

PHILIP HEARD: INTERESTED PARTY REFERENCE No. 20054420

COMMENTS TO THE PLANNING INSPECTORATE FOR DEADLINE 1 (WORD COUNT 1482)

These comments are in addition to those I submitted on 10 February 2025 (RR-322)

SOLAR PANEL CONTAMINATION

1. The Springwell Solar Farm site sits on an aquifer that provides potable water to thousands of people and livestock. Indeed, in the beck running through Scopwick, bubbles of ground water are regularly seen rising to the surface. Potable water, by definition, is water that is safe to drink and therefore must be free from harmful substances and micro-organisms that cause illness.

2. A Review of Health Hazards Associated with Rainwater Harvested from Green, Conventional and Photovoltaic Rooftops (International Journal of Environmental Science and Development Vol 12, No 10, October 2021) states that: "When photovoltaic modules degrade, cracks and delamination may occur in some of the modules. PV modules have the potential, therefore, of producing and leaching toxicants/metals into the rainwater harvested from such PV panels. At a certain degree of contamination, water may become non-potable since it can cause a problem upon consumption."

3. The Applicant does not say how many solar panels will be on the site. Nor does the Applicant give any estimation of the percentage that will be damaged/delaminated at any time. However it is reasonable to assume that once the panels are beyond a certain age (6+ years?), many hundreds will exhibit defects. There is no evidence to date of any investigation/modelling to estimate the number of cracked/delaminated panels across the time span of the development and the resulting leach of toxins into the aquifer. The resulting ppm of heavy metals etc (including lead, cadmium and selenium) needs to be assessed against the WHO permissible criteria. Given the potential impact, the investigation by the Applicant should be independently verified by the Environment Agency.

BESS DESIGN

4. In the Outline Battery Management Safety Plan (oBSMP) para 4.5.2 states that separation of key components would be in accordance with the NFCC guidance in place at the time. The current guidance is 6m separation. At the second sub-bullet of the same paragraph it states that separation will be a minimum of '3m which is in line with NFPA 855 guidance for a remote installation'. So separation is NOT in accordance with NFCC guidance. If the Springwell BESS is a remote location (which is very subjective) with closer battery containers, then the closer separation must surely require a larger amount of available water for firefighting given the greater risk of propagation of fire from one container to the next. Moss Landing, a remote location in California, burned for 15 days.

5. Para 4.8.3 of the oBSMP states that 'The proposed development would consider the option of using roof mounted deflagration panels.' "Consider", "outline", "illustrative", "for example"; is there anything this Applicant is prepared to confirm prior to any planning consent?

6. The Applicant states that battery testing will be in accordance with UL9540A (Test Method for Battery Energy Storage Systems). It is surprising that at this stage the actual battery type has not been confirmed. Can the Applicant confirm that testing will be independently verified and will the report, as a minimum, confirm:

- a. Batteries were randomly selected off the production line.
- b. The number of tests carried out (this should be a minimum of 4).
- c. All batteries behaved the same in all tests.
- d. The testing incorporated cell, module and rack levels.
- e. The characteristics of the composition of gasses generated.
- f. That the test showed that a fire involving one energy storage system (ESS) will not propagate to an adjacent unit using the proposed separation distance.
- g. That the representative cells, modules and units tested, including any planned fire suppression system, matched the intended installation configuration.
- h. That testing included evaluation of the design deflagration mitigation measures (if any) intended for the ESS cabinets.
- i. Which approved laboratory undertook the testing and who witnessed it.
- j. That the test report will be accompanied by a supplementary report prepared by a registered design professional with expertise in fire protection engineering that provides interpretation on the test data in relation to the installation requirements for the ESS.

7. Will the test and supplementary reports be publicly available?

BESS FIRE & SAFETY

8. To date, the Applicant has failed to state the size of the Springwell Battery Energy Storage System (BESS) although the assumption is it will be 400 MW capacity.

9. The planned location of the BESS is on a large aquifer that provides drinking water to many thousands of people and livestock. It has been widely documented that a BESS fire can only be fought by cooling surrounding batteries and installations whilst the fire itself burns out. Therefore, in the event of a BESS fire, copious amounts of water will be required for cooling; this water becomes highly toxic in the process. The consequences of highly toxic water entering the aquifer are totally unacceptable and cannot be allowed to happen. Hence, the design of the firewater run-off containment system and its capacity must be based on the worst case scenario not the most likely.

10. Evidence of BESS fires to date shows that it can take days for Lithium-Ion battery fires to burn out, with the likelihood of re-ignition high. A BESS fire in California burned for some 15 days; the BESS fire in Liverpool required almost 60 hours of constant cooling water. BESS fires are not as rare as developers suggest; there have been 4 in the UK/Ireland so far in 2025, this is approximately 2.5% of the current number of BESS.

11. At the recent hearings held by the Planning Inspectorate in Lincoln, it was concerning to note that the Applicant's Expert stated that cooling water only needed to be applied for 15 minute bursts. Which authority issued this instruction/guidance? NFCC Guidance does not say that; indeed, many individual Fire & Rescue Services state that continuous application of cooling water is required. Indeed, the Liverpool BESS fire, required continuous water cooling for some 59 hours.

12. The West Yorkshire Fire & Rescue Service, in a letter regarding planning for a proposed 200 MW BESS in Leeds (West Yorkshire Fire & Rescue 23/00450/FU dated 20 March 2023), recommended that there should be sufficient water available to fight a fire using 2 hoses each delivering 1900 litres/minute for 24 hours, a total of almost 5.5 million litres.

Only independent experts should decide what constitutes worst case but if, for example, if it was 10 days, then, based on this usage, the amount of water required to cool the fire would be 55 million litres. Just 5 days would require water some 27 million litres of water. It is assumed that the capacity of the Springwell BESS toxic firewater containment area matches the water available on site; a mere 452000 litres. Given the consequences of poisoning the aquifer this amount is woefully inadequate as any amount greater than the containment capacity will flow directly into the aquifer. Indeed, with the known risk factors, it is unacceptable that the Applicant has not included an independently verified risk assessment to consider the likelihood of contaminants entering the groundwater.

13. North Kesteven District Council have recently received a planning application (Ref 25/0491/FUL) for a 400MW BESS south of Green Man Road, Navenby, LN5 0AY. (It is assumed this BESS will feature in the cumulative assessment for Springwell.) In determining the capacity of the lagoon for holding toxic firewater run-off, the Applicant for this BESS has taken into account the possibility of a 1 in 2 year rainfall event coinciding with a fire and have increased the capacity by 895m³ in addition to calculated amount of firewater. Given that the Springwell Solar Farm Applicant states that they will employ best practice where possible, I assume they will strongly consider this approach.

14. In the oBSMP, para 5.6.7, the reuse of collected toxic water is considered an option. It states that this follows the management plan process as detailed in "Protocol for the disposal of contaminated water and associated wastes at incidents 2018". The Protocol does not give an option for reuse of toxic waste so could the Applicant please state the authority for using collected firewater. Indeed, the Liverpool BESS fire resulted in firewater runoff containing many toxins including hydrofluoric acid; if reused, this would be potentially dangerous to emergency personnel and highly corrosive to equipment.

15. Given the highly toxic nature of firewater used in a BESS fire there appears to be very little detail from the Applicant regarding where and how it will be disposed of safely.

16. As with all fire and rescue services the response of Lincolnshire Fire and Rescue will depend upon resources available at the time. The Service has 48 station-based fire engines covering an area of 5921 km². 23 appliances attended the BESS fire in East Tilbury in Essex in February 2025.