



Perigus Energy Ireland Midco Limited

Proposed Greenhills Renewable Energy Park, County Cork

Construction Environmental Management Plan

605444

AUGUST 2026

RSK



RSK GENERAL NOTES

Proposed Development No.: 605444

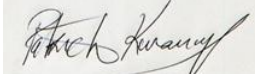
Title: Proposed Greenhills Renewable Energy Park

Client: Perigus Energy Ireland Midco Limited

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Date: 06/08/26

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1 INTRODUCTION

1.1 Introduction

RSK Ireland Ltd. has been commissioned by Perigus Energy Ireland Midco Limited (the Developer/s) to prepare this Construction Environmental Management Plan (CEMP) for the Proposed Greenhills Renewable Energy Park (the Proposed Development) in Co. Cork in support of the Planning Application.

The CEMP is intended to form the basis of providing information on the management and methodologies at the site in relation to construction of the Proposed Development.

This CEMP should be read in conjunction with the Planning and Environmental Report (PER) and Natura Impact Statement (NIS) for the Proposed Development.

With the implementation of the Proposed Development design and the mitigation measures proposed in the PER and NIS, any potential environmental impacts can be appropriately managed and mitigated, thus ensuring that there will be no likely significant environmental effects from the Proposed Development.

This CEMP is a live document and should be treated as such. It will be updated to include any planning conditions and recommendations of the Planning Authority and consultees. It will be continuously reviewed and updated during the construction phase of the Proposed Development.

Reviews can be triggered by the following events:

- Changes in the relevant legislation which could impact on the mitigation requirements of the construction phase.
- Where non-compliance with mitigation arises which require an update of the CEMP.
- Where issues arise as a result of site auditing for environmental compliance.
- Where complaints are received that necessitate a change in work practices that should be reflected in the CEMP.

Updated copies will be provided to the Planning Authority, where changes are made.

1.2 Scope

This CEMP co-ordinates and details the mitigation measures recommended in the PER chapters. The CEMP identifies the key environmental and construction contract constraints which the Contractor must adhere to. Multiple environmental receptors are present in the surrounding area.

This CEMP will be expanded and updated by the appointed construction Contractors prior to construction works commencing as some items can only be finalised with input from them when they have been appointed.



The Proposed Development is also currently at planning stage. The CEMP will also be updated to reflect any granted planning permissions and conditions.

The revised document will contain the site-specific control measures that will be applied by the Contractors and, where relevant, their sub-contractors during the construction phases of each element of the proposal and therefore some items can only be finalised with input from them when they have been appointed.

The CEMP allows for the inclusion of any additional constraints applied from planning conditions to be included in updates. As such it should be considered a live document which will be constantly updated during the construction phase of the Proposed Development. The aims of the CEMP will be to;

- Ensure construction works and activities are completed in accordance with design, mitigation and best practice approach presented in the PER and any associated planning documentation.
- Ensure construction works and activities are completed in accordance with all planning conditions for the Proposed Development and that the CEMP is updated as required.
- Ensure construction works and activities have minimal impact/disturbance to local landowners and the local community.
- Ensure construction works and activities have no adverse effect on the integrity of any European Site.
- Ensure that construction traffic to and from the Proposed Development is strictly managed to avoid unnecessary traffic movements.
- Identify a dedicated person on site to liaise with the Public regarding any concerns that they may have in relation to the site activities.
- Adopt a sustainable approach to construction.
- Provide adequate environmental training and awareness for all Proposed Development personnel.

A copy of the CEMP will be provided to each specific Contractor working on behalf of the Developer. A copy will be maintained on site for reference by the entire workforce. It will be accessible to all site personnel, subcontractors and representatives of the relevant enforcement authority.

The CEMP will be a key construction contract document, which will ensure that the mitigation measures, which are considered necessary to protect the environment are implemented.

Suitably qualified and experienced Environmental / Ecological Clerk of Works (EnvCoW/ECOW) will be appointed to provide ecological and environmental advice during construction. The EnvCoW and ECoW will monitor construction to ensure compliance with the CEMP and help to reduce risks and delays.

Any breaches of the CEMP will be reported to the appointed Proposed Development Manager who will have the authority to stop construction works.

2 SITE AND PROPOSED DEVELOPMENT DESCRIPTION

2.1 Site Location and Plan

The Proposed Development (Greenhills Renewable Energy Park) comprises a solar farm, battery energy storage system, 220kV AIS substation and loop-in grid connection in the townlands of Knocknagappagh, Barnaviddane, Ballyneague, Ballydaniel, Youghalpark, Ballydaheen and Cornaveigh in County Cork, see Figure 2.1 below.

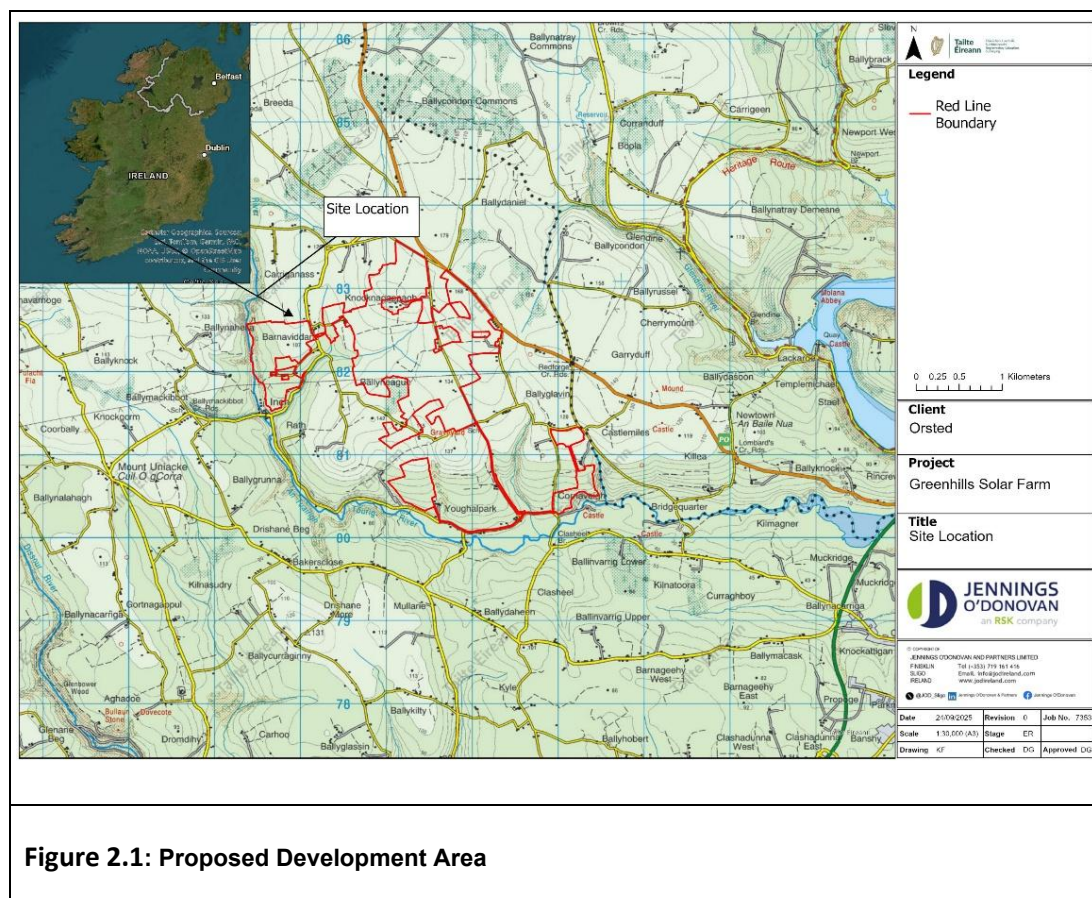


Figure 2.1: Proposed Development Area

The Proposed Development is adjacent to the R634 road approximately 7km north-west of the settlement of Youghal and 6.5km north-east of Killeagh, Co. Cork.

The site area is relatively flat and comprises agricultural lands in a rural setting with low population density. The high level of solar irradiance in the southern region of the country makes it ideal for the development of renewable solar photovoltaic projects.

2.2 Description of the Proposed Development

A detailed description is included in the PER **Chapter 4 Description of the Proposed Development**. In summary, the Proposed Development area is circa 323ha and will comprise the following elements:

- Solar array
- Inverter/transformer stations
- Interconnector underground cabling (including sections in the southern part of the site along public roads)
- New (2) and upgraded (9) site entrances and access tracks
- All ancillary development such as drainage infrastructure, security fencing, CCTV, weather stations and storage containers for spare parts.
- Temporary construction compound(s)
- Landscaping
- Biodiversity enhancement
- Battery energy storage system (BESS)
- 220kV AIS substation
- 220kV Overhead Line (OHL) Loop in grid connection to the existing Knockraha-Cullenagh 220kV OHL

A 10-year planning permission and 40-year operational life from the date of commissioning of the entire Proposed Development is being sought. This reflects the lifespan of modern-day renewable energy components.

A pre-condition survey will be carried out on all public roads that will be used in connection with the Proposed Development to record the condition of the public roads in advance of construction commencing. A post construction survey will also be carried out after the works are completed. All roads will be reinstated in a timely manner upon completion of the construction works.

Letter drops will be carried out to notify members of the public living near the proposed work locations to advise them of any particular upcoming traffic related matters.

Clear signage relating to the Proposed Development, both temporary and permanent, will be provided for accessing the site. The entrances to the site will be secured when the site is not in use. When necessary, a flagman/ banksman will be utilised to assist traffic movements at the site entrance or in other areas as required.

Transformer delivery will require the transportation of abnormal loads. The abnormal load will be delivered via the R634 via a new site entrance and new and upgraded access track to the proposed substation location. This will be undertaken at off-peak times under agreement with the local authority and An Garda Síochána.

A Traffic Impact Assessment incorporating construction traffic management measures has been prepared for the Proposed Development and is presented in **PER Appendix M**. In the event planning permission is granted for the proposed development, the Traffic

Management Measures may be amended to address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned. The measures will include:

- A delivery schedule.
- The requirement for dry run of the route using vehicles with similar dimensions for the substation transformer.

It is envisaged that construction will take approximately 21 months to complete. However, this is subject to various factors including weather conditions. The timeline includes preliminary works such as detailed design, marking out and procurement activities.

Deliveries of project components are scheduled from September 2028 to June 2029 depending on the element of the Proposed Development under construction.

The main construction activities, which includes civil engineering, fencing, tracks, compounds, hardstands, drainage, substation and BESS is scheduled for the period September 2028 to September 2029.

For the solar array element, pile foundation, frame structure assembly and solar PV module installation is scheduled to occur between January 2029 and September 2029.

Trenching for electrical cabling instruction, inverter and transformer installation is scheduled for the period March 2029 to October 2029. Short term local road openings to allow cable ducting will occur during this period.

Construction of the Loop-in grid connection and commissioning of the Proposed Development is scheduled to occur during the period August 2029 to March 2030. During the loop-in construction the existing 220kV Knockraha to Cullenagh Overhead line will be interrupted for a period of circa 17 weeks. The exact timing of this line outage will be agreed in advance with EirGrid and ESB Networks.

This also indicates the overlapping time periods when most delivery and construction activities will occur, mainly between March 2029 and October 2029.

It is anticipated that the Proposed Development will be grid connected and fully operational by April 2030.

2.2.1 Working hours

Working hours for construction will be from 08:00 to 18:00 on weekdays, with reduced working hours at weekends, from 08:00 to 16:00 on a Saturday. No works will generally occur on Sundays or bank holidays. During certain stages of the construction phase, it is expected that some work will have to be carried out outside of normal working hours. However, this will be kept to a minimum and will be undertaken where prior written approval has been received from the planning authority. Construction activities will gradually phase out from pre-construction to predominantly civil activities followed by commissioning and testing of the solar equipment.

2.3 Grid Connection (GCR)

Electricity from the solar array areas will be ducted via underground cabling to an on-site new 220kV AIS substation, which will be connected to the national grid via a loop-in grid connection to the existing Knockraha-Cullenagh 220kV overhead line, which runs through the main array area of the Proposed Development.

The proposed design for the 220kV loop-in to the existing OHL will require two short sections of overhead line connections from the substation gantries. Two new 27m to 36m, 269E single circuit, steel lattice, strain towers with Shieldwire, will be constructed under the existing 220kV OHL, see Figure 2.2.

The proposed 220kV AIS substation, loop-in grid connection and BESS compound are located in the townland of Ballyneague,, circa 6.5 kilometres north of Killeagh, County Cork, see

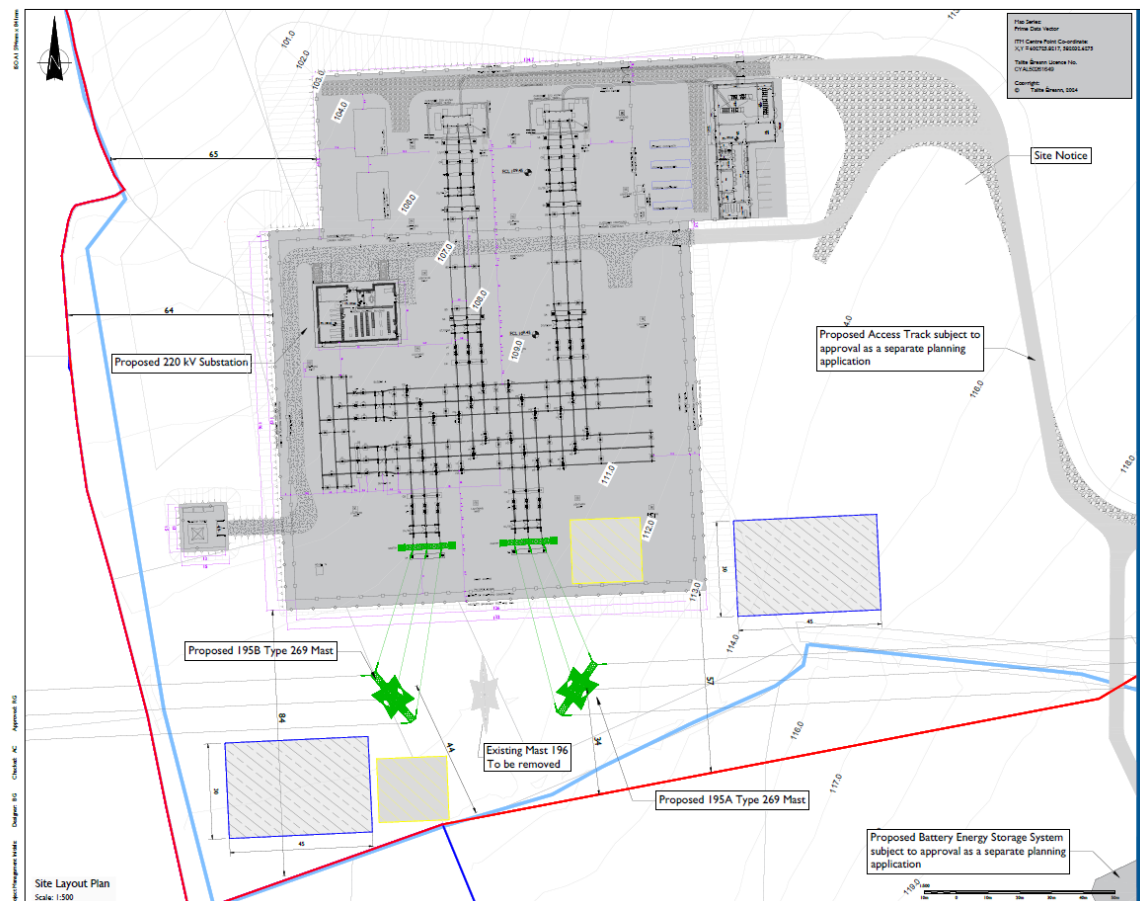


Figure 2.2: 220kV AIS Substation Layout Plan and Loop in Connection (illustrative purposes only)

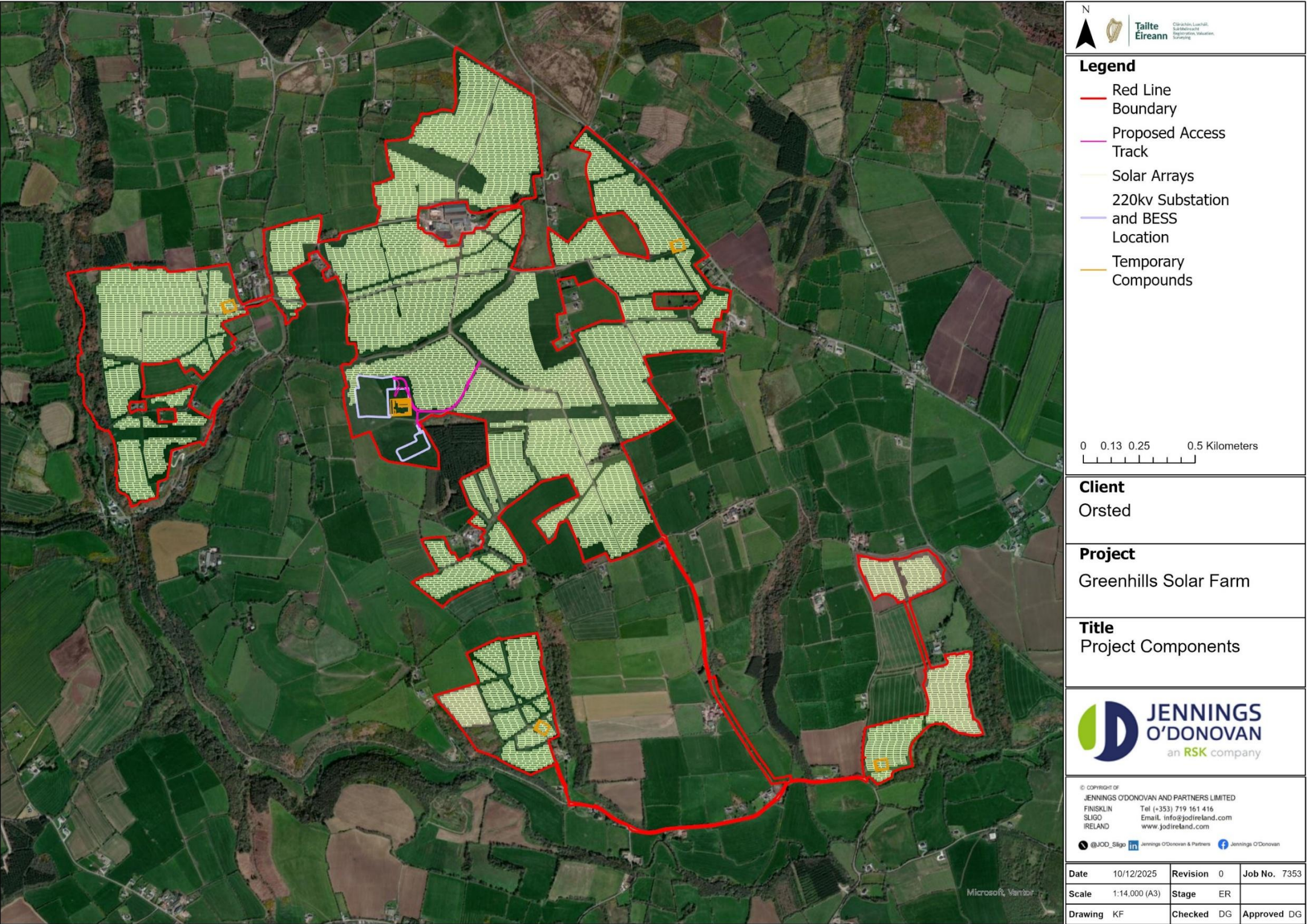


Figure 2.3: Location of Solar Array, 220kV Substation and BESS location

2.4 Proposed Development Programme

A procurement process will commence upon full planning approval to appoint a competent and experienced Contractor for the proposed works at the Site, with a target twenty one-month completion date for construction of all phases. The proposed timeline for the Proposed Development is set out in Figure 2.4. This also indicates the overlapping time periods when most delivery and construction activities will occur, mainly between March 2029 and October 2029.

The Contractor, once appointed, will develop a detailed construction work programme including plans to minimise risks to construction workers and local residents from dust, noise and vibration and to watercourses from pollution during each phase of the Proposed Development, addressing any restrictions with regards to undertaking certain tasks within sensitive bird breeding seasons/ retention of existing hedgerow etc. to minimise the impact of the construction on the identified species which use the site and its environs.

Greenhills Solar and BESS Proposed Development Indicative Construction Timeline																								
Construction Element	Start	Finish	Approximate Duration in time period	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28	Jan-29	Feb-29	Mar-29	Apr-29	May-29	Jun-29	Jul-29	Aug-29	Sep-29	Oct-29	Nov-29	Dec-29	Jan-30	Feb-30	Mar-30	Apr-30
Project Detailed Design, Marking Out & Procurement	Aug-28	Jul-29	11 months																					
Deliveries - Fframes	Sep-28	Jan-29	5 months																					
Deliveries - PV Modules	Sep-28	Feb-29	6 months																					
Deliveries - Inverters	Jan-29	Mar-29	3 months																					
Deliveries - Transformers	Mar-29	Jun-29	4 months																					
Deliveries - BESS	Mar-29	Jun-29	4 months																					
Deliveries - Cabling	Mar-29	Jun-29	4 months																					
Construction - Civils, Fencing, Tracks, Compounds, Hardstands, Drainage, Substation, BESS	Sep-28	Sep-29	12 months																					
Construction - Pile Foundations	Jan-29	Jul-29	7 months																					
Construction - Frame Structure Assembly	Feb-29	Sep-29	8 months																					
Construction - Solar PV Module Installation	Mar-29	Sep-29	7 months																					
Construction - Electrical - Trenching, Cabling, Inverter & Transformer Installation	Mar-29	Oct-29	8 months																					
Grid Connection & Commissioning of the Site	Aug-29	Mar-30	7 months																					
COD	Apr-30																							

Figure 2.4: Proposed Development Construction Programme

3 SUMMARY OF ENVIRONMENTAL SITE SETTING

3.1 Local Hydrology

The site is situated within the Blackwater (Munster) WFD Catchment (Hydrometric area (HA) 18) draining a total area of 3311km². This catchment is subdivided into 28 catchments with the site falling into the Tourig_SC_010. The regional and local hydrology of the site are summarised below in **Table 3-1** and **Figure 3.1**.

Table 3-1: Summary of the catchment, sub catchment and sub basin at the site

WFD Catchment	WFD SubCatchment	WFD River Sub Basin	River Waterbody
Blackwater (Munster) [HA_18]	Tourig_SC_010 [18-8]	Tourig_020 [IE_SW_18T030700]	Tourig_020 [IE_SW_18T030700]
		Glendine (Blackwater)_010 [IE_SW_18G070300]	Glendine (Blackwater)_010 [IE_SW_18G070300]

All surface waters draining from the Site eventually discharge into the Blackwater (Munster)_170), from which waters eventually flow to the Upper and Lower Blackwater Estuary, and onward into the Youghal Estuary through to Youghal Bay and into the Celtic Sea. The layout of the proposed wind farm has been designed to minimise potential environmental effects. The existing drainage is discussed in PER **Chapter 9 Land, Soils Geology, Hydrology and Hydrogeology**.

3.2 Site Drainage

The Site is characterised by a relatively extensive network of historic drains, with occasional non-mapped natural and artificial drainage channels. The drainage classifications are summarised in **Table 3-2**.

Table 3-2: Drain classifications

Drain classification	Description
Historically Mapped Surface Water	25-inch maps located on GeoHive maps (Not mapped by EPA/WFD)
Primary Drainage	Main artery of drains on site
Secondary Drainage	Connection to primary drains
Tertiary Drainage	Connection to secondary drains

Permanent site drainage will adopt a Sustainable Drainage (SuDS) nature-based approach to management of rainwater runoff. The approach to drainage ensures that existing site hydrology is maintained.

3.2.1 Solar Array Areas

The majority of the Proposed Development area remains a permeable surface under solar panels, where previous studies have shown that PV panel installations typically do not cause any significant change to drainage patterns where underlying ground / surface conditions are unaffected.

New made surfaces are limited to the proposed AIS Substation, BESS, permeable (unbound gravel) tracks, and hardstandings for Invertor Combiner Kiosk /Transformers and the associated crane hardstands. Rainfall will infiltrate through the unbound gravel surface, at level track surfaces into subsoils responding to rainfall in an identical way as existing fields. On steeper track sections where water is likely to flow, run off will be direct to the surrounding vegetated ground. The proposed Invertor Combiner Kiosk/Transformers, crane hardstands are relatively small and free standing, and all rainwater will run directly off these surfaces to the adjacent permeable surfaces of either grass or site access tracks made of crushed stone.

The proposed development has the potential to cause an increase in the peak rate and volume of run-off from the site without mitigation. Permanent surface water drainage design therefore adopts SuDS principles and ensures that runoff from new impermeable or semi-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% AEP (1 in 100 year) 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.
- Runoff from access tracks shall be collected via open swales or french drains. Run-off within swales shall be attenuated with the use of check dams in order to reduce the peak rate of run-off and to encourage infiltration of surface water.
- Attenuation basins, silt ponds with buffered outfalls (level spreaders) will have a beneficial effect to water quality during the construction and operational phase. These will be provided for areas of hardstands to avoid discharge directly to streams and watercourses.
- The riparian zones will be protected by development setback in excess of 20m for mapped surface water features i.e. EPA mapped streams and rivers and in excess of 10m from existing drainage non-mapped features.
- Cut-off swales will be installed between new infrastructure and existing watercourses.

At site entrances, soakaway and interceptor drains for all entrances will be provided. These will prevent surface water from discharging into the public road. No surface water runoff will be discharged onto public roads, foul sewers, or adjacent property.

Proposed drainage minimises alterations to the ambient Site hydrology and hydrogeology and preserves green-field runoff rates and volumes. Drainage systems are designed for rainfall storm events of 1 in 100 years including climate change, thereby, safeguarding no detrimental impacts of flooding at the Site and to adjacent areas.

The nature-based solutions ensure that runoff from the Proposed Development is treated to ensure that water quality in discharges to watercourses or groundwater is to a high standard.

In relation to existing watercourses and field drains:

- Existing land drains and watercourses were taken into account in the design phase using appropriate buffer zones 10m for land drains and 20m for watercourses. Riparian corridors remain free from development are maintained to the main watercourses.
- Key land drains will be preserved where required, and will be maintained during the Proposed Development life, with appropriate drain management practices being implemented.
- In the Site on low lying ground, existing land drains under solar panels will be allowed to naturally degrade over time through lack of maintenance. This will not affect operation of the Site and is likely to cause a beneficial effect to flooding downstream by “slowing the flow”, where water will not drain runoff the land as quickly as it presently does.

During the construction phase, portable toilet facilities will be provided for workers. All associated waste will be disposed off-site by a suitably licensed waste contractor. There is no requirement for foul drainage during the operational phase.

Appropriate pollution prevention measures will be implemented during the construction phase, to ensure that runoff from the construction site is not contaminated by fuel, sewage or lubricant spillages.

A drainage plan for the Proposed Development can be found in **PER Appendix B**.

3.2.2 220kV AIS Substation and BESS

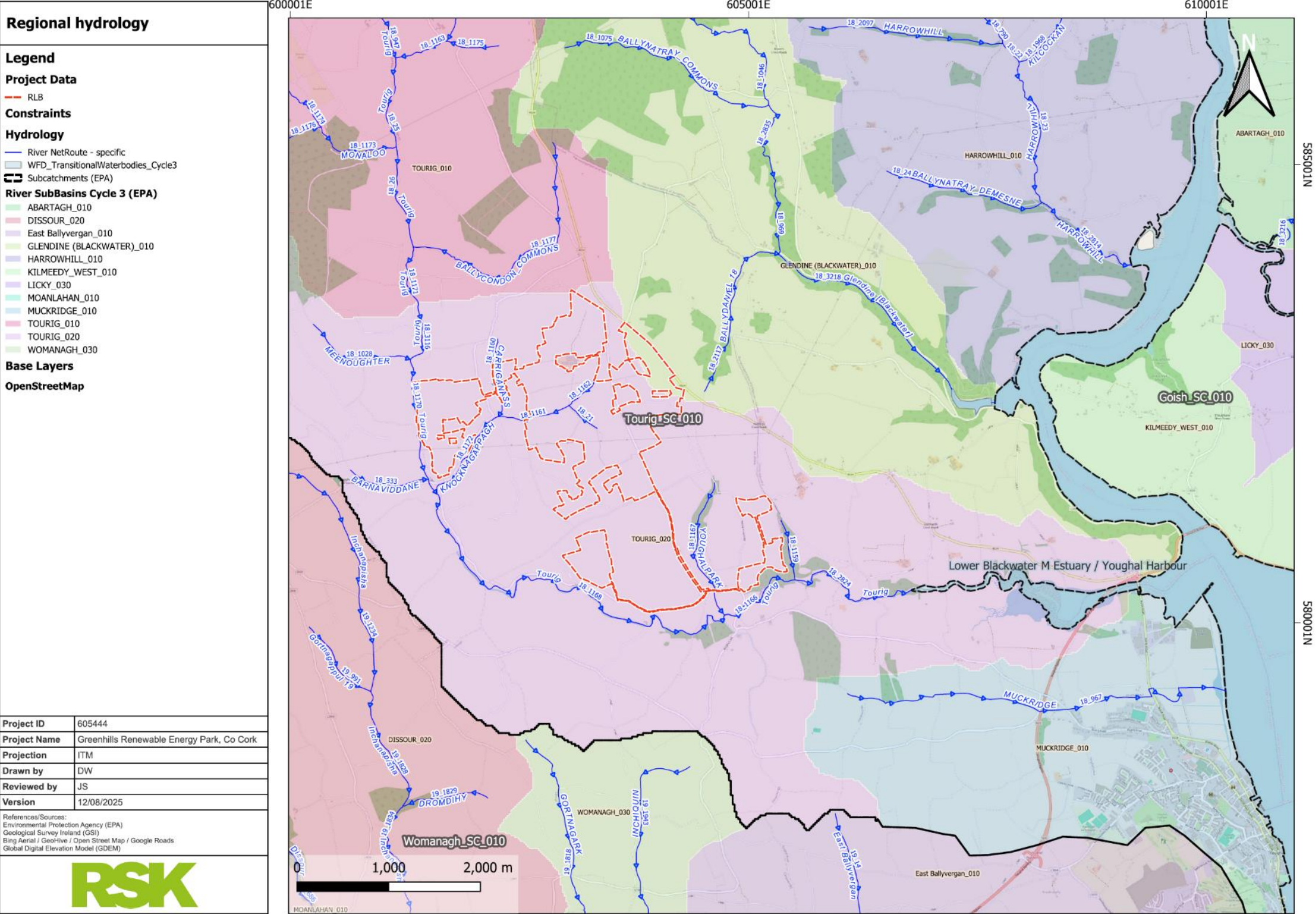
Permanent substation and BESS site drainage will adopt a Sustainable Drainage (SuDS) nature-based approach to management of rainwater runoff. The approach to drainage ensures that existing site hydrology is maintained.

Surface water drainage will be ducted to a percolation area of circa 5m x 5m x 1.8m deep at the substation site which has been confirmed through site percolation testing to be suitable for surface water infiltration for this purpose. It is located within the substation compound and all surface water drainage will be directed to this percolation area.

The percolation rate testing was carried out as part of the substation and BESS site investigation works, see **SI Report in PER Appendix C**.

Percolation testing was also carried out at the BESS location to confirm the infiltration rate and all drainage from the BESS will be directed to the percolation area located at the BESS site.

Note: Data points presented are georeferenced using open source data and/or a handheld GPS. This drawing / map is considered a conceptual model with reasonable accuracy for the purposes of environmental assessment. This drawing should not be relied upon for detailed design purposes.



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Figure 3.1: Proposed Development Hydrology

3.3 Hydrogeology – Bedrock Aquifer

The Proposed Development is underlain by a Locally Important Aquifer (LI) which describes bedrock which is moderately productive only in local zones (**Figure 3.2**).

The Proposed Development overlies the Glenville Groundwater Body which covers an area of 1,107km².

There are no karst features close to the site. Historic maps have indicated previous mapped ‘springs’ or ‘rises’ in the area.

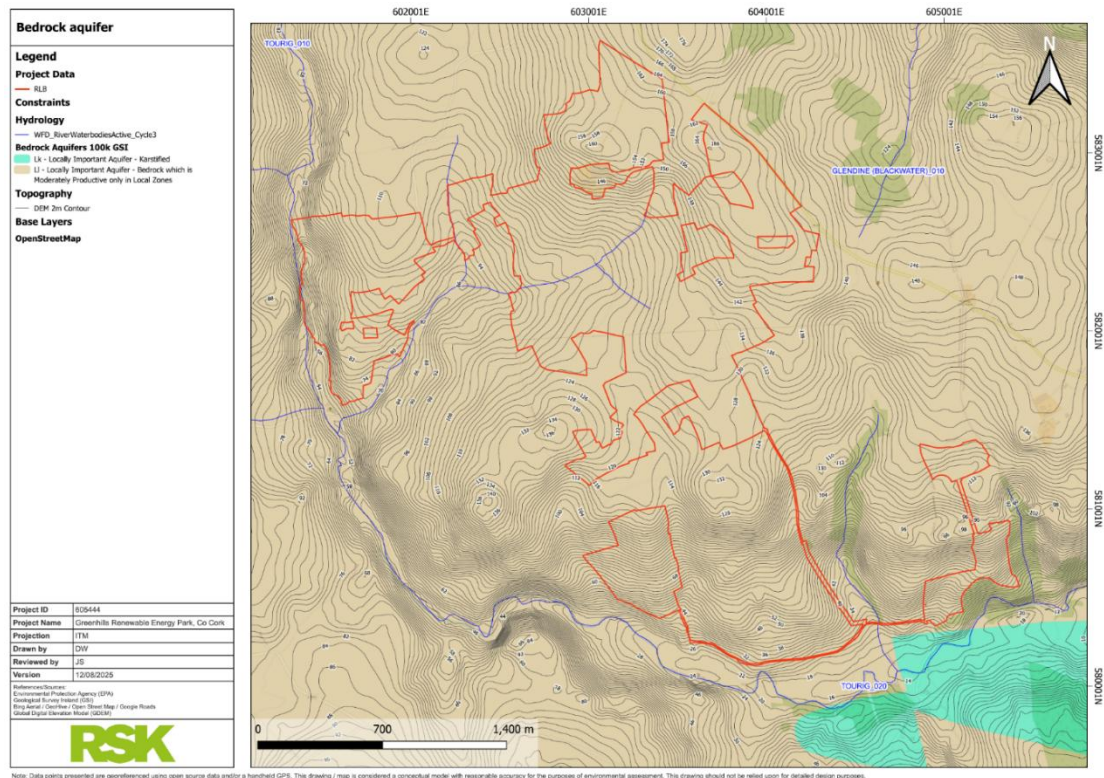


Figure 3.2: Bedrock Aquifer

3.4 Aquifer Vulnerability

The groundwater vulnerability on site varies from moderate (M) to rock at or near surface (X). Most of the site is classed at high (H), with more extreme ground water vulnerability mapped close to the rivers and towards the south of the redline boundary (**Figure 3.3**).

Based on the mapped subsoil permeability (section 11.3.3.3) the depth to bedrock on site ranges from 0 – 10m with shallower bedrock found closer to the mapped rivers. In the small area mapped as moderate vulnerability the depth to bedrock is deeper (>10m).

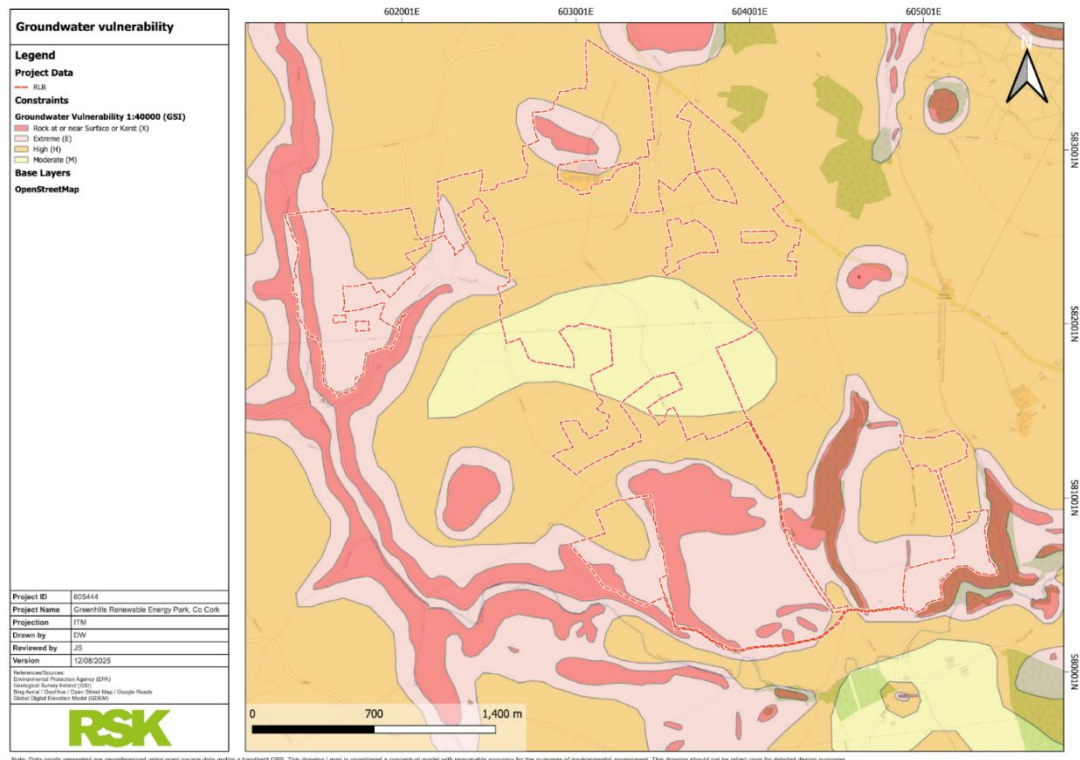


Figure 3.3: Groundwater Vulnerability

3.5 Designated Site and Habitats

The Proposed Development is not positioned within, or directly adjacent to any designated or protected area, Special Protected Area (SPA), Special Areas of Conservation (SAC), National Heritage Area (NHA) or Statutory Nature Reserve of National Park (pNHA,).

The nearest downstream designated areas hydrologically connected to the site via the Tourig River and Glendine River include:

- Blackwater Estuary SPA (EPA Site Code: 004028) situated circa 2.0km east.
- Blackwater River (Cork/Waterford) SAC (EPA Site Code: 002170) situated circa 2km to the east also south.

There are no designated sites within the redline boundary. However,

There are designated drinking water rivers on site, mapped by the EPA and are sensitive receptors under Article 7 Abstraction for Drinking Water.

No other sensitive receptors have been found on site such as nutrient sensitive rivers, salmonid rivers, or freshwater pearl mussel catchments. The nearest designated area for shellfish is located in Youghal Bay, east of the Womanagh Estuary.

These are discussed in PER **Chapter 9 Ecology** and **Chapter 11 Land Soils, Geology, Hydrology and Hydrogeology**.

Assessments of the baseline hydrological and hydrogeological conditions at the site indicate that parts of the site have already experienced impacts to baseline conditions through the modification of drainage networks associated with agricultural practices.

- Minimise the impact on biodiversity through good design, inclusion of appropriate buffers for existing treelines and hedgerows, potential bat roosts, badger setts and protected bird species if present on site.
- Avoid areas with identified invasive species through appropriate buffering
- Identify potential biodiversity enhancement measures which could be integrated into the proposed development
- Protect archaeological and cultural heritage assets through appropriate buffering and screening
- Identify and protect drainage infrastructure with appropriate buffers allowing for nature-based solutions to attenuate any surface flows from the proposed development and avoid potential for downstream flooding
- Utilise existing access points to the proposed development area to reduce the need for new access locations
- Utilise internal trackways for transport delivery during construction, operation and decommissioning thereby reducing potential loss of treelines and hedgerows and potential impacts on the public road infrastructure
- Utilise internal trackways to the extent possible for internal cabling between solar arrays and the substation location thus minimising potential loss of treelines and hedgerows
- Minimise disruption of existing infrastructure such as transmission and distribution networks
- The key constraints, offsets and set back distances used in arriving at the final design are set out in **Table 3-3** below.

Table 3-3: Summary of Constraint sand Set back/buffer distances

Key Constraint	Element	Set-back/Buffer adopted and use of existing infrastructure.
Biodiversity	Habitat - Scrub and Woodland	7m
	Habitat – Hedgerows, Treeline	7m
	Invasive Species	7m
	Badger Setts	30m
Landscape and Visual	Housing – General LVIA Buffer	50m
	Housing - Tailored Panel Offsets	50m
	Housing - Tailored Panel Offsets	80m
	Housing - Tailored Panel Offsets	100m
	Housing - Tailored Panel Offsets	150 m
	Offset planting with native thicket	20m
	Offsets planted with hedgerows	Individual
	Removal of Panel Areas	Individual
Archaeology and Cultural heritage	Archaeology – buffer zones around recorded archaeological sites and SMR Zones	50m buffers around the NMS points. Customised individual buffers around structures and

Key Constraint	Element	Set-back/Buffer adopted and use of existing infrastructure.
		buildings based on expert opinion.
Hydrology	River Buffer zone	20m
	Drainage	10m
Transmission and Distribution Infrastructure	Existing 220kV OHL	10m from outer conductor
	Medium voltage 10kV and 20kV OHL	10m
	Low voltage 230V and 400V OHL	4m
	Existing 220kV tower	23m
Traffic and Transport	Site Access	Using existing access points where feasible including along the R634 Regional Road
	Road network	Maximises use of internal existing trackways to minimise using local road network

These key constraints, offsets and setback distances will need to be adhered to during construction of the Proposed Development.

3.8 Site Entrances

A total of 11 Site entrances are proposed to access the Proposed Development as shown on Figure 3.5.

Existing access points into agricultural fields have been utilised where possible in the design of the Proposed Development. new access points

Existing trackways within the site are being utilised for construction and operation to minimise use of the local road network.

Table 3-4: Site Entrances

Entrance Number	Easting	Northing	Description
Site Access 1 (New access point)	604151.97	582750.33	Main site entrance off the R634 and haul route access for the abnormal load (transformer) , Substation, BESS and solar panel development areas.
Site Access 2	603267.02	583503.66	Located on the L7806 and providing haul route access to the northern section of the solar farm.
Site Access 3	602071.85	582577.35	Located on the L3803 local road and providing haul route access to the westernmost section of the solar farm.

Entrance Number	Easting	Northing	Description
Site Access 4	603554.85	580335.39	Located on the L3808 local road and providing haul route access to the southern (westerly) section of the solar farm.
Site Access 5	604896.94	580390.38	Located on the L38081 local road and providing haul route access to the southeast section of the solar farm.
Site Access 6	603189.47	581405.10	Located on the L7828 local road and providing haul route access to the southwest area of the central section of the solar farm.
Site Access 7	603177.94	581404.32	Located on the L7828 local road and providing haul route access to the southwest area of the central section of the solar farm also.
Site Access 8	603503.49	582647.66	Located on the L7829 local road and providing haul route access to the central section of the solar farm.
Site Access 9	603511.48	582648.49	Located on the L7829 local road and providing haul route access to the central section of the solar farm.
Site Access 10	603801.29	581869.05	Located on the L7829 local road and providing haul route access to the south section of the solar farm.
Site Access 11	602317.31	582622.06	Located on the L38032 local road and providing haul route access to the west section of the solar farm.

All HGV delivery vehicles will access the Proposed Development from the R634 regional road and use the site entrances shown on Figure 10-2..

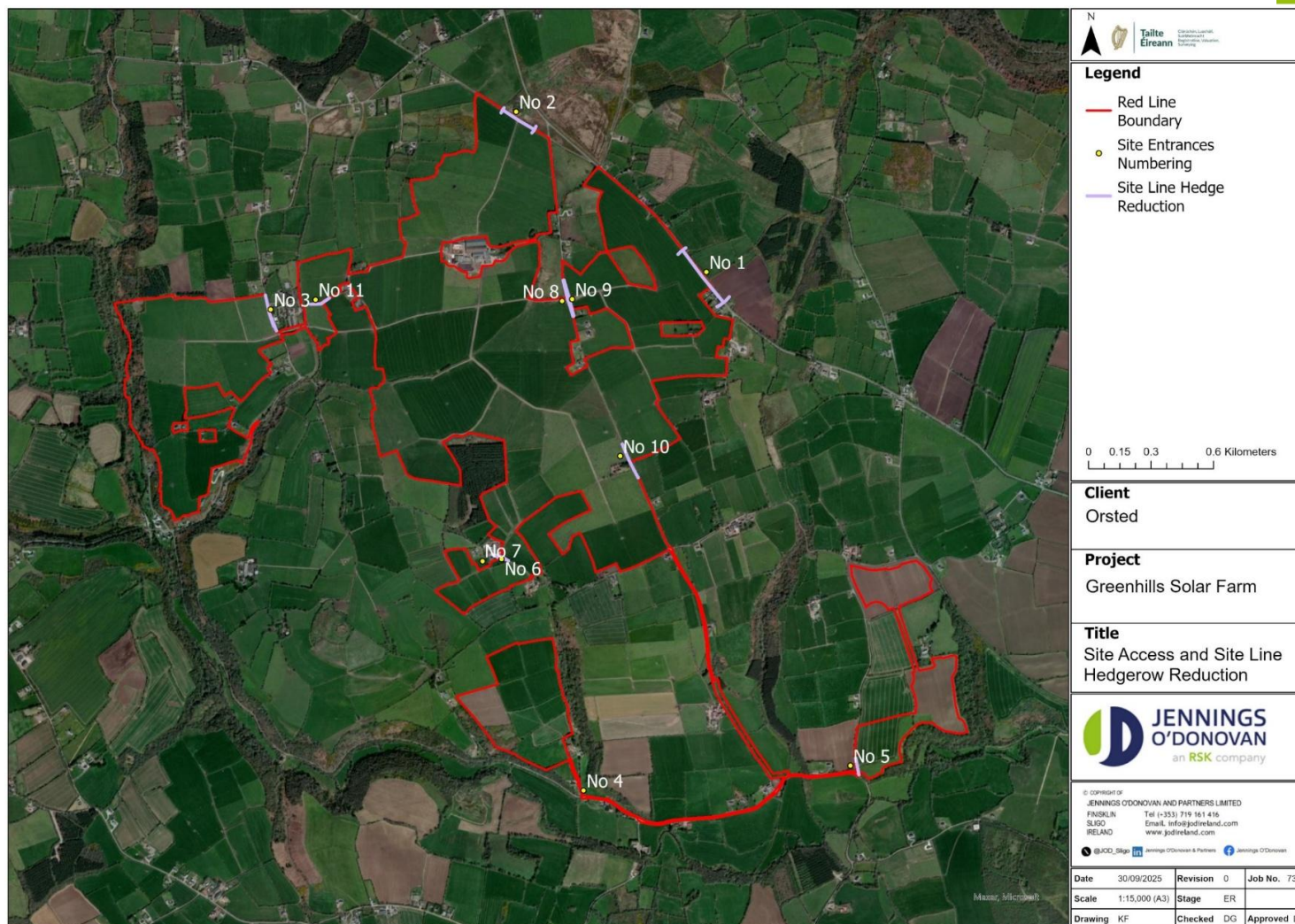


Figure 3.5: Site Entrances

4 OBJECTIVES OF THE CEMP

4.1 Overall Objective

The Overall Objective of this CEMP is to implement the construction of the Proposed Development in a sustainable manner, as set out in the Proposed Development design, construction standards and codes of practice, fully in compliance with the requirements of the PER, NIS and planning conditions ensuring no significant effect on the environment, amenity of the area or on human population.

4.2 Key Proposed Development Objectives

- Construct the Proposed Development in a sustainable manner using sustainable sources of materials where possible, maximising reuse potential of natural materials, maximising waste recycling and minimising waste production requiring off-site disposal.
- Ensure all mitigation requirements as set out in the PER included in any Planning Consent are fully implemented.
- In particular prevent suspended solids, concrete, oils and debris from excavations, construction activities and material deposition from entering watercourses.
- Ensure that in areas where the geophysical survey has identified potential sub surface archaeology that either these locations will be avoided by micro siting solar panel frame piles or panels will be constructed using nonintrusive construction methods (see **Appendix D** Above Ground Mounting Structure Construction Methodology).
- Ensuring that emergency measures are in place should an unforeseen pollution incident or potential impact arise on site.
- Ensure compliance with the requirements of mitigation with respect to air and noise.
- Where incidents arise which trigger a review of the CEMP ensure that the CEMP is updated to include any additional mitigation measures or change of practices required.
- Ensure Good waste management and housekeeping is implemented, in compliance with the Waste Management Regulations and in line with the Circular Economy requirements, including having clearly labelled proper segregated waste management facilities on site, proper segregation is carried out and waste is removed by a Licensed waste Contractor (see **Appendix U of the PER - Resource and Waste Management Plan**).
- Maximising the reuse of excavated materials: stone, soil and subsoil material and avoidance of disposal off site to the extent possible.
- Ensure site security to avoid potential environmental impacts through unauthorised activity.

- Implement a Water Quality Monitoring Plan (**Appendix E of the CEMP**) to ensure no adverse effects on the environment or human population.
- Implement a Surface Water Management Plan (**Appendix A of the CEMP**) to ensure no adverse effects on the environment or human population.
- Ensure compliance with environmental legislation particularly as it pertains to water quality, wildlife protection, Biodiversity, protected habitats and species and human health.
- Ensure construction works and activities are completed in accordance with any planning conditions.
- Minimise the impact on local landowners and the local community which may arise from construction of the Solar arrays, BESS and the grid connection.
- Provide adequate environmental training and awareness for all Proposed Development personnel at the commencement of the Proposed Development and periodically as required.

5 CONSTRUCTION ACTIVITIES

Construction of the Proposed Development is described in Chapter 5 of the PER. All construction methods will be in accordance with international and national best practice and comply with health and safety requirements to reduce potential adverse environmental impacts and effects from the Proposed Development.

Experienced main Civil Contractor, Electrical Contractor and associated Subcontractors will be appointed to undertake the construction works required for the Proposed Development.

All Contractors and Subcontractors will be required to comply fully with this CEMP and any updates during the construction phase of the Proposed Development.

All Contractors and Subcontractors will be required to provide induction training, setting out the requirements of the CEMP, PER and NIS, with respect to protection of the environment and Human population, to all staff before commencement of construction activities.

Periodic toolbox talks must be held when any non-compliance incidents as a result of audit are identified which require updating of the CEMP, when complaints are received as a result of construction activities and when changes of legislation occur which trigger an update of the CEMP.

All Contractors and Subcontractors will be required to comply fully with the Health and Safety requirements as set out in National legislation.

Construction activity will involve all the necessary operations to construct the Proposed Development as described. A high-level overview of the construction activities involved is provided below. Note also that the precise order in which these activities will take place is not known at this stage.

- Temporary Construction compounds, Site Offices / Staff Welfare Units and Storage Compound. The main temporary construction compound will be located adjacent to the proposed AIS substation with four additional temporary compounds located in the solar array areas.
- Temporary staff parking.
- Vegetation removal, topsoil stripping and excavation.
- Subsoil excavation.
- Temporary Storage of topsoil and subsoil for reuse.
- Construction of the drainage network, drainage and silt control measures including nature based solutions.
- Importation of fill for access tracks
- Importation of solar panels,, frames and piles
- Importation of steel.
- Importation of concrete.

- Construction of new units - foundation trenching, establishment of foundations, installation of utilities, nature based SuDS, importation of building materials by HGV, storage of building materials, erection of units, erection of scaffolding, roofing, internal fit out and painting.
- Construction of access routes and parking areas - site levelling, earthworks, soil compaction, installation of access track base and drainage,.
- Minor removal of hedgerows and reinstatement.
- Enhancement of hedgerows and screening planting
- Construction of site tracks and upgrade of water course crossing as required.
- Construction of inverter/transformer and crane hardstandings.
- Internal site cabling installation
- External in road site cabling including construction of cable joints , along the L7829 and the L3808.
- Construction of Control buildings and substation including:
 - Installation of switchgear/metering.
 - Installation of transformer and externals.
- Construction of the Battery Energy Storage System
- Construction of the Loop-in grid connection to the existing Knockraha to Cullenagh 220kV overhead Line.
- Landscaping and Signage

5.1 Typical Equipment

A list of typical equipment to be used on site during the construction period is summarised below in **Table 5-1**.

Table 5-1: Typical Materials and Equipment

Typical Materials Required	Typical Equipment Required
Solar Array • Piles • Metal frames • Solar Panels • Fill • Concrete	Solar Array Equipment • Solar pile driver or equivalent • HGV trucks • 4x4 vehicles • Crane • Teleporter • Tractor and Trailer • Hoist • Compact Track Loader
Cable Duct Trenching Materials: • Sand for pipe bedding; • Ready-mix Concrete where necessary (delivered to site); • Trench backfilling material (excavated material and aggregates) to relevant specifications; • 100mm diameter HDPE ducting; • 125mm diameter HDPE ducting; • Temporary Surface Reinstatement Materials	Cable duct Trenching Equipment: • Tracked excavator (only rubber tracked machines will be allowed on public roads else delivery by HGV); • Tracked dumper or tractor and trailer. • Drum Roller • HGV Trucks • 4x4 Vehicles

Typical Materials Required	Typical Equipment Required
Joint Slab Materials: • Sand for pipe bedding. • Blinding Concrete where necessary. • Clause 804 Material. • 160mm diameter HDPE ducting. • 125mm diameter HDPE ducting. • Precast Chamber Units / Relevant construction materials for chambers. • Link Box.	Joint Slab Equipment: • Excavator Operator. • 360° tracked excavator (13 ton normally, 22 ton for rock breaker). • 1 no. tracked dumper or tractor and trailer
Steel Gantry Materials • Insulators • Electrical Connections • Concrete (foundation) • Aggregate • Insulators • Steel guy ropes • Electrical Connections • Crushed rock & timber (foundation) • Crushed rock and concrete (alternative foundation)	Steel Gantry Equipment • Gantry Construction Equipment • 4X4 Vehicle • Winch • Tractor and Trailer • Crane • Teleporter • Chains/small tools • Tracked Excavator • Sheet Piling Rig • Tracked Dumper

Typical Materials Required	Typical Equipment Required
Substation Materials • Stone • Geotextile • Lighting • Paving. • Fencing. • Steel Uprights • Concrete • Timber • Cladding • Doors	Substation Equipment • Up to 10 Electrical/Civil Crews • Tracked Excavators • 360° tracked excavators (13 ton normally, 22 ton for rock breaker) • Tracked dumpers / tractors and trailers • Crane • Hoist • Power Tools • Generator • Scaffolding
BESS Materials • Stone • Geotextile • Lighting • Paving. • Fencing. • Steel Uprights • Concrete • Timber	BESS Equipment • Tracked Excavators • 360° tracked excavators (13 ton normally, 22 ton for rock breaker) • Tracked dumpers / tractors and trailers • Crane • Hoist • Power Tools • Generator

Typical Materials Required	Typical Equipment Required
• Cladding • Doors	• Scaffolding
Miscellaneous • Fuel tank delivery vehicles Heavy goods vehicle, Haulage and Delivery vehicles. • Hand Tools including Hammers, Crow Bars, Shovels, Wheelbarrows. • Power Tools including Stihl Saws, Battery Drills, Angle Grinders. • Forklift, Scaffold including Hop Ups and Aluminium Towers. • Pumps to enable excavation and service trenches to remain dry.	Preliminary SI Equipment: • 4x4 vehicle • Wheeled dumper • Soil compactor • 360° tracked excavator (wheeled excavator where required) • Borehole Drill Equipment

5.2 Site Clearance, Earthworks and Materials

Stone fill will be required for the new access track, upgrading of existing access tracks, inverter hardstands, inverter pads, substation compound, BESS infrastructure, and cable bedding, which will be imported from local licensed quarries. Concrete will also be imported for concrete plinths at the BESS, foundations at the Substation and for the inverter/transformer plinths and fencing foundations. A summary table of imported granular is provided in **Table 5-2** below.

Table 5-2: Estimate of Imported Material quantities

Proposed Development Element	Estimated Quantity Fill m ³
Site Entrances	1,100
New Access Roads	6,456
Upgraded Access Roads	4,665
Temporary construction compounds	2,400
Main construction compound	2,080
Inverter hardstandings	2,754
Inverter Pads	1,944
BESS - Infrastructure	4,490
Substation Compound	8,343
Cable in Public road - Excavation	2,268
33kV Cables within site and offroad - Bedding	1,242
LV Cables and Ducting - bedding and surround	3,000
Concrete	2,850

It is anticipated that vegetation clearance, vegetation maintenance, earthworks and ground preparation from cut and fill works will be required for the Proposed Development. Cut and fill operations will be associated mainly with the 220kV AIS Substation, Battery Energy Storage System and new main access track (haul route for abnormal load)

Stripping and removal of the topsoil layer will be coordinated with the proposed staging for the Proposed Development. The extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work area(s) and will be programmed to minimise soil handling / double soil movements. No excavated material is anticipated to be removed from site. The bulk of the excavated material will material will be reused in the cut and fill operations with any excess used for embankment and landscaping purposes. No excavation will occur at the main and ancillary temporary construction compounds which will be developed using hardcore on geogrid material.

Disturbed subsoil layers will be stabilised as soon as practicable and reused in cut and fill, new access track construction for gradient purposes and in construction of embankments.

All suitable non-hazardous excavated material will be reused on site where possible. Any excavated material that cannot be reused shall be handled and transported to exported to a licensed waste facility.

Drainage measures will be installed prior to earthwork activities such as cut and fill and access track construction and upgrading and other infrastructure construction in order to divert 'clean' surface water run-off and stormwater away from exposed soils of earthworks preventing further erosion. This will also prevent 'clean' water from mixing with potentially silt-laden water generated from construction works.

Best practice pre-earthworks drainage measures may include:

- Cut-off/ diversion ditches.
- Temporary interception bunds.
- Swales.
- Retention ponds.

At the main cut and fill locations (substation and BESS) stilling ponds will be constructed on construction works drainage to allow silt laden water to settle out before discharge into the main drainage network.

The presence of the Invasive Alien species Japanese Knotweed has been identified at locations adjacent to the cable route on a short section of road which will be used for underground interconnector cabling (see PER **Chapter 9 Ecology** and the Invasive Species Report which is **Appendix L to the PER**). These areas will generally be avoided during construction. However, a 7m buffer around these locations will be maintained with special requirements for any construction vehicles which are used within this buffer zone. Should the need arise, the removal, treatment and disposal of any identified invasive non-native plants will be undertaken in accordance with the latest guidance and Invasive Species Management Plan developed for the site by the Appointed Contractor to prevent further growth or spread beyond the site. Any excavated material from within the 7m buffer will be removed from site and disposed of in a licensed waste management facility.

The Invasive Species Report will be updated and sent to the Planning Authority for approval prior to commencement of Construction Works.

5.3 Archaeological, Architectural and Cultural Heritage

A Geophysical Survey carried out for the proposed development (ITM 603333, 582222) identified potential archaeological features consisting of faint curvilinear anomalies that may indicate the presence of a possible enclosure (M1), two curvilinear anomalies (M2) and (M3) that may indicate the presence of ring-ditches or similar cut features, and a second potential enclosure (M4) that is located on high rough ground. Scatters of other anomalies also represent potential archaeology such as potential spread/pit remains that were recorded across the survey area. An archaeological interpretation of responses in these areas is highly tentative, and natural soil or geological origins, or recent land use, should be considered for these anomalies. Broad positive responses were detected across the survey area that likely relate to either natural variation and/or changes in the underlying geology and may obscure or mask any potential archaeological features in these areas. The visibility in the results of removed field boundaries shown on former editions of the Ordnance Survey maps does, however, give a high level of confidence in the overall survey.

As set out in the Above Ground Mounting Structure Construction Methodology (**Appendix D to this CEMP**), a detailed GPS site survey will be conducted to confirm

GPS location of the potential archaeological features identified in the Archaeological Reports and any pre-construction survey work, as instructed by the Project Archaeologist. At these locations, protective barriers/ boundaries will be erected to align with the perimeter of the features, and high visibility tape and 'Archaeological Feature - Do not Disturb' signs will be fixed to the temporary protective fencing around the features. The fences delimiting the buffer zones will rest on existing ground levels to avoid any sub-surface impacts. It is proposed that archaeological features will be located and protected in the manner outlined above prior to commencing works in the vicinity. A register of the protections implemented will be kept and regular inspections undertaken to ensure that these protections are kept in place and maintained throughout the array installation works.

Once the protections are in place, a buffer zone will be marked out to delineate the areas in which gabion basket / ballasted foundations are to be used for the mounting of solar panels. Alternatively, if suitable, the standard piled foundations may be microsituated to avoid these areas,

There are a number of gabion basket/ ballasted/ precast concrete solutions in the market specifically designed for avoiding disturbance of sub-soil archaeology. The solutions chosen in detailed design may vary slightly from what is described here but the key elements and concepts will be maintained, with no below ground works. It is clearly established that there are ways of building solar arrays without disruption to potential archaeology in the sub soil.

The determination of the least impactful solution will be subject to detailed design and signoff by the Project Archaeologist, following the appointment of contractors and cannot be fully defined at this time.

5.4 Solar Array 33kV Cabling, Grid Connection and BESS

5.4.1 Battery Energy Storage System

The proposed BESS development electrical plant will consist of 7 Inverter Twin Skid (two inverters, one transformer and 1 RMU) units with 4 associated electrical plant Batteries per Inverter (each unit consists of a skid and 4 batteries pods), giving a total of 56 Battery Container Units within a fenced compound adjacent to the proposed Greenhills Energy Park 220 kV AIS Substation. The total footprint area of this compound will amount to 7,760m².

An Outline Construction Methodology has been prepared (Outline Construction Methodology, Greenhills Energy Park Battery Energy Storage System) which covers the constructions and environmental management of the substation and loop-in grid connection and is provided in **Appendix G to the PER**.

5.4.2 220kV AIS Substation and loop-in grid connection

The proposed 220kV AIS substation, loop-in grid connection and BESS compound are located in the townland of Ballyneague, circa 6.5 kilometres north of Killeagh, County Cork. The construction of the AIS 220kV Substation will require a cut and fill operation to provide a level platform for site construction. Loop-in to the existing 220kV line will require the construction of two new steel diversion towers to divert the overhead line into

and out of the Proposed Development substation. It will also entail the removal of an existing steel tower from the existing Overhead line route.

An Outline Construction Methodology (Outline Construction Methodology, Greenhills Renewable Energy Park Grid Connection) for proposed 220kV AIS Substation has been prepared which covers the construction and environmental management of the substation and loop-in grid connection and is provided in **Appendix H to the PER**.

5.4.3 Solar Array cabling

Electricity from the solar array areas will be ducted to an on-site proposed new 220kV AIS substation. The substation will be connected to the national grid via a short loop-in grid connection to the existing Knockraha-Cullenagh 220kV overhead line, which runs through the middle of the site.

Solar array areas will be connected to the substation internally within the red line boundary by means of underground medium voltage cabling which will be installed in trenches both within the Proposed Development Site, generally along the existing access trackways and new trackways. Some installation of cables will be required in the local road infrastructure and off road to connect the southern solar array areas of the Proposed Development to the substation location.

An Outline Construction Methodology has been prepared for the underground cabling (Outline Construction Methodology, Greenhills Renewable Energy Park 33kV Interconnector) and is provided in **Appendix I to the PER**.

5.5 Management of Surplus Material

It is envisaged that material excavated to construct all infrastructure elements of the Proposed Development will be used as part of the cut and fill, backfill, embankment construction, for site reinstatement and landscaping purposes. Any temporary stockpiles will be restricted to a maximum of 2m in height

A Spoil Management Plan has been prepared for the Proposed Development and is included as **Appendix B to this CEMP**.

The spoil generated on site will be of mainly topsoil and subsoil.

Any material excavated for the construction and upgrade of site access tracks will be placed mainly in berms alongside the access tracks.

In relation to excavated material removed during the underground cable interconnectors network installation, any earthen (sod) banks to be excavated will be carefully removed and stored separately, maintained and used during reinstatement. Surplus excavated material from roadways will be reused if suitable or disposed of to a licenced waste facility. This will particularly be the case at the location where Japanese Knotweed has been identified. Excavated material from this location will be removed and disposed off in a Licenced waste facility

The use of soil stockpiles will be minimised by earthworks planning. However, where stockpiles are used, silt fences and silt mats will be employed to minimise sediment levels in run-off.

5.6 Importation of Fill and Concrete for Proposed Development Construction

The importation of fill material will be required for access track construction, substation, hardstand areas, BESS and temporary construction compounds. Concrete will be required for Loop in tower foundations, substation structure foundations, BESS unit plinths and Inverter Transformer pads.

Fill and concrete material will be sourced locally. Fill will comprise of coarse aggregate or finer partial engineering fill or clay depending on geotechnical engineered specifications.

Any infill material/landscaping that is required will be placed and levelled in appropriate lift thicknesses to ensure the material is not over compacted thereby retaining its drainage properties.

Only suitable material will be allowed on site, this may be achieved through chemical testing prior to importation. Provided the imported material is a product with known characteristics, minimal monitoring or validity sampling of imported loads of the material will be required, however visual inspection of all material in each load will be conducted as a minimum.

Temporary stockpiles of imported material will be kept to a minimum.

Fill areas, when target elevation has been achieved, will be stabilised as quickly and efficiently as possible.

5.7 Hedgerow Loss and Planting

As part of the Proposed Development some limited loss of hedgerow will occur due to development of site access locations and due to upgrading and construction of new access tracks, gates and fences. In addition trimming of hedgerows at site entrances due to routing maintenance to ensure unobstructed site lines will be required. This is estimated in a worst case scenario to be as per Table 5-3.

Table 5-3: Estimated Hedgerow loss and maintenance requirement

Hedgerow Removal	Length (m)
Removal due to Site Entrances:	260
Removal due to access stack, gates and fence line	135
Hedgerow Maintenance	Length (m)
Site Line maintenance	468

The loss of hedgerow will be offset by bolstering of existing hedgerows and the establishment of new hedgerow areas. This is set out in the Landscape and Visual Impact assessment as mitigation and the Biodiversity Enhancement Management Plan (BEMP). The new and bolstered hedgerows will serve both to screen the proposed development from viewpoints and also to offset hedgerow loss and enhance biodiversity.

As set out in PER Chapter 12 LVIA, it is proposed to bolster existing perimeter and internal hedgerows with under-planting and inter-planting of whip transplants (i.e. Hedgerow Type 1, see **Figure 5.1** below) in order to ensure dense and consistent screening of the site in perpetuity. This will be undertaken where required to thicken and fill gaps in the existing hedgerow network prior to the construction phase, thus allowing for any growth in the period between a grant of planning permission and construction of the development. Advanced nursery stock in the form of 8-10cm girth trees will be used to fill any noticeable gaps and plant species will be selected to complement the existing broadleaf hedgerow species mix around the site and will be of local provenance.

It is proposed to bolster up to circa 31,000m of existing linear hedgerow and mosaic hedgerow as necessary.

Where not already exceeded by existing vegetation, it is intended to manage hedgerows up to 3-4m in height.

This height will be achieved by a combination of allowing lower sections of existing hedgerows to mature, filling obvious gaps with advanced nursery stock and providing an additional line of whip planting to selected hedgerows that require densification.

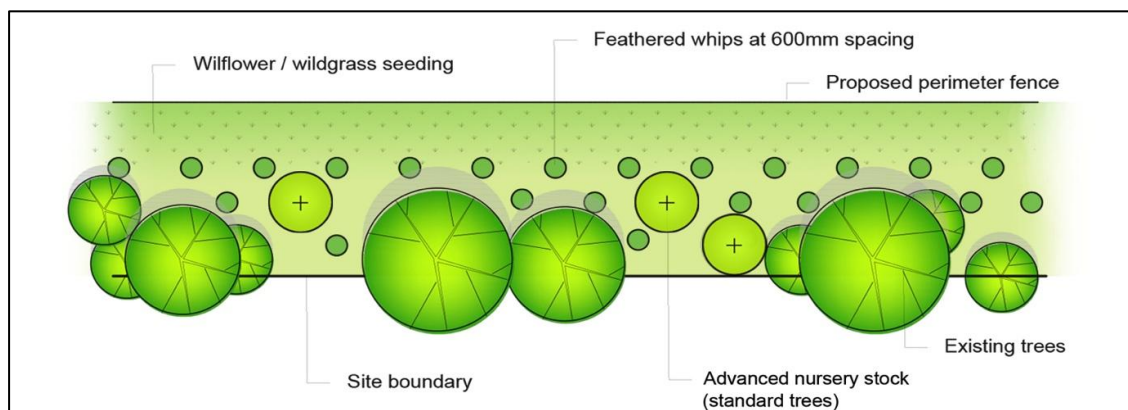


Figure 5.1: Hedgerow Type 1: indicative boundary planting detail

It is also proposed to plant new 'Type 2' hedgerows (**Figure 5.2**), with whips and a high proportion of advance nursery stock trees (c.3m planted height), along the boundaries of some of the proposed parcels to further screen the proposed development from some of the nearest surrounding receptors. All of this planting will be allowed to mature up to a maintained height of 3-4m.

It is proposed to establish an estimated **1,400** linear meters of Hedgerow Type 2 (New Native hedgerow).

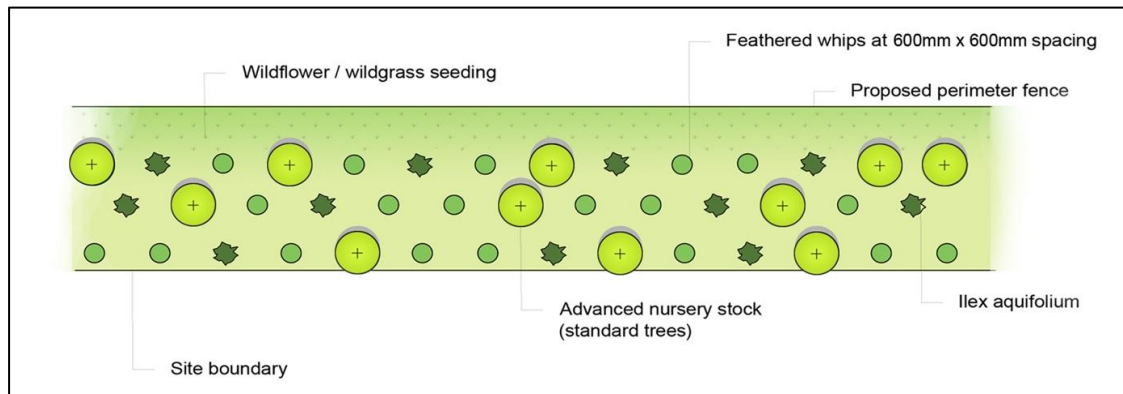


Figure 5.2: Type 2 Indicative boundary planting TYPE 2

Native woodland thickets are also proposed in localised areas along the perimeter of the proposed development. These native thickets/woodlands will be provided in the form of high canopy (dominants) species, low canopy (sub-dominant) species, understory and fringe (higher shrubs) species and understory and edge (lower shrub) species, and will comprise of a mix of advanced nursery stock and whip planting of local provenance. The proposed planting will be allowed to grow out to reach maturity and will break up the visual mass of the main solar array and substation development.

An estimated **19,600m²** of Native Woodland will be established.

The locations where new hedgerow, bolstering of existing hedgerow and establishment of new native woodland is proposed are shown on the drawings in **PER Appendix E Landscape Mitigation Plan**.

5.8 Decommissioning and Aftercare

At the end of its operational life, the Proposed Development will be decommissioned as assessed in this Planning and Environmental Report. Prior to decommissioning, Perigus Energy Ireland Midco Limited (The Applicant) may make an application to extend the life of the Proposed Development, however this would be subject to an entirely new planning application. Decommissioning of the solar farm elements will involve the complete removal of above ground components. Cranes will be used to disassemble each Inverter/Transformer and they will be removed from the site. The foundations of the Inverter plinths will be removed, and the ground will be covered by soils typical of the surrounding environment and then reseeded or left to re-vegetate according to ecological requirements. Underground cables will be cut back, removed from ducting and will be recycled. Underground cable ducting will be left in-situ to minimise ground disturbance. It is proposed that site access tracks will remain to allow access through the site for farm

access, as considered appropriate at the time. Decommissioning the proposed development will take approximately 2 months to complete.

Details of decommissioning will be agreed with the local authority prior to any decommissioning taking place. A site-specific Decommissioning Management Plan has been prepared and will be updated by the Developer for the approval of the Planning Authority before Decommissioning work can commence.

Site materials will be recycled where practicable or disposed of in accordance with waste legislation and best practice guidelines at the time of decommissioning.

As with construction, decommissioning works have could result in potential significant effects on identified sensitive receptors. Details of decommissioning will be agreed with the local authority prior to any decommissioning taking place. The potential for effects during the decommissioning phase of the Proposed Development has been fully assessed in the Planning and Environmental Report.

It is envisaged that the Proposed 220kV AIS Substation and Loop-in grid connection will be handed over to the Network Operator (EirGrid/ESB Networks), forming part of the national grid, and will not be decommissioned.

6 ENVIRONMENTAL POLICIES AND LEGAL REQUIREMENTS

All site works shall be undertaken in compliance with the CEMP and with all applicable legal and regulatory requirements.

6.1 Environmental Policies

As part of the appointment, the Contractor(s) will provide a copy of their Safety and Environmental Policy. They will ensure that a copy of their Health, Safety and Environmental Policy is clearly displayed on site notice boards during the construction period. All employees will be required to comply with the requirements of the Environmental Policy.

The Contractor will ensure their employees and support staff (contractors, sub-contractors, suppliers etc.) actively promote and administer a strong environmental culture. To achieve this, a number of initiatives will be in operation during the life of the Proposed Development. This will include the use of poster campaigns to raise awareness of topical subjects, and toolbox talks involving all members of the Proposed Development team and site workforce.

6.2 Health and Safety Management

The Contractor shall be responsible for ensuring that the construction works Health and Safety Plan is implemented and followed on site. The works will be carried out in accordance with all relevant health and safety legislation and Codes of Practice and site rules relating to the works will be observed.

6.3 Legislation and other legal requirements

The Contractor shall comply as necessary with all relevant Statutory requirements such as the 2005 Safety Health and Welfare at Work Act (as amended, The Construction Regulations (SI 291 of 2013), the General Application Regulations (SI 299 of 2007), etc. (and any amendments thereof).

In addition, the Contractor shall comply with all the reasonable safety requirements of the Client, the Proposed Development Supervisor for the Design Process and the Proposed Development Supervisor for the Construction Phase.

A legislation register shall be held by the Contractor and reviewed periodically and updated as necessary. Any legislative changes shall be disseminated to Proposed Development management immediately, after which the method statements of any affected operations shall be changed accordingly.

A consents and licenses register shall also be held by the Contractor which will contain a schedule of all consent submissions and a tracker to confirm they are in place for the start of works. This will be tracked and managed by the Site Manager and confirmation and approved documentation will be sent to the HSEQ manager before works begin, when new consents are obtained, or when consent is withdrawn, or terminated.

7 ENVIRONMENTAL MANAGEMENT IMPLEMENTATION

7.1 Roles and Responsibilities

The appointed Contractor and all sub-contractors will be responsible for ensuring that the potential risks to the environment and local community are adequately avoided or controlled by the application of measures documented within this CEMP. These will be further developed in their amended CEMP and shall be complied with throughout the construction phase. The main organisations and persons involved in the construction phase works are set out below.

7.2 The Client

Perigus Energy Ireland Midco Limited (The Applicant) shall be responsible for:

- Securing the land including access required for all works.
- Appointment of the Contractor.
- Setting and communicating appropriate standards for environmental management and ensuring that their environmental policy is delivered.
- Review and comment on the Contractor specific CEMP.

7.3 Appointed Contractor

The Contractor shall be responsible for:

- Appointing a Site Manager / Site Supervisor.

7.4 Site Manager / Site Supervisor

The Site Manager shall be responsible for:

- Undertaking weekly Site Compound Checks, and appointing persons to supervise refuelling of tanks and bowsers.
- Ensuring the required consents are in place before work starts.
- Ensuring environmental and waste requirements are included on requisitions and in subcontracts and orders.
- Ensuring oil, including diesel is stored in properly bunded tanks / drip trays.
- Ensuring Waste Transfer Notes / Waste Consignment Notes are checked against invoices before payment.
- Liaising with statutory authorities as required and ensuring records of communication (including verbal communication) are kept. Statutory authorities should always be accompanied on site visits.
- Ensuring employees, contractors and subcontractors implement the controls set out in the CEMP.

- Ensuring employees, contractors and subcontractors receive Induction Training (including Proposed Development environmental issues) and Toolbox Talks, as appropriate.
- Ensuring personnel needed for audits are available when required.
- Verifying actions resulting from Corrective Action Requests and Observations raised during audits are completed by the deadlines.
- Ensuring environmental training is provided.
- Reporting incidents immediately to the client, and to statutory authorities where required.
- Logging and monitoring incidents and non-conformances.
- Disseminating information, including changes to legislation, and relay to relevant contractor's employees.
- Identifying employees who require environmental training and maintain training records in line with the contract for the works.
- Providing advice and dealing with queries and correspondence on environmental issues.
- Identifying significant environmental impacts for the Proposed Development and assist in setting up contracts to include the necessary controls.
- Monitoring the progress in closing out Corrective Action Requests and Observations raised during audits.
- Ensuring all records are retained and readily available.
- Carrying out monthly site audits and reporting on energy data, water usage and waste disposal and their greenhouse gas emissions.
- Appointing any third-party specialists as required.

7.5 All Staff

All staff have responsibility for the environment, responsibilities include but are not limited to:

- In the case of an incident, stopping work, implementing control procedures and reporting it to the Site Manager.
- Contacting the Waste Representative when waste needs collecting.
- Passing any queries or correspondence on public health or environmental issues to the Site Manager.
- Working in accordance with environmental procedures, the CEMP and Method Statements.
- Working in accordance with instructions issued by the Ecological Clerk of Works and/or the Environmental Clerk of Works.

7.6 The Community Liaison Officer

The Community Liaison Officer shall be responsible for:

- Responding to telephone and email queries within 48 hours of receipt.
- Sharing key contact information associated with site development with key stakeholders and update these details as required.
- As a general courtesy, alerting the community to any disruptive works one week in advance of commencement, where reasonably practicable.
- Minimising the impact of site traffic and associated parking on the local road network.
- Arranging any necessary meetings that may be requested by community representatives regarding any on-site issues.
- Circulating updates as required on the Proposed Development's progress to include information of relevance and interest to the local community.

7.7 Ecological Clerk of Works (ECoW)

An Ecological Clerk of Works (ECoW) will be appointed to address issues relating to ecological features during the construction and decommissioning phases, as described within the CEMP. Their responsibilities will include:

- Undertaking a pre-construction survey to ensure that significant effects to ecological features will be avoided.
- Inform and educate site personnel of sensitive ecological features within the Proposed Development site and how effects on these features could occur.
- Oversee management of ecological issues during the construction and decommissioning period and advise on ecological issues as they arise.
- Provide guidance to contractors to ensure legal compliance with respect to protected habitats and species on site.
- Liaise with officers from consenting authorities and other relevant bodies and contractors with regular updates in relation to construction and/or decommissioning progress.
- Ensure all hedgerow bolstering and new hedgerow establishment is carried out as specified in **PER Appendix E** (Landscape Mitigation Plan).

The Contractor will implement the mitigation measures as set out in the PER which are summarised into **Appendix C of this CEMP**.

The appointed ECoW will have responsibility for monitoring activities that have the potential to impact on ecology or biodiversity associated with the site or linked to the site arising from site construction activities. The Contractor will adhere to the guidance by the appointed ECoW during construction.

The ECoW will ensure that all the mitigation measures set out in **PER Chapter 9 Ecology** and in the NIS are being fully implemented.

The appointed ECoW will have the authority to issue Stop Work Orders until such time that issues which may impact on ecology or biodiversity are resolved.

7.8 Environmental Clerk of Works (EnvCoW)

To ensure effective implementation of mitigation measures, environmental auditing, and monitoring of environmental obligations of the Developer, an Environmental Clerk of Works (EnvCoW) will be assigned by the Developer to carry out monitoring at the Site during the construction and operational phases of the Proposed Development.

The EnvCoW role will be to actively and continuously monitor site conditions and advise on environmental issues and monitoring compliance, and will not be responsible for implementing measures, the due duty of implementing measures will be held by the Developer / contracted construction operator.

The EnvCoW will have the authority to issue instructions to cease work if unexpected environmental risks arise, until an agreed alternative solution is identified, and risks are avoided or minimised.

The EnvCoW will be responsible for undertaking the mitigation measures in **Appendix C of the CEMP**. Their responsibilities will include, though not limited to:

- Ensuring effective implementation of mitigation measures, environmental auditing, and monitoring of the surface water management plan (**Appendix A to this CEMP**).
- Agree methodology for stripping existing vegetation and locations where material is to be deposited and restoration as per the Spoil Management Plan (**Appendix B to this CEMP**).
- Undertake the water quality monitoring (**Appendix E to this CEMP**).
- Monitoring and implementation of environmental pollution preventions, providing further guidance and liaison with local authorities in relation to pollution instances if applicable (**Appendix F to this CEMP**).
- Supervise the use of any cement or concrete.
- Providing guidance to contractors to ensure legal compliance with respect to pollution incidents, advising on required pollution prevention measures (as described in this PER) and monitoring their effectiveness.

8 ENVIRONMENTAL MANAGEMENT OF SITE ACTIVITIES

8.1 Best Practice Guidance

The Contractor will adhere to best practice guidance and requirements as detailed below, particularly the

- CIRIA guidance document C532 Control of water pollution from construction sites
- EU Construction and Demolition Waste Management Protocol – BIBM
- IEMA's latest Impact Assessment Guidance, 'A New Perspective on Land and Soil in Environmental Impact Assessment' (Feb 2022)
- Machinery Directive. See Guide to application of the Machinery Directive 2006/42/EC Edition 2.2 – October 2019 (Update of 2nd Edition).

The construction approach will also adhere to the requirements set out in the Inland Fisheries Ireland guidance document Requirements for the Protection of Fisheries Habitat during Construction and Development Works and Development Sites.

- PPG 1: Understanding your environmental responsibilities - good environmental practices.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/485211/LIT_1404.pdf
- GPP 2: Above ground oil storage tanks.
<https://www.netregs.org.uk/media/1899/guidance-for-pollution-prevention-3-2022-update-v2.pdf>
- PPG 3: Use and design of oil separators in surface water drainage systems.
<https://www.netregs.org.uk/media/1899/guidance-for-pollution-prevention-3-2022-update-v2.pdf>
- GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer. <https://www.netregs.org.uk/media/1887/guidance-for-pollution-prevention-4-2022-update.pdf>
- GPP 5: Works and maintenance in or near water.
<https://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf>
- PPG 6: Working at construction and demolition sites Pollution Prevention Guidelines. <https://www.netregs.org.uk/media/1672/ppg-6.pdf>
- PPG 7: Safe storage - The safe operation of refuelling facilities.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/485206/pmho0711btzl-e-e.pdf
- GPP 8: Safe storage and disposal of used oils.
<https://www.netregs.org.uk/media/1900/guidance-for-pollution-prevention-8-2022-update.pdf>

- GPP 19: Vehicles: Service and Repair.
<https://www.netregs.org.uk/media/1417/gpp-19-vehicles-sevice-and-repair-no-e.pdf>
- GPP 21: Pollution incident response planning.
<https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/gpp-21-pollution-incident-response-planning/>
- GPP 22: Dealing with spills.
<https://www.netregs.org.uk/media/1643/gpp-22-dealing-with-spills.pdf>
- GPP 26 Safe storage - drums and intermediate bulk containers.
<https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/gpp-26-safe-storage-drums-and-intermediate-bulk-containers/>
- PPG 27: Installation, decommissioning and removal of underground storage tanks. <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/gpp-27-installation-decommissioning-and-removal-of-underground-storage-tanks/>
- CIRIA (Construction Industry Research and Information Association) Environmental Good Practice on Site (fourth edition (C741),
https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductcode=C741&Category=BOOK:
- CIRIA: Control of Water Pollution from construction sites. Guidance for consultants and contractors,
https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C532&Category=BOOK;
- CIRIA Control of Water Pollution from Linear Construction Sites. Technical Guidance C648.
<https://www.ciria.org/CIRIA/ProductExcerpts/C648.aspx>;
- CIRIA: The Suds Manual (C753F)
https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C753F;
- CIRIA SuDS Manual Technical Guidance C697
https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C753F;
- CIRIA Report Number C532 (2001): Control of water pollution from construction sites - Guidance for consultants and contractors.
https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C532&Category=BOOK;
- National Roads Authority: Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes
<https://www.tii.ie/technical-services/environment/planning/Guidelines-on-Procedures-for-Assessment-and-Treatment-of-Geology-Hydrology-and-Hydrogeology-for-National-Road-Schemes.pdf>,
- Best Practice Planning Guidance Report for Large Scale Solar Energy Development in Ireland

https://www.irishsolarenergy.org/_files/ugd/dcb342_6e14be41b33049b08d6cdf1478b3d32.pdf

- Eastern Regional Fisheries Board: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites
<https://www.fishingireland.net/environment/fullconstructionanddevelopment.html>
- Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works Adjacent to Waters,
<https://www.fisheriesireland.ie/sites/default/files/migrated/docman/2016/Guidelines%20Report%202016.pdf>,
- NatureScot pre-application guidance for solar farms
<https://www.nature.scot/doc/naturescot-pre-application-guidance-solar-farms>
- EPA, BEST PRACTICE GUIDELINES for the preparation of resource & waste management plans for construction & demolition Proposed Developments (2021)
<https://www.epa.ie/publications/circular-economy/resources/CDWasteGuidelines.pdf>
- TII: The Management of Waste from National Road Construction Proposed Developments GE-ENV-01101 December 2017,
<https://www.tiipublications.ie/library/GE-ENV-01101-01.pdf>
- TII: Guidelines for the Treatment of Otters Prior to The Construction Of National Road Schemes,
<https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Otters-prior-to-the-Construction-of-National-Road-Schemes.pdf>
- TII: Guidelines for the Treatment of Badgers Prior to The Construction Of National Road Schemes,
<https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Badgers-prior-to-the-Construction-of-a-National-Road-Scheme.pdf>
- TII: Guidelines for the Treatment of Bats During The Construction Of National Road Schemes,
<https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Bats-during-the-Construction-of-National-Road-Schemes.pdf>
- TII: Guidelines for the Crossing of Watercourses During the Construction Of National Road Schemes,
<https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Crossing-of-Watercourses-during-the-Construction-of-National-Road-Schemes.pdf>
- TII: Guidelines for the Protection And Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes,
<https://www.tii.ie/technical-services/environment/construction/Guidelines-for-the-Protection-and-Preservation-of-Trees-Hedgerows-and-Scrub.pdf>

- Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads Revision 1, December 2010,
<https://www.tii.ie/technical-services/environment/construction/Management-of-Noxious-Weeds-and-Non-Native-Invasive-Plant-Species-on-National-Road-Schemes.pdf>

8.2 Construction Phase Prevention of Pollution

The appointed Contractor(s) will implement at a minimum all of the Mitigation Measures as set out in the PER and NIS prepared for the Proposed Development.

A Summary Table of Mitigation Measures is provided in **Appendix C** to the CEMP.

The Summary Table will be reviewed and updated with additional mitigation measures should these be required during the construction phase.

8.3 Hydrology and Drainage Management

Site drainage and drainage management and control is set out in PER **Chapter 11** Land, Soils and Geology, Hydrology and Hydrogeology and in the Drainage Plan **Appendix B of the PER**.

A Surface Water Management Plan has been prepared for Proposed Development, see in **Appendix A of this CEMP**. The Contractor will implement in full the requirements of the Surface Water Management Plan provided.

The Proposed Development Hydrologist/Design Engineer will attend the site during the Construction Phase to ensure that the drainage design and drainage controls are constructed in accordance with the mitigation measures outlined in **Appendix A of this CEMP** (Surface Water Management Plan).

8.4 Resource and Waste Management

To ensure effective control of waste arising from construction activities and to minimise waste generation and final disposal requirements the Contractor will adhere to the requirements of the Resource and Waste Management Plan for the Site which is provided in **Appendix U to the PER**.

The Resource and Waste Management Plan sets out the principles and approach to materials and waste management and must be fully adhered to by the Contractor(s) and all subcontractors appointed to construct the Proposed Development.

8.5 Archaeology, Architectural and Cultural Heritage

To effectively control potential impacts on Archaeology, Architecture and Cultural Heritage, the Contractor will adhere to the mitigation set out in the Archaeological, Architectural and Cultural Heritage Impact Assessment report in **Appendix R to the PER**.

Specifically, construction within areas identified by the Geophysical Survey (Appendix I of the Archaeology, Architecture and Cultural Heritage Report) as having potential subsurface archaeological remains shall comply with the requirements of the Above-

Ground Mounting Structure Construction Methodology set out in **Appendix D of this CEMP.**

8.6 Traffic Management

A Traffic Impact Assessment incorporating a Construction Traffic Management Plan (CTMP) has been prepared for the Proposed Development and is presented in the PER **Chapter 10.**

9 MONITORING & ENVIRONMENTAL CLERK OF WORKS

To ensure effective implementation of mitigation measures, environmental auditing, and monitoring of environmental obligations of the Developer, an Environmental Clerk of Works (EnvCoW) will be assigned by the Developer to carry out monitoring at the Site during the construction and operational phases of the Proposed Development.

The EnvCoW role will be to actively and continuously monitor site conditions and advise on environmental issues and monitoring compliance, and will not be responsible for implementing measures, the due duty of implementing measures will be held by the Developer / contracted construction operator.

The EnvCoW will have the authority to temporarily stop works in a particular area of the site to ensure corrective measures are implemented and adverse environmental impacts are minimised if not avoided.

Monitoring of pollution prevention and mitigation undertaken by the EnvCoW assigned by the Developer will include:

- Monitoring site pollution prevention plan.
- Water quality monitoring.
- Advising on required pollution prevention measures (as described in this Planning and Environmental Report) and monitoring their effectiveness.
- Liaison with local authorities in relation to pollution instances if applicable.
- Considering EnvCoW will be responsible for monitoring a broad range of environmental factors at the Site, technical monitoring and advice will be sought such as from specialist consultants as the need arises e.g., installation and website for telemetry.

A detailed Surface Water Management Plan (SWMP) has been prepared and is attached as **Appendix A** and a Water Quality Monitoring Plan (WQMP) attached as **Appendix E to this CEMP**.

The requirements of the SWMP and any updates will be fully implemented by the Contractor(s) engaged to construct the Proposed Development.

10 COMMUNICATION

10.1 Internal Communication

Environmental mitigation measures shall be incorporated into the Risk Assessments and Method Statements (RAMS) prepared by all contractors working on the site. All RAMS shall be communicated to the workforce by the Site Manager.

Weekly construction meetings shall be held during the construction phase. These meetings shall include health, safety and environmental matters such as:

- Works activities underway and planned.
- Mitigation measures required to be implemented.
- Results of weekly inspections and any audit results/ feedback.
- Any corrective and preventive actions required to be implemented.
- Identification of areas for continual improvement.
- Status of staff competence and training needs.
- Status of the CEMP and of any required consents and approvals and the need for review and updating.

Any issues resulting from daily or weekly audits shall be discussed with appropriate corrective actions agreed. A 'weekly look ahead' shall be provided at the construction meeting where any environmental constraints or special requirements can be discussed and agreed in advance, where required.

The Site Manager shall conduct daily construction briefings, as required, to ensure site personnel are advised of any specific environmental requirements and constraints.

Toolbox talks will be scheduled as and when necessary, over the duration of the Proposed Development.

The Contractor will directly and promptly communicate any environmental issues with the relevant body/department via phone or email.

Site notice boards will display the Environmental Policy of the Client, emergency contacts list, relevant statutory and non-statutory advice and guidance; and any other relevant information. These environmental notice boards will be situated in prominent positions including the main reception area of the site office / compound.

10.2 External Communication

Prior to works commencing on site a Stakeholder Communications Plan will be developed and implemented. This may comprise of circulating information leaflets or similar to inform local residents or residents' associations of each phase of the development with particular emphasis on safety, traffic management and the control of noise and dust throughout the construction period. The contractor will promote and aim to maintain excellent relationships with adjacent local residents, businesses, occupiers and the general public through regular communication and updates on construction activities that may affect them.

All communications received by the Contractor that are relevant to the works in site, including enquiries and complaints, shall be passed to the Site Manager.

If required by the Client any relevant contractors shall attend community engagement events, meetings, etc details of which shall be communicated to stakeholders in advance.

The Site Manager shall serve as the point of contact for the regulatory authorities for their specific activities. Communications from the regulatory authorities received at the site by the Site Manager shall be immediately reported to the Client.

The Contractor shall maintain a record of all communications.

Through the induction all members of the workforce shall be made aware that any direct approaches from members of the public should be directed to their Site Manager. The Site Manager shall record all approaches made by members of the public and shall advise the Client's Proposed Development Team of all comments received at the worksite from members of the public.

10.3 Public Liaison

The Contractor will establish early community relations with the surrounding residents and local community. All local residents and where relevant businesses shall be notified in advance of works commencing on site.

A Community Liaison Officer will be appointed for the duration of the Proposed Development and will be responsible for complaint management, public consultation and liaison with the public.

The Community Liaison Officer will manage any complaints from the community in a fair and efficient manner and share key information associated with site development such as potential disruptive works as and when necessary.

10.4 Complaints Procedure

The Contractor shall put in place a system for recording, and responding to, all complaints received from third parties. The system shall include the timely reporting of all such complaints.

As a minimum the activity leading to the complaint will be stopped immediately; or where not possible to entirely stop the activity reduce it to the lowest possible level e.g., shut off all non-essential plant.

All complaints will be acknowledged by the Contractor or Proposed Development Team on receipt and assessed to determine what information is required from all parties in order to formulate a response. The complainant will be called on the same day if a phone number is provided. Where a phone number is not provided an email response shall be given within three days. All complaints shall be recorded and investigated.

The Contractor will ensure that the complaints log is made available to the local authority if requested.

10.5 Documentation

The Site Manager shall be responsible for documenting and retaining safe all suitable records relating to environmental issues at the site and/or arising from site operations. Documents shall be stored in a suitable manner and backups created to safeguard the records. This CEMP shall be a controlled document and authorised latest version shall be signed and dated by the responsible person[s]. Other site data records and environmental management documentation will include, but not necessarily be limited to the following:

- Copies of relevant consents, permissions, or other approvals/ authorisations.
- Environmental data records including monitoring results, waste transfer notes/ records of waste collection and treatment/disposal.
- Records of any environmental incidents including actions taken and resolution.
- Records of complaints including actions taken and resolution.
- Records of all plant / equipment entering / leaving site together with any relevant compliance documentation (for instance in respect of noise or air pollutant emissions class).
- Copies of any enforcement notices or instructions issued by the local authority or any statutory regulatory body.
- Record of any prosecutions pending or resolved, and any penalties enforced.
- Records of daily site inspections.
- Records of weekly/monthly audits and minutes of environmental team briefings.
- Records of staff training including site inductions and toolbox talks.

11 ENVIRONMENTAL TRAINING AND AWARENESS

11.1 Inductions

All Proposed Development personnel and sub-contractors shall receive an Environmental Induction Presentation, prior to commencement of works onsite. No personnel, including sub-contractors, shall be permitted to commence employment on site without prior attendance at an induction.

Environmental topics covered in the induction shall include but will not be limited to:

- Water resources and pollution prevention.
- Emergency response procedures and incident reporting.
- Waste management and housekeeping.
- Management structure.
- Duties and responsibilities.
- Relevant procedures.
- Ecologically sensitive areas.
- Consents, licenses and Legislation.
- Environmental best practice.

11.2 Toolbox Talks

Regular 'Tool-Box Talks' on specialised topics shall supplement the induction course. Toolbox talks shall be used to highlight issues of concern and to disseminate new information not previously provided. They will also offer site personnel with the opportunity to provide feedback.

Tool-Box Talks shall include, but will not be limited to, instances where:

- There is a change to existing legislation, which requires an operational change.
- Site inspections or audits have identified corrective actions which require rolling out.
- Work is being undertaken in environmentally sensitive areas and pollution response procedures.
- There are significant changes in environmental conditions, i.e., heavy rainfall.

The frequency and topics of the Toolbox Talks shall depend upon the phase of construction. They shall be provided as often as necessary to address site-specific environmental requirements.

Toolbox talk topics for environmental management shall include, but will not be limited to:

- Control of noise and dust emissions.

- Environmental incident and reporting.
- Silt and water management.
- Waste management and segregation.

Records of all 'Tool-Box Talks' and attendance shall be kept in the site offices.

11.3 Specialist training

Specialist training for specific members of the construction crews will be provided as required. This may include, but will not be limited to:

- Emergency environmental crews.
- Environmental Monitoring.
- Waste representatives.
- Fuel tanker drivers and refuelling activities.
- Drainage blocking and flume diversion

12 EMERGENCY PREPAREDNESS AND EMERGENCY RESPONSE

An Emergency Response Plan has been prepared for the Proposed Development and is attached to this CEMP as **Appendix F**.

Prior to commencement of construction, the Environmental Clerk of Works (EnvCoW) will prepare a register of corrective action and emergency response sub-contractors that can be called upon in the event of an environmental incident, and/or to give training on escalating incident where useful, including e.g. specialist hydrocarbon spill response, specialist hydrological and/or water quality response.

Mitigation measures as outlined in the previous sections will reduce the potential for contamination of waters during the construction phase of the Proposed Development. However, there remains the risk of accidental spillages and or leaks of contaminants, and excessive loading of surface water mitigation infrastructure.

The Emergency Response Plan potential emergencies and respective emergency responses include:

- Hydrocarbon spill or leak – Hydrocarbon contamination incidents will be dealt with immediately as they arise. Hydrocarbon spill kits will be prepared and kept in vehicles associated with the construction phase of the proposed development. Spill kits will also be established at proposed construction areas. Suitable receptacles for hydrocarbon contaminated materials will also be at hand.
- Significant hydrocarbon spill or leak – In the event of a significant hydrocarbon spillage, emergency responses will be escalated accordingly. Escalation can include measures such as installation of temporary sumps, drains or dykes to control the flow or migration of hydrocarbons and contaminated runoff will be contained, managed and pumped to a controlled area in line with Active Management including treatment through a suitably equipped treatment tank and Granular Activate Carbon (GAC) vessels.
- This process will be managed by the EnvCoW in conjunction with a preidentified consultant (EnvCoW) in regard to effective remediation, treatment and removal of hydrocarbon contaminated water and soils. Excavation and appropriate disposal of contaminated soils will be required in this instance.
- If a significant hydrocarbon spillage does occur, the contractor on behalf of the Developer will have an approved and certified clean-up consultancy available on 24-hour notice to contain and clean-up the spill. The faster the containment or clean-up starts, the greater the success rate, the lower the damage caused and the lower the cost for the clean-up.
- Cementitious material – Cement / concrete contamination incidents will be dealt with immediately as they arise. Spill kits will also be established at proposed construction areas. Suitable receptacles for cementitious materials will also be at hand.
- In the event of a significant contamination or polluting incident the relevant authorities will be informed immediately.

The Emergency Response Plan sets out the requirements with respect to the following:

- Managing & Reporting Environmental Incidents
- Roles and Responsibilities
- Spill Kits
- Fire Prevention
- Extreme Weather
- Emergency Contacts
- Incident Reporting and Investigation
- Incident Response

The Emergency Response Plan is to be considered a live document which is to be updated on a regular basis by the Site Manager.

13 COMPLIANCE AND AUDITING

13.1 Proposed Development Works Area Inspections

13.1.1 Site Inspections and Environmental Audits

The ECoW and the Site Construction Manager will carry out routine inspections of construction activities.

Site inspections will be carried out on a daily and weekly basis at locations which are relevant to the construction activities taking place on site to ensure all controls are in place and are functioning to prevent pollution events occurring.

Inspections carried out will ensure that the activities taking place are in compliance with the mitigation set out in the Planning and Environmental Report, the NIS and in compliance with this CEMP and all other planning application documents.

Inspections will be carried out by suitably trained staff only.

A log of all inspections shall be maintained on site by the ECoW and made available for inspection by the Local Authority on request.

Any identified failures or potential failures in pollution control measures will be logged as well as any corrective actions taken.

13.1.2 Auditing

The purpose of Environmental Audits is to identify and to highlight the underlying causes of non-compliance. Good environmental audits will result in system and performance improvement.

A schedule of environmental audits will take place during the construction phase will be set up and agreed with the Planning Authority prior to commencement of construction.

The Environmental Audits will be carried out by contractor staff or alternatively by external personnel acting on their behalf.

The results of environmental audits will be documented and provided to Proposed Development management personnel.

Corrective Actions, if required will be identified and agreed with the Contractor together with the time frame for their implementation.

13.1.3 Environmental Compliance

Identified incidents will be classified as Near Miss, Minor or Major in accordance with

Table 13-1: Incident Reporting and Investigation

Incident Classification	Definition
Near Miss	An event, controlled through implementation of an effective incident control measure (e.g., drip tray used, effective use of noise barrier).
Minor Environmental Incident	Incidents that have caused minor harm or damage to the environment e.g. • a minor fuel spill below 20 litres onto ground which is immediately cleared; • a minor spill of a chemical not classified as presenting an ecotoxic risk; • exceeding noise levels; • silt runoff from site which does not enter into a surface water feature; or • excess dust emissions.
Major Environmental Incident	Incidents that have caused or may cause significant harm or damage to the environment e.g. • a minor fuel spill which impacts a sensitive land feature, a water body, or drains; • a major fuel spillage over 20 litres; • any spillage of a chemical which is classified as presenting an ecotoxic risk; • silt runoff from site which enters a water feature; or • receipt of a nuisance complaint.

An exceedance will immediately trigger an investigation into the reason for the exceedance occurring and the application of suitable mitigation where necessary.

Where Minor or Major incidents occur, Corrective Action will be taken immediately, an assessment of the impact arising from the activity will be made and recorded by the ECoW, a report generated on the issue, action taken and effectiveness of the corrective action taken.

The Corrective Action Report will be made available to the Planning Authority or other Statutory Body on request.

The appropriate Corrective Action will be implemented by the Site Supervisor/Construction Manager, as advised by the EnvCoW.

A Corrective Action Notice will be issued to the Main Contractor and will include the details of the incident and the action required to be taken. The Corrective Action Notice will include a section to be completed when the actions required are completed.

This CEMP will be updated and reviewed prior to commencement of construction, and also every six months thereafter during the construction phase of the Proposed Development or when triggered by the need to do so due to an environmental incident, on foot of a complaint or new legislative requirements which lead to a change in mitigation or management practices on site.



Perigus Energy Ireland Midco Limited

Greenhills Renewable Energy Park

Construction Environmental Management Plan

Appendix A Surface Water Management Plan

605444 SWMP (00)

AUGUST 2026





Status: 00

Date: 12/08/2026

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1 INTRODUCTION

This Surface Water Management Plan (SWMP) forms part of the Construction Environmental Management Plan (CEMP) for the Greenhills Renewable Energy Park (the Proposed Development) in Co. Cork.

The SWMP sets out the minimum surface water management requirements which must be implemented during the:

- Construction of the Development
- Operation of the Development
- Decommissioning of the Development

The SWMP should be considered a live document and is to be updated by the Contractor at the commencement of the Project and on a quarterly basis thereafter, or as more frequently as the need arises to ensure that it is current and has the most up to date information.

A copy of the SWMP and any updates shall be maintained on site as part of the Environmental Clerk of Works (EnvCoW's) Environmental Management System.

An electronic copy of the SWMP and any updates shall be provided to the following:

- Greenhills Renewable Energy Park Project office
- Cork County Council Planning Department
- Inland Fisheries Ireland
- Contractor

All sub -contractors working on the project.

The EnvCoW shall maintain a record of all versions of the SWMP issued.

2 PROJECT DESCRIPTION

2.1 Site Location and Plan

The Proposed Development (Greenhills Renewable Energy Park) comprises a solar farm, battery energy storage system, 220kV AIS substation and loop-in grid connection in the townlands of Knocknagappagh, Barnaviddane, Ballyneague, Ballydaniel, Youghalpark, Ballydaheen and Cornaveigh in County Cork, see Figure 2-1 below.

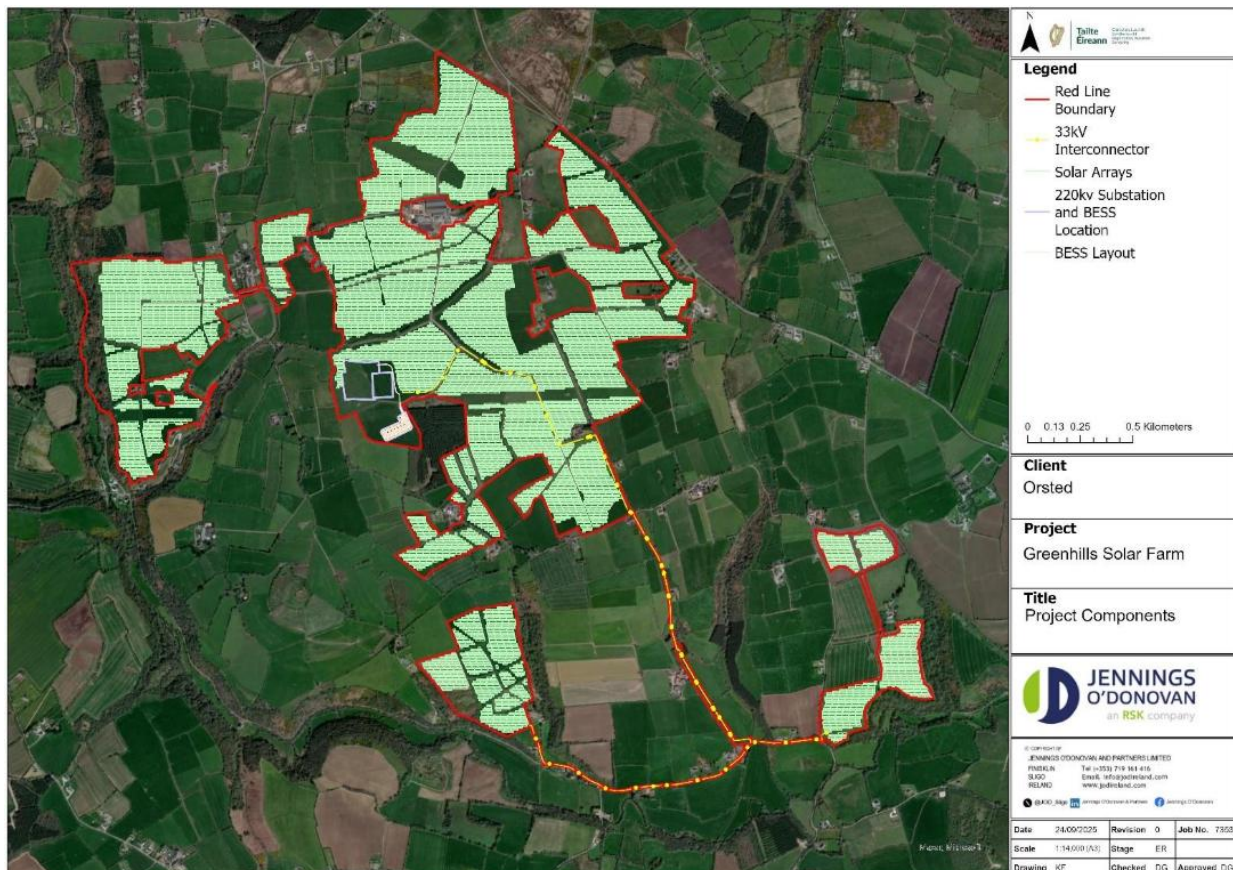


Figure 2-1: Proposed Development Area

The Proposed Development is adjacent to the R634 road approximately 7km north-west of the settlement of Youghal and 6.5km north-east of Killeagh, Co. Cork.

The site area is relatively flat and comprises agricultural lands in a Rural setting with low population density. The high level of solar irradiance in the southern region of the country makes it ideal for the development of renewable solar photovoltaic projects.

2.2 Description of the Development

A detailed description is included in Planning and Environmental Report Chapter 4 Description of the Proposed Development. In summary the proposed development area is 328 ha and the Proposed Development will comprise the following elements:

- Solar array

- Inverter/transformer stations
- New site entrances and access tracks
- All ancillary development such as drainage infrastructure, security fencing, CCTV, weather stations and storage containers for spare parts.
- Temporary construction compound(s)
- Landscaping
- Biodiversity enhancement
- Battery energy storage system (BESS)
- 220kV substation & loop in grid connection

A 10-year planning permission and 40-year operational life from the date of commissioning of the entire Proposed Development is being sought. This reflects the lifespan of modern-day technology.

Electricity from the solar array areas will be ducted to an on-site new 220kV AIS substation, which will be connected to the national grid via a loop-in grid connection to the existing Knockraha-Cullenagh 220kV overhead line, which runs through the middle of the site. The proposed 220kV AIS substation, loop-in grid connection and BESS compound are located in the townland of Ballyneague,, circa 6.5 kilometres north of Killeagh, County Cork.

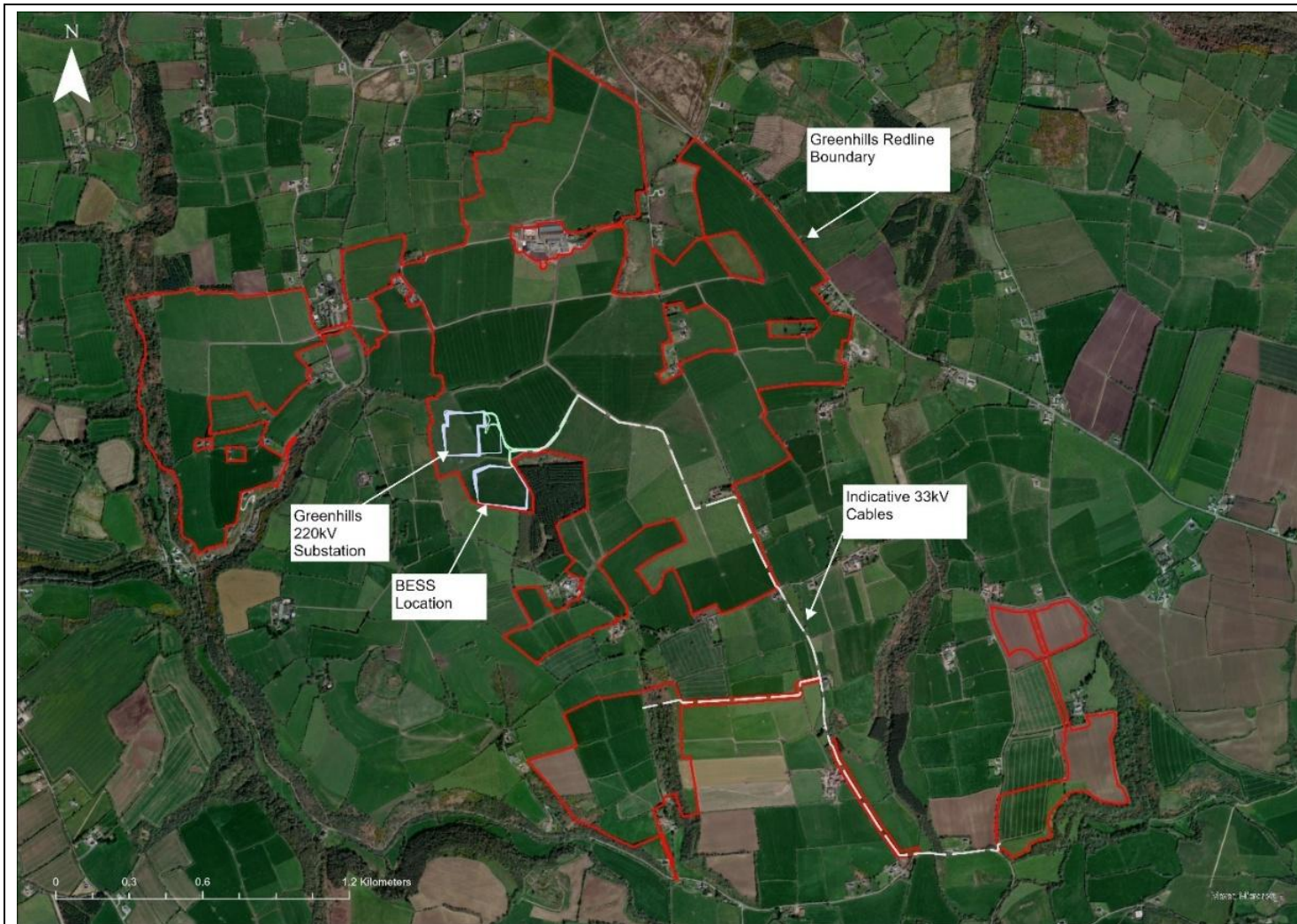


Figure 2-2: Proposed Development Site Location Map

3 MONITORING, ENVIRONMENTAL CLERK AND EMERGENCY RESPONSE PROTOCOLS

3.1 Environmental Clerk of Work

To ensure effective implementation of mitigation measures, environmental auditing, and monitoring of environmental obligations of the Developer, an Environmental Clerk of Works (EnvCoW) will be assigned by the Developer to carry out monitoring at the Site during the construction and operational phases of the Development.

The EnvCoW role and monitoring schedule is outlined in the Water Quality Monitoring Plan (WQMP).

3.2 Managing & Reporting Environmental Incidents

Environmental incidents including accidental spillages on soils (e.g. fuel), breeches of thresholds (environmental quality standards – TSS exceeding 25mg/l), and significant environmental incidents will be reported to the Local Authority as part of emergency responses to such incidents. Incident notification will be escalated to relevant third parties where relevant e.g. Inland Fisheries Ireland (IFI) if surface water receptors are intercepted.

3.3 Emergency Response Protocols

Mitigation will set out to minimise any potential for contaminants to reach sensitive receptors identified during the construction phase of the proposed development are encompassed in passive management of construction water, however, there remains the risk of accidental spillages and or leaks of contaminants, and excessive loading of surface water mitigation infrastructure.

EnvCoW will monitor the efficacy of mitigation measures applied, and were failing to achieve the objectives set, emergency response and mitigation measures are escalated until such time as the site stabilises, and objectives of mitigation are being achieved once more.

Details of these protocols are outlined in the WQMP.

4 ENVIRONMENTAL CONSTRAINTS AND MITIGATION MEASURES

The descriptive mitigation measures outlined in this report (Section 5 & 6) will be applied to the development design and construction methodologies with a view to avoiding and/or minimising any potential adverse effects to water quality in the receiving surface water network. The aims and examples of important considerations in relation to mitigation measures described in the PER are further clarified here.

The available guidance stipulates varying surface water buffer widths depending on type of activity, receptor type and sensitivity, and riparian zone characteristics including topography (steepness). Recommended surface water buffer widths range from 5m to 50m depending on site specific and activity specific characteristics. However, given that solar panel installation construction involves minimum ground disturbance with the only significant ground disturbance occurring at the Substation, BESS and new access track, for the purposes of this assessment the following approach has been applied:

- 20m Surface Water Buffer Zone - Mapped surface water features i.e., mapped streams, rivers, lakes. Source for mapped surface water features; EPA.
- 10m Drainage Buffer Zone - Non-mapped drainage features i.e., non-mapped streams, natural and artificial drainage features, except where the area is crossed at track locations. Source for non-mapped surface water features desk study and aerial photography assessment, Lidar topographic data and field observations. With exceptions where the area is crossed at track locations.

Historic mapping was reviewed, and field walkover surveys conducted to identify and map drainage features on site. The field surveys identified the main hydrological connectivity to the Tourig River flowing west of the site which connects to the designated areas as described in the biodiversity section above. The proposed development area is drained by the Carrignass Stream, Knocknappagh Stream, Ballyleague Stream, Youghalpark Stream and Ballyglavin stream (all tributaries of the Tourig River), as well as internal local drainage connected to these. All watercourses and significant artificial drains which were identified were avoided through incorporation of appropriate buffers into the overall design, see Figure 4-1.

No flood zones were identified within the site. A flood area is located along the Tourig water course (EPA 18T03), located to the west of the northern parcel, south of the southern parcel and southeast parcel, though this appears to be limited to the main channel. Figure 4-1 presents identified historic surface water features (screening 25" maps, GeoHive). Some of these features are obsolete / no longer exist. Active historic drains

Significant drainage features have been identified and mapped in so far as practical. The Proposed Development is situated within the Blackwater (Munster) Catchment (ID: 18, Area: c. 3307.64 km²). Surface water runoff associated with the Site drains into Tourig_SC_010 sub catchment and the Tourig_020, Glendine (Blackwater)_010 and Tourig_010 River sub basins. Surface waters drain from the Proposed Development via the historical drains into the Tourig and the Glendine Rivers before combining in the Youghal Harbour, which eventually flows to the Celtic Sea.

In terms of local drainage and non-mapped surface water features, the Proposed Development is characterised by artificial drainage networks including agricultural and land reclamation / improvement works.

Groundwater buffer zones are dependent on the characteristics of the receptor e.g., private well, or public supply source protection zone, and the characteristics of the underlying geology and associated aquifer e.g., poor unproductive aquifer, or regionally important karstified aquifer. The site is underlain by a Locally Important Aquifer (LI) which describes bedrock which is moderately productive only in local zones, which falls in a group of Poorly Productive Aquifers and has an GSI estimated transmissivity of less than 10 m² /d. The Proposed Development overlies the Glenville Groundwater Body which covers an area of 1,107km².

There are no karst features close to the site. There are a number of agricultural wells within the redline boundary and private wells and boreholes within 2km of the site, see Figure 4-2.

Historic maps have indicated previous mapped 'springs' or 'rises' in the area.

None of the proposed works fall within a buffer zone associated with an EPA mapped river. The proposed delivery routes associated widening where required, at watercourse crossings etc. naturally fall within buffer zones associated with mapped streams / rivers. Some of the proposed site access tracks fall within buffer zones associated with existing natural and constructed drainage features at various locations. These features pose an elevated risk in terms of connectivity to surface water receptors downstream.

Following site surveys natural and artificial drainage features observed which are relatively well connected to the mapped surface water network and/or regional groundwater bodies have been included in considering constraints. Given the extensive drainage network existing at the site the construction activities associated with the development will invariably be in close proximity to surface water / drainage features, such that there will be a requirement for further enhancing and specifying mitigation measures.

Some of the development footprint will fall within buffer zones due to the unique and limiting circumstances associated with the site and the development. Careful consideration and special attention to planning is required for the identified locations within the surface water buffer zones. Each proposed construction location will possess unique characteristics and will require assessment on a case-by-case basis to ensure adequate measures are implemented. The mitigation measures described in the following sections will also be applied.

Some portions of the Development footprint fall within assigned buffer areas, including;

- Three existing culverts will be crossed by the 33kV cables in the public road infrastructure on the L3808.

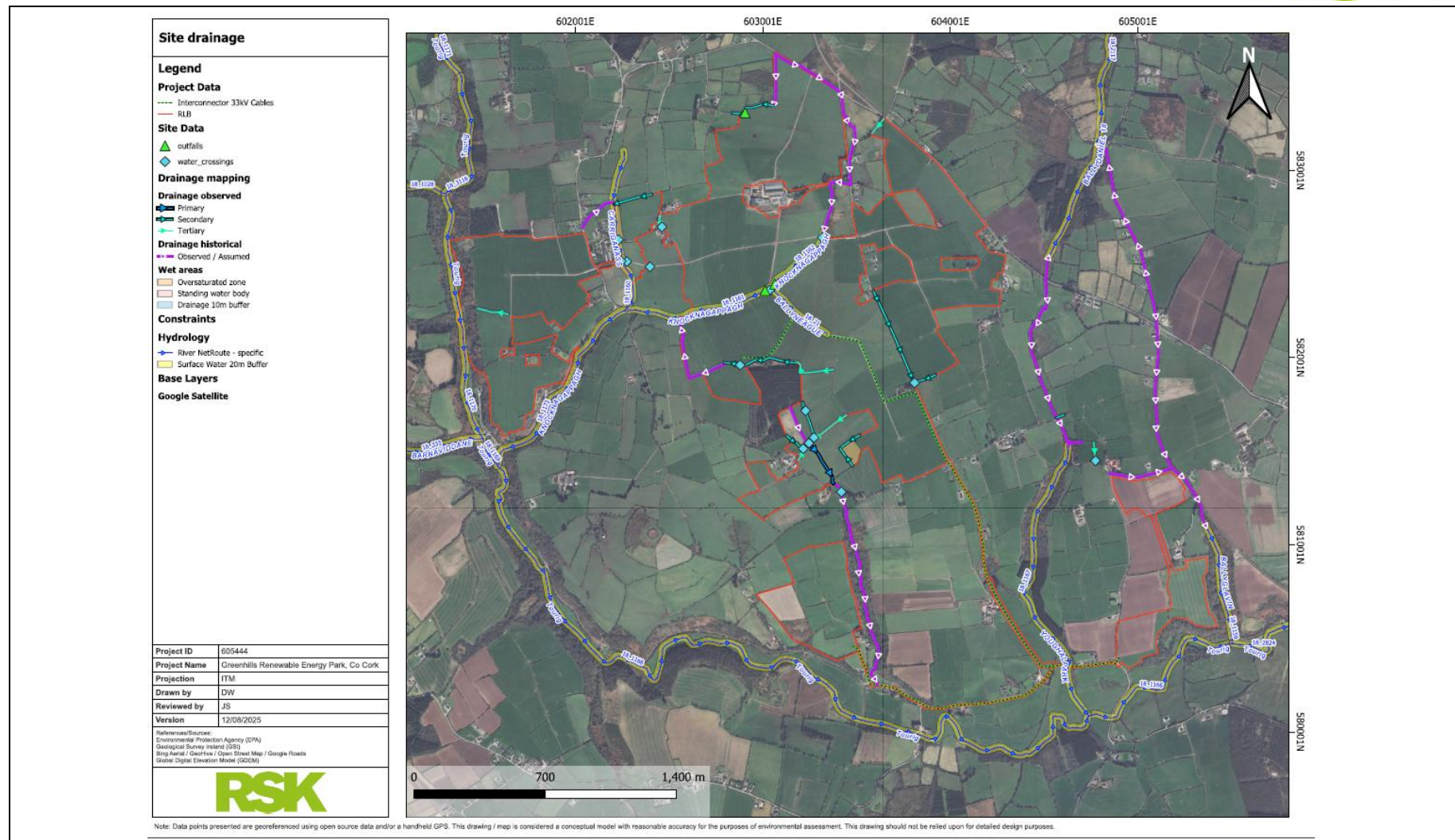


Figure 4-1: Historic Surface Water & Preliminary Drainage Map

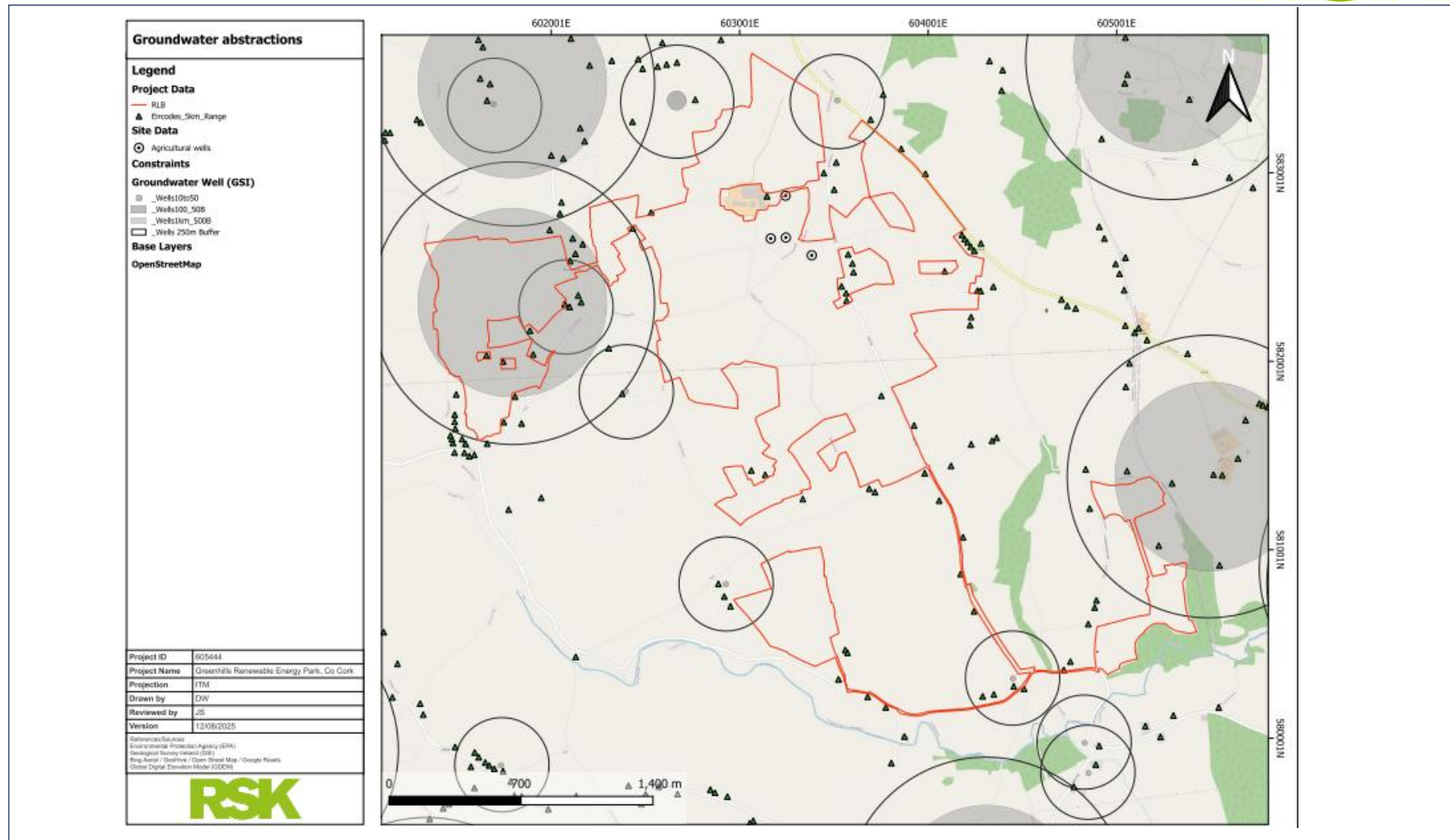


Figure 4-2: GSI registered groundwater abstractions, site identified wells and local Eircode

5 DRAINAGE SYSTEM OVERVIEW

The drainage system has been designed for this Development, considering all constraints outlined in Section 4. It aims to ensure the Development does not change the baseline water quality within or downstream of the Site. The drainage system includes the following:

- A 20m buffer from EPA mapped rivers
- A 10m buffer from drains and watercourses except at water crossings. These will be marked out prior to works beginning on site.
- Drainage will be installed in parallel with access track construction.
- Swales and Check dams will be mainly used for linear track drainage.
- Silt fencing will be utilised during water crossings and around stockpiles
- Settlement-attenuation ponds will be used at every major excavation (Substation and BESS)

5.1 SuDS Drainage Design

Drainage features constructed at a site as part of the Proposed Development have the potential to significantly adversely effect on the baseline hydrological regime, particularly in areas in close proximity to existing drainage features.

As part of mitigation by avoidance during the design phase of the development, groundwater, surface water, and drainage buffer zones were established where applicable, excluding areas crossed at track locations. Buffer zones are intended to drive the design process by minimising or avoiding the risk to surface water features by restricting construction disturbance to outside these zones, in turn protecting riparian vegetation and providing potential for filtering of runoff from the site and maintaining the baseline hydrological and drainage regime at the site.

Where drainage networks exist, collected / diverted runoff will likely be diverted back into the existing network. In such instances, it is important to include the existing drainage network in designing and specify the treatment train and attenuation features, including improving, modifying, and constructing attenuation features in drainage channels. Similar considerations for newly constructed drainage channels, the modification and/or improvements of existing drainage will be designed with a view to maintaining or improving the hydrological regime at the site.

The drainage design for the proposed site will be such that drains are positioned adjacent to the footprint of the development, therefore the proposed drainage infrastructure can be considered part of the development footprint.

Site surveys identified significant natural and artificial drainage features which are connected to the mapped surface water network and/or regional groundwater bodies. The construction activities associated with the development will invariably be in close proximity to surface water / drainage features, including within the buffer zones such that they will be subject to further enhancement and specific mitigation measures.

There is increased potential for water pollution in these areas, in particular sedimentation to local surface water features due to the excavation and generation of spoil and emplacement of stone

materials during the construction stage of the project. To ensure this is reduced and mitigated for Nature Based Sustainable Drainage Systems (SuDS) will be implemented.

The design criteria for the Nature Based SuDS design are as follows:

- To select and install ecologically sensitive drainage.
- To minimise alterations to the ambient site hydrology and hydrogeology.
- To provide settlement and treatment controls as close to the site footprint as possible and to replicate the existing hydrological environment of the site.
- To minimise sediment loads resulting from the development run-off during the construction phase.
- To preserve and potentially reduce greenfield runoff rates and volumes.
- To provide settlement ponds to encourage sedimentation and storm water runoff settlement.
- To reduce stormwater runoff velocities throughout the site to prevent scouring and encourage settlement of sediment locally.
- To manage the problems of erosion and allow for the effective revegetation of bare surfaces.
- To control water within the site and allow for the discharge of runoff from the site within the limits prescribed in the Salmonid Regulations.

The purpose of incorporating a Nature Based SuDS design is:

- To provide sufficient detail to ensure that water pollution will not occur as a result of construction activities at the site and to minimise the risk of any such occurrence.
- To regulate the rate of surface water run-off downslope to prevent scouring and to encourage settlement of sediment locally.
- To provide appropriate retention times such that no flooding will occur.
- To provide settlement ponds to encourage sedimentation and storm water runoff settlement.

6 DETAILED DESIGN CONSIDERATIONS

Nature based solutions couple SuDS with ecology and biodiversity mitigation can also provide opportunities to attain net biodiversity gain.

One of the main objectives of Nature Based Solutions and SuDS is to create an array of runoff stilling areas / standing water and promote diffuse discharge and recharge of runoff at the proposed site. The objective of nature-based solutions will be to reverse the effect of the development where there is the opportunity and where it is appropriate through surveying and risk assessment.

6.1 SuDS Design Principles

The approach to treatment and attenuation of storm water is as follows:

- Additional drainage measures will only be added as necessary. The dimensions of these features will avoid intercepting large volumes of water. Any changes to the SWMP must be agreed with the Environmental Manager and the EnvCoW.
- Where linear track drains are specified on the drainage stone filled check dams will be installed at a regular frequency, in order to reduce flow velocities and improve conditions for the settlement of solids in transit. Check dams will be constructed from 5-40mm crushed rock. It is intended that these dams will be relatively simple to construct but will provide treatment of construction runoff at source. There will be outflow points (spillways) from the drains to the settlement ponds. No outflow will be permitted directly into natural watercourses.
- The roads within the Proposed Development will be constructed with an appropriate surface cross slope, so that all storm water flow will be directed towards the constructed swales located along road verges or to french drains/soakaways. The width and depth of constructed swales will be minimised as far as practical in order to reduce ground disturbance, excavation footprint (and hence volume of excavated materials) and also disruption of local hydrology as far as possible.
- Drainage vegetation (vegetation including grasses established within a drainage channel) can filter runoff water. Living and decomposing plants and roots and associated microorganisms trap sediments and take up excess nutrients used, will be similar in species to the local area and will be approved by the Environmental Clerk of Works.
- Temporary erosion protection together with silt fences may be required (Figure 6-1).
- Permanent check dams (flow barriers or dams constructed across the drainage channel) will be installed at regular intervals within the swales in order to reduce erosion and allow for greater flow control. These check dams are required in order to reduce the velocity of water and therefore allow settlement of coarser sediment particles as well as silt at low flow conditions. Reduction in flow velocity will also prevent scouring of the drainage channel itself.
- Stormwater runoff within the trackside drainage will be treated through the provision of check dams, within a range depending on local slope of the drain as significant levels of sediment are not expected because of the surface dressing of the access tracks,

collector drains and buffered outfalls. All trackside drainage will drain to settlement-attenuation ponds prior to the buffered outfall.

- The number and location of check dams will be dependent on the slope, flow and volume of water, although the following general rules will be applied:
 - The maximum spacing between check dams should be such that the toe of the upstream dam is at the same elevation as the top of the downstream dam.
 - The centre of the check dam should be at least 0.2m lower than the outside edges.
 - Side slopes should be 1:2 or less.
 - A Terram membrane barrier or similar non-woven geotextile membrane will be placed around check dam.
 - Check dams will be keyed at least 0.1m into the drainage channel bottom in order to prevent the dam washing out.
 - Check dams will be maintained and monitored on a regular basis. Sediment will be removed before it reaches one half the original dam height.
- Discharging directly back into the surrounding area will assist in maintaining the hydrological characteristics of the Site.
- Where vegetation is removed from sloped areas during construction, these areas will be reinstated as early as possible using the same vegetation or similar vegetation as advised by the EnvCoW.
- A sump may be required for trench dewatering. Water will subsequently be pumped into settlement-attenuation ponds or a siltbuster.
- The level of silt runoff during construction will be monitored which is detailed in Chapter 11: Land, Soils, Geology, Hydrology and Hydrogeology and if found to be excessive of 25 mg/L in any area, will subsequently be managed by the provision of additional silt attenuation features such as silt fences or silt traps.

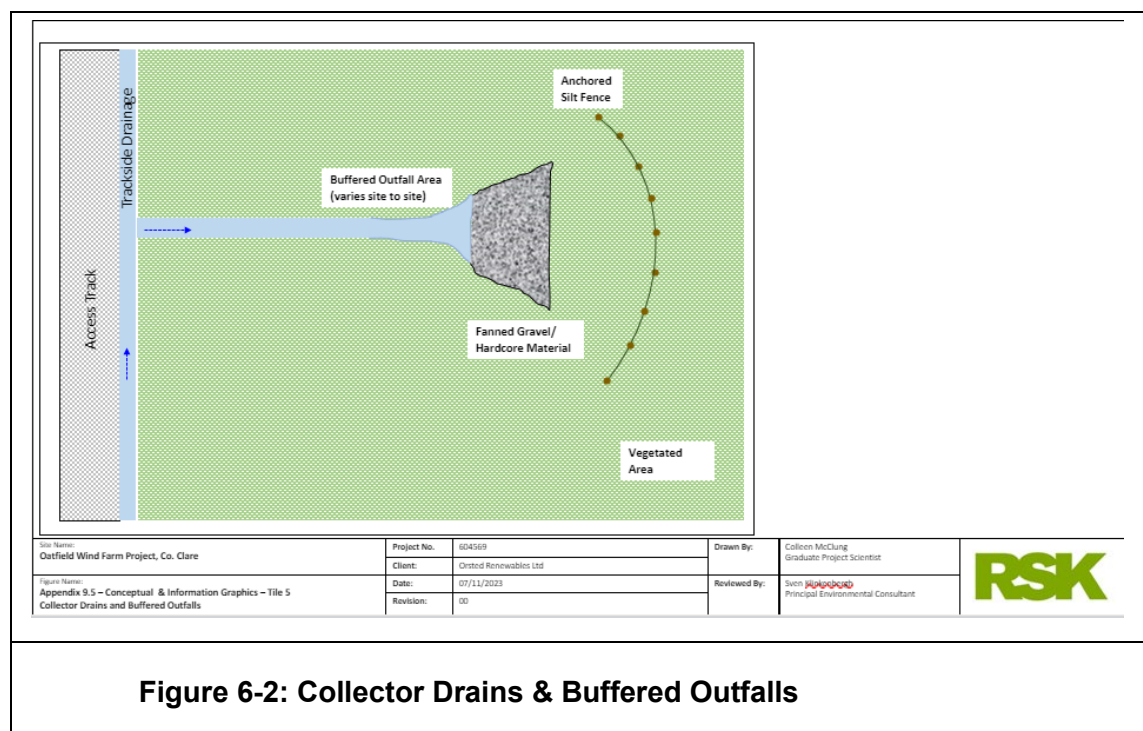


This system involves the installation of some semi-permeable geotextile fabric (Figure 5), vertically held on simple timber posts, and is used primarily as an additional means of filtering out sediments from runoff water used in conjunction with other drainage and attenuation measures. The fences can be installed (to manufacturers' recommendations) in a range of scenarios, including;

- Alongside any sensitive areas, e.g. watercourses, particularly where works occur within drainage or surface water buffers. This can include dirty water containment at watercourse crossings.
- Large areas of stripped materials i.e. soils and subsoils, and areas used for temporary storage of materials, e.g. around the substation and BESS cut and Fill construction area.
- Downstream from drainage or water treatment outlets and can usually be arranged in a horse-shoe style configuration to contain and allow settlement of suspended sediments.
- Within temporary construction drains, alongside or in place of check dams.

Silt fencing works through ponding. It allows runoff water to gather, and for sediment to sink while the water itself slowly soaks into the ground or evaporates. These systems require ongoing monitoring and maintenance.

Silt Fencing is considered a temporary mitigation measure and will be removed once conditions stabilise following the construction phase of the development.



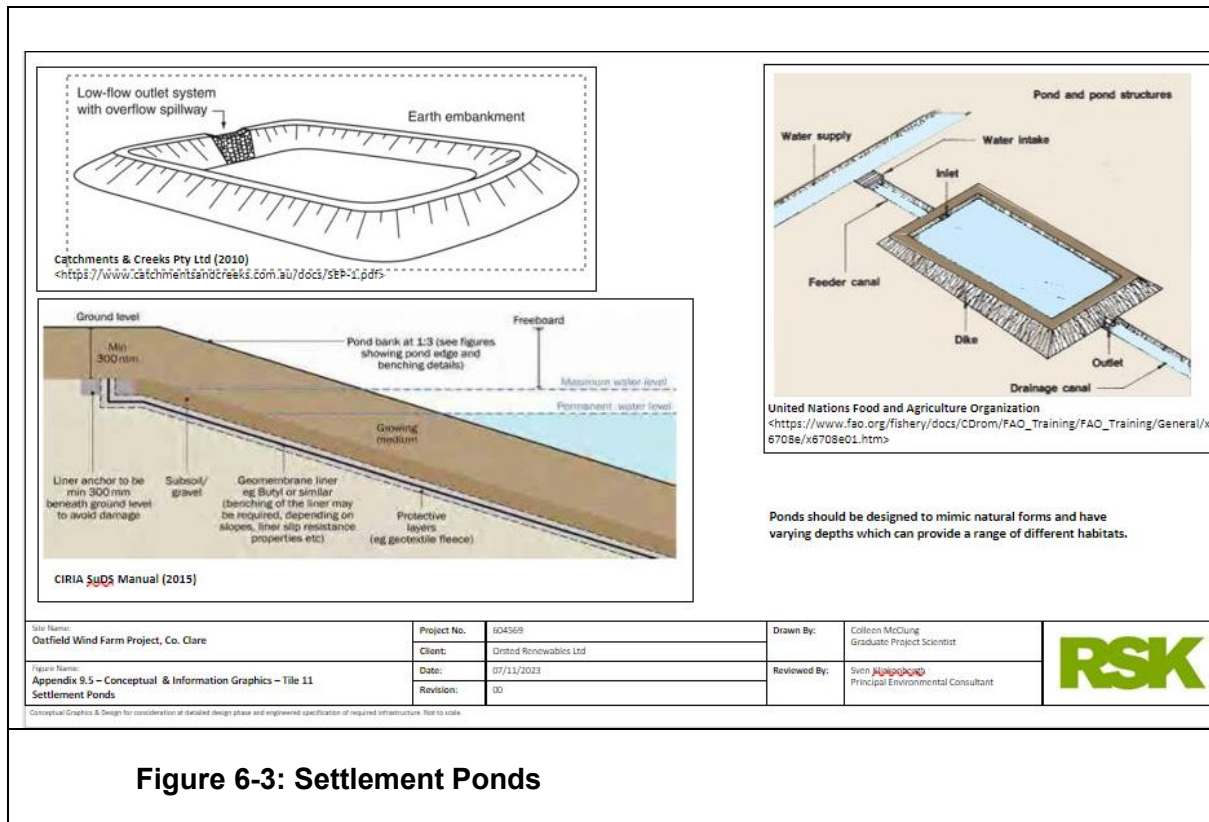


Figure 6-3: Settlement Ponds

6.2 Swales

Drainage Swales will be provided between the Proposed Development and watercourses. Drainage from site roads, compounds, inverter stations and other hardstand areas will be collected by these drainage swales and attenuated to greenfield equivalent in three-compartment silt ponds (which are also designed for attenuation) and dispersed overland via a “level spreader” or buffered outfalls where the outflow will mimic existing natural overland sheet flow.

Settlement ponds are to be securely fenced to prevent easy access. The ponds are utilised to attenuate and to aid the removal of suspended solids from site runoff water.

Flows controls shall be installed at the silt pond outflow points to ensure that flows are discharged at a limited rate up to the 1% AEP Climate Change event.

6.3 French Drains and Soakaways

French drains comprising 0.4m wide trenches up to 900mm deep will be filled with 32mm single sized crushed stone. These will be provided along edges of new tracks where no swales are proposed and also within localised hollows where surface water would otherwise accumulate and will connect such hollows to the road drainage.

Soakaways will be provided at the following locations:

- Site entrances
- Substation
- Inverter/transformer stations



At site entrances, the soakaway will comprise 1.8m diameter perforated precast concrete manhole rings to at least 1.2m deep filled with single 32mm sized crushed stone.

During operation, the Proposed Development will have no oil/fuels stored on site and will be drained via a comprehensive SuDS Management Train, so an interceptor is not required. However Transformers containing oil will be typically bunded also.

At the substation (see Section 3.2 of TLI Group Report Reference: 300101185-CS-R-02-00), a soakaway of 5m x 5m x 1.8m is proposed.

For the inverter (transformer/hardstand areas, a soakaway trench 0.6m wide x 8.0m long, 1.2m deep and filled with 32mm single sized crushed stone is proposed at the end of each unit (see Planning Drawing 7353-PL-506).

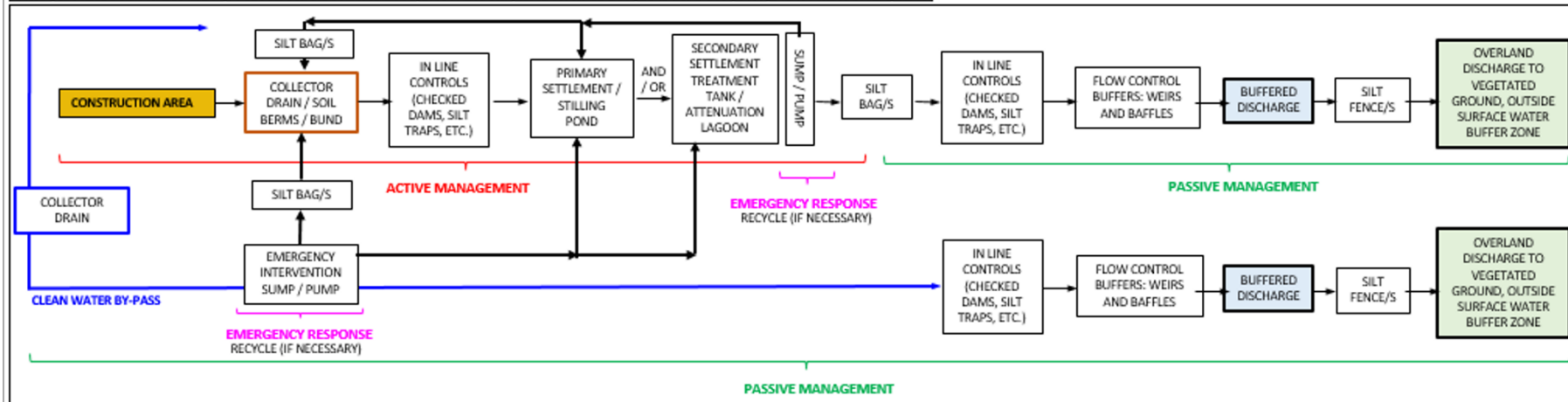
7 ACTIVE MANAGEMENT TREATMENT PLANS

In all instances where construction water, or runoff has the potential to entrain solids during excavation and other construction activities, runoff will be contained by means of temporary berms (lined geotextile of similar), bunds (lined) and sumps. This will be referred to as dewatering. Construction water (contaminated) will be pumped to the treatment train (Figure 7-1).

Pre-excavation, the following activities would be completed; felling of required trees and remove required vegetation from the site, including grass, shrubs, and bushes. Stockpile vegetation in a designated area for later removal or use in the restoration of the site. Remove the topsoil to the required depth to prepare the area for construction. Stockpile the topsoil in a designated area for later use in the restoration of the site. Remove the subsoil to the required depth to prepare the area for construction.

Contaminated water arising from construction works, namely, excavations, drilling and temporary stockpiling, will be contained and treated prior to release or discharge. The schematic presented here is a conceptual model of measures implemented to manage arisings and runoff (Figure 7-2).

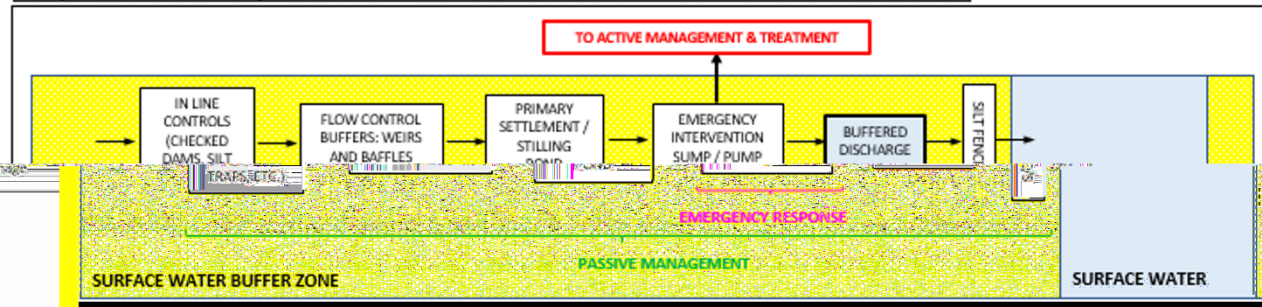
Conceptual Treatment Train Layout for Construction Areas (Access Tracks, Hardstand Areas, Turbine Base, etc.) & Clean Water By-Pass



NOTES:

- Wherever possible, outfalls will be positioned outside of Surface Water Buffer Zones.
- For areas of the development footprint within Surface Water Buffer Zones, in line measures such as silt screens will be over specified e.g. double / triple silt screens, and access to emergency intervention sump / pumps will be facilitated through design and/or emergency response.
- Quality of runoff entering buffer zones will be good i.e. suspended solids <25mg/l. Where runoff quality is poor, emergency response will be to use an intervention sump, pump and pump divert runoff to an area of the drainage network where it will be treated before redistribution and discharge.

Conceptual Treatment Train Layout for Construction Areas & Associated Infrastructure within Surface Water Buffer Zones



Site Name:	Project No.	604162	Drawn By:	Sven Klinkenbergh
Greenhills Renewable Energy Park	Client:	Tullacondra Green Energy Ltd	Principal Environmental Consultant	
Figure Name:	Date:	18/11/2022	Reviewed By:	SK
Figure 3.2 : Conceptual model of Water Treatment Train	Revision:	00 DRAFT		

Figure 7-1: Passive and Active Treatment train flow Diagram

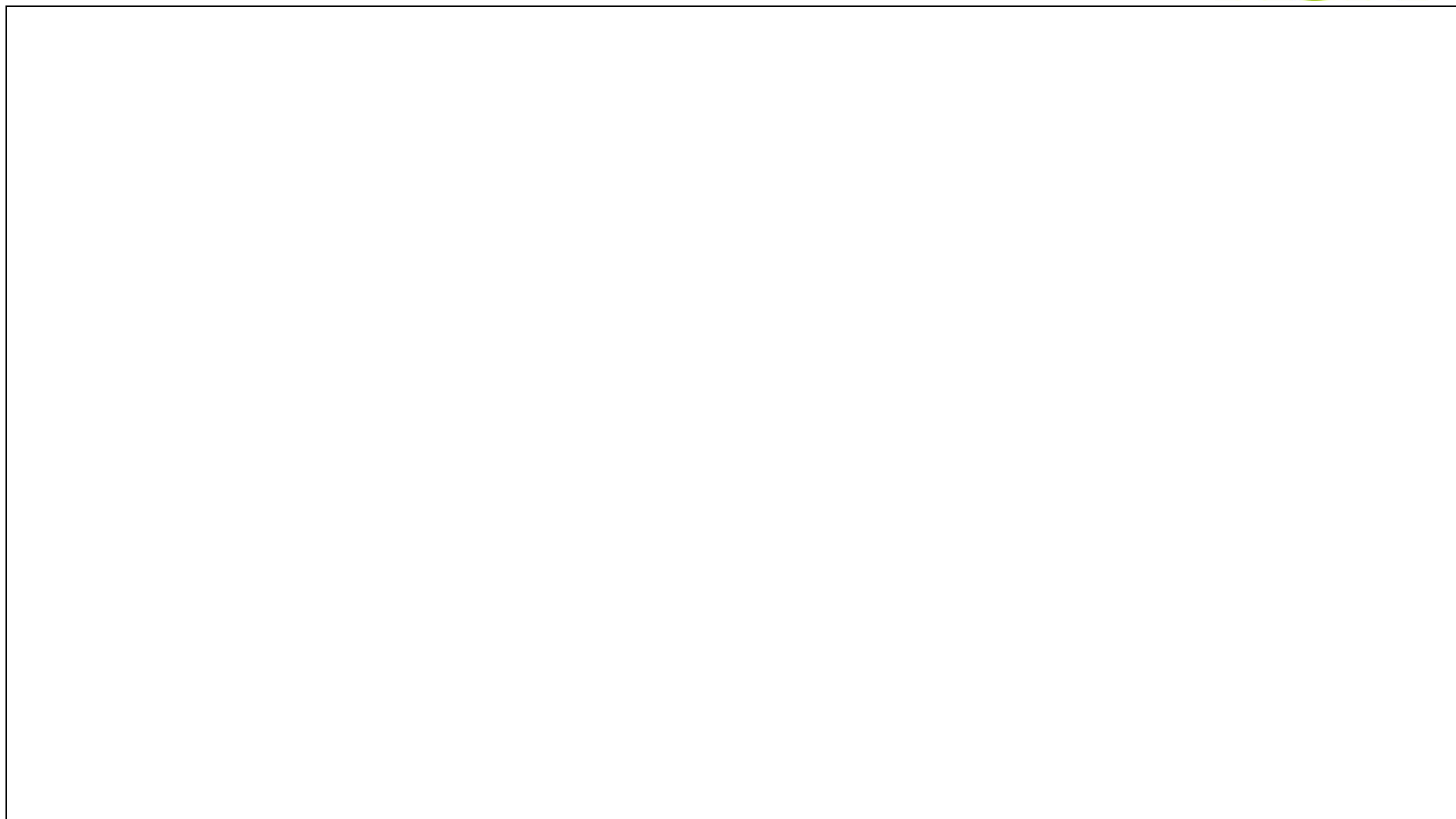


Figure 7-2:

7.1 Active Treatment Train of Construction Waters

The following sets out the Active Treatment train for construction waters:

- A. Arisings. Arisings from the launch / reception pit, or any other significant excavation (e.g., cable joint bays), will be directed to the treatment train.
- B. Temporary Bund. Arising control area i.e., a temporary bund. Gross solids will be temporarily deposited here.
- C. Sump / Pump. Rainwater accumulation will be removed by pumping to a Silbuster unit so as to provide the treatment of water prior to discharge to a nearby swale or silt pond.
- D. Temporary Silt Pond. This can be constructed using soils for bunding in combination with an impermeable liner.
- E. Outfall. The outfall from the Silt pond will be buffered (coarse aggregate) to dissipate energy and diffuse discharging water.
- F. Silt Screen. A silt screen will be in place down gradient of the stilling pond outfall. This is a precautionary measure to mitigate peak loads or surcharges in the system.
- G. Monitoring Location/s. Discharge quality will be monitored in real time using handheld turbidity meter to accurately measure the quality of water discharging from the site. Monitoring of discharge quality will be carried out at the settlement ponds and check dams i.e., before being actually discharged to surface vegetation or surface water (licenced).
- H. Sump / Pump. Discharge By-Pass. If water discharging from the siltpond exceeds quality reference limits water will be diverted (pumped) from the silt pond to the settlement / treatment tank.
- I. Silt Pond By-Pass. Similar to Discharge By-Pass, if conditions dictate water can be diverted directly to settlement / treatment tank.
- J. Settlement / Treatment Tank. A settlement tank will in line and ready to use if required i.e., water quality at silt pond outfall fails to meet quality reference limits. The tank will be equipped with treatment systems which will be activated as the need arises, for example, very fine particles which are very slow to settle can be treated with a flocculant agent to promote settlement of particles.
- K. GAC Vessel/s. As a precautionary measure, GAC (Granulated Activated Carbon) vessel/s will be in line and ready to use if required. GAC vessels are used to filter out low concentrations of hydrocarbons. Significant hydrocarbon contamination is only envisaged under accidental circumstances. If a hydrocarbon spill does occur, normal operations will pause and the treatment train will be utilised to remediate captured contaminated runoff.
- L. GAC Vessel By-Pass. If the quality of the water is acceptable in terms of hydrocarbon contamination.
- M. Treated water will be discharge by gravity / pump to the stilling pond for additional clarification, monitoring and buffered discharge to vegetated area.

Silt Bag. A silt bag can be used as alternative to stilling ponds. However, silt bags must only be used as primary method in lower risk areas i.e., outside of buffer zones, etc. Stilling ponds will be

the primary method (D, N) is circumstances where risk is elevated, however a gate valve and silt bag can be included in the treatment train and used as an emergency discharge route in the event that the stilling pond needs remediation or maintenance.

In all instances, stilling ponds (D), silt bags (N) and outfalls (E) will be situated outside of surface water buffer zones. At many locations, works will be within buffer zones. In these instances, waters can be pumped to the treatment train which can be positioned upgradient along the road (grid connection route) where discharge to vegetated areas / roadside drains can be managed.

Discharge of non-contaminated storm runoff to vegetated land within the Site boundary is not a licenced activity however this methodology is possible only under relatively low flow conditions (e.g., <2 litres per second (l/sec) typical of runoff over a relatively small site area). In the event that the expected incoming flow rate or dewatering rate is relatively high (>2 l/sec) a discharge licence will be acquired.

The discharge points will be identified during the licence application process. As discussed previously, the main components of the treatment will be positioned outside of the 50m surface water buffer zone where possible. The developer will identify suitable locations for the establishment of temporary infrastructure considering other variable such as traffic and access management. Similarly, the preferred location of discharge points will be outside of buffer zones and into minor or non-mapped surface water / drainage features where possible. The subject drain will be inspected to ensure connection to the mapped network (not blocked).

The quality of the water being discharged will be monitored. If discharge water quality is poor (e.g., >25mg/l Total Suspended Solids) additional measures will be implemented, for example, pausing works as required and treating construction water by dosing with coagulant to enhance the settlement of finer solids – this can be done in a controlled manner by means of a suitably equipped settlement tank. Collected and treated construction water will be discharged by gravity / pump to a vegetated area of ground within the site. Silt fences will be established at the discharge area to ensure potential residual suspended solids are attenuated and the potential for erosion is reduced. The discharge area will be outside of buffered areas (similar to dewatering of excavations). The quality of water discharged will be in line with licence discharge limits assigned by the local authority and will be monitored in real time (telemetry with 15 min sampling rate), as well as laboratory samples taken, analysed and reported and the frequency indicated in the licence.

8 POST CONSTRUCTION DRAINAGE MANAGEMENT

Following the completion of construction, a full review of construction stage temporary drainage will be undertaken by the appointed Contractor (in conjunction with the Environmental Manager, Site Engineer and the Project EnvCoW), with a view to removing drainage infrastructure that is no longer required during the development's operation phase.



APPENDIX B – SPOIL MANAGEMENT PLAN

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1 INTRODUCTION

The Proposed Development (Greenhills Renewable Energy Park) comprises a solar farm, battery energy storage system (BESS), 220kV AIS substation and Loop-in grid connection in the townlands of Knocknagappagh, Barnaviddane, Ballyneague, Ballydaniel, Youghalpark, Ballydaheen and Cornaveigh in County Cork.

The Proposed Development is adjacent to the R364 road approximately 7km north-west of the settlement of Youghal and 6.5km north-east of Killeagh, Co. Cork.

The site area is relatively flat and comprises agricultural lands in a Rural setting with low population density. The high level of solar irradiance in the southern region of the country makes it ideal for the development of renewable solar photovoltaic projects

1.1 Description of the Development

A detailed description is included in the Planning and Environmental Report Chapter 4 Description of the Proposed Development. In summary, the Proposed Development area is circa 323ha and will comprise the following elements:

- Solar array
- Inverter/transformer stations
- Interconnector underground cabling (including sections in the southern part of the site along public roads)
- New (2) and upgraded (9) site entrances and access tracks
- All ancillary development such as drainage infrastructure, security fencing, CCTV, weather stations and storage containers for spare parts.
- Temporary construction compound(s)
- Landscaping
- Biodiversity enhancement
- Battery energy storage system (BESS)
- 220kV AIS substation
- 220kV Overhead Line (OHL) Loop in grid connection to the existing Knockraha-Cullenagh 220kV OHL

A 10-year planning permission and 40-year operational life from the date of commissioning of the entire Proposed Development is being sought. This reflects the lifespan of modern-day renewable energy developments.

Electricity from the solar array areas will be ducted to an on-site new 220kV AIS substation, which will be connected to the national grid via a loop-in grid connection to the existing Knockraha-Cullenagh 220kV overhead line, which runs through the middle of the site. The proposed 220kV AIS substation, loop-in grid connection and BESS compound are located in the townland of Ballyneague,, circa 6.5 kilometres north of Killeagh, County Cork.

2 PURPOSE OF THE SPOIL MANAGEMENT PLAN

The purpose of this Spoil Management Plan is to describe how it is planned to construct the Proposed Development in a manner that is sustainable to ensure the landscape is not adversely impacted as a result of the Proposed Development and to ensure that site management practices are carried out to complete the Proposed Development safely and in the interest of orderly development.

The plan also sets out a methodology to prevent:

1. Soil excavated during the construction phase from being adversely stockpiled on site during and following the completion of construction works in areas not suitable for same.
2. Adverse local effects on sensitive habitats.

The ultimate aim is to construct the Proposed Development in a sustainable manner that facilitates regeneration of natural habitats at locations affected by construction works and that will minimise the damage incurred on sensitive habitats.

3 SPOIL MANAGEMENT

Site investigations were carried out at the proposed Substation and BESS locations and at the substation location. This detailed information allowed a location-specific assessment of ground conditions to be carried out. Based on this information, adjustments to the site infrastructure were carried out. The outcome of identifying all of the environmental, technical and engineering constraints for the site was that an infrastructural layout could be provided in the most sensitive way considering the need for spoil temporary storage and reuse.

3.1 Footprint of the proposed development

The Proposed Development footprint is provided in **Table 3-1**.

Table 3-1: Footprint of Proposed Development

Item	Description	Area (m ²)
New Access Roads	Constructed on existing grassland (circa 4m wide)	21,520
Upgraded Access Roads	Reinforcement of existing trackways (circa 4m wide)	31,100
Temporary compounds (4 in number 2000m2 each)	Geotextile on existing grassland loaded with granular material at 4 locations which will be used for solar array also	8,000
Main Temporary Compound	Located adjacent to the Substation on the EirGrid future expansion area	5,200
Inverter hardstandings	54 Inverter hardstands each 172m2 on existing grassland	9,180.00
Inverter Pads	54 Inverter Pads each 120m2 on existing grassland	6,480
PV Panels	Estimate of Area covered by PV panels on existing grassland (circa 560,000 panels)	2,100,000
BESS - Infrastructure	BESS Footprint on cut and fill area	7,760
Substation Compound	220kV AIS Substation Footprint on cut and fill area	21,493
Cable in Public road - Excavation	Temporary excavation of linear trench and backfilling	1,890
33kV Cables within site and offroad - cables and ducts	Temporary excavation of linear trench and backfilling on grassland area	2,070

3.2 Site Clearance and Earthworks

It is anticipated that vegetation clearance, vegetation maintenance, earthworks and ground preparation from cut and fill works will be required for the access tracks as part of the Proposed Development. Cut and fill operations will be associated with the 220kV AIS Substation, Battery Energy Storage System and new access tracks (haul route for abnormal load). The footprint of the Proposed Development areas are provided in **Table 3-1**. Recontouring will only be required for the BESS footprint (0.97 ha), the AIS Substation footprint(2.84ha) and the access track for transformer delivery (0.9ha), i.e. a total of 4.71 ha.

It is currently estimated that the volume of excavated material, (including bulking factor) due to construction of new access track, cut and fill at the substation and BESS will be circa **13,600m³** of topsoil and **39,690 m³** of subsoil.

Stripping and removal of the topsoil layer will be coordinated with the proposed staging for the Proposed Development. The extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work area(s) and will be programmed to minimise soil handling / double soil movements. No excavated material is anticipated to be removed from site. The bulk of the excavated material will be reused in the cut and fill operations with any excess used for embankment and landscaping purposes. No excavation will occur at the main and ancillary temporary construction compounds which will be developed using hardcore on geogrid material.

Disturbed subsoil layers will be stabilised as soon as practicable and reused in cut and fill, new access track construction for gradient purposes and in construction of embankments.

All suitable non-hazardous excavated material will be reused on site where possible. Any excavated material that cannot be reused shall be handled and transported to exported to a licensed waste facility.

3.1. Excavated Spoil Management

Spoil will invariably be generated during excavations for new tracks, existing access track widening at key locations to facilitate abnormal load (transformers) delivery, substation and BESS cut and fill construction and inverter hardstand areas, etc. Minimisation of the production of this spoil is to be treated as a high priority, but it is nevertheless accepted that there will be generation of excess spoil in the form of a mixture of topsoil and subsoil.

It is envisaged that material excavated to construct all infrastructure elements of the Proposed Development will be used as part of the cut and fill, backfill, embankment construction, for site reinstatement and landscaping purposes. Any temporary stockpiles will be restricted to a maximum of 2m in height.

As per **Table 5.1** above, the spoil generated on site will be of mainly subsoils and Till.

The material excavated for the construction and upgrade of site access tracks will be placed mainly in berms alongside the access tracks.

In relation to excavated material removed during the grid connection network installation, any earthen (sod) banks to be excavated will be carefully removed and stored separately, maintained and used during reinstatement. Surplus excavated material from roadways will be reused if suitable or disposed of to a licenced waste facility.

The use of soil stockpiles will be minimised by earthworks planning. However, where stockpiles are used, silt fences and silt mats will be employed to minimise sediment levels in run-off.

Owing to the good geotechnical conditions on site the works can be constructed on the existing surface with minimal subsoil excavation required with the exception of the substation and BESS locations. This cuts down the quantity of spoil generated. In areas of sloping ground (Substation and BESS) there is a need to cut and fill into the ground to facilitate the necessary substation and BESS gradients. This results in the generation of sizeable volumes of spoil. Foundation excavations will also require excavation to

depth. All of this infrastructure generates material that contributes towards the total cut spoil volume for the site.

The management of temporary spoil storage areas will involve the following:

- Drainage in the form of interceptor drains has been designed to exclude any clean water runoff reaching spoil storage areas.
- Run off from spoil storage areas will be directed to the dirty water drainage system and will be settled in the treatment train (see the Surface Water Management Plan included as **Appendix A**) prior to discharge from the site.
- Mineral subsoil shall be excavated and stored separately to topsoil; this will prevent mixing of materials and facilitate reuse afterwards.
- All materials which require temporary storage will be stockpiled at low angles (<1 in 5) to ensure their stability and secured using silt fencing where necessary. This will help to mitigate erosion and unnecessary additions of suspended solids to the drainage system.
- If necessary, mineral soils will be covered while stored to minimise run-off.
- Sediment management systems, such as silt fencing, will be provided around the proposed temporary spoil storage areas where necessary.

3.2. Temporary Storage of Excavated Material

No permanent stockpiles will be left on site after the completion of the construction phase works. After completion of the substation, BESS base and access track reinstatement works, all remaining stockpiled materials are to be used on site for landscaping purposes, such as embankment at the substation and BESS.

Any materials excavated during the construction phase, which are to be used in the site reinstatement and landscaping process shall, in the first instance, be stored on site in an environmentally safe manner that will not result in the pollution of waters or the smothering of ecologically sensitive habitats.

The following principles will be adhered to when considering the temporary storage of excavated materials;

- Spoil will be deposited, in layers of 0.50m and will not exceed the thickness (maximum stockpile height of 2.0m).
- Spoil storage areas were selected to ensure slopes were less than 5 degrees to the horizontal and greater than 10m from the top of a cutting.
- Once reinstatement is complete the temporary storage sites will be re-vegetated.
- Upon commencement of the restoration phase, guidance from The Environmental Clerk of Works (EnvCoW) will be sought to confirm the methodology and programme.

3.3. Reinstatement

Reinstatement works will commence at a late stage of construction. However, part of the reinstatement works can be carried out following the completion of individual sections of work.

Suitable material of sufficient density excavated during the works will be reused in various methods during the construction works. This includes the use of excavated materials in the finishing off the substation and BESS areas after construction works, and the use of excavated subsoil and topsoil for the backfilling of internal grid routes and temporary works.

Temporary works compounds will be created using granular fill placed on a geotextile layer. As the site develops these will be decommissioned and the granular material recovered and repurposed for access track and other fill purposes.

3.4. Control Measures

The following generalised control measures will be enforced during construction:

- No storage of excavated material other than in areas selected for such activities; temporary stockpile within the development footprint at proposed areas (maximum stockpile height of 2.0m).
- Exclusion zones delineating the working corridor will be installed around all working areas using post and rope fences. No activity will be permitted past this fence.
- Water build-up in excavations will be avoided.
- Temporary upslope cut-off drains and surround berms will be installed in advance of construction.
- Existing drainage patterns will be maintained as far as is practicable.
- Deviation from the agreed work methodology must be approved by the Environmental Clerk of Works (EnvCoW).
- The site supervisor will suspend work if work practices or weather conditions are unsafe as defined by Met Éireann's weather alert categories. The colour coding used by Met Éireann is fully aligned with international best practice and the European Meteoalarm system (www.meteoalarm.eu):

Alert Category	Description
Yellow	No unusual weather. Localised danger
Orange	Infrequent. Dangerous / disruptive
Red	Rare. Extremely dangerous / destructive

- Where suitable material is available, it will be used for the immediate backfilling of any excavations following completion of construction at that location.
- Creating a methodology for covering up of the stockpiled materials during high rainfall events in order to minimise run-off.

4 SITE SPECIFIC SPOIL MANAGEMENT PLAN

4.1. Method of Excavation

The general principles of extraction set out in this plan will be adhered to at all times during the construction phase.

4.2. Method of Construction

For the construction phase, the activities that are considered likely to generate spoil are as follows:

- Construction of new access tracks and local upgrading of existing access tracks.
- Temporarily side casting of materials during excavation of drainage channels and construction of berms.
- Excavation and reinstatement areas for spoil.
- Excavations for crane hardstands, Inverter hardstands, substation, Loop-in towers and BESS

Prior to the commencement of construction work on the required infrastructure above, the following will be considered:

- Existing ground profile.
- Existing ground soil type.
- Bearing capacity of required access tracks hardstands, substation and BESS locations
- Existing natural drainage regimes on site.
- Proposed substation Transformer transport delivery specifications.
- Environmental buffer areas and zones.

4.2.1. Excavated Infrastructure

New tracks, upgrading of areas of track to facilitate abnormal load delivery, crane hardstands, substation and BESS locations will generally be constructed using imported stone aggregate obtained from local quarries and placed over a layer of geogrid. A similar approach will be taken for other infrastructure required for the Proposed Development.

Typically, the sequence of constructing new access tracks and hardstands will comprise the following:

- I. The appointed contractor will survey the area for any unforeseen hazards prior to the commencement of works and set up warning signage as appropriate.
- II. Excavators will first remove any topsoil / vegetative layer which may be present if deemed required. Hardstands and tracks will be constructed on grade where possible. Material to be reused will generally be kept adjacent to the location for

reuse where possible. The footprint of the topsoil / vegetation removal areas will be kept to a minimum in order to minimise spoil generation and to prevent any runoff of silt during heavy rainfall.

- III. Excavators will continue to strip and excavate the softer subsoil where required which will be temporarily stored in the designated areas in accordance with approved methods with the use of an articulated dumper truck. Excavated material will only be temporarily stored on slopes not steeper than 1 in 5 and to a maximum height of under 2.0m at the required setback from streams at the selected temporary spoil storage areas where they will either be reused for construction activities immediately or be stored until the need to reuse the material arises.
- IV. All excavations to be carried out will be battered back to a safe angle of repose.
- V. Once a section of the excavated infrastructure is exposed to formation, a layer of geogrid will be laid out which will be covered with imported aggregate stone as required.
- VI. The stone will be delivered to the required work area and spread out locally with the use of excavators and compacted with the use of a roller which will roll the stone aggregate in maximum 250mm layers on top of the geogrid / geotextile material in order to achieve the required design strength.
- VII. Drainage will be constructed to manage clean and dirty water runoff in sensitive areas. Additional care will be taken during any construction works adjacent to the existing stilling ponds within the site.
- VIII. The final running surface of the new excavated access tracks will be capped with a layer of hard-wearing CI 804 stone material or similar using a road grader.
- IX. Any surplus spoil material generated from the excavated infrastructure will be subsequently reused for site restoration and landscaping purposes. Excavated topsoil and subsoil will be kept separate at the excavation and storage areas.
- X. The appointed contractor will ensure that on-site personnel are aware of environmental constraints / sensitive areas within the wind farm site in which works are to be avoided.

4.3. Role of Environmental Clerk of Works (EnvCoW)

An EnvCoW will be appointed for the construction phase of the Proposed Development. As part of this role the EnvCoW will conduct the following works in relation to surplus spoil management:

- Demarcate ecological constraints on the working areas and route corridors, in consultation with the Geotechnical/Civil Designer as necessary.
- Agree proposals for temporarily side casting and temporary storage areas as development proceeds.
- Agree methodology for stripping existing vegetation and locations where material is to be deposited.
- Agree timing of restoration and reinstatement of access track sides.



- Issue instruction to cease work if unexpected risks arise, until an agreed alternative solution is identified, and risks are avoided or minimised.

5 CONCLUSION

Spoil will be reused or stored locally on a temporary basis to its point of generation, reducing the impact of long-haul routes. No peat is present on site and all the excavated spoil will be reused. Sufficient temporary storage areas are provided for material that are intended for reuse in a later phase of the Proposed Development. Excavated material will be used for reinstatement of excavated areas infilled following construction.

GREENHILLS RENEWABLE ENERGY PARK: CEMP APPENDIX C (SCHEDULE OF MITIGATION MEASURES)

Chapter/ Section Reference	Chapter/Section Description	Mitigation Measures
PER Appendix O Landscape and Visual	1.5. Mitigation and Restoration Measures	In addition to mitigation by avoidance measures, retention of existing hedgerow boundaries within and around the site aids visual screening, and maintains the existing field pattern. In this respect, the proposed solar farm is not perceived to impose itself on the existing landscape pattern.
		In addition to retaining the existing hedgerows within and around the site, it is also proposed to bolster existing perimeter and internal hedgerows with under-planting and inter-planting of whip transplants (i.e. Hedgerow Type 1 - see Figure 1 10 of the LVIA Assessment) in order to ensure dense and consistent screening of the site in perpetuity. This will be undertaken where required to thicken and fill gaps in the existing hedgerow network prior to the construction phase, thus allowing for any growth in the period between a grant of planning permission and construction of the development. Advanced nursery stock in the form of 8-10cm girth trees will be used to fill any noticeable gaps and plant species will be selected to complement the existing broadleaf hedgerow species mix around the site and will be of local provenance. Where not already exceeded by existing vegetation, it is intended to manage hedgerows up to 3-4m in height. This height will be achieved by a combination of allowing lower sections of existing hedgerows to mature, filling obvious gaps with advanced nursery stock and providing an additional line of whip planting to selected hedgerows that require densification. Refer to the Landscape Mitigation Plan LD.GRNHLLS for details.
		It is also proposed to plant new 'Type 2' hedgerows (Figure 1 11 of the LVIA Assessment), with whips and a high proportion of advance nursery stock trees (c.3m planted height), along the boundaries of some of the proposed parcels to further screen the proposed development from some of the nearest surrounding receptors (refer to Landscape Mitigation Plan drawing package LD.GRNHLLS). All of this planting will be allowed to mature up to a maintained height of 3-4m to aid in the screening and softening of the proposed development from nearby dwellings and surrounding local and regional roads.
		Native woodland thickets are also proposed in localised areas along the perimeter of the proposed development to further screen and visually soften the proposed development from surrounding receptors, whilst also contextually separating the site from the surrounding public realm. These native thickets/woodlands will be provided in the form of high canopy (dominants) species, low canopy (sub-dominant) species, understory and fringe (higher shrubs) species and understory and edge (lower shrub) species, and will comprise of a mix of advanced nursery stock and whip planting of local provenance. The proposed planting will be allowed to grow out to reach maturity and will break up the visual mass of the main solar array and substation development.
		Furthermore, at an early stage of the design process, additional setbacks from some of the nearest residential dwellings to the proposed development were incorporated to mitigate potential visual impacts. The most notable area of setbacks is located within the central part of the site along the L-7829, where several dwellings are situated on either side of the local road. The proposed development is positioned to the north, south, east, and west of these dwellings; therefore, substantial setbacks were included to reduce the visual presence of the development and to further screen and soften the impact on these nearby visual receptors.
		All new cabling within the site will be buried underground.
		The proposed perimeter up to 2.4m stock proof fence will be set to the inside of the site boundaries. This will be maintained throughout the operational phase of the development to ensure access is prevented for both stray farm animals and human trespass. However, a small gap at the base of the fence will allow wild fauna to continue passage throughout the site. An un-grazed margin between deer fencing and the solar panels will be left for biodiversity enhancement measures. When feasible, ancillary structures such as inverters, transformer cabins and other plant will be coloured in green or muted shades to help blend them in with the surrounding countryside.
		Wherever possible, the on-site access roads utilise the existing farm tracks and follow existing topography in order to minimise ground disturbance, alteration of physical landscape character and visual intrusion. Reinstatement of temporary construction areas, construction compounds and cable trenches to the preconstruction conditions will be carried out at the end of the construction phase. Restoration of any areas disturbed during the construction process will be undertaken on construction completion by appropriate grass seeding to return a green characteristic.
PER Appendix E Landscape Mitigation Plan	Drawing Schedule with Mitigation	The decommissioning of the site will involve the removal of all solar panels and associated fencing, storage and operation facilities. The site will be fully restored to agricultural use through reseeded of appropriate grass species to reflect the grass sward mix in the immediate vicinity. The site will be fully restored to agricultural use in accordance with a detailed restoration plan.
		20251021-D-GRNHLLS-1.0
		20251021-D-GRNHLLS-1.1
		20251021-D-GRNHLLS-1.2
		20251021-D-GRNHLLS-1.3
		20251021-D-GRNHLLS-1.4

GREENHILLS RENEWABLE ENERGY PARK: CEMP APPENDIX C (SCHEDULE OF MITIGATION MEASURES)

Chapter/ Section Reference	Chapter/Section Description	Mitigation Measures
		20251021-D-GRNHLLS-1.5
		20251021-D-GRNHLLS-1.6
		20251021-D-GRNHLLS-1.7
PER Appendix Q Glint and Glare	13.1_Mitigation by Design	All existing hedgerows within and around the perimeter of the site be allowed to 'grow-out' prior to construction. Additionally, advanced nursery stock in the form of 8-10cm girth trees will be used to fill any noticeable gaps. It is also proposed to plant new sections of hedgerow, along some sections of the site boundary, whilst extensive new corridors of native thicket/woodland will be planted along the boundary of localised sections of the site to further screen the proposed development from some of the nearest surrounding receptors. The location of the proposed mitigation planting is indicated on the Landscape Masterplan Package LD.GRNHLLS-SLR
	Operational	Once the relevant construction and associated works are complete, the hedgerows will be brought under regular agricultural management and trimmed to a height of approximately 3m-4m for hedgerows (generally greater than the maximum height of the proposed panels) whilst native woodland thickets will be allowed to grow out, reaching an established height of c. 8-10m within c. 5 years from implementation. Other existing hedgerows and vegetation will also be maintained to maximise screening of the proposed development to provide consistent screening of the solar farm from nearby dwellings and transport routes.
PER Appendix M Traffic and Transport	10.3.2 Haul Routes	All heavy goods vehicle (HGV) deliveries will access the Proposed Development from the R634 regional road and use the site entrances shown on Figure 1.2.
		Deliveries to site access 1 will access directly from the R634. Deliveries to site access 2 will use the L7829 and L7806 local roads. Deliveries to site access 3 will use the L3083 local road. Deliveries to site access 4 and 5 will use the L7829 and L3808 local roads. Deliveries to site access 6 and 7 will use the L3803 and L7828 local roads. Deliveries to site entrance 8, 9 and 10 will use the L7829 local road. Deliveries to site access 11 will use the L3083 and L38032 local roads.
	10.3.4 Site Entrances	All site entrances to the Development will be stop controlled junctions. The site entrances will be signposted and marked in accordance with the Department of Transport Traffic Signs Manual (TSM, 2024). During the construction and operations phase of the solar farm, the junctions will be fitted with a RUS 027 stop sign and markings in accordance with TSM Chapter 7 Figure 7.35. During the construction of the Development, the site entrances will be signposted with advance warning signs in accordance with Chapter 8 of the Traffic Signs Manual. The layout of the advance warning signage is shown on Figure 1.15 for site entrance 1. The advance warning signage will be spaced in to comply with the posted speed limit on the road, if the actual road speeds are found to be higher, the sign spacing and frequency of signs will be adjusted in accordance with the traffic signs manual. The location of the site entrances will be signposted from the R634 to direct construction traffic to the appropriate site entrance. Directional signage will be located opposite the site entrances directing vehicles exiting the site along the haul route to the R634. Typical details of directional signage are shown in Section 1.5.9.
	10.3.5 Parking	Parking for staff and visitors during the construction period will be provided at temporary compounds within the site boundary. The locations of the site compounds are shown on Figure 1.2. There will be no parking permitted on the public road network or at site entrances. Parking for vehicles involved with cable connection works on the public road network will be within the traffic management work zone.
	10.3.6 Delivery Vehicles	Delivery vehicles will consist of rigid and articulated vehicles and will be in accordance with S.I. No. 5/2003 - Road Traffic (Construction and Use of Vehicles) Regulations 2003 regarding vehicle weight and payloads
	10.4.5	Traffic management will be required during the construction of site entrances and passing bays on the R634, L7806, L3803, L7829, L7828 and L38081 local roads and during trenching and cable laying works for the underground cable on the L3808 and L7829. Traffic management will be carried out in accordance with Chapter 8 of the Traffic Signs Manual using temporary traffic signals and flagmen.
	10.5.1 Location and Diversion of Existing Services	Prior to the commencement of works, the location of existing services shall be confirmed by ground penetrating radar. All service diversions and works to protect existing services which are necessary for the construction of the solar farm shall be agreed with the relevant service provider prior to works commencing onsite.
	10.5.2 Road and Verge Maintenance Agreement – Local and Regional Roads	Prior to the commencement of works, the developer / contractor shall liaise with the local road engineers office and agree a protocol for general and emergency maintenance and repair of the public road network. The agreement will include call-out procedures for council and contractors staff, maintenance and repair of road surfacing, maintenance and repair of road verges, maintenance and repair of drainage systems on the public road, maintenance of vegetation at site entrances and junctions. emergency repair procedures outside normal working hours and specifications for materials and workmanship.
	10.5.3 Road and Verge Maintenance Agreement – National Roads	Prior to the commencement of works, the developer / contractor shall liaise with Transport Infrastructure Ireland (TII) and agree a protocol for general and emergency maintenance and repair of the national road network. The agreement will include call-out procedures for maintenance and repair of road surfacing during the transportation of abnormal loads on the N25 leading to the solar farm site entrances. Specifications for materials and workmanship will be in accordance with TII standards and specifications which are published on the TII website.
	10.5.4 Permits to Work on the Public Road Network	Prior to the commencement of works, the contractor shall obtain all necessary road opening licenses and road closure permits to work on the public road network. The contractor shall inform the public in advance of any road closures and provide alternative means of access to properties, businesses and farms

GREENHILLS RENEWABLE ENERGY PARK: CEMP APPENDIX C (SCHEDULE OF MITIGATION MEASURES)

Chapter/ Section Reference	Chapter/Section Description	Mitigation Measures
	10.5.5 Traffic Management Plan	All works carried out on the public road network shall be carried out using a traffic management system in accordance with the requirements of Chapter 8 of the Traffic Signs Manual. The appointed contractor shall compile a detailed Traffic Management Plan (TMP) for the works which will specify the precise traffic management measures for each works section and submit to Cork County Council for approval. The contractor will appoint a competent traffic management coordinator who will be the main point of contact for all traffic management matters during the course of the works. The agreed traffic management systems shall be installed and maintained by operatives with the appropriate training to carry out works on traffic management systems.
	10.5.6Vulnerable Road Users	Signage from the traffic signs manual shall be located along the haul routes to highlight the presence of vulnerable road users. The signs will include W140 Pedestrians, W143 Cyclists and W150 Horses (see Figure 1.27).
	10.5.7Existing School Bus and Business HGV Traffic	Prior to any works commencing on site, the developer / contractor will liaise with schools and businesses in the area to avoid clashes with existing bus and HGV transport schedules. School buses were observed at junctions on the haul routes during the traffic counts.
	10.5.8Site Access Roads and Speed Limits	Construction HGV traffic shall be prohibited from using local roads which do not form part of the haul route. The location of Site access points shall be signposted and assigned a Site access number for the duration of the works. Haul Routes for construction and delivery traffic shall be signposted from the R634 with directional signage located at all site entrances and junctions on the haul route. All construction traffic will observe the posted speed limits which will be signposted along the haul routes. Typical directional signs are shown in Figure 1.29
	10.5.9 Road Condition Survey	A pre-construction road condition survey shall be carried out prior to any works commencing onsite. A post-construction condition survey shall be carried out following the completion of the works in consultation with Cork County Council. Reinstatement of defects on the public road network resulting from construction traffic shall be made good to a specification agreed with Cork County Council. The extent of the road condition survey shall cover the haul routes on the local road network shown in Figure 1.13. The final scope shall be agreed with Cork County Council.
	10.5.10Bridge Condition Survey	A pre-construction bridge condition survey shall be carried out to assess the condition of the watercourse crossings on the haul routes shown in Figure 1.12. The bridge condition survey shall identify any requirements for bridge strengthening work necessary for HGV and abnormal load traffic associated with the construction of the Proposed Development.
	10.5.11Public Information and Access	The appointed Contractor shall inform local residents, schools, businesses and emergency services of proposed works and road closures in advance of any works taking place onsite. Access shall be maintained to properties at all times during the course of the works. The Contractor will appoint a project coordinator who will be the main point of contact for matters relating to traffic which will affect the general public, local businesses and emergency services. An out-of-hours contact number shall also be provided.
	10.5.12 Emergency Access Routes	Emergency access routes shall be provided at all times for emergency service vehicles to access the Site or to bypass the works in the event of an emergency.
	10.6 Construction, Operation & Decommissioning Traffic Volumes	Working hours during the construction of the solar farm will be from 08:00 - 18:00 Monday to Friday and 08:00 – 16:00 on Saturdays with no working on Sundays or Bank Holidays. Any construction works carried out outside these hours will be agreed in writing with Cork County Council.
	Specific Mitigation Measures	10.7 Proposed Mitigation Measures
		A detailed Traffic Management Plan will be completed by the appointed contractor for works to be carried out on the public road network. The Traffic Management Plan will be in accordance with Chapter 8 of the Traffic Signs Manual and will be agreed with Cork County Council prior to any works commencing on site. The Traffic Management Plan will detail traffic management systems to be implemented at all works locations on the public road. All proposed road closures and details of traffic diversions will be agreed with Cork County Council.
		The appointed contractor will appoint a competent traffic management coordinator who will be the main point of contact for all traffic management matters during the course of the works. Prior to the works commencing on site, the contractor will inform residents of the nature of the works, proposed hours of work and their expected duration.
		Traffic movement will be limited to 08:00 - 18:00 Monday to Friday and 08:00 – 16:00 on Saturdays with no movements on Sundays or Bank Holidays, unless otherwise agreed in writing with Cork County Council.
		HGV deliveries will be scheduled to avoid peak morning and evening traffic times to minimize disruption on public road users, schools, businesses and the local community.
		Construction personnel will be encouraged to car-pool, or to travel to Site in minibuses.
		Parking for site staff and construction operatives will be provided at dedicated locations within the Site. There will be no parking allowed on the public road network or in the vicinity of the site entrances. Parking during underground cable works on the L3808 and L7809 local roads will be provided within the traffic management works area.
		Gates at the site entrances will be set back from the carriageway edge to allow HGV vehicles to pull off the road and wait at the entrance without blocking the road in the event that the gates are closed.

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		HGV deliveries will be planned and sequenced where practical to only arrive when the site gates are open and personnel will be on hand to receive them. Deliveries to site access no's 4, 5, 6, 7 and 11 will be carried out using small vehicles or transferred to small vehicles at the main site compounds to minimise disruption on the local road network.
		The phasing of HGV deliveries will be managed by site staff and deliveries will be coordinated to minimise the risk of opposing vehicles meeting on the local road network. The developer / contractor will liaise with schools and businesses in the area to establish existing transport schedules.
		HGV deliveries to the Site will follow dedicated haul routes to reach the Site. The haul routes will be signposted from the regional road junctions to direct vehicles to the appropriate site entrance. Construction traffic will be prohibited from using any local roads outside the dedicated haul route. The directional signage will remain for the duration of the works.
		The location of all site entrances will be highlighted using advance warning signs in accordance with Chapter 8 of the Traffic Signs Manual.
		All loads of granular material will be covered during transportation.
		Wheel cleaning facilities will be provided near the site entrances within the Site to prevent the spread of debris onto the public road.
		Any dust generating activities will be minimised where practical during windy conditions, and drivers will adopt driving practices to minimise the creation of dust. Where conditions exist for dust to become friable, techniques such as damping down of the potentially affected areas will be employed.
		All construction vehicles will observe the posted speed limit on the public road network and within the Site.
		Access to the construction site will be controlled by site security and all visitors will sign in and out. All site visitors will undergo a site induction covering Health and Safety issues at the temporary construction compounds and will be required to wear appropriate personal protective equipment while on-site.
		All materials associated with the Proposed Development will be stored within the Site boundary.
PER Appendix S Noise	15.5.1 Construction Mitigation Measures	Construction activities will comply with BS 5228-1 and BS 5228-2 and the following measures will be implemented during construction
		Best Practicable Means (BPM) as defined in BS 5228-1 will be employed at all times to reduce noise and vibration levels to a minimum;
		The appointed contractor will comply with local authority controls on noise and vibration during construction;
		The use of a high quality construction site hoarding will be included around all noise sensitive boundaries. Where the hoarding blocks line of sight between the works and the receptor a reduction in noise levels of around 10 dB can be achieved;
		A Community Liaison Plan will be developed by the developer in consultation with local residents and a single point of contact nominated to engage with CCC and the residents and to handle complaints and communication of site information if requested by CCC;
		Contact details for the site manager and liaison officer will be displayed on the site hoarding;
		All staff will be briefed on the complaints procedure and the mitigation requirement and their responsibilities to register and escalate complaints;
		Regular updates at appropriate intervals to all identified affected neighbours via a newsletter and the posting of relevant information on the site hoarding;
		Only plant conforming with or better than relevant national or international standards (including BS 5228-1 and BS 5228-2), directives or recommendations on noise or vibration emissions will be selected and used. Construction plant will be maintained in good condition with regards to minimising noise and vibration emissions;
		Plant will be operated and maintained appropriately, with due regard for manufacturer recommendations. All vehicles, plant and equipment will be switched off when not in use;
		Routes and programming for the transport of construction materials, spoil and personnel will be carefully selected to reduce the risk of increased noise and vibration impacts during construction;
		Vehicle and mechanical plant / equipment used for the purpose of the works will be fitted with effective exhaust silencers, to be maintained in good working order and operated in such a manner to minimise noise emissions;
		Construction plant and activities will be positioned appropriately to minimise noise at sensitive locations;
		Equipment that breaks concrete by pulverising or similar, rather than by percussion, will be used close to noise sensitive locations;
		Mufflers will be used on pneumatic tools;
		Works will be programmed to minimise the requirement for working outside normal working hours;
		Unnecessary revving of engines and idling will be avoided;
		Plant and vehicles will be started-up sequentially rather than all together;
		Drop height of materials will be minimised;

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		Rubber linings will be used in, for example, chutes and dumpers to reduce impact noise;
		Low vibratory or non-vibratory plant will be used when working in close proximity to a vibration sensitive receptor;
		Vibratory equipment will be started-up or turned off as far away from sensitive receptors as possible; and
		All site access roads will be kept even.
	Construction Noise Monitoring	Construction noise monitoring should be undertaken during the proposed works at agreed locations. The precise monitoring locations shall be agreed with the client and/or Local Authority and shall be available to be relocated to alternative position(s), depending on construction works being carried out, specific works locations and on receipt of any noise complaint(s).
		Measurements should be undertaken with noise measuring equipment conforming to the requirements of Annex G of BS 5228-1:2009+A1:2014 and, where required, vibration measuring equipment conforming to the requirements outlined in Section 9 of BS 5228-2:2009+A1:2014.
	15.5.2 Operational Noise Mitigation	No mitigation proposed
	15.5.3 Decommissioning Noise	Best Practicable Means (BPM) as defined in BS 5228-1 will be employed at all times to reduce noise and vibration levels to a minimum;
		The appointed contractor will comply with local authority controls on noise and vibration during construction;
		The use of a high quality construction site hoarding will be included around all noise sensitive boundaries. Where the hoarding blocks line of sight between the works and the receptor a reduction in noise levels of around 10 dB can be achieved;
		A Community Liaison Plan will be developed by the developer in consultation with local residents and a single point of contact nominated to engage with CCC and the residents and to handle complaints and communication of site information if requested by CCC;
		Contact details for the site manager and liaison officer will be displayed on the site hoarding;
		All staff will be briefed on the complaints procedure and the mitigation requirement and their responsibilities to register and escalate complaints;
		Regular updates at appropriate intervals to all identified affected neighbours via a newsletter and the posting of relevant information on the site hoarding;
		Only plant conforming with or better than relevant national or international standards (including BS 5228-1 and BS 5228-2), directives or recommendations on noise or vibration emissions will be selected and used. Construction plant will be maintained in good condition with regards to minimising noise and vibration emissions;
		Plant will be operated and maintained appropriately, with due regard for manufacturer recommendations. All vehicles, plant and equipment will be switched off when not in use;
		Routes and programming for the transport of construction materials, spoil and personnel will be carefully selected to reduce the risk of increased noise and vibration impacts during construction;
		Vehicle and mechanical plant / equipment used for the purpose of the works will be fitted with effective exhaust silencers, to be maintained in good working order and operated in such a manner to minimise noise emissions;
		Construction plant and activities will be positioned appropriately to minimise noise at sensitive locations;
		Equipment that breaks concrete by pulverising or similar, rather than by percussion, will be used close to noise sensitive locations;
		Mufflers will be used on pneumatic tools;
		Works will be programmed to minimise the requirement for working outside normal working hours;
		Unnecessary revving of engines and idling will be avoided;
		Plant and vehicles will be started-up sequentially rather than all together;
		Drop height of materials will be minimised;
		Rubber linings will be used in, for example, chutes and dumpers to reduce impact noise;
		Low vibratory or non-vibratory plant will be used when working in close proximity to a vibration sensitive receptor;
		Vibratory equipment will be started-up or turned off as far away from sensitive receptors as possible; and
		All site access roads will be kept even.
		Noise monitoring should be undertaken during the decommissioning phase at agreed locations. The precise monitoring locations shall be agreed with the client and/or Local Authority and shall be available to be relocated to alternative position(s), depending on works being carried out, specific works locations and on receipt of any noise complaint(s).

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Chapter/ Section Reference	Chapter/Section Description	Mitigation Measures
		Measurements should be undertaken with noise measuring equipment conforming to the requirements of Annex G of BS 5228-1:2009+A1:2014 and, where required, vibration measuring equipment conforming to the requirements outlined in Section 9 of BS 5228-2:2009+A1:2014.
PER Appendix N Land, soils and Geology , Hydrology and Hydrogeol ogy Mitigation	11.5.1 Design Mitigation	The design of the Proposed Development uses as little concrete as possible, minimising the potential effects on surface and groundwater receptors.
		The overall design and soil management have aimed to reduce land take and soil disturbance helping to reduce potential direct and indirect impacts on land, soils and water.
		The panels will be mounted on galvanized steel frames mainly anchored by shallow driven piles causing minimal disturbance to the land.
		Any surplus excavated materials, such as a topsoil and subsoil, will be re-used on-site for landscaping and backfilling cable trenches.
		The drainage has been designed to reduce the potential effects on surface water quality and quantity and potential for flooding on site and downstream.
		Nature Based Solutions (NBS) will be adopted at the Proposed Development in constructed drainage. NBS include Sustainable Drainage Systems (SuDS), which will be employed to attenuate runoff and reduce the hydrological response to rainfall at the site.
	11.5.2 Drainage Design	Existing drains and watercourses have been accounted for during the design phase of the Proposed development. Construction activities avoid these buffer zones.
		The drainage, attenuation and other surface water runoff management systems will be installed concurrent with the main construction activities to control increased runoff and associated suspended solids loads in runoff during intensive construction activities. Erosion controls will be incorporated into the design to minimise exposed soil in existing and newly established drainage channels.
		During the construction phase of the Proposed Development any surface water run off from the construction areas will be collected and managed, in a way that settlement ponds and check dams will be maintained (deslugged/settle solids removed) on regular basis by using a vector (suction tanker) and disposing of the contents at a licenced facility. It is important to minimise the agitation of solids during these works, otherwise it will likely lead to an acute significant loading of suspended solids in the drainage network.
		Permanent site drainage will adopt a Sustainable Drainage (SuDS) nature-based approach to manage surface water runoff. This approach to drainage ensures that existing site hydrology is maintained, including runoff rates and volumes.
		A handheld turbidity meter is recommended to accurately measure the quality of water discharging from the site. The meter should be maintained and calibrated frequently. It is recommended that quality thresholds are established for the purposes of escalating water quality issues as/if they arise.
		Temporary mitigation measures such as silt fences will be erected in areas where risk of pollution to watercourses has been identified e.g., watercourse crossing locations and areas where development (such as felling) unavoidably lie within watercourse buffer zones.
		Upslope cut-off drainage channels approximately parallel to the proposed track alignment installed in advance of any excavated cuttings for the track. This will prevent washout by surface flows of exposed clays in excavations and fine sediments in track makeup, and increase efficiency of silt removal in future trackside drainage swales.
		Minor drains, other flow paths and cut-off drain outlet locations will be identified and charted, to ensure that piped crossings can be installed in advance of or adjacent to the track construction.
		Trackside drainage swales and silt/attenuation ponds will be installed in parallel with track construction. Note that this may require that drainage swales are reformed on an ongoing basis as temporary track alignments are modified to their eventual finished design level.
		Swales are to be added in 45 locations. A swale is a shallow linear vegetated channel feature which is designed to collect and transfer runoff during rainfall events. The vegetation helps to filter out any potential contaminants from reaching the surface water or groundwater network. Swales help to promote infiltration and can help to mitigate against flooding and reduce erosion. Check dams and berms can be installed across the flow path of a swale to increase attenuation and infiltration.
		At the 11 site entrances, soakaway and interceptor drains will be added to prevent surface water runoff from discharging onto the public road.
		No surface water runoff will be discharged onto public roads, foul sewers, or adjacent property.

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	11.5.3Sediment Control	Excavated material will be temporarily stockpiled onsite for re-use during reinstatement. Stockpiles will be restricted to less than 2m in height. Stockpiles will be located a minimum of 50m from surface water features, and all stockpiling locations will be subject to approval by the Site Manager and Project Ecological Clerk of Works (ECoW). No material will be stored other than in the areas selected for stockpiling.
		In order to mitigate the effects posed by release of suspended solids and associated nutrient loading to the surface water environment:
		Best practice will be in place for construction works, including avoiding constraints, excavations battered back to a safe angle of repose, segregation of topsoil and subsoil, reuse of material as soon as possible and low angles of stockpiling ensuring stability.
		The drainage, attenuation and other surface water runoff management systems will be installed concurrent with the main construction activities to control increased runoff and associated suspended solids loads in runoff during intensive construction activities.
		Sediment / silt fencing will be erected along the perimeter of source areas e.g., stockpiles to reduce the potential for sediment laden run-off to reach sensitive receptors. No direct flow paths between stockpiles and watercourses will be permitted at the site.
		Earthworks will not occur during sustained or intense rainfall events.
		Vehicle movement will be restricted to the footprint on the development where practicable.
		Following completion of construction the temporary works/assembly areas needed for the construction period will be reinstated using the original spoil material removed and stockpiled close to the location from where it was excavated.
	11.5.4.1Refuelling and Storage of Chemicals	All machinery will be checked regularly for any leaks or signs of wear and tear.
		Where possible off-site refuelling will take place off-site
		Fuel stored onsite will be bunded to at least 110% volume capacity of fuels stored at the site.
		On-site refuelling of machinery will be carried out at dedicated refuelling locations a minimum distance of 50m from watercourses using a mobile double skinned fuel bowser.
		Drip tray, spill kits and fuel absorbent pads will be available during refuelling in case of any accidental spillages.
		Only designated competent operatives will be authorised to refuel plant on site.
		Containers will be properly secured to prevent unauthorised access and misuse.
		An effective spillage procedure will be put in place with all staff properly briefed
	11.5.4.2Concrete	Any waste fuel/ oil will be collected, stored in appropriate containers and will be reused, recycled or disposed of offsite in an authorized facility .
		Ready-mixed concrete will be used as required during the construction phase except for parts of the substation where hollow core concrete will be used.
		All concrete will be delivered from local batching plants in sealed concrete delivery trucks, as required. Vehicles transporting cement or concrete will be visually inspected for signs of excess cementitious material prior to being granted access to the site.
		Only the chute of the concrete delivery truck will be cleaned on site in a dedicated bunded area, using the least volume of water required. The contents will be allowed to settle and the supernatant will be removed off site by licenced generator to a licenced wastewater treatment plant. Designated washout of concrete trucks will not be located within the vicinity of watercourses or drainage channels.
	11.5.4.3Wastewater	Concrete will be poured during metrological dry periods/seasons in so far as practical and reasonably foreseeable. This will reduce the potential for surface water run off being significantly affected by freshly poured concrete. No surplus concrete will be stored or deposited on site.
		During the construction phase, portable toilet facilities will be provided for workers. Wastewater from the staff welfare facilities will be tankered off-site by an authorised waste collector to a wastewater treatment plant.
	11.5.4.4Operational Phase	No refuelling will take place on site during the operational phase.
		The Inverter Combiner Kiosk/Transformer units will contain oil that will be bunded to prevent leaks, no emissions will occur during normal operation as the oil is maintained within the system. These will be monitored and maintained regularly to prevent leaks.
		Welfare provisions (toilets, sink, etc.) will be in place in the substation throughout the operational phase and all wasetwater will be collected in a holdin tank. Wastewater will be removed off site by a Licensed waste contractor and disposed off to to a licenced wastewater facility

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	11.5.5 Dewatering	Should dewatering be required during the installation of underground cabling, the excavated trench will be dewatered from a sump installed within the low section of the opened trench. Where dewatering is required, dirty water will be fully and appropriately attenuated through silt bags before being appropriately discharged to vegetation or surface water drainage features.
	11.6 Monitoring	
	11.6.1 Construction Phase	Daily visual inspection of silt fencing, drainage channels, swales and other surface water runoff control infrastructure. Any blockages or damages should be repaired or cleared as soon as possible.
		Weather monitoring in the form of 24-hour advance meteorological forecasting (downloadable from Met Éireann) linked to a trigger-response system. When a pre-determined rainfall trigger levels is exceeded and/or any yellow or greater rainfall warning (>25mm/hour) issued by Met Éireann, planned responses will be undertaken including stopping construction work and inspecting construction areas and drainage features prior to recommencing works.
		Routine surface water monitoring will be conducted on site and at locations downstream during the construction phase of the Proposed Development at a frequency agreed with the planning authority.
		Monitoring throughout the construction phase of the development is to be undertaken as per the Construction Environmental Management Plan (CEMP) under the supervision of the appointed Environmental Manager / Clerk of Works. In the event of any limit exceedances, potential contamination events or other environmental incidences works are to stopped until corrective measures are implement and adverse environmental effects are minimised if not avoided.
		Environmental incidents including accidental spillages (e.g., fuel), breeches of licence limits if applicable, and significant environmental incidents will be reported to the Local Authority as part of the emergency response. Incident notification will be escalated to relevant third parties where relevant e.g., Inland Fisheries Ireland (IFI) if surface water receptors are intercepted.
	11.6.2 Operational Phase	Following the construction phase of the Proposed Development drainage features will be routinely monitored and maintained where required.
		Surface water sampling at selected water monitoring locations at the site will be carried out at a reasonable frequency and gradually reduced based on observed stability of conditions and will also be scheduled following extreme metrological events.
	11.6.3 Decommissioning Phase	Similar to the construction phase daily visual inspection of silt fencing, drainage channels, swales and other surface water runoff control infrastructure. Any blockages or damages should be repaired or cleared as soon as possible.
		Routine surface water monitoring will be conducted on site and at locations downstream of the Proposed Development at a frequency outlined in the Decommissioning Plan and agreed with the planning authority.
PER Appendix B Drainage Plan	2.4 Linear Track Drainage- Swales and Check Dams	Stone filled check dams will be installed at a regular frequency, in order to reduce flow velocities and improve conditions for the settlement of solids in transit. Check dams will be constructed from 5-40mm crushed rock. It is intended that these dams will be relatively simple to construct but will provide treatment of construction runoff at source. There will be outflow points (spillways) from the drains to the settlement ponds. No outflow will be permitted directly into natural watercourses.
		Roads within the Proposed Development will be constructed with an appropriate surface cross slope, so that all storm water flow will be directed towards the constructed swales located along road verges or to french drains/soakaways. The width and depth of constructed swales will be minimised as far as practical in order to reduce ground disturbance, excavation footprint (and hence volume of excavated materials) and also disruption of local hydrology as far as possible.
		Permanent check dams (flow barriers or dams constructed across the drainage channel) will be installed at regular intervals within the swales in order to reduce erosion and allow for greater flow control.
		The maximum spacing between check dams should be such that the toe of the upstream dam is at the same elevation as the top of the downstream dam.
		The centre of the check dam should be at least 0.2m lower than the outside edges.
		Side slopes should be 1:2 or less.
		A Terram membrane barrier or similar non-woven geotextile membrane will be placed around check dam.
		Check dams will be keyed at least 0.1m into the drainage channel bottom in order to prevent the dam washing out.
		Check dams will be maintained and monitored on a regular basis. Sediment will be removed before it reaches one half the original dam height.
	2.5 Silt Pond/ Attenuation Requirements	Drainage Swales will be provided between the Proposed Development and watercourses. Drainage from site roads, compounds, inverter stations and other hardstand areas will be collected by these drainage swales and attenuated to greenfield equivalent in three-compartment silt ponds (which are also designed for attenuation) and dispersed overland via a "level spreader" or buffered outfalls where the outflow will mimic existing natural overland sheet flow.
		Settlement ponds are to be securely fenced to prevent easy access

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		Flows controls shall be installed at the silt pond outflow points to ensure that flows are discharged at a limited rate up to the 1% AEP Climate Change event
	2.6 French Drains and Soakaways	French drains comprising 0.4m wide trenches up to 900mm deep will be filled with 32mm single sized crushed stone. These will be provided along edges of new tracks where no swales are proposed and also within localised hollows where surface water would otherwise accumulate and will connect such hollows to the road drainage.
		Soakaways will be provided at the following locations: - Site entrances - Substation - Inverter/transformer stations At site entrances, the soakaway will comprise 1.8m diameter perforated precast concrete manhole rings to at least 1.2m deep filled with single 32mm sized crushed stone.
		Provide a 5mx5m soakaway at the substation
		For the inverter (transformer/hardstand areas, a soakaway trench 0.6m wide x 8.0m long, 1.2m deep and filled with 32mm single sized crushed stone is proposed at the end of each unit (see Drawing 7353-PL-506).
	2.7 Maintenance and Monitoring	Surface water runoff control infrastructure will be checked and maintained on a regular basis and settlement ponds and check dams will be maintained (desludged/settle solids removed) on a regular basis, particularly during the construction phase of the Proposed Development by using a vactor (suction tanker) and disposing of the contents at a licenced facility.
		Site water runoff quality will be monitored during the decommissioning, construction, and operational phases of the Proposed Development. A relatively high frequency of monitoring (e.g. daily) is required during the decommissioning and construction phase.
		Similarly, the early stages of the operational phase will require a relatively high frequency of monitoring, however the frequency of monitoring can gradually reduce thereafter – presuming there are no issues with the quality of discharging water at that point in time.
		It is recommended that a handheld turbidity meter is available to accurately measure the quality of water discharging from the site. The meter should be maintained and calibrated frequently. It is recommended that quality thresholds are established for the purposes of escalating water quality issues as/if they arise
	2.8 Post Construction Drainage Management	Following the completion of construction, a full review of construction stage temporary drainage will be undertaken by the appointed contractor (in conjunction with the Project hydrologist/Site Engineer and the Project ECoW), with a view to checking the effectiveness of drainage infrastructure and to enhance if necessary for the Operational Phase.
	3 Additional Construction Drainage Management	
	3.1 Temporary Site Compounds	A bunded refuelling (impervious concrete) area and a bunded service area will be provided at the main compound. Gullies draining from the bunded area will pass through a class 1 bypass interceptor before discharging from the compound.
	3.2 Cable Trenching	When rainwater accumulates in the trenches, it should be removed by pumping to a Siltbuster unit so as to provide treatment of water prior to discharge to a nearby swale or silt pond
	3.3 Site-Wide Requirements and Silt Fencing	Temporary pollution prevention measures and temporary or permanent drainage and surface water management features (SuDS) will be constructed prior to earthworks (including preliminary or enabling works including felling) proceeding to construct any linear works (tracks / hardstanding areas / cable routes), and other infrastructure. Drainage will be provided to temporary works and reinstated to suit the final footprint of the completed development.
		Temporary drainage measures in advance of earthworks will include:
		· Temporary silt fences erected in areas where risk of pollution to watercourses has been identified e.g., watercourse crossing locations and areas where development (such as felling) unavoidably lie within watercourse buffer zones.
		· Upslope cut-off drainage channels approximately parallel to the proposed track alignment installed in advance of any excavated cuttings for the track. This will prevent washout by surface flows of exposed clays in excavations and fine sediments in track makeup, and increase efficiency of silt removal in future trackside drainage swales;
		· Minor drains, other flow paths and cut-off drain outlet locations will be identified and charted, to ensure that piped crossings can be installed in advance of or adjacent to the track construction;

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		Trackside drainage swales and silt/attenuation ponds will be installed in parallel with track construction. Note that this may require that drainage swales are reformed on an ongoing basis as temporary track alignments are modified to their eventual finished design level. Spoil management is to be planned in advance of earthworks and on an ongoing basis, to allow planning of drainage required in advance of spoil being deposited. Suitable prevention measures will always be in place to prevent the conveyance of silts to receiving watercourses
PER Appendix R Cultural Heritage	6.27	No groundworks, construction vehicle movements or storage of materials should be carried out within the exclusion zones around monuments and buildings of historic interest located within and in close proximity to the site boundary shown on Figure 6.
	6.28	As an embedded mitigation measure, it is proposed to utilize above ground, non-intrusive gabion basket/ballasted foundation solar panel foundations over areas where four anomalies of archaeological potential were identified by the geophysical survey on the Site (Geophysical Survey Numbers M1, M2, M3, and M4; Figure 7 Map Numbers 89-91) and within a 5 m buffer around these anomalies. The gabion basket mounted foundations involve rolling out geogrid/textile on top of the grass, without any requirement for excavation. Gravel is then placed on the geogrid/textile. This design solution avoids excavation and significant ground disturbance within these areas and is intended to preserve any surviving archaeological remains in situ.
	6.29	The anomalies of archaeological significance that were identified by geophysical survey should be targeted during a test trenching programme that could be conditioned within any grant of permission for the site in order to ascertain their significance and extent. Features exposed should be sufficiently sectioned in order to assess their depth and nature. This must be carried out by a licence-eligible archaeologist prior to any groundworks taking place. Once test trenching is complete, further mitigation might include preservation in situ (avoidance), excavation (preservation by record), and/or monitoring. The Department of Housing, Local Government, and Heritage shall be consulted in this regard.
	6.30	Existing historic farmsteads, historic field boundaries and other heritage features identified within the Site will be retained and protected where practicable throughout the construction and operational phases.
	6.31	Existing hedgerows and boundary vegetation will be retained wherever possible. Additional native hedgerow planting may be undertaken along selected boundaries, including in the vicinity of Roisin House, to further reduce potential effects on heritage settings.
	6.32 / 6.33	Given the absence of known archaeological monuments within the development footprint and the avoidance measures incorporated into the design, no significant residual effects on the archaeological resource are predicted. Notwithstanding the above, the detailed scope of archaeological works required during the implementation of the project will be determined through the statutory planning process and in consultation with Cork County Council and the National Monuments Service, where required. Should additional archaeological investigation be requested by the relevant authorities, any such works would be undertaken by a suitably qualified and licence-eligible archaeologist and would focus on clarifying the nature and significance of identified anomalies and informing any further mitigation requirements.
	6.34	All significant sub-surface groundworks associated with the Proposed Development, including the construction of the substation, compound areas, access tracks, and off-road cable trenches, should be subject to a programme of archaeological monitoring carried out under licence.
	6.35	Where archaeological material is encountered during monitoring: • Works in the affected area will cease pending archaeological assessment; • The National Monuments Service and Cork County Council will be consulted as appropriate; • Preservation in situ will be the preferred mitigation option where feasible; • Where preservation in situ cannot reasonably be achieved, an appropriate programme of archaeological excavation and preservation by record will be undertaken in accordance with statutory requirements and best practice guidance.
	6.36	All archaeological works will be undertaken by suitably qualified personnel operating under the relevant legislative framework. Following completion of any archaeological investigations, a final report and archive will be prepared and submitted to the relevant authorities.

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Chapter/ Section Reference	Chapter/Section Description	Mitigation Measures
	7.1 Construction Phase General	The Contractor will adhere to best practice guidance and requirements as detailed below, particularly: • CIRIA guidance document C532 Control of water pollution from construction sites; • EU Construction and Demolition Waste Management Protocol – BIBM; • IEMA's latest Impact Assessment Guidance, A New Perspective on Land and Soil in Environmental Impact Assessment' (Feb 2022); and • Machinery Directive. See Guide to application of the Machinery Directive 2006/42/EC Edition 2.2 – October 2019 (Update of 2nd Edition). The construction approach will also adhere to the requirements set out in the Inland Fisheries Ireland guidance document Requirements for the Protection of Fisheries Habitat during Construction and Development Works and Development Sites. Additional reference guidance material includes: • Pollution Prevention Guidance (PPG) 1: Understanding your environmental responsibilities - good environmental practices; • Guidance for Pollution Prevention (GPP) 2: Above ground oil storage tanks; • PPG 3: Use and design of oil separators in surface water drainage systems; • GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer; • GPP 5: Works and maintenance in or near water; • PPG 6: Working at construction and demolition sites Pollution Prevention Guidelines; • PPG 7: Safe storage - The safe operation of refueling facilities; • GPP 8: Safe storage and disposal of used oils; • GPP 19: Vehicles: Service and Repair; • GPP 21: Pollution incident response planning; • GPP 22: Dealing with spills; • GPP 26 Safe storage - drums and intermediate bulk containers; • PPG 27: Installation, decommissioning and removal of underground storage tanks; • CIRIA: Environmental Good Practice on Site (fourth edition (C741); • CIRIA: Control of Water Pollution from construction sites. Guidance for consultants and contractors; • CIRIA Control of Water Pollution from Linear Construction Sites. Technical Guidance C648. • CIRIA: The Suds Manual (C753F); • CIRIA SuDS Manual Technical Guidance C697; • CIRIA Report Number C532 (2001): Control of water pollution from construction sites - Guidance for consultants and contractors; • National Roads Authority: Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes; • Best Practice Planning Guidance Report for Large Scale Solar Energy Development in Ireland • Eastern Regional Fisheries Board: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites; • Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries During Construction Works Adjacent to Waters; • EPA, Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition Proposed Developments (2021); • TII: The Management of Waste from National Road Construction Proposed Developments GE-ENV-01101 December 2017; • NRA (2006): Guidelines for the Treatment of Otters Prior to The Construction Of National Road Schemes; • NRA (2005): Guidelines for the Treatment of Badgers Prior to The Construction Of National Road Schemes; • TII: Guidelines for the Treatment of Bats During The Construction Of National Road Schemes; • TII: Guidelines for the Crossing of Watercourses During the Construction Of National Road Schemes; • TII: Guidelines for the Protection And Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes; and • Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads Revision 1, December 2010.
	7.1.1 Hydrological Buffers	Hydrological buffers within the Proposed Development are presented in Appendix D . No instream works will take place within the Proposed Development. Watercourse buffers will be used as follows:
		A 20m buffer from mapped rivers; and
		A 10m buffer from drains and watercourses except at water crossings. These will be marked out prior to works beginning on site.
	7.1.2 7.1.2. Mitigation for Disturbance/Displacement of Mobile Species	
	Timing of Works	Working hours for construction will be restricted to 07:00 to 18:00 on weekdays and from 08:00 to 14:00 on Saturdays. No works will take place at night to avoid vehicles moving at times activity is likely to be high unless required in an emergency or with the agreement of the planning authorities

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Chapter/ Section Reference	Chapter/Section Description	Mitigation Measures
	Buffer Distances	Ecological buffers within the Proposed Development are presented in Appendix D. Inclusion of appropriate buffers for existing treelines and hedgerows, potential bat roosts, Badger setts and protected bird species if present on site are provided in the final design and are outlined as follows: • Habitat - Scrub and Woodland: 7m; • Habitat – Hedgerows, Treeline: 7m; • Invasive Species: 7m; • Potential Bat Roosts: 10m; and • Badger Setts: 30m.
	9.1 Designated Sites	
	9.1.1 International Designated Sites	The mitigation measures related to the Proposed Development are sufficient to ensure no likely significant effects on any National sites or their relevant QIs. As such, no additional mitigation measures are required in the ECI.
	Hydrology and Drainage Management	The Contractor will implement in full the requirements of the Surface Water Management Plan provided. The Proposed Development Hydrologist/Design Engineer will attend the site during the Construction Phase to ensure that the drainage design and drainage controls are constructed in accordance with the mitigation measures outlined in Appendix A and Planning and Environmental Report.
	Ecological Clerk of Works (ECoW)	An Ecological Clerk of Works (ECoW) will be appointed to address issues relating to ecological features during the construction and decommissioning phases, as described within the CEMP. Their responsibilities will include: • Undertaking a pre-construction survey to ensure that significant effects to ecological features will be avoided; • Inform and educate site personnel of sensitive ecological features within the Proposed Development site and how effects on these features could occur; • Oversee management of ecological issues during the construction and decommissioning period and advise on ecological issues as they arise; • Provide guidance to contractors to ensure legal compliance with respect to protected habitats and species on site; • Liaise with officers from consenting authorities and other relevant bodies and contractors with regular updates in relation to construction and/or decommissioning progress; and • Ensure all hedgerow bolstering and new hedgerow establishment is carried out as specified in the Landscape Mitigation Plan. The Contractor will implement the mitigation measures as set out in the Planning and Environmental Report which are summarised into Appendix C of the CEMP. The appointed ECoW will have responsibility for monitoring activities that have the potential to impact on ecology or biodiversity associated with the site or linked to the site arising from site construction activities. The Contractor will adhere to the guidance by the appointed ECoW during construction. The ECoW will ensure that all the mitigation measures set out in Planning and Environmental Report and in the NIS are being fully implemented. The appointed ECoW will have the authority to issue Stop Work Orders until such time that issues which may impact on ecology or biodiversity are resolved.
PER Appendix F CEMP	1.1.1. Emergency Preparedness and Emergency Response	An Emergency Response Plan has been prepared for the Proposed Development and is attached to the CEMP as Appendix F. Prior to commencement of construction, the Environmental Clerk of Works (EnvCoW) will prepare a register of corrective action and emergency response sub-contractors that can be called upon in the event of an environmental incident, and/or to give training on escalating incident where useful, including e.g. specialist hydrocarbon spill response, specialist hydrological and/or water quality response. Mitigation measures as outlined in the previous sections will reduce the potential for contamination of waters during the construction phase of the Proposed Development. However, there remains the risk of accidental spillages and or leaks of contaminants, and excessive loading of surface water mitigation infrastructure. The Emergency Response Plan sets out the requirements with respect to the following: • Managing & Reporting Environmental Incidents; • Roles and Responsibilities ; • Spill Kits; • Fire Prevention; • Extreme Weather; • Emergency Contacts; • Incident Reporting and Investigation; and • Incident Response. The Emergency Response Plan is to be considered a live document which is to be updated on a regular basis by the Site Manager.

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Chapter/ Section Reference	Chapter/Section Description	Mitigation Measures
PER Appendix F CEMP	1.1.1. Site Manager/Site Supervisor	The Site Manager shall be responsible for: • Undertaking weekly Site Compound Checks, and appointing people to supervise refueling of tanks and bowsers; • Ensuring the required consents are in place before work starts; • Ensuring environmental and waste requirements are included on requisitions and in subcontracts and orders; • Ensuring oil, including diesel, is stored in properly bunded tanks / drip trays; • Ensuring Waste Transfer Notes / Waste Consignment Notes are checked against invoices before payment; • Liaising with statutory authorities as required and ensuring records of communication (including verbal communication) are kept. Statutory authorities should always be accompanied on site visits; • Ensuring employees, contractors and subcontractors implement the controls set out in the CEMP; • Ensuring employees, contractors and subcontractors receive Induction Training (including Proposed Development environmental issues) and Toolbox Talks, as appropriate; • Ensuring personnel needed for audits are available when required; • Verifying actions resulting from Corrective Action Requests and Observations raised during audits are completed by the deadlines; • Ensuring environmental training is provided; • Reporting incidents immediately to the client, and to statutory authorities where required; • Logging and monitoring incidents and non-conformances; • Disseminating information, including changes to legislation, and relay to relevant contractor's employees; • Identifying employees who require environmental training and maintain training records in line with the contract for the works; • Providing advice and dealing with queries and correspondence on environmental issues. • Identifying significant environmental impacts for the Proposed Development and assist in setting up contracts to include the necessary controls; • Monitoring the progress in closing out Corrective Action Requests and Observations raised during audits; • Ensuring all records are retained and readily available; • Carrying out monthly site audits and reporting on energy data, water usage and waste disposal and their greenhouse gas emissions; and • Appointing any third-party specialists as required.
PER Appendix F CEMP	1.1.1. Contamination	To ensure effective control of waste arising from construction activities and to minimise waste generation and final disposal requirements the Contractor will adhere to the requirements of the Surface Water Management Plan (Appendix A), Resource and Waste Management Plan (Appendix D) and Water Quality Management Plan (Appendix E) for the Proposed Development which are provided in the CEMP.
PER Appendix F CEMP	1.1.1.1. Monitoring and Environmental Clerk of Works	To ensure effective implementation of mitigation measures, environmental auditing, and monitoring of environmental obligations of the Developer, an EnvCoW will be assigned by the Developer to carry out monitoring at the Site during the construction and operational phases of the Development. The EnvCoW role will be to actively and continuously monitor site conditions and advise on environmental issues and monitoring compliance, and will not be responsible for implementing measures, the due duty of implementing measures will be held by the Developer / contracted construction operator. The EnvCoW will have the authority to temporarily stop works in a particular area of the site to ensure corrective measures are implemented and adverse environmental impacts are minimised if not avoided. Monitoring of pollution prevention and mitigation undertaken by the EnvCoW assigned by the Developer will include: • Monitoring site pollution prevention plan; • Water quality monitoring; • Advising on required pollution prevention measures (as described in this EIAR) and monitoring their effectiveness; • Liaison with local authorities in relation to pollution instances if applicable; and • Considering EnvCoW will be responsible for monitoring a broad range of environmental factors at the Site, technical monitoring and advice will be sought such as from specialist consultants as the need arises e.g., installation and website for telemetry.

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Chapter/ Section Reference	Chapter/Section Description	Mitigation Measures
PER Appendix F CEMP	1.1.1.1. Hedgerow Replanting	The loss of hedgerows will be offset by bolstering existing hedgerows and the establishment of new hedgerow areas. This is set out in the Landscape and Visual Impact assessment within the CEMP as mitigation and will serve both to screen the proposed development from viewpoints and also to offset hedgerow loss and enhance biodiversity and is summarised below: • Bolster existing perimeter and internal hedgerows with under-planting and inter-planting of whip transplants in order to ensure dense and consistent screening of the site in perpetuity; • Advanced nursery stock in the form of 8-10cm girth trees will be used to fill any noticeable gaps and plant species will be selected to complement the existing broadleaf hedgerow species mix around the site and will be of local provenance; • Bolster approximately 31,000 linear meters of existing hedgerow; • Where not already exceeded by existing vegetation, it is intended to manage hedgerows up to 3-4m in height by a combination of allowing lower sections of existing hedgerows to mature, filling obvious gaps with advanced nursery stock and providing an additional line of whip planting to selected hedgerows that require densification; • Plant new 'Type 2' hedgerows, with whips and a high proportion of advance nursery stock trees (c.3m planted height), along the boundaries of some of the proposed parcels to further screen the Proposed Development from some of the nearest surrounding receptors; • Allow planting to mature up to a maintained height of 3-4m; and • Establish an estimated 1,400 linear meters of Hedgerow Type 2 (New Native hedgerow).
PER Appendix D Biodiversity Enhancement Management Plan	1.1.1.1. Biodiversity Enhancement Management Plan	The accompanying Biodiversity Enhancement Management Plan (BEMP) provides the following enhancement measures for high ecological value habitats within the Proposed Development: • Cut back hedgerows between November and February and on a 3-year cycle, or at least stagger maintenance on different areas (cut one third of hedgerow every year instead of all at once) to allow for a constant food source for pollinators. Hedgerows should be at least 2.5m in height and trimmed in an A-shape for road access. Hedgerows will have a target height of 4m across the site boundaries; • Establish species rich grasslands from local sources and allowed to grow naturally between solar panels and in designated areas left uncut between March-October, winter cuts either via livestock or manual cutting; • Maintenance of scrub on south of the site; • Eliminate the use of pesticides and herbicides with the exception of management of Invasive species; • 1.96ha of native broadleaved woodland shelter belts be planted onsite: Hazel <i>Corylus avellana</i>, Rowan <i>Sorbus aucuparia</i>, Blackthorn <i>Prunus spinosa</i>, Hawthorn <i>Crataegus monogyna</i>, Oaks <i>Quercus</i> spp. etc. Species mixture will follow guidelines set out by the native tree area scheme; • Installation of an artificial Otter holt within the Tourig River on the western boundary of the Proposed Development. See the accompanying BEMP for detailed enhancement and implementation measures.
PER Appendix L Invasive Species Report	1.1.1. Invasive Non-Native Species	A detailed Invasive Species Management Plan (ISMP) has been prepared to avoid causing the spread of invasive plant species. This will be adopted during all stages (e.g., construction, operation and decommissioning) of the Proposed Development and reviewed/updated in response to any significant changes in the ecological baseline regarding invasive non-native plant species. Control measures within the ISMP will include:
	Fallow Deer	No specific legal provisions associated with Fallow Deer in Ireland, management measures outlined in Section XXX
	Cherry Laurel	No specific legal provisions associated with the growing of Cherry Laurel in Ireland, management measures outlined in Section XXX
	Japanese Knotweed	As the Japanese Knotweed is located on private property, eradication may not be possible. Therefore, it is advised that a 7m radius around any Japanese Knotweed located onsite is cordoned off and marked with a restricted access sign. All soil excavated within this 7m radius must be treated as biohazardous material due to the potential for presence of rhizomes. Any vehicles which enter this precautionary 7m must undergo Check, Clean, Dry protocol after leaving the marked area to prevent potential spread of any seeds.
	American Mink	No specific legal provisions associated with American Mink in Ireland, management measures outlined in Section XXX . An artificial Otter holt will be placed on the western boundary of the Proposed Development. Increased Otter presence may in turn deter the presence of American Mink onsite, providing biological control for the invasive species, as they are in direct competition for resources and some studies have indicated that recovering Otter populations may reduce presence of American Mink (McDonald et al., 2007).

GREENHILLS RENEWABLE ENERGY PARK: CEMP APPENDIX C (SCHEDULE OF MITIGATION MEASURES)

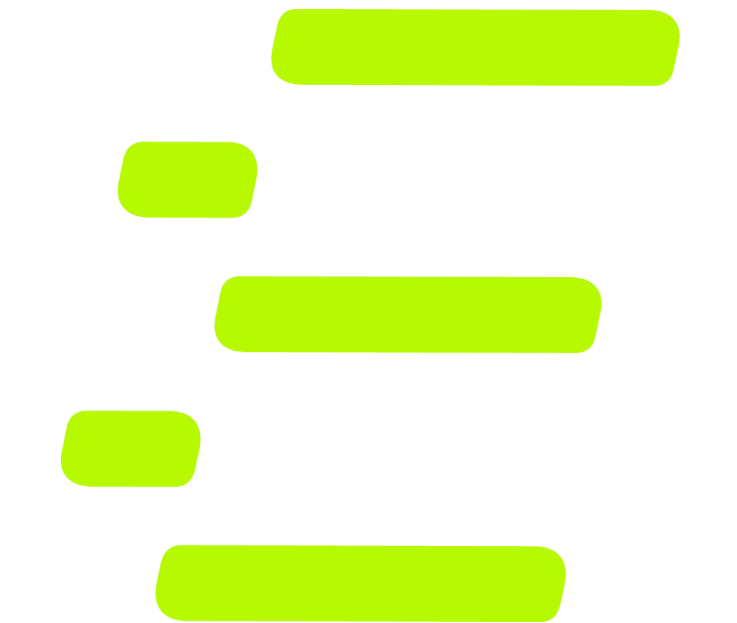
Chapter/ Section Reference	Chapter/Section Description	Mitigation Measures
	9.1.9.1 General Management Measures	• If an Invasive Alien Species (IAS) is identified on site in addition to the already identified locations, contact your Site Supervisor/HSEQ Advisor for instructions on how to proceed; • Implement controls as instructed by the HSEQ Advisor; • Information on IAS/training will be provided at induction stage to all staff/Site Operatives; and • If additional IAS are identified onsite, changes to the Invasives Species Report may be deemed necessary, and the Client should be contacted before proceeding with works. • Appropriate signage for IAS will be used; • Locations where Japanese Knotweed occurs will be fenced off where possible to prevent disturbance and prevent access. This involves fencing-off the IAS including a 10m buffer zone to stop workers and machinery entering these areas; • Suppliers of any soil or aggregates, brought on to the site are required to assure that it is free of any IAS; • All tyres and tracks should be checked/cleaned before leaving a site where an IAS has been identified to prevent inadvertently spreading the species; • Soils and plant materials will be cleaned from tools, equipment, vehicles and work clothes before entering and leaving the work site; • Before removing any plants and shrubs, they will be checked that they are not a Third Schedule/First Schedule Invasive Species; and • Contaminated soils will be treated carefully. If wastes are being transported off site, ensure that they are appropriately transported by a licensed waste carrier who is informed that the waste material contains an invasive species as part of the waste transfer documentation.
PER Appendix K EclA	Protected Species	
	Otter	A full spectrum of surveys in line with Reid <i>et al.</i> (2013) and Highways Agency (1999) recommendations to identify the extent of Otter presence utilising the habitat within the Proposed Development site boundary will be conducted prior to any works commencing. Should an active holt be found within the 150m distance of the works (NRA, 2006), no works will take place until the holt has been confirmed vacant. Consultation will be conducted with NPWS and if required works will either wait for the holt to no longer be in use or derogation license to relocate the holt will be sought with appropriate measures in line with the Wildlife Acts and the EU habitats Directive. Should this derogation license be required, this effect will be re-assessed to address the changes to adverse effects on Otter. The creation of shelter for Otter via an artificial holt on the Tourig River will be actioned as part of the BEMP. Wildlife gates will be provided with the erection for stock proof fencing to avoid fragmentation.
	Badger	A Pre-Construction Badger Survey should be undertaken in line with NRA (2006) Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes. National Roads Authority, Dublin, Ireland. This includes: • A pre-construction Badger survey should be carried out no more than 10-12 months in advance of construction in order to identify sett entrances; • Should an active Badger sett be identified within the Proposed Development, no construction works should take place within 30m of the active sett, any works within this area will require derogation licenses; • No heavy machinery should be used within 30m of Badger setts (unless carried out in consultation with NPWS); • Lighter machinery (generally wheeled vehicles) should not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance should not take place within 10m of sett entrances; • Any works within the Badger breeding season (December to June inclusive) will require an exclusion zone of 50m around the setts, any works within this area will require derogation licenses; and • All excavations are to be securely covered or closed off at the end of each working day to prevent the accidental trapping of Badgers; and • Wildlife gates will be provided with the erection for stock proof fencing to avoid fragmentation. Signs of other Mammals should be observed and recorded during the Badger pre-construction survey.

GREENHILLS RENEWABLE ENERGY PARK: CEMP APPENDIX C (SCHEDULE OF MITIGATION MEASURES)

Chapter/ Section Reference	Chapter/Section Description	Mitigation Measures
	Bats	The Proposed Development does not involve the removal of any trees or the identified roost (BL6) which is located just outside of the Proposed Development site boundary. In the event that a mature tree may require trimming or felling, the tree should be surveyed for potential bat roosts before any work commences. All works required within 50m of confirmed roosts will not occur during the breeding season (April-October). To minimise the potential for impacts on commuting and foraging bats, removal or alteration of suitable commuting and foraging habitat (e.g., hedgerows and treelines), wherever possible, be undertaken outside of the peak breeding season (i.e., outside of the period April to October inclusive). Although not anticipated, if any mature trees ultimately require removal, it will need to be surveyed for PRF prior to removal, in line with Bat Conservation Trust guidelines (Collins, 2023). Further surveys will be required should this PRF check determine the tree to be of medium or high bat roosting potential. If removal of an active roost is required, all appropriate mitigation measures and derogation steps will be adhered to including, alternative design measures, bat boxes, and ECoW oversight of any felling of tree limbs with PRFs.
PER Appendix D Biodiversit y Enhancem ent Manageme nt Plan	3.1 Maintain and creat native flowering hedgerows	Existing areas of hedgerow will be retained within the Proposed Development boundary where possible. An additional 16,857km of hedgerow mosaic habitats will be managed via underplanting, limited cutting to facilitate growth up to 4m and general maintenance in managing hedgerows for biodiversity per AIPP guidance for solar farms (NBDC, 2023). In areas where the extent of hedgerow is limited, additional hedgerow will be created through active management. In particular, hedgerow management should seek to ensure the greatest likelihood of successful growth and maximise the surface area of this habitat to provide the greatest possible extent of suitable commuting and foraging habitat to increase biodiversity onsite. As a total of c. 395m of hedgerow is proposed to be lost in small sections across the site as part of the construction phase of the Proposed Development (Figure 3.1), 1,400m of hedgerow is proposed to be planted to account for this loss (Figure 3.2). Native hedgerow planting will follow the guidelines set out in the NBDC guidance for solar farms (NBDC, 2023). Therefore, hedgerows will be planted with native flowering species such as Hawthorn <i>Crataegus monogyna</i> and Blackthorn <i>Prunus spinosa</i> and only cut back and maintained between November and February. Hedgerow cutting will be a 3-year cycle where feasible, where not feasible it is recommended that maintenance be staggered across the areas of hedgerow (cutting one third of hedgerow every year instead of cutting back all at once) to allow for a constant food source for pollinators. When maintaining the hedgerows, the hedgerow trees should be left uncut, and the remainder of the hedgerow cut into an 'A' shape (i.e. wider at the base than at the top). Cuttings should be piled into heaps and left to decay naturally. Hedgerows will be allowed to grow to 4m in height. A small area of south or east-facing exposed earth at the base of the hedgerows will be left bare to provide areas for mining solitary bees to nest, encouraging increased pollinator biodiversity onsite (NBDC, 2021).
	3.2Creat Native Woodland	It is proposed that approximately 1.96ha of native broadleaved woodland shelter belts be planted onsite, see figure 3.2 of the BEMP. Species selected will be native to the local area. It is recommended that Ash <i>Fraxinus excelsior</i> is not planted due to the prevalence of ash dieback disease in Ireland. Therefore, it is recommended that native species such as Sessile Oak <i>Quercus petraea</i>, Alder <i>Alnus glutinosa</i>, Birch <i>Betula spp.</i>, Willow <i>Salix spp.</i> and Rowan <i>Sorbus aucuparia</i> are used. Species mixture will follow guidelines set out by the Native Tree Area Scheme . This will provide additional foraging, commuting and shelter habitat for wildlife onsite, contributing to increased biodiversity.
	3.3Native Wildflower Meadow Area	Improved agricultural grassland currently occupies 291.10ha within the managed area. A mosaic of improved agricultural grassland and scrub occupies a further 0.07ha within the managed area. The developer will allow improved grassland to revert to a more natural state. In such cases, a reversion program will be required, involving: • Analysis of soil samples to establish baseline nutrient levels; • Cessation of chemical and organic fertiliser application; • Cessation of lime application; and • Habitat enhancement works. The grassland between the solar arrays onsite will be allowed to revert to a natural state during the operational phase of the development. This grassland will be cut unevenly once a year in autumn, after any wildflower species have flowered, and the cuttings removed to prevent addition of excess nutrients to the soil. Noxious plant species may be pulled. Further, areas of native wildflower meadow with the 'species rich grassland' areas are proposed to be planted across the site. Approximately 13.35ha of species rich grassland will be planted onsite. In the first instance, seeds will be sourced locally. Fields will also be allowed to grow naturally from baseline levels with regular cuts over winter to facilitate establishment of diverse flowering plants. Irregular grazing regimes may also be deployed in line with the project ecologists' recommendations. No wildflower mixes will be used. This will provide valuable foraging habitats for pollinators, birds and other wildlife onsite.
	3.4Eliminate Use of Pesticides	No spraying or broadcast application of herbicides will be permitted within the Proposed Development boundary at any time. Where necessary to site management, Cherry Laurel <i>Prunus laurocerasus</i> will be removed by cutting. In exceptional circumstances, targeted control of invasive species using herbicides may be permitted. Pesticide use will be minimised wherever possible, with none permitted within 5m of any existing hedgerows (except for spot treatment of invasive plant species such as Japanese Knotweed <i>Fallopia japonica</i>).

GREENHILLS RENEWABLE ENERGY PARK: CEMP APPENDIX C (SCHEDULE OF MITIGATION MEASURES)

Chapter/ Section Reference	Chapter/Section Description	Mitigation Measures
	3.5 Scrub	Scrub currently occupies 2.65ha within the managed area. A total of 636m of linear scrub is also currently present within the managed area. Existing areas of scrub will be retained where possible. Small areas of established scrub will be trimmed to prevent encroachment onto grassland and access routes. Cuttings will not be burned, but piled into heaps and left to decay naturally along site verges
	3.6 Otter	An artificial Otter holt will be placed on the western boundary of the Proposed Development in order to encourage establishment onsite of ex-situ Otter populations related to the Blackwater River (Cork/Waterford) SAC (Figure 3.3 of the BEMP). Artificial holts will be placed in an undisturbed area, far away from roads, free from flooding and as close to good food supply as possible (Northern Ireland Environmental Agency (NIEA), 2019). Increased Otter presence may in turn deter the presence of American Mink onsite, providing biological control for the invasive species, as they are in direct competition for resources and some studies have indicated that recovering Otter populations may reduce presence of American Mink (McDonald <i>et al.</i> , 2007).
	4.1 Timing	The BEMP will be implemented concurrently with the commencement of the construction phase of the Proposed Development and subsequently throughout the operational phase of the Proposed Development. No hedgerow, scrub or woodland maintenance will occur between 1 st March and 31 st August of any given year, and maintenance will occur on a 3-year cycle where feasible. Grassland management works will occur in autumn of each year.
	4.3 Responsibilities	The client will engage a suitably qualified ecologist to oversee the implementation of this BEMP as a part of the annual solar farm operational programme.



Greenhills Solar Farm

Above Ground Solar Mounting Structure Construction Methodology

1. Proposed Mounting Structure Installation Methodologies

1.1 Protection of Potential Archaeological Features

A detailed GPS site survey will be conducted to confirm GPS location of the potential archaeological features identified in the Archaeological Reports and any pre-construction survey work, as instructed by the Project Archaeologist. At these locations, protective barriers/ boundaries will be erected to align with the perimeter of the features, and high visibility tape and 'Archaeological Feature - Do not Disturb' signs will be fixed to the temporary protective fencing around the features. The fences delimiting the buffer zones will rest on existing ground levels to avoid any sub-surface impacts. It is proposed that archaeological features will be located and protected in the manner outlined above prior to commencing works in the vicinity. A register of the protections implemented will be kept and regular inspections undertaken to ensure that these protections are kept in place and maintained throughout the array installation works.

Once the protections are in place, a buffer zone will be marked out to delineate the areas in which gabion basket / ballasted foundations are to be used for the mounting of solar panels. Alternatively, if suitable, the standard piled foundations may be micrositied to avoid these areas,

Section 1.2 below outlines one construction methodology for use of the gabion basket/ ballasted solution. Please note that there are a number of gabion basket/ ballasted/ precast concrete solutions in the market specifically designed for avoiding disturbance of sub-soil archaeology. The solutions chosen in detailed design may vary slightly from what is described here but the key elements and concepts will be maintained, with no below ground works. It is clearly established that there are ways of building solar arrays without disruption to potential archaeology in the sub soil. These alternative construction methodologies may bring additional cost and complexity to the project, however that is a standard risk carried by all developers operating in construction and has no bearing on planning.

1.2 Installation of above ground solutions

1. In order to figure out the size and quantity of gabion baskets/ ballasts to be used, some minor site investigation will be required. It may be necessary to carry out a CBR assessment which would be carried out under full-time archaeological monitoring. This process is not uncommon and appropriate procedure will be followed to align with the archaeologists' recommendations.
2. The gabion basket mounted solution can be achieved by rolling out geogrid/textile on top of the grass, without any requirement for excavation. Gravel is then placed on the geogrid/textile, ensuring that the potential archaeological features below are fully protected.
Other solutions seen on the market simply place the gabion basket or ballasted foundation directly on the grass, avoiding the use of gravel and geogrid/textile. The determination of the least impactful solution will be subject to detailed design and signoff by the Project Archaeologist, following the appointment of contractors and cannot be fully defined at this time.

3. Using the GPS coordinates confirming the exact locations, empty gabion baskets or ballasted foundations will then be positioned, while ensuring no heavy loads are imposing on any potential archaeological features in the sub-soil. The use of iterative light movements across the land should ensure no further impact on the ground than would have been experienced to date. The gabion

4. The gabion baskets/ ballasted foundations are then filled/ stacked with quarry stone/ brick to provide the ballast necessary to act as the solar array foundation. No works will be carried out in wet weather where there is the potential for the soil to be churned up. As well as this, compact track loaders, (e.g. Bobcat T64 Compact Track Loader) will be utilised to minimise track wear. Material delivery schedules and paths can also be sequenced to avoid unnecessary material delivery journeys. Additionally, temporary track mats may be used, helping to protect the ground underneath and avoid disturbance.



5. The temporary protective fencing around the archaeological buffer zones will also be above ground and will remain in place during the completion of the mechanical installation of the frames for the solar array.
6. With respect to the electrical cabling, it would be normal for the DC cabling to travel inside the purlins of the mounting structure which will already be above ground. Any extra cabling can also be kept above ground with different solutions in locations with potential archaeological sensitivities. In areas away from the mounting structures there are also solutions like cable snakes or the option to simply lay the cable directly on the ground and build up soil around it for protection. This avoids the need for any cable trenches to be dug. See images below for examples of cable hangers which can travel between the verticals of the gabion baskets / ballasted foundations:



7. Inverters can also be mounted above ground off the gabion basket / ballasted solution structure and kept lined up adjacent to the roadside at the end of the arrays in order to minimise any ground travel required. This would be typical for inverter location selection in any case to minimise the lengths of electrical cable required.



Perigus Energy Ireland Midco Limited

Greenhills Renewable Energy Park

Construction Environmental Management Plan

Appendix E Water Quality Monitoring Plan

605444 WQMP (00)

AUGUST 2026





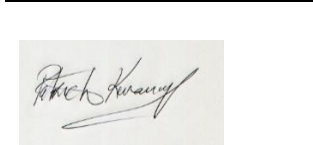
RSK GENERAL NOTES

Project No.: 605444-WQMP (00)

Title: Greenhills Renewable Energy Park: Outline Water Quality Monitoring Plan

Client: Perigus Energy

Status: 00

Contributors	Nikolina Bozinovic	Technical reviewer	Paddy Kavanagh
			
Signature		Signature	
Date:	12/08/2026	Date:	12/08/2026

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated



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1 INTRODUCTION

This Water Quality Monitoring Plan (WQMP) forms part of the Construction Environmental Management Plan (CEMP) for the Greenhills Renewable Energy Park (the Proposed Development) in Co. Cork.

The WQMP sets out the minimum monitoring requirements which must be implemented during the:

- Construction of the Development
- Operation of the Development
- Decommissioning of the Development

The WQMP should be considered a live document and is to be updated by the Contractor at the commencement of the Project and on a quarterly basis thereafter, or as more frequently as the need arises to ensure that it is current and has the most up to date information.

A copy of the WQMP and any updates shall be maintained on site as part of the Environmental Clerk of Works (EnvCoW) Environmental Management System.

An electronic copy of the ERP and any updates shall be provided to the following:

- Greenhills Renewable Energy Park Project office
- Cork County Council Planning Department
- Inland Fisheries Ireland
- Contractor
- All sub contractors working on the project.

The EnvCoW shall maintain a record of all versions of the WQMP issued.



2 PROJECT DESCRIPTION

2.1 Site Location and Plan

The Proposed Development (Greenhills Renewable Energy Park) comprises a solar farm, battery energy storage system, 220kV AIS substation and loop-in grid connection in the townlands of Knocknagappagh, Barnaviddane, Ballyneague, Ballydaniel, Youghalpark, Ballydaheen and Cornaveigh in County Cork, see Figure 2-1 b9(nl)low.

Figure



- Interconnector underground cabling (including sections in the southern part of the site along public roads)
- New (2) and upgraded (9) site entrances and access tracks
- All ancillary development such as drainage infrastructure, security fencing, CCTV, weather stations and storage containers for spare parts.
- Temporary construction compound(s)
- Landscaping
- Biodiversity enhancement
- Battery energy storage system (BESS)
- 220kV AIS substation
- 220kV Overhead Line (OHL) Loop in grid connection to the existing Knockraha- Cullenagh 220kV OHL

A 10-year planning permission and 40-year operational life from the date of commissioning of the entire Proposed Development is being sought. This reflects the lifespan of modern-day renewable energy developments.

Electricity from the solar array areas will be ducted to an on-site new 220kV AIS substation, which will be connected to the national grid via a loop-in grid connection to the existing Knockraha-Cullenagh 220kV overhead line, which runs through the middle of the site. The proposed 220kV AIS substation, loop-in grid connection and BESS compound are located in the townland of Ballyneague,, circa 6.5 kilometres north of Killeagh, County Cork, see **Figure 2-2**.

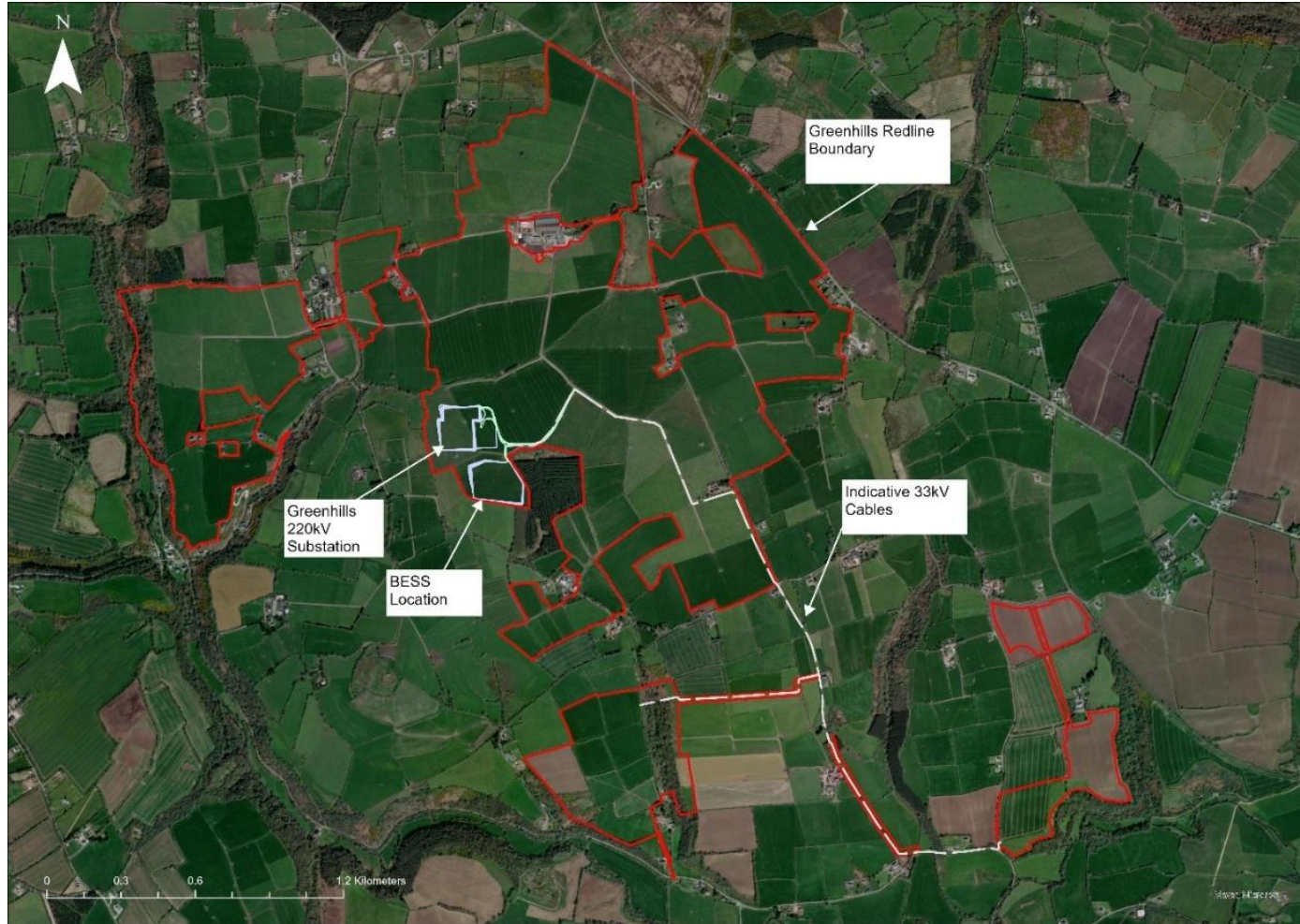


Figure 2-2: Location of Solar Array, 220kV Substation and BESS location

Activity	Construction
Monitoring Frequency	General Monitoring Requirement
Prior to Commencement of Construction	A programme of water quality monitoring outlining the selected parameters and monitoring frequency will be agreed with Inland Fisheries Ireland and Cork County Council prior to the commencement of construction.
Daily during Construction Quarterly during Operation	- During the construction phase of the project, the development areas and adjacent receiving drainage systems will be monitored daily for evidence of erosion and other adverse effects to natural drainage channels and existing degraded areas whereby soils/subsoils are exposed and prone to enhanced degradation. - This monitoring will continue at a reasonable frequency during the operational phase of the development; however, it is envisaged that any potential issues in this regard will be identified and rectified during the construction phase.
Equipment on site	- Handheld meters (Turbidity / Total Suspended Solids (TSS)) will be used by the EnvCoW / competent operators during construction works. This will be done with a view to managing water treatment and anticipating potential surcharges in water or TSS loading within the treatment train. - Handheld meters will also be used to monitor outfall/discharge quality in the event telemetry systems fail or during system maintenance. - A handheld turbidity meter will be available and used to accurately measure the quality of water discharging from the site at any particular location. - The meter will be maintained and calibrated frequently (per the particular unit's calibration requirements / user manual) and will also be used to check and calibrate remote sensors if they are employed.
Continuous	Rainfall will be monitored (1 no. rainfall gauge required). This unit will be connected with and displayed with other

Activity	Construction
Monitoring Frequency	General Monitoring Requirement
	site water quality telemetry data via the telemetry website.
Weekly during construction	Surface water runoff control infrastructure will be checked and maintained on an ongoing basis, and stilling ponds and check dams will be maintained (de-sludge / settle solids removed) on an ongoing basis, particularly during the construction phase of the development.
Continuous	Continuous monitoring particularly in principal surface water features draining the site will be conducted using a handheld meter by the EnvCoW.
	Monitoring of potential hydrological effect of the development, particularly during the operational phase will be inherently linked to the ecological health of the site (as a functioning ecosystem) and therefore both hydrology (by handheld monitoring device by the environmental clerk of works) and ecology will be considered and monitored in tandem. For example, effects to the hydrological regime at the site can potentially effect on the ecological health or characterisation of the site, and vice versa. Ecological indicators can potentially provide useful data in relation to the long-term effect of changes to the hydrological regime at the site. Changes to the management of runoff and in turn the hydrological regime at the site will lead to a positive effect overall when compared to the baseline conditions associated with the site e.g. introduction of intermittent buffered outfalls along the length of the drainage network is in contrast to baseline, this will promote a more even distribution runoff, attenuate runoff and reduce the hydrological response to rainfall, enhanced potential for recharge to ground, and in various areas of biodiversity enhancement.
Duration of construction and post construction for a 12 month period on a monthly basis	- Similar to the wind farm site baseline monitoring, baseline surface water samples will be obtained at upstream and downstream sampling locations at each significant construction location over mapped rivers. - Baseline surface water samples will be obtained at accessible locations such as existing bridges on public

Activity	Construction
Monitoring Frequency	General Monitoring Requirement
	roads. Where upstream access is poor, the upstream baseline sampling location will be directly/immediately upstream of the construction location (e.g., existing bridge / culvert).

Table 3-2: Specific Surface Water Monitoring Requirements

Activity	Site Construction
Monitoring Frequency	Specific Monitoring Requirement
Monthly	The baseline monitoring undertaken at the Site as part of this study, see surface water sampling sites SW1 to SW7 on Figure 3-1, will be repeated periodically before, during and after the construction phase of the Development to monitor any deviations from baseline water quality that occur at the Site. This monitoring along with the detailed monitoring outlined below will ensure that the mitigation measures that are in place to protect water quality are working.
Daily	Daily inspection of silt traps, buffered outfalls and drainage channels
Daily	Daily measurement of total suspended solids, electrical conductivity, and pH at selected water monitoring locations on the Site (Figure 9.6) (locations close to active working zones).
Continuous	Monitoring of total suspended solids, electrical conductivity, and pH during times when excavations are being dewatered (likely high in solids) will be done in real time by the EnvCoW using handheld meters on site.

Continuous	- Monitoring will be carried out as part of Active Management of construction water management and treatment by the EnvCoW using handheld meters on site. - A small degree of tolerance above reference concentrations is acceptable at this location but only if the discharge from the Active Management train discharges to another Passive Management system or to a non-sensitive vegetated area. - If discharging within sensitive areas or buffer zones, the quality of discharge from the Active Management train will be in line with prescribed reference limits (e.g., 25mg/l TSS)
Daily during Construction Weekly during Operation	- During the construction phase of the project, the Development areas will be monitored daily for evidence of groundwater seepage, water ponding and wetting of previously dry spots, and visual monitoring of the effectiveness of the constructed drainage and attenuation system so that it does not become blocked, eroded or damaged during the construction process. - This monitoring will continue at a reasonable frequency (weekly initially gradually reduced based on observed stability of conditions) during the operational phase of the Development, however it is envisaged that any potential issues in this regard will be identified and rectified during the construction phase.
Daily during Construction Weekly during Operation	- During the construction phase of the project, the Development areas and adjacent receiving drainage systems will be monitored daily for evidence of erosion and other adverse impacts to natural drainage channels and existing degraded areas whereby soils/peat are exposed and prone to enhanced degradation. - This monitoring will continue at a reasonable frequency during the operational phase of the Development, however it is envisaged that any potential issues in this regard will be identified and rectified during the construction phase

Continuous during Construction	- Site water runoff quality at all surface water monitoring locations will be monitored on a continuous basis during the construction phase of the Development. - Monitoring will continue into the operational phase until such time that the Site and water quality have stabilised (stable conditions in line with baseline conditions for e.g. 8 consecutive quarterly monitoring events). This monitoring will be carried out at the downstream surface water baseline sampling location (Figure 3-1).
Activity	Watercourse Crossings
Monitoring Frequency	Monitoring Frequency
Daily during Construction Weekly/Monthly during Operation	- During both the construction and operational phases of the project watercourse crossings will be monitored frequently (daily during construction and intermittently during operational phase i.e., weekly / monthly inspections initially and reduced gradually in line with observed stability and confidence in longer term data obtained. - The water course crossings will be monitored in terms of structural integrity and in terms of their impact on respective watercourses.
Activity	Monitoring Under Licence
Monitoring Frequency	Specific Monitoring Requirement
Daily during Construction, Regularly during Operation	- During the construction phase, the drilling of abstraction well at the development site will require a daily sampling of groundwater for testing a range of drinking water parameters as the baseline results. The testing of groundwater samples will be done in laboratory. - Results of monitoring will be submitted to the relevant body (EPA) - The frequency of testing will be defined by abstraction licence
Monthly during Operation	During Operational phase, samples from the wastewater treatment plant will be collected and tested on regular basis, monthly or as proposed by the discharge licence.

	- The samples will be laboratory tested and screened for specific parameters - Results of monitoring will be submitted to the Cork County Council on regular basis
Likely Daily or Weekly if required.	- Where a discharge licence is required, the conditions of the licence will stipulate monitoring requirements in line with licence parameters with associated emission limit values. - The frequency of sampling will likely be daily or weekly. Sampling will include obtaining physical samples at an agreed discharge sampling point and will be sent an accredited laboratory for analysis. - Where discharge licence is required, monitoring in line with the licence will be done in addition to the other monitoring regimes undertaken as described in sections above. Monitoring under licence conditions will not negate the requirement for the other regimes described.
Activity	Post Construction
Monitoring Frequency	Specific Monitoring Requirements
Monthly or after heavy rainfall events (defined as >10mm rain)	- Post construction: at a monthly or after heavy rainfall events (>10mm of rain) inspection of silt traps, buffered outfalls and drainage channels, measurement of total suspended solids, electrical conductivity, and pH at selected water monitoring locations at the site. - During the operational phase of the project the stilling ponds and buffered outfalls will be periodically inspected during maintenance visits to the site.
Weekly during Operation	During the operational phase of the project the stilling ponds and buffered outfalls will be periodically inspected e.g., weekly during maintenance visits to the Site initially and gradually reduced based on observed stability of conditions.

3.3 Managing & Reporting Environmental Incidents

Environmental incidents including accidental spillages on soils (e.g. fuel), breeches of thresholds (environmental quality standards – TSS exceeding 25mg/l), and significant environmental incidents will



be reported to the Local Authority as part of emergency responses to such incidents. Incident notification will be escalated to relevant third parties where relevant e.g. Inland Fisheries Ireland (IFI) if surface water receptors are intercepted.

Monitoring at downstream baseline Surface Water (SW) monitoring locations (**Figure 3-1**) will be undertaken by the Environmental Clerk of Works in accordance with this WQMP. If any the thresholds are exceeded at these locations this will trigger emergency response and escalation of measures including immediate full site inspection to ascertain to the potential unknown source (bearing in mind that the quality of managed runoff at the site will be known by means of live telemetry and handheld meters), Conceptual and information graphics presented in **Figure 3-2** presents indicative layout and specification for both passive treatment trains (e.g., clean water and or storm water interceptor drains), active management treatment trains (management and treatment of construction water) and emergency response and intervention.

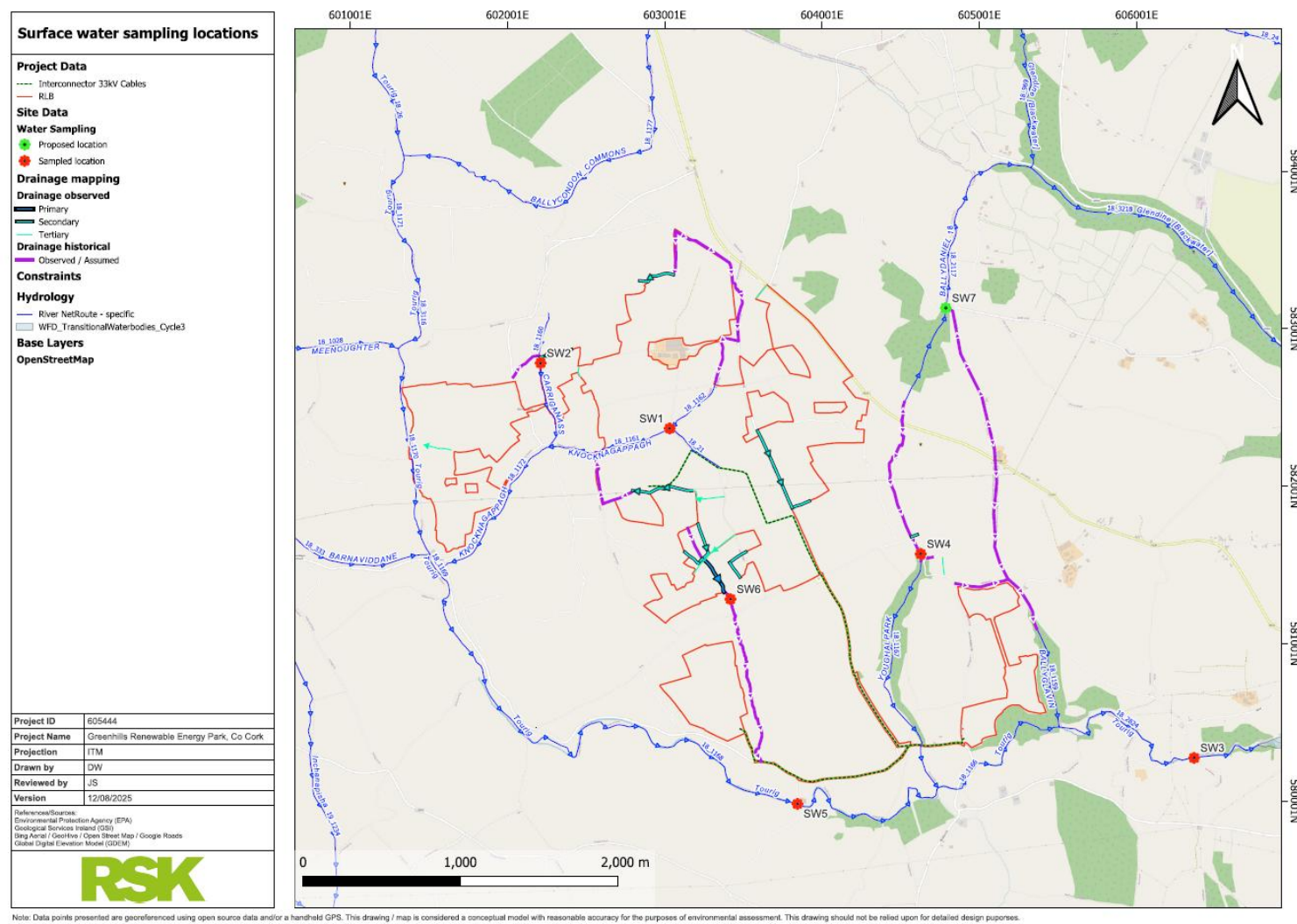


Figure 3-1: Location of SW Monitoring Locations (SWX)

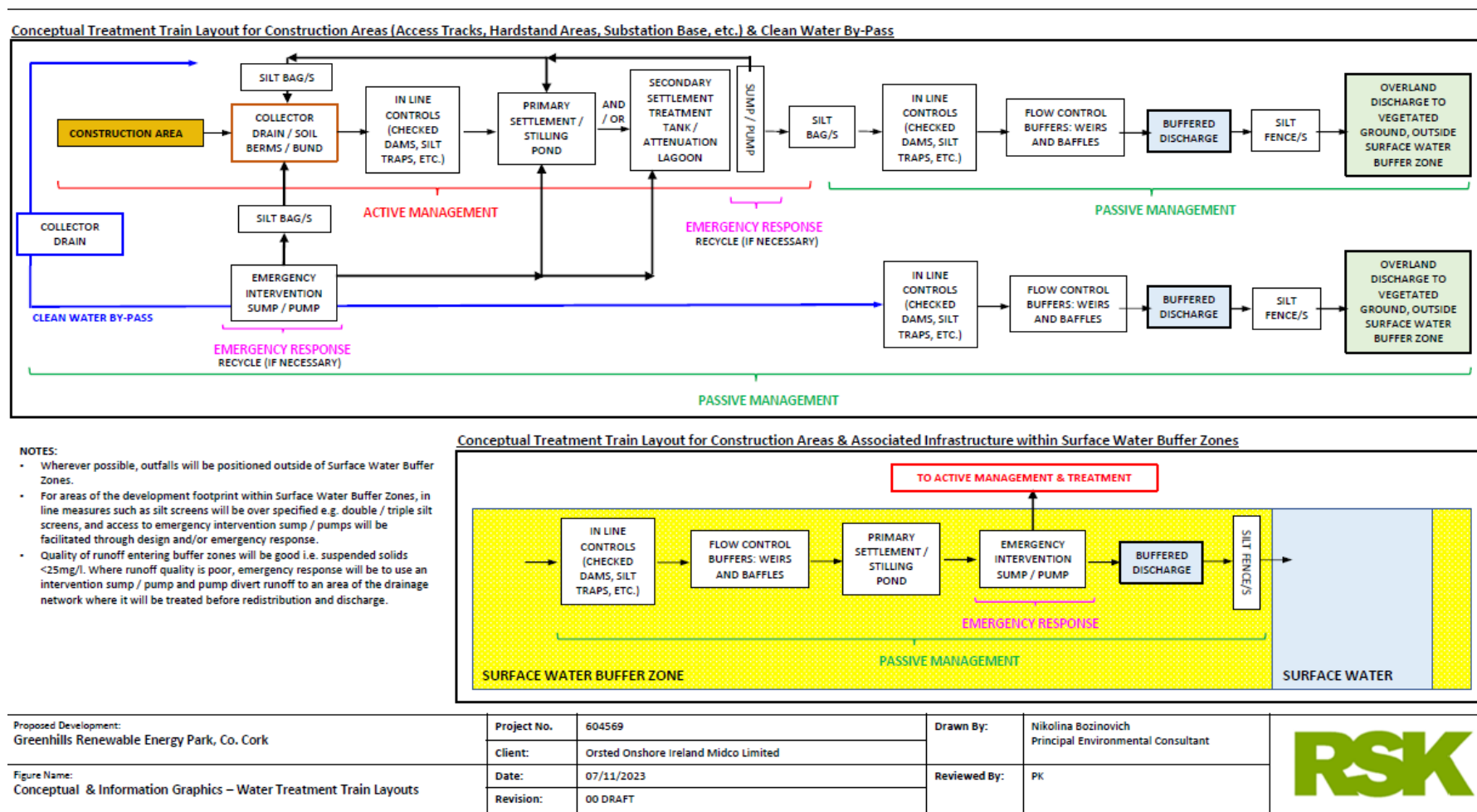


Figure 3-2: Conceptual Model of Water Treatment Train

4 EMERGENCY RESPONSE PROTOCOLS

Prior to commencement of construction, the EnvCoW will prepare a register of corrective action and emergency response sub-contractors that can be called upon in the event of an environmental incident, and/or to give training on escalating incident where useful, including e.g., specialist hydrocarbon spill response, specialist hydrological and/or water quality response.

Mitigation will set out to minimise any potential for contaminants to reach sensitive receptors identified during the construction phase of the proposed development are encompassed in passive management of construction water, however, there remains the risk of accidental spillages and or leaks of contaminants, and excessive loading of surface water mitigation infrastructure.

EnvCoW will monitor the efficacy of mitigation measures applied, and were failing to achieve the objectives set, emergency response and mitigation measures are escalated until such time as the site stabilises and objectives of mitigation are being achieved once more.

A risk of accidental chemical spillages, sediment overloading of control measures or leaks of contaminants from plant or equipment remains a possibility. If there is any issues, active construction water management will then take place. There is a series of steps for Emergency response protocols and they are as follows.

- Monitoring by EnvCoW – threshold triggered
- Investigate and identify sources of contaminate
- Isolate the area – insert straw bales (temporary measure)
- Divert water – Pump out of drain
- Discharge to vegetated area through silt screen or stilling pond before vegetated area

All activities that could trigger an emergency response protocol are listed below, however it should be noted that each response is dependent on two key items.

- Severity of contaminant
- Volume of water

The following is a non-exhaustive list of potential emergency scenarios where corrective action may be required, and proposed corrective mitigation measures are included:

- Potential issue; Elevated concentrations of suspended solids in runoff during excavation activities during an unforeseen or low probability storm event, for example a 1 in 100-year event. Proposed measure; cover exposed stockpiles in plastic sheeting and placement of straw bales and silt fences in associated drainage channels.
- Potential issue; Failure or degradation of stone check dam during a storm event with associated elevated runoff volumes. Proposed measure; Introduction of straw bales and silt fences in order to regain attenuation capacity of the drainage channel until the maintenance can be completed, (Figure 4-1).

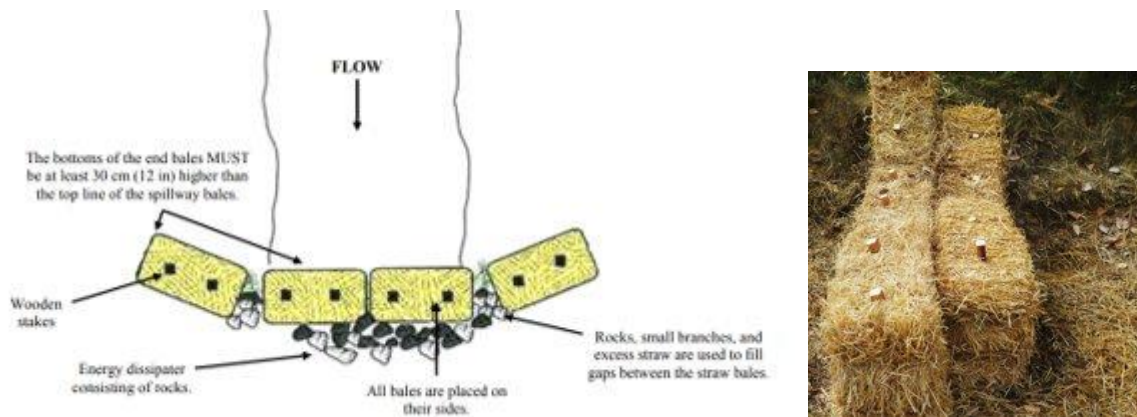


Figure 4-1: Straw bale retention feature

- Potential issue; Localised stability issue leading to deposit of soils/subsoils within an active drainage channel. Proposed measure; Introduction of straw bales and silt fences directly downstream, of the area in order to attenuate gross solids isolate the area and over pump until remedial works and maintenance can be completed, divert all runoff from the area to Active Management area of the treatment train.
- Potential issue; Management of unexpected runoff patterns leading to excessive drying or wetting in a particular area, potentially leading to enhanced erosion. Proposed measure; This type of issue will require assessment on a case by case basis. Solutions might include; decommission, modification, introduction or relocation of buffered outfall, or diversion of runoff volumes to or away from the area. In regard to the potential for erosion and similar physical processes, any such issues will become apparent through monitoring relatively rapidly, whereas effects to ecological sensitivities will become apparent relatively slowly in comparison. It is noted that much of the Site is effected as part of baseline in this regard e.g. existing artificial drainage networks.

Potential emergencies and respective emergency responses include:

- Hydrocarbon spill or leak – Hydrocarbon contamination incidents will be dealt with immediately as they arise. Hydrocarbon spill kits will be prepared and kept in vehicles associated with the construction phase of the proposed development. Spill kits will also be established at proposed construction areas. Suitable receptacles for hydrocarbon contaminated materials will also be at hand.
- Significant hydrocarbon spill or leak – In the event of a significant hydrocarbon spillage, emergency responses will be escalated accordingly. Escalation can include measures such as installation of temporary sumps, drains or dykes to control the flow or migration of hydrocarbons and contaminated runoff will be contained, managed and pumped to a controlled area in line with active management including treatment through a suitably equipped treatment tank and Granular Activate Carbon (GAC) vessels, Figure 4-2. This process will be managed by the EnvCoW in conjunction with a preidentified consultant (EnvCoW) specialist register, in regard to effective remediation, treatment and removal of hydrocarbon contaminated water and soils excavation and appropriate disposal of contaminated soils will be required in this instance.

- If a significant hydrocarbon spillage does occur, the contractor on behalf of the developer will have an approved and certified clean-up consultancy available on 24-hour notice to contain and clean-up the spill. The faster the containment or clean-up starts, the greater the success rate, the lower the damage caused and the lower the cost for the clean-up.
- Cementitious material – Cement / concrete contamination incidents will be dealt with immediately as they arise. Spill kits will also be established at proposed construction areas, for example a spill kit will be established and mobilised as part of the turbine erection materials and equipment. Suitable receptacles for cementitious materials will also be at hand.
- In the event of a significant contamination or polluting incident the relevant authorities will be informed immediately.



Figure 4-2: Good Practice of Bunded Materials



APPENDIX F – EMERGENCY RESPONSE PLAN



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1 INTRODUCTION

This Emergency Response Plan (ERP) forms part of the Construction Environmental Management Plan (CEMP) for Greenhills Renewable Energy Park (the Proposed Development) in Co. Cork.

The ERP is intended to form the basis of providing information on the emergency responses required should, emergency situations, pollution incidents or serious accident occur on the site during construction of the Project.

The ERP should be considered a live document and is to be updated by the Contractor on a quarterly basis, or more frequently as the need arises to ensure that it is current and has the most up to date information and contact details.

A copy of the ERP and any updates shall be maintained on site as part of the Contractor's Health and Safety File.

An electronic copy of the ERP and any updates shall be provided to the following:

- Greenhills Renewable Energy Park Project office
- Cork County Council Planning Department
- All sub-contractors working on the Project.

The Contractor shall maintain a record of all versions of the ERP issued and to whom in the Health and Safety file on site.

2 PROJECT DESCRIPTION

2.1 Site Location and Plan

The Proposed Development (Greenhills Renewable Energy Park) comprises a solar farm, battery energy storage system, 220kV AIS substation and loop-in grid connection in the townlands of Knocknagappagh, Barnaviddane, Ballyneague, Ballydaniel, Youghalpark, Ballydaheen and Cornaveigh in County Cork, see Figure 1 1 below.

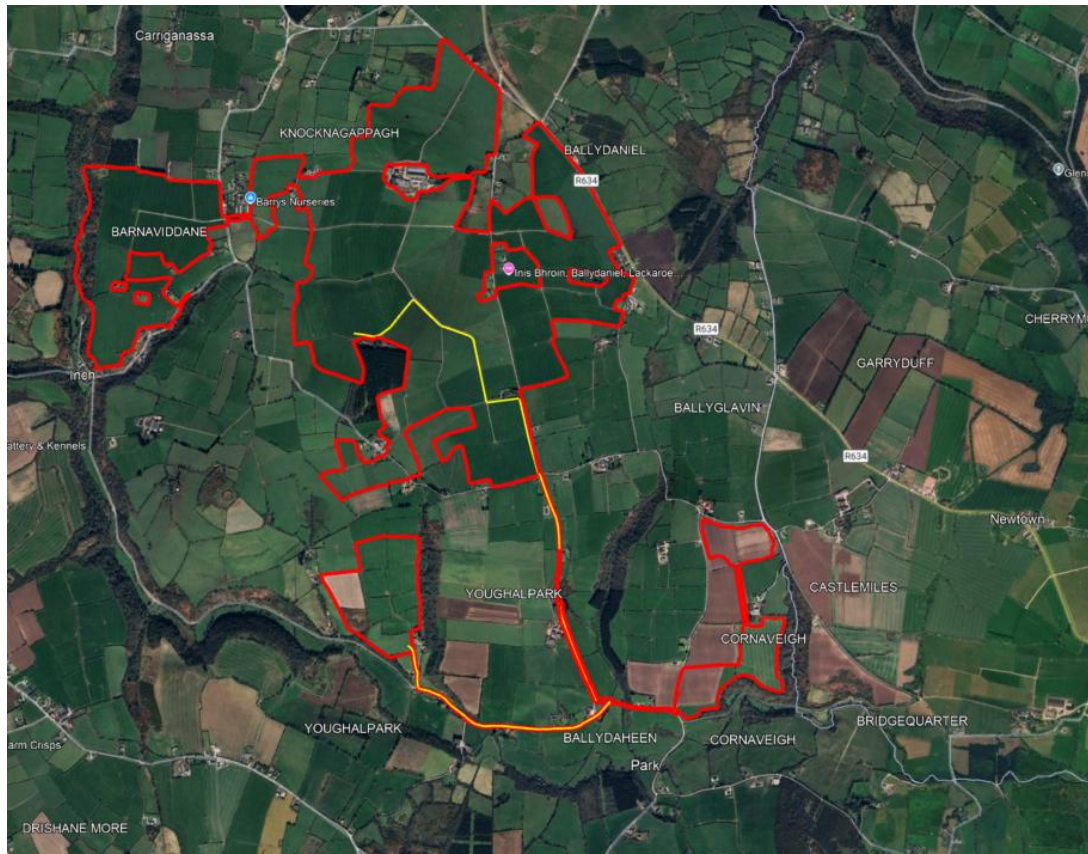


Figure 1 1: Proposed Development Area

The Proposed Development is adjacent to the R634 road approximately 7km north-west of the settlement of Youghal and 6.5km north-east of Killeagh, Co. Cork.

The site area is relatively flat and comprises agricultural lands in a rural setting with low population density. The high level of solar irradiance in the southern region of the country makes it ideal for the development of renewable solar photovoltaic projects

2.2 Description of the Development

A detailed description is included in Planning and Environmental Report Chapter 4 Description of the Proposed Development. In summary the proposed development area is circa 323 ha and the Proposed Development will comprise the following elements:



- Solar array
- Inverter/transformer stations
- Interconnector underground cabling (including sections in the southern part of the site along public roads)
- New (2) and upgraded (9) site entrances and access tracks
- All ancillary development such as drainage infrastructure, security fencing, CCTV, weather stations and storage containers for spare parts.
- Temporary construction compound(s)
- Landscaping
- Biodiversity enhancement
- Battery energy storage system (BESS)
- 220kV AIS substation
- 220kV Overhead Line (OHL) Loop in grid connection to the existing Knockraha- Cullenagh 220kV OHL

A 10-year planning permission and 40-year operational life from the date of commissioning of the entire Proposed Development is being sought. This reflects the lifespan of modern-day turbines.

Electricity from the solar array areas will be ducted to an on-site new 220kV AIS substation, which will be connected to the national grid via a loop-in grid connection to the existing Knockraha-Cullenagh 220kV overhead line, which runs through the middle of the site. The proposed 220kV AIS substation, loop-in grid connection and BESS compound are located in the townland of Ballyneague,, circa 6.5 kilometres north of Killeagh, County Cork.

3 EMERGENCY PREPAREDNESS AND EMERGENCY RESPONSE

Prior to commencement of construction, the Environmental Clerk of Works (EnvCoW) will prepare a register of corrective action and emergency response sub-contractors that can be called upon in the event of an environmental incident, and/or to give training on escalating incident where useful, including e.g. specialist hydrocarbon spill response, specialist hydrological and/or water quality response.

Although mitigation measures provided in the Planning and Environmental Report (PER) **Chapter 11 Land, Soils and Geology, Hydrology and Hydrogeology**) and CEMP will reduce the potential for contamination of waters during the construction phase of the Project, there remains the risk of accidental spillages and/or leaks of contaminants, and excessive loading of surface water mitigation infrastructure. For this reason, emergency preparedness is required.

Potential emergencies and respective emergency responses include:

- Hydrocarbon spill or leak – Hydrocarbon contamination incidents will be dealt with immediately as they arise. Hydrocarbon spill kits will be prepared and kept in vehicles associated with the construction phase of the Project. Spill kits will also be established at proposed construction areas. For example, a spill kit will be established and mobilised as part of the turbine erection materials and equipment. Suitable receptacles for hydrocarbon contaminated materials will also be at hand.
- Significant hydrocarbon spill or leak – In the event of a significant hydrocarbon spillage, emergency responses will be escalated accordingly. Escalation can include measures such as installation of temporary sumps, drains or dykes to control the flow or migration of hydrocarbons and contaminated runoff will be contained, managed and pumped to a controlled area in line with Active Management including treatment through a suitably equipped treatment tank and Granular Activate Carbon (GAC) vessels. This process will be managed by the EnvCoW in conjunction with a preidentified consultant (EnvCoW specialist register) in regard to effective remediation, treatment and removal of hydrocarbon contaminated water and soils. Excavation and appropriate disposal of contaminated soils will be required in this instance.
- If a significant hydrocarbon spillage does occur, the contractor on behalf of the developer will have an approved and certified clean-up consultancy available on 24-hour notice to contain and clean-up the spill. The faster the containment or clean-up starts, the greater the success rate, the lower the damage caused and the lower the cost for the clean-up.
- Cementitious material – Cement / concrete contamination incidents will be dealt with immediately as they arise. Spill kits will also be established at proposed construction areas, for example a spill kit will be established and mobilised as part of the turbine erection materials and equipment. Suitable receptacles for cementitious materials will also be at hand.
- In the event of a significant contamination or polluting incident the relevant authorities will be informed immediately.

3.1 Managing and Reporting Environmental Incidents

Environmental incidents including accidental spillages on soils (e.g. fuel), breeches of licence limits if applicable (discharge of trade effluent), and significant environmental incidents will be reported to the Local Authority as part of emergency responses to such incidents. Incident notification will be escalated



to relevant third parties where relevant e.g. Inland Fisheries Ireland (IFI) if surface water receptors are intercepted.

3.2 Emergency Response Plan

The ERP provides procedures to be followed in the event of an emergency in terms of site health and safety and environmental protection.

The ERP is a working document and will require updating and submissions from the contractor/PSCS throughout the various phases of the project. Where sub-contractors that are contracted on site are governed by their own emergency response procedure, arrangements will be made to allow for inclusion of the sub-contractor's ERP within this document.

3.3 Roles and Responsibilities

The Site Manager will be responsible for activating and coordinating the emergency response procedure. In a situation where the Site Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command.

3.4 Spill Kits

Spill kits capable of dealing with hydrocarbon and chemical spills shall be available at appropriate locations on site. Each storage location shall be clearly visible to the workforce, for instance by deploying clear signage.

The spill kit contents shall include absorbent pads, absorbent booms, absorbent granules and hazardous waste disposal sacks as a minimum. Regular checks of the spill kits shall be completed to ensure they remain adequately stocked to deal with environmental incidents.

Spill drills shall be performed periodically to confirm that the workforce can effectively contain and clear up potentially polluting spillages. All drills will be documented, and details kept on record for the duration of the works.

3.5 Fire Prevention

Means to raise the alarm in the event of a fire such as a siren or foghorn shall be available at the points of work. An assembly point marked with a sign shall be designated a safe distance from the active works locations and will be communicated to all members of the workforce before works commence.

The workforce shall assemble at the point for a rollcall to be carried out by the Site Security Officer. The Site Manager will decide the appropriate course of action and will advise all personnel accordingly.

All individuals on site, including visitors, will be obliged to immediately sign in on arrival.

3.6 Extreme Weather

The Site Manager shall register to receive Met Eireann weather warnings. All warnings issued by Met Eireann with the potential to impact upon the works shall be communicated by the Site Manager to the workforce in a timely manner so that measures can be implemented where necessary.



The Contractor shall maintain provisions to deal with extreme hot weather events. Measures shall include provision of safe drinking water and adequate shade.

Seasonable variations will be monitored to take account of potential wet weather when planning stripping of topsoil and excavations to minimise soil erosion and run off.

3.7 Incident Reporting and Investigation

All incidents, including near misses, shall be classified according to the categories outlined below. All categories of environmental incident shall be reported by the Contractor to The Project Team as outlined in Table 1 below.

Table 1: Incident Reporting and Investigation

Incident Classification	Definition
Near Miss	An event, controlled through implementation of an effective incident control measure (e.g., drip tray used, effective use of noise barrier).
Minor Environmental Incident	Incidents that have caused minor harm or damage to the environment e.g. • a minor fuel spill below 20 litres onto ground which is immediately cleared. • a minor spill of a chemical not classified as presenting an ecotoxic risk. • exceeding noise levels. • silt runoff from site which does not enter into a surface water feature. • excess dust emissions.
Major Environmental Incident	Incidents that have caused or may cause significant harm or damage to the environment e.g. • a minor fuel spill which impacts a sensitive land feature, a water body, or drains. • a major fuel spillage over 20 litres. • any spillage of a chemical which is classified as presenting an ecotoxic risk. • silt runoff from site which enters a water feature. • receipt of a nuisance complaint.



The Contractor shall prepare an investigation report for all environmental incidents. The report is to include a summary of the environmental incident, describing the:

- nature of the incident.
- details of any pollutant released including the type and quantity of pollutant released.
- location for the incident (e.g., grid reference).
- Receptors that were or could have been impacted.
- An analysis of what led to the incident occurring.
- Summary of immediate actions taken to mitigate the incident.
- Summary of any remedial action required.
- Lessons learned and future measures or actions to be implemented.

The Contractor shall report all environmental incidents that are required to be reported to the relevant statutory or regulatory bodies.

The Contractor will verify the incident investigation and agree with their contractors any further actions which are to be implemented to prevent a reoccurrence of comparable incidents. A timeline for the implementation of all actions shall be established and the Contractor shall provide details of when they have been implemented.

An incident investigation shall be complete when all details have been recorded on file.

3.8 Emergency Contacts

In the event of an emergency occurrence at the Site, the Contractor shall determine the relevant statutory and regulatory bodies that must be notified. Notification shall be in accordance with the measures outlined above.

A list of emergency contacts is presented in Table 2. A copy of these contacts will be included in the Site Safety Manual and in the site office.

Table 2: List of emergency contacts

Emergency Contacts	
Contact	Contact details
Client – Greenhills Renewable Energy Park	TBC prior to commencement
Project Supervisor Construction Stage (PSCS)	TBC prior to commencement
Project Supervisor Design Stage (PSDS)	TBC prior to commencement

Emergency Contacts	
Contact	Contact details
Cork County Council Environmental Incident Report	021 4532700
Cork County Council Roads and Transportation Emergency Number (only to be used after 5.00 pm and before 9.00 am, at weekends and Public Holidays)	021 4800048
Inland Fisheries Ireland (Incident Reporting)	0818 34 74 24
Inland Fisheries Ireland Macroom Offices (South Western river basin district) , Cork (9.00 to 1.00pm and 2.00pm to 4.30pm on Mondays to Fridays)	026 41222
EPA Incident Hotline Number (outside of business hours (09.00 – 17.00 Monday to Friday)	0818 33 55 99
EPA (Dublin)	01 268 0100
EPA Regional Inspectorate Cork	021 4875540
National Parks and Wildlife Service's regional office	076 100 2557
National Environmental Complaints Line (NECL)	1850 365 121
National Parks and Wildlife South Western Division	064 6670 166
Health and Safety Authority	1890 289 389
Irish Water	1800 278 278
Emergency Services – Ambulance, Fire, Gardai	999 / 112
Bord Gáis Emergency	1850 20 50 50
ESB Networks Emergency (Overhead Wires)	1800 372 999

Emergency Contacts	
Contact	Contact details
Youghal Garda Station	024 92200

3.9 Incident Response

All pollution incidents should be managed through the **STOP - CONTAIN - NOTIFY** concept.

As soon as an incident is identified, the first action should be to **STOP** and prevent further discharge to drainage/river/ground.

CONTAIN may constitute control of discharge in the event of a spill, or cessation of works if it is the works that are resulting in the incident, e.g., halting excavations until silt runoff is contained. It is recognised that due to personal health and safety risks it may not always be safe to stop the source of the spill, for instance if a significant volume of an unidentified substance has been released.

NOTIFICATION should take place as soon as practicable, and frequently can take place while further release is being stopped or while a spill is being contained.

Oil, fuel or chemical spill to ground:

- Wear protective clothing, prevent further release at source e.g., switch off tap/ valve, correct leaking drum and make safe the area.
- If the spill is migrating, create a temporary bund to prevent further spread by using spill kit materials / sandbags.
- If drains or field ditches are located nearby, install drain seals/ deploy additional spill kit materials to prevent the spill discharging to the drain or ditch.
- Apply absorbent granules or pads (available from spill kit) to the affected area.
- Contractor will notify the local authority regarding the nature and scale of incident. The following information should be included in the notification:
 - Time of discharge.
 - Type/quantity of material discharged.
 - Location of discharge.
 - Site contact details.
- Contractor will notify The Project Team of the incident and communicate the information provided to the local authority.
- Containment measures should remain in place until the nature and extent of the contamination can be assessed and a remediation strategy must be prepared.
- All impacted materials shall be disposed of in accordance with relevant legislative and regulatory requirements and Duty of Care requirements.

Discovery of unexpected contamination:

- On the discovery of unexpected contamination, the Contractor will immediately halt works in the area.



- If impacted materials have already been removed, they shall be returned to the excavation or placed on to a membrane, e.g., terram, to prevent migration of the contaminant to another area.
- Contractor to report the situation to The Project Team.
- Arrangements will be made between the Contractor and The Project Team for samples of the contamination to be collected and tested on fast turnaround.
- Contractor to only continue with works in the area once the test results have confirmed the contaminant and a safe means of working has been established.

The Contractor shall be free to continue works in areas unaffected by the contamination but will not speculatively continue to excavate material to find the extent of the contamination without supervision from a geo-environmental engineer.

All impacted materials will be disposed of in accordance with relevant legislative and regulatory requirements as well as relevant Duty of Care requirements.

Oil, fuel or chemical spill to surface water feature:

- Wear protective clothing, prevent further release at source e.g., switch off tap/ valve, correct leaking drum and make safe the area.
- If source not readily identifiable, contain first (see below) then identify and prevent further release at source.
- Immediately deploy appropriately sized boom from nearest spill kit across affected surface water feature. Use stakes to attach it to the sides of the surface water feature. Tie booms together to increase length if required.
- Supplement with additional booms across the surface water feature, as required, to contain any migration of the spill not halted by the first installation.
- Contractor shall notify the local authority regarding the nature and scale of incident. The following information should be included in the notification:
 - Time of discharge.
 - Type/quantity of material discharged to surface water feature.
 - Location of discharge.
 - Site contact details.
 - Contractor shall notify The Project Team of the incident and communicate the information provided to the local authority.
 - All impacted materials will be disposed of in accordance with relevant legislative and regulatory requirements and relevant Duty of Care requirements.

Oil, fuel or chemical spill to drainage system

- Wear protective clothing, prevent further release at source e.g., switch off tap/ valve, correct leaking drum and make safe the area.
- If source is not readily identifiable, contain the visible pollutant first, then identify and prevent further release at source.
- Immediately deploy appropriate drain cover(s) to affected gullies.
- Supplement with booms around the gully to contain any migration of the spill.
- The Contractor shall notify the local authority and the relevant water company regarding the nature and scale of incident. The following information should be included in the notification:
 - Time of discharge.
 - Type/quantity of material discharged to the drain.
 - Location of discharge, specifically which drain.
 - Site contact details.



- The Contractor shall notify The Project Team of the incident and communicate the information provided to the local authority.
- All impacted materials shall be disposed of in accordance with relevant legislative and regulatory requirements and relevant Duty of Care requirements.

Explosion / Fire Procedure:

Explosion/fire incidents should also be dealt with through health and safety procedures. In the event that a fire is detected, or an explosion occurs:

- Notify the emergency services and evacuate the area.
- Only attempt to tackle the fire with site equipment if trained to do so.
- Ensure that pollution of nearby water bodies including surface water drainage from fire control water or other substances is minimised. Where possible and safe to do so, any site drainage systems should be protected through the deployment of drain seals/ spill kit materials to ensure any firefighting waters are captured and can be disposed of appropriately.
- At a time when it is acceptable to do so, the local authority shall be notified regarding the nature and scale of incident. The following information should be included in the notification:
 - Nature of the incident.
 - Time and date of the incident.
 - Quantity of fire control water discharged to surface water feature/drainage, where relevant.
 - Location of discharge.
 - Site contact details.

Discharge of Silt

In the event of an unexpected discharge of silty water, then:

- Prevent further release at source e.g., cease dewatering the excavations.
- Contain silt and protect sensitive receptors from further discharge:
 - If a drain is located nearby, install drain seals or deploy spill kit materials to prevent discharge.
 - If silt flow is in the direction of surface water features deploy hay bales around surface the feature.
 - If silt is being generated by runoff from stockpiles deploy spill kit materials, silt fencing or move soil to form a bund at the base to prevent further silt laden runoff from the stockpile.
- If silt is discharged without prior approval the Environment Protection Agency shall be notified. If the silt discharge enters the drainage system, the relevant water company shall also be notified regarding the nature and scale of incident. The following information should be included in all notifications:
 - Time of discharge.
 - Type/quantity of material discharged.
 - Location of discharge, e.g., which drain or surface water feature.
 - Site contact details.

Contamination of or by waste materials

- Assess whether the area needs to be evacuated, such as if fumes are being given off.
- Assess whether the damage can be undone through segregation.



- Complete a risk assessment for the task including consideration of any COSHH risks.
- If it is safe to do so segregate the waste. If it is not safe to do so, then the full waste quantity is to be consigned as hazardous waste.
- Contractor to report the incident to the client.
- Waste to be collected from site in accordance with normal practice.

Discovery of archaeological artefact or heritage feature

- Immediately stop works in the area of the artefact or feature.
- Ensure the area is isolated from interference by erecting fencing around the discovery. Prevent vehicles from navigating through this area.
- Provide a safe means for pedestrians; and if possible, vehicles, to move around the isolated area.
- Contractor shall report the find to the client.
- Client to arrange for the find to be assessed by a qualified heritage or archaeological specialist. Contractor to prevent tampering with the find until it has been assessed.
- Works to proceed in accordance with the recommendations given by the heritage or archaeological specialist.

Ecological discovery or damage

- Immediately stop works in the area.
- Contractor to immediately report the incident to the client.
- Client to arrange for a qualified ecologist to assess the discovery or damage caused.

Works to proceed in accordance with the advice received from the ecologist.

Vandalism/theft procedure

Acts of theft and vandalism present the risk that damage may be caused to equipment containing hazardous substances that could cause pollution, or damage may be caused to measures which have been installed to prevent the release of pollution. On identifying an act of vandalism or theft:

- The Contractor shall notify Garda Síochána of the incident.
- Inspect all fuel storage tanks/drums and equipment to ensure there has been no release of the fuel or other hazardous substances, e.g., hydraulic fluid.
- If a spill is identified follow the procedures for Oil, fuel or chemical spills.
- Inspect pollution protection measures, e.g., drainage or silt protection, to ensure it has not been interfered with. Where it is possible, correct any issues identified without causing further release.
- Inspect site boundaries to identify the access point if not immediately clear and secure the site.