
BLACKHILLOCK

349 MW BESS

FIRE ASSESSMENT

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1. Introduction

This Fire Risk Assessment (FRA) is conducted for the Blackhillock Battery Energy Storage System (BESS) located near Keith in Moray, Scotland. The purpose of this assessment is to identify potential fire hazards, evaluate the level of risk associated with these hazards, and recommend measures to mitigate and manage these risks effectively.

The Blackhillock BESS will play a critical role in the energy infrastructure of the region, providing essential support to the national grid. As such, it is imperative to ensure that adequate fire safety measures are in place to protect personnel, property, and the surrounding environment.

This FRA considers various factors, including the site's location, the layout and the correct spacing between equipment, construction materials, equipment, and operational procedures. It takes into account relevant fire safety legislation, industry best practices, and guidelines set forth by regulatory authorities.

In conducting this assessment, we establish a comprehensive understanding of the fire risks present at the Blackhillock BESS and develop tailored strategies to detect, and respond to potential fire incidents effectively.

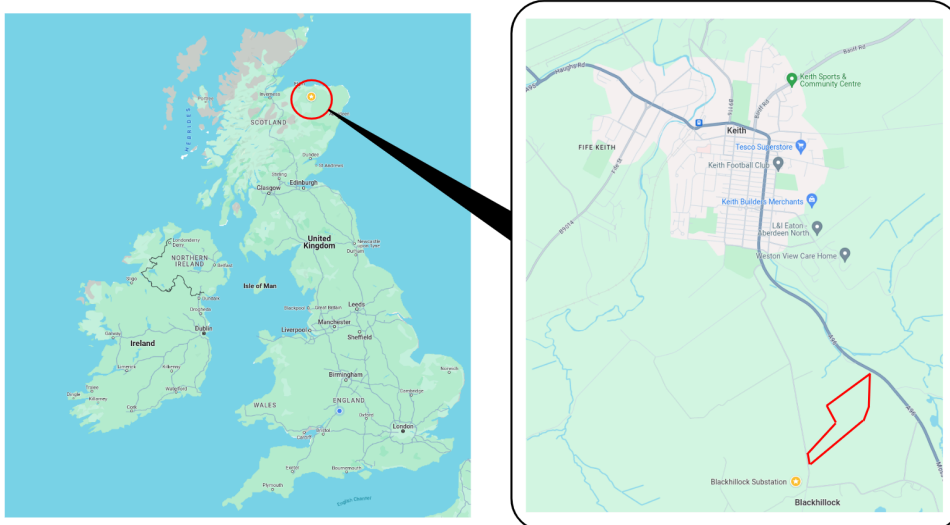
This report is intended to serve as a guiding document for all stakeholders involved in the operation and management of the Blackhillock BESS, including owners, operators, emergency responders, and regulatory authorities.

Through collaboration, vigilance, and adherence to established fire safety protocols, we can mitigate the potential impact of fire incidents and uphold the integrity and reliability of the Blackhillock BESS.

2. Site details

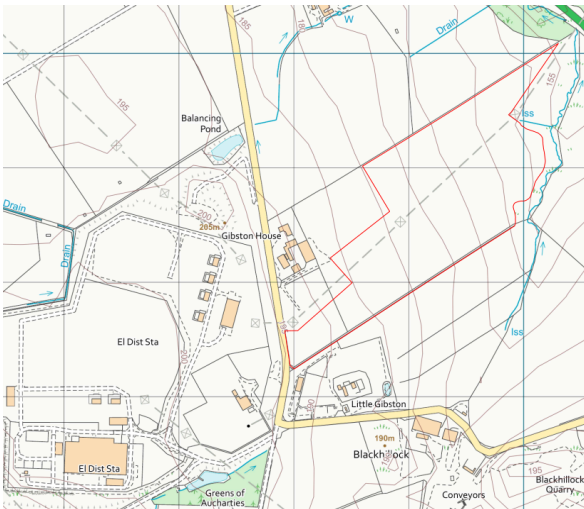
2.1 Site location

The project is located in the north of Scotland, near the town of Keith in a rural area.



Location: Blackhillock, near Keith, Scotland.

The site is very close to the substation, on cultivated arable land at Gibston Farm, Blackhillock, Keith, AB55 5YN. The land size is approximately 22.5 acres.



Location and size of the land for the BESS

There are a number of residential properties within 300m of the site, most notably at the south-western edge of the field. Additionally, there is a high-voltage line present on the easement, dividing the available building construction area into two parts and leaving a band of 70m free of any construction beneath this HV line.



View of the land in Blackhillock

Geographical co-ordinates (bounding perimeter):

- Southern boundary : 57.522646, -2.943350
- Western boundary : 57.524975, -2.944172
- Northern boundary : 57.527831, -2.935728
- Eastern boundary : 57.525362, -2.936545
- Site main entrance : 57.523968, -2.943730

what3words location main entrance :<https://what3words.com/dinosaur.swept.tradition>

2.2 Site infrastructure and equipment



Equipment List - Blackhillock

- 52x MV Twin Skid (8.8MVA) with Integrated 660V/33kV Power Transformer & 33kV Switchgear
- 208x 20ft ISO Battery Containers
- 7x Emergency Diesel Generators
- 7x Customer Substations containing 33kV SF6 Free Switchgear and Aux transformers
- 7x LV and control rooms (20ft ISO container)
- 2x 33kV Switchgear rooms
- 2x 230MVA 33/400kV supergrid transformers
- 1x GIS 400kV switchgear building
- 1x Main control room
- 1x Amenities building
- 4x Storage containers

3. Identification of the fire hazards

3.1.1. Identification of the heat-ignitions sources

The following list outlines potential sources of ignition within the Blackhillock Battery Energy Storage System (BESS) facility. Identifying these sources is critical for assessing fire risk and implementing effective mitigation measures. By evaluating each source's severity and likelihood, we can develop targeted strategies to minimise the risk of fire incidents and ensure the safety of personnel and property.

IGNITION SOURCES	LOCATION	COMMENTS
Batteries	Outdoors. 208 units on concrete pedestals	ignition by thermal runaway or by external factors
Electrical equipment	Indoors and outdoors. Inverters, transformers and switchgear.	ignition by malfunction, human error, overheating or external factors (wild life, lightning)
Electrical components	Indoor and outdoors. Cables, connectors.	damage to cable or connectors.
Lightning	Outdoors	Fire caused by lightning
Electric devices	Indoor	laptop, laptop charger, mobile phone charger, printer, lights, other devices
Human factors	Outdoor and indoor	smoking, arson, littering, bonfires
Backup diesel generator	Outdoors - diesel generator.	combustion of the fuel during the generator operations
Existing services	Outdoors. Overhead, power lines	damage because of the weather conditions or other external factors

3.1.2. Identification of fuel and flammable materials on site

This list identifies various materials that have the potential to ignite or contribute to the spread of fire. By identifying and evaluating these materials, we can develop strategies to minimise their impact on fire safety and protect against potential hazards.

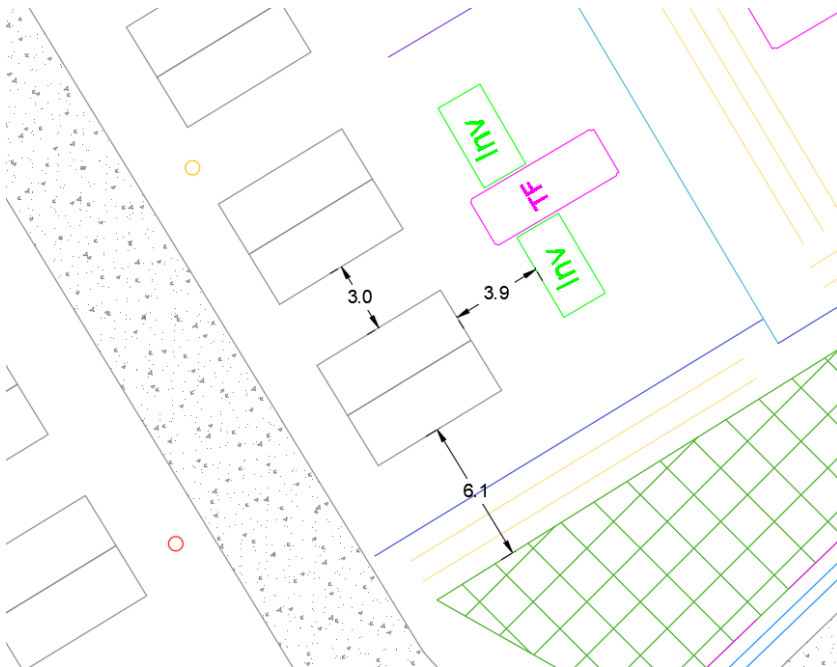
FLAMMABLE MATERIALS	LOCATION	COMMENTS
Diesel	Diesel generator	Fuel will be handled during the tank refuelling
Oil	transformers	oil of the site transformers
Batteries cells	battery containers	for energy storage
Paints	COSHH area	for maintenance

COMBUSTIBLE MATERIALS -FUEL	LOCATION	COMMENTS
Paper	Indoors: monitoring cabin	as built drawings, site procedures, documentation displayed, notebooks, posters
Cardboard	Indoors, monitoring storage zone (spare parts storage)	storage of materials
Textile	Indoors, outdoors	clothes and PPEs kept on site (flash protection coverall)
Plastics	Indoors: monitoring , storage zone (spare parts storage)	plastic sheeting

Furniture	Indoors: monitoring cabin	chair, table, shelves
Waste	Indoors: monitoring cabin	wrappers of food, organic waste
Office materials	Indoors: monitoring cabin	pencils, markers, notebook
Office device	Indoors: monitoring cabin	printer, laptop

4. Preventative strategy / Mitigate fire risk

To prevent the spread of fire, contain it, and minimise its impact, we have followed the recommendations of NFPA 855. We maintain a minimum distance of 3 metres between battery blocks, inverters, and vegetation in accordance with NFPA 855.





Layout with spacing between batteries, equipment and planting.

5. People at risk

A) Construction phase :

Most of the workforce will be mobilised during the construction phase, leading to a significant number of personnel being present on site. Comprehensive fire safety measures will be implemented on site, including, but not limited to, the installation of fire extinguishers, regular fire drills, and the designation of fire watch personnel. Emergency response plans will be established and communicated to all workers to ensure rapid and efficient evacuation in case of a fire. Fire safety measures will also be implemented during transport of the batteries to the site, in accordance with the IEC 62281 standard.

people at risk	location	comments
EPC - site manager (Construction phase) and technicians	Entire Site	carrying inspections, site visits and preventative maintenance
visitors	Specific areas designated as safe for visitors which will vary during the projects lifetime	site visit
contractors	Entire Site, however dependant on the specific contractors scope	carrying out preventive maintenance works for which they are appointed
local authorities	Specific areas designated as safe for visitors which will vary during the projects lifetime	local enforcement authorities, such as HSE, Fire brigade, police
public	off-site	people (residents and non-residents affected by fire spread or smoke

B) Operational phase :

During the operational phase the site will be remotely monitored and does not require permanent occupancy. Due to this reason, the number of personnel and occasions to be at risk is lower than on a site requiring permanent occupancy. This site is monitored and configured remotely, through a closed-circuit television (CCTV) system. Maintenance functions will require technicians and engineers on site for routine and unplanned maintenance.

people at risk	location	comments
O&M contractor (Operational phase) and technicians	Entire Site	carrying inspections, site visits and preventative maintenance
visitors	Specific areas designated as safe for visitors.	site visit
contractors	Entire Site, however dependant on the specific contractors scope	carrying out preventive maintenance works for which they are appointed
local authorities	Specific areas designated as safe for visitors.	local enforcement authorities, such as HSE, Fire brigade, police
public	off-site	people (residents and non-residents affected by fire spread or smoke

6. Fire safety provisions

6.1.1. Source: orders, standards and guidance

1- The Regulatory Reform (Fire Safety) Order 2005: The applicable order related to fire safety in non-domestic premises including work sites or power generation (or storage systems) sites.

2- The NFPA 855: Standard for the Installation of Stationary Energy Storage Systems.

3- The Recommendations provided by emergency services will be included.

The local emergency service Fire and Rescue service from Moray has already been contacted and is awaiting documentation to schedule an inspection at the site.

4- The NFPA 855 Compliance Assessment provided by the battery manufacturer and distributor demonstrates compliance with the NFPA-855 standard, and how the equipment complies with the NFPA-68 in terms of explosion relief.

The assessment includes details of the tests carried out with the batteries under the standard UL 9540A, UL 9540, and NFPA 855. The battery manufacturer’s manuals provide detailed information regarding warnings from smoke and heat detectors, the response following a warning, and the maintenance requirements for the protection system.

Fire safety function	Description	Compliance of code
Detection & Alarm	Smoke detection to alarm stage 1) Addressable fire control panel to external horn + strobe light 2) Fire control panel to Alarm 3) Shut-down (by Load disconnect switch)	Compliant to NFPA 855 and NFPA 72 at enclosure level
Suppression	Direct Injection design to battery system - Spraying clean agent (Fire suppressant) to the event cell directly	UL1973 (cell and module level) UL9540 and UL9540A (Installation level)
	Dry pipe sprinkler design	NFPA 13
Explosion control	Deflagration panel on the roof	NFPA 68
	Active venting system with gas detection and exhaust fan (optional) - To maintain the concentration under 25% of LFL	NFPA 69

6.1.2. Roles, responsibilities and competence

A) Construction phase :

The Site Manager (SM) is the appointed Emergency Coordinator (EC), with the responsibility of coordinating emergency evacuation at the worksite. The responsibilities of the SM as EC are included in the Emergency Response Plan.

Emergency Coordinator

The Emergency Coordinator (EC) is responsible for ensuring that, in the event of an emergency, the Emergency Response Plan is followed, sounding an air horn to ensure that the workforce and visitors evacuate the site and assemble at the approved muster point.

The EC shall be able to communicate in English, ensuring effective communication with all staff on site, give instructions and determine the type of emergency scenario, location, and details in case any emergency call is received.

EC and the appointed first aider(s) shall work cooperatively to facilitate first aid and contact the emergency services if required. EC will have knowledge of where the extinguishers and additional emergency resources are located. They will have access to the sign-in register to carry out the roll call, ensuring that all the staff on site are evacuated and assembled at the muster point. EC details (name and phone contact) shall be given in the site induction and displayed on site (safety board, canteens or offices).

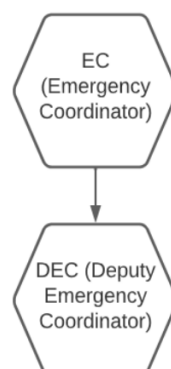
As general duties, EC must:

1. Answer an emergency call and upon determining the emergency scenario, proceed with the emergency response procedure. Each scenario requires different steps that must be taken into consideration.
2. Ensure that all the staff are evacuated from the site emergency scene and that they are directed to gather at the assembly point.
3. Contact the Emergency Services or authorities if required (999).
4. Ensure that the site is safe before returning to work after an emergency.
5. Coordinate the Deputy EC to support during emergencies or in case of accident.
6. Follow the report procedure.

Deputy Emergency Coordinator

During the phases where the facilities are installed and there are an increased number of workers, there will be a Deputy EC. The Deputy EC will support the EC during an emergency, following the EC's instructions. The Deputy EC shall be competent, being a trained Fire Marshal, First Aider and being familiar with the site and activities. The Deputy EC will deputise for the EC if the EC is absent or the victim of an accident.

All the personnel on site will be made aware of the Deputy EC during the site induction. If a new Deputy EC is appointed, site staff will be informed at a toolbox talk and on the site H&S panel board.



B) Operational phase :

During the operational phase the O&M contractor manager is the appointed Emergency Coordinator (EC), with the responsibility of coordinating emergency evacuation at the worksite. The responsibilities of the O&M contractor manager as EC are included in the Emergency Response Plan.

The site will be monitored by CCTV and the O&M contractor will be responsible for contacting the local fire and rescue service to coordinate the intervention.

6.1.3. Detectors (first level of alarm)

There are sensors on site to detect early stages of an unexpected event (temperature increase, equipment malfunction, smoke, thermal runaway) that might lead to a fire.

The sensors on site are as follows:

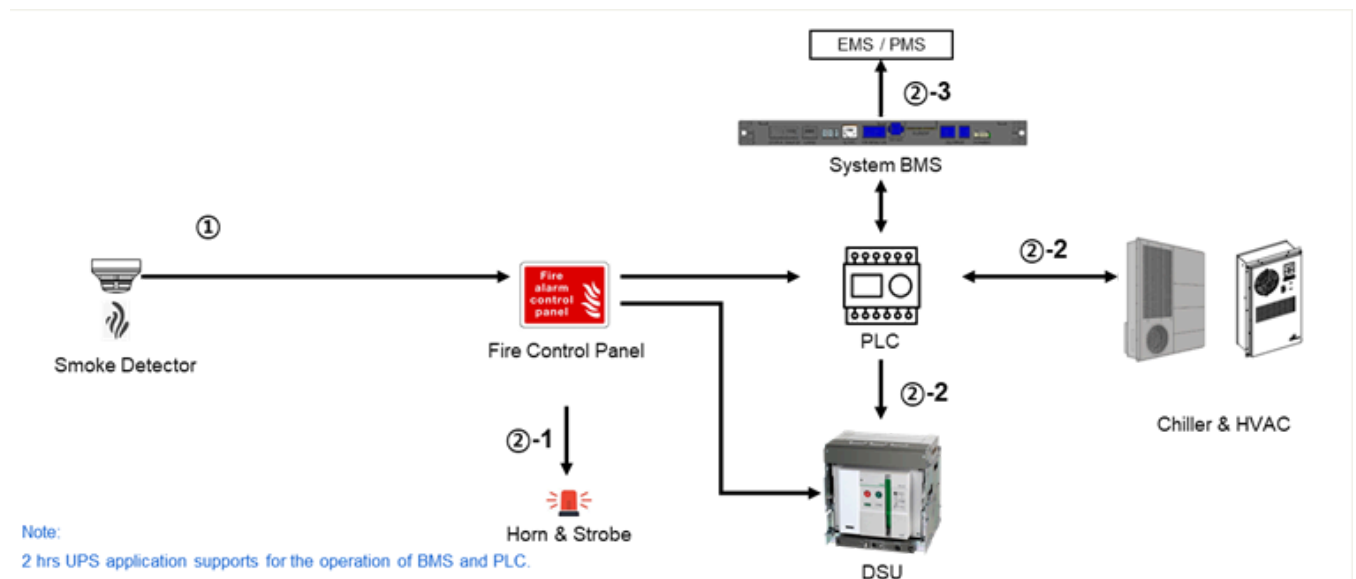
Temperature sensors. Temperature sensors are operative in the batteries, transformer substations, and control substation;

Photoelectric smoke detectors. Smoke detectors are installed and operational in batteries, Customer substations, monitoring room;

Pressure sensors. Available for the transformers, including the auxiliary transformer.

Detection & Alarm

- ① Detected smoke by sensors in enclosure
- ②-1 Fire control panel to external horn & strobe
- ②-2 DSU (Load disconnect switch) opened and Chiller (HVAC) operation stopped by PLC
- ②-3 System BMS to report alarm to EMS/PMS



The detection systems are linked to the batteries and electrical components management system (the fire control panel is placed within the LV control room). In case any of the detectors are triggered, a warning alarm sounds, and a signal is received by the security company. The 24/7 security company will monitor the event through a 360° CCTV placed on site to check if the warning is because of an external factor.

The warning would be reported to the SM who would follow the emergency procedure. A fireman panel will be installed beside the site access gate so the whole site can be stopped in case of an emergency. In addition, there are available emergency stop buttons at different locations on site.

The site's remote operations allow for other site functions to be shut down immediately upon notification of the alarm.

6.1.4. Reaction systems (suppression and firefighting equipment)

Deflagration Panels

Deflagration panels are safety devices designed to release a build up of pressure. They provide a controlled venting mechanism to prevent structural damage and minimise the risk of further fire or explosion within the battery container.

Venting System with Gas Detection and Exhaust Fan

The active venting system is activated by gas detection to prevent the accumulation of hazardous gases.

- **Venting Activation:** The system opens an electric shutter and engages exhaust fans to expel hazardous gases. The shutter allows fresh air to enter, while the exhaust fan clears the gas from the container.
- **Fan Control:** The exhaust fan runs until the gas concentration returns to a safe level. Once the gas levels are safe, both the fan and shutters return to their normal positions.

This system provides an effective safety measure to ensure gas levels remain within safe limits, minimising the risk of an explosion.

Fire Extinguishing System

The fire extinguishing system consists of two main types of protection: aerosol and dry pipe systems.

- **Aerosol System:** When a fire is detected, the aerosol fire suppression system automatically releases aerosol into the affected area. The aerosol quickly suppresses the fire by cooling the area and interrupting the combustion process.
- **Dry Pipe System:** Serving as a last line of defence, the dry pipe system releases water when needed to control fire spread. It is typically activated after other measures have been exhausted, adding an extra layer of protection.

7. Fire risk assessment review

Emergency procedures on construction phase

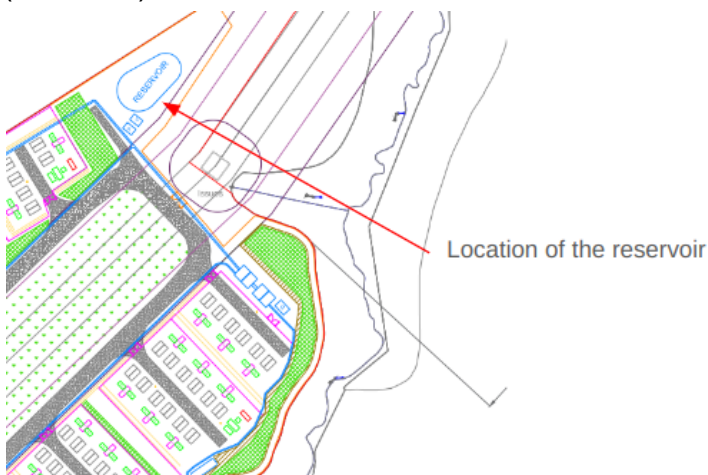
The Emergency Response Plan is shared with all the new personnel, contractors, and visitors before any activity on site starts. If the ERP is revised, personnel must repeat the site induction to be informed of the latest revision. The fire-fighting strategy is decided by the fire brigade once they assess the fire and the best manner to proceed for all personnel, properties and the environment.

Emergency procedures on operational phase

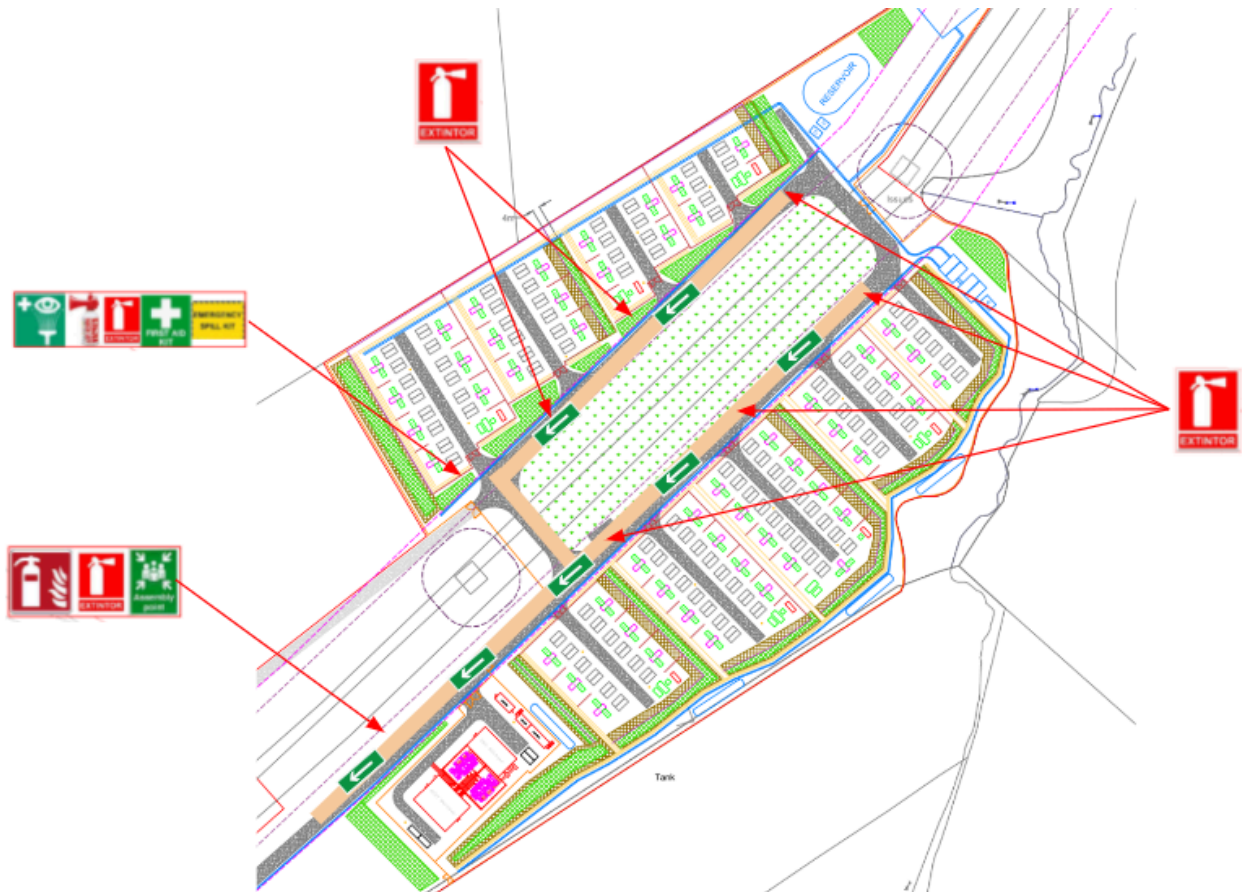
During the operational phase, the site is normally unmanned, however the ERP will be communicated to all visitors / contractors during their induction, prior to access to the site. As during the construction phase, this plan is shared with the local authorities, fire brigade and police, to anticipate actions on any fire event. Further information can be found in the Emergency Response Plan and will be available for consulting on site and in the H&S File folders in the O&M phase.

Water supply for the fire brigade:

The water supply has been designed to provide as minimum 1 900 litres / minutes for at least 2 hours as per recommendation in the grid Scale BESS guidance from the NFCC (Scotland).



Extinguisher :



Example of extinguisher location (not validated)

Fireman panel :

A fireman panel will be installed beside the site entrance (picture below as an example), where the assembly point will be located. The fireman panels contain essential information for an emergency event: emergency contact numbers, site address and contact numbers of stakeholders. A general emergency stop button is fitted to the fireman panel, which stops the whole site in case of an emergency (see picture below).

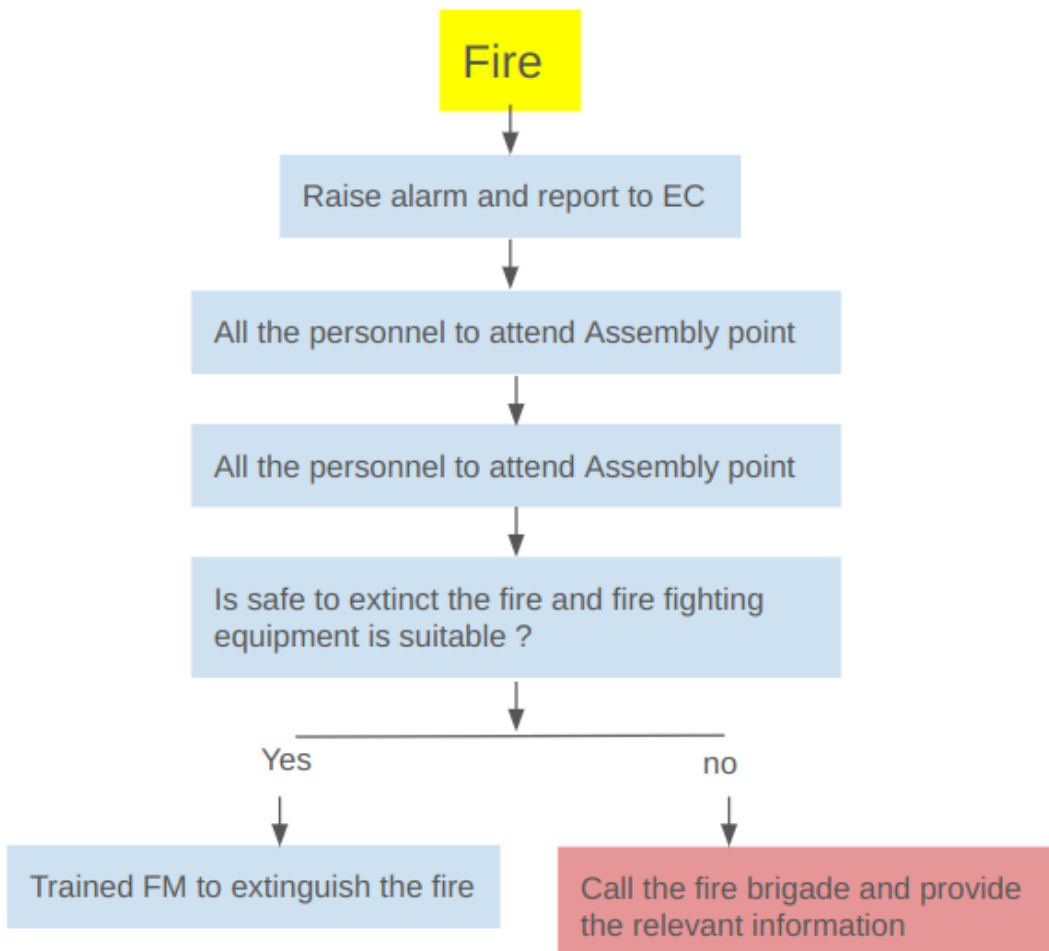


Example of fireman panel

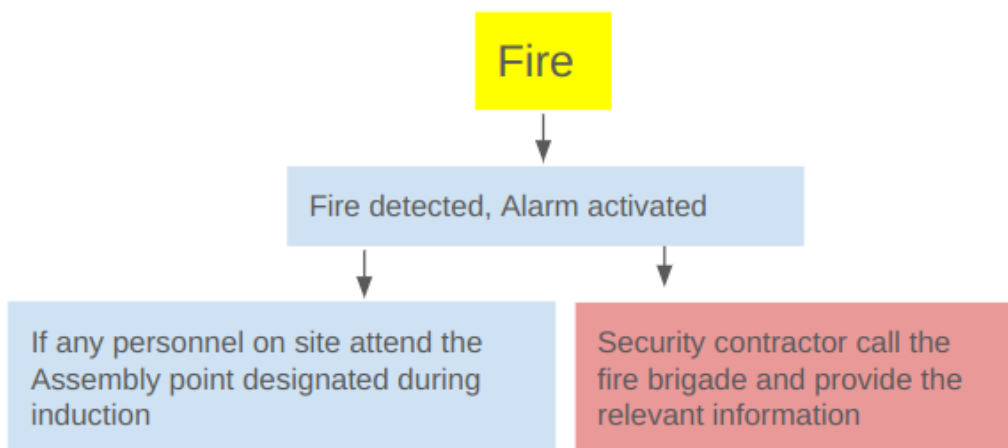
These emergency buttons will always be accessible, never locked or the access to the panel obstructed. A Gerda box, serving as a secure enclosure for key site specific information for fire response teams, will be installed beside the fireman panel.

7.1 Emergency scenarios

Flowchart of action in case of an emergency event during construction phase :



Flowchart of action in case of an emergency event during operation phase :



Red: call 999

Yellow: event triggering the emergency response

Blue: process/steps

7.2 Fire event or explosion

Fire event or explosion

In case of fire the following steps shall be taken:

1. Any person who encounters a situation which is deemed as a fire emergency, or an explosion must notify the site EC immediately. Sounding of the air horn.



Example of emergency plan layout - proposal 1 (not validated)

2. The EC will raise an alarm and notify all employees to evacuate. Due to the size of the site, the alarm will be raised using air horns. On hearing the alarm for evacuation, all operatives will immediately leave their work and assemble at the designated area.

3. The EC will be responsible for undertaking the roll call and notifying the emergency services of any persons not accounted for, and any locations which cannot be adequately evacuated.

4. In the event of any injuries, and only if it is safe to do so, First Aiders will administer first aid to injured persons. During the project phases where there are 2 supervisors, there will be an EC and a Deputy EC. In case of injured persons, the Deputy EC will do the roll call while the EC/first aider will carry out the first aid to the IP.

5. In the event of a minor fire, once its nature is identified, fire-fighting equipment can be used to eliminate the fire. Only personnel qualified to operate fire-fighting equipment can make use of it, and only in cases where there is no risk for any person. The fire extinguisher will be managed by the EC or the Deputy EC, both trained in the use of the fire extinguishers.

6. In case of uncontrolled fire, the fire brigade will be called by the EC (deputy in case that the main EC is carrying out first aid). A site Fire Risk Assessment (FRA) will be completed and periodically reviewed. All the controls and required fire-fighting equipment identified in the FRA will be implemented. In the welfare area a fire alarm system in accordance with BS 5839 Category 1 will be installed considering the project specific Fire Risk Assessment suggested controls.

5. Reception of emergency services

In an event where emergency services may be required and are called, the EC will receive the emergency services at the site entrance or the Deputy EC if it is required by the EC.

This appointed person (EC or DEC on their behalf) will receive the emergency services and guide them to the casualty or -in case of fire or any event requiring the presence of the firemen- where the services are required. This appointed person needs to speak fluent English and have an essential knowledge of the site characteristics.

When the emergency services are called, all plant and vehicles on site must stop their manoeuvres or activities and avoid any transit along the site tracks.

Emergency contacts	Phone number
General Emergency	999
Ambulance	999
Police	999
Fire and rescue	999
Gas emergency	0800 111999
Electricity Emergency	0800 404090
Road Emergency	03457 565656
Other relevant contacts	Phone number
Turner Memorial Hospital	01542 882526
Fire Station	07841 362628
Police Station	0300 426 0101
Blackhillock Flexpower Ltd	Phone number
Company Office - Office hours (Monday-Friday,9am to 5.30pm)	01242 500254
Out of office hours and bank holidays	0785 9122325

Phone numbers above to be updated as necessary.

8. Recording

All the accidents will be recorded in the site accident book by the EC.

Any near miss, dangerous occurrence, incident -including environmental incidents- will be recorded and an investigation carried out to find out the root causes and immediate preventive actions and remedial actions to prevent further events.

In case of personal injury, a further investigation will be developed where external personnel to the project will cooperate. The investigation report will be shared with the Client and the authorities if it is requested.

9. Fire risk assessment

This FRA will be under continuous revision.

During the construction phase, the EPC has the duty to keep informed and apply findings and technology enhancements to improve the safety of the BESS. In addition, legislation is subject to changes and the EPC has the duty to keep informed and amend the FRA to observe new requirements that might raise new regulations or standards.

During the operation phase, Blackhillock Flexpower Ltd takes over responsibility from the EPC and will be in charge of following new requirements and new regulation to improve site safety and the FRA.

The review process shall consider significant changes in people, plant and processes or when the organisation determines that the FRA is no longer valid, such as:

- > Following a fire or arson attempt;
- > Major alterations to the site;
- > Significant operational changes;
- > When requested to do so by a Fire officer or authorities.

<u>Severity (S)</u>	<u>Likelihood of harm (L)</u>	<u>Risk Rating (R) = S x L</u>	
1 = No Injury	1= Very Unlikely	1 to 6 = Low Risk (L) (Acceptable, Monitor & Review)	
2 = Minor Injury	2 = Unlikely	8 to 12 = Medium Risk (M) (Acceptable with controls)	
3 = Lost time Injury	3 = Likely	>15 = High Risk (H) Unacceptable	
4 = Major Injury	4 = Very Likely		
5 = Death or Permanent Disability	5 = Certain		

Hazards liable to create a fire risk and how	When	Safety controls	Risk	Comments	Risk rating after controls
<p>Batteries thermal runaway How : process that is accelerated by increased temperature, in turn releasing energy that further increases temperature. Might cause fire or explosion.</p>	<p>During operations, during preventive maintenance, during corrective maintenance</p>	<p>The battery qualifies for EU safety standards including IEC 62619 / 62477-1 LVD / 61000-6-2/-4 EMC and UL 1973 standard. Initial (first level) warning activating the fire alarm panel which in turn stops the state of operating and transmits a signal to the Energy Management System (EMS) and when the Battery Management System (BMS) detects a second level, activation the stat-X aerosol is designed to flood the cabinet. Maintenance of the battery's equipment and emergency devices according to the manufacturer manuals. Maintenance of the equipment online by trained competent personnel.</p> <p>Distance between batteries respect a minimum of 3 metres to avoid any propagation and control a fire event following the recommendation of the NFPA 855.</p>	<p>12</p>	<p>Inspections and maintenance according to the O&M schedule to ensure all the emergency system detectors -sensors- and communication devices are operational.</p>	<p>2</p>
<p>Fire affecting batteries. How : Arson, thermal runaway , off site fire affecting the site, other site equipment fire spread to batteries, fire caused by natural circumstances (lightning)</p>	<p>During operations, during preventive maintenance, during corrective maintenance</p>	<p>*Controls to prevent thermal runaway explained above. Site security and access control (24/7 site monitoring by an external company – CCTV). Preventive maintenance to minimise the risk of electric equipment failure or malfunction. Fire-fighting equipment (CO2 suitable for electric fires and Foam ext. for solid materials other than electric equipment or components) to stop minor fires of components other than batteries. Fire sensors, connected to a fire panel warning through SCADA of the alarm. 360° CCTV for site monitoring to detect fires when the alarms are activated. Competent personnel for electric equipment maintenance. Maintenance of the fire detectors. Emergency procedures: fireman panel at the gate, site stoppage at the gate and specific ERP continuously under review.</p>	<p>16</p>		<p>4</p>

Hazards liable to create a fire risk and how	When	Safety controls	Risk	Comments	Risk rating after controls
Electric equipment and/or electrical components fire. how : Malfunction or failure of the equipment, external elements (wild animals - rates - , adverse weather conditions - lightning)	During corrective or preventive maintenance , and anytime during operations	Preventive maintenance to minimise the risk of electric equipment failure or malfunction. Fire-fighting equipment (extinguishers CO2 of 5 Kg., suitable for electric fires) to stop minor fires of components other than batteries. Servicing and revision of the fire extinguishers included in the maintenance schedule of the site and a record of extinguishers use. Extinguisher's locations can be checked in the Emergency Response Plan layout displayed on site in the site office (monitoring room). Competent personnel for electric equipment maintenance. Maintenance of the fire detectors. All the electric equipment (systems) as inverters or transformers are remotely monitored. In case of malfunction this is detected through SCADA. All the site personnel (SM and technicians) trained in fire extinguishers use. Fire Marshall training course.	12		4
Flammable substances How: Diesel for auxiliary generator. refuelling or the generator shell. flammable materials required for corrective maintenance.	During diesel tank refuelling, also during corrective maintenance where flammable material might be required	The flammable materials-liquids require a COSHH assessment and Safety Data Sheet (MSDS) detailing how to treat and use, manage, store, and dispose of the substance. Material stored according to the COSHH assessment. Smoking or ignition sources to be avoided near to the flammable substances. How works -usually required for some corrective maintenance- will require additional control measures and a permit-to-work	9		4
Visitors, contractors, staff. How : unexpected behaviour (i.e. smoking), working bad practices	During site visits, preventive or corrective maintenance	PAT (Permit-to-Access) required to enter the site and specific site inductions where the site rules and requirements, such as smoking prohibition (and vaping). Disciplinary action for unsafe behaviours. Hot works are managed under a permit-to-work system. ERP available on site.	9	Explain fire risk in the induction outline location of firefighting means, assembly points, ensuring sign in/out register is understood and behaviour in case of fire event.	2

Hazards liable to create a fire risk and how	When	Safety controls	Risk	Comment	Risk rating after controls
Fire on cabins - rooms: monitoring customers. How: malfunction of electric equipment or electric devices in the cabins, failure in the maintenance of the equipment (wrong settings, wrong assembly or installation). Wild animal damaging electric components or conductors	Operations phase, maintenance activities, office works on site	Procedures for any corrective maintenance (repair, replacement, testing) carried out in the customer building or the monitoring room. These procedures shall include controls and verification of the installation, testing and inspection before commissioning and after any test or inspection. All the maintenance works, repairs, replacements, testing, setting and/or inspection of the cabins electrical equipment or components shall be carried out by competent personnel. Only authorised personnel can enter the site cabins. EPC HV Safety Rules will be applicable in any HV environment (customer substation). Smoke detectors according to the UK standard BS 5839- 1:2017 and wiring to the standard 7671:2018 and connected to the fire panel. System of detection to be inspected and tested by an external competent person (standard BS 5839). PAT testing required for electric portable appliances (cellular chargers, printers, laptop charger, portable tools chargers...). Safety voltage for portable electric tools 110 volts. Prohibition of smoking or vaping on site.	16		4
Generator (gas-oil) for auxiliary power supply. How : malfunction, overheating	In case of an unexpected site shutdown requiring auxiliary power supply	Maintenance plan of the generator and its components according to the manufacturer literature. The SM shall agree with a competent person the required inspections and testing to comply with the manufacturer instructions.	8		4
Intruders, unauthorised access How: vandalism, arson, equipment manipulation	During operational phase when site is unoccupied	All the site perimeter is fenced and monitored 24/7 by an external security company through a CCTV system which is operated remotely. Keep the main gate always closed and locked. The HV areas shall be kept fenced, closed and locked with restricted access. All the electric equipment control panels shall be closed to avoid their manipulation by unauthorised people.	12		3