

Potential Dark Sky Reserve, Sunshine Coast, Queensland, Australia

*Briefing Paper for International Dark-Sky Association
Eligibility Assessment*

February 2023



*Credit: Dr Ken Wishaw & Geoff Simon
Kirbys Road Environment Reserve Looking South, January 2022*

Purpose

The purpose of this paper is to seek an eligibility assessment of a potential Dark Sky Reserve on the Sunshine Coast, Queensland, Australia.

Sunshine Coast Council is undertaking investigations into a Dark Sky Place and is seeking preliminary advice from the International Dark-Sky Association (IDA) on a potential area for nomination under the Dark Sky Places Program. The advice received from IDA will help inform Council's decision on whether to pursue a Dark Sky Place.

Locational context

The Sunshine Coast region is located in South-east Queensland, Australia. The southern boundary of the Sunshine Coast local government area is 53 kilometres north of the capital - Brisbane. The Sunshine Coast local government area is managed by the Sunshine Coast Regional Council (the Council). The Country of two distinct First Nations groups, Kabi Kabi and the Jinibara people, extends across the area.

Close to half (40%) of the Sunshine Coast local government area is being investigated by the Council as a potential Dark Sky Reserve under the International Dark Sky Places Program.

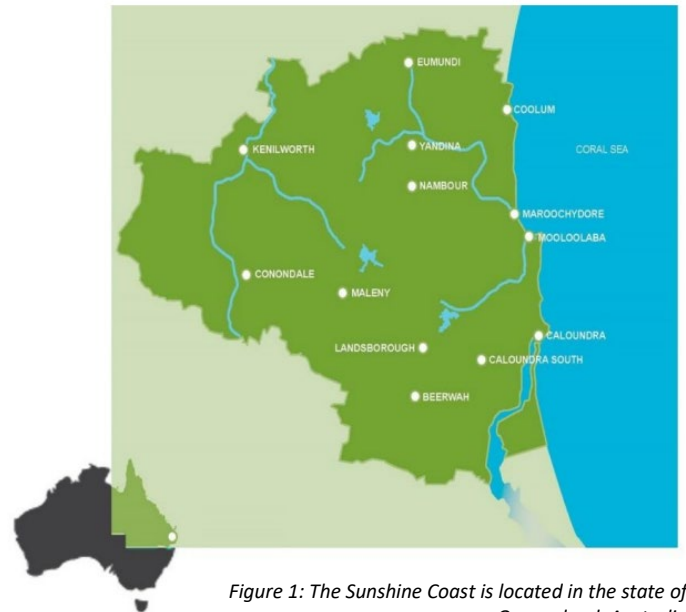


Figure 1: The Sunshine Coast is located in the state of Queensland, Australia

Sunshine Coast, Australia

The Sunshine Coast is widely acknowledged as a highly desirable place to live, work and play.

The local government area covers an area of approximately 2,200 square kilometres and is considered a major urban and economic centre and an emerging city-region. It has a strong reputation as a lifestyle region defined by its subtropical climate, picturesque coastline and beaches, extensive waterways and wetlands, and the hinterland mountain ranges. The natural environment and distinct landscapes are the foundations of the Sunshine Coast way of life.

Across the contrasting landscapes, from hinterland to coastal foreshores, there is a vast diversity of native plants and animals that create the region's highly regarded natural environment and rich biodiversity.

The Sunshine Coast offers a desirable lifestyle and over the past decade around 6,500 people each year have chosen to make the region home. This annual growth in population, which is expected to continue in the foreseeable future, has led to significant urban development and supporting infrastructure. The majority of residents live within established urban centres along the coast.

About the Sunshine Coast Local Government Area, Australia

Since first formed in 2008, the Council has been consulting with the community about how best to respond to future pressures and maintain the liveability and natural assets valued by the community. As an evolving region, with an increasing population, along with pressures such as

climate change and a changing economy, there are both challenges and opportunities to be met in the future.

The Council has a [vision](#) of *Australia's most sustainable region – Healthy. Smart. Creative*. The Council recognises that our valued natural assets underpin and enhance our liveability, and that residents living sustainably within the environment is key to achieving the corporate vision for the region.

The Council has demonstrated its commitment to sustainable development over the past decade and continues to plan for a sustainable future across the region. The actions and achievements of Council, in partnership with the community, have established a healthy and liveable region, creating a strong platform to respond proactively to change.

As the Sunshine Coast continues to grow as a city-region, it is well positioned to respond to changes. It is a living laboratory that can demonstrate a high standard of sustainable development, so that its people can live, work and play sustainably in a landscape that is valued for its environmental significance and important wildlife habitat and ecosystems.

Its most recent achievement has been the recognition by UNESCO as an international site of excellence – the Sunshine Coast Biosphere.

Consideration of a Dark Sky Place on the Sunshine Coast has been discussed by Council as a potential mechanism to further provide for the long-term protection and management of the region's natural assets and transition the Sunshine Coast to a more sustainable, resilient and low carbon way of living.

Potential Dark Sky Reserve location – Sunshine Coast (Hinterland)

In November 2020, Council resolved to support further investigations with targeted input, to scope potential Sunshine Coast Dark Sky Place designations (through the International Dark Sky Places Program) and associated location/s, requirements, benefits and report back to Council for consideration.

A Dark Sky Reserve is being considered by Council in the western region of the local government area in the vicinity of Obi Obi, Maleny, Conondale, Mapleton and Kenilworth (see Attachment 1).

The area under investigation is 873km² in size and is primarily made up of the Mary River Catchment boundary within the local government area (Attachment 2). From a night sky perspective, light pollution data and preliminary night sky readings indicate the area has the attributes of a Dark Sky Reserve (Attachment 3).

The Council sees a number of benefits of Dark Sky Places including to:

- Protect the dark sky environment that currently exists
- Bring international recognition of the efforts made to protect our dark skies
- Provide wildlife friendly environments
- Support Council's overall aspirations to transition to a more sustainable way of living
- Support the health and wellbeing of Sunshine Coast residents and visitors.

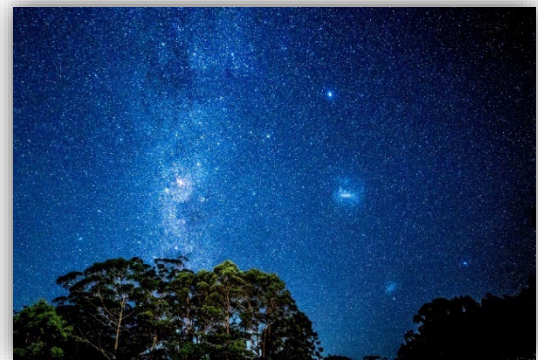
Within this investigation area (Core and Buffer/Periphery):

- Approximately 40% is government land – majority of this government land is State Protected Areas.

- Population of approximately 13,000 residents and includes the townships of Maleny, Mapleton, Montville, Witta, Flaxton and Conondale.
- Approximately 850 public lighting assets (Note this does not include Council owned / operated buildings and facilities within the buffer area (such as libraries, aquatic centres etc).
- Two observatories:
 - The Mapleton Observatory is located at the Mapleton School and has been operating since 2002.
 - Maleny Observatory – designated observatory in 2021 by the Astronomical Society of Australia.
- Active community group - Brisbane Astronomical Society/Sunshine Coast Dark Sky Astronomers.

The Core

Kirbys Road Environment Reserve is part of the Council's conservation estate and was purchased through [Council's Environment Levy Land Acquisition Program](#). The reserve is close to 3km².



Credit: Dr Ken Wishaw & Geoff Simon - Kirbys Rd Environment Reserve Looking South January 2022

The site is considered a suitable 'core' area due to:

- Dark sky qualities
- Protected in council's conservation estate
- Its location within the region surrounded by National Parks and rural areas
- Management and planning for the reserve - Council is planning for a number of embellishments in the reserve including a car park, walking trails, amenities etc. Light meters have also been installed for dark sky assessment.

Sky quality readings at the reserve in 2021 were 21.56 magnitudes per square arcsecond.

Areas of the core are proposed to be accessible for night-time viewing.

Land manager: Sunshine Coast Regional Council

Potential partners: Qld Government – Qld Parks and Wildlife Service (adjoining landowner east/west).

The Buffer/Periphery

The Buffer/Periphery area surrounds Kirbys Road Environment Reserve. The area follows the Mary River Catchment Boundary within the western portion of the local government area with the addition of Mapleton National Park and Mapleton Forest Reserves in their entirety.

The Mary River is one of the most environmentally and economically diverse catchments in Queensland, supporting a range of activities including agriculture and tourism. Its headwaters are in the Conondale and Blackall Ranges (within the Sunshine Coast Local Government Area) and it flows northwards for hundreds of kilometres to the Great Sandy Strait, influencing the coastal environment of Hervey Bay and ultimately the Coral Sea (including the [Great Barrier Reef](#)).

Large areas of the catchment are protected natural areas and support several iconic threatened species – notably the Mary River cod, Mary River turtle and Queensland lungfish. Approximately one sixth of the Mary River catchment occurs within the Sunshine Coast Council area.

Within the Sunshine Coast, native vegetation covers 66% of the catchment area and the Mary River catchment contributes 45% of the Local Government Areas native vegetation.

State Protected Areas including the Conondale, Mapleton, Maleny and Kondalilla National Parks exist in this area. Conondale National Park is the largest single Core Habitat Area in the region (19,252 hectares).

The area comprises small hinterland townships including Maleny, Mapleton, Montville and Conondale.

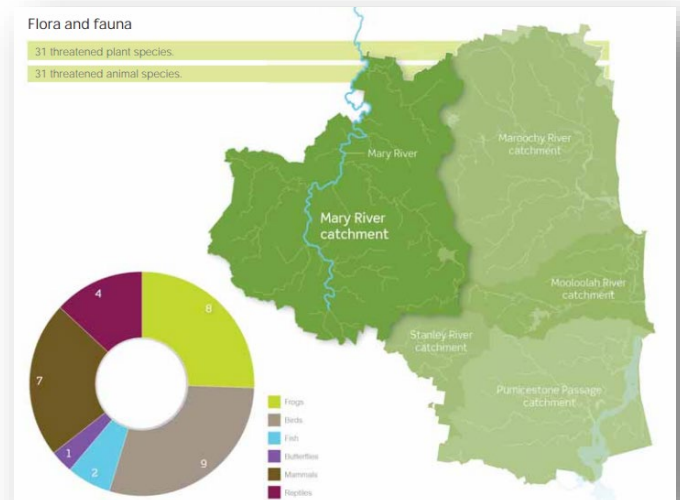


Figure 2: Mary River Catchment, Sunshine Coast

Primary periphery partners:

- Energy Queensland (Energex) – Energy Queensland is the Group of electricity distribution, retail and energy services business who deliver electricity across the State of Queensland in which Sunshine Coast resides.
- Department of Transport and Main Roads – Qld Government Department who manages and delivers Queensland's integrated transport environment
- Sunshine Coast community.

Council initiatives

Council is pursuing a number of initiatives which align to the objectives of a Dark Sky Place including:

- [Environment and Liveability Strategy](#) – Council's award winning Strategy was developed to provide a clear vision and forward plan to 2041 to deliver a healthy environment and liveable Sunshine Coast. Council is investing in and delivering an extensive range of projects, programs in partnership with dedicated volunteers, community organisations and researchers, to preserve our outstanding natural environment and ensure our region remains a great place to live.
- [Urban Lighting Master Plan](#) - The Urban Lighting Master Plan was developed to deliver substantial improvements to the public lighting network by upgrading street lights to energy efficient technology.
- Green Spaces – Council is planning and advocating for our green spaces by securing land to protect natural assets, respond to climatic changes and provide further green spaces for people to enjoy.
- [Biosphere](#) – The Sunshine Coast region was recognised in 2022 as an international site of excellence. Becoming a biosphere demonstrates the Sunshine Coast's commitment to remain future facing and will help enhance our national and international reputation and support our economy, lifestyle and environment for future generations.
- Marine Turtle Conservation Plan – Council is currently development a Marine Turtle Conservation Plan. One of the most significant threats to the region's marine turtles includes urban light pollution, the plan identifies light pollution as a major theme of work for focus

over the next decade. The plan is at final draft and is proposed to be presented to Council in 2023.

As part of our [marine turtle conservation efforts](#), Council has undertaken the following:

- Light shielding near nesting beaches
- Luminaire trials and retrofitting streetlights in Council parks
- Ongoing education and awareness programs to reduce lighting around nesting beaches including community partnerships.
- Council is developing an Electrical & Public Lighting Services Infrastructure Manual intended to address specific technical requirements governing lighting (and electrical) infrastructure in public open spaces.
- Council has received funding through the Federal – [Local Roads and Community Infrastructure Round 3](#). The proposed project list includes an allocation of \$4 million for upgrading Energex Rate 1 streetlights to LED by investing initial capital for positive carbon abatement and return on investment. Rate 1 streetlights are installed, owned and maintained by Energex where Council is the customer. Within the proposed Dark Sky Reserve buffer area, it is estimated there are 285 Rate 1 streetlights.
- [Environment Levy Land Acquisitions](#) – Council purchases land using Environment Levy funds to protect, preserve and enhance our natural environment and wildlife corridors. Council has purchased over 110 properties (4,050 ha) through the program. In 2021/22, council further expanded the core Kirbys Road Environment Reserve with a 68 hectare through this program.

Community initiatives

The Sunshine Coast community has a number of strong and active community groups.

The Brisbane Astronomical Society – Sunshine Coast are a group of astronomers seeking to preserve the night sky from light pollution and share the wonders of the stars with the Sunshine Coast community. The group resides in Maleny within the investigation area. The convenor of the local group is advocating to formalise the protection of the Sunshine Coast’s dark skies and deliver on initiatives with benefit to local residents, wildlife and local eco-tourism.

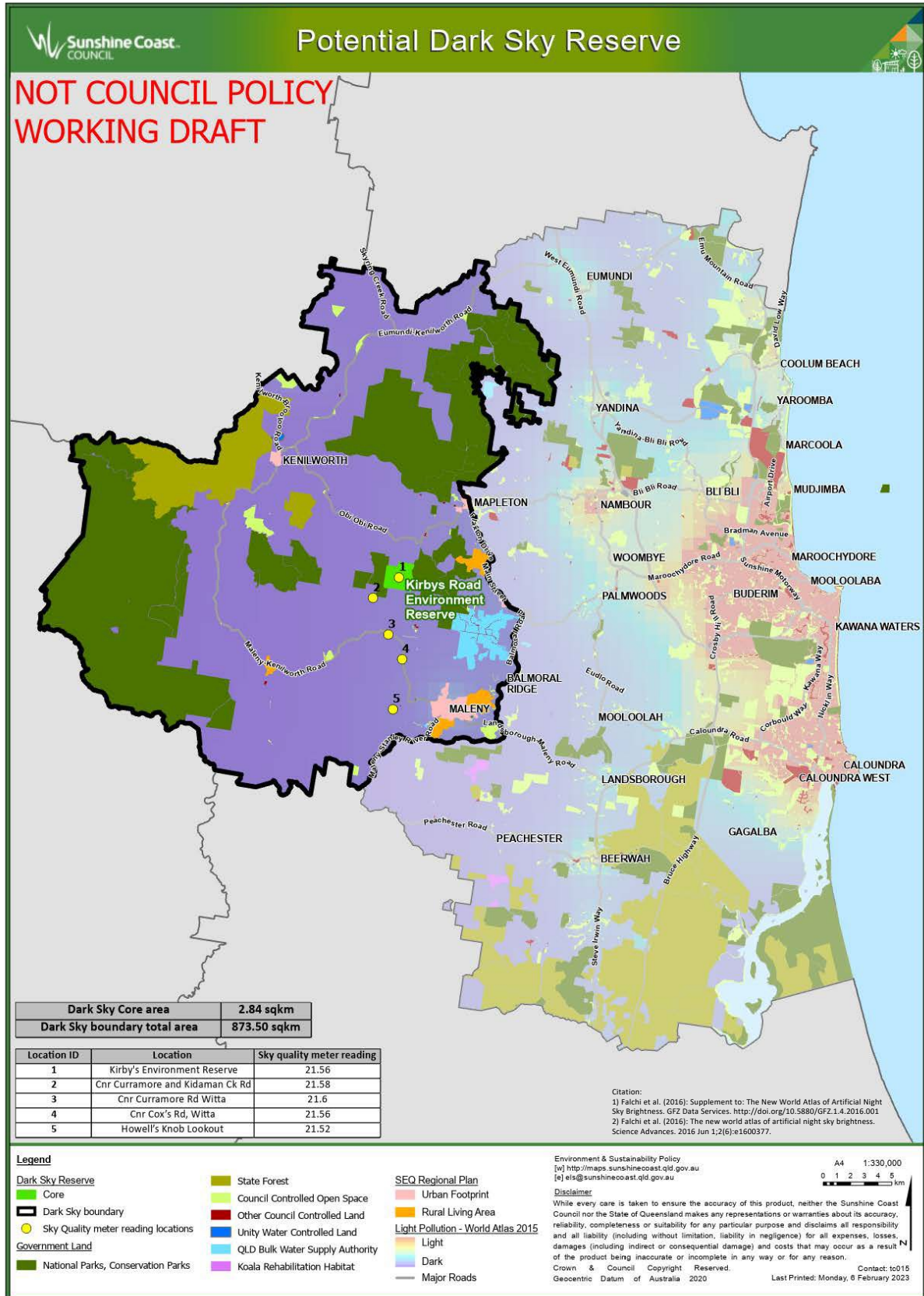
Maleny Golf Club in conjunction with the Brisbane Astronomical Society was granted “Designated Observatory” status in 2021 by the Astronomical Society of Australia, the peak professional astronomical organisation.

Conclusion

Council officer investigations to date indicate a potential opportunity for a Dark Sky Reserve designation across the western portion of the local government area to protect the existing night sky quality and to further act, educate and work in partnership with government agencies and the community to maintain this natural asset for future generations.

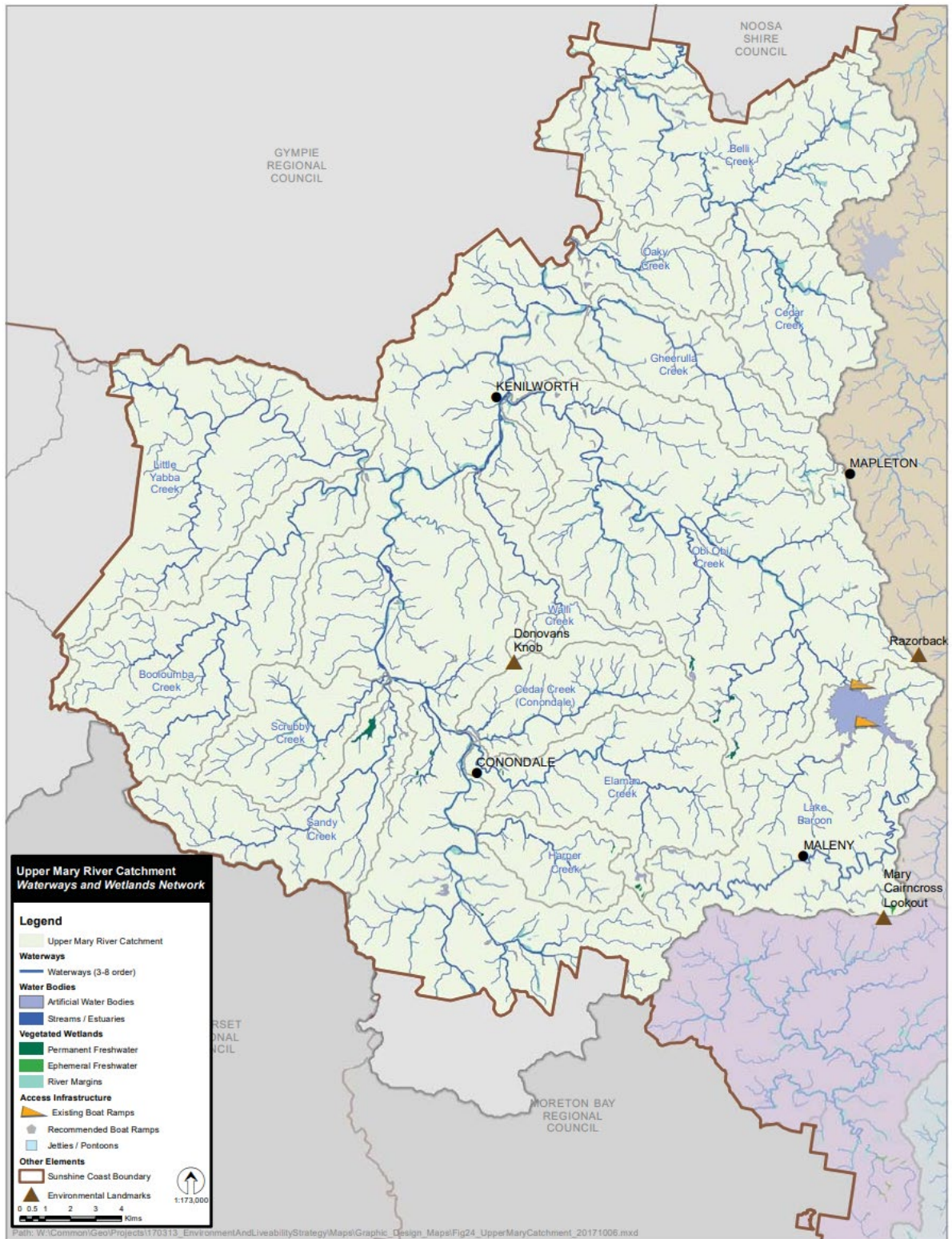
Council is seeking preliminary advice from IDA on the investigation area outlined above in order to inform its decision on pursuing a designation.

Attachment 1: Proposed Dark Sky Reserve Investigation Area



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Attachment 2 – Mary River Catchment Boundary



Attachment 3 - Sky Quality meter readings (SQM)- SQM-L meter 0919

The Secretary of Brisbane Astronomical Society and Affiliate, Australasian Dark Sky Alliance undertook a dark sky survey in 2021 of the Obi-Obi valley with particular reference to the Kirbys Road Environment Reserve. This involved sky quality meter readings en-route to the reserve from Maleny Observatory and light dome photography at the reserve. Results are below

Maleny Observatory	21.34
Howell's Knob Lookout	21.52
Cnr Cox's Rd, Witta	21.56
Cnr Curramore Rd Witta	21.60
Cnr Curramore and Kidaman Ck Rd	21.58
Kirbys Road Environment Reserve	21.56

See attachment 1 for survey locations within potential Dark Sky Reserve.