Fire Safety

What are BESS fires?

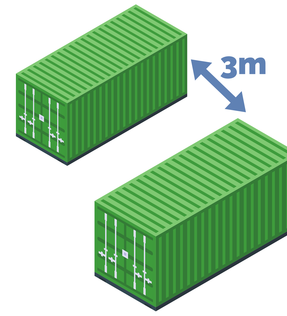
Battery fires happen when a cell overheats and releases flammable gases, causing a self-sustaining fire that spreads quickly. This is called thermal runaway. These fires are difficult to extinguish, making proper design and safety measures essential.

How do we prevent BESS fires?*

Although these fires are extremely rare, they are serious, and significant investment has gone into developing strategies to prevent them. These strategies are divided into 3 stages:
Design, Detection, and Containment and Control.

Design

- **Battery quality:** We use tier 1 UL 9540A certified batteries from trusted, high-quality providers.
- **Batteries not housed in buildings:** Batteries are contained in sealed, purpose-built containers.
- **Proper spacing:** A 3m gap prevents fire from spreading between containers.
- **Design for safety:** We design batteries so they are never overloaded, preventing overheating and thermal runaway.
- **Cooling:** Active cooling systems prevent batteries from overheating.



Early Detection

- **Voltage sensors:** Battery monitors will be alerted to unhealthy cells before a problem occurs.
- **Gas detection:** When cells overheat, they release gases, setting off alarms and triggering a safe shutdown before a fire starts.
- **Smoke detection:** Sensitive smoke detectors will raise an alarm when activated and batteries will be shut down.
- **Heat detection:** Overheating in any individual cell triggers a release of non-toxic cooling agent directly into the cell, stopping thermal runaway.
- **Immediate shutdown:** On any severe alarm condition the batteries are automatically shut down, and operators are alerted.

Containment and Control

Cooling

The most effective way to contain and control a fire fueled by hot gases is through cooling. Cooling systems include:

- **Immediate system shut down.**
- **Coolant is automatically injected into any cell nearing combustion temperature to prevent thermal runaway.**
- **Water is used by fire responders to prevent any possibility of the fire spreading, and to keep the fire contained.**

Containment and Control measures

- **Spacing:** 3m spacing prevents the fires spreading between containers.
- **Containerisation:** Batteries are built into insulated, metal containers which prevent the spread of fire through the site, and are factory built to high standards of weatherproofing.
- **Local fire departments:** During planning and construction phases, local fire departments are consulted to ensure good design, and inform response plans.
- **Pressure panels:** Designed to open under pressure to prevent BESS fire explosions by releasing the gasses in a controlled way.

All sites are designed in accordance with the National Fire Chiefs Council (NFCC) Grid Scale BESS planning guidance.

We also only use batteries that adhere to the **UL 9540A testing standard** for fire safety and thermal runaway prevention.

* The specific technologies, and component references presented during this public consultation are illustrative and for discussion only, as the final design and technology provider are not yet confirmed and are subject to change. While equivalent systems will likely be selected for the final project, reliance on these preliminary, non-binding references should be avoided.

BESS FAQs

We've created these FAQ banners to share important information about our BESS sites. If you have any questions or concerns, we'd be happy to chat with you.

Why do we use lithium batteries ?

Lithium batteries are the best choice for large-scale energy storage because they are more efficient, faster to charge, and take up less space than other options. They also have a longer lifespan and can respond almost instantly when the grid needs support.

How will the batteries be cooled and ventilated to prevent overheating?

Each battery container has its own climate control system, including fans and air conditioning. The system constantly monitors battery temperatures and adjusts to keep everything running safely and efficiently.

How will the facility impact local residents?

We design our sites to minimise any impact on the local community, including noise and visual concerns.

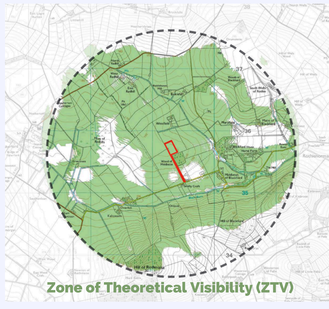
Noise Reduction Measures:

- Accoustic consultants assess and advise on noise control
- Attenuation on equipment to reduce sound
- Acoustic barriers, shielding, and land banks
- Noise assessments for all homes within council-defined impact zones, with analysis at each storey
- Careful site design will place loudest equipment furthest away from noise-sensitive areas

Visual Impact Measures:

- Planting trees, bushes, and shrubs to naturally shield the site
- Using green-coloured batteries to better integrate with the surroundings
- Installing green walls or fences for screening
- Specialist consultants create photomontages to show how the site will look from different angles (see images below)
- Assessments for every property with a potential view of the site using geological software (see images below)

Visual Impact Assessments



We use models like these that show the Zone of Theoretical Visibility (ZTV) around a site. From here we can use photo montages to assess and compare different visual mitigation measures, such as planting trees or building extra fences.

What fire supression systems are put in place?

Our fire prevention strategy is built around **Design**, **Detection**, and **Containment & Control** to ensure maximum safety.

- **Early detection:** Voltage sensors detect unhealthy cells before any problem occurs. Gas and smoke sensors automatically trigger alarms at the earliest signs of a problem.
- **Immediate shutdown:** Batteries are instantly disconnected to stop electricity flow.
- **Rapid cooling:** Heat sensors trigger the release of cooling agent directly into the battery cell, preventing thermal runaway.
- **Containment & control:** The systems are designed with multiple safety layers prevent overloading, overheating, and thermal runaway, such as fire-resistant steel containers, 3-meter spacing between batteries, and pressure panels.
- **Collaboration with fire services:** We work with local fire departments through the planning and construction phases to ensure good design, and inform response plans.

What site security measures have been taken?

Our facilities designed with robust security measures to prevent unauthorised access, including:

- High-security perimeter fencing
- 24/7 CCTV with infrared capability
- Two-way communication systems
- Alarm systems for immediate alerts

BESS FAQs

How will the facility impact local wildlife and ecosystems?

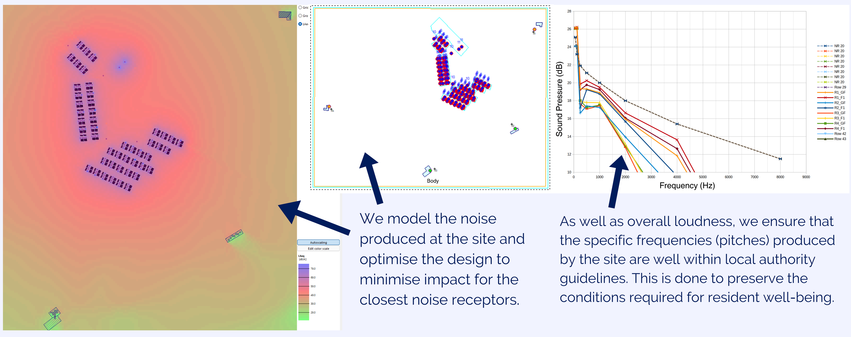
For each project, we bring in specialist ecological consultants to assess and advise us on how to protect local wildlife, including badgers, bats, and birds. They help us develop targeted habitat plans to minimise environmental impact and avoid disrupting wildlife. Measures can include: **construction exclusion zones; avoiding work during nesting seasons; managing light pollution; planting and landscaping plans; dust control; tyre washers to prevent soil contamination; and regular water quality testing.**
We take steps to reduce disruption, but where it's unavoidable, we offset it by developing additional ecosystems or creating new habitat spaces nearby.

How will flood water and contaminated water be managed?

We collaborate with water and flood specialists to minimise construction impact and follow recommended water quality testing procedures. Protection measures can include:

- **Floodwater ponds with sluice gates to prevent discharge in cases of contamination**
- **Water reservoir tanks to manage flow of water**
- **Flood engineering so that water can drain safely into the ground**

Noise Impact Assessments



We model the noise produced at the site and optimise the design to minimise impact for the closest noise receptors.

As well as overall loudness, we ensure that the specific frequencies (pitches) produced by the site are well within local authority guidelines. This is done to preserve the conditions required for resident well-being.

What is your commitment to environmental and safety standards?

We follow best practices in battery safety, fire prevention, and ecological protection to ensure a safe and sustainable operation.

- **Fire Safety:** UL 9540A is the highest quality safety standard for BESS batteries. We only use high-quality batteries that are tested to this standard.
- **Habitat Management:** The Conservation (Natural Habitats, &c,) Regulations 1994 (as amended); The Wildlife and Countryside Act 1981 (as amended); The Protection of Badger Act 1992 (as amended); National Planning Framework 4 ('NPF4')
- **Water Management:** Designing for urban drainage (CIRIA C635), prevention of polluted water / firewater runoff entering the natural site (COMAH Regulations 2015: Control of Major Accident Hazards), Sustainable Drainage Standards (CIRIA C753 SuDS Manual)

Our construction process is guided by recommended safety standards and local authority guidance, ensuring a strong focus on safety.

What emergency response plans are in place?

- **Emergency Response Plan:** A full risk assessment and response plan will be developed during the design phase in collaboration with emergency services.
- **Incident Notification:** In the event of an emergency, our monitoring and operations teams will notify emergency services immediately. We use a combination of automated and manual response systems.
- **Accident Prevention:** Safety is built into our design with robust risk assessments from the start, informed by our experience in the sector.

What happens at the site's end of life?

Most facilities are expected to operate for around 25 years, with the potential to extend up to around 40 years. As part of our lease agreement, we are committed to restoring the site to its original state once the project ends.

Where can I find out more?

We're happy to discuss the specific measures in place for each site and are keen to involve the local community in the design process. We hope you find these events helpful.
If you have more questions after today, feel free to email us — we're here to help.