

Additional Information

QLDC District Plan Review – Submission #340

17 August 2016

I have collated four dark sky resources for the Hearing Panel.

1. Dunedin City Council's action plan to become NZ's first Dark Sky city:

Night Sky City

2. A newspaper article about the trialling of LED lights as the DCC prepares to replace city streetlights and thereby limit the impact of light pollution on the night sky:

DCC trials new streetlights – ODT 13 July 2016

3. Naseby seeks support to obtain accreditation as an international Dark Sky Reserve:

Support for dark sky reserves sought - <http://www.odt.co.nz>

4. Guidelines from the association that provides international accreditation for Dark Sky places:

International Dark Sky Association: Dark Sky Community Guidelines
October 2015, p. 1 - 4 www.darksky.org

Ros Hughes

Listen

Current position

Dunedinites are used to experiencing amazing night skies, from the Milky Way to the Aurora Australis. These stellar views are one of the great luxuries of living in our remote part of the world. We also enjoy a night-time cityscape of new and heritage buildings lit to draw the eye. Most recently, work to regenerate Vogel Street in the heart of Dunedin has included the installation of light projectors that shine images inspired by fragments of chinaware found in the area onto the pavement.

Globally, there is increasing concern that we are losing our natural night sky environment to a haze of human light pollution. There is a growing body of evidence that light pollution not only blocks our view of the stars and impacts on astronomy but also disrupts ecosystems, can affect the quality of our sleep, wastes energy and costs a lot of money.

Action and delivery

This action speaks to a simple idea, established by the International Dark-Sky Association (IDA): light what you need, when you need it. Some light at night is necessary for safety and recreation, but light is not the only safety tool and it is clear that with advances in technology we can do this better with energy-efficient, smart infrastructure. Dunedin could also be far more innovative with night lighting, using clever lighting to highlight a path to the stadium from the city centre on match days for example.

The Dunedin City Council is currently planning through the asset renewal process to upgrade Dunedin's street lighting from low-pressure sodium to LED, which will save a significant amount in terms of electricity and maintenance costs. The new LED fittings will also include significant shielding to prevent light spilling upwards. There is a unique opportunity for the city to maximise the benefits of this asset renewal by exploring how to leverage from the upgrade of the street lighting. This action is focused on how to do this.

There are multiple economic benefits on offer. From an economic perspective, Dunedin would be New Zealand's first Dark Sky city, and would lead the way for New Zealand to be the world's first dark sky country. As a unique selling point for our already strong tourism sector, it is a way to further differentiate New Zealand's appeal. There is also significant spend on outdoor lighting and savings free up resourcing for other activities. There is great potential for the Night Sky City action to drive innovation and economic development, with our companies, entrepreneurs and communities working to find solutions to our local challenges. Some of these solutions may be of export-quality. These economic benefits are supported by the environmental and social benefits that protecting our night sky offers.

Dunedin has an opportunity to test ways in which lighting challenges can be addressed for the whole country, to build expertise in energy-efficient outdoor lighting and to promote research and adoption of energy-saving measures.

If Dunedin is successful in approaching night lighting in a truly 21st century way – reimagining how the world's urban and rural areas approach the dark – we will play our part in keeping our night skies full of stars now and into the future.

Headline success measures

Successful delivery of this action will result in:

- o improved quality of night sky vistas

- o savings on street lighting energy costs
- o increased visitor numbers.

Consultation focus

1. Ensure key activity strands leveraging the street lighting upgrade are identified.
2. Explore the economic opportunities e.g. tourism packages based around the night sky or 'heritage buildings at night' experiences.
3. Develop the plan to encourage innovation in the lighting and night sky space.
4. Explore the level of comfort with different types, colours and intensities of public lighting.
5. Participatory decision-making process around public external lighting.

Key delivery partners

Several organisations are emerging as key partners in progressing thinking about Dunedin's night sky, including:

- o New Zealand Transport Agency (NZTA)
- o Dunedin Dark Skies Group
- o Otago Museum
- o Otago Chamber of Commerce
- o The Upstart Trust
- o Dunedin City Council

Key resources

- o [The International Dark Sky Association](#)
- o [International Network of Cities on Urban Lighting \(LUCI\)](#)

Delivery activity

Lead organisations

Measuring progress

Confirmed activity

Around 9,000 city street lights upgraded to LED as part of Dunedin's asset renewal programme, which will deliver substantial energy and maintenance cost-savings

Dunedin City Council
NZTA

Number of street lights upgraded

Savings on energy costs

Savings on maintenance costs

Establish a Night Sky City Advisory Panel to advise on:

- o key city outdoor lighting projects
- o the street lighting asset renewal from a big picture perspective.

Dunedin City Council

Key lighting projects identified

Ngāi Tahu

Global and national good practice collated and examined

Dunedin Dark Skies Group

There are compelling reasons for investigating what LED lighting

solution, or solutions are right for Dunedin, and we have considerable expertise in the city and a number of different desired outcomes.

University of
Otago

Otago
Polytechnic

Otago Museum

Continue to support the growth of key festivals and events that speak to the Night Sky City ambitions, particularly Puaka Matariki and the Midwinter Carnival

Dunedin City Council

Creative Dunedin Partnership

Government funding agencies

Dunedin Midwinter Celebrations

Puaka Matariki Steering Roopū

Number of people attending key festivals and events that speak to the Night Sky City ambitions

Delivery activity

Lead organisations **Measuring progress**

Proposed activity

Investigate 'SMART' control management systems for outdoor lighting

Dunedin City Council

Aurora

EECA

Number of projects for which smart controls are assessed

Explore instituting local standards and requirements for private street lights

Dunedin City Council

Otago Property Investors Association

Number of private street lights upgraded

Number of new LED lights installed in private developments

Advocate for the upgrade of state highway lights within Dunedin

Dunedin City Council

Number of NZTA lighting assets

Dunedin Dark Skies Group upgraded

Join the LUCI network of cities on urban lighting

Dunedin City Council Best practice shared

Otago Chamber of Commerce

University of Otago

Otago Polytechnic

Ngāi Tahu

Specific lighting accord to support Night Sky City action – both preventing light pollution and driving creativity and innovation in the outdoor lighting space, including engaging projects with light in the public realm

Dunedin City Council Creation of lighting Accord

Otago Polytechnic Number of participants

Dunedin Dark Skies Group Number of efficient light fittings

NZTA installed/decrease in outdoor lights

Value of financial savings and associated benefits

Establish a New Zealand-wide group of local and central Government to explore the potential of New Zealand as the world's first Dark Sky Country

Dunedin City Council To be confirmed

Otago Chamber of Commerce

Dunedin Dark Skies Group

University of Otago

“Maui - A Modern Man’ by Rowan Holt (worn by Nick Price-Ellison), ‘Matariki at the Marae’ at Puketeraki Marae.”

“The City of Dunedin has an extraordinary opportunity to become one of the best places in the world to view the night sky and kick start a new ‘dark sky’ tourism industry in our region. Dunedin could become New Zealand’s first and largest Dark Sky City. If the wrong choices are made, the beautiful views we now enjoy of the night sky may be lost forever. We need to use the least light polluting technologies available and we need to use them smartly.”

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Wednesday, 13 July 2016

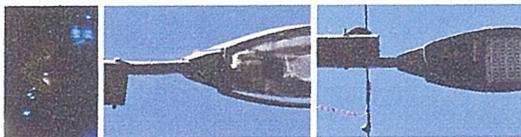
DCC trials new streetlights

By **Vaughan Elder** ([/author/Vaughan%20Elder](#))

[News \(/news\)](#) > [Dunedin \(/news/dunedin\)](#)



New shielded LED lights put out white light next to the yellow light of the old in Wakari Dunedin. Photos by Peter McIntosh.



The Dunedin City Council is trialling LED technology as it prepares to spend millions replacing the city's streetlights.

Parks and recreation group manager Richard Saunders, who is also working in the transport area, said the council was planning to replace all the city's streetlights over the next two financial years.

It had set aside \$6million for the project, but the final cost would not be known until the council settled on which type of light would be used and whether it would use "smart technology", Mr Saunders said.

The smart technology it was looking at included the option of pre-programmed dimming and the ability to control light levels remotely.

The council had run a trial of two types of LED lights in Lynn St, Wakari, since December last year. One of the lights put out a white light similar to moonlight, and the other was slightly dimmer and put out a white light with a warmer hue.

The lights were shielded, which meant they directed light on to the road and footpath, and there was less light spill on to private property or into the sky.

Mr Saunders said the small amount of feedback it had received had been positive, with some saying the new lights made them feel safer.

Residents of the street who spoke to the *Otago Daily Times* yesterday were mostly happy with the lights.

One person was concerned they put out less light than the high pressure sodium lights, while another was not aware the trial was running.

Mr Saunders said 20 similar lights were about to be installed in Wingatui Rd, Mosgiel, at a section requiring new streetlights.

The council would take into account advice from the Dark Skies Advisory Panel, which is keen on having lights which have a limited impact on the night sky.

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'Long, slow, deep decline' into cold [VIDEO](#)

Dunedin Pokemon Go capital of NZ ([/news/dunedin/dunedin-pokemon-go-capital-nz](#))

South wakes to big chill ([/regions/south-wakes-big-chill](#))

EDITORS' PICKS

Otago Daily Times

Published on Otago Daily Times Online News (<http://www.odt.co.nz>)

Support for dark sky reserve sought

By Lynda van Kempen
Created 01/07/16

ShareThis

Naseby's dark skies could be the key to a bright future. Local group Naseby Vision is exploring the possibility of the town becoming an international dark sky reserve, like Tekapo.

"Globally, there is increasing interest in pristine skies," group secretary and Naseby resident Hilary Allison told the Central Otago District Council yesterday.

"From the research we've already undertaken, a light survey, Naseby [night skies] are deemed qualified as 'pristine', the same, if not slightly better, than Tekapo," she said.

The group wanted the council's support for its efforts to get accreditation on an international network of dark sky reserves.

There was a whole raft of things it had to complete to reach that goal.

It also wanted that aim to be kept in sight when bulbs were replaced in street lights, so light pollution was kept to a minimum.

Mrs Allison said Naseby's bid "struck an extraordinarily rich vein of intelligent support from the Otago Museum, the Astronomical Society and the Dark Skies group who are equally excited about Naseby being a dark skies destination".

Attracting visitors to study the town's starry skies would have economic benefits for the region, she said.

The Central Otago Astronomical Society was "very interested" in what Naseby planned, society member and district councillor Barrie Wills said.

"We'd like to do something similar all through Central Otago."

Central Otago Mayor Tony Lepper said it was a good idea.

"Good old Naseby, having a crack," he said.

"The Scottish nature of me says perhaps we'll turn out all the lights and let you walk around with a torch."

Naseby Vision is a community group, representing more than 300 residents, holiday-home owners, farmers and business people.



[1] Hilary Allison.

Central Otago

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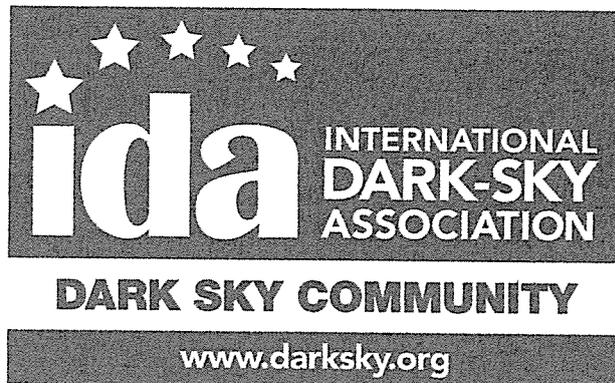
Source URL (retrieved on 29/07/2016 - 23:25): <http://www.odt.co.nz/regions/central-otago/388775/support-dark-sky-reserve-sought>

Resource #4

INTERNATIONAL DARK-SKY ASSOCIATION

3223 N first Ave - Tucson Arizona 85719 - 520-293-3198 - www.darksky.org

TO PRESERVE AND PROTECT THE NIGHTTIME ENVIRONMENT AND OUR HERITAGE OF DARK
SKIES THROUGH ENVIRONMENTALLY RESPONSIBLE OUTDOOR LIGHTING



International Dark-Sky Association Dark Sky Community Guidelines

October 2015

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DEFINITION OF AN IDA DARK SKY COMMUNITY

An IDA Dark Sky Community (DSC) is a town, city, or municipality that has shown exceptional dedication to the preservation of the night sky through the implementation and enforcement of quality lighting codes, dark sky education, and citizen support of dark skies.

GOALS FOR IDA DARK SKY COMMUNITY CREATION

- 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 ecotourism
- To promote protection of human health, 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 International Dark-Sky Association (IDA) by encouraging communities to identify dark skies as a valuable community asset and goal

BENEFITS

Achieving this designation brings recognition of the efforts made by the Community council, the local government authorities (police department, planning and zoning, etc.), the citizens, and any other public and private organization to protect the night sky and the environment dependent on it. This designation will enhance awareness of dark sky matters to all residents and visitors of the Community.

Designation as an DSC entitles the Community to display the IDA Dark Sky Community logo in official publications, promotions, signs at the entrance or within the Community, and retain the use of this logo by other groups within the Community when identifying the area itself (i.e. a Community can say “Flagstaff, the world’s first IDA Dark Sky Community” or in other words to the same effect, for example, an organization within the Community can say “located in Star City, an IDA Dark Sky Community”). IDA will maintain a web page identifying and describing all DSCs available on www.darksky.org.

ELIGIBILITY

Community must have some type of legal organization that is officially recognized by outside groups. This can be in the form of a town, city, municipality, or other legally organized community (such as a urban neighborhoods and subdivisions).

MINIMUM REQUIREMENTS FOR ALL COMMUNITIES

- A) A quality comprehensive lighting code like the IDA/IES Model Lighting Ordinance (MLO) with the following minimum standards for permanent lighting installations (more on developing a lighting code and guidelines may be found on our website <http://www.darksky.org/outdoorlighting/mlo>):
- i) Fully-shielded or full-cutoff standard for all lighting fixtures over 1500 lumens initial lamp output (or equivalent wattages), AND;
 - ii) Establishes a threshold of 3000 Kelvins for the allowable correlated color temperature of all lighting fixtures, AND;
 - iii) Restrictions on total amount of unshielded lighting, such as a limit on lumens per acre or total site lumens in unshielded fixtures (or equivalent wattages), AND;
 - iv) A policy to address over-lighting, such as energy density caps, lumens/acre caps, or maximum illuminance specifications, AND;
 - v) A provision that clearly: (1) indicates where, when, and under what circumstances new public outdoor lighting (street lighting and lighting on other public property and rights-of-way) is warranted and will be permitted, and (2) requires that adaptive controls and curfews be employed in all future installations of public outdoor lighting.
- B) Community commitment to dark skies and quality lighting as shown by:
- i) City owned lighting conforming with, or committed to conforming with, the lighting code (if the latter, a published plan with a timeline for completion in no more than 5 years), AND;
 - ii) Municipal support of dark skies and good lighting as indicated through city publications, flyers, public service announcements, funding of lighting upgrades, etc.
- C) Broad Support for dark skies from a wide range of community organizations such as:
- i) Chamber of Commerce
 - ii) Local electrical utility
 - iii) Local IDA Chapter
 - iv) Lighting retailers
 - v) Home Owners Association
 - vi) Business Improvement Associations
 - vii) Others
- D) Community commitment to dark skies and education as shown by at least one of the following:

- i) Planning and execution of at least two community dark sky awareness events per year. This may be organized through a local astronomy club, municipality, school, etc. AND/OR;
 - ii) Inclusion of dark sky awareness documents (IDA brochures or Community-created brochures) with other Community informational documents for residents and visitors, AND/OR;
 - iii) Inclusion of dark sky education in Community schools and curriculum.
- E) Success in light pollution control. At least one of the following conditions must be demonstrated:
- i) Examples of a minimum of ten projects built under the lighting code, demonstrating effective application of the local lighting code, AND/OR;
 - ii) Alternative demonstration of success in light pollution control, to be discussed with IDA for compliance.
- F) A sky brightness measurement program must be maintained either by the Community or by another public or private organization (university, research center, IDA chapter, astronomy club, etc.) to follow the evolution of light pollution in the DSC.
- G) Designation is permanent, but is subject to regular review by IDA and possible revocation if minimum requirements are not maintained. More details may be found in the "Reassessment of DSC designation" section.
- H) Periodic checks, through the submission of the annual report due October 1st, will be preformed to ensure that minimum standards and objectives of the program are being upheld and adequate progress is being made. This report is a short 1 to 2-page synopsis of the Community's activities and initiatives throughout the last year. The Borrego Springs, CA report is included on the website for reference <http://darksky.org/idsp/communities/>.