November 2021

Stage 2: Appropriate Assessment -

Natura Impact Statement

Proposed Public Park, Remediation and Restoration Works

Finisklin Closed Landfill

On behalf of

Sligo County Council

MALONE O'REGAN ENVIRONMENTAL

QUALITY
I.S. EN ISO 9001:2015
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Stage 2: Appropriate Assessment - Natura Impact Statement

Proposed Public Park, Remediation and Restoration Works

Finisklin Closed Landfill

Sligo County Council

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1 INTRODUCTION

Malone O'Regan Environmental (MOR) was commissioned by Sligo County Council (SCC) ("the Applicant") to prepare a Natura Impact Statement (NIS) to assess the potential adverse effects, if any, on the European conservation designations (i.e., Natura 2000 sites); in respect of the following proposed works ("the Proposed Development") at the closed Finisklin landfill, Co. Sligo:

- Remedial works which will include the installation of six (6No.) bio-windows and one (1No.) bioactive-trench at specific parts of the Site; and
- Development of a public park in the northern portion of the Site.

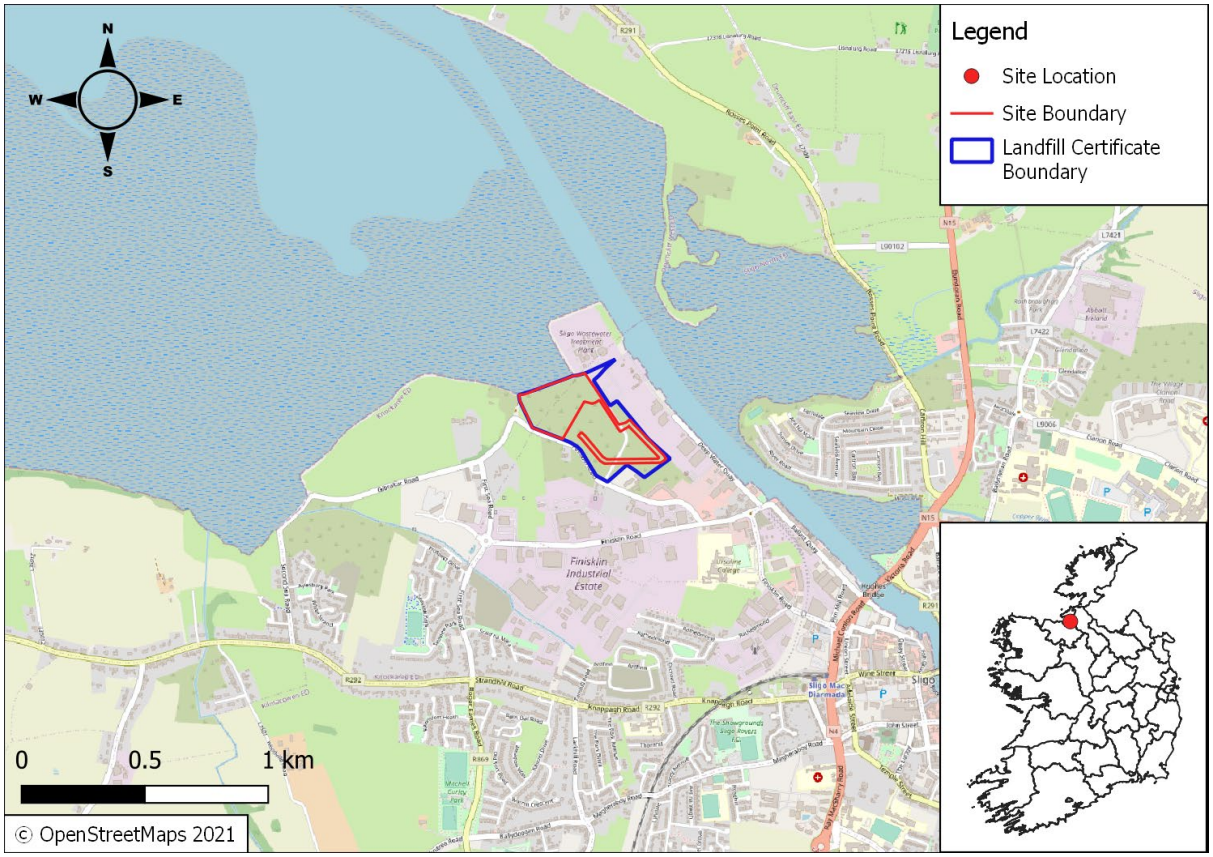
The scope of the proposed remediation works have been agreed with the Environmental Protection Agency (EPA) and are required to comply with the Certificate of Authorisation (EPA Ref: H0006-01) that was issued to SCC on the 13th of September 2018. The Proposed Development of a new public park on a portion of the former landfill will provide an important new amenity to the local community.

This report has been prepared to inform the Planning Authority with regard to Stage 1 (Screening) and Stage 2 (Appropriate Assessment) of the Proposed Development through the research and interpretation of available scientific, geographic and engineering knowledge.

The objective of this assessment was to determine whether the Proposed Development will, on its own or in combination with other plans / projects have a significant effect on Natura 2000 sites within a defined radius of the subject Site.

The location of the Proposed Development ('the Site') is shown in Figure 1-1 (Grid reference: G 67732 37069).

Figure 1-1: Site Location



The purpose of this assessment was to determine the appropriateness, or otherwise, of the proposed works in the context of the conservation objectives of Natura 2000 sites.

1.1 Statement of Authority

The report was approved by Mr. Dyfrig Hubble, Principal Ecologist. Dyfrig is a full member of the Chartered Institute of Ecology and Environmental Management. Dyfrig has over 15 years' experience working in the ecological consultancy sector including habitat appraisals, specialist species-specific surveys and ecological assessments.

1.2 Regulatory Context

This Natura Impact Statement (NIS) was prepared in accordance with Article 33 of the Planning and Development Regulations 2001 (as amended) and in compliance with the following legislation:

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna better known as "The Habitats Directive" provides the framework for legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC as amended 2009/149/EC) (better known as "The Birds Directive").

Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment (now termed Natura Impact Statement):

> "*Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implication 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."*

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. First, the project should aim to avoid any negative impacts on European sites by identifying possible impacts early in the planning stage and designing the project in order to avoid such impacts. Second, mitigation measures should be applied, if necessary, during the AA process to the point, where no adverse impacts on the site(s) remain. If the project is still likely to result in adverse effects, and no further practicable mitigation is possible, it is rejected. If no alternative solutions are identified and the project is required for imperative reasons of overriding public interest (IROPI test) under Article 6(4) of the Habitats Directive, then compensation measures are required for any remaining adverse effects.

1.3 Stages of Appropriate Assessment

This NIS has been undertaken in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC 2001) and the European Commission Guidance 'Managing Natura 2000 Sites'. The Guidance for Planning Authorities published by the Department of Environment, Heritage and Local Government (DOEHLG, December 2009) was also adhered to.

There are four distinct stages to undertaking an AA as outlined in current EU and DOEHLG guidance:

Stage 1: Screening

This process identifies the potential impacts of a plan or project on a Natura site, alone and in combination with other plans and projects and considers whether these impacts are likely to be significant. If potential significant impacts are identified the plan or project cannot be screened out and must proceed to Stage 2.

Stage 2: Appropriate Assessment

Where potential significant impacts are identified, an assessment of the potential mitigation of those impacts is required; this stage considers the appropriateness of those mitigation measures in the context of maintaining the integrity of the Natura 2000 sites. If potential significant impacts cannot be eliminated with appropriate mitigation measures, the assessment must proceed to Stage 3.

Stage 3: Assessment of Alternatives Solutions

This process examines alternative ways to achieve the objectives of the plan or project that avoid adverse impacts on the integrity of the Natura 2000 site if mitigation measures are deemed insufficient.

Stage 4: Imperative Reasons of Overriding Public Interest (IROPI)

Assessment where no alternative solution exists for a plan or project and where adverse impacts remain. This includes an assessment of compensatory measures in the case of projects or plans which are necessary for IROPI.

This report comprises a Stage 2 Appropriate Assessment, which seeks to determine whether the subject site will, on its own or in combination with other plans / projects, have a significant effect on Natura 2000 sites within a defined radius of the subject site.

2 METHODOLOGY

2.1 Desk Based Studies

A desk-based review of information sources was completed, which included the following sources of information:

- The National Parks and Wildlife Service (NPWS) website was consulted with regard to the most up to date detail on conservation objectives for the Natura 2000 sites relevant to this assessment (NPWS, 2021);
- The National Biodiversity Data Centre (NBDC) website was consulted with regard to species distributions (NBDC, 2021); and,
- The EPA Envision website was consulted to obtain details about watercourses in the vicinity of the Site (https://gis.epa.ie/EPAMaps/) (EPA, 2021).

2.1.1 Invasive Species

An updated invasive species survey was undertaken on the 13th of August 2021 by a suitably qualified MOR ecologist.

The Site was assessed for the presence of any noxious / invasive species such as Japanese knotweed (*Fallopia japonica*) and any other invasive species within the Site and adjacent area, and to assess the Japanese Knotweed remediation works.

2.1.2 Other Species

In addition, as part of the overall biodiversity assessment for the Site, an assessment was carried out of the potential for the Site to support any other species considered to be of value for biodiversity, including those that were identified as occurring locally by the desktop study. This information was used as part of the NIS to inform the assessment of potential adverse effects on both Annex I Species and Habitats identified as part of the study.

3 DESCRIPTION OF THE PROJECT

3.1 Site Description and Context

The Site, which covers an area of ca. 6.27 hectares (ha), is located within the ca.13ha of closed landfill area at Finisklin, just northwest of Sligo town. The proposed works form part of the remediation strategy required for the management of the historic landfill in compliance with the conditions of the CoA as well as the provision of a new public park.

The former landfill is now well vegetated with a mix of rank, weedy vegetation, wet grassland and scrub (mostly willow). A number of Japanese knotweed (*Fallopia japonica*) stands were identified onsite and are currently subject to ongoing management.

The Site is bordered to the north by Sligo Harbour / Garavogue Estuary and the Sligo Wastewater Treatment Plant (WWTP), to the east by commercial / industrial facilities located on Deepwater Berths Road, to the south by commercial / industrial facilities and to the west by Finisklin Road and Far Finisklin cul-de-sac along which there are residential properties. Refer to Figure 3-1 for Site context.

Figure 3-1: Site Context

3.1.1 Hydrological Features

The Site is located within the Bonet_SC_030 Subcatchment (Subcatchment ID: 35_10) and the Sligo Bay and Drowse Catchment (Catchment ID: 35) (EPA, 2021).

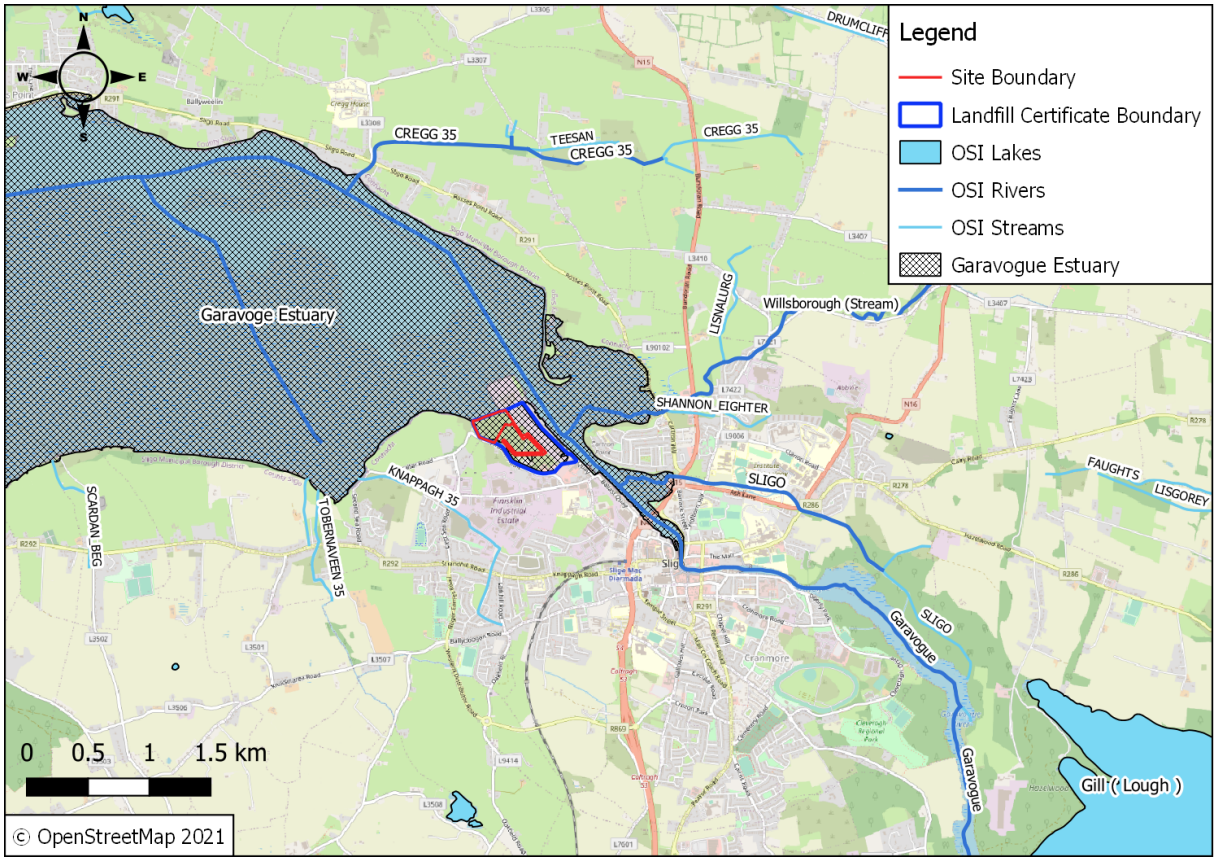
There are three (3No.) waterbodies of note within close proximity to the Site.

- The Garavogue Estuary is located directly adjacent to the northern perimeter of the Site and surrounds the north-eastern and north-western boundaries of the Site;

- The Knappagh Stream is located ca. 600m southwest of the Site. The stream flows in a northerly direction, entering the Garavogue Estuary ca.880m southwest of the Site; and,
- The Garavogue River is located ca.1.6km southeast of the Site. The river flows in a westerly direction before joining the Estuary and Sligo Bay.

The location of the key surface water features in the vicinity of the Site are illustrated in Figure 3-2 below.

Figure 3-2: Watercourses in the Vicinity of the Site



Under the Water Framework Directive (WFD) 2000/60/EC, the EPA classifies the status and the risk of not achieving good water quality status for all waterbodies in Ireland. According to the WFD 2013-2018 monitoring events, the most up-to-date data at the time of writing this report, the water quality of the watercourses in the vicinity of the Site are as follows:

- The Garavogue Estuary has a '*moderate*' water quality status and its risk of not achieving a '*high*' water quality status is under '*review*,' (EPA, 2021);
- The water quality status of the Knappagh Stream is '*unassigned*' and its risk of not achieving a '*high'* water quality status is under '*review*' (EPA, 2021); and,
- The Garavogue River has a '*poor*' water quality status according to the EPA and is considered to be '*at risk'* (EPA, 2021).

3.2 Proposed Development

The Proposed Development will consist of the remediation works and development of a new park located on the closed Finisklin Landfill site. The total area of the Site will be 6.27ha, which the majority namely 4.8ha, will comprise of a new public park. The proposed works will include the following:

- Remediation works including the installation of six (6No) biowindows, one (1No) bioactive trench and increasing the thickness of the landfill capping layer within a localised portion of the Site, these remediation works have been agreed with the EPA in accordance with requirements of COA *H0006-01*;
- Provision of a ca. 4.8 ha public park including 1,000m of a 3.5m wide walking track;
- Construction of an 18m^2 viewing platform;
- Construction of a ca. 750 m^2 car park, including 27 No. of car parking spaces and 10No. of bicycle parking spaces;
- Demolition of a 4m^2 single story concrete block hut;
- Modifications to the existing site entrance and provision of new gates;
- Provision of a new pedestrian entrance; and,
- Associated ancillary works including land grading, drainage works, landscaping, fencing and seating areas.

Remediation works are based on the findings of the Tier 3 Environmental Risk Assessment for the Site (MOR, 2017) and with the EPA agreed scope of works (MOR, October 2020). These works will address the potential risk of landfill gas migration to offsite properties surrounding the Site. As the volume of gas being generated at the Site is low, a biofilter venting system i.e., venting biowindows and interceptor trenches, are considered the most appropriate remediation technique for the specific requirements at the Site. The measures are required under the conditions of CoA H0006-01. Refer to drawing P803 submitted with this application for further details.

3.2.1 Biowindows and Bioactive Trenches

Based on recorded results and numerous different investigations it can be confirmed that the landfill gas identified at the former landfill presents no immediate risk to any offsite properties specifically those located along the northeastern side of the Site on Deepwater Berths Road.

However, based on detailed assessments undertaken in conjunction with the EPA, the risk posed by potential off site gas migration was determined to be higher at the north-eastern and northwestern boundaries. This is primarily due to the fact that these were the locations where the most recent waste was deposited before the former landfill was closed (MOR, 2011). It was subsequently agreed with the EPA that venting biowindows and an intercepting bioactive trench will be installed at specific locations to passively vent methane gas at low concentrations.

A biowindow is an accepted system for mitigating landfill methane emissions to the atmosphere. These biowindows and bioactive trenches contain naturally occurring methanotrophs (methane consuming microorganisms). These methanotrophs convert methane in the landfill gas, in the presence of oxygen to energy, carbon dioxide, water and cell material. Biowindows are integrated with the landfill soil cover in small areas where higher methane emissions have been observed. A biowindow receives passively vented landfill gas from underlying waste, this, in turn, presents variable routes for the movement of gas preventing lateral gas migration as well as reducing methane emissions and therefore global warming potential (refer to Section 4.8 Climate of the Environmental Impact Assessment Report (EIAR) Screening submitted as part of the application for further information).

An intercepting bioactive trench is proposed to be installed along a section of the north eastern boundary. The bioactive trench has been designed to intercept, collect and treat methane generated from the landfill and channel it through the same methane oxidising mechanism as the biowindow.

Extensive consultation took place with the EPA regarding this remediation strategy through several letters, reports, meetings and site visits. The EPA were satisfied that the concentrations of landfill gas being generated by the closed landfill did not warrant any active landfill gas collection system. Taking a precautionary approach, the EPA did stipulate the

requirement for additional biowindows in the southern part of the landfill despite the conclusions that there was no active gas production in this region, refer to Section 4.8 Climate of the EIAR Screening for further information.

The report titled "*Landfill Biowindow Specification CoA H0006-01 Finisklin Closed Landfill*" dated August 2020 was prepared and issued in response to a letter from the EPA dated 26th June 2020 (see Appendix A) (MOR, 2020b). The report details the following:

- The scientific justifications for the proposed biowindow designs;
- Sets out the biowindow designs; and
- Sets out the monitoring systems proposed for the biowindows.

In brief, to meet the calculated area of biowindow required to effectively remediate landfill gas at the Site, the following specifications were deemed to be required;

- The Final Cell - One (1No.) biowindow sized 12m x 12m to be installed;
- The Northern Cell - One (1No) biowindow sized 20m X 20m
- The Middle Cell - Three (3No.) biowindows 10m x 10m at the surface to be installed;
- The Southern Cell - One (1No) biowindow 10m x 10m to be installed; and
- The Northern/Middle Cell – One (1No.) bioactive trench sized 200m x 4m x 4m to be installed.

Figure 3-3: Proposed (approximate) locations for Biowindows and the Bioactive trench

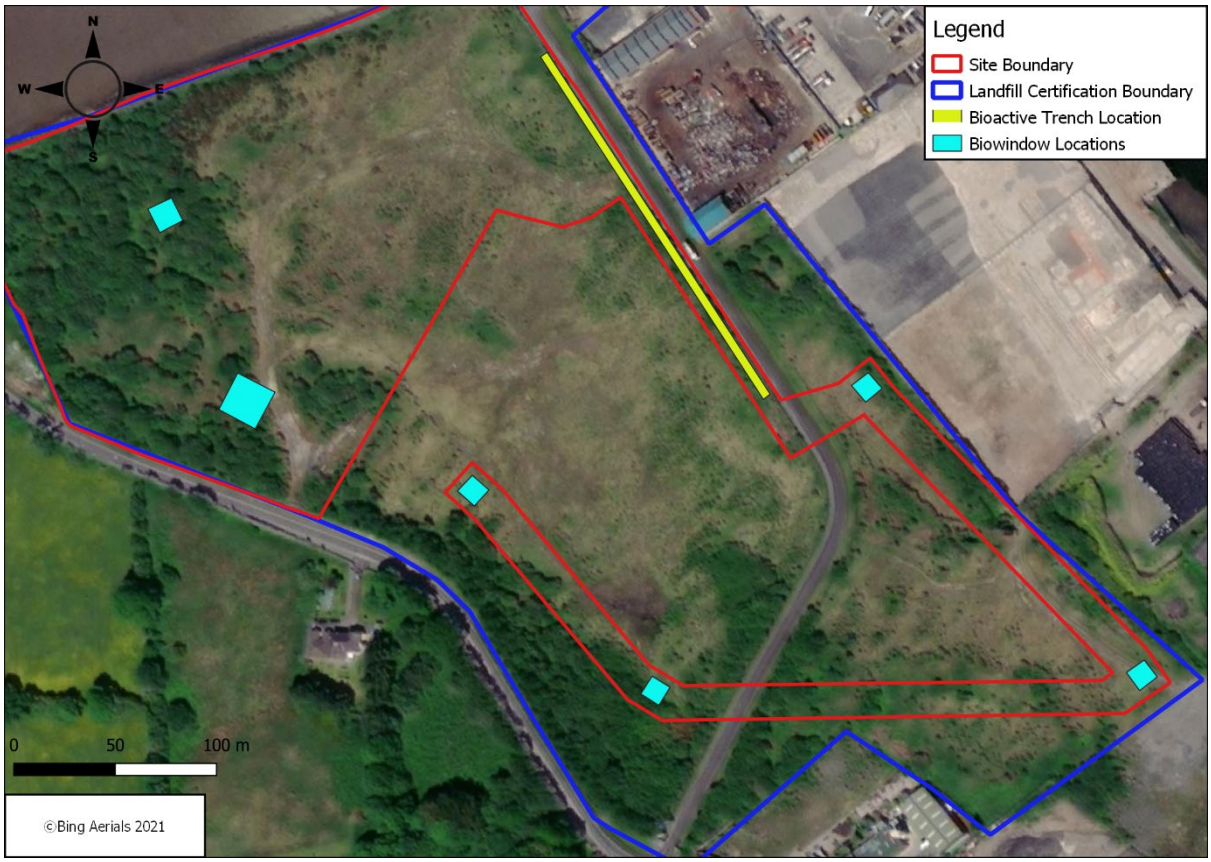


Table 3-1 gives the proposed minimum design depths of each of the layers of the biowindows and the bioactive trench.

Table 3-1: Parameters for the Design of the Biowindows and Bioactive Trench.

Layer	Biowindow (2 m cap)	Bioactive Trench (2 m cap)	Notes
Topsoil with vegetation	10 cm nominal	10 cm nominal	Vegetation increases oxygen diffusion into subsoil and enhances methane oxidation
Methane Oxidising Layer (MOL)	120 cm minimum	120 cm minimum	Either compost or medium sand are suitable materials
Capillary Break	20 cm nominal	20 cm nominal	A medium non-calcareous sand is required to break the capillary effect between the MOL and the GDL. Grain size 0.5 – 2.0 mm
Gas Distribution Layer (GDL)	50 cm at highest and 30 cm at lowest point of capillary layer	50 cm at highest and 30 cm at lowest point of capillary break layer	A no fines non-calcareous gravel with a particle size 20 – 60 mm

The sides of the Methane Oxidising Layer (MOL) in the top 1 m will be hopper shaped to reduce the propensity for short circuiting of gas flow at the edges of the biowindows or the bioactive trench.

The base of the MOL, capillary break layer, and the top of the gas distribution layer (GDL) will be inclined at an angle of between 2-5 to the horizontal, into the centre of the biowindow or towards the waste in the bioactive trench, to reduce the risk of water collecting at the capillary break and increase the length of unrestricted gas migration (LUGM). The GDL is laid in direct contact with the waste.

A herringbone drainage system will be installed at the base of the MOL to help increase the length of the LUGM parameter. This will comprise of four pipes with perforated upper halves, laid on the top of the capillary break level. The four arms of the herringbone follow the slope of the Capillary Break level and will drain through a single unperforated pipe into the GDL. Any gas migrating up the drainage system will also be distributed through the perforations in the drainage pipe.

During construction, the MOL may be lightly compacted to reduce the need for additional material to be added to the biowindows following settlement. Light compaction will not affect the oxidising performance of the MOL. Figures 3-4 to 3-6 show the sectional layouts for the biowindow and the bioactive trench.

Figure 3-4: Design of Biowindow (12m x 12m version).

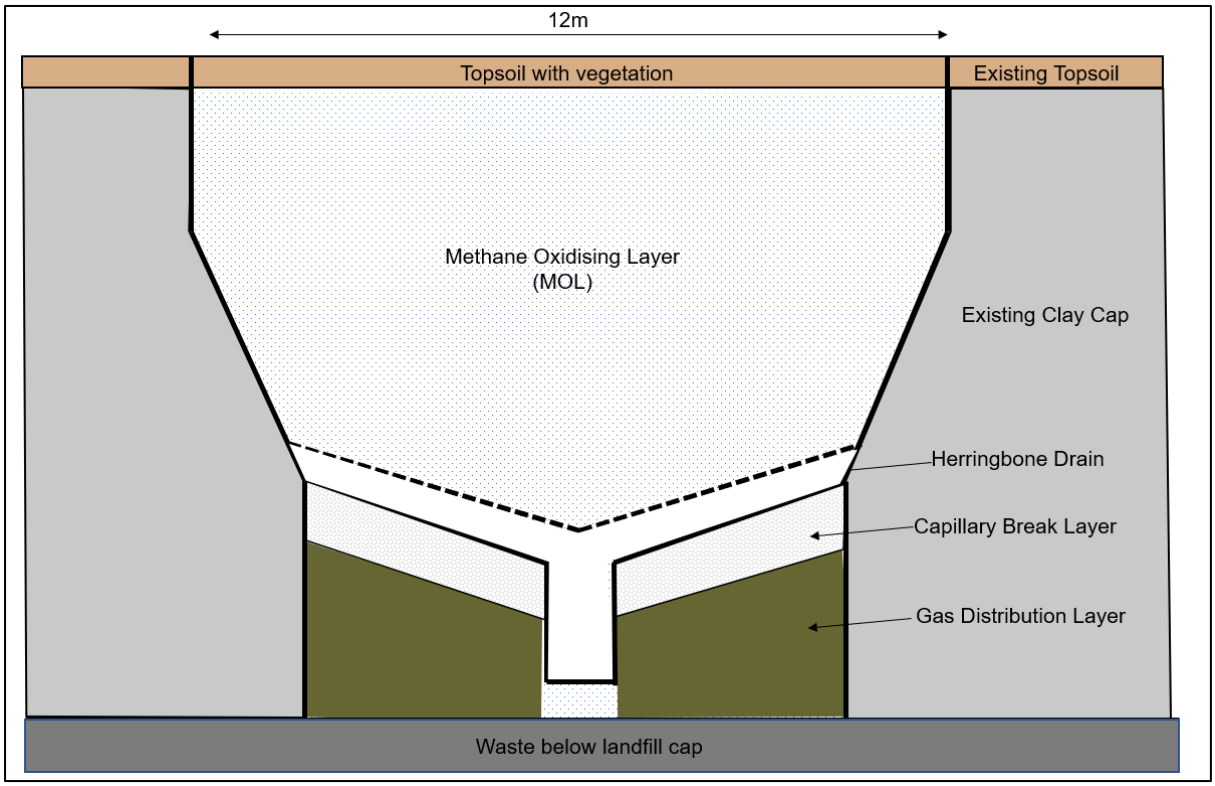


Figure 3-5: Design of Bioactive Trench.

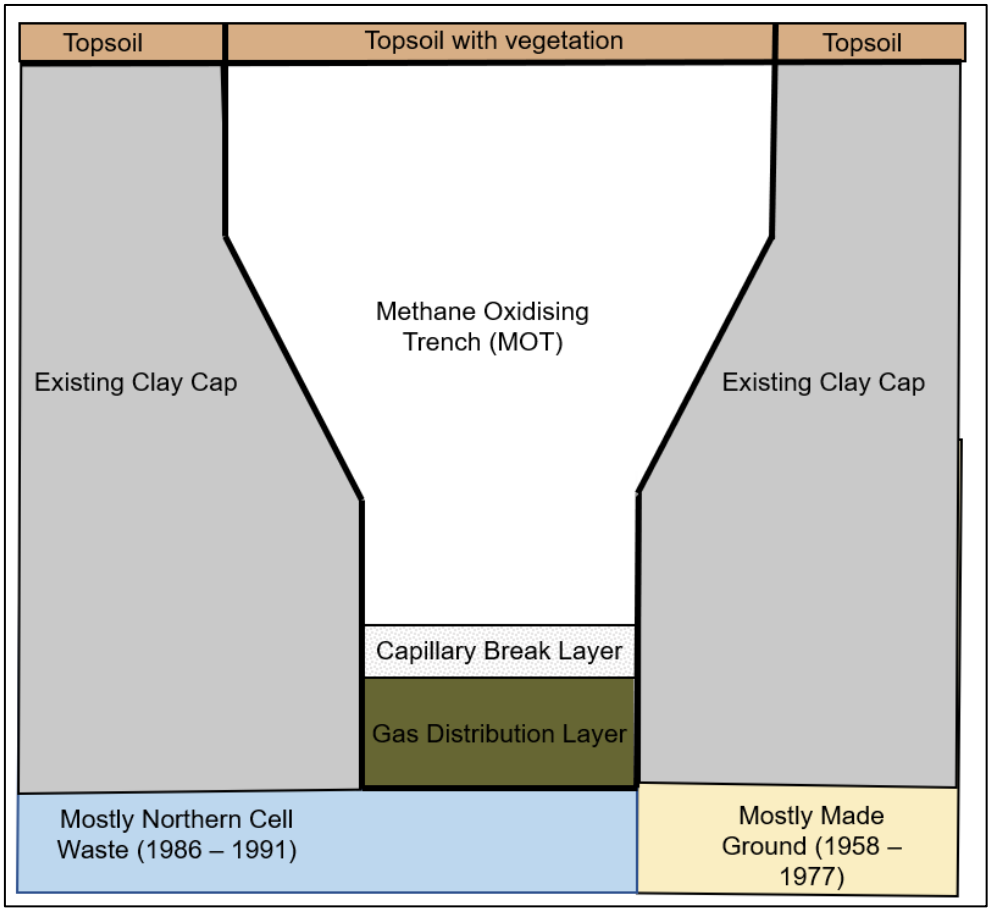
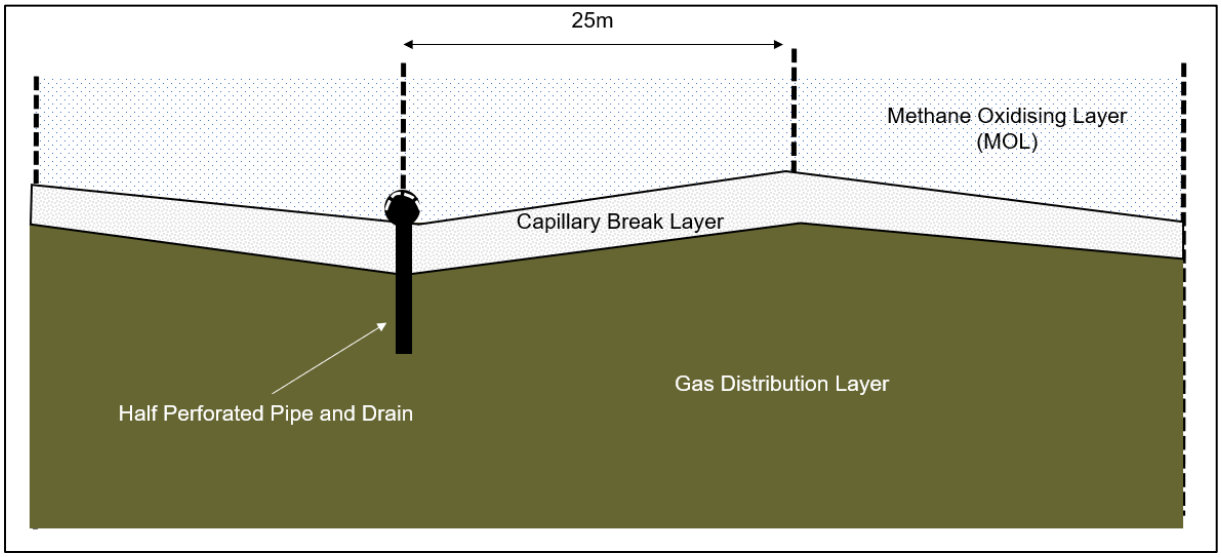


Figure 3-6: Design of Bioactive Trench – View on Long Section of Trench Showing Zig-Zag Capillary Break Layer.



3.2.2 Earthworks / Landfill Capping

The EPA, in the CoA determination (H0006-01), require under condition 3.1(c) that SCC "*Install a permeable landfill cap, minimum 500mm*". A detailed investigation was undertaken by MOR in consultation with the EPA to determine the thickness of the capping layer. The results of this investigation confirmed that at some locations within the former landfill that capping layer had only a thickness between 200mm and 400mm. The EPA instructed that the thickness of the capping layer in the identified locations had to increase to a thickness of 500mm. It is estimated that ca.1,900 tonnes of soil will be required to bring the capping layer up to this mandatory depth. Excavation works for the public park including the walking track and car park will provide ca. 1,550 tonnes, the remaining ca. 350 tonnes will be sourced by regrading parts of the Site during landscaping works in areas that have surplus capping material. This approach will avoid the need to import any materials from offsite sources.

These works will first require the clearing of willow dominant scrub within the footprint of the proposed capping works. These areas will be replanted in accordance with the landscape plan, refer to the Landscape Plan submitted with this application and outlined in Section 3.2.3.

3.2.3 Public Park – Landscaping

A Landscape Plan has been prepared to outline the proposed public park development and has been submitted with this application.

The public park (4.8 ha) includes the construction of a walking track and associated landscaping works. The design style is based on the sensitive enhancement of the Site, using a controlled spatial arrangement, and a visual sequence of directing focus and attention within the area.

The aim is that the landscape layout will add to and positively reinforce the naturalized character of the lands (see Figure 3-7 below, for further information refer to the landscape plan submitted with this application). The key elements of the Landscape plan are:

- The biowindow locations are lightly buffered with a surround of low to mid-sized regenerating planting.
- A low-key walking track network (3.5m in width) with considered views is incorporated which allow for exploration and appreciation of the scenic landscape.
- Key seating areas form focal point resting and viewing areas.

- On areas where soil is to be deposited, the existing scrub vegetation will be removed. It is proposed to reseed these areas with species rich grassland to aid in promoting biodiversity and in keeping with the All-Ireland Pollinator plan (NBDC, 2021). Precise seed mix is to be tailored by a wildflower specialist following final soil tests to achieve maximum diversity and pollinator benefits on the site.
- The resting nodes / seating areas act as key pivot points offset from the circulation pathway within the natural open areas.
- A viewing platform is incorporated at a strategic point in the design (Size 6 x 3 m).
- The existing regenerating vegetation (clusters of *Ulex* and juvenile *Salix* scrub) is to be retained throughout the site where appropriate and allowed to regenerate.
- Existing retained stands of willow species (*Salix spp.*) provide vertical punctuation within the space.
- It is proposed to clear willow / scrub in a meandering area offset approx. 3 meters each side of the pathway to aid enticement, movement and direction into the open amenity area.

Figure 3-7: Excerpt from Landscape Plan (refer to landscape plan for further detail)

3.2.4 Walking Track

The walking track will be 1,000m in length and to be generally 3.5m wide. Excavation to a minimum of 200mm to achieve a gently graded track will be required. Importation and fill using

100mm clause 804 hardcore, and compacted and grade to falls. Surface with self-binding gravel layer with a compacted thickness of 35-40mm.

The walking track will be slightly sunken (50mm) in relation to surrounding ground levels, thereby creating a slight sloping side which will frame and provide definition for the track edges. These gentle falls with existing topography will allow for water runoff with exit points to adjacent lower level ground at 3-5 metre intervals.

3.2.5 Site Access

The Site will be accessed via the existing gate to the local Far Finisklin Road which diverges from the main Finisklin Road ca. 200m west of the Ballast Quay and Finisklin Road roundabout. The Finisklin Road is connected to the N4 national road.

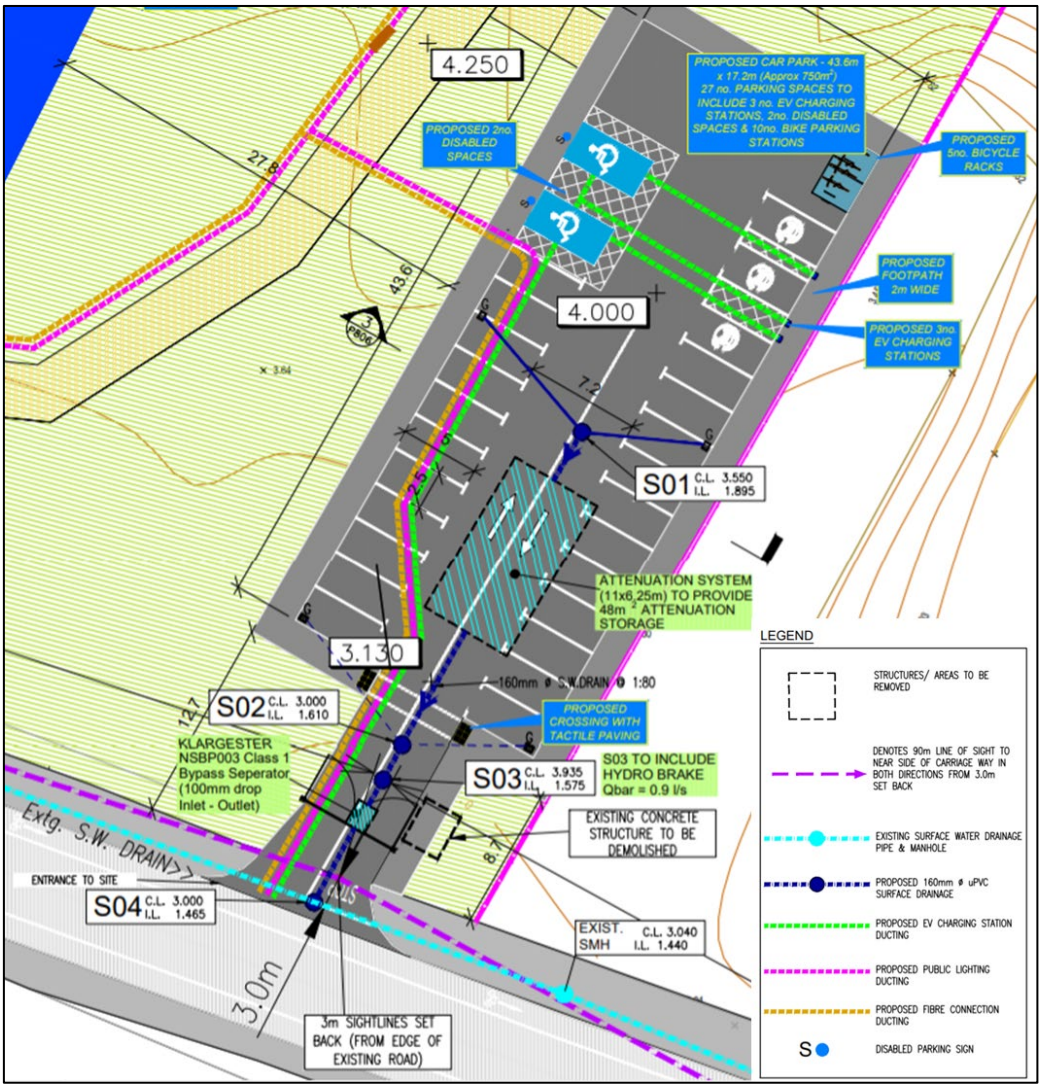
The access road will be modified during the construction works to link the carpark for the public park to the Far Finisklin Road. A 3.0m setback for sightlines (from the edge of the existing road) will allow a 90.0 m line of sight in both directions. Refer to drawing P804 submitted with this application for further details.

An additional pedestrian entrance will be provided ca. 100m further west along the Far Finisklin Road from the existing vehicle entrance.

3.2.6 Carpark

The carpark will utilise the existing hardstanding onsite covering an area of ca. 750m^2 to include 27No. spaces, of which 2No. will be designated disability parking and 3No. as electric vehicle charging stations. A bicycle rack will also be available to the rear of the carpark with a capacity to store 10No. bicycles. A 2m wide footpath will run around the periphery of the carpark with a zebra crossing located across the main entrance to allow pedestrians traverse safely, see Figure 3-8. Refer to drawing P806 submitted with this application for further details.

Figure 3-8: Proposed Site Entrance, Car Park and Drainage (refer to drawing P806 for detail)



3.2.7 Services

Stormwater from the car park will be captured by a surface water drainage system equipped with an attenuation tank. This will be diverted through a Klargester NSBP006 Class 1 bypass separator (or similar) to remove silt and hydrocarbons and a hydro break to control flow from the Site. The proposed new drainage system will connect to an existing public storm drain that discharges to the Garavogue Estuary along Deepwater Quay.

This system has been designed in accordance with Construction Industry Research and Information Association (CIRIA) C753 - The Sustainable Drainage Systems manual (CIRIA, 2015a). It has been designed for a 1 in 100-year flood event with an allowance of 30% increase in rainfall to account for climate change as specified in the Engineering Planning Report which has been submitted as part of the application.

A timber post and rail fence will be erected along the boundary of the public park. There is no proposed lighting within the park area, however, it is proposed that the park will be closed during the hours of darkness. Ducts for potential future lighting and electricity connections are provided within the design should they be required in future. Further information on the existing services can be found in the Engineering Planning Report and suite of engineering drawings submitted with this application.

3.3 Construction Procedures

During the construction phase of the Proposed Development potential environmental effects will be short-term and localised. Nonetheless, all works will comply with the relevant legislation, construction industry guidelines and best practice in order to reduce potential environmental adverse effects.

A Construction Environmental and Waste Management Plan (CE&WMP) will be prepared by the appointed contractor and will be submitted to the Planning Authority for approval in advance of works commencing at the Site. The following guidance will be referred to and followed during the construction phase of the project to prevent water pollution that may occur within the area:

- Landfill Manuals – Landfill Restoration and Aftercare (EPA, 1999);
- C532 – Control of Water Pollution from Construction Sites. Guidance for Consultants and Contractors (CIRIA, 2011)
- C774 - Coastal and Marine Environmental Site Guide (Second Edition*)* (CIRIA, 2015);
- C741 - Environmental Good Practice on Site (4th edition) (CIRIA, 2015); and,
- All works will be undertaken in accordance with the 'Requirements for the Protection of Fisheries Habitat during Construction and Development' (Inland Fisheries Ireland, 2016).

The full scope and details to be included in the CE&WMP will be refined following receipt of addition information with regards to the Proposed Development.

The proposed works will take approximately 10-12 weeks onsite to complete. Working hours will generally be restricted to between 7am to 7pm Monday to Friday and between 9am to 3pm on Saturdays. Construction work will not be permitted on Sunday or at night-time except where safety concerns necessitate it or if agreed in advance with the Planning Authority.

3.4 Monitoring

An experienced Ecological Clerk of Works (ECoW) will inspect the Site in advance of works commencing and supervise all vegetation clearance works or other works as required to ensure that they will be completed in line with the mitigation measures stipulated within the CE&WMP. The ECoW will either deliver or provide the resident engineer with sufficient environmental information to deliver a Site induction to personnel working on the Site.

In addition, all remediation works will be supervised onsite by appropriately qualified and competent person in relation to landfill works on behalf of SCC.

4 IDENTIFICATION OF NATURA 2000 SITES

In accordance with the European Commission Methodological Guidance (European Commission, 2002) a list of European sites that could be potentially impacted by the Proposed Development has been compiled. Guidance for Planning Authorities prepared by the Department of Environment Heritage and Local Government (DoEHLG, 2009) states that defining the likely zone of impact for the screening and the approach used will depend on the nature, size, location and the likely effects of the project. The key variables determining whether or not a particular Natura 2000 site is likely to be negatively affected by a project are:

- The physical distance from the project to the Site;
- The presence of impact pathways;
- The sensitivities of the ecological receptors; and
- The potential for in-combination effects.

Adopting the precautionary principle, all SAC and SPA sites within a 15km radius of the Site have been considered.

There are fourteen (14No) European sites located within 15km of the Site - these are identified in Figure 4-1 and Table 4-1.

Figure 4-1: Site Location and Natura 2000 Designated Sites within 15km

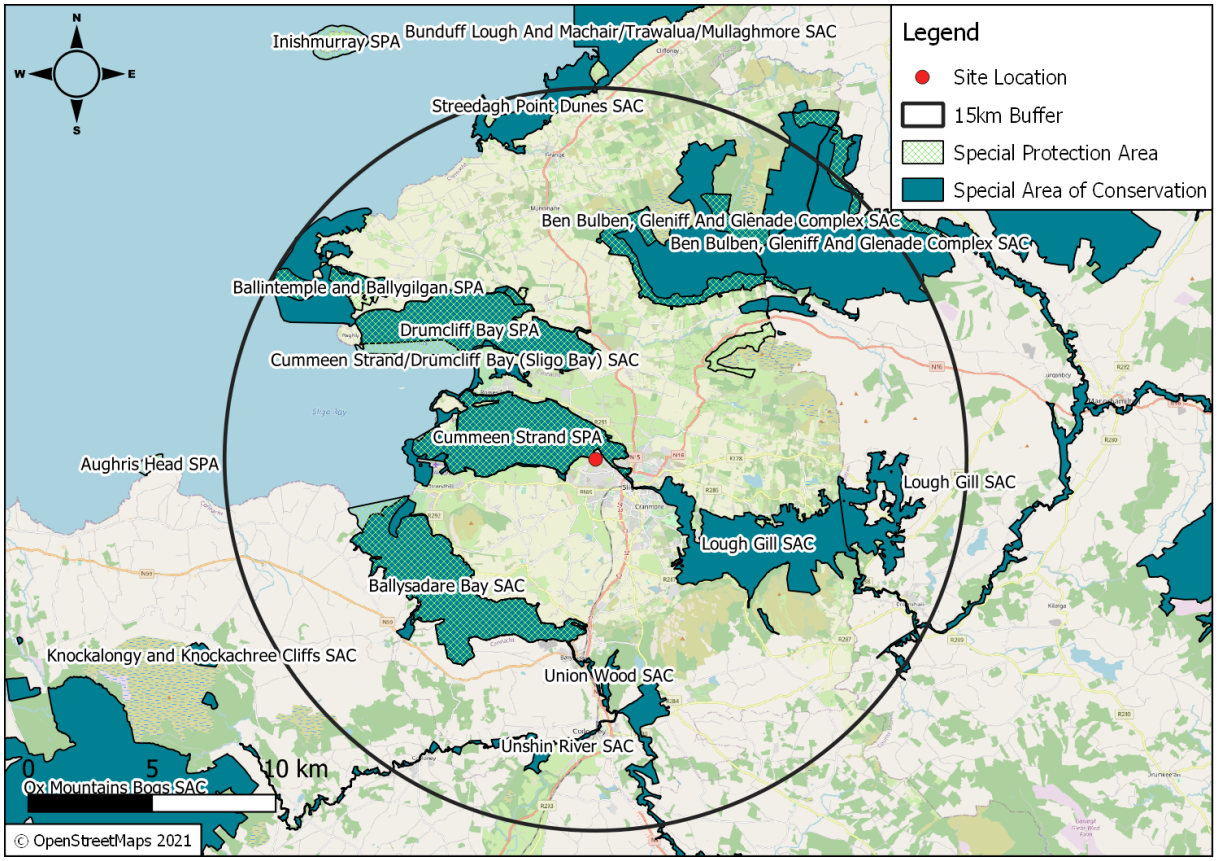


Table 4-1: European Designated Sites within 15km of the Site

Site Name	Code	Distance (km)	Direction from the Site
Special Areas of Conservation (SAC)			
Cummeen Strand / Drumcliff Bay	000627	Adjacent	N
Lough Gill	001976	1.6km	SE
Ballysadare Bay	000622	6.6km	SW
Ben Bulben, Gleniff and Glenade Complex	000623	6.7km	NE
Unshin River	001898	7.4km	SW
Union Wood	000638	7.4km	SE
Streedagh Point Dunes	001680	12.5km	NW
Bunduff Lough and Machair / Trawlua / Mullaghmore	000625	14.7	N
Special Areas of Protection (SPA)			
Cummeen Strand	004035	Adjacent	N
Drumcliff Bay	004013	3.7km	NW
Ballysadare Bay	004129	6.6km	SW
Sligo / Leitrim Uplands	004187	6.7km	NE
Ballintemple and Ballygilgan	004234	6.8km	NW
Ardboline Island and Horse Island	004135	12.9km	NW

The Site is located directly adjacent to Cummeen Strand / Drumcliff Bay SAC and Cummeen Strand SPA. Furthermore, the boundaries of seven (7No.) additional SACs and five (5No.) additional SPAs are located within 15km of the Site.

Given the localised nature of the project, lack of impact pathways and intervening distance separating the Site from the following Natura 2000 sites:

- Ballysadare Bay SAC,
- Ben Bulben, Gleniff and Glenade Complex SAC, Unshin River SAC,
- Union Wood SAC, Streedagh Point Dunes SAC,
- Bunduff Lough and Machair / Trawlua / Mullaghmore SAC,
- Drumcliff Bay SPA,
- Ballysadare Bay SPA,
- Sligo / Leitrim Uplands SPA,
- Ballintemple and Ballygilgan SPA, and,

- Ardboline Island and Horse Island SPA.

It is considered highly unlikely that these Natura 2000 sites or any of their qualifying features of interest could be affected by the project. Therefore, these sites have been screened out from further assessment.

However, the Site is directly adjacent to both the Cummeen Strand / Drumcliff Bay SAC and the Cummeen Strand SPA. Therefore, further consideration will be given to these two (2No.) Natura 2000 sites, to assess potential adverse effects resulting from the Proposed Development. Further details are provided below.

It should be noted that Lough Gill SAC has also been screened out from this assessment. This is due to its location upstream of the Proposed Development ensuring no potential pollutants from the proposed works could reach the SAC and the fact that, any potential adverse effects on designated aquatic species have already been incorporated into this assessment in relation to the species protected under Cummeen Strand / Drumcliff Bay SAC. Therefore, species such as otter (*Lutra lutra*), salmon (*salmo salar*) and lamprey (*Lampetra spp.*), which may utilise the wider Garavogue Estuary outside of Lough Gill SAC will be protected by measures implemented for the protection of designated habitats and species in Cummeen Strand / Drumcliff Bay SAC and Cummeen Strand SPA.

4.1 Cummeen Strand / Drumcliff Bay SAC (Site Code 000627)

Cummeen Strand / Drumcliff Bay SAC is a coastal site and extends from Cullamore in the north-west to Killaspug in the south-west, and from Sligo City in the south-east to Drumcliff village in the northeast. It is comprised of two large, shallow bays, Drumcliff Bay and Sligo Harbour, and both Ardboline and Horse Island. Sand dunes and sand hills at Rosses Point, Killaspug, Yellow Strand and Coney Island are included, as are grasslands at Ballintemple and Ballygilgan (Lissadell), along with a variety of other habitats such as woodland, saltmarsh, sandy beaches, boulder beaches, shingle, fen, freshwater marshes, rocky sea cliffs and lakes. The site is largely underlain by Carboniferous limestone, but acidic rocks are also found on the Rosses Point peninsula (NPWS, 2013).

Species rich habitats (Annex I of the EU Habitats Directive) including Estuaries, Tidal Mudflats and Sandflats, Embryonic Shifting Dunes, Marram Dunes, Fixed Dunes, Juniper Scrub, Orchid-rich Calcareous Grassland and Petrifying Springs can be found within this SAC.

This SAC is of considerable conservation significance for multiple reasons.

- Ornithological importance: Both Drumcliff Bay and Cummeen Strand have been designated as SPA under the E.U. Birds Directive and supports wintering waterfowl along with important bird populations listed in Annex I of the E.U Birds Directive, including Golden Plover, Dunlin, Lapwing, Bar-Tailed Godwit, Oystercatcher and Ringed Plover; and,
- This SAC supports multiple species listed on Annex II of the E.U Habitats Directive, including Narrow-mouthed Whorl Snail, Sea and River Lamprey and Common (Harbour) Seal.

Table 4-2 Qualifying Annex I Habitats for Cummeen Strand / Drumcliff Bay SAC

Qualifying Habitats (*denotes Priority Habitat)	Code	Site Specific Conservation Objective
Estuaries	1130	Maintain favourable conservation condition
Mudflats and Sandflats not covered by seawater at low tide	1140	Maintain favourable conservation condition

Qualifying Habitats (*denotes Priority Habitat)	Code	Site Specific Conservation Objective
Embryonic shifting dunes	2110	Maintain favourable conservation condition
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	2120	Restore favourable conservation condition
Fixed coastal dunes with herbaceous vegetation (grey dunes)	2130	Restore favourable conservation condition
Juniperus communis formations on heaths or calcareous grasslands	5130	Restore favourable conservation condition
Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)	6210	Maintain favourable conservation condition
Petrifying springs with tufa formation (*Cratoneurion)*	7220	Maintain favourable conservation condition

Table 4-3 Qualifying Annex II Species for the Cummeen Strand / Drumcliff Bay SAC

Qualifying Species	Species Name	Code	Site Specific Conservation Objective
Mammals listed on Annex II of the Habitats Directive	Harbour Seal *(Phoca vitulina)*	1365	Maintain favourable conservation condition
Molluscs listed on Annex II of the Habitats Directive	Narrow-mouthed Whorl Snail (*Vertigo angustior*)	1014	Maintain favourable conservation condition
Fish listed on Annex II of the Habitats Directive	Sea Lamprey (*Petromyzon marinus*)	1095	Restore favourable conservation condition
	River Lamprey (Lampetra fluviatilis)	1099	Maintain favourable conservation condition

4.2 Cummeen Strand SPA (Site Code 004035)

The Cummeen Strand SPA is a large shallow bay which extends from Sligo Bay westwards to Coney Island. It is one of three estuarine bays within Sligo Bay and is situated between Drumcliff Bay to the north and Ballysadare Bay to the south. The Garavogue River flows into the bay and forms a permanent channel.

At low tide, extensive sand and mud flats are exposed and support a diverse macro-invertebrate fauna which provide the main food supply for the wintering waterfowl. This includes Lugworm (*Arenicola marina*), Ragworm (*Hediste diversicolor*), and Cockles (*Cerastoderma edule*). The estuarine and intertidal flat habitats are of conservation significance and are listed on Annex I of the E.U. Habitats Directive.

This SPA is of significant ornithological importance and the site supports wintering waterfowl along with internationally and nationally important bird populations listed in Annex I of the E.U Birds Directive including populations of Light-bellied Brent Goose, Golden Plover and Bar-tailed Godwit. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds. This SPA is important as a component of the much larger Sligo Bay complex and is also a Ramsar Convention site (NPWS, 2013).

Table 4-4 Qualifying Annex I Species for the Cummeen Strand SPA

Common Name	Scientific name	Code	Season
Light-bellied Brent Goose	*Branta bernicla hrota*	A046	Wintering
Oystercatcher	*Haematopus ostralegus*	A130	Wintering
Redshank	*Tringa totanus*	A162	Wintering
Wetland and Waterbirds		A999	Wintering

4.3 Conservation Objectives

European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status areas designated as Special Areas of Conservation (SAC) and Special Protection Areas (SPA). The Irish Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites. According to the EU Habitats Directive, favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, is stable or increasing;
- 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.

The favourable conservation status of a species is achieved when:

- Population data on the species concerned indicate that it is maintaining itself;
- The natural range of the species is neither being reduced or 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 full report for the conservation objectives for the Cummeen Strand / Drumcliff Bay SAC[1] and Cummeen Strand SPA[2] can be found on the NPWS website.

[1] Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC | National Parks & Wildlife Service (npws.ie)
[2] Cummeen Strand SPA | National Parks & Wildlife Service (npws.ie)

5 STUDY RESULTS

5.1 Desk-Based Study Results

Table 5-1 provides a summary of records of designated species that occur within a 2km grid square of the Site boundary (NBDC, 2021).

Table 5-1: Protected and / or Notable Species within a 2km Grid Square of the Site

Common Name	*Scientific Name*	Date of last record	Designation
Birds			
Black-headed Gull	*Larus ridibundus*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Red List
Black-tailed Godwit	*Limosa limosa*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Brent Goose	*Branta bernicla*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Common Goldeneye	*Bucephala clangula*	31/12/2011	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section II Bird Species Birds of Conservation Concern Amber List
Common Greenshank	*Tringa nebularia*	31/012/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Common Kingfisher	*Alcedo atthis*	22/01/2014	Wildlife Acts 1976 / 2000, EU Birds Directive Annex I, Section II Bird Species, Birds of Conservation Concern Amber List
Common Shelduck	*Tadorna tadorna*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Common Snipe	*Gallinago gallinago*	31/12/2011	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section I and Annex III and Section III Bird Species Birds of Conservation Concern Amber List
Dunlin	*Calidris alpina*	31/12/2011	Wildlife Acts 1976 / 2000, EU Birds Directive Annex I, Section II Bird Species, Birds of Conservation Concern Amber List

Common Name	***Scientific Name***	**Date of last record**	**Designation**
Eurasian Curlew	*Numenius arquata*	31/12/2011	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section II Bird Species Birds of Conservation Concern Red List
Eurasian Oystercatcher	*Haematopus ostralegus*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Eurasian Teal	*Anas crecca*	31/12/2011	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section I and Annex III Section II Bird Species Birds of Conservation Concern Amber List
Eurasian Wigeon	*Anas penelope*	31/12/2011	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section I and Annex III and Section II Bird Species Birds of Conservation Concern Amber List
European Shag	*Phalacrocorax aristotelis*	31/12/2011	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Gadwall	*Anas strepera*	31/12/2011	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section I Bird Species Birds of Conservation Concern Amber List
Great Black-backed Gull	*Larus marinus*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Great Cormorant	*Phalacrocorax carbo*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Great Crested Grebe	*Podiceps cristatus*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Great Northern Diver	*Gavia immer*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Greater Scaup	*Aythya marila*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Herring Gull	*Larus argentatus*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Red List

Common Name	***Scientific Name***	**Date of last record**	**Designation**
Lesser Black-backed Gull	*Larus fuscus*	24/03/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Little Egret	*Egretta garzetta*	31/12/2011	Wildlife Acts 1976 / 2000, EU Birds Directive Annex I, Section II Bird Species
Little Grebe	*Tachybaptus ruficollis*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Mallard	*Anas platyrhynchos*	31/12/2011	Wildlife Acts 1976 / 2000 EU Birds Directive Annex II Section I and Annex III and Section I Bird Species
Mediterranean Gull	*Larus melanocephalus*	31/12/2011	Wildlife Acts 1976 / 2000, EU Birds Directive Annex I, Section II Bird Species, Birds of Conservation Concern Amber List
Mew Gull	*Larus canus*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Mute Swan	*Cygnus olor*	20/07/2015	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Northern Lapwing	*Vanellus vanellus*	31/12/2011	Wildlife Acts 1976 / 2000 EU Birds Directive Annex II Section II Bird Species Birds of Conservation Concern Red List
Peregrine Falcon	*Falco peregrinus*	31/12/2011	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex I Bird Species,
Red-breasted Merganser	*Mergus serrator*	31/12/2011	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section II Bird Species
Redshank	*Tringa totanus*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Red List
Sand Martin	*Riparia*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List
Spotted Flycatcher	*Muscicapa striata*	31/12/2011	Wildlife Acts 1976 / 2000, Birds of Conservation Concern Amber List

Common Name	***Scientific Name***	**Date of last record**	**Designation**
Whooper Swan	*Cygnus*	31/12/2011	Wildlife Acts 1976 / 2000, EU Birds Directive Annex I, Section II Bird Species, Birds of Conservation Concern Amber List

*Note: Table includes records of protected species recorded within the last 10 years

6 STAGE 1 SCREENING: IDENTIFICATION OF POTENTIAL ADVERSE EFFECTS

6.1 Potential Adverse Effects

Potential adverse effects, if any, on the Cummenn Strand / Drumcliff Bay SAC and Cummeen Strand SPA were considered further in this section. The key output of this stage of the assessment was the identification of the types of threats to the integrity of the Natura 2000 sites as a result of implementing the Proposed Development.

A number of factors were examined at this stage and dismissed due to the very low risk associated with them. Table 6-1, Table 6-2 and Table 6-3 present further details and rationale of the screening assessment undertaken for each of the qualifying interests of each of the Natura 2000 sites identified as having the potential to be adversely affected.

These factors were screened in or out, based on whether or not it was concluded that they are likely to be affected by the Proposed Development if no mitigation measures were applied, and if progression to Stage 2 is required. The rationale for these conclusions is based on results from the aforementioned desk study, literature search and field survey results.

Table 6-1: Screening Assessment: Annex 1 Habitats Cummeen Strand/Drumcliff Bay SAC

Qualifying Feature of Interest	Baseline	Potential Impacts	Screening Rationale	Screening Conclusion
Estuaries	According to the Conservation Objectives Report (NPWS, 2013), this habitat is located directly adjacent to the Site. The initial habitat walkover confirmed the absence of this habitat onsite, but it is within immediate proximity to the Site.	Adverse effects on water quality associated with pollution during construction & operation	Given the proximity of the Site to the adjacent estuaries habitat there is potential (albeit limited) for siltation and pollution arising from the construction works to enter the estuary habitat without appropriate mitigation measures in place. Therefore, further assessment will be required.	**Screened in**
Mudflats and Sandflats not covered by seawater at low tide	According to the Conservation Objectives Report (NPWS, 2013), this habitat is located directly adjacent to the Site. The initial habitat walkover confirmed the absence of this habitat onsite but it is within immediate proximity to the Site.	As above	As above	**Screened in**
Embryonic shifting dunes	According to the Conservation Objectives Report (NPWS, 2013), this habitat is located ca.5.5km southwest of the Site. This habitat is not present onsite or within the immediate vicinity of the Site.	As above	Given the intervening distance from the Proposed Development, it is considered highly unlikely that this habitat will be adversely affected by the construction or operational phase of the Proposed Development. This is due to the fact that pollutants will either dilute or settle out of the estuary prior to reaching the embryonic shifting dunes habitat. Therefore, this receptor has been screened out from further consideration.	**Screened out**
Shifting dunes along the shoreline with	According to the Conservation Objectives Report (NPWS, 2013), this habitat is located ca.6.2km west of the Site.	N/A	As above	**Screened out**

Qualifying Feature of Interest	Baseline	Potential Impacts	Screening Rationale	Screening Conclusion
Ammophila arenaria (white dunes)	Previous Site walkovers did not identify this habitat onsite or within the immediate vicinity of the Site.			
Fixed coastal dunes with herbaceous vegetation (grey dunes)	According to the Conservation Objectives Report (NPWS, 2013), this habitat is located ca.5.6km southwest of the Site at its nearest point. Previous Site walkovers did not identify this habitat onsite or within the immediate vicinity of the Site.	N/A	As above	**Screened out**
Juniperus communis formations on heaths or calcareous grasslands	According to the Conservation Objectives Report (NPWS, 2013), this habitat is located ca.4.45km northwest of the Site at its nearest point. Previous Site walkovers did not identify this habitat onsite or within the immediate vicinity of the Site.	N/A	This terrestrial habitat is not located onsite or within the vicinity of the Site. There are no impact pathways connecting the Site to this habitat given its terrestrial nature and therefore there are no potential adverse effects anticipated that could affect this habitat.	**Screened out**
Petrifying springs with tufa formation	According to the Conservation Objectives Report (NPWS, 2013), this habitat is located ca.1.85km northwest of the Site across the Garavogue estuary. This habitat was not identified onsite or within the immediate vicinity of the Site during previous Site walkovers.	N/A	As above as per embryonic shifting dunes.	**Screened out**

Table 6-2 Screening Assessment: Annex 2 Species -Cummeen Strand/Drumcliff Bay SAC

Qualifying Feature of Interest	Baseline	Potential Impacts	Screening Rationale	Screening Conclusion
Harbour Seal	The NPWS holds records for Harbour Seal within the Cummeen Strand / Drumcliff Bay SAC (NPWS, 2013). However, the NBDC holds no recent records for this species within a 2km boundary of the Site (NBDC, 2021) According to previous surveys of the Site and the Conservation Objectives Report (NPWS, 2013), no suitable haul-out sites are located onsite or within the immediate vicinity of the Site. The nearest breeding and resting sites are located ca.5.25km and ca.6.5km northwest of the Site, respectively (NPWS, 2013). However, it is considered likely that seals forage and travel up and down the section of the Garavogue estuary adjacent to the Site.	Disturbance during construction works	It is considered highly unlikely that the project will have any impact on seal haul-out sites or breeding success. However, there is potential (albeit limited) for the construction works to cause disturbance to seals foraging and utilising the area of the estuary within close proximity to the Site. Further assessment will be required in order to determine the potential significance of this disturbance.	**Screened In**
Narrow-mouthed Whorl Snail	The NPWS holds records for Narrow-mouthed Whorl Snail within the Cummeen Strand / Drumcliff Bay SAC (NPWS, 2013), however, there are no records held by the NBDC for this species within a 2km boundary of the Site (NBDC, 2021) According to the Conservation Objectives Report, the nearest record of this species is located ca.6.4km west of the Site (NPWS, 2013)	N/A	There are no suitable habitats for this species onsite or within the immediate vicinity of the Site. Therefore, it is considered highly unlikely that the works will have any significant impact on this species. This is further emphasised by the small-scale nature of the works. No further assessment required	**Screened Out**
Sea Lamprey	The NBDC holds no records for Sea Lamprey within 2km of the Site (NBDC, 2021)	Adverse effects associated with pollution	This species is known to be present within the Garavogue Estuary during parts of its life cycle. Although there will be no works occurring within the estuary, there is potential that sea lamprey could be	**Screened in**

Qualifying Feature of Interest	Baseline	Potential Impacts	Screening Rationale	Screening Conclusion
	However, given the SACs designation for this species and a precautionary approach has been adopted and its presence has been assumed in all areas of suitable habitat within the vicinity of the Site. No suitable habitats for this species are present onsite.	during construction	adversely affected should water quality deteriorate during the construction or operational phases of the Proposed Development. Therefore, taking a precautionary approach, further consideration will be given to this species.	
River Lamprey	The NBDC holds no records for Sea Lamprey within the Cummeen Strand / Drumcliff Bay SAC- (NBDC, 2021) However, given the SACs designation for this species and a precautionary approach has been adopted and its presence has been assumed in all areas of suitable habitat within the vicinity of the Site. No suitable habitats for this species are present onsite.	As above	As above	**Screened in**

Table 6-3 Screening Assessment: Cummeen Strand SPA (Site Code 004035)

Qualifying Feature of Interest	Baseline	Potential Impacts	Screening Rationale	Screening Conclusion
Light-bellied Brent Goose	The NBDC holds records for the Light-bellied Brent Goose within a 2km grid of the Site (NBDC, 2021) However, the onsite habitats are considered to be of limited value for this species.	Disturbance during construction works and effects associated with pollution during the construction phase.	Overall, the Site is not considered to be suitable for this bird species given the limited value of the onsite foraging and nesting habitats for this species. Similarly, it is not anticipated that this species will be adversely affected by direct effects such as disturbance during the construction phase of the Proposed Development given the fact that birds are highly mobile and will move away from disturbances. However, given the proximity of the Site to the Cummeen Strand SPA, a precautionary approach has been taken and further consideration will be given to ensure any temporary disturbance to this species is minimised.	**Screened In**
Oystercatcher	The NBDC holds several records for Oystercatcher within 2km of the Site (NBDC, 2021). It should be noted that previous surveys onsite from 2017 did not identify this species within areas close to the Site but did note this species feeding within the estuary.	As above	As above	**Screened In**
Redshank	The NBDC holds several records for Redshank within 2km of the Site (NBDC, 2021) It should be noted that this species was not recorded within areas close to the Site during past surveys, however it was noted feeding within the estuary.	As above	As above	**Screened in**

Qualifying Feature of Interest	Baseline	Potential Impacts	Screening Rationale	Screening Conclusion
Wetlands & Waterbirds	The NBDC holds records for numerous wetland and waterbirds within a 2km grid square of the Site, refer to Table 5-1. Although the onsite habitats are considered to be of limited value for these species, suitable wetland habitats are present directly adjacent to the Site.	As above	As above	**Screened in**

7 STAGE 2: ASSESSMENT OF POTENTIAL ADVERSE EFFECTS

This section provides recommendations for measures which will mitigate against any potential adverse effects of the proposed works on qualifying habitats and species throughout the duration of the project. The following effects with potential to adversely affect the conservation objectives of the identified Natura 2000 sites were identified and considered:

- Loss of, or disturbance to Habitats and Species;
- Potential impairment of water quality; and,
- Potential spread of invasive species (i.e., Japanese Knotweed).

7.1 Loss of, or disturbance to Habitats and Species

It is considered that the Proposed Development will not result in any direct or indirect loss or disturbance to any of the Annex I habitats or Annex I or II species for which the Natura 2000 sites within 15km of the Site have been designated. This conclusion is based on the small-scale and localised nature of the construction works within the Site boundary which is encompassed by the wider historic landfill Site at Finisklin and the absence of designated Annex I habitats or habitats suitable for designated species onsite.

However, given the proximity of the Site to the designated estuary habitat along with mudflats and sandflats not covered by seawater at low tide, mitigation measures will be implemented to ensure that no potential pollution arising from the construction works reaches these designated habitats within the SAC, see Section 7.2 below.

In relation to species, potential adverse effects to the harbour seal and fish species protected under the Cummeen Strand / Drumcliff Bay SAC and designated bird species protected under the Cummeen Strand SPA were assessed in more detail below.

7.1.1 Disturbance to Harbour Seal

Seals are carnivorous generalists and will forage in a variety of marine habitats. Based on the desk-top review of the Site, it is considered that there is potential for seals to enter / forage within the section of the estuary directly adjacent to the Site.

However, previous Site walkovers did not identify any suitable haul-out areas in the vicinity of the Site. Seals tend to select locations such as inshore bays, and coves for this purpose. It is not considered that any areas within or directly adjacent to the Site will be utilised for resting / breeding purposes. According to the NPWS, the nearest suitable breeding and resting sites for harbour seal are located ca.5.25km and ca.6.5km northwest of the Site (respectively), separated from the Site by Rosses Point (NPWS, 2013). The NPWS did not identify any suitable sites within Garavogue estuary (NPWS, 2013).

It was also noted during previous walkovers of the Site, that there is an elevated ambient noise level within the area associated with the industrial units and road from the surrounding area. It is therefore considered that any species including the common seal that would potentially utilise the area surrounding the Site will be somewhat habituated to increased ambient noise levels resulting from existing human related activities.

Nonetheless, to avoid any disturbance to common seal activity close to the Site, before any noisy works (e.g. use of a plate compactor or vibrating plate) commence, the area of the Garavogue Estuary closest to the Site will be checked for the presence of seals. In the unlikely event that any seals are identified, in accordance with best practice, the noisy works will be gradually ramped up to encourage any seals away. Therefore, any short-term localised disturbance will not result in any significant or long terms impacts on any nearby seals.

7.1.2 Disturbance to Birds

Given the proximity of the Site in relation to the Cummeen Strand SPA, there is potential for the construction works to result in small-scale temporary displacement of birds potentially using the area of the SPA within close proximity to the Site. However, it is not considered likely that any short-term temporary displacement of these birds would result in any significant impacts to these species in terms of survival or reproductive success. This is based on the availability of both similar habitat and large expanses of mudflats and suitable feeding areas within the Harbour.

Furthermore, a review of previous bird surveys undertaken at the Site in 2011 and 2017 did not identify any of the target bird species utilising the Site or adjoining areas of Sligo Harbour/Garavogue Estuary. Instead, large numbers of wading birds were noted feeding along the central channel and scattered on the open flats, most notably on the large expanses of intertidal sandflats towards Coney Island.

In addition, as noted above, the area is subject to elevated ambient noise levels as a result of existing human-related activities. It is therefore considered that the bird species actively using the area adjacent to the Site will have become somewhat habituated to elevated noise levels.

However, the following precautionary mitigation measures will be employed to protect breeding birds, these include:

- An updated ecological Site survey will be undertaken in advance of the works commencing;
- Construction works will be limited to daylight hours to further reduce any disturbance to bird species within the area and allow species to forage at dawn, dusk and during the night; and,
- Any required tree and scrub clearance will take place outside of the nesting bird season, typically considered to be between the 1st March to 31st August (weather dependant). Regardless the areas of vegetation to be cleared will be checked for the presence of nesting birds and the works will be supervised by the ECoW.

It can therefore be concluded that the project will not have any significant impact on the designated birds protected under Cummeen Strand SPA.

7.2 Potential Impairment of Water Quality

Should run-off of potential pollutants from the project reach the surface water or groundwater and flow into the adjoining Garavogue Estuary, this could adversely affect the water quality within estuary and the mudflats and sandflats not covered by seawater at low tide, and subsequently impact both protected habitats and species within the Cummeen Strand / Drumcliff Bay SAC and Cummeen Strand SPA.

Potential pollutants resulting from the restoration / construction phase include suspended solids, cementitious materials, silt and hydrocarbon leaks and spills. In addition, waste material may also be encountered during the ground works. If allowed to enter the Garavogue estuary, any of these pollutants would have a deleterious effect on fish, plants and invertebrates and in turn, impact predatory species which rely on these receptors for food.

Therefore, the following mitigation measures will be implemented to protect the Garavogue Estuary, and subsequently designated habitats and species, from potential contaminants in line with best practice guidelines:

- Only capping works required by the CoA will occur within 5m from the coastline. This 5m exclusion zone will be established along the Garavogue Estuary to eliminate non-essential plant and personnel from encroaching on the coastline;

- The northern boundary of the site will be visually inspected daily during works at low tide. Sampling and testing will be carried out at surface water monitoring locations the month before works begin and the month after works are completed in accordance with the CoA. During sampling, tidal factors will be taken into consideration (see the CE&WMP submitted with this application for further information).
- Ecological monitoring will be undertaken during the construction phase to ensure that there are no impacts on water quality or features of ecological interest;
- Existing vegetation will be retained where possible;
- Within the works area, the ground stripped of existing cover / vegetation will be kept to the absolute minimum required for the works;
- Eroded sediments will be retained onsite with erosion and sediment control structures such as sediment traps and silt fences if required;
- Run-off will be diverted away from stripped areas;
- Temporary fills or stockpiled material located in close proximity to the Garavogue Estuary will be covered to prevent run-off entering the watercourse;
- The existing access road on Site will be used, which will help prevent erosion of fines and / or rutting by Site traffic;
- Fuels, lubricants and hydraulic fluids for equipment used in the Site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to current best practice (Enterprise Ireland BPGCS005);
- Appropriate spill control equipment, including oil booms and oil soakage pads, will be kept within the Site / vehicles to deal with any accidental spillage;
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the Site and disposed of in accordance with all relevant waste management legislation;
- No vehicle or equipment maintenance work will take place within the Site;
- Prior to works commencing within close proximity to the Garavogue Estuary, all equipment will be checked to ensure that they are mechanically sound, to avoid leaks of oil, fuel, hydraulic fluids and grease;
- Measures will be implemented to minimise waste and ensure correct handling storage and disposal of waste;
- Emergency response procedures will be put in place; and,
- Hydrophilic grout and quick-setting mixes or rapid hardener additives will be used, to promote the early set of concrete located near the estuary.

With the implementation of the above mitigation measures and best practice guidelines, it can be concluded that the proposed restoration / construction works at the Site will not have an adverse effect on the Cummeen Strand / Drumcliff Bay SAC, Cummeen Strand SPA or any of their qualifying features of interest.

It should be noted that there will be no significant change to the surface water and groundwater flow regime at the Site following completion of the project. SUDS design measures as described in section 3.2.7 will be put in place for the protection of surface water quality and attenuation of flow. It is, therefore, considered that there will be no deterioration of water quality in the waterbodies surrounding the Site and subsequently, no adverse effects on the habitats

and species protected under the Cummeen Strand / Drumcliff Bay SAC and Cummeen Strand SAC will occur as a result of the operational phase of the Proposed Development.

7.3 Potential spread of Japanese Knotweed / Spread of Invasive Species

The invasive species Japanese Knotweed was recorded onsite during the August 2021 Site walkover and previous surveys of the Site undertaken in 2017 (See Figure 7-1). The stands of Japanese Knotweed are subject to ongoing management / control by SCC.

Should either the project works result in the spread of Japanese Knotweed into either the SAC or SPA, not only would this constitute a breach of wildlife legislation in relation to invasive species, but it could cause significant damage to the designated habitats. It should be noted that the saline conditions within the harbour will limit the spread of Japanese Knotweed to some degree, however tidal movements and the activity of birds building nests both have the ability to cause further spread of this species.

The main impact in terms of Japanese Knotweed in relation to the designated habitats would be out-competing native plant communities, thereby resulting in the development of large single-species stands of Japanese Knotweed and resulting in a reduction in local plant biodiversity. This would also result in a negative impact on the biodiversity of the fauna using these areas.

In addition, Japanese Knotweed can also cause damage to buildings, hard surfaces and infrastructure by growing through concrete, tarmac and other hard surfaces.

Figure 7-1: Japanese Knotweed Distribution Map - August 2021

7.3.1 Measures to Prevent the Spread of Japanese Knotweed

The Japanese Knotweed is currently subject to ongoing management and control by SCC. In order to mitigate and prevent any further spread of Japanese Knotweed onsite, an updated Japanese Knotweed Survey and Management Plan specific for the Proposed Development will be prepared in advance of the works commencing.

As part of the Japanese Knotweed Management Plan appropriate best practice measures will be implemented to prevent the spread during all works, which include the following;

- All works will be conducted according to NRA Guidelines 'The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads' (NRA, 2010);
- The contractor(s) will provide details of the extent of the works area and prior to commencement. All works areas, site compounds and access routes will be sited a minimum of 7m away from any identified Japanese Knotweed stand, and all areas will be re-surveyed to ensure that no new stands have become established. If found, additional appropriate mitigation strategies will need to be devised and implemented;
- All stands of Japanese Knotweed within the Site will be clearly demarcated, including a 7m buffer zone around each stand;
- All vehicles, machinery and any other equipment that may be used for the works will be washed using high-pressure steam cleaning with water >40 degrees Celsius, in advance of being used on the Site. If it is not possible to steam clean the equipment, a normal power hose will be used. Before machinery or equipment is unloaded at the Site equipment will be visually inspected to ensure that all adherent material and debris has been removed. Any vehicles and machinery that are not clean will be sent off-site for cleaning;
- All works within the 7m buffer zone will be supervised by the ECoW and all machinery utilised in these areas will be cleaned prior to leaving these buffer zones;
- All vehicles leaving the Site will be cleaned thoroughly at a designated location and a visual inspection of the vehicle should also be carried out; and,
- In advance of works, all site personnel will receive a toolbox talk which will include reference to mitigation measures in relation to invasive species, including Japanese Knotweed.

Provided that the above mitigation measures are fully adhered to, it can therefore be concluded that the project will not have any significant impact on Natura 2000 Sites.

7.4 Analysis of 'In-Combination' Effects

The Habitats Directive requires that due consideration needs to be given to any plan or project which is likely to have a significant effect alone or in combination with other plans and projects. As described above, the project alone is unlikely to have any direct or indirect significant effects on the Natura 2000 sites.

Due to the large size of both the Cummeen Strand / Drumcliff Bay SAC and Cummeen Strand SPA, there are numerous projects and activities which have the potential to affect the conservation interests of both sites, most notably the Sligo WWTP to the north of the Site.

Additionally, a planning application was submitted by Carbon Sole Group Ltd (Planning Ref 21/334) for the development of a waste gasification plant on a portion of the former Finisklin landfill. This application was refused permission by Sligo County Council on the 20th of October 2021 for three reasons, the most relevant to this application being:

"*3. Under the Waste Management (Certification of Historic Unlicensed Waste Disposal and recovery activity) Regulations 2008, Sligo County Council were required to carry out a risk assessment of environmental pollution associated with the closed Finisklin Landfill. Having completed the risk assessment, a site remediation plan has been prepared and authorised by the Environmental Protection Agency. These remediation measures are required to be implemented before any new buildings can be constructed within the site of the former landfill. It is considered, therefore, that the proposed development is premature pending the completion of these remediation measures required to address the environmental contamination risks associated with the closed landfill.*"

The development proposed by Carbon Sole Group Ltd (Planning Ref 21/334) was determined by the Council to be premature on the basis that is not currently compatible with the CoA (EPA Ref: H0006-01) and as such it would conflict with the proposed development subject to this application. For these reasons, it was not considered as part of this NIS.

The Public Park has been specifically designed to allow for the potential future development of a playground for children within the park. Give the distance of the playground from the boundary of the Natura 2000 Sites, it is not considered likely that any adverse impacts will occur. Furthermore, the development of a playground at this location will be subject to the required statutory consents.

However, taking the above into account, and considering the small-scale nature of the Proposed Development, and the mitigation measures which will be implemented, it can be concluded that there will not be any significant in-combination contribution by the Proposed Development to possible adverse effects on the interests of either the Cummeen Strand / Drumcliff Bay SAC and Cummeen Strand SPA.

8 CONCLUSIONS

A detailed assessment of the layout and nature of the project, the methods to be employed and the overall activities that will occur at the Site has been carried out and the potential for impacts on Natura 2000 European sites and qualifying features of interest within a 15km radius of the Site has been examined in detail.

Of the fourteen (14No.) Natura 2000 sites identified within a 15km radius, Cummeen Strand / Drumcliff Bay SAC and Cummeen Strand SPA were identified to require further detailed consideration due to their proximity to the Site.

It is considered reasonable to conclude that the project will not result in any significant impacts on the SAC or SPA or their qualifying features of interest, on the basis that the Site currently provides limited opportunities for protected or notable species and that best practice measures will be implemented. Specifically, the construction works will be undertaken to avoid the potential for water pollution reaching the surrounding Garavogue Estuary and measures will be implemented to prevent disturbance or loss of designated Annex I or II species such as harbour seal and wetland and waterbirds.

In terms of significant impacts on Natura 2000 sites, the NPWS Guidance (2009) uses an EC definition as follows:

> *"Any element of a plan or project that has the potential to affect the conservation objectives of a Natura 2000 Site, including its structure and function, should be considered significant (EC, 2006)".*

It can be concluded that the project, alone or in-combination with other projects, will not adversely affect the integrity, and conservation status of any of the qualifying interests of the Cummeen Strand / Drumcliff Bay SAC and Cummeen Strand SPA.

Accordingly, progression to Stage 3 of the Appropriate Assessment process (i.e., Assessment of Alternatives Solutions) is not required for this project.

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APPENDICES

APPENDIX A

South/South West Region
Environmental Protection Agency
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26th June 2020

Re. Landfill Gas Pumping Trial at Finisklin Landfill (H0006-01)

Dear Mr. Murtagh,

I refer to your email correspondence received on the 3rd April 2020 in relation to the 2nd landfill gas pumping trial report for Finisklin Historic Landfill (CoA no. H0006-01). I also note your related email of the 5th March 2020, in which you provided liquid-dipping levels from the gas wells at the landfill.

In assessing this documentation, I have noted the following:

- Not all of the information that was requested by Agency in relation to the conducting of the pumping trial (as per my email of 5th March 2020) was provided – e.g. photographs of the pipework and wellhead set up; borehole logs.
- Some of the gas concentrations and flow yields that were recorded in the first and second pumping trials differed from each other.
- During the second pumping trial, gas flow rates at wells G2 and G3 reduced significantly during the course of the trial, despite the suction pressure being relatively static or increasing. Coupled with that, the relative amounts of fresh air being drawn into the system appeared to be quite high.
- The overall percentage of methane recorded at the flare at the end of the 2nd pumping trial dropped to below 12%.
- VOCs have been detected at services located at some of the premises located along the eastern flank of the landfill, albeit that the precise source of these VOCs has not been determined.
- Relatively high percentage methane concentrations continue to be recorded at a number of the gas monitoring wells at the landfill.

Based on all the information that has been provided, and the specific circumstances of this particular landfill (e.g. groundwater levels, tidal influence, waste composition, capping materials), I am satisfied that there is an insufficient landfill gas available for abstraction to warrant the installation of an active abstraction and flaring system. Nonetheless, the Agency remains of the view that landfill gas currently poses a risk at this facility without

further intervention measures being taken to break the *source-pathway-receptor* linkage. In view of this, the Agency agrees to your overall proposal to install passive gas venting systems such as biowindows and a bioactive intercepting trench, but the precise details of these systems will need to be agreed in advance.

The Agency requests that you now provide detailed design details of the landfill gas risk control measures to be proposed, taking account of the following:

- Venting biowindows and/or trenches should be installed across the entirety of the landfill, and not just focused on the northern and final cells section of the landfill. It is particularly important that additional venting systems are installed to the east of the roadway where the intercepting trench has been proposed to be located.
- Drawings are provided to show the proposed location of the venting infrastructure.
- Justification/explanation is provided on the design approach used in setting out the sizing, design, location and spacing of the gas venting infrastructure.
- Details are provided of the proposed monitoring and maintenance arrangements[1] for the gas venting infrastructure. [Such monitoring arrangements could include for example, inclusion of the infrastructure in the surface VOC monitoring which is required to be done on a quarterly basis under Condition 3.5(f)].

To ensure that the landfill gas mitigation measures are being effective, the Agency wishes to remind you of the importance of monitoring for landfill gas, particularly at/near the main receptors along the eastern flank of the landfill body. You will note that the Agency has previously highlighted a concern (i.e. correspondence of 30th January 2020) in relation to the adequacy of the existing framework of gas monitoring wells to be able to provide sufficient reassurance in this regard. The Agency now requests that you submit proposals in relation to improving the provision of landfill gas monitoring wells near the receptors located along the eastern flank of the landfill.

Yours sincerely,

Caoimhin Nolan

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Caoimhin Nolan (OEE Inspector)

[1] It should be noted that biofilter-type systems require active ongoing maintenance and checking to ensure that the bed media remains fit for purpose.