Proposed Green Energy Project at Asland Walks

ASLAND WALKS AND BRETHERTON BESS PROJECT -
GRID-SCALE BATTERY ENERGY STORAGE SYSTEM UNITS : FIRE MANAGEMENT STRATEGY (FMS)

(Aligned with NFCC Guidance for Grid-Scale Lithium-Ion BESS)

GA Pet Food Partners and Bretherton Energy Co-operative (December 2025)

Contents

1. Introduction & Purpose

This Fire Management Strategy outlines the fire safety design principles, risk mitigation measures, operational controls, and emergency response arrangements for the Battery Energy Storage System (BESS) units forming part of the Asland Walks and Bretherton BESS Projects for GA Petfood Partners and Bretherton Energy Co-operative.

The strategy follows the **National Fire Chiefs Council (NFCC) – Grid-Scale BESS Guidance**, ensuring the facility enables a **safe and effective Fire & Rescue Service (FRS) response**, minimises risk to the surrounding environment, and supports resilient operation.

2. Project Overview

- **Site Name:** Asland Walks and Bretherton BESS Project
- **Client/Operator:** GA Petfood Partners and Bretherton Energy Co-operative.
- **Technology:** Grid-scale lithium-ion BESS
- **Installation Type:** Containerised units
- **Associated Infrastructure:** Renewable generation, inverters, transformers, HV distribution equipment
- **Purpose:** Renewable energy storage for grid importing/exporting

A site-specific plan showing the layout of BESS units, access routes, utilities, and firefighting infrastructure will be maintained and updated throughout design and construction.

3. Applicable Guidance & Standards

This Fire Management Strategy is prepared in accordance with:

- National Fire Chiefs Council (NFCC) – *Guidance for Grid-Scale Lithium-Ion BESS*
- NFPA 855 – *Installation of Energy Storage Systems*
- UL 9540 / UL 9540A testing evidence (manufacturer supplied)
- FM Global Data Sheet 5-33 – *Energy Storage Systems*
- Dangerous Substances (Notification & Marking of Sites) Regulations 1990 (NAMOS)
- BS EN 13501, BS 9999 and other relevant UK fire safety standards

4. Hazard Identification & Risk Management

A comprehensive risk management process will be undertaken, incorporating:

4.1 Key Hazards

- Thermal runaway within individual cells or modules
- Vapour cloud formation and ignition
- Deflagration within containers
- Electrical faults, overcharging or cooling system failure
- External fire spread from vegetation or neighbouring assets
- Firewater run-off contamination
- Restricted access for firefighting

4.2 Risk Controls

- Manufacturer-certified battery management system (BMS) providing early detection, datalogging and automated shutdown
- Container fire-resistant construction elements where applicable
- Deflagration venting designed to maintain <25% LEL and vent away from personnel
- Minimum spacing between units to limit fire spread
- Vegetation and combustibles controls
- Site water supplies capable of boundary cooling
- Site access designed for FRS vehicle manoeuvrability

A quantitative, performance-based risk assessment will be made available to the FRS on request.

5. BESS System Design & Construction

5.1 Battery Chemistry and Form Factor

- Battery Chemistry: *NCA*
- Form Factor: *Prismatic*
- Containerised BESS units with integrated monitoring and protection systems, currently the Samsung Battery Box is proposed but due to developing technology this may change.

5.2 Layout & Separation Distances

- **Minimum 6 m spacing** between BESS units, unless justified by engineered solutions
- **Minimum 25 m** from site boundaries or occupied buildings (unless additional mitigation provided)
- Orientation to minimise exposure from prevailing wind where possible

5.3 Fire-Resistant Design Features

- Internal compartmentation or thermal barriers (manufacturer dependent)
- Deflagration panels sized according to tested performance data (UL 9540A evidence)
- Mechanical protection against vehicle impact

6. Detection, Monitoring & Control Systems

6.1 Battery Management System (BMS)

- Continuous monitoring of:
    - Voltage, current, temperature
    - Cell/module status
- Rapid fault isolation

6.2 Fire & Vapour Detection

- Smoke/heat detection linked to operator control system
- Electrolyte vapour detection where specified
- Automatic shutdown for affected modules

6.3 Communication

- Remote monitoring to central control room
- Automated alarms to on-call engineers
- Contact details provided to FRS for emergency notification

7. Fire Suppression & Water Requirements

7.1 Suppression Philosophy

NFCC guidance recognises that:

- Lithium-ion BESS fires cannot always be extinguished immediately
- Defensive boundary cooling is the primary tactic to prevent escalation
- Reignition is possible hours or days later

7.2 Water Supply

In accordance with NFCC recommendations:

- Dedicated water supply capable of **≥1,900 L/min for 2 hours** within a 228 m3 tank at Asland Walks Energy Park, and hydrant at the Bretherton BESS
- Outlets and couplings aligned with Lancashire FRS requirements
- Access maintained for High Volume Pump units if required

7.3 Fixed Suppression

- Any fixed system will be evidence-based and supported by UL 9540A results
- Water deluge, aerosol, or inert gas systems will be sized according to performance need
- Shutdown of ventilation systems will be carried out only were safe

7.4 Run-Off Management

- Site drainage equipped with interceptors or bunded containment
- Prevent contaminated water from entering natural watercourses

8. Site Access & FRS Operations

8.1 Access Design

- Two separate site access points for opposing wind conditions
- Roads suitable for 32-tonne fire appliances
- Turning circles and passing places to FRS specification
- Clear access around all BESS units for hose-lines

8.2 Hazard Information

- High Voltage DC cables clearly identified
- Exclusion zones indicated on signage and site plans
- Vent exhaust direction highlighted in Emergency Response Plan

9. Site Conditions & Vegetation Control

- **10 m vegetation-clear zone** around BESS units
- No storage of flammable materials near BESS units
- Grass and foliage maintained to reduce wildfire/grassfire risk
- Windblown debris risk minimised through regular maintenance

10. Signage & Labelling

Signage will include:

- Identification of BESS units
- Battery chemistry and hazards (thermal runaway, electrical, gas risk)
- Firefighting infrastructure (hydrants, tanks, isolation points)
- 24/7 emergency contact number
- Dangerous goods information (where applicable under NAMOS)
- Emergency shutdown procedures
- Must be **visible at 30 m at night**

11. Environmental Protection

- Drainage and containment designed for expected firefighting water volumes
- Spill control equipment available
- Flood risk assessment and mitigation measures incorporated
- Monitoring and reporting in compliance

12. Emergency Planning & FRS Liaison

12.1 Emergency Response Plan (ERP)

The ERP will cover:

- Fire detection and alarm communications
- FRS notification procedure
- Isolation & shutdown process
- Site plan when BESS details are confirmed showing:
    - BESS locations
    - Hydrants, tanks or pumps
    - Drainage and run-off control
    - Exclusion zones
    - Vent directions

- Muster points and evacuation procedures
- Procedures for reignition monitoring

12.2 Information Sharing

- SSRI packages will be offered to the FRS
- Pre-incident familiarisation visits encouraged
- Updates shared for any system changes

13. Post-Incident Recovery Plan

The operator will implement a recovery plan addressing:

- Ongoing thermal monitoring of affected units
- Reignition risk assessment
- Safe de-energisation procedures
- Removal, quarantine, and disposal of damaged modules
- Environmental monitoring and remediation
- Reporting and incident learning reviews

14. Review & Continuous Improvement

This Fire Management Strategy will be:

- Reviewed at each project stage (design, installation, commissioning)
- Updated following any near-miss, incident, or significant modification
- Reviewed annually in coordination with the local FRS