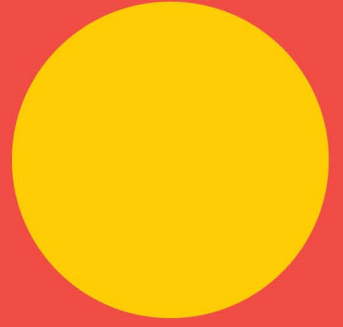




MEANS
THE WORLD



PUBLIC LIGHTING **ASSET MANAGEMENT PLAN** **2024-2034**



| Document Control | | Public Lighting Management Plan Asset Management Plan 2024-2034 | | | |
|------------------|------------------|--|--------|----------|------------------------------|
| Rev No | Date | Revision Details | Author | Reviewer | Approver |
| 1 | 20 November 2023 | Public Lighting Asset Management Plan Endorsed for Consultation | CDA | SAD | AMC 20/11/23 Item 4.78 |
| 2 | 17 April 2024 | Public Lighting Asset Management Plan 2024-2034 Final - 24/77055 | CDA | SAD | AMC 17/04/24 Item 4.22 |

Table of Contents

| | | |
|----|---|----|
| 1. | Executive Summary | 1 |
| | What are Public Lighting Assets? | 1 |
| | Lighting Ownership and Responsibility | 2 |
| | Asset Strategy | 3 |
| | Operations & Maintenance Strategy | 3 |
| | Street Lighting | 5 |
| | Council Owned Lighting Assets | 5 |
| 2. | Introduction | 7 |
| | Asset Management Framework | 8 |
| 3. | Level of Service for Public Lighting Assets | 10 |
| | Legislative Service Level Requirements | 10 |
| | Community Level of Service | 10 |
| | Technical Level of Service | 11 |
| 4. | Public Lighting Asset Lifecycle Management | 13 |
| | Asset Strategy | 13 |
| | Asset Operations and Maintenance Strategy | 16 |
| | Tariff Agreements | 16 |
| | Public Lighting Asset Risk Management | 18 |
| 5. | Financial Summary | 19 |
| | Asset valuations | 19 |
| | Long Term Asset Renewal Funding Costs | 19 |
| | Sustainability of service delivery | 20 |
| | Projected expenditures for Long Term Financial Plan | 20 |
| 6. | Building for the future | 20 |
| | Future Demand | 20 |
| | Sustainable Street Lighting | 21 |
| | Climate Impact on Public Lighting Assets | 21 |
| 7. | Continuous Improvement | 22 |
| 8. | Conclusion | 24 |
| 9. | References | 24 |

List of Figures

Figure 1 – Overall Network Condition2

Figure 2 – Overall projected Capital expenditure for Public Lighting Assets.....3

Figure 3 - Overall projected Operations and maintenance expenditure for Public Lighting Assets4

Figure 4 - Asset Lifecycle Management15

Figure 5 - Risk Management Process18

Figure 6 - City's Population Growth20

Figure 7 - Street Lighting Emissions Reduction Profile21

List of Tables

Table 1 - Technical Level of Service12

Table 2 - Description of Condition13

Table 3 - Public Lighting Asset Maintenance Strategy16

Table 4 - Street Lighting Financial Savings21

Table 5 - Improvement Plan23

1. Executive Summary

Public Lighting Assets are assets that have a primary function of facilitating illumination of public spaces within our City. The requirements for Public Lighting assets are closely aligned with the City of Charles Sturt's (CCS) 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.

Support diverse events and experiences that bring people together and contribute to the history, culture, and vitality of our neighbourhoods.

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 diversity of open spaces to create innovative, accessible, and flexible community 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 well-maintained network of roads and paths that facilitate safe, efficient, and sustainable connections.

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.

Charles Sturt is recognised as a leading partner and educator pursuing a sustainable future with our community.

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 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 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 good condition with less than 5% of the network below what would typically be considered an acceptable service level.

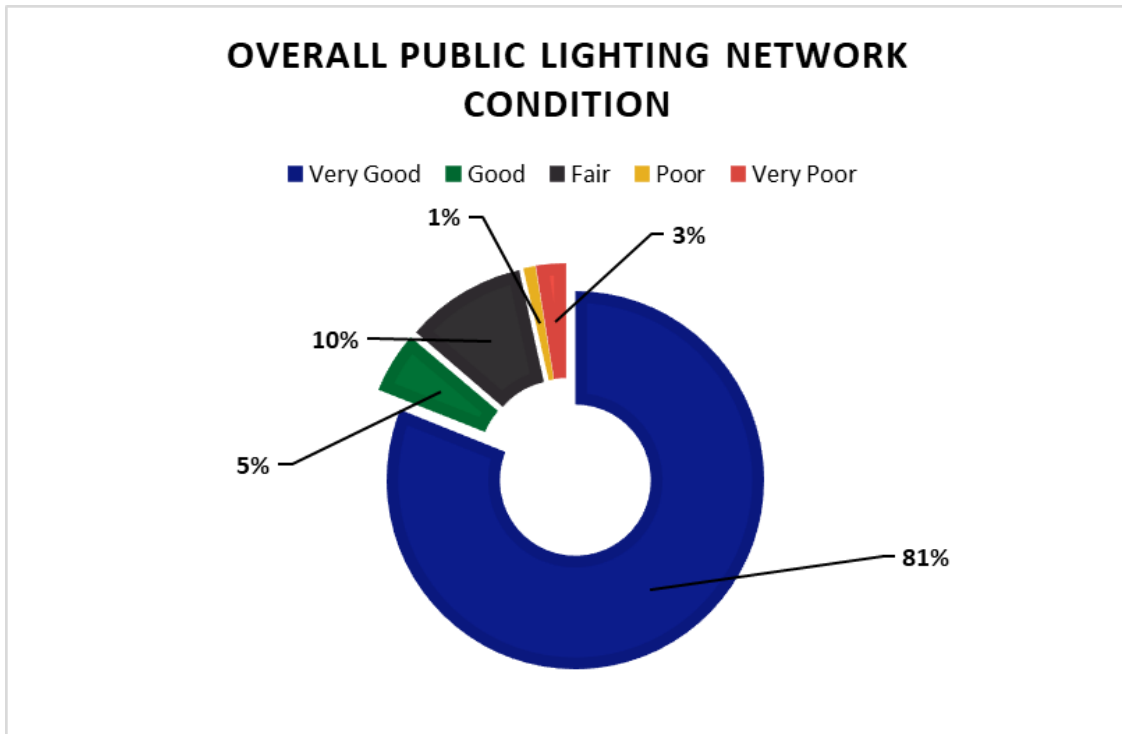


Figure 1 – Overall Network Condition

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 **\$26,498,104.53**. This is an increase from \$8,023,897.43 from the previous draft AMP asset stock in 2021. This is primarily a result of the recent Street LED Upgrade works across the city in which Council takes on the ownership of the luminaire (light fitting) component which was previously owned by 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 Council (typically Public Lighting Assets within Council land for public spaces and path assets), some are owned entirely by SAPN and DIT (Council pay a contribution for the maintenance and operation of these Public Lighting Assets) and some are a hybrid of Council and SAPN ownership where Council owns 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 the Public Lighting Asset network remains in condition 3 or better 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 2023/2024 until 2032/2033, an average spend of \$1.58 Million per year on, renewal, new and upgrade of Public Lighting Assets is required.

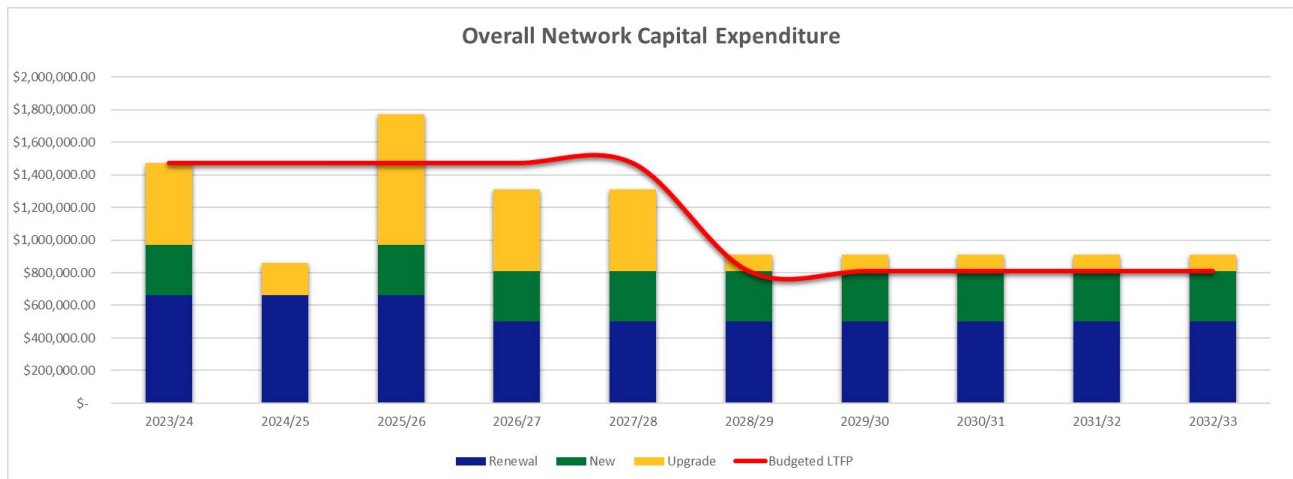


Figure 2 – Overall projected Capital expenditure for Public Lighting Assets

This AMP proposes to optimise the renewal and upgrade funding for Public Lighting Assets. The current LTFP provides an average spend of \$1,161,111.11 funding per year over the 10-year planning period. This AMP proposes a minor decrease in funding to an average of \$1,127,000.00 funding per year over the 10-year planning period. This AMP ensures that the network remains in serviceable condition and assets are 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 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.

Council currently spends \$1.5M 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.

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

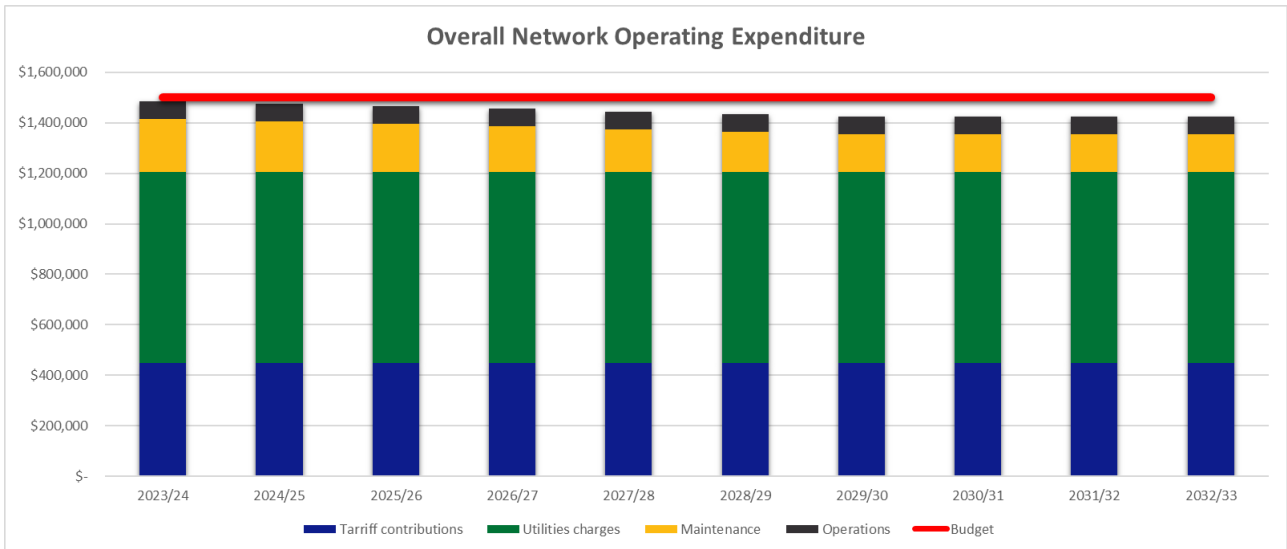


Figure 3 - Overall projected Operations and maintenance expenditure for Public Lighting Assets

Upon endorsement of this AMP all figures will be included in Councils Long Term Financial Plan expenditure to continue to fund services included 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 13,640 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 streetlights and for the operation and maintenance of street light Infrastructure by way of a tariff.

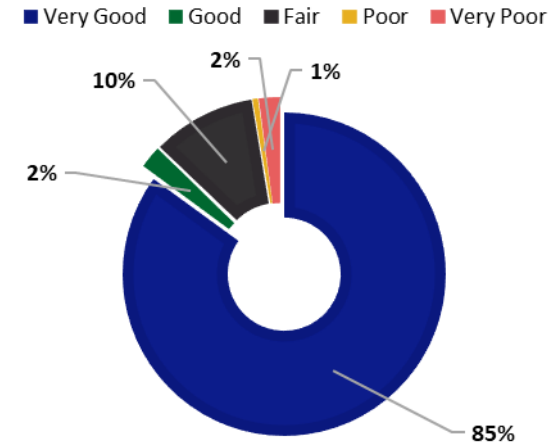
The City of Charles Sturt, in partnership with SA Power Networks, have implemented bulk LED lighting upgrade (replacing existing lights on local streets with LED fittings) and LED Improvement programs. CCS and SAPN have changed over approximately 10,900 of our Council's old and inefficient streetlights 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 82% at the end of the 2022/23 financial year.

CCS and SAPN have also continued to install additional streetlights on local streets to ensure lighting compliance is achieved (within current conditions). This AMP seeks to continue the completion of the infill lighting program for local street and high-volume roads over the next 5 years.

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.

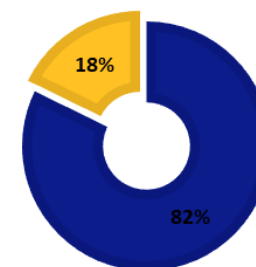
NOTE: Number of Lights owned on DIT road is an estimate based on SAPN data base provided to Council.

STREETLIGHTING CONDITION



STREET LIGHTING TECHNOLOGY STATUS

■ LED ■ NON LED



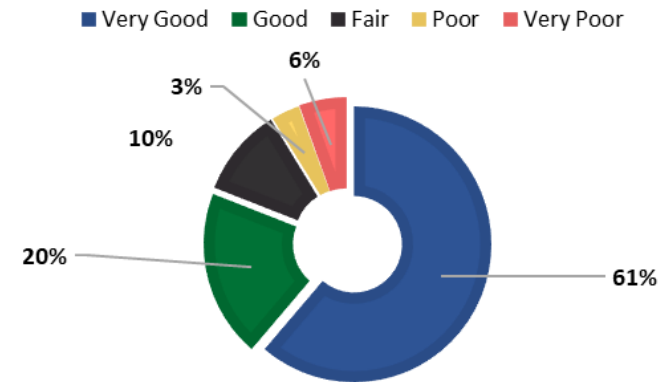
Council Owned Lighting Assets

The City of Charles Sturt (CCS) operate 2,819 Council owned lighting assets across the Council area.

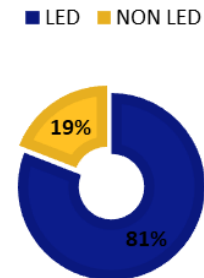
This asset class primarily provides illumination for transport functions through reserves (e.g. lighting paths through reserves).

Council has invested heavily in renewing lights in poor condition over the last 5 years and asset data shows that 81% of lighting assets owned by Council, on Council land are in good condition.

COUNCIL OWNED LIGHTING CONDITION



COUNCIL OWNED LIGHTING TECHNOLOGY STATUS



2. 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 10-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 Organisational Plan 2020-2025
- Community Plan 2020-2027, Charles Sturt – A Leading, Liveable City
- City of Charles Sturt Asset Accounting Policy
- City of Charles Sturt Asset Fund Policy
- Engineering and Open Space Guidelines
- SA Infrastructure Guidelines
- City of Charles Sturt Environmental Sustainability Policy
- Net Zero – Our Map to Net Zero Corporate Emissions 2020-2025
- City of Charles Sturt Open Space Strategy
- City of Charles Sturt Transport Plan
- City of Charles Sturt Your Neighbourhood Plan
- City of Charles Sturt Path Policy and Guidelines

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 revision of the 2021 Public Lighting AMP. This AMP seeks to continue to ensure a holistic integrated Asset Management Strategy for all Public Lighting Assets is implemented. 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.
- Asset condition audit of sportsground lighting
- Asset condition verification of reserve lighting assets
- Review and amendment of asset valuation data for all Public Lighting Assets.
- Updated 4 year works programs for Renewal, New and Upgrade works.
- Investigation into climate change and sustainability factors for Public Lighting.

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' needs to ensure Public Lighting Assets 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 10-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.

The organisation uses a Strategic Asset Management (SAM) system which uses advanced asset management principles to model service levels, future demand, 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 on the next page.

¹ IPWEA, 2015, IIMM.

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

3. 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 1993
- Disability Discrimination Act 1992
- Australian Road Rules
- Planning, Development and Infrastructure Act 2016
- Planning and Design Code for South Australia
- Work Health and Safety Act 2012
- AUSTROADS 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 Infrastructure Survey prior to developing this AMP to lead service levels and understand residents' and business owners' satisfaction with aspects of services and facilities provided by Council.

The results of the survey that 77% of people who responded are satisfied with the lighting in their local area.

Upon endorsement of the draft version of this AMP a 4-week community consultation period was undertaken in February 2024. The purpose of the consultation was to understand the community satisfaction with Public Lighting Assets and their proposed service levels in this AMP that have been based on the City of Charles Sturt's initial Community Infrastructure Survey.

A total of 1 response was received through the consultation process the respondent was dissatisfied with the level of services proposed in the AMP and would support Council investing further resources and increasing services levels in the future in this AMP.

The consultation process ensured 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.

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.

The current Technical Level of Service for Public Lighting Assets aims to renew 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.

This AMP aims to improve the level of service for Public Lighting Assets. It aims to ensure the Public Lighting Asset network remains in condition 3 or better 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.

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 | Council owned 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. |
| <u>Renewal</u> | |
| Public Lighting Assets are renewed and replaced in accordance with asset lifecycle requirements | |
| Street Lighting | Reserve Lighting |
| Successfully planning and delivering annual asset renewal programs to ensure Local Streets 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. |
| <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 |
| Successful planning and delivering of Street Lighting LED and infill programs in conjunction with SAPN. | New LED lights are constructed to ensure nighttime access is available to strategic destinations in accordance with best practice design. |

Table 1 - Technical Level of Service

4. 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 criteria to prioritize Public Lighting Assets when undertaking renewal, upgrade, and new planning.

- Condition (observed condition pole and fitting/Luminaire age)
- Maintenance
- 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 calculated condition data from 2021 which was based on construction age of light fittings/luminaires has been visually verified. 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 2 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 and not of up-to-date LED technology |
| 4 | Poor: Assets more than 10 years old and not of LED technology |
| 5 | Very Poor: Assets more than 10 years old and not of LED technology |

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 prioritized 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 Environmental and Sustainable Design requirements.

Functionality/ Strategic Importance

Assets that form part of a strategic corridor are a key driver for the future of the network. Prioritizing 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 Council for Council and uses all principles from the following Asset Management Lifecycle.



Figure 4 - Asset Lifecycle Management

Asset Operations and Maintenance Strategy

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

Lighting is maintained in accordance with Council's Customer Request Maintenance process. Operational and maintenance expenditure is outlined in table 3 below.

| Asset Class | Activity | Budget | Tasks |
|--|--------------------------|-----------|--|
| Management Costs | Staff Resource Costs | \$70,000 | Resource wages for Public Lighting Asset Manager and Public Lighting Officer |
| Operations | Operating costs | \$450,000 | Street Lighting Tariff Contribution |
| | Usage costs | \$255,000 | Cost contribution for 50% of cost of use of lighting for main roads. |
| | | \$500,000 | Cost of usage of running Council owned streetlight and lights in reserves that are on a metered supply. |
| Street Lighting | Reactive Maintenance | \$10,000 | Reactive Maintenance and fault repairs undertaken by Council where they are outside of the responsibility of SAPN (CRM process flow chart). |
| Council Reserve/Council Owned Lighting | Reactive Maintenance | \$180,000 | Reactive Maintenance and fault repairs undertaken by Council reported by the community (CRM process flow chart). |
| | Proactive Maintenance | \$20,000 | Planned Maintenance dedicated to fitting cleaning for strategic locations to ensure public lighting fittings remain operational and achieve design requirements. |
| Sportsground Lighting | Customer requests/faults | \$- | Sporting Club responsibility (dependant on license agreement) |

Table 3 - Public Lighting Asset Maintenance Strategy

Due to the ongoing investment in LED technology Council's maintenance funding stream now has capacity to include a dedicated program for light fitting cleaning to ensure that lights function to their correct illumination capacity. This AMP proposed to dedicate \$20,000 of funding from Council's existing maintenance budget to scheduled light fitting cleaning for proactive maintenance 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 - 661 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 – 424 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 streetlights, 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 –9,988

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 – 1,106 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 – 1,404 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 – 59 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– 2819 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 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. Council manages risks in the following way.



Figure 5 - 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 10-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.

5. 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-high 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 as of the 1st of July 2023 is almost \$26.5 Million. The best available estimate of the value of assets included in this Asset Management Plan are outlined below.

- Gross Replacement Cost \$26,498,104.53
- Accumulated Depreciation \$7,779,272.93
- Carrying Amount \$18,718,831.60
- Annual Average Asset Consumption \$1,173,359.06

Gross Replacement Cost

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

Accumulated Depreciation

Refers to the total economic benefit consumed.

Carrying Amount

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 **\$2,673,359.06** 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 **77%** of life cycle costs, this is an increase from 75% in 2021. 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
- 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 2023 real values. This AMP the projected required renewals to achieve 98% of life cycle costs provide a very minor funding gap of an average of \$15,359 per year for the 10-year planning period within the City of Charles Sturt's LTFP budget.

6. Building for the future

Future Demand

Our population continues to grow with the current estimated resident population being 124,864. The chart below shows the growth in our City's population in the past 10 years, increasing in that time by more than 14,000 people.

Planning and Land Use Services South Australia forecast high population projections for Adelaide West. It is projected that an average of 642 dwellings per annum will be required in Charles Sturt over the next 30 years. This is slightly less than the last ten years average of 690 dwellings per annum. Based on such projections, over the next 20 years it is expected that population will increase by approximately 30,000 people. This will deliver a greater expectation and demand on Public Lighting Assets across the City of Charles Sturt.

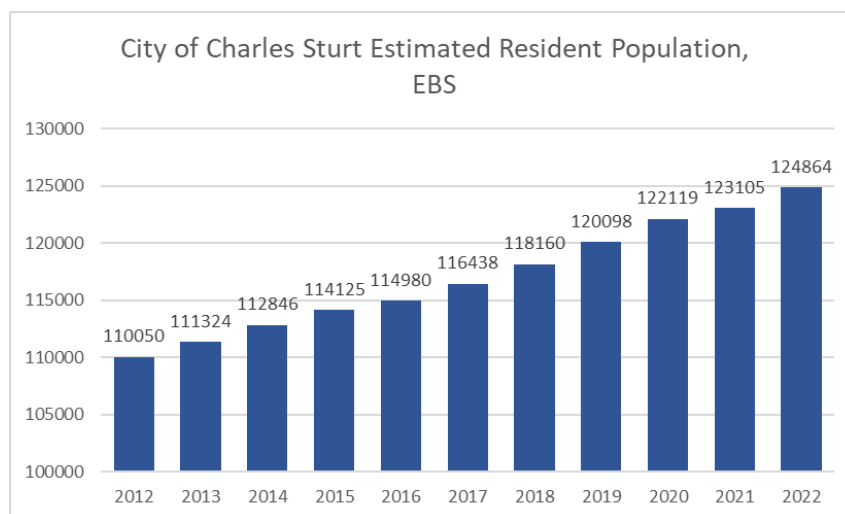


Figure 6 - City's Population Growth

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 450,000GWh the ongoing investment in LED technology has now reduced Council's energy consumption to between 200,000GWh and 150,000 GWh (season dependant). This has resulted in a peak reduction in 250,000GWh.

Transitioning all of the City of Charles Sturt's Street Lighting Assets to LED has reduce carbon emissions by more than 88% which translates to approximately 1800 tons of greenhouse gases a year ongoing.

Emissions Streetlighting 2017-2023 (t CO₂)

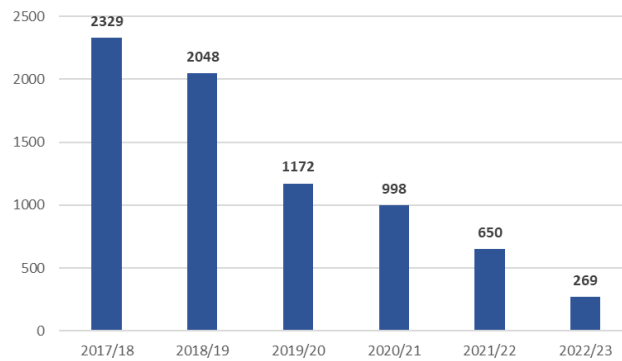


Figure 7 - Street Lighting Emissions Reduction Profile

The street lighting LED bulk rollout program has been completed and savings from the City of Charles Sturt's investment into a street lighting LED upgrade program have passed on approximately \$445,000 savings each year ongoing over the last 5 years ongoing as follows.

| Year | Street Lighting Cost | Saving |
|-----------|----------------------|----------------|
| 2017/2018 | \$892,686.48 | N/A |
| 2018/2019 | \$773,450.30 | - \$119,236.18 |
| 2019/2020 | \$506,319.06 | -\$267,131.24 |
| 2020/2021 | \$512,037.32 | \$5,718.26 |
| 2021/2022 | 447,923.88 | -\$64,113.44 |

Table 4 - Street Lighting Financial Savings

Climate Impact on Public Lighting Assets

In response to its climate emergency declaration in 2019, Council is seeking to improve its understanding of, and response to, climate change risks for assets. This AMP identifies an improvement for future revisions to develop a decision support tool to understand the vulnerability of our assets to both the physical and economic transition risks of climate change and provides a process for our asset managers to

consider climate-resilient response options. Staff will continue to refine this process over time as knowledge and capacity grows.

With climate change, our Public Lighting Assets may be exposed to climate hazards based on their location and their materials and design. As our climate warms and evenings are a better time to be outside, lighting of public spaces may become increasingly important for safe access by our community. Energy efficiency and power reliability will be key objectives for climate resilient public lighting. Consideration of design and materials that consider minimizing impacts to fauna and biodiversity is also key for supporting climate resilience across our city.

Through our asset management planning, we aim to:

- Minimise our greenhouse gas (GHG) emissions.
- Design, construct, and manage assets to reduce exposure to, and build resilience to, the impacts of climate change.
- Support the circular economy.
- Consider the whole of lifecycle costs (incl emissions) of managing assets.
- Improve our environment through design, construction, and maintenance of natural and built assets.

7. Continuous Improvement

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

- Visual Lighting Condition 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.

The following improvements were identified in 2020 and the current status of actions is as follows.

Short term (12-24 months)

Completed

- 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 lighting priority criteria for new lighting requests.
- Establishment of a lighting design approval process and guideline. (Internal process implemented).
- Establishment of a Council lighting policy for all Public Lighting Assets. (Internal process implemented).

Medium term (2-4 years)

Complete

- Establishment of a lighting maintenance strategy that identifies a proactive maintenance program; including fitting cleaning to ensure lighting operates as per the intended design.
- 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.

In progress

- Undertake LED rollout of Higher vehicle category roads and remaining streetlights in accordance with SAPN's standard fitting requirements.

Long Term (>5 years)

Complete

- Investigate potential separation of Public Lighting Asset classes into their functional areas for inclusion in the Transport and Open Space AMP's. – Public Lighting will remain in its own AMP.

Commenced

- 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.

This AMP has identified the following improvement plan for Public Lighting Assets.

| Initiative | Timeframe |
|---|-------------------------------------|
| Complete LED infill and improvement program | Scheduled for completion in 2024/25 |
| Transition lights on TFI Tariff to PLC tariff | 2 years |
| Complete LED rollout of Higher vehicle category roads in accordance with SAPN's standard fitting requirements. | 4 years |
| Complete LED conversion of any remaining streetlights in accordance with SAPN's standard fitting requirements. | 4 years |
| Investigate Transition of CLER Tariff lights to PLC tariff | 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. | > 5 years |
| Advocate to DIT for the conversion of arterial road lighting to LED to reduce Council's contribution towards the operation of this lighting. | ongoing |
| Undertake research into climate change impacts of Public Lighting Assets, including where possible understanding embodied energy, local vs non-local production, useful life, maintenance costs and recyclability. | > 5 years |
| Continue to review, refine, and adapt the process to assess and respond to climate change risks and building climate resilience relating to Public Lighting Assets, as new information, knowledge and capacity grows. | ongoing |

Table 5 - Improvement Plan

8. 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.

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.

9. References

1. IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.
2. IPWEA, 2015, 2nd edition, 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMM.
3. IPWEA, 2015, 3rd edition, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
4. IPWEA, 2012, 'LTFP Practice Note 6 PN Long Term Financial Plan', Institute of Public Works Engineering Australasia, Sydney
5. Ironbark Sustainability, 2015, Version 2a, 'Transitioning to Safe and Sustainable Public Lighting,' Ironbark Group Pty. Ltd.
6. Street Lighting Compliance infill program report, Enerven Pty. Ltd.
7. CM23/188340 Public Lighting AMP - 2023 Revision - Program and Financial LTFP information
8. CM 23/234993 – Emissions-report streetlighting 10_2023
9. CM 23/238445 Public Lighting Customer Request Maintenance Process – Flow Chart