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# Old Wood Energy Park

## Land west of Wysall, Nottinghamshire

## Outline Battery Safety Management Plan

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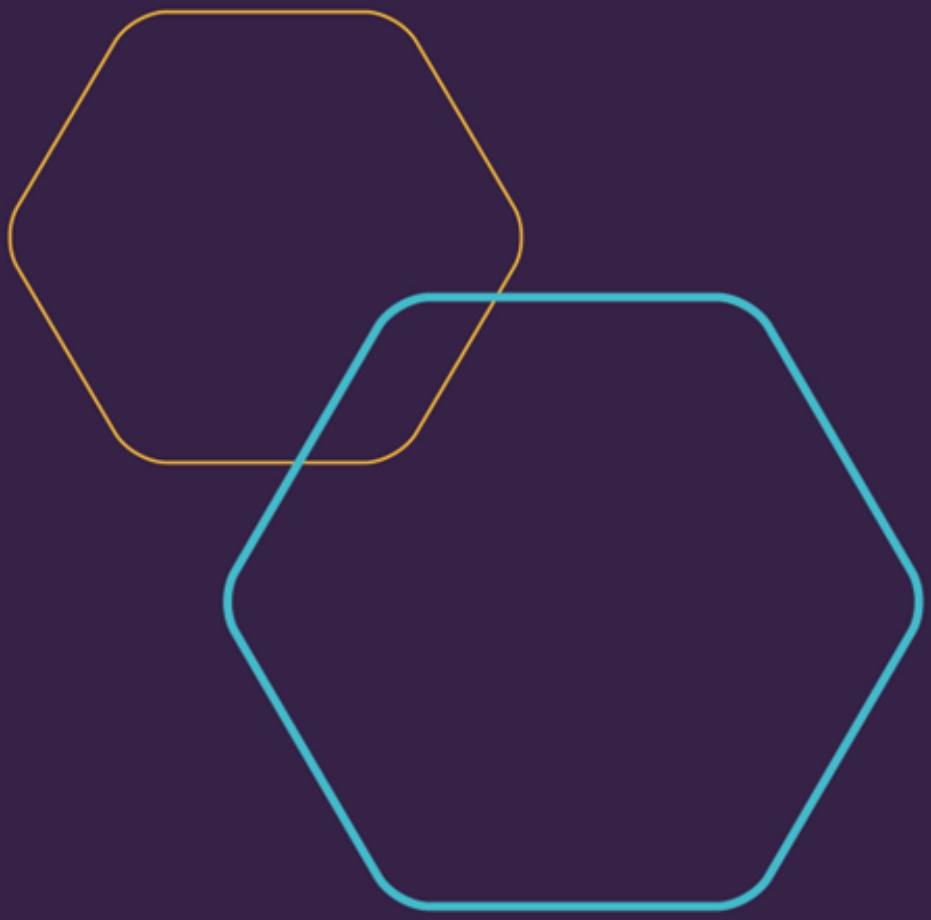

# Outline Battery Safety Management Plan

## Old Wood Energy Park

December 2023

exagen

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# 1 INTRODUCTION

## 1.1 Background

This Outline Battery Safety Management Plan ('OBSMP') has been prepared by Exagen to support the planning application for Old Wood Energy Park, a renewable energy project proposed to the west of Wysall, Nottinghamshire.

The project is made up of:

- a solar farm, split over two land parcels occupying agricultural land to the west of Wysall;
- a point of connection, substation and Battery Energy Storage System (BESS) compound, located on the southern of the two land parcels and accessed off Wysall Road; and
- a buried cable in the public road between the two land parcels.

There are no battery containers located on the northern parcel of land and so, for the purpose of this report, the focus is on the southern part of the southern parcel where the point of connection, substation and BESS compound is located and which is referred to as the Site. The compound will include a 132kV substation with transformer and 76 battery storage containers (similar to 20ft shipping containers), 38 inverters, 4 auxiliary transformers, two switchroom buildings, access tracks and fencing. For the purposes of this report these components are referred to as 'the Development'.

This OBSMP has been prepared to ensure that safety risks related to the proposed BESS are understood, accounted for and mitigated as far as practicable, in agreement with relevant consultees, prior to construction commencing. The purpose of this document is to identify how industry good practice will be used to reduce risk to life, property, and the environment from the BESS.

It is anticipated that any planning permission granted for the Development would require, as a condition prior to the implementation of any BESS, a Detailed Battery Safety Management Plan ('DBSMP'), which would be in accordance with this report. This is an approach that has been taken for applications for other large utility scale BESS projects in the UK, either standalone BESS projects or co-located with other renewable technologies such as solar or wind farms. As part of preparation of the DBSMP, consideration will be given to the latest good practices for battery fire protection including prevention, detection, protection, along with local fire authority agreed emergency response plans, as guidance continues to develop in the UK and overseas. This document is based on the guidance as of December 2023 however the relevant guidance in place at the time of construction will be used to prepare the DBSMP.

Following the adoption of the measures set out in this OBSMP, the risk of a fire occurring from the BESS will be reduced, and if a fire did occur, the risk of it spreading to the point where it became a major incident will be reduced to an acceptable level.

This outline document is required to be updated to a DBSMP prior to construction of the energy storage facility to be tailored to the specific technology chosen for deployment.

There is a suite of other legislation and regulations with regards to Electrical Safety that apply to the Development. These regulations are not set out here, as they do not apply to fire safety, but it is important to emphasise that the controls set out within those regulations on the safe deployment of energy storage technology apply alongside this report.

## 1.2 Planning Permission Conditions

As stated above, it is anticipated that a planning condition would be applied to any planning permission for the Development requiring that, prior to the implementation of any BESS, a Detailed Battery Safety Management Plan (DBSMP) in accordance with this OBSMP will

be submitted to and approved by the Councils following consultation with the HSE and Nottinghamshire Fire and Rescue Service (NFRS).

### 1.3 Document Structure

This OBSMP includes the following sections:

- Introduction;
- Guidance;
- Design Approach with regards to the Development, including responses to recommendations;
- Battery Energy Storage Detailed Design Stage - Pre-Construction Information Requirements;
- Fire Hazard Management; and
- Conclusions.

## 2 GUIDANCE

### 2.1 International Guidance

The design of the Development has been influenced by a range of guidance documents and standards. While there is limited UK-specific guidance available specifically for Battery Energy Storage Systems (BESS), consideration is given to best practices from various sources worldwide.

The following international guidance has been considered during the preparation of the OBSMP and remains relevant:

- Allianz Risk Consulting (ARC), Tech Talk Volume 26 (2019). Battery Energy Storage Systems (BESS) using Li-ion batteries[1];
- National Fire Protection Association (NFPA) 855, Standard for the Installation of Stationary Energy Storage Systems, (final 2020 edition not yet available)[2];
- UL 9540, Standard for Energy Storage Systems and Equipment[3]; and
- Consolidated Edison and New York State Energy Research and Development Authority - Considerations for ESS Fire Safety (February 2017)[4].
- FM Global 2017 and 2023 Property Loss Prevention Data Sheets: Electrical Energy Storage Systems.

At the time of writing, the NFPA and UL United States of America standards are not specifically relevant to the United Kingdom but notwithstanding this provide valuable guidance, and are referred to in the ARC technical note which is addressed in section 3.3 of this document.

More detailed UK guidance is emerging, and it is expected that the regulatory environment will be more developed by the detailed design stage. Examples of existing UK guidance include:

- The Energy Operators Forum "Good Practice Guide" (December 2014)[5];
- Institute of Engineering and Technology - Code of Practice for Electrical Energy Storage Systems (August 2017)[6];

[1] https://www.agcs.allianz.com/news-and-insights/risk-advisory/tech-talk-volume-26-bess-english.html
[2] https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=855
[3] https://standardscatalog.ul.com/standards/en/standard_9540_1
[4] https://www.nyserda.ny.gov/-/media/Files/Publications/Research/Energy-Storage/20170118-ConEd-NYSERDA-Battery-Testing-Report.pdf
[5] https://www.eatechnology.com/engineering-projects/electrical-energy-storage/
[6] https://shop.theiet.org/code-of-practice-for-electrical-energy-storage-systems

- The Energy Institute: Battery Storage Guidance Note 1 - Battery Storage Planning (August 2019)[7]; and
- National Fire Chiefs Council (NFCC) Grid Scale Battery Storage System Planning – Guidance for FRS.

The above NFCC guidance is based on data sheets issued by FM Global, specifically the older version (2017). The NFCC guidance has not been updated since publication of the 2023 version of the FM Global datasheet, which is therefore considered the most up-to-date.

The Development is compliant with relevant legislation and industry standards and aims to apply findings from guidance wherever possible.

### 2.2 Li-Ion Battery Transportation Guidance

International guidance for the transportation of Li-Ion batteries exists in the form of UN 38.3[8].

These rules, issued by the United Nations, are recommendations. European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) 2019[9] includes mandatory rules for signatory states based on these recommendations.

In the ADR UN 38.3 is mentioned as obligatory. The United Kingdom is a signatory to these rules, so must apply them.

UK guidance on the transport of dangerous goods is available online on the Government's "Moving dangerous goods, Guidance" webpage[10].

## 3 BESS DESIGN APPROACH

### 3.1 BESS Failure Mechanisms

There are four primary failure mechanisms of lithium-ion batteries: thermal, electrical, mechanical, and chemical. These failure modes can arise from various factors, including manufacturing defects, overcharging, over-discharging, mechanical damage, overheating, abuse, and internal or external short circuits.

Among these failure types, thermal runaway poses the most significant potential hazard. If left uncontrolled, thermal runaway can result in a fire. Therefore, the main objective of this document is to mitigate the fire risk associated with the BESS and effectively manage the hazard in the unlikely event of its occurrence.

While it is acknowledged that other electrical systems within the BESS, such as transformers, inverters, and switchgear, may also carry fire risks, these risks are better understood and regulated due to their extensive historical deployment. Industry guidance and codes have long addressed these risks. As a result, this document specifically focuses on addressing the battery component of the Development.

### 3.2 Safety Objectives

The Development will minimise risk by:

[7] https://publishing.energyinst.org/topics/power-generation/battery-storage/battery-storage-guidance-note-1-battery-storage-planning
[8] UN Manual of Tests and Criteria (UN38.3 is chapter 38 of this document): ST/SG/AC.10/11/rev 6 with 2 corrigendum. Available at: https://www.unece.org/fileadmin/DAM/trans/danger/ST_SG_AC.10_11_Rev6_E_WEB_-With_corrections_from_Corr.1.pdf [accessed 01/04/2022]
[9] Available at: https://www.unece.org/trans/danger/publi/adr/adr2019/19contentse.html [accessed 01/04/2022]
[10] https://www.gov.uk/guidance/moving-dangerous-goods

- Procuring components and using construction techniques which comply with all relevant legislation;
- Including automatic fire detection systems in the development design;
- Including automatic fire suppression systems in the development design;
- Including redundancy in the design to provide multiple layers of protection;
- Designing the Development to contain and restrict the spread of fire through the use of fire-resistant materials, and adequate separation between elements of the BESS;
- Ensuring that the local fire service's recommendations and requirements are addressed to enable an adequate emergency response to a fire; and
- Working with the local fire service to develop their Tactical Response Plan in case of an incident.

The BESS design aims to achieve the following safety objectives:

- Minimise the likelihood of a fire event;
- Minimise the consequences should a fire occur;
- Contain a fire event to the site;
- Minimise any impact on the surrounding area from smoke and fire;
- Automatically detect and fight a fire;
- Ensure personnel on site can escape safely;
- Ensure firefighters can operate and fight fire in reasonable safety.

### 3.3 Allianz Risk Consulting BESS Design Recommendations

The recommendations set out in the ARC publication are set out in Table 3.1 with the project response to each.

***Table 3.1 - ARC Recommendations***

| ARC Recommendation | Project Response |
|---|---|
| **1. Fire department**<br>• Invite the fire department to your property to discuss BESS hazards. An adequate emergency response is the key to avoiding an uncontrolled fire. Keep in mind that some fire fighters will not fully understand the hazards and may assume that lithium-ion batteries are the same as lithium batteries.<br>• Key questions to discuss with the fire department include:<br>- What is the main difference between extinguishing and cooling?<br>- How to handle a damaged battery?<br>- How to manage the flammable and toxic gases?<br>• Plan training exercises with the fire department when the system is commissioned.<br>• Standard Operating Procedures (SOP) & Standard Operating Guidelines (SOG) are of major importance and should be updated and tested on a regular basis. | Exagen will address all these recommendations through consultation with the local fire service.<br>The local fire service will hold a Tactical Information Record (or equivalent) for the Development. Exagen will engage with the local fire service as required to provide the necessary information for this document prior to the commencement of construction of the BESS and will update the information during operation as required by the local fire service. |

| ARC Recommendation | Project Response |
|---|---|
| **2. Construction and location**<br>• Install BESS outdoors a minimum of 20 m (65 ft.) from important buildings or equipment. Maintain a minimum of 3 m (10 ft.) separation from lot lines, public ways and other exposures.<br>• Within the module, maintain a minimum of 1 m (3 ft.) separation distance between enclosures for all units up to 50 kWh when not listed, or up to 250 kWh when listed.<br>• Install a thermal barrier where the minimum space separation cannot be provided.<br>• If the BESS must be located indoors, install in a 2-hour fire rated cut-off room, which is accessible directly outdoors for manual firefighting.<br>• Restrict the access to competent employees or sub-contractors.<br>• Ensure enclosures are non-combustible. | The design of the BESS will reflect prevailing legislative requirements and UK industry recommendations.<br>A minimum of 3 m separation or the minimum separation specified in applicable UK legislation will be utilised between individual battery containers.<br>Separation between components within BESS containers/modules will comply with identified applicable UK regulations and legislation identified at the time of detailed design (see Table 4.1). Thermal barriers will be utilised where the minimum space separation cannot be provided, also in accordance with applicable regulations.<br>The BESS containers will be located outdoors.<br>Access to the BESS containers will only be available to competent operational staff who have received appropriate training and certification where required by legislation, or under the supervision of competent operational staff.<br>All enclosures will be non-combustible with EI120 standard. |
| **3. Material, equipment and design**<br>• BESS should be tested in accordance with UL 9540A, Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems. This standard evaluates thermal runaway, gas composition, flaming, fire spread, re-ignition and the effectiveness of fire protection systems. Data generated can be used to determine the fire and explosion protection requirements for a BESS.<br>• Place capacitor, transformer, and switch gear in separate rooms according to best engineering practices. | The BESS utilised will hold the relevant test certificates and meet the electrical safety regulation applicable under UK regulations and legislation.<br>The detailed design will identify the location of capacitors, transformers, and switch gear. The design responses to fire risk requirement set out in Table 4.1 will specifically address the placement of these items. |
| **4. Ventilation and temperature control**<br>• Install adequate ventilation or an air conditioning system to control the temperature. Maintaining temperature control is vital to these batteries' longevity and proper operation as they degrade exponentially at elevated temperatures. | All enclosures will include adequate Heating Ventilation and Air Conditioning (HVAC) installations incorporating redundancy.<br>The behaviour of HVAC and air circulation in the event of a pre-alarm and main alarm will be defined by the manufacturer (and, if applicable, the |

| ARC Recommendation | Project Response |
|---|---|
| • Ensure ventilation is provided in accordance with the manufacturer's recommendations.<br>• Install and maintain the ventilation during all stages of a fire. Ventilation is important since batteries will continue to generate flammable gas as long as they are hot. Also, carbon monoxide will be generated until the batteries are completely cooled through to their core. | certifier) with due regard to the extinguishing agent used. |
| **5. Gas detection and smoke detection**<br>• Install a very early warning fire detection system, such as aspirating smoke detection.<br>• Install carbon monoxide (CO) detection within the container or BESS room. | A minimum of two types of fire detection system will be deployed, (e.g., optical, heat, chemical etc.).<br>The fire detection system will be installed with fire resistant wires and components. |
| **6. Fire protection and water supply**<br>• Install sprinkler protection within BESS rooms and ideally within BESS containers. The sprinkler system should be designed to provide 12.2 l/min/m² over 232 m² (0.30 gpm/ft2 over 2500 ft²). Water has been proven to be the best agent to fight a fire involving lithium-Ion batteries. It is important to note that other extinguishing agents, such as aerosols or gaseous extinguishing systems, will extinguish the fire, but they do not provide cooling like water. Insufficient cooling allows a hot and deep-seated core to remain. The heat will rapidly spread back through the battery and reignite remaining active sections. This is the primary reason ARC recommends the use of water for fighting the fire and cooling the batteries.<br>• Implement a procedure for battery submersion in the pre-emergency plan performed by the fire department. Submerging batteries in water (preferably outdoors) after they burn has proven to be effective at cooling the batteries and neutralizing the thermal threat. They will continue to release gases, mostly carbon monoxide, but also flammable gas such as hydrogen. Therefore, never submerge several batteries in a confined space without adequate ventilation.<br>• Ensure that sufficient water is available for manual firefighting. The ability of the fire department to control a fire involving a BESS depends on the presence of an adequate water supply and their knowledge of the hazards. The following should be considered: | The fire protection concept will be based on the prevention of propagation with high construction standards, suppression systems and distances to adjacent installations.<br>The BESS will include a gas-based extinguishing fire suppression system, (e.g., Novec 1230), as a first barrier of security against fire propagation within a container.<br>Separation between adjacent installations is a security redundancy measure to limit fire propagation in case of a suppression system failure or a non-typical failure event.<br>A system for water-based cooling will be implemented to ensure that adequate cooling can be delivered to batteries. This may take the form of an automated system (such as a sprinkler system) or a manually deployed solution. The justification for the system chosen to be implemented including its compliance with legislation will be provided in the pre-construction DBSMP.<br>Exagen will liaise with the local fire service to agree whether there is a requirement for any form of water supply for the proposed BESS, and if so then what specification is required for this. Any required water supply information must be provided in the design responses to fire risk information (see Table 4.1). |

| ARC Recommendation | Project Response |
|---|---|
| - An external fire hydrant should be located within 100 m (330 ft.) of the BESS room or containers.<br>- The water supply should be able to provide a minimum of 1,900 l/min (500 gpm) for at least 2 hours. | |
| **7. Maintenance**<br>• Follow original equipment manufacturer recommendations for the inspection, testing and maintenance of BESS. In addition, ensure that the following are completed:<br>- Measure the internal resistance of the cells. Replace the cells when a dramatic drop is detected. Keep in mind that the internal resistance is mainly independent of the state of charge, but increases as the battery ages. Therefore, it is a good gauge of predictable life.<br>- Perform infrared scanning at least once per year.<br>- Check for fluid leakage.<br>- Implement electric terminal torquing procedures to maintain connection integrity. | Internal resistance is measured as part of the State of Health (SOH) control system, with maintenance and replacement carried out regularly to respond to the results.<br>Constant insulation monitoring of each battery bank detects potential leakage.<br>Prepare an operating procedure (within the Standard Operation Procedures and Guidelines referred to in Table 4.1) for the swap-out of faulty cells/modules. This will include plans for suitable storage locations for the modules prior to removal from site.<br>Torque tests are part of the operation and maintenance (O&M) processes. |

## 4 BESS DETAILED DESIGN STAGE

Table 4.1 sets out the minimum information to be included with the final version of this OBSMP, before the BESS is implemented.

***Table 4.1 - Detailed Design Information Requirements***

| Requirement | Reason for Information Required |
|---|---|
| **Statement of Compliance with Applicable Legislation** | To demonstrate compliance with legislation, will cross reference to the other documents set out below. |
| **Detailed Design Drawing of BESS** | To ensure available and safe access to the BESS for fire appliances.<br>To enable the local fire service to evaluate the available access for fire appliances to all parts of the BESS.<br>To show separation between components of BESS. |
| **Statement of design responses to fire risk** | To accompany the detailed design drawing and explain how the risk of fire spreading has been addressed through the Development Design. |

| Requirement | Reason for Information Required |
|---|---|
| **Battery Specification** | To ensure that the local fire service are aware of the specific type of batteries installed. This would include the battery 'chemistry' as well as size and format of each cell. |
| **Fire Detection System Specification** | To demonstrate how the requirement for fire detection has been addressed. |
| **Fire Suppression System Specification** | To demonstrate how the requirement for fire suppression has been addressed. |
| **Standard Operating Procedures and Guidelines (Relevant to Safety)** | To demonstrate an ongoing commitment to regular checks and maintenance during operation e.g., plans for swap-out of suspected modules.<br>Include a list of competencies and/or certification requirements for competent Site Operating staff. |
| **BESS Installation Contractor Emergency Protocol (during construction)** | To demonstrate that protocols are in place to manage a fire during construction. |
| **Site Operator Emergency Protocol (during operation, including decommissioning)** | To demonstrate that protocols are in place to manage a fire during operation and decommissioning. |
| **Other information requested by the local fire service to inform their Tactical Response Plan** | To ensure that the local fire service has the information it requires to adequately address a fire at the BESS. |
| **Battery Transportation Plan** | To ensure that the transportation of battery cells, including delivery of new, used, failed and replacement battery cells to and from the site is carried out in accordance with prevailing legislation. |
| **Environmental Risk Assessment**<br>(e.g. for an Environmental Permit) | To ensure that the potential for indirect risks (e.g., through leakage or other emissions) is understood and mitigated using methods consistent with Best Available Techniques (BAT) in relation to the specific battery chemistry selected. |

## 5 FIRE HAZARD MANAGEMENT

Some outline details are provided below on fire hazard management and response. This sets out the basic framework around which a detailed Fire Management Plan could be delivered, the requirement for which could be secured by planning condition.

### 5.1 Fire Service Guidance

The Applicant will work with NFRS to identify relevant existing guidance for dealing with sites like power stations and substations. It is crucial to ensure, upon arrival at a site involving electrical apparatus, that the apparatus is electrically isolated and safe to approach. This responsibility lies with the operator on the premises. It is strongly advised to avoid touching or approaching any electrical or associated equipment unless it has been confirmed to be isolated and safe.

In the event of a fire, the battery system and transformers serving the BESS will be automatically electrically isolated when a fire is detected. However, it's important to note that the batteries may still retain a charge even after the electrical system is isolated. Confirming the absence of residual risk from the energized batteries within the container may not be possible. This information will inform the firefighting strategy outlined in the emergency plan.

### 5.2 Fire Service Access

The access design will ensure easy accessibility for emergency services, with clearly laid out and signposted site roads following the guidelines of the Building Regulations (2022) Approved Document B section B5.

The Development shall be designed and constructed to provide reasonable facilities to assist firefighters in the protection of life.

There are no dead-end access routes longer than 20m and with the access track design being loops around rows of battery containers no additional turning facilities are required.

The minimum proposed width for the access route to reach the BESS will be 3.7 and the minimum width for gateways will be 3.1 m and if height restricted minimum 3.7 m height. There are no locations which are height limited at the Development.

There is a main access provided into the BESS compound, from the southwest off Wysall Road. In addition, alternative emergency access points are included from the northwest and northeast corners, utilising access roads within the solar farm to enter the BESS compound. These would be needed should wind direction or otherwise compromise the ability of the emergency services to use the main access point.

### 5.3 Fire Water

In most cases, initial firefighting intervention will focus on defensive firefighting measures to prevent fire spread to adjacent BESS units. As a result, proposals for water supplies on site will be developed following liaison with NFRS considering the likely flow rates required to achieve tactical priorities. The requirements for firewater for firefighting purposes includes:

- Fire hydrants fed from mains supply will be positioned on site to enable NFRS to quickly access firefighting water;
- These will be positioned such that a fire hydrant will be accessible in all wind conditions, i.e. not inaccessible due to products of combustion;
- The capacity of the external firefighting water will achieve at a minimum 1,900lrs/min application requirements for a minimum of 2hrs;
- Pillar hydrants would be the preferred, however, ground hydrants would be considered where water pressure and flow can be assured; and
- Pillar hydrants will be protected from mechanical damage (e.g., through use of bollards).

### 5.4 Emergency Planning

The BESS will have a robust and validated emergency plan, developed in consultation with NFRS. This comprehensive emergency plan will include the following key components:

- Detailed information about the BESS, ensuring a clear understanding of its specifications and characteristics;
- Overall site drawings that identify essential features required during an emergency, such as layout, muster points, e-stop locations, and firefighting equipment;
- Design drawings and schematics of the system;
- Procedures outlining the process for isolating containers in the event of a failure;

- Battery data, including relevant information about the batteries used;
- MSDS (Material Safety Data Sheets) providing crucial safety information about materials involved;
- COSHH (Control of Substances Hazardous to Health) Assessment, assessing potential risks associated with substances;
- Number of cells present in the system;
- Details of the fire detection system in place;
- Fire-fighting strategy, outlining the approach to be taken in the event of a fire;
- Review of local risk points, such as nearby trees or infrastructure that may require protection from fire propagation;
- Review of fire water provisions, ensuring adequate resources are available for fire suppression; and
- Clearly defined actions to be undertaken in case of an emergency.

By incorporating these elements into the emergency plan, the BESS will be well-prepared to effectively respond to and manage any emergency situations that may arise. Key sections of the above, including emergency response plans, will be provided to the fire service on arrival and will be stored in a dedicated area at the entrance to the site.

### 5.5 Firefighting Consequences

Since personnel will not have access to the battery containers within the BESS, the Development will be remotely operated with no permanent onsite staff and there are no residential properties in close proximity to the BESS units, immediate threats to life are unlikely, and the focus will primarily be on protecting the property/ other onsite infrastructure.

In the event of a fire, the emergency services will likely deploy firefighting tactics that involve using water to cool down and prevent the spread of fire to neighbouring areas. Directly targeting the equipment with water jets is not anticipated, and the strategy will primarily focus on containment and cooling of adjacent units to prevent fire propagation. The specific firefighting approach will be finalized in collaboration with the Fire and Rescue Service and clearly outlined in the emergency response plan.

A fire in the BESS could result in the mobilization of pollutants in surface water runoff. To address this, the Drainage Strategy which has been prepared to inform the planning application for the Development provides details and recommendations for containment and attenuation of runoff from the BESS area. It suggests utilising local containment and lined permeable sustainable drainage system (SuDS) features with gravel subgrade to manage runoff before it enters the watercourse. In the event of a fire, self-actuating valves at the outfalls from the BESS areas will automatically close, isolating the drainage from the wider environment. The water contained within the valves can then be tested, treated, and released or removed off-site as necessary, in consultation with the relevant parties.

Additionally, a post-event action plan will be developed to determine any immediate and follow-up actions required in response to an incident. Various factors will influence the design of an investigation following an incident, considering the volume and concentration of the damage. In the case of a fire in a BESS unit, variables to be considered include the extent of the fire (duration, number of affected BESS units, impact on adjacent assets), firefighting methods (including alternative techniques for adjacent fires), the location of the fire in relation to drainage or soft ground, and existing site conditions such as recent weather and precipitation levels.

### 5.6 Pre-construction Requirements

The approach to addressing the specific requirements outlined below will be determined during the detailed design phase, which will be updated prior to the construction of the

BESS. These updates will be incorporated into a DBSMP and submitted to the Council for approval before construction begins, encompassing the following:

- Detailed design and accompanying drawings of the BESS, providing a comprehensive understanding of the system;
- Specifications of the battery system, including details of fire detection and suppression systems;
- Operational procedures and training requirements, with a focus on emergency operations;
- Confirmation of overall compliance with applicable legislation;
- Environmental risk assessment to identify and mitigate potential indirect risks, such as leakage or emissions; and
- Development of an emergency plan covering all phases of construction, operation, and decommissioning. This plan will be created in consultation with Fire and Rescue Services and will include provisions for adequate firefighting equipment on-site.

By submission of the DBSMP it will be demonstrating prior to construction that all considerations and requirements with respect to management of fire risk have been addressed, ensuring the safe installation and operation of the BESS.

## 6 CONCLUSION

This OBSMP sets out the design approach to be taken, and the information which is required to be provided in advance of construction of the Development to demonstrate that the BESS will be constructed and operated safely.

It is anticipated that a DBSMP will be a condition of any planning permission granted for the Development which would be required to be in accordance with this report.

This document has considered the relevant guidance available at the time of writing and detailed the key safety objectives contained within these, and how the design of the Development will respond to their recommendations. Principle details include the minimum spacing observed between containers of 3 m, the outdoor location of the BESS and consideration of the location of the Site being a significant distance from any nearby dwellings, and a commitment by Exagen to engage in more detail with NFRS to secure a sufficiently detailed DBSMP.

Mitigation and management requirements in the event of an emergency at the BESS have been considered and include detail of how the Development has included embedded contingency planning in the form of emergency access points, surface water runoff isolation options, and the availability of water sources with which to contain a thermal runaway event. Further detail of how the Development will be made suitable for an emergency event will be agreed via the DBSMP as a condition of any planning permission.