

EMERGENCY RESPONSE PLAN

BALLYCUNNEEN BATTERY ENERGY STORAGE SITE



GREENFIRE SOLUTIONS
SUPPORTING RENEWABLE ENERGY

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GREENFIRE SOLUTIONS

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1. Introduction

TOBIN (under the instruction of BNRG Ballycunneen Ltd) (the Applicant) have commissioned Greenfire Solutions (GS) to provide an Emergency Response Plan (ERP) for the proposed Ballycunneen Battery Energy Storage System (BESS), located across the townlands of Ballycunneen, Co. Clare (the Application Site). The BESS forms part of a larger proposed solar farm and associated infrastructure development, which is the subject of a planning appeal before An Coimisiún Pleanála (Case No. PL-500676-CE-26; Clare County Council Planning Reference No. 2560560). This ERP relates solely to the BESS component of the proposed development.

Greenfire Solutions

GS is led by former Senior Officers from the UK Fire and Rescue Service, and we work with fire and rescue services across the UK, the Republic of Ireland, Local Authorities and private sector applicants. We pride ourselves on providing a wide range of high-quality, bespoke, and ethically sound advice and support. Since the launch of GS, we have enjoyed considerable growth, built upon the foundations of a solid reputation for delivering high quality outcomes. We work with over 45 energy companies and planning consultancies helping to shape projects from inception through to delivery on the ground. We provide an end-to-end solution in relation to the management of fire risk.

Author

The author of this document is David Pemberton, a former strategic manager in the UK Fire & Rescue Service (FRS). David has 30 years' experience as a risk management and leadership professional and delivering community safety and resilience in challenging and complex environments. David has a reputation for forming powerful collaborative relationships and delivering excellence.

Purpose

This Emergency Response Plan (ERP) is a framework which will be fully populated once the exact scheme design and technology is procured, and more detailed information available. The Final ERP will be populated after planning consent is granted and further information and detail is available. The Final Emergency Response Plan will be provided so that all Ballycunneen BESS site personnel understand the practices that are to be followed to be prepared for and to provide immediate and effective response to emergencies that might arise at the facility.

The primary objectives of this ERP are to:

- Safeguard human life and the safety of emergency responders attending the site;
- Protect property and critical infrastructure;
- Prevent and mitigate environmental contamination; and,
- Ensure consistent coordination with Co. Clare Fire and Rescue Service and other principal response agencies (PRAs) under the Framework for Major Emergency Management.

This ERP has been prepared in compliance with, and with reference to, the following:

- NFCC Grid-Scale Battery Energy Storage System Planning Guidance (December 2025);
- NFPA 855:2026 — Standard for the Installation of Stationary Energy Storage Systems;
- Health and Safety Executive (HSE) grid-scale energy storage safety guidance (2024); and,
- PAS 63100:2024 — Protection Against Fire of Battery Energy Storage Systems.

Scope

This ERP covers the commissioning, operation, maintenance and decommissioning phases of the Ballycunneen BESS. The ERP relates solely to the BESS compound; separate arrangements apply to the wider solar farm development. Foreseeable incidents addressed include: thermal runaway and fire within BESS containers; fire involving ancillary electrical infrastructure (including Power Conversion

Systems and Medium Voltage Power Systems); explosion and gas release; environmental contamination from fire-water runoff; and interface risks with the co-located solar farm infrastructure. The ERP will be supported by a commitment for an ongoing Fire Communications Framework (FCF). The FCF will outline an agreed approach to ongoing communication / coordination strategies between the ultimate BESS operator and the local Co. Clare Fire and Rescue Service Fire Station, and should cover all project development stages, including pre-planning; site commissioning; site operations; and site decommissioning.

The ERP will be supported by a Site-Specific Tactical Fire Response Plan (TFRP) developed in agreement with Co. Clare Fire and Rescue Service and other key stakeholders. The TFRP provides detailed operational information to emergency crews attending the premises, including specific firefighting tactics, access routes, isolation procedures and hazards particular to the Development. Information from the TFRP will be made available electronically to Co. Clare Fire and Rescue Service for integration into their internal operational information systems and, should GS be commissioned to undertake a Site-Specific Risk Information (SSRI) Pack, will be housed in a Security Information Box (SIB) at the site vehicular access point, of a type recommended by Co. Clare Fire and Rescue Service.

Life safety of personnel shall be the highest priority during any event.

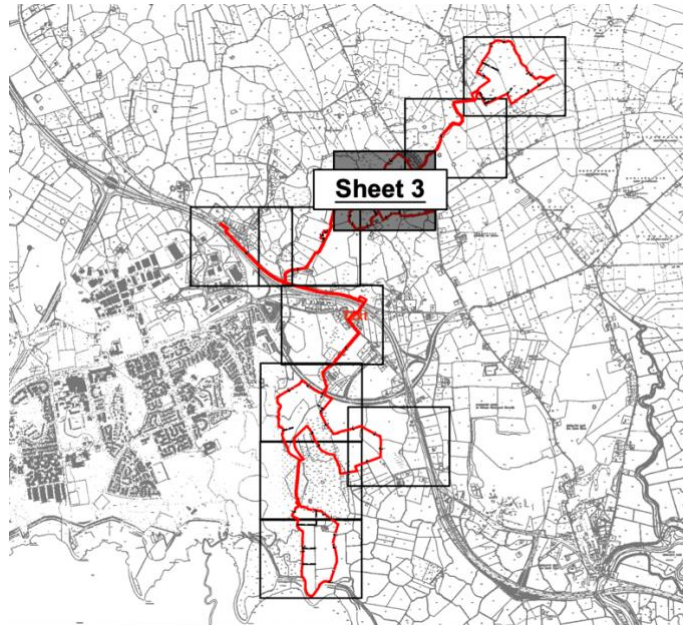
Review

The success or failure of all emergency plans depends upon effective training, continual e.g. annual, review of this response plan, and execution of the response. Successful implementation of this plan depends on timely identification of capabilities, available resources at the time of the incident and a thorough information exchange between responding organisations and the facility.

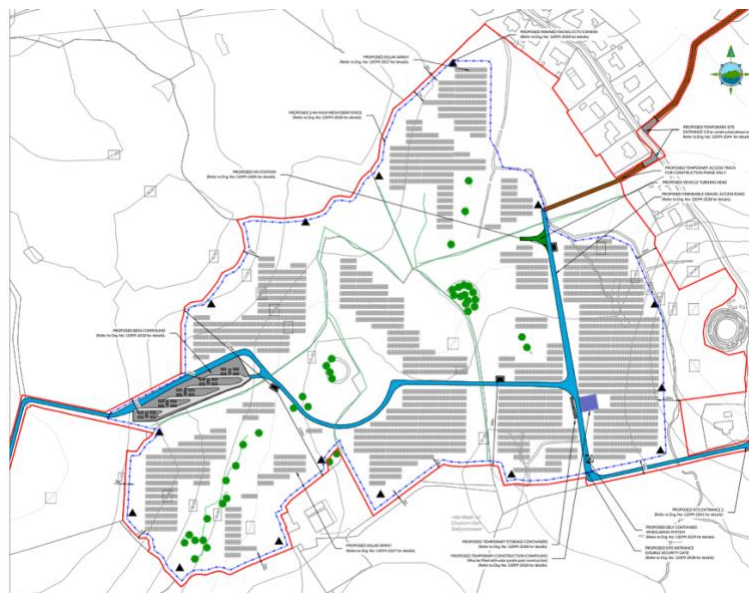
This ERP will be reviewed on at least an annual basis and updated as required to ensure that it remains current, accurate and fit for purpose.

2. Site Layout

The proposed Ballycunneen BESS is located at approximately 52.725612°N, 8.842984°W, approximately 5 km east-northeast of Shannon town, Co. Clare. The BESS compound forms part of a wider solar farm development situated on a predominantly rural site to the east of Shannon town. The Application Site lies in relative proximity to the Shannon Estuary, which is designated as a Special Protection Area (River Shannon and River Fergus Estuaries SPA; BirdLife Site Code 004077). The southernmost parcel of the wider development (Land Parcel 4) lies immediately adjacent to the SPA. The nearest fire station to the Application Site is Shannon Fire Station, operated by Co. Clare Fire and Rescue Service (a local authority fire service operating under Clare County Council). Shannon Fire Station is crewed on an on-call basis.



Location of Solar Farm site (see below for Sheet 3; location of BESS)



Sheet 3 – location of BESS compound

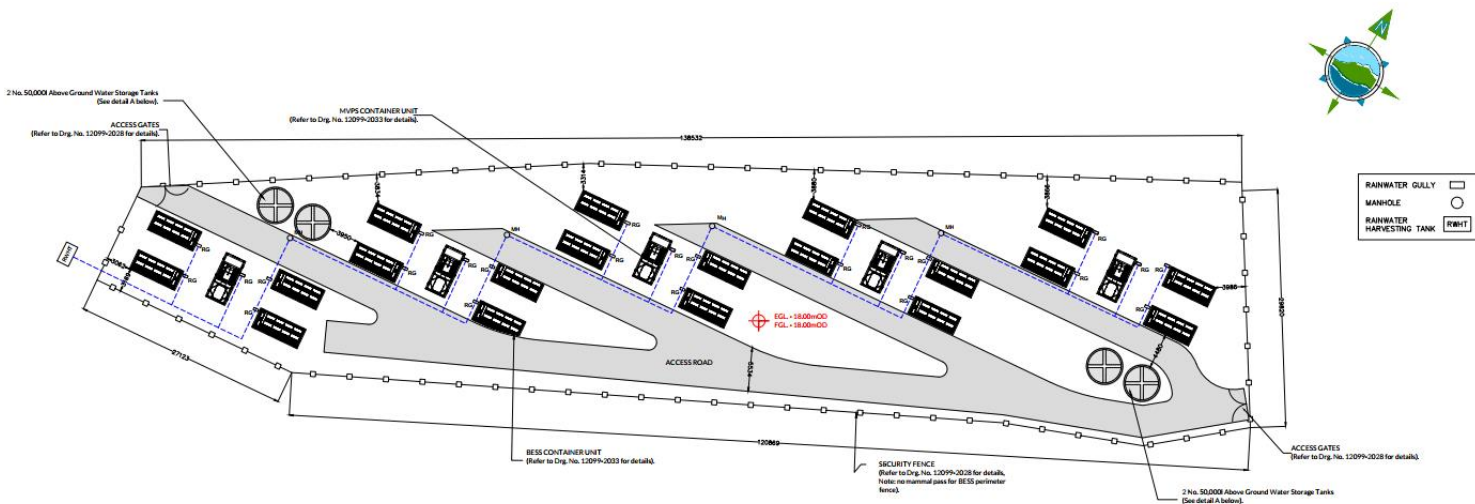
3. Description of Facility

The proposed Ballycunneen BESS is based on Lithium Iron Phosphate (LiFePO₄ or LFP) technology. The final battery enclosure manufacturer and precise technical specification have not yet been determined, as the procurement process has not commenced. The proposed development comprises the following principal components:

- Up to 20 no. containerised BESS units;
- Up to 5 no. Medium Voltage Power Systems (MVPS) incorporating inverters and transformers for the BESS containers;
- Internal access tracks, turning areas and hardstanding;

- Site security fencing, access gates and associated perimeter infrastructure; and,
- Associated electrical, communications, drainage and environmental protection infrastructure.

The BESS compound is approximately 75 m long by 16 m wide. BESS containers are arranged in arrays of four containers, each associated with one MVPS unit. Inter-container spacing within arrays is 6 m, with a further 6 m separation between containers and the associated MVPS. Two separate access points are provided to the eastern and western sides of the compound, connected by a through-track with short spurs to each array. The inter-array separation of 6 m substantially exceeds the 0.914 m minimum specified in NFPA 855:2026 and provides an additional defensive buffer against fire propagation between arrays.



Proposed BESS compound layout

Battery Chemistry and System Architecture

LiFePO4 technology offers several significant benefits:

- Excellent thermal stability, making it one of the safest lithium-ion battery chemistries available, reducing the risk of thermal runaway and fire hazards;
- Substantially cobalt-free, more environmentally friendly and less dependent on scarce resources; and,
- Adaptability to a broad range of operating temperatures, providing versatility in various environments.

Each BESS container will be equipped with its own Battery Management System (BMS), which will monitor and manage the performance, safety and health of the batteries within each container, providing an effective method for early identification of potential faults. Individual container BMS units will communicate with a central site-level BMS, which aggregates data from all containers, enabling real-time monitoring, control and coordinated response across the site. It is expected that the selected technology will incorporate a liquid-cooled Thermal Management System (TMS) that continuously monitors temperature at the cell level to prevent conditions that could lead to thermal runaway. The precise operating parameters of the TMS will be confirmed through the procurement process and documented in the Detailed Battery Safety Management Plan (DBSMP).

The ultimate selection of battery technology will be determined through a rigorous procurement process, considering the most up-to-date technology and safety standards available at the time of

implementation. The battery technology will be confirmed as part of the DBSMP, which is expected to be required by planning condition prior to operation of the development, submitted to and approved in writing by Clare County Council in consultation with Co. Clare Fire and Rescue Service.

4. Site Contacts / Roles and Responsibilities

Once planning consent has been granted, and prior to site construction commencing, up-to-date contact information for facility personnel, off-site technical support personnel, and emergency contact numbers will be compiled and included in the Final ERP and TFRP. This will include, as a minimum:

- Site operator / O&M contractor and 24/7 emergency contact number;
- On-call engineering support;
- Keyholding arrangements and site access contacts;
- Co. Clare Fire and Rescue Service control room;
- Environmental Protection Agency (EPA) emergency contact;
- Applicant / Owner senior responsible officer; and,
- Any other relevant emergency contacts identified through the FRHA process.

The site is anticipated to be operated remotely during normal operation, with periodic visits by operations and maintenance (O&M) staff. A security operative or on-call engineer will be the primary point of contact for emergency services attending the site. During the construction phase, contacts and responsibilities will be managed through the Construction TFRP. The contacts and responsibilities information from the TFRP will be made available electronically to Co. Clare Fire and Rescue Service for use in their internal operational information systems.

5. Hazard Identification

Once planning consent has been granted, and prior to site construction, a full Fire Risk and Hazard Assessment (FRHA) will be created. The FRHA will ensure compliance with the Safety, Health and Welfare at Work Act 2005 and the Fire Services Acts 1981 and 2003. The information from the FRHA will directly feed the Final ERP and TFRP. Such an approach will ensure a systematic way to identify all potential sources of ignition, mitigation approaches and response strategies to fire risk.

The main hazards associated with a BESS site primarily revolve around fire, explosion, and electrical risks, particularly when using lithium-ion technology. These risks are most prevalent during construction and the first two years of operation. The key hazards of a BESS site are:

1. Thermal Runaway and Fire

- **Thermal Runaway:** Uncontrolled self-heating of battery cells, potentially leading to fire and gas release within a BESS container.
- **Self-Sustaining Fires:** Fires that continue to propagate within a BESS container independent of external ignition sources.
- **Reignition:** Risk of re-ignition of a BESS container following apparent extinguishment, due to residual thermal energy.
- **Fire propagation pathways between BESS units:** Risk of fire spreading between adjacent BESS containers via radiant heat, direct flame impingement, or migration of hot gases.

2. Explosion and Gas Release

- **Toxic/Flammable Gases:** Release of hydrogen fluoride (HF), carbon monoxide (CO), hydrogen (H₂) and volatile organic compounds (VOCs) during thermal runaway events.

- **Vapour Cloud Explosions:** Risk of deflagration or detonation arising from accumulation of flammable gases, including secondary explosion risk via cable route vapour migration pathways to associated electrical infrastructure.

3. Electrical Hazards

- **High-Voltage Shock:** Risk of contact with high-voltage conductors within BESS containers, MVPS, grid connection infrastructure and associated cabling.
- **Arc Flash:** Risk of electrical arc flash from BESS containers, MVPS, Medium Voltage (MV) switchgear and associated equipment.
- **Electrical fire hazards:** Fire risk from Power Conversion Systems (PCS), MV switchgear, transformers and HV substation apparatus, including dielectric fluid fires.

4. Environmental and Physical Hazards

- **Toxic Water Run-off:** Risk of contaminated firewater runoff entering watercourses, groundwater or the Shannon Estuary SPA.
- **Structural Risks:** Potential structural failure of containers or support infrastructure during a fire or explosion event.
- **Burnt/unburnt products of combustion:** Deposition of particulate matter and combustion by-products in the local area.
- **Environmental contamination:** Potential release of transformer dielectric oil or thermal management cooling fluid.
- **Interface risks:** Risks arising from the co-location of the BESS with the wider solar PV farm infrastructure.

5. Hazardous Materials

- **Electrolyte Leaks:** Release of battery electrolyte, which may be flammable or chemically reactive and may contribute to fire or environmental contamination.
- **Chemical Burns:** Risk of chemical burns from contact with battery electrolyte or other hazardous materials present on site.

6. Site Access and Evacuation Routes

The Application Site will be accessed via two separate access points on the eastern and western sides of the BESS compound. Both access points connect to an internal through-track with short spurs to each BESS array. The minimum design width of internal access tracks is 6 m, which is capable of accommodating Co. Clare Fire and Rescue Service appliances.

Access design will have regard to Technical Guidance Document B (Fire Safety) to the Irish Building Regulations 1997 (as amended) and the NFCC Version 2 Guidance (December 2025). A swept path analysis for emergency vehicles will be undertaken at detailed design stage to confirm that the proposed access arrangements are suitable for fire appliance access and manoeuvring across the site in all weather conditions.

In the event of a fire at the BESS compound, Co. Clare Fire and Rescue Service will likely establish a 50-metre safety exclusion zone (inner cordon) around the BESS container(s) undergoing a thermal event. Given the dimensions of the BESS compound (approximately 75 m × 16 m), this cordon may extend beyond the perimeter boundary of the compound on some or all sides. The area beyond the inner cordon will serve as the operational base for attending crews, command facilities and emergency coordination, ensuring all personnel remain at a safe distance from the primary hazards.

Matters such as the detailed locations of Rendezvous Points (RVP), Forward Control Points (FCP), assembly points for facility personnel, evacuation routes, access codes, keyholding arrangements and hard standing areas for emergency appliances will be confirmed in the Construction TFRP and incorporated into the Final ERP and TFRP.

7. Site Water Supplies

An increasing number of BESS manufacturers suggest that applying firefighting branches (water) to a BESS unit undergoing a thermal event will have limited effect and could prolong the duration of the thermal event unnecessarily.

Therefore, should water be required / used, the recommended firefighting tactic is for water to be used defensively via water fog or spray pattern branches directed on areas adjacent to the BESS unit undergoing the thermal event to prevent an incident developing beyond the BESS unit of origin. This is commonly known as boundary cooling, and is intended to significantly reduce overall water requirements, and thus the associated drainage / environmental protection requirements. This tactic is currently recognised as an appropriate operational approach by the UK fire and rescue service.

Several BESS manufacturers now advocate that should a BESS unit have a thermal event and progress to thermal runaway; the affected unit should be permitted to consume itself (i.e. burn itself out). This 'burn' policy is recognised within the NFCC Version 2 Guidance (December 2025) and is accepted by many insurers. GS experience is that the majority of applicants adopt a burn policy across their sites, and GS advocates such an approach.

The NFCC Version 2 Guidance (December 2025) specifies that private fire hydrants should be capable of achieving a flow rate of no less than 1,500 litres per minute. Where a flow rate of 1,500 litres per minute cannot be achieved from hydrant infrastructure, it is prudent to provide an equivalent static water supply sufficient to deliver that flow rate for a sustained duration of 120 minutes, equating to a minimum static supply of approximately 180,000 litres. The proposed layout includes the provision of 4no. static water tanks each containing 50m³ of water.

Co. Clare Fire and Rescue Service will be consulted on water supply requirements for the site as part of the engagement process. The detailed water supply arrangements, including any requirement for on-site static water storage and private fire hydrants, will be agreed with Co. Clare Fire and Rescue Service and captured within the TFRP. Private fire hydrants and any connections to dry pipe systems would be installed in accordance with BS 9990 (Non-automatic Firefighting Systems — Code of Practice) and identified in accordance with BS 3251 (Indicator plates for fire hydrants and emergency water supplies). Operational advice and site information on water supplies, operational tactics and considerations will be captured in the TFRP and agreed with Co. Clare Fire and Rescue Service prior to commissioning.

8. Communication Protocols

Once planning consent has been granted, and prior to site construction, a full Fire Risk and Hazard Assessment (FRHA) will be created. The FRHA will ensure compliance with the Safety, Health and Welfare at Work Act 2005 and the Fire Services Acts 1981 and 2003. The information from the FRHA will directly feed the Final ERP and TFRP. Such an approach will ensure a systematic way to identify all potential sources of ignition, mitigation approaches and response strategies to fire risk.

The final and fully populated ERP will be supported by a Site-Specific Tactical Fire Response Plan (TFRP) developed in agreement with Co. Clare Fire and Rescue Service and other key stakeholders. The TFRP provides detailed operational information to emergency crews attending the premises and will include, inter alia, details of site access, water supplies, firefighting tactics, drainage and environmental protection measures, and emergency contact information. Information from the TFRP will be made available electronically to Co. Clare Fire and Rescue Service for integration into their internal operational information systems.

The ERP and TFRP will be supported by a commitment for an ongoing Fire Communications Framework (FCF). The FCF will outline an agreed approach to ongoing communication / coordination strategies between the ultimate BESS operator and the local Co. Clare Fire and Rescue Service Fire Station, and

should cover all project development stages, including pre-planning; site commissioning; site operations; and site decommissioning.

Through the Final ERP and TFRP, details of the Operators Control Centre emergency call response process will be established, including a copy of the call response form.

Clear communication processes will be established to include: how, in the event of a fire incident occurring on site, on-site detection systems will alert site operatives (on-site or remote) of the incident; the process for the site keyholder to provide Co. Clare Fire and Rescue Service with access to the site; the means by which relevant incident information and the TFRP documents contained within the Secure Information Box (SIB) are made available to attending crews; and protocols for communication between the on-call engineer and Co. Clare Fire and Rescue Service, both remotely and on-site, to ensure accurate and current information is provided to emergency responders at all stages of an incident.

The Secure Information Box (SIB) will be located at the site entrance and will contain the ERP, TFRP, site layout plans, details of water supplies, signage information, drainage and runoff containment plans, emergency contact details and any other information of relevance to Co. Clare Fire and Rescue Service crews attending an incident at the site.

9. Major Incident Emergency Services Briefing (METHANE)

During operation, the proposed Ballycunneen BESS is anticipated to be controlled remotely, with only periodic visits from operations and maintenance staff. In the event of an emergency, a security operative or on-call engineer will be the primary point of contact for attending emergency services.

A major incident occurs when the location, number, severity or type of casualties requires extraordinary resources. The declaration of a major incident by emergency services results in the implementation of a multi-service structured response based on the key principles of: command and control; safety; and communications.

The Emergency Services use the METHANE acronym to build a structured report for alerting others about a major incident. METHANE stands for:

- **M**ajor Incident Declared
- **E**xact location
- **T**ype of incident
- **H**azards
- **A**ccess
- **N**umber and type of casualties
- **E**mergency services present and required

METHANE is the recognised model for passing incident information between emergency services and their control rooms. All site staff will receive appropriate awareness training to ensure they are able to provide relevant information to the emergency services in the event of an incident at the site.

10. Directions to Hospital

The nearest acute hospital to the Application Site is **University Hospital Limerick (UHL)**, which is the principal Emergency Department serving County Clare and the Mid-West region of Ireland.

Address: Dooradoyle, Limerick, V94 F858

Telephone: (061) 301 111

Approximate distance from site: Approximately 20 km / 25 minutes by road

Directions from Site to University Hospital Limerick

From the Ballycunneen BESS site, proceed west / south-west toward Shannon town. Join the N19 / N18 dual carriageway southbound in the direction of Limerick. Continue on the N18 / M18 motorway toward Limerick city. Take the exit signposted for Dooradoyle / University Hospital Limerick and follow signs for University Hospital Limerick (UHL). The Emergency Department is clearly signed on arrival at the hospital campus.

11. Firefighting and Fire Mitigation Facilities

Proposed Safety Measures

Detailed information and specifications for the fire safety and mitigation systems are not yet available, as the battery enclosure procurement process has not commenced. Requirements have been identified and general principles have been outlined in the Risk Management and Compliance Report prepared for the planning appeal. The following sections describe the expected provisions, which will be confirmed and detailed in the DBSMP and Final ERP post-consent.

Internal Safety Measures

Each BESS container is expected to incorporate the following internal safety measures as a minimum requirement of the procurement specification:

- **Battery Management System (BMS):** Continuous cell-level monitoring of voltage, current, temperature, State of Charge (SoC) and State of Health (SoH), with overcharge, over-discharge and short circuit protection. BMS alarms are classified as follows: **Level I** alarm leads to a 50% power reduction; **Level II** alarm places the PCS into standby mode; **Level III** alarm results in the cutoff of the relay.
- **Overcurrent and Ground Fault Protection:** Electrical protection systems to detect and interrupt fault conditions before they can develop into thermal events.
- **Remote Shutdown Capability:** Emergency shut-down capability accessible remotely and locally, including from the site-level Energy Management System (EMS) / SCADA system.
- **Overpressure Vents:** Passive pressure relief venting to safely manage gas build-up within the container enclosure during a thermal event.
- **Thermal Management System:** Liquid cooling system maintaining optimal operating temperatures at the cell level, with backup power capability to remain operational during grid disconnection events.

External Safety Measures

The following safety measures are proposed to be installed external to the BESS containers:

- Access to and egress from the site at two locations (eastern and western), providing an alternative route in the event that one access point is compromised.
- Site lighting (sensor-activated and/or manually triggered) to support safe night-time access by emergency services.
- Smoke and heat detection systems external to the BESS containers, including at the MVPS units, to provide early warning of fire events.
- A site drainage system designed to contain contaminated firewater runoff, preventing discharge to the Shannon Estuary or other watercourses (see Section 14).
- Signage in visible locations indicating the type of infrastructure, relevant hazards, installed mitigations and 24/7 emergency contact information.
- Unobstructed access to the site (at both access points) maintained at all times.
- On-site CCTV

Fire Detection and Suppression

Each BESS container is expected to be equipped with advanced smoke, heat and flammable gas detection systems — including sensors for hydrogen, carbon monoxide and volatile organic compounds — integrated with the BMS and site-level EMS, to provide early detection of thermal anomalies and off-gassing events.

Based on current indicative design, the internal fire suppression system within each BESS container is anticipated to comprise an aerosol or clean-agent suppression system. The specific suppression agent and deployment configuration will be confirmed through the procurement process. GS does not recommend the installation of water-based suppression systems (sprinklers, water mist, deluge or fixed water spray) inside BESS units, in line with current industry guidance and the position set out in Section 7 of this ERP. The fire detection and suppression systems will be designed to meet the requirements of BS EN 54 (series), BS 5839-1:2017 and, where applicable, BS EN 14972-1:2020+A1:2025, and validated through UL 9540A:2025 testing.

Deflagration Venting and Explosion Prevention

It is expected that the chosen technology will incorporate comprehensive active and passive safety features to prevent and manage deflagration risks. The primary explosion control strategy is anticipated to comply with NFPA 69 (Standard on Explosion Prevention Systems) as the primary active control mechanism, including:

- Continuous combustible gas monitoring to maintain concentrations below 25% of the Lower Explosive Limit (LEL) / Lower Flammable Limit (LFL);
- Active mechanical ventilation for purging dangerous off-gases, with backup power capability during grid disconnection; and,
- Automatic system shutdown in response to detected gas, thermal or electrical anomalies.

Passive deflagration venting in accordance with NFPA 68 (Standard on Explosion Protection by Deflagration Venting) and/or BS EN 14373:2021 (Explosion Suppression Systems) may be incorporated as supplementary protection. The procurement specification will also require a cable route vapour migration risk assessment, covering all cable routes and conduits connecting BESS containers to MVPS, substation and control building infrastructure, in accordance with NFCC Version 2 Guidance (December 2025).

Power Conversion / Medium Voltage Power Systems

Each MVPS is expected to incorporate a transformer using mineral or synthetic dielectric oil for insulation and cooling. Such oil will be stored in an independent reservoir that is bonded to 110% of the oil volume capacity. Regular inspection and maintenance of dielectric oil storage will be required to ensure oil quality and integrity.

Summary

The combination of real-time BMS monitoring with multi-tiered control hierarchy, active thermal management with liquid cooling, proprietary deflagration protection system, and automatic safety responses is designed to ensure a safe operating environment. The system has been validated through extensive UL 9540A testing and large-scale fire testing to demonstrate its ability to mitigate thermal risks within the BESS and prevent conditions that could lead to thermal runaway propagation.

12. Off-Site Smoke Plume Considerations

The prevailing wind direction at the Application Site is **south-westerly**, consistent with the prevailing conditions for the west of Ireland. The BESS compound is located approximately 5 km east-northeast of Shannon town and in relative proximity to the Shannon Estuary, designated as a Special Protection Area (River Shannon and River Fergus Estuaries SPA; BirdLife Site Code 004077).

Sensitive receptors within 1 km of the BESS compound are to be identified and assessed in the Final ERP, confirmed by detailed site survey.

Guidance published by the National Fire Chiefs Council (NFCC Version 2, December 2025) advises that smoke from lithium-ion battery fires should be considered potentially toxic and corrosive, and appropriate precautions should be taken. **Hydrogen Fluoride (HF) is generally considered the primary toxic hazard** associated with lithium-ion battery fires. During a fire event, smoke and combustion gases may migrate beyond the site boundary, with the potential to affect personnel, nearby receptors and the environment downwind of the site.

Potential off-site impacts may include:

- Exposure of persons downwind to irritant or toxic smoke;
- Reduced visibility in the local area due to dense smoke plume;
- Deposition of particulate matter and combustion by-products in the local area; and,
- Potential contamination of the Shannon Estuary SPA and associated habitats and species in the event of a significant fire, dependent on wind direction.

In the unlikely event of a significant battery fire, the Incident Commander from Co. Clare Fire and Rescue Service may consider appropriate public safety measures, which could include temporary cordons or exclusion zones; road closures in the immediate area; shelter-in-place advice for nearby receptors downwind of the incident; and evacuation of nearby properties if deemed necessary.

Given the proximity to the Shannon Estuary SPA, any significant fire event should prompt early notification of the Environmental Protection Agency (EPA) and the National Parks and Wildlife Service (NPWS), as appropriate. Contact details for these bodies will be included in the Final ERP and TFRP.

A formal smoke plume dispersion analysis has not been undertaken at this stage of development. The impact assessment outcomes, including Acute Exposure Guideline Level (AEGL) and Short-Term Exposure Limit (STEL) analysis for key toxic species (particularly HF), would be incorporated into the Final ERP and TFRP.

13. Incident Response Procedures / Emergency Action Checklists

Once planning consent has been granted, and prior to site construction, a full Fire Risk and Hazard Assessment (FRHA) will be created. The FRHA will ensure compliance with the Safety, Health and Welfare at Work Act 2005 and the Fire Services Acts 1981 and 2003. The information from the FRHA will directly feed the Final ERP and TFRP. Such an approach will ensure a systematic way to identify all potential sources of ignition, mitigation approaches and response strategies to fire risk.

This ERP is a framework which will be fully populated once the exact scheme design and technology is procured and more detailed information is available. The ERP will be further developed in consultation with Co. Clare Fire and Rescue Service through the TFRP process, to include site-specific emergency action checklists for use by facility personnel.

Once planning consent is granted, and prior to construction commencing, detailed emergency procedures will be provided for all credible hazards and risks, including:

- Building, infrastructure and vehicle fires;
- Environmental contamination from firewater runoff or BESS electrolyte release;
- Grassfire or wildfire approaching or affecting the site;
- BESS-specific scenarios (thermal runaway; gas release; deflagration / explosion); and,
- Incidents involving the co-located solar farm infrastructure.

Location and details of emergency resources to be included in the Final ERP:

- Emergency eyewash and shower facilities;
- Spill containment systems and equipment;

- Emergency warning systems (audible and visual);
- Communication systems (including radio, telephone and emergency contacts);
- Personal protective equipment (PPE) storage locations;
- First aid supplies;
- Procedures for manually activating fire suppression systems; and,
- Emergency stop (E-stop) facility locations and activation procedures.

Operational tactics, Emergency Action Checklists and detailed site-specific response information will be captured in the TFRP, developed and agreed with Co. Clare Fire and Rescue Service prior to commissioning.

14. Environmental Protection Plans

In line with NFCC Version 2 Guidance (December 2025), this ERP recommends no direct water application to a BESS unit undergoing a thermal event. Should water be required for boundary cooling of areas adjacent to the affected container, the drainage design must ensure that any contaminated firewater runoff is contained on site and does not enter any watercourse, drainage ditch, groundwater body or the Shannon Estuary SPA.

The proposed drainage and containment strategy for the Application Site incorporates the following measures:

- All BESS units and MVPS transformer units will be positioned on concrete rafts with impermeable bunded aprons to contain any leaks, spills or contaminated firewater runoff.
- A Class 1 oil/water separation system will be provided as an additional layer of protection to prevent contamination of surface water or groundwater from transformer dielectric oil releases.
- The site drainage strategy proposes an underground piped system connected to an attenuation structure where it will be contained during a fire event and can be used for recirculation as part of the water strategy. Final sizing will be confirmed at detailed design stage following infiltration testing.
- An emergency drainage shut-off (penstock or equivalent) will be incorporated into the drainage system to prevent contaminated runoff from leaving the site in the event of a significant fire or spill incident.
- Filter drains and drainage blankets will be incorporated where appropriate to manage surface water runoff across the site.

Given the proximity to the Shannon Estuary SPA, particular attention will be paid during detailed design to ensure that the drainage and containment system provides adequate protection for this designated site. The EPA, Clare County Council and the NPWS will be consulted as appropriate during the detailed design process.

The Environmental Protection Plans for the site, including detailed drainage and containment specifications, will be confirmed in the Final ERP and TFRP, developed in consultation with Co. Clare Fire and Rescue Service and the relevant environmental authorities.

15. Post-Incident Considerations and Stabilisation

Once planning consent has been granted, and prior to site construction, a full Fire Risk and Hazard Assessment (FRHA) will be created. The FRHA will ensure compliance with the Safety, Health and Welfare at Work Act 2005 and the Fire Services Acts 1981 and 2003. The information from the FRHA will directly feed the Final ERP and TFRP. Such an approach will ensure a systematic way to identify all potential sources of ignition, mitigation approaches and response strategies to fire risk.

Following any significant incident at the Ballycunneen BESS, the site will not be re-entered or operations resumed until the Incident Commander from Co. Clare Fire and Rescue Service has declared the scene safe and all immediate hazards have been mitigated. Post-incident stabilisation considerations will include:

- Assessment of residual thermal energy within affected BESS containers and the risk of reignition, which may require extended monitoring over a period of days;
- Assessment and management of toxic off-gas residues within containers and the surrounding area;
- Assessment of structural integrity of affected containers and adjacent infrastructure;
- Environmental assessment and monitoring of any contaminated firewater runoff, particularly in relation to the Shannon Estuary SPA; and,
- Safe storage, removal and disposal of affected battery materials in accordance with applicable Irish waste and environmental legislation.

A Detailed Battery Safety Management Plan (DBSMP) will be developed post-consent, which will include detailed post-incident procedures for site stabilisation, safe removal of affected BESS containers, and coordination with Co. Clare Fire and Rescue Service, the EPA and other relevant authorities. Further detail will be incorporated into the Final ERP and TFRP.

16. Procedures for Reviewing and Updating ERP

This ERP will be reviewed on at least an annual basis and updated as required. The ERP and TFRP will be maintained in alignment to ensure that the information available to Co. Clare Fire and Rescue Service and site personnel remains accurate and current throughout the operational life of the Ballycunneen BESS.

In addition to the annual review, this ERP will be reviewed and updated in response to the following triggers:

- Changes to personnel or contact details for key stakeholders;
- Changes to O&M contractor or responsibility allocation for the site;
- Changes to associated ERPs or emergency plans for other stakeholders in the vicinity;
- Commencement of construction on or adjacent to the site requiring liaison with emergency services;
- Addition, removal or significant modification of major equipment at the site;
- Changes to site infrastructure, access routes or site tracks; and,
- Improvements or corrective actions arising from audits, exercises, near-misses or incidents.

Co. Clare Fire and Rescue Service will be notified of any material changes to the ERP or TFRP and provided with updated copies for integration into their operational information systems.

17. Training and Plan Testing for Staff and Emergency Responders

All site personnel, O&M staff and security operatives with roles and responsibilities under this ERP will receive appropriate training prior to site commissioning and at regular intervals thereafter. Training and plan testing will be conducted using the following methods:

- **Tabletop exercises (discussion-based):** Structured discussion-based exercises involving key stakeholders, including site operators and Co. Clare Fire and Rescue Service, to review and test emergency procedures, communication protocols and decision-making processes without the need for physical deployment of resources.

- **Functional exercises (demonstrating specific procedures):** Exercises designed to demonstrate and test specific elements of the emergency response, such as site evacuation procedures, communication systems or activation of safety systems.
- **Full-scale drills (hands-on practice):** Exercises involving the full deployment of site personnel and, where appropriate, Co. Clare Fire and Rescue Service, to provide realistic, hands-on practice of emergency response procedures.

All training and exercises will test the following key aspects of the ERP:

- Roles and Responsibilities — ensuring all personnel understand their specific duties during an emergency;
- Procedures and Processes — testing the practicality and effectiveness of documented emergency procedures;
- Communication Systems — verifying that all communication channels function effectively under emergency conditions;
- Logistics and Resources — confirming the availability and accessibility of emergency equipment and resources; and,
- Equipment and Systems — testing the correct operation of safety systems, suppression equipment and detection systems.

Records of all training activities, exercises and drills will be maintained by the site operator and made available to Co. Clare Fire and Rescue Service on request. Lessons learned from exercises and any real incidents will be incorporated into the review and update process for this ERP as described in Section 16.

END