From:	[redacted]
To:	Cleve Hill Solar Park
Subject:	Ref 20018862 - Objection Cleve Hill Solar Park - Human Health and Environmental Risks - oral presentation summary
Date:	31 July 2019 21:09:05

31st July 2019

Ref: 20018862

Cleve Hill Solar Park Development – Human Health and Environmental Risks – Objections – Summary of Oral Presentation on Monday, 22nd July 2019

Dear Madam or Sir,

Please find below a summary of my oral presentation given on Monday, 22nd July 2019.

I briefly referred to my previous objection submitted in relation to incorrect Agricultural Land Classification submitted by Cleve Hill Solar Park. However, over the course of the open meetings and issue specific meetings it became apparent to me that there may be a potential significant risk to human health due to the battery storage systems proposed for the development. I stated that very little or no concrete information has been provided to date by Cleve Hill Solar Park in their planning application.

I referred to technical studies which have demonstrated the release of toxic and harmful hydrogen fluoride gas from lithium batteries in the event of fire at high concentrations and the same technical study provided quantitative data of hydrogen fluoride release from a given unit of lithium batteries.

This data was extrapolated to a larger scale battery storage system and used a value of a 10,000kWh battery storage system. This value was based on additional research conducted, as very little or no information was provided in the planning application.

I explained that I had to derive a domestic exposure limit for hydrogen fluoride as there are currently no domestic exposure limits for hydrogen fluoride in the UK. I used the HSE work exposure limit, which is 1.8ppm, which is divided by a safety factor of 100, which was in accordance with Environment Agency procedures in such events. An exposure limit of 0.018ppm for domestic properties was derived.

I further explained that I used a dispersion model developed by the US Environment Protection Agency. This model was developed for fire fighters to estimate potential exposure during a case of large scale fires. The assumption was made that there is a moderate breeze prevalent and various scenarios run considering a 10,000kWh battery storage unit.

I explained that expected hydrogen fluoride concentrations exceed derived domestic exposure limits by a factor of 2,444 at a distance of 4.5km, a factor of 1,333 at a distance of 7.8km and a factor of 55 at a distance of 10km.

In my closing remark I stated that there is a foreseeable and significant human health risk in an event of fire of the proposed battery storage systems at the Cleve Hill Solar Park, endangering the population at Seasalter, Graveney, Faversham and Whitstable and have recommended that any such battery storage system should be at least 15km from any population.

Environmental Risk

I also intended to present further information about the potential environmental risks from the battery storage system, which I have detailed in my written submission. However, having had to explain a complex scenario and conceptual model in relation to human health risk I unfortunately ran out of time to give a oral presentation about environmental risks. The environmental risks from the battery storage systems are summarised below:

- Significant concentrations of copper and nickel, among other heavy metals, have been

determined in the metallic leachates from various types of lithium batteries according to various standard leachate procedures.

- Copper concentrations ranged between 54,100 mg/kg to 278,000mg/kg of battery material.
- Based on a 100,000kg battery storage system there is a potential to release 6,670kg of copper in a catastrophic event.
- The volume of water in a catastrophic flooding event of 0.5m of the entire area is estimated to be approximately 1,750,000m^3.
- The calculated potential concentrations of copper in the water would be approximately 3.81mg/L.
- Based on an Environmental Quality Standard of 0.001 mg/L for copper, the estimated concentration from a pollution event from the battery storage area would exceed by a factor of 3,810.

As stated above, environmental risks are further detailed in my written submission.

I hope the summary of my oral presentation on the 22/07/2019 meets your requirements.

If I may add, I would like to request an issue specific hearing in September 2019 in relation to the potential significant human health and environmental risk of the battery storage systems for the Cleve Hill Solar Park in order to discuss and explore this aspect in more detail.

Yours sincerely,

Bruno Erasin, BSc, PhD

[redacted]