



## *Walk in St Kilda Rd & Environs*

### **Planet Ark National Tree Day nature care event: Lighting**

**Saturday 31 August 2019, 2.30pm – 4.00pm**

**Venue: Prahran Mechanics Institute, 39 St Edmonds Rd, Prahran VIC**

Website event link: <https://treeday.planetark.org/sites/10023179>

#### **Panel Presentation on Lighting: changes and effects**

*This is an educational public event to consider issues and inspire and motivate the community to foster change to support nature and a healthy environment*

Consideration of the increasingly significant environmental and health and welfare impacts of lighting and light pollution on nature and life in cities. An expert panel will discuss the impact of lighting on trees, nature, parklands, observatories, animals and humans, and make recommendations.

There have been changes to the *Australian Lighting Standards* recently, including revisions for parklands, heritage reserves and observatories and mandatory requirements. AS/NZS 4282:2019, Control of the obtrusive effects of outdoor lighting\*.

- **Dr Barry Clark**, astronomer, Director of the Outdoor Lighting Improvement section, Astronomical Society of Victoria (ASV) and committee member of the Victorian Chapter of the International Dark Sky Association.

Dr Clark will discuss the Standard for control of the obtrusive effects of outdoor lighting, focusing on heritage parkland reserves such as Fawkner Park and Domain

Parklands/Melbourne's Domain Parklands and Memorial Precinct, and on observatories, such as Melbourne Observatory.

- **Dr Greg Moore, OAM**, formerly Principal of Burnley College, Melbourne, arboriculture expert, inaugural President of the International Society of Arboriculture, Australian Chapter, Chair of Treenet, and Chair of the National Trust of Australia's Significant Tree Register.

Dr Moore, just back from a conference in America, will present latest research findings about the impact of lighting on trees; the importance of light to trees, the role of visible light, the importance of light that humans cannot see, light pollution and urban trees, light at night and street trees.

- **Councillor Rohan Leppert**, City of Melbourne, Chair of the Arts, Culture and Heritage Portfolio, and Deputy Chair of the Transport Portfolio and the Planning Portfolio; Chair of the Planning Committee, Municipal Association of Victoria (MAV); represents the City of Melbourne on the Victorian Local Government Association.

Councillor Leppert will discuss changes council may implement, including lighting modifications and diminishment in parklands, heritage reserves and formally recognised sensitive locations such as Melbourne Observatory.

**Free Event** Opportunity for questions; Tea and coffee available

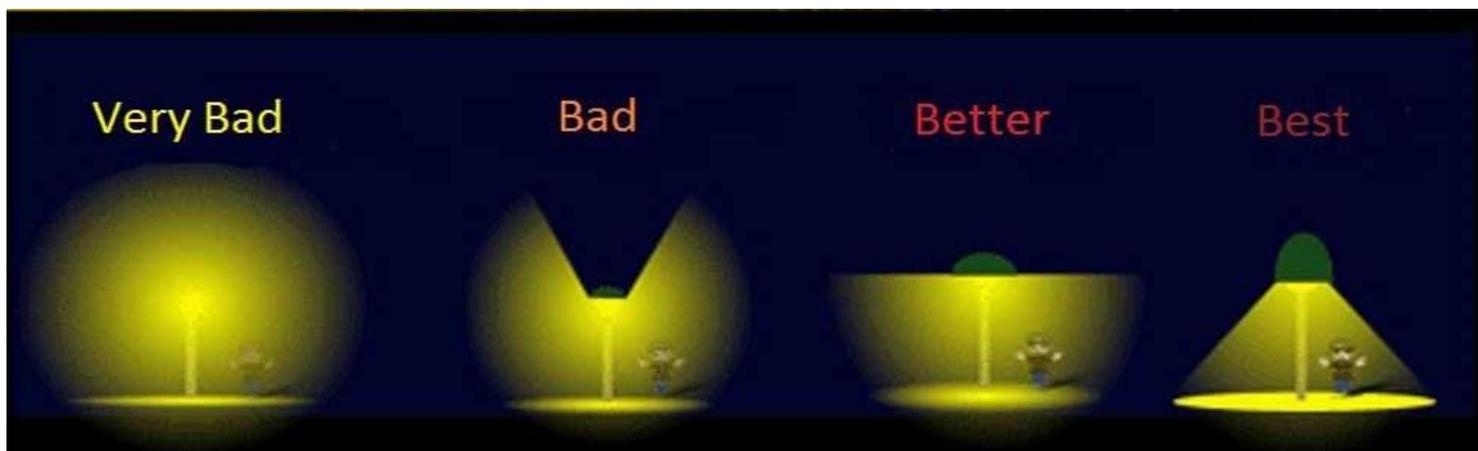
**Bookings:** <https://www.trybooking.com/BEKAU>

**Venue:** Prahran Mechanics Institute (PMI), 39 St Edmonds Road, Prahran VIC 3181  
<https://www.pmi.net.au/> Between Greville Street and High Street, Prahran. Trams in High Street, Commercial Road and Chapel Street.

**Organiser:** Bea McNicholas, Director, *Walk in St Kilda Road and Environs*, Planet Ark, National Tree Day



Melbourne Observatory 29 June 2018: circus lighting disrupts telescope and observatory function



[https://blogs-images.forbes.com\\_startswithabang\\_files\\_2019\\_04\\_light-fix-comp](https://blogs-images.forbes.com_startswithabang_files_2019_04_light-fix-comp)

## Resources:

\* The PMI copy of this new Australian Standard will be available for perusal at the event.

[https://infostore.saiglobal.com/en-au/Standards/AS-NZS-4282-2019-1141358\\_SAIG\\_AS\\_AS\\_2703687/](https://infostore.saiglobal.com/en-au/Standards/AS-NZS-4282-2019-1141358_SAIG_AS_AS_2703687/)  
<https://asv.org.au/light-pollution>

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“Light pollution, also known as photo pollution, is the presence of anthropogenic and artificial light in the night environment. It is exacerbated by excessive, misdirected or obtrusive uses of light, but even carefully used light fundamentally alters natural conditions. As a major side-effect of urbanization, it is blamed for compromising health, disrupting ecosystems and spoiling aesthetic environments.”

[https://en.wikipedia.org/wiki/Light\\_pollution](https://en.wikipedia.org/wiki/Light_pollution)

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Re Melbourne Observatory: “We suggest that the master plan should include a requirement to develop a lighting policy which considers relevant lighting standards for observatories, and addresses the provision of temporary lighting for events to minimise impacts on the Observatory.” *National Trust of Australia (Vic.)*, April 2019

<http://www.trustadvocate.org.au/melbourne-gardens-masterplan-2019-2039/>

<https://www.facebook.com/friendsofmelbourneobservatory/>

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“*This Is How To Bring Dark Skies Back In An Increasingly Developed World*”,  
Dr Ethan Siegel, Contributor, Forbes, Science, Apr 16, 2019.

Dr Siegel Ph.D. is an astrophysicist, author, and science communicator.

“Light pollution may be a worse problem than ever, but it doesn't have to be this way.”

<https://www.forbes.com/sites/startswithabang/2019/04/16/this-is-how-to-bring-dark-skies-back-in-an-increasingly-developed-world/#6db77fc406e9>

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“*Our nights are getting brighter, and Earth is paying the price*”, Nadia Drake, National Geographic, 3 April 2019. “Now, as the consequences of light pollution tiptoe from the shadows and into the spotlight, cities, regulatory agencies, and conservation groups are agitating for solutions.”

<https://www.nationalgeographic.com/science/2019/04/nights-are-getting-brighter-earth-paying-the-price-light-pollution-dark-skies/>



Park lighting: <https://www.lumens.com/led-garden-and-pathway-luminaire---77239-by-bega-BEGP85966.html>

Dark sky friendly lighting fixtures:

<https://www.darksky.org/our-work/lighting/lighting-for-citizens/lighting-basics/>

Dark-Sky Compliance: select fixtures that are specifically rated as dark-sky compliant. These designs are meant to minimize the amount of glow emitted by shielding glare and light trespass.

<https://www.lumens.com/landscape-lighting/>

Dark sky planning and compliance <https://www.planning.nsw.gov.au/Policy-and-Legislation/Environment-and-Heritage/Dark-Sky-Planning>

See video: <https://www.planning.nsw.gov.au/~ /media/Files/DPE/Guidelines/dark-sky-planning-guideline-2016-06.ashx>

See pdf: <https://www.planning.nsw.gov.au/- /media/Files/DPE/Guidelines/dark-sky-planning-guideline-2016-06.pdf>

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*Urban trees are stressed out because they can't get enough sleep*, By Lila MacLellan June 10, 2017 <https://qz.com/998854/urban-trees-are-stressed-out-because-they-cant-get-enough-sleep/>

German forester Peter Wohlleben, author of the best-selling book *The Hidden Life of Trees*: told a crowd at the Hay Festival of Literature in Wales last month, as the Times of London reported, **“Trees that live near street lights will die earlier.”** City street lights should be switched off at 1am, he suggests, rather than burning all night. Wohlleben cites research indicating that **“Sleep deprivation affects trees and people in much the same way: it is life threatening.”**

Scientists in Finland have demonstrated that trees have circadian rhythms, and that they do in fact “sleep” at night, in the sense that their leaves droop and then perk up again at daybreak. A study done at the University of Exeter also showed that artificial light causes trees to bud one week earlier in spring. Under a constant light source, trees and plants do not function as effectively; they may not know when to photosynthesize and what season it is as effectively as they would if they lived with periods of natural darkness. ... What's more, the bright lights affect the birds and insects that would normally live in a tree, which disturbs the tree's biome, or ecosystem.

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light pollution alters plant cycles. It throws their bud dormancy out of whack, along with their growth patterns and time when they drop their leaves and fruit.

<https://www.nationalgeographic.com/news/2016/06/light-pollution-early-spring-budbursts/>

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‘artificial light in the night-time environment is sufficiently bright to induce a physiological response in plants, affecting their phenology, growth form and resource allocation. The physiology, behaviour and ecology of herbivores and pollinators are also likely to be impacted by artificial light’.

*Ecological effects of artificial light at night on wild plants*, Jonathan Bennie, Thomas W. Davies, David Cruse, Kevin J. Gaston, *Journal of Ecology*, 01 February 2016

<https://doi.org/10.1111/1365-2745.12551>

<https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2745.12551>

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<https://www.abc.net.au/news/2018-03-26/how-light-pollution-is-damaging-our-world/9464026>

*The Dark Side of Light: How light pollution is damaging our world*, Christopher Dengate, 26/3/19

Earth's nights are getting brighter, and that has scientists concerned. It is an environmental nuisance that kills our wildlife, costs taxpayers and makes it increasingly difficult to see and study the stars. Little wonder then, that rising levels of light pollution have now sparked an international movement of scientists and environmental activists to campaign to make the world a darker place.

Kellie Pendoley is an environmental scientist who has published research on how light pollution is affecting the sea turtle population in Western Australia. Research published by La Trobe University in Melbourne found that light pollution was causing some wallabies to delay giving birth by a month, putting them out of sync with the food resources they need, and putting their

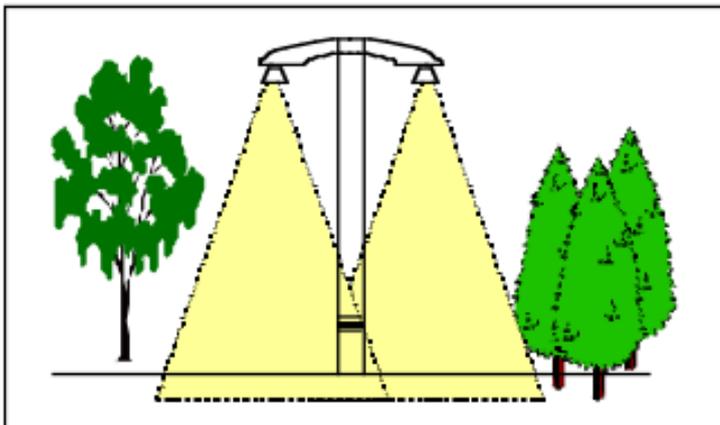
*Walk in St Kilda Rd & Environs*, Planet Ark NTD event – Lighting, 31 August 2019, B. McNicholas

joeyes at risk. The ecological effects of artificial light on plants is also beginning to be documented.

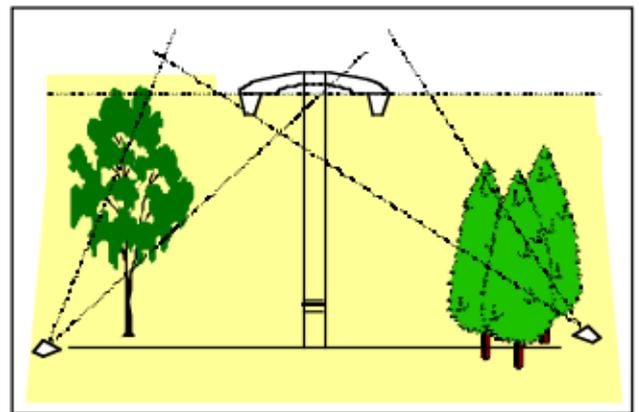
... He says part of the problem is that cities can make short-term savings by simply switching to LEDs. "That doesn't take advantage of the huge potential of LEDs to do lots of different things," Dr Kyba said. Things such as changing the colour, direction and intensity of lighting. He also says making a difference can be as simple as talking to the local government.

*Does Night Lighting Harm Trees?* William R. Chaney, Department of Forestry and Natural Resources, Purdue University, West Lafayette, IN 47907, USA, 2017; page 4  
<https://www.extension.purdue.edu/extmedia/FNR/FNR-FAQ-17.pdf>

“When artificial lighting is considered essential, mercury vapor, metal halide, or fluorescent lamps should be used in this order of preference. High-pressure sodium lamps should be avoided and even low-intensity incandescent is best excluded due to its high output of infrared and potential impact on some tree species. Fixtures shielded so that all of the light is directed toward the ground onto pedestrians and vehicular traffic and away from plants should be employed to reduce light pollution and harm to trees (Fig. 2). In all cases, uplighting and shining light over great horizontal distances should be avoided (Fig. 3). Lights should be turned off or dimmed during off-peak hours to avoid continuous lighting of trees, which has the greatest potential for upsetting normal growth patterns.”



**Figure 2. Best lighting design that with proper choice of lamp type will provide night light and minimize light pollution and effects on trees.**



**Figure 3. Poor lighting design using unshielded fixture and upward directed spots. Even with proper selection of lamp type to minimize direct effects on trees, wasteful night sky pollution occurs.**

The Royal Horticultural Society, UK, 2019: <https://www.rhs.org.uk/Advice/Profile?PID=513>

### **Garden Lighting: Minimising impact**

- Ask yourself whether you really need lighting
- Lessen the effects of lighting by **positioning lights as low as possible** and aiming lights responsibly
- **Turn garden lights off when not in use or use motion sensors or timers** for essential or security lighting
- Hoods can also **direct the light downwards** to reduce light pollution of the night sky
- Choose **low-intensity lighting and warmer hues** (warm white, yellow or amber): solar lighting is cheap, safe and emits a dull glow suitable for garden use
- Encourage **local councils to adopt switch-off schemes for street lighting: even part-night lighting** instead of full-night lighting has been found to reduce negative impact on the behaviour of moths