Panther Environmental Solutions Ltd
Units 3 & 4, Innovation Centre
S.E.T.U Carlow Campus,
Green Road, Carlow
Rep. of Ireland
R93 W248

Telephone /Fax: 059-9134222
Email: info@pantherwms.com
Website: www.pantherwms.com

RECEIVED: 19/12/2024

Natura Impact Statement Report

COUNTRY CREST ULC, COLLINSTOWN, LUSK, CO. DUBLIN

REPORT NO:	PE_NIS_ 10228	**AUTHOR:**	Paula Farrell BSc.
DATE:	12th December 2024	**REVIEWED:**	Martin O'Looney BSc.

TABLE OF CONTENTS

RECEIVED: 18/12/2024

Contents

RECEIVED: 18/12/2024

RECEIVED: 18/12/2024

LIST OF FIGURES

LIST OF TABLES

RECEIVED: 18/12/2024

EXECUTIVE SUMMARY

Panther Environmental Solutions Ltd. was commissioned by Country Crest ULC to prepare a Natura Impact Statement (NIS) for permission for the development of an Anaerobic Digestion (AD) Facility to produce a renewable biomethane gas for direct injection into the national gas grid on a site of circa 7.28 hectares at the townland of Collinstown, Lusk, Co Dublin.

The closest Natura 2000 sites are the Rogerstown Estuary SAC (Site Code: 000208) and the Rogerstown Estuary (SPA) (Site Code: 004015) located approximately 4.4km to the south-east of the proposed development.

This report identified the presence of European sites within the potential zone of influence of the proposed development as the Rogerstown Estuary SAC (Site Code: 000208) and the Rogerstown Estuary (SPA) (Site Code: 004015) due to direct hydrological connection. The potential for Likely Significant Effects (LSE) to European sites as a result of the proposed development such as potential surface water quality impacts, introduction of invasive species, habitat destruction and impacts from noise and dust were considered and the level of risk posed assessed.

During Stage 1 Screening for Appropriate Assessment, it was considered that there may be potential for an impact upon the qualifying interests / special conservation interests of the Rogerstown Estuary SAC and Rogerstown Estuary SPA due to a potential deterioration in water quality during the construction phase. Therefore, a Natura Impact Statement was prepared.

Due to the mitigation measures outlined within this NIS which will be implemented during the construction phase, it is considered that there would be no significant risks to the conservation objectives of the habitats and species for which the aforementioned designated sites have been designated.

It is considered that there will be no significant risk of negative impact, either alone or in combination with other plans or projects, to the integrity of the Natura 2000 network.

RECEIVED: 18/12/2024

1. INTRODUCTION

This Appropriate Assessment Screening Report has been prepared by Panther Environmental Solutions Ltd to accompany a planning application to Fingal County Council by the applicant, for the development of an Anaerobic Digestion (AD) Facility to produce a renewable biomethane gas for direct injection into the national gas grid on a site of circa 7.28 hectares at the townland of Collinstown, Lusk, Co Dublin.

The principal aim of this study is to assess for Likely Significant Effects (LSE)/adverse impacts to European sites (the Natura 2000 network) are likely to occur as a result of this project in accordance with Article 6(3) of the Habitats Directive and the Planning and Development (Amendment) Act, 2000, as amended. This report has been prepared with regards to the European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997), and the later amendment regulations (S.I. No. 233 of 1998; S.I. No. 237 of 2005, S.I. No. 477 of 2011 and S.I. No. 355 of 2015).

A study was undertaken by Ms Paula Farrell of Panther Ecology Ltd who has a BSc in Wildlife Biology from Munster Technological University (formerly IT Tralee) and has experience in elasmobranch, amphibian, bird, invertebrate and floral surveys. This comprised a review of the proposed development, a site visit on 28th August 2024 to examine the ecological context of the proposed development, a desk study of the information on European sites within the potential zone of influence of the site and an analysis of the information in the context of the guidance to determine if a Natura Impact Statement is required.

The Appropriate Assessment and Natura Impact Statement shall be undertaken in accordance with the guidance outlined in "*Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities*" (DoEHLG, Dec 2010) and "*Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites*" (EC, 2021) and "*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive*" (EC, 2019).

- DoEHLG (2010) "*Appropriate Assessment of Plans & Projects in Ireland*"
- Environment DG, European Commission (2021) "*Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*".
- Department of the Environment Heritage and Local Government (DoEHLG) Circular Letter SEA 1/08 and NPWS 1/08.
- Department of the Environment Heritage and Local Government (DoEHLG) Circular letter NPWS 1/10 and PSSP 2/10
- OPR Practice Note PN01 (2021) "*Appropriate Assessment Screening for Development Management*"

2. LEGISLATIVE CONTEXT

RECEIVED: 28/02/2024

The EU Habitats Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna and flora, as amended by council directive 97/62/EC, 2006/105/EC, and Regulation EC1882/2003 of September 2003, as transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/11), provides the framework for legal protection for habitats and species of European importance. The Natura 2000 network provides an ecological infrastructure for the protection of sites that are of particular importance for rare, endangered or vulnerable habitats and species within the EU. The Natura 2000 network in Ireland is made up of European Sites which include:

- Special Areas of Conservation (SACs)
- Special Protection Areas (SPAs)

Article 6(3) of the Habitats Directive establishes the requirement for appropriate assessment when planning new developments that might affect a Natura 2000 site. Article 6(3) of the Habitats Directive states;

"*Any plan or project not directly connected with, or necessary to the management of the site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site, and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*"

Stage 1: Screening for Appropriate Assessment
This stage involves an initial screening assessment of the potential impacts of the project, either alone or in combination with other projects, upon a Natura 2000 site. If it can be concluded that there would be no significant impacts upon Natura 2000 sites, the assessment stops at this stage. If not, or if further assessment is required, the assessment proceeds to Stage 2.

Stage 2: Appropriate Assessment / Natura Impact Statement (NIS)
This stage assesses the impact of the project, alone or in combination with other projects or plans, on the integrity of the Natura 2000 site, with respect to the site's conservation objectives, the site's ecological structure and function and its overall integrity. The output of this stage is an NIS, which also includes any mitigation measures required to avoid, reduce or offset negative impacts of the project. If this stage determines that adverse effects on the Natura 2000 site cannot be excluded, then the plan or project should proceed to Stage 3 or be abandoned.

3. METHODOLOGY

Stage 1 - Screening

Screening is the first stage in the Appropriate Assessment process, and is carried out to determine whether a Stage 2 Appropriate Assessment and a Natura Impact Statement (NIS) is

required. Screening addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3);

RECEIVED: 18/12/2024

1. Whether a plan or project is directly connected to or necessary for the management of the European (Natura 2000) site; and

2. Whether a plan or project, alone or in combination with other plans or projects, is likely to have significant effects on a European (Natura 2000) site, in view of its conservation objectives.

Screening should be undertaken without the inclusion of mitigation measures. If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 AA and an NIS.

The findings and conclusions of the screening process should be documented, with the necessary supporting evidence and objective criteria. This is of particular importance in the cases where the Appropriate Assessment process ends at the screening stage because the conclusion is that no significant effects are likely.

Stage 2 – Natura Impact Assessment

The scope of this assessment follows the appropriate assessment statement methodology as defined within the European Commission guidance document "*Assessment of plans and projects significantly affecting Natura 2000 sites"* (2002), Section 3, Part 2. Guidance from the Department of the Environment, Heritage and Local Government "*Appropriate Assessment of Plans and Projects in Ireland*" (2010) and "*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive*" (2018) and "Appropriate Assessment Screening for Development Management" OPR Practice Note PN01 (2021) have also been used in the preparation of this report. In accordance with this guidance, the following methodology has been used to produce this Natura Impact Statement:

Step 1**:** Information Required
Identifying the conservation objectives of the Natura 2000 site and the aspects of the project, alone or in combination with other projects or plans, which have the potential to affect those conservation objectives.

This process involves gathering information for the Natura 2000 site, including the conservation objectives of the site, factors contributing to conservation value, aspects sensitive to change and the existing baseline condition of the site. The principal source of information used for Natura 2000 sites, their qualifying interests and conservation objectives is the National Parks and Wildlife Service (NPWS). Information is also required for the project including the size and scale of the project, the relationship (distance, connectivity etc.) of the project to the Natura 2000 site and the characteristics of existing, proposed or other projects which have the potential to affect the Natura 2000 site.

Step 2: Impact Prediction
This process predicts and identifies the likely significant effects of the project on the Natura 2000 site. Potential impacts are identified as; direct and indirect; short or long-term duration; construction, operational or decommissioning; and isolated, interactive and cumulative effects.

RECEIVED: 18/12/2024

Step 3: Conservation Objectives
Once the potential impacts of the project have been predicted and identified, it will be necessary to assess whether these impacts will adversely impact upon the integrity of the Natura 2000 site, as defined by the site's conservation objectives and status of the site. Where it cannot be demonstrated that there will be no adverse impacts upon the Natura 2000 site, mitigation measures must be proposed for the project.

Step 4: Mitigation Measures
Upon the identification of potential impacts, the project will have on the Natura 2000 site (alone or in combination with other projects or plans), mitigation measures will be proposed to eliminate, reduce or offset these negative impacts. Mitigation measures should be considered with preference to the hierarchy of preferred options outlined in the guidance document "*Assessment of plans and projects significantly affecting Natura 2000 sites"*.

3.1 METHODOLOGY BACKGROUND

This Appropriate Assessment has been carried with reference to the following guidelines:

- *Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities*. DoEHLG, 2010.
- Circular NPWS 1/10 & PSSP 2/10 Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities
- *Managing Natura 2000 sites – The Provisions of Article 6 of The Habitats Directive 92/43/EEC.* European Commission, 2021.
- Circular L8/08 Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments 2 September 2008
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites. Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.* European Commission, 2021.
- Commission Notice "Managing Natura 2000 sites The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission, 21.11.2018
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester.
- OPR Practice Note PN01 (2021) "*Appropriate Assessment Screening for Development Management*"

3.2 Desktop Research

Desktop research was carried out to gather information on the ecology of the site and surrounding areas. The locations of the Natura 2000 sites within the Zone of Influence (ZoI) of Country Crest ULC, Collinstown, Lusk, Co Dublin, were identified from National Parks and

Wildlife Service (NPWS) online map viewer. Other Natura sites beyond 15km were also reviewed and considered for the potential for the project to have a negative effect.

RECEIVED: 18/12/2024

Water quality data from the EPA was reviewed for the assessment of biological and environmental data collected on waterbodies in Ireland (Accessed December 2024).

Information on the characteristics of the Natura 2000 sites within the potential zone of influence was reviewed from the conservation objectives documents, site synopses and Standard Natura 2000 data forms available on the NPWS website.

3.3 Site ASSESSMENT

A site characterisation assessment was undertaken on the 28th August 2024 to examine the ecological context of the development site, by systematically walking the site and boundaries and determining the habitats present. The habitat survey was undertaken in accordance with the standard methodology outlined in Fossitt's "*A Guide to Habitats in Ireland*", a hierarchical classification scheme based upon the characteristics of vegetation present. The Fossitt system also indicates when there are potential links with Annex I habitats of the E.U. Habitats Directive (92/43/EEC). Cognisance was also taken of the Heritage Council guidelines, "*Best Practice Guidance for Habitat Survey and Mapping*", (Smith *et al.*, 2011).

Bird species and signs of fauna activity were also noted. Particular attention was given to the possible presence of habitats and/or species, which are legally protected under Irish and European legislation and to assessing any potential ecological connectivity with Natura 2000 sites or supplementary or steppingstone habitats of relevance to Natura 2000 sites.

RECEIVED: 28/02/2024

4.0 DESCRIPTION OF PROPOSED DEVELOPMENT

4.1 PROPOSED DEVELOPMENT

Country Crest ULC, wish to apply for Planning Permission for the development of an Anaerobic Digestion (AD) Facility to produce a renewable biomethane gas for direct injection into the national gas grid on a site of circa 7.28 hectares at the townland of Collinstown, Lusk, Co Dublin (GPS Coordinates: 53.547536, -6.168595) (See Figure 4.1).

The development comprises of AD tanks and processing equipment, feedstock storage facilities and equipment, silage storage clamps, digestate management and storage facilities. Carbon dioxide from the production of this biomethane will be captured for reuse in the Irish food industry.

The proposed supporting infrastructure to bedeveloped includes *inter alia*:

- 1 no. 45m diameter combined primary and secondary digestion tank (8.5m high, 7947m³ & 3981m³ respectively) & attached pumping unit,
- 1 no reception tank (5m high, 250 m³) & attached pumping unit,
- 1 no. 32m diameter power digest tank & attached gas sphere (12m high, 4.825m³ & 3130 m³ respectively) & attached pumping unit,
- 1 no digestate separator building (119.5 m^2),
- 1 no. pasteurization unit & hygenization buffer tank,
- 1 no. gas upgrading unit,
- 1 no. gas pre-treatment unit,
- 1 no. gas valve chamber,
- 1 no. gas flare (9m high),
- 1 no. GNI gas injection unit (25.1 m^2) with an underground gas pipeline to the gas grid connection adjacent the site to the west,
- 1 no. combined heat and power unit, 2 no. boiler containers,
- 1 no oxygen compound,
- 1 no heat distribution container,
- 1 no switchboard container,
- 1 no carbon dioxide liquefaction unit,
- 2 no weighbridges & integrated lever arms & access control & attached bio security units,
- 1 no single-storey office and administration building (123 m^2),
- 1 no ESB sub-station (66 m^2),
- 1 no enclosed feedstock reception building (1527 m^2),
- 1 no odour abatement machinery (with 14m high chimney),
- Silage clamps (8m high),
- 1 no machinery shed (309.4 m^2),
- 1 no services building (288.6 m^2),
- 1 no solid digestate storage building (484.1 m^2),
- 2 no covered digestate lagoons,
- Attached pumping building (30 m^2) and attached digestate loading-unloading areas,
- Roof mounted solar arrays / photovoltaic panels,

RECEIVED: 18/12/2024

- All associated car and bicycle parking, internal road layouts, earthen berms, site retaining walls, palisade fencing and boundary treatments, hard surface and bunded areas for housing supporting plant, processing and storage facilities and all associated site works.
- All accessed by the existing Country Crest internal road network which uses as public roadway access point to the L1155 Man o War Road.

Figure 4.1: Location of Proposed Development at Country Crest ULC, Collinstown, Lusk, Co. Dublin

The proposed surface water drainage network will be divided into two catchments within the red line boundary of the proposed development. In Catchement 1, surface water comprised of rainwater runoff from roofs and hardcore areas will be directed to a impermeable detention basin to the south. From here, surface water will pass through a Klargester by-pass interceptor prior to dicharging into an existing drainage ditch along the southern boundary of the site. A hydrobrake will be fitted to restrict the flow of water at a rate of 7.95l/sec. A penstock valve is to be installed upstream of the flow control to stop flow in the event of an emergency. This will be connected to a SCADA alarm system in the event of a leak occurring and to prevent any contaminated surface water from leaving ths site by automatically closing the valve. The detention basin will be sealed. The total attentuation required for Catchment 1 is 1318.6m^3 for the 1 in 30 year return period and 1825.4m^3 for the 1 in 100 year return period which includes the additional increment in accordance with GDSDS requirements. The detention basin will provide a total storage volume of 1841.12m^3.

Surface water comprised of rainwater run-off from roofs and hardstanding areas (paths, roads and lagoons) will b directed to an impermeable detention basin to the south. Surface water from this detention basin will discharge to the drainage ditch to the south and pass through the same interceptor as in catchment 1. The total attenuation volume required for Catchment 2 is 441m^3

for the 1 in 30 year return period and 614.5m^3 for the 1 in 100 year return period which includes the additional increment in accordance with GDSDS requirements. The proposed detention basin 1 provides a total storage volume of 612.5m^3 .

RECEIVED: 19/12/2024

According to the Engineers Report, the allowable outflow for the whole site has been calculated for the 1 in 30 year return period and the 1 in 100 year return period using the GDSDS and is 30.58 l/sec and 37.87 l/sec respectively. The Qbar calculation is based on a SOIL factor of 0.3 which corresponds with Soil Type 2 in the Flood Studies Report. Due to the unfavourable infiltration rates and the limited space available onsite where long-term storage can be provided the allowable outflow from the site will be restricted to Qbar. Qbar for the proposed catchment 1 was calculated as 8.47 l/sec and as 6.101 l/sec for proposed catchment 2, and these will be adopted for the allowable outflow rate.

In-stream works will be required for the installation of two new headwalls within the drainage ditch to the south to facilitate the proposed surface water drainage network. This drainage network is hydrologically connected to the Palmerstown watercourse and ultimately the Rogerstown Estuary SAC and SPA. Mitigation measures will be implemented for the protection of water quality downstream and the proposed methodology are detailed in section 8.

Domestic waste water from the proposed development will be directed to a new package treatment system and percolation area.

The surface and foul water network will be designed and arranged in accordance with the requirements of the GDSDS and the GDRC in conjunction with "Recommendations for Site Development Works for Housing Areas" (current edition) published by the (DOEHLG).

Silage clamps will be located in the middle section of the site between the main concrete yard and the lagoons where, through compaction and fermentation, soiled water will be generated. This effluent will be collected by buried tanks and may be further used as feedstock for the anaerobic digestion process.

There will be no process effluent emissions from the site, with all liquid digestate stored within covered earth lagoons, awaiting collection for landspreading activities. The two lagoons have been designed to ensure the site has sufficient storage capacity for the volume of liquid digestate generated onsite subject to conditions outlined in the Industrial Emissions licence. Digestate would be collected by an appointed contractor and applied within the applicant's and partner farmers lands in the area in accordance with Nutrient Management Plans and the Nitrates Regulations as a matter of good environmental practice. The regulations provide for controls designed to protect groundwater and surface water from impacts due to the application of fertiliser on agricultural lands. Acceptable spreading times are limited, prohibitions on weather and ground conditions are defined and set back distances from waterbodies and wells/springs and limitations for areas of extreme groundwater vulnerability are established.

No existing trees or hedgerows are to be removed as part of this development. A landscape plan has been prepared by Griffin Landscape Architecture. It includes for areas of amenity grassland, native wildflower meadows, wetland planting, new hedgerow and tree planting and a new woodland habitat. The planting schedule will include native and non-native non-invasive species within its design and is as follows. The proposed tree planting will include: *Betula pendula* 'Youngi', *Pinus sylvestris, Quercus robur, Prunus avium,* and *Amelanchier lamarckii*.

Hedgerow planting will include: *Prunus lusitanica, Crataegus monogyna, Ilex aquifolia, Viburnum opulus, Prunus spinosa* and *Corylus avellana*. The typical native woodland planting will include: Mountain Ash (*Sorbus acuparia*), Wild Cherry (*Prunus avium*), Crab Apple (*Malus sylvestris*), Downy Birch (*Betula pubescens*), Holly (*Ilex aquifolium*), Guelder Rose (*Viburnum opulus*), Sessile Oak (*Quercus petraea*), Hazel (*Corylus avellana*), Alder (*Alnus glutinosa*) and Scots Pine (*Pinus sylvestris*). The herbaceous and shrub planting will include: *Rudbeckia* 'Goldstrum', *Calamagrostis* 'Karl Foerester', *Achillea millefolium, Salvia nemorosa* 'Caradonna', *Nepeta x faassemii* 'Walkers Low', *Persicaria amplexicaulis, Hydrangea paniculata, Aster* 'Little Carlow' and *Pittosporum* 'Tom Thumb'. The landscape also includes the addition of logpiles for invertebrates which will increase the diverity of habitats available onsite. This will encourage and increase species diversity and the overal biodiversity of the area.

RECEIVED 18/12/2024

It is the intention of the applicant to use some of the generated biogas to supply electricity and heat to the AD system, offsetting the use of some fossil fuels. It is envisaged that the biogas produced by the plant be collected and stored and subsequently used to create electricity and/or heat energy using a gas engine generator. Heat generated is often used to speed up the AD processes and can also be used for heating buildings. Any excess biomethane produced will be injected into the national grid. A 560 KW capacity duel-fuel boiler (gas and diesel) would be installed to provide heat for the process when the system is initially started and to maintain the heat on occasions when the CHP unit is out of service.

The estimated construction timeframe is approximately 18 months. Construction works would be confined to the proposed development footprint with no works taking place outside the development boundary. As noted above, minor in-stream works will be required within the drainage ditch along the south. There will be no construction works within any other drainage ditch onsite. The proposed development would not require the importation of materials likely to contain invasive species. See Appendix C for site plans and layouts.

The closest Natura 2000 sites with a hydrological connection are Rogerstown Estuary SAC (Site Code: 000208) and the Rogerstown Estuary SPA (Site Code: 004015) located approximately 4.4km to the south-east of the proposed development (see Figure 4.2). The proposed development is also hydrologically connected to the North-west Irish Sea SPA (Site Code: 004236) located approximately 4.9km to the south-east.

RECEIVED 18/12/2024

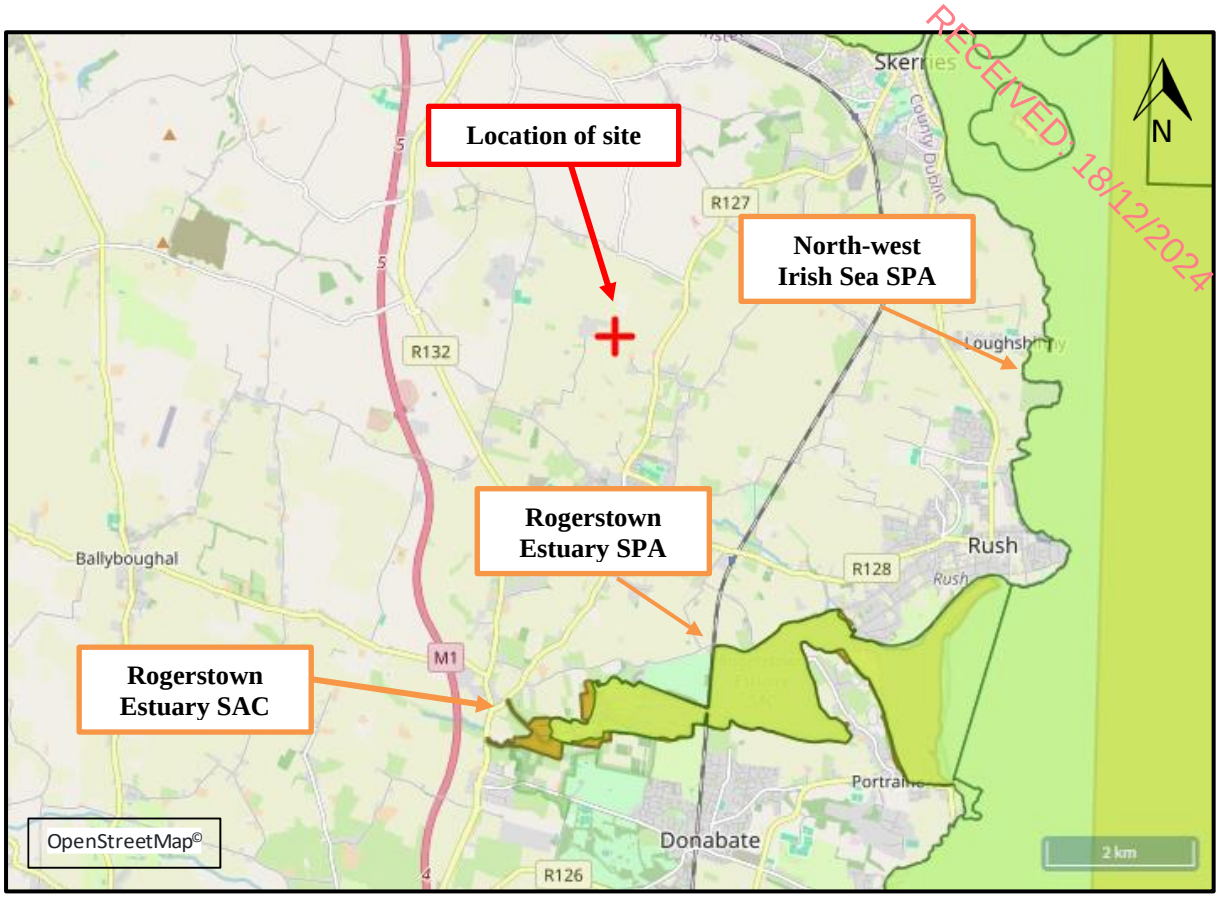


Figure 4.2: Location of Proposed Development and Natura 2000 sites

The following project elements of the proposed development have been examined for relevance to possible effects on the Natura 2000 sites;

- Earthworks & Excavation
- Sediment & Hydrocarbon Runnoff
- Stormwater & Waste Water
- Disturbance to Protected Species
- Impact on Protected Habitats
- Dust and Noise
- Invasive Species

RECEIVED: 18/12/2024

4.2 EXISTING ENVIRONMENT

Figure 4.3: Proposed development location within arable crops habitat

The proposed development is currently comprised of arable land delineated with hedgerows and drainage ditches. The surrounding area is predominantly agricultural farmland and buildings. The existing Country Crest ULC site is to the south. Residential dwellings are dotted along the local road network within the wider environment. There are no mapped watercourses within the red line boundary. The closest mapped watercourse is the Palmerston located approximately 80m to the north. The southern drainage ditch is hydrologically connected to this watercourse.

4.2.1 PERCOLATION TEST

A percolation test has been prepared as part of this planning application. The site is located on a Locally Important Aquifer with low vulnerability. The soil type is surface water gleys and ground water gleys. The subsoil is till derived from Namurian sandstones and shale. The Bedrock type is listed as Dinantian upper impure limestone. A trial hole was dug to a depth of 2.1m as part of this assessment. The excavated trial hole showed three main horizons: 0.4m of gravelly silty/clay humus, 0.9m of gravelly silty/clay and 0.8m of gravelly clay. The percolation test result for surface was 7.22 (noted as surface test passed). The percolation test result for subsurface was 53.22 (noted as subsurface test passed) indicating it is suitable for a septic tank and percolation area (as per EPA Code of Practice 2021).

4.2.2 HABITATS AND FLORA

A site characterisation assessment was undertaken on the 28th August 2024 to examine the ecological context of the development site, by systematically walking the site and boundaries

RECEIVED 18/12/2024

and determining the habitats present. The habitat survey was undertaken in accordance with the standard methodology outlined in Fossitt's "*A Guide to Habitats in Ireland*", a hierarchical classification scheme based upon the characteristics of vegetation present. The Fossitt system also indicates when there are potential links with Annex I habitats of the E.U. Habitats Directive (92/43/EEC). Cognisance was also taken of the Heritage Council guidelines, "*Best Practice Guidance for Habitat Survey and Mapping*", (Smith *et al.*, 2011).

Arable Crops (BC1) is the dominant habitat onsite. It is comprised of Maize (Zea) with some agricultural herbs interspersed. This includes Shepherd's Purse (*Capsella bursa-pastoris*), Redshank (*Persicaria maculosa*), Fat-hen (*Chenopodium album*), Groundsel (*Senecio vulgaris*), Red-dead Nettle (*Lamium purpureum*), Knotgrass (*Polygonum aviculare*), Chamomile (*Chamaemelum nobile*), Speedwell (*Veronica* spp.), Prickly Sowthistle (*Sonchus asper*), Rape (*Brassica napus*) and Ramping Fumitory (*Fumaria muralis*).

Hedgerows (WL1) occur along the site boundaries. They are managed as part of the agricultural land management. They are comprised of Hawthorn (*Crataegus monogyna*), Willow Species (*Salix* spp.), Gorse (*Ulex* spp.), Bramble (*Rubus fruticosus* agg.) and Nettle (*Urtica* spp.).

Recolonising bare ground (ED3) occurs along the boundaries of the site. Plant species recorded include Nettle (*Urtica* spp.), Fat-hen (*Chenopodium album*), Rape (*Brassica napus*), Ramping Fumitory (*Fumaria muralis*), Horsetail (*Equisetum* spp.), Speedwell (*Veronica* spp.), Ivy (*Hedera* spp.), Thistle (*Cirsium* spp.), Wild-oat (*Avena fatua*), Willowherb (*Epilobium* spp.), Bush Vetch (*Vicia sepium*) and Hedge Woundwort (*Stachys sylvatica*).

Drainage ditches (FW4) are found to the north, south, west and around the perimeter of the small field to the north. Some drains were completely dry while others held stagnant water. The drains to the north were approximately 0.5m in width and the substrate was muddy. Scrub and a steep bank obscured much of the northern drain however, intermittent sections revealed stagnant water within. Water was also heard which likely due to an outflow discharge pipe from the farm to the north. The drain to the south was dry within the western portion however, the southern portion contained stagnant water. Thick vegetation potentially concealed any outflow pipe. Local landowner knowledge notes that this drain would typically flow to the east and connect with other existing drains until they reach the Palmerstown watercourse. This drain measures approximately 1-2m in width. This drainage ditch was heavily vegetated. The drain along the west boundary contained stagnant water. The depth was unclear given that the water was slightly turbid with steep and vegetated banks. There was no flow however, local knowledge confirms that this drainage ditch would typically flow in a southern direction and then west, around the existing constructive wetlands and eventually into the Rathmooney watercourse. Species recorded within the drainage ditches include a mix of dry and aquatic species such as Great Willowherb (*Epilobium hirsutum*), Nettle (*Urtica dioica*), Horsetail (*Equisetum* spp.), Creeping Thistle (*Cirsium arvense*), Nightshade (*Solanum* spp.), False Oat-grass (*Arrhenatherum elatius*), Duckweed (*Lemna* spp.), Reed Canary-grass (*Phalaris arundinaceae*) and Watercress (*Nasturtium officinale*). The drainage ditches onsite provide a direct hydrological connection to the Rogerstown Estuary SAC and SPA.

Some areas of **Dry meadows and grassy verges (GS2)** are found along the margins of the arable crops habitat, particularly to the north. The species composition is comprised of False Oat-grass (*Arrhenatherum elatius*), Cocksfoot Grass (*Dactylis glomerata*), Couch Grass (*Elymus repens*), Common Hogweed (*Heracleum sphondylium*), Creeping Thistle (*Cirsium*

arvense), Dock (*Rumex* spp.), Bramble (*Rubus fruticosus* agg.), Nettle (*Urtica* spp.), (*Epilobium* spp.) and Rape (*Brassica napus*). This habitat has links to the Lowland Hay Meadows (*Alcopecurus pratensis, Sanquisorba officinalis*) [6510] however, it is absent of the characteristic high quality and positive indicator species.

RECEIVED: 18/12/2024

Spoil and bare ground (ED2) is mainly located at the proposed site entrance. Species recorded include Groundsel (*Senecio vulgaris*), Knotgrass (*Polygonum aviculare*), Sheperd's Purse (*Capsella bursa-pastoris)*, Broadleaved Plantain (*Plantago major*), Thistle (*Cirsium* spp.), Dandelion (*Taraxacum* agg.) and Ryegrasses (*Lolium* spp.).

Other habitats of note outside the red line boundary include **buildings and artificial surfaces (BL3).** This comprises the road network, hardcore areas and agricultural sheds in proximity to the proposed development.

The majority of habitats identified within the boundary of the site during the assessment were generally considered to be modified and of low conservation value.

The hedgerows are considered of higher ecological importance however, these will be retained with additional planting proposed.

No habitats associated with the Rogerstown Estuary SAC were recorded onsite. No plant species of conservation significance or third schedule invasive plant species were noted during the site assessment.

See Figure 4.4 for map of habitats onsite.

See Table 4.1 for summary for habitats located at and adjacent the proposed development.

Table 4.1: Habitats found in and adjacent to the development site

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	**LEVEL 2**	**LEVEL 3**
B – Cultivated and built land	**BL** – Built Land	**BL3** – Buildings and artificial surfaces
E – Exposed rock and disturbed ground	**ER –** Exposed rock	**ED2** – Spoil and bare ground
		ED3 – Recolonising bare ground
F – Freshwater	**FW** – Watercourses	**FW4** – Drainage Ditches
W – Woodland and scrub	**WL** – Linear woodland / scrub	**WL1** – Hedgerows
B – Cultivated and built land	**BC –** Cultivated land	**BC1 –** Arable crops
G – Grassland and marsh	**GS –** Semi-natural grassland	**GS2 –** Dry meadows and grassy verges

RECEIVED: 18/12/2024

Figure 4.4: Habitat map

RECEIVED: 18/12/2024

4.2.3 FAUNA

Bird species noted during the site walkover included Swallow (*Hirundo rustica*), Robin (*Erithacus rubecula*), Blackbird (*Turdus merula*), Rook (*Corvus frugilegus*), Buzzard (*Buteo buteo*) and Woodpigeon (*Columba palumbus*).

No bird species is red listed while Swallow are amber listed under the BoCCI classification. None of the bird species recorded are listed under Annex I of the E.U. Birds Directive.

There was no evidence of mammals, including protected species within or adjacent the red line boundary of the site.

The proposed development would not offer suitable breeding or nesting habitat for the qualifying interest species of the Rogerstown Estuary SPA as the site is comprised of modified arable crops habitat. While it is unlikely given that the majority of the qualifying interests are wetland birds, some are associated within inland habitats and/or feed on invertebrates. The qualifying interests of this SPA were not recorded within the redline boundary or adjacent habitats and would most likely find more suitable habitat within the boundary of the SPA. A deterioration in water quality could have an indirect impact on the qualifying interests, particularly those that feed on freshwater and coastal species.

Fauna typical of that found throughout the rest of Ireland which would be expected to be found in the area would include; Bat species, Badger (*Meles meles*), Otter (*Lutra lutra*), Fox (*Vulpes vulpes*), Pine Marten (*Martes martes*), Stoat (*Mustela erminea hibernica*), American Mink (*Mustela vison*), Common Frog (*Rana temporaria*), Hedgehog (*Erinus europaeus*), Red Squirrel (*Sciurus vulgaris*), Grey Squirrel (*Sciurus carolinensis*), Wood Mouse (*Apodemus sylvaticus*), Pygmy Shrew (*Sorex minutus*) and Brown Rat (*Rattus norvegicus*).

4.2.3 DESKTOP RECORDS

In addition to the site walkover, flora and fauna records were reviewed on the National Biodiversity Data Centre (NBDC) website for the proposed development site and vicinity.

No protected plant species under the Flora (Protection) Order, 2022 (S.I. No. 235 of 2022) were recorded within the 10km square (Tetrad – O25) in which the proposed development site. This includes: Meadow Barley (*Hordeum secalinum*). There are no records of this species within or in proximity of the red line boundary of the site. This is a species associated with damp grassland which does not occur onsite.

Six invasive plant species listed in the Third Schedule of the European Communities Birds and Natural Habitats) Amendment (S.I. No. 355 of 2015) of Regulations 2011-2015 were recorded within the 10km square (Tetrad – O25); Rhododendron ponticum, and Indian Balsam (*Impatiens glandulifera*), Wireweed (*Sargassum muticum*), Water Fern (*Azolla filiculoides*), Sea-buckthorn (*Hippophae rhamnoides*) and Three-cornered Garlic (*Allium triquetrum*).

Endangered flora species of note include Meadow Barley (*Hordeum secalinum*), Round-leaved Crane's-bill (*Geranium rotundifolium*) and Green-winged Orchid (*Orchis morio*).

RECEIVED: 18/12/2024

Fauna records for the previous thirty years were reviewed on the NBDC website for the 10km square (Tetrad – O25) in which the proposed development is located. Bird species of note include Arctic Tern (*Sterna paradisaea*), Barn Owl (*Tyto alba*), Swallow (*Hirundo rustica*), Barnacle Goose (*Branta leucopsis*), Black Guillemot (*Cepphus grylle*), Bar-tailed Godwit (*Limosa lapponica*), Black-headed Gull (*Larus ridibundus*), Black-legged Kittiwake (*Rissa tridactyla*), Black-tailed Godwit (*Limosa limosa*), Brent Goose (*Branta bernicla*), Coot (*Fulica atra*), Goldeneye (*Bucephala clangula*), Grasshopper Warbler (Locustella naevia), Greenshank (*Tringa nebularia*), Guillemot (*Uria aalge*), Kestrel (*Falco tinnunculus*), Kingfisher (*Alcedo atthis*), Linnet (*Carduelis cannabina*), Pochard (*Aythya ferina*), Quail (*Coturnix coturnix*), Redshank (*Tringa totanus*), Sandpiper (*Actitis hypoleucos*), Scoter (*Melanitta nigra*), Shelduck (*Tadorna tadorna*), Snipe (*Gallinago gallinago*), Starling (*Sturnus vulgaris*), Swift (*Apus apus*), Tern (*Sterna hirundo*), Corn Crake (*Crex crex*), Dunlin (*Calidris alpina*), Curlew (*Numenius arquata*), Marsh Harrier (*Circus aeruginosus*), Oystercatcher (*Haematopus ostralegus*), *scirpaceus*), Teal (*Anas crecca*), Tree Sparrow (*Passer montanus*), Wigeon (*Anas penelope*), Woodcock (*Scolopax rusticola*), Golden Plover (*Pluvialis apricaria*), Shag (*Phalacrocorax aristotelis*), Gadwall (*Anas strepera*), Great Black-backed Gull (*Larus marinus*), Great Cormorant (*Phalacrocorax carbo*), Great Crested Grebe (*Podiceps cristatus*), Great Northern Diver (*Gavia immer*), Great Skua (*Stercorarius skua*), Greater Scaup (*Aythya marila*), Greater White-fronted Goose (*Anser albifrons*), Grey Partridge (*Perdix perdix*), Grey Plover (*Pluvialis squatarola*), Hen Harrier (*Circus cyaneus*), Herring Gull (*Larus argentatus*), House Martin (*Delichon urbicum*), House Sparrow (*Passer domesticus*), Jack Snipe (*Lymnocryptes minimus*), Lesser Black-backed Gull (*Larus fuscus*), Lesser Whitethroat (*Sylvia curruca*), Little Egret (*Egretta garzetta*), Little Grebe (*Tachybaptus ruficollis*), Little Gull (*Larus minutus*), Little Tern (*Sternula albifrons*), Long-tailed Duck (*Clangula hyemalis*), Mallard (*Anas platyrhynchos*), Manx Shearwater (*Puffinus puffinus*), Mediterranean Gull (*Larus melanocephalus*), Merlin (*Falco columbarius*), Mew Gull (*Larus canus*), Mute Swan (*Cygnus olor*), Northern Goshawk (*Accipiter gentilis*), Northern Lapwing (*Vanellus vanellus*), Yellowhammer (*Emberiza citrinella*), Northern Pintail (*Anas acuta*), Northern Shoveler (*Anas clypeata*), Northern Wheatear (*Oenanthe oenanthe*), Peregrine Falcon (*Falco peregrinus*), Razorbill (*Alca torda*), Red Kite (*Milvus milvus*), Red Knot (*Calidris canutus*), Red-breasted Merganser (*Mergus serrator*), Red-throated Diver (*Gavia stellata*), Ringed Plover (*Charadrius hiaticula*), Rock Pigeon (*Columba livia*), Roseate Tern (*Sterna dougallii*), Ruff (*Philomachus pugnax*), Sand Martin (*Riparia riparia*), Sandwich Tern (*Sterna sandvicensis*), Short-eared Owl (*Asio flammeus*), Sky Lark (*Alauda arvensis*), Slavonian Grebe (*Podiceps auritus*), Spotted Flycatcher (*Muscicapa striata*), Stock Pigeon (*Columba oenas*), Tufted Duck (*Aythya fuligula*), Twite (*Carduelis flavirostris*), Water Rail (*Rallus aquaticus*) and Whooper Swan (*Cygnus cygnus*).

Fauna of note include the protected species Common Frog (*Rana temporaria*), Smooth Newt (*Lissotriton vulgaris*), Basking Shark (*Cetorhinus maximus*), Common Lizard (*Zootoca vivipara*), Common Seal (*Phoca vitulina*), Grey Seal (*Halichoerus grypus*), Minke Whale (*Balaenoptera acutorostrata*), Northern Bottlenose Whale (*Hyperoodon ampullatus*), Striped Dolphin (*Stenella coeruleoalba*), Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Badger (*Meles meles*), Pygmy Shrew (*Sorex minutus*), Otter (*Lutra lutra*), Lesser Noctule (*Nyctalus leisleri*), Nathusius's Pipistrelle (*Pipistrellus nathusii*), Pine Marten (*Martes martes*), Hedgehog (*Erinaceus europaeus*), Pipistrelle (*Pipistrellus pipistrellus sensu lato*) and Soprano Pipistrelle (*Pipistrellus pygmaeus*).

High/Medium impact invasive species recorded are Flatworm (*Arthurdendyus triangulates*) and Rabbit (*Oryctolagus cuniculus*). Species listed under the Third Schedule of the European

Communities Birds and Natural Habitats) Amendment (S.I. No. 355 of 2015) of Regulations 2011-2015 include Greylag Goose (*Anser anser*) and Grey Squirrel (*Sciurus carolinensis*).

RECEIVED: 18/12/2024

4.3 WATER ENVIRONMENT

4.3.1 WATERCOURSES WITHIN THE VICINITY AND WATER QUALITY STATUS

The proposed development is located within the Palmerstown sub-catchment (Palmerstown_SC_010), part of the Nanny-Delvin catchment (Catchment ID: 08). The closest mapped watercourse is the Palmerstown (EPA Code: 08P03 – Order 1) located approximately 80m to the north of the proposed development. The Palmerstown flows in a mostly south-easterly direction for approximately 5km where it enters the Rogerstown Estuary and becomes part of the Rogerstown Estuary SAC and SPA. From here, the Rogerstown Estuary enters the Northwestern Irish Sea. The Rathmooney (EPA code: 08R18 – Order 1) is located approximately 447m to the south-west of the proposed development. It flows in a mostly south-easterly direction for approximately 4.9km downstream where it joins the Palmerstown confluence. The Collinstown (EPA Code: 08C23 – Order 1) is located approximately 1.1km to the south-eat of the development. It joins the Palmerstown confluence downstream. Other watercourses within the area include the Oberstown (EPA Code: 08O02- Order 1) located approximately 996m to the west. It flows in a south-westerly direction for approximately 1.9km where it enters the Ballough (Stream) EPA Code: 08B09 – Order 3). The Ballough continues until it enters Rogerstown Estuary.

There are no mapped watercourses within the development boundary. Land drains are located along the perimeter of the proposed development site. The southern drain flows eastwards for 218m where it enters into the Palmerstown watercourse. The western drain flows south and the westwards, around the existing constructive wetlands. It follows the land drain and eventually enters the Rathmooney watercourse. Therefore, the drainage ditches onsite provide a direct hydrological connection between the Rogerstown Estuary SAC and SPA. See Figure 4.5 for map of watercourses surrounding the proposed development.

There are no water quality measures set for protected habitats listed within the Rogerstown Estuary SAC. The modification of hydrological flow or physical alteration of waterbodies for agriculture, residential/recreation activities/structures, agricultural activities and marine aquaculture generating marine pollution are listed as some of the threats and pressures to these habitats.

While there are no water quality attributes listed for the qualifying interests of the Rogerstown Estuary SPA, a deterioration in water quality can have an indirect impact by affecting prey populations.

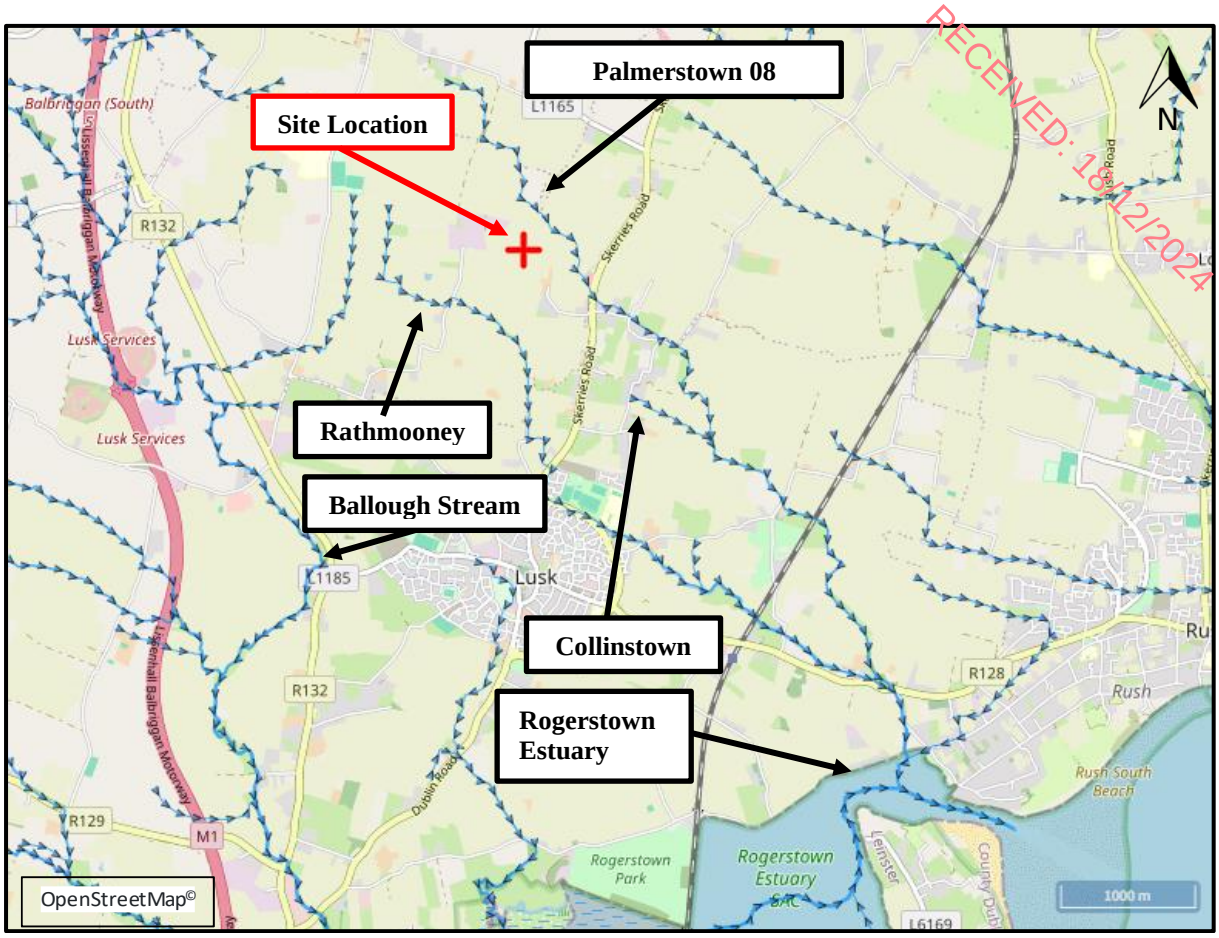


Figure 4.5: Watercourses surrounding the proposed development

The Environmental Protection Agency (EPA) does not undertake surface water monitoring within the Palmerstown 010 Sub Catchment. The most recent WFD Status for the Palmerstown 010 river was assessed by a modelling technique which yielded a Poor value, albeit with a low confidence. The risk of the Palmerstown 010 failing to meet its WFD objectives by 2027 is currently under review.

Significant pressures have been identified for waterbodies that are At Risk of not meeting their water quality objectives under the Water Framework Directive. Within the Palmerstown_SC_010 subcatchment, pressures to a number of waterbodies have been identified, including impacts from urban run-off or diffuse urban pressures and from hydromorphology, which include sediment/siltation pollution and alteration to the physical environment. None of these pressures have been identified at the Palmerstown 08 stream or to any watercourse which would be considered downstream from the proposed development.

The Environmental Protection Agency (EPA) does undertake surface water monitoring along the Ballough Stream. The results for the nearest monitoring stations with available information (as per Table 4.2) for the period 2005 – 2024 are summarised in Figure 4.6 below for indicative purposes. As can be seen in Figure 4.6 below, the Ballough Stream is mainly achieving a water quality status of between Q3 (poor) to Q3-4 (moderate) in recent years.

EPA comments on the most recent monitoring results for the Ballough Stream are as follows "*The Ballough Stream maintained moderate ecological condition in July 2024 with evidence*

of heavy siltation. The river was also very turbid on the day of survey. Nutrient enrichment was also evident."

RECEIVED:18/12/2024

Table 4.2: Monitoring Stations on the Ballough Stream within the vicinity of the development

STATION NO.	STATION LOCATION	EASTING	NORTHING	APPROX. LOCATION RELATIVE TO SITE
RS08B031600	Corduff Br	319910.4	252252.45	4.7km SW

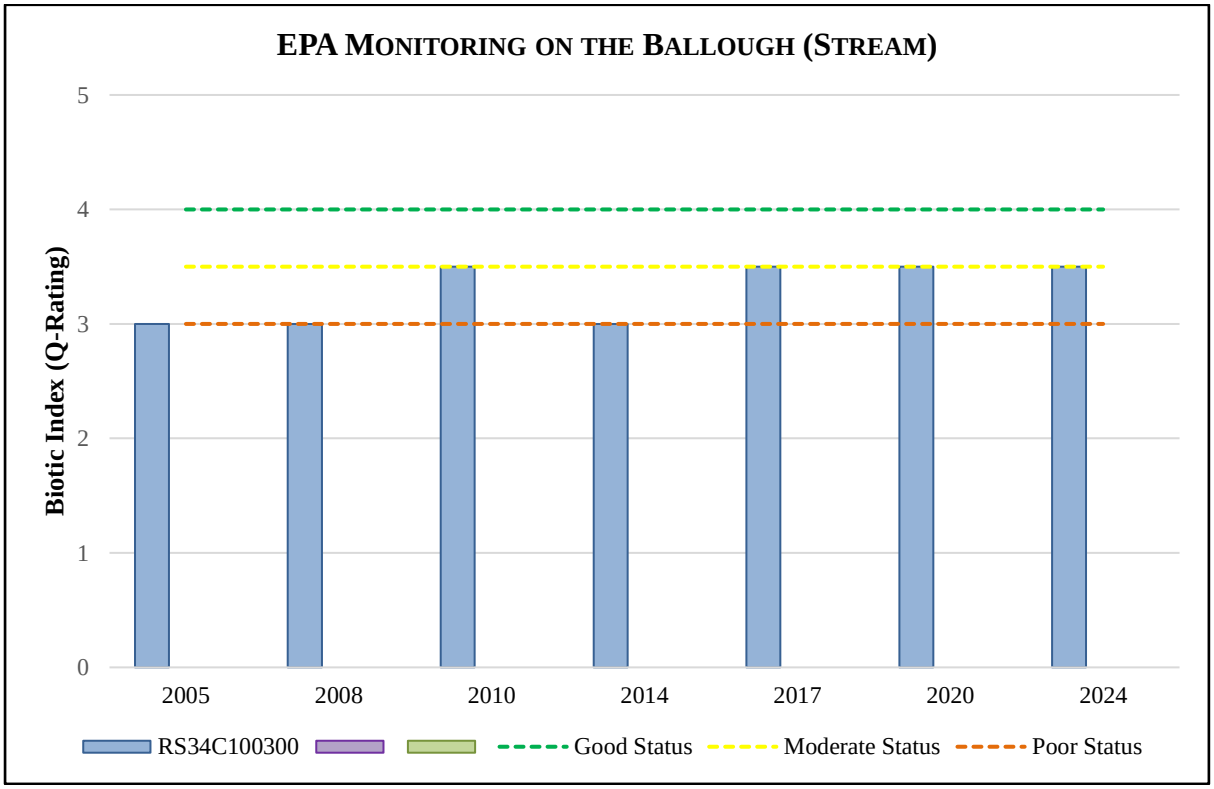


Figure 4.6: EPA Ecological Monitoring of the Ballough Stream from 2005 – 2024

In addition to the water quality monitoring along the Ballough Stream, the status of transitional and coastal waterbodies has been assessed.

The results for the transnational and coastal waters surrounding the proposed development site as listed in Table 4.3 and shown in Figure 4.7 below.

Table 4.3: Potentially Dependent Transitional and Coastal Waterbodies

TRANSITIONAL AND COASTAL WATERBODIES				
NAME	ID	TYPE	STATUS	DISTANCE
Rogerstown Estuary	IE_EA_050_0100	Transitional	Intermediate	4.3km SE
Northwestern Irish Sea (HA 08)	IE_EA_020_0000	Coastal	Unpolluted	5.3km E

RECEIVED: 18/12/2024

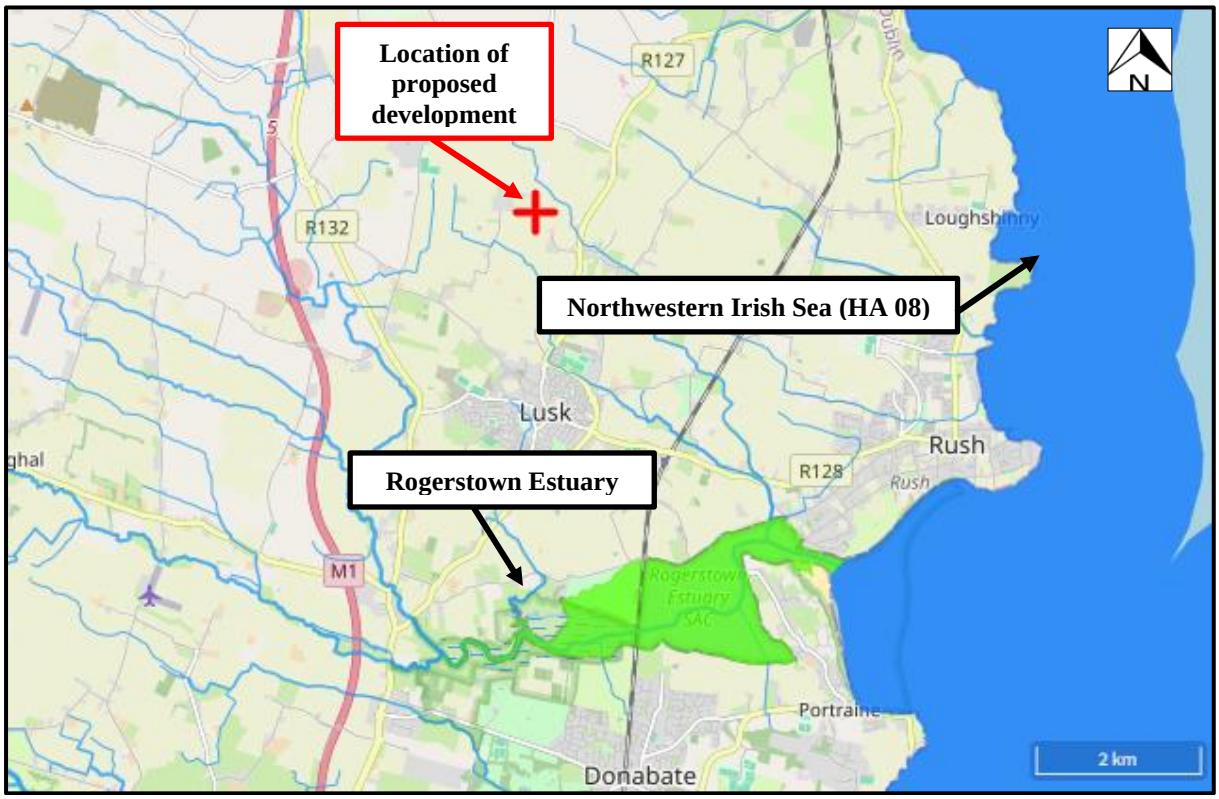


Figure 4.7: Transitional and coastal waters

4.3.2 PRELIMINARY FLOOD RISK ASSESSMENT

According to the Preliminary Flood Risk Assessment (PFRA) Mapping prepared by the OPW, the development site is not located within an area of fluvial flooding or pluvial flooding. However, it should be noted that this mapping system is based on broad-scale simple analysis and may not be accurate for a specific location. There is no history of flooding at the proposed development.

5. EUROPEAN SITES (NATURA 2000 SITES)

RECEIVED: 18/12/2024

In assessing the zone of influence of this project upon European sites, the following factors must be considered:

- Potential impacts arising from the project
- The location and nature of European sites
- Pathways between the development and European sites

There is no standard radius that can be used to select which European sites are to be analysed. This can only be determined by looking at the zone of influence of the project at hand.

Table 5.1.1: Eight Special Protection Area (SPA) sites occur within the Zone of Influence (ZoI) of the proposed development. Five Special Area of Conservation (SAC) sites occur within the zone of influence of the development site and are shown in the following table.

TABLE 5.1.1: NATURA 2000 SITES WITH ZOI				
SITE NAME	DESIGNATION	SITE CODE	DISTANCE	SCREENING
Rogerstown Estuary	SAC	000208	4.4km SE	Screened in
Rogerstown Estuary	SPA	004015	4.4km SE	Screened In
North-west Irish Sea	SPA	004236	4.9km E	Screened In
Skerries Islands	SPA	004122	5.4km NE	Screened Out
Rockabill to Dalkey Island	SAC	003000	6.4km E	Screened Out
Rockabill	SPA	004014	7.3km NE	Screened Out
Malahide Estuary	SAC	000205	7.8km S	Screened Out
Malahide Estuary	SPA	004025	7.8km S	Screened Out
Lambay Island	SPA	004069	10.3km SE	Screened Out
Lambay Island	SAC	000204	10.5km SE	Screened Out
River Nanny Estuary and Shore	SPA	004158	11.8km N	Screened Out
Baldoyle Bay	SAC	000199	14km S	Screened Out
Baldoyle Bay	SPA	004016	14km S	Screened Out

Maps detailing European sites within the Zone of Influence (ZoI) of the proposed site are included as Appendix A below.

For this assessment, the site considered to be within the zone of influence of the proposed development is Rogerstown Estuary SAC (Site code: 000208) and Rogerstown Estuary SPA (Site code: 004015) due to a direct hydrological connectivity with the proposed development site. While the risk is considered low, given the direct hydrological connection, the North-west Irish Sea SPA (Site Code: 004236) is also screened in as a precaution. In-stream works are required within an existing drainage ditch onsite. This drainage ditch is hydrologically connected to the aforementioned Natura 2000 sites. Therefore, these sites have been screened in to assess for any likely significant effects on qualifying interests and due to a deterioration in water quality.

The Natura 2000 Sites screened out and rational are as follows;

RECEIVED: 18/12/2024

The Skerries Islands SPA (Site Code: 004122) is located approximately 5.4km from the proposed development site. There is a weak hydrological connection via a drainage ditch onsite and the Irish Sea. This SPA is also not located adjacent to the Rogerstown Estuary, where the Rathmooney and Palmerstown watercourses enter the Irish Sea. The proposed development does not support the breeding and nesting habitats for the qualifying interests of this SPA. The habitats onsite are mostly comprised of arable crops. While the site would contain invertebrates in which some of the qualifying interests could feed upon, their diets mainly consist of molluscs, fish, freshwater and coastal habitats. In-stream works will be required within an onsite drainage ditch. Given the weak/remote hydrological connection and dilution effect, an impact on water quality would not be anticipated. All waste water will be treated onsite via a new waste water treatment system while only clean surface water will enter the drainage ditch. Given the distance, absence of associated habitats, nature and scale of the works, the dilution effect, the Skerries Island SPA has been screened out.

The proposed development is located approximately 6.4km from the Rockabill to Dalkey Island SAC (Site Code: 003000). This SPA is located a significant distance from where the Rathmooney and Palmerstown watercourses enter the Irish Sea. It is a weak/remote hydrological connection via the Irish Sea. The proposed development does not support the qualifying interest (Harbour Porpoise) of this SAC given that the habitats within the development boundary are terrestrial. The habitat Reefs [1170] for which this SAC has been designated is not located within the red line boundary. Given the distance, absence of associated habitats, nature and scale of the works, the dilution effect, the Rockabill to Dalkey Island SAC has been screened out.

Rockabill SPA (Site Code: 004014) is located approximately 7.3km from the proposed development site. There is a weak hydrological connection via the Irish Sea. This SPA is also not located adjacent to the Rogerstown Estuary, where the Rathmooney and Palmerstown watercourses enter the Irish Sea. The proposed development would not support the qualifying interests of this SPA as they are associated with coastal habitats. In-stream works will be required within an onsite drainage ditch. Given the weak/remote hydrological connection and dilution effect, an impact on water quality would not be anticipated. All waste water will be treated onsite via a new waste water treatment system while only clean surface water will enter the drainage ditch. Given the distance, absence of associated habitats, nature and scale of the works, the dilution effect, this SPA has been screened out.

The proposed development is located approximately 7.8km from the Malahide Estuary SPA (Site Code: 004025) and the Malahide Estuary SAC (Site Code: 000205). There is no direct hydrological connection between the proposed development and these Natura 2000 sites. In addition, the proposed development would not contain or support the habitats and species for which these sites have been designated. The proposed development could offer limited foraging habitat for some of the qualifying interests of the SPA however, given the availability of more suitable habitats in proximity to the protected site, it is unlikely these species would utilise the site. None of the qualifying interests were recorded during the site survey. Given the distance, absence of associated habitats, nature and scale of the works, the dilution effect, sites have been screened out.

Lambay Island SPA (Site Code: 004069) and Lambay Island SAC (Site Code: 000204 are located approximately 10.3 and 10.5km from the proposed development site. There is a weak

hydrological connection via the Irish Sea. The proposed development would not support the qualifying interests or contain the habitats for which these Natura 2000 sites have been designated. No coastal habitats occur within or in close proximity to the red line boundary. Given the weak/remote hydrological connection and dilution effect, an impact on water quality would not be anticipated. All waste water will be treated onsite via a new waste water treatment system while only clean surface water will enter the drainage ditch. Given the distance, absence of associated habitats, nature and scale of the works, the dilution effect, this SPA has been screened out.

RECEIVED: 18/12/2024

The proposed development is located approximately 11.8km from the River Nanny Estuary and Shore SPA (Site Code: 004158). There is a weak hydrological connection via the Irish Sea. The modified habitats onsite would not support the qualifying interests of this protected site. Given the weak/remote hydrological connection and dilution effect, an impact on water quality would not be anticipated. All waste water will be treated onsite via a new waste water treatment system while only clean surface water will enter the drainage ditch. Given the distance, absence of associated habitats, nature and scale of the works, the dilution effect, this SPA has been screened out.

The Baldoyle Bay SAC (Site Code: 000199) and Baldoyle Bay SPA (Site Code: 004016) are located approximately 14km to the south of the proposed development. There is a weak hydrological connection via the Irish Sea. The modified habitats onsite would not support the qualifying interests of this protected site. Given the weak/remote hydrological connection and dilution effect, an impact on water quality would not be anticipated. All waste water will be treated onsite via a new waste water treatment system while only clean surface water will enter the drainage ditch. Given the distance, absence of associated habitats, nature and scale of the works, the dilution effect, this SPA has been screened out

Due to the considerable dilution effect of coastal waters and the hydrological distance these SACs and SPAs have been screened out.

There is no direct hydrological connection between the proposed development site and any other Natura 2000 site within the potential zone of influence. Therefore, it is not anticipated that the proposed development would have the potential to impact upon any other Natura 2000 Site.

5.1 ROGERSTOWN ESTUARY SAC (SITE CODE: 000208)

Rogerstown Estuary is situated about 2km north of Donabate in Co. Dublin. It is a relatively small, narrow estuary separated from the sea by a sand and shingle bar. The estuary is divided by a causeway and narrow bridge, built in the 1840s to carry the Dublin-Belfast railway line. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

TABLE 5.1.2: ANNEX I HABITATS	
CODE	**DESCRIPTION**
1130	Estuaries
1140	Tidal Mudflats and Sandflats

TABLE 5.1.2: ANNEX I HABITATS	
CODE	**DESCRIPTION**
1310	*Salicornia* and other annuals colonising mud and sand
1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
1410	Mediterranean salt meadows (*Juncetalia maritimi*)
2120	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes) *

RECEIVED: 18/11/2024

* *denotes a priority habitat*

The conservation objectives for the SAC site are to maintain or restore the favourable conservation condition of the qualifying interests. An excerpt from the Natura 2000 Data Form for the Rogerstown Estuary SAC is included below, while further details are available within the site's site synopsis (2013);

"The estuary drains almost completely at low tide. The intertidal flats of the outer estuary are mainly of sands, with soft muds in the north-west sector and along the southern shore. Associated with these muds are stands of Common Cordgrass (*Spartina anglica*). Green algae (mainly *Enteromorpha spp*. and *Ulva lactuca*) are widespread and form dense mats in the more sheltered areas. The intertidal angiosperm Beaked Tasselweed (*Ruppia maritima*) grows profusely in places beneath the algal mats. The Lugworm (*Arenicola marina*) is common in the outer estuary and large Mussel beds (*Mytilus edulis*) occur at the outlet to the sea. The area of intertidal flats in the inner estuary is reduced as a result of the local authority refuse tip on the north shore. The sediments are mostly muds, which are very soft in places. Common Cordgrass is widespread in parts, and in summer, dense green algal mats grow on the muds. In the extreme inner part, the estuary narrows to a tidal river."

RECEIVED: 18/12/2024

Figure 5.1: Rogerstown Estuary SAC

Rogerstown Estuary SAC Conservation Objectives

The Habitats Directive requires the Appropriate Assessment process to assess the potential impacts of the development "in *view of the site's conservation objectives*". Site specific conservation objectives (SSCOs) for the qualifying interests of the Rogerstown Estuary SAC are provided in the table below, where available from the NPWS document "*Conservation Objectives: Rogerstown Estuary SAC (Site code: 000208)* (NPWS, 2013).

RECEIVED: 18/12/2024

TABLE 5.1.3 CONSERVATION OBJECTIVES OF THE ROGERSTOWN ESTUARY SAC		
ATTRIBUTE	**MEASURE**	**TARGET**
[1130] Estuaries		
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.
Community distribution	Hectares	Maintain the extent of the *Zostera*-dominated community and the Mytilus edulis-dominated community, subject to natural processes
Community structure: *Zostera* density	Shoots/m²	Conserve the high quality of the *Zostera*-dominated community, subject to natural processes
Community structure: *Mytilus edulis* density	Individuals/m²	Conserve the high quality of the *Mytilus edulis* dominated community, subject to natural processes
Community distribution	Hectares	Conserve the following community types in a natural condition: Sand to coarse sediment with *Nephtys cirrosa* and *Scolelepis squamata* community complex; Estuarine sandy mud to mixed sediment with *Tubificoides benedii*, *Hediste diversicolor* and *Peringia ulvae* community complex
[1140] Mudflats and sandflats not covered by seawater at low tide		
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes
Community extent	Hectares	Maintain the extent of the *Zostera*-dominated community and the Mytilus edulis-dominated community, subject to natural processes
Community structure: *Zostera* density	Shoots/m²	Conserve the high quality of the *Zostera*-dominated community, subject to natural processes
Community structure: *Zostera* density	Shoots/m²	Conserve the high quality of the *Zostera*-dominated community, subject to natural processes
Community structure: *Mytilus edulis* density	Individuals/m²	Conserve the high quality of the *Mytilus edulis* dominated community, subject to natural processes
Community distribution	Hectares	Conserve the following community types in a natural condition: Sand to coarse sediment with *Nephtys cirrosa* and *Scolelepis squamata* community complex; Estuarine sandy mud to mixed sediment with *Tubificoides benedii*, *Hediste diversicolor* and *Peringia ulvae* community complex
[1310] *Salicornia* and other annuals colonising mud and sand		

RECEIVED: 18/12/2024

TABLE 5.1.3 CONSERVATION OBJECTIVES OF THE ROGERSTOWN ESTUARY SAC		
ATTRIBUTE	**MEASURE**	**TARGET**
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Rogerstown Estuary 37.2ha
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Allow creek and pan structure to develop, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% area outside creeks vegetated
Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1% where it is known to occur
[1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)		
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Rogerstown Estuary 37.2ha
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Allow creek and pan structure to develop, subject to natural processes, including erosion and succession

RECEIVED: 18/12/2024

TABLE 5.1.3 CONSERVATION OBJECTIVES OF THE ROGERSTOWN ESTUARY SAC		
ATTRIBUTE	**MEASURE**	**TARGET**
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% area outside creeks vegetated
Vegetation composition: typical species and subcommunities	Percentage cover at a representative sample of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1% where it is known to occur
[1410] Mediterranean salt meadows (*Juncetalia maritimi*)		
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Rogerstown Estuary2.18ha
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height Centimetres Maintain structural variation in the sward	Centimetres	Maintain structural variation in the sward

RECEIVED: 18/12/2024

TABLE 5.1.3 CONSERVATION OBJECTIVES OF THE ROGERSTOWN ESTUARY SAC		
ATTRIBUTE	**MEASURE**	**TARGET**
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with characteristic species listed in SMP (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)		
Habitat area	Hectares	Area increasing, subject to natural processes including erosion and succession. For sub-sites mapped: Rush - 1.25ha, Portrane - 1.31ha
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation composition: plant health of foredune grasses	Percentage cover	95% of marram grass (*Ammophila arenaria*) and/or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present)
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities dominated by marram grass (*Ammophila arenaria*) and/or lymegrass (*Leymus arenarius*)
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover
[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)		
Habitat area	Hectares	Area increasing, subject to natural processes including erosion and succession. For sub-sites mapped: Rush - 3.24ha; Portrane - 5.13ha.
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes

RECEIVED: 18/12/2024

TABLE 5.1.3 CONSERVATION OBJECTIVES OF THE ROGERSTOWN ESTUARY SAC		
ATTRIBUTE	**MEASURE**	**TARGET**
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: bare ground	Percentage	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes
Vegetation structure: sward height	Centimetres	Maintain structural variation within sward
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with typical species listed in Ryle et al. (2009)
Vegetation composition: negative indicator species (including *Hippophae rhamnoides*)	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control

RECEIVED: 18/12/2024

Rogerstown Estuary SAC Conservation Status

According to the Habitat's Directive, favourable conservation status of a habitat is achieved when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable as defined below.

According to the Habitat's Directive, favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The conservation statuses for the qualifying interests of Rogerstown Estuary SAC are outlined below.

TABLE 5.1.4: CONSERVATION STATUS OF QUALIFYING INTERESTS

CODE	QUALIFYING INTEREST	NATIONAL CONSERVATION STATUS*
1130	Estuaries	Inadequate
1140	Tidal Mudflats and Sandflats	Inadequate
1310	*Salicornia* and other annuals colonising mud and sand	Favourable
1330	Atlantic Salt Meadows	Inadequate
1410	Mediterranean Salt Meadows	Inadequate
2120	Marram Dunes (White Dunes)	Inadequate
2130	Fixed Dunes (Grey Dunes)	Favourable

**Sourced from the Status of EU Protected Habitats and Species in Ireland (NPWS, 2019b and 2019c)*

5.2 ROGERSTOWN ESTUARY SPA (SITE CODE: 004015)

The site comprises a relatively small estuarine system in north County Dublin. It receives freshwater from the Ballyboghil and Ballough rivers, both of which flow through an intensive agricultural catchment. It is a funnel shaped estuary, extending for about 6 km from east to west and up to 2 km at its widest. It has a wide salinity range, from full sea water to near full fresh water. The estuary is bisected by a causeway and bridge which carries the Dublin-Belfast railway line. A sandy peninsula stretches across the outer part of the estuary, restricting water

RECEIVED: 18/12/2024

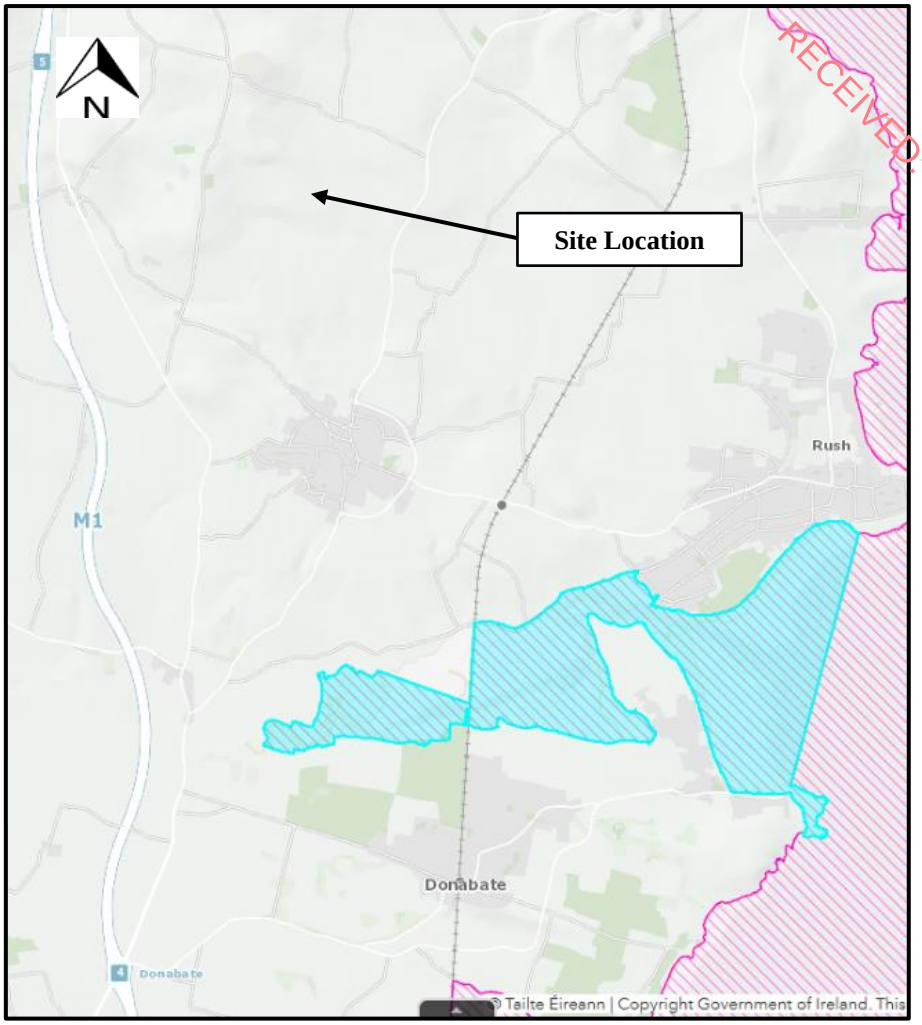
flow to a channel of c.200 m. In addition to salt marsh and sand dune habitats, some agricultural fields which adjoin the estuary are included in the site, as these have ornithological or botanical interests. A section of shallow marine water is included in the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species:

TABLE 5.2.1: CONSERVATION INTERESTS OF ROGERSTOWN ESTUARY SPA		
SPECIAL CONSERVATION INTERESTS		
CODE	COMMON NAME	SCIENTIFIC NAME
A043	Greylag Goose	*Anser anser*
A046	Light-bellied Brent Goose	*Branta bernicla hrota*
A048	Shelduck	*Tadorna tadorna*
A130	Oystercatcher	*Haematopus ostralegus*
A137	Ringed Plover	*Charadrius hiaticula*
A141	Grey Plover	*Pluvialis squatarola*
A143	Knot	*Calidris canutus*
A149	Dunlin	*Calidris alpina*
A156	Black-tailed Godwit	*Limosa limosa*
A162	Redshank	*Tringa totanus*
A999	Wetland and Waterbirds	

An excerpt from the site's Site Synopsis (NPWS, 2014) is included below;

"At low tide extensive intertidal sand and mud flats are exposed and these provide the main food resource for the wintering waterfowl that use the site. The intertidal flats of the estuary are mainly of sands, with soft muds in the northwest sector and along the southern shore. Associated with these muds are stands of Common Cord-grass (*Spartina anglica*). Green algae (mainly *Ulva spp.*) are widespread and form dense mats in the more sheltered areas. The intertidal vascular plant Beaked Tasselweed (*Ruppia maritima*) grows profusely in places beneath the algal mats and is grazed by herbivorous waterfowl (notably Light-bellied Brent Goose and Wigeon). Salt marsh fringes parts of the estuary, especially its southern shores. Common plant species of the saltmarsh include Sea Rush (*Juncus maritimus*), Sea Purslane (*Halimione portulacoides*) and Common Saltmarsh-grass (*Puccinellia maritima*). Rogerstown Estuary SPA is an important link in the chain of estuaries on the east coast. It supports an internationally important population of Light-bellied Brent Goose and nationally important populations of a further 10 species. The presence of Little Egret and Golden Plover is of note as these species are listed on Annex I of the E.U. Birds Directive. Rogerstown Estuary is also a Ramsar Convention site, and part of Rogerstown Estuary SPA is designated as a Statutory Nature Reserve and a Wildfowl Sanctuary."



RECEIVED: 18/12/2024

Figure 5.2: Rogerstown Estuary SPA

Rogerstown Estuary SPA Conservation Objectives

The Habitats Directive requires the Appropriate Assessment process to assess the potential impacts of the development "in *view of the site's conservation objectives*". Site specific conservation objectives (SSCOs) for the qualifying interests of the Rogerstown Estuary SPA are provided in the table below, where available from the NPWS document "*Conservation Objectives: Rogerstown Estuary SPA (Site code: 000206)* (NPWS, 2013).

RECEIVED: 18/12/2024

TABLE 5.2.2: CONSERVATION OBJECTIVES OF THE ROGERSTOWN ESTUARY SPA		
ATTRIBUTE	**MEASURE**	**TARGET**
[A043] Greylag Goose		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing or intensity of use of areas by greylag goose, other than that occurring from natural patterns of variation
[A046[Light-bellied Brent Goose		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing and intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation
[A048] Shelduck		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing or intensity of use of areas by shelduck, other than that occurring from natural patterns of variation
[A056] Shoveler		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the numbers or range of areas used by shoveler, other than that occurring from natural patterns of variation
[A130] Oystercatcher		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the numbers or range of areas used by oystercatcher, other than that occurring from natural patterns of variation
[A137] Ringed Plover		
Population trend	Percentage change	Long term population trend stable or increasing

RECEIVED: 18/12/2024

TABLE 5.2.2: CONSERVATION OBJECTIVES OF THE ROGERSTOWN ESTUARY SPA		
ATTRIBUTE	**MEASURE**	**TARGET**
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the numbers or range of areas used by ringed plover, other than that occurring from natural patterns of variation
[A141 Grey Plover		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the numbers or range of areas used by Grey Plover, other than that occurring from natural patterns of variation
[A143] Knot		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the numbers or range of areas used by knot, other than that occurring from natural patterns of variation
[A149] Dunlin		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the numbers or range of areas used by dunlin, other than that occurring from natural patterns of variation
[A156] Black-tailed Godwit		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the numbers or range of areas used by black-tailed godwit, other than that occurring from natural patterns of variation
[A162] Redshank		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	There should be no significant decrease in the numbers or range of areas used by redshank, other than that occurring from natural patterns of variation
[A999] Wetlands		
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 646 hectares, other than that occurring from natural patterns of variation

Rogerstown Estuary SPA Conservation Status

RECEIVED: 19/12/2024

According to the Habitat's Directive, favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

TABLE 5.2.3: CONSERVATION STATUS OF CONSERVATION INTEREST		
CODE	**SPECIAL CONSERVATION INTEREST**	**NATIONAL CONSERVATION STATUS***
A043	Greylag Goose	Amber List
A046	Light-bellied Brent Goose	Amber List
A048	Shelduck	Amber List
A130	Oystercatcher	Amber List
A137	Ringed Plover	Green List
A141	Grey Plover	Amber List
A143	Knot	Red List
A149	Dunlin	Red List
A156	Black-tailed Godwit	Red List
A162	Redshank	Red List

** Birds of Conservation Concern in Ireland 2020-2026 (G. Gilbert, A. Stanbury & L. Lewis, 2021)*

5.3 NORTH-WEST IRISH SEA SPA (SITE CODE: 004236)

The North-west Irish Sea cSPA constitutes an important resource for marine birds. The estuaries and bays that open into it along with connecting coastal stretches of intertidal and shallow subtidal habitats, provide safe feeding and roosting habitats for waterbirds throughout the winter and migration periods. These areas, along with more pelagic marine waters further offshore, provide additional supporting habitats (for foraging and other maintenance behaviours) for those seabirds that breed at colonies on the north-west Irish Sea's islands and coastal headlands. These marine areas are also important for seabirds outside the breeding period. This SPA extends offshore along the coasts of counties Louth, Meath and Dublin, and is approximately 2,333 km^2 in area. This SPA is ecologically connected to several existing SPAs in this area.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species:

TABLE 5.3.1: SPECIAL CONSERVATION INTERESTS	
CODE	**DESCRIPTION**
A001	Red-throated Diver (*Gavia stellata*)
A003	Great Northern Diver (*Gavia immer*)
A009	Fulmar (*Fulmarus glacialis*)
A013	Manx Shearwater (*Puffinus puffinus*)
A017	Cormorant (*Phalacrocorax carbo*)
A018	Shag (*Phalacrocorax aristotelis*)
A065	Common Scoter (*Melanitta nigra*)
A177	Little Gull (*Larus minutus*)
A179	Black-headed Gull (*Chroicocephalus ridibundus*)
A182	Common Gull (*Larus canus*)
A183	Lesser Black-backed Gull (*Larus fuscus*)
A184	Herring Gull (*Larus argentatus*)
A187	Great Black-backed Gull (*Larus marinus*)
A188	Kittiwake (*Rissa tridactyla*)
A192	Roseate Tern (*Sterna dougallii*)
A193	Common Tern (*Sterna hirundo*)
A194	Arctic Tern (*Sterna paradisaea*)
A195	Little Tern (*Sterna albifrons*)
A199	Guillemot (*Uria aalge*)
A200	Razorbill (*Alca torda*)
A204	Puffin (*Fratercula arctica*)

RECEIVED: 18/12/2024

An excerpt from the site's Site Synopsis (NPWS, 2023):

"Informed by two surveys of the western Irish Sea region in 2016 an estimated 120,232 and 34,626 individual marine birds occurred in this SPA during autumn and winter respectively. Those marine bird species whose estimated abundances equalled or exceeded 1% of the total estimated size of the winter assemblage are: Red-throated Diver (538), Fulmar (506), Little Gull (391), Kittiwake (944), Black-headed Gull (508), Common Gull (2,866), Herring Gull (6,893), Great Black-backed Gull (2,096), Razorbill (4,638) and Guillemot (13,914). The estimated 2016 summer abundance of Manx Shearwater in the North West Irish Sea SPA is 13,010 and is of international importance. The estimated 2016 autumn and winter abundances of Great Northern Diver in the North West Irish Sea SPA is 248 and 230 respectively and are of international importance. The estimated abundances of Common Scoter over parts of this SPA can reach significant numbers (e.g. 14,567 in December 2018) which is also of international importance".

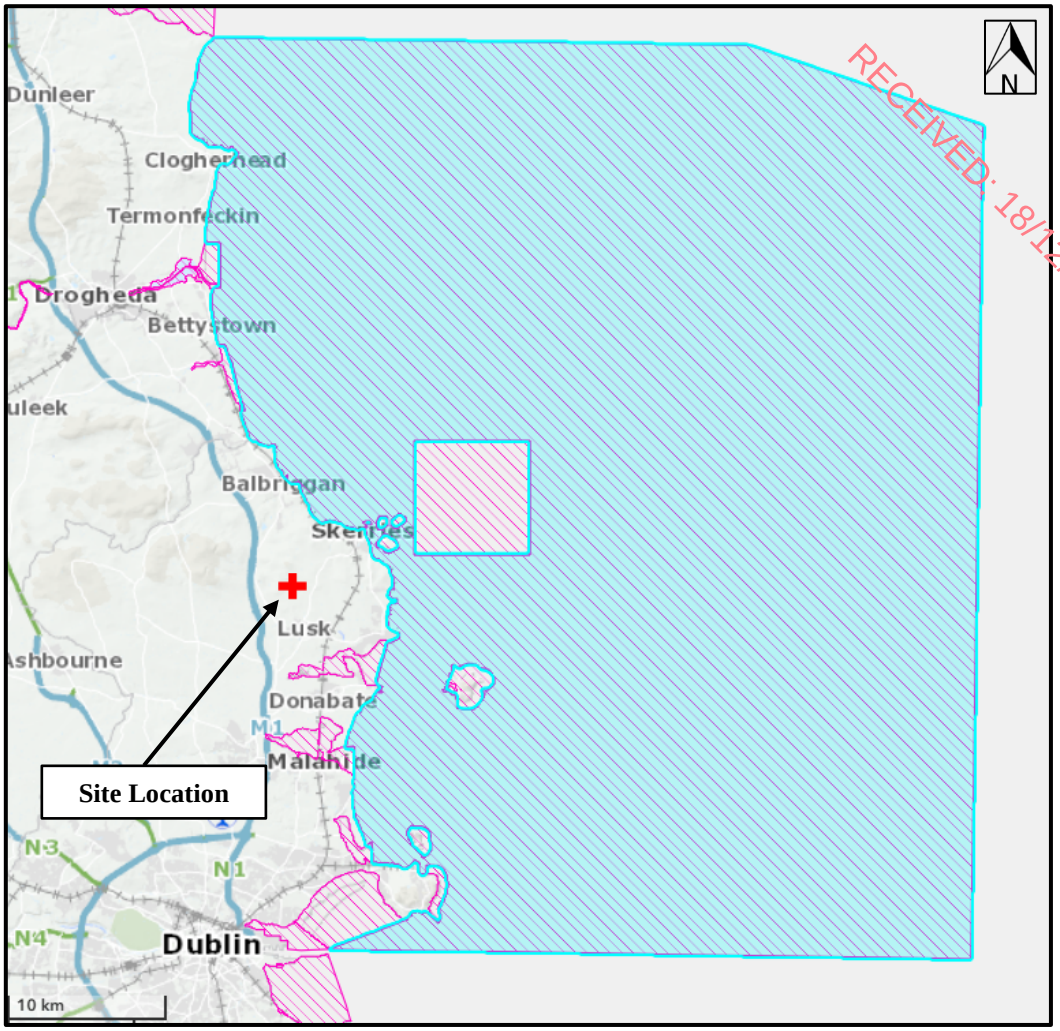


Figure 5.2: North-west Irish Sea SPA (Blue Outline)

North-west Irish Sea SPA Conservation Objectives

The Habitats Directive requires the Appropriate Assessment process to assess the potential impacts of the development "in *view of the site's conservation objectives*". Site specific conservation objectives (SSCOs) for the qualifying interests of the North-west Irish Sea SPA are provided in the NPWS document "Conservation Objectives: North-west Irish Sea SPA 004236" (NPWS, 2023). The document notes that the conservation objectives for the SPA site are to maintain or restore the favorable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

North-west Irish Sea SPA Conservation Status

According to the Habitat's Directive, favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and

- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

RECEIVED: 18/12/2024

Table 5.3.2: The conservation statuses for the special conservation interest of the North-west Irish Sea SPA are outlined below.

TABLE 5.3.2: CONSERVATION STATUS		
CODE	**SPECIAL CONSERVATION INTEREST**	**NATIONAL CONSERVATION STATUS***
A001	Red-throated Diver (*Gavia stellata*)	Amber
A003	Great Northern Diver (*Gavia immer*)	Amber
A009	Fulmar (*Fulmarus glacialis*)	Amber
A013	Manx Shearwater (*Puffinus puffinus*)	Amber
A017	Cormorant (*Phalacrocorax carbo*)	Amber
A018	Shag (*Phalacrocorax aristotelis*)	Amber
A065	Common Scoter (*Melanitta nigra*)	Red
A177	Little Gull (*Larus minutus*)	Amber
A179	Black-headed Gull (*Chroicocephalus ridibundus*)	Amber
A182	Common Gull (*Larus canus*)	Amber
A183	Lesser Black-backed Gull (*Larus fuscus*)	Amber
A184	Herring Gull (*Larus argentatus*)	Amber
A187	Great Black-backed Gull (*Larus marinus*)	Green
A188	Kittiwake (*Rissa tridactyla*)	Red
A192	Roseate Tern (*Sterna dougallii*)	Amber
A193	Common Tern (*Sterna hirundo*)	Amber
A194	Arctic Tern (*Sterna paradisaea*)	Amber
A195	Little Tern (*Sterna albifrons*)	Amber
A199	Guillemot (*Uria aalge*)	Amber
A200	Razorbill (*Alca torda*)	Red
A204	Puffin (*Fratercula arctica*)	Red

** Birds of Conservation Concern in Ireland 2020-2026 (G. Gilbert, A. Stanbury & L. Lewis, 2021)*

RECEIVED: 18/12/2024

6.0 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

6.1 DISTURBANCE TO PROTECTED HABITATS AND SPECIES

The site does not directly impinge on any part of a European site, and as such would not be expected to have any in-situ effects upon a protected site through loss or destruction of habitat, fragmentation of habitat, disturbance of habitat or direct reduction in species density. However, given the hydrological connection to the Rogerstown Estuary SAC and SPA and the North-west Irish Sea SPA, ex-situ impacts must be considered.

The Rogerstown SAC and SPA are located approximately 4.4km (5.2km hydrologically downstream) from the proposed development. There are no mapped watercourses within the red line boundary. The closest mapped watercourse is the Palmerstown located approximately 80m to the north. A drainage ditch along the southern boundary is directly connected to the Palmerstown. A drainage ditch to the west is hydrologically connected to the Rathmooney watercourse. Both watercourses flow into the Rogerstown estuary SAC and SPA and ultimately into the Irish Sea. There are no other freshwater habitats located within or adjacent the red line boundary.

The proposed development will require minor in-stream works within the southern drainage ditch for the installation of two headwalls. This is proposed as part of the surface water drainage network. These works will be temporary in duration. In-stream works have the potential to cause a deterioration in water quality due to the release in sediments and chemicals downstream.

It is considered that the proposed development site would not contain the habitats or species for which Rogerstown Estuary SAC has been designated. The proposed development is located 4.4km (5.2km upstream) from the tidal waters of Rogerstown Estuary. Therefore, the proposed development would not have links to any habitats associated with tidal conditions such as mudflats, sandflats, Mediterranean and Atlantic salt meadows. The nearest mapped example of these habitats is located 5.2km (hydrologically) downstream. These habitats do not occur within the red line boundary or adjacent. Therefore, given the absence of protected habitats onsite, it is considered that the proposed development would not have any direct significant effects on the Rogerstown Estuary SAC. According to the Conservation Objectives report for this SAC, there are no listed water quality attributes however, known threats and pressures include the modification of hydrological flow or physical alteration of waterbodies for agriculture, residential/recreation activities/structures, agricultural activities and marine aquaculture generating marine pollution. The proposed development will not significantly impact the hydrological flow of any watercourse as there are no proposed works to create a dam. As noted above, there will be minor in-stream works required. While the risk is considered low, there is potential for a deterioration in water quality of some of the qualifying habitats.

It is considered that the proposed development will not have any direct or indirect significant effects on shifting dunes [2120] or fixed coastal dunes [2130] as these are located along the coast. There will be no construction works within any coastal habitat. There are also no water quality attributes, threats or pressures associated with these habitats.

RECEIVED: 18/12/2024

The site would not offer suitable breeding grounds for the bird species associated with the Rogerstown Estuary SPA. There are no lakes, reservoirs, significant areas of grassland, estuaries, mudflats, sandy coasts, marshes, coastal habitats, machair, wet grassland or rivers. Greylag Geese are known to feed on arable land and typically feed upon cereal stubble during the winter. Therefore, Greylag Geese could potentially utilise the site for foraging. There are limited areas of grassland within and adjacent the boundary which would not offer sufficient suitable habitats for foraging qualifying interests associated with grasslands. None of the qualifying interests were recorded onsite. Given the availability of arable land in the area and in proximity of the Rogerstown Estuary SPA, it is considered that the proposed development would not limit foraging habitat for the Greylag Goose or any other qualifying interests should they be present. However, the proposed in-stream works could have an indirect impact to a deterioration in water quality during the construction phase of the development.

The proposed development would not offer suitable breeding or nesting habitats for the Qualifying Interests of the North-west Irish Sea SPA. No areas of lakes, reservoirs, significant areas of grassland, estuaries, mudflats, sandy coasts, marshes, coastal habitats, machair, wet grassland, cliffs, caves or rivers occur within or adjacent the red line boundary. The proposed development would also offer limited foraging habitat for most of the qualifying interests which prey upon fish, molluscs and other coastal/freshwater species. Greylag Geese and Black-headed Gull are known to feed on the roots of plants and insects within arable lands. Common Gull feed upon terrestrial and aquatic invertebrates while the Lesser Black-backed Gull is known to feed on small birds. While the proposed development could support the foraging habitats of the aforementioned species, given the surrounding arable lands and lands within proximity of the SPA, it is not anticipated that the proposed development would significantly limit suitable foraging habitat. However, an indirect impact could occur via a deterioration in water quality during the construction phase of the development.

It is not envisaged that protected species would be adversely impacted upon by the site due to noise generated by the facility or by noise generated from the associated site traffic and industrial makeup of the site. The new development is within proximity of an existing operating commercial business. Construction works will take approximately 18 months and would not pose a significant risk owing to the distances between the development site and designated sites. Construction works would also be temporary and would not be considered to have a residual effect on fauna. During the operational phase, any fauna in the area with be accustomed to noise from human, commercial (food processing facility), vehicular and agricultural activities during the operational phase of the development. Much of the processes during the operational phase that could generate noise would be internal as opposed to external noise.

The potential disturbance on protected habitats and species due to dust during the construction phase would not be considered significant, given the transient nature of construction works and the scale of the development. It is considered that the operational phase of the development does not have the potential to significantly impact upon designated sites due to air emissions given the nature of the development. This is discussed further below in section 6.4.

It is therefore considered that the proposed development would not result in any significant risk to the protected habitats and species of the Rogerstown Estuary SPA, the Rogerstown Estuary SAC or the North-west Irish Sea SPA due to habitat fragmentation or loss, disturbance or direct reduction in species density. Water quality is discussed in section 6.3.

RECEIVED: 16/12/2024

6.2 INVASIVE SPECIES

Under Regulation 49(2) of the European Communities (Birds and Natural Habitats) Regulations 2011-2015 (S.I. No. 477 of 2011) Amended (S.I. No. 355 of 2015), save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to any plant which is included in Part 1 of the Third Schedule shall be guilty of an offence.

Materials containing invasive species such as Japanese Knotweed are considered "controlled waste", and, as such, there are legal restrictions on their handling and disposal. Under Regulation 49(7) of the European Communities (Birds and Natural Habitats) Regulations 2011-2015, it is a legal requirement to obtain a license to move "vector materials" listed in the Third Schedule, Part 3.

Six invasive flora species has been recorded by the National Biodiversity Data Centre within the 10km (Tetrad – O25).

Table 6.1: National Biodiversity Data Centre records of Third Schedule invasive species within 10km square (Tetrad – O25) of the development.

THIRD SCHEDULE INVASIVE FLORA	
Indian Balsam (*Impatiens glandulifera*)	Rhododendron ponticum
Wireweed (*Sargassum muticum*),	Three-cornered Garlic (*Allium triquetrum*)
Sea-buckthorn (*Hippophae rhamnoides*)	Water Fern (*Azolla filiculoides*)

The spread of invasive plant and animal species can negatively impact on the conservation objectives of certain Annex habitats and species designated within designate sites.

No third schedule invasive species were noted within or adjacent the site boundary during the site assessment.

The risk of invasive species being introduced onto the site during the construction or operational phase of the project is considered to be low, with no import of materials with the potential to contain invasive flora species. In addition, the proposed development will not require the importation of any topsoil.

Therefore, it is considered that there would be no significant risk to protected habitats and species as a result of invasive species from the site.

6.3 POTENTIAL IMPACTS ON WATER QUALITY

The proposed development is located within the Nanny-Delvin Catchment thus the site would be hydrologically linked to Rogerstown Estuary SAC (Site code: 000208), the Rogerstown Estuary SPA (Site code: 004015) and the North-west Irish Sea SPA (Site Code: 004236).

The proposed development will require minor in-stream works within an existing drainage ditch along the southern boundary of the site. This will consists of the construction of two new headwalls as part of the surface water drainage network.

RECEIVED: 18/12/2024

6.3.1 WATER QUALITY DURING THE CONSTRUCTION PHASE

During the construction phase of projects, a deterioration in water quality can arise through the release of suspended solids during soil disturbance and in-stream works, the release of uncured concrete and the release of hydrocarbons (fuels and oils). The risk of water quality deterioration as a result of uncured concrete would be considered low, given that precast concrete would be used where possible and surplus concrete would be returned to the batching plant. The proposed headwalls will be comprised of pre-cast concrete.

It is considered that much of the suspended solids onsite would be retained onsite during the construction phase as surface water run-off would percolate to ground. However, during the proposed instream works, there is potential for suspended solids and hydrocarbons/chemicals to be carried downstream and into the Natura 2000 sites. A deterioration in water quality has the potential to have an indirect impact on the qualifying interests of the Rogerstown Estuary SPA and the North-west Irish Sea SPA by having a significant impact on prey.

Construction mitigation measures will be required to prevent a deterioration in water quality during the construction phase of this development.

6.3.2 WATER QUALITY DURING THE OPERATIONAL PHASE

During the operational phase, surface water comprised of rainwater run-off from roofs and hardcore surfaces will be directed to the new drainage network and will discharge to the existing drainage ditch to the south. Before discharge, surface water will be attenuated onsite and will pass through a petrol/oil interceptor. A hydrobrake will limit the rate of flow leaving the site. The surface water drainage network will be fitted with an alarm system and valve that will close should any leak be detected. Therefore, there is no risk of any contaminated surface water leaving the site that could have an impact on a protected species or habitat.

Domestic foul water will be directed to a new waste water treatment system. This will be located greater than 10m from a watercourse or drainage ditch as per the *Code of Practice – Domestic Waste Water Treatment Systems (Population Equivalents ≤10)*.

All soiled water will be treated in the AD. Liquid and solid digestate is to be landspread. A nutrient management plan has been completed to show landbanks have capacity. Landspreading would be conducted in accordance with the Good Agricultural Practice Regulations (Nitrates Regulations).

The potential impact of the development upon the Rogerstown Estuary SAC, the Rogerstown Estuary SPA and the North-west Irish Sea SPA in the event of a flood event would not be considered significant as the development site is not located within a flood risk zone and there is no history of flooding within the development site. Therefore, the proposed development would not be anticipated to pose a significant risk upon any Natura 2000 site as a result of floodwaters or surface water run-off during the operational phase.

It is therefore considered that, due to the location of the site, the relative scale and extent of the proposed development and the proposed drainage system that there would be no significant risk upon these protected sites due to a deleterious effect on water quality during the operational phase.

RECEIVED: 18/12/2024

6.4 POTENTIAL IMPACTS ON AIR QUALITY

Nitrogen (N) and elements can have significant impacts on "*biodiversity through eutrophication, acidification or direct toxic effect*" (IWM, 2022) if above the critical limits. Both Ammonia and Nitrogen can have an impact on Natura 2000 sites. Nitrogen promotes fast-growing species outcompeting some of the more sensitive species while ammonia causes "*direct foliar damage*" and can ultimately result in a loss of sensitive species. Critical limits are thresholds set for impacts which can occur from air pollution.

An air quality assessment was undertaken by Katestone Environmental Ireland Ltd as part of supporting documentation within an Environmental Impact Assessment Report (EIAR). Biogas is formed as a result of the primary and secondary digestion, where biological process aid in the breakdown of biodegradable materials in the absence of oxygen. The biogas produces is a mixture of methane, caron dioxide, sulphides and ammonia among other contaminants.

It states that "*In Ireland, The Environmental Protection Agency (EPA) guidance entitled Assessment of the impact of ammonia and nitrogen on Natura 2000 Sites from intensive agricultural installations. (EPA, 2023) stipulates that the dispersion modelling predictions of emissions of ammonia from intensive agricultural facilities at sensitive ecological locations on Natura 2000 sites should be assessed against a threshold of 1% of:*

- *The critical load of nitrogen*
- *The critical level for ammonia*".

The predicted levels of contaminants were compared against the applicable limits for each protected site.

According to the air quality assessment report "*Predicted concentrations of NO_3 comply with the 1% threshold of significance at all sensitive ecological locations for the operation of sources of emissions at the proposed development in isolation. Predicted concentrations of NH_3 comply with the 1% threshold of significance at all sensitive ecological locations for the operation of sources of emissions at the proposed development in isolation. Predicted deposition rates of nitrogen comply with the 1% threshold of significance at all sensitive ecological locations for the operation of sources of emissions at the proposed development in isolation.*"

Therefore, it is predicted that the operation of the new proposed anaerobic digestion plant will not result in significant additional air quality impacts at nearby sensitive receptors or upon Natura 2000 sites.

6.5 SCREENING CONCLUSION

RECEIVED: 18/12/2024

In order for an effect to occur, there must be a pathway between the source and the receptor (the SAC / SPA). Where a pathway does not exist, an impact cannot occur.

The proposed development site is hydrologically connected to the Rogerstown Estuary SAC (Site Code: 000208) and the Rogerstown Estuary SPA (Site Code: 004015) from the North-west Irish Sea SPA (Site Code: 004236) via a drainage ditch onsite.

In the absence of mitigation measures, there is potential for the proposed development to have a significant impact upon the qualifying interests / special conservation interests of the Rogerstown Estuary SAC, the Rogerstown Estuary SPA and the North-west Irish Sea SPA due to a potential deterioration in water quality during the construction phase. Therefore, a Natura Impact Statement is required.

7.0 ASSESSMENT OF ADVERSE EFEFCTS: STAGE 2 APPROPRIATE ASSESSMENT

Describe the significant effects, if any, on the relevant European site which have occurred, which are occurring or which can reasonably be expected to occur as a result of the project or plan (alone or in combination).

The proposed development has the potential to impact upon the qualifying interests of the Rogerstown Estuary SAC, the Rogerstown Estuary SPA and the North-west Irish Sea SPA due to a potential deterioration in water quality during the construction phase.

During the construction works, there is potential for water quality deterioration through the release of suspended solids during soil disturbance works. Suspended solids could become entrained in surface water run-off and could affect aquatic qualifying interests / special conservation interests through deposition. Nutrients can be bound in suspended solids, therefore, a significant increase in suspended solids can result in excessive eutrophication, leading to the deoxygenation of waters and subsequent asphyxia of aquatic species. An increase in sediments has the potential to impact upon fish species by damaging gravel beds required for spawning, smothering fish eggs and in extreme cases, by interfering with the gills of fish. An increase in suspended solids also has the potential to reduce water clarity, which can impact the light penetration of water and may also affect certain behaviours of aquatic fauna such as foraging success.

A potential source of chemical contamination would be from the release of hydrocarbons (oils, fuels) from construction plant and equipment. Hydrocarbons can affect water quality, potentially resulting in toxic conditions for aquatic flora and fauna. Oil films on the water surface can disrupt oxygen diffusion from the atmosphere, resulting in de-oxygen of waters.

Another potential source of contamination would be the release of uncured concrete. In the event of uncured concrete entering a waterbody, the pH would be altered locally, potentially leading to the death of aquatic flora and fauna and an alteration to the waterbody substrate.

A deterioration in water quality can have an indirect impact on avifauna listed within the Rogerstown Estuary SPA and the North-west Irish Sea SPA by impacting prey populations.

The tables below briefly outline the occurrence of the qualifying interests of the Rogerstown Estuary SAC, the Rogerstown Estuary SPA and the North-west Irish Sea SPA in relation to the proposed development site, taking cognisance of the NPWS "*Conservation Objectives: Rogerstown Estuary SAC 000208*", "*Conservation Objectives: Rogerstown Estuary SPA 004015"* and "*Conservation Objectives: North-west Irish Sea SPA 004236"* In addition to Volumes 1, 2 and 3 of the 2019 NPWS Reports, "The *Status of EU Protected Habitats and Species in Ireland*".

RECEIVED: 18/12/2024

The following tables also outline which of the qualifying interests and special conservation interests may be impacted upon by a potential deterioration in water quality from the proposed development.

RECEIVED: 18/12/2024

TABLE 7.1: POTENTIAL IMPACTS TO ROGERSTOWN ESTUARY SAC (SITE CODE: 000208)		
QUALIFYING INTEREST	**LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE**	**POTENTIAL IMPACT**
[1130] Estuaries	The development is located within the current known distribution, current range and favourable reference range of these qualifying interests (NPWS, 2019b). The nearest mapped examples of these qualifying interests are located approximately 4.4km south-east (5.2km hydrologically downstream) of the development site (NPWS, 2011). There are no water quality attributions listed within the conservation objectives report. Given the distance, nature and scale of the works, and absence of these habitats within the boundary, it is not anticipated that the development would have the potential to directly impact upon this qualifying interests. However, marine pollution generated from residential and agricultural activities has the potential to cause an indirect impact. As minor instream works are required, there is potential for a deterioration in water quality downstream.	Yes
[1140] Tidal Mudflats and Sandflats	The development is located within the current known distribution, current range and favourable reference range of these qualifying interests (NPWS, 2019b). The nearest mapped examples of these qualifying interests are located approximately 4.4km south-east (5.2km hydrologically downstream) of the development site (NPWS, 2011). There are no water quality attributions listed within the conservation objectives report. Given the distance, nature and scale of the works, and absence of these habitats within the boundary, it is not anticipated that the development would have the potential to directly impact upon this qualifying interests. However, marine pollution generated from residential and agricultural activities has the potential to cause an indirect impact. As minor instream works are required, there is potential for a deterioration in water quality downstream.	Yes
[1330] Atlantic Salt Meadows (*Glauco-Puccinellietalia maritimae*)	The development is located within the current known distribution, current range and favourable reference range of these qualifying interests (NPWS, 2019b). The nearest examples of these qualifying interests are located approximately 5km south-east (6km hydrologically downstream) of the development site (NPWS, 2011). There are no water quality attributions listed within the conservation objectives report. Given the distance, nature and scale of the works, and absence of these habitats within the boundary, it is not anticipated that the development would have the potential to directly impact upon this qualifying interests. There are no water quality attributes listed or threats in relation to water quality pollution.	No
[1410] Mediterranean salt meadows (*Juncetalia maritimi*)	The development is located within the current known distribution and favourable reference range of these qualifying interests (NPWS, 2019b). The nearest examples of these qualifying interests are located approximately 5.4km to the south (over 6km hydrologically downstream) of the development site (NPWS, 2011). There are no water quality attributions listed within the conservation objectives report. Given the distance, nature and scale of the works, and absence of these habitats within the boundary, it is not anticipated that the development would have the potential to directly impact upon this qualifying interests. There are no water quality attributes listed or threats in relation to water quality pollution.	No

RECEIVED: 18/12/2024

TABLE 7.1: POTENTIAL IMPACTS TO ROGERSTOWN ESTUARY SAC (SITE CODE: 000208)		
QUALIFYING INTEREST	**LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE**	**POTENTIAL IMPACT**
[2120] Shifting dunes	The development is located within the current known distribution, current range and favourable reference range of these qualifying interests (NPWS, 2019b). The nearest examples of these qualifying interests are located approximately 5.8km to the south (over 6km hydrologically downstream) of the development site (NPWS, 2011). There are no water quality attributions listed within the conservation objectives report. There are no coastal habitats within the boundary or adjacent. There are no listed water quality threats or pressures associated with this habitat. Given the distance, nature and scale of the works and absence of these habitats within the boundary, it is not anticipated that the development would have the potential to negatively impact upon this qualifying interests either directly or indirectly.	None
[2130] Fixed coastal dunes	The development is located within the current known distribution, the current range and favourable reference range of this qualifying interest (NPWS, 2019b). The nearest examples of these qualifying interests are located approximately 5.8km to the south (over 6km hydrologically downstream) of the development site (NPWS, 2011). There are no water quality attributions listed within the conservation objectives report. There are no coastal habitats within the boundary or adjacent. There are no listed water quality threats or pressures associated with this habitat. Given the distance, nature and scale of the works and absence of these habitats within the boundary, it is not anticipated that the development would have the potential to negatively impact upon this qualifying interests either directly or indirectly.	None

TABLE 7.2: POTENTIAL IMPACTS TO ROGERSTOWN ESTUARY SPA (SITE CODE: 004015)		
QUALIFYING INTEREST	**OCCURRENCE / ASSESSMENT**	**POTENTIAL IMPACT**
[A043] Greylag Goose (*Anser anser*)	Wintering species, Icelandic birds from November to April with feral birds present all year. Their preference was for estuaries, feeding on the roots of rushes and sedges. Currently this species feeds mostly on cereal stubble and grassland in wintering areas. Known to breed by lakes and reservoirs. The Icelandic population winters mostly on the coast. A deterioration in water quality could have an indirect impact on this species.	Yes

RECEIVED: 18/12/2024

[A046] Light-bellied Brent Goose (*Branta bernicla hrota*)	Wintering species mostly found on coastal estuaries. During the winter, it feeds mostly on eel-grass, which grows on muddy estuaries, and also on grasslands, usually when coastal supplies have been depleted at estuarine sites. A deterioration in water quality could have an indirect impact on this species.	
[A048] Shelduck (*Tadorna tadorna*)	Wintering species frequents mudflats and muddy or sandy estuaries in coastal regions Its diet consists predominantly of salt-water molluscs, aquatic invertebrates, small fish, fish spawn and plant material. A deterioration in water quality could have an indirect impact on this species.	
[A056] Shoveler (*Anas clypeata*)	Winter migrants from October to March with some resident all year. Diet consists of zooplankton within ephemeral wetlands such as turloughs and callows. Also feeds on molluscs, insects and larvae. Nests on the ground among waterside vegetation. In winter, Shoveler prefers eutrophic waters rich in plankton and occur along coastal estuaries, lagoons, inland lakes and callows. Breeding in Ireland around Lough Neagh and the mid-Shannon basin. A deterioration in water quality could have an indirect impact on this species.	
[A130] Oystercatcher (*Haematopus ostralegus*)	Wintering species on estuarine mudflats, saltmarshes and sandy and rocky shores. Its diet consists of bivalves and gastropods are the most important food items for this species. Polychaetes and crustaceans are more important in estuaries and molluscs (e.g. mussels, limpets and whelks) are most important on rocky shores. A deterioration in water quality could have an indirect impact on this species.	
[A137] Ringed Plover (*Charadrius hiatucula*)	This species is both a winter visitor and resident to Ireland. Feeds on invertebrates, particularly polychaete worms and crustaceans. Breeds mostly along the coast preferring wide sandy or shingle beaches. Some birds breed in inland beside rivers and lakes. The winter population occurs along the coastline, along upper shores of estuaries and non-estuarine coastlines. A deterioration in water quality could have an indirect impact on this species.	
[A141] Grey Plover (*Pluvialis squatarola*)	Wintering species frequents intertidal mudflats, saltmarshes, sandflats and beaches of oceanic coastlines, bays and estuaries. Its diet consists predominantly of marine polychaete worms, molluscs and crustaceans. A deterioration in water quality could have an indirect impact on this species.	
[A143] Knot (*Calidris canutus*)	Wintering species found at coastal, frequenting tidal mudflats or sandflats, sandy beaches of sheltered coasts, rocky shelves, bays, lagoons and harbours, occasionally also oceanic beaches and saltmarshes. Its diet consists of intertidal invertebrates such as bivalve and gastropod molluscs, crustaceans, annelid worms and insects. A deterioration in water quality could have an indirect impact on this species.	
[A149] Dunlin (*Calidris alpina*)	Wintering species mainly prefer estuarine mudflats, but also frequent a wide variety of freshwater and brackish wetlands both coastal and inland, including lagoons, muddy freshwater shores, tidal rivers and sandy coasts. Its diet is consuming mostly polychaete worms and small gastropods, as well as insects, crustaceans, bivalves, plant matter and occasionally small fish. A deterioration in water quality could have an indirect impact on this species.	

RECEIVED: 18/12/2024

[A156] Black-tailed Godwit (*Limosa limosa*)	Wintering species in sheltered estuaries and lagoons with large intertidal mudflats, sandy beaches, saltmarshes and salt-flats. Its diet consists of adult and larval insects (especially beetles), annelid and polychaete worms, molluscs, ragworms, crustaceans, spiders, fish eggs, and the spawn and tadpoles of frogs. A deterioration in water quality could have an indirect impact on this species.	
[A162] Redshank (*Tringa tetanus*)	Wintering species is largely coastal occupying rocky, muddy and sandy beaches, saltmarshes, tidal mudflats, saline and freshwater coastal lagoons, tidal estuaries. Its diet consists insects, spiders and annelid worms, as well as molluscs, crustaceans (especially amphipods e.g. *Corophium spp*.) and occasionally small fish and tadpoles. A deterioration in water quality could have an indirect impact on this species.	
[A999] Wetland and waterbirds	A deterioration in water quality could have an indirect impact on this species.	

TABLE 7.3: POTENTIAL IMPACTS TO NORTH-WEST IRISH SEA SPA (SITE CODE: 004236)

QUALIFYING INTEREST	LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE	POTENTIAL IMPACT
[A001] Red-throated Diver (*Gavia stellata*)	Winter visitor to all Irish coasts from September to April. Feed on Small fish such as sprats, sand eels, codling and flatfish. Other food items include fish spawn, frogs, shrimps, molluscs, water insects and annelids. In Ireland they breed on small fresh water loughs. Nests are typically a scrape lined with aquatic vegetation and constructed close to or on the waters edge. There is little food in the loughs used for breeding and adults have to travel to more productive waters at the coast to forage. This species is most numerous in Irish coastal waters out of the breeding season. A deterioration in water quality could have an indirect impact on this species.	Yes
[A003] Great Northern Diver (*Gavia immer*)	A widespread winter visitor to coastal areas from September to April. Feeds mostly fish but also feeds on crustaceans, molluscs, annelids, insects and amphibians. Great Northern Divers occur along the Irish coastline. They are particularly abundant off the south, west and northwest coasts over the winter. Great Northern Divers occur along a variety of coastlines, particularly deeper bays and inlets, as well as shallow bays with sandy shores. They can forage up to 10 km offshore and numbers close to shore tend to be highest when winds blow onshore. A deterioration in water quality could have an indirect impact on this species.	Yes
[A009] Fulmar (*Fulmarus glacialis*)	Resident along all Irish coasts. Feeds on a great variety of food taken including fish, discards from trawlers, crustaceans and whale flesh. Mainly breeds on sea cliffs. Winters at sea, but can be seen in Irish waters throughout the year. A deterioration in water quality could have an indirect impact on this species.	Yes

RECEIVED: 19/12/2024

TABLE 7.3: POTENTIAL IMPACTS TO NORTH-WEST IRISH SEA SPA (SITE CODE: 004236)		
QUALIFYING INTEREST	**LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE**	**POTENTIAL IMPACT**
[A013] Manx Shearwater (*Puffinus puffinus*)	Summer visitor to all coasts from March to August. Feeds on small fish, plankton, molluscs and crustaceans. Spends most of its life at sea and only comes to land in the breeding season. Mostly breeds on uninhabited off-shore islands. Winters at sea in the South Atlantic off South America. A deterioration in water quality could have an indirect impact on this species.	Yes
[A017] Cormorant (*Phalacrocorax carbo*)	Resident, some immigration during the winter. Feeds on fish. Breeds in colonies mainly around the coast of Ireland, with some birds breeding inland. Most of the larger coastal colonies in Ireland are on the south and north west coasts with big colonies also in Co. Dublin. Birds on the coast breed on cliffs whilst those inland, in trees. Winters at sea and inland. A deterioration in water quality could have an indirect impact on this species.	Yes
[A018] Shag (*Phalacrocorax aristotelis*)	Resident along all Irish coasts. Feeds on a wide range of small fish taken from just below the surface. Breeds all around the coast of Ireland wherever suitable cliffs exist. Whilst young birds will disperse widely, most adults will winter in the vicinity of their breeding colonies. A deterioration in water quality could have an indirect impact on this species.	Yes
[A065] Common Scoter (*Melanitta nigra*)	Resident and winter visitor from the Continent to all Irish coasts between October and April. During the summer the diet is varied and includes water plants, insect larvae and freshwater crustaceans. During the winter, they forage mostly in waters less than 20 m deep and with coarse sandy substrates. They feed predominantly on benthic bivalve molluscs. They nest on islands with dense covering of scrub and tree cover. Almost entirely marine during the winter, and tend to congregate in large flocks on shallow seas with sandy bottoms supporting their preferred prey. A deterioration in water quality could have an indirect impact on this species.	Yes
[A177] Little Gull (*Larus minutus*)	Winter visitor to east and south coasts from October to March. Feeds by picking small fish, crabs and other invertebrates off the surface of the sea and less frequently lakes and ponds. Breed colonially in marshes in Scandinavia and Eastern Europe. The majority winters along the coasts of the North and Irish Seas, as well as the Mediterranean. Little Gulls are most frequently observed off the east coast, with smaller numbers present along the south coast. Rare in the north and west of Ireland. A deterioration in water quality could have an indirect impact on this species.	Yes
[A179] Black-headed Gull (*Chroicocephalus ridibundus*)	Wintering species is most common in coastal habitats and tidal inshore waters, showing a preference for inlets or estuaries with sandy or muddy beaches, and generally avoiding rocky or exposed coastlines. It may also occur inland during this season, frequenting ploughed fields, moist grasslands, urban parks, sewage farms, refuse tips, reservoirs, ponds and ornamental waters. Its diet consists predominantly of aquatic and terrestrial insects, earthworms and marine invertebrates (e.g. molluscs, crustaceans and marine worms) although it may also take fish (usually dead or sick), rodents, and agricultural grain. During the non-breeding season, the species may rely heavily	Yes

RECEIVED: 18/12/2024

TABLE 7.3: POTENTIAL IMPACTS TO NORTH-WEST IRISH SEA SPA (SITE CODE: 004236)		
QUALIFYING INTEREST	**LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE**	**POTENTIAL IMPACT**
	on artificial food sources provided by man, especially in Western Europe and often scavenges from refuse tips during this period. A deterioration in water quality could have an indirect impact on this species.	
[A182] Common Gull (*Larus canus*)	Local breeding species on islands in larger lakes in western Ireland. Winter visitor to all Irish coasts. Feeds on Terrestrial and aquatic insects and invertebrates, fish. Nests on the ground in a wide variety of situations, including islands, cliffs and shingle banks. Breeds on the coast and inland in the west of Ireland. Resident birds are joined by wintering birds from Europe. A deterioration in water quality could have an indirect impact on this species.	Yes
[A183] Lesser Black-backed Gull (*Larus fuscus*)	Summer visitor to Irish lakes and coasts, migrates to Iberia and northwest Africa in the winter. Feeds on a variety of prey including young birds. Breeds with other gull species in islands, sand dunes and coastal cliffs, and nests on the ground. Water quality would have an impact on this species. A deterioration in water quality could have an indirect impact on this species.	Yes
[A184] Herring Gull (*Larus argentatus*)	Resident species along Irish coasts. Predator and scavenger feeding along the coasts, follows fishing boats and known to frequent landfill sites. A deterioration in water quality could have an indirect impact on this species.	Yes
[A187] Great Black-backed Gull (*Larus marinus*)	Resident along all Irish coasts. Less frequently seen inland. Feeds on fish, waste from commercial fishing, offal, and other birds, for example auks at colonies in the breeding season. Will also engage in kleptoparasitism. Breeds on the ground in colonies all around the coast of Ireland. A few birds breed inland where they associate with freshwater lakes. Resident birds are joined by immigrants in the winter. Found around the coast with some birds inland. A deterioration in water quality could have an indirect impact on this species.	Yes
[A188] Kittiwake (*Rissa tridactyla*)	Summer visitor to steep coastal cliffs along all Irish coasts. Disperses to the open ocean in winter. Feeds on fish, waste from commercial fishing and invertebrates. Breeds on steep sea cliffs. Winters at sea. A deterioration in water quality could have an indirect impact on this species.	Yes
[A192] Roseate Tern (*Sterna dougallii*)	Rare summer visitor from April to October, the majority breeding at two sites in the Irish Sea, with another colony in Wexford. Feeds mostly on marine fish. Nest colonially on the ground. Restricted to two main colonies in Ireland, one on the island of Rockabill, off Skerries, Co. Dublin and one at Lady's Island, near Rosslare, in Co. Wexford. Birds have bred at other sites recently, for example on Dalkey Island, Co. Dublin and on the Blasket Islands Co. Kerry. Rockabill holds the most important colony in Europe with up to 1,200 pairs of birds. Winters in west Africa. A deterioration in water quality could have an indirect impact on this species.	Yes
[A193] Common Tern (*Sterna hirundo*)	Summer visitor from March to October to all Irish coasts. Feeds mostly on marine fish. Nest colonially on the ground from August to October. Breeds on the coast, with larger colonies in Co. Dublin, Co. Wexford and Co. Galway. Also breeds inland on islets in freshwater lakes, notably in Co. Galway and in Co. Mayo. Winters in west and south Africa. A deterioration in water quality could have an indirect impact on this species.	Yes

RECEIVED: 19/12/2024

TABLE 7.3: POTENTIAL IMPACTS TO NORTH-WEST IRISH SEA SPA (SITE CODE: 004236)		
QUALIFYING INTEREST	**LOCATION IN THE NATURA 2000 SITE RELATIVE TO APPLICATION SITE**	**POTENTIAL IMPACT**
[A194] Arctic Tern (*Sterna paradisaea*)	Summer visitor from March to September to all Irish coasts. Winters off south Africa and as far south as Antarctica. Feeds on marine fish, crustaceans and insects. Mainly a coastal breeding bird, but in Ireland the species also breeds inland on the fresh water lakes of Lough Corrib (Co. Galway) and Lough Conn (Co. Mayo). More colonies are found on the west coast with Co. Wexford, Co. Kerry, Co. Mayo and Co. Donegal having the largest number of birds. Considered to have the longest migration of all birds, utilizing the summer of both hemispheres. A deterioration in water quality could have an indirect impact on this species.	Yes
[A195] Little Tern (*Sterna albifrons*)	Rare summer visitor from April to August and sows a preference for shingle or sandy beaches to the east and west coastal habitats of Ireland. Feeds mostly on marine fish. A deterioration in water quality could have an indirect impact on this species.	Yes
[A199] Guillemot (*Uria aalge*)	Resident, though occur inshore/ land during the breeding season. Feeds mainly on small fish, some invertebrates. Comes ashore to nest on cliff ledges from May onwards. Winters at sea. Some Irish birds are believed to winter near their breeding sites. A deterioration in water quality could have an indirect impact on this species.	Yes
[A200] Razorbill (*Alca torda*)	Resident, though occur inshore/ land during the breeding season. Feeds mainly on small fish, some invertebrates. Nests on sea cliffs. Winters at sea. A deterioration in water quality could have an indirect impact on this species.	Yes
[A204] Puffin (*Fratercula arctica*)	Summer visitor from March to September to sea stacks and cliffs, mainly along the west coast of Ireland. Feeds on marine fish and crustaceans. Nests in colonies in burrows, or sometimes in boulder screes and in cracks in steep cliffs. Nests preferably in off-shore islands. Winters far out to sea. A deterioration in water quality could have an indirect impact on this species.	Yes

Rogerstown Estuary SAC/SPA and the North-west Irish Sea SPA Conservation Objectives

RECEIVED: 18/12/2024

The relevant site-specific conservation objectives for the qualifying interests which have been identified as being potentially impacted upon by the development are outlined below.

Rogerstown Estuary SAC

Estuaries [1130]
To maintain or restore the favourable conservation status of habitats and species of community interest. A deterioration in water quality could have an indirect impact on this habitat.

Mudflats and Sandflats [1140]
To maintain or restore the favourable conservation status of habitats and species of community interest. A deterioration in water quality could have an indirect impact on this habitat.

Salicornia and other annuals colonising mud and sand [1310]
To maintain or restore the favourable conservation status of habitats and species of community interest. A deterioration in water quality could have an indirect impact on this habitat.

Rogerstown Estuary SPA

Qualifying Interests - To maintain or restore the favourable conservation status of habitats and species of community interest. A deterioration in water quality could have an indirect impact on this habitat.

North-west Irish Sea SPA

Qualifying Interests - To maintain or restore the favourable conservation status of habitats and species of community interest. A deterioration in water quality could have an indirect impact on this habitat.

8.0 Mitigation Measures

RECEIVED: 18/12/2024

This assessment has determined that the proposed development has the potential to impact upon the Rogerstown Estuary SAC, the Rogerstown Estuary SPA and the North-west Irish Sea SPA due to a potential deterioration in water quality during the construction phase. As discussed in Section 7, it is considered that the proposed development has the potential to impact upon the following qualifying interests / special conservation interests of the SAC/SPA's:

- [1130] Estuaries
- [1140] Mudflats and sandflats
- [1310] Salicornia colonisers
- [A204] Puffin
- [A200] Razorbill
- [A043] Greylag Goose
- [A046] Light-bellied Brent Goose
- [A048] Shelduck
- [A056] Shoveler
- [A130] Oystercatcher
- [A137] Ringed Plover
- [A141] Grey Plover
- [A143] Knot
- [A149] Dunlin
- [A156] Black-tailed Godwit
- [A162] Redshank
- [A001] Red-throated Diver
- [A003] Great Northern Diver
- [A009] Fulmar
- [A013] Manx Shearwater
- [A017] Cormorant
- [A018] Shag
- [A065] Common Scoter
- [A177] Little Gull
- [A179] Black-headed Gull
- [A182] Common Gull
- [A183] Lesser Black-backed Gull
- [A184] Herring Gull
- [A187] Great Black-backed Gull
- [A188] Kittiwake
- [A192] Roseate Tern
- [A193] Common Tern
- [A194] Arctic Tern
- [A195] Little Tern
- [A199] Guillemot

8.1.1 Water Quality Mitigation Measures

The risk of a deterioration in water quality during the construction phase of this proposed development is considered low. However, given the proposed in-stream works and location of additional drainage ditches onsite, there is potential for a deterioration in water quality to occur. Measures that will be implemented to ensure that there will be no adverse effect to the listed habitats or species, as listed above, of the Rogerstown Estuary SAC, the Rogerstown Estuary SPA and the North-west Irish Sea SPA due to a potential deterioration in water quality during the construction phase include the following.

MITIGATION MEASURES PRIOR TO COMMENCEMENT OF THE PROPOSED IN-STREAM WORKS

- Training of relevant personnel on monitoring and mitigation measures that will be implemented during the construction phase at the development site by way of a toolbox talk;

RECEIVED: 18/12/2024

- Daily visual inspection of proposed development/construction works and pumping operations will be completed and signed by suitably trained staff member;
- Record of all visual inspections to be kept on file and available for review by relevant authorities;
- The contractor will maintain effective communication with the operating foremen through the toolbox talk to ensure there will be no risk of water pollution and all measures are enacted during the proposed works;
- In-stream works within the southern drainage ditch will be undertaken outside periods of heavy rainfall.

MITIGATION MEASURES DURING THE PROPOSED IN-STREAM WORKS

The dry cut open method may be used for such developmental works where minor works within a watercourse or drainage ditch is required. Prior to any works, the site is prepared by stripping topsoil from the banks at the location of the proposed headwalls. Works will then begin on the installation of the precast concrete headwall including excavation of the banks where necessary to fit the headwall. The water flow will be dammed using sandbags to create the seal / dam across the drain as per design. Pumps would be set up to take the flow from upstream to downstream of the location of the proposed headwall. The water will be filtered to limit silt carry over and reduce disturbance to the bed before pumped water is released back into the drainage ditch. Once completed, all materials used within the construction will be removed from site and bank profile reinstated. It should be noted that this method may be altered to suit site-specification requirements. Mitigation measures have been included below:

- The construction works contractor will adhere to standard construction best practice, taking cognisance of the Construction Industry Research and Information Association (CIRIA) guidelines "*Control of Water Pollution from Construction Sites; guidance for consultants and contractors*" 2001 and "*Control of Water Pollution from Construction Sites – Guide to Good Practice*", 2002;
- Cognisance will be taken of the 2016 guidelines published Inland Fisheries Ireland, "*Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters*";
- Excavations and earth-moving activities will be planned outside periods of heavy rainfall, to limit the potential for suspended solids to become entrained within surface water run-off;
- A filter will be provided at the pump inlet to prevent the entry of any potential aquatic fauna into the pump, and to limit the potential disturbance to the watercourse bed due to sediments;
- Pumping operations will be supervised at all times by the contractor;
- Excavation of the bank of the drainage ditch will then proceed, with the excavated material stockpiled for later reinstatement.
- Where possible, heavy machinery will only operate within an access strip set back 5m from the top of the bank of the drainage ditch;
- Excavated materials will not be allowed to fall into the watercourse and will not be stored or placed near the drainage ditch;

RECEIVED: 18/12/2024

- Only clear vegetation when works are required to prevent leaving exposed ground for long periods of time;
- Any vegetation cuttings should be removed from the site and not stored near the banks of the drainage ditch;
- Following the completion of reinstatement works, including any required bank reinstatement works, the sandbags would be removed;
- In the unlikely event of a suspected deterioration in water quality within the Palmerstown watercourse due to construction/in-stream works at the development site works will immediately cease, an investigation into the cause undertaken and the relevant NPWS and Inland Fisheries Ireland personnel informed;
- Where spoil is generated, this will only be stored temporarily. A designated spoil area will be established by the construction works contractor within the site footprint. This will be located away from the watercourse.

MITIGATION MEASURES ONCE IN-STREAM WORKS HAVE CEASED

- The contractor will ensure all machinery and equipment has been taken from the construction area and that no materials associated with the proposed development remain.

WATER QUALITY MITIGATION MEASURES FOR DURATION OF CONSTRUCTION WORKS

- The construction works contractor will adhere to standard construction best practice, taking cognisance of the Construction Industry Research and Information Association (CIRIA) guidelines "*Control of Water Pollution from Construction Sites; guidance for consultants and contractors*" 2001 and "*Control of Water Pollution from Construction Sites – Guide to Good Practice*", 2002;
- Cognisance will be taken of the 2016 guidelines published Inland Fisheries Ireland, "*Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters*";
- Stockpiling of loose materials will be kept a minimum of 20m from drains and watercourses,
- Fuel, oil and chemical storage will be stored within a bunded area, which will be at least 50m away from drains, excavations and other locations where it may cause pollution;
- Excavations, earth-moving activities will be planned outside periods of heavy rainfall, to limit the potential for suspended solids to become entrained within surface water run-off;
- Regular visual inspections will be undertaken of the site access road to ensure no silt-laden surface water runoff leaves the site, with the potential to either join with any adjacent surface water drainage systems within the vicinity or travel along the road network;

RECEIVED: 18/12/2024

- Where spoil is generated, this will only be stored temporarily. A designated spoil area will be established by the construction works contractor within the site footprint. This will be located away from any watercourse or any drainage ditch;
- Silt fencing will be placed around spoil areas until such time as the excavated soil has been used in landscaping / re-instatement works or removed offsite by a licenced waste contractor;
- Where possible, spoil will be covered or alternatively, graded to avoid ponding or water saturation;
- Manhole covers and stormwater gullies will be protected by silt blankets and additional measures such as sandbags to be incorporated on steeper gradients if required
- Sandbags will be placed beneath any steep gradient where required to prevent surface water from entering a drainage ditch or watercourse;
- Should water be encountered during excavation works, water will be pumped to a silt control feature, such as a lagoon/infiltration area used for settlement;
- This lagoon/infiltration area must have adequate capacity and water must be filtered before discharging. Water must not be directly discharged to a drainage ditch or a watercourse;
- The lagoon/infiltration area will be located away from any steep sloping ground;
- Pumping operations will be supervised at all times;
- All construction plant machinery and equipment will be maintained in good working order and regularly inspected;
- The construction works contractor will ensure the relevant site personnel are trained in spillage control;
- Where construction plant shows signs of hydrocarbon leakage, site personnel will cease the operation of the item in question. Any defective construction machinery will be kept out of service until the necessary repairs are undertaken;
- A designated area for the storage of hydrocarbons will be established by the construction works contractor and inspected on a regular basis;
- Spill kits, adequately stocked with spill clean-up materials such as booms and absorbent pads, will be readily available onsite;
- Any fuels, oils or chemicals will be stored in accordance with the EPA guidance on the storage of materials, in designated bunded areas at the temporary site compound, with adequate bund provision to contain 110% of the largest drum volume or 25% of the total volume of containers;
- Material storage areas will be appropriately labelled and marked;
- Should a protected fauna species such as Otter (*Lutra lutra*) or Badger (*Meles meles*) be found during the construction phase of the project, all construction works will be halted and an investigation will be undertaken. Where required, an officer of the NPWS will be notified prior to the resumption of construction works;
- If weed control is required then herbicide application will only be carried out by suitably qualified contractors or operators with strict reference to the product label, local land use, health and safety considerations and any pertinent regulations. All herbicide

treatment must comply with the pesticide regulations S.I. No. 155/2012 - European Communities (Sustainable Use of Pesticides) Regulations 2012 or any amended or current regulations at the time of use.

RECEIVED: 18/12/2024

BIOSECURITY MEASURES

During all phases of the proposed development, biosecurity protocols must be followed to ensure non-native invasive species and diseases such as crayfish plague are not introduced to the proposed construction area;

- All personnel must implement the 'Clean – Check – Dry' principles, ensuring that all personal protective equipment (PPE), and equipment and machinery is clean and dry upon arrival at the proposed construction area;
- Upon completion of the proposed works, the contractor must check and clean all PPE, equipment and machinery visually by inspecting all equipment that has come into contact with the water for evidence of attached plant or animal material, or adherent mud or debris. This should be done before leaving the proposed activity area. Remove any attached or adherent material (vegetation and debris) before leaving the construction area of operation;
- High-pressure steam cleaning, with water > 40 degrees C, is recommended for machinery that will be moved from one watercourse to another. Many roadside garages provide these facilities. After cleaning, visually inspect the equipment to ensure that all adherent material and debris has been removed;
- It is recommended to apply disinfectant to the undercarriage and wheels of the vehicle/machine after steam cleaning or power hosing;
- Wet or live wells and other water retaining compartments in machinery must be cleaned, rinsed or flushed with a 1% solution of Virkon Aquatic or another proprietary disinfection product. Alternatively, a 5% solution (100 ml / 20 litre solution) of chlorine bleach should be used. Rinse thoroughly with clean water;
- Prior to commencement of any new activity, the contractor must ensure that all PPE, equipment and machinery are dry.
- If drying out of PPE, equipment and machinery is not feasible, disinfection using Virkon Aquatic must be carried out, as per the manufacturer's instructions.

Reference documents:

- *Control of Water Pollution from Construction Sites; guidance for consultants and contractors*" 2001;
- Construction Industry Research and Information Association (CIRIA) guidelines "*Control of Water Pollution from Construction Sites; guidance for consultants and contractors*" 2001;
- *Guidelines for the treatment of Otters prior to the construction of national road schemes*, (National Roads Authority, 2008).

It is therefore considered that due to the proposed mitigation measures, there will be no adverse effect to water quality and the protected habitats and species of the Rogerstown Estuary SAC,

the Rogerstown Estuary SPA or the North-west Irish Sea SPA as a result of the proposed development.

RECEIVED: 18/12/2024

9.0 IN COMBINATION EFFECTS

The following plans and projects were reviewed and considered for in-combination effects with the proposed development:

- Fingal Development Plan 2023-2029;
- Fingal Local Economic and Community Plan 2023-2028;
- Proposed and permitted developments in the area available on Fingal County Council planning system.

The proposed development is located within the townland of Collinstown and will be accessed by an existing road internal road which connects to the L1155. The village of Lusk is located approximately 2.3km to the south. The M1 motorway is located approximately 2.9km to the west and provides connectivity to Dublin and Louth. The area around the site is predominately agricultural (both pasture and tillage). Recent planning applications granted within the vicinity of the development include the most recent Agri-developments. There are also eight EPA licenced facilities located within approximately 10km of the site, which are included in the table below.

Table 9.1: Recent planning applications close to the proposed site

Application No.	Development Type	Outcome	Approximate Distance
F12A/0119	Permission for a New Anaerobic Digestion/Combined Heat & Power facility.	Granted	Adjacent NW
F19A/0365	Permission for a 1.414sq.m. side extension to Potato Storage Shed including all associated site works.	Granted	Adjacent W
F12A/0087	Permission for a New agricultural cattle feeding facility.	Granted	Adjacent N
F18A/0210	Permission for a 386.4m² side extension to existing Dispatch Shed.	Granted	71m W
F14A/0072	Permission for A) 1272m² grain store, B) 1157m² combined machinery shed and workshop.	Granted	104m N
F14A/0413	New agri-business facility (4867 sq.m.) incorporating two storey internal ancillary office/staff accommodation (346sq.m.) and ancillary plant/switch/storage rooms (128sq.m.), for a total floor area of 5,341sq.m., including new access road within the site, new waste water treatment system and associated site works.	Granted	168m W
F15A/0211	Permission for the development of the existing first floor area into a gymnasium and games room, including alterations to the internal layout, which includes the installation of a passenger lift and the installation of an external escape stairs on the eastern elevation.	Granted	206m W
F22A/0625	Planning permission for an Integrated Constructed Wetland ICW providing tertiary treatment to wastewater generated on site and all associated site	Granted	300m W

Application No.	Development Type	Outcome	Approximate Distance
	works. A Natura Impact Statement (NIS) has been prepared in respect of the proposed development.		
F23A/0326	Permission for of 1 no. 2.MW Wind Turbine.	Granted	323m NW

RECEIVED: 18/12/2024

Table 9.2: EPA licensed facilities in proximity to the proposed development

Licence No.	Licence Name	Licence Type (First Schedule of EPA Act, 1992, as amended)	Approximate Distance from Development
P0780	Brooks Group Limited	IPPC	3.3km NW
W0231	Fingal Landfill	IEL	3.4km W
W0272	Milverton Waste Recovery Facility	WMA	4.2km NE
W0129	Integrated Material Solutions Limited Partnership	WMA	5.6km W
P1175	Woodburn Farms Limited	IEL – 6.1 (a)	5.7km E
P0014	SK Biotek Ireland Limited	IEL	10km SW
P1014	Padraig Thornton Waste Disposal Limited	IEL - 11.4 (b)(ii)	6.km N
P1091	Mr. Pat Rooney	IEL – 6.1 (a)	11km SW

Potential in-combination effects are discussed under the following headings.

9.1 HABITAT LOSS / FRAGMENTATION

As discussed in Section 6.1, the proposed development does not directly impinge on any part of a European site, and as such would not be expected to have any in-situ effects upon a protected site through loss or destruction of habitat or fragmentation of habitat within the Natura 2000 site boundaries.

With regards ex-situ effects, it is considered that the proposed development site would not contain the habitats for which the Rogerstown Estuary SAC has been designated. There will be no construction works within the boundaries of this SAC or within the boundaries of the Rogerstown Estuary SPA and the North-west Irish Sea SPA.

The majority of habitats within the red line boundary have been modified and are of lower ecological value. The proposed development will not require the removal of any hedgerows or trees. These habitats would be considered of higher ecological value. The proposed landscape plan includes additional planting of new hedgerows, trees, meadows and woodlands. This will increase the overall species diversity and biodiversity of the site. There will be new opportunities for nesting birds. This will have a positive impact on biodiversity in the area. No protected habitats/species or habitats/species associated with the Rogerstown Estuary SAC/SPA or the North-west Irish Sea SPA were recorded within the red line boundary.

As noted in section 6, the arable habitats onsite could support some of the qualifying interests of the Rogerstown Estuary SPA and the North-west Irish Sea SPA. However, the avifauna for

which the SPA's have been designated are more likely to find more suitable habitats and foraging grounds in proximity of the SPA's. In addition, it is considered that the proposed development would not significantly limit any potential foraging habitat given the surrounding arable land use that would still be available.

RECEIVED: 18/12/2024

The main land-use surrounding the proposed development site is agriculture and commercial (food processing facilities & agri-business), all of which have been modified.

The closest EPA licenced facilities are 3.3km from the proposed development. Brooks Group Limited are a builder's merchant. Due to the different operational activities at these facilities it is considered there would be no cumulative noise impacts which would pose a significant risk to designated sites or species.

Developments were identified on the Fingal County Council planning site within the vicinity of the applicants proposed site and are comprised of agri-developments. Should future planning applications be submitted for the area, it is likely that they would be located within the town limit of Rathmooney/Ballymaguire or on land identified for agricultural/commercial use.

9.2 DISTURBANCE TO SPECIES

Disturbance to species may arise through noise emissions, physical disturbance and human activity. The main in-combination noise and human activity effects would be from any agricultural and commercial (food processing facility) activities within the area. The Rogerstown Estuary SAC and SPA are located approximately 4.4km from the proposed development boundary. The North-west Irish Sea SPA is located approximately 4.9km from the proposed development boundary. Given the distance to the nearest protected sites, it is considered that the proposed development would not have the potential to cause a significant impact due to noise disturbance. In addition, there will be no construction works within the boundary of any protected site.

Fauna within the area would be accustomed to noises commonly audible within the surrounding environment given its location within an agricultural setting and the location of a food processing facility to the west. According to the noise assessment (Refer to Document: PES_EIAR_ 22415), noise levels during the operational phase are not expected to significantly increase. Therefore, there are no cumulative impacts associated with noise that would be expected. It is not anticipated that there would be any significant impact to protected species as a result of light spill as luminaires will be angled away from hedgerows and treelines along site boundaries and tilted mainly towards the ground.

With regards to protected freshwater fauna and qualifying interests of the Rogerstown Estuary SPA and the North-west Irish Sea SPA, it is considered that the proposed development would not have a direct impact on protected species as no works will take place within the boundary of the protected sites. The proposed development would not support the breeding/nesting habitats of these avifauna. The arable land and hedgerows could offer suitable foraging habitat for some of the listed qualifying interests such as Greylag Goose, Lesser Black-backed Gull and Black-headed Gull. However, it is not expected that the proposed development would have the potential to significantly limit foraging habitat given the availability of arable land within the wider environment. In addition, the species listed are mostly associated with coastal and estuarine habitats. The areas in close proximity to the SPA boundaries would offer more suitable habitat. In addition, none of the qualifying interest species were recorded onsite.

RECEIVED: 18/12/2024

Mitigation measures included within this report will be implemented to ensure no indirect impact on water quality via the release of suspended solids that could impact the qualifying interests of the Rogerstown Estuary SAC, Rogerstown Estuary SPA and the North-west Irish Sea SPA.

Construction works will be undertaken during daylight hours so as to not disturb nocturnal species.

During site works, any material (consisting of materials used in the construction of the development) would be removed and would be either stored for re-use in the construction phase or removed to a licenced waste facility.

Therefore, owing to the surrounding rural and commercial land use and close proximity to the local road network, it is considered that the proposed development will not significantly increase cumulative noise impacts, or other disturbance effects due to human activity, which would pose an adverse risk to designated sites or species and habitats within the Rogerstown Estuary SAC, Rogerstown estuary SPA and the North-west Irish Sea SPA.

9.3 DETERIORATION IN WATER QUALITY

Continued implementation of the Water Framework Directive would result in achieving, or maintaining, improvements to water quality in the Nanny-Delvin Catchment. Developments such as this proposed development could act in combination with existing environmental pressures on the Nanny-Delvin Catchment, including; agriculture, anthropogenic, domestic and urban waste water, urban run-off, industry (including extractive) and forestry. However, as noted in Section 6.3, it is not considered that the development would pose a significant risk upon any SAC/SPA site due to a deleterious effect on water quality, during the operational phase.

The proposed instream works within a drainage ditch to the south could have a significant impact on water quality as detailed in section 6.3.

Construction phase mitigation measures will be implemented to protect watercourses and the qualifying interests of the Natura 2000 sites downstream. These measures will include silt control features that will prevent a significant impact on the drainage network. Mitigation measures will be also put in place to protect against spills and runoff during the construction phase. This will mitigate any adverse effect on the water quality of the Rogerstown Estuary SAC, Rogerstown estuary SPA and the North-west Irish Sea SPA

Given the proposed mitigation measures, no in combination impacts are anticipated due to a deterioration in water quality.

9.4 AIR QUALITY

As noted in section 6.4, the air quality impact assessment determined that the predicted air impacts are below the 1% threshold. Therefore, it is considered that the proposed development would not have any in-combination impact on the Rogerstown Estuary SAC/SPA or the North-west Irish Sea SPA due to a deterioration in air quality either during the construction or operational phases.

RECEIVED: 18/12/2024

10.0 CONCLUSION

It is not anticipated that the proposed development, subject to mitigation measures, by itself or in combination with other developments, would impact negatively upon the Natura 2000 network during the site preparation or operational phases of the project.

The proposed development site is located approximately 4.4km from the Rogerstown Estuary SAC (Site Code: 000208) and the Rogerstown Estuary SPA (Site Code: 004015) and 4.9km from the North-west Irish Sea SPA (Site Code: 004236). It is considered that there would be no potential risk of significant impacts upon the qualifying interests / special conservation interests of the Rogerstown Estuary SAC/SPA and the North-west Irish Sea SPA (Site Code: 004236) due to the proposed mitigation measures to be implemented.

It is the conclusion of this Natura Impact Statement that, subject to recommended mitigation measures, there would be no potential for significant impacts on European sites as a result of the proposed development and mitigation measures to be employed. This conclusion refers to the development by itself or in combination with other developments.

11.0 REFERENCES

Aas, G., Riedmiller, A. (1994) *Trees of Britain & Europe*. Harper Collins Publishers

Averis, B. (2013) *Plants and Habitats: An introduction to common plants and their habitats in Britain and Ireland*. United Kingdom: Swallowtail Print Ltd.

Botanical Society of Britain and Ireland flora distribution maps, available at: https://bsbi.org/maps

Cabot, D. (2004*) Irish Birds*. Harper Collins Publishers, London

CIRIA (2002) *Control of Water Pollution from Construction Sites – Guide to Good Practice*.

CIRIA (2001) *Control of Water Pollution from Construction Sites; guidance for consultants and contractors*.

Council Directive (EC) 2009/147/EC of 30 November 2009 on the conservation of wild birds.

Council Directive (EC) 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy – more commonly known as the Water Framework Directive.

Council Directive (EC) 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

DoEHLG (2010) *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities*.

Environment DG, European Commission (2021) *Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.*

Environmental Protection Agency Licence public access information, Available at: http://www.epa.ie/licensing/iedipcse/

European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272 of 2009).

European Communities (Quality of Salmonid Waters) Regulations 1988 (S.I. No. 293 of 1988)

Fossitt, J.A. (2000) *A Guide to Habitats in Ireland*. Kilkenny: The Heritage Council.

Fitzpatrick, U., Weeks, L., Wright, M. (2016) *Identification Guide to Irelands Grasses*. National Biodiversity Data Centre King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. and Cassidy, D. (2011). *Ireland Red List No. 5: Amphibians, Reptiles and Freshwater Fish*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Gilbert, G., Stanbury, A & Lewis, L. (2021) *Birds of Conservation Concern in Ireland 2021-2026*, Irish Birds, 9, pp. 523-544.

Marnell, F., Kingston, N. and Looney, D. (2009). *Ireland Red List No. 3: Terrestrial Mammals*, National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

Moorkens, E. A. (2000). Conservation management of the freshwater pearl mussel *Margaritifera margaritifera*. Part 2: Water Quality Requirements. *Irish Wildlife Manuals*, No. 9. Dúchas, the Heritage Service, Dublin.

Moorkens, E. A. (1999). Conservation management of the freshwater pearl mussel *Margaritifera margaritifera*. Part 1: Biology of the species and its present situation in Ireland. *Irish Wildlife Manuals*, No. 8. Dúchas, the Heritage Service, Dublin.

National Parks and Wildlife Service, available at: http://www.npws.ie/protected-sites

NPWS (2013a) Conservation Objectives: Rogerstown Estuary SAC 000208.Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013b) Conservation Objectives: Rogerstown Estuary SPA 004015. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NWPS (2013c) *Site Synopsis: Rogerstown Estuary SAC 000208*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NWPS (2014) *Site Synopsis: Rogerstown Estuary SPA 004015*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2018) Natura Standard Data Form for Rogerstown Estuary SPA

RECEIVED: 18/12/2024

NPWS (2019a) The Status of Protected EU Habitats and Species in Ireland. Volume 1: Summary Overview Unpublished Report, National Parks and Wildlife Services, Department of Culture, Heritage and the Gaeltacht.

NPWS (2019b) The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitats Assessments. Unpublished report. National Parks and Wildlife Services, Department of Culture, Heritage and the Gaeltacht.

NPWS (2019c) The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished report. National Parks and Wildlife Services, Department of Culture, Heritage and the Gaeltacht.

NPWS (2019d) Natura Standard Data Form for Rogerstown Estuary SAC

Parnell, J. and Curtis, T. (2012) *Webb's An Irish Flora*. Cork: Cork University Press.

Philips, R. (1980) *Grasses, Ferns, Mosses & Lichens of Great Britain and Ireland*. London: Pan Books.

Reid, N., Hayden, B., Lundy, M.G., Pietravalle, S., McDonald, R.A. & Montgomery, W.I. (2013) National Otter Survey of Ireland 2010/12. *Irish Wildlife Manuals*, No. 76. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Rose, F. (2006) *The Wildflower Key: How to identify wild flowers, trees and shrubs in Britain and Ireland*. China: Frederick Warne & Co.

Smith, G.F., O'Donoghue, P., O'Hora, K. and Delaney, E. (2011) *Best Practice Guidance for habitat survey and mapping*. The Heritage Council, Kilkenny. Available at: www.heritagecouncil.ie/wildlife/publications/

Streeter, D. (2018) *Collins Wild Flower Guide*. Harper Collins Publishers, London

Sterry, P. (2004) *Complete Irish Wildlife*. Harper Collins Publishers, London

Woods, C. (1974) *Freshwater Life in Ireland*. Irish University Press

Wheater, C.P., Bell, J.R. and Cook, P.A. (2011) *Practical Field Ecology: A Project Guide*. John Wiley & Sons.

Wilson, J. and Carmody, M. (2013) *The Birds of Ireland*. Gill Books

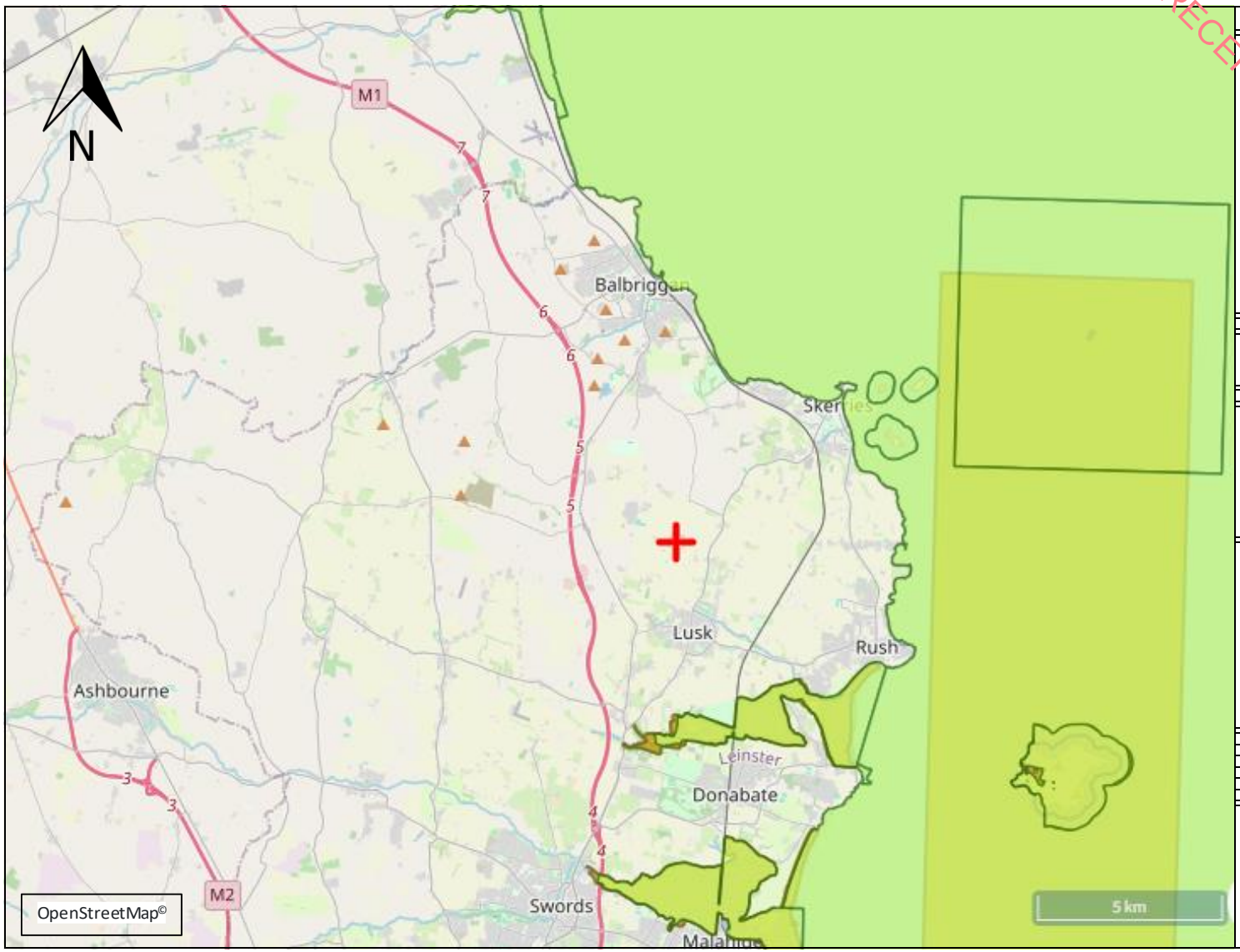
RECEIVED: 18/12/2024

RECEIVED: 18/12/2024

Appendix A

- PROTECTED SITES AND SITE PLANS –

RECEIVED: 18/12/2024



Notes

Site Location –

S.P.A. –

S.A.C. –

Project Title:

PROTECTED SITES MAP

Client Name:

Country Crest ULC,
Collinstown, Lusk,
Co. Dublin

PANTHER ECOLOGY LTD

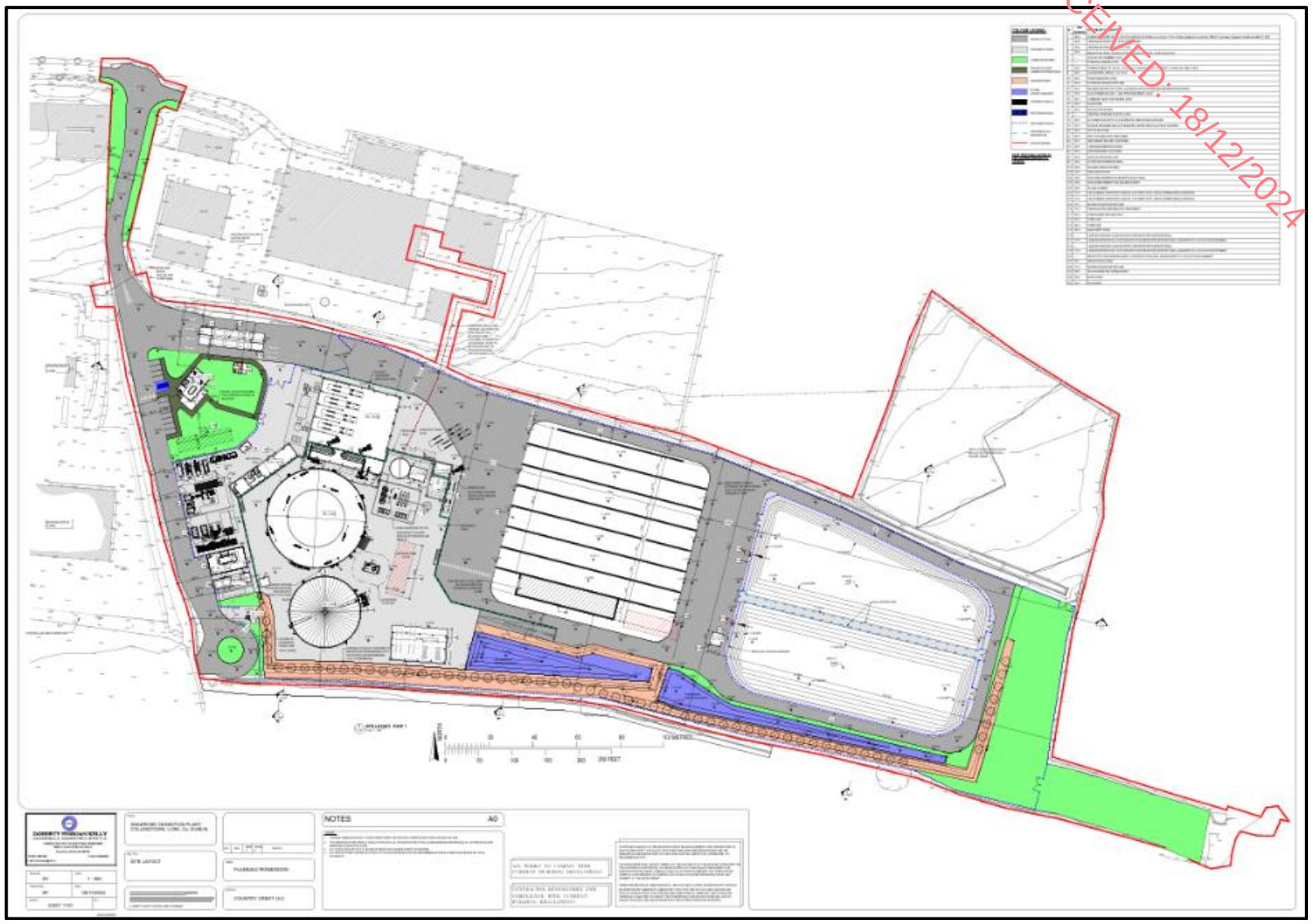
UNITS 3 & 4
S.E.T.U CARLOW CAMPUS
GREEN ROAD
CARLOW
R93 W248

TELE: 059 91 34222
MOBILE: 087 851 9284
EMAIL: info@pantherwms.com
WEB: www.pantherwms.com

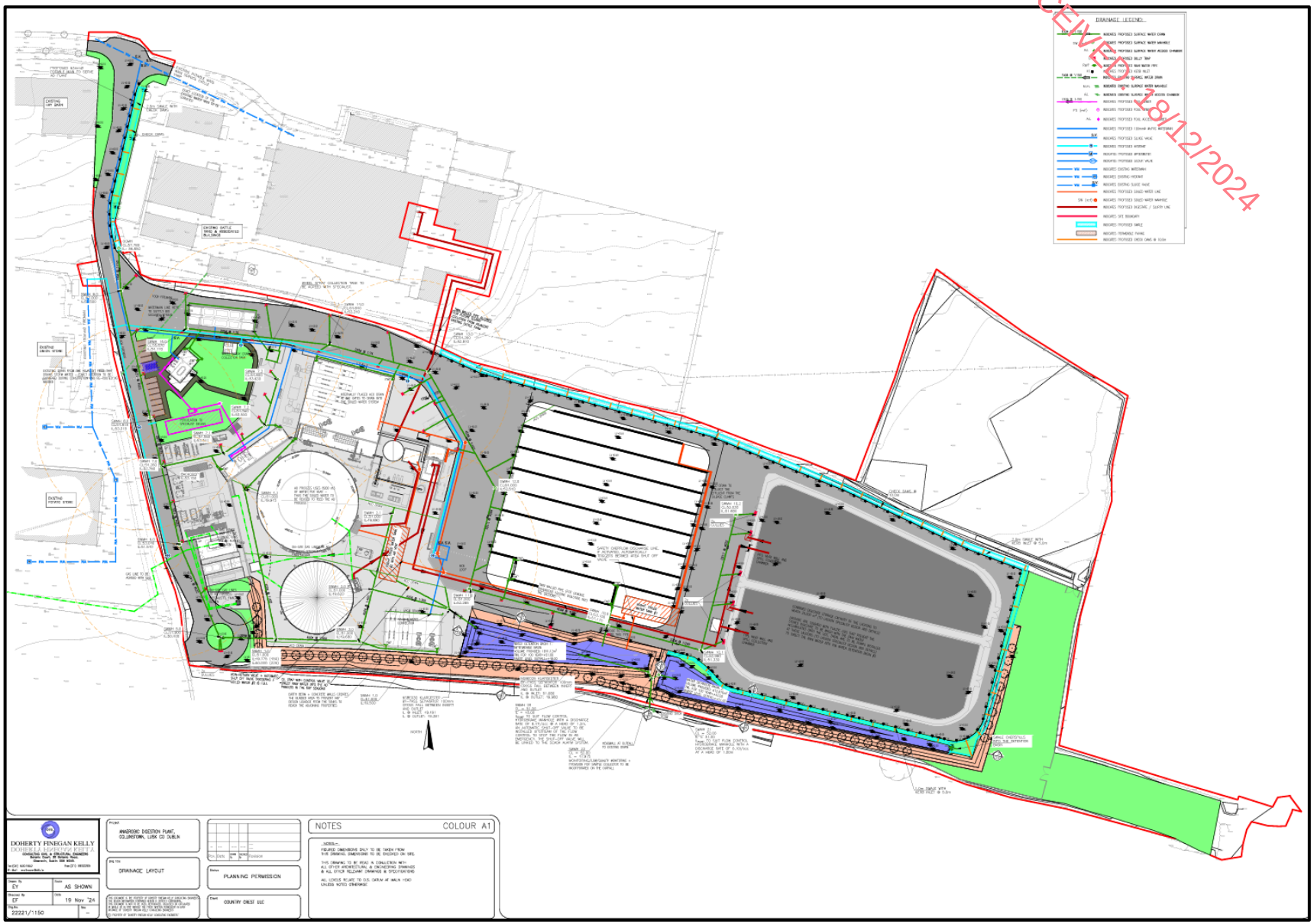
Drawing Status:	Scale:	NTS	A4
Report	Datum:	EPA Envision	
Drawing Number: PE_AA_10228	Drawn:	PE	
	Checked:	MF	
Revision:	Approved:	-	
R0	Date:	7/10/2024	

©This drawing or its contents must not be reproduced for any purpose without written permission. It is to be used only for the purpose for which it is supplied.

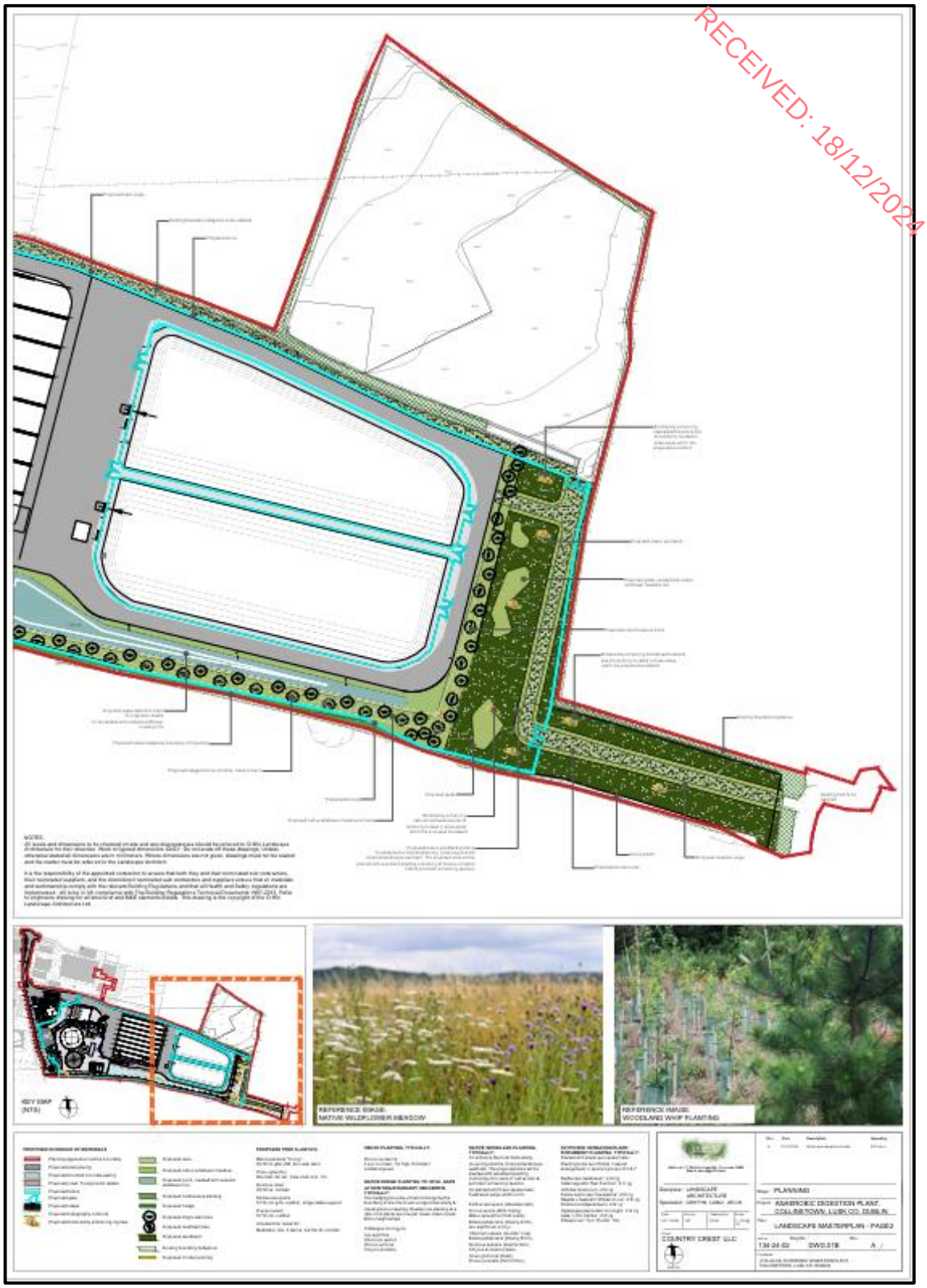
RECEIVED: 18/12/2024



RECEIVED 18/12/2024




NOTES
KEY MAP
(NTS)
RECEIVED 18/12/2024


RECEIVED: 18/12/2024
KEY MAP (NTS)
REFERENCE IMAGE: NATIVE WILDFLOWER MEADOW
REFERENCE IMAGE: WOODLAND WHIP PLANTING
PLANNING
ANAEROBIC DIGESTION PLANT, COLLINSTOWN, LUSK, CO. DUBLIN
LANDSCAPE MASTERPLAN - PHASE 2
COUNTRY CREST ULC

RECEIVED: 18/12/2024

Appendix B

- PHOTOLOG -

RECEIVED: 18/12/2024

Plate 1: Site entrance

Plate 2: Arable Crops (BC1)

Plate 3: Drainage ditch (FW4) west

Plate 4: Hedgerows (WL1)

Notes:

**COUNTRY CREST ULC,
COLLINSTOWN, LUSK, CO. DUBLIN**

**APPENDIX D
PHOTO LOG**

PANTHER ECOLOGY LTD

UNITS 3 & 4 INNOVATION CENTRE GREEN ROAD CARLOW

TELEPHONE: 059 91 34222
MOBILE: 087 851 9284
EMAIL: info@pantherwms.com
WEB: www.pantherwms.com

file location:		scale: N/A	A4
drawing status:	REPORT	datum:	N/A
		drawn:	PE
drawing no.	rev	checked:	RDS
NIS_10228	A	approved:	-
		date:	28/08/2024

©This drawing or its contents must not be reproduced for any purpose without written permission. It is to be used only for the purpose for which it is supplied.

RECEIVED: 18/12/2024

Plate 5: Recolonising bare ground and partly dry drain north

Plate 6: GS2 habitat along hedgerow

Plate 7: Drainage ditch (FW4) south

Plate 8: Buildings and artificial surfaces (BL3)

Notes:

**COUNTRY CREST ULC,
COLLINSTOWN, LUSK, CO. DUBLIN**

**APPENDIX D
PHOTO LOG**

PANTHER ECOLOGY LTD

UNITS 3 & 4
INNOVATION
CENTRE
GREEN ROAD
CARLOW

TELEPHONE: 059 91 34222
MOBILE: 087 851 9284
EMAIL: info@pantherwms.com
WEB: www.pantherwms.com

file location:		scale: N/A	A4
drawing status:	REPORT	datum:	N/A
		drawn:	PE
drawing no.	rev	checked:	RDS
NIS_10228	A	approved:	-
		date:	28/08/2024

©This drawing or its contents must not be reproduced for any purpose without written permission. It is to be used only for the purpose for which it is supplied.

RECEIVED: 18/12/2024

Appendix C

- SILT FENCING SPECIFICATIONS -

SILT FENCING SPECIFICATIONS

RECEIVED: 18/12/2024

Silt fencing consists of porous filter fabric which detains sediment and the support posts. The fabric must be trenched-in and backfilled, and the soil compacted around it. The posts are sunk into the ground and can be either steel or wood. How much is required will be determined by the location, size and topography of the site with some sites requiring more than others. Silt fencing works by blocking runoff water and creating a pond behind it. This dissipates the energy in running water and allows for sediments to sink while the water can either pass through, percolate to ground or evaporate.

Silt fencing installation should have posts anywhere from 1m to 2m apart as the silt fencing has to withstand the force of water building up behind it. The fabric must be secured to the posts using plastic cable ties, wire twists or construction grade staples. It is important that there is no gap between the silt fencing and the ground. Trenching-in the fabric will ensure a solid anchor in the ground and ensures runoff water does not get past. Silt fencing fabric must be able to withstand all weather conditions and made of special material that's high quality, permeable, technical filter fabric and can prevent runoff from a storm event. The material used in silt fencing will determine how durable and efficient it is as stopping sediment from reaching a protected area. Material can be geotextile fabric, produced from high-tenacity polypropylene silt-film

The building contractor will determine the most appropriate type of silt fencing to use and ensure its correct installation and maintenance throughout the construction phase. Silt fencing must remain in place until there is no risk of sediments from entering a protected habitat or watercourse. Silt fences must be inspected daily and after a heavy rainfall event with repairs carried out if required. When sediment accumulation reaches one third the height of the exposed fence either remove the sediments or install a second silt fence as directed by the construction site manager/engineer.

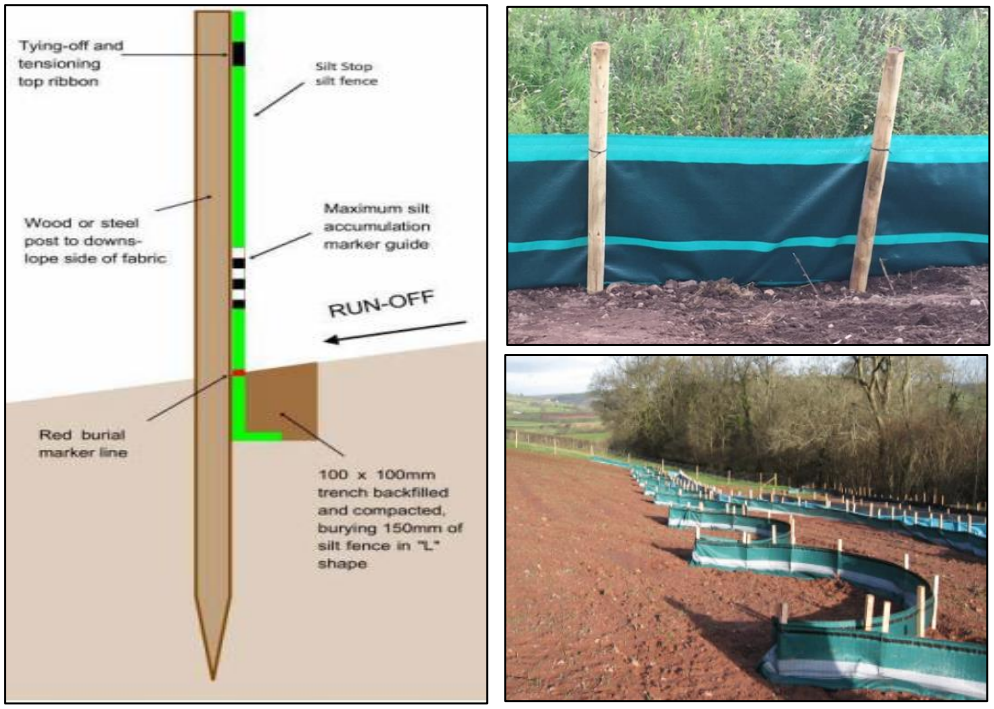


Figure Appendix D1: Example of Silt Fencing and Installation.

RECEIVED: 18/12/2024