

Thursday, 18 October 2018

Att: Whitehaven Coal Limited
PO Box 600
Gunnedah NSW 2380

Assoc. Professor Chris Lidman
Director Siding Spring Observatory
Research School of Astronomy and
Astrophysics
Observatory Rd
Coonabarabran, NSW, 2357
Phone: +61 2 6125 0238
Fax: +61 2 6125 0233
Email: christopher.lidman@anu.edu.au
<http://rsaa.anu.edu.au>
www.anu.edu.au

CRICOS Provider No. 00120C

**RESPONSE TO THE VICKERY EXTENSION PROJECT
ENVIRONMENTAL IMPACT STATEMENT
BY SIDING SPRING OBSERVATORY, COONABARABRAN**

1 BACKGROUND

Siding Spring Observatory (SSO) is a major scientific facility operated by the Australian National University (ANU). Situated on a high ridge in the Warrumbungle Mountains, it hosts a range of telescopes operated both by ANU and other national and international agencies. The telescopes include: the 3.9m Anglo-Australian Telescope, the largest optical telescope in Australia; KMTNet, run by the Korean Astronomy and Space Science Institute, JAXA, run by the Japanese Aerospace Exploration Agency, and LCOGT, an American-led collaboration that has a network of facilities in both the Northern and Southern Hemispheres. The total infrastructure investment at Siding Spring is in excess of \$100 million at today's costs. Over the next decade, the Observatory anticipates that several new major telescopes will be based at SSO.

The Vickery Extension Project is sufficiently close to the Observatory to raise concerns about the incremental effects of light pollution from infrastructure lighting and mining operations. Upward sky-glow from unshielded light sources is the major threat to a pristine night sky, with the deleterious effect depending on the number, intensity and distance of the sources. In the case of the Vickery Extension Project the westernmost point of the project area is 115km from Siding Spring.

The preservation of a night sky unpolluted by artificial light is imperative to the future operation of Siding Spring Observatory, which continues to attract infrastructure investment from domestic and international scientific institutions, and with the recent opening of the Warrumbungle Dark Sky Park, an increasing focus on tourism. It is the protection of the night sky under NSW planning legislation that is one of the main reasons for Australia's success in attracting these ventures to the site. The legislation consists of the Environmental Planning and Assessment Amendment (Siding Spring Observatory) Regulation 2016 and its subsidiary documentation, in particular the associated Dark Sky Planning Guideline. These mandate the implementation of the provisions of the Guidelines in State Significant Developments on land within 200 kilometres of the observatory. The Vickery Extension Project is a State Significant Development and it lies within 200 km of the Observatory.

This submission is a response to the exhibition of the Vickery Coal's Environmental Impact Statement (EIS) made by the Siding Spring Director on behalf of the Australian National University and other stakeholders on the Siding Spring site.

2. CONCERNS FROM THE EIS

We acknowledge the effort by Whitehaven Coal in preparing the Environmental Impact Statement (EIS). The major concern of the Observatory relates to the amount of upward light spill generated by the project. The EIS notes that mining operations will occur 24 hour a day, 365 days a year, so the Observatory is concerned that there will be a deleterious effect on the quality of the night sky at SSO if effort is not spent on minimizing the upward light spill of lights used at the mine. The glow from existing open cut mining operations in the Gunnedah Basin are already easily visible with the naked eye from the Observatory.

The EIS discusses the impact of lighting on the Observatory in section 5.6 of Appendix L, and reports on strategies that will be used to mitigate upward light spill are discussed in section 6.3. The report refers to the Dark Sky Planning Guidelines (DP&E 2016). We commend Whitehaven Coal on being aware of these guidelines and for being prepared to adopt good lighting design principles. In particular, the EIS notes

- Use of warm colour light bulbs (3,500K)
- Use of asymmetric beams
- Avoiding over-lighting.

We would like Whitehaven Coal to consider additional measures that reduce upward light spill

- Use of Shielded fitting to avoid upward light spill
- Use energy efficient bulbs
- Avoid lighting highly reflective surfaces
- Switch off lights when not required.

As noted above, the glow from existing open cut mining operations in the Gunnedah Basin are already easily visible from the Observatory. It is the cumulative effect of all lighting sources, and not the light coming from a single mine that dictates how bright the night sky is above the Observatory. Any light emissions from the Vickery Extension Project would add to the existing emissions from other resource extraction projects, neighboring communities and regional cities, pushing the night sky background inexorably towards the critical threshold quoted in Section 3.3 of the *Dark Sky Planning Guideline*.

We request that Whitehaven Coal compute the impact of their project on the natural, moon free skyglow at 550nm at 30 degrees above the horizon in the direction of the mine from the Observatory.

3. THE WAY FORWARD

The SSO Dark Sky Committee recognises that the current realities of energy production in Australia dictate that ventures such as the Vickery Extension Project are necessary. The challenge is to carry out these activities while preserving the pristine environment of Siding Spring Observatory, so it can continue as a major contributor to the nation's scientific well-being, as it has done for almost 50 years, and enabling the development of the Warrumbungle Dark Sky Park, which has the potential to become a great tourism resource for the shires that border it. We are keen to continue working with Whitehaven Coal to minimise any detrimental impact on the Observatory and the Warrumbungle Dark Sky Park from the project.

A handwritten signature in black ink, appearing to read 'Chris Lidman', written in a cursive style.

Assoc. Professor Chris Lidman
Director, Siding Spring Observatory
Chair of the SSO Dark Sky Committee
The Australian National University