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DESIGNING AND DELIVERING
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BALLYNAHONE LDES
ACP REF. ABP-321384-24

Further Information Response Report

Prepared for:

FuturEnergy Ireland Development DAC

FuturEnergy Ireland

Date: **March 2026**

Document No:

P25288-FT-XX-XX-RP-PL-0001

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BALLYNAHONE LDES

FURTHER INFORMATION RESPONSE REPORT

REVISION CONTROL TABLE, CLIENT, KEYWORDS AND ABSTRACT

User is responsible for Checking the Revision Status of This Document

Rev. No.	Description of Changes	Prepared by:	Checked by:	Approved by:	Date:
0	Final	CA/LD/NSC	TB	JH	26/03/2026

Client: FuturEnergy Ireland Development DAC.

Keywords: Request for Further Information, Ballynahone, Long Duration Energy Storage, Donegal County Council, An Coimisiún Pleanála, Planning Application.

Abstract: This document contains the response to a further information request issued by An Coimisiún Pleanála for the proposed Ballynahone LDES, (PA Reg. Ref. 2461497 and ACP Reg. Ref. ABP-321384-24). This report has been prepared by Fehily Timoney and Company (Fehily Timoney) on behalf of FuturEnergy Ireland Development DAC.

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1. INTRODUCTION

1.1 Background to Request for Further Information

On the 11th September 2025, An Coimisiún Pleanála (ACP) issued a Request for Further Information (RFI) to FuturEnergy Ireland Development DAC (the Applicant) under Section 132 of the Planning and Development Act 2000 (as amended). This related to an appeal (ACP Ref. ABP-321384-24) in respect of Donegal County Council's decision to grant permission dated 15 November 2024 for a proposed Long Duration Energy Storage (hereafter referred to as LDES) compound (Reg. Ref. 2461497).

This report, prepared by Fehily Timoney and Company (FT) presents the Applicant's response to the RFI. For reference, a copy of the RFI letter is included in **Appendix 1** of this document. The RFI letter sought responses to 4no. items (1 to 4), with some of these items subdivided into parts (e.g. a, b, c etc.) and further subdivided into Roman numerals (e.g. i, ii, iii etc). For ease of reading, the ACP FI Request wording is replicated verbatim in Section 2 below followed by the Applicant's Response. Each item is addressed in the order that it has been presented in the RFI letter.

This report identifies clarifications and updates to plans and particulars submitted with the Planning application, including the Planning and Environmental Report (PER) submitted with the planning application. Elements of the application material that are not altered by the response to the FI will not be commented upon as they remain the same.

Per our appeal response dated 21 January 2025, responding to the third party appeal from the Buncrana-Fahan Against Untested Battery Storage Group, we wish to further draw the attention of the Commission of the wording of Condition 22 of the Donegal County Council Notification of Decision to Grant Permission.

Condition no. 22 states *"Noise levels from the site during the operational phase shall not exceed 40 dba"*, however, this is not location specific and we would respectfully submit that a noise limit of 35dB at the nearest existing dwelling is the relevant noise standard that aligns with best practice EPA NG4 Guidelines for this type of development. Please note that 35dB is the nighttime noise requirement, in line with the EPA NG4 Guidelines. As set out in the original documentation the project has been designed on this basis and ensures the facility will operate at all times without negatively impacting existing local dwellings. It is an important consideration for the proposed development that the noise condition aligns with EPA NG4 Guidelines, which are the relevant applicable guidelines. We would welcome a revised noise condition to this effect.

We additionally note that this Further Information Request broadly aligns with the content of Condition 9 as applied to the Donegal County Council Notification of Decision to Grant Permission. It is noted that the Chief Fire Officer in Donegal requested this information as part of a prior to commencement condition.

As part of the preparation of this further information response, some drawings have been updated and new drawings prepared and are included as part of this RFI Response to cover drawings which required update in addressing the RFI. A revised drawing register is attached to the pack of revised drawings and attached to this report as **Appendix 2**.

1.1.1 Development as Originally Proposed

In the original planning application, the proposed development, on an overall site of c.5.8 hectares, comprised of the following:

- Long Duration Energy Storage (LDES) Compound with a total surface area of c. 2.9 Ha containing 248 no. battery energy storage units in the form of metal shipping containers [approximately 12.2 m (L) x 2.6 m (W) and 2.9 m (H) each] and associated ancillary control and ventilation equipment;
- Installation of an onsite transformer compound (c.3,600 sq m) to facilitate an under-the fence connection to the adjacent Trillick 110 kV substation. The transformer compound will include a control building of c.27 sq m, a 110 kV transformer, associated electrical equipment, and an up to 18 m high lightning protection monopole mast;
- A temporary construction compound with a total surface area of c. 1,500 sq m.
- c. 515 m of new and upgraded access tracks;
- 3 no. entrances from the L-7231 public road comprising the upgrade of 1 no. existing entrance and creation of 1 no. new permanent access and 1 no. new temporary access for the construction and operation of the facility;
- Underground electrical and communications cabling between the proposed LDES compound and the proposed on-site transformer compound which will cross under the L-7231 public road;
- Security lighting;
- Pole mounted CCTV and communications mast;
- On-site freshwater storage tank including fresh water treatment unit in the form of a metal shipping container;
- On-site drainage system and associated vegetated attenuation pond;
- A storage container in the form of a metal shipping container;
- Sound reflective barriers to a height of 4 m;
- Security fencing and gates;
- All associated ancillary site development, services and clearance works including tree felling of c.4.7 Ha of conifer plantation, landscaping and planting.

1.1.2 Development as Now Proposed

Following amendments to address this Request for Further Information, the proposed development description remains predominantly as previously proposed and listed above, with only the addition of the following:

- 1 no. entrance from the L-7221 public road for emergency vehicle access only;
- 4 no. water tanks for the purpose of static fire water supply.

1.2 Report Structure

This RFI Response Report is structured as follows:

- Section 1 - Introduction;
- Section 2 - Responses to Request for Further Information;
- Appendices.

2. RESPONSE

2.1 Item 1: Fire Prevention / Response Strategy

2.1.1 Item 1 Section (a)

(a) Provide an update on the status of the system certification standards (as identified in Table 2 of the submitted Technology & Compliance Overview (Appendix 1) (namely UL 1973, UL9540A and UL 9540). A copy of relevant certificates, as applicable, to be submitted and any new information provided with respect to the current status of product/system certification with Underwriters Laboratories (UL).

2.1.1.1 Response

Form Energy's iron-air battery technology has successfully completed UL9540A safety testing. UL9540A testing had not been completed at the time the original planning application was submitted to Donegal County Council (September 2024), but it was subsequently successfully completed in late 2024. The iron-air battery cell was tested under extreme conditions, including seven days of continuous overcharging, direct short circuits, and high-stress fault scenarios. The battery remained stable in all scenarios, demonstrating that there is no uncontrolled heating, no thermal runaway, no dendrite formation, and no fire. It should be noted that successfully completing UL9540A does not produce a certificate.

Successfully completing UL9540A with strong test results eliminates the need for fire-rated barriers or walls and justifies reducing the required spacing and separation distances between neighbouring enclosures, walls, property lines, and other exposures. For example, NFPA 855 and International Fire Code generally require a 3m separation between BESS units and exposures. However, successful UL9540A testing, which confirms no thermal runaway propagation, can allow a reduced separation to less than 1m. Ultimately, UL 9540A validates the inherent safety of the iron-air chemistry and the engineered safety measures, enabling a more optimised layout.

To mitigate fire risks from the electrical equipment, Form Energy's battery system are designed to the highest industry electrical and fire safety standards. Form Energy participated in UL's New & Innovative Program to review Form's novel technology and identify all applicable safety standards. Through this review, UL determined that the applicable standards for Form's systems include:

- UL 9540 (Standard for Safety of Energy Storage Systems and Equipment);
- UL 1973 (the Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications);

Form's iron-air battery systems are designed to be compliant with all these standards. Form is working with UL to evaluate its first commercial deployments in accordance with applicable standards, including UL9540 and UL1973.

The certification process for UL 9540 and UL1973 is ongoing, and will be completed prior to the installation of the units.

2.1.2 Item 1 Section (b)

Provide details of the chemical composition of the electrolytes used in the proposed batteries, all associated risks and proposed mitigation measures for same.

2.1.2.1 Response

In the first instance we refer the Commission to the attached Material Safety Data Sheet (**Appendix 3**) provided by the technology provider, Form Energy, which outlines the overall composition and the safety considerations of the electrolyte.

The electrolyte is water based and non-flammable. It contains dissolved salts, primarily Potassium Hydroxide (KOH) with other proprietary additives that results in a pH level greater than 14.

Each battery enclosure contains approximately 5,200 US gallons (c. 19,684 litres) of electrolyte.

The battery enclosures are provisioned with (1) a containment system with sufficient capacity to contain 10% of the volume of containers or the volume of the largest container and (2) an automatic leak detection system to detect the spillage of fluid in accordance with UL9540 Section 23 and 40 CFR 264.175 (B). The cell vessels of the batteries serve as the primary containment of the electrolyte, with the battery enclosure serving as the secondary containment. The base of the enclosure then acts as a basin to retain the electrolyte in the event of a battery leak. With these measures the electrolyte is prevented from releasing into the environment. A risk of electrolyte spillage outside of the battery containers during the fill and drain procedures remains , with mitigation measures described further below. Enclosure-level electrolyte fill happens at beginning of life during system commissioning whereas enclosure-level electrolyte drain happens at end of life during system decommissioning. In addition, some service activities may require performing the drain and fill procedure of an individual module which is anticipated to happen no more than once a year.

Electrolyte levels fluctuate within the cells due to evaporative and hydrolysis losses as a normal part of system operation. The Form Energy battery contains an electrolyte management system that refills cells when necessary, utilising a pump around method from a central reservoir that acts as the supply and reserve. The electrolyte management system can be activated by the Battery Management System (hereafter BMS) during idle, charging, and discharging conditions. Modules are designed with fill manifolds that connect to each cell.

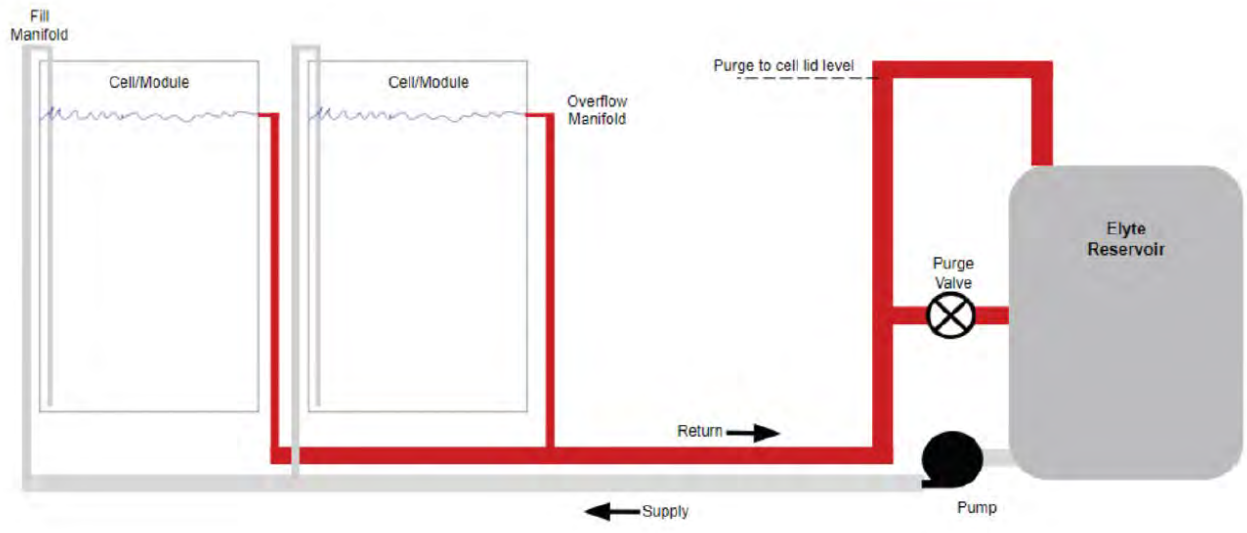

Figure 2-1: Electrolyte Management System

The system is also designed with overflow protection connected to the central reservoir, as well as secondary containment within the enclosure in the event of an electrolyte spill. In addition, Form's enclosures include a leak detection and monitoring system, with associated faults and alarms from the BMS that send alerts to the Energy Management System and Future Energy Ireland's Supervisory Control and Data Acquisition (SCADA) system. Upon detecting a leak, the system automatically cuts off power to the enclosure. As needed, designated personnel will immediately address any issues according to the site-specific emergency response plan.

During the fill and drain procedure, the volume of this type of spill is generally expected to be less than 5 gallons. During any electrolyte fill, drain, and service operations, Form Energy implements comprehensive spill prevention and emergency response measures to strictly manage electrolyte flow. Before any pumping begins, technicians set up temporary secondary containment, such as duck ponds, pop-up berms, and buckets, at all hose connection points to capture potential drips. The project site maintains extensive spill response equipment, including absorbent mats, absorbent socks, vermiculite, and granular neutralizers. Throughout the pumping process, personnel conduct visual monitoring while utilizing valves and manual isolation points to safely regulate flow rates. In the unlikely event of a spill, responders are trained to immediately stop the source (such as closing valves or shutting off pumps), establish an exclusion zone, clean up, and collect free liquid from the containment berms. Finally, all recovered fluids, contaminated absorbent materials, and affected equipment are securely captured in labelled drums or totes and stored in a designated hazardous waste area for eventual pickup by a licensed hazardous material disposal contractor.

It should be noted, that given the design and procedural mitigations aforementioned in this section, the risk of electrolyte spill into the environment is very low. Notwithstanding this, the following equipment and materials listed below are sufficient to clean up a spill of 250 gallons of free electrolyte and 45 gallons of contaminated materials and will be stored on site.

Materials for Caustic Spills (labeled as such)

- Two 50 lbs bags of grade 2 vermiculite
- Four rolls of PIG pads and 10 absorbent socks
- Two 2 pound containers of granular neutralizer (can neutralize up to 1 gallon of electrolyte)
- Two rolls of caution tape
- Two containers of 200 pH test strips

Equipment for Caustic Spills (labeled as such)

- One shovel
- One broom and dustpan
- One roll of 50 gallon waste bags
- Four 55 gallon poly open-head: 1H2/Y1.8/100 containment drums or equivalent
- One 45 gallon poly open-head: 1H2/Y1.8/100 containment drum or equivalent
- Four 4' x 4' pop up containment berms, 60 gallon capacity
- Two 10' x 10' pop up containment berms, 745 gallon capacity
- One intermediate bulk container (IBC)
- Chemical resistant electric diaphragm pump and hoses (not intrinsically safe)
- Two 5 gallon buckets
- One 5 gallon bucket head shop vacuum
- One eye wash and safety shower – to be located within 50' of spill clean up if needed.

PPE for Caustic Spills

Four sets of each, all are necessary to perform spill cleanup.

- Impervious Safety Shoes
- Safety Goggles
- Nitrile Gloves
- Face Shield with Chin Protection
- Heavy Duty Elbow Length Gloves (Showa 772)
- Chemical Resistant Coveralls (Lakeland Chem2Max or Dupont Tychem SFR2000)

An example Draft Spill Response Plan is enclosed as **Appendix 4,** this outlines the procedures in the event of a spill. This Draft Spill Response Plan will be a 'live' document under ownership of the Applicant and managed by the Operator throughout the period of operation. This example Draft Spill Response Plan will form the basis for the final Spill Response Plan to be agreed with the Planning Authority post planning consent. Any additional mitigation measures required to address spillage within the BESS compound shall be carried out in accordance with the measures for pollution control detailed in the CEMP submitted with the Planning Application. This includes Section 4.2.1 'Surface Water Management Plan' which contains mitigation measures for spillage and pollution control and Section 5.1.10 which includes details of environmental emergency response procedures. These will be carried out in addition to the abovementioned mitigation measures.

Furthermore, it is of note that the battery enclosures/containers sit on concrete plinths , surrounded by gravel hardcore within the wider compound. The compound is built up with well-graded granular fill sitting on a layer of geotextile membrane. Any residual gravel that comes in contact with electrolyte will be removed from site and disposed of in a licensed facility.

As such, the risk of electrolyte entering into the soil or groundwater is minimal.

2.1.3 Item 1, Section (c)

Explosion Risk Modelling to be undertaken and details of Hydrogen Gas Management System, including how it is proposed to vent the gases from the units, fail/safe mechanisms and quantities of hydrogen gas produced to be provided.

2.1.3.1 Response

In terms of explosion risk modelling, each of Form's iron-air battery technology battery enclosures are designed to contain any potential deflagration event that could occur within the enclosure, including, but not limited to, a hydrogen ignition event. The enclosures are engineered to withstand internal deflagration pressures in accordance with NFPA 69 Section 13.3.4 (Deflagration Pressure Containment) and NFPA 68 Section 6.3.1.1 (Deflagration Venting Requirements). By designing the enclosures to safely contain such events, any pressure effects are retained within the individual battery enclosure. As a result, the risk of propagation to neighbouring enclosures or impacts on the surrounding environment is removed.

Hydrogen gas is produced during charge, discharge and idle states. The gas is odourless, colourless and requires internal sensors or external meters for detection. Hydrogen is a flammable chemical which has an auto ignition temperature at approximately 500°C. The battery enclosures include a functional safety subsystem for monitoring and limiting the production of hydrogen gas as well as venting it to the atmosphere to reliably maintain the concentration in the system below 25% of the Lower Flammability Limit (LFL) of Hydrogen. The vented gas poses no health or safety risk to the local community. It is odourless, non-toxic, and non-flammable at these concentrations.

The iron-air battery is engineered with a comprehensive Hydrogen Management System specifically designed to safely manage the Hydrogen gas generated during battery operation. The primary objective of this system is to safely exhaust and dilute this gas with fresh ambient air, guaranteeing that the exhaust released into the environment remains reliably well below 25% of LFL. The Hydrogen Management System uses variable-speed dilution fans that adjust their airflow based on the battery's operational state and thus prevents the buildup of hazardous gas levels under all conditions, ensuring the highest standards of safety for both the facility and the surrounding community.

The Hydrogen Management System is designed to minimize the magnitude of an ignition if one were to occur. These ignition events are highly unlikely through the normal operation of our cells. The system utilizes a highly controlled, multi-stage pathway to ensure maximum safety before any Hydrogen gas leaves the battery enclosure. Hydrogen is generated inside each battery cell and as the Hydrogen gas exits an individual battery cell, it is first routed through a system that isolates the cell and reliably prevents any ignition event from spreading from one cell to another. The Hydrogen gas from battery modules enters a dilution duct, where dilution fans continuously mix it with large volumes of fresh air to prevent ignition propagation between battery modules. The hydrogen exhausted from the system is diluted to safe, non-hazardous levels before it is exhausted from the battery enclosure.

To provide absolute confidence in the system's safety, Form Energy has incorporated robust redundancies across all critical functions. Each enclosure has multiple dilution fans and if any one of the dilution fans were ever to fail or require maintenance, a built-in "buddy system" automatically activates, allowing an adjacent fan to instantly ramp up and provide the necessary dilution airflow via a connecting bypass duct. Furthermore, the enclosure is equipped with redundant differential pressure sensors to continuously verify dilution airflow as well as multiple Hydrogen gas sensors to monitor for hydrogen leaks from the primary hydrogen plumbing. In the unlikely event of an unexpected hydrogen gas leak, the system automatically transitions to a safe state and utilizes fans to rapidly purge the enclosure with fresh air. The Hydrogen Management System is designed with inherent redundancy and fail-safe features to maintain hydrogen release capability during loss of power.

The quantity and rate of Hydrogen generation is highly dynamic and fluctuates based on ambient weather conditions as well as specific operating conditions of the battery system. For example, Hydrogen generation depends heavily on battery cycling, including the system's state of charge, state of health, charge power, and the frequency of charging. The most important safety metric is that the Form Energy iron-air battery is designed and validated to actively manage Hydrogen generation so that the battery enclosure's ambient environment remains reliably below 25% of the LFL at all times.

2.1.4 Item 1, Section (d)

Revised drawings to demonstrate the provision of a perimeter ring road solution with more than one access point from the public road for fire authority vehicle access. The access points are recommended to be positioned to account for opposite wind direction.

2.1.4.1 Response

Additional Access Point

The proposed development as originally applied for had 3 no. proposed site access points to the L-7231 public road.

The project includes the use and upgrade of an existing forestry entrance to access the LDES Compound for construction and operational purposes.

A new construction and operational access shall be created across the road from the above location to serve the UTF Transformer compound.

A temporary access shall be created directly to the south of the UTF Transformer Compound access to provide construction stage access only to the proposed temporary construction compound and laydown area as shown on the site layout plan. This access shall be permanently closed off and fully reinstated at the end of the construction stage.

We refer the Commission to the enclosed drawing number **P23-117-0600-0003**, prepared by Fehily Timoney and Company. This shows the addition of a further entrance to the southern boundary of the site, onto the L-7221 public local road, for emergency use only.

The additional emergency access arrangements incorporate a Kevron Padlock system, restricting vehicular ingress and egress solely to local emergency services via standard issue key.

This additional emergency access point is designed to be maintained clear of obstruction at all times. This is made clear through the no entry road markings, signage, and yellow box provided in drawing number **P23-117-0600-0003**. Given its permanent closure to all vehicular traffic other than emergency service vehicles, the existing forward visibility splays are considered safe for the entrance requirements, providing 100 metres of visibility to the southeast and in excess of 300 metres to the northwest without mitigation. Consequently, the forward visibility currently provided is deemed suitably safe for emergency use without requiring any additional mitigation measures. Maintenance of the adjacent public road corridor will remain the responsibility of the relevant local planning authority.

It is of note that there is a noise barrier to the south and north of the LDES compound to mitigate against noise emitted from the LDES equipment during operation. In the event of an emergency, both entrance gates as well as noise barrier gates will be opened to allow access and egress to and from the facility for staff and emergency vehicles.

In an emergency event the batteries will be shut down. Therefore, noise propagation from the battery enclosures would be significantly reduced or eliminated. Noise emissions will not exceed prescribed operational noise limits at residential receptors during these times.

Provision of a Perimeter Ring Road

Whilst an additional internal access track is not provided in the northeastern edge of the battery compound, this area has been sufficiently sized so that a fire tender / emergency response vehicle can travel through and along the northeastern edge of the site. Furthermore, the ground conditions within the site will consist of compacted hardcore (gravel), which can be easily traversed by emergency vehicles, allowing for full perimeter access within the site. This area will remain free from development and obstacles such as vehicles / equipment during operation and will be marked out as such including suitable signage on site. An orange hatching is included in drawing number **P23-117-0600-0004** which shows the area kept clear for fire tender access. Through this, an emergency vehicle is able to drive around inside the full compound and exit without the need to reverse.

2.1.5 Item 1, Section (e)

> *Detailed drawings to illustrate adequate separation distance and fire breaks provided for and to be maintained from the surrounding forest. An indicative maintenance schedule for fire breaks shall be provided.*

2.1.5.1 Response

It should be noted that the proposed site achieves a minimum setback distance of 10 m maintained free of vegetation or combustible material from battery containers in line with the UK National Fire Chiefs Council (NFCC) guidance. Additionally, Coillte's standard firebreak distance between forestry plantations is 6 metres in width[1].

Due to design of the proposed development and distance from combustible material / vegetation of each proposed battery containers, explicit fire breaks were not identified as such on the original Planning application drawings.

The applicant refers the Commission to drawing number **P23-117-0600-0004** which now highlights the separation distance from the surrounding forestry edge and from the proposed screening planting. The proposed separation distance between battery containers (i.e. enclosures) and the nearest combustible or vegetation ranges from 17 m at its closest to 34 m at its largest. This is considered to be suitably safe to prevent a battery fire spreading to the surrounding forestry.

Table 2.1 below outlines an indicative Maintenance Schedule for fire breaks[2].

The maintenance of fire breaks is usually performed on a 1-to-3-year cycle, but intensive cutting and weeding are mandatory annually during the dormant season to prepare for the higher-risk fire season.

[1] Sources -
Coillte Environmental, Social and Economic (ESE) Standards Manual
Forest Management Certification Standards.
DAFM (Department of Agriculture, Food and the Marine) Forestry Standards Manual

Table 2-1: Indicative Maintenance Schedule for Fire Breaks

Activity	Frequency	Timing	Purpose
Vegetation Control (Cutting/Mowing)	Annually	Autumn / Early Winter	To minimise fuel load before the spring/summer fire season.
Ground Cultivation / Plashing	Every 3 years	Autumn / Winter	To expose mineral soil, preventing fuel continuity across the break (especially after initial clear felling).
Inspection & Clearing	Quarterly / Post-Storm	Year-Round	To remove windblow, fallen branches, and any debris that bridges the gap between the crop and the break.

2.1.6 Item 1, Section (f)

A draft Fire Risk Management Plan (dFRMP) which provides advice in relation to potential emergency response implications, taking into account items (a)-(e) above, including but not limited to:

- *The hazards and risks at and to the facility and their proposed management.*
- *Safety issues for firefighters responding to emergencies at the facility.*
- *Safe access to and within the facility for emergency vehicles and responders, including to key site infrastructure and fire protection systems.*
- *The adequacy of proposed fire detection and suppression systems on-site, including detailed information on the storage of water useable for firefighting purposes, location of any static water storage tanks and the provision of hydrant supplies as appropriate.*
- *Natural and built infrastructure and on-site processes that may impact or delay effective emergency response.*

2.1.6.1 Response

It is important to note from the outset that the iron–air battery system functions using a controlled oxidation process known as “reversible rusting.” During discharge, oxygen from the surrounding air reacts with metallic iron within the cell to form rust, releasing energy. During charging, an applied electrical current reverses this reaction, converting the rust back into iron and releasing oxygen. This process enables energy storage and release in a gradual and regulated manner, reflecting a natural and inherently stable chemical cycle.

Iron–air battery cells are not susceptible to thermal runaway. This high level of stability is attributed to three key factors:

- The discharge rate is limited by the availability of atmospheric oxygen, preventing rapid or uncontrolled reactions.
- The electrolyte used is water-based and non-flammable, inherently reducing fire risk; and
- The chemistry demonstrates resilience under fault and abuse conditions, maintaining stability even in the extreme testing scenario.

Iron–air battery cells rely on oxygen from ambient air to support the oxidation process that enables energy discharge. As a result, the rate of discharge is inherently limited by the availability of oxygen. Since oxygen has low solubility in water, it must be actively drawn into the cell via forced air circulation using an internal fan system.

In the absence of a continuous oxygen supply, the battery cannot discharge. This constraint prevents the rapid release of stored energy and eliminates the potential for excessive heat generation or uncontrolled self-heating. Consequently, the design of the iron–air battery system ensures that energy release remains gradual and stable under all operating conditions, significantly reducing the likelihood of fire-related hazards.

As mentioned earlier, Form Energy battery has successfully passed UL9540A testing, demonstrating no risk of thermal runaway.

The Form BESS is equipped with a fire detection system specifically designed to comply with NFPA 855 and NFPA 72 standards. To ensure adequate monitoring, the system includes at least 2 individually addressed fire detectors placed throughout the battery enclosure, allowing the relative location of any fire or fault to be instantly identified. These fire detectors are managed by a site-level FACP or sub-FACP that includes a backup battery. The status of each fire detector will be communicated to the BMS. In the event that a fire is detected, the BMS executes the following additional mitigations:.

- Stops any charging or discharging operations of the enclosure and isolates the enclosure from the rest of the plant
- Disables thermal management fans so they do not introduce more oxygen into the enclosure
- Closes the thermal management system inlet and exhaust flowpath to limit air entering the enclosure

In response to this further information request Item, we refer the Commission to the enclosed **Appendix 5** which contains the draft Fire Risk Management Plan (dFRMP) prepared by ORS Fire Consultants.

It is anticipated that the dFRMP will be a 'live' document under ownership of the Applicant and managed by the Operator throughout the period of operation. In the event of a planning approval any conditions relating to a FRMP which may be attached by the Commission will be implemented in accordance with the condition. Additionally, this dFRMP will form the basis for the final FRMP to be agreed with the Fire Authority as part of the Fire Certification process post planning consent.

The dFRMP details the following;

Section 4 details the fire risk management plan methodology, including the following approach:

- Risk Identification: Detecting potential hazards that may arise during each stage of the development.
- Risk Evaluation: Conducting a qualitative assessment of identified risks.
- Mitigation Measures: Implementing safety controls designed to reduce or eliminate the risks identified.
- Risk Re-evaluation: Reassessing risks following the application of mitigation measures to confirm effectiveness or identify residual risks.

Section 5 details the Energy Storage Component Considerations which are considered during the design phase of a development that incorporates an energy storage system comprising of an iron air system prior to the start of construction.

Section 6 Identifies the potential Fire Safety Risks and outlines mitigation measures for each risk item. The key fire hazards and risks within the development are identified in this Section of the dFRMP and will be minimised through the application of safety mitigation strategies that reflect established industry standards for energy storage systems. Many of these measures specifically address hazards associated with battery cells.

Section 6.4.5 deals with access for Firefighting. In the event of a fire on site, once emergency services gain entry, they will be able to navigate internal access tracks that run throughout the development, providing direct routes to the battery units, inverters, and transformer/PCS units. These tracks will be at least 5 meters wide, ensuring sufficient space for firefighting vehicles.

For security and safety, the energy storage system area will be enclosed by a roughly 2-metre-high security fence to restrict unauthorized access. Before construction begins, a tailored Emergency Plan will be developed in collaboration with the local fire service, detailing the procedures to follow should a fire occur. The fire service will be provided with keys or access codes to ensure swift entry.

To facilitate safe operations, transformers and PCS units will be positioned on hardstands next to the access tracks. Additionally, the inverters will be equipped with input-side disconnection devices that allow the DC current to be cut off if necessary.

Section 6.4.7 details Site Location and Design Considerations. - The site has been carefully chosen to maintain a safe distance from nearby residential properties, reducing any potential fire risk to the public. All major equipment, including battery units, has been positioned well within the site boundaries, keeping fire safety as a priority.

While energy storage units are not classified as buildings, their layout has been designed to meet industry-standard fire resistance requirements for both structural integrity and insulation. This means that in the very unlikely event that a fire breaks out and all other fire mitigation and prevention measures fail, the fire will be confined to the specific unit involved and will not spread further.

Section 7 deals with Fire Detection and Suppression, whilst there are no automated fire suppression systems located within the Form BESS enclosure, smoke detectors within each Form BESS enclosure are monitored by a project sub fire alarm control panel (FACP). Alarm and trouble conditions will report locally to the project sub-FACP, which will report to a site-level main FACP. The main FACP will alert remotely monitored security operations centre. Section 7 also details the sourcing of water on site for defensive firefighting purposes.

2.1.7 Item 1, Section (g)

A preliminary Emergency Response Plan (pERP) to include systems for containing and managing firewater runoff.

2.1.7.1 Response

In response to this further information request Item we refer the Commission to the enclosed **Appendix 6** which contains the preliminary Emergency Response Plan (pERP) prepared by ORS Fire Consultants. In the event of a planning approval any conditions relating to a ERP which may be attached by the Commission will be implemented in accordance with the condition.

This pERP will be a 'live' document under ownership of the Applicant and managed by the Operator throughout the period of operation. This pERP will form the basis for the final ERP to be agreed with the Fire Authority as part of the Fire Certification process post planning consent.

The Applicant will adhere to the recommendations of this document, and any contractors appointed will be required to adhere to it.

The enclosed pERP details how firewater runoff is contained and managed, which aligns with the response in Section 2.2.1.1 below. Further details on the management of firewater runoff is outlined in in Section 2.2 of this further information response.

2.2 Item 2: Firefighting water/Fire water storage

2.2.1 Item 2, Section (a)

Details of the quantity and confirmation of how firefighting water will be sourced and/or retained within the proposed development site. This should be to the UK National Fire Chief's Council (NFCC) Grid Scale Battery Energy Storage System Planning - Guidance for the FRS (Fire & Rescue Services), which states that provision should be made for BESS units to provide 1,900 litres of water for 2 hours, as a minimum unless it can be demonstrated that another amount is appropriate. Revised drawings and necessary agreements to be provided to demonstrate feasibility of same.

2.2.1.1 Response

Quantity and Sourcing of Firefighting Reserve

The planning application included a static modular water storage tank system which had the dual purpose of supplying the iron-air BESS units and to provide firefighting water supply. The tank is connected to the mains which will ensure it is topped up.

Water supply is via a connection to the 50mm Uisce Éireann watermain along the L-7211, for which a Confirmation of Feasibility has been obtained, this confirms the viability of the proposed connection arrangement. Please refer to **Appendix 7** for further information.

The NFCC guidance referenced in the further information request specifies a minimum provision of 1,900 litres per minute over 2 hours. New guidance from the NFCC published in December 2025 states that in the event that a flow rate of 25 litres per second cannot be achieved, an equivalent static supply of approximately 180,000 litres is required to provide that flow rate for 120 minutes. This replaces the previous guidance which recommended 1,900 litres per minute for at least 2 hours.

As described above, the on-site storage tank included in the design submitted with the planning application has a volume of 55,141 litres. The tank shall include a level sensor to maintain a dedicated reserve of water for firefighting purposes at all times. The tanking system is modular and can be easily expanded to provide more capacity.

There is sufficient space within the BESS compound to provide additional dedicated water storage for firefighting purposes in addition to the mains fed tank. It is calculated that an additional 4 no. tanks of the same dimensions included in the planning design would provide dedicated static storage of 220,000 litres. This would provide sufficient dedicated static storage of fire water to exceed the latest NFCC requirements. 4 no. dedicated fire water storage tanks have been included in the design to supplement the original mains fed tank. These tanks shall be reserved exclusively for storage of fire water throughout the lifetime of the development.

Refer to the appended drawing number **P23-117-0100-0005** for the location of the additional fire water storage tanks. Refer to drawing number **P23-117-0501-0010** as submitted with the original planning application for a standard detail of these water tanks.

Figure 2.1 below also provides detail on the location of these.

The inclusion of the additional water storage tanks has been assessed from an environmental perspective and does not result in any perceptible additional adverse effects on the environment.

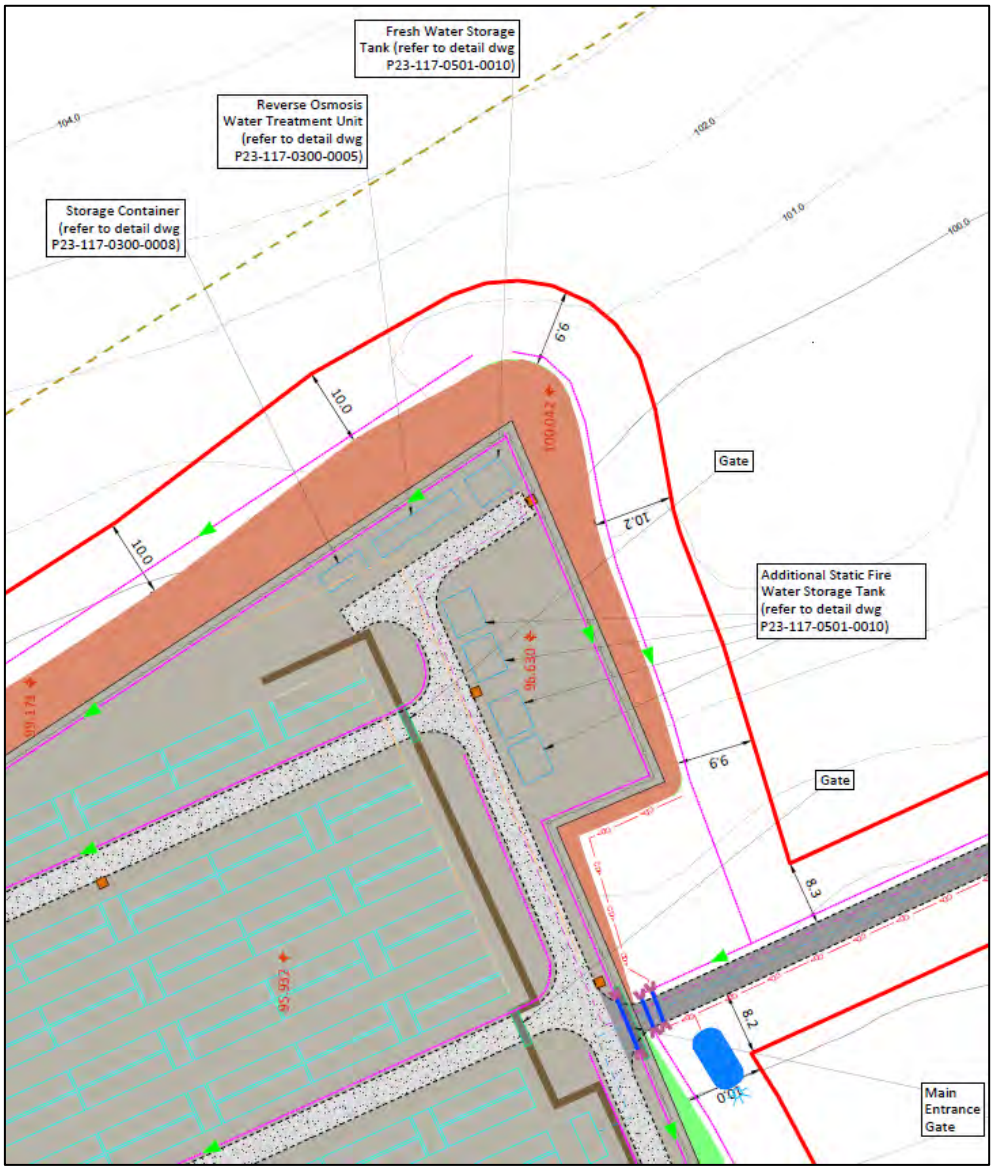

Figure 2-2: Additional Firewater Storage Tanks Location Plan

Water Management System

The proposed water tank is mains fed. In the event of a fire, the BESS shall undergo a controlled shutdown, resulting in the cessation of associated water consumption. The tank shall include a level sensor to maintain a dedicated reserve of water for firefighting purposes at all times. This will simultaneously stop the flow of water to the BESS units and maintain the water level within the tank.

In the event of a water main interruption, there are four additional modular static firewater storage tanks which have been added to provide approximately 220,000 litres of water capacity on site and will be kept full at all times. These additional tanks maintain the minimum separation distance of 10 metres from the nearest battery container.

These tanks have been added on foot of a recent update to the NFCC guidance stating a minimum of 180,000 litres of firewater should be provided on commercial scale BESS sites where a fire hydrant with a flow rate of 25 litres per second is not provided.

Defensive Firefighting and Retention

Drawing numbers **P23-117-0100-0004 to P23-117-0100-0006** as submitted with the original planning application show the drainage layout proposed. Drawing numbers **P23-117-0501-0006 to P23-117-0501-0009** as submitted with the original planning application show details of the proposed drainage infrastructure and permanent attenuation pond which is located in the south-east corner of the BESS compound as shown on the site layout drawings.

Firefighting tactics will be strictly defensive, focusing on cooling equipment plinths and perimeter vegetation. This approach minimises the risk of a fire propagating and does not provide a medium for fire to spread.

To address the retention of firefighting water and prevent untreated runoff, the site design utilises a robust, gravity-led drainage and containment network. This system will isolate and capture firewater without the need for permanent wastewater infrastructure or connection to local sewer networks.

All run off within the compound is directed to the main attenuation pond in the south east corner of the BESS compound via the internal drainage network. The attenuation pond outfall can be closed off in the event of an emergency and has sufficient capacity to store run off from fire fighting activities and contain same within the site.

The attenuation pond has a total design capacity of 1,493,000 litres. Accounting for a standard operational volume of 30 - 40% and a mandatory 300 mm freeboard allowance, the remaining available storage volume is sufficient to contain the projected firewater runoff volumes in their entirety from a fire event.

In the unlikely event of a fire, the attenuation pond will act as temporary storage for firewater runoff. The pond is lined to prevent infiltration of water to the ground. The discharge point of the pond will be blocked immediately after an event, allowing it to hold all conveyed firewater flow within the site. This ensures no discharge of contaminated firewater to the local environment. Following an incident, the pond will be drained and all water removed from the site by tanker to a licensed waste facility.

Any additional mitigation measures required to address spillage of contaminated water within the BESS compound shall be carried out in accordance with the measures for pollution control detailed in the CEMP submitted with the Planning Application. This includes Section 4.2.1 'Surface Water Management Plan' which contains mitigation measures for spillage and pollution control and Section 5.1.10 which includes details of environmental emergency response procedures.

2.2.2 Item 2, Section (b) (i)

> *A detailed methodology for fire water storage management along with any proposed mitigation measures (e.g. drainage systems, interceptors, bunded lagoons etc.). Such measures shall be included in the pERP, as referred to in Item 1 (g).*

2.2.2.1 Response

Please refer to Section 2.2.1.1 response under the paragraphs on Defensive Firefighting and Retention for this information.

Also, please refer to Sections 6.2 and 7.4 of the Preliminary Emergency Response Plan.

2.2.3 Item 2, Section (a) (ii)

Having regard to the need for large quantities of water in the event of a fire, the potential impacts and effects of contaminated fire water run-off on ground and surface water bodies requires full consideration in both the planning and environmental assessment, and in the AA Screening and, if determined to be required a Natura Impact Statement (NIS).

2.2.3.1 Response

We refer to the information provided in the section 2.2.1.1 response under the paragraphs on Defensive Firefighting and Retention. The proposed on-site drainage system will contain fire water within the onsite attenuation and settlement ponds, ensuring that it will be contained on site before being tested and potentially pumped and removed off site by a licenced contractor.

The site design utilises a robust, gravity-led drainage and containment network. This system will isolate and capture firewater without the need for permanent wastewater infrastructure or connection to local sewer networks.

All run off within the compound is directed to the main attenuation pond in the south east corner of the BESS compound via the internal drainage network. The attenuation pond outfall can be closed off in the event of an emergency and has sufficient capacity to store run off from fire fighting activities and contain same within the site.

The attenuation pond has a total design capacity of 1,493,000 litres. Accounting for a standard operational volume of 30 - 40% and a mandatory 300 mm freeboard allowance, the remaining available storage volume is sufficient to contain the projected firewater runoff volumes in their entirety from a fire event.

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Spillage of contaminated water within the BESS compound shall be carried out in accordance with the measures for pollution control detailed in the CEMP submitted with the Planning Application. This includes Section 4.2.1 'Surface Water Management Plan' which contains mitigation measures for spillage and pollution control and Section 5.1.10 which includes details of environmental emergency response procedures.

Any additional measures required to address spillage of contaminated water within the BESS compound shall be carried out in accordance with the measures for pollution control detailed in the CEMP submitted with the Planning Application. This includes Section 4.2.1 'Surface Water Management Plan' which contains mitigation measures for spillage and pollution control and Section 5.1.10 which includes details of environmental emergency response procedures.

The potential impact and effects of contaminated runoff have been considered in the planning and environmental assessment as contained in the original planning application, including the Appropriate Assessment.

From an ecological perspective, as confirmed in the Appropriate Assessment Screening Report, there is no pathway for any contaminated water from the development to any European site.

The AA Screening already prepared carried out a S-P-R connectivity assessment of the three identified European sites (Lough Swilly Special Area of Conservation (SAC) 002287, Lough Swilly Special Protection Area (SPA) 004075 and Lough Foyle SPA (SPA) 004087) and found that there are no likely significant effects identified to any European sites.

There is no pathway for any deterioration in the freshwater system of the Mill River from the proposed development given that the development site is located 22 m from the river (at its nearest distance, but generally >100 m from the river) and site runoff during construction and operation will percolate to ground rather than travelling such distances over vegetated lands given that vegetation will act as natural swales. Additionally, the riparian habitat on the Mill River will remain intact and will not be affected by the proposed development. As such, there can be no direct release of site drainage/runoff during the construction or operation stage of the proposed development to any watercourse, including the Mill River (which ultimately flows into Lough Swilly SAC). Please note that the nearest point of the proposed development to the Mill River is 22m, that being an access track and landscape planting.

The Appropriate Assessment Screening Report concluded that,

> *"given the scale and nature of the potential sources, there are no likely significant effects identified to any European sites. This process has considered potential effects which may arise during all phases of the proposed project. Through an assessment of the pathways for effects and an evaluation of the sources for impacts, taking account of the processes involved and the distance of separation from European sites, it has been evaluated that there are no likely significant effects on the qualifying interests, special conservation interest or the conservation objectives of any designated European site.*
>
> *While best practice construction methods and drainage design measures will be provided as part of the proposed development, these are not required to avoid or reduce any effects on any European site. These measures are not relied upon to reach a conclusion of no likely significant effects on any European site. Measures intended to avoid or reduce the harmful effects of the Proposed Development on European sites, (i.e., "mitigation measures") or best practice measures have not been taken into account in this screening stage appraisal.*
>
> *It can be excluded, on the basis of objective information, that the Proposed Development will have a significant effect on any European sites.".*

As such, the assessment of potential for significant effects in the AA Screening submitted with the application was already based on an assumption of uncontrolled runoff which encompasses the event of a fire and all associated run off from the proposed development onto adjacent lands / ground and surface water bodies for both construction, operation and decommissioning stages.

2.3 Item 3: Revised EIA Screening

A revised Environmental Impact Assessment (EIA) screening section of the 'Planning & Environmental Report' clearly setting out the information specified in Schedule 7A of the Planning and Development Regulations 2001 (as amended), and any further relevant information (under Article 109 (2A) (a) and (b) of the Planning and Development Regulations 2001, as amended) on:

(a) The characteristics of the proposed development and its likely significant effects on the environment, including, where relevant, information on how the available results of other relevant assessments of the effects on the environment carried out pursuant to European Union legislation other than the Environmental Impact Assessment Directive have been taken into account, and

(b) the inclusion of a summary table of features and/or measures envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects of the proposed development and a timescale for the implementation of proposed mitigation measures.

2.3.1 Response

In response to this FI Item, a revised EIA Screening has been prepared, based on the EIA Screening contained within Section 5 of the Planning and Environmental Report issued with the initial planning application.

Please refer to the enclosed revised EIA Screening Report which is included in this FI Response as **Appendix 8** in respect of this Item. This now fully addresses the proposed development against the criteria listed in Schedule 7 of the Planning and Development Regulations 2001 (as amended) and containing information listed in Schedule 7A of the Planning and Development Regulations 2001 (as amended).

Since the previous EIA Screening, the proposed development has changed in respect of an additional entrance being included for emergency vehicles as well as additional water tanks for fire water purposes on foot of this Further Information Request.

The revised EIA Screening Report presents an assessment of whether or not the proposed Ballynahone LDES should be subject to Environmental Impact Assessment (EIA). The assessment is carried out having regard to the criteria set out in Schedule 7A of the Planning and Development Regulations 2001 (as amended), and in accordance with the EPA (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) and other guidance documents set out in Section 3.4.

Section 4.1 of the EIA Screening provides a summary of mitigation measures.

The EIA Screening concludes:

"In summary, no significant adverse impacts to the receiving environment will arise as a result of the proposed project.
It is therefore submitted that sub-threshold EIA is not required for the project due to the project's limited impact on the receiving environment with respect to Schedule 7 of the Planning and Development Regulations 2001 (as amended), and Annex II of the EIA Directive."

2.4 Item 4: Supporting Documents

Having regard to items identified in 1, 2 and 3 above any relevant supporting documents and assessments accompanying the planning application such as, but not limited to, the Planning and Environmental Report, Ecological Impact Assessment (EclA), Landscape and Visual Impact Assessment (LVIA), Landscape Plans, Construction Environmental Management Plan etc. shall be revised to reflect any changes resulting from a response to the items of further information.

2.4.1 Response

It is not considered that any other supporting documents and assessments associated with this application need to be updated as a result of this further information response. Below we list each assessment submitted with the original application and explain why they do not need to be updated. .

Noise

It is of note that there is a noise barrier to the south and north of the LDES compound to mitigate against noise emitted from the proposed technology. It is noted that the new gate, proposed as part of this FI response will be of the same height as the noise barrier, with the same material and with no gaps when closed.

It is proposed that this additional entrance would only be opened in an emergency, such as a fire event, in which case the LDES compound would be shut down. As such any noise emission when the gate is open would be negligible. It is highly likely that if use of the emergency access point is required, an emergency situation will be in effect and the batteries would not be operating or would be shutdown shortly afterwards. Therefore, noise propagation from the battery enclosures would be significantly reduced or eliminated altogether.

Therefore, it is considered that the noise emissions from the proposed development will remain in line with the nighttime noise limit of 35dB at the nearest existing dwelling in line with best practice EPA NG4 Guidelines for this type of development.

Landscape Visual Impact Assessment

From a visual point of view this new emergency opening will not result in a change to the outcomes of the Visual Impact Assessment originally carried out. The proposed LDES compound will still be briefly and partially visible from the L-7221 public road by those using the road, but this will be a brief glimpse of an entrance way and gate, largely in line with what can be found in such a rural setting

This FI Response and all associated appendices should be read as an addendum to the original planning application material, with elements superseded where noted. The Applicant would welcome a condition to confirm same, in line with standard condition wording to ensure development is carried out in accordance with plans and particulars including in the Further Information Response.

CEMP

The CEMP is being supplemented by any additional measures contained within this RFI response and should be read in conjunction with both the material submitted as part of the planning application, and with the material submitted in this RFI response. Whilst this FI Response report details the proposed approach when filling the battery units with electrolyte, it is not considered necessary that this detail is added to the CEMP.

The CEMP will be a key construction contract document which will ensure that all mitigation measures considered necessary to protect the environment are implemented. In the event of a planning approval, any conditions relating to the CEMP which may be attached by the Commission will be implemented in accordance with the requirements of the condition.

Prior to construction, the Appointed Main Contractor will prepare a detailed CEMP taking into account mitigation methods/requirements outlined in this report as well as the CEMP as submitted. The final CEMP itself will be subject to ongoing review throughout the construction phase of the proposed development through regular environmental auditing and site inspections. This will confirm the efficacy and implementation of all relevant mitigation measures and commitments identified in the application documentation.

AA Screening

Please refer to Section 2.2.3 of this report which outlines the response in respect of AA Screening. It is not considered that further amendments are required to the AA Screening on foot of the minor changes to the development in response of this RFI, or with respect to the additional detail that is provided.

EcIA

It is not considered that further amendments are required to the EcIA on foot of the minor changes to the development in response of this RFI, or with respect to the additional detail that is provided. There is nothing included or changed which would materially alter the context or findings of this report.

Archaeology

It is not considered that further amendments are required to the Cultural Heritage Impact Assessment on foot of the minor changes to the development in response of this RFI, or with respect to the additional detail that is provided. There is nothing included or changed which would materially alter the context or findings of this report.

Planning and Environmental Report

It is not considered that further amendments are required to the Planning and Environmental Report or its constituent chapters on foot of the minor changes to the development in response of this RFI, or with respect to the additional detail that is provided other than where already altered, such as the now standalone EIA Screening Report. There is nothing included or changed which would materially alter the context or findings of this report.

FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

APPENDIX 1

An Coimisiún Pleanála Further Information Request Letter

Our Case Number: ABP-321384-24

Planning Authority Reference Number: 2461497

Your Reference: Futurenergy Ireland Development DAC

An Coimisiún Pleanála

Fehily Timoney & Co.
Core House
Pouladuff Road
Co. Cork
T12 D773

FEHILY TIMONEY & CO.
Distribution TB/JM
03 DEC 2025
Job No: P23-117
Correspondence No:
Comment: 4

Date: 04 December 2025

Re: 10 year permission for energy storage facility and all associated works. The proposed facility will be operational for a period of 30 years.
Ballynahone, Buncrana, Co. Donegal

Dear Sir / Madam,

I have been asked by An Coimisiún Pleanála to refer to the above-mentioned appeal.

The Commission has examined the appeal and is of the opinion that certain information is necessary for the purpose of enabling it to determine the appeal.

In accordance with section 132 of the Planning and Development Act, 2000, (as amended), you are required to submit, **on or before 26th March 2026**, the following information:

1. **Fire Prevention/ Response Strategy**

   a) **Provide an update on the status of the system certification standards (as identified in Table 2 of the submitted Technology & Compliance Overview (Appendix 1) (namely UL 1973, UL9540A and UL 9540). A copy of relevant certificates, as applicable, to be submitted and any new information provided with respect to the current status of product/system certification with Underwriters Laboratories (UL).**

   b) **Provide details of the chemical composition of the electrolytes used in the proposed batteries, all associated risks and proposed mitigation measures for same.**

   c) **Explosion Risk Modelling to be undertaken and details of Hydrogen Gas Management System, including how it is proposed to vent the gases from the units, fail-safe mechanisms and quantities of hydrogen gas produced to be provided.**

   d) **Revised drawings to demonstrate the provision of a perimeter ring road solution with more than one access point from the public road for fire authority vehicle access. The access points are recommended to be positioned to account for opposite wind direction.**

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D01 V902

64 Marlborough Street
Dublin 1
D01 V902

e) Detailed drawings to illustrate adequate separation distance and fire breaks provided for and to be maintained from the surrounding forest. An indicative maintenance schedule for fire breaks shall be provided.

f) A draft Fire Risk Management Plan (dFRMP) which provides advice in relation to potential emergency response implications, taking into account items (a)-(e) above, including but not limited to:
- The hazards and risks at and to the facility and their proposed management.
- Safety issues for firefighters responding to emergencies at the facility.
- Safe access to and within the facility for emergency vehicles and responders, including to key site infrastructure and fire protection systems.
- The adequacy of proposed fire detection and suppression systems on-site, including detailed information on the storage of water useable for firefighting purposes, location of any static water storage tanks and the provision of hydrant supplies as appropriate.
- Natural and built infrastructure and on-site processes that may impact or delay effective emergency response.

g) A preliminary Emergency Response Plan (pERP) to include systems for containing and managing firewater runoff.

2. Firefighting water/Fire water storage

a) Details of the quantity and confirmation of how firefighting water will be sourced and/or retained within the proposed development site. This should be to the UK National Fire Chief's Council (NFCC) Grid Scale Battery Energy Storage System Planning - Guidance for the FRS (Fire & Rescue Services), which states that provision should be made for BESS units to provide 1,900 litres of water for 2 hours, as a minimum unless it can be demonstrated that another amount is appropriate. Revised drawings and necessary agreements be provided to demonstrate feasibility of same.

b) (i) The applicant shall submit a detailed methodology for fire water storage management along with any proposed mitigation measures (e.g. drainage systems, interceptors, bunded lagoons etc.). Such measures shall be included in the pERP, as referred to in Item 1 (g).

(ii) Having regard to the need for large quantities of water in the event of a fire, the potential impacts and effects of contaminated fire water run-off on ground and surface water bodies requires full consideration in both the planning and environmental assessment, and in the AA Screening and, if determined to be required a Natura Impact Statement (NIS).

3. A revised Environmental Impact Assessment (EIA) screening section of the 'Planning & Environmental Report' clearly setting out the information specified in Schedule 7A of the Planning and Development Regulations 2001 (as amended), and any further relevant information on:

a) The characteristics of the proposed development and its likely significant effects on the environment, including, where relevant, information on how the available results of other relevant assessments of the effects on the environment carried out pursuant to European Union legislation other than the Environmental Impact Assessment Directive have been taken into account, and

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b) **the inclusion of a summary table of features and/or measures envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects of the proposed development and a timescale for the implementation of proposed mitigation measures.**

4. **Having regard to items identified in 1, 2 and 3 above any relevant supporting documents and assessments accompanying the planning application such as, but not limited to, the Planning and Environmental Report, Ecological Impact Assessment (EcIA), Landscape and Visual Impact Assessment (LVIA), Landscape Plans, Construction Environmental Management Plan etc. shall be revised to reflect any changes resulting from a response to the items of further information.**

Upon receipt of the above information revised notices may be required.

If the information required is not received before the end of the specified period, the Commission will dismiss or otherwise determine the appeal without further notice to you in accordance with section 133 of the 2000 Act, (as amended). **The provisions of section 251 of the Planning and Development Act, 2000, (as amended), relating to the holiday period between the 24th December and 1st January, both days inclusive, have been taken into account in the calculation of the response date.** Your submission in response to this notice must be received by the Commission **on or before the date specified above**.

Please quote the above appeal reference number in any further correspondence.

If you have any queries in the meantime, please contact the undersigned officer of the Commission at appeals@pleanala.ie.

Yours faithfully,

Ronan Meganney
Executive Officer
Direct Line:

BP71 - Xmas Registered Post

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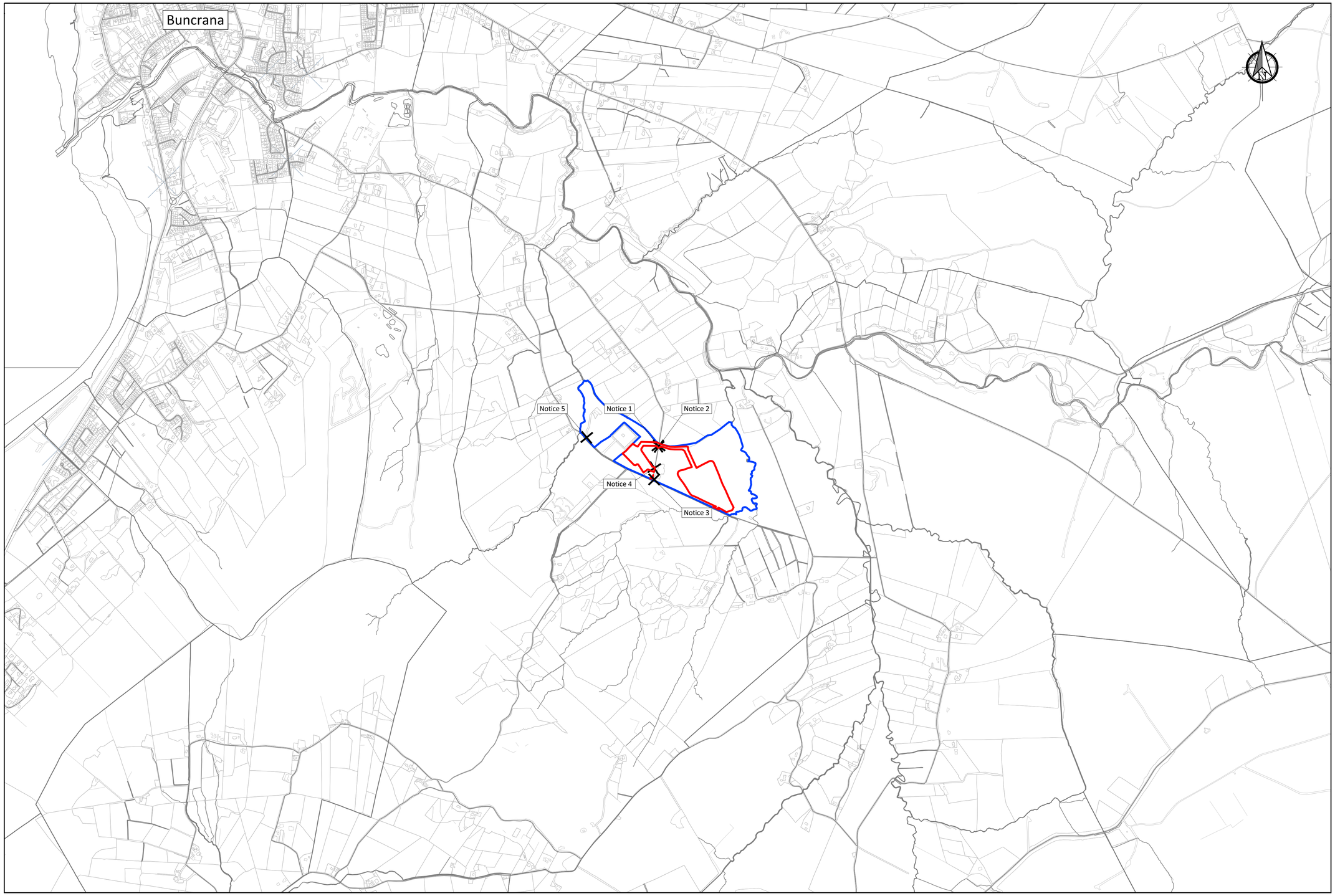
APPENDIX 2

Revised Drawing Pack
Including Drawing Register

Drawing Register – Ballynahone LDES Further Information Response

Drawing Number	Drawing Title	Scale
P23-117-0100-0001	PROJECT OVERVIEW MAP	1:10000 at A1
P23-117-0100-0002	SITE LOCATION MAP 1:2,500	1:2500 at A1
P23-117-0100-0003	SITE LAYOUT PLAN	1:1000 at A1
P23-117-0100-0004	SITE LAYOUT PLAN 1:500 SHEET 1 OF 3	1:500 at A1
P23-117-0100-0005	SITE LAYOUT PLAN 1:500 SHEET 2 OF 3	1:500 at A1
P23-117-0100-0006	SITE LAYOUT PLAN 1:500 SHEET 3 OF 3	1:500 at A1
P23-117-0100-0007	SITE SECTION	1:1250 at A1
P23-117-0600-0001	VEHICLE TRACKING AT EMERGENCY ENTRANCE	1:250 at A1
P23-117-0600-0002	SIGHT LINES AT EMERGENCY ENTRANCE	1:500 at A1
P23-117-0600-0003	EMERGENCY ENTRANCE ROAD MARKINGS AND SIGNS	1:125 at A1
P23-117-0600-0004	SEPARATION DISTANCE / FIREBREAK FROM SURROUNDING FORESTRY	1:500 at A1



LEGEND:

- PROPOSED DEVELOPMENT BOUNDARY
- PROPERTY BOUNDARY

NOTES:

1. For information purposes only, not for construction.
2. Coordinates presented in ITM.
3. All dimensions in meters unless otherwise stated.

0m 100m 200m 300m 400m 500m 600m 700m 800m 900m 1000m

Scale 1:10000

PLAN

Scale 1:10000

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Rev.	Description	App By	Date
P01	FOR PLANNING	JH	19.09.24
P02	FOR FURTHER INFORMATION	JH	05.12.25

PROJECT: BALLYNAHONE LONG DURATION ENERGY STORAGE

CLIENT: FUTURENERGY IRELAND DEVELOPMENT DAC

SHEET: PROJECT OVERVIEW MAP

Date: 19.09.24	Project number: P23-117	Scale (@ A1-): 1:10000	
Drawn by: POR	Drawing Number: P23-117-0100-0001		Rev: P02
Checked by: TB			

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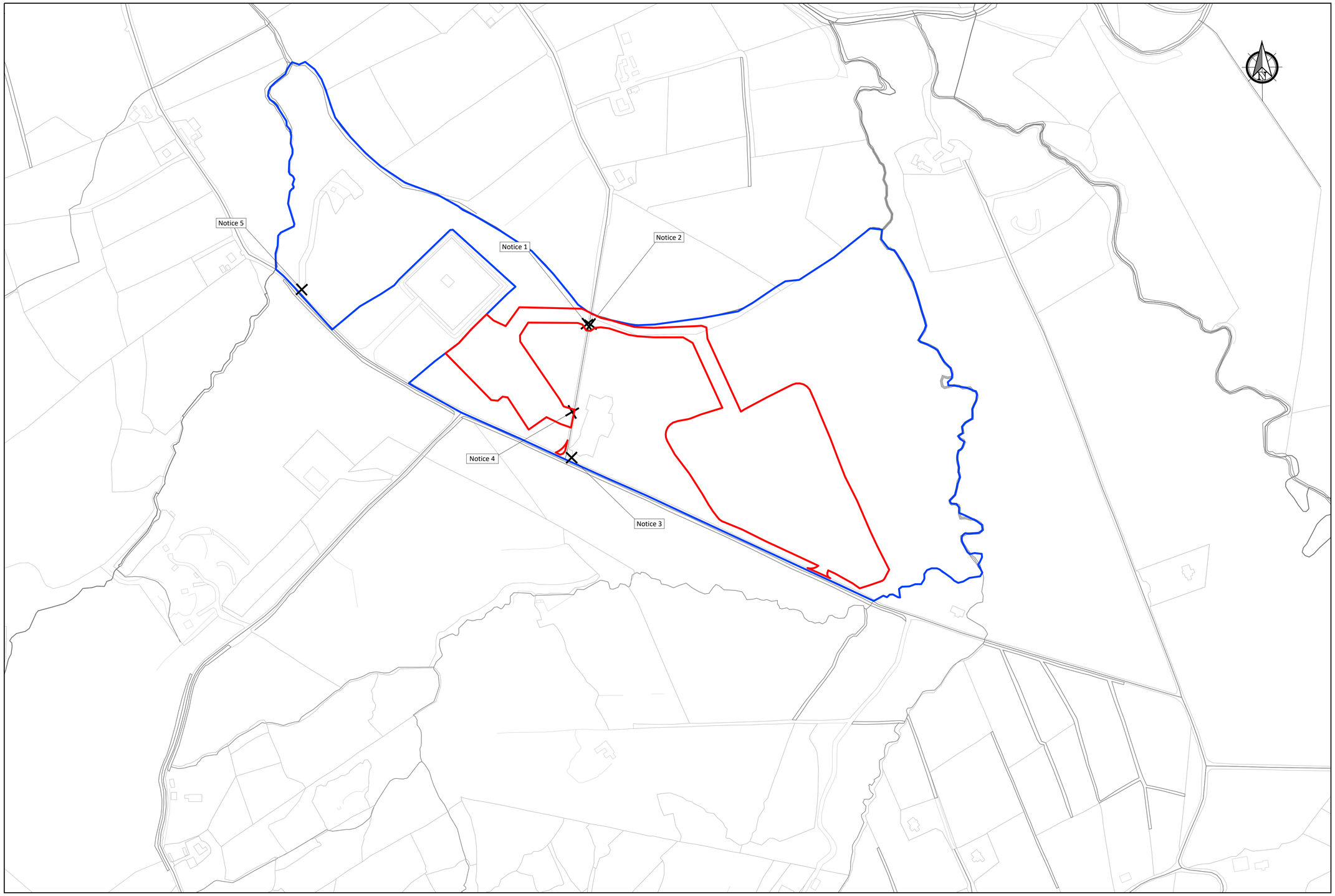
24 March 2026



LEGEND:

PROPOSED DEVELOPMENT BOUNDARY

PROPERTY BOUNDARY

NOTES:

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PLAN

Scale 1:2500

0m 25m 50m 75m 100m 125m 150m 175m 200m 225m 250m

Scale 1:2500

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Rev.	Description	App By	Date
P01	FOR PLANNING	JH	19.09.24
P02	FOR FURTHER INFORMATION	JH	05.12.25

PROJECT

BALLYNAHONE LONG DURATION ENERGY STORAGE

CLIENT

FUTURENERGY IRELAND DEVELOPMENT DAC

SHEET

SITE LOCATION MAP 1:2,500

Date 19.09.24

Drawn by POR

Checked by TB

Project number P23-117

Scale (@ A1-) 1:2500

Drawing Number **P23-117-0100-0002**

Rev **P02**

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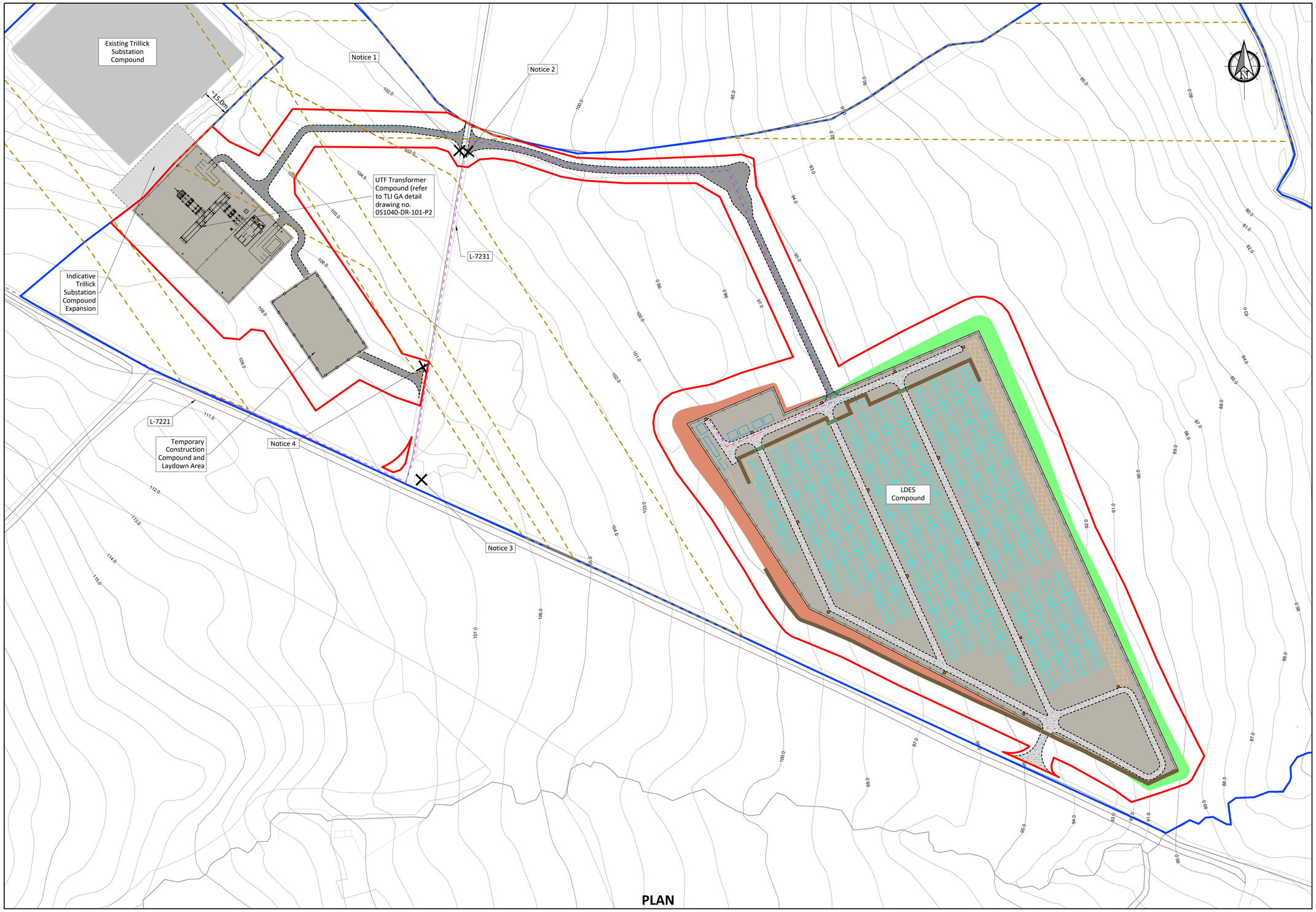
24 March 2026



LEGEND:

- PROPOSED DEVELOPMENT BOUNDARY
- PROPERTY BOUNDARY
- BATTERY STORAGE UNIT
- ACCESS TRACK
- HARDSTANDING SURFACE
- EARTHWORKS - CUTTING
- EARTHWORKS - FILL
- SECURITY FENCE
- AREA KEPT CLEAR FOR FIRE TENDER ACCESS
- WATER CONNECTION
- BURIED ELECTRICAL CABLE
- EXISTING BURDEN/WAYLEAVE
- SOUND REFLECTIVE BARRIER
- XXX.XXX FINISHED SURFACE LEVEL
- EXISTING GROUND CONTOUR - MAJOR
- EXISTING GROUND CONTOUR - MINOR
- LIGHTING POLE
- SITE NOTICE LOCATIONS

NOTES:

1. For information purposes only, not for construction.
2. Coordinates presented in ITM.
3. All dimensions in meters unless otherwise stated.
4. For proposed landscaping and planting please refer to drawing ref. LD.BLLNHNE 1.1 - Landscape Plan.

PLAN

Scale 1:1000

0m 10m 20m 30m 40m 50m 60m 70m 80m 90m 100m

Scale 1:1000

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Rev.	Description	App By	Date
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P02	FOR FURTHER INFORMATION	JH	05.12.25

PROJECT
BALLYNAHONE LONG DURATION ENERGY STORAGE

CLIENT
FUTURENERGY IRELAND DEVELOPMENT DAC

SHEET
SITE LAYOUT PLAN

Date 19.09.24
Project number P23-117
Scale (@ A1-) 1:1000
Drawn by POR
Drawing Number P23-117-0100-0003
Rev P02
Checked by TB

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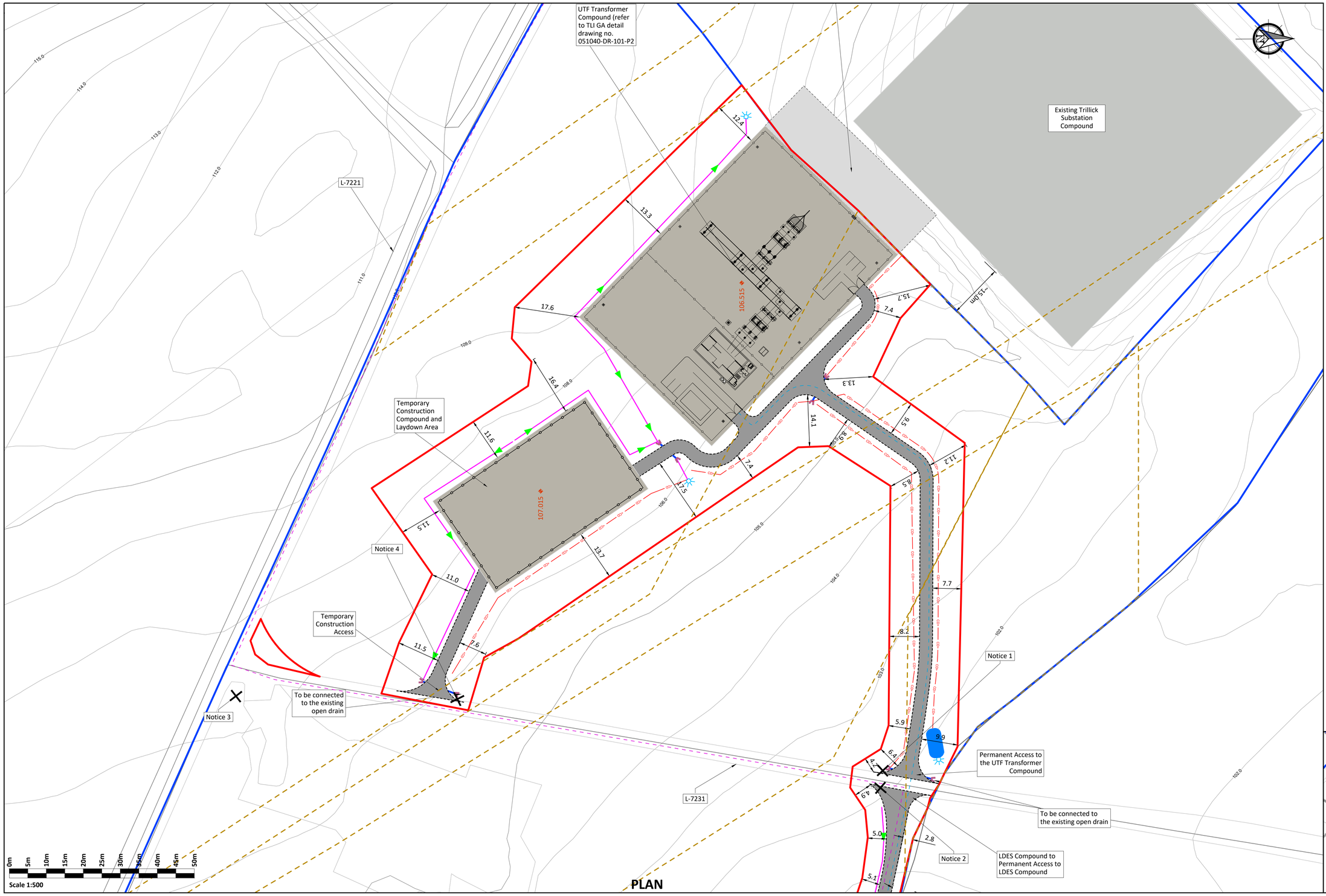
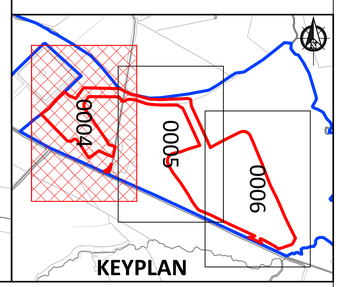
24 March 2026



PLAN

Scale 1:500



KEYPLAN

Scale 1:7000

LEGEND:

- PROPOSED DEVELOPMENT BOUNDARY
- PROPERTY BOUNDARY
- BATTERY STORAGE UNIT
- ACCESS TRACK
- HARDSTANDING SURFACE
- EARTHWORKS - CUTTING
- EARTHWORKS - FILL
- SECURITY FENCE
- AREA KEPT CLEAR FOR FIRE TENDER ACCESS
- WATER CONNECTION
- BURIED ELECTRICAL CABLE
- EXISTING BURDEN/WAYLEAVE
- SOUND REFLECTIVE BARRIER
- XXX.XXX FINISHED SURFACE LEVEL
- EXISTING GROUND CONTOUR - MAJOR
- EXISTING GROUND CONTOUR - MINOR
- LIGHTING POLE
- SITE NOTICE LOCATIONS

DRAINAGE LEGEND:

- CARRIER DRAIN
- FILTER DRAIN
- INTERCEPTOR DRAIN
- CROSS DRAIN
- MANHOLE
- HEADWALL
- FLOW ARROW
- PUMP STATION
- SETTLEMENT POND

NOTES:

1. For information purposes only, not for construction.
2. Coordinates presented in ITM.
3. All dimensions in meters unless otherwise stated.
4. For proposed landscaping and planting please refer to drawing ref. LD.BLLNHNE 1.1 - Landscape Plan.

FEHILY TIMONEY

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Rev.	Description	App By	Date
P01	FOR PLANNING	JH	19.09.24

PROJECT

BALLYNAHONE LONG DURATION ENERGY STORAGE

CLIENT

FUTURENERGY IRELAND DEVELOPMENT DAC

SHEET

SITE LAYOUT PLAN 1:500 SHEET 1 OF 3

Date 19.09.24	Project number P23-117	Scale (@ A1-) 1:500	
Drawn by POR	Drawing Number P23-117-0100-0004		Rev P01
Checked by TB			

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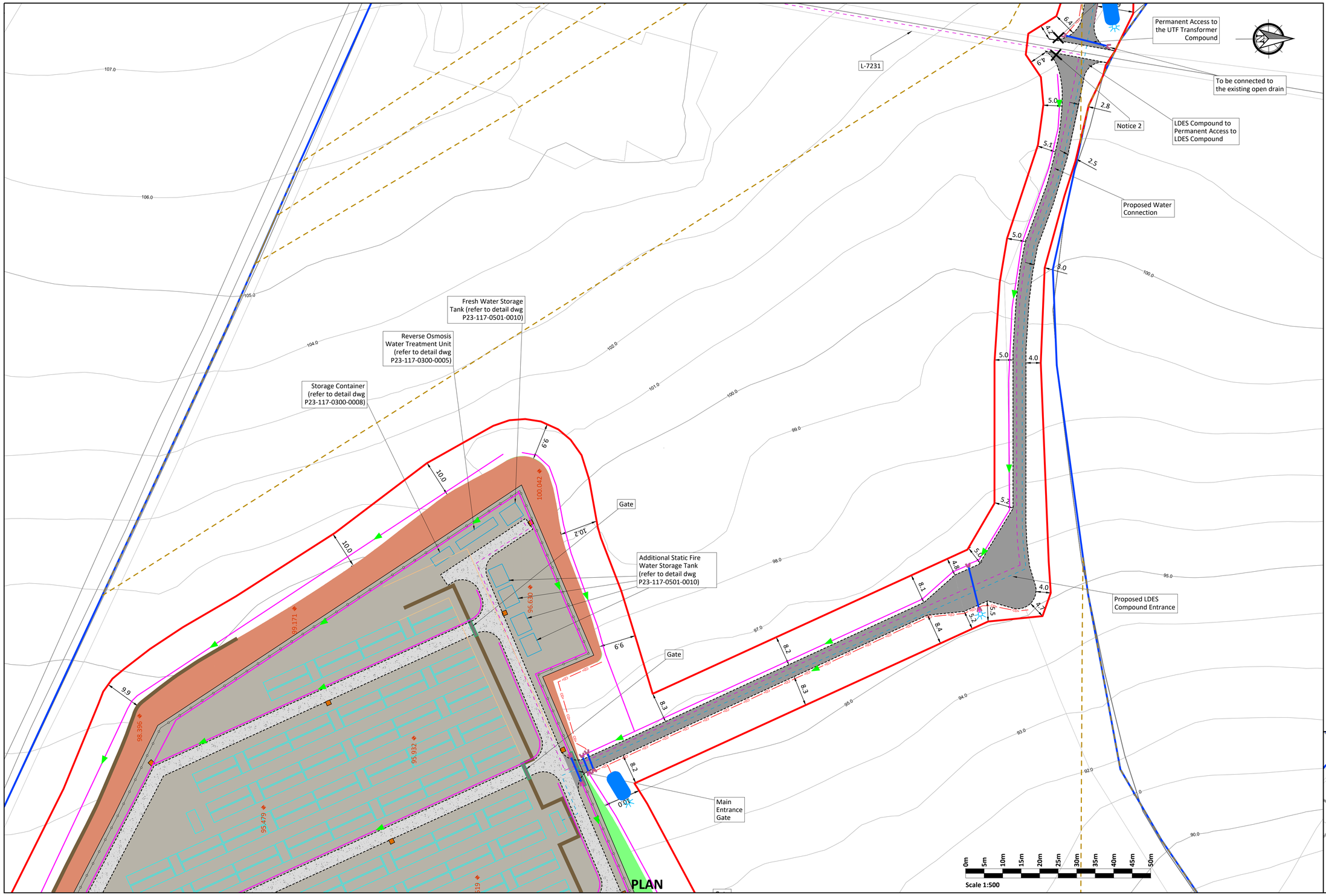
13 March 2026



PLAN

Scale 1:500

If Applicable : Ordnance Survey Ireland Licence No. CYAL50221678 © Ordnance Survey Ireland and Government of Ireland
0126,0127,0128,0147,0148,0149

LEGEND:

- PROPOSED DEVELOPMENT BOUNDARY
- PROPERTY BOUNDARY
- BATTERY STORAGE UNIT
- ACCESS TRACK
- HARDSTANDING SURFACE
- EARTHWORKS - CUTTING
- EARTHWORKS - FILL
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- EXISTING GROUND CONTOUR - MINOR
- LIGHTING POLE
- **SITE NOTICE LOCATIONS**

DRAINAGE LEGEND:

- CARRIER DRAIN
- FILTER DRAIN
- INTERCEPTOR DRAIN
- CROSS DRAIN
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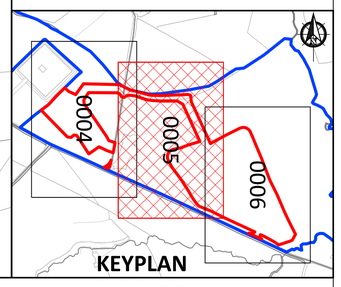

KEYPLAN

Scale 1:7000

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Rev.	Description	App By	Date
P01	FOR PLANNING	JH	19.09.24
P02	FOR FURTHER INFORMATION	JH	24.03.26

PROJECT
BALLYNAHONE LONG DURATION ENERGY STORAGE

CLIENT
FUTURENERGY IRELAND DEVELOPMENT DAC

SHEET
SITE LAYOUT PLAN 1:500 SHEET 2 OF 3

Date 19.09.24	Project number P23-117	Scale (@ A1-) 1:500	
Drawn by POR	Drawing Number P23-117-0100-0005		Rev P02
Checked by TB			

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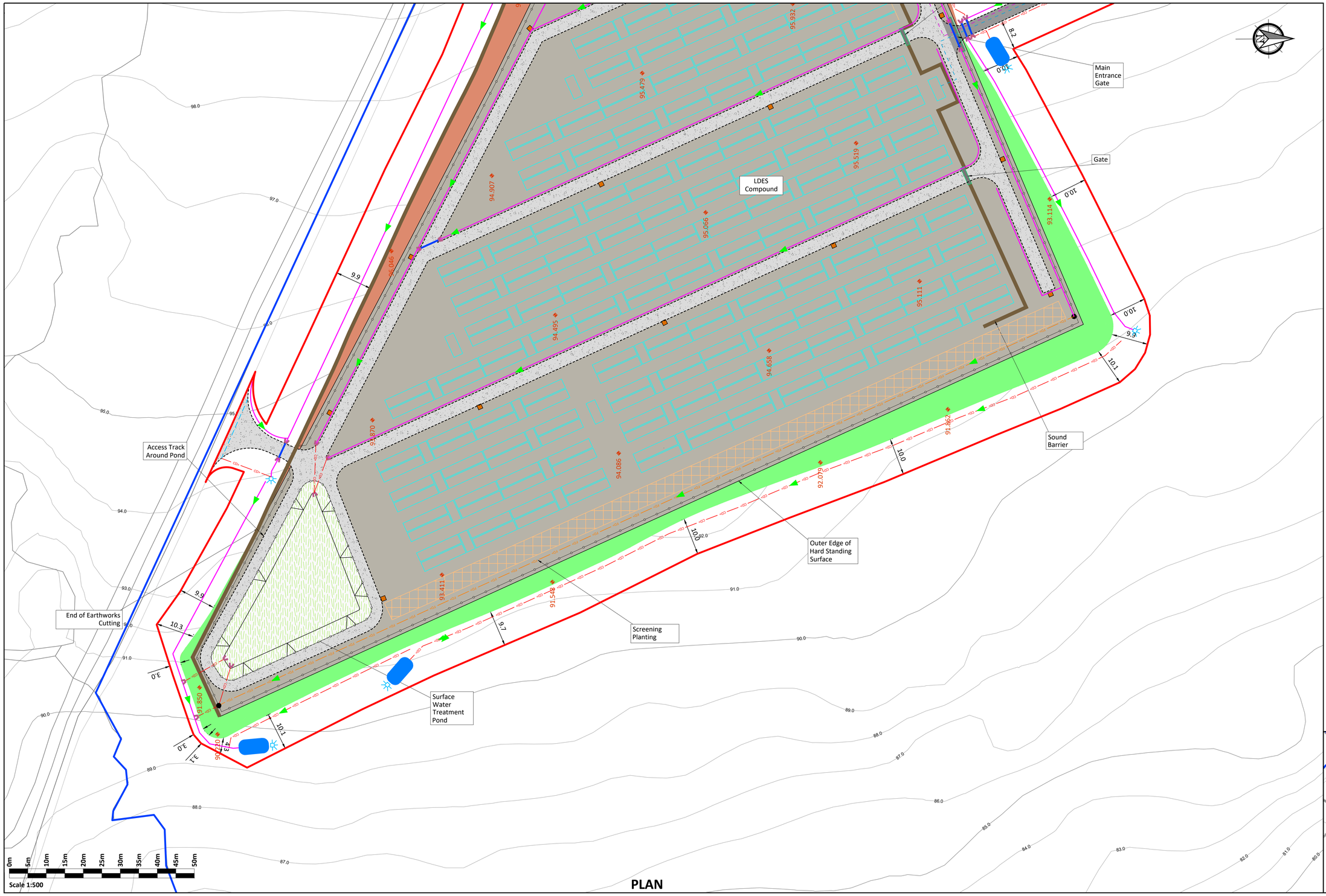
24 March 2026



PLAN

Scale 1:500

LEGEND:

- PROPOSED DEVELOPMENT BOUNDARY
- PROPERTY BOUNDARY
- BATTERY STORAGE UNIT
- ACCESS TRACK
- HARDSTANDING SURFACE
- EARTHWORKS - CUTTING
- EARTHWORKS - FILL
- SECURITY FENCE
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- WATER CONNECTION
- BURIED ELECTRICAL CABLE
- EXISTING BURDEN/WAYLEAVE
- SOUND REFLECTIVE BARRIER
- XXX.XXX FINISHED SURFACE LEVEL
- EXISTING GROUND CONTOUR - MAJOR
- EXISTING GROUND CONTOUR - MINOR
- LIGHTING POLE
- SITE NOTICE LOCATIONS

DRAINAGE LEGEND:

- CARRIER DRAIN
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- MANHOLE
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- FLOW ARROW
- PUMP STATION
- SETTLEMENT POND

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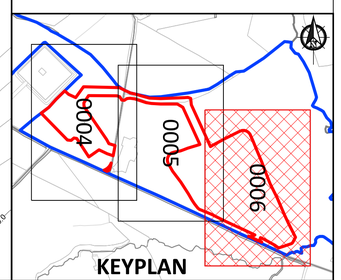

KEYPLAN

Scale 1:7000

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Rev.	Description	App By	Date
P01	FOR PLANNING	JH	19.09.24
P02	FOR FURTHER INFORMATION	JH	05.12.25

PROJECT
BALLYNAHONE LONG DURATION ENERGY STORAGE

CLIENT
FUTURENERGY IRELAND DEVELOPMENT DAC

SHEET
SITE LAYOUT PLAN 1:500 SHEET 3 OF 3

Date 19.09.24
Project number P23-117
Scale (@ A1-) 1:500
Drawn by POR
Checked by TB
Drawing Number P23-117-0100-0006
Rev P02

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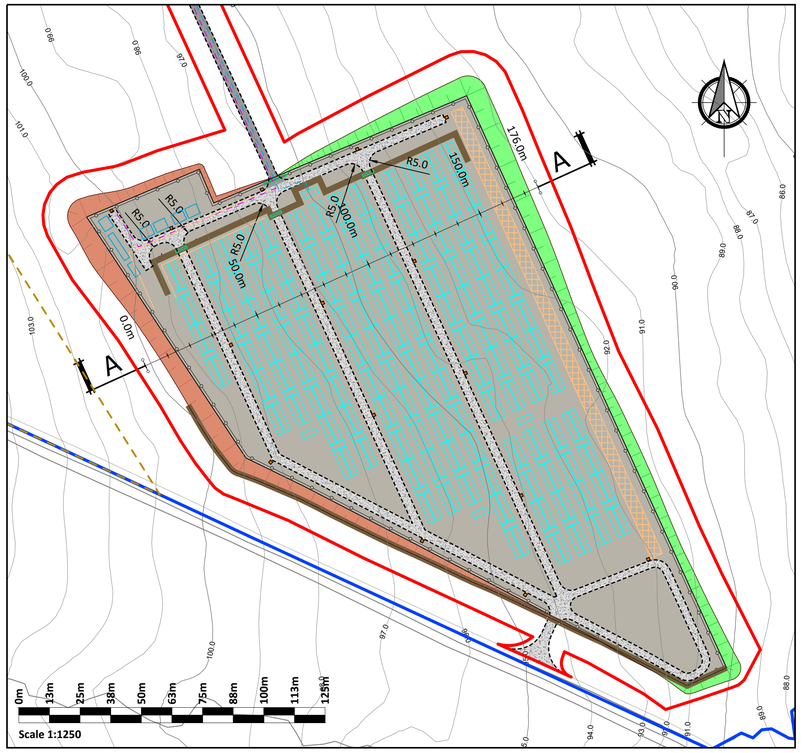
24 March 2026

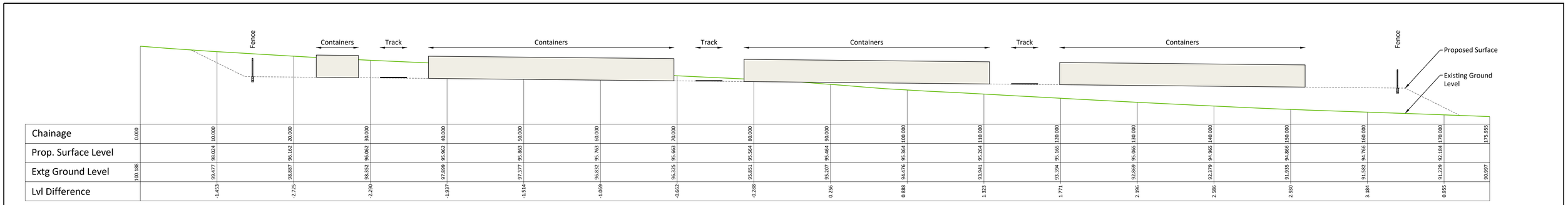
LEGEND:

- PROPOSED DEVELOPMENT BOUNDARY
- PROPERTY BOUNDARY
- BATTERY STORAGE UNIT
- ACCESS TRACK
- HARDSTANDING SURFACE
- EARTHWORKS - CUTTING
- EARTHWORKS - FILL
- SECURITY FENCE
- AREA KEPT CLEAR FOR FIRE TENDER ACCESS
- WATER CONNECTION
- BURIED ELECTRICAL CABLE
- EXISTING BURDEN/WAYLEAVE
- SOUND REFLECTIVE BARRIER



PLAN

Scale 1:1250



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Prop. Surface Level		98.024	96.162	96.062	95.962	95.863	95.763	95.663	95.564	95.464	95.364	95.264	95.165	95.065	94.965	94.866	94.766	92.184	
Extg Ground Level	100.188	99.477	98.887	98.352	97.899	97.377	96.832	96.325	95.851	95.207	94.476	93.941	93.394	92.869	92.379	91.935	91.582	91.229	90.997
Lvl Difference		-1.453	-2.725	-2.290	-1.937	-1.514	-1.069	-0.662	-0.288	0.256	0.888	1.323	1.771	2.196	2.586	2.930	3.184	0.955	

SECTION A-A

Scale 1:250

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Rev.	Description	App By	Date
P01	FOR PLANNING	JH	19.09.24
P02	FOR FURTHER INFORMATION	JH	05.12.25

PROJECT: **BALLYNAHONE LONG DURATION ENERGY STORAGE**

CLIENT: **FUTURENERGY IRELAND DEVELOPMENT DAC**

SHEET: **SITE SECTION**

Date: 19.09.24
Drawn by: POR
Checked by: TB
Project number: P23-117
Scale (@ A1-): 1:1250
Drawing Number: **P23-117-0100-0007**
(Sheet set subset 0100)
Rev: **P02**

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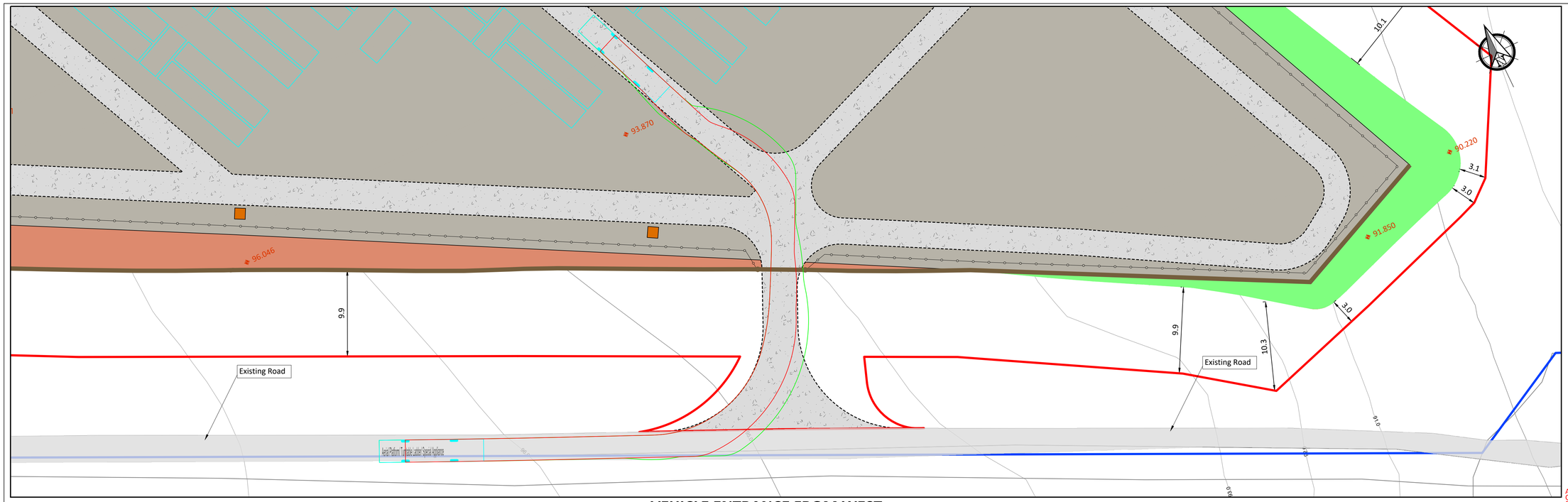
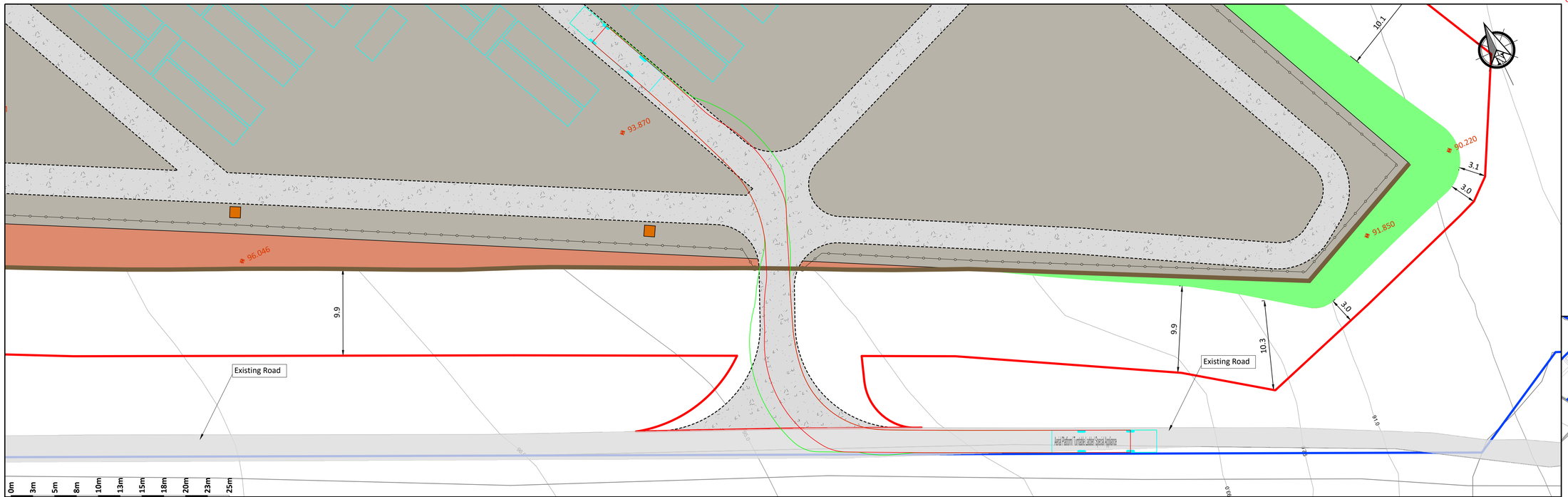
24 March 2026



VEHICLE ENTRANCE FROM WEST

Scale 1:250



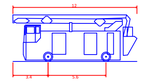
Scale 1:250

VEHICLE ENTRANCE FROM EAST

Scale 1:250

LEGEND:

- PROPOSED DEVELOPMENT BOUNDARY
- PROPERTY BOUNDARY
- BATTERY STORAGE UNIT
- ACCESS TRACK
- HARDSTANDING SURFACE
- EARTHWORKS - CUTTING
- EARTHWORKS - FILL
- SECURITY FENCE
- AREA KEPT CLEAR FOR FIRE TENDER ACCESS
- WATER CONNECTION
- BURIED ELECTRICAL CABLE
- EXISTING BURDEN/WAYLEAVE
- SOUND REFLECTIVE BARRIER
- XXX.XXX FINISHED SURFACE LEVEL
- EXISTING GROUND CONTOUR - MAJOR
- EXISTING GROUND CONTOUR - MINOR
- LIGHTING POLE
- SITE NOTICE LOCATIONS
- VEHICLE WHEEL OUTLINE
- VEHICLE BODY OUTLINE



Aerial Platform/ Turntable Ladder/ Special Appliance
Overall Length 12.000m
Overall Width 2.550m
Overall Body Height 4.500m
Min Body Ground Clearance 0.130m
Track Width 2.550m
Lock-to-lock time 4.00s
Curb to Curb Turning Radius 13.750m

NOTES:

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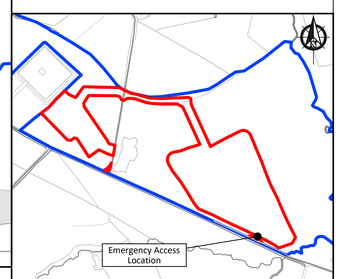

KEYPLAN

Scale 1:7000

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Rev.	Description	App By	Date
P01	FOR FURTHER INFORMATION	JH	05.12.25

PROJECT
BALLYNAHONE LONG DURATION ENERGY STORAGE

CLIENT
FUTURENERGY IRELAND DEVELOPMENT DAC

SHEET
VEHICLE TRACKING AT EMERGENCY ENTRANCE

Date: 05.12.25
Project number: P23-117
Scale (@ A1-): 1:250
Drawn by: CS
Checked by: LD
Drawing Number: P23-117-0600-0001
Rev: P01

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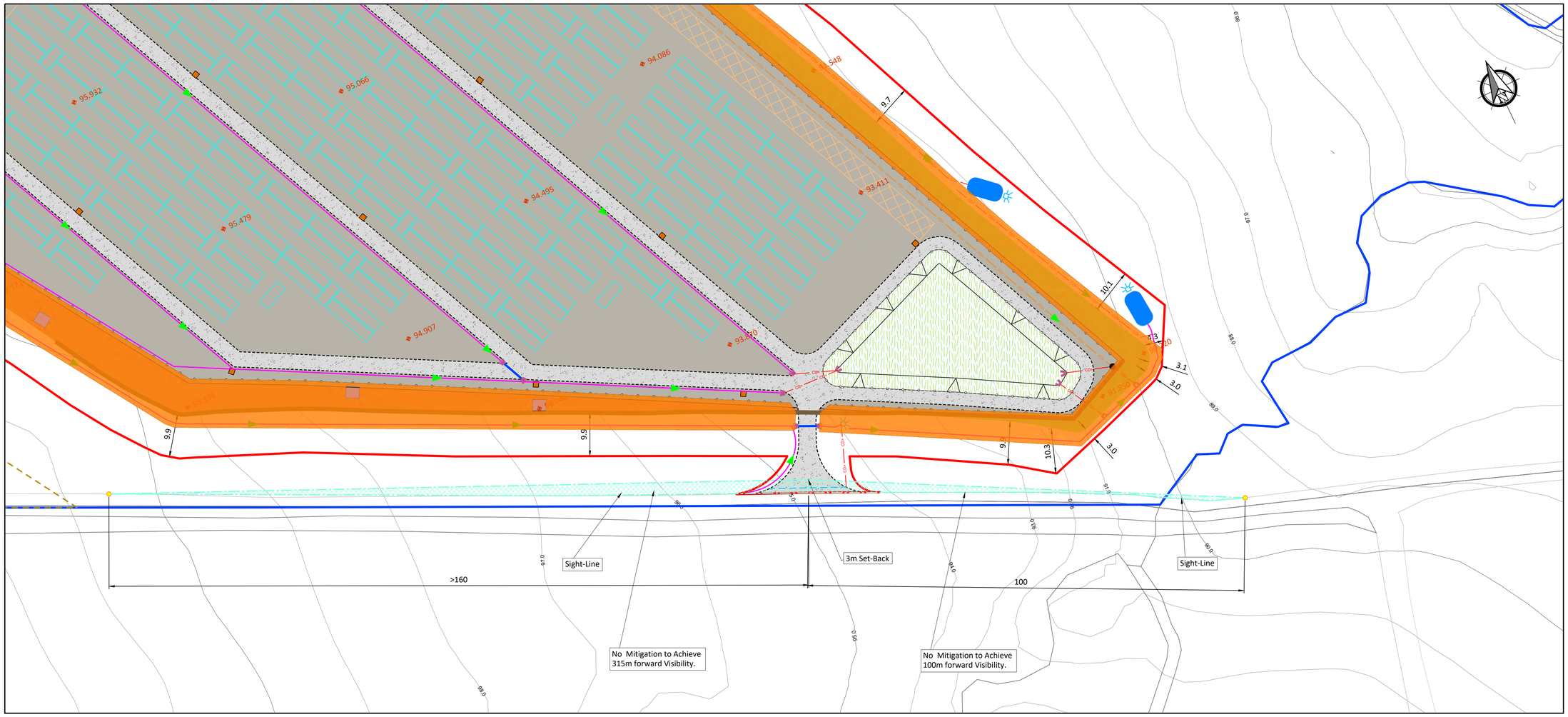
24 March 2026



PLAN

Scale 1:500

LEGEND:

- PROPOSED DEVELOPMENT BOUNDARY
- PROPERTY BOUNDARY
- BATTERY STORAGE UNIT
- ACCESS TRACK
- HARDSTANDING SURFACE
- EARTHWORKS - CUTTING
- EARTHWORKS - FILL
- SECURITY FENCE
- AREA KEPT CLEAR FOR FIRE TENDER ACCESS
- WATER CONNECTION
- BURIED ELECTRICAL CABLE
- EXISTING BURDEN/WAYLEAVE
- SOUND REFLECTIVE BARRIER
- XXX.XXX FINISHED SURFACE LEVEL
- EXISTING GROUND CONTOUR - MAJOR
- EXISTING GROUND CONTOUR - MINOR
- LIGHTING POLE
- SITE NOTICE LOCATIONS
- FIRE BREAK AREA

DRAINAGE LEGEND:

- CD CARRIER DRAIN
- FD FILTER DRAIN
- INTERCEPTOR DRAIN
- CROSS DRAIN
- MANHOLE
- HEADWALL
- FLOW ARROW
- PS PUMP STATION
- SETTLEMENT POND
- DIFFUSE OUTFALL

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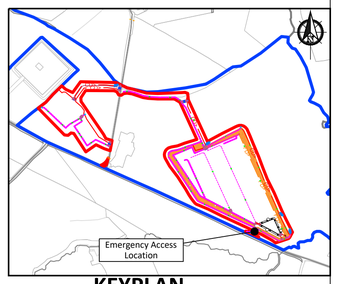
0m 5m 10m 15m 20m 25m 30m 35m 40m 45m 50m

Scale 1:500

Entrance Looking Northwest

Entrance Looking Southeast



KEYPLAN

Scale 1:7000

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Rev.	Description	App By	Date
P01	FOR FURTHER INFORMATION	JH	05.12.25

PROJECT: BALLYNAHONE LONG DURATION ENERGY STORAGE

CLIENT: FUTURENERGY IRELAND DEVELOPMENT DAC

SHEET: SIGHT LINES AT EMERGENCY ENTRANCE

Date: 05.12.25

Project number: P23-117

Scale (@ A1-): 1:500

Drawn by: CS

Drawing Number: P23-117-0600-0002

Rev: P01

Checked by: LD

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24 March 2026

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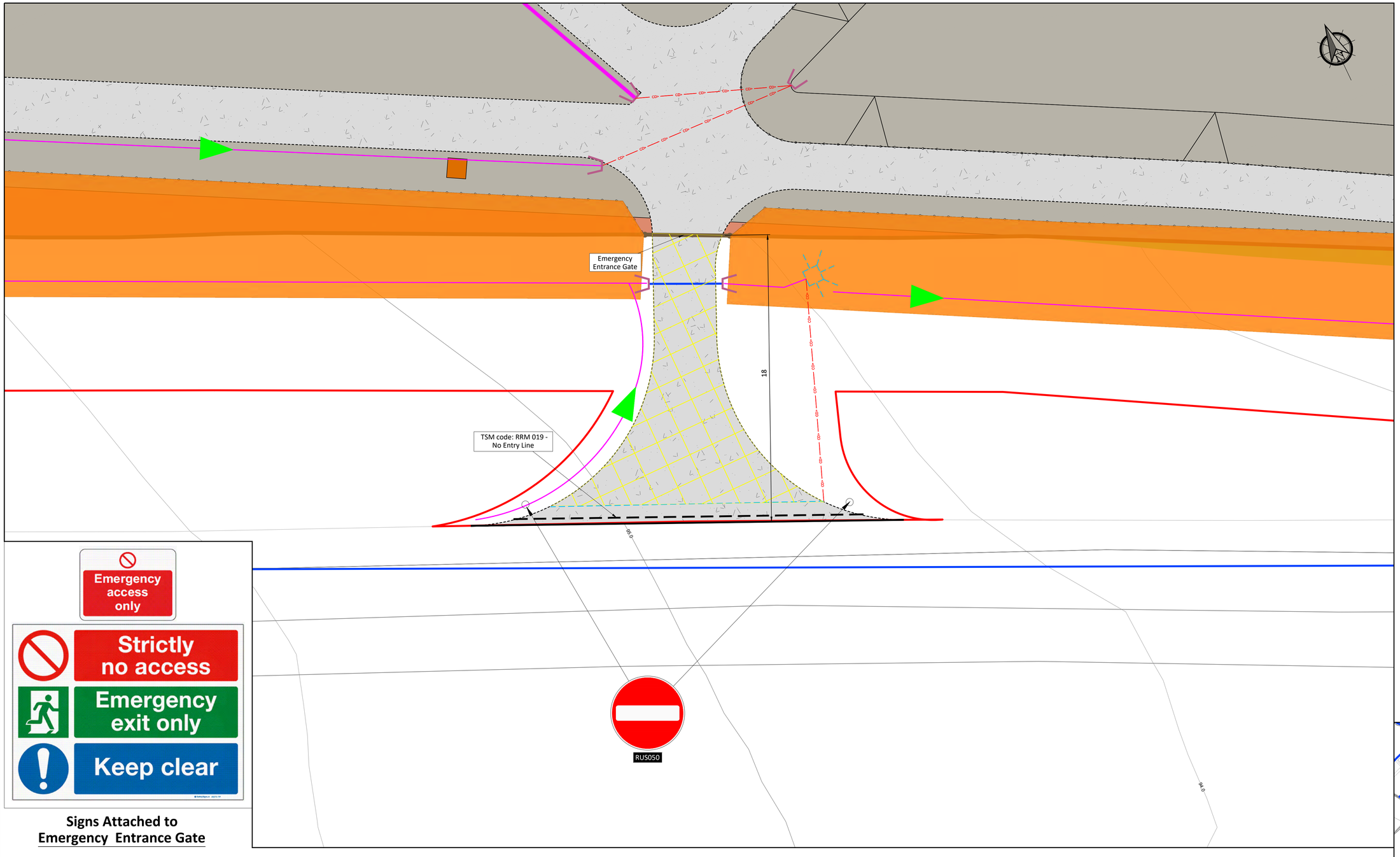

LEGEND:

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- LIGHTING POLE
- SITE NOTICE LOCATIONS
- FIRE BREAK AREA

DRAINAGE LEGEND:

- CARRIER DRAIN
- FILTER DRAIN
- INTERCEPTOR DRAIN
- CROSS DRAIN
- MANHOLE
- HEADWALL
- FLOW ARROW
- PUMP STATION
- SETTLEMENT POND
- DIFFUSE OUTFALL

NOTES:

1. Access Control: Gate must incorporate a Kevron Padlock (or equivalent) allowing access by local emergency services via standard issue key.
2. Road Signage and Markings in accordance with the Traffic Signs Manual 2010.

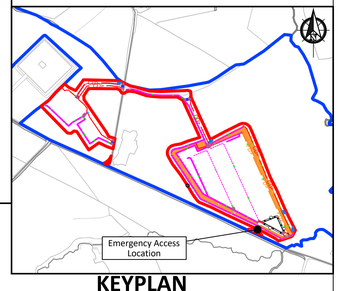
Signs Attached to Emergency Entrance Gate

0m 1m 2m 4m 5m 6m 7m 9m 10m 11m 12m

Scale 1:125

PLAN

Scale 1:125



KEYPLAN

Scale 1:7000

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Rev.	Description	App By	Date
P01	FOR FURTHER INFORMATION	JH	05.12.25

PROJECT: BALLYNAHONE LONG DURATION ENERGY STORAGE

CLIENT: FUTURENERGY IRELAND DEVELOPMENT DAC

SHEET: EMERGENCY ENTRANCE ROAD MARKINGS AND SIGNS

Date 05.12.25	Project number P23-117	Scale (@ A1-) 1:125	
Drawn by CS	Drawing Number P23-117-0600-0003		Rev P01
Checked by LD			

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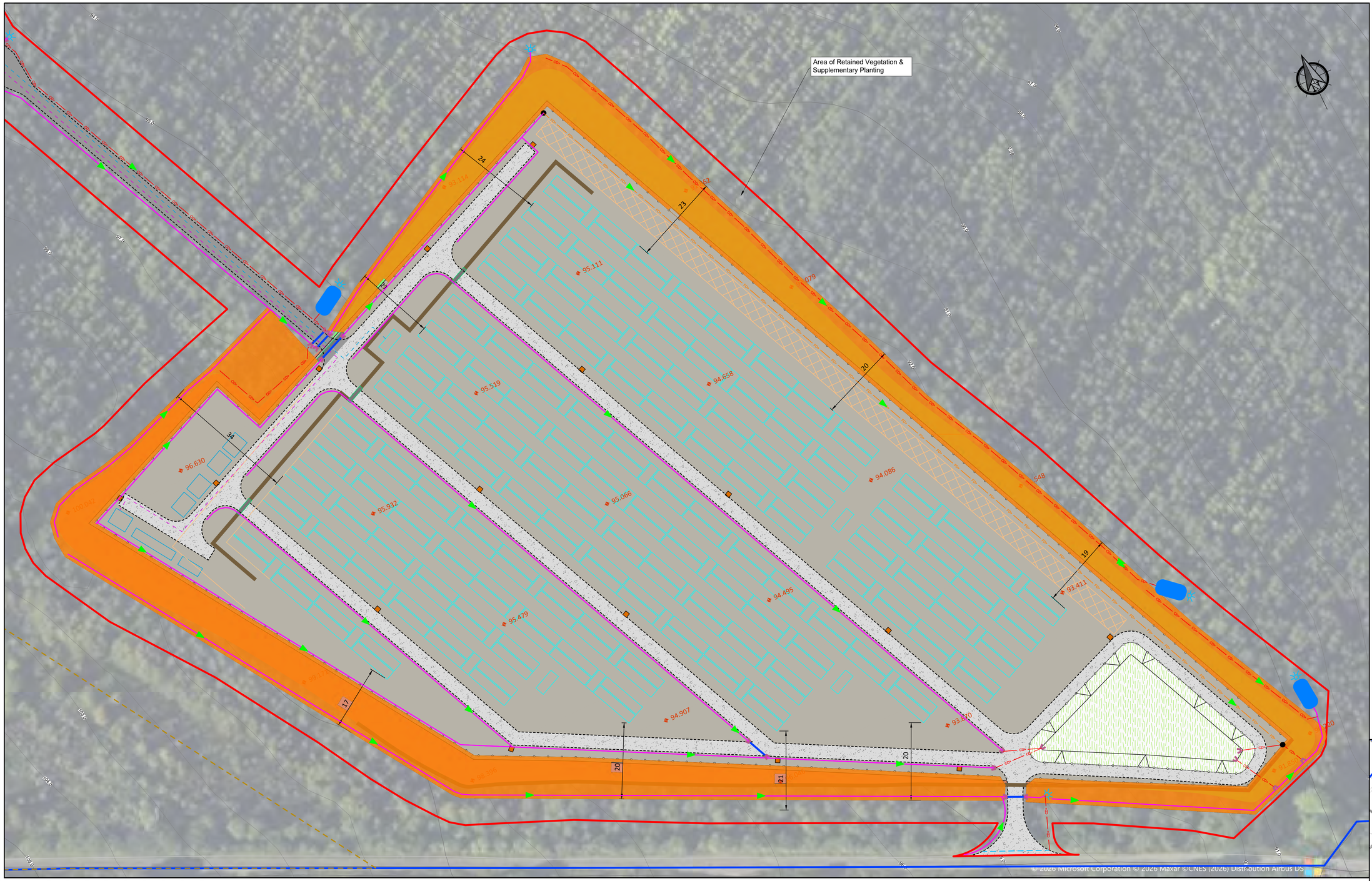
24 March 2026



LEGEND:

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- LIGHTING POLE
- SITE NOTICE LOCATIONS
- FIRE BREAK AREA

DRAINAGE LEGEND:

- CARRIER DRAIN
- FILTER DRAIN
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- MANHOLE
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- PUMP STATION
- SETTLEMENT POND
- DIFFUSE OUTFALL

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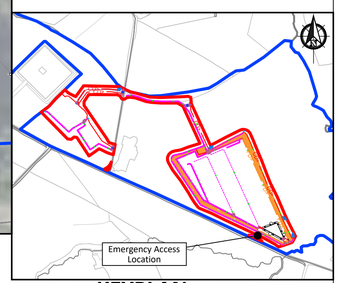
0m 5m 10m 15m 20m 25m 30m 35m 40m 45m 50m

Scale 1:500

PLAN

Scale 1:500



KEYPLAN

Scale 1:7000

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Rev.	Description	App By	Date
P01	FOR FURTHER INFORMATION	JH	05.12.25

PROJECT: BALLYNAHONE LONG DURATION ENERGY STORAGE

CLIENT: FUTURENERGY IRELAND DEVELOPMENT DAC

SHEET: SEPARATION DISTANCE / FIREBREAK FROM SURROUNDING FORESTRY

Date: 05.12.25	Project number: P23-117	Scale (@ A1-): 1:500	
Drawn by: CS	Drawing Number: P23-117-0600-0004		Rev: P01
Checked by: LD			

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24 March 2026

FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

APPENDIX 3

Material Safety Data Sheet

Safety Data Sheet

OSHA HazCom Standard 29 CFR 1910.1200(g) revised in 2024 and GHS Rev 08

Date of issue: 03/14/2025 Revised on 11/12/2025

1 Identification

· **Product Identifier**

· **Trade Name: Custom Battery Electrolyte 00043348-03 Rev01**
· **Other means of identification**
· **Product Number:** 00043348-03
· **Relevant identified uses of the substance or mixture and uses advised against:**
· **Product Description:** Battery electrolyte mixture

· **Details of the Supplier of the Safety Data Sheet:**
· **Manufacturer/Supplier:**
Form Energy Inc.
30 Dane Street
Somerville, MA 02143
P: (844) 367-6462
(844) 367-6462
ehs@formenergy.com
formenergy.com
· **Emergency telephone number:** 844-476-6929

2 Hazard(s) Identification

· **Classification of the substance or mixture:**

Corrosion

Skin corrosion 1A	H314 Causes severe skin burns and eye damage.
Eye damage 1	H318 Causes serious eye damage.

Acute toxicity - oral 4 H302 Harmful if swallowed.

· **Label elements:**
· **Hazard pictograms:**

· **Signal word:** Danger

· **Hazard-determining components of labeling:**
Potassium Hydroxide
Proprietary
· **Hazard statements:**
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
· **Precautionary statements:**

P260	Do not breathe dusts or mists.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear eye protection / face protection.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312	If swallowed: Call a poison center/doctor if you feel unwell.

(Contd. on page 2)

Safety Data Sheet

OSHA HazCom Standard 29 CFR 1910.1200(g) revised in 2024 and GHS Rev 08

Date of issue: 03/14/2025 Revised on 11/12/2025

Trade Name: Custom Battery Electrolyte 00043348-03 Rev01

P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340 If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a poison center/doctor.
P321 Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).
P363 Wash contaminated clothing before reuse.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· ***Unknown acute toxicity:***
This value refers to knowledge of known, established toxicological or ecotoxicological values.
· ***Information pertaining to particular dangers for man and environment:***
· ***Classification system:*** NFPA/HMIS Definitions: 0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme
· ***NFPA ratings (scale 0 - 4)***

Health = 3
Fire = 0
Reactivity = 0

· ***HMIS-ratings (scale 0 - 4)***

Health = *3
Fire = 0
Physical Hazard = 0

· ***Hazard(s) not otherwise classified (HNOC):*** None known
· ***Classification according to (d)(1)(ii) of § 1910.1200***
The SDS issuer does not object to the classifications provided by importers or manufacturers of precursor products.
· ***Hazards not otherwise classified***
There are no adverse physical or health effects known that are not covered by the hazard classes of the Hazard Communications Standard.

* 3 Composition/Information on Ingredients

· ***Chemical characterization: Substance***
· ***Description:***
Mixture of substances listed with non-hazardous additions and/or components that are less than listing threshold. All non-hazardous, components listed under threshold, and listed component total 100%.

· ***Dangerous Components:***

CAS: 1310-58-3 RTECS: TT 2102000	Potassium Hydroxide Skin corrosion 1A, H314; Acute toxicity - oral 4, H302 Specific concentration limits: Skin Corrosion 1A; H314: C ≥ 5 % Skin Corrosion 1B; H314: 2 % ≤ C < 5 % Skin Irritation 2; H315: 0.5 % ≤ C < 2 % Eye Irritation 2; H319: 0.5 % ≤ C < 2 %	60-90%
NA	Proprietary Skin corrosion 1A, H314; Eye damage 1, H318	2-12%

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· ***Additional information:***
The exact percentages of the ingredients of this mixture are considered to be proprietary and are withheld in accordance with the provisions of paragraph (i) of §1910.1200 of 29 CFR 1910.1200 Trade Secrets.

*
4 First-Aid Measures

· ***Description of first aid measures***
· ***General information:*** Immediately remove any clothing soiled by the product.
· ***After inhalation:*** In case of unconsciousness place patient stably in the side position for transportation.
· ***After skin contact:***
Call a doctor immediately.
Immediately wash with water and soap and rinse thoroughly.
Wash with soap and water.
· ***After eye contact:***
Rinse opened eye for several minutes under running water. Then consult a doctor.
If easy to do so, remove contact lenses if worn.
If eye irritation occurs, consult a doctor.
· ***After swallowing:*** If swallowed and symptoms occur, consult a doctor.
· ***Most important symptoms and effects, both acute and delayed:*** No further relevant information available.
· ***Indication of any immediate medical attention and special treatment needed:*** Treat symptomatically.

5 Fire-Fighting Measures

· ***Extinguishing media***
· ***Suitable extinguishing agents:*** Use fire fighting measures that suit the environment.
· ***For safety reasons unsuitable extinguishing agents:*** No further relevant information.
· ***Special hazards arising from the substance or mixture:*** No further relevant information available.
· ***Advice for firefighters***
· ***Special protective equipment for firefighters:***
As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes.

*
6 Accidental Release Measures

· ***Personal precautions, protective equipment and emergency procedures:***
Wear protective equipment. Keep unprotected persons away.
· ***Environmental precautions:*** Dilute with plenty of water.
· ***Methods and material for containment and cleaning up:***
Absorb with liquid-binding material (i.e. sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose of contaminated material as waste according to section 13.
Ensure adequate ventilation.
Dispose of the collected material according to regulations.

· ***PAC-1:***		
1310-58-3	Potassium Hydroxide	0.18 mg/m³
NA	Proprietary	18 mg/m³

· ***PAC-2:***		
1310-58-3	Potassium Hydroxide	2 mg/m³
NA	Proprietary	200 mg/m³

· ***PAC-3:***		
1310-58-3	Potassium Hydroxide	54 mg/m³
NA	Proprietary	1,200 mg/m³

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· ***Reference to other sections:***
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and Storage

· ***Precautions for safe handling:***
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
· ***Information about protection against explosions and fires:*** No special measures required.

· ***Conditions for safe storage, including any incompatibilities***
· ***Storage***
· ***Requirements to be met by storerooms and receptacles:***
Do not store near strong oxidizers
Don't store around acids and bases.
· ***Information about storage in one common storage facility:*** Not required.
· ***Further information about storage conditions:*** Keep receptacle tightly sealed.
· ***Specific end use(s):*** No further relevant information available.

*

8 Exposure Controls/Personal Protection

· ***Control parameters:***
· ***Components with occupational exposure limits:***
The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
At this time, the remaining constituents have no known exposure limits.

1310-58-3 Potassium Hydroxide	
REL	Ceiling limit value: 2 mg/m³
TLV	Ceiling limit value: 2 mg/m³

· ***Additional information:*** The lists that were valid during the creation of this SDS were used as basis.

· ***Exposure controls:***
· ***Appropriate engineering controls*** No further data; see section 7.
· ***Personal protective equipment***
· ***General protective and hygienic measures:***
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing and wash before reuse.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
· ***Breathing equipment:*** Not required.
· ***Protection of hands:***

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
· ***Material of gloves:***
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

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· **Penetration time of glove material:**
The exact break-through time has to be determined and observed by the manufacturer of the protective gloves.
· **Eye protection:**

Tightly sealed goggles

· **Limitation and supervision of exposure into the environment:** None

*
9 Physical and Chemical Properties

· **Information on basic physical and chemical properties**
· **General Information**

· **Physical state**	Liquid
· **Color:**	Clear
· **Odor:**	Characteristic
· **Odor threshold:**	Not determined.
· **Melting point/Melting range:**	Not determined.
· **Boiling point/Boiling range:**	≥100 °C (≥212 °F)
· **Flammability:**	Not applicable.
· **Explosion limits:**	
· **Lower:**	Not determined.
· **Upper:**	Not determined.
· **Flash point:**	None
· **Auto igniting:**	Not applicable
· **Decomposition temperature:**	Not determined.
· **pH-value:**	14
· **Viscosity:**	
· **Kinematic:**	Not determined.
· **Dynamic:**	Not determined.
· **Solubility in / Miscibility with:**	
· **Water:**	Fully miscible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Vapor pressure @ 20 °C (68 °F):**	≤23 hPa (≤17.3 mm Hg)
· **Vapor pressure:**	
· **Density @ 20 °C (68 °F):**	1.7268 g/cm³ (14.4101 lbs/gal)
· **Relative density:**	Not determined.
· **Vapor density:**	Not determined.
· **Particle characteristics**	Not applicable.

· **Other information:**
· **Appearance:**
· **Form:** Liquid
· **Important information on protection of health and environment, and on safety.**
· **Ignition temperature:** Product is not self-igniting.
· **Danger of explosion:** Product does not present an explosion hazard.
· **Change in condition**
· **Evaporation rate:** Not determined.

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10 Stability and Reactivity

· ***Reactivity:*** No further relevant information available.
· ***Chemical stability:*** Product is stable under normal conditions.
· ***Thermal decomposition / conditions to be avoided:*** No decomposition if used according to specifications.
· ***Possibility of hazardous reactions:*** No dangerous reactions known.
· ***Conditions to avoid:*** Contact with strong oxidizers, acidic chemicals and alkali chemicals.
· ***Incompatible materials:*** Can react with strong oxidizers, bases and acids.
· ***Hazardous decomposition products:*** No dangerous decomposition products known.

* 11 Toxicological Information

· ***Information on toxicological effects:***
· ***Acute toxicity:***

· ***LD/LC50 values that are relevant for classification:***		
1310-58-3 Potassium Hydroxide		
Oral	LD50	273 mg/kg (Rat)
Inhalative	LC50/96 hours	80 mg/l (Daphnia)
Proprietary		
Oral	LD50	3,457 mg/kg (Rat)

· ***Primary irritant effect:***
· ***On the skin:*** Strong caustic effect on skin and mucous membranes.
· ***On the eye:***
Strong irritant with the danger of severe eye injury.
Corrosive effect.
Causes serious eye irritation.
· ***Additional toxicological information:***
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Corrosive
Swallowing will lead to a corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.
· ***Interactive effects*** No interactive effects between components are known.

· ***Carcinogenic categories:***

· ***IARC (International Agency for Research on Cancer):***
None of the ingredients are listed.

· ***NTP (National Toxicology Program):***
None of the ingredients are listed.

· ***OSHA-Ca (Occupational Safety & Health Administration):***
None of the ingredients are listed.

· ***Alternative sources for toxicological information***
No non-standard sources for toxicological information where used.

* 12 Ecological Information

· ***Toxicity:***
· ***Aquatic toxicity:*** No further relevant information available.
· ***Persistence and degradability:*** No further relevant information available.

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· **Bioaccumulative potential:** No further relevant information available.
· **Mobility in soil:** No further relevant information available.
· **Results of PBT and vPvB assessment:**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects:**
· **Additional ecological information:**
· **General notes:** Must not reach bodies of water or drainage ditch undiluted or unneutralized.

13 Disposal Considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household waste. Do not allow product to reach sewage system.
Observe all federal, state and local environmental regulations when disposing of this material.

· **Uncleaned packaging**
· **Recommendation:** Disposal must be made according to official regulations.
· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

* 14 Transport Information

· **UN-Number:**
· **DOT, ADR/ADN, IMDG, IATA** UN3266
· **UN proper shipping name:**
· **DOT** Co rrosive liquid, basic, inorganic, n.o.s. (Potassium hydroxide)
· **ADR/ADN** UN3266 CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (POTASSIUM HYDROXIDE)
· **IMDG, IATA** COR ROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (POTASSIUM HYDROXIDE)
· **Transport hazard class(es):**
· **DOT**

· **Class:** 8 Corrosive substances
· **Label:** 8

· **ADR/ADN**

· **Class:** 8 (C5) Corrosive substances
· **Label:** 8

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Trade Name: Custom Battery Electrolyte 00043348-03 Rev01

· **IMDG, IATA**

· **Class:**	8 Corrosive substances
· **Label:**	8
· **Packing group:**	
· **DOT, ADR/ADN, IMDG, IATA**	II
· **Environmental hazards:**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:**	Not applicable.
· **Transport/Additional information:**	
· **DOT**	
· **Quantity limitations:**	On passenger aircraft/rail: 1 L On cargo aircraft only: 30 L
· **ADR/ADN**	
· **Excepted quantities (EQ):**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· **IMDG**	
· **Limited quantities (LQ):**	1L
· **Excepted quantities (EQ):**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· **Special precautions for user:**	Warning: Corrosive substances
· **Hazard identification number (Kemler code):**	80
· **EMS Number:**	F-A,S-B
· **Segregation groups:**	(SGG18) Alkalis
· **Stowage Category**	B
· **Stowage Code**	SW2 Clear of living quarters.
· **Segregation Code**	SG35 Stow "separated from" SGG1-acids
· **UN "Model Regulation":**	UN 3266 CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (POTASSIUM HYDROXIDE), 8, II

* 15 Regulatory Information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture:**
No further relevant information available.

· **SARA (Superfund Amendments and Reauthorization):**

· **Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**

None of the ingredients are listed.

· **TSCA (Toxic Substances Control Act):**

1310-58-3	Potassium Hydroxide	ACTIVE
7732-18-5	Water, distilled water, deionized water	ACTIVE

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Trade Name: Custom Battery Electrolyte 00043348-03 Rev01

NA	Proprietary	ACTIVE

· ***Hazardous Air Pollutants***

None of the ingredients are listed.

· ***California Proposition 65:***

· ***Chemicals known to cause cancer:***

None of the ingredients are listed.

· ***Chemicals known to cause reproductive toxicity for females:***

None of the ingredients are listed.

· ***Chemicals known to cause reproductive toxicity for males:***

None of the ingredients are listed.

· ***Chemicals known to cause developmental toxicity:***

None of the ingredients are listed.

· ***New Jersey Right-to-Know List:***

1310-58-3	Potassium Hydroxide
NA	Proprietary

· ***New Jersey Special Hazardous Substance List:***

1310-58-3	Potassium Hydroxide	CO, R1
NA	Proprietary	CO

· ***Pennsylvania Right-to-Know List:***

1310-58-3	Potassium Hydroxide

· ***Pennsylvania Special Hazardous Substance List:***

1310-58-3	Potassium Hydroxide	E

· ***Carcinogenic categories:***

· ***EPA (Environmental Protection Agency):***

None of the ingredients are listed.

· ***TLV (Threshold Limit Value established by ACGIH):***

None of the ingredients are listed.

· ***NIOSH-Ca (National Institute for Occupational Safety and Health):***

None of the ingredients are listed.

· ***GHS label elements***

The product is classified and labeled according to the Globally Harmonized System (GHS).

· ***Hazard pictograms:***

· ***Signal word:*** Danger

· ***Hazard-determining components of labeling:***

Potassium Hydroxide

Proprietary

· ***Hazard statements:***

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

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Trade Name: Custom Battery Electrolyte 00043348-03 Rev01

· ***Precautionary statements:***

P260	Do not breathe dusts or mists.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear eye protection / face protection.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312	If swallowed: Call a poison center/doctor if you feel unwell.
P301+P330+P331	If swallowed: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353	If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340	If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a poison center/doctor.
P321	Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).
P363	Wash contaminated clothing before reuse.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

· ***National regulations:***

The product is not subject to be labelled according with the prevailing version of the regulations on hazardous substances.

· ***Chemical safety assessment:*** A Chemical Safety Assessment has not been carried out.

16 Other Information

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create warranty, expressed or implied, and shall not establish a legally valid contractual relationship. It is the responsibility of the user to determine applicability of this information and the suitability of the material or product for any particular purpose.

· ***Date of previous version*** -
· ***Version number of previous version:*** -
· ***Date of preparation*** 03/14/2025
· ***Abbreviations and acronyms:***
ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety and Health
OSHA: Occupational Safety & Health Administration
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute toxicity - oral 4: Acute toxicity – Category 4
Skin corrosion 1A: Skin corrosion/irritation – Category 1A
Eye damage 1: Serious eye damage/eye irritation – Category 1
· **** Data compared to the previous version altered.***

FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

APPENDIX 4

Example Draft Spill Response Plan

Project Spill Response Plan

Revision Table

Revision	Date	Comments	Owner
01	11-2025	SAMPLE FOR DISCUSSION PURPOSES ONLY	

Contents

Introduction and Purpose

PROJECT OPERATOR is committed to the safety and well-being of its employees, contractors, and clients. This Spill Response Plan provides instructions on how to respond in the event of an unintended Potassium Hydroxide discharge at the project site.

Applicability and Scope

The applicability of this plan is singular to the Potassium Hydroxide that will be used as the electrolyte solution for the operation of the battery storage units at the site. The scope of this document is limited to the response actions that are necessary in the unlikely event of an uncontrolled release of Potassium Hydroxide to the environment.

The Form Battery Enclosure is not intended to be operated with free product within the enclosure containment, if product is observed within the containment, it will be cleaned up per Appendix A and disposed of as hazardous waste.

Responsibility & Order of Succession

The Spill Response Plan's implementation shall be managed by the following personnel unless otherwise designated by Project Lead:

The Staff Lead is responsible for implementing this plan and is trained to respond to emergencies or has the information necessary to make decisions on how to respond to an emergency. This person is responsible for reviewing and updating the plan on an annual basis or after an incident. Post incident updates shall be carried out to support any findings from the Incident Report mentioned in the Emergency Response Program. Incident investigations can be carried out by this person or a designated alternative.

NAME
TITLE
CONTACT

The Alternate Staff Lead is responsible for implementing this plan and is contacted in the event the Staff Lead cannot be reached:

NAME
TITLE
CONTACT

Hazardous Materials

Material	Volume (G)	Location	Notes/Comments
Potassium Hydroxide (Battery Storage Electrolyte Solution)	XXXX total	Battery Enclosures*	Corrosive

*Note that there are XXX battery enclosures with ~5,200 gallons of electrolyte each.

Emergency Communications

In the event of an emergency, the PROJECT OPERATOR personnel will use the below listed equipment and methods to communicate details of the emergency, muster areas, responder notifications and basic commands and instructions:

- Site Radios (quantity X stored in the site connex)
- Personal Mobile Phones
- Verbal Communication

Note that the nearest hospital qualified to treat caustic exposures is:

MEDICAL FACILITY NAME

ADDRESS

Their direct emergency number is PHONE NUMBER.

Training & Exercises

PROJECT OPERATOR team members must be briefed on this spill response plan prior to the start of work on site and must be re-briefed on an annual basis, or when there are revisions to this plan. The training will be recorded via an attendance sheet and kept with the plan in the project site office. Additionally, personnel qualified to respond to spills on site will be trained in caustic awareness and handling.

Spill Response Equipment

The following equipment will be stored on site for use in the event of a spill. Equipment will be stored in or near the hazardous materials storage connex on the interior east side of the project ring road. Given the presence of the Battery Enclosure containment the risk of spill is extremely low. However, there is a small chance that some electrolyte could escape containment equipment during the enclosure fill and drain processes. The volume of this type of spill is generally expected to be less than 5 gallons, however, the equipment and materials listed below is sufficient to clean up a spill of 250 gallons of free electrolyte and 45 gallons of contaminated materials.

Materials for Caustic Spills (labeled as such)

- Two 50 lbs bags of grade 2 vermiculite
- Four rolls of PIG pads and 10 absorbent socks
- Two 2 pound containers of granular neutralizer (can neutralize up to 1 gallon of electrolyte)
- Two rolls of caution tape
- Two containers of 200 pH test strips

Equipment for Caustic Spills (labeled as such)

- One shovel
- One broom and dustpan
- One roll of 50 gallon waste bags
- Four 55 gallon poly open-head: 1H2/Y1.8/100 containment drums or equivalent
- One 45 gallon poly open-head: 1H2/Y1.8/100 containment drum or equivalent
- Four 4’ x 4’ pop up containment berms, 60 gallon capacity
- Two 10’ x 10’ pop up containment berms, 745 gallon capacity
- One intermediate bulk container (IBC)
- Chemical resistant electric diaphragm pump and hoses (not intrinsically safe)
- Two 5 gallon buckets
- One 5 gallon bucket head shop vacuum
- One eye wash and safety shower – to be located within 50’ of spill clean up if needed.

**Note that equipment cleanup shall be determined on a case-by-case basis by the spill response team based on the condition of the equipment. If equipment is cleaned it will be done within a containment berm and any diluting liquid in the containment berm will be absorbed and disposed of as hazardous waste.*

PPE for Caustic Spills

Four sets of each, all are necessary to perform spill cleanup.

- Impervious Safety Shoes
- Safety Goggles
- Nitrile Gloves
- Face Shield with Chin Protection
- Heavy Duty Elbow Length Gloves (Showa 772)
- Chemical Resistant Coveralls (Lakeland Chem2Max or Dupont Tychem SFR2000)

Spills

If a spill occurs, take the following action:

- If the spill is associated with an imminent threat of fire or serious personnel injury (as determined by the Staff Lead), evacuate the area and call EMERGENCY SERVICES CONTACT PHONE NUMBER.
- If you can safely do so, stop the source of the spill (e.g. close a valve, turn off a pump, etc.) or contain the source of the spill (e.g. place a new containment berm etc.)
    - If you cannot, call the spill response contractor (WASTE / SPILL RESPONSE CONTRACTOR CONTACT) and proceed per their direction
- Tape off the spill area with at least a three foot exclusion zone, Site Lead or designated person shall monitor entrance and exit of all personnel to the spill area
- If the source of the spill can be stopped, assess the magnitude of the spill:
    - If the spill can be cleaned up using equipment and material on site, don PPE and proceed with cleanup actions
        - Set up a pop-up containment berm and, using the diaphragm pump and IBC or a 5 gallon bucket and the shop vac head, gather as much free liquid as possible
        - Soak up the remaining free liquid with PIG pads or vermiculite and contain saturated pads in a 45- or 55-gallon drum
        - Neutralize any remaining electrolyte with the powder neutralizer (each two-pound container can neutralize a half gallon of electrolyte)
        - Remove any contaminated soil or aggregate with the shovel and contain in a 45 or 55 gallon drum.
    - If the spill cannot be cleaned up using equipment and materials on site (i.e. the escaped volume is too large or the affected area is too big), call the spill response contractor (WASTE / SPILL RESPONSE CONTRACTOR CONTACT). In the event the spill response contractor is called, the Site Lead or designated person shall continue to monitor entrance and exit to the spill area. Response time can vary from X to Y hours depending on the availability of responders.
- Report the spill to the SPILL/POLLUTION REPORTING AGENCY and other entities as necessary, see below.

Waste Management

Waste generated from spill cleanup shall be contained and labeled until it is picked up by the hazardous material disposal contractor (WASTE / SPILL RESPONSE CONTRACTOR CONTACT). Liquid electrolyte can be stored in 45 or 55-gallon drums or IBCs. Saturated sorbent pads, vermiculite, neutralizer, contaminated site materials, and contaminated PPE shall be stored in 45 or 55-gallon drums. All hazardous waste shall be labeled and stored in the hazardous waste connex until it is picked up for disposal.

Spill Reporting

All caustic spills must be reported to the SPILL/POLLUTION REPORTING AGENCY Duty Officer. In the case of a spill, follow the instructions below:

1. Alert the Staff Lead via site radio, cell phone or verbal communication
2. The Staff Lead shall inform the LOCAL SPILL/POLLUTION REPORTING AGENCY CONTACT
3. If the spill is over XX gallons, the Staff Lead shall inform the NATIONAL SPILL/POLLUTION REPORTING AGENCY
4. The Staff Lead shall complete all necessary reporting paperwork per guidance from the LOCAL AND NATIONAL SPILL/POLLUTION REPORTING AGENCY

Appendix A – Management of Electrolyte within Battery Enclosure Containment

This Appendix contains a summary of key information pertaining to the management of electrolyte that may leak within the Battery Enclosure and be contained within the Enclosure Containment.

Notification System

The project notification system, described in detail in the Emergency Response Program document, monitors enclosure status via remote telemetry through SCADA FIBER COMMUNICATIONS INTERFACE / CELLULAR INTERFACE. Notifications are sent through this system and are monitored by Form personnel. If something like a large leak were to occur, the enclosure containment sensors would actuate and a notification would be sent. If something like a full cell ruptured and leaked all its electrolyte, something that is not expected and has never happened, there are several different fault conditions that would persist to notify the on-call team. These fault conditions are dependent on the state of the system when the event occurred but, in all system states a notification would be raised.

Enclosure Containment

The Battery Enclosures are equipped with leak detectors at a low point of the integrated containment which are remotely monitored. If *any* electrolyte is observed within the containment, Form would notify PROJECT OPERATOR, if requested by PROJECT OPERATOR, recover any accumulated electrolyte. This may require stopping operation of the affected quad pack to de-energize. Cleanup procedures are categorized by the size of the escaped electrolyte:

- Small escapes are those that do not include enough volume to use a vacuum:
    - These are cleaned up using PIG pads.

- 
- Medium escapes are those that are estimated at less than or equal to 20 gallons of total volume:
  - These are cleaned up using a 5-gallon bucket and bucket head vacuum.
  - 

  - After the bulk of the fluid has been removed, PIG pads are used to perform a final cleanup.
- Large escapes are those that are estimated at more than 20 gallons:
  - These are cleaned up using a pump and drum or IBC tote.
  - After the bulk of the fluid has been removed, PIG pads are used to perform a final cleanup.

Prior to performing electrolyte cleanup within the enclosure containment, and safety meeting is held, the system is shut down, locked and tagged out, work materials and equipment are staged, and PPE is donned. These efforts and the cleanup actions are completed without depleting the Spill Response Materials. When cleanup operations are completed, tools and materials are cleaned or disposed of, electrolyte and saturated absorbent materials are labeled and stored in the hazardous waste connex until pickup and disposal, the enclosure is put back into service, and PPE is removed.

Appendix B – Site Map

FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

APPENDIX 5

Draft Fire Risk Management Plan (dFRMP)

2026

Draft Fire Risk Management Plan (dFRMP) at Energy Storage Development, Ballynahone, Buncrana, Co. Donegal

Draft Fire Risk Management Plan (dFRMP)

Document Control Sheet

Client:	Fehily Timoney
Document No:	252755-ORS-ZZ-RP-FRMP-FS-003

Revision	Status	Author	Reviewed by	Approved By	Issue Date
P01	**FRMP**	**TD**	**GH**	**SC**	**25/11/2025**
P02	**FRMP**		**GH/SC**		**20/02/2026**
P03	**FRMP**	**GH**	**GH/SC**		**11/03/2026**

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Table of Acronyms

Acronym	Full Term
AC	Alternating Current
BMU	Block Management Unit
BMS	Battery Management System
BESS	Battery Energy Storage System
BRE	Building Research Establishment
BS	British Standard
CO	Carbon Monoxide
CCTV	Closed-Circuit Television
DC	Direct Current
DNVGL	Det Norske Veritas Germanischer Lloyd
EES	Electric Energy Storage
EMU	Enclosure Management Unit
ERP	Emergency Response Plan
FACP	Fire Alarm Control Panel
FRMP	Fire Risk Management Plan
GDE	Gas Diffusion Electrode
H_2	Hydrogen Gas
HSE	Health and Safety Executive
HV	High Voltage
IEC	International Electrotechnical Commission
IET	Institution of Engineering and Technology
KOH	Potassium Hydroxide
LDES	Long Duration Energy Storage
LFL	Lower Flammability Limit
LV	Low Voltage
MDS	Material Data Sheet
MMU	Module Management Unit
NFCC	National Fire Chiefs Council
OEE	Oxygen Evolution Electrode
PCS	Power Conversion System
PPC	Power Plant Controller
PPE	Personal Protective Equipment
QMU	Quad Pack Management Unit
ROC	Remote Operations Centre
SCADA	Supervisory Control and Data Acquisition
SME	Subject Matter Expert
SOC	State of Charge
SOH	State of Health
UL	Underwriters Laboratories
VESDA	Very Early Smoke Detection Apparatus

1 Introduction

1.1 Background

This report presents an assessment of the fire risks associated with the proposed Iron-Air Battery Energy Storage System (BESS) development located at Ballynahone, Buncrana, Co. Donegal. It also outlines mitigation strategies to address these risks.

1.2 Development Description

The proposed development comprises the following:

- Long Duration Energy Storage (LDES) Compound with a total surface area of c. 2.9 Ha containing 248 no. battery energy storage units in the form of metal shipping containers [approximately 12.2 m (L) x 2.6 m (W) and 2.9 m (H) each] and associated ancillary control and ventilation equipment;
- Installation of an onsite transformer compound (c.3,600 sq m) to facilitate an under-the fence connection to the adjacent Trillick 110kV substation. The transformer compound will include a control building of c.27 sq m, a 110 kV transformer, associated electrical equipment, and an up to 18 m high lightning protection monopole mast;
- A temporary construction compound with a total surface area of c. 1,500sq m. c. 515m of new and upgraded access tracks;
- 3 no. entrances from the L-7231 public road comprising the upgrade of 1 no. existing entrance and creation of 1 no. new permanent access and 1 no. new temporary access for the construction and operation of the facility;
- 1 no. entrance from the L-7221 public road for emergency vehicle access only;
- Underground electrical and communications cabling between the proposed LDES compound and the proposed on-site transformer compound which will cross under the L-7231 public road;
- Security lighting;
- Pole mounted CCTV and communications mast;
- On-site freshwater storage tank including fresh water treatment unit in the form of a metal shipping container;
- On-site drainage system and associated vegetated attenuation pond;
- A storage container in the form of a metal shipping container;
- Sound reflective barriers to a height of 4 m;
- Security fencing and gates;
- All associated ancillary site development, services and clearance works including tree felling of c.4.7 Ha of conifer plantation, landscaping and planting.

2 Policy and Guidance

The following policies and guidance documents are considered relevant to fire safety in relation to proposed Iron – Air Battery Systems development.

While several international standards and guidance documents address fire safety measures for energy storage systems, there remains relatively limited Ireland-specific technical guidance for Iron–Air technology. Accordingly, this report draws on applicable best practice documentation and technical references from relevant international sources. These references inform the design of fire safety measures, including fire prevention, fire detection systems, and fire control strategies, ensuring alignment with recognised regulatory standards and safety guidelines.

In preparing this assessment, the following recognized standards and reference materials, been reviewed:

- Underwriters Laboratories (UL) 9540A – Standard for Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems.
- United Kingdom Power Networks (UKPN) Engineering Design Standard 07-0116: Fire – Energy Storage Systems (2016).
- BS EN IEC 62933-1: Electric Energy Storage (EES) Systems (2018).
- BS 7671: Requirements for Electrical Installations, Institute of Engineering and Technology (IET) (2018).
- BS 5839-1: Fire Detection and Fire Alarm Systems for Buildings – Code of Practice for the Design, Installation, Commissioning and Maintenance of Systems in Non-Domestic Premises (2017).
- BS EN 62477-1: Safety Requirements for Power Electronic Converter Systems and Equipment – General (2012).
- DNVGL-RP-0043: Recommended Practice – Safety, Operation and Performance of Grid-Connected Energy Storage Systems (2017).
- Chapter 5 of the Code of Practice for Fire Safety Assessment of Premises and Buildings (2022).

3 Fire Safety - Form Energy Iron-Air Batteries

In December 2024, Form Energy completed UL9540A testing.

UL9540A testing assesses a battery's susceptibility to thermal runaway and its capability to contain heat or fire propagation. During this evaluation, Form Energy's iron-air battery cells were exposed to simulated fault and abuse conditions that are known to induce thermal runaway in other battery technologies, such as lithium-ion systems.

Due to the nature of the iron-air technology, testing extended beyond conventional lithium-ion protocols to include a wider range of potential failure modes. Across all test scenarios, the results were consistent: there was no uncontrolled heating, no thermal runaway, no dendrite formation, and no fire.

The cells were subjected to stringent testing procedures, including several short-circuit failure conditions during both charging and discharging phases. Even under extreme conditions, such as simultaneous charging and short-circuiting or continuous overcharging for 168 hours, the batteries remained stable without any evidence of uncontrolled heating or thermal runaway.

Successfully completing UL9540A with strong test results eliminates the need for fire-rated barriers or walls and justifies reducing the required spacing and separation distances between neighbouring enclosures, walls, property lines, and other exposures. Ultimately, UL 9540A validates the inherent safety of the iron-air chemistry and the engineered safety measures.

Iron–Air battery systems inherent chemical stability provides a highly robust safety profile and places iron–air battery systems at a lower fire risk compared to lithium-ion technologies.

To mitigate fire risks from the electrical equipment, Form Energy's battery system are designed to the highest industry electrical and fire safety standards. Form Energy participated in UL's New & Innovative Program to review Form's novel technology and identify all applicable safety standards. Through this review, UL determined that the applicable standards for Form's systems include:

- UL 9540 (Standard for Safety of Energy Storage Systems and Equipment);
- UL 1973 (the Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications);
- Form's iron-air battery systems are designed to be compliant with all these standards.

4 Fire Risk Management Plan Methodology

This section outlines the key fire safety elements considered during the design phase of a development that incorporates an energy storage system comprising of an Iron-Air BESS

A comprehensive Fire Risk Management Plan (FRMP) will be prepared by the project proponent. This document represents a draft FRMP that will be expanded during the construction phase and subject to ongoing review and modification, where required, during the operational lifetime of the facility.

The final FRMP will incorporate the latest best practice approaches for the detection and prevention of battery-related fires, as well as procedures for emergency response relevant at the time of implementation.

The electrical energy managed by energy storage systems undergoes multiple stages of processing before being supplied to the grid, including current and voltage transformation and DC to AC conversion via power conversion systems (PCS) and transformers.

A key aspect of fire risk management in energy storage projects is power conditioning. Power conditioning refers to the equipment and processes designed to maintain or improve the quality of electrical power supplied to sensitive electronic systems. This is a critical function in utility-scale energy storage installations, ensuring that electricity is generated efficiently and managed safely. Essential components in this system include inverters or power conversion system (PCS) units, controllers, transformers, wiring, connector boxes, switches, monitoring devices, charge regulators, and, of course, the battery units themselves.

The flow of electrical energy through the storage system passes via various ancillary devices, all interconnected through wiring and related hardware. The reliability and quality of these ancillary components are crucial to maintaining long-term safe and effective operation.

The key fire hazards and risks within the development, as identified in Section 6 will be minimised through the application of safety mitigation strategies that reflect established industry standards for energy storage systems.

To address these risks, the following process will be implemented:

Risk Identification: Detecting potential hazards that may arise during each stage of the development.

Risk Evaluation: Conducting a qualitative assessment of identified risks.

Mitigation Measures: Implementing safety controls designed to reduce or eliminate the risks identified.

Risk Re-evaluation: Reassessing risks following the application of mitigation measures to confirm effectiveness or identify residual risks.

5 Main Component Considerations

The following section sets out a clear overview of the principal equipment and systems installed within the premises. It outlines the intended function and operational role of each system, together with a high-level description of its typical configuration and environment of use.

For clarity and ease of reference, this section is descriptive in nature and focuses solely on the equipment and system characteristics. The detailed assessment of associated fire hazards, ignition sources, fuel loads, potential fault conditions, and corresponding mitigation measures are addressed separately within the dedicated Fire Safety Management section below.

This structure ensures that the equipment and system context is fully understood before examining the specific fire risks, control measures, maintenance considerations, and emergency service access requirements relevant to each identified hazard.

5.1 Battery Enclosures

The smallest anatomy of a BESS is a cell. Cells are combined into modules which are combined within enclosures. An example hierarchy of these BESS components is set out in Figure 5.1 below. Enclosures contain multiple modules and additional protection, monitoring and isolation features powered by on-site auxiliary power.

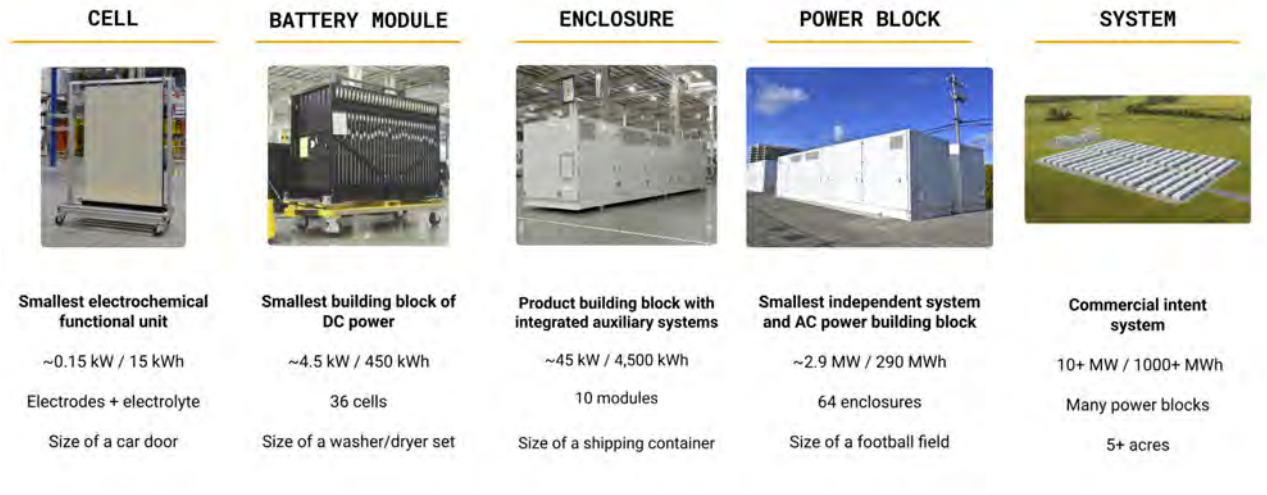

Figure 5.1: Example of the Hierarchy of BESS components.

The batteries are iron-air chemistry and contain three different electrodes: an iron anode, and two separate cathodes for charge and discharge. The discharge cathode is referred to as the gas diffusion electrode (GDE) and the charge cathode is referred to as the oxygen evolution electrode (OEE).

The electrodes are submerged in electrolyte as stated in Section 5.4 of this report, which is a caustic solution of potassium hydroxide (KOH), water, and proprietary additives.

5.2 Inverters / Power Conversion Systems (PCS)

The inverters/PCS units will be housed within a container, along with other supporting equipment. These inverters will be linked to the transformer/PCS units via AC electrical cabling, which will be routed underground from the BESS inverters to the transformer/PCS infrastructure.

5.3 Transformers

After passing through the inverters, the electrical power is routed to the transformer unit. Initially, power flows through the Low Voltage (LV) switchgear before entering the transformer, where the voltage is stepped up, consistent with the standard arrangement used at substations across the electricity network in Ireland. The higher voltage power then exits the transformer via the High Voltage (HV) switchgear for transmission to the national grid.

Most transformers used in energy storage projects are oil cooled. Although these transformers are designed and certified to meet rigorous safety standards, there remains a potential fire risk since the oil inside can act as a fuel if a fault occurs.

To mitigate this fire risk, several precautionary measures are implemented, including:

- Continuous remote monitoring by the site operations and maintenance (O&M) team through SCADA system to detect any signs of overheating; if detected, the affected transformer kiosk will automatically shut down to prevent escalation.
- Routine maintenance to ensure the transformer system operates efficiently and to minimize the chances of faults that could lead to fire.

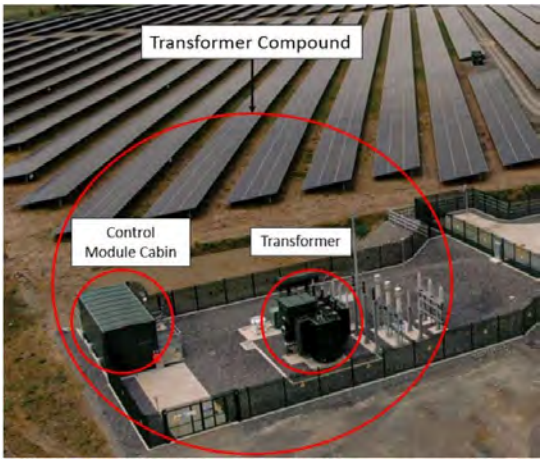

Figure 5-2 Example Photograph of UTF Transformer Compound

5.4 Chemical Composition of Electrolytes

The electrolyte used in Form Energy's battery system is a non-flammable, water-based electrolyte containing dissolved salts (primarily KOH) and additives with a pH >14. Each battery enclosure contains approximately 5,200 gallons of electrolyte. Cell vessels serve as the primary containment of the electrolyte. The battery enclosure acts as the secondary containment, with the base of the enclosure serving as a basin to retain electrolyte in event of a battery electrolyte leak and thus preventing such a leak from resulting in a release to the environment.

In addition, Form Energy's battery system enclosures include a leak detection and monitoring system, with associated faults and alarms from the Battery Management System that send alerts to the Energy Management System and the FuturEnergy Ireland's Supervisory Control and Data Acquisition (SCADA) system. Upon detecting a leak, the system will automatically cuts off power to the enclosure. As needed, designated personnel will address any issues (such as leaks or spills of electrolyte) according to the site-specific emergency response plan. Section 6.2.1 of this dFRMP also outlines how the electrolyte will be managed.

5.5 Reversible Rusting Iron

The iron–air battery system functions using a controlled oxidation process known as "reversible rusting." During discharge, oxygen from the surrounding air reacts with metallic iron within the cell to form rust, releasing energy. During charging, an applied electrical current reverses this reaction, converting the rust back into iron and releasing oxygen. This process enables energy storage and release in a gradual and regulated manner, reflecting a natural and inherently stable chemical cycle.

Iron–air battery cells are not susceptible to thermal runaway. This high level of stability is attributed to three key factors:

1. The discharge rate is limited by the availability of atmospheric oxygen, preventing rapid or uncontrolled reactions.
2. The electrolyte used is water-based and non-flammable, inherently reducing fire risk; and
3. The chemistry demonstrates resilience under fault and abuse conditions, maintaining stability even in extreme testing scenario.

Iron–air battery cells rely on oxygen from ambient air to support the oxidation process that enables energy discharge. As a result, the rate of discharge is inherently limited by the availability of oxygen. Since oxygen has low solubility in water, it must be actively drawn into the cell via forced air circulation using an internal fan system.

In the absence of a continuous oxygen supply, the battery cannot discharge. This constraint prevents the rapid release of stored energy and eliminates the potential for excessive heat generation or uncontrolled self-heating. Consequently, the design of the iron–air battery system ensures that energy release remains gradual and stable under all operating conditions, significantly reducing the likelihood of fire-related hazards.

5.6 Hydrogen Gas System

Hydrogen gas is produced during charge, discharge and isle states. The gas is odourless, colourless and requires internal sensors or external meters for detection. Hydrogen is a flammable chemical which has an auto ignition temperature at approximately 500^{o}C. The battery enclosures include a functional safety subsystem for monitoring and limiting the production of hydrogen gas as well as venting it to the atmosphere to reliably maintain the concentration in the system below 25% of the Lower Flammability Limit (LFL) of Hydrogen. The vented gas poses no health or safety risk to the local community. It is odourless, non-toxic, and non-flammable at these concentrations.

The iron-air battery is engineered with a comprehensive Hydrogen Management System specifically designed to safely manage the Hydrogen gas generated during battery operation. The primary objective of this system is to safely exhaust and dilute this gas with fresh ambient air, guaranteeing that the exhaust released into the environment remains reliably well below 25% of LFL. The Hydrogen Management System uses variable-speed dilution fans that adjust their airflow based on the battery's operational state and thus prevents the buildup of hazardous gas levels under all conditions, ensuring the highest standards of safety for both the facility and the surrounding community.

The Hydrogen Management System is designed to minimize the magnitude of an ignition if one were to occur. These ignition events are highly unlikely through the normal operation of our cells. The system utilizes a highly controlled, multi-stage pathway to ensure maximum safety before any Hydrogen gas leaves the battery enclosure. Hydrogen is generated inside each battery cell and as the Hydrogen gas exits an individual battery cell, it is first routed through a system that isolates the cell and reliably prevents any ignition event from spreading from one cell to another. The Hydrogen gas from battery modules enters a dilution duct, where dilution fans continuously mix it with large volumes of fresh air to prevent ignition propagation between battery modules. The hydrogen exhausted from the system is diluted to safe, non-hazardous levels before it is exhausted from the battery enclosure.

To provide absolute confidence in the system's safety, Form Energy has incorporated robust redundancies across all critical functions. Each enclosure has multiple dilution fans and if any one of the dilution fans were ever to fail or require maintenance, a built-in "buddy system" automatically activates, allowing an adjacent fan to instantly ramp up and provide the necessary dilution airflow via a connecting bypass duct. Furthermore, the enclosure is equipped with redundant differential pressure sensors to continuously verify dilution airflow as well as multiple Hydrogen gas sensors to monitor for hydrogen leaks from the primary hydrogen plumbing. In the unlikely event of an unexpected hydrogen gas leak, the system automatically transitions to a safe state and utilizes fans to rapidly purge the enclosure with fresh air. The Hydrogen Management System is designed with inherent redundancy and fail-safe features to maintain hydrogen release capability during loss of power.

The quantity and rate of Hydrogen generation is highly dynamic and fluctuates based on ambient weather conditions as well as specific operating conditions of the battery system. For example, Hydrogen generation depends heavily on battery cycling, including the system's state of charge, state of health, charge power, and the frequency of charging. The most important safety metric is that the Form Energy iron-air battery is designed and validated to actively manage Hydrogen generation so that the battery enclosure's ambient environment remains reliably below 25% of the LFL at all times.

6 Fire Safety Management

6.1 Potential Energy Storage System Failure

6.1.1 Fire Hazards

Risk:

Due to their chemistry, iron-air batteries do not experience thermal runaway. However, during operation, they produce flammable Hydrogen. If a fault leads to an ignition source, Hydrogen can explode or catch fire. The fire can then spread to the battery's plastic components.

Mitigation:

The concentration of Hydrogen is maintained at 25% below the LFL through the use of the Hydrogen Gas Management system, described in Section 5.6. Maintaining Hydrogen at these levels ensures that it cannot catch fire or explode.

6.1.2 Explosion Hazards

Risk:

Hydrogen gas generated within the BESS at high enough concentrations presents an explosion hazard due to its flammable nature, as it can accumulate and ignite, leading to an explosion. Propagation of an explosion could lead to damage and further fire/explosion hazards in neighbouring BESS enclosures within the compound, as well as impact surrounding buildings and infrastructure.

Mitigation:

In terms of explosion risk the battery enclosures are designed to contain any potential deflagration event that could occur within the enclosure, including, but not limited to, a hydrogen ignition event. The enclosures are engineered to withstand internal deflagration pressures in accordance with NFPA 69 Section 13.3.4 (Deflagration Pressure Containment) and NFPA 68 Section 6.3.1.1 (Deflagration Venting Requirements). By designing the enclosures to safely contain such events, any pressure effects are retained within the battery enclosure. As a result, the risk of propagation to neighbouring enclosures or impacts on the surrounding environment is removed.

6.1.3 Hydrogen Gas Management

Risk:

Fan failure or power loss to the hydrogen management system presents a safety risk, as it may allow hydrogen gas to accumulate to higher levels without adequate detection, ventilation, or control. This can lead to the concentration of Hydrogen to increase above the LFL.

Mitigation:

Each enclosure has multiple dilution fans and if any one of the dilution fans were ever to fail or require maintenance, a built-in "buddy system" automatically activates, allowing an adjacent fan to instantly ramp up and provide the necessary dilution airflow via a connecting bypass duct. The Hydrogen Management System is designed with inherent redundancy and fail-safe features to maintain hydrogen release capability during loss of power.

6.2 Battery Management

The battery management system (BMS) monitors, protects, and manages the BESS, ensuring battery health parameters are maintained for efficient and continual operation.
The BMS exists within the system at multiple levels as part of a layered safety approach. The functions of the BMS include controlling the normal operations and critical safety systems of the product. The BMS components include the cathode switchboard, the module management unit (MMU), the EMU, and the quad pack management unit (QMU). The BMS utilizes both hardware and software to control the system. The MMU includes both hardware and firmware and is responsible for operating (charge and discharge) and protecting all the cells in the module. All cathode switchboards are routed to the MMU, including voltage, temperature, and current sensors. The gas diffusion electrode (GDE) fan is controlled by the MMU. The EMU contains hardware, firmware, and the protection interlocks of the system. The EMU controls module operation by setting the MMU to a charge or discharge state. The EMU also controls the subsystems including thermal, hydrogen, and electrolyte management systems. The QMU is responsible for controlling the operational charge and discharge configuration of the quad pack via the DC switchbox on the quad skid. The QMU also sends appropriate charge or discharge commands to the four enclosure EMUs.

The power plant controller (PPC) is the control system for the entire storage plant. Site operators will interface with the system to charge or discharge the BESS via the PPC. The PPC enclosure also contains a power plant controller, a block management unit (BMU) which manages the DC side of each block. The PPC is responsible for controlling all of the power blocks within a system.

6.2.1 Electrolyte Management

Electrolyte levels fluctuate within the cells due to evaporative and hydrolysis losses as a normal part of system operation. The Form BESS contains an electrolyte management system that refills cells when necessary, utilizing a pump around method from a central reservoir that acts as the supply and reserve. The electrolyte management system can be activated by the BMS during idle, charging, and discharging conditions. Modules are designed with fill manifolds that connect to each cell.

The system is also designed with overflow protection connected to the central reservoir, as well as secondary containment within the enclosure in the event of an electrolyte spill. Each enclosure has a leak detection system that can cut off power to the electrolyte distribution pump, cut off DC power, and stop the charging or discharging of the batteries if a leak is detected. Spilled electrolyte is retained within the secondary containment system and subsequently removed and managed in accordance with the site's operation and maintenance (O&M) procedures and applicable environmental regulations.

The system is also designed with overflow protection connected to the central reservoir, as well as secondary containment within the enclosure in the event of an electrolyte spill. In addition, Form's enclosures include a leak detection and monitoring system, with associated faults and alarms from the BMS that send alerts to the Energy Management System and Future Energy Ireland's Supervisory Control and Data Acquisition (SCADA) system. Upon detecting a leak, the system automatically cuts off power to the enclosure. As needed, designated personnel will immediately address any issues according to the site-specific emergency response plan.

6.3 Dielectric fluid

Risk:
Dielectric fluid is contained within the sealed transformer tank and is used to provide electrical insulation and cooling of the internal windings. During a transformer failure, arcing and sustained fire can lead to heat retention in the windings and metal cabinet of the transformer, making this a persistent fire.

Mitigation:

Mitigation measures include transformer separation distance based on the type and class of the dielectric fluid in accordance with BS EN IEC 61936-1:2021, temperature monitoring, and installation within a bunded containment area designed to retain any leaked dielectric fluid

6.4 Fire Safety in All Potential Abuse Conditions

Iron–air battery technology fundamentally eliminates the risk of thermal runaway, a failure mode associated with lithium-ion systems. Lithium-ion batteries contain all the reactive components needed to rapidly release energy internally. If the cell separator is compromised due to overheating, mechanical damage, or degradation, stored energy may be discharged suddenly, generating uncontrolled heat and potentially leading to fire or explosion. In contrast, iron–air batteries store energy in metallic iron and require an external oxygen supply to discharge. As oxygen is not present within the cell and must be drawn from ambient air for the reaction to occur, any internal short circuit cannot drive rapid energy release. The discharge process is further constrained by the limited solubility of oxygen in the electrolyte and is dependent on controlled airflow through a fan mechanism.

The only theoretical scenario in which oxygen levels could increase to significantly accelerate oxidation involves rapid electrolyte loss. System design prevents such an occurrence under normal or fault conditions. Even if electrolyte were unexpectedly drained, testing has shown that while some heating may occur, the reaction quickly stabilizes. This is due to the formation of iron oxide (rust) on the iron surface, which creates a physical barrier that limits further oxygen access and slows the reaction rate.

UL9540A safety testing confirmed that iron–air cells do not exhibit thermal runaway behaviour even under severe abuse conditions, including deliberate short circuit testing. The temperature rise was modest and self-limiting. As such, there is no credible failure pathway that would result in uncontrolled heat generation or escalation to a full-scale fire due to battery cell failure.

6.4.1 Fire Breaks and Associated Maintenance service schedule

Maintenance service schedule to be provided by installation contractor, for all electrical and mechanical systems. Schedule to be maintained and documented by a fire log to be kept on site and to include but not limited to service history for:

- Battery management system.
- Gas management system.
- Alarm maintenance.

Maintenance of fire breaks to ensure they are kept clear of combustible material such as vegetation is of importance to the safe running of the site.

The maintenance of fire breaks is usually performed on a 1-to-3-year cycle, but intensive cutting and weeding are mandatory annually during the dormant season to prepare for the high-risk fire season.

Activity	Frequency	Timing	Purpose
Vegetation Control (Cutting/Mowing)	Annually	Autumn / Early Winter	To minimise fuel load before the spring/summer fire season.
Ground Cultivation / Plashing	Every 3 years	Autumn / Winter	To expose mineral soil, preventing fuel continuity across the break (especially after initial clear felling).
Inspection & Clearing	Quarterly / Post-Storm	Year-Round	To remove windblow, fallen branches, and any debris that bridges the gap between the crop and the break.

6.4.2 External Risk Factors

The risk of arson at the energy storage system site is assessed as extremely low. While such an event is unlikely, its potential impact could be significant, causing substantial damage. To mitigate this risk, the site will be secured with a 2-meter-high fence and monitored continuously by CCTV cameras positioned around the perimeter. This security system is designed to prevent unauthorized access, and any intrusions will be detected promptly to enable swift response from the appropriate authority.

6.4.3 Training

All staff to receive training and induction upon onboarding; all staff to be fully versed with the requirements within the emergency response plan and be aware of their role in the event of an emergency. All contact details for local emergency services within Appendix B of the ERP. Bespoke situation drills to be operated at least twice a year, all to be recorded within the fire register.

All staff should be competent, and adequate PPE always worn when maintenance is carried out.

A Subject Matter Expert (SME) will be recommended to be involved within the induction process.

6.4.4 Subject Matter Expert (SME)

A BESS SME is a person or group familiar with the Form BESS, the site layout and equipment, installation guides and manuals, the BMS architecture, passive and active protection systems, notification sequencing, and this FRMP.

The BESS SME, equipment owner, and site operator play a critical role in guiding fire department personnel responding to a BESS emergency by coordinating the following:

- Ensuring security of the site and limit access to only authorized personnel
- Ensuring accountability of non-fire department personnel inside the facility.
- Ensuring authorized personnel have PPE that is appropriate to their assigned role/task.
- Reviewing and interpreting BMS data including SOC, state of health (SOH), temperature, and status of equipment.
- Locating and isolating the equipment/system causing the fault.
- Ensuring that an exclusion zone, established in coordination with the Fire and Rescue Services, is maintained around the affected equipment or system.
- Expanding exclusion zone in the event additional battery enclosures sustain alarms or

direct fire impingement.

- Evaluating the status of the explosion control and prevention system (if applicable)
- Identifying need for exposure protection.
- Leading post-incident operations.
- Administering the decommissioning plan of affected system/equipment.

It is anticipated that the dFRMP will be a 'live' document under ownership of the Applicant and managed by the Operator throughout the period of operation. This dFRMP will form the basis for the final FRMP to be agreed with the Fire Authority as part of the Fire Certification process post planning consent, at that time roles and responsibilities for the SME will be fully defined.

6.4.5 Access for Firefighting

In the event of a fire or other emergency incident, emergency services will gain access to the site via the primary entrance gate, with a specific emergency access point also provided, as indicated on drawing number **P23-117-0600-0003**, prepared by Fehily Timoney and Company. This shows the addition of a further entrance to the southern boundary of the site, onto the L-7221 public local road, for emergency vehicles only.

The prevailing wind in Ireland tends to be south-westerly, as such an entrance on the southern boundary and one on the western boundary are considered appropriate. Additionally, these locations are the best placed in terms of site constraints and proximity to the local road network.

The emergency access arrangements incorporate a Kevron Padlock system, restricting vehicular ingress and egress solely to local emergency services via standard issue key.

This dedicated access point is designed to be maintained clear of obstruction at all times. This is made clear through the no entry road markings, signage, and yellow box provided in drawing number P23-117-0600-0003. Given its permanent closure to all vehicular traffic other than emergency service vehicles, the existing forward visibility splays are considered safe for the entrance requirements, providing 100 metres of visibility to the southeast and in excess of 300 metres to the northwest without mitigation. Consequently, the forward visibility currently provided is deemed suitably safe for emergency use without requiring any additional mitigation measures. Maintenance of the adjacent public road corridor will remain the responsibility of the relevant local planning authority.

Whilst an additional access track is not provided in the northern end of the LDES compound, this has been sufficiently sized so that a fire tender / emergency response vehicle can travel through the site. The ground here will be compacted hardcore (gravel) which can be easily traversed by vehicles. This area will remain free from development and obstacles such as vehicles / equipment during operation.

The main operational access, emergency access and internal access tracks are detailed in drawing numbers P23-117-0100-0004 to 0006 The provision of two access points enhances emergency response flexibility, allows for alternative routing where required, and supports access for emergency services in the event that one entrance is obstructed.

Once on site, fire appliances will be able to utilise the internal access tracks, which extend throughout the development and provide direct approach routes to the battery energy storage units, inverters, and transformer/PCS units. These tracks will have a minimum width of 3.5 metres, together with a minimum 1.8-metre clear margin to the side of the track, thereby ensuring adequate working space for firefighting vehicles, personnel deployment, and equipment set-down areas.

For security and public safety purposes, the energy storage system compound will be enclosed by an approximately 2-metre-high security fence to prevent unauthorised access. Emergency services will be provided with the necessary keys, access codes, or agreed entry arrangements to ensure prompt and unhindered access in the event of an incident. To facilitate safe operations, transformers and PCS units will be positioned on hardstands next to the access tracks.
Additionally, the inverters will be equipped with input-side disconnection devices that allow the DC current to be cut off if necessary.

6.4.6 Standard Fire Safety Features in the Battery System

The battery units will include several built-in safety features designed to reduce fire risks, including:

- Internal fuses to prevent electrical faults.
- Thermal monitoring to detect overheating.
- Contactors at rack, string, and bank levels for electrical control.
- Internal separation layers to limit fire spread.
- Venting devices to safely release gases.
- Overcharge protection devices.
- A Battery Management System (BMS) to ensure operation stays within safe parameters.
- Cooling systems to manage temperature.
- Venting systems for controlled gas release.

6.4.7 Site Location and Design

The site has been carefully chosen to maintain a safe distance from nearby residential properties, reducing any potential fire risk to the public, with the nearest residential property (the proposed development has achieved set back distances of approximately 330m to the north and approximately 310m to the south). All major equipment, including battery units, has been positioned well within the site boundaries, keeping fire safety as a priority, despite its low likelihood.

While energy storage units are not classified as buildings, their layout has been designed to meet industry-standard fire resistance requirements for both structural integrity and insulation. This means that in the unlikely event that a fire breaks out and all other fire mitigation and prevention measures fail, the fire will be confined to the specific unit involved and will not spread further.

Form's iron-air battery systems have three safeguards to mitigate the effects of fire hazards that may arise in the electrical components of the iron-air battery:

- Electrical design of the equipment in accordance with applicable standards for power electronics IEC/UL62368-1 (standard governing communication technology) and UL9540, UL1973.
- Form's battery systems use a non-combustible enclosure to contain heat and burning debris and to protect the contents from external ignition sources; and
- The site is designed with suitable fire break for vegetation control.

The proposed separation distance between battery containers (i.e. enclosures) and the nearest combustible or vegetation ranges from 17 m at its closest to 34 m at its largest. . This is considered to be suitably safe to prevent a battery fire spreading to the surrounding forestry.

7 Fire Fighting Measures

Smoke detectors within each Form BESS enclosure are monitored by a project sub fire alarm control panel (FACP). Alarm and trouble conditions will be reported locally to the project sub-FACP, which will report to a site-level main FACP. The main FACP will alert remotely monitored security operations centre.

The Form BESS is equipped with a fire detection system specifically designed to comply with NFPA 855 and NFPA 72 standards. To ensure adequate monitoring, the system includes at least 2 individually addressed fire detectors placed throughout the battery enclosure, allowing the relative location of any fire or fault to be instantly identified. These fire detectors are managed by a site-level FACP or sub-FACP that includes a backup battery. The status of each fire detector will be communicated to the BMS. In the event that a fire is detected, the BMS executes the following additional mitigations:.

1) Stops any charging or discharging operations of the enclosure and isolates the enclosure from the rest of the plant

2) Disables thermal management fans so they do not introduce more oxygen into the enclosure

3) Closes the thermal management system inlet and exhaust flowpath to limit air entering the enclosure

7.1 Quantity and Sourcing of Firefighting Reserve

The planning application included a static modular water storage tank system which had the dual purpose of supplying the iron-air BESS units and to provide firefighting water supply. The tank is connected to the mains which will ensure it is topped up.

Water supply is via a connection to the 50mm Uisce Éireann watermain along the L-7211, for which a Confirmation of Feasibility has been obtained, this confirms the viability of the proposed connection arrangement.

The NFCC guidance referenced in the further information request specifies a minimum provision of 1,900 litres per minute over 2 hours. New guidance from the NFCC published in December 2025 states that in the event that a flow rate of 25 litres per second cannot be achieved, an equivalent static supply of approximately 180,000 litres is required to provide that flow rate for 120 minutes. This replaces the previous guidance which recommended 1,900 litres per minute for at least 2 hours.

The on-site storage tank included in the design submitted with the planning application has a volume of 55,141 litres. The tank shall include a level sensor to maintain a dedicated reserve of water for firefighting purposes at all times. The tanking system is modular and can be easily expanded to provide more capacity.

There is sufficient space within the BESS compound to provide additional dedicated water storage for firefighting purposes in addition to the mains fed tank. It is calculated that an additional 4 no. tanks of the same dimensions included in the planning design would provide dedicated static storage of 220,000 litres. This would provide sufficient dedicated static storage of fire water to exceed the latest NFCC requirements. 4 no. dedicated fire water storage tanks have been included in the design to supplement the original mains fed tank. These tanks shall be reserved exclusively for storage of fire water throughout the lifetime of the development.

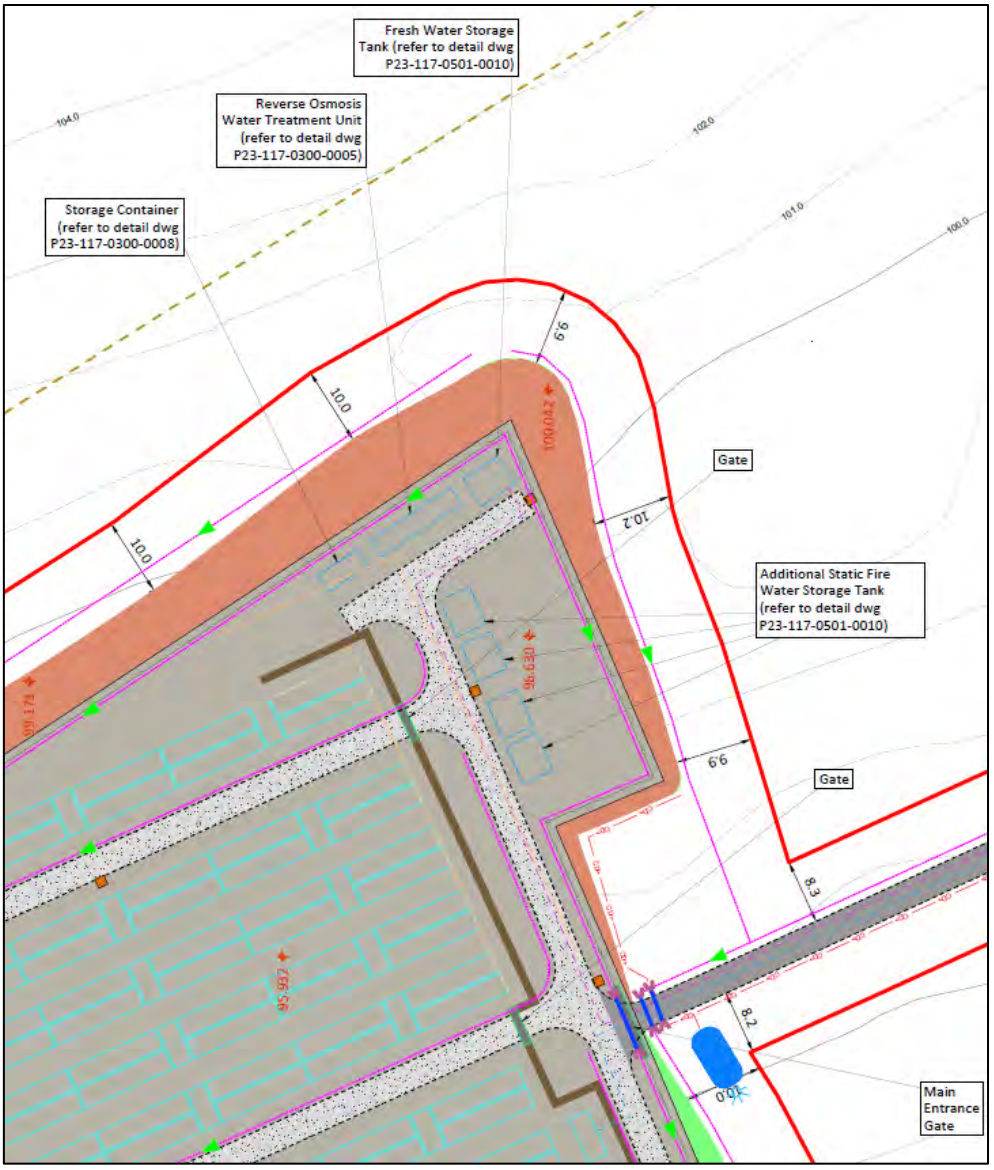

Figure 7-1: Additional Firewater Storage Tanks Location Plan

The proposed water tank is mains fed. In the event of a fire, the BESS shall undergo a controlled shutdown, resulting in the cessation of associated water consumption. The tank shall include a level sensor to maintain a dedicated reserve of water for firefighting purposes at all times. This will simultaneously stop the flow of water to the BESS units and maintain the water level within the tank.

In the event of a water main interruption, there are four additional modular static firewater storage tanks which have been added to provide approximately 220,000 litres of water capacity on site and will be kept full at all times. These additional tanks maintain the minimum separation distance of 10 metres from the nearest battery container.

Firefighting tactics will be strictly defensive, focusing on cooling equipment plinths and perimeter vegetation. This approach minimises the risk of a fire propagating and does not provide a medium for fire to spread.

To address the retention of firefighting water and prevent untreated runoff, the site design utilises a robust, gravity-led drainage and containment network. This system will isolate and capture firewater without the need for permanent wastewater infrastructure or connection to local sewer networks.

All run off within the compound is directed to the main attenuation pond in the south east corner of the BESS compound via the internal drainage network. The attenuation pond outfall can be closed off in the event of an emergency and has sufficient capacity to store run off from fire fighting activities and contain same within the site.

The attenuation pond has a total design capacity of 1,493,000 litres. Accounting for a standard operational volume of 30 - 40% and a mandatory 300 mm freeboard allowance, the remaining available storage volume is sufficient to contain the projected firewater runoff volumes in their entirety from a fire event.

In the unlikely event of a fire, the attenuation pond will act as temporary storage for firewater runoff. The pond is lined to prevent infiltration of water to the ground. The discharge point of the pond will be blocked immediately after an event, allowing it to hold all conveyed firewater flow within the site. This ensures no discharge of contaminated firewater to the local environment. Following an incident, the pond will be drained and all water removed from the site by tanker to a licensed waste facility.

Any additional mitigation measures required to address spillage of contaminated water within the BESS compound shall be carried out in accordance with the measures for pollution control detailed in the CEMP submitted with the Planning Application. This includes Section 4.2.1 'Surface Water Management Plan' which contains mitigation measures for spillage and pollution control and Section 5.1.10 which includes details of environmental emergency response procedures.

7.2 Fire Brigade Information

Fire Brigade personnel should not encroach 30 metres as defined in Section 7.4 of this report or force entry of the multi-day storage area until the battery enclosure has been identified. Upon arrival fire incident command should contact the ROC. XX

7.3 Exclusion Zone

A 30 metre exclusion zone is established once the at risk equipment has been identified. The exclusion zone will be expanded if in the unlikely event failure conditions spread to adjacent equipment. The exclusion zone is established to protect personnel from the potential effects of fire, thermal radiation, smoke and plume gases. The 30-metredistances will allow for a command post to be established for the incident duration without the requirement of relocation if environmental conditions shift. Fire brigade incident command may approach closer if the conditions warrant and additional mitigation measures are necessary. However, effort will be taken to avoid operating in the exclusion zone in front of any doors. Additionally, enclosures should be approached at the corner and not head on.

Figure 7-1: Exclusion zone sample

7.4 Additional fire safety measures will include

- Fire detection systems specifically designed for the Energy Storage System, including:
  - Very Early Smoke Detection Apparatus (VESDA) for early identification of smoke.
  - Gas detection sensors to monitor gases such as hydrogen (H_2) and carbon monoxide (CO), providing early warning of potential cell failure.
- Battery cooling systems equipped with automated fail-safe mechanisms to maintain safe operating temperatures.
- Emergency stop controls are accessible both remotely and locally to quickly halt system operation if needed.
- Standard heat and smoke detection systems as supplementary safety layers.
- Continuous thermal monitoring of battery units, with automated shutdown procedures triggered if temperatures exceed safe thresholds.
- There is a fast stop (F-stop) button located at each quad skid, as well as at the inverter.

8 Additional Measures

The following measures will be incorporated during the detailed design and construction phases of the energy storage system and will form part of the Risk Assessment and Method Statement (RAMS) process applied to work activities at the facility.

- The use of arc-proof clothing, gloves, and face visors, which will be worn as necessary by personnel performing relevant tasks.
- Fire-resistant, non-combustible materials will be utilized where applicable throughout the installation, in accordance with the project specification..
- The energy storage system will undergo regular maintenance and testing to ensure ongoing safety and performance in accordance with O&M plan.
- All work conducted in electrical areas will be subject to thorough risk assessments to guarantee safe practices are followed.
- Battery units will be equipped with air ventilation and temperature control systems to prevent overheating.
- Any work involving heat sources will be performed under strict supervision and safety protocols to prevent fire ignition. Fire extinguishers will be readily available to manage any small fires that might occur.

The first aid procedures shall form part of the site-specific arrangements and will be incorporated into the final Emergency Response Plan.

8.1 Fire Mitigation for Works on Inverters

- The inverters are specifically designed for Irish weather conditions, minimizing the risk of water ingress and subsequent short circuits.
- DC insulation monitors will be installed in the inverters and connected to the energy storage monitoring system. These monitors will be configured to disconnect DC supplies automatically if heat exceeds safe thresholds or a fire is detected. Supplies will also be disconnected if there is no operator intervention within a predetermined time.

8.2 Fire Mitigation for Transformers/PCS Units

Fire risk associated with the inverters primarily stems from overheating due to high current flow originating from the batteries. This risk is managed by regulating current flow and incorporating isolation switches designed to disconnect the inverter should abnormal conditions arise. The fire load within the inverters is low, direct firefighting of inverter fires is generally not advised; instead, containment strategies are recommended until the fire extinguishes naturally.

- High-voltage areas will be designed according to IEC 62270-202 – High-Voltage Switchgear and Control Gear – Part 202: High-Voltage/Low-Voltage Prefabricated Substations.
- All high-voltage equipment will be remotely monitored and operated
- The system will be monitored 24 hours a day through a dedicated control room.
- Prior to construction, the Applicant will update the previously provided emergency plan addressing credible plant failure scenarios.

Early engagement and ongoing consultation with local fire services will be conducted throughout the design and construction phases, ensuring a robust and effective emergency response plan is in place.

9 Summary

The Proposed Development has been designed following Ireland, UK, and internationally recognized best practices and guidance. Throughout the design process, the Health and Safety Authority (HSA) hierarchy of controls has been carefully applied, including:

- Elimination
- Substitution
- Engineering Controls
- Administrative Controls
- Personal Protective Equipment (PPE)

This Fire Risk Management Plan outlines the fire prevention and mitigation measures that will be implemented for the proposed development. Fire safety measures will be addressed throughout all project phases, including construction, operation and decommissioning. The proposed design features and mitigation strategies will minimise the likelihood of a fire event and reduce the potential impact should such an event occur.

The primary focus of this Fire Risk Management Plan is the elimination of risks through design, the implementation of additional mitigation measures, and the establishment of an appropriate fire response plan in order to minimise risks to personnel at the facility, adjoining land uses, and the environment..

Like any development, fire risks exist and, in this case, relate to:

- Fires within components of the energy storage system.
- Poor waste management and inadequate vegetation maintenance around the site; and
- Potential arson attacks on the development.

The Proposed Development will be enclosed by security fencing and monitored using infrared CCTV cameras.

Should there be an arson attack then it will be caught on CCTV in its early stages so that the relevant authorities can be contacted.

For security reasons the proposed development will be enclosed by a 2 m high security fence to prevent unauthorized access to the development. As a result, it would be good practice for the fire service to call to the site and prepare a Planned Emergency Procedure which would be site specific and would set in place the procedures that the fire service would undertake should an outbreak of fire occur. Once on site the fire service will be able to access the inverters and transformer/PCS units from the development access roads.

With the provision of the Fire Risk Management Plan and the production of an Emergency Response Plan (Appendix A), the potential for fire risk will be minimised and relevant mitigation has been proposed.

This plan has outlined that the Applicant has considered fire safety at all stages of the development – construction, operation and decommissioning and that safety and fire risk management are inherent in the overall design. The design and mitigation measures proposed will minimise the risk of a fire event occurring, and reduced the impact of such an event in the unlikely chance it should occur.

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APPENDIX 6

Preliminary Emergency Response Plan (pERP)

2026

PRELIMINARY EMERGENCY RESPONSE PLAN

Project: Iron-Air Battery Energy Storage System (BESS) Facility, Ballynahone, Buncrana, Co. Donegal.

Preliminary Emergency Response Plan for the proposed Iron-Air Battery Energy Storage System (BESS) Facility, Ballynahone, Buncrana, Co. Donegal

Client:	**Fehily Timoney**
Document No:	**252755-ORS-ZZ-RP-ERP-FS-004**

Revision	Status	Author:	Reviewed by:	Approved By:	Issue Date
P01	S1	GH	SC	BC	02/12/2025
P02	S1	GH	SC	BC	13/02/2026
P03	S1	MY	GH	BC	10/03/2026

Contents

1 INTRODUCTION

ORS has been appointed to prepare a draft Fire Risk Management Plan (dFRMP) and a preliminary Emergency Response Plan (pERP) for the proposed Iron-Air Battery Energy Storage System (BESS) Facility, Ballynahone, Buncrana, Co. Donegal. This report presents the preliminary ERP, while the dFRMP is provided as a separate standalone document.

2 SCOPE

The preliminary Emergency Response Plan applies to the proposed Iron-Air Battery Energy Storage System (BESS) Facility, Ballynahone, Buncrana, Co. Donegal, Ireland. The plan establishes the procedures, responsibilities, and coordination measures required to effectively manage emergency situations that may arise throughout the full lifecycle of the development.

The scope of this pERP shall be coordinated with all project phases, including commissioning, operation, maintenance, and decommissioning. It addresses potential emergency scenarios relevant to a utility-scale iron air BESS installation, including but not limited to fire events, explosion risks, electrical faults, hazardous material release, environmental contamination, severe weather incidents, and security-related threats.

This document defines the internal emergency management structure, communication protocols, escalation procedures, coordination with external emergency services and post-incident recovery actions. It shall be integrated along with other site-specific safety documentation, including the Risk Assessment Method Statement (RAMS), Fire Risk Management Plan (FRMP), and Construction Environmental Management Plan (CEMP).

The pERP applies to all personnel on site, including employees, contractors, visitors, and third-party service providers. To ensure ongoing efficacy, the pERP mandates annual reviews, post- incident evaluations, updates following significant site modifications, or in response to regulatory changes, with mandatory training and drills to build preparedness and compliance.

This pERP is provided as guidance only and shall be customised by the site owner as required. The site owner retains full responsibility for the adoption and implementation of the final Emergency Response Plan, including undertaking all mandatory consultations with the relevant authorities such as the local Fire and Rescue Services (FRS), the Health and Safety Authority (HSA), and the Environmental Protection Agency (EPA) during the subsequent project phase. This is based on the proposed utility-scale Iron-air BESS deployed in containerised outdoor enclosures, operating unmanned with 24/7 remote monitoring via a Battery Management System (BMS).

3 POLICY AND GUIDANCE

The following policies and guidance documents are considered relevant to fire safety in relation to projects incorporating technologies such as Iron-Air BESS facilities.

Accordingly, this report draws on applicable best practice documentation and technical references, as well as from other international sources, where appropriate.

In preparing this assessment, the following recognised standards and reference materials, commonly applied to comparable projects, have been reviewed:

- IEC 62933-5-2: Electrical energy storage (EES) systems - Part 5-2: Safety requirements for grid-integrated EES systems - Electrochemical-based systems.
- European Association for Storage of Energy (EASE) Guidelines on Safety Best Practices for Battery Energy Storage Systems.
- UK National Fire Chief's Council (NFCC) Guidance - BESS

- NFPA 855 (2023): Standard for the Installation of Stationary Energy Storage Systems.
- First Responders Guide to Lithium-Ion Battery Energy Storage System Incidents, American Clean Power Association, 2023
- American Clean Power Association: Energy Storage Emergency Response Plan.
- SEAI (Sustainable Energy Authority of Ireland) - Manual of Consenting Procedures – Battery Storage.

4 SITE DESCRIPTION

The iron-air BESS facility is located in a rural setting to minimise impact while supporting grid stability. The site is elevated to reduce flood risk, and has a minimum 10 m vegetation / combustible clearance buffer to mitigate wildfire spread. .

The system comprises modular, containerized battery units (e.g., 248 units arranged in quad packs, each containing iron anodes, gas diffusion electrodes (GDE), and oxygen evolution electrodes (OEE) submerged in KOH electrolyte). The units are spaced in accordance with the manufacturer's recommended separation distances, which shall be based on their large-scale test data to prevent propagation, housed in weatherproof enclosures with integrated ventilation for hydrogen venting. Ancillary equipment includes inverters for DC-to-AC conversion, oil-cooled transformers with secondary bunding to contain potential leaks, high- voltage switchgear, BMS/EMS control rooms equipped with redundant power supplies and data logging, fire detection sensors (smoke, heat, and hydrogen), security features such as 2m-high fencing with anti-climb measures, CCTV with motion detection and night vision, all-weather access roads (minimum 5 m wide, capable of supporting 12.5-tonne fire appliances).

The layout ensures clear access for emergency vehicles, with two gated entry points, one for operational access and an additional for use by emergency response vehicles only.

The facility will operate unmanned, with 24/7 remote Supervisory Control and Data Acquisition (SCADA) monitoring from a central operations centre (note that the location of this will be defined in the final ERP). Periodic onsite maintenance by certified personnel will include system diagnostics checks, enclosure inspections, and filter replacements.

5 EMERGENCY RESPONSE MANAGEMENT

Effective emergency response management at the Iron Air BESS facility relies on clearly defined roles, structured communication pathways, and personnel trained in the specific risks associated with utility-scale battery energy storage systems. This section outlines the management framework and assigned responsibilities necessary to ensure a coordinated and effective response to any emergency event.

5.1 Roles and responsibilities

The following roles are established to support the implementation and maintenance of this pERP:

5.1.1 Overall Organization

- The site owner/operator holds overall governance responsibility for the Emergency Response Plan (ERP).
- This includes ensuring that the ERP is developed, formally approved, adequately resourced, and maintained in compliance with all applicable statutory and regulatory requirements.
- The owner/operator shall ensure the provision of sufficient resources to support emergency preparedness, including appropriate equipment, trained personnel, and 24-hour emergency contact arrangements.
- They are responsible for integrating the ERP with the Fire Risk Management Plan (FRMP), and for ensuring periodic review, audit, and continuous improvement of the emergency management framework.

5.1.2 Emergency Response Coordinator

- The Emergency Response (ER) Coordinator (or designated alternate) appointed by the site owner is responsible for the operational implementation and activation of the ERP in the event of an incident.
- The ER Coordinator shall initiate the internal communication cascade, mobilise response personnel, oversee evacuation procedures, and act as the primary liaison with responding emergency services by providing site plans, hazard information, and relevant Battery Management System (BMS) data.
- The ER Coordinator is also responsible for maintaining incident records, coordinating post-incident debriefing and reporting, and ensuring that emergency response training and drills are conducted in accordance with the site's emergency preparedness programme.

5.1.3 BMS Operator

- Perform real-time monitoring of hydrogen levels, electrolyte status, temperatures, and voltages from a remote centre.
- Initiate automatic responses such as venting, shutdowns, or isolations upon anomaly detection.
- Alert emergency services, the Battery SME, and site owner promptly; log all data for investigations.
- Ensure system redundancy (e.g., backup power for monitoring).

5.1.4 On-Site Personnel/Contractors

- During presence (e.g., maintenance), report any incidents or anomalies immediately.
- Execute initial actions like evacuation or containment if safe.
- Use required PPE (chemical-resistant gloves/suits for electrolytes, Self-contained breathing apparatus (SCBA) for hazardous gas exposure such as CO and CO_2).
- Adhere to permit-to-work systems (e.g., hot work); and lockout/tagout procedures for electrical isolation.
- Participate in required drills and training. Avoid unauthorised entry into designated hazardous areas, such as battery enclosures, electrical equipment areas (including inverters and switchgear), and restricted maintenance zones, unless authorised and appropriately trained.

5.1.5 Incident Commander

The senior Fire Rescue Services (FRS) officer assumes overall command upon arrival, conducts an initial scene assessment, and directs all responding resources accordingly; this shall be further confirmed by the site owner in the Final Emergency Response Plan.

5.1.6 Battery Subject Matter Expert (SME)

- A Subject Matter Expert (SME) shall be available 24/7, with both primary and secondary contacts designated to ensure continuity.
- The SME shall have detailed knowledge of the battery system's operational characteristics, failure modes, and hazards, and be capable of supporting the incident command structure where required.
- During an emergency, the SME shall interpret real-time Battery Management System (BMS) data, including hydrogen levels, state of charge (SOC), and system alarms, and advise on safe shutdown procedures, hydrogen mitigation, electrolyte handling, and system isolation.
- Where escalation requires, the SME shall be able to attend site within two hours; if not immediately practicable, a dedicated 24-hour contact line shall provide responders with operational data and technical guidance.
- The SME shall also support post-incident investigation, root cause analysis, and updates to the Emergency Response Plan.

5.1.7 Fire and Rescue Services (FRS)

- Lead on-site emergency response; conduct site visits (If required) and provide advice on access, water supplies, and suppression strategies.
- Coordinate with other agencies; implement defensive tactics (e.g., boundary cooling).
- Clear the site for re-entry post-incident; participate in joint drills and review ERP effectiveness.

5.1.8 External Regulatory Authorities

- **Health and Safety Authority of Ireland (HSA)**

The HSA shall be notified of reportable incidents in accordance with statutory requirements. The HSA may conduct independent investigations, review site safety practices, and advice on corrective actions to ensure compliance with workplace safety legislation in accordance with their defined procedures.

- **Environmental Protection Agency (EPA)**

The EPA shall be notified of any incident with actual or potential environmental impact. This includes impacts on surface water, groundwater, surface runoff, and firefighting water. The EPA may review response and advice on remediation actions and measures to ensure compliance in accordance with their defined procedures .

The ERC or designated representative by site owner shall ensure that all statutory notifications to relevant authorities, including FRS, HSA, and EPA, are completed in a timely and compliant manner in accordance with applicable regulatory requirements.

5.2 Preparation and Planning for Emergencies

5.2.1 Pre-planning for emergencies

- The local Fire Service and other relevant first responders shall receive a copy of the final Emergency Response Plan and participate in an on-site familiarisation visit.
- The two emergency responder access points to the facility shall be clearly identified and maintained.
- An emergency response information notice board shall be installed in a location readily visible and accessible to all personnel. The board shall display key emergency contacts as shown in Appendix A of this report, details of personnel certified in First Aid/AED, evacuation route diagrams, road exit locations, and other information deemed necessary by the Emergency Response Coordinator. Appropriate provisions shall be made for non-English speaking personnel.
- Evacuation routes shall be agreed with the FRS and shown in the Site plan, contained in the final ERP which will be clearly documented, established, and posted.
- A log of on-site personnel shall be maintained at all times to enable headcount verification during emergency situations.
- All fenced areas and property shall display appropriate hazard signage, including applicable Danger, Warning, and Caution notices.
- Site personnel shall be instructed to keep all exits and access routes clear at all times, including ensuring fire extinguishers and other emergency equipment remain unobstructed.
- Safe approach distances shall be established for relevant equipment failure modes. Personnel shall be trained accordingly, and this information shall be communicated in writing to first responders during drills and emergency coordination meetings.
- Safety Data Sheets (SDS) provided by manufacturers shall, where relevant, be provided to first responders. In some cases, manufacturers or suppliers will provide Material Safety Data Sheets (MSDS) instead of SDS where relevant.

5.2.2 Emergency Routes

The site emergency evacuation route shall be identified in the final site plan as part of the final ERP and posted and orally communicated to site personnel. These procedures shall be discussed at periodic safety meetings in addition to being covered during new employee orientation. Personnel will be required to undergo training with respect to the available exits and to ensure that they are familiar with the evacuation routes.

Depending upon the degree of emergency, weather and/or site conditions, roadways as designated on the site map will be used for routes of evacuation. In the event of an evacuation, all personnel will meet at the designated muster point. The location of this muster point will be confirmed during the pre-construction and operations stages. If the primary muster point is inaccessible or hazardous, personnel shall gather at the secondary muster point and inform the emergency coordinator (if not present) by radio or telephone. The Emergency Response Coordinator shall inform personnel of a diversion to the secondary muster point by such means as are available, to include radio or loud hailer. If personnel are unable to make it to the designated muster points, they should seek shelter wherever possible and contact their supervisor for further instructions. Accountability of personnel shall be of the upmost importance and be conducted in a timely manner. Responder access points shall be kept unobstructed at all times so first responders will not be hindered in their operations when responding to emergencies within the site.

5.2.3 Familiarisation with Iron-Air BESS Safety Systems

Prior to commissioning and at defined intervals thereafter, site personnel, the Emergency Response Coordinator, and relevant external responders shall be familiarised with the BESS safety architecture. This shall include an overview of the Battery Management System (BMS) monitoring functions, automatic shutdown and isolation logic, gas detection and emergency ventilation activation thresholds, , explosion venting provisions, and Emergency Stop (E-Stop) functionality.

Familiarisation shall focus on operational awareness of system behaviour during abnormal events, including alarm escalation pathways and defensive response interfaces, rather than detailed engineering design. The local Fire & Rescue Service shall be invited to participate in site visits and information sessions to support pre-incident planning and tactical awareness.

5.2.4 Emergency Response Procedures

Only personnel with relevant training and experience may respond to hazardous chemical incidents. Employees must not place themselves in danger. Rescue operations are performed only by trained professionals using proper PPE and risk assessment procedures. If local fire services respond, the incident will operate in accordance with established procedures..

Alert Tiers

Alert tiers are pre-defined escalation levels used to:

- communicate severity of a fire-related incident, and
- trigger proportionate response actions and notifications.

They help ensure consistent, rapid decision-making as conditions worsen.

Level 1 (Alert)
Minor issues like slight H_2 rise or small leak; remote venting/isolation; continuous monitoring without evacuation.

Level 2 (Incident)
Confirmed ignition, fire, or significant leak; immediate site evacuation; alert FRS and SME.

Level 3 (Major Accident)
Explosion, uncontrolled fire, or off-site impact; full site shutdown; activate Unified Command; notify HSA/EPA immediately.

The phases of emergency response may be categorized as follows for handling an emergency: Analyse, Plan, Implement, Evaluate.

5.2.4.1 Analyse

During the response analysis phase, emergency responders are notified. The first employee arriving at the scene must remain outside the hazard area and assess the situation from a safe distance and shall:

- Identify the type of incident (fire, spill, explosion, etc.).
- Determine if medical assistance is required.
- Assess risks to people, property, and the environment.
- Consider weather and site conditions.

The area should be isolated if safe to do so. Untrained personnel must limit actions to notification, isolation, and personal safety. Rescue attempts are only permitted with proper training, PPE, and minimal risk.

5.2.4.2 Plan

The response planning phase involves mobilising the appropriate resources and equipment to the emergency scene and developing a strategy to control and mitigate the incident. Once immediate life threats are controlled, a response plan is developed and communicated to all responders.

The plan shall:

- Prioritize responder safety.
- Establish the following zones
  - Hot Zone (Exclusion Zone or Hazard Zone) This is the innermost area with the highest immediate risk — closest to the affected BESS unit(s), enclosure, or fire.
  - Warm Zone (Contamination Reduction Zone or Decontamination Corridor) This is the transition/buffer area between the hot zone and safer areas.
  - Staging Zone This is a designated safe area for assembling incoming resources, equipment, and personnel before assignment.
- Restrict access to trained personnel only.
- Identify decontamination procedures.

The Emergency Response Coordinator and trained responders will assess hazards and set operational objectives.

5.2.4.3 Implement

Once a plan is developed and the proper resources and equipment are there, then the Emergency Response Coordinator will make the determination to implement the plan. The response begins with emergency notification via radio or phone. The Emergency Response Coordinator ensures emergency services (999 / 112) are contacted if required.

Key implementation steps include:

- Establishing an upwind command post.
- Coordinating with external responders and regulatory agencies.
- Setting up hot zones and decontamination corridors.
- Ensuring PPE use and accountability of personnel.
- Maintaining backup teams and communication systems.

All incidents must be documented and filed appropriately.

5.2.4.4 Evaluate

Once the plan is implemented, it shall be evaluated for safety and effectiveness. If the plan is not safe or effective, then the process should start over again with Analyse, Plan, Implement, and Evaluate. During response operations, the Emergency Response Coordinator continuously monitors effectiveness and safety.

If the plan is ineffective or unsafe:

- Personnel are withdrawn from the hot zone.
- The strategy is revised.
- The updated plan is reimplemented and reassessed.

Evaluation ensures continuous improvement and safe emergency management.

5.3 Communications and Notification

5.3.1 Communication Principles

Timely, clear, and structured communication is essential to ensure an effective emergency response. The ERC shall act as the central point of contact for all emergency communications and shall coordinate information flow between site personnel, FRS, SMEs, regulators, and external stakeholders. All emergency communications shall prioritise life safety and operational clarity.

During an incident:

- Emergency response transmissions take priority over all other communications.
- Signal words such as “Urgent” or “Mayday” shall be used to identify critical transmissions.
- Radio discipline shall be maintained at all times.
- If communication systems fail or transmissions are unclear, personnel shall proceed immediately to the designated muster area.
- All hand-held radios shall be inspected daily for functionality. Devices shall be fully charged, and back-up batteries shall be available. Faulty radios shall be removed from service, labelled accordingly, and replaced prior to work continuation.
- Provision shall be made to ensure effective communication with non-English speaking personnel, including translation support where necessary.

5.3.2 Incident Command Structure

Upon arrival of Fire & Rescue Service, the incident shall be managed in accordance with the National Incident Management System (NIMS), utilising a structured Incident Command System (ICS) framework to ensure unified command, clearly defined responsibilities, and effective multi-agency coordination. Under this structure:

- Fire & Rescue Service shall assume Incident Command.
- The Emergency Response Coordinator shall act as site liaison.
- A unified command approach may be adopted for Level 3 events involving multi-agency response.
- Clear operational zones (hot, warm, cold) shall be established.
- Information shall flow through designated command channels only.

This ensures coordinated multi-agency response and prevents conflicting instructions.

5.3.3 Notification Matrix

Notifications shall be made in accordance with the severity classification.

Immediate Notification (All Levels Where Applicable)

- Fire & Rescue Service via 999/112 (for incidents requiring emergency services)
- Site Operator
- Subject Matter Expert (SME)

Level 2 - Incident

- Fire & Rescue Service (if not already engaged)
- Site Senior Management
- Technical SME support
- Regulatory notification shall be undertaken where statutory reporting thresholds are met.

Level 3 - Major Accident

- Fire & Rescue Service (if not already engaged)
- Site Senior Management
- Relevant Regulatory Authorities in accordance with statutory reporting obligations, which may include:
  - Health and Safety Authority (HSA)
  - Environmental Protection Agency (EPA), where environmental release occurs
  - Local Development Authority (where community impact is possible)

Notification shall occur without undue delay and in accordance with applicable legislation.

5.3.4 Public and Community Communication

Where an incident has potential off-site impact (e.g., visible smoke plume, precautionary evacuation, or road closure), communication shall be coordinated through:

- Local Authority (Donegal County Council)
- Fire & Rescue Service
- Site management
- Public communication methods may include:
  - Local media notification
  - Community liaison channels
  - Direct alerts where appropriate

All public messaging shall be factual, coordinated, and approved through the Incident Command structure to prevent misinformation.

5.3.5 Communication Failure Contingency

In the event of radio or mobile communication failure:

- Personnel shall proceed to the designated muster area.
- Supervisors shall conduct physical headcounts.
- Emergency services shall be contacted using alternate communication methods.
- Redundancy in communication systems shall be maintained to ensure resilience during emergencies.
- An audible horn signal shall be used to notify all site personnel in the event of an evacuation.

5.4 Evacuation Procedures

5.4.1 Activation

Upon activation of an alarm (automatic or manual), all personnel shall immediately cease work and evacuate to the designated upwind muster/assembly point which will be confirmed during the pre-construction and operations stages and shown on the site plan / included in the final ERP.. Evacuation shall be immediate and orderly. Personnel must not delay collecting personal belongings and shall maintain a minimum recommended 30m or as advised by the Emergency Response Coordinator exclusion distance from hydrogen leak or other hazardous areas (such as containers on fire) at all times.

5.4.2 Evacuation Conduct

During evacuation, personnel are expected to act calmly and without panic. Movement shall be controlled and deliberate; running is prohibited. Individuals may assist others only where doing so does not increase personal risk. Evacuation routes shall be followed while remaining alert to vehicle movements, operating equipment, uneven ground, ice, snow, or loose gravel conditions. Personnel should remain upwind, uphill, and upstream where practicable. No employee shall enter a hazardous zone or attempt rescue operations under any circumstances.

5.4.3 Muster/Assembly Areas

All personnel shall report directly to the Primary Muster/Assembly Area which will be confirmed during the pre-construction and operations stages and shown on the site plan / included in the final ERP. If access to the primary location is obstructed or unsafe, personnel shall proceed to the Secondary Muster Area and notify their supervisor immediately of their location. No individual shall leave the muster area until authorized by the Emergency Response Coordinator or Fire & Rescue Service.

5.4.4 Accountability

Following evacuation, the Emergency Response Coordinator shall conduct a formal roll call using site checklists or digital accountability systems. All employees, contractors, and visitors must be accounted for. If a person is unaccounted for, the following information shall be provided immediately to Fire & Rescue Service:

- Name
- Work location
- Last known location
- Any mobility or medical considerations

Re-entry to the site shall be strictly prohibited until Fire & Rescue Service or Emergency Response Coordinator declares the area safe, following their assessment.

5.4.5 Assistance for Persons Requiring Support

Personnel requiring evacuation assistance due to mobility, hearing, vision, or other impairments shall pre-arrange support within their work area per a specific Risk Assessment. If any person requiring assistance has not evacuated, this shall be reported immediately to the supervisor and communicated to Fire & Rescue Service upon arrival.

5.4.6 Incident Command and External Emergency Services

Upon arrival, Fire & Rescue Service shall assume control of the incident under the Incident Command structure. The Emergency Response Coordinator shall establish an incident command post in a safe, upwind location and act as liaison with the Incident Commander. The ER Coordinator shall provide site layout drawings, hazard identification information, and personnel accountability status to assist emergency responders.

5.4.7 Incident Response Strategy (Defensive Approach)

The facility adopts a defensive response strategy prioritizing life safety and preventing escalation. Site personnel shall not under any circumstances undertake offensive firefighting or enter enclosures. Response measures shall include:

- Remote Emergency Stop (E-Stop) activation via the Battery Management System (BMS)
- Establishment of a 30m hot zone
- Continuous hydrogen and gas monitoring
- Use of thermal imaging cameras
- Boundary cooling for exposure protection only
- Prohibition of entry into energized systems

Self-contained breathing apparatus (SCBA) and chemical-resistant PPE are mandatory for emergency responders operating within controlled zones. Rescue attempts shall be limited to line-of-sight and shall not involve entry into hazardous areas.

5.4.8 Environmental Protection and Firewater Management

Environmental protection forms an integral part of the emergency strategy. The site incorporates engineered containment measures as defined in the overall planning application designed to prevent uncontrolled discharge of firewater runoff.
In the event of an incident:

- Discharge points shall be closed to retain firewater on-site
- Firewater runoff flows shall be directed to attenuation structures
- Retained firewater shall be tested for contaminants
- Disposal shall be undertaken by a licensed contractor at an authorised treatment facility

No fire water shall be released from the site until confirmed compliant with environmental protection requirements.

5.5 Conditions Associated with Energy Storage Systems

5.5.1 Unique Challenges

BESS present distinct operational and fire response challenges compared to conventional electrical infrastructure. Unlike typical utilities, BESS facilities may not have a single point of electrical isolation, and portions of the system may remain energised even after disconnection.

The following hazards may be encountered when fighting fires in energy storage systems:

- Shock or arcing hazard due to the presence of water during defensive firefighting activities.
- Related electrical enclosures may not resist water intrusion from the high- pressure stream of a fire hose.
- Batteries damaged in the fire may not resist water intrusion.
- Damaged conductors may not resist water intrusion.
- Shock hazard due to direct contact with energized components.
- Leaks or spills of caustic electrolyte.
- Hazardous gases such as carbon monoxide associated with the combustion of system material.

5.5.2 Fire and Water

Due to the hazards described above, careful consideration must be given when selecting fire fighting methods for the energy storage system. For iron–air battery installations, water-based fire fighting method is generally acceptable for defensive firefighting. However, responders must remain aware of potential electrical hazards and the presence of high-voltage equipment during firefighting operations.

The local fire department will be informed of the recommended firefighting methods for the specific energy storage system, as identified by the equipment manufacturer.

The most appropriate fire protection systems/equipment for the BESS units shall be selected based on manufacturer guidance and the operational characteristics of the installation. All fire protection equipment, whether automatic or manual, must be regularly inspected and maintained in accordance with the manufacturer’s recommendations to ensure proper functionality during an emergency.

5.6 Post-Emergency Reporting, Recovery and Investigation

5.6.1 Incident Reporting

Following any emergency event, the Emergency Response Coordinator (ERC) shall prepare a formal incident report detailing the nature of the incident, response actions taken, and any resulting impacts to personnel, equipment, or the environment. The report shall be reviewed by senior management and retained in accordance with company procedures and statutory requirements.

Where reporting thresholds are met, notifications shall be made to the relevant regulatory authorities in accordance with applicable legislation.

5.6.2 Post-Incident Investigation

A structured investigation shall be initiated without undue delay to determine the root cause and contributing factors of the event. This investigation shall assess the technical, operational, and procedural aspects of the incident, including the performance of the Emergency Response Plan.

The review shall specifically evaluate:

- The immediate and underlying causes of the incident
- The effectiveness of the emergency response actions
- Whether amendments to the Emergency Response Plan or Fire Risk Assessment are required

The need for additional training, system upgrades, and regular emergency response drills (at least annually), including involvement of local emergency services, varied emergency scenarios, and quarterly drills during construction.

Where required, investigation findings may be shared with relevant regulatory authorities, including the Health and Safety Authority (HSA) and Environmental Protection Agency (EPA), where statutory thresholds are met. The Emergency Response Plan (ERP) and Fire Risk Assessment (FRA) shall be reviewed and updated based on findings.

5.6.3 Site Release and Operational Continuity

The FRS in coordination with the ERC shall determine when the site is safe for controlled re-entry. In certain circumstances, affected areas may be secured pending technical assessment or, where applicable, investigation by statutory authorities.

If operations cannot resume immediately, the site shall remain secured and access restricted until deemed safe. Re-entry will only occur following approval from FRS, and site owner...

5.6.4 Monitoring and Stabilisation

Following containment or extinguishment of a battery incident, extended monitoring may be required to ensure the system remains stable and that no re-ignition or residual hazards are present..

Temperature monitoring, gas detection, and controlled ventilation shall continue until stable and safe conditions are confirmed. Adjacent battery units shall be inspected to assess potential heat transfer or secondary damage. Re-entry and recovery operations shall only proceed once conditions are deemed safe for personnel.

5.6.5 Decommissioning of Damaged Units

If iron-air battery modules need to be decommissioned, they shall be electrically isolated and rendered safe prior to removal. This task will be coordinated by the site owner. Where technically feasible, modules should be discharged. Due to the presence of an alkaline electrolyte (potassium hydroxide), appropriate precautions shall be taken to prevent chemical exposure or environmental contamination during removal and handling. Transport and disposal of damaged components shall be carried out in accordance with applicable hazardous materials transport regulations.

However, large scale iron-air battery energy storage systems are usually transported as equipment or machinery rather than individual batteries; therefore, the exact classification and packaging requirements shall be determined based on the manufacturer’s Safety Data Sheet (SDS) and relevant regulatory guidance.

5.6.6 Environmental Assessment and Remediation

Following a fire and associated firewater runoff event, retained firewater and affected surfaces shall be assessed for contamination. Testing shall include pH, metals, hydrocarbons, and other relevant contaminants.

Where contamination is identified, appropriate remediation measures shall be implemented. Disposal of contaminated water or materials shall be undertaken by licensed contractors, and no discharge shall occur until compliance with environmental protection requirements is confirmed with relevant documentation submitted to EPA for review.

6 RESOURCES AND FACILITIES TO SUPPORT EFFECTIVE EMERGENCY RESPONSE

6.1 Access

Two site accesses are provided for the BESS compound, one from the L-7231 public road and an additional entrance for emergency vehicles only to the southern boundary of the site, onto the L-7221 Local Road. The access arrangements have been designed to meet fire appliance access, load bearing 12.5-tonne, and manoeuvrability requirements, ensuring adequate emergency response capability, with sufficient clearance for appliance manoeuvrability and an unobstructed approach to the BESS compound. Consultation shall be undertaken with the local Fire Authority (Donegal County Council) during the post-planning and detailed design phases to confirm requirements relating to vehicle access, and operational access for firefighting personnel.

The emergency access arrangements incorporate a Kevron Padlock system, restricting vehicular ingress and egress solely to local emergency services via standard issue key.

This dedicated access point is designed to be maintained clear of obstruction at all times. This is made clear through the no entry road markings, signage, and yellow box

Transversing inside the battery compound is made possible by internal access tracks that run the entire length of the compound. Furthermore, the ground conditions within the site will consist of compacted hardcore (gravel), which can be easily traversed by emergency vehicles, allowing for full perimeter access within the site.

6.2 Firefighting water

Adequate fire fighting water storage shall be provided on site to meet NFCC Guidelines, which require a static supply of approximately 180,000 litres to provide a flow rate of 25 litres per second for 120 minutes.

It is noted that the design includes a mains connection at the main site entrance which can act as a secondary source of water.

6.3 Emergency Equipment

Emergency equipment shall include appropriate personal protective equipment (PPE), spill response kits suitable for electrolyte containment, first-aid provisions including burn treatment supplies, portable hydrogen gas detectors, thermal imaging capability, and emergency lighting with backup power generation. Equipment shall be maintained and inspected in accordance with the O&M Plan.

6.4 Signage

The site shall display clear and durable hazard signage, including warnings such as “Battery Energy Storage System – Hydrogen and Electrical Hazard – No Unauthorised Entry,” along with 24-hour emergency contact details. Signage shall be legible from a minimum distance of 30 metres and comply with relevant safety and dangerous substances regulations where applicable. The emergency signage used on site shall comply with I.S. EN ISO 7010:2020&LC:2020&A1:2020, A2:2022&A3:2022 - Graphical symbols - Safety colours and safety signs - Registered safety signs - Amendment 2 (ISO 7010:2019/Amd 2:2020).

7 EXTERNAL AND SECURITY RELATED EMERGENCY EVENTS

While the primary hazards of the BESS relate to electrical and battery risks, the facility may also be exposed to external threats and non-process incidents. The following section outlines the immediate response actions under this pERP, while directing detailed preventative and management controls to the relevant project plans.

The Emergency Response Coordinator (or designated Site Operator) shall retain overall responsibility for activation of the ERP and liaison with emergency services.

7.1 Security Threats (Bomb Threat, Vandalism, Sabotage, Active Intruder)

Security incidents may include bomb threats, suspicious objects, vandalism, forced entry, malicious damage, or violent intrusion..

If any suspicious item(s) are found, they shall not be touched, moved, or interfered with. Barrier tape shall be used to cordon off the area by extending a continuous line beginning immediately in front of the suspicious item and continuing to just outside the room exit. This will assist local authorities in safely locating the item upon arrival.

Immediate ERP Actions:

- Contact An Garda Síochána via 999/112.
- Cease work and evacuate personnel where required.
- Do not touch suspicious objects.
- Isolate affected equipment remotely via BMS/SCADA where safe.
- Secure the perimeter and preserve CCTV evidence.
- Prevent re-entry until Garda clearance is provided.

Detailed Physical security controls (fencing, gated access, CCTV, intrusion detection, lighting) shall be addressed within the Site Security Management Plan.

7.2 Severe Weather and Natural Hazards (Flood, Lightning, High Winds, Snow/Ice, Seismic)

Extreme weather or natural events may affect structural integrity, electrical safety, or access.

Immediate ERP Actions:

- Suspend non-essential site access.
- Remotely isolate systems where risk of damage exists.
- Avoid outdoor work during lightning proximity.
- Restrict access during snow/ice conditions due to slip hazards.
- Prevent fire water runoff from leaving site boundaries.

Detailed drainage design, and surface water management will addressed within the Construction Environmental Management Plan (CEMP) and Surface Water Management Strategy which will be completed by the appointed contactor. Structural resilience and wind/seismic design compliance shall be addressed within the project engineering design documentation.

7.3 Fire or Explosion Resulting from External Causes

Although the BESS contains internal fire protection systems, external ignition sources (e.g., arson, vehicle impact, wildfire) may initiate an event.

Immediate ERP Actions:

- Activate emergency services via 999/112.
- Initiate site evacuation.
- Establish exclusion zone.
- Activate remote emergency shutdown (E-Stop) where available.
- Provide site plans and hazard data to Fire & Rescue Service.

7.4 Environmental Incident or Contamination

Environmental risk may arise, although with a low probability due to spill control measures, from the spill of alkaline electrolyte from the iron-air battery system (potassium hydroxide solution), The electrolyte is highly alkaline and corrosive and may pose risks to soil, surface water, and drainage systems if spilled. Other risks include firewater runoff, fuel spills from auxiliary equipment, or other external contamination events.

Immediate ERP Actions:

- Activate drainage isolation systems.
- Prevent discharge to watercourses.
- Arrange environmental monitoring and sampling.
- Notify the EPA and Local Authority where required.
- Engage licensed waste contractor for removal of contaminated material.

7.5 Third-Party Impact or Accidental Damage

Accidental vehicle collision, nearby construction activity, or infrastructure damage may compromise electrical or structural safety.

Immediate ERP Actions:

- Suspend operations in the affected area.
- Assess for electrical hazard, fire, or release.
- Isolate damaged equipment.
- Notify emergency services if escalation risk exists.
- Conduct engineering inspection prior to recommissioning.

Traffic management, contractor controls, and construction-phase risks shall be addressed within the CEMP and Traffic Management Plan.
Operational inspection and recommissioning procedures shall be defined within the O&M Plan.

7.6 Command and Coordination

Until the arrival of emergency services, the Emergency Response Coordinator shall manage the site response; upon their arrival, operational command shall transfer in accordance with national incident management arrangements, with the Site Operator acting as liaison and providing technical information, site drawings, and hazard data.

8 CYBERSECURITY

Cybersecurity shall form an integral part of the Battery Energy Storage System (BESS) lifecycle and shall be embedded within the system design from inception. Detailed governance, controls, and responsibilities shall be defined in the IT Security Plan. This will be implemented post-planning and prior to operation of the facility.

The facility shall adopt a “secure by design” approach to ensure that cyber risks are minimised during development, commissioning, and operational phases.

Once operational, the system shall be subject to continuous security monitoring, periodic risk assessment, vulnerability management, and timely application of security patches to maintain resilience against emerging threats.

A structured hardening process shall be implemented to reduce the attack surface of site infrastructure, control systems, and associated equipment. Hardening measures shall include:

- Restricting network exposure by ensuring only essential service ports are open; all unnecessary ports shall remain closed.
- Installing only required operational software; all non-essential applications shall be removed.
- Prohibiting development tools, test environments, or source code repositories on live production systems.
- Disallowing remote access protocols that transmit credentials or data in plain text.
- Ensuring passwords and authentication credentials are securely encrypted and managed in accordance with recognised security standards.

These measures support secure system operation and protect critical infrastructure from unauthorised access or compromise.

9 TRAINING AND DRILLS

9.1 Training

Annual training shall be provided for all roles, including induction for new personnel and refresher sessions. Training shall cover iron–air battery hazards (hydrogen generation and alkaline electrolyte exposure), ERP procedures, PPE use, evacuation, and first aid for chemical burns or inhalation. Specialist modules for SMEs and responders shall include BMS interpretation and system monitoring. Training may use simulations and e-learning, with attendance and competency records maintained.

9.2 Drills

Progressive annual cycle (tabletop exercises in year 1 for planning review; functional simulations in year 2 for role practice; full-scale in year 3 with FRS involvement to identify gaps; corrective action plans implemented within 30 days; records maintained for audits.

10 REVIEW AND MAINTENANCE

To remain effective, the Emergency Response Plan (ERP) shall be reviewed and updated on a regular basis. A full review shall be carried out annually, following any significant incident, after material site changes, or where regulatory requirements are amended. The review shall consider changes in hazards, operations, technology, and best practice, and may involve consultation with the Fire & Rescue Service, HSA, and EPA where appropriate. Updates shall be documented and communicated to relevant personnel. Regulatory inspections may assess compliance, training records, equipment readiness, and drill performance, and any identified deficiencies shall be addressed promptly.

11 CONCLUSION

This pERP establishes a structured and coordinated framework for managing emergency events associated with the proposed Iron-Air Battery Energy Storage System (BESS) Facility, Ballynahone, Buncrana, Co. Donegal. The preliminary ERP defines clear roles and responsibilities, communication protocols, escalation procedures, and defensive response strategies appropriate to a utility-scale BESS installation. The pERP prioritises life safety, environmental protection, regulatory compliance, and coordination with external emergency services.

Through defined alert tiers, structured Incident Command procedures, environmental containment measures, cybersecurity provisions, and scheduled training and drills, the Plan provides a robust framework for prevention, preparedness, response, and recovery. Regular review and continuous improvement mechanisms ensure that the ERP remains effective, compliant, and aligned with operational and regulatory developments.

12 LIMITATIONS

This pERP has been prepared based on the information available at the time of drafting, including the proposed site layout and applicable regulatory guidance. Manufacturer technical data sheets, detailed system specifications, and large-scale test reports were not available at the time of preparation; therefore, certain assumptions have been made regarding system characteristics and hazards. This document should be considered preliminary and may require revision once detailed manufacturer information becomes available or if there are material changes to the system design, battery chemistry, layout, operational strategy, or regulatory requirements, and in line with any conditions of a planning consent
.

While the pERP provides a structured framework for emergency response, it cannot eliminate all risks associated with utility-scale energy storage systems. Effective implementation relies on appropriate training, maintenance, operational discipline, and coordination with external agencies.

Other emergency risks or external factors identified as part of the wider project risk assessment shall be managed in accordance with their respective management plans, including but not limited to the Fire Risk Management Plan, Construction Environmental Management Plan, Site Security Management Plan, Traffic Management Plan, IT Security Plan, and Operations & Maintenance Plan, as applicable (note that a number of these will be prepared post-planning).

APPENDIX A

Emergency Roles and Contact List

(Iron Air Battery Energy Storage Facility)

This appendix sets out the designated roles, responsibilities, and emergency contact details for the facility. All personnel listed below shall be trained in site-specific emergency procedures and the operational characteristics of the Battery Energy Storage System.

No.	Role	Name / Organisation	24/7 Contact	Key Responsibilities
1	**Site Owner / Operator**			Overall site governance, regulatory liaison, and activation of emergency management procedures.
2	**Emergency Response Coordinator**			Activation of ERP, coordination of site response until arrival of emergency services, liaison with regulators and responders.
3	**BMS / EMS Operator**			Continuous remote monitoring, emergency shutdown (E-Stop) activation, alarm escalation, provision of technical data to responders.
4	**On-Site Supervisor / Contractor Lead (if applicable)**			Incident reporting, evacuation coordination, implementation of first response measures during maintenance activities.
5	**Battery Subject Matter Expert (SME)**			Technical advice to FRS and Site Operator regarding battery systems, hazards, and isolation procedures.
6	**Fire & Rescue Service (FRS)**		Emergency: 999 / 112	Establish incident command, implement defensive tactics, coordinate multi-agency response, declare site safe for re-entry.
7	**Health & Safety Authority (HSA)**			Investigation under Safety, Health and Welfare at Work Act; audit and enforcement where required.
8	**Environmental Protection Agency (EPA)**			Environmental notification, oversight of remediation, waste disposal compliance, review of firewater containment measures.

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APPENDIX 7

Uisce Eireann Application Form and Confirmation of Feasibility Letter

Pre-connection enquiry form

Business developments, mixed use developments, housing developments

This form is to be filled out by applicants enquiring about the feasibility of a water and/or wastewater connection to Uisce Éireann infrastructure. If completing this form by hand, please use BLOCK CAPITALS and black ink. Please note that this is a digital PDF form and can be filled in electronically

Please refer to the **Guide to completing the pre-connection enquiry form** on page 14 of this document when completing the form.

*** Denotes mandatory/ required field. Please note, if mandatory fields are not completed the application will be returned.**

Section A | Applicant details

1 *Applicant details:

Registered company name (if applicable): FuturEnergy Ireland Limited

Trading name (if applicable): FuturEnergy Ireland Limited

Company registration number (if applicable): 683948

Parent company registered company name (if applicable):

Parent company registration number (if applicable):

If you are not a registered company/business, please provide the applicant's name:

*Contact name:

*Postal address: 27/28 Herbert Place

Dublin 2

*Eircode: D02DC97

Please provide either a landline or a mobile number

Landline: 0166985656

*Mobile:

*Email: info@futurenergyireland.ie

2 Agent details (if applicable):

The fields marked with * in this section are mandatory if using an agent

*Contact name: Trevor Byrne

Company name (if applicable): Fehily Timoney and Co

*Postal address: Core House, Pouladuff Road, Cork

*Eircode: T12D773

Please provide either a landline or a mobile number

Landline: 021 4964133

*Mobile N/A

*Email: trevor.byrne@ftco.ie

3 *Please indicate whether it is the applicant or agent who should receive future correspondence in relation to the enquiry:

Applicant | Agent ✔

Section B | Site details

4 *Site address 1 (include Site name/Building name/Building number):

Ballynahone

***Address 2** Trillick

***Address 3** Buncranna

***City/Town** Buncranna

***County** Donegal **Eircode** N/A

5 *Irish Grid co-ordinates (proposed connection point):

Eastings (X) 237330 Northings (Y) 429611

Note: Values for Eastings must be between 015,900 and 340,000. Northings, between 029,000 and 362,000
Eg. co-ordinates of GPO, O'Connell St., Dublin: E(X) 315,878 N(Y) 234,619

6 *Local Authority where proposed development is located:

Donegal County Council

7 *Has full planning permission been granted? Yes No ✔

If 'Yes', please provide the current or previous planning reference number:

8 ***Is this development affiliated with a government body/agency?** Yes ☐ No ✔

If 'Yes', please specify the body/agency:

Eg. IDA, HSE, LDA, etc.

Section C | Development details

9 ***Please outline the domestic and/or industry/business use proposed:**

Domestic:

Property type	Number of units	Property type	Number of units
House	N/A	Apartments	N/A
Duplex	N/A	Number of Apartment Blocks	N/A

Industry/business:

Property type	Number of units	Property type	Number of units
Agricultural	N/A	Brewery / Distillery	N/A
Restaurant / Café / Pub	N/A	Car Wash / Valeting	N/A
Creche	N/A	Data Centre	N/A
Fire Hydrant	N/A	Fire Station	N/A
Food Processing	N/A	Hotel Accommodation	N/A
Industrial / Manufacturing	1	Laundry / Laundrette	N/A
Office	N/A	Primary Care Centre	N/A
Residential / Nursing Care Home	N/A	Retail	N/A
School	N/A	Sports Facility	N/A
Student Accommodation	N/A	Warehouse	N/A

Other (please specify type)	Battery Energy Storage	No. of Units	1

9.1 Please provide additional details if your proposed business use are in the Food Processing, Industrial unit/ Manufacturing, Sports Facility or Other Categories.

Proposed development of a Long Duration Battery Storage and connection to 110kV Substation

9.2 Please provide the maximum expected occupancy in number of people, according to the proposed development you selected, e.g. Number of office workers, number of nursing home residents, maximum pub occupancy, number of hotel beds, number of retail workers:

N / A

10 ***Approximate start date of proposed development:**

0 1 / 0 1 / 2 0 2 5

11 ***Is the development multi-phased?** Yes No ✔

If 'Yes', application must include a master-plan identifying the development phases and the current phase number.

If 'Yes', please provide details of variations in water demand volumes and wastewater discharge loads due to phasing requirements.

12 ***Please indicate the type of connection required by ticking the appropriate box below:**

Both Water and Wastewater		Please complete both Sections D and E
Water only	✔	Please go to Section D
Wastewater only		Please go to Section E

Reason for only applying for one service (if applicable):

Fresh Water connection required for temperature control. Wastewater to be managed on site

Section D | Water connection and demand details

13 ***Is there an existing connection to public water mains at the site?** Yes ☐ No ✔

13.1 If yes, is this enquiry for an additional connection to one already installed? Yes ☐ No ☐

13.2 If yes, is this enquiry to increase the size of an existing connection? Yes ☐ No ☐

14 **Approximate date water connection is required:** 0 1 / 0 6 / 2 0 2 5

15 ***What diameter of water connection is required to service the development?** 2 5 mm

16 ***Is more than one connection required to the public infrastructure to service this development?** Yes ☐ No ✔

If 'Yes', how many? ☐☐

17 **Please indicate the business water demand (shops, offices, schools, hotels, restaurants, etc.):**

Post-development peak hour water demand	n/a	**l/s**
Post-development average hour water demand	n/a	**l/s**

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

18 **Please indicate the industrial water demand (industry-specific water requirements):**

Post-development peak hour water demand	0.4	**l/s**
Post-development average hour water demand	0.2	**l/s**

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

19 **What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?**

1 0 0 ☐☐ m

20 **What is the highest finished floor level of the proposed development above Malin Head Ordnance Datum?**

1 0 0 ☐☐ m

21 **Is on-site water storage being provided?** Yes ☐ No ✔

Please include calculations on the attached sheet provided.

22 **Are there fire flow requirements?** Yes ☐ No ✔

Additional fire flow requirements over and above those identified in Q17-18	N/A	**l/s**

Please include calculations on the attached sheet provided, and include confirmation of requirements from the Fire Authority.

23 **Do you propose to supplement your potable water supply from other sources?** Yes ☐ No ✔

If 'Yes', please indicate how you propose to supplement your potable water supply from other sources (see **Guide to completing the application form** on page 15 of this document for further details):

Section E | Wastewater connection and discharge details

24 ***Is there an existing connection to a public sewer at the site?** Yes ☐ No ✔

24.1 If yes, is this enquiry for an additional connection to the one already installed? Yes ☐ No ☐

24.2 If yes, is this enquiry to increase the size of an existing connection? Yes ☐ No ☐

25 ***Approximate date that wastewater connection is required:** ☐☐ / ☐☐ / ☐☐☐☐

26 ***What diameter of wastewater connection is required to service the development?** ☐☐☐ mm

27 ***Is more than one connection required to the public infrastructure to service this development?** Yes ☐ No ✔

If 'Yes', how many? ☐☐

28 **Please indicate the commercial wastewater hydraulic load (shops, offices, schools, hotels, restaurants, etc.):**

Post-development peak discharge		**l/s**
Post-development average discharge		**l/s**

Please include calculations on the attached sheet provided.

29 **Please indicate the industrial wastewater hydraulic load (industry-specific discharge requirements):**

Post-development peak discharge		**l/s**
Post-development average discharge		**l/s**

Please include calculations on the attached sheet provided.

30 Wastewater organic load:

Characteristic	Max concentration (mg/l)	Average concentration (mg/l)	Maximum daily load (kg/day)
Biochemical oxygen demand (BOD)			
Chemical oxygen demand (COD)			
Suspended solids (SS)			
Total nitrogen (N)			
Total phosphorus (P)			
Other			

Temperature range	
pH range	

31 *Storm water run-off will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer. In the case of such brownfield sites, please indicate if the development intends discharging surface water to the combined wastewater collection system:

Yes ☐ No ✔

If 'Yes', please give reason for discharge and comment on adequacy of SUDS/attenuation measures proposed.

Please submit detailed calculations on discharge volumes, peak flows and attenuation volumes with this application

32 *Do you propose to pump the wastewater? Yes ☐ No ✔

If 'Yes', please include justification for your pumped solution with this application.

33 What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum? ☐☐☐☐☐ m

34 What is the lowest finished floor level on site above Malin Head Ordnance Datum? ☐☐☐☐☐ m

35 What is the proposed invert level of the pipe exiting the property to the public road? ☐☐☐☐☐ m

Section F | Supporting documentation

Please provide the following additional information (all mandatory):

> Site location map: A site location map to a scale of 1:1000, which clearly identifies the land or structure to which the enquiry relates. The map shall include the following details: ✔

i. The scale shall be clearly indicated on the map.

ii. The boundaries shall be delineated in red.

iii. The site co-ordinates shall be marked on the site location map.

> Details of planning and development exemptions (if applicable). ✔

> Calculations (calculation sheets provided below). ✔

> Site layout map to a scale of 1:500 showing layout of proposed development, water network and wastewater network layouts, additional water/wastewater infrastructure if proposed, connection points to Uisce Éireann infrastructure. ✔

> Conceptual design of the connection asset from the proposed development to the existing Uisce Éireann infrastructure, including service conflicts, gradients, pipe sizes and invert levels. ✔

> Any other information that might help Uisce Éireann assess this pre-connection enquiry. ✔

Section G | Declaration

I/We hereby make this application to Uisce Éireann for a water and/or wastewater connection as detailed on this form.

I/We understand that any alterations made to this application must be declared to Uisce Éireann.

The details that I/we have given with this application are accurate.

I/We have enclosed all the necessary supporting documentation.

Any personal data you provide will be stored and processed by Uisce Éireann and may be transferred to third parties for the purposes of the water and/or wastewater connection process. I hereby give consent to Uisce Éireann to store and process my personal data and to transfer my personal data to third parties, if required, for the purposes of the connection process.

If you wish to revoke consent at any time or wish to see Uisce Éireann's full Data Protection Notice, please see **https://www.water.ie/privacy-notice/**

Signature: | Date: 0 8 / 0 2 / 2 0 2 4

Your full name (in BLOCK CAPITALS):

T	R	E	V	O	R		B	Y	R	N	E																		

Uisce Éireann will carry out a formal assessment based on the information provided on this form. Any future connection offer made by Uisce Éireann will be based on the information that has been provided here.

Please submit the completed form to **newconnections@water.ie** or alternatively, post to:

Uisce Éireann
PO Box 860
South City Delivery Office
Cork City

Please note that if you are sending us your application form and any associated documentation by email, the maximum file size that we can receive in any one email is 35MB.

Please note, if mandatory fields are not completed the application will be returned.

Uisce Éireann is subject to the provisions of the Freedom of Information Act 2014 ("FOIA") and the codes of practice issued under FOIA as may be amended, updated or replaced from time to time. The FOIA enables members of the public to obtain access to records held by public bodies subject to certain exemptions such as where the requested records may not be released, for example to protect another individual's privacy rights or to protect commercially sensitive information. Please clearly label any document or part thereof which contains commercially sensitive information. Uisce Éireann accepts no responsibility for any loss or damage arising as a result of its processing of freedom of information requests.

Calculations

Water demand

See notes at back of form

On-site storage

See notes at back of form

Fire flow requirements

See notes at back of form

Foul wastewater discharge

See notes at back of form

See notes at back of form

Guide to completing the pre-connection enquiry form

This form should be completed by applicants enquiring about the feasibility of a water and/or wastewater connection to Uisce Éireann infrastructure.

The Uisce Éireann Codes of Practice are available at **www.water.ie** for reference.

Section A | Applicant Details

Question 1: This question requires the applicant or company enquiring about the feasibility of a connection to identify themselves, their postal address, and to provide their contact details.

Question 2: If the applicant has employed a consulting engineer or an agent to manage the enquiry on their behalf, the agent's address and contact details should be recorded here.

Question 3: Please indicate whether it is the applicant or the agent who should receive future correspondence in relation to the enquiry.

Section B | Site details

Question 4: This is the address of the site requiring the water/wastewater service connection and for which this enquiry is being made.

Question 5: Please provide the Irish Grid co-ordinates of the proposed site. Irish grid positions on maps are expressed in two dimensions as Eastings (E or X) and Northings (N or Y) relative to an origin. You will find these coordinates on your Ordnance Survey map which is required to be submitted with an application.

Question 6: Please identify the Local Authority that is or will be dealing with your planning application, for example Cork City Council.

Question 7: Please indicate if planning permission has been granted for this application, and if so, please provide the planning permission reference number.

Question 8: Please indicate if this development is affiliated with a government body/agency, and if so, specify

Section C | Development details

Question 9: Please specify the number of different property/premises types by filling in the tables provided.

Question 9.1: Please provide additional details if your proposed business use are in the Food Processing, Industrial unit/ Manufacturing, Sports Facility or Other Categories.

Question 9.2: Please indicate the maximum expected occupancy in numbers of people according to the proposed development you selected.

Question 10: Please indicate the approximate commencement date of works on the development.

Question 11: Please indicate if a phased building approach is to be adopted when developing the site. If so, please provide details of the phase master-plan and the proposed variation in water demand/wastewater discharge as a result of the phasing of the development.

Question 12: Please indicate the type of connection required by ticking the appropriate box and proceed to complete the appropriate section or sections.

Section D | Water connection and demand details

Question 13: Please indicate if a water connection already exists for this site.

Question 13.1: Please indicate if this enquiry concerns an additional connection to one already installed on the site.

Question 13.2: Please indicate if you are proposing to upgrade the water connection to facilitate an increase in water demand. Uisce Éireann will determine what impact this will have on our infrastructure.

Question 14: Please indicate the approximate date that the proposed connection to the water infrastructure will be required.

Question 15: Please indicate what diameter of water connection is required to service this development.

Question 16: Please indicate if more than one connection is required to service this development. Please note that the connection size provided may be used to determine the connection charge.

Question 17: If this connection enquiry concerns a business premises, please provide calculations for the water demand and include your calculations on the calculation sheet provided. Business premises include shops, offices, hotels, schools, etc. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Uisce Éireann Codes of Practice for Water Infrastructure.

Question 18: If this connection enquiry is for an industrial premises, please calculate the water demand and include your calculations on the calculation sheet provided. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak demand for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Uisce Éireann Codes of Practice for Water Infrastructure.

Question 19: Please specify the ground level at the location where connection to the public water mains will be made. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 20: Please specify the highest finished floor level on site. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 21: If storage is required, water storage capacity of 24-hour water demand must usually be provided at the proposed site. In some cases, 24-hour storage capacity may not be required, for example 24-hour storage for a domestic house would be provided in an attic storage tank. Please calculate the 24-hour water storage requirements and include your calculations on the attached sheet provided. Please also confirm that on-site storage is being provided by ticking the appropriate box.

Question 22: The water supply system shall be designed and constructed to reliably convey the water flows that are required of the development including fire flow requirements by the Fire Authority. The Fire Authority will provide the requirement for fire flow rates that the water supply system will have to carry. Please note that while flows in excess of your required demand may be achieved in the Uisce Éireann network and could be utilised in the event of a fire, Uisce Éireann cannot guarantee a flow rate to meet your fire flow requirement. To guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development. Please include your calculations on the attached sheet provided, and further provide confirmation of the Fire Authority requirements.

Question 23: Please identify proposed additional water supply sources, that is, do you intend to connect to the public water mains or the public mains and supplement from other sources? If supplementing public water supply with a supply from another source, please provide details as to how the potable water supply is to be protected from cross contamination at the premises.

Section E | Wastewater connection and discharge details

Question 24: Please indicate if a wastewater connection to a public sewer already exists for this site.

Question 24.1: Please indicate if this enquiry relates to an additional wastewater connection to one already installed.

Question 24.2: Please indicate if you are proposing to upgrade the wastewater connection to facilitate an increased discharge. Uisce Éireann will determine what impact this will have on our infrastructure.

Question 25: Please specify the approximate date that the proposed connection to the wastewater infrastructure will be required.

Question 26: Please indicate what diameter of wastewater connection is required to service this development.

Question 27: Please indicate if more than one connection is required to service this development. Please indicate number required.

Question 28: If this enquiry relates to a business premises, please provide calculations for the wastewater discharge and include your calculations on the attached sheet provided. Business premises include shops, offices, hotels, schools, etc. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Uisce Éireann Codes of Practice for Wastewater Infrastructure.

Question 29: If this enquiry relates to an industrial premises, please provide calculations for the wastewater discharge and include your calculations on the calculation sheet provided. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak discharge for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Uisce Éireann Codes of Practice for Wastewater Infrastructure.

Question 30: Please specify the maximum and average concentrations and the maximum daily load of each of the wastewater characteristics listed in the wastewater organic load table (if not domestic effluent), and also specify if any other significant concentrations are expected in the effluent. Please complete the table and provide additional supporting documentation if relevant. Note that the concentration shall be in mg/l and the load shall be in kg/day. Note that for business premises (shops, offices, schools, hotels, etc.) for which only domestic effluent will be discharged (excluding discharge from canteens/ restaurants which would require a Trade Effluent Discharge licence), there is no need to complete this question.

Question 31: In exceptional circumstances, such as brownfield sites, where the only practical outlet for storm/ surface water is to a combined sewer, Uisce Éireann will consider permitting a restricted attenuated flow to the combined sewer. Storm/surface water will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer and the applicant must demonstrate how the storm/surface water flow from the proposed site is minimised using sustainable urban drainage system (SUDS). This type of connection will only be considered on a case by case basis. Please advise if the proposed development intends discharging surface water to the combined wastewater collection system.

Question 32: Please specify if the development needs to pump its wastewater discharge to gain access to Uisce Éireann infrastructure.

Question 33: Please specify the ground level at the location where connection to the public sewer will be made. This is required to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 34: Please specify the lowest floor level of the proposed development. This is required in order to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 35: Please specify the proposed invert level of the pipe exiting the property to the public road.

Section F | Supporting documentation

Please provide additional information as listed.

Section G | Declaration

Please review the declaration, sign, and return the completed application form to Uisce Éireann by email or by post using the contact details provided in Section G.

Notes

The purpose of this preliminary connection application is to support a planning application for a new type of long duration energy storage facility to support the penetration of renewable energy generation capacity on the national grid. The proposed technology requires a fresh water supply to assist with the regulation of the battery technology which has to date not been used in Ireland.

FuturEnergy Ireland wishes to commence pre-application consultation with An Bord Pleanála (ABP) under Section 182E of the Planning and Development Act 2000, (as amended).

The proposed LDES Facility is located approximately 150 meters east of the Trillick 110 kV Substation. It is envisioned that there will be interaction between the existing network substation and the proposed LDES Facility as the connection of the proposed LDES Facility will require the construction of a transformer compound adjacent to the network substation to facilitate an 'Under the Fence' (UTF) grid connection to the national grid.

The Site's topography slopes gently from west to east. The Site's natural drainage pattern flows into a tributary of the Owenkillew River, which runs adjacent to the eastern edge of the Site flowing from south to north eventually passing through Buncrana Town to the sea. The coastal area where the river meets the sea is part of the Lough Swilly SAC.

A small country road called Gransha Road runs directly by the south edge of the Site. The folio the site is located on is divided by a road called the Drum Road which runs in a north-south direction. There is a requirement for a freshwater connection with flow requirements equivalent to that of a domestic dwelling. It is proposed to construct an onsite water storage tank with capacity to manage internal water distribution throughout the facility.

The on-site water system uses demineralized water to replace water lost during operation due to evaporation. More precise project-specific loss rates will be calculated by the technology supplier during the project detailed design phase if planning permission is granted.

With respect to wastewater treatment, the site will utilize a prepackaged and containerized treatment system with discharge to an on-site percolation area. Due to the nature of the system design, the volume of wastewater produced by the system is expected to be low.
Battery storage units will be fitted with individual fire suppression systems with additional water storage provided on site in case of fire.

Notes

CONFIRMATION OF FEASIBILITY

Trevor Byrne

Fehily Timony and Co.
Core House
Pouladuff Road
Co. Cork
T12D773

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

13 May 2024

Our Ref: CDS24001367 Pre-Connection Enquiry
Ballynahone, Trillick, Buncranna, Donegal

Dear Applicant/Agent,

We have completed the review of the Pre-Connection Enquiry.

Uisce Éireann has reviewed the pre-connection enquiry in relation to a Water connection for a Business Connection of 1 unit(s) at Ballynahone, Trillick, Buncranna, Donegal, (the **Development)**.

Based upon the details provided we can advise the following regarding connecting to the networks;

- **Water Connection**
  - **Feasible without infrastructure upgrade by Irish Water**
  - In order to be able to supply the proposed development, the following requirements are needed:

    - Approx. 1.4 km of new 50mm ID connection from the existing 50mm HDPE watermain.
    - A new Booster PS would be required to supply the development;
    - On site storage for fireflow.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Uisce Éireann infrastructure. Before the Development can be connected to our network(s) you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.

As the network capacity changes constantly, this review is only valid at the time of its completion. As soon as planning permission has been granted for the Development, a completed connection application should be submitted. The connection application is available at www.water.ie/connections/get-connected/

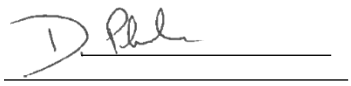
Where can you find more information?

- **Section A -** What is important to know?
- **Section B -** Details of Uisce Éireann's Network(s)

This letter is issued to provide information about the current feasibility of the proposed connection(s) to Uisce Éireann's network(s). This is not a connection offer and capacity in Uisce Éireann's network(s) may only be secured by entering into a connection agreement with Uisce Éireann.

For any further information, visit **www.water.ie/connections**, **email newconnections@water.ie** or contact 1800 278 278**.**

Yours sincerely,



Dermot Phelan
Connections Delivery Manager

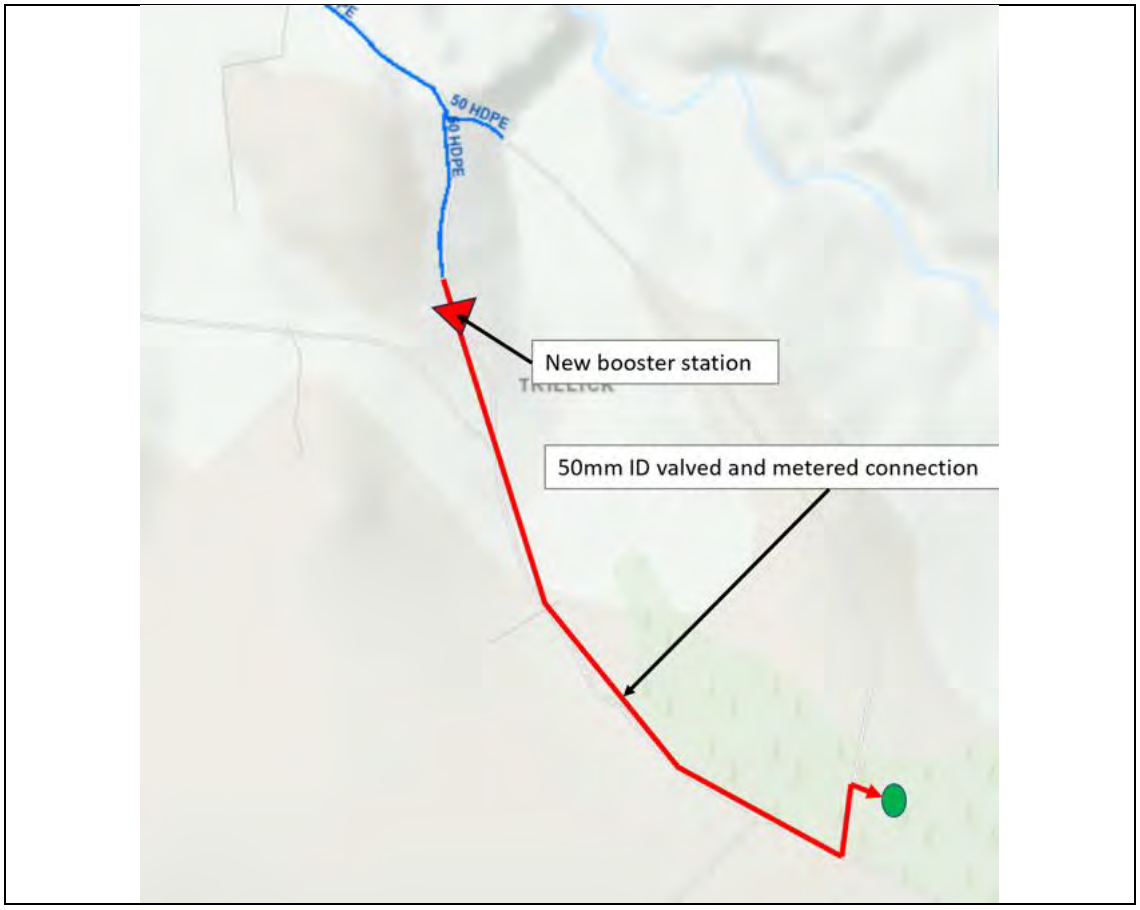
Section A - What is important to know?

What is important to know?	Why is this important?
Do you need a contract to connect?	• Yes, a contract is required to connect. This letter does not constitute a contract or an offer in whole or in part to provide a connection to Uisce Éireann's network(s). • Before the Development can connect to Uisce Éireann's network(s), you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.
When should I submit a Connection Application?	• A connection application should only be submitted after planning permission has been granted.
Where can I find information on connection charges?	• Uisce Éireann connection charges can be found at: https://www.water.ie/connections/information/charges/
Who will carry out the connection work?	• All works to Uisce Éireann's network(s), including works in the public space, must be carried out by Uisce Éireann*. *Where a Developer has been granted specific permission and has been issued a connection offer for Self-Lay in the Public Road/Area, they may complete the relevant connection works
Fire flow Requirements	• The Confirmation of Feasibility does not extend to fire flow requirements for the Development. Fire flow requirements are a matter for the Developer to determine. • **What to do?** - Contact the relevant Local Fire Authority
Plan for disposal of storm water	• The Confirmation of Feasibility does not extend to the management or disposal of storm water or ground waters. • **What to do?** - Contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges.
Where do I find details of Uisce Éireann's network(s)?	• Requests for maps showing Uisce Éireann's network(s) can be submitted to: datarequests@water.ie

What are the design requirements for the connection(s)?	• The design and construction of the Water pipes and related infrastructure to be installed in this Development shall comply with ***the Uisce Éireann Connections and Developer Services Standard Details and Codes of Practice,*** available at www.water.ie/connections
Trade Effluent Licensing	• Any person discharging trade effluent** to a sewer, must have a Trade Effluent Licence issued pursuant to section 16 of the Local Government (Water Pollution) Act, 1977 (as amended). • More information and an application form for a Trade Effluent License can be found at the following link: https://www.water.ie/business/trade-effluent/about/ **trade effluent is defined in the Local Government (Water Pollution) Act, 1977 (as amended)

Section B – Details of Uisce Éireann's Network(s)

The map included below outlines the current Uisce Éireann infrastructure adjacent the Development: To access Uisce Éireann Maps email datarequests@water.ie



Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

Note: The information provided on the included maps as to the position of Uisce Éireann's underground network(s) is provided as a general guide only. The information is based on the best available information provided by each Local Authority in Ireland to Uisce Éireann.

Whilst every care has been taken in respect of the information on Uisce Éireann's network(s), Uisce Éireann assumes no responsibility for and gives no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided, nor does it accept any liability whatsoever arising from or out of any errors or omissions. This information should not be solely relied upon in the event of excavations or any other works being carried out in the vicinity of Uisce Éireann's underground network(s). The onus is on the parties carrying out excavations or any other works to ensure the exact location of Uisce Éireann's underground network(s) is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

APPENDIX 8

EIA Screening Report

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

BALLYNAHONE LDES
REG. REF. 24/321384 / ACP REF. 321384-24

EIA SCREENING REPORT

Prepared for:

FuturEnergy Ireland Development DAC

Date: **March 2026**

Document No:

P25288-FT-XX-XX-RP-PL-0002

Unit 3/4, Northwood House, Northwood Crescent,
Northwood, Dublin, D09 X899, Ireland

T: +353 1 658 3500 | E: info@ftco.ie

CORK | DUBLIN | CARLOW

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BALLYNAHONE LDES

EIA SCREENING REPORT

REVISION CONTROL TABLE, CLIENT, KEYWORDS AND ABSTRACT

User is responsible for Checking the Revision Status of This Document

Rev. No.	Description of Changes	Prepared by:	Checked by:	Approved by:	Date:
0	Final	IW/CC/NSC	CA/JH	JH	25/03/2026

Client: FuturEnergy Ireland Development DAC.

Keywords: EIA Screening, Request for Further Information, Ballynahone, Long Duration Energy Storage, Donegal County Council.

Abstract: Fehily Timoney and Company is pleased to submit this revised EIA Screening Report having been prepared in consideration of the proposed Ballynahone Long Duration Energy Storage in County Donegal.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

1.1 Introduction

This EIA Screening Report reviews the proposed development against the requirements of the EIA Directive.

The requirements for EIA of various types of development are transposed into Irish legislation under the Planning and Development Act, 2000 (as amended), and the Planning and Development Regulations, 2001 (as amended).The assessment is carried out having regard to the criteria set out in Schedule 7 and in accordance with the information required to be provided in Schedule 7A of the Planning and Development Regulations 2001 (as amended), and in accordance with the EPA (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) and other guidance documents as set out in Section 3.4.

This EIA Screening Report should be read in conjunction with the planning and environmental assessment/report submitted with the original application

2. PROJECT DESCRIPTION

2.1 Description of Project

FuturEnergy Ireland Development DAC (the Applicant) intends to develop a Long Duration Energy Storage (LDES) Facility in the townland of Ballynahone, Co. Donegal.

The purpose of the LDES Facility will be to provide long duration energy storage to support the penetration of renewable energy generation onto the national grid. The Project includes an 'under the fence' (UTF) transformer compound adjacent to the existing Trillick 110 kV network sub-station. The transformer compound (hereunder referred to as the 'UTF Transformer Compound') is required to enable the connection of the LDES Facility to the national grid.

2.2 Site Context

The application site is located within the townland of Ballynahone, near the town of Buncrana Co. Donegal, adjacent to the Trillick 110 kV Substation. 'The Drum' local road runs through the site, with the location of the proposed UTF Transformer Compound to the west and the proposed energy storage compound to the east.

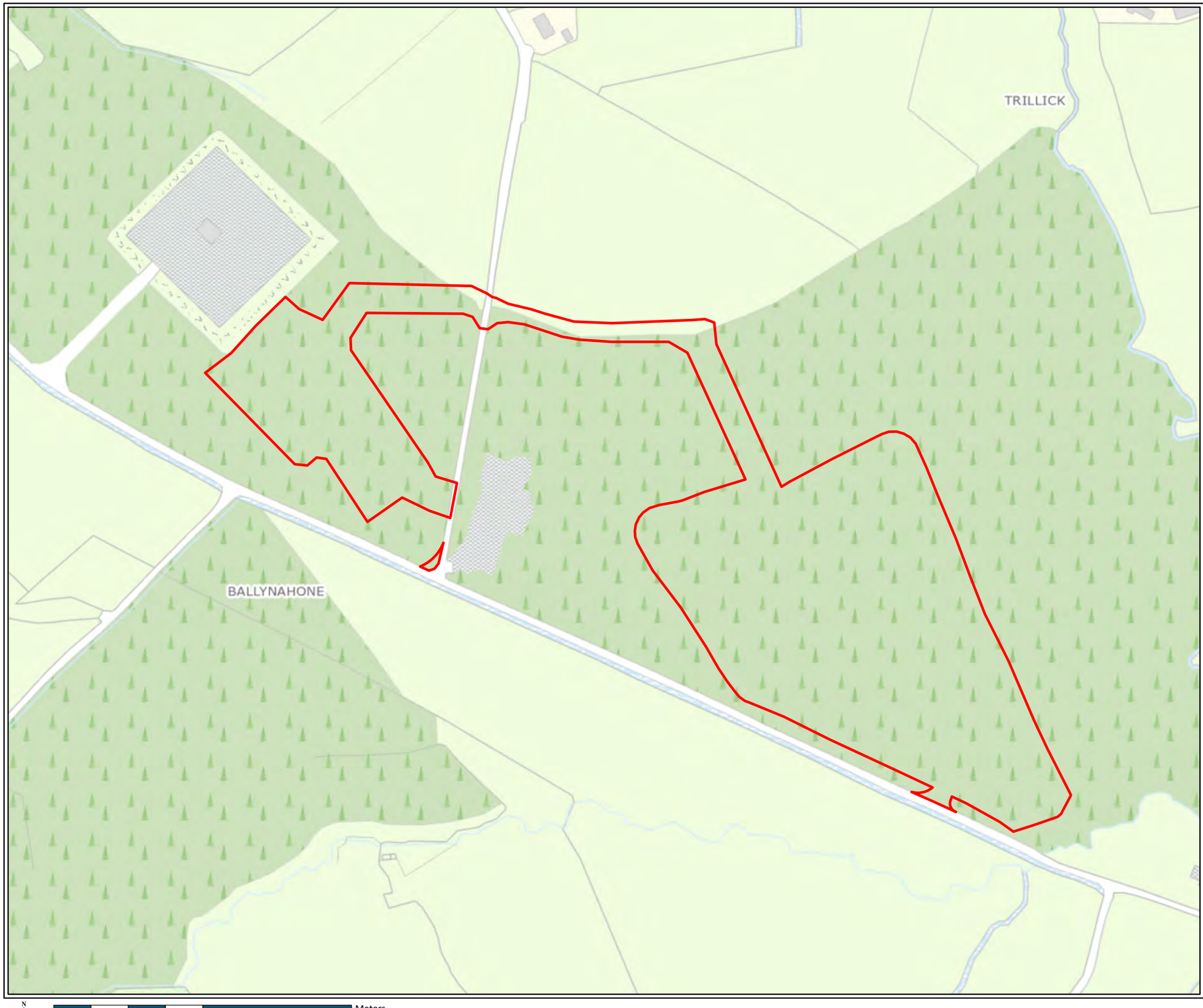
The surrounding land uses are mostly farmland and forestry with inland peat bogs located to the east of the site. The site contains semi-mature coniferous forestry plantation. There are a number of one-off rural dwellings located near the site, in addition to a farm/construction yard and a gun club.

Topography of the site slopes gently downwards from west to east. The Mill River runs adjacent to the eastern edge of the site flowing from south to north eventually passing through Buncrana to the sea.

The site is well linked by road to the nearby town of Buncrana.

Figure 1 below shows the location of the site.

Path: R:\Map Production\2025\P25-288\Workspaces\P25_288_Figures\P25_288_Figures.aprx



Legend

Proposed Development Boundary

N
W E
S

0 50 100 200 Meters

TITLE: Site Location			
PROJECT: Ballynahone Long Duration Battery Storage Planning and Environmental Services			
FIGURE NO:	1		
CLIENT:	FuturEnergy Ireland		
SCALE:	1:2,500	**REVISION:**	0
DATE:	11/03/2026	**PAGE SIZE:**	A3

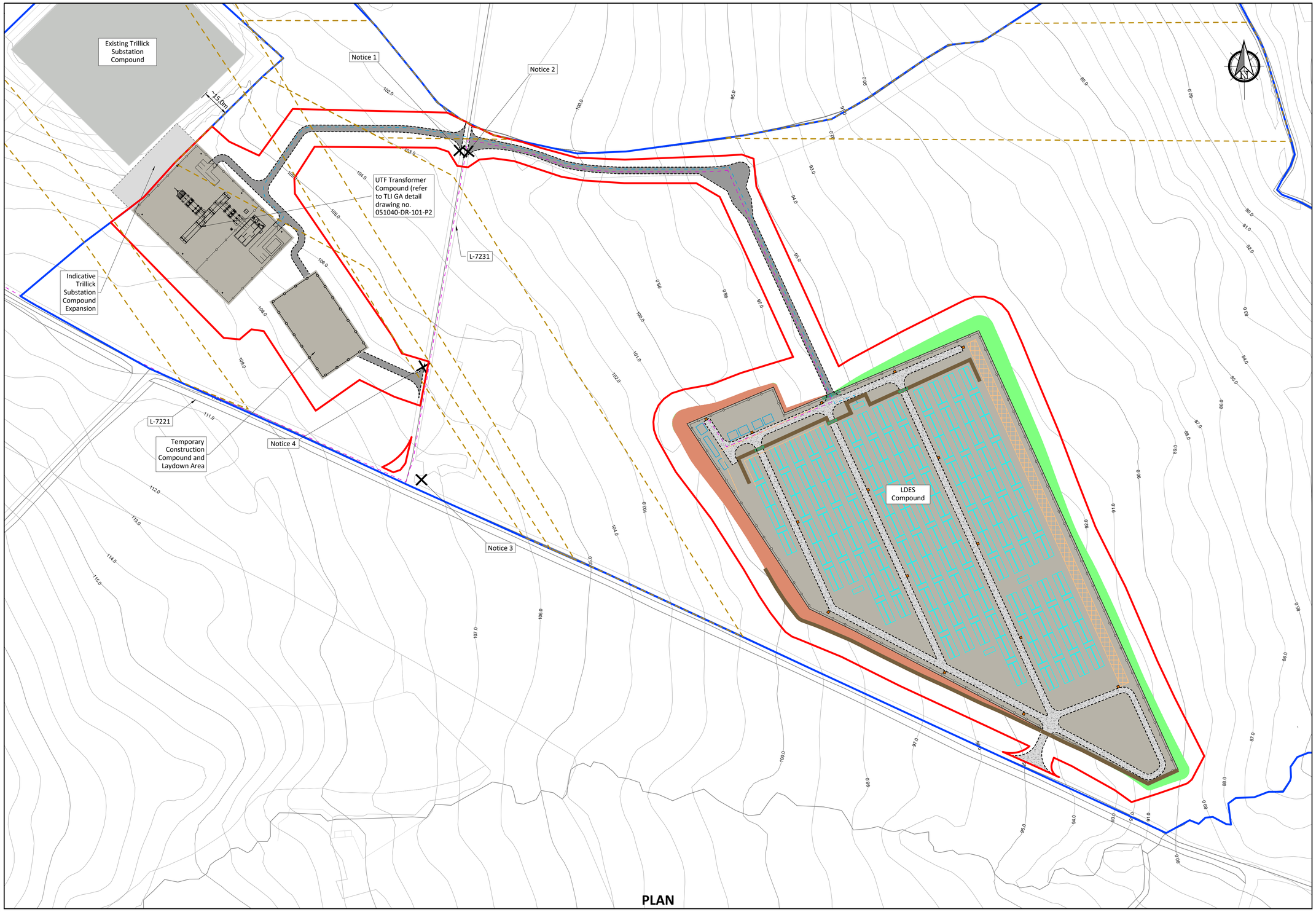
FEHILY TIMONEY
Cork | Dublin | Carlow
www.fehilytimoney.ie

2.3 Proposed Development

The proposed development, on an overall site of c.5.8 hectares, comprises the following:

- Long Duration Energy Storage (LDES) Compound with a total surface area of c. 2.9 Ha containing 248 no. battery energy storage units in the form of metal shipping containers [approximately 12.2 m (L) x 2.6 m (W) and 2.9 m (H) each] and associated ancillary control and ventilation equipment;
- Installation of an onsite transformer compound (c.3,600 sq m) to facilitate an under-the fence connection to the adjacent Trillick 110kV substation. The transformer compound will include a control building of c.27 sq m, a 110 kV transformer, associated electrical equipment, and an up to 18 m high lightning protection monopole mast;
- A temporary construction compound with a total surface area of c. 1,500sq m.
- c. 515m of new and upgraded access tracks;
- 3 no. entrances from the L-7231 public road comprising the upgrade of 1 no. existing entrance and creation of 1 no. new permanent access and 1 no. new temporary access for the construction and operation of the facility;
- 1 no. entrance from the L-7221 public road for emergency vehicle access only;
- 4 no. water tanks for the purpose of static fire water supply;
- Underground electrical and communications cabling between the proposed LDES compound and the proposed on-site transformer compound which will cross under the L-7231 public road;
- Security lighting;
- Pole mounted CCTV and communications mast;
- On-site freshwater storage tank including fresh water treatment unit in the form of a metal shipping container;
- On-site drainage system and associated vegetated attenuation pond;
- A storage container in the form of a metal shipping container;
- Sound reflective barriers to a height of 4 m;
- Security fencing and gates;
- All associated ancillary site development, services and clearance works including tree felling of c.4.7 Ha of conifer plantation, landscaping and planting.

Figure 2 below shows the site layout.



LEGEND:

- PROPOSED DEVELOPMENT BOUNDARY
- PROPERTY BOUNDARY
- BATTERY STORAGE UNIT
- ACCESS TRACK
- HARDSTANDING SURFACE
- EARTHWORKS - CUTTING
- EARTHWORKS - FILL
- SECURITY FENCE
- AREA KEPT CLEAR FOR FIRE TENDER ACCESS
- WATER CONNECTION
- BURIED ELECTRICAL CABLE
- EXISTING BURDEN/WAYLEAVE
- SOUND REFLECTIVE BARRIER
- XXX.XXX FINISHED SURFACE LEVEL
- EXISTING GROUND CONTOUR - MAJOR
- EXISTING GROUND CONTOUR - MINOR
- LIGHTING POLE
- SITE NOTICE LOCATIONS

NOTES:

1. For information purposes only, not for construction.
2. Coordinates presented in ITM.
3. All dimensions in meters unless otherwise stated.
4. For proposed landscaping and planting please refer to drawing ref. LD.BLLNHNE 1.1 - Landscape Plan.

PLAN

Scale 1:1000

0m 10m 20m 30m 40m 50m 60m 70m 80m 90m 100m

Scale 1:1000

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Rev.	Description	App By	Date
P01	FOR PLANNING	JH	19.09.24
P02	FOR FURTHER INFORMATION	JH	05.12.25

PROJECT
BALLYNAHONE LONG DURATION ENERGY STORAGE

CLIENT
FUTURENERGY IRELAND DEVELOPMENT DAC

SHEET
SITE LAYOUT PLAN

Date 19.09.24
Project number P23-117
Scale (@ A1-) 1:1000
Drawn by POR
Drawing Number P23-117-0100-0003
Rev P02
Checked by TB

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24 March 2026

3. EIA LEGISLATION

3.1 EIA Legislative Background

The first test is to examine whether the project is a type that is prescribed in the EIA Directive, as transposed into Irish law via the Planning & Development Regulations 2001 (as amended) ('the Regulations'). If a project is not of a type that is included in the Regulations, then there is no statutory requirement for it to be the subject of an EIA.

The European Union Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment, requires member states to ensure that a competent authority carries out an assessment of the environmental impacts of certain types of projects, as listed in the Directive, prior to development consent being given for the project.

The EIA Directive requires that:

> *"in order to ensure a high level of protection of the environment and human health, screening procedures and EIA assessments should take account of the impact of the whole project in question, including where relevant, its subsurface and underground, during the construction, operational and, where relevant demolition phases."*

The requirements for the EIA of various types of development are transposed into Irish legislation under the Planning and Development Act, 2000 (as amended), and the Planning and Development Regulations, 2001 (as amended).

Schedule 5, Part 1 of the Planning Regulations includes a list of projects which are subject to EIA based on their type. Part 2 of the same schedule includes a list of projects which by reason of scale also fall into the EIA category, for example under Part 10 - Infrastructure Projects Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere fall into Part 2.

Schedule 5: Part 2 of the P&D Regulations includes a section relating to 'sub-threshold' (discretionary) EIA:

> *"Any project listed in this Part which does not exceed a quantity, area or other limit specified in this Part in respect of the relevant class of development, but which would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7."*

Any project listed in Schedule 5 Part 2 which does not exceed a quantity, area or other limit (e.g. 10 hectares of a built-up area), should be subject to EIA where the project would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7 of the Regulations.

3.1.1 EIA Project Types

Below we review the LDES facility against the energy categories and potentially other relevant categories of development contained in Schedule 5 of the Planning & Development Regulations 2001.

It is important to re-iterate that if a Project does not fall into a category listed in Part 1 or 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended, recent High Court decisions, Sweetman v an Bord Pleanála (IGP Solar) [2020] IEHC 39 confirms that EIA cannot be required for that project.

3.2 Project Categories

Table 3-1: Project Categories

Category	Assessment
Schedule 5 Part 2 3.(b) - "Industrial installations for carrying gas, steam and hot water with a potential heat output of 300 megawatts or more, or transmission of electrical energy by overhead cables not included in Part 1 of this Schedule, where the voltage would be 200 kilovolts or more."	The proposed development for a Long Duration Energy Storage facility does not fall into this category.
Schedule 5 Part 2 3.(h) - *"Installations for hydroelectric energy production with an output of 20 megawatts or more, or where the new or extended superficial area of water impounded would be 30 hectares or more, or where there would be a 30 per cent change in the maximum, minimum or mean flows in the main river channel."*	The proposed development for a Long Duration Energy Storage facility does not fall into this category.
Schedule 5 Part 2 3.(i) - *"Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts."*	The proposed development for a Long Duration Energy Storage facility does not fall into this category.
Schedule 5 Part 2 1.(a) - *"Projects for the restructuring of rural land holdings, undertaken as part of a wider proposed development, and not as an agricultural activity that must comply with the European Communities (Environmental Impact Assessment) (Agriculture) Regulations 2011, where the length of field boundary to be removed is above 4 kilometres, or where re-contouring is above 5 hectares, or where the area of lands to be restructured by removal of field boundaries is above 50 hectares."*	The project does not reorganise, consolidate or change the boundaries of agricultural land parcels. The site and wider area is currently under commercial forestry. This category is not relevant to the proposed development.

Category	Assessment
Schedule 5 Part 2 1.(d)(iii) - *"Deforestation for the purpose of conversion to another type of land use, where the area to be deforested would be greater than 10 hectares of natural woodlands or 70 hectares of conifer forest."*	Whilst the proposed development does include the removal of forestry, this is commercial conifer forestry and not natural woodland forestry. The quantum of conifer forestry to be removed is approximately 4.7 hectares which is considerably below the 70 hectares of conifer forestry which would warrant a mandatory EIAR.
Schedule 5 Part 2 10.(dd) - "All private roads which would exceed 2000 metres in length."	The development shall include c. 515m of new and upgraded access track. It is therefore below this threshold. In Cummins and Others v An Coimisiún Pleanála [2025] IEHC 52. The High Court rejected the argument that internal gravel access tracks for a solar farm development should be classified as *"private roads"* under the Planning and Development Regulations 2021. Consequently, access tracks associated with the Energy Storage facility do not trigger a mandatory or subthreshold EIA.

Based on the above the only category that is relevant to the project is Schedule 5 Part 2 1.(Category (d)(iii), which refers to:

> *"Deforestation for the purpose of conversion to another type of land use, where the area to be deforested would be greater than 10 hectares of natural woodlands or 70 hectares of conifer forest."*

As noted in Table 1-1 above, c. 4.7 hectares of forestry is proposed to be removed, however the subject site is in use as a commercial conifer forestry rather than natural woodlands. The proposed quantum of felling is approximately 6.7% of the quantum of conifer forestry to be removed before triggering the requirement for a mandatory EIA.

Whilst the quantum of deforestation is significantly below the threshold, notwithstanding this the project falls into the EIAR category and should be considered for sub-threshold assessment pursuant to Category 15 of the Regulations and therefore below we carry carryout a Schedule 7 assessment of the development.

3.3 Sub-Threshold EIA Screening

Schedule 7 of the Planning and Development Regulations 2001 (as amended) is utilised for the purposes of assessing whether a proposed development would or would not be likely to have significant effects on the environment. The criteria in Schedule 7 is in accordance with Annex III of the 2014 Directive 2014/52/EU:

Schedule 7A of the Planning and Development Regulations 2001 (as amended), lists the information to be provided for screening sub-threshold development for EIA.

The assessment is carried out having regard to the criteria set out in Schedule 7 and in accordance with the information required to be provided in Schedule 7A of the Planning and Development Regulations 2001 (as amended), and in accordance with the EPA (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) and other guidance documents as set out in Section 3.4 below.

In completing this screening assessment regard has also been had to EIA Screening Guidelines contained in the Office of the Planning Regulator's Practice Note PN02 Environmental Impact Assessment Screening. The EIA Screening should be read in conjunction with the comprehensive Planning 7 Environmental Report submitted with the Planning Application.

3.4 EIA Screening Guidelines

In order to assist the Competent Authority in their assessment, this report has been structured so as to present the information required under Schedule 7A against the criteria set out in Schedule 7.

This assessment was undertaken having regard to the following guidance:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (EPA, 2022);
- Guidance on EIA Screening (Directive 2011/92/EU as amended by 2014/52/EU), European Commission, 2017;
- Environmental Impact Assessment (EIA) Guidance for Consent Authorities regarding Sub-threshold Development DEHLG (updated December 2020);
- Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2008);
- Office of the Planning Regulator Practice Note (PN02) 'Environmental Impact Assessment Screening' (OPR, 2021); and

4. ASSESSMENT AGAINST SCHEDULE 7 CRITERIA

The aim of this section is to address likely impacts on the environment at all stages of the Project i.e. construction, operation and decommissioning. The following tables present the EIA Screening based on the criteria contained in Schedule 7 of the P&D Regulations and are grouped under the following headings:

- Characteristics of the Proposed scheme - Table 3-1
- Location of the Proposed scheme - Table 3-2
- Types and Characteristics of Potential Impact - Table 3-3

Table 4-1: Characteristics of the Proposed Scheme

Criterion	If relevant, briefly describe the characteristics of the development (i.e. the nature and extent):
The size and design of the whole of the proposed development (including any demolition works).	The proposed development covers an overall site area of approximately 5.8 hectares. It comprises a Long Duration Energy Storage Compound of approximately 2.9 hectares housing 248 battery energy storage units in metal shipping containers, alongside a 3,600 square metre transformer compound. The design includes an up to 18-metre high lightning protection monopole mast, a temporary construction compound of approximately 1,500 square metres, and 515 metres of new and upgraded access tracks.
Other existing or permitted projects (including under other legislation that is subject to EIA) that could give rise to cumulative effects:	An assessment of existing and proposed developments that could give rise to cumulative impacts has been carried out. A planning search was carried out with regards to planning applications and permissions on the An Coimisiún Pleanála and Donegal County Council Planning websites within 5 km of the application site, with the most recent search having been carried out on 24th March 2026. These have been reviewed with a view to their potential for cumulative effects in combination with the proposed development. All applications were found to be for minor developments such as one off rural housing, residential extensions / change of use, agricultural practices / outbuildings, one off meteorological masts or small scale residential developments. In terms of large scale developments of relevance to the proposed development, there are a 3 no. planning permissions for wind development across County Donegal; the closest permitted wind farm is Glenard Wind Farm (ACP Ref. 312659) located c. 3.6 km to the east of the eastern site boundary. The closest operational wind farm is Sorne Hill, located c. 4.2 km northeast of the northern site boundary. The Carrowglen Wind Farm (permitted at appeal stage under ACP Ref. 305861-19) is located approximately 3.85 km east of the eastern site boundary. Due to the distance between the sites, cumulative effects are not likely to occur. Works in the public road will be carried out by Uisce Eireann for the water supply connection without causing significant cumulative impacts.

Criterion	If relevant, briefly describe the characteristics of the development (i.e. the nature and extent):
Use of natural resources, in particular land, soil, water and biodiversity:	The construction phase will involve the use of fossil fuels for construction machinery and will require the felling of approximately 4.7 hectares of commercial coniferous forestry. The operational phase will utilise water from a public supply, a confirmation of feasibility has been received from Uisce Eireann confirming the feasibility of this connection to the public water supply. 4 no. dedicated fire water storage tanks have been included in the design to supplement the original mains fed tank. These tanks shall be reserved exclusively for storage of fire water throughout the lifetime of the development. Imported granular material will be required for the proposed development. This will place a demand on local aggregate extraction facilities. The proposed development will involve movement of existing Peat and Glacial Till deposits during the construction phase of the proposed development. This will be done through excavation and filling and material deposition. Temporary stockpiles (not exceeding 2m in height) of material will be located adjacent to the excavation areas prior to reinstatement, however no long-term stockpiles of material will remain after construction. Temporary stockpiles will be shaped and sealed to prevent the ingress of water from rainfall. The battery cells themselves use iron sourced outside of Ireland instead of precious metals or heavy metals and as such do not use materials which are in short supply. The project will indirectly reduce the consumption of fossil fuels within the electrical grid by allowing energy generated by wind turbines to be stored and used at a later time, thereby avoiding lost renewable energy. An on-site water storage tank of 55,141 litres is provided as part of the development to accommodate water for the reverse-osmosis process.
Production of waste:	Solid wastes will be produced during the construction phase. During the operation of the project, no solid wastes will be generated. Minimal solid waste will be produced during the decommissioning phase due to access tracks and compounds being left in situ. Waste will be efficiently managed as detailed in the Construction Environmental Management Plan. The proposed battery system actively vents hydrogen gas to the atmosphere to reliably maintain the concentration below 25 percent of the Lower Flammability Limit, posing no health or safety risk to the local community as it is odourless, non-toxic, and non-flammable at these concentrations. The reverse-osmosis process will produce waste water. This process removes minerals from the fresh (drinking) water supply to the development. Water outputted from the reverse osmosis process will be simply de-mineralised water and will not release pollutants.

Criterion	If relevant, briefly describe the characteristics of the development (i.e. the nature and extent):
	The iron-air BESS, by its very nature is highly recyclable due to the use of iron in the cells. Waste electrolyte will be removed to licenced facilities to be disposed of safely.
Pollution and nuisances:	The project will cause noise during the construction phase (expected to last up to 12 months) which will be managed in accordance with the Construction Environmental Management Plan to limit disturbance. Operational noise will occur due to components of the battery containers as assessed in Section 11 of the Planning & Environmental Report as part of the original planning application. Sound reflective barriers to a height of 4 metres will be installed to mitigate noise impacts. The project will not release pollutants to the air, and a small amount of discharge water from the reverse osmosis water treatment system will be safely directed to the on-site surface water drainage system. This discharge water will be free of contaminants. The proposed battery system actively vents hydrogen gas to the atmosphere to reliably maintain the concentration below 25 percent of the Lower Flammability Limit, posing no health or safety risk to the local community as it is odourless, non-toxic, and non-flammable at these concentrations. The electrolyte is water based and non-flammable. It contains dissolved salts, primarily Potassium Hydroxide (KOH) with other proprietary additives that results in a pH level greater than 14. Each battery enclosure contains approximately 5,200 US gallons (c. 19,684 litres) of electrolyte. The battery enclosures are provisioned with (1) a containment system with sufficient capacity to contain 10% of the volume of containers or the volume of the largest container and (2) an automatic leak detection system to detect the spillage of fluid in accordance with UL9540 Section 23 and 40 CFR 264.175 (B). The cell vessels of the batteries serve as the primary containment of the electrolyte, with the battery enclosure serving as the secondary containment. The base of the enclosure then acts as a basin to retain the electrolyte in the event of a battery leak. With these measures the electrolyte is prevented from releasing into the environment. A risk of electrolyte spillage outside of the battery containers during any fill and drain procedures (e.g. once a year) is unlikely. Mitigations measures to reduce this risk considerably are setting up temporary secondary containment, such as duck ponds, pop-up berms, and buckets, at all hose connection points to capture potential drips. During the fill and drain procedure, the volume of this type of spill is generally expected to be less than 5 US gallons.

Criterion	If relevant, briefly describe the characteristics of the development (i.e. the nature and extent):
Major accidents and disasters:	Peat Slippage - The peat probing and ground investigation indicate that the majority of the site is underlain by very shallow peaty soils (<0.5m in thickness) with shallow slopes (<5 degrees) and therefore peat stability is not considered to be an issue for such soils. There is no evidence of peat instability or erosion within the site, and degradation of the peat in the future is not anticipated. Electrolyte leak - The battery enclosures are provisioned with (1) a containment system with sufficient capacity to contain 10% of the volume of containers or the volume of the largest container and (2) an automatic leak detection system to detect the spillage of fluid in accordance with UL9540 Section 23 and 40 CFR 264.175 (B). The cell vessels of the batteries serve as the primary containment of the electrolyte, with the battery enclosure serving as the secondary containment. The base of the enclosure then acts as a basin to retain the electrolyte in the event of a battery leak. With these measures the electrolyte is prevented from releasing into the environment. A risk of electrolyte spillage outside of the battery containers during any fill and drain procedures (e.g. once a year) is unlikely. Mitigations measures to reduce this risk considerably are setting up temporary secondary containment, such as duck ponds, pop-up berms, and buckets, at all hose connection points to capture potential drips. During the fill and drain procedure, the volume of this type of spill is generally expected to be less than 5 US gallons. Explosion - Form's iron-air battery technology battery enclosures are designed to contain any potential deflagration event that could occur within the enclosure, including, but not limited to, a hydrogen ignition event. The enclosures are engineered to withstand internal deflagration pressures in accordance with NFPA 69 Section 13.3.4 (Deflagration Pressure Containment) and NFPA 68 Section 6.3.1.1 (Deflagration Venting Requirements). By designing the enclosures to safely contain such events, any pressure effects are retained within the individual battery enclosure. As a result, the risk of propagation to neighbouring enclosures or impacts on the surrounding environment is removed. Thermal Runaway - the proposed development has undergone and successfully completed UL9540A testing which shows that there is no risk of thermal runaway. Fire Risk - is considered to be very low due to the nature of the proposed iron-air batteries and no risk of thermal runaway.

Criterion	If relevant, briefly describe the characteristics of the development (i.e. the nature and extent):
Risks to human health, for example due to water contamination or air pollution:	Receptors - There are 15 residential receptors located within approximately 500 metres of the site boundary. The noise impact assessment (section 11 - Noise and Vibration of the originally submitted Planning and Environmental Report) demonstrates that the project meets current best practice guidance with regard to noise limits and is not likely to have a significant impact on nearby receptors as the predicted cumulative noise level at the closest residential dwellings will be 34.4 dBLAeq. This is below the daytime noise limit of 45 dB LAeq, the evening limit of 40 dB LAeq and the night-time noise limit of 35 dB LAeq. Hydrogen and Explosion Risk - Hydrogen gas is produced during charge, discharge and idle states. The gas is odourless, colourless and requires internal sensors or external meters for detection. Hydrogen is a flammable chemical which has an auto ignition temperature at approximately 500°C. The battery enclosures include a functional safety subsystem for monitoring and limiting the production of hydrogen gas as well as venting it to the atmosphere to reliably maintain the concentration in the system below 25% of the Lower Flammability Limit (LFL) of Hydrogen. The vented gas poses no health or safety risk to the local community. It is odourless, non-toxic, and non-flammable at these concentrations. The battery enclosures are designed to contain any potential deflagration event that could occur within the enclosure, including, but not limited to, a hydrogen ignition event. The enclosures are engineered to withstand internal deflagration pressures in accordance with NFPA 69 Section 13.3.4 (Deflagration Pressure Containment) and NFPA 68 Section 6.3.1.1 (Deflagration Venting Requirements). By designing the enclosures to safely contain such events, any pressure effects are retained within the battery enclosure. As a result, the risk of propagation to neighbouring enclosures or impacts on the surrounding environment is removed. Electrolyte - The electrolyte is water based and non-flammable. It contains dissolved salts, primarily Potassium Hydroxide (KOH) with other proprietary additives that results in a pH level greater than 14. Each battery enclosure contains approximately 5,200 US gallons (c. 19,684 litres) of electrolyte. The sections above outline how this will not come into contact with humans. Firewater Management - To address the retention of firefighting water and prevent untreated runoff, the site design utilises a robust, gravity-led drainage and containment network. This system will isolate and capture firewater without the need for permanent wastewater infrastructure or connection to local sewer networks.

Criterion	If relevant, briefly describe the characteristics of the development (i.e. the nature and extent):
	All run off within the compound is directed to the main attenuation pond in the south east corner of the BESS compound via the internal drainage network. The attenuation pond outfall can be closed off in the event of an emergency and has sufficient capacity to store run off from fire fighting activities and contain same within the site. The attenuation pond has a total design capacity of 1,493,000 litres. Accounting for a standard operational volume of 30 - 40% and a mandatory 300 mm freeboard allowance, the remaining available storage volume is sufficient to contain the projected firewater runoff volumes in their entirety from a fire event. In the unlikely event of a fire, the attenuation pond will act as temporary storage for firewater runoff. The pond is lined to prevent infiltration of water to the ground. The discharge point of the pond will be blocked immediately after an event, allowing it to hold all conveyed firewater flow within the site. This ensures no discharge of contaminated firewater to the local environment. Following an incident, the pond will be drained and all water removed from the site by tanker to a licensed waste facility.

Table 4-2: Location of the Proposed Scheme

The environmental sensitivity of geographical areas likely to be affected by the proposed development:	If relevant, briefly describe the characteristics of the location (with particular regard to the (a) existing and approved land use, (b) the relative abundance, availability, quality and regenerative capacity of natural resources, and (c) the absorption capacity of the environment):
The existing and approved land use	The application site is located within the townland of Ballynahone, adjacent to the Trillick 110 kV Substation, and currently contains a semi-mature coniferous forestry plantation. The surrounding landscape is mostly used as farmland and forestry with inland peat bogs located to the east of the site. There are a number of one-off rural dwellings located near the site, in addition to a farm or construction yard and a gun club. To ensure the safe absorption of the development and to allow for rapid emergency response, the site will feature internal access tracks at least 5 metres wide to ensure sufficient space for firefighting vehicles. To prevent unauthorised access and mitigate the risk of arson, the facility will be enclosed by a 2-metre high perimeter security fence and monitored continuously by CCTV cameras.

The environmental sensitivity of geographical areas likely to be affected by the proposed development:	If relevant, briefly describe the characteristics of the location (with particular regard to the (a) existing and approved land use, (b) the relative abundance, availability, quality and regenerative capacity of natural resources, and (c) the absorption capacity of the environment):
The relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground.	The project will result in the permanent loss of approximately 4.84 hectares of habitat, comprising 4.7 hectares of coniferous plantations and 0.14 hectares of cutover bog, neither of which are Annex I type habitats. Approximately 14 hectares of coniferous forestry will be retained around the periphery, ensuring no significant loss of available habitat. The aquifer underlying the study area is the Lough Swilly groundwater body, which is classified as being in 'Good' status.
The absorption capacity of the natural environment, paying particular attention to the following areas: (i) wetlands, riparian areas, river mouths; (ii) coastal zones and the marine environment; (iii) mountain and forest areas; (iv) nature reserves and parks; (v) areas classified or protected under legislation, including Natura 2000 areas designated pursuant to the Habitats Directive and the Birds Directive and; (vi) areas in which there has already been a failure to meet the environmental quality standards laid down in legislation of the European Union and relevant to the project, or in which it is considered that there is such a failure; (vii) densely populated areas; (viii) landscapes and sites of historical, cultural or archaeological significance.	(i) There are no wetlands, riparian areas or river mounts in or adjacent to the site. (ii) The site is not located within or adjacent to a coastal zone or marine environment. (iii) The site is not located within or adjacent to a mountain or forest area. The site contains commercial conifer forestry and not natural woodland forestry. (iv) The habitats within and adjacent to the proposed development are not Annex I type habitats, nor are they nature reserves or parks. (v) The site is located entirely outside of any European site, with the closest being the Lough Swilly Special Area of Conservation located 2.78 kilometres away. The AA Screening carried out for the proposed development confirms no S-P-R connection to this. (vi) The Mill River runs adjacent to the eastern edge of the site and is classified as 'Poor' and 'At Risk'. (vii) The site is not located proximate to densely populated areas, with the closest being Buncrana, c. 2.5 km north west of the proposed development. (viii) The County Development Plan has identified the site as being in an area of Moderate Scenic Value, which is the lowest designation, meaning the moderate to low level residual visual impacts represent an acceptable impact on the receiving working transitional landscape. There are no recorded archaeological sites within the extent of the proposed development site, while there are three recorded archaeological sites within the 1 km. There are no NIAH buildings or protected structures within the subject site or 1km study area. The proposed development will not give rise to any direct or indirect negative impacts or significance of effect on recorded/protected archaeological or architectural heritage sites. The proposed site has had extensive previous ground disturbance works and landscaping for construction of the existing 110kv sub-station, as well as a significant change of use to commercial forestry plantation.

The environmental sensitivity of geographical areas likely to be affected by the proposed development:	If relevant, briefly describe the characteristics of the location (with particular regard to the (a) existing and approved land use, (b) the relative abundance, availability, quality and regenerative capacity of natural resources, and (c) the absorption capacity of the environment):
	There is low potential for encountering sub-surface archaeological remains. As such, there is a predicted Not Significant effect predicted for the cultural heritage resource.

For criteria 3 'Types and Characteristics of Potential Impact' the Regulations require that the likely significant effects on the environment of the proposed scheme (in relation to criteria set out under 'Characteristics of the Proposed Development' and 'Location of the Proposed Development') are assessed for the environmental topics set out in section 171A of the Planning and Development Act (i.e. population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape) taking into account—

(a) the magnitude and spatial extent of the impact (for example, geographical area and size of the population likely to be affected),
(b) the nature of the impact,
(c) the transboundary nature of the impact,
(d) the intensity and complexity of the impact,
(e) the probability of the impact,
(f) the expected onset, duration, frequency and reversibility of the impact,
(g) the cumulation of the impact with the impact of other existing and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(b) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment, and
(h) the possibility of effectively reducing the impact.

This assessment is carried out in Table 3-3 below, and should be read in conjunction with the planning and environmental assessment/report submitted with the original application as well as all plans and particulars submitted as part of the RFI response.

Table 4-3: Types and Characteristics of Potential Impact

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
Population & Human Health	**Traffic & Transportation - Construction Traffic as per Section 9 of the Planning & Environmental Report**. Based on the above, negative or adverse effects on the receiving environment associated with the construction works at the site are considered to be short-term in duration and slight in significance without appropriate mitigation. Noise Impact is considered in **Section 11 of the Planning & Environmental Report**, potential to exceed EPA criteria. Risk of Fire or Explosion. - **Please refer to Section 10 of the Planning & environmental Report and the CEMP.** In addition, please refer to the Draft Fire Risk Management Plan and Emergency Response Plan prepared by ORS and submitted as part of this Response. Overall the Risk to fire is considered to be low.	As per Section 9.7 of the P&E Report, Traffic Management Plan and a Construction Environmental Management Plan will be implemented to minimise disruption. Sound reflective barriers to a height of 4 metres will be installed to mitigate potential noise impacts on the surrounding human environment. Fire Safety Certificate and UL certification for proposed LDES component to ensure the facility complies with relevant standards for fire safety. Please refer to Draft Fire Risk Management Plan and Emergency Response plan prepared by ORS.	No.
Biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive: *	The Appropriate Assessment Screening Report (updated in response to the Third Party appeal) submitted with the Planning Application states that there are no likely significant effects on the qualifying interests or the conservation objectives of any designated European site. A standalone EcIA was prepared for this project and is contained in **Appendix 7 of the Planning & Environmental Report..**	Mitigation has been prescribed for ecological features, including precautionary measures for badgers, ensuring no residual effects occur. Biodiversity enhancement measures, such as the implementation of bird boxes and a wetland pond, will also be provided. **NOTE:** *These mitigation measures do not relate to Species or Habitats protected under the Habitats Directive.*	No.

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
	The EcIA concludes, given the scale and nature of the potential sources, there are no likely significant effects identified to any European sites. However, there will be likely significant effects to woodcock, whereby construction generated noise and lighting is likely to temporarily disturb woodcock from foraging and roosting habitats. Mitigation has been prescribed for this ecological feature, and there will be no residual effects as a result. Mitigation has also been prescribed for badger, under a precautionary basis as it is uncertain if there will be significant effects to this species. Additionally, biodiversity enhancement measures have been provided, including the implementation of bird boxes and a wetland pond.	In the event that site clearance is to occur during Winter the following approach is required: Site clearance will be carried out by a soft start such that Woodcock are encouraged to vacate the area in advance. This will ensure avoidance of accidental injury to birds. All construction phase lighting will be directed to the works areas only and will be cowled away from adjacent lands (in particular the grassland to the north of the site) such that lighting spill at night does not splay into suitable Woodcock feeding areas. This will be advised by the EcOW as needed. This is particularly pertinent during construction of the access road given proximity to adjacent neutral grassland, whereas for the other areas of the site adjacent forestry will provide a level of natural screening.	
Land, soil, water,	**Section 6 of the Planning & Environmental Report** carries out an impact assessment of the project on Soils , Geology and Hydrogeology. For Tree Felling: The Magnitude of the impact from these works on the soils and geology receptors is considered to be 'Moderate Adverse' in nature. The importance is considered to be 'Medium'. The rating of these potential impacts, prior to mitigation, is considered to be of Moderate significance. The Impact Classification is negative, permanent, direct and will have likely effects.	Mitigation measures are included in Section 6.4 of the Planning and Environmental Report and include standard mitigation measures to protect groundwater and to manage silt laden runoff during tree felling and groundworks.	No.

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
	For Earthworks: The Magnitude of the impact from these works on the soils and geology receptors is considered to be 'Small Adverse' in nature. The importance is considered to be 'Medium'. The rating of these potential impacts, prior to mitigation, is considered to be of Slight significance. The Impact Classification is negative, permanent, direct and will have likely effects. Possible potential impacts on hydrology and water quality are considered in **Section 7 of the Planning & Environmental Report**. Potential impacts during construction activities include: • Standing water in excavations could contain an increased concentration of suspended solids as a result of the disturbance of the underlying soils. • Silt carried on the wheels of vehicles leaving the site could be carried onto the public road. • There is a risk of accidental pollution incidents from the spillage or leakage of fuels stored on site and from construction machinery or site vehicles, the use of concrete and cement, and storage of chemical on site. • Inappropriate site management of excavations could lead to loss of suspended solids. • Cable trenches could act as a conduit for surface water flows. • The construction of new infrastructure has the potential to obstruct existing overland flow.	Existing forestry drains will be replaced by a site-specific Sustainable Drainage System, featuring a vegetated attenuation pond and filter trench drains to manage surface water and safely handle discharge from the reverse osmosis process. All run off within the compound is directed to the main attenuation pond in the south east corner of the BESS compound via the internal drainage network. The attenuation pond outfall can be closed off in the event of an emergency and has sufficient capacity to store run off from fire fighting activities and contain same within the site. The attenuation pond has a total design capacity of 1,493,000 litres. Accounting for a standard operational volume of 30 - 40% and a mandatory 300 mm freeboard allowance, the remaining available storage volume is sufficient to contain the projected firewater runoff volumes in their entirety from a fire event. In the unlikely event of a fire, the attenuation pond will act as temporary storage for firewater runoff. The pond is lined to prevent infiltration of water to the ground. The discharge point of the pond will be blocked immediately after an event, allowing it to hold all conveyed firewater flow within the site. This ensures no discharge of contaminated firewater to the local environment. Following an incident,	No

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
	• Fire Water could lead to ground contamination.	the pond will be drained and all water removed from the site by tanker to a licensed waste facility. Any additional mitigation measures required to address spillage of contaminated water within the BESS compound shall be carried out in accordance with the measures for pollution control detailed in the CEMP submitted with the Planning Application. This includes Section 4.2.1 'Surface Water Management Plan' which contains mitigation measures for spillage and pollution control and Section 5.1.10 which includes details of environmental emergency response procedures. Any accidental electrolyte leaks are physically contained within the base of the battery enclosure, which serves as a basin to prevent any release into the surrounding environment.	
Air and climate	**Section 10 of the Planning & Environmental Report examines the potential impact of the project on Air Quality and Climate**. The facility will support the penetration of renewable energy generation onto the national grid. The project will not release pollutants to the air and will indirectly reduce the use of fossil fuels. While iron-air batteries do not carry a risk of thermal runaway, there is a potential fire risk originating from oil-cooled transformers or hydrogen gas ignition.	The facility features early smoke and gas detection, alongside inverters that automatically disconnect power during high heat or fire.. Hydrogen gas is produced during charge, discharge and idle states. The gas is odourless, colourless and requires internal sensors or external meters for detection. Hydrogen is a flammable chemical which has an auto ignition temperature at approximately 500oC.	No.

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
		The battery enclosures include a functional safety subsystem for monitoring and limiting the production of hydrogen gas as well as venting it to the atmosphere to reliably maintain the concentration in the system below 25% of the Lower Flammability Limit (LFL) of Hydrogen. The vented gas poses no health or safety risk to the local community. It is odourless, non-toxic, and non-flammable at these concentrations. The Hydrogen Management System is designed with inherent redundancy and fail-safe features to maintain hydrogen release capability during loss of power. The Technology also utilises a Hydrogen Gas Monitoring System, which includes sensors in the enclosure's airspace to act as an early warning for any leaks. There is a hydrogen gas monitoring system included as a part of the vent gas management system.	No

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
Material Assets	As contained in Section 4 of the Planning Statement, the project will increase the energy utilisation of the grid by assisting with addressing dispatch down. The grid connection to the Trillick substation is an under the fence connection. The project will not give rise to any direct or indirect negative impacts or significance of effect on material assets. No mitigation measures are proposed.		No.
Cultural heritage and the landscape	As contained in S**ection 12 of the Planning & Environmental Report.** The project will not give rise to any direct or indirect negative impacts or significance of effect on recorded or protected archaeological or architectural heritage sites, No mitigation measures are proposed. As per **Section 13 of the Planning & Environmental Report**, Landscape impacts are not considered to exceed moderate-slight significance, and residual visual impacts will not exceed slight-imperceptible significance.	Proposed planting will be native stock and selected in line with the All Ireland Pollinator Plan to bolster the local biodiversity value of the site. All landscaping measures are outlined on the landscape mitigation plan - refer to drawing LD.BLLNHNE 1.1.	No.
Cumulative Effects	Each chapter of the Planning & environmental Report assessed the project for Cumulative effects. No Cumulative effects are envisaged.	N/A	No.

Criterion	If relevant, briefly describe the characteristics of the potential impacts under the headings below. (including where relevant the magnitude and spatial extent of the impact (e.g. geographical areas and size of population likely to be affected), nature of impact, intensity and complexity of impact, probability of impact, and duration, frequency and reversibility of the impact):	If relevant, briefly describe any mitigation measures proposed to avoid or prevent a significant effect.	Is this likely to result in significant effects on the environment?
Transboundary Effects	No transboundary effects envisaged.	N/A	No.

4.1 Summary of Mitigation Measures

Table 4-1 below provides a summary of features and/or measures envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects of the proposed development and a timescale for the implementation of proposed mitigation measures.

Table 4-4: Summary of Mitigation Measures

Criterion	Mitigation Measure	Timeline to Implement
Population & Human Health	Implementation of a Construction Environmental Management Plan (CEMP) to control construction noise, dust, and waste.	Pre and during construction stage.
	Enforcement of a Traffic Management Plan to safely manage construction vehicles and minimise disruption to the local road network.	Pre and during construction stage.
	Fire Risk Management Plan, and Emergency Response Plan, including Fire Safety Certificate and UL certification for proposed LDES component.	Pre-Construction.
	Active venting and continuous monitoring of hydrogen gas to ensure concentrations reliably remain below 25 percent of the Lower Flammability Limit, preventing explosion risks.	Embedded Mitigation
	Installation of Very Early Smoke Detection Apparatus (VESDA) alongside dedicated gas detection sensors for hydrogen and carbon monoxide.	
	Equipping inverters with direct current insulation monitors configured to automatically disconnect power if heat exceeds safe thresholds or a fire is detected.	Embedded Mitigation
	Each of Form's iron-air battery technology battery enclosures are designed to contain any potential deflagration event that could occur within the enclosure, including, but not limited to, a hydrogen ignition event. The enclosures are engineered to withstand internal deflagration pressures in accordance with NFPA 69 Section 13.3.4 (Deflagration Pressure Containment) and NFPA 68 Section 6.3.1.1 (Deflagration Venting Requirements). By designing the enclosures to safely contain such events, any pressure effects are retained within the individual battery enclosure. As a result, the risk of propagation to neighbouring enclosures or impacts on the surrounding environment is removed.	Embedded Mitigation Embedded Mitigation

Criterion	Mitigation Measure	Timeline to Implement
	Engineering each battery enclosure to act as a 5,200-gallon secondary containment basin to physically retain any accidental electrolyte leaks, paired with automatic leak detection that immediately cuts off power.	Embedded Mitigation
	Installation of a 2-metre high perimeter security fence and continuous CCTV monitoring to prevent unauthorised access and mitigate the risk of arson.	Construction stage
	Enforced life safety procedures, including a 30 m exclusion zone, and a strict "no entry" protocol for emergency personnel during a fault unless there is a confirmed line-of-sight rescue.	Operation Stage.
Biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive	Execution of precautionary mitigation measures outlined in the Ecological Impact Assessment to protect local wildlife, with a specific focus on badgers and nesting woodcock.	Throughout construction and operation stage.
	Retention of approximately 14 hectares of existing coniferous forestry around the site boundary to maintain natural ecological corridors.	Embedded Mitigation .
	Introduction of biodiversity enhancement measures, including the installation of bird boxes and the creation of a new wetland pond.	Construction Stage.
Land, soil, water, air and climate	Installation of a site-specific Sustainable Drainage System (SuDS), featuring a vegetated attenuation pond and filter trench drains to safely manage surface water and reverse osmosis discharge.	Construction stage.
	Strict segregation and secure bunding of excavated topsoil and subsoil during earthworks to prevent sediment runoff into nearby watercourses.	Construction stage
	To address the retention of firefighting water and prevent untreated runoff, the site design utilises a robust, gravity-led drainage and containment network. This system will isolate and capture firewater without the need for permanent wastewater infrastructure or connection to local sewer networks.	Construction Stage.

Criterion	Mitigation Measure	Timeline to Implement
	All run off within the compound is directed to the main attenuation pond in the south east corner of the BESS compound via the internal drainage network. The attenuation pond outfall can be closed off in the event of an emergency and has sufficient capacity to store run off from fire fighting activities and contain same within the site. The attenuation pond has a total design capacity of 1,493,000 litres. Accounting for a standard operational volume of 30 - 40% and a mandatory 300 mm freeboard allowance, the remaining available storage volume is sufficient to contain the projected firewater runoff volumes in their entirety from a fire event. In the unlikely event of a fire, the attenuation pond will act as temporary storage for firewater runoff. The pond is lined to prevent infiltration of water to the ground. The discharge point of the pond will be blocked immediately after an event, allowing it to hold all conveyed firewater flow within the site. This ensures no discharge of contaminated firewater to the local environment. Following an incident, the pond will be drained and all water removed from the site by tanker to a licensed waste facility. Engineering each battery enclosure to act as a 5,200-gallon secondary containment basin to physically retain any accidental electrolyte leaks, paired with automatic leak detection that immediately cuts off power. During any electrolyte fill, drain, and service operations, Form Energy implements comprehensive spill prevention and emergency response measures to strictly manage electrolyte flow. Before any pumping begins, technicians set up temporary secondary containment, such as duck ponds, pop-up berms, and buckets, at all hose connection points to capture potential drips.	Embedded Mitigation Operational stage

Criterion	Mitigation Measure	Timeline to Implement
Air and climate	The facility features early smoke and gas detection, alongside inverters that automatically disconnect power during high heat or fire. The battery enclosures include a functional safety subsystem for monitoring and limiting the production of hydrogen gas as well as venting it to the atmosphere to reliably maintain the concentration in the system below 25% of the Lower Flammability Limit (LFL) of Hydrogen. The Hydrogen Management System is designed with inherent redundancy and fail-safe features to maintain hydrogen release capability during loss of power.	Embedded Mitigation Operation stage
Material assets, Landscape	Utilisation of the retained perimeter forestry as a natural visual screen, supported by supplementary landscaping to help the facility assimilate into the landscape. No mitigation measures relating to cultural heritage are recommended.	Embedded Mitigation and Construction Stage.
Noise and Vibration	Construction of sound reflective barriers up to 4 metres in height at strategic locations to mitigate operational noise from battery containers and transformers.	Implemented during construction and in place before operation.
Major Accidents and Natural Disasters	The operational LDES facility will be subject to a Emergency Response Plan and Fire Risk Management Plan agreed with the Fire Authority as part of the Fire Certification process post planning. This will ensure that the risk of major accidents is minimal.	Construction Stage and Prior to Operation.

5. CONCLUSION

This EIA screening assessment has been carried out in accordance with the Planning and Development Regulations 2001 (as amended) The report assessed the impact of the proposed project, in conjunction with committed developments in the surrounding area.

Based on all available information, and taking account of the scale, nature and location of the proposed development, it is our opinion that the preparation of an EIAR is not a mandatory requirement (under Part 1 or Part 2 of Schedule 5). In order to ensure completeness, this conclusion was further clarified in respect to requirements set out in Schedule 7 of the Planning and Development Regulations 2001 (as amended), Annex II of the EIA Directive, and the screening checklist provided in the EU guidance document for EIA Screening, as set out in this document.

Key findings are summarised as follows:

- Limited noise emissions (not exceeding 35dB at nearest sensitive receptors) may be generated during the operation; however, this is anticipated to be minimal in effect and will not likely cause a significant impact as noted in section 11 of the Planning and Environmental Report .
- The landscape visual assessment (section 13 of the Planning and Environmental Report) identified that there are no significant impacts to the landscape character of the area and is in keeping with the existing landscape character.
- There will be no significant impact on the receiving biodiversity, surface water, groundwater or traffic environment. Please refer to the Ecological Impact Assessment (EcIA) and Planning and Environmental Report submitted with the original application for details on this.
- There will be no impact on recorded monuments or protected structures or historic features.
- Decommissioning will be undertaken in line with Section 2.1.15 of the Planning and Environmental Report and in accordance with a Decommissioning Plan to be agreed with the planning authority - having regard to prevailing environmental conditions to ensure the use of best available recycling technology and techniques available at the time.

In summary, no significant adverse impacts to the receiving environment will arise as a result of the proposed project either by itself or in cumulation with other projects.

It is therefore submitted that sub-threshold EIA is not required for the project due to the project's limited likely effects on the receiving environment with respect to Schedule 7 and 7A of the Planning and Development Regulations 2001 (as amended), and Annex II of the EIA Directive.

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