

Public Lighting Asset Management Plan

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Executive Summary

Public Lighting Assets are all assets that have a primary function of facilitating illumination of public spaces within our City. The requirements for Public Lighting assets with the City of Charles Sturt are closely aligned with the City of Charles Sturt's transport function requirements, placemaking precinct initiatives, open space reserve hierarchy, environmental sustainability targets and uptake on technology. This is consistent with the 30-Year Plan for Greater Adelaide that facilitates a sustainable city through more compact communities, provision of opportunities for multiple land uses and increasing investment into clear service levels for vehicles, walking, cycling, public transport and shared mobility platforms.

The City of Charles Sturt aims to encourage a city of place for people and to meet all their community, transport, safety and service needs. Our Public Lighting Asset Network strategic objectives are;

Create valued urban places that bring people together and reflect local character and identity

This action develops local places for our residents to provide them with a sense of community and place. Developing neighbourhood 'hearts', such as main streets, meeting places and community open spaces, creates locations where residents can interact and build community ties. These ties are critical to creating social inclusiveness and developing healthy and active communities.

Enhance the quality and diversity of open and public spaces

The City of Charles Sturt aims to establish connected communities and spaces that create and embrace social inclusion and healthy, liveable environments. A planned transport network is integral to connecting communities with spaces, and land use planning is the key to positioning communities with transport infrastructure.

Drive an integrated responsive transport system and network

Public lighting plays a key role in implementing improvements to our transport network to improve road safety and invest in walking, cycling and driving connectivity through the City.

Lead and educate to reduce the City's impact on the Environment and build resilience

The City of Charles Sturt is committed to protecting and enhancing our natural environment while balancing the needs of the built environment. The City of Charles Sturt is actively advocating and partnering with relevant stakeholders to implement LED street lighting conversions across the City.

Asset Management Plans play an important role in facilitating the delivery of our objectives in a considered and sustainable way. The Public Lighting Asset Management Plan (AMP) aims to establish a service level for Public Lighting Assets to ensure the overall Public Lighting Network is in suitable condition, of suitable technology, minimises maintenance requirements, has sufficient capacity for existing use and future demand on the asset network.

What are Public Lighting Assets?

Public Lighting Assets are all assets that have a primary function of facilitating illumination of public spaces within our City. They include;

- Lighting for Main Roads
- Lighting for Local Streets and Carparks
- Reserve Lighting Assets (primarily for transport functions through reserves i.e. lighting paths through reserves)
- Sportsground Lighting
- Decorative Lighting

Lighting audits, revaluation and revision of capital expenditure has been undertaken for all these assets. This AMP has also reviewed maintenance and expenditure practices to ensure renewal and maintenance service levels are optimised throughout the life of the plan. Overall it can be observed that the Public Lighting network is in an acceptable condition with 33% of the network below what would typically be considered an acceptable service level.

OVERALL PUBLIC LIGHTING NETWORK CONDITION

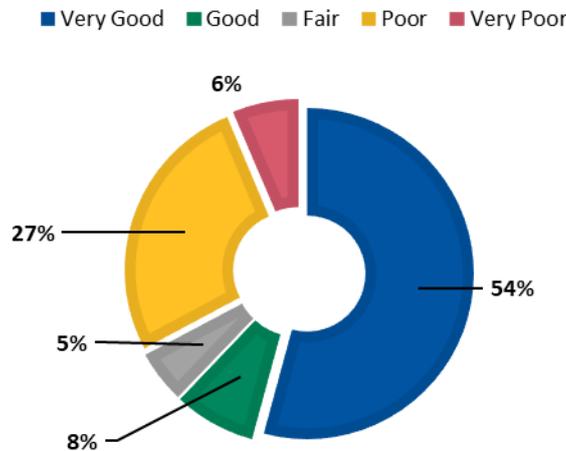


Figure 1 – Overall Network Condition

The City of Charles Sturt's Public Lighting Assets, which are financial and are represented as the book value, have a current replacement cost of \$18,474,207.10. This is an increase from \$9,426,304.00 from the previous draft AMP asset stock in 2016. This is primarily as a result of the recent Street LED Upgrade rollout across the city in which Council has taken on the ownership of the luminaire (light fitting) component which was previously owned by SA Power Networks (SAPN). The LED rollout resulted in arrangements posed by the Public Lighting Consumers (PLC) Tariff with SA Power Networks (SAPN).

Lighting Ownership and Responsibility

Public Lighting Assets within the City of Charles Sturt consists of several different ownership and responsibility models.

Some Public Lighting Assets are owned and operated entirely by CCS (typically Public Lighting Assets within Council land for public spaces and path assets), some are owned entirely by SAPN and DIT (CCS pay a contribution for the maintenance and operation of these Public Lighting Assets) and some are a hybrid of CCS and SAPN ownership where Council own the luminaire (light fitting) and SAPN own the supporting structures (poles). Under a hybrid arrangement Council contribute to the maintenance and operation by way of a tariff.

Tariff structures are outlined in the operations and maintenance section of this AMP.

Asset Strategy

This AMP aims to ensure all Public Lighting Assets are replaced prior to entering poor condition (condition 4) and are replaced with current LED technology. Where reasonably possible the City of Charles Sturt maintains and renews assets and installs new assets consistent with the objectives and actions of endorsed corporate documents. Key criteria that are considered in decision making include age-based asset condition, technology, ongoing maintenance issues, risk, current/future use demands, population and interaction with adjoining land uses.

In order to fulfil the above asset strategy and continue to provide services over the 10-year planning period from 2020/2021 until 2029/2030, an average spend of \$1,161,111.11 per year on, renewal, new and upgrade of Public Lighting Assets would be required.

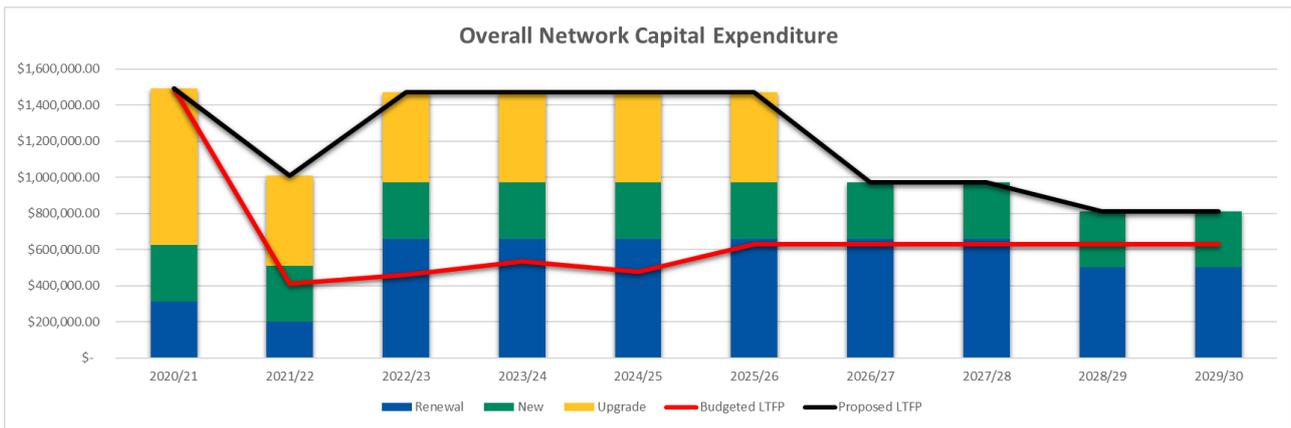


Figure 2 – Overall projected Capital expenditure for Public Lighting Assets

This AMP also ensures that a full time resource is included to manage all lighting renewals, upgrades, new and maintenance over the 10yr planning period.

This AMP proposes to increase the renewal and upgrade funding for Public Lighting Assets. The current LTFP provides an average spend of \$559,333.33 funding per year over the 10-year planning period. An increase in funding to an average of \$1,161,111.11 funding per year over the 10-year planning period is required. This is to ensure that the network that is currently in poor and very poor condition is replaced with current best practice technology and utilised to pass on operating savings to the City of Charles Sturt.

Operations & Maintenance Strategy

This AMP aims to ensure operating and maintenance expenditure allows for Council to maintain Public Lighting Assets in response to electrical faults and damage and pay for utility and tariff charges to ensure Public Lighting Assets remain in operation. Currently Council undertakes reactive maintenance on Council owned lights based on reported or observed faults. Recent trend data shows early signs of a reduction in future maintenance costs due to the early investment of LED lighting. This AMP projects a reduction in maintenance from \$210,000 to \$150,000 over the next 5 years as part of this AMP. The AMP proposes to use the above projected savings to undertake ongoing pro-active maintenance in the future. The development of a maintenance strategy has been identified as an improvement in this AMP and will presented with a future revision of this AMP.

Council currently spends \$1.655M on lighting contributions and utilities charges. Recent trend data from the continued investment in the LED Street lighting upgrade program, has provided an ongoing saving of \$445K since 2017/2018 of operating expenditure. At the end of the 2021/22 financial year it is the first phase of the LED Street lighting update program will be completed (upgrade of local streets) and is projected to increase to an ongoing saving minimum of \$450K.

The program is anticipated to provide further ongoing savings at the end of the future phases of the program between 2022/2023 and 2025/26. Further savings and reductions in operating expenditure will be provided in future revisions of this AMP. This ongoing saving provides a reduction in operating expenditure for Public Lighting Assets and has allowed for the inclusion of dedicated staff resources to deliver new, upgrade and renewal programs.

Details of the LED Street lighting program environmental and financial sustainability benefits have been provided in this AMP.

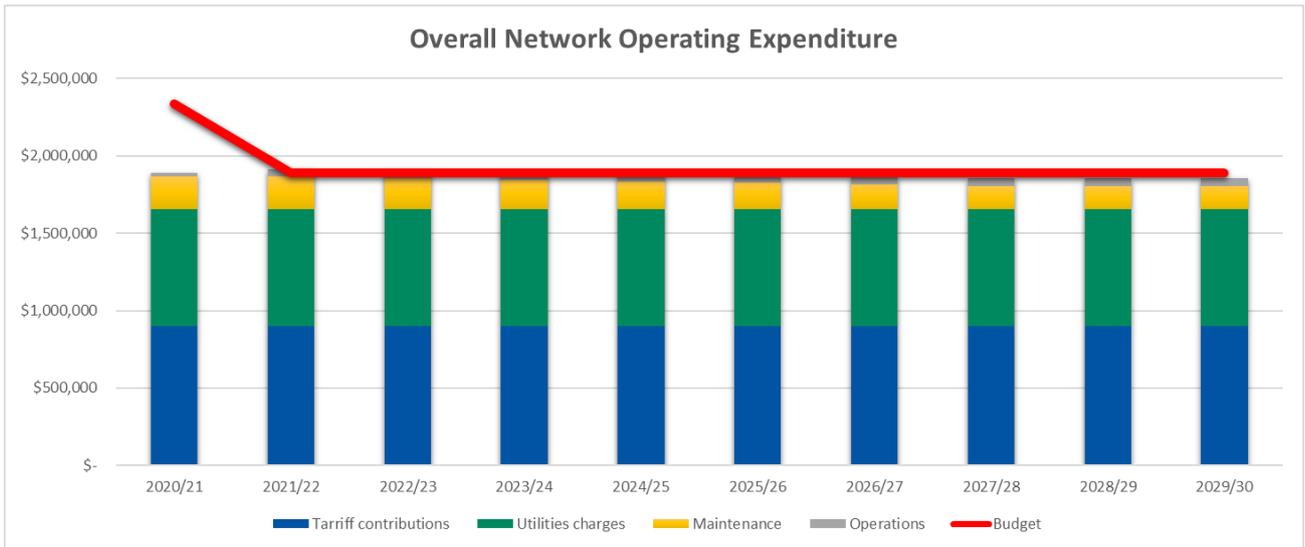


Figure 3 - Overall projected Operations and maintenance expenditure for Public Lighting Assets

Upon endorsement of the draft version of this AMP a 4-week community consultation period was completed to consult with the local community to understand community satisfaction and expectations regarding the proposed level of services and renewal strategy proposed for Public Lighting Assets. Results of the community consultation are provided in this AMP

A summary of each asset class has been provided as follows;

Street Lighting

The City of Charles Sturt (CCS) are responsible for providing 13,567 Street Lighting Assets across the Council area. CCS are responsible for providing lighting on local roads and share responsibility for lighting on the main road network (arterial roads) with the Department for Infrastructure and Transport (DIT). Street Lighting Assets ensure illumination of main roads, local streets and laneways for all network users.

Traditionally, most street lighting in South Australia has been owned and operated by SA Power Networks as a service to Councils and DIT who both have responsibility for the provision of street lighting. The City of Charles Sturt pays for the electricity used by public street lights and for the operation and maintenance of street light Infrastructure by way of a tariff.

Over the last 3 years the City of Charles Sturt, in partnership with SA Power Networks, have implemented a bulk LED lighting upgrade program (replacing existing lights on local streets with Sylvania STREET LED 3 fittings). CCS and SAPN have changed over 10,018 of our City's old and inefficient street lights on our local roads with new LED lighting. Switching to LED lighting will save ratepayers' money, help protect the environment and will improve visibility on roads and footpaths. This has led to the street lighting condition improving in condition and the ratio of LED vs Non-LED increasing to 74% at the end of the 2020/21 financial year. As part of this bulk rollout Council will retain ownership of the luminaire (light fitting). The final phase of the LED rollout program is programmed for the 2021/22 financial year.

Council also recently commissioned a lighting compliance audit for an infill lighting program across the Council area. This AMP seeks to continue the completion of the infill lighting program in conjunction with the LED rollout program in 2020/21 and 2021/22.

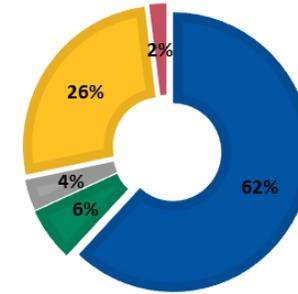
At the conclusion of the rollout program and infill program in 2021/22 this AMP recommends continuing the LED rollout program for all other street lights on high volume roads (e.g. collector roads) and any heritage style lighting excluded from the original rollout that is required to provide street lighting illumination compliance. A revised AMP with updated condition data will be submitted at the conclusion of this program of works.

It is also proposed to work with DIT to transition all ownership (renewal and maintenance responsibility) of lights on DIT's road network back to DIT. Currently there is approximately 450 lights on DIT's road network that Council own and are responsible for.

****NOTE:** Number of Lights owned on DIT road is an estimate based on SAPN data base provided to Council***

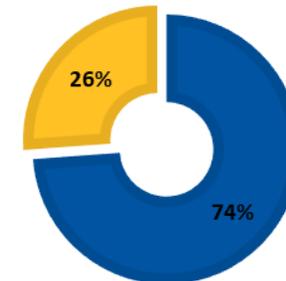
STREETLIGHTING CONDITION

■ Very Good ■ Good ■ Fair ■ Poor ■ Very Poor



STREET LIGHTING TECHNOLOGY STATUS

■ LED ■ NON LED



Reserve Lighting

The City of Charles Sturt (CCS) provide almost 3,063 Reserve Lighting Assets across the Council area.

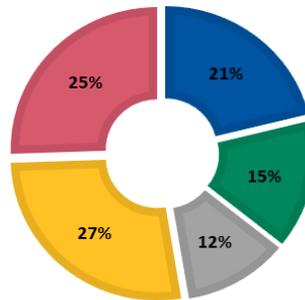
This asset class primarily provides illumination for transport functions through reserves i.e. lighting paths through reserves).

This asset class has a large amount of assets in poor condition due to their age and technology profile. This AMP aims to renew assets in this class that are in very poor and poor condition.

This AMP also ensures that these assets are replaced with LED technology.

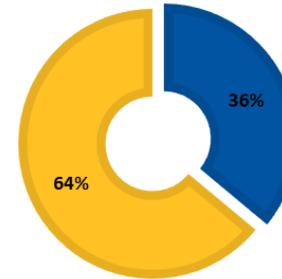
RESERVE LIGHTING CONDITION

Very Good Good Fair Poor Very Poor



RESERVE LIGHTING TECHNOLOGY STATUS

LED NON LED



Sportsground and Decorative lighting

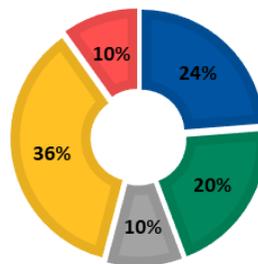
The City of Charles Sturt (CCS) provide almost 122 Sports Ground and Decorative Lighting Assets across the Council area.

These assets are in reasonable condition. This AMP aims to renew assets in this class that are in very poor and poor condition.

This AMP also ensures that these assets are replaced with LED technology, where possible.

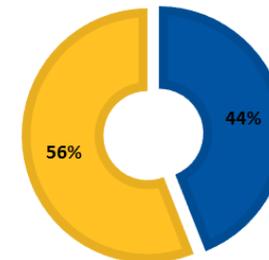
SPORTS GROUND AND DECORATIVE LIGHTING

Very Good Good Fair Poor Very Poor



SPORTS GROUND AND DECORATIVE LIGHTING TECHNOLOGY STATUS

LED NON LED



Introduction

This Asset Management Plan (AMP) communicates the actions required for the management of Public Lighting Assets owned and maintained by the City of Charles Sturt (and services provided from assets), compliance with regulatory requirements, and funding needed to provide the required levels of service over a 20-year planning period.

The AMP is to be read in conjunction with the City of Charles Sturt's planning documents. This should include the Asset Management Policy and Asset Management Strategy (where these have been developed) along with other key planning documents:

- City of Charles Sturt Corporate Plan 2016-2027
- City of Charles Sturt Community Plan 2013-2027 – A city where people come first
- City of Charles Sturt Asset Accounting Policy
- City of Charles Sturt Asset Fund Policy
- Engineering and Open Space Guidelines
- Net Zero: our map to net zero corporate emissions 2020-2025 and CCS ESD requirements
- City of Charles Sturt Environmental Sustainability Policy
- City of Charles Sturt Living Green to 2020
- City of Charles Sturt Transport Plan 2016-2031
- City of Charles Sturt Path Policy and Guidelines
- SA Infrastructure Guidelines
- AdaptWest Western Adelaide Region Climate Change Adaptation Plan

The Public Lighting Assets covered by this AMP are;

- Road Lighting Assets
- Street Lighting Assets
- Carpark Lighting Assets
- Reserve Lighting Assets (primarily for transport functions through reserves)
- Decorative Lighting Assets
- Sportsground Lighting Assets

Public Lighting Assets illuminate roads, paths and reserves throughout the Council area. These assets provide safer roads and paths, provide security at night and provide visual amenity in key precincts.

This AMP update is a major revision of the DRAFT 2016 Lighting AMP and seeks endorsement of Council's first Public Lighting AMP. This major revision of that AMP seeks to form a wholistic integrated Asset Management Strategy for all Council Public Lighting Assets. Major revision of renewal strategy, amendment of Long-Term Financial Plans (LTFP) and alteration of asset classes have been conducted for the preparation of this AMP, these are summarised as follows;

- Review of current Data set and assessment of existing LTFP for Renewal, New and Upgrade funding.
- Street Lighting audit on local roads.
- Review and amendment of asset valuation data for all Public Lighting Assets.
- Re-prioritisation of Public Lighting Asset Classes to distinguish separate strategies for Street Lighting, Reserve Lighting and Sportsground/Decorative Lighting
- Updated 4 year works programs for Renewal, New and Upgrade works.
- Investigation into climate change and sustainability factors as a result of public lighting LED technology.

Asset Management Framework

The City of Charles Sturt exists to provide services to its community, some of which are provided by Public Lighting Assets. Public Lighting Assets have been acquired by construction undertaken by Council and through contribution of new public infrastructure from developers. The organisations goal in Public Lighting Assets is to meet a defined level of service in the most cost-effective manner for present and future consumers. This AMP is prepared as a combination of 'core' and 'advanced' AMP over a 20 year planning period in accordance with the International Infrastructure Management Manual¹. Core asset management is a 'top down' approach where analysis is applied at the system or network level. An 'advanced' asset management approach uses a 'bottom up' approach for gathering detailed asset information for individual assets.

¹ IPWEA, 2015, IIMM.

The organisation uses a Strategic Asset Management (SAM) system which uses advanced asset management principles to model service levels, future demands and network risks. This assists in modelling the timing of intervention to ensure the service level across the entire network can be managed through a sustainable funding scenario and assists Council in integrating transport assets into single projects where possible. The data used in generating this AMP has been broken down into individual asset classes using advanced principles. The process the City of Charles Sturt follows for preparing an asset management plan is shown as follows.

INFORMATION FLOWS

- Asset register data on size, age, value, remaining life of the network
- Unit rates for categories of work/material
- Adopted service levels
- Projections of various factors affecting future demand for services
- Correlations between maintenance and renewal, including decay models
- Data on new assets acquired by council

ASSET MANAGEMENT PLAN

- Assumed Works Program and trends
- Resulting budget, valuation and depreciation projections
- Useful life analysis

- Long term financial plan
- Strategic business plan
- Annual budget
- Departmental business plans and budgets

Level of Service for Public Lighting Assets

Levels of Service are a commitment to carry out a given action or actions within a specified time frame in response to an event or asset condition data. The Levels of Service defined in this section will be used to:

- Identify the desired level of service that our customers seek and clarify the level of service that our customers should expect;
- Identify works required to meet these levels of service;
- Identify the costs and benefits of the services offered; and
- Enable Council and customers to discuss and assess the suitability, affordability and equality of the existing service level and to determine the impact of increasing or decreasing this level in future.

The adopted levels of service transport assets are based on legislative requirements, customer research and expectations and technical requirements set out by industry standards.

Legislative Service Level Requirements

There are many legislative requirements and regulations relating to the management of assets. Council must comply with these requirements and ensure their assets meet these legislative service levels these include;

- South Australian Local Government Act 1999
- South Australian State Records Act 1977
- Environment Protection Act
- Disability Discrimination Act 1992
- Australian Road Rules
- Development Act 1993 / Planning, Development and Infrastructure Act 2016
- Work Health and Safety Act 2011
- AUSROADS Guidelines
- Australian Standards

Community Level of Service

The Community Level of Service measures how the customer receives the service and whether value to the customer is provided. The City of Charles Sturt undertook a Community Survey immediately prior to consultation of this AMP to capture City of Charles Sturt residents' and business owners' satisfaction with aspects of services and facilities provided by Council. This task is also undertaken to test the importance of specific aspects of service provided to the community.

The results of the survey detail that 65% of residents felt safe at night in their local street and note that public lighting assets play a key role in improving safety in our neighbourhoods at night.

Upon endorsement of the draft version of this AMP a 4-week community consultation period between June and July 2021 was undertaken. The purpose of the consultation was to understand the community satisfaction with Public Lighting Assets and their proposed service levels in this AMP.

A total of 21 responses were received through the consultation process and feedback seemed quite positive regarding the sentiment towards current lighting and the ongoing improvements across the city in general.

The consultation process ensured the community were educated in what the proposed service level strategy for Public Lighting Assets is, cost implications for increasing the service level and risk implications for lowering the service level. The majority of the community are satisfied with the lighting in their street/neighbourhood, the proposed service level in this AMP and provided positive responses about the overall improvement with Lighting Assets due to the investment in LED technology and LED rollout programs.

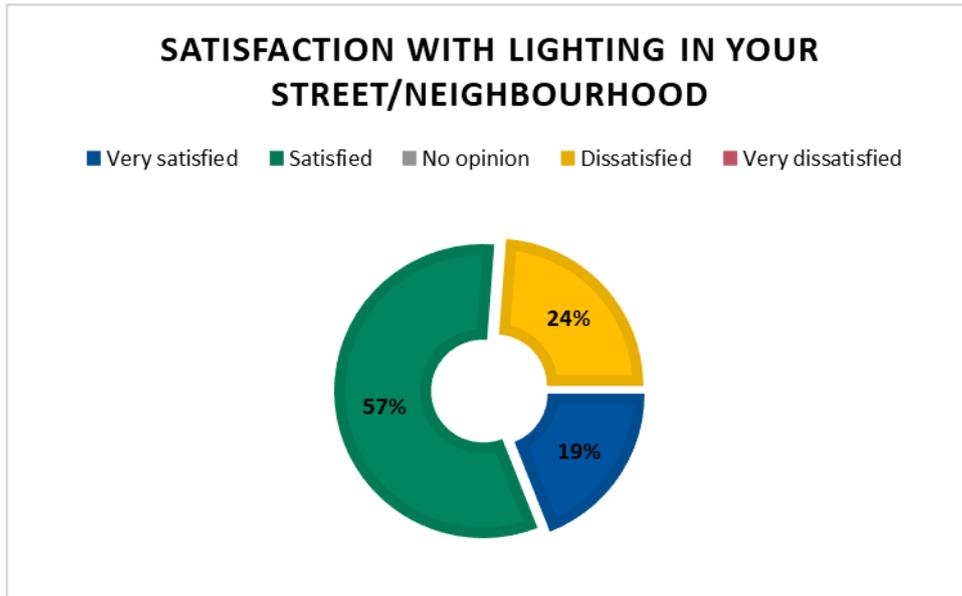


Figure 4 - Community satisfaction with lighting in public lighting

The consultation results show that 80% of the community are satisfied with the lighting in their street or neighborhood and feel safe at night.

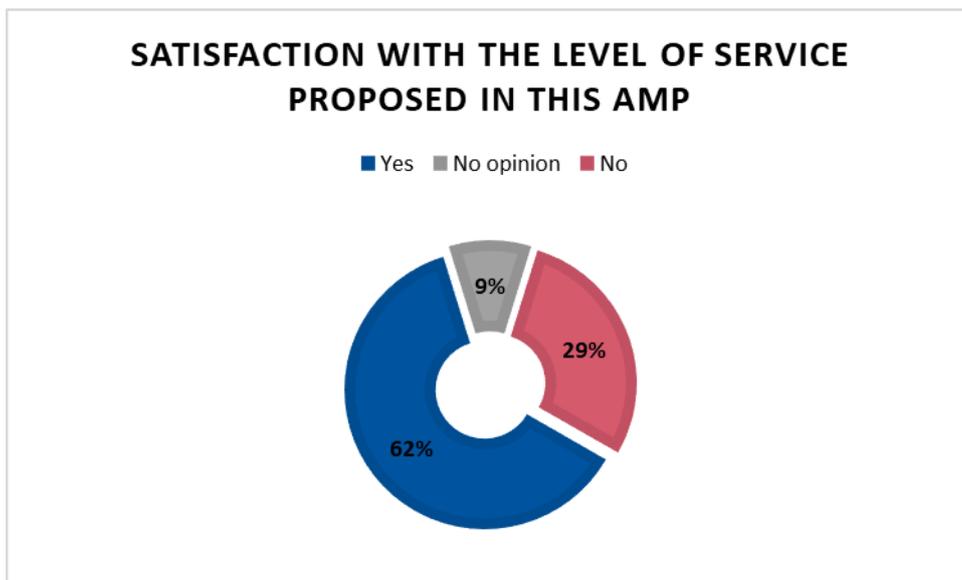


Figure 5 – Community satisfaction with proposed service level

62% of the community are satisfied with the proposed service level in this AMP with the ongoing expectation that Council continue to improve lighting across the City of Charles Sturt through Led technology upgrades and improvements across the entire network.

Technical Level of Service

Supporting the Community Level of Service are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Council’s current Technical Level of Service is to aim to ensure that there are no very poor or poor condition Public Lighting Assets throughout the network and prioritise replacements based on existing non-LED technology. The Technical Level of Service measures are linked to ensure the correct activities and appropriate budgets exist to cover the intended service level:

Operations & Maintenance

The activities necessary to retain assets as near as practicable to the City of Charles Sturt's desired service level throughout the network. Maintenance activities enable an asset to provide service for its planned life (e.g. replacement of damaged light fittings or parts, damaged poles or series of lights that are not in operation).

Renewal

The activities that return the service capability of an asset up to that which it had originally (e.g. replacement of existing lighting assets on Council land) or in line with current standards.

Upgrade/New

The activities to provide a higher level of service (e.g. upgrading Street lighting with LED rollouts) or a new service that did not exist previously (e.g. a new lighting assets on Council land).

Asset Managers plan, implement and control technical service levels to influence the Community Level of Service, the table below identifies the City of Charles Sturts Technical levels of service for all Public Lighting Assets;

<u>Technical levels of service</u>		
<u>Maintenance/Operations</u>		
Public Lighting Assets and are well maintained and services provide value for money to the local community		
Street Lighting	Reserve Lighting	Decorative and Sportsground lighting
Street lighting remain in working order to ensure streets remain functional and safe.	Lighting remains in working order to ensure paths, accessways and reserves remain functional and safe.	Lights remain in working order to ensure paths, accessways and reserves remain functional and safe.
<u>Renewal</u>		
Public Lighting Assets are renewed and replaced in accordance with asset lifecycle requirements		
Street Lighting	Reserve Lighting	Decorative and Sportsground lighting
Successfully planning and delivering annual asset renewal programs to ensure paths, accessways and reserves are safe and serviceable for the community and comply with best practice design	Successfully planning and delivering annual asset renewal programs to ensure paths, accessways and reserves are safe and serviceable for the community and comply with best practice design.	Successfully planning and delivering annual asset renewal programs to ensure lighting assets comply with best practice design.
<u>Upgrade/New</u>		
Public Lighting Assets are constructed or upgraded to meet current and future function or demand in the network		
Street Lighting	Reserve Lighting	Decorative and Sportsground lighting
Successful planning and delivering of Street Lighting LED and infill programs in conjunction with SAPN.	New LED lights are constructed to ensure night time access is available to strategic destinations.	Decorative and sportsground lighting comply with best practice design.

Table 1 - Technical Level of Service

Public Lighting Asset Lifecycle Management

The City of Charles Sturt uses all principles of Asset Lifecycle Management to manage Public Lighting Assets and aims to encourage lighting designs that are compliant with current Australian standards, Industry Guidelines and ensures a sense of safety and amenity to meet community needs.

Overall expenditure is provided in the executive summary for all asset classes in this AMP.

Asset Strategy

Public Lighting Assets located in different locations of the Council area may require very different designs depending on what they illuminate. Generally, there is an aim for Public Lighting Assets to provide illumination and amenity that compliments shared spaces, wide paths, safe streets, and environmental sensitivity.

Technology, land use, network hierarchy, legislation and environmental impacts all effect the requirements and demand for Public Lighting assets. As these factors change, the way Public Lighting Assets are used will also change and subsequently alter the demand for Public Lighting Assets across the Council area.

The City of Charles Sturt uses the following main criteria to prioritize Public Lighting Assets when undertaking renewal, upgrade and new planning;

- Condition (observed condition pole and fitting/Luminaire age)
- Risk
- Network Hierarchy
- Technology
- Land Use

Age based condition, risk and technology form the basis of renewal required in the network and then all other criteria are used to priorities works.

Condition

For the purposes of this AMP Council has used observed condition data for light poles and a calculated condition based on construction age of light fittings/luminaires. This is due to the constant change in LED technology and that major risks associated with Public Lighting Assets serviceability is largely based on the performance of old technology.

Age based conditions for fittings/luminaires are determined as per table 3 below;

Aged based Condition Grading	Description of Condition
1	Very Good: Constructed within the last 2 years
2	Good: Constructed within the last 2-5 years
3	Fair: Constructed within the last 10 years
4	Poor: Public Lighting Assets more than 10 years old
5	Very Poor: Public Lighting Assets more than 10 years old

Table 2 - Description of Condition

Network Hierarchy

Assets that provide a high function in the network hierarchy get higher weighting on renewal as they have a higher function in the network. E.g. Public Lighting Assets that illuminate higher volume streets are prioritised over low volume laneways.

Technology

Assets that are non-LED technology are prioritised for replacement to current LED technology in accordance with NET Zero goals and CCS ESD requirements.

Maintenance

Public lighting assets that have experienced ongoing maintenance issues/faults are escalated for replacement in accordance with NET Zero goals and CCS ESD requirements..

Functionality/ Strategic Importance

Assets that form part of a strategic corridor are a key driver for the future of the network. Prioritising the replacement of assets with a high weighting on this criterion will ensure the network can cater for future demands. E.g. Public Lighting Assets that illuminate a path through a strategic corridor like the RTLP path.

Utilisation/Land Use

The City of Charles Sturt is undergoing significant urban redevelopment. This redevelopment and re-zoning of land changes the demand for, and requirements of, Public Lighting Assets and changes what assets are suitable for different uses.

These key criteria are then broken down into many test points to develop renewal/new/upgrade programs using the Council’s Strategic Asset Management system. This strategy has been developed specifically by CCS for CCS and uses all principles from the following Asset Management Lifecycle;



Figure 6 - Asset Lifecycle Management

Asset Operations and Maintenance Strategy

In order to minimise risks and keep service levels acceptable during the life of the asset, Council undertakes key maintenance tasks to ensure all Public Lighting Assets are still serviceable until they require replacement.

Each asset class requires a different operational and maintenance strategy outlined in table 4 below;

Asset Class	Activity	Budget	Tasks
Management Costs	Staff Resource Costs	\$70,000	Resource wages for Public Lighting Asset Manager and Public Lighting Officer
Street Lighting	Maintenance	\$10,000	Reactive Maintenance and Fault Repairs undertaken by Council where they are outside of the responsibility of SAPN.
	Operating costs	\$900,000	Street Lighting Tariff Contribution (SAPN and DIT)
	Usage costs	\$255,000 \$500,000	Cost contribution for 50% of cost of use of lighting for main roads. Cost of usage of running council owned street light and lights in reserves that are on a metered supply.
Council Reserve Lighting	Maintenance	\$200,000	Reactive Maintenance and Fault repairs undertaken by Council.
	Usage costs	\$-	Currently included in street lighting usage costs and costs for electrical supply for all Council assets in reserves (e.g. lights, BBQ's and irrigation). This AMP includes a future improvement to review and optimise these costs through Council's Utilities Business Analysts review of Council utility charges.
Sportsground and Decorative Lighting	Customer requests/faults	\$-	Dependant on individual service agreements with clubs. This AMP includes a future improvement to review and optimise these costs through Council's Utilities Business Analysts review of Council utility charges.
	Usage costs	\$-	Dependant on service agreement with clubs. This AMP includes a future improvement to review and optimise these costs through Council's Utilities Business Analysts review of Council utility charges.

Table 3 – Public Lighting Asset Maintenance Strategy

Council currently have no maintenance program for light fitting cleaning to ensure that lights function to their correct illumination capacity. Future revisions of the AMP will consider implementing a strategy for proactive maintenance (e.g. cleaning fittings) to ensure ongoing operation of lighting complies with intended design standards.

Tariff Agreements

SA Power Networks (SAPN) have different types of Tariff arrangements for different types of infrastructure in their network.

The Tariff arrangements the City of Charles Sturt holds with SAPN for lights are as follows;

CLER - 658 lights

The CLER Tariff applies where the Customer owns the luminaire and the infrastructure supporting the luminaire and SA Power Networks provides certain specific maintenance services where it relates to failure of the lamp. Council is responsible for all other activities and costs related to the Luminaire and supporting infrastructure.

Energy Only – 231 Lights

The EO Tariff applies where the Customer owns the luminaire and the infrastructure supporting the luminaire and SA Power Networks provides certain specific services. The Customer is responsible all activities and costs related to the luminaire and supporting infrastructure the subject of the EO Tariff other than that SA Power Networks will maintain a database relating to street lights, and record and inform customers of streetlight faults reported to SA Power Networks, and Council is responsible for all maintenance (including replacement of failed lamps).

PLC –8896 lights

PLC Tariff applies where the Customer funds the cost of a LED luminaire upgrade or new installation and remains responsible for the luminaire replacements not covered by warranty. SAPN will procure and install the new luminaire, or install a new luminaire supplied by Council. Under the PLC Tariff SAPN will operate, maintain and repair the luminaire, and repair and/or replace its supporting infrastructure

SAPN – 934 Lights

SAPN Tariff applies where SA Power Networks funds a LED luminaire upgrade or new installation. SAPN fund the luminaire upgrade, and will operate and maintain, repair and/or replace the luminaire and its supporting infrastructure.

SLULoS – 2041 Lights

SLUoS Tariff applies where SA Power Networks has previously funded a non-LED luminaire upgrade or new installation. Under the SLUoS Tariff, SA Power Networks will operate and maintain, repair and/or replace the luminaire and its supporting infrastructure.

TFI – 56 Lights

TFI Tariff Applies where LED lighting infrastructure is transferred (gifted or vested) to SA Power Networks. Typically, Council (or developers) fund the initial cost of the luminaire installation and SAPN take over the responsibilities for luminaire replacements. Under the TFI tariff SA Power Networks will operate and maintain, repair and/or replace the luminaire and its supporting infrastructure after it is transferred to SAPN.

Metered Supply – 2912 Lights

Public Lights not located on roads (such as reserve lights) are connected to an electricity meter and the utilities charges charged to Council via their service provider.

Public Lighting Asset Risk Management

The purpose risk management for this AMP is to understand and document consequences and outcomes related to the risks associated with managing Public Lighting Assets. Risks identified in the Public Lighting Risk Assessment have been used to form the basis of analysing and determining renewal and maintenance priorities. Risks need to be managed in a key way to ensure operations, maintenance and renewal all follow the same direction to ensure all risks are mitigated throughout the network consistently.

Risk priorities are determined due to level of risk consequence, risk likelihood, strategic priorities, financial outcome, Land use and asset condition. CCS manages risks in the following way;



Figure 7 - Risk Management Process

The above risk assessment process;

- Identifies credible risks.
- The likelihood of the risk event occurring.
- The consequences should the event occur.
- Evaluates the risk.
- Develops a risk treatment plan for non-acceptable risks.

The organisation has prioritised decisions made in adopting this AMP to obtain the optimum benefits from its available resources. Council has an existing budget that allows the AMP to balance the risks of Public Lighting Assets and the asset register data provides a basis for where the AMP and future works is generated from. The LTFP that coincides with this AMP ensures major risks are mitigated and the network remains safe and useable for all users.

There are some operations and maintenance activities and capital projects that are unable to be undertaken within the 20 year planning period. These include:

- Renewal of lights with poor wiring that may fail prematurely or suddenly.
- Renewal of lights that pose a significant maintenance burden on council that may continuously fail.
- Ensuring all lights are LED technology

Operations and maintenance activities and capital projects that cannot be undertaken as a result of the above will affect the level of service of the network and pass on risks to users. These result in lack of connectivity for roads and paths, unsafe traffic control devices, poor amenity in public spaces along with unsafe public spaces.

Financial Summary

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

The expenditure and valuations projections in this AMP are based on best available data. Currency and accuracy of data is critical to effective asset and financial management.

Data confidence is assessed as reliable with medium confidence for this AMP. Data is based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate $\pm 10\%$.

Asset valuations

The Overall value of Public Lighting Assets at the 30th of September 2020 is almost \$18.5 Million. The best available estimate of the value of assets included in this Asset Management Plan are outlined below;

• Gross Replacement Cost	\$18,474,207.10
• Depreciable Amount	\$18,474,207.10
• Depreciated Replacement Cost ²	\$13,236,509.87
• Annual Average Asset Consumption	\$840,849.10

Gross Replacement Cost

Refers to the current replacement value of all open space and recreation assets.

Depreciable amount

Refers to the cost of an asset, or other amount substituted for its cost, less its residual value.

Depreciated replacement cost (DRC)

Refers to the current replacement cost of an asset less, where applicable, accumulated depreciation calculated based on such cost to reflect the already consumed or expired future economic benefits of the asset.

Annual average asset consumption

Refers to 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.

Long Term Asset Renewal Funding Costs

Life cycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the asset life cycle. Life cycle costs include, renewal, operations and maintenance expenditure and asset consumption (depreciation expense). The life cycle cost for the services covered in this asset management plan is **\$2,865,295.75** per year (average operations and maintenance expenditure plus depreciation expense projected over 10 years).

This AMP has identified the current City of Charles Sturt's LTFP contains a budget shortfall. In order to provide the required service level for Public Lighting Assets in line with the City of Charles Sturt Renewal Strategy this AMP proposes an increase to the current LTFP (inclusive of an additional staffing resource).

The proposed LTFP in this AMP will ensure that Life cycle expenditure is **75%** of life cycle costs. The life cycle costs and life cycle expenditure comparison highlights any difference between present outlays and the average cost of providing the service over the long term. If the life cycle expenditure is less than that life cycle cost, it is most likely that outlays will need to be increased or cuts in services made in the future.

Sustainability of service delivery

Two key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the:

- asset renewal funding ratio; and

² Also reported as Written Down Value, Carrying or Net Book Value.

- long term budgeted expenditures/projected expenditure (over 10 years of the planning period).

Projected expenditures for Long Term Financial Plan

LTFP's and projected expenditure can be found above in the executive summary of Public Lighting Asset classes.

Expenditure projections are in 2020 real values. Due to a revised renewal strategy and inclusion of future stages of the City of Charles Sturts Street LED Upgrade program proposed in this AMP the projected required renewals to achieve 75% of life cycle costs provide a funding gap of an average of \$541,600 per year for the 10 year planning period and an average of \$315,800 over the 20 year life of the plan with the City of Charles Sturts existing LTFP budget.

Building for the future

Future Demand

Our population has continued to grow over the past 12 months with the current estimated resident population being 117,382. The chart below shows the growth in our City’s population in the past 7 years, increasing in that time by 7,459 people. Based on such projections over the 20-year planning period for this AMP it is expected that population will increase by approximately 20,000 people. This will deliver a greater expectation and demand on Public Lighting Assets across the City of Charles Sturt.

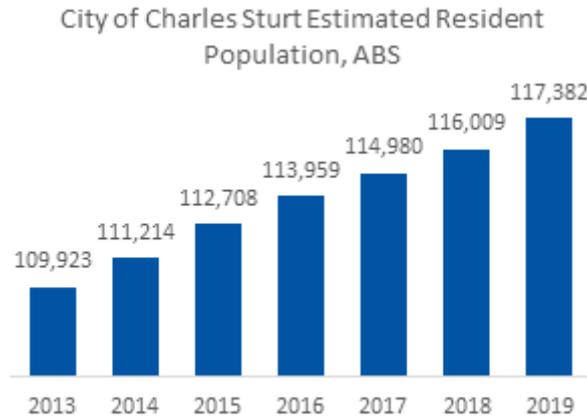


Figure 8 - City's Population Growth

Sustainable Street Lighting

The City of Charles Sturt is working to adapt to climate change and reduce our environmental footprint. Public Lighting Assets are the largest source of greenhouse gas emissions by local government in Australia. These assets account for 30% of the City of Charles Sturt’s own greenhouse gas emissions. Transitioning street lighting to LED technology will significantly reduce the City of Charles Sturt’s energy consumption and maintenance costs per annum and provide an overall improvement to our network.

In June 2018 Council’s energy consumption peaked at 450,000KWh as the LED rollout of street lighting continued Council’s Energy consumption in June 2021 was 194,000KWh. This has resulted in a reduction in 256,000KWh.

Transitioning all of the City of Charles Sturt’s Street Lighting Assets to LED is projected to reduce carbon emissions by more than 1600 tons of greenhouse gases a year. The expected annualised energy savings to Council, is approximately \$684,000 per annum once fully installed. The new lights being installed will be 82% more energy efficient than existing street lighting.

The first phase of the street light LED rollout program (to local streets) is scheduled to be completed the 2021/22 financial year.

Early trend savings from the first phase of the Street LED upgrade program are as follows;

Year	Street Lighting Cost	Saving
2017/2018	\$892,686.48	\$0
2018/2019	\$774,020.39	\$118,666.09
2019/2020	\$505,626.87	\$268,393.52
2020/2021	\$448,226.52	\$57,400.35

Since the commencement of the Street LED upgrade program in 2018 Council have saved almost \$445,000 in 3 years street lighting usage costs.

Future revisions of the AMP will seek to reduce energy consumption budgets in line with the reduction from the LED streetlight rollout program.

Continuous Improvement

To undertake this AMP the City of Charles Sturt undertook the following tasks;

- Lighting Asset Audit (internal)
- Update of all Lighting Asset Data
- Revision of Renewal strategy
- Revision of Maintenance Strategy
- Revision of resources for the delivery of Public Lighting Assets
- Local Road Lighting compliance assessments (external)
- Revision of LTFP for Public Lighting Assets

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

The AMP will be updated every 2-4 years 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 LTFP.

The AMP has a life of 4 years but is due for complete revision and updating within 2 years of the upcoming Council election.

This AMP aims to undertake the following improvements;

Short term (12-24 months)

- Completion of CCS Bulk LED rollout and LED infill and improvement programs.
- Undertake a detailed asset condition audit of Public Lighting Assets on Council owned land.
- Revise useful lives of Public Lighting Assets.
- Establishment of a Council lighting policy for all Public Lighting Assets
- Establishment of a lighting priority criteria for new lighting requests.
- Establishment of a lighting design approval process and guideline.

Medium term (2-4 years)

- Undertake LED rollout of Higher vehicle category roads and remaining street lights in accordance with SAPN's standard fitting requirements.
- Review energy consumption budgets and emissions for street lighting to ensure targets are being achieved by the LED streetlight rollout program and achieving NET ZERO goals and CCS ESD requirements.
- Establishment of a lighting maintenance strategy that identifies a proactive maintenance program; including fitting cleaning to ensure lighting operates as per the intended design.

Long Term (>5 years)

- Transition ownership of Public Lighting Assets on roads owned by DIT back to DIT through the LGA's Public Lighting Working Group Sub Committee.
- Advocate to DIT for the conversion of arterial road lighting to LED to reduce Council's contribution towards the operation of this lighting.
- Investigate potential separation of Public Lighting Asset classes into their functional areas for inclusion in the Transport and Open Space AMP's.

Conclusion

This Asset Management Plan (AMP) communicates the actions required for the management of Public Lighting Assets owned and maintained by the City of Charles Sturt (and services provided from assets), compliance with regulatory requirements, and funding needed to provide the required levels of service over a 20-year planning period.

The identified funding scenarios and asset lifecycle management strategies in this AMP have been designed to ensure that Public Lighting Assets illuminate roads, paths and reserves throughout the Council area. These assets provide safer roads and paths, provide security at night and provide visual amenity in key precincts.

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