub-component
Smaller individual parts that make up a component part.

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

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

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

Source: IPWEA, 2009, Glossary