From: [redacted]
To: Stonestreet Green Solar Project
Cc: [redacted]
Subject: FW: National Infrastructure Project EN010135, StoneStreet Green Solar, Aldington, Ashford
Date: 14 May 2025 17:47:30
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Good afternoon,

We have reviewed the questions directed to Kent Fire and Rescue Service (KFRS) and can provide the following responses.

Q8.0.1 The Applicant or Kent Fire Service - Domestic battery storage versus commercial battery storage
Is there a difference between the two storage systems given the risk of fire safety highlighted in Dr Patricia Bromley's rep {AS-023] at Deadline 3?

Response

There are clear and significant differences between domestic and commercial battery energy storage systems (BESS), particularly in terms of scale, installation standards, risk profile, and fire safety implications.

1. Size and Capacity

Commercial BESS systems, including grid-scale and microgrid applications, typically range from 200 kW to over 1 MW per unit, with installations designed to serve large loads or support grid stability.

Domestic BESS, by contrast, are considerably smaller, generally ranging between 2.6 kWh and 5.2 kWh (e.g., GivEnergy systems). These are designed to support household energy needs, typically storing excess solar generation for evening use.

2. Technology and Chemistry Variability

The battery technology and chemistry (e.g., lithium-ion, LFP, NMC) can vary widely across both sectors, but domestic systems may use a broader range of suppliers and configurations, potentially without rigorous integration or oversight.

Commercial systems are often deployed by specialist providers with comprehensive engineering assessments, whereas domestic installations may not always benefit from the same level of technical scrutiny.

3. Installation Standards and Regulatory Oversight

Commercial systems are subject to strict planning, fire safety, and electrical standards, with installation typically in dedicated, isolated enclosures with fire suppression and monitoring systems in place.

Domestic installations have only recently been subject to more formal regulation (e.g., PAS 63100). Historically, many have been installed without professional oversight, including in unsuitable areas such as unventilated loft spaces. This creates potential

fire risks due to poor heat dissipation or gas build-up.

4. Fire Safety Risks

Despite their smaller capacity, domestic BESS can pose a higher relative risk to life, particularly when installed inside occupied buildings. The risk is exacerbated by improper installation, insufficient ventilation, and nearby combustible materials

Commercial systems, while larger, are typically located away from occupied buildings, in engineered environments with fire prevention and mitigation measures. As such, the absolute risk may be higher due to scale, but the risk to people is often lower due to controlled siting and management.

There is a substantial difference between domestic and commercial battery storage systems in terms of fire safety risk. While commercial systems involve larger energy capacities, their design, placement, and compliance with stringent safety standards typically reduce the risk to individuals. Domestic systems, despite lower energy content, may present a proportionally greater risk to life and property due to installation location, oversight variability, and proximity to people.

Q8.0.2 Fire Authority or The Applicant - Water capacity
How would a local or national drought impact on water supply and fire safety?

Response

To facilitate the effective management of water supply during times of drought, Water Authorities have adopted a four-phase strategy which reflects the seriousness of the drought condition. For the purposes of continuity, KFRS applies a similar approach, which aligns itself with the activity levels of the respective Water Authority, as follows:

Phase 1 - Drought Awareness Following a prolonged or predicted period of abnormally low rainfall, water undertakers should advise KFRS of potential drought through the regular meeting forums held between them and the Water Service department. This trigger helps KFRS create a state of readiness in preparation for actions required, should drought be implemented within Kent.

Phase 2 - Voluntary Demand Reductions This is the point that both KFRS and the five water companies within Kent look to increase activity in terms of creating public awareness of the situation and undertaking measures that ensure KFRS contribute toward preserving the water supply, e.g. reduce window cleaning on stations. This will also help to ensure the reputation of KFRS is maintained. Water undertakers will liaise with the Environment Agency and neighbouring authorities.

Phase 3 - Compulsory Restrictions on Use This is when water companies place compulsory restrictions on how the public and businesses use water. This does not impact on our ability to use water at an emergency but would have an impact on the use of water for training and exercising.

Phase 4 - Full Drought Conditions (including commercial) Water levels in this drought phase would be at an extremely low and serious position. Drought Permits would be introduced to provide some support for managing the water supply.

Phase 5 - May result in the isolation of the water network and the impact upon the availability of fire hydrant supplies. This will be communicated to KFRS Fire Control

through the relevant water company. Additional response strategies can be located within the service's Business Continuity Severe Weather Response Plan.

Q8.0.4 Kent Fire and Rescue Service Water Capacity
Katie Lam MP at OFH2 and in her representation [REP1-129] and Dr Bromley suggests that the water supply in the event of an outbreak of fire may be insufficient based on the recent domestic car battery fire in Aldington. The Applicant reaffirmed that there was a sufficient water supply to deal with any incidents of fire on the Proposed site. Can the Fire Authority confirm that they still maintain that adequate water supplies to the proposed site are available in the event of an outbreak of fire. Please could the Fire Authority comment on this please?

Response

Water supplies will depend on the size of the installation. As a minimum it is recommended that hydrant supplies for boundary cooling purposes should be located close to BESS containers but not less than 10 metres, so to provide safe access in the event of fire and should be capable of delivering no less than 1,900 litres per minute for at least 2 hours.

The provision of water tanks is the preferred option due to typically low water main flow rates across the county. However, we would recommend where possible that these tanks are re-filled via a mains water supply. In addition, water tanks and/or on-site hydrant positions should be position so that crews and an appliance would not have to pass a container (in thermal runaway) to access the water.

The applicant has confirmed – "Each BESS Compound will include a hydrant that is connected to an on-site water tank capable of delivering 1,900L per minute for at least two hours as required by NFCC Guidance. The tanks will each be located at least 50m from a BESS Compound".

The applicant has confirmed – "Each BESS Compound will be located within a bunded area lined with a protective membrane to limit any environmental impact of pollutants as a result of water run off".

Q8.0.5 Kent Fire and Rescue Service Optimal Fire Fighting Layout
Could the design and location of the battery storage systems and for that matter the overall layout of the development be improved to make firefighting easier in the event of an outbreak of fire?

Response

Although each BESS is unique a standard minimum distance of 25 metres is recommended between BESS and occupied buildings.

Access to the site should typically meet the functional requirements of the Building Regulations Requirement B5 as detailed in Approved Document B Volume 2: Buildings other than dwellings. Additionally, the recommendations within the National Fire Chiefs Council (NFCC) grid scale guidance document requires two access points into a BESS site due to the potential of single access routes being blocked by smoke and toxic fumes as a result of prevailing winds (and potentially other blockages). In this case, attending crews would have to travel through clouds of smoke and toxic fumes to get access to the secondary access.

It is recommended that a minimum spacing between units of 6 metres is suggested unless suitable design features are introduced to reduce spacing supported by detailed technical analysis.

The applicant has confirmed – **"Spacing of BESS Units** - The spacing between BESS Units (excluding side HVAC units) is 6m, in line with the NFCC Guidance and exceeding NFPA 855 requirements. However, a key feature of the design is that the BESS Units are not located in one location but are instead distributed across the 192ha site, typically in groups of four with a maximum grouping of eight BESS Units in one area. This significantly reduces the risk of a fire incident involving multiple BESS Units. BESS Units will be single-stacked, and each compound will be at least 25m from the next nearest BESS Compound. The nearest residential receptor to any BESS Compound will be 150m, c. 6x the NFCC guidance recommendation and we have not included BESS Units in fields where this distance cannot be achieved". The applicant has confirmed – "Access roads will be provided from the public highway to each of the BESS Compound locations, with an approach to each BESS Compound possible from two directions. The access roads will be at least 3.7m wide and will be a grass-paving approach which has been used elsewhere in the UK for fire service access and has a carrying load in compliance with Building Regulations and the NFCC Guidance".

Q8.0.6 Kent Fire and Rescue Service Liverpool Battery Storage Fire
In terms of the recent battery storage fire incident on Merseyside, are there any revised guidelines or advice emanating from the review of the case?

Response

The Liverpool, Carnegie Road BESS fire Sept 2020. The Merseyside FRS incident report highlighted lots of learning points through recommendations which, has undoubtedly shaped the subsequent NFCC guidance issued in 2023. BESS-Fire-Significant-Incident-Report.pdf Page 28. Numerous recommendations to improve fire fighter safety and reduce risks to as low as practicable.

Kind regards
[redacted]

[redacted] **| Group Manager Building Safety | Kent Fire and Rescue Service**
Building Safety, Canterbury Fire Station, Upper Bridge Street, Canterbury, CT1 2NH
T: [redacted] | W: www.kent.fire-uk.org