

8.9 Clayton Bay Lighting - Dark Skies

File Ref: 9.24.003

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Community Strategic Plan Impact:

LIVEABLE

CONNECTED

Report Objective

To seek approval of the Council to upgrade and energise (switch on) street lighting in Clayton Bay, and to provide advice on the process of gaining accreditation under the International Dark-Sky Places program.

Executive Summary

Public street lighting has been an ongoing issue in Clayton Bay and in October 2019 (ACM19318) Council resolved to retain a lower number of street lights while Administration consulted with the community and investigated technical solutions to embrace the low light ambitions of the community.

58 street lights are currently installed in Clayton Bay, however only 12 lights are operational. 46 luminaires are non-energised (not switched on) and all 12 operational lights are comprised of mercury vapour 80-watt luminaires that are fitted to existing light columns posts or stobie poles.

Legal advice has confirmed that legislation states that all road lighting where it is provided (to Australian Standards) should be functioning and energised (switched on).

Approval is sought to proceed with a lighting upgrade to install and energise environmentally sensitive warm tone 3,000 Kelvin LED luminaires to 58 existing points of lighting infrastructure already constructed in Clayton Bay, with the removal of the existing old technology low efficiency 80 watt mercury luminaires.

In addition, it is proposed that Council undertake further consultation with the Clayton Bay residents and the Clayton Bay Community Association Incorporated to determine the level of support for a community-run committee to assist with the accreditation application process and manage ongoing requirements should Clayton Bay receive Dark Sky Community accreditation.

Recommendation

- 1. That Council approve the procurement, installation, and activation of 58 (fifty eight) Sylvania Street LED MK3 in a 3,000 Kelvin (warm tone colour temperature) at a cost estimate of \$50,000 and an ongoing tariff cost of \$3,536.84 per annum with SA Power Networks who will also manage faults, maintenance and replacement.**

2. That Council undertakes community consultation, in accordance with Council's Public Consultation Policy, with the Clayton Bay residents and Clayton Bay Community Association Inc. to determine the level of support to create a community committee to facilitate the application process and manage a Dark Sky Community in Clayton Bay.
3. That the results of the community consultation be presented to Council after the November 2022 Council elections.

Context

Clayton Bay is situated adjacent Lake Alexandrina and the lower Murray River and part of the lower lakes and Coorong Region. The town settlement is contained in an area of approximately two square kilometres in size. It is located 30km from Goolwa by road and has a population of approximately 350 residents with a proportion of holiday houses. Clayton Bay sits adjacent a *Wetland of International Importance* under the *Ramsar Convention on Wetlands*.

Previous reports to Council have addressed key decisions and events surrounding public lighting provision and use in Clayton Bay. These can be found on the following dates:

16 December 2019	ACM19412
21 October 2019	ACM19318
3 December 2007	ACF07617
18 June 2007	ACS0783
5 March 2007	ACF07151
18 December 2006	ACS06222

A decision from Council in 2007 to Electricity Trust of South Australia (ETSA) (now known as SA Power Networks) had instructed ETSA to deactivate a majority of road lights installed as part of Pelican Waters land division. The road lighting was to remain de-energised until a time that development had reached a level that necessitated a review of the lighting.

During 2019 several complaints pertaining to the provision of street lighting (or lack of street lighting) associated with land development in Clayton Bay were received by Council and by SA Power Networks.

The matter of street lighting activation was raised from within the Clayton Bay residents. Residents moving in to Pelican Waters land division were requesting to have street lights activated either directly to SA Power Networks or to the Council. Prior to 2019, approximately 10 street lights may have been energised and following a series of resident requests, up to 31 lights may have been energised according to advice provided by SA Power Networks.

Rather than have the 31 street lights active (per the residents request) the Council at the 21 October 2019 Council meeting, agreed to retain the lower

number of street lights to 12 while Administration consulted with the community and investigated technical solutions to embrace the low light ambitions of the community.

The road lighting conversation in Clayton Bay has shifted focus with the opportunity to consider procuring environmentally sensitive road lighting that meets the minimum criteria as recommended by the International Dark-Sky Association (IDA). SA Power Networks has recently made available a warm tone 24 watt LED with a cut off lens that directs light downwards with minimal upward waste light spill. The installation of this luminaire would not affect a future attempt to gain accreditation into one of the International Dark-Sky Association's Dark Sky Communities program.

The Clayton Bay community during 2019 community consultation had been supportive of moving towards Dark-Sky accreditation but at the time, there was little understanding of what was required to achieve this accreditation. A large part of the IDA accreditation process includes a commitment from the community, a community driven committee, appropriate lighting advocacy from the community, lighting policy alignment, impacts on private land and private development into the future. This was not discussed during 2019 consultation with the community.

A Council briefing in June 2022 regarding Clayton Bay Lighting provided a background to what the IDA is about and what is involved in accreditation.

To summarise some key points, the IDA is not advocating no light – only responsible usage. The IDA recommends that all outdoor lighting should:

- Only be on when needed
- Only light the area that needs it
- Be no brighter than necessary
- Minimise blue light emissions
- Eliminate upward-directed light.

The Clayton Bay Road Lighting Audit and review by a specialist consultant has provided advice to the Administration on appropriate road lighting infrastructure to meet our legal requirement to light the road reserve to minimum Australian Standards while also meeting the recommended criteria under the International Dark-Sky Association guidelines.

REFER ATTACHMENT 8.9 (page 9)

General Analysis

Road lighting infrastructure

SA Power Networks manage road lighting on behalf of Council's and State Government. Councils pay an annual tariff per light that SA Power Networks manage for associated services and ultimately the replacement of the light.

Since 2016, SA Power Networks have been installing white tone (4,000 Kelvin) LED lighting across South Australia, as the new standard in street lighting. The light change-overs are occurring continually where old lighting has faulted or reached the end of their useful life. The predominant light being changed out is

the 80 watt mercury vapour luminaire. This is the most common light in the Alexandrina Council.

More recently a warm tone energy efficient 24 watt LED has become available which fits a more environmentally sensitive requirement. The Sylvania Street LED MK3 comes in a cut-off (flat bottomed) "Aeroscreen" luminaire and in a warm tone (3,000 Kelvin) in 24 watt. According to a report prepared by the specialist consultant on 6 October 2021, the 24 watt 3,000K LED is suitable as a direct replacement for the phased out 80 watt mercury vapour luminaire currently installed at 43 locations in Clayton Bay.

58 points of light service are currently installed in Clayton Bay. Of the 58 points of road lighting, 12 lights are currently energised. To meet our legal obligations and as road manager, we must have all 58 points of road lighting energised.

The Sylvania 24 watt Street LED is the light being installed in the River Murray Dark Sky Reserve and replacing their old lighting ordinance. The 24 watt Street LED is suitable for use in a Dark Sky Reserve as it has a colour temperature of no more than 3,000 Kelvins. The International Dark-Sky Association recommends that only warm tone light sources at or below 3,000 Kelvins be used for all outdoor lighting.

White light and lighting with more blue in its spectrum has been shown to harm human health and endanger wildlife. The Sylvania 24 watt StreetLED can be fitted to tilt bracket infrastructure to allow for a precise adjustment for a horizontal lighting service. The luminaire comes in a flat-bottomed Aeroscreen lens option to restrict upward-directed light.

The Sylvania 24 watt Street LED is also smart city lighting compatible allowing remote wireless control over public lighting installations. While this lighting is capable of wireless control, this is not part of any current procurement proposals and may be a consideration in the future.

International Dark Sky Community

The IDA has a Dark Sky Places program that has five Dark Sky categories. Dark Sky Places categories include the following:

- International Dark Sky Communities
- International Dark Sky Parks
- International Dark Sky Reserves
- International Dark Sky Sanctuaries
- Urban Night Sky Places.

The characteristics of Clayton Bay appear to fit within the International Dark Sky Communities criteria. The definition of an International Dark Sky Community, is as follows:

An international Dark Sky Community (IDSC) is a town, city, municipality or other similar political entity that has shown exceptional dedication to the preservation of the night sky through the implementation and enforcement of quality lighting policies, dark-sky education and citizen support of the ideal of dark skies.

The goals for IDSC are as follows:

- To identify communities with exceptional commitment to and success in pursuing dark sky preservation and restoration, and their promotion of quality outdoor lighting.
- To promote improved outdoor-night time quality of life for residents and visitors
- To support protection of human healthy, nocturnal habitats, public enjoyment of the night sky and its heritage, and/or areas ideal for professional and amateur astronomy.
- To provide local, national and international recognition for such communities.
- To promote the ideals of the International Dark-Sky Association (IDA) by encouraging communities to identify dark skies as a valuable community asset and aspiration.

Further to IDSC eligibility requirements noted in the *International Dark-Sky Community Designation Guidelines* (see attachment), there are strict minimum requirements for all communities that must be met. Consideration must be given with regard to the minimum requirements as noted on page 4 – 8 of the Guidelines. The Guidelines are available at attachment 8.9(a) or on the URL www.darksky.org.

International Dark-Sky Places (IDSP) provides a typical accreditation timeline for the accreditation process:

Phase 1: Initial inquiry (45 days)

Phase 2: Formal Application (1-3 years)

Phase 3: Certification (90-150 days).

To support the accreditation process for Clayton Bay, a Lighting Plan for Clayton Bay is required. This can be based on details and recommendations within the consultant's Clayton Bay Lighting Report.

A Lighting Policy based on the strict criteria referenced in the Dark Sky Guidelines is required that will affect all outdoor lighting (private and road lighting).

Participation from a wide base of stakeholders will be essential in the efforts to pull together the application submission. Skill-sets from backgrounds in astronomy, management, technical skills, teaching, mentoring, events and organisation will be necessary to obtain. A volunteer base for ongoing commitment to lighting audits, reporting, community engagement and events is crucial to the success of maintaining accreditation.

Resourcing for application preparation and community engagement will be required by Council. However, the success of the submission will be dependent on the support of the Clayton Bay community. Should the community be willing to participate in this venture and support the IDSC application process, a supporting letter from elected representatives of the Community such as from the Mayor and/or Council is required. Additional letters of support from community organisations, clubs, groups, universities, astronomical groups, etc. will provide additional weight in the submission. Details are contained in the

IDSC Guidelines. Therefore it is important that the Community take the leadership and own this initiative if it is to be successful.

Comparative Analysis

River Murray Dark Sky Reserve and Clayton Bay

The Mid Murray Dark Sky Reserve covers an area of 3,200km² and was accredited in 2019. Swan Reach Conservation Park is the reserves 'dark core', which is surrounded by populated areas where the community apply Dark Sky principles. Night sky brightness is routinely checked at the reserve's 'core' that must be equal or darker than 21.5 magnitudes per square arc second (a metric of darkness). The higher the reading of magnitudes per square arc second, the darker the sky is.

Mid Murray Council is currently establishing a section 41 Committee to oversee the River Murray Dark Sky Reserve policy and management. Mid Murray Council is pursuing a Code Amendment, to introduce related development policies into the Planning and Design Code. In the meantime, the Mid Murray are managing road lighting and development via a Light Management Plan and Dark Sky Policy.

With reference to the online resource www.lightpollutionmap.info, Clayton Bay achieves a similar level of Dark Sky darkness as the distance from Adelaide and the protection from the Mount Lofty Ranges is similar to that of the Mid Murray Dark Sky Reserve.

Clayton Bay, while not formally assessed, registers a sky darkness level of approximately 21.96 magnitudes per square arc second. This darkness reading is comparable to other towns within the Mid Murray Dark Sky Reserve:

- Sedan, with an area of approximately 0.2 square km has 17 local road lights and 1 arterial light and has a night sky darkness reading of 21.96 magnitudes per square arc second
- Cambrai, with an area of approximately 0.3 square km has 33 local road lights and 9 arterial road lights and has a night sky darkness reading of 24.94 magnitudes per square arc second
- Swan Reach, with an area of approximately 0.8 square km has 36 local road lights and 13 arterial road lights and has a night sky darkness reading of 21.9 magnitudes per square arc second.
- Blanchetown, with an area of approximately 1 square km has 76 local road lights and 37 arterial road lights and has a night sky darkness reading of 21.7 magnitudes per square arc second

Should Clayton Bay upgrade and energise 58 Sylvania Street LED's in 3000 kelvin warm tone 24 watt luminaires, it is unlikely to have an impact on the night sky darkness readings.

Mercury lighting is being phased out by SA Power Networks under the Minamata Convention on Mercury. It is an international treaty that seeks to protect human health and the environment from the effects of mercury contamination. LED lighting is the direct replacement.

Financial and Economic Implications

The Clayton Bay lighting upgrade has been budgeted in the 2022/23 capital program with the lighting upgrade estimated at \$50,000 and ongoing tariff costs of \$3,536.84 per annum

IDA Accreditation:

\$350 USD annual membership

\$350 USD submission administration fee

The total cost for developing a submission for IDA Accreditation will be dependent on experts engaged, volunteer support and the Clayton Bay communities involvement and willingness. The duration for the submission will likely carry over several financial years as per advice from IDA.

It should be noted that Mid Murray Council seconded a planning officer for one day per week for a period of 12 months to assist with their IDA submission.

Risk Management

In accordance with the Alexandrina Risk Management Policy and Matrix, the risk of not adopting the first recommendation to energise 58 points of road lighting infrastructure is considered high. The current lighting arrangement does not meet Australian Standards and therefore poses a high risk of potential civil liability, uninsured liabilities or reputational damage.

The risk of adopting the second recommendation to consult with the Clayton Bay Community on a potential IDA Accreditation submission is considered low. A further report will be brought to Council should the outcome of the consultation result in the Clayton Bay community wanting to pursue IDA Accreditation.