



SITE SPECIFIC RISK ENGAGEMENT DOCUMENT

BURSTEAD SOLAR FARM AND BATTERY STORAGE 'FREE GO'
LAND SOUTH AND EAST OF GREAT BURSTEAD, BILLERICAY, ESSEX

NOVEMBER 2023



Site Specific Risk Engagement Document

Battery Energy Storage Systems

Burstead Solar Farm and Battery Storage 'Free Go'
Land South and East of Great Burstead, Billericay,
Essex

[NOVEMBER 2023]

Crest Consultancy

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Purpose

This document is prepared to support a 'Free Go' planning application made to Basildon Council and Rochford District Council. It will provide some background references and source material links before detailing the circumstances and approach taken at the Burstead Solar Farm. This will include the plans and outline control measures for the Battery Energy Storage System. This document will form the basis for the creation of an Emergency Response Plan or Detailed Battery Safety Management Plan, via Condition, once planning permission has been granted.

Background

Battery Energy Storage Systems (BESS) are an important contributor to a greener energy future and the protection of our climate. Enso Energy are committed to working with communities, landowners and all stakeholders, in this instance the Essex Fire and Rescue Service (Essex FRS), to deliver schemes that are supportive of their local environments.

Government's commitment to developing a flexible energy grid and their encouragement of battery storage is clear (see: Prime Minister's Ten Point Plan for a Green Industrial Revolution (November 2020), Energy White Paper (December 2020), Transitioning to a net zero energy system (July 2021) report and British Energy Security Strategy (April 2022). They are further supported by the Future Energy Scenarios as National Grid are promoting their use on the system. These all highlight there is no prohibition on new battery storage development on any safety ground within the UK, indeed, such schemes are actively encouraged by Government and National Grid.

Enso Energy recognise that the storage of electricity can present a manageable risk and they are committed to that risk being 'as low as is reasonably practical' (ALARP).

In 2022 the National Fire Chief's Council (NFCC) produced guidance for FRS on grid scale BESS planning¹. Enso Energy are committed to an ongoing, open and transparent relationship with local FRS where their developments are proposed. This NFCC guidance was, in August 2023, included within an update to the online Planning Practice Guidance (PPG) within the 'renewable and low carbon' topic.

¹ <https://www.ukfrs.com/sites/default/files/2023-04/Grid%20Scale%20Battery%20Energy%20Storage%20System%20planning%20Guidance%20for%20FRS.pdf>

The PPG addresses fire safety by encouraging Applicants and Local Planning Authorities to consult with their local fire and rescue service. That has been done here, with Essex FRS and is demonstrated within this document.

The PPG “encourages” applicants and local planning authorities “to consider” the guidance produced by the NFCC. It is important to keep in mind the key qualifier at the start of the NFCC guidance, that it is only guidance, that every BESS installation will be different, that fire and rescue services should make a final fact-specific decision. The guidelines are only a “starting point” and cannot cover every eventuality or design, and that the “ultimate responsibility for the safe design and running” of a BESS rests with the operator ². There can be and are good and justified reasons to not follow the guidance.

Specifically, it is detailed within the PPG that:

“What can applicants seeking planning permission for battery energy storage systems do to ensure they consider any potential risks?”

Where planning permission is being sought for development of battery energy storage systems of 1 MWh or over, and excluding where battery energy storage systems are associated with a residential dwelling, applicants are encouraged to engage with the relevant local fire and rescue service before submitting an application to the local planning authority. This is so matters relating to the siting and location of battery energy storage systems, in particular in the event of an incident, prevention of the impact of thermal runaway, and emergency services access can be considered before an application is made.

Applicants are also encouraged to consider guidance produced by the National Fire Chiefs Council when preparing the application.

The location of such sites are of particular interest to fire and rescue services; who will seek to obtain details of the design, and firefighting access and facilities at these sites in their register of site specific risks that they maintain for the purposes of Section 7 of the Fire and Rescue Services Act 2004.

Paragraph: 034 Reference ID: 5-034-20230814”

“What can local planning authorities do to ensure they consider any potential risks when determining the planning application?”

² NFCC guidance p2/10

When planning applications for the development of battery energy storage systems of 1 MWh or over, and excluding where battery energy storage systems are associated with a residential dwelling, are submitted to a local planning authority, the local planning authority are encouraged to consult with their local fire and rescue service as part of the formal period of public consultation prior to deciding the planning application. This is to ensure that the fire and rescue service are given the opportunity to provide their views on the application to identify the potential mitigations which could be put in place in the event of an incident, and so these views can be taken into account when determining the application.

Local planning authorities are also encouraged to consider guidance produced by the National Fire Chiefs Council when determining the application.

Paragraph: 035 Reference ID: 5-035-20230814”

The NFCC guidance recognises the increasing number of these battery schemes and that the designs and approaches are continuing to develop with learning incorporated. The guidance stresses that it is a “starting point and cannot cover every eventuality or type of design” in setting our principles to be considered on a site specific basis.

This Site Specific Risk Engagement Document demonstrates how the Applicant has complied with the PPG requirement and specifically details the engagement undertaken with Essex FRS. The fire service will be considering their core legislative requirements, in addition to the NFCC BESS guidance:

- The Fire and Rescue Services Act 2004 (sets out the responsibilities of Fire and Rescue Authorities (FRAs)).
- The Building Safety Act 2022
- Regulatory Reform (Fire Safety) Order 2005
- Fire Safety Act 2021 and Fire Safety Regulations (England) 2022
- Civil Contingencies Act 2004

In addition to the fire specific legislation the relevant content from the Essex Design Guidance on BESS has been reviewed. This document and the overall approach taken at Burstead Solar Farm is consistent with the suggestion from: <https://www.essexdesignguide.co.uk/supplementary-guidance/solar-farm-guiding-principles/battery-energy-storage-systems-and-fire-safety/> (2022) which states:

“A management plan should demonstrate how the [BESS] facility will be constructed and operated safely, in consultation with Essex Fire and Rescue Service where appropriate.”³

This Site Specific Risk Engagement Document forms the basis on which such a “Management Plan” can be prepared and sets the framework for continued consultation with Essex FRS.

Methodology and Consultation

This site specific risk plans will be used to continue engagement with Essex FRS during the determination of planning applications and has formed the basis of the pre-application discussions held prior to submission with Essex FRS fire safety officer Dave Barnard and Essex FRS Future Infrastructure Risk Team. This document and the discussions held with Essex FRS will then be converted into a Risk Management Plan for the site once planning has been approved. An Emergency Response Plan or Detailed Battery Safety Management Plan, via Condition, would be prepared. There is a need for the two documents as more information, for instance, on the Battery Management System, will not be available at the planning application stage but will be developed as the proposals progress.

Enso Energy will ensure that the risk associated with the Burstead Solar Farm BESS site is reduced to, ‘as low as is reasonably practicable’ (ALARP). The Plan, Do, Check, Act ⁴ approach is promoted by the Health and Safety Executive (HSE) as a way for business to deal with risk. It is ideally suited to this arrangement based on the multiple contacts and stages of engagement required.

Plan:

- Engage with FRS at an early stage to ensure that their thoughts and feedback can be considered. At Burstead Solar Farm Crest Consultancy initially engaged with Dave Barnard at Essex FRS on 13/11/2023;
- Consider all available guidance and legislation in the preparation for a planning application, including the PPG;
- Recognise the need to involve both operational firefighting officers and fire safety officers in the early engagement;
- Establish positive relationships to support the exchange of information and the achievement of managing any risk to ALARP;

³ <https://www.essexdesignguide.co.uk/supplementary-guidance/solar-farm-guiding-principles/battery-energy-storage-systems-and-fire-safety/>

⁴ <https://www.hse.gov.uk/managing/introduction/how-to-manage.htm>

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- Identify joint priorities for the reduction of risk;
 - Consider site specific conditions, what this means for risk and control measures; and
 - Look at the various stages and consider updates, site visits and the support of FRS awareness to support the reduction of risk to ALARP.

Do:

- Use the NFCC guidance to engage with Essex FRS on site specific safety aspects and the implementation of control measures;
- Provide site specific information, via this document, that increases Essex FRS awareness and understanding of site plans, and provides an ability for them to influence site planning and enables them to contribute to requests from the planning authorities in a more meaningful way;
- Engage with the FRS at an operational level as well as engaging their Fire Protection departments to support the reduction of risk for responding operational staff;
- Once planning permission has been granted, to use this Site Specific Risk Engagement Document to prepare a Risk Management Plan and engage further with the FRS to support them in creating an Emergency Response Plan; and
- Engage with FRS to support them in discharging their responsibilities within the Fire and Rescue Service Act (2004) Section 7 (2) (d) obtaining information to support firefighting. This could include site visits and the exchange of information and knowledge directly to firefighting staff, upon request.

Check:

- We will monitor the safety systems in place for their effectiveness;
- We will investigate any activations of monitoring, ventilation or suppression systems;
- We will collate this across all sites to look for any trend information and to ensure that learning is universal and not isolated to site specific incidents;
- We will monitor and engage with industry and governmental updates, guidance and legislation to support our ALARP objective;
- We will initiate testing regimes for any safety equipment provided; and
- We will complete annual reviews of the Risk Management Plan and engage Essex FRS in that review.

Act:

- We will capture this process and approach within our Health and Safety Management Framework;
- We will produce action plans where annual reviews of Risk Management Plans identify either remedial or continuous improvement opportunities; and
- The annual review of the Risk Management Plan will act as the catalyst for the cyclical flow of the Plan, Do, Check, Act process. In addition to the annual review safety events, near misses, the release of research or legislative changes and national or

international events would result in the activation of the Check aspect of the model, leading to a cyclical flow review.

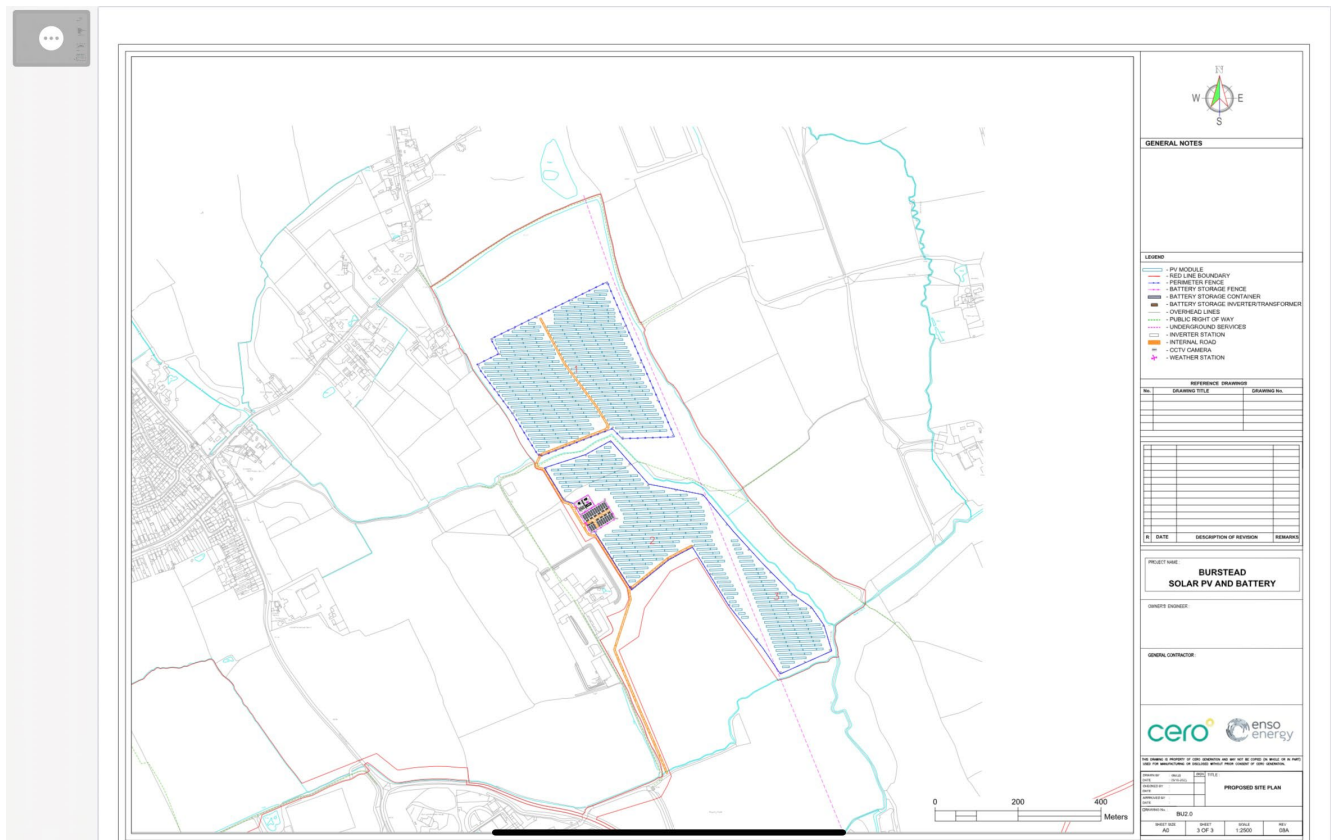
The Applicant has engaged with Essex FRS safety department and their Future Infrastructure Risk Team. A record of initial contact and correspondence is included within Appendix 2.

Site Specific Information

Burstead Solar Farm and Battery Storage System on Land South and East of Great Burstead, Billericay, Essex
(November 2023)

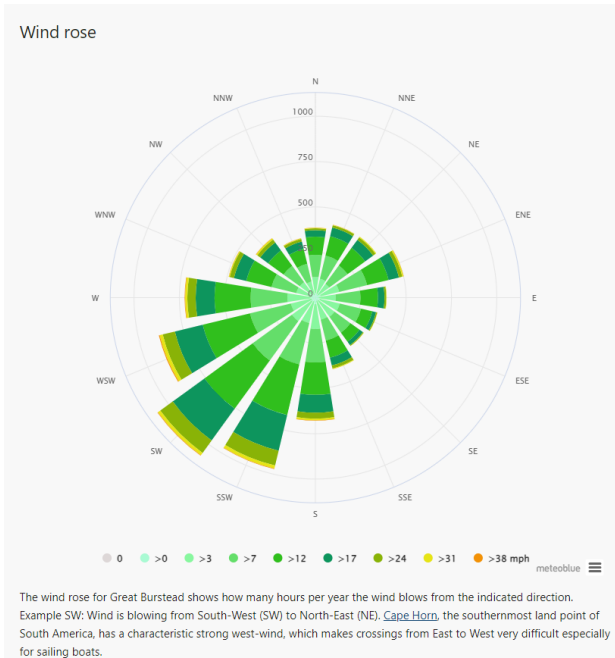
The proposal is for the construction, operation, maintenance and decommissioning of a ground mounted solar farm which will generate electricity for distribution to the national grid. Provision is also made for a battery storage facility which would be utilised to reinforce the power generation of the solar farm. All associated plant and equipment, together with associated development (such as CCTV and fencing) is included within the proposals. The proposal would operate for a time limited period of up to 40 years. The location of and elevations for the battery storage facility are shown on the accompanying plans. As noted above the NFCC guidance encourages that a site specific approach is taken to each BESS.

1) Proposed Site Plan (Drawing BU7.0 Rev 08A)
Diagram 1



- 1.1) Access: Burstead has one access point, as can be seen in the proposed site layout diagram 1 above. The access is off Granites Chase. The site was originally proposed as a BESS site prior to the NFCC guidance being published in the previously refused planning applications. Enso Energy have explored the provision of additional access points and it is not possible for this site. In mitigation for single access the following points are made:
- The NFCC guidance document states that “should” include at least two separate access points to account for opposite wind direction. See the point below and diagram three for confirmation that the prevailing wind direction does not directly impact the single access point. The principle of at least two separate access points is accepted but it is not possible for this site.
 - The prevailing wind direction does not directly compromise the access point (see Diagram 2)
 - There is no life risk associated with the site so a defensive approach can be taken by the fire service

Diagram 2



- 1.2) **Water supplies:** Water supplies will be provided by the provision of water tanks. Details of the water supply will be provided within an Emergency Response Plan or Detailed Battery Safety Management Plan, via Condition, on the grant of planning permission. The size and capability of the tanks will provide a minimum of 1900l of water per minute for at least two hours. Design and installation will ensure transferability of the water between the tanks. Firefighting equipment of hose lines and a ground monitor will be provided in close proximity to the tanks for use by firefighting staff. The provision of more than one tank provides contingency if, for any reason, water could not be obtained for one of the tanks. The provision of at least two tanks is not the most financially efficient approach but it is being proposed to support firefighter safety.
- 1.3) As can be seen in Diagram 3 the proposed site for the Burstead BESS is some distance from built up areas. Any event will not impact large numbers of the community, any major infrastructure sites or any major transport routes.

Diagram 3



2) Battery Safety Management Plan: It is not possible to supply full details during the planning application stage. The details will be provided, in detailed design, procurement and pre-construction discussions, after a successful planning application and this document will be updated. What can be confirmed at this stage is that any Enso Energy BESS site will include, in a layered protection approach:

- Detection system
- Ventilation system
- Suppression systems
- Deflagrating panels

The information on battery chemistry and battery form will be included post planning when this document is updated into a Risk Management Plan. A planning condition will be included on submission which will result in the formal re-engagement of the planning authority and the fire service, within the planning regulatory framework, prior to development starting. The plans for Burstead are based on established lithium-ion technology and will not be an experimental approach.

2.1) Burstead will consist of 24 BESS units. The units will be of a shipping container design, 12.2m (L) by 2.4m (W) and 2m high. The Burstead site was originally proposed prior to the NFCC guidance being released. The units will not be 6m apart and the following points should be considered:

- The spacing of the containers will be in line with National Fire Protection Association standard NFPA855 which covers the installation of stationary energy storage systems
- Shipping containers are constructed of fire resistant material
- The Battery Safety Management Plan will prevent to a ALARP thermal runaway from occurring

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- 3) Post planning activity: After the grant of planning permission Enso Energy commit to the following activities:
- The development of this document into a Risk Management Plan
 - The provision of detailed information through a Battery Safety Management Plan via Condition
 - Direct engagement with Operational Responders from Essex FRS
 - On-going engagement and communication including, where requested, site visits for the purposes of increased knowledge and understanding for emergency responders
 - The provision of comprehensive on-site information to support the safe management of any emergency event
 - The holistic management of risk at the site through the use of the Plan, Do, Check, Act approach within an overall health and safety framework

It is expected that Basildon Council and Rochford District Council will seek consultation views of Essex FRS as part of the 'Free Go' planning applications as set out in the PPG.

Appendix 1

Crest consultancy

Enso Energy have commissioned Crest Consultancy based on their Fire Sector knowledge and expertise. Gabby Heycock was an Area Manager with Oxfordshire Fire and Rescue Service, working at a strategic level for eleven years. During that period he was responsible for the Fire Protection department and also the creation of their current Community Risk Management Plan which involves the identification of risk and the allocation of resources to reduce the identified risks. Gabby also worked at a national level as part of the NFCC working group on Community Risk Management Planning.

Appendix 2

Initial record of contact

Date	Method of contact	Officer	Purpose
12, 14, 16, 22, 23 (Oct)	Email	Jessica Head, Fire Safety Officer	Introduction, identification of case officer
13/11/23	Phone call	Dave Barnard, Fire Safety Officer	Discussions about the sites, the NFCC guidance and the consultation approach
16/11/23	Email	Future Infrastructure Risk Team	Initial Q&A over scope and approach
Will continue during consideration of 'Free Go' application.			