McCloy Consulting

Drainage Strategy

Glenara Power Reserve

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WATER & ENVIRONMENTAL CONSULTANTS

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01	18/05/26	IB	DKS	DKS	Amendment to drainage plan	For Information
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DISTRIBUTION

Recipient	Revision					
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1 INTRODUCTION

1.1 Terms of Reference

This report has been commissioned by Neoen Renewables Ireland Ltd in response to the Request for Further Information issued by An Coimisiún Pleanála under Section 132 of the Planning and Development Act in respect of the proposed Glenlara Power Reserve Project, Curraduff, Glenlara, Newmarket, Co. Cork.

This report and the accompanying revised drainage layout drawing have been prepared to provide additional technical detail and clarification in relation to site drainage infrastructure, firefighting water supply, firefighting water containment, pollution control measures and the management of surface water and groundwater pathways associated with the proposed development.

In particular, this report responds to Items 3 and 4 of the Further Information request insofar as they relate to:

- the provision and security of firefighting water supply;
- the management and containment of firefighting water and potentially contaminated runoff;
- the integration of firefighting water management measures within the site drainage strategy; and
- the protection of surface water and groundwater receptors,

Effects specific to Water Framework Directive objectives are considered separately in a revised submission by the Hydrology consultant (HES).

1.2 Statement of Authority

McCloy Consulting Ltd is an independent environmental and water engineering consultancy specialising in flood modelling and flood risk assessment, surface water management and Sustainable Drainage Systems (SuDS) design, and hydrological assessment, with extensive experience in the UK and Ireland.

This report has been prepared and reviewed by qualified professionals with appropriate experience in the fields of flood risk, drainage, and pollution control, wastewater, and hydraulic modelling studies. The key staff members involved in this project are as follows:

- Iain Black *MSc BEng (Hons)* – Project Engineer with experience in drainage and surface water management design.
- Kyle Somerville *BEng (Hons) CEng MIEI* – Director and Chartered Engineer specialising in flood risk assessment, hydraulic modelling, drainage, and surface water management design.

1.3 Scope / Purpose

This report has been prepared in response to the Request for Further Information issued by An Coimisiún Pleanála under Section 132 of the Planning and Development Act in respect of the Glenlara Power Reserve Project.

The purpose of this report is to provide an enhanced level of technical detail and integration in respect of firefighting water supply, firefighting water containment, pollution control, and associated drainage infrastructure, and to demonstrate how these measures are integrated within the permanent site drainage strategy.

This report should be read in conjunction with the planning application documents previously submitted in support of the application, including the wider environmental, hydrological and hydrogeological assessments.

This report and the accompanying revised drainage layout drawing update and supersede the previously submitted drainage strategy information insofar as it relates to:

- permanent surface water drainage design;
- attenuation and restricted discharge arrangements;
- pollution control and drainage isolation measures;

- firefighting water supply infrastructure;
- firefighting water containment measures; and
- the assessment of surface water and groundwater pathways associated with these elements.

In particular, the accompanying revised drainage layout drawing supersedes the previously submitted Proposed Drainage Layout prepared by Hydro-Environmental Services (Drawing No. P1696-0-0724-A3-D101-00C, dated 22 July 2024).

The Hydrological / Hydrogeological Review and Drainage Impact Assessment prepared by Hydro-Environmental Services (HES Report No. P1696 FINAL Rev F1, dated 24 July 2024) remains relevant in respect of the established baseline hydrological, hydrogeological and environmental context, except where updated, clarified or superseded by this report in relation to drainage design and firefighting water management.

This report therefore provides the updated drainage and firefighting water management strategy for the purposes of responding to the Further Information request and should be read as the primary document in respect of those matters.

2 SITE AND PROPOSED DEVELOPMENT

2.1 Site Location and Context

The site is located immediately northwest of the existing Glenlara substation compound, and approx. 1.6km southwest of Newmarket town, Curraduff, Co. Cork.

The site location is shown in Figure 2-1 below.

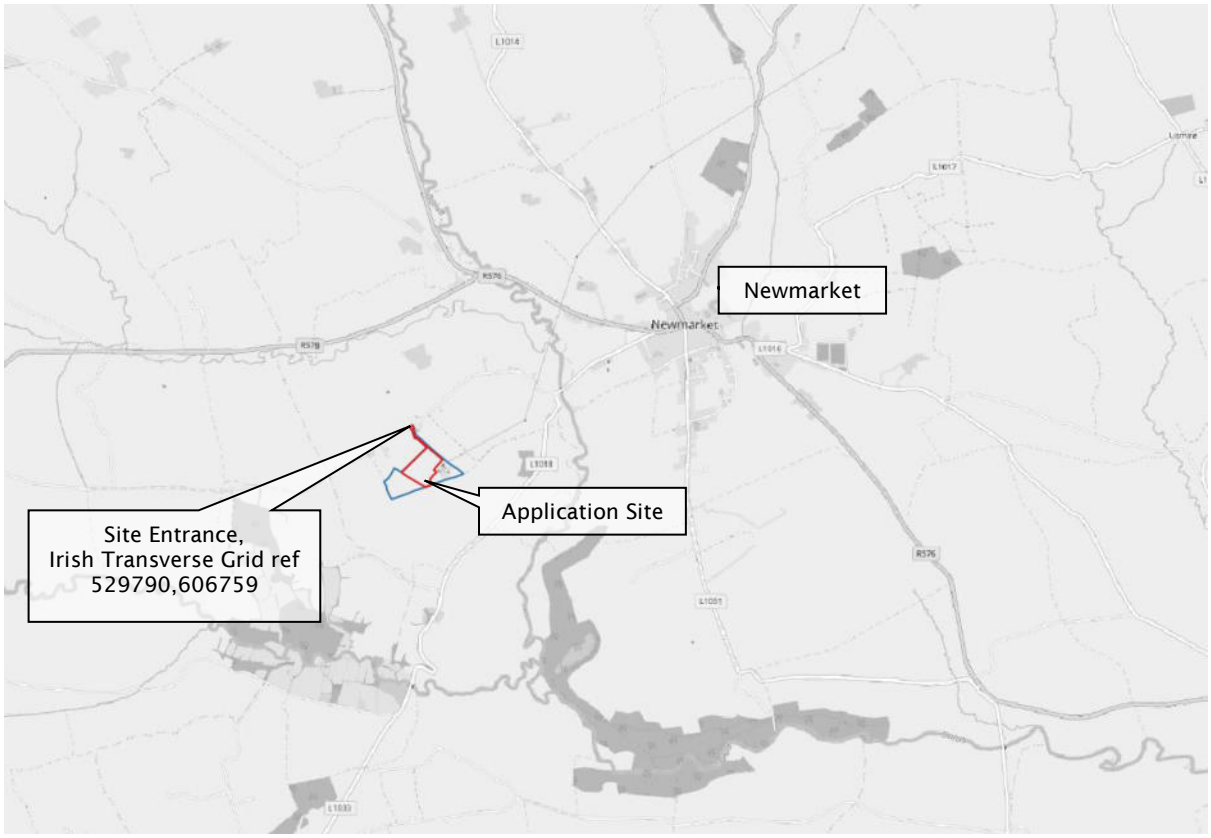


Figure 2.1: Site Location

2.2 Site Characteristics

The baseline hydrological, hydrogeological and drainage characteristics of the site have been established by the Hydrological / Hydrogeological Review and Drainage Impact Assessment prepared by Hydro-Environmental Services (HES Report No. P1696 FINAL Rev F1, dated 24 July 2024), which forms part of the planning application documentation. The summary below draws upon and adopts that established baseline insofar as relevant to the updated drainage strategy presented in this report.

2.2.1 Land Use

The site currently comprises undeveloped agricultural land adjacent to the existing Glenlara substation. The proposed ESS compound is located within an agricultural field bounded by existing field boundaries and drainage features. The transformer compound lies immediately southeast adjacent to the existing substation infrastructure.

2.2.2 Hydrology and Watercourses

As identified by HES, a field drain / land drain runs along the eastern boundary of the proposed ESS compound and conveys runoff southeast towards an unnamed watercourse located along the southern field boundary. This unnamed watercourse flows eastwards and ultimately discharges to the Dalua River, a tributary of the Blackwater River (Cork / Waterford) SAC, located approximately 1km east of the site.

A second field drain is present to the north / northeast of the proposed ESS compound and flows eastwards toward the eastern boundary drain.

These existing drainage features are relevant to the proposed development both in terms of receiving controlled runoff from the permanent drainage system and as potential pathways for migration of contaminants in the absence of suitable control measures.

2.2.3 Topography

The site generally slopes moderately toward the east and southeast. Existing ground levels within the main body of the site range from approximately 214m OD in the northwestern corner, falling toward approximately 195m OD at the southeastern extent. The site entrance lies at approximately 209m OD.

As identified within the HES assessment, the local topography creates a natural focal point for drainage toward the southeastern corner of the site and influences the location and operation of gravity-based drainage infrastructure and attenuation features.

2.2.4 Ground Conditions

Ground conditions and drainage characteristics are informed by the previous site investigation and trial pitting undertaken by HES together with publicly available Geological Survey Ireland mapping.

The site is underlain by Namurian (undifferentiated) bedrock comprising dark shale and pale sandstone. Trial pitting identified predominantly silt-dominated subsoils, becoming increasingly gravelly with depth in places, with evidence of mottling indicative of poorly drained conditions and shallow seasonal groundwater influences. Groundwater seepage / inflows were locally encountered in trial pits at depths typically associated with the upper weathered bedrock horizon.

On the basis of the observed low permeability subsoils and shallow groundwater conditions, infiltration to ground is not considered a suitable means of stormwater disposal. The permanent drainage strategy therefore adopts attenuation and controlled discharge principles rather than infiltration-based SuDS measures.

2.3 Proposed Development

The proposed development comprises the following:

- Energy storage containers installed on concrete plinths;
- Associated electrical inverters and transformers;
- Electrical and communications cabling;
- Upgrade of an existing agricultural access point;
- Access track;
- Boundary security fencing and gates;
- Pole-mounted security cameras; and
- All associated site development, landscaping, drainage and reinstatement works

The planning application as previously submitted included a surface water drainage strategy and associated drainage proposals prepared by Hydro-Environmental Services in support of the development. This report and the accompanying revised drainage layout update and expand upon those proposals insofar as they relate to permanent drainage infrastructure, pollution control, and firefighting water supply and containment measures. The revised strategy maintains the same fundamental drainage philosophy established in the original submission, namely the use of attenuation, controlled discharge and SuDS principles, but provides an enhanced level of technical detail and integrates additional infrastructure and control measures associated with firefighting water management.

Proposal drawings on which this assessment is based are included in Appendix A.

3 DRAINAGE STRATEGY

3.1 Preamble

The site consists of Battery energy storage containers, transformers, inverters, and associated access track and hardstanding platforms.

The transformer compound shown is under separate planning permission, with its drainage considered in this report as likely to be constructed at the same time.

The key aspects of the project design are as follows.

- The requirement to limit the rate of discharge into the existing surface water networks from all impermeable surfaces to that of greenfield run-off rates as stipulated by Cork CC
- Demonstrating the feasibility of compliance with the requirements of Cork CC

The drainage strategy presented herein maintains the approach established in the previously submitted HES assessment, based on attenuation, controlled discharge to greenfield runoff rates, and the application of SuDS principles, and is updated to incorporate the additional requirements set out in the Further Information request.

3.2 Site Setting

Aspects relevant to the drainage design are as follows:

- Site topography is slopes gently towards the east/ southeast.
- Existing land cover is agricultural land. Ground conditions are poor draining / have limited permeability. Existing land drainage relies on land drainage which discharges to the unnamed watercourse to the south of the site.

3.3 Permanent Drainage Standards

Surface water drainage design shall be as per the requirements of the Cork County Council Development Plan 2022-2028 and to the standards of Cork County Council Water Services Department, insofar as those standards may apply to a development of this nature.

The drainage design is intended to demonstrate how water quantity and quality are dealt with.

Permanent surface water drainage design therefore adopts SuDS principles and ensures that runoff from new impermeable surfaces (tracks and ancillary infrastructure) shall be reduced to the pre-development greenfield rate. The design principles adopted in the Drainage Plan are as follows:

- The drainage system will cater protection for up to a 1 in 1% AEP rainfall event including allowance for climate change., common to the standard of protection for flooding from surface water drainage afforded by GDSDS as best practice.
- GDSDS standards direct that all runoff up to the design standard shall be limited to Qbar where Long Term Storage (i.e., loss of water by infiltration) cannot be accommodated. Given limited soil permeability, the design adopts the more onerous Qbar approach.

3.3.1 Climate Change / Adaptation

Consistent with existing planning submission, the design includes a 20% allowance for climate change at all return periods with the assumption that all roof and hardstanding areas are 100% impermeable. Application of urban creep (typically a 10% increase in private impermeable areas) is not applicable to this site.

3.3.2 Permanent Water Quality

To ensure consistency with permanent drainage design standards, provision of water quality protection and treatment of runoff is per the indices guidance in the CIRIA SuDS manual.

The substation compound (which is likely to include use / storage / handling of fuels or lubricants) is assessed as being a land use with high pollution risk. Table 26.2 of the SuDS Manual defines the pollution hazard as High, with Pollution indices as follows:

- Total Suspended Solids 0.8
- Metals 0.8
- Hydrocarbons 0.9

The access track and BESS platform (where the BESS comprises inert batteries in containers) is taken as land use with low pollution risk, Table 26.2 of the SuDS Manual defines the pollution hazard as low, with pollution indices as follows.

- Total Suspended Solids 0.5
- Metals 0.4
- Hydrocarbons 0.4

3.4 Proposed Solution – Surface Water Drainage Approach

Runoff from the BESS compound will be conveyed by filter drain to a lined basin, which will discharge to the unnamed watercourse to the south.

The access track will drain to a swale and be discharged to the existing land drainage at greenfield rate.

Run-off from substation will be conveyed by filter drain to an attenuation basin and will discharge at greenfield rate to the existing land drainage

The proposed storm drainage layout is included in Appendix B.

3.4.1 Peak Discharge / Flow Controls

Peak discharge from the site has been set at the greenfield equivalent for the site, determined as being the Qbar rate of 10.78L/s/ha as per Cork County Council's requirements.

Attenuation is to be provided as shown on the proposed storm drainage layout drawing enclosed in Appendix B, and flow controls shall be Hydrobrake units at outflow point of attenuation. Runoff rate calculations have been provided in Appendix D.

3.4.2 Permanent Drainage Performance

Flooding: The permanent drainage ensures that runoff is limited to Qbar for the drained area up the 1% AEP event + climate change.

Water Quality*:*

BESS Platform: Provision of permeable surfaces and filter drains in sequence will have a Pollution Mitigation Index per Table 26.3 of the SuDS manual as follows.

Pollutant	Source Hazard Index	Permeable pavement/surface	Filter Drain Mitigation (0.5 mitigation indices)	Detention Basin (0.5 mitigation)	Total Mitigation Index	Sufficient?
TSS	0.5	0.7	0.2	0.125	1.025	Yes
Metals	0.4	0.6	0.2	0.125	0.925	Yes
Hydrocarbons	0.4	0.7	0.2	0.115	1.015	Yes

Substation Compound: Provision of filter drains, oil interceptor, detention basin in sequence will have a Pollution Mitigation Index per Table 26.3 of the SuDS manual as follows:

Pollutant	Source Hazard Index	Permeable pavement/surface	Filter Drain Mitigation (0.5 mitigation indices	Detention basin Mitigation (0.25 mitigation Indices)	Total Mitigation Index	Sufficient?
TSS	0.8	0.7	0.2	0.125	1.05	Yes
Metals	0.8	0.6	0.2	0.125	0.925	Yes
Hydrocarbons	0.9	0.7	0.2	0.15	1.05	Yes

Access Track: provision of permeable surfaces and permanent swales with check dams in sequence will have a Pollution Mitigation Index per Table 26.3 of the SuDS manual as follows:

Pollutant	Source Hazard Index	Permeable pavement/surfaces	Swale Mitigation (0.5 mitigation indices)	Total Mitigation Index	Sufficient?
TSS	0.5	0.7	0.25	0.95	Yes
Metals	0.4	0.6	0.3	0.9	Yes
Hydrocarbons	0.4	0.7	0.3	1	Yes

3.4.3 Firefighting Water - Emergency Response

The drainage plan is designed to manage potentially polluted water in the event of a firefighting event, described separately in detail at Section 4.

3.4.4 Field Drain Diversion

An existing land drainage crosses the proposed access track. It is proposed that a section of this will be culverted to allow for access to the BESS compound.

A 900 mm Dia culvert has been proposed and is shown on the drainage plan in Appendix B.

3.5 Maintenance Requirements

The developer is to ensure that maintenance of the drainage system is provided for as part of the overall management plan for the site.

Table 3-1 outlines the maintenance requirements for drainage features (including inlets, outlets, controls, and inspection chambers).

Table 3-1 Maintenance Requirements for Drainage Features

Inlets, Outlets, Controls, and Inspection Chambers		
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly
	Remove debris and sediment from chambers	Monthly for first six months, then quarterly or after significant storm
Remedial actions	Repair/rehabilitate where required	As required
	Routine rodding/ jetting of pitch subbase drainage as required	Annual/ after significant storm
Monitoring	Check all structures to ensure all is in good condition and operating as designed.	Annually
	(Flow controls) check for evidence of blockage	Monthly or after significant storm.
	(Flow controls) check for damage to components	Annually or after significant storm.
Filter Drains		
Regular Maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
	Inspect filter drain surface, inlet, outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly
	Inspect pre-treatment systems, inlets, and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Monthly
	Remove sediment from pre-treatment devices	Six monthly
Occasional Maintenance	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required
	Clear perforated pipework of blockages	As required
Swale		
Regular Maintenance	Remove litter and debris	Monthly, as required
	Cut grass – to retain grass height within specific design range. Manage other vegetation and remove nuisance plants	Monthly, as required
	Inspect inlets, outlets, and overflows for blockages, and clear if required	Monthly

Inlets, Outlets, Controls, and Inspection Chambers		
	Inspect filtration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for > 48 hours	Monthly, as required
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies	Half yearly
Occasional Maintenance	Reseed areas of poor vegetation growth, alter plant types to better suit conditions if required	As required or if bare soil is exposed over 10% or more of the swale treatment area
Remedial Actions	Repair erosion or other damage by re-turfing or re-seeding	As required
	Relevel uneven surfaces and reinstate design level	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of soil surface	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required
Attenuation basin,		
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass for spillways and access routes. Cut grass: Meadow grass in and around basin.	Monthly (during growing season) or as required. Half yearly (spring / before nesting season and autumn)
Remedial Actions	Re-seed areas of poor vegetation cover.	As required
	Remove sediment from inlets, outlets and basin when required.	Every 5 years or as required
Monitoring	Check all structures to ensure all is in good conditions and operating as designed	Annually
Flow Control Device		
Regular Maintenance	Checking of devices for siltation/blockages and clearing as required	Annually or after significant storm.
	Checking of device outlets for damage and undertaking remediation	
Fuel/ Oil Interceptor		

Regular Maintenance	Maintenance shall be as specified by the supplier. A maintenance plan with the supplier is encouraged.	As recommended

4 FIREFIGHTING WATER - EMERGENCY RESPONSE

4.1 Pre-amble

Water supply and drainage / pollution control have been considered in conjunction with the Outline Fire Risk Management Plan prepared by Gexcon and submitted separately.

The FRMP establishes the basis on which fire events would be identified, managed and responded to, including the role of active and passive fire protection systems, emergency procedures and firefighting intervention.

In the event of a battery fire, the emergency response strategy recognises that water may be required by the emergency services for cooling, boundary protection and prevention of fire spread. The firefighting approach therefore considers both the provision of firefighting water and the containment and management of water used during firefighting operations, such that emergency response activities do not give rise to uncontrolled releases to the environment.

4.2 Firefighting Water Supply

Firefighting water demand for the development has been determined with reference to National Fire Chiefs Council (NFCC) "Guidance for Grid-Scale Battery Energy Storage Systems", as set out in the Fire Risk Management Plan. In the absence of Irish-specific national guidance addressing firefighting water demand for BESS installations, NFCC guidance is relied upon as recognised operational best practice applied by fire and rescue services in comparable regulatory contexts. NFCC Guidance (2026 Update) is adopted as the design basis.

NFCC Guidance (2026 Update) states that, as a minimum, hydrant supplies for boundary cooling purposes should be capable of delivering no less than a flow rate of 25 litres per second over 120 minutes. This flow-based requirement equates to a minimum firefighting water volume of approximately 180 m3.

The firefighting strategy is based on the provision of dedicated on-site water storage sufficient to meet the full NFCC firefighting demand. The firefighting requirement is therefore met independently of any external water supply, with external supplies serving a replenishment function only.

Provision of firefighting water for the development will be achieved through a dedicated water supply strategy designed to ensure that the required firefighting water storage can be filled and maintained over time. A pre-connection enquiry has been submitted to Uisce Éireann (confirmation pending, refer to Appendix G). to establish whether a connection to the public water supply is feasible at this location and, if so, on what basis. Subject to confirmation of availability and technical acceptance by Uisce Éireann, a public water supply connection may be used to provide water for filling and maintaining the on-site firefighting water storage.

In parallel, a site-specific groundwater abstraction feasibility assessment (refer to Appendix E) has been undertaken, which concludes that abstraction from the underlying bedrock aquifer is likely to be viable, subject to detailed design, drilling and testing. A private borewell therefore represents an alternative means of supplying water for firefighting storage replenishment.

The final firefighting water supply arrangement will comprise one or a combination of the following, depending on technical feasibility and regulatory approvals:

- supply from the public water network, where connection can be facilitated by Uisce Éireann; and/or
- supply from an on-site private groundwater abstraction.

The site incorporates dedicated firefighting water storage with a capacity of approximately 271 m³, which exceeds the minimum volume recommended within the National Fire Chiefs Council (NFCC) guidance for grid scale battery energy storage systems (Version 2, 2026). This ensures that the required firefighting water demand can be met from on-site storage alone.

External water supply, whether from mains, tanker delivery or other sources, is therefore not critical to the initial firefighting response and serves only to replenish storage where required during extended operations.

On this basis, the firefighting water supply is defined, reliable and independent of external supply constraints.

4.3 Firefighting Water Containment

Design and assessment of containment and control of potentially contaminated firefighting water is informed by the UK Guidance for Pollution Prevention 18 ((GPP18)): *Containing Major Spillages and Firewater at Industrial Sites and* the *National Fire Chiefs Council (NFCC) Guidance for Grid-Scale Battery Energy Storage Systems (2026 Update* which, in the absence of Irish guidance, sets out best practice requirements for containment of runoff likely to carry firefighting contamination. NFCC Guidance (2026 Update), states that fire water is to be controlled and prevented from leaving the site by surface water or groundwater (infiltration) pathways.

Total volume of storage provided in the case of emergency is 1183m^3, which as per the above guidance allows in the worst case scenario including preceding and in-emergency rainfall allowance.

Firefighting water arising from internal suppression systems within BESS containers, and from emergency service intervention by fire tenders and onsite hydrants for external cooling or boundary protection is directed to the site drainage system and retained within a lined attenuation basin.

Firefighting water, delivered by on-site fire water tanks or hydrants, may (dependent on the firefighting strategy) be used for cooling of adjacent units. Location of the tank are shown on the Drainage Plan provided in Appendix B Where it is conservatively assumed that water used for cooling could become contaminated, then it will be controlled and prevented from leaving the site laterally (in site drainage) or by migrating vertically to groundwater.

The preliminary design approach for storage of firefighting water consists of containment within the lined attenuation basin and the top layer of the BESS subbase, with vertical migration to groundwater, and loss to surface water, prevented by an impermeable geomembrane liner installed permanently at the formation level of the BESS platform subbase and at the attenuation basin. Water will preferentially follow lateral drainage pathways within the site drainage network and be directed to the lined attenuation basin. The attenuation basin is constructed with an impermeable geomembrane, which prevents infiltration within the containment area. As such, the potential for contaminated water to migrate to groundwater is negligible.

Lateral migration (to downstream watercourses) is prevented by installation of an emergency control shut-off isolation valve which controls discharge from the lined storage area, preventing potentially contaminated water discharging to a downstream watercourse.

The drainage systems are designed to give sufficient time to contain that water and allow for the arrangement of pumping facilities to remove the contaminated water from the networks. Pumped firewater will be removed into suitable tanker lorries which will transport this to a licensed facility for disposal.

The volume of storage available exceeds volume of water recommended to be allowed for firefighting in NFCC guidance (refer to previous Section 4.2), exceeds the firewater supply storage to be maintained at the site, additional storage is available within the lined permeable subbase for water provided on-board by fire tender vehicles or the mains water supply.

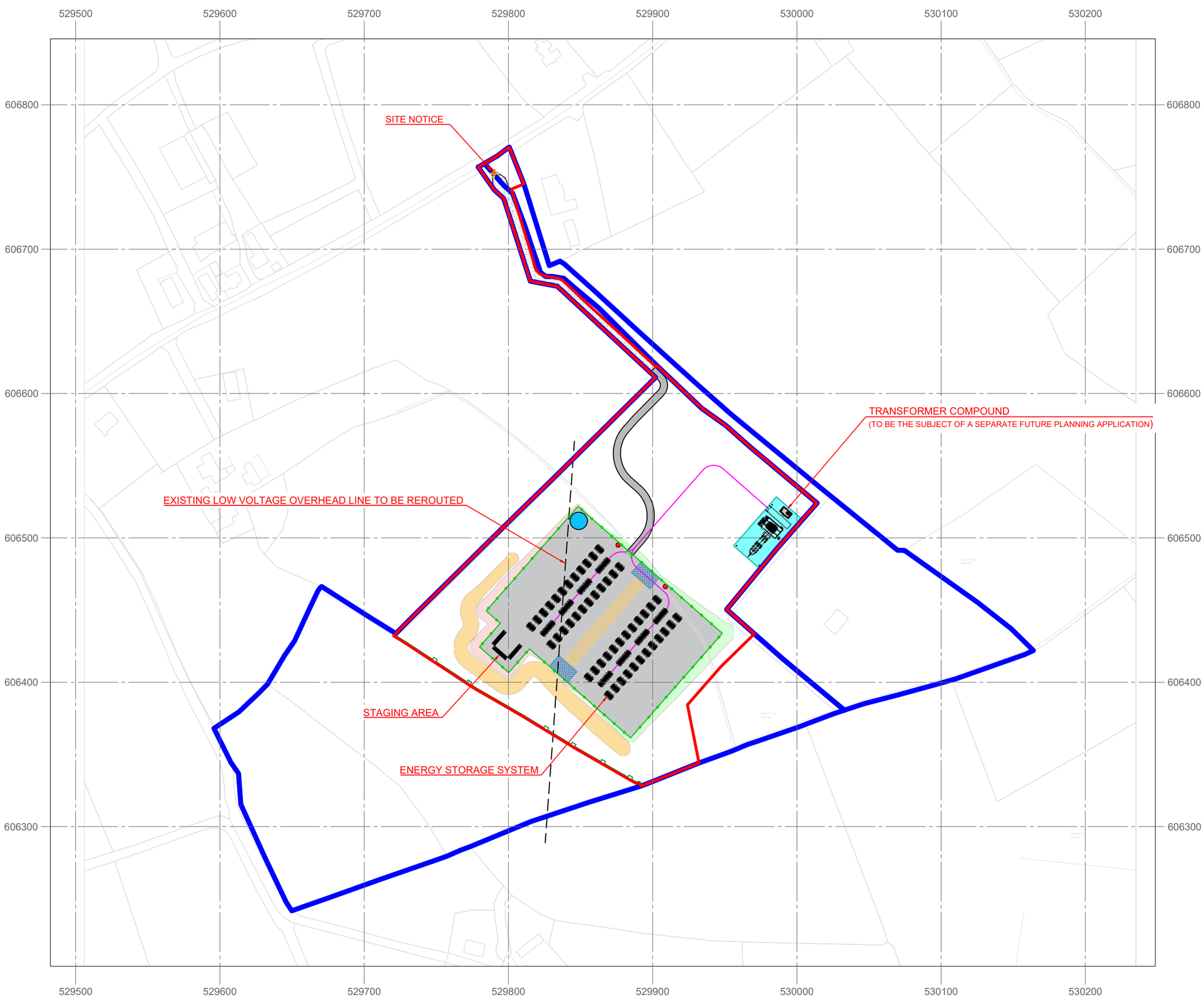
The system ensures that there is sufficient storage to allow arrangement for pumping facilities to remove contaminated water for transport and disposal offsite, preventing loss of firewater to groundwater or surface water.

The firefighting water demand and containment scenario adopted represents a conservative and self-sufficient design basis for planning purposes. Final operational firefighting procedures and site-specific emergency response arrangements will be developed in consultation with the relevant Fire and Rescue Service at detailed design stage

The drainage layout including siting of the pollution control valves are shown on the Drainage Plan at Appendix B.

Appendix A

Development Drawings



LEGEND:

- LANDOWNERSHIP BOUNDARY
- APPLICATION BOUNDARY
- INTERNAL ACCESS TRACKS
- EXISTING ACCESS TRACK TO BE UPGRADED
- INTERNAL ESS CABLING
- TRANSFORMER COMPOUND
- SECURITY PALISADE FENCING
- STOCK PROOF MESH FENCING
- CCTV SECURITY CAMERA LOCATIONS
- LIGHT POLE
- 1M CONTOUR DATA
- EXCAVATION CUT
- EXCAVATION FILL
- BERM

N

Date:	Rev:	Description:	Drawn By:
12/05/2026	REV 01	REVISED PROJECT DESIGN / LAYOUT.	EF

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Client: NEOEN RENEWABLES IRELAND LIMITED

Job Title: GLENLARA POWER RESERVE PROJECT

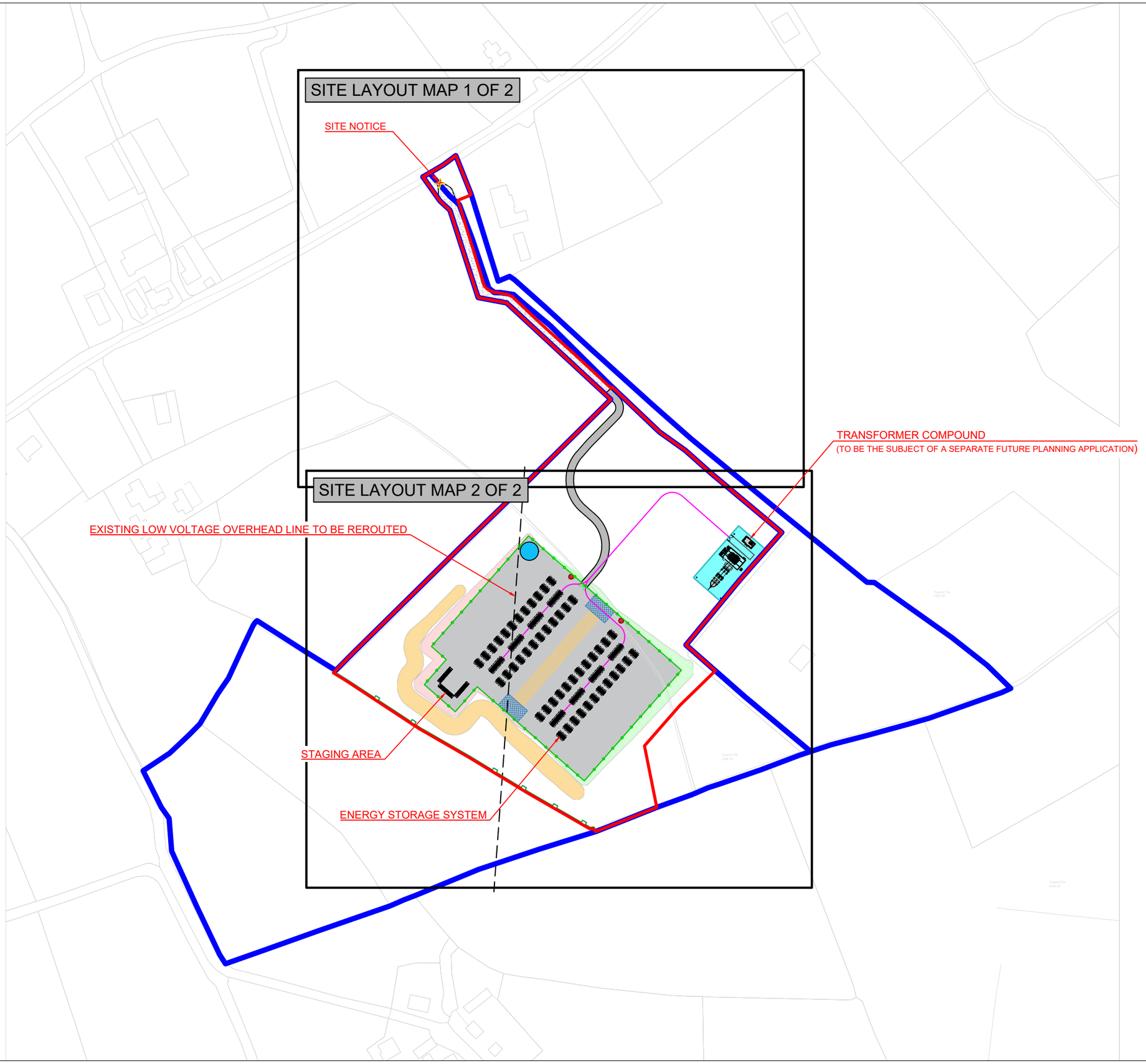
Drawing Title:

FIGURE 2: SITE LOCATION MAP
(1:2,500)

Drawing No.:	Stage:
NEO001GLE_FI_LOC-0.02	SECTION 132 REQUEST INFORMATION

Scale:	Date:	Revision No.:
(A3) 1:2,500	17/06/2024	REV 01

Drawn By:	Checked By:	Confirmed By:
JB	SC	CF



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12/05/2026	REV 01	REVISED PROJECT DESIGN / LAYOUT.	EF

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Client: NEOEN RENEWABLES IRELAND LIMITED

Job Title: GLENLARA POWER RESERVE PROJECT

Drawing Title:

FIGURE 3: SITE LAYOUT MAP
DRAWING KEY

Drawing No.:	Stage:
NEO001GLE_FI_LOC-0.03	SECTION 132 REQUEST INFORMATION

Scale:	Date:	Revision No.:
(A3) 1:2,500	17/06/2024	REV 01

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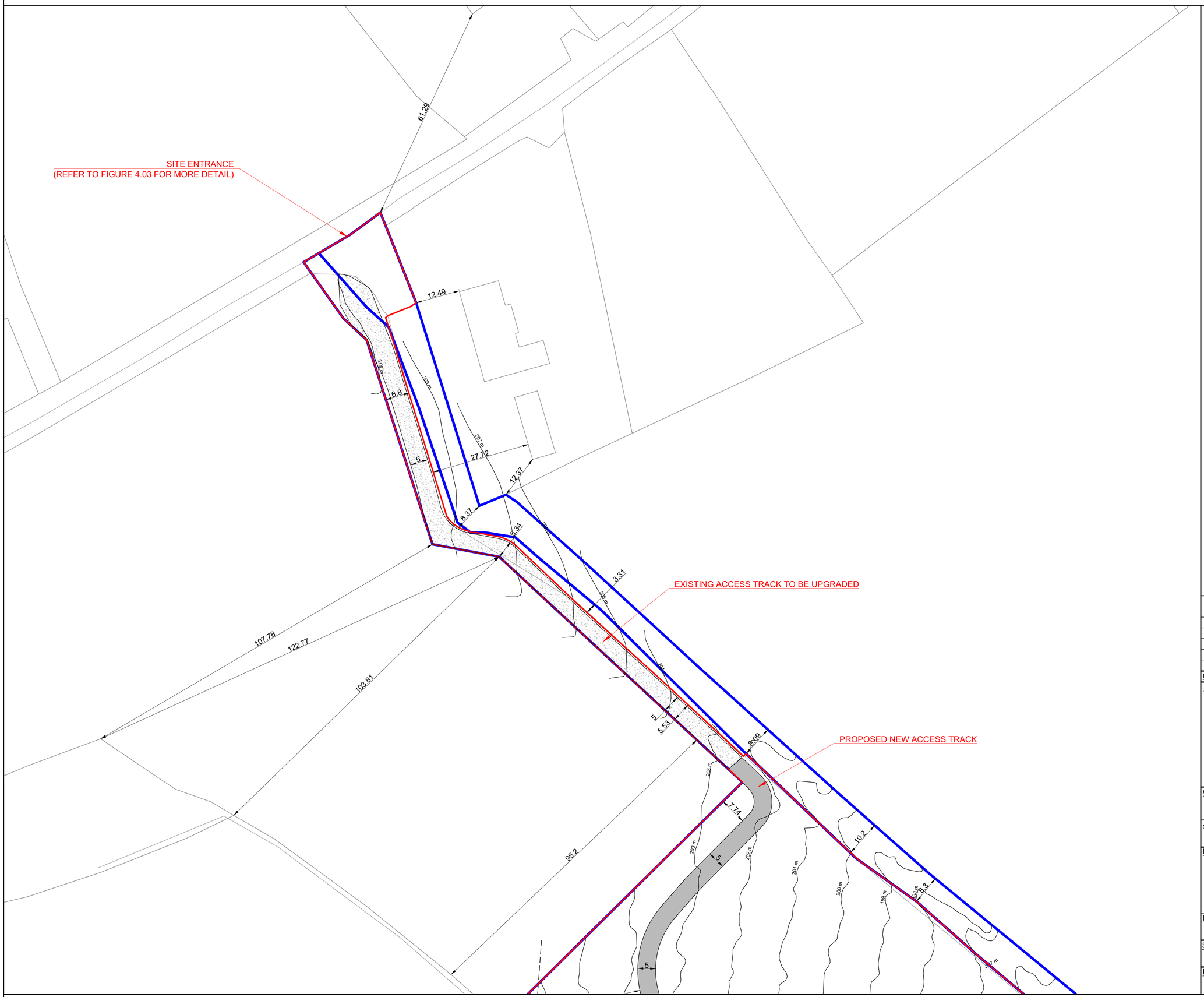

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NEOEN RENEWABLES IRELAND LIMITED

Job Title:
GLENLARA POWER RESERVE PROJECT

Drawing Title:
FIGURE 4.01: SITE LAYOUT MAP 1 OF 2 (1:500)

Drawing No.	Stage.	
NEO001GLE_PAS_LAY-0.01	PLANNING	
Scale: (A1) 1:500	Date: 17/06/2024	Revision No.: REV 0
Drawn By: JB	Checked By: SC	Confirmed By: CF

12M DIAMETER WATER TANK

ENERGY STORAGE SYSTEM (ESS) CONTAINER

HYDRANT LOATIONS

STAGING AREA

TRANSFORMER & INVERTER CONTAINERS

EXISTING LOW VOLTAGE OVERHEAD LINE TO BE REROUTED

FFL=205m

FFL=202m

Fulacht Fia
(Site of)

LEGEND:

- LANDOWNERSHIP BOUNDARY
- APPLICATION BOUNDARY
- INTERNAL ACCESS TRACKS
- EXISTING ACCESS TRACK TO BE UPGRADED
- INTERNAL ESS CABLING
- TRANSFORMER COMPOUND
- SECURITY PALISADE FENCING
- STOCK PROOF MESH FENCING
- CCTV SECURITY CAMERA LOCATIONS
- LIGHT POLE
- 1M CONTOUR DATA
- EXCAVATION CUT
- EXCAVATION FILL
- BERM

N

Date:	Rev:	Description:	Drawn By:
12/05/2026	REV 01	REVISED PROJECT DESIGN / LAYOUT.	EF

Prepared By:

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Client:
NEOEN RENEWABLES IRELAND LIMITED

Job Title:
GLENLARA POWER RESERVE PROJECT

Drawing Title:
FIGURE 4.02: SITE LAYOUT MAP 2 OF 2
(1:500)

Drawing No.:	Stage:
NEO001GLE_FI_LAY-0.02	SECTION 132 REQUEST INFORMATION

Scale:	Date:	Revision No.:
(A1) 1:500	17/06/2024	REV 01

Drawn By:	Checked By:	Confirmed By:
JB	SC	CF

Appendix B

Proposed Surface Water Drainage Layout

R:_Projects\M02206 Galetech Energy Services\08 Glenlara BESS, County Cork\01 Drawings\3 Drainage\1.1 Working Drawing\M02206-01-CE200-PP02.dwg 2026-05-06 17:07:47

MAP 2
SCALE: 1:1250

MAP 1
SCALE: 1:500

KEY PLAN
SCALE: 1:2500

WATER TANK TO BE FILLED/TOPPED UP BY MAINS, SUBJECT TO UE CONSENT

TRACKPIPE

SWALE TO CONVEY AND ATTENUATE RUN-OFF FROM ACCESS LANE

MAP 2
SCALE: 1:1250

ONSITE TANK FILLED BY MAINS OR ABSTRACTION, TO PROVIDE FIREWATER

SA1–1350ø
CL: 205.000
IL: 204.370

SA8–1350ø
CL: 205.000
IL: 204.145

HYDRANT TO PROVIDE FIRE WATER ONSITE. FED BY WATER TANK

EXISTING FIELD DRAIN TO BE CULVERTED TO ALLOW FOR ACCESS
MIN CULVERT DIA: 900mm

RUN-OFF FROM ACCESS TRACK CONVEYED AND ATTENUATED BY SWALE WITH CHECK DAM, DISCHARGE TO EXISTING FIELD DRAIN

UNBOUND SURFACES TO DRAIN VIA PERMEABLE SURFACE. RUNOFF TO DISCHARGE LATERALLY IN SUBBASE AND BY SURFACE OVERFLOW

SUBBASE UNDERLAID BY IMPERMEABLE MEMBRANE

GROUNDWATER COLLECTOR DRAIN

SA13–1350ø
CL: 205.000
IL: 204.069

SA9–1350ø
CL: 205.000
IL: 203.879

SA3–1350ø
CL: 205.000
IL: 203.899

SA12–1350ø
CL: 205.000
IL: 203.699

SA13–1350ø
CL: 205.000
IL: 203.590

SA10–1350ø
CL: 205.000
IL: 203.625

SA4–1350ø
CL: 205.000
IL: 203.500

SA5–1350ø
CL: 202.000
IL: 200.945

SA25–1350ø
CL: 202.000
IL: 201.038

SA23–1350ø
CL: 202.000
IL: 200.896

SA14–1350ø
CL: 202.000
IL: 201.175

SA22–1350ø
CL: 202.000
IL: 201.361

SA26–1350ø
CL: 202.000
IL: 200.998

SA24–1350ø
CL: 202.000
IL: 200.790

SA6–1350ø
CL: 202.000
IL: 200.600

SA2–1350ø
CL: 205.000
IL: 204.085

HYDRANT TO PROVIDE FIRE WATER ONSITE. FED BY WATER TANK

SA15–1350ø
CL: 202.000
IL: 201.154

SA18–1350ø
CL: 202.000
IL: 201.201

SA19–1350ø
CL: 202.000
IL: 201.119

SA21–1350ø
CL: 202.000
IL: 200.872

SA17–1350ø
CL: 202.000
IL: 200.834

SA16–1350ø
CL: 202.000
IL: 200.954

SA20–1350ø
CL: 202.000
IL: 201.023

SB1–1350ø
CL: 197.000
IL: 195.801

SB2–1350ø
CL: 197.000
IL:195.635

ATTENUATION BASIN TO PROVIDE 34m3 OF STORAGE
WEIR LEVEL:
197.760
CL: 197.760
IL: 200.834

DRAINAGE FROM SUBSTATION COMPOUND TO DISCHARGE VIA BYPASS SEPARATOTOR TO SUIT DESIGN FLOW PER KLARGESTOR NSBP003 OR SIMILAR TO MITIGATE POTENTIAL POLLUTION FROM LUBRICANTS OR FUEL ASSOCIATED WITH TRANSFORMERS OR GENERATOR – SUBJECT TO FUTURE DESIGN

SB3–1350ø
HYDROBRAKE MANHOLE TO LIMIT FLOW TO 1.2LPS
REF:
MD-SHE-0056-1200-0660-1200
DESIGN HEAD: 0.66
CL: 196.266
IL:195.600

OUTFALL TO FIELD DRAIN
ALTHON HEADWALL OR SIMILAR
IL: 195.454

LINED ATTENUATION BASIN TO PROVIDE 952m3 OF STORAGE

FIRE SUPPRESSION ATTENUATION VOLUME (MINIMUM RECOMMENDED VOLUME OF 180 CU.m AS PER NFCC GRID SCALE BATTERY ENERGY STORAGE SYSTEM PLANNING – GUIDANCE FOR FRS) TO BE PROVIDED BY BASIN IN CASE OF EMERGENCY.

WEIR LEVEL:
CL: 197.163
IL: 195.5

SA7 – 1350ø
HYDROBRAKE MANHOLE TO LIMIT FLOW TO 14.5LPS
REF:
MD-SHE-0165-1450-1500-1450
DESIGN HEAD: 1.5
CL:197.163
IL:195.500

EMERGENCY POLLUTION CONTROL VALVE (PENSTOCK OR SIMILAR) TO BE LOCATED IN MH. VALVE TO BE CLOSED IN EVENT OF CONTAINMENT EVENT (RUNOFF / FIREFIGHTING WATER STORED IN LINED BASIN)

OUTFALL TO WATERCOURSE
ALTHON HEADWALL OR SIMILAR
IL: 195.4

PRELIMINARY - FOR PLANNING

MAP 1
SCALE: 1:500

GENERAL NOTES

1. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS TO BE CHECKED ON SITE. COPYRIGHT PROTECTED.

LEGEND

- SITE BOUNDARY
- ATTENUATION BASIN
- EXTENT OF IMPERMEABLE LINER
- PROPOSED FILTER DRAIN
- PROPOSED SWALE
- PROPOSED CARRIER PIPE
- PROPOSED TRACK PIPE
- WATERCOURSE
- EXISTING FIELD DRAIN
- PROPOSED CULVERT
- W — PROPOSED MAINS WATER SUPPLY
- PROPOSED COLLECTOR DRAIN

ISSUE	DRN	APP	DATE	NOTES / DESCRIPTION
2	IB	DKS	06/05/26	INCLUSION OF SECTION
01	IB	DKS	30/04/26	ORIGINAL FOR REVIEW

FOR REVIEW

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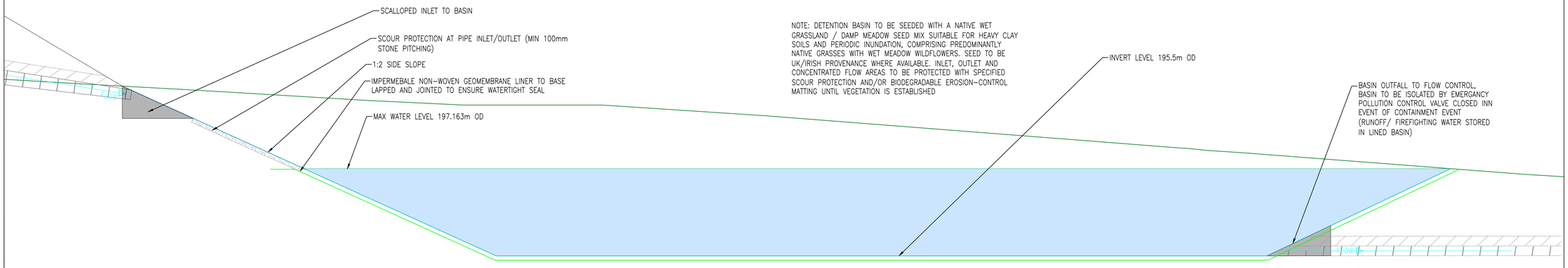
PROJECT
GLENLARA POWER RESERVE CO. CORK

CLIENT
NEOEN RENEWABLES IRELAND LTD

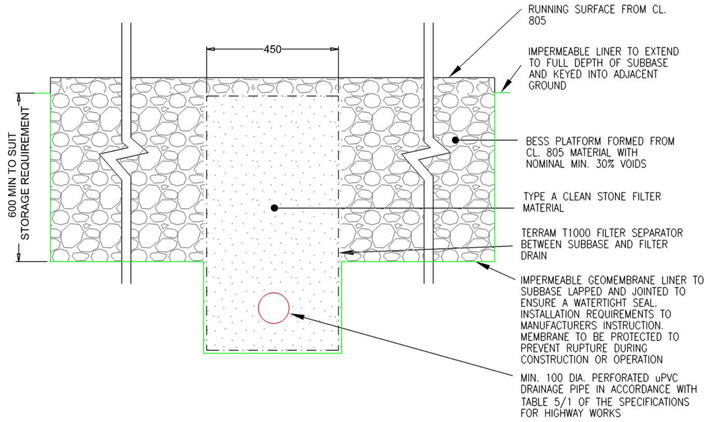
DRAWING TITLE
PROPOSED DRAINAGE LAYOUT GENERAL ARRANGEMENT

SCALE	ORIGINAL SHEET SIZE	PROJECT NO.
AS SHOWN	A1	M02206-08

DRAWING NO.
CE 201–02



SECTION A:A CROSS SECTION OF ATTENUATION BASIN,
SCALE: 1:50



TYPICAL SECTION : BESS PLATFORM WITH IMPERMEABLE MEMBRANE AND FILTER DRAIN
SCALE: NTS

PRELIMINARY - FOR PLANNING

GENERAL NOTES

1. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS TO BE CHECKED ON SITE. COPYRIGHT PROTECTED.

ISSUE	DRN	APP	DATE	NOTES / DESCRIPTION
01	IB	DKS	05/05/26	ORIGINAL FOR REVIEW

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PROJECT
GLENLARA POWER RESERVE CO. CORK

CLIENT
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DRAWING TITLE
PROPOSED DRAINAGE LAYOUT CROSS SECTIONs

SCALE	ORIGINAL SHEET SIZE	PROJECT NO.
AS SHOWN	A1	M02206-08

DRAWING NO.
CE 202-01

Appendix C

Storm Network Hydraulic Calculations

Calculation Methodology – Firefighting Containment

This calculation note summarises the methodology and calculations undertaken to determine the required emergency containment storage for the proposed development.

The assessment has been carried out in accordance with Guidance for Pollution Prevention 18 (GPP18): *Containing Major Spillages and Firewater at Industrial Sites* and the *National Fire Chiefs Council (NFCC) Guidance for Grid-Scale Battery Energy Storage Systems (2026 Update)*. In the absence of Irish-specific guidance relating to firewater management and pollution prevention for BESS installations, these documents have been adopted as recognised best practice.

Containment Design Basis (GPP18)

GPP18 does not prescribe specific rainfall return periods or durations, but requires that containment systems are designed based on a credible worst-case scenario, including:

- the volume of firewater applied during an incident;
- rainfall occurring during the incident; and
- any residual volume within the drainage system at the onset of the incident.

For the purposes of this assessment, a conservative design scenario has been adopted comprising the parameters stated in previous guidance PPG18, i.e.:

- a preceding rainfall event represented by a 1 in 10-year return period rainfall over a 7-day duration, with discharge restricted to the greenfield runoff rate, to establish residual storage within the drainage system at the onset of an incident;
- rainfall during the incident represented by a 1 in 10-year, 24-hour rainfall event across the contributing site area; and
- firefighting water demand in accordance with NFCC guidance for grid-scale battery energy storage systems.

The containment system is required to accommodate the combined volume arising from these components and to prevent uncontrolled discharge to surface water or groundwater, with provision for isolation and subsequent removal of retained liquids.

Preceding Rainfall Allowance

A hydraulic simulation was undertaken using MicroDrainage to represent a 1 in 10-year return period rainfall event over a 7-day duration prior to an incident, with discharge restricted to the greenfield runoff rate per normal operation of the site.

The simulation indicates that a residual volume of approximately 50m³ remains within the attenuation basin (that will be isolated in an emergency event) at the end of this period. This volume has been included within the overall storage requirement.

Emergency Incident Rainfall Allowance

A 1 in 10-year, 24-hour rainfall event has been calculated based on a contributing area of 13,400m² and a rainfall depth of 75.5mm, resulting in a required storage volume of 1,011m³ (13,400m² × 0.0755m).

Firefighting Water Allowance

NFCC guidance states that, as a minimum, water supplies for boundary cooling purposes should be capable of delivering a flow rate of 25 litres per second over a duration of 120 minutes. This corresponds to a total applied volume of approximately 180 m³, which has been adopted as the design firewater volume for the purposes of this assessment. A fire water storage tank containing 271m3 is located on site to provide 1.5 x NFCC guidance (2026 Update) of the fire water provision.

Total Storage Requirement

The total required emergency containment storage is therefore:

- Residual volume from preceding rainfall (1 in 10-year, 7-day event): 50m³
- Emergency Event Rainfall Allowance 1 in 10-year, 24-hour rainfall event: 1,011m³
- Firefighting Water Allowance :(271)m³

Total Required Storage = 1,273m³

Proposed Storage Provision

A lined attenuation basin is proposed to provide 953m³ of dedicated containment storage. This basin forms the primary detention and isolation feature for firefighting water and incident-related runoff.

The remaining volume (230m³) is temporarily accommodated within the permeable sub-base beneath the lower BESS platform. This sub-base, constructed using Clause 805 material with an assumed porosity of 30%, operates as a permeable pavement layer and provides inherent void space capable of storing water on a short-term basis.

The sub-base extends over an area of 5,863m². Based on the required storage volume, the equivalent depth of water stored within the sub-base is:

· 321m³ ÷ (5,863m² × 0.30) = 0.183m

This represents a relatively shallow proportion of the available sub-base depth and extent, and is therefore considered a credible and conservative use of the available storage volume.

The sub-base is underlain by low permeability subsoils and is hydraulically connected to the site drainage network. As a result, water stored within the sub-base will preferentially drain laterally via the drainage system to the lined attenuation basin, rather than infiltrating vertically to groundwater.

In an emergency scenario, the attenuation basin is isolated using the shut-off valve, and retained water is removed by pumping. This active management ensures that water stored within the drainage system, including the sub-base, is drawn down towards the basin and can be removed from the site in a controlled manner.

On this basis, the permeable sub-base provides supplementary, temporary storage within a closed and managed drainage system, while the lined attenuation basin provides the primary containment and isolation function. The combined storage provision is therefore sufficient to accommodate a credible worst case emergency containment volume in accordance with GPP18 principles.

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Surface Network 1

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	2	Foul Sewage (l/s/ha)	0.000	Maximum Backdrop Height (m)	1.500
M5-60 (mm)	15.700	Volumetric Runoff Coeff.	0.750	Min Design Depth for Optimisation (m)	1.200
Ratio R	0.262	PIMP (%)	100	Min Vel for Auto Design only (m/s)	1.00
Maximum Rainfall (mm/hr)	50	Add Flow / Climate Change (%)	0	Min Slope for Optimisation (1:X)	500
Maximum Time of Concentration (mins)	30	Minimum Backdrop Height (m)	0.200		

Designed with Level Soffits

Network Design Table for Surface Network 1

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)

Network Design Table for Surface Network 1

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	36.289	0.242	150.0	0.043	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	27.940	0.186	150.0	0.012	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	59.870	0.399	150.0	0.036	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	39.880	0.266	149.9	0.024	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	38.225	0.255	149.9	0.053	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.002	5.213	0.035	148.9	0.017	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.000	55.468	0.370	150.0	0.049	5.00	0.0	0.600	o	225	Pipe/Conduit	
3.001	16.331	0.109	149.8	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	43.73	5.74	204.327	0.043	0.0	0.0	0.0	0.82	14.5	5.1
1.001	42.15	6.31	204.085	0.054	0.0	0.0	0.0	0.82	14.5	6.2
1.002	39.20	7.53	203.899	0.090	0.0	0.0	0.0	0.82	14.5	9.5
2.000	44.07	5.62	204.145	0.024	0.0	0.0	0.0	1.07	42.4	2.8
2.001	42.38	6.22	203.880	0.076	0.0	0.0	0.0	1.07	42.4	8.8
2.002	42.16	6.30	203.625	0.094	0.0	0.0	0.0	1.07	42.5	10.7
3.000	43.36	5.87	204.069	0.049	0.0	0.0	0.0	1.07	42.4	5.8
3.001	42.77	6.08	203.699	0.049	0.0	0.0	0.0	1.28	90.6	5.8

Network Design Table for Surface Network 1

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
2.003	18.315	0.090	203.5	0.073	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	23.018	2.555	9.0	0.036	0.00	0.0	0.600	o	300	Pipe/Conduit	
4.000	34.477	0.230	149.9	0.027	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.004	51.790	0.345	150.0	0.013	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.000	50.029	0.200	250.1	0.015	5.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
2.003	41.44	6.58	203.590	0.216	0.0	0.0	0.0	1.10	77.6	24.3
1.003	39.04	7.60	203.500	0.342	0.0	0.0	0.0	5.27	372.4	36.1
4.000	44.33	5.54	201.175	0.027	0.0	0.0	0.0	1.07	42.4	3.2
1.004	37.63	8.27	200.945	0.381	0.0	0.0	0.0	1.28	90.6	38.9
5.000	42.95	6.01	201.154	0.015	0.0	0.0	0.0	0.82	32.7	1.7

Network Design Table for Surface Network 1

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
5.001	29.974	0.120	249.8	0.031	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.000	16.483	0.082	201.0	0.068	5.00	0.0	0.600	o	225	Pipe/Conduit	
6.001	19.076	0.095	200.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
6.002	21.927	0.146	150.2	0.013	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.003	6.467	0.043	150.4	0.017	0.00	0.0	0.600	o	150	Pipe/Conduit	
5.002	58.547	0.234	250.2	0.011	0.00	0.0	0.600	o	300	Pipe/Conduit	
7.000	44.076	0.390	113.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
5.001	41.34	6.62	200.954	0.046	0.0	0.0	0.0	0.82	32.7	5.1
6.000	45.07	5.30	201.201	0.068	0.0	0.0	0.0	0.92	36.5	8.3
6.001	43.70	5.75	201.119	0.068	0.0	0.0	0.0	0.71	12.5	8.3
6.002	42.73	6.09	201.023	0.081	0.0	0.0	0.0	1.06	42.3	9.4
6.003	42.37	6.22	200.877	0.098	0.0	0.0	0.0	0.82	14.4	11.2
5.002	39.02	7.61	200.834	0.155	0.0	0.0	0.0	0.99	69.9	16.3
7.000	43.62	5.78	201.361	0.000	0.0	0.0	0.0	0.94	16.7	0.0

Network Design Table for Surface Network 1

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
8.000	21.273	0.142	149.8	0.087	5.00	0.0	0.600	o	225	Pipe/Conduit	
7.001	15.794	0.105	150.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
9.000	31.078	0.207	150.1	0.020	5.00	0.0	0.600	o	150	Pipe/Conduit	
7.002	6.058	0.040	151.5	0.019	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.005	15.974	4.350	3.7	0.012	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
8.000	44.96	5.33	201.038	0.087	0.0	0.0	0.0	1.07	42.4	10.6
7.001	42.92	6.03	200.896	0.087	0.0	0.0	0.0	1.06	42.3	10.6
9.000	44.05	5.63	200.998	0.020	0.0	0.0	0.0	0.82	14.5	2.3
7.002	42.58	6.15	200.790	0.126	0.0	0.0	0.0	0.81	14.4«	14.5
1.005	37.56	8.31	200.600	0.674	0.0	0.0	0.0	6.88	273.4	68.6

Network Design Table for Surface Network 1

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.006	23.053	0.092	250.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.006	36.66	8.78	195.500	0.674	0.0	0.0	0.0	0.82	32.7«	68.6

Manhole Schedules for Surface Network 1

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SA1	205.000	0.673	Open Manhole	1350	1.000	204.327	150				
SA2	205.000	0.915	Open Manhole	1350	1.001	204.085	150	1.000	204.085	150	
SA3	205.000	1.101	Open Manhole	1350	1.002	203.899	150	1.001	203.899	150	
SA8	205.000	0.855	Open Manhole	1350	2.000	204.145	225				
SA9	205.210	1.331	Open Manhole	1350	2.001	203.880	225	2.000	203.879	225	
SA10	205.000	1.375	Open Manhole	1350	2.002	203.625	225	2.001	203.625	225	
SA13	205.000	0.931	Open Manhole	1350	3.000	204.069	225				
SA12	205.000	1.301	Open Manhole	1350	3.001	203.699	300	3.000	203.699	225	
SA11	205.000	1.410	Open Manhole	1350	2.003	203.590	300	2.002	203.590	225	
								3.001	203.590	300	
SA4	205.000	1.500	Open Manhole	1350	1.003	203.500	300	1.002	203.500	150	
								2.003	203.500	300	
SA14	202.000	0.825	Open Manhole	1350	4.000	201.175	225				
SA5	202.000	1.055	Open Manhole	1350	1.004	200.945	300	1.003	200.945	300	
								4.000	200.945	225	
SA15	202.000	0.846	Open Manhole	1350	5.000	201.154	225				
SA16	202.000	1.046	Open Manhole	1350	5.001	200.954	225	5.000	200.954	225	
SA18	202.000	0.799	Open Manhole	1350	6.000	201.201	225				
SA19	202.000	0.881	Open Manhole	1350	6.001	201.119	150	6.000	201.119	225	

Manhole Schedules for Surface Network 1

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SA20	202.000	0.977	Open Manhole	1350	6.002	201.023	225	6.001	201.024	150	
SA21	202.000	1.123	Open Manhole	1350	6.003	200.877	150	6.002	200.877	225	
SA17	202.000	1.166	Open Manhole	1350	5.002	200.834	300	5.001	200.834	225	
								6.003	200.834	150	
SA22	202.000	0.639	Open Manhole	1350	7.000	201.361	150				
SA25	202.000	0.962	Open Manhole	1350	8.000	201.038	225				
SA23	202.000	1.104	Open Manhole	1350	7.001	200.896	225	7.000	200.971	150	
								8.000	200.896	225	
SA26	202.000	1.002	Open Manhole	1350	9.000	200.998	150				
SA24	202.000	1.210	Open Manhole	1350	7.002	200.790	150	7.001	200.791	225	76
								9.000	200.791	150	1
SA6	202.000	1.400	Open Manhole	1350	1.005	200.600	225	1.004	200.600	300	
								5.002	200.600	300	
								7.002	200.750	150	75
SA7	197.163	1.663	Open Manhole	1350	1.006	195.500	225	1.005	196.250	225	750
S22	198.163	2.755	Open Manhole	1200		OUTFALL		1.006	195.408	225	

Manhole Schedules for Surface Network 1

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SA1	529858.459	606505.996	529858.459	606505.996	Required	
SA2	529886.293	606482.712	529886.293	606482.712	Required	
SA3	529868.201	606461.421	529868.201	606461.421	Required	
SA8	529869.745	606491.576	529869.745	606491.576	Required	
SA9	529843.497	606461.553	529843.497	606461.553	Required	
SA10	529818.163	606432.929	529818.163	606432.929	Required	
SA13	529838.553	606481.334	529838.553	606481.334	Required	
SA12	529802.440	606439.232	529802.440	606439.232	Required	

Manhole Schedules for Surface Network 1

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SA11	529814.996	606428.788	529814.996	606428.788	Required	
SA4	529828.597	606416.522	529828.597	606416.522	Required	
SA14	529869.167	606427.159	529869.167	606427.159	Required	
SA5	529846.082	606401.552	529846.082	606401.552	Required	
SA15	529908.455	606465.745	529908.455	606465.745	Required	
SA16	529944.253	606430.797	529944.253	606430.797	Required	
SA18	529913.253	606454.939	529913.253	606454.939	Required	
SA19	529925.470	606443.874	529925.470	606443.874	Required	

Manhole Schedules for Surface Network 1

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SA20	529939.610	606431.069	529939.610	606431.069	Required	
SA21	529924.525	606415.155	529924.525	606415.155	Required	
SA17	529923.988	606408.711	529923.988	606408.711	Required	
SA22	529901.538	606416.181	529901.538	606416.181	Required	
SA25	529857.059	606397.584	529857.059	606397.584	Required	
SA23	529872.536	606382.990	529872.536	606382.990	Required	
SA26	529905.156	606394.946	529905.156	606394.946	Required	
SA24	529884.028	606372.155	529884.028	606372.155	Required	

Manhole Schedules for Surface Network 1

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SA6	529883.837	606366.100	529883.837	606366.100	Required	
SA7	529897.101	606357.200	529897.101	606357.200	Required	
S22	529906.873	606336.320			No Entry	

PIPELINE SCHEDULES for Surface Network 1

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	SA1	205.000	204.327	0.523	Open Manhole	1350
1.001	o	150	SA2	205.000	204.085	0.765	Open Manhole	1350
1.002	o	150	SA3	205.000	203.899	0.951	Open Manhole	1350
2.000	o	225	SA8	205.000	204.145	0.630	Open Manhole	1350
2.001	o	225	SA9	205.210	203.880	1.105	Open Manhole	1350
2.002	o	225	SA10	205.000	203.625	1.150	Open Manhole	1350
3.000	o	225	SA13	205.000	204.069	0.706	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	36.289	150.0	SA2	205.000	204.085	0.765	Open Manhole	1350
1.001	27.940	150.0	SA3	205.000	203.899	0.951	Open Manhole	1350
1.002	59.870	150.0	SA4	205.000	203.500	1.350	Open Manhole	1350
2.000	39.880	149.9	SA9	205.210	203.879	1.106	Open Manhole	1350
2.001	38.225	149.9	SA10	205.000	203.625	1.150	Open Manhole	1350
2.002	5.213	148.9	SA11	205.000	203.590	1.185	Open Manhole	1350
3.000	55.468	150.0	SA12	205.000	203.699	1.076	Open Manhole	1350

PIPELINE SCHEDULES for Surface Network 1

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
3.001	o	300	SA12	205.000	203.699	1.001	Open Manhole	1350
2.003	o	300	SA11	205.000	203.590	1.110	Open Manhole	1350
1.003	o	300	SA4	205.000	203.500	1.200	Open Manhole	1350
4.000	o	225	SA14	202.000	201.175	0.600	Open Manhole	1350
1.004	o	300	SA5	202.000	200.945	0.755	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
3.001	16.331	149.8	SA11	205.000	203.590	1.110	Open Manhole	1350
2.003	18.315	203.5	SA4	205.000	203.500	1.200	Open Manhole	1350
1.003	23.018	9.0	SA5	202.000	200.945	0.755	Open Manhole	1350
4.000	34.477	149.9	SA5	202.000	200.945	0.830	Open Manhole	1350
1.004	51.790	150.0	SA6	202.000	200.600	1.100	Open Manhole	1350

PIPELINE SCHEDULES for Surface Network 1

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
5.000	o	225	SA15	202.000	201.154	0.621	Open Manhole	1350
5.001	o	225	SA16	202.000	200.954	0.821	Open Manhole	1350
6.000	o	225	SA18	202.000	201.201	0.574	Open Manhole	1350
6.001	o	150	SA19	202.000	201.119	0.731	Open Manhole	1350
6.002	o	225	SA20	202.000	201.023	0.752	Open Manhole	1350
6.003	o	150	SA21	202.000	200.877	0.973	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
5.000	50.029	250.1	SA16	202.000	200.954	0.821	Open Manhole	1350
5.001	29.974	249.8	SA17	202.000	200.834	0.941	Open Manhole	1350
6.000	16.483	201.0	SA19	202.000	201.119	0.656	Open Manhole	1350
6.001	19.076	200.8	SA20	202.000	201.024	0.826	Open Manhole	1350
6.002	21.927	150.2	SA21	202.000	200.877	0.898	Open Manhole	1350
6.003	6.467	150.4	SA17	202.000	200.834	1.016	Open Manhole	1350

PIPELINE SCHEDULES for Surface Network 1

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
5.002	o	300	SA17	202.000	200.834	0.866	Open Manhole	1350
7.000	o	150	SA22	202.000	201.361	0.489	Open Manhole	1350
8.000	o	225	SA25	202.000	201.038	0.737	Open Manhole	1350
7.001	o	225	SA23	202.000	200.896	0.879	Open Manhole	1350
9.000	o	150	SA26	202.000	200.998	0.852	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
5.002	58.547	250.2	SA6	202.000	200.600	1.100	Open Manhole	1350
7.000	44.076	113.0	SA23	202.000	200.971	0.879	Open Manhole	1350
8.000	21.273	149.8	SA23	202.000	200.896	0.879	Open Manhole	1350
7.001	15.794	150.4	SA24	202.000	200.791	0.984	Open Manhole	1350
9.000	31.078	150.1	SA24	202.000	200.791	1.059	Open Manhole	1350

PIPELINE SCHEDULES for Surface Network 1

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
7.002	o	150	SA24	202.000	200.790	1.060	Open Manhole	1350
1.005	o	225	SA6	202.000	200.600	1.175	Open Manhole	1350
1.006	o	225	SA7	197.163	195.500	1.438	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
7.002	6.058	151.5	SA6	202.000	200.750	1.100	Open Manhole	1350
1.005	15.974	3.7	SA7	197.163	196.250	0.688	Open Manhole	1350
1.006	23.053	250.6	S22	198.163	195.408	2.530	Open Manhole	1200

Simulation Criteria for Surface Network 1

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	2.000	Output Interval (mins)	1

Number of Input Hydrographs 0	Number of Offline Controls 0	Number of Time/Area Diagrams 0
Number of Online Controls 1	Number of Storage Structures 1	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	15.700	Cv (Summer)	0.750
Return Period (years)	2	Ratio R	0.262	Cv (Winter)	0.840
Region	Scotland and Ireland	Profile Type	Summer	Storm Duration (mins)	30

Online Controls for Surface Network 1

Complex Manhole: SA7, DS/PN: 1.006, Volume (m³): 3.0

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0165-1450-1500-1450	Sump Available	Yes
Design Head (m)	1.500	Diameter (mm)	165
Design Flow (l/s)	14.5	Invert Level (m)	195.500
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	225
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1500
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.500	14.5	Kick-Flo®	0.956	11.7
Flush-Flo™	0.444	14.5	Mean Flow over Head Range	-	12.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.9	0.600	14.3	1.600	14.9	2.600	18.8	5.000	25.7	7.500	31.3
0.200	13.1	0.800	13.5	1.800	15.8	3.000	20.2	5.500	27.0	8.000	32.3
0.300	14.1	1.000	12.0	2.000	16.6	3.500	21.7	6.000	28.1	8.500	33.2
0.400	14.5	1.200	13.0	2.200	17.4	4.000	23.1	6.500	29.2	9.000	34.2
0.500	14.4	1.400	14.0	2.400	18.1	4.500	24.5	7.000	30.3	9.500	35.1

Weir

Discharge Coef 0.544 Width (m) 0.500 Invert Level (m) 197.014

Storage Structures for Surface Network 1

Tank or Pond Manhole: SA7, DS/PN: 1.006

Invert Level (m) 195.500

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	500.0	0.300	548.7	0.600	599.6	0.900	652.9	1.200	708.3	1.500	766.1
0.100	516.0	0.400	565.4	0.700	617.1	1.000	671.1	1.300	727.3	1.514	768.8
0.200	532.2	0.500	582.4	0.800	634.9	1.100	689.6	1.400	746.6		

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 16.700 Cv (Summer) 1.000
Region Scotland and Ireland Ratio R 0.262 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status ON
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 100
Climate Change (%) 20

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.000	SA1 30	Summer	100	+20%	100/15 Summer				204.998	0.521	0.000	0.99		13.8

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Status	Level Exceeded
1.000	SA1	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.001	SA2	30 Summer	100	+20%	100/15 Summer				204.929	0.694	0.000	1.14		15.8
1.002	SA3	30 Summer	100	+20%	100/15 Summer				204.774	0.725	0.000	1.64		23.2
2.000	SA8	15 Summer	100	+20%					204.235	-0.135	0.000	0.28		11.3
2.001	SA9	15 Summer	100	+20%	100/15 Summer				204.201	0.096	0.000	0.80		32.1
2.002	SA10	15 Summer	100	+20%	100/15 Summer				204.032	0.182	0.000	1.32		39.5
3.000	SA13	15 Summer	100	+20%					204.194	-0.099	0.000	0.57		23.4
3.001	SA12	15 Summer	100	+20%	100/15 Summer				204.011	0.012	0.000	0.34		26.2
2.003	SA11	15 Summer	100	+20%	100/15 Summer				203.957	0.067	0.000	1.33		88.9
1.003	SA4	15 Summer	100	+20%					203.630	-0.170	0.000	0.38		124.4
4.000	SA14	30 Summer	100	+20%	100/15 Summer				201.793	0.393	0.000	0.27		10.7
1.004	SA5	30 Summer	100	+20%	100/15 Summer				201.766	0.521	0.000	1.57		134.3
5.000	SA15	15 Summer	100	+20%					201.228	-0.151	0.000	0.22		7.0
5.001	SA16	15 Summer	100	+20%					201.101	-0.078	0.000	0.71		21.7
6.000	SA18	30 Summer	100	+20%	100/15 Summer				201.874	0.448	0.000	0.74		24.2
6.001	SA19	30 Summer	100	+20%	100/15 Summer				201.807	0.538	0.000	2.00		23.3
6.002	SA20	30 Summer	100	+20%	100/15 Summer				201.434	0.186	0.000	0.70		27.1
6.003	SA21	30 Summer	100	+20%	100/15 Summer				201.345	0.318	0.000	2.62		31.9
5.002	SA17	15 Summer	100	+20%					201.047	-0.087	0.000	0.80		52.9
7.000	SA22	30 Summer	100	+20%	100/30 Summer				201.525	0.014	0.000	0.08		1.3
8.000	SA25	30 Summer	100	+20%	100/15 Summer				201.643	0.380	0.000	0.89		34.5
7.001	SA23	30 Summer	100	+20%	100/15 Summer				201.529	0.408	0.000	0.85		31.6
9.000	SA26	30 Summer	100	+20%	100/15 Summer				201.493	0.345	0.000	0.51		7.0
7.002	SA24	30 Summer	100	+20%	100/15 Summer				201.443	0.503	0.000	3.69		44.3
1.005	SA6	30 Summer	100	+20%					200.777	-0.048	0.000	0.97		234.8
1.006	SA7	360 Summer	100	+20%	100/15 Summer				196.044	0.319	0.000	0.48		14.5

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Status	Level Exceeded
1.001	SA2	FLOOD RISK	
1.002	SA3	FLOOD RISK	
2.000	SA8	OK	
2.001	SA9	SURCHARGED	
2.002	SA10	SURCHARGED	
3.000	SA13	OK	
3.001	SA12	SURCHARGED	
2.003	SA11	SURCHARGED	
1.003	SA4	OK	
4.000	SA14	FLOOD RISK	
1.004	SA5	FLOOD RISK	
5.000	SA15	OK	
5.001	SA16	OK	
6.000	SA18	FLOOD RISK	
6.001	SA19	FLOOD RISK	
6.002	SA20	SURCHARGED	
6.003	SA21	SURCHARGED	
5.002	SA17	OK	
7.000	SA22	SURCHARGED	
8.000	SA25	SURCHARGED	
7.001	SA23	SURCHARGED	
9.000	SA26	SURCHARGED	
7.002	SA24	SURCHARGED	
1.005	SA6	OK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Status	Level Exceeded
1.006	SA7	SURCHARGED	

Appendix D

Greenfield Runoff Rate Calculations

Project Ref: M02206-08
Project Name: Glenlara

Purpose: To cacluate the greenfield runoff rate for the site.

QBAR Calculation	
Area (Km2)	0.0435
SAAR (mm)	1198
SOIL (Index)	0.45
QBAR (m3/s)	0.04687538
QBAR (Lps)	46.8753827
Lps/HA	**10.77595**

Location	Area (Ha)	Greenfield rate (Lps)
BESS	1.34	14.43977305
Transformer compound	0.11	1.185354504
Access Track	0.09	0.969835504

By	Checked	Revision	Reason for Change	Date
IB	KS	Original		27/04/2026

Appendix E

Groundwater Abstraction Feasibility Assessment

TECHNICAL NOTE

1 GROUNDWATER ABSTRACTION FEASIBILITY - INITIAL ASSESSMENT

1.1 Scoping Objectives

This Groundwater Abstraction Feasibility Scoping Assessment has been prepared to evaluate the initial feasibility of establishing a private groundwater supply at the site that will meet the water demand for a firefighting water supply source for the proposed Battery Energy Storage facility at Glenlara, Co Cork.

1.2 Statement of Authority

This assessment has been prepared and reviewed by qualified professions with appropriate experience. The key staff members involved in this project are as follows:

- Erin Galbraith *BSc (Hons) MSc PgCert CEnv MIEnvSoc* – Senior Consultant / Environmental Engineer experienced in contaminated land risk assessments, geo-environmental investigations, groundwater and hydrogeological/hydrological assessments, environmental management, remediation and mine risk assessment, supporting projects through planning, design and regulatory approval.

1.3 Scope of Works

The scope of works for the assessment includes the following:

- Assessment of geological and hydrogeological setting: Review of published and on-line geological and hydrogeological maps and records to inform the environmental setting of the site and its surrounds.
- Groundwater resource availability: Groundwater feasibility will be evaluated through a review of abstraction yields and water quality records and will aim to identify any quantity restrictions for a potential future abstraction well at the site.
- Provide recommendation of initial assessment of feasibility of establishing a private groundwater supply at the site to meet development demands and provide recommendations for further required assessments where appropriate.

2 SITE SETTING AND GROUNDWATER RESOURCE POTENTIAL

2.1 Site Location and Description

The site is located at Glenlara, approximately 1.6km west of Newmarket ITM grid reference (529873, 606457). The site boundary occupies an approximate area of 11 acres, and the site currently comprises agricultural lands. Access is from an unnamed local road west of the L1109. The site lies to the immediate north of Glenlara 110kV Substation.

Site levels lie c.209mOD at the site entrance in the northern portion of the site, with land in the main body of the site at c.214mOD in the northwestern corner, sloping gently downwards to c.195mOD in the east/southern eastern portion of the site.

2.2 Geological Setting

2.2.1 Subsoils

A review of GSI Groundwater Data Ireland Viewer Teagasc EPA Soils Dataset[1] (1:50,000 scale) indicates the subsoil beneath the site is comprised of till derived from Namurian sandstones and shales.

A figure showing the subsoils underlying the site is shown in Figure 2-1.

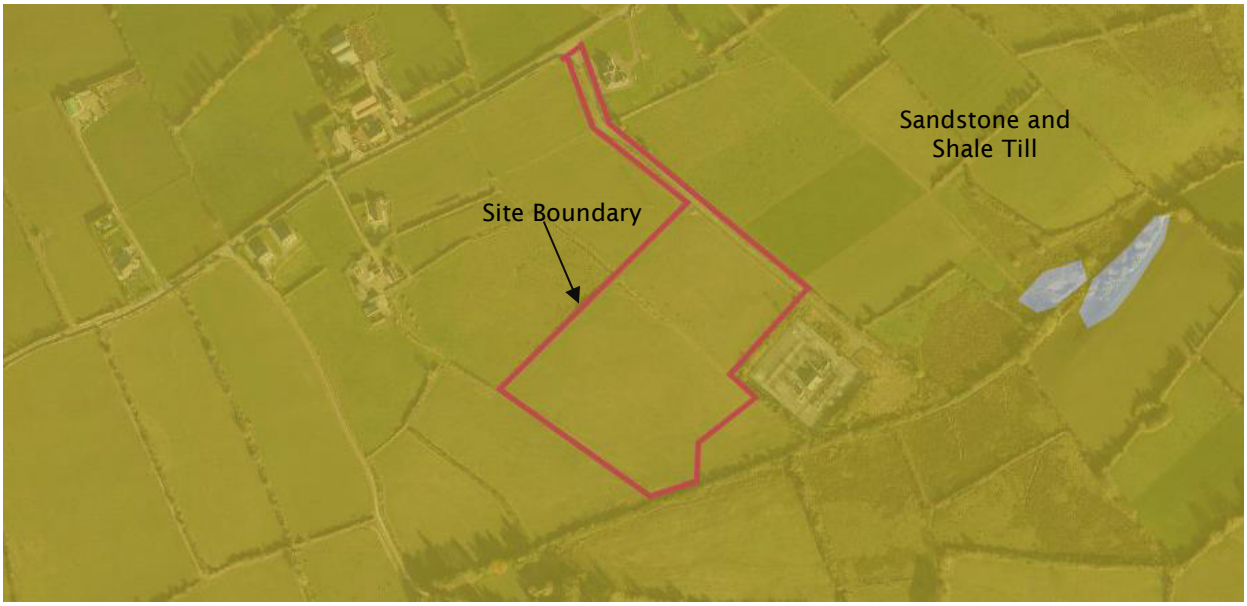


Figure 2-1: Subsoils (Teagasc, EPA and GSI, 2023)

2.2.2 Mapped Solid Geology

A review of the published geological mapping (GSI) 1:500,000 scale indicates the site is underlain by the Namurian shale and sandstone (undifferentiated) Formation, comprised of interbedded sedimentary rocks formed during the Carboniferous period. These strata typically consist of alternating layers of shale and sandstone and may weather to variable strength materials with locally fractured rock conditions.

An overview of the bedrock geology is presented in Figure 2.2 overleaf.

[1] https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=de7012a99d2748ea9106e7ee1b6ab8d5&scale=0

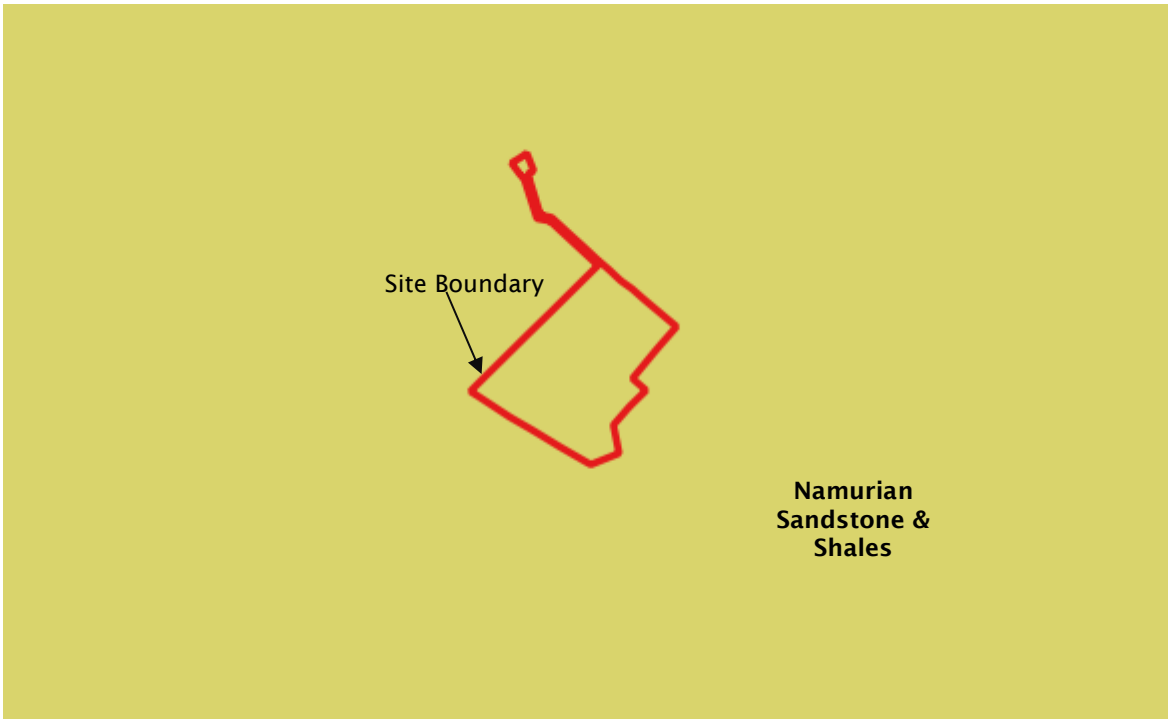


Figure 2-2: Bedrock Geology Map (1:500,000 scale)

2.2.3 Borehole Records

A review of GSI GeoUrban Map Viewer[2] Bedrock Boreholes (Verified) database did not identify any borehole records within 2km of the site.

2.3 Hydrogeology

2.3.1 Bedrock Hydrogeology

2.3.1.1 Aquifer Characteristics

A review of the available online GSI Groundwater Data Viewer database indicates the underlying groundwater body is the Rathmore West Groundwater Body, which is described as poorly productive.

The Rathmore West Groundwater Body (GWB) has a Water Framework Directive (WFD) overall groundwater status (2016-2021) of '**Good'** and listed as '**Not at Risk'** (WFD Risk 3rd Cycle).

A review of the GSI Groundwater Resources Data Viewer identified that the aquifer beneath the site is classified as a **Locally Important Aquifer (LI),** which is described as a bedrock which is moderately productive only in local zones and is an aquifer that is capable of supplying locally important supplies (e.g. smaller public water supplies, group schemes).

2.3.1.2 Groundwater Vulnerability

A review of GSI groundwater vulnerability mapping database[3] identifies groundwater vulnerability beneath the site as 'Moderate'.

[2] https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=9768f4818b79416093b6b2212a850ce6
[3] https://gsi.geodata.gov.ie/portal/apps/webappviewer/index.html?id=d333a8a9b6ab44378411fc0d973db4ef

2.3.2 Groundwater Recharge

Diffuse recharge generally occurs via rainfall percolating through the subsoil being higher in areas where subsoil is thinner and/or more permeable. The proportion of the effective rainfall that recharges the aquifer is largely determined by the thickness and permeability of the soil and subsoil, and by the slope.

The GSI's groundwater recharge model parameters for the site are summarised in Table 2-1.

Table 2-1: Groundwater Recharge Parameters

Majority of the Site	
Average Recharge (mm/yr)	130.54
Hydrogeological Setting:	3.iii
Hydrogeological Setting Description:	M Vul: Low Permeability Subsoil
Subsoil Type:	TNSSs
Subsoil Description:	Shale and Sandstone Till (Namurian)
Subsoil Permeability	Low
Vulnerability Category:	M
Aquifer Category:	LI
Aquifer Category Description:	Locally Important Aquifer – Bedrock which is moderately productive only in local zones
Rock Unit:	Undifferentiated Namurian
Recharge Coefficient (%):	15
Effective Rainfall (mm/yr):	870.30

2.3.3 Groundwater Subsoil Permeability

A review of the GSI groundwater subsoil permeability datasets indicates that the subsoils underlying the site are classed as 'Low Permeability'.

2.3.4 National Soils Hydrology

A review of the National Soils Hydrology map indicates that the subsoils underlying the majority of the site are classed as 'Poorly Drained'. A small portion encroaching the site's northwestern corner is classified as 'Well Drained'.

2.3.5 Groundwater Drinking Water Protection Areas

A review of the GSI groundwater drinking water protection areas indicate there are no protected areas within 2km of the site.

2.3.6 Groundwater Karst Data

A review of Karst Data Database on GSI Groundwater Data Viewer identified no groundwater karst features mapped within 2km of the site.

2.3.7 GSI Registered Groundwater Wells and Springs

A review of GSI Spatial Resources database identified one record of a groundwater well or springs within a 2km radius of the site boundary. Details are provided below in Table 2-2.

Table 2-2: GSI Registered Groundwater Wells & Springs Within 2km of the Site

GSI Name	Borehole ID	Year Drilled	Depth of borehole (m)	Depth to bedrock (m)	Yield m³/day	Specific Capacity (m³/d/m)	Distance & Direction to Site
1109NEW005	3415	7/4/1999	36.6	8.8	28	29.8	c.300m N

2.4 Indicative Groundwater Potential

Following a review of the available geological, hydrogeological, and environmental datasets, the site is considered to have moderate potential for groundwater abstraction, typical of a fractured bedrock setting within a Locally Important Aquifer. Groundwater occurrence is expected to be controlled primarily by secondary permeability within fractures and weathered zones of the underlying Namurian shale and sandstone bedrock. This assessment is informed by published GSI, EPA and Teagasc mapping, together with available groundwater well records in the surrounding area.

The site is underlain by Namurian shale and sandstone bedrock, comprising interbedded sedimentary rocks of Carboniferous age. These formations are typically characterised by low primary permeability, with groundwater flow and storage largely dependent on fracture networks and zones of enhanced weathering. Where such features are well developed, these aquifers can support locally important groundwater supplies.

The overlying subsoils comprise low permeability glacial till derived from Namurian sandstones and shales, which, in conjunction with the predominantly poorly drained soils, may locally limit recharge. However, the classification of groundwater vulnerability as **Moderate** indicates that recharge pathways are present, particularly via discontinuities in the subsoil and preferential flow routes.

The site is located within the Rathmore West Groundwater Body, which is described as poorly productive at a regional scale, but is assigned a 'Good' Water Framework Directive status and is classified as 'Not at Risk', indicating that groundwater quality is generally good and the resource is not currently subject to significant pressures.

The underlying aquifer is classified as a Locally Important Aquifer (LI), defined as a bedrock that is moderately productive only in local zones but capable of supplying locally important abstractions, such as individual supplies or small group schemes. Typical groundwater yields in such settings can vary significantly depending on local fracture conditions, but are generally in the order of 5 to 50m³/day, with higher yields possible where more transmissive fracture zones are encountered. Transmissivity values are typically low to moderate (approximately 1-50m2/day), with low storativity, reflecting the limited storage capacity of fractured bedrock systems.

A groundwater well located c.300m north of the site has a recorded yield of 28m³/day, demonstrating that viable groundwater supplies can be achieved locally and supporting the interpretation that similar yields may be achievable at the site where favourable conditions are encountered and with appropriate siting and drilling targeting fractured zones.

Overall, the site is considered to have moderate potential for groundwater abstraction, with groundwater availability likely to be variable and dependent on the interpretation of fractured bedrock zones. While recharge may be somewhat limited by low permeability subsoils, the presence of a Locally Important Aquifer, combined with the evidence of nearby successful abstraction and generally good groundwater quality, suggests that the suitably sited and constructed borehole has reasonable potential to provide a reliable local water supply, subject to confirmation through site-specific drilling and pump testing.

The water supply tank design for the proposed firefighting system at the development has a volume of c.271m³. Assuming daily yields ranging up to 43m³/day are considered achievable, it is considered possible that the proposed water supply tank could be refilled in less than 7 days.

Therefore, it is likely to be feasible that a well exploiting the underlying bedrock aquifer will supply the site's water demand.

3 SUMMARY AND RECOMMENDATIONS

3.1 Outcome

This Groundwater Abstraction Feasibility Scoping Assessment report has been undertaken to assess the initial feasibility of installing a groundwater supply at a proposed Battery Energy Storage Facility at Glenlara, Co Cork.

This feasibility scoping study has evaluated the initial feasibility of installing a private groundwater well by assessing the geological and hydrogeological setting of the site and determining the likelihood that a groundwater well will meet the sites water demand in full.

Based on information gathered during this study, it is deemed possible that a borewell at the site will achieve the required yield, and as such, is deemed technically feasible.

The geological and hydrogeological conditions, including the presence of weathered and fractured bedrock units with demonstrated groundwater potential in the rock unit, indicate that sufficient yield is feasible, provided that the borehole is constructed to intercept and fully develop productive zones.

Final confirmation of feasibility will depend on the results of future borewell drilling and pump testing, which will establish the sustainable yield under operational conditions. These works will also inform any refinements to the design, pump specification and supply infrastructure.

In summary, there are no significant technical constraints identified at this stage that would preclude the development of a borewell capable of meeting the stated abstraction requirements.

3.2 Recommendations

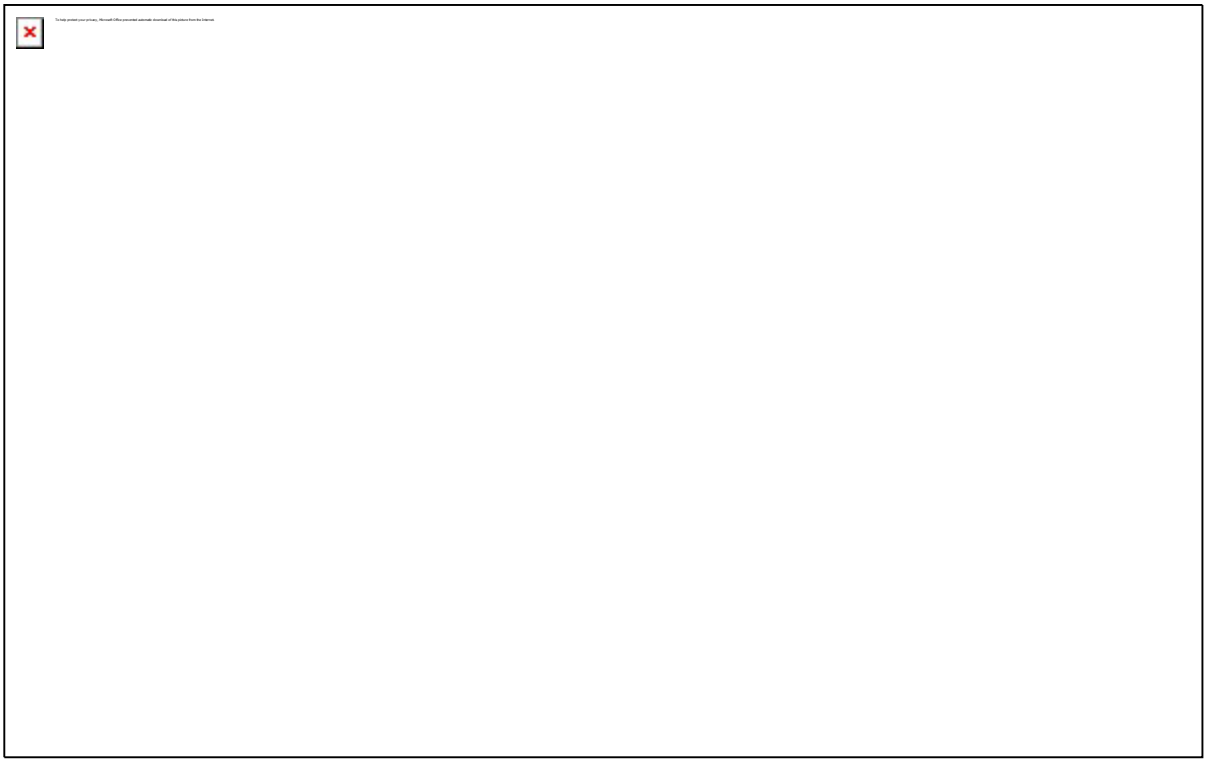
It is recommended that prior to drilling any future abstraction well at the site that a full Groundwater Abstraction Feasibility Assessment should be completed which would assess any groundwater quality restrictions, groundwater contamination risks and the presence of other licenced abstractions proximal to the site. This assessment should also include preliminary trial well designs to meet required specifications, and provide recommendations on abstraction licensing and regulations, with guidance to be provided on abstraction licensing to ensure the operator is fully aware of its legal responsibilities.

Appendix F

Correspondence

Iain Black

From: newconnections <newconnections@water.ie>
Sent: 18 March 2026 09:02
To: Iain Black
Subject: CDS26002341 Uisce Éireann Pre-Connection Enquiry EMAIL:0624731



Uisce Éireann Pre Connection Enquiry Ref Number: CDS26002341

Dear Customer,

Thank you for submitting your Pre-connection Enquiry Form for Site At, Curraduff, Newmarket, Cork . Your Uisce Éireann reference number for your application is CDS26002341, which you can keep for your records.

Next steps in your enquiry:

Assessment of Enquiry: Your enquiry is currently being assessed to confirm it is technically feasible; we will be in touch once this assessment has been completed. A significant level of analysis is required before we can provide a response. Two of a number of considerations are:

- A review of the available capacity in Uisce Éireann infrastructure versus your requirements.
- The location for connection versus the distance to/from our network.

Where your requirements are of a significant nature for example, multiple properties or commercial/industrial developments, this work may take a period of time to complete.

Getting a Confirmation of Feasibility: If your application is technically feasible, we will issue you with a letter of "Confirmation of Feasibility". This will outline what capital works if any, may be required to upgrade the public infrastructure to cater for your development.
From receipt of your Pre-connection Enquiry, it takes on average 16 weeks to issue a Confirmation of Feasibility.

Design Layout Approval: Where you are proposing to apply for a housing development (two or more properties), a **Statement of Design Acceptance** to your proposal will be required from Uisce Éireann before applying for Planning Permission. Please therefore submit your designs for assessment to Uisce Éireann to ensure they comply with our requirements, in advance of applying for Planning Permission.

Connection Application: Your Confirmation of Feasibility; which is a specific requirement to apply for Planning Permission through the Strategic Housing Development process, will assist you in obtaining your Planning Permission following which you may apply for your connection immediately.

If you have any further queries please contact us on **1800 278 278** or **+353 1 707 2828;** alternatively, you can visit www.water.ie/connections for more information.
Please note that the rates charged for 1850 numbers may vary across different service providers. Calls from mobiles may be more expensive.

Please do not amend this subject line as it will help us deal with your response.

Yours sincerely,

Customer Service Advisor

Callsave 1800 278 278 | +353 1 707 2828
www.water.ie/connections

Is don duine amháin nó don eintiteas amháin ainmnithe ar an seoladh an fhaisnéis agus d'fhéadfadh ábhar faoi rún, faoi phribhléid nó ábhar atá íogair ó thaobh na tráchtála de a bheith mar chuid den fhaisnéis. Tá toirmeasc ar aon daoine nó aon eititis; nach dóibh siúd an fhaisnéis- aon athbhreithniú a dhéanamh, aon atarchur a dhéanamh nó aon athdháileadh a dhéanamh, nó aon úsáid eile a bhaint as an bhfaisnéis, nó aon ghníomh a bhraithfeadh ar an bhfaisnéis seo a dhéanamh agus d'fhéadfaí an dlí a shárú dá ndéanfaí sin. Séanann Uisce Éireann dliteanas as aon ghníomh agus as aon iarmhairt bunaithe ar úsáid neamhúdaraithe na faisnéise seo. Séanann Uisce Éireann dliteanas maidir le seachadadh iomlán agus ceart na faisnéise sa chumarsáid seo agus séanann Uisce Éireann dliteanas maidir le haon mhoill a bhaineann leis an bhfaisnéis a fháil. Má tá an ríomh-phost seo faighte agat trí dhearmad, déan teagmháil leis an seoltóir más é do thoil é agus scrios an t-ábhar ó gach aon ríomhaire. D'fhéadfadh ríomhphost a bheith so-ghabhálach i leith truaillithe, idircheaptha agus i leith leasuithe neamhúdaraithe. Séanann Uisce Éireann aon fhreagracht as athruithe nó as idircheapadh a rinneadh ar an ríomhphost seo nó as aon dochar do chórais na bhfaighteoirí déanta ag an teachtaireacht seo nó ag a ceangaltáin tar éis a sheolta. Tabhair faoi deara go bhféadfadh monatóireacht a bheith á dhéanamh ar theachtaireachtaí chuig Uisce Éireann agus ó Uisce Éireann d'fhonn ár ngnó a chosaint agus chun a chinntiú go bhfuiltear ag teacht le beartais agus le caighdeáin Uisce Éireann. Is cuideachta gníomhaíochta ainmnithe é Uisce Éireann atá faoi theorainn scaireanna, a bunaíodh de bhun fhorálacha na n-Achtanna um Sheirbhísí Uisce 2007-2022, a bhfuil a bpríomh-ionad gnó ag Teach Colvill, 24-26 Sráid na Talbóide, BÁC 1.

Go raibh maith agat as d'aird a thabhairt.

The information transmitted is intended only for the person or entity to which it is addressed and may

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Thank you for your attention.