From: [redacted]
To: Cleve Hill Solar Park
Subject: CPRE Kent: additional information
Date: 29 November 2019 16:13:41
Attachments: [redacted]

Dear Cleve Hill Solar team,

In the light of the recent press coverage of the study into the catastrophic effect of artificial light at night on insect populations, we would like to highlight this and would ask that the attached paper is put before the inspectors.

While writing, we would also like to take the opportunity to endorse and support the comments on the safety hazards associated with lithium ion batteries in the documents submitted by Sir David Melville of the Faversham Society on 29th November.

Thank you

Dr Hilary Newport
Director
The Kent Branch of CPRE
[redacted]

The countryside charity Kent

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National Infrastructure Planning
Cleve Hill Solar Park
CPRE Kent (Reference 20022146)

Graveney Marshes – the effect of light pollution on aquatic and terrestrial insects

CPRE Kent has previously evidenced the negative effect solar panels are likely to have on the reproductive success of aquatic invertebrates creating and ecological trap through polarization. Here we cover the negative effect light pollution can have on terrestrial and aquatic insects.

It's no secret that insects are facing a catastrophic decline in numbers globally as reported extensively in the national press. This is due to a combination of human influenced factors, with light pollution being cited as one of the major drivers of insect decline. Recent reports have highlighted yet further evidence of light pollution's effect on insect decline.[1]

Alessandro *et al* (Oct 2017)[2] in a study on the effects of artificial light at night (ALAN) on aquatic and terrestrial invertebrates stated evidence indicates clearly that ALAN affects the movement, reproduction, physiology and behaviour of animals and that alterations in behaviour and movement have occurred in freshwater ecosystems where ALAN has disrupted the diel vertical migration (DVM) of plankton, arthropod drift and in turn fish predation. It is also well documented that ALAN attracts terrestrial and winged invertebrates with negative outcomes.

With ALAN negatively affecting these faunae, the result is likely to result in a disruption in the natural dynamics of these 'subsidy fluxes' leading to potentially damaging and extensive ecological consequences. It's logical that where invertebrates congregate so too do predators, potentially creating a feeding frenzy and subsequently a likely crash of invertebrate population in the ALAN affected area, which then has a knock-on effect on predators in the area.

Maja Grubisic *et al* (June 2017)[3] observed a reduced biomass (total number of organisms in a given area) in developing periphyton in areas affected by ALAN. Concluding that ALAN may negatively reduce resilience of periphyton communities subjected to frequent physical stresses such as light pollution. Maja Grubisic *et al* states that it is well known that light pollution affects aquatic microorganisms, insects and fish and that their study illustrates that ALAN also negatively impacts biomass and community composition of aquatic principal producers, the primary food supply for consumers.

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[1] Light pollution is a driver of insect declines
https://www.sciencedirect.com/science/article/abs/pii/S0006320719307797?via%3Dihub

[2] https://www.frontiersin.org/articles/10.3389/fenvs.2017.00061/full?&utm_source=Email_to_authors_&utm_medium=Email&utm_content=T1_11.5e1_author&utm_campaign=Email_publication&field=&journalName=Frontiers_in_Environmental_Science&id=307308ttp://

[3] https://aslopubs.onlinelibrary.wiley.com/doi/full/10.1002/lno.10607

There are many more papers, too many to quote here, that could be cited all finding that ALAN has a negative effect on invertebrates whether winged, terrestrial or aquatic and on their basal food supply. This inevitably causes a cascade effect upwards through the trophic level affecting amphibians, bats and raptors etc. Graveney Marshes is known and documented on dark sky maps[4] for being tranquil with no ALAN (with the possible exception of London Array). The introduction of any artificial light into this peaceful area is likely to have a catastrophic effect on the flora and fauna that thrive within this habitat.

CPRE Kent therefore, opposes any use of artificial light at night either during construction/ decommissioning and operation for security or otherwise.

Natural England's findings of Adverse Effect on Integrity (AEoI) on the SPA in regard to the marsh Harrier

CPRE Kent would like it to be noted on record that we categorically disagree with Natural England's findings that there will be no AEoI. This was advised by someone at NE who has not attended any of the examinations nor visited the site itself with no, or at best limited local knowledge of Graveney Marshes as far as we are aware. Several experts who did attend the examinations and do have local knowledge of Graveney Marshes, including our own, all agree that there will be AEoI on the SPA. Our expert goes further by concluding there will be a tangible risk of losing the marsh harrier from the site all together.

[4] https://www.nightblight.cpre.org.uk/maps/