November 2016

Moorebank Precinct West – Stage 2 Proposal
Application Number SSD 16_7709
Submission by Lorrae Lemond

I strongly object to the proposed Moorebank Intermodals for many reasons. I have particular concerns regarding traffic congestion, health, air pollution, noise pollution, negative job growth and negative impact to our flora and fauna. This submission is in relation to my concerns regarding light spill and the effect it will have on residents, flora and fauna. .

In Appendix T_VIA and Light Spill Report October 2016 it is mentioned in point 8.1 Introduction, that the external lighting at the Proposal site is provided by using **metal halide lamps** for the container yard and high pressure sodium (HPS) lamps for roadways and carparks. In "Guidelines for Good Exterior Lighting Plans – Dark Sky Society" www.darkskysociety.org/handouts/**Lighting**PlanGuidelines.pdf it is stated "Metal Halide (due to its higher costs, energy use, impact on the environment, and greater contribution to "sky glow") is discouraged". Why then are the proponents planning to use this type of light which will contribute to "sky glow" and impact the environment, therefore, result in health problems for humans as well as local flora and fauna?

Effects of artificial light at night on human health: A literature review of observational and experimental studies applied to exposure assessment.

Cho Y[1], Ryu SH[1], Lee BR[1], Kim KH[1], Lee E[2], Choi J[1,2].

It has frequently been reported that exposure to artificial light at night (ALAN) may cause negative health effects, such as breast cancer, circadian phase disruption and sleep disorders. Here, we reviewed the literature assessing the effects of human exposure to ALAN in order to list the health effects of various aspects of ALAN. Several electronic databases were searched for articles, published through August 2014, related to assessing the effects of exposure to ALAN on human health; these also included the details of experiments on such exposure. A total of 85 articles were included in the review. Several observational studies showed that outdoor ALAN levels are a risk factor for breast cancer and reported that indoor light intensity and individual lighting habits were relevant to this risk. Exposure to artificial bright light during the nighttime suppresses melatonin secretion, increases sleep onset latency (SOL) and increases alertness. Circadian misalignment caused by chronic ALAN exposure may have negative effects on the psychological, cardiovascular and/or metabolic functions. ALAN also causes circadian phase disruption, which increases with longer duration of exposure and with exposure later in the evening. It has also been reported that shorter wavelengths of light preferentially disturb melatonin secretion and cause circadian phase shifts, even if the light is not bright.

How Artificial Light Effects Mammals
http://www.latrobe.edu.au/news/articles/2015/release/how-artificial-light-effects-mammals

Light pollution in urban fringe areas is significantly affecting the breeding patterns of native Australian mammals, new La Trobe University research has found.

The groundbreaking research has revealed artificial night lighting has delayed the breeding season of Tammar Wallabies, which could severely reduce populations in years to come.

Researcher Kylie Robert, who is a senior lecturer in La Trobe's Department of Ecology, Environment and Evolution, said the findings could be applied to many species of nocturnal mammals.

"Light pollution is growing at a faster rate than any other human made disturbance and it's having an increasing impact on wildlife," Dr Robert said.

"Wildlife in urban areas and urban fringes are the most at risk. Studies have been conducted on birds before but to our knowledge, no study has ever examined the impacts of light pollution on the reproductive timing of wild mammals."

Mammals such as the wallaby are heavily dependent on light levels as seasonal indicators. Their breeding season is timed especially so offspring are born when food and water are in abundance for nursing mothers.

However, artificial night lighting affects the melatonin levels in mammals, which is their internal signal of when to reproduce.

More alarmingly, there is an increasing growth rate in the use of energy efficient LED lighting. Despite the energy-efficient benefits of LED's there is growing concern for their impacts on wildlife as they emit wavelengths in the blue spectra that further impact melatonin.

The delayed breeding season will see young born when there are reduced food sources, which would force malnourished mothers to abandon their offspring.

Dr Robert and her team coincidentally discovered the impacts while working on another project on Garden Island, WA. The island is home to a large Naval base, which is heavily lit during the night with artificial lighting.

The team observed that the wallabies living near the naval base entered their breeding season later than those wallabies living in natural bush land, free from artificial light.

"These results are very exciting because it means we can start mitigating the cause of the problem," Dr Robert said.

"We are currently working on developing wildlife friendly lighting which removes the blue wavelength light spectra in LED globes."

The article will be published in the Royal Society journal, *Proceedings of the Royal Society B*, on Wednesday 30 September.

Summary

Since it is believed that protected and highly endangered species such as swamp wallaby and the brush-tailed wallaby are present as well as other native species, this is of particular concern. These articles also show how light spill/artificial light affect human health. With projects such as the intermodal where there are already many health concerns associated with increase of pollution and noise 24 hours/7 days a week and artificial light/light spill only adds to these risks.

An intermodal slow close to residential areas will only mean disaster for the health of residents, flora and fauna.