

# Cottam Solar Project

## Environmental Statement

### Appendix 17.4: BESS Fire Technical Note

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**Subject:** Cottam Solar Project, Environmental Statement Chapter 17 Air Quality. Appendix 17.4

The Scheme Comprises the Installation of Solar Photovoltaic (PV) Generating Panels and on-site Energy Storage Facilities Across Proposed Sites in Lincolnshire and Nottinghamshire Together with Grid Connection Infrastructure. The Proposed Development Would Allow for the Generation, Storage and Export of up to around 600 Megawatts (MW) Renewable Energy

Technical Note: Air Quality Assessment on Emission Impact from the Battery Energy Storage Systems (BESS) Fire

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Building upon the assessment undertaken by Tetra Tech to determine the potential impact of a solar panel fire incident at the proposed development, this technical note further considers the potential impact of emissions from a Battery Energy Storage Systems (BESS) fire incident.

## 1. A Summary of the Solar Panel Fire Accident Impact Assessment

Tetra Tech has undertaken a solar panel fire accident impact assessment contained within the Cottam ES Chapter 17 Air Quality [EN010133/APP/C6.2.17].

The solar panel fire accident impact assessment report stated the following:

*“17.7.14 Effect of a fire incident on the surrounding residents and public has been assessed using the ‘air quality category’ which is classified from ‘good’, ‘moderate’, ‘unhealthy’, ‘very unhealthy’ to ‘hazardous’. Each category corresponds to a different level of health concern. The air quality category in this assessment is classified using the values of the fire-generated particulate matter (equivalent to PM2.5) concentrations in air. Furthermore, air quality category zones have been determined according to the air quality category to make it easy for public/site manager/fire safety representative to quickly take appropriate actions in case of a fire.*

*Four air quality category zones have been identified as below:*

- **Hazardous Zone** – within 10 m from a fire;
- **Unhealthy Zone** – 11 to 20 m from a fire;
- **Moderate/Unhealthy for Sensitive Groups Zone** – 21 to 200 m from a fire; and
- **Good air quality Zone** – more than 200 m from a fire.

*As a fire could occur at any location within the development during the site construction, operational and decommissioning phases, generic receptor locations have been used in the assessment. In case*



*of a fire, the site manager/fire safety representative will need to assess the fire locations, wind directions and surrounding receptors. The site manager/fire safety representative will take appropriate actions accordingly.*

*The actions to be taken include (1) to inform any potential affected residents within the zones and to advise public about health effects of smoke, related symptoms, and ways to reduce exposure; (2) to cancel outdoor events; and/or (3) to move affected residents to a cleaner air location.”*

These categories and actions, along with National Fire Chiefs Council (NFCC) guidance detailed in the next section, will be used to inform this technical note, which presents the findings for a specific BESS fire accident impact on surrounding sensitive residential receptors.

## **2. National Operational Guidance: Control Measure – Cordon Control: Hazardous Materials**

The ‘National Operational Guidance: Control measure – Cordon controls: Hazardous materials’ guidance is developed and maintained by the National Fire Chiefs Council (NFCC). The guidance provides emergency action codes in case of a fire which releases gases, vapours or dust.

The guidance can be downloaded on: <https://www.ukfrs.com/guidance/search/cordon-controls-hazardous-materials>.

The emergency action codes states the following:

*“The Dangerous Goods Emergency Action Code List (EAC) gives the following information on public safety hazards. An ‘E’ following the first two characters of an EAC indicates that there may be a public safety hazard outside the immediate area of the incident, and that the following actions should be considered by first responders:*

- People should be told to stay indoors, with all doors and windows closed, preferably in upstairs rooms facing away from the incident. They should eliminate all ignition sources and stop any ventilation*
- Effects may spread beyond the immediate vicinity. All non-essential personnel should be instructed to move at least 250m away from the incident*
- Police and fire and rescue service incident commanders should consult with each other and with a product expert or a source of product expertise*
- The possible need for subsequent public evacuation should be considered, but it should be remembered that in most cases it will be safer to shelter-in-place than to evacuate”.*

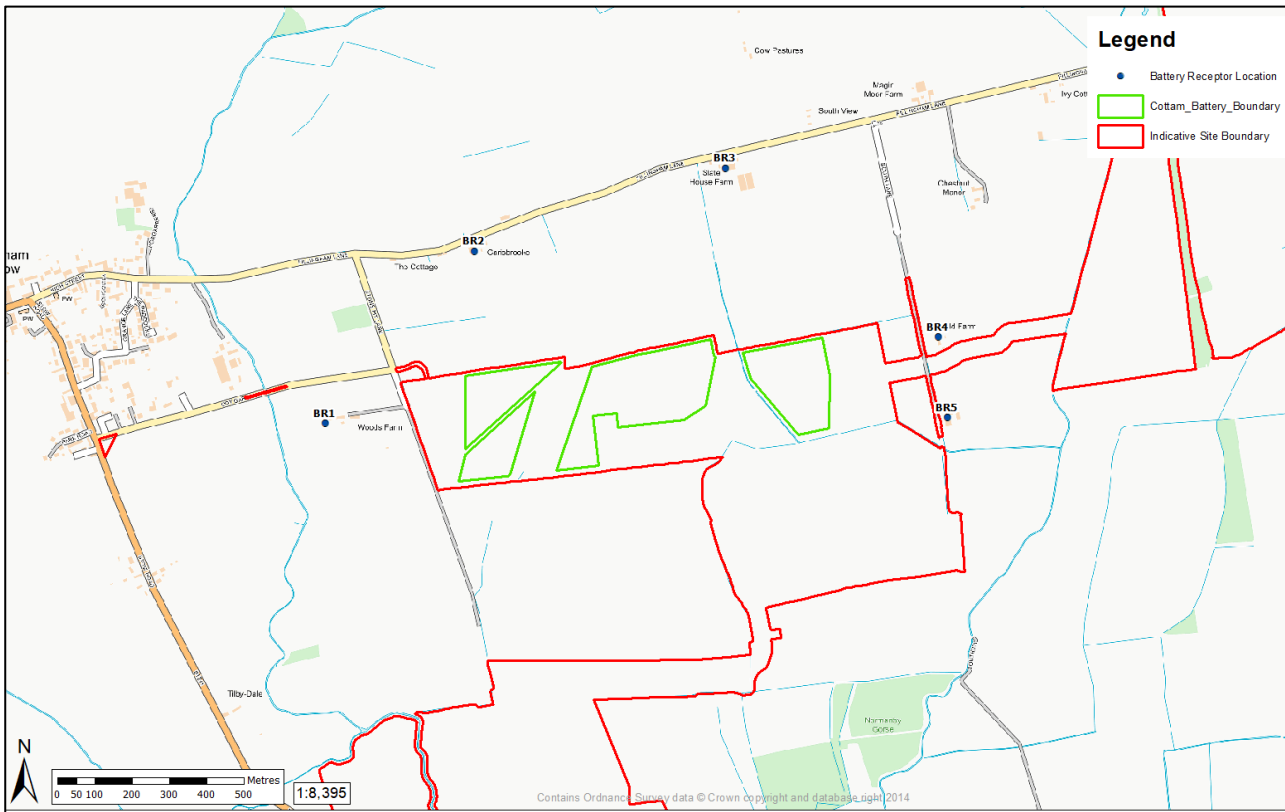
A key piece of information from the guidance which is used in considering the level of risk from a BESS fire at the proposed development states that ‘All non-essential personnel should be instructed to move at least 250m away from the incident’. This guidance will be used to help determine the potential effects of a BESS fire for the purposes of this technical note.

### 3. Receptors for the BESS Fire Emission Impact Assessment

The receptor locations relevant to the BESS are shown in Figure 1-1.

The closest sensitive receptor is approximately 320 m from the BESS boundary.

**Figure 1-1 Receptor Locations**



### 4. BESS Fire Emission Impact on Surrounding Sensitive Receptors

The consideration factors used to determine the potential impact of a BESS fire incident at the proposed development are as follows:

- (1) The closest residential receptors are located more than 320m away from the BESS boundary;
- (2) A BESS fire would only produce a short-term impact in terms of surrounding environment;
- (3) The National Fire Chiefs Council states that the effects (in case of a fire) may spread beyond the immediate vicinity and that all non-essential personnel should be instructed to move at least 250m away from the incident; and
- (4) Tetra Tech’s fire accident impact assessment on a solar panel fire concludes that a receptor that is located > 200 m from a fire would be in a good ‘air quality category zone’.

Based on the factors of distance to the nearest property, the short-term nature of a fire incident, guidance from the NFCC, and the Tetra Tech fire accident impact assessment report, it is concluded that there will not be



adverse effects at the closest receptor locations as a result of a BESS fire incident at the proposed development, and therefore, detailed modelling and assessment of a BESS fire plume is not required.

Whilst there is low risk of adverse effects at the closest receptors, in the case of a BESS fire at the proposed development, good practice safety measures will be implemented in accordance with the action plan presented in Tetra Tech's fire accident impact assessment report. These measures include the following:

*"The site manager/fire safety representative will need to assess the fire locations, wind directions and surrounding receptors. The site manager/fire safety representative will take appropriate actions accordingly. The actions to be taken include:*

*(1) to inform any potentially affected residents within the affected zones and to advise public about health effects of smoke, related symptoms, and ways to reduce exposure;*

*(2) to cancel outdoor events; and/or*

*(3) to move affected residents to a cleaner air location."*

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