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## HISTORIC LANDFILL AT SNEEM, CO. KERRY

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### NATURA IMPACT STATEMENT FOR THE REMEDICATION OF HISTORIC LANDFILL SITE, SNEEM, COUNTY KERRY

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Prepared for: Kerry County Council



**Date:** June 2022

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## NATURA IMPACT STATEMENT FOR THE REMEDIATION OF HISTORIC LANDFILL SITE, SNEEM, COUNTY KERRY

User is responsible for Checking the Revision Status of This Document

Rev. No.	Description of Changes	Prepared by:	Checked by:	Approved by:	Date:
0	Final Issue	DD/MG/AMW	JK	BG	16/06/2022

**Client:** Kerry County Council

**Keywords:** Natura Impact Statement (NIS), Article 6 of the Habitats Directive, European (Natura 2000) sites, Historic Landfill at Sneem, Co. Kerry, Remediation.

**Abstract:** This document comprises the Stage Two: Natura Impact Statement for the Historic Landfill at Sneem, Co. Kerry. Appropriate Assessment is required under Article 6 (3) of the Habitats Directive for any project or plan that may give rise to likely significant effects on a European (Natura 2000) site.

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## 1. INTRODUCTION

Kerry County Council proposed the remediation of a historic landfill at Sneem, Co. Kerry. Sneem historical landfill site is in an area of open land located immediately adjacent to an area of bogland. The site is privately owned and is located approximately 1km north of Sneem village in the townland of Maulagallane and bordering Scrahannagaur townland. Available evidence suggests that the site closed, and landfilling ceased in 1996. The date of the start of landfilling activities is unknown. Since its closure the site reverted to private ownership, with the lands presently used for agriculture. The site has been capped with soil cover with no other remediation works have been carried out.

### 1.1 Overview of Proposed Project

The proposed development will include:

- *Development of a temporary site compound outside of the engineered capping area footprint.*
- *Site clearance.*
- *Grading/profiling of existing site area.*
- *Installation of engineered landfill capping system.*
- *Landscaping.*
- *Ongoing environmental monitoring.*
- *Ongoing Management of Landfill Gas.*
- *Ongoing maintenance of engineered cap on-site.*
- *Ongoing maintenance of drainage systems on-site.*

In April 2021, Fehily Timoney and Company (FT) prepared a report to inform the screening for Appropriate Assessment (See Appendix 1) for the proposed remediation works on behalf of Kerry County Council . The screening report conclude as follows:

- It was not possible to 'screen out' Kenmare River SAC (Site Code 002158) as mitigation measures will be required to prevent reductions in water quality during construction and the spread of invasive species. As mitigation measures are required to prevent any potential significant effect on the SAC, a Natura Impact Statement is required for Kenmare River SAC (Site Code 002158).
- It was not possible to 'screen out' Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment SAC (000365) as mitigation measures will be required to prevent reductions in water quality downstream of the SAC during construction. As mitigation measures are required to prevent any potential significant effect on the SAC, a Natura Impact Statement is required for Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365).

The Source-Pathway-Receptor assessment carried out as part of the screening identified likely significant effects on the aquatic conservation interests of Kenmare River SAC due to potential construction-stage runoff, containing leachate, sediment and viable invasive species material, from site entering the perimeter waterbody, Ardsheelhane River, which is located 350m (nearest instream distance) upstream of Kenmare River SAC.



This assessment also identified likely significant effects on the aquatic conservation interests of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment SAC due to potential construction-stage runoff, containing leachate, sediment and viable invasive species material, from site entering the perimeter waterbody which is located 5.5km (nearest instream distance) downstream of the SAC.

Where it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have likely significant effects on a European site, the competent authority shall determine that an appropriate assessment is required. This Natura Impact Statement (NIS) has been prepared to inform the competent authority in completing their obligations in relation to Appropriate Assessment under Council Directive 92/43/EEC (Habitats Directive) as implemented in Ireland under *inter alia* the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021, and Part XAB of the Planning and Development Act, 2000 (as amended). Further consideration is given in this NIS to the elements of the remediation of the historic landfill site which might impact the Ardsheelhane River and whether such impacts might have adverse effects on the integrity of Kenmare River SAC and Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment SAC.

The European Commission Notice C(2019): '*Managing Natura 2000 sites The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*' prescribes the content of the Appropriate Assessment and notes the following:

- It must be ensured that the appropriate assessment addresses all elements contributing to the site's integrity as specified in the site's conservation objectives and Standard Data Form, and is based on the best available scientific knowledge in the field;
- The information required should be up-to-date;
- The appropriate assessment should also include a comprehensive identification of all the potential effects of the plan or project likely to be significant on the site, taking into account cumulative and other effects likely to arise as a result of the combined action of the plan or project under assessment with other plans or projects.
- It should apply the best available techniques and methods to assess the extent of the effects of the plan or project on the integrity of the site(s).

This NIS as presented has been developed to address these requirements so as to present sufficient and up-to-date information to allow the Competent Authority to give full consideration of all elements contributing to the site integrity and allowing identification of potential impacts, mitigation measures and residual impacts.

This NIS was prepared in accordance with the following guidance:

- *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*, Office for Official Publications of the European Communities, Luxembourg (EC, 2002).
- *Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. Commission Notice (2021) Brussels, 28.9.2021 C(2021) 6913 final;
- *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin (2009, updated 2010);
- European Commission (2019) *Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC*. Brussels, 2019/C 33/01). OJ C 33, 25.1.2019;
- *Interpretation Manual of European Union Habitats*. Version EUR 28. European Commission 2013;
- OPR Practice Note PN01 *Appropriate Assessment Screening for Development Management* Office of the Planning Regulator (March 2021).



## 2. PROJECT OVERVIEW

### 2.1 Brief Description of Existing Site

Sneem historic landfill is located within the townland of Mullagallane approximately 800m north of Sneem, Co. Kerry. The surrounding landscape is rural in nature, with heath/rough grassland dominating, and agricultural land, woodland and forestry also plantations present. Kenmare Bay is located to the south, which is connected to Sneem village by Sneem Harbour. The site is at an elevation of 9m - 15m OD. The land use classifications for the surrounding area as defined by the 2018 CORINE landcover dataset are: 243 Land principally occupied by agriculture with significant areas of natural vegetation. Within the wider landscape are: 234 Transitional woodland scrub, 412 Peat bogs, 312 Coniferous forests and 112 Discontinuous urban fabric. The site is underlain by the Glenflesk Chloritic Sandstone Formation, which comprises green-coloured, mostly medium-grained sandstone, conglomerate and pebbly sandstone, together with green and purple siltstone. The soil types overlapping the historic landfill site are river alluvium and blanket peat.

The site walkover indicates that the main habitat types (Fossitt, 2000) present in the immediate vicinity of the proposed works site are: improved agricultural grassland (GA1), treelines/riparian woodland (WL2/WN5) and depositing lowland rivers (FW2). Improved agricultural grassland covers the historic landfill, while a stretch of treelines/riparian woodland (WL2/WN5) runs along the riverbank. Depositng lowland rivers is represented by the Ardsheelhane River that bounds the site to the southeast. An area of Japanese knotweed (*Fallopia japonica*); Third Schedule listed species under Regulations 49 & 50 in the European Communities Birds and Natural Habitats Regulations 2011 to 2021 is present at the western corner of the site along the field side of the field/road boundary ditch.

No botanical species protected under the Flora (Protection) Order (1999; and as amended 2015), listed in Annex II or IV of the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded during the site walkover. All flora and fauna species recorded during the walkover are considered common for similar habitats in the general area. No qualifying species of any European sites within 15 km of the proposed development were recorded during the site visit.

The Ardsheelhane River offers potential habitat for otter *Lutra lutra*, and sections of the river may also contain suitable habitat for Freshwater Pearl Mussel (FPM) *Margaritifera margaritifera* due to its location within a freshwater pearl mussel sensitive-area. It should be noted that FPM is not a qualifying interest of Kenmare River SAC located downstream of the site but is a qualifying interest of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) located upstream of site.

The EPA mapviewer indicates that the:

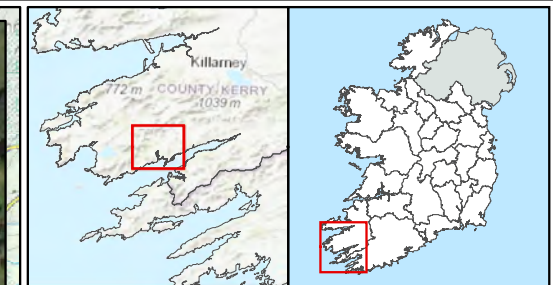
- Site is located within the: Sneem\_SC\_010 Subcatchment within the Dunmanus-Bantry-Kenmare Catchment. The Sneem freshwater pearl mussel-sensitive area overlaps the site; this catchment falls within the category 'Catchments of Other Extant Populations'.
- A direct downstream hydrological link between Sneem historic landfill site and Kenmare River cSAC (002158) exists via the Ardsheelhane and Sneem Rivers. The Ardsheelhane River borders the historic landfill site and is also directly connected through a surface drains running along the northern and southern boundaries and discharging into the river. The Ardsheelhane joins the Sneem River c. 227m downstream of the site, which in turn enters Kenmare River cSAC c. 122m downstream of the confluence.



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As such the instream distance between Sneem historic landfill site and Kenmare River cSAC is c. 349m. The Arsheelhane and Sneem Rivers have a Water Framework Directive status of 'good'.

- Kenmare River SAC extends upstream along the Sneem River north of Sneem village; As such the instream distance between Sneem historic landfill site and Kenmare River SAC is c. 349m.



Site Boundary

<b>TITLE:</b>	Site Location
<b>PROJECT:</b>	AA Screening for Sneem Historic Landfill, Co. Kerry
<b>FIGURE NO:</b>	1.1
<b>CLIENT:</b>	Kerry County Council
<b>SCALE:</b>	1:50000
<b>REVISION:</b>	0
<b>DATE:</b>	27/04/2020
<b>PAGE SIZE:</b>	A3





## 2.2 Purpose of the proposed project

The Tier 3 Risk Assessment reviewed the findings of the Tier 1 Risk Assessment undertaken by Kerry County Council, the Tier 2 site investigation and Risk Assessment (undertaken by FT) and assessed and determined the overall risk the site may pose to the receiving environment. Based on the findings of the modelling exercises and quantitative risk assessments, measures are required to mitigate the identified risks to groundwater, surface water and landfill gas migration. The existing site has a basic soil cap with an established grass cover used by cattle for grazing. Site walkovers and Tier 2 and 3 risk assessments showed:

- Evidence of insitu MSW and commercial wastes.
- Evidence of groundwater passing through the waste body.
- Evidence of leachate contaminating both surface and ground waters.
- Evidence of low-level landfill gas emissions.
- An insitu landfill cap that is not compliant with either the Landfill Directive or Environmental Protection Agency (EPA) publication Landfill Manual - Landfill Site Design.

Remediation works will ultimately have a positive impact on the water quality of surrounding water bodies.

## 2.3 Project Overview

Proposed works for the historic landfill are outlined in Section 3 – Proposed Project Description of the CEMP report. The remediation works will include:

- Development of a temporary site compound on the proposed engineered capping development.
- Site clearance.
- Grading/profiling of existing site area.
- Installation of engineered landfill capping system.
- Landscaping.

The site is currently grazed by sheep, following proposed remediation works the site will continue to be grazed. Construction details for respective elements of the proposed cap will be subject Environmental Protection Agency approval. The site is currently grazed by cattle. Following remediation works the site will continue to be grazed.

## 2.4 Construction Phase

The construction period for the proposed development has been estimated to be in the region of 4 to 6 months.



## Overview

The construction phase will include:

- Development of a temporary site compound on the proposed engineered capping development.
- Site clearance.
- Grading/profiling of existing site area.
- Installation of engineered landfill capping system.
- Landscaping.

### 2.4.1 Temporary Site Compound and Office Areas

The temporary site compound shall comprise a materials storage area, site offices and a parking area. A material storage compound, a parking area and site offices in the form of portacabins and site canteen/welfare facilities (Contractor and Employers Representatives) will be provided to the north of the site outside the footprint of the landfill area. The temporary site compound shall be founded on a small area that will be levelled, compacted and overlaid with gravel surfacing overlying geogrid and geotextile. These materials will be removed from site following completion of the works. Wastewater from the welfare facilities will be stored in a temporary above ground tank prior to disposal at a licensed wastewater treatment plant. Generators will be used on-site for power supply during the temporary works. Water will be provided via water tankers.

### 2.4.2 Site Clearance

Overgrown vegetation on the southern and western boundaries of the site will be cut back and cultivated into the existing cap using a rotovator or similar prior to reprofiling of the site.

### 2.4.3 Grading/Profiling of Existing Area

The existing waste body was covered following cessation of waste filling, with an intermediate cap comprising of soil materials circa 300 mm to 500 mm thick. The existing finished surface will require re-profiling to facilitate:

- Surface and sub-surface drainage.
- Safe execution of the site remediation works.
- Long term slope stability of side slopes.
- Safe access for maintenance of the cap.

Re-profiling will principally involve the (shallow) cutting of material at the top of side slopes and at local high spots. These “cut” materials, estimated to be approximately 10 m<sup>3</sup>, will be used as “fill” in local depressions. All cut and fill works will be carried out within the site boundary. Average site slopes will be profiled to a slope of 1:3. Site slopes will not be allowed to exceed 1:2.5. It is proposed to retain where possible the existing profiles, in particular those less than or equal to 1:2.5. Thereafter imported granular “dust” material 50mm to 100mm thick will be used provide a formation for the engineered cap. The re-profiled surface will provide the foundation for the engineered landfill cap.



#### 2.4.4 Installation of Engineered Landfill Cap

The engineered landfill cap “barrier” system will:

- Cover an area of approximately 2,800 m<sup>2</sup>.
- Isolate the waste body from rainfall inputs which contribute to produce leachate. This will protect underlying groundwater and adjacent surface waters.
- Minimise the potential for uncontrolled landfill gas migration to the atmosphere or adjacent lands.
- Provide a physical barrier between the finished surface and buried wastes.
- Facilitate controlled discharge of surface water runoff and sub surface drainage flows into the receiving surface waters.

The cap components are described below under the following headings:

- Vertical wells.
- Below liner landfill gas collection system.
- A linear low-density polyethylene (LLDPE) barrier to isolate the waste body from rainfall inputs and prevent uncontrolled fugitive gas emissions from the waste body.
- Over liner services.
- Over liner gas management system.
- Landfill gas compound.
- A subsurface over liner drainage system discharging to a surface drainage system.
- Surface drainage system.
- Geogrids on slopes steeper than 1:3 to support soil on side slopes.
- A subsoil layer average thickness 800mm.
- A topsoil layer average thickness 200mm.

##### *Vertical Wells*

Vertical wells shall be installed within the waste body prior to reprofiling works. Well arisings will be placed in dedicated low spots on site prior to re-profiling. Well arisings will be covered at the end of each working day to minimise odour nuisance. Wells will be connected to over liner gas collection pipework to the gas management compound. Well diameter will be greater than 450 mm and will comprise a slotted HDPE pipe with a gravel surround. Well depth will typically be circa. 5.0 m.

##### *Passive Below Liner Landfill Gas Collection System*

Currently any landfill gas produced vents gas to atmosphere via diffuse surface emissions. Once the LLDPE barrier is installed this preferential pathway to atmosphere will be isolated. Below the LLDPE barrier a gas collection geocomposite and pipework system will be constructed to collect and direct landfill gas to the proposed gas management compound to manage landfill gas via passive venting. The proposed gas compound will be located in the north-western end of the site and will have an area of approximately 200 m<sup>2</sup>.



The below liner gas collection geocomposite will be a cusped synthetic product or similar approved that will be rolled out above the granular “dust” material overlying the re-profiled intermediate cap which overlies the waste. The gas collection geocomposite forms a “cavity” to intercept gas emissions from the underlying body. Gas collection pipework will be slotted and laid in gravel surround below the gas collection geocomposite and it will facilitate: collection of landfill gas; and soakage, if required, of condensate or other as may collect in pipework.

Landfill gas collected in the under-liner gas system will be transferred via solid HDPE pipes and terminate in the landfill gas management compound.

#### *LLDPE Barrier*

The LLDPE barrier will be a 1.0 mm thick “plastic” sheet that is impermeable to both water and gas. It prevents gas escaping into the overlying soils and stops water from rainfall entering the underlying waste body. The LLDPE sheets will be welded at joints and will terminate in a vertical cut-off trench circa 3.0 m deep along the perimeter boundary of the site.

#### *Over-liner Services*

Over liner services comprising duct and water mains will be provided within the cap to support after use activities.

#### *Over-liner Gas Management System*

Over-liner HDPE solid pipework will convey gas from vertical wells to the gas management compound. Connections to wells will be via below ground valve chambers and/or above ground manifold boxed less than 1.0 m in height. All above ground structures will be fenced using stock proof fencing or similar approved.

#### *Landfill Gas Compound*

The under and over liner gas pipe systems will terminate in the gas management compound and exhaust landfill gas to atmosphere. Landfill gas quality will change over time. Subject to calorific value landfill gas will be either vented to atmosphere via vent stacks or oxidised prior to venting. Oxidation will be carried out using a biological filter recessed into the cap to facilitate passive venting to atmosphere. The biological filter and vent will be located in the landfill gas compound. The compound will be circa. 10.0 m wide by 20.0 m long and contained within stock proof fencing. The vent will comprise a vertical pipe 300 mm diameter with a cowl and/or carbon filter located at a height of not less than 3.0 m above surrounding ground level. The compound will also have provision for temporary plant to accommodate: gas pumping trials, or oxidation by high temperature flaring as may be required.

#### *Subsurface Drainage Over Liner Drainage System*

The over liner sub surface drainage collection geocomposite will be a cusped synthetic product or similar approved that will be rolled out above the LLDPE barrier. It will form a “cavity” to intercept rainfall inputs that may percolate into the cap. Subsurface drainage flows from the drainage geocomposite will be transferred via a supporting pipework system to the surface drainage system at the perimeter of the cap and will ultimately be discharged to one of the 2 no. surface drainage outfalls. The proposed outfalls are located in the eastern end of the site discharging into the existing watercourse.



### *Surface Drainage System*

The topsoil will have shallow grassed surface drainage swales that will direct surface water runoff to the receiving watercourses. The swales shall be constructed at grades between 1:50 and 1:100 to mitigate the risk of erosion. The swale profile will be shaped to allow mowing and trafficking by farm vehicles.

### *Geogrid on Side Slopes*

Following installation of the sub-surface drainage geocomposite, a geogrid will be installed to support placement of subsoil materials on steep side slopes ( 1V:2.5H side slope<1V:3H). The geogrid is designed to prevent translational slope failures, (i.e. it will stop soil slipping off the LLDPE liner).

### *Subsoil Layer*

Suitably sourced subsoils will be imported to the site and placed atop of the sub surface drainage geocomposite and /or geogrid on side slopes. The subsoil layer will generally be 800mm deep. The purpose of the subsoil layer is to protect the synthetic geocomposite materials, under lying pipework and to support landscaping.

### *Topsoil Layer*

Suitable sourced topsoil will be placed atop the subsoil. The topsoil will have no stones greater than 50 mm diameter. Stones greater than 50 mm will be removed by a proprietary stone picker or similar prior to grass seeding (pasture). The topsoil layer will be 200 mm deep. Stones will be reused on site in site roads or as fill to sub surface drains.

#### 2.4.5 Stock Proof Fencing

Clearance of shrub on the perimeter will result in damage to exiting stock proof fencing. Following placement of the cap a replacement perimeter stock proof fence 1.3 m high will be installed on the perimeter of the site. A gate will be provided to facilitate access to the adjacent field to the north. An access gate will be provided to off the main road. Redundant fences will be transported and disposed/recovered at a licenced facility.

#### 2.4.6 Temporary Works

Temporary works will include:

- Leachate management.
- Wheel cleaning.
- Daily cover of exposed waste.
- Suspended solids management.
- Odour management.
- Traffic management.



#### 2.4.7 Landfill Gas/Leachate Environmental Monitoring Infrastructure

Three new perimeter monitoring wells will be installed external to the waste body to monitor for landfill gas migration. Arisings from boreholes will be disposed of on site. In the event that waste is found to be present it will be disposed on site below the LLDPE barrier and gas collection geocomposite. Monitoring wells will have a chamber and a cover atop the wells at the same elevation as the surrounding ground. The wells will have monitoring ports to support monitoring of landfill gas quality and or groundwater quality as may be required by the Environmental Protection Agency (EPA).

The construction works will make provision for additional wells within the waste body and ports will be installed at wells heads or manifolds to support monitoring of gas quality and pressure. Two existing wells as are present within the waste footprint will be retained and incorporated into the cap to support future environmental monitoring as may be required by the EPA.

#### 2.4.8 Grass Cover/Landscaping for Pasture

Post capping and placement of the subsoils and topsoil layers the site will be landscaped using a proprietary grass cover mix suited for pasture. Grass cover in addition to providing fodder for stock will prevent erosion of the soils and will provide a final appearance similar to surrounding land use.

A copy of the Construction Environmental Management Plan (CEMP) is contained in Appendix 2.

### 2.5 Operational Phase / Post Construction

The Operational/Post Construction works will include:

- Ongoing environmental monitoring.
- Ongoing Management of Landfill Gas.
- Ongoing maintenance of engineered cap on-site.
- Ongoing maintenance of surface and sub-surface drainage systems on-site.

#### 2.5.1 Environmental Monitoring

Monitoring staff will be required to access installed infrastructure (wells, the landfill gas compound and surface water outfalls) to take samples and/or monitor gas quality during the aftercare period post construction.

#### 2.5.2 Management of Landfill Gas

At present venting to atmosphere of landfill gas and oxidation of methane occurs naturally via the existing soil cap and monitoring is carried out at insitu wells on and off site. Once a LLDPE barrier is installed landfill gas will be directed via gas pipe systems to the gas compound for landfill gas management.



There will be an on-going requirement to:

- Maintain landfill gas infrastructure.
- Monitor landfill gas quality within and external to the facility at dedicated monitoring locations.
- Reinstate/replace biological filter media.

#### 2.5.3 Maintenance of Cap

The grass cover will require maintenance. This may be provided either by grazing and or by mowing. Fertiliser supplements may also be required periodically during the aftercare period subject to stocking density.

#### 2.5.4 Maintenance of Drainage

Surface water swales will be grazed and or mowed during the aftercare period. In the event that settlement or erosion compromises swale integrity cracks may need to be closed. This is normally carried out by running a tractor and or tracked vehicle atop the swale edge to close settlement cracks. Sub surface drainage pipes may require periodic jetting of pipes if they become compromised with roots or silt.

Groundwater monitoring shall be carried out at the two existing perimeter wells and surface water monitoring shall be carried out at the proposed surface water discharge outfalls. Monitoring will be undertaken annually in accordance with parameters listed in Table C.2 of the EPA's *Landfill Manuals - Landfill Monitoring, 2<sup>nd</sup> Edition (2003)*. Groundwater and surface water monitoring will be undertaken to monitor the performance of the engineered cap and surface water monitoring will include the monitoring of suspended solid levels at perimeter outfalls.

Gas monitoring shall be carried out at existing groundwater monitoring boreholes. Gas sampling will be undertaken for Methane, Carbon Dioxide, Oxygen, Carbon Monoxide and temperature.



### 3. EUROPEAN SITES WITHIN THE ZONE OF INFLUENCE

An assessment of the European sites within the zone of influence of the Sneem Historical Landfill is set out in the Stage 1 Appropriate Assessment Screening Report for the Remediation of Historic Landfill Site, Sneem, County Kerry (FTC, 2021). It has been concluded that Kenmare River SAC (Site Code 002158) and Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment SAC (000365) are located within the zone of influence of the proposed remediation works. Specifically, likely adverse effects to the integrity of aquatic qualifying interests of the SACs has been identified through sediment (soil), leachate and invasive species material emitted to the perimeter waterbody, Ardsheelhane River, during proposed remediation works at the historic landfill site.



## 4. EUROPEAN SITE DESCRIPTION

### 4.1 Kenmare River SAC

The Kenmare SAC is selected for fixed coastal dunes with herbaceous vegetation (grey dunes), a priority habitat on Annex I of the E.U. Habitats Directive (92/43/EEC), 1992, as amended. The site is also selected as a SAC for Large shallow inlets and bays, Reefs, Perennial vegetation of stony banks, vegetated sea cliffs of the Atlantic and Baltic coasts, Atlantic salt meadows, Mediterranean salt meadows, shifting dunes along the shoreline with *Ammophila arenaria* (white dunes European dry heaths, Calaminarian grasslands of the *Violetalia calaminariae* and submerged or partially submerged sea caves.

As well as habitats, the SAC has been selected due to the presence of invertebrate and mammal species which are listed under Annex II of the EU Habitats Directive, including marsh snail (*Vertigo angustior*), lesser horseshoe bat (*Rhinolophus hipposideros*), otter (*Lutra lutra*), and harbour seal (*Phoca vitulina*).

“Kenmare River SAC in Co. Kerry, is a long, narrow, south-west facing bay. It is a deep, drowned glacial valley and the bedrock is mainly Old Red Sandstone which forms reefs along the middle of the bay throughout its length. Exposure to prevailing winds and swells at the mouth diminishes towards the head of the bay. Numerous islands and inlets along the length of the bay provide further areas of additional shelter in which a variety of habitats and unusual communities occur.” (NPWS 2016)

The proposed development site is located within the Dunmanus-Bantry-Kenmare catchment (Hydrometric Area 21), and Sneem\_SC\_010 Sub catchment. The site has a hydrological link; through a perimeter river, Ardsheelhane River (EPA code: 21A02), which runs along the site’s eastern boundary, and joins the Sneem River 227m downstream of the site, which in turn enters Kenmare River SAC c. 122m downstream of the confluence.

Just upstream of the Sneem River confluence is the closest monitoring point downstream from where drainage from the proposed landfill remediation ultimately discharges into the Ardsheelhane River. A Q-rating of Q4 was assigned to this point (RS21A020200) in 2019. 2006, 2003 and 2000, classified as having ‘Good’, ‘Moderate’ and High Status’ respectively, in accordance with the Water Framework Directive (2000/60/EC). The monitoring point upstream of the Sneem River confluence monitoring point, at the Bridge upstream of Ardsheelhane River confluence, in the Sneem River is classified as having ‘Good Status’ in 2019, and the monitoring point upstream of the proposed remediation works, Ardsheelhane – Coomyanna Bridge, within the Ardsheelhane River is classified as ‘Good Status’ in 2021, see Table 4-1. Therefore, the current water quality in the River Ardsheelhane and Sneem downstream of the proposed works is deemed suitable to support the QIs of the SAC, see Table 5-1. Any surface water run-off associated with the proposed remediation works is likely to lead to water quality degradation in the downstream rivers, with reduced suitability for the aquatic QIs of the SAC.

**Table 4-1: EPA biological water quality results for the Ardsheelhane River (22A02) and Sneem River (21S03)**

Station Location	Station Code	2000	2003	2006	2019/2020
Just u/s Sneem R confl	RS21A020200	4-5	3-4	4	4
Br u/s Ardsheelhane R confl	RS21S030400	4-5	4-5	4-5	4
Coomyanna Br	RS21A020100	4-5	4-5	4-5	4



The main threats and pressures which may impact the Kenmare SAC are set out in the Natura 2000 Data Form and are presented in Table 4-2. Invasive non-native species and pollution to surface waters are existing low-level threat to the SAC (inside of the SAC boundary). Spread of invasive species and water quality degradation within the SAC, through surface water run off during the remediation works, would exacerbate these existing pressures.



**Table 4-2: Threats, Pressures and Activities with Impacts on the Kenmare River SAC**

High Level (inside site)	Medium Level (inside site)	Medium Level (outside site)	Low Level (inside site)	Low Level (outside site)
F02 Fishing and harvesting aquatic resources	A08 Fertilisation	E01 Urbanised areas, human habitation	A04.03 Abandonment of pastoral systems, lack of grazing	H01 Pollution to surface waters (limnic, terrestrial, marine & brackish)
F01 Marine and Freshwater Aquaculture			I01 Invasive non-native species	
			H03 Marine water pollution	
			G01.01 Nautical sports	
			G01.02 Walking, horse-riding and non-motorised vehicles	
			D01.01 Paths, tracks, cycling tracks	
			J01.01 Burning down	
			H01 Pollution to surface waters (limnic, terrestrial, marine & brackish)	
			A08 Fertilisation	
			A04.02 Non intensive grazing	
			A04.02.01 Non intensive cattle grazing	

Source: Kenmare River SAC (002158) Natura 2000 Data Form, <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF002158.pdf>



#### 4.1.1 Suitability to Support the Qualifying Interests of the SAC

The assessment of the zone of influence of the proposed remediation works has identified potential for effects in the Kenmare River SAC. As such the qualifying interests of the SAC are discussed in Table 4-3 individually in terms of their occurrence in the downstream rivers within the vicinity of the proposed works. This assessment is based upon a desk-based assessment and field surveys. The field surveys included:

- Preliminary ecological appraisal on 15<sup>th</sup> February 2019,
- Habitat and invasive species survey on 09<sup>th</sup> August 2021,
- Bat activity transect on 09<sup>th</sup> August 2021,
- Static bat detector deployment from 09<sup>th</sup> August to 09<sup>th</sup> September 2021,
- Freshwater pearl mussel survey on 30<sup>th</sup> August 2021.
- Fisheries and otter survey on 30<sup>th</sup> September 2021.



Table 4-3: Summary of the potential occurrence of qualifying interests of the Kenmare River SAC within the zone of influence of the proposed remediation works.

	Natura Code	Item Description	Occurrence
Habitats	1160	Large shallow inlets and bays	A coastal habitat –present in Kenmare Bay, downstream of Sneem village (NPWS, 2013). This habitat does not occur within or in the vicinity of the proposed works (with a direct path distance of ca. 3.5km between the site and the closest mapped potential habitat and dilution factor of the estuary).
	1170	Reefs	A marine habitat –present in the Sneem River estuary, downstream of Sneem village (NPWS, 2011). This habitat does not occur within or in the vicinity of the proposed works (with a direct path distance of ca. 1.2km between the site and the closest mapped potential habitat and dilution factor of the estuary).
	1220	Perennial vegetation of stony banks	A coastal habitat –present in the wider Kenmare Bay area (NPWS, 2013). This habitat does not occur within or in the vicinity of the proposed works (with a direct path distance of ca. 5km between the site and the closest mapped potential habitat and dilution factor of the estuary).
	1230	Vegetated sea cliffs of the Atlantic and Baltic coasts	A coastal habitat –present in the wider Kenmare Bay area (NPWS, 2013). This habitat does not occur within or in the vicinity of the proposed works (with a direct path distance of ca. 9.3km between the site and the closest mapped potential habitat and dilution factor of the estuary).
	1330	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> )	A coastal habitat –present in the wider Kenmare Bay area. Potential habitat is identified in the in the Sneem River estuary, downstream of Sneem village (NPWS, 2013). This habitat occurs within the vicinity of the proposed works (with a direct path distance of ca. 1.6km between the site and the closest mapped potential habitat).
	1410	<i>Mediterranean salt meadows (Juncetalia maritimi)</i>	A coastal habitat –present in the wider Kenmare Bay area. Potential habitat is identified in the in the Sneem River estuary, downstream of Sneem village (NPWS, 2013). This habitat occurs within the vicinity of the proposed works (with a direct path distance of ca. 1.4km between the site and the closest mapped potential habitat).
	2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	A coastal habitat –present in the wider Kenmare Bay area (NPWS, 2013). This habitat does not occur within or in the vicinity of the proposed works (with a direct path distance of ca. 17.8km between the site and the closest mapped potential habitat).
	2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	A coastal habitat –present in the wider Kenmare Bay area (NPWS, 2013). This habitat does not occur within or in the vicinity of the proposed works (with a direct path distance of ca. 17.8km between the site and the closest mapped potential habitat and dilution factor of the estuary).
	4030	European dry heaths	A terrestrial habitat –the closest site is in the Derrynane locality, with no hydrological link to the proposed works (NPWS, 2013). This habitat does not occur within or in the vicinity of the proposed works.
	5130	<i>Juniperus communis</i> formations on heaths or calcareous grasslands	A terrestrial habitat –the closest site is in the Derrynane locality, with no hydrological link to the proposed works (NPWS, 2013). This habitat does not occur within or in the vicinity of the proposed works.
	6130	Calaminarian grasslands of the <i>Violetalia calaminariae</i>	A terrestrial habitat - in the Allihies (Mountain Mine) on the Beara Peninsula, with no hydrological link to the proposed works (NPWS, 2013). This habitat does not occur within or in the vicinity of the proposed works.
8330	Submerged or partially submerged sea caves	A coastal habitat –present in the wider Kenmare Bay area (NPWS, 2013). This habitat does not occur within or in the vicinity of the proposed works (with a direct path distance of ca. 5.9km between the site and the closest mapped potential habitat and dilution factor of the estuary).	
Species	1014	Narrow-mouthed Whorl Snail ( <i>Vertigo angustior</i> )	A terrestrial species of damp habitats –with one known site in the Derrynane locality (NPWS, 2013). Suitable habitat for this species does not occur within or in the vicinity of the proposed works.
	1303	Lesser Horseshoe Bat ( <i>Rhinolophus hipposideros</i> )	A terrestrial species –with two known roost sites at Dunkerron souterrain and Foley’s cottage Killaha (NPWS, 2013). Their associated potential feeding territories are just under 17 km from the proposed works, and therefore outside the foraging range of this species in Ireland. Review of the NPWS Lesser Horseshoe bat database indicates that the proposed works fall within a 1km buffer of a known roost. Static detector surveys identified lesser horseshoe bat using the site.
	1355	Otter ( <i>Lutra lutra</i> )	It is likely otters utilise the rivers within the SAC from estuary to headwater (NPWS, 2013). Otter sprain and an otter sprainting site were identified in the Arsheelhane River immediately downstream of the proposed works during the walkover surveys. There is potential for otter to be present in perimeter waterbody during proposed works.
	1365	Harbour Seal ( <i>Phoca vitulina</i> )	A coastal species –present in the wider Kenmare Bay area (NPWS, 2013). Suitable habitat for this species does not occur within or in the vicinity of the proposed works.



Having regard to Table 4-3, the following qualifying interests of the Kenmare River SAC which may potentially be within the zone of influence of the proposed remediation works:

- Atlantic salt meadows
- Mediterranean salt meadows
- Lesser horseshoe bat
- Otter

### Atlantic salt meadows

Atlantic salt meadows are distributed around most of the coastline of Ireland. Atlantic salt meadows contain several distinctive zones that are related to elevation and submergence frequency. The lowest part along the tidal zone is generally dominated by common saltmarsh-grass (*Puccinellia maritima*). The mid marsh zones are generally characterised by thrift (*Armeria maritima*) and/or sea plantain (*Plantago maritima*). Pressures on the habitat include grazing.

No observations of this habitat were recorded within or in the vicinity of the proposed works during the field surveys, however the closest mapped potential habitat is c.1.6km downstream (NPWS 2013).

The Overall Status of the habitat in Ireland is Inadequate.

### Mediterranean salt meadows

Mediterranean salt meadows are widespread on the Irish coastline, however they are not as extensive as Atlantic salt meadows. The habitat is distinguished from Atlantic salt meadows by the presence of rushes such as sea rush (*Juncus maritimus*) and/or sharp rush (*J. acutus*). Pressures on the habitat include grazing.

No observations of this habitat were recorded within or in the vicinity of the proposed works during the field surveys, however the closest mapped potential habitat is c.1.4km downstream (NPWS 2013).

The Overall Status of the habitat in Ireland is Inadequate but with an improving trend.

### Lesser horseshoe bat

Ireland represents a stronghold for the lesser horseshoe bat. Ireland represents the most north-westerly limit of the species' distribution and here it is confined to six west coast counties: Mayo, Galway, Clare, Limerick, Cork and Kerry.

These bats are loyal to their roosts, roosting in derelict buildings in summer and hibernating in caves, souterrains, cellars and icehouses in winter. These insectivorous bats rely on linear features in the landscapes, such as hedgerows and treelines, to commute between roosting and foraging sites. Deciduous woodland and riparian vegetation provide foraging opportunities.

The main threats to lesser horseshoe bat include loss of roosting sites, loss of commuting routes, i.e. linear features, and unsympathetic management of foraging habitats. The identified threats are considered manageable and a significant proportion of this bat's summer and winter roosts are protected within SACs. The Overall Status of the species in Ireland is 'Favourable' and 'improving'.



Review of the NPWS Lesser Horseshoe bat database indicates that the proposed works fall within a 1km buffer of a known roost.

A static detector surveys, using a Song Meter SM4BAT Full spectrum bat recorder, identified lesser horseshoe bat echolocating within/ adjacent to the proposed works. The detector was deployed for one month along the south-easterly perimeter riparian treeline, ITM 468969 567822. Lesser horseshoe bat was recorded on 22 of the 31 nights. The nights with the highest lesser horseshoe bat activity were 29<sup>th</sup> and 31<sup>st</sup> August and 07<sup>th</sup> September, with six passes per night (Appendix 4). It is likely that the existing treeline along the eastern site boundary offers potential commuting and foraging opportunities to lesser horseshoe bats roosting in the vicinity of the proposed works. No roosting features were identified onsite or within its vicinity.

## Otter

Ireland represents a stronghold for the European otter. Four national surveys were conducted between 1980/81 and 2010. The 1980/81 survey found otter signs at 88% of sites surveyed. Declines were indicated in 1990/91 and 2004/05 however the most recent survey in 2010 pointed to a recovery to levels recorded in 1980.

Aquatic prey and safe refuges to rest and breed are the two primary requirements of otter. In Ireland, populations of otter are found along rivers lakes and coasts where aquatic prey are abundant and adequate bankside cover is available. Otters are opportunistic predators with a broad and varied diet which includes fish in freshwater and coastal habitats, crabs and molluscs in coastal areas and crayfish and frogs inland.

The main threats to otter include pollution (organic pollution resulting in fish kills is a particular concern) and accidental death caused by road traffic collisions and fishing gear. A total of 44 SACs which include extensive stretches of river channels and coastline (mainland and offshore islands) have been designated for otter (NPWS, 2019c). The Overall Status of the species in Ireland is 'Favourable' and 'improving.' This trend is unchanged since the last Article 17 reporting period (NPWS, 2019).

The National Biodiversity Data Centre (NBDC) website has records of otter within the 10km grid quare (V66) of the proposed development site. There are no otter records available within the 2km grid quare (V66Y) of the proposed development site. During the otter survey, a single spraint was found on a boulder on the western bank of the river beside the remains of what appears to be a foot bridge or pully bridge which has fallen into disrepair. Again, on the western bank, under a very dense growth of rhododendron, a territorial marking site was found. This feature contained 3 spraints of varying ages. This is not considered a heavily marked sprainting site, however, it was evident that this sprainting site is used on a long standing basis due to the effects on the vegetation, particularly the moss. This is a common indicator of regularly used sprainting sites (Chanin, 2003). No features were found that were deemed as having been used by otters to rest (holts or couches). A number of features that would be suitable were found in the form of the root balls of semi wind thrown trees with multiple access and escape points, however, there were no signs of otter occupation.

## 4.2 Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment SAC

The Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment SAC is selected for blanket bogs (if active), *Taxus baccata* woods and alluvial forests, priority habitats on Annex I of the E.U. Habitats Directive (92/43/EEC), 1992, as amended.



The site is also selected as a SAC for oligotrophic waters containing very few minerals of sandy plains, oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea*, water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation, Northern Atlantic wet heaths with *Erica tetralix*, European dry heaths, Alpine and Boreal heaths, *Juniperus communis* formations on heaths or calcareous grasslands, *Calaminarian* grasslands of the *Violetalia calaminariae*, *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils, depressions on peat substrates of the *Rhynchosporion* and old sessile oak woods with *Ilex* and *Blechnum*.

As well as habitats, the SAC has been selected due to the presence of aquatic plant, fern, invertebrate, fish and mammal species which are listed under Annex II of the EU Habitats Directive, including slender naiad (*Najas flexilis*), Killarney fern (*Trichomanes speciosum*), Kerry slug (*Geomalacus maculosus*), freshwater pearl mussel (*Margaritifera margaritifera*), marsh fritillary (*Euphydryas aurinia*), Atlantic salmon (*Salmo salar*), Killarney shad (*Alosa fallax killarnensis*), Eurasian otter (*Lutra lutra*), lesser horseshoe bat (*Rhinolophus hipposideros*), and the three Irish Lamprey species - sea (*Petromyzon marinus*), brook (*Lampetra planeri*) and river (*Lampetra fluviatilis*).

“This very large site encompasses the mountains, rivers and lakes of the Iveragh Peninsula, and the Paps Mountains which stretch eastward from Killarney towards Millstreet. The majority of the site is in Co. Kerry, with a small portion in Co. Cork. This is the most mountainous region in Ireland and includes Carrauntoohil, the highest peak in the country at 1,039 m. The underlying geology is almost entirely Old Red Sandstone, although Carboniferous limestone occurs on the eastern shores of Lough Leane, and rhyolitic lavas occur above Lough Guitane. The dramatic sandstone ridges and valleys have been shaped by glacial processes and many of the lakes are impounded by glacial moraines. Located close to the Atlantic in the southwest of Ireland, the site is subject to strong oceanic influences. Generally, Lusitanian flora and fauna is well-represented, while the high peaks and cliffs support arcticalpine relicts.” (NPWS 2013)

The site has an indirect hydrological link; through a perimeter river, Ardsheelhane River (EPA code: 21A02), which runs along the site’s eastern boundary, and joins the Sneem River 227m downstream of the site. The SAC is located a minimum instream distance of ca. 5.5km (Sneem River) upstream of the site. See section 4.1 for Sneem River Q-ratings downstream of the proposed works.

The main threats and pressures which may impact the SAC are set out in the Natura 2000 Data Form and are presented in Table 4-4.



**Table 4-4: Threats, Pressures and Activities with Impacts on Killarney National Park Macgillicuddy's Reeks and Caragh River Catchment SAC**

High Level (inside site)	Medium Level (inside site)	Medium Level (outside site)	Low Level (inside site)	Low Level (outside site)
A04 Grazing	E01.03 Dispersed habitation	A08 Fertilisation	G01.02 Walking, horse-riding and non-motorised vehicles	E01.03 Dispersed habitation
I01 Invasive non-native species	G02.06 Attraction park	E01 Urbanised areas, human habitation	F02.03 Leisure fishing	G02.01 Golf course
	E03.01 Disposal of household / recreational facility waste	B Sylviculture, forestry	A03 Mowing / cutting of grassland	
	K01.01 Erosion	A04 Grazing	A08 Fertilisation	
	C01.03 Peat extraction			
	B Sylviculture, forestry			
	J01 Fire and fire suppression			

Source: Killarney National Park Macgillicuddy's Reeks and Caragh River Catchment SAC (000365) Natura 2000 Data Form, <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF000365.pdf>



#### 4.2.1 Suitability to Support the Qualifying Interests of the SAC

The assessment of the zone of influence of the proposed remediation works has identified potential for effects in Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment SAC. As such the qualifying interests of the SAC are discussed in Table 4-5 individually in terms of their occurrence in the downstream rivers, namely Sneem River, within the vicinity of the proposed works. This assessment is based upon a desk-based assessment and field surveys, see Section 4.1.1.



Table 4-5: Summary of the potential occurrence of qualifying interests of the Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment SAC within the zone of influence of the proposed remediation works.

	Natura Code	Item Description	Occurrence
Habitats	3110	Estuaries Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> )	All QI habitats are located within the SAC, and therefore are located a minimum of 5.5km upstream (Sneem River), or 3km direct distance from SAC boundary to the proposed works. The closest mapped habitat is 'Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> )', with a direct path distance of ca. 4.5km from the site (NPWS, 2017).
	3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i>	
	3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	
	4010	Northern Atlantic wet heaths with <i>Erica tetralix</i>	
	4030	European dry heaths	
	4060	Alpine and Boreal heaths	
	5130	<i>Juniperus communis</i> formations on heaths or calcareous grasslands	
	6130	Calaminarian grasslands of the <i>Violetalia calaminariae</i>	
	6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> )	
	7130	Blanket bogs (* if active bog)	
	7150	Depressions on peat substrates of the <i>Rhynchosporion</i>	
	91A0	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	
	91J0	<i>Taxus baccata</i> woods of the British Isles	
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> )		
Species	1024	Kerry Slug ( <i>Geomalacus maculosus</i> )	A terrestrial species – is largely located around Killarney National Park, and around Caragh Lake and Glencar (NPWS, 2017). There is no direct link between the mapped areas and the proposed works (with a direct path distance of ca. 8.4km between the site and the closest mapped potential habitat) and no potential habitat onsite.
	1029	Freshwater Pearl Mussel ( <i>Margaritifera margaritifera</i> )	An aquatic species – the Currane, Caragh and Gearhameen as catchments suitable for this species (NPWS, 2017). While these catchments do not have hydrological connectivity with the proposed works, a population of this species was recorded in the Sneem River, downstream from the proposed works. The Sneem River continues upstream for ca. 5.5km into the SAC.
	1065	Marsh Fritillary ( <i>Euphydryas aurinia</i> )	A terrestrial species – largely associated with devil's-bit scabious (NPWS, 2017). Suitable habitat for this species does not occur within or in the vicinity of the proposed works (with a direct path distance of ca. 32km between the site and the closest mapped potential habitat).
	1095	Sea lamprey ( <i>Petromyzon marinus</i> )	The range of this species can be limited to lower stretches of the rivers in the SAC due to artificial barriers restricting access upstream (NPWS, 2017). As the upper stretches of the Sneem River is located within the SAC, if this mobile species is present, it may travel within the watercourse (move downstream) and/or migrate from the sea, inland and vice versa.



Natura Code	Item Description	Occurrence
1096	Brook Lamprey ( <i>Lampetra planeri</i> )	The range of this species can be limited to lower stretches of the rivers in the SAC due to artificial barriers restricting access upstream (NPWS, 2017). As the upper stretches of the Sneem River is located within the SAC, if this mobile species is present, it may travel within the watercourse (move downstream).
1099	River lamprey ( <i>Lampetra fluviatilis</i> )	The range of this species can be limited to lower stretches of the rivers in the SAC due to artificial barriers restricting access upstream (NPWS, 2017). As the upper stretches of the Sneem River is located within the SAC, if this mobile species is present, it may travel within the watercourse (move downstream) and/or migrate from the sea, inland and vice versa.
1106	Salmon ( <i>Salmo salar</i> )	The range of this species can be limited to lower stretches of the rivers in the SAC due to artificial barriers restricting access upstream (NPWS, 2017). As the upper stretches of the Sneem River is located within the SAC, if this mobile species is present, it may travel within the watercourse (move downstream) and/or migrate from the sea, inland and vice versa.
1303	Lesser Horseshoe Bat ( <i>Rhinolophus hipposideros</i> )	A terrestrial species –with four mapped roost sites within the SAC (NPWS, 2017). Their associated potential feeding territories are over 12 km from the proposed works, and therefore outside the foraging range of this species in Ireland. Lesser horseshoe bats onsite are likely associated with the closer Kenmare River SAC.
1355	Otter ( <i>Lutra lutra</i> )	It is likely otters utilise the rivers within the SAC from estuary to headwater (NPWS, 2017). As the upper stretches of the Sneem River is located within the SAC, if this mobile species is present, it may travel within the watercourse (move downstream) which may also form part of this species territory. Otter sprain and an otter sprainting site were identified in the Arsheelhane River immediately downstream of the proposed works during the walkover surveys. There is potential for otter to be present in perimeter waterbody during proposed works.
1421	Killarney Fern ( <i>Trichomanes speciosum</i> )	This fern is largely located in the Killarney locality (NPWS 2017). This species does not occur within or in the vicinity of the proposed works. There is no direct link between the recorded areas and the proposed works.
1833	Slender Naiad ( <i>Najas flexilis</i> )	This aquatic plant species is located in the lakes of the SAC (NPWS 2017). This species does not occur within or in the vicinity of the proposed works. There is no direct link between the mapped areas and the proposed works.
5046	Killarney Shad ( <i>Alosa fallax killarnensis</i> )	This aquatic species is unique to Lough Leane (NPWS 2017). This species does not occur within or in the vicinity of the proposed works. There is no direct link between the recorded areas and the proposed works.



Having regard to Table 4-5, the qualifying interests of the Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment SAC which may potentially be within the zone of influence of the proposed remediation works:

- Freshwater Pearl Mussel
- Sea Lamprey
- Brook Lamprey
- River Lamprey
- Atlantic salmon
- Otter

### Freshwater Pearl Mussel

The freshwater pearl mussel is a large, long-lived, bivalve mollusc found in clean, fast-flowing rivers. Freshwater pearl mussels are widespread in Ireland, occurring in more than 160 rivers and a handful of associated lakes. The freshwater pearl mussel produces very tiny young that burrow into river gravels to prevent being washed to sea. The species requires very clean and well oxygenated rivers. The population is in decline and is under significant threat from sedimentation and enrichment of its habitat. Riverbeds have become clogged with silt, algae and rooted-plants so that the young mussels can no longer survive. In some rivers, pollution is sufficiently severe that adult mussels are also dying. The Overall Status is assessed as 'Bad' and 'declining' for this species.

During the 2021 freshwater pearl mussel surveys, total of 566 freshwater pearl mussels were recorded in Sneem River, and five individuals recorded in the Ardsheelhane River, all downstream of the proposed works. All mussels observed appeared healthy and were actively filtering (Appendix 5). The upper reaches of the Sneem River forms part of the SAC.

### Lamprey

The brook lamprey is the smallest of the three lamprey species native to Ireland and it is the only one of the three species that is non-parasitic and spends all its life in freshwater (Maitland & Campbell, 1992). Brook lamprey live for up to five years burrowed into silt deposits in rivers. They metamorphose into adults and spawn in the early spring in fast flowing streams with gravel substrates. Unlike the other two Irish lamprey species they are not parasitic as adults and undertake only localised migrations. Although still common in Ireland they are under significant threat from drainage and navigation maintenance works and from water quality deterioration.

The river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus* are larger in size than the brook lamprey and exhibit an anadromous life cycle. Lamprey are poor swimmers and cannot jump or climb (Reinhardt *et al.*, 2009), so have significant difficulty getting past barriers such as weirs. The Overall Status of sea and brook lamprey populations in Ireland is currently assessed as 'Favourable'. The Overall Status of sea lamprey is assessed as 'Bad' with a stable trend, unchanged since the last Article 17 assessment.

The fisheries assessment surveys 2021 identified the section of Ardsheelhane River adjacent to the proposed remediation works as not optimal lamprey or some sub optimal ammocoete habitat with small pockets of suitable lamprey spawning habitat (see Appendix 3).



## Atlantic salmon

Atlantic salmon are an anadromous species, meaning they are spawned in freshwater habitats and then migrate to the sea. Salmon habitats are usually fast flowing riffle and glide habitats with cobble or gravel substrates. The gravels at these sites must be clean and well oxygenated for successful hatching.

Crisp (2000) notes that salmon spawning site selection is governed by a complex of environmental factors including intra-gravel flow, gravel size, water depth as well as stream velocity and cover, which are all essential for successful spawning, egg survival and hatching. One of the most important factors for salmon egg survival is oxygen supply, which is dependent upon dissolved oxygen concentration and inter-gravel flow. High concentrations of suspended solids in the river are undesirable as they are likely to result in infilling of the gravel pores with fine material (Cowx and Fraser, 2003). Juvenile salmon require fast flowing clean water and the cover of instream rocks, plants, and banks to thrive. Adult salmon require pool habitat to rest in the interval between entering the river and reaching spawning grounds and the act of spawning. The Overall Status of Atlantic salmon populations in Ireland is currently assessed as 'Stable' (NPWS, 2019).

During the fisheries assessment surveys 2021, 38 salmon were captured within the Ardsheelhane River 200m upstream to the site. A total of 29 salmon were captured within the Ardsheelhane River 100m downstream to the site. Three age groups of salmon were present both upstream and downstream. In terms of fisheries habitats, there are some good holding pools for adult salmonids as well as excellent rearing areas for juveniles. There are small pockets of suitable salmonid spawning habitat, but no large spawning beds were present. (see Appendix 3).

## Otter

See Section 4.1.1.



## 5. POTENTIAL FOR ADVERSE EFFECTS ON SITE INTEGRITY

The potential for the remediation of the historic landfill site at Sneem (in the absence of mitigation) to have an adverse effect on the integrity of Kenmare River SAC (002158) and Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365) are considered hereunder.

The appraisal is made relative to the potential for the effects to impact the maintenance or restoration of the favourable conservation conditions of Atlantic salt meadows, Mediterranean salt meadows, freshwater pearl mussel, sea lamprey, brook lamprey, river lamprey, Atlantic salmon, lesser horseshoe bat and otter (which are identified as the qualifying interests within the zone of influence). The conservation conditions required by these species are defined by attributes and targets set out in the Conservation Objectives Report (NPWS, 2013 and 2017). No other qualifying interests of the Kenmare River SAC or Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC were identified to be within the zone of influence of the proposed remediation works having regard to the potential for the affected areas.

The Habitats Directive 92/43/EEC define the favourable conservation status of an Annex I habitat as achieved when:

- Its natural range, and area it covers within that range, are 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.

The favourable conservation status of an Annex II 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.

### 5.1 Potential For Adverse Effects on Site Integrity

The elements of the remediation of the historic landfill site at Sneem which were identified as posing a pressure on the Kenmare River SAC or Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC are identified as being the release of surface-water runoff, groundwater and spread of invasive species to the rivers within the SAC, namely Ardsheelhane and Sneem rivers, and the construction phase causing disturbance to mobile QIs.

#### 5.1.1 Surface water runoff to the Ardsheelhane River

The Ardsheelhane River flow along the perimeter to the east of the historic landfill site at Sneem, which discharges to the Sneem River.



## Water quality degradation

During the construction phase of the remediation works, there is a risk of surface water runoff from the site to discharge into the hydrologically connected Kenmare River SAC, via the Ardsheelhane and Sneem rivers, leading to a degradation in water quality. Kenmare River SAC has a direct hydrological link with the historic landfill. Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC is located a minimum instream distance of ca. 5.5km (Sneem River) upstream of the site, with a degradation of the downstream water quality having the potential to adversely affect mobile aquatic QIs. Site clearance and the use of concrete would result in a risk of uncontrolled charges to the drainage ditches and the downstream Ardsheelhane River. Uncontrolled discharges to the Ardsheelhane River from the perimeter waterbodies could have an effect on the water temperature, dissolved oxygen, pH, and turbidity of the receiving waters. This in turn can have implications for the quality of the habitat to support fisheries and therefore have indirect effects food supply for. Sedimentation can affect habitat quality by filling in spawning gravel beds. A change in pH, as may be caused by the accidental release of concrete during the installation of the monitoring station adjacent to the drainage ditch, can have an associated effect on ammonia in the water which can have toxic effects on fish. Risk of contaminated groundwater containing leachate entering the adjacent waterbodies is already present due to the existing landfill.

## Spread of invasive species

During the construction phase of the remediation works, there is a risk of surface water runoff, containing invasive plant material, from the site to discharge into the hydrologically connected Kenmare River SAC, via existing perimeter waterbodies, leading to a spread of invasive species. Site clearance would result in a risk of uncontrolled charges to the drainage ditches and the adjacent Ardsheelhane River. Uncontrolled discharges to the Ardsheelhane River from the perimeter waterbodies could have an effect on the species composition of downstream habitats.

### 5.1.2 Disturbance to mobile QI's

The designated lesser horseshoe bat roosts for Kenmare River SAC, Dunkerron souterrain and Foley's cottage Killaha, are 17km from the site which are beyond the foraging distance of this species. However, lesser horseshoe bat have been recorded within the site and there are potential roosts overlapping the SAC boundary within 1km of the site. Removal of the riparian treeline and lighting during the construction stage could lead to reduced foraging habitat for lesser horseshoe bat populations in the vicinity of the proposed development site.

An otter sprainting rock was discovered in downstream of the site along the Ardsheelhane River. No holt was found within the site. The section of the Ardsheelhane River that runs adjacent to the site is likely used for foraging and commuting. Noise during the construction stage from increased human activity, vehicles or plant on site could lead to disturbance/ displacement to otter populations in the vicinity of the proposed development site.

## 5.2 Potential for Adverse Effects

An assessment of the potential for the remediation of the historic landfill site at Sneem to have adverse effects on the integrity of the Kenmare River SAC or Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC is presented hereunder with respect to the aquatic qualifying interests and mobile QIS which have been identified to be within the likely zone of influence of the proposed works, Table 5-1.



Table 5-1: Conservation Objectives and Structure and Functions for Relevant Qualifying Interests

Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion
Atlantic salt meadows <i>Glaucopuccinellietalia maritima</i> [1330]	To maintain the favourable conservation condition Atlantic salt meadows ( <i>Glaucopuccinellietalia maritima</i> ) in Kenmare River SAC  Attributes Measures and Targets Sourced from Conservation Objectives for Kenmare River SAC 002158  <a href="https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf">https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf</a>	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites Dereen House - 0.26ha; Dinish - 0.07ha; Tahilla - 0.01ha; West Cove - 0.08ha.	<b>Potential for Adverse Effects</b>  This habitat is mapped downstream of the proposed works. There is potential for the uncontrolled release of surface water runoff from the remediation works to result in a degradation of water quality and spread of invasive species downstream, thereby potentially effecting the physical structure, vegetation structure and composition.	Yes potential to affect targets	Temporary due to the duration of the project.	Yes, potential for the project to affect this target either alone or in-combination with other plans or projects exists.
		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	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 within sward				
		Vegetation structure: vegetation cover	% cover at a representative sample of monitoring stops	Maintain more than 90% area outside creeks vegetated				
		Vegetation composition: typical species and subcommunities	% cover at a representative sample of monitoring stops	Maintain range of subcommunities with typical species.				



Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion
		Vegetation structure: negative indicator species- <i>Spartina anglica</i>	Hectares	There is currently no common cordgrass ( <i>Spartina anglica</i> ) in this SAC.				
<b>Mediterranean salt meadows <i>Juncetalia maritimi</i> [1410]</b>	To maintain the favourable conservation condition Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) in Kenmare River SAC  Attributes Measures and Targets Sourced from Conservation Objectives for Kenmare River SAC 002158  <a href="https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf">https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf</a>	Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites Dereen House - 8.93ha; Dinish - 0.04ha; Tahilla - 0.27ha; West Cove - 1.54ha.	<b>Potential for Adverse Effects</b>  This habitat is mapped downstream of the proposed works. There is potential for the uncontrolled release of surface water runoff from the remediation works to result in a degradation of water quality and spread of invasive species downstream, thereby potentially effecting the physical structure, vegetation structure and composition.	Yes potential to affect targets	Temporary due to the duration of the project.	Yes, potential for the project to affect this target either alone or in-combination with other plans or projects exists.
		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	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 within sward				
		Vegetation structure: vegetation cover	% cover at a representative sample of monitoring stops	Maintain more than 90% area outside creeks vegetated				
		Vegetation composition: typical species and subcommunities	% cover at a representative sample of monitoring stops	Maintain range of subcommunities with typical species				



Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion
		Vegetation structure: negative indicator species- <i>Spartina anglica</i>	Hectares	There is currently no common cordgrass ( <i>Spartina anglica</i> ) in this SAC.				
<b>Freshwater Pearl Mussel</b> <i>Margaritifera</i> [1029]	To restore the favourable conservation condition of Freshwater Pearl Mussel in Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC  Attributes Measures and Targets Sourced from Conservation Objectives for Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC 000365  <a href="https://www.npws.ie/sites/default/files/protected-sites/conservation-objec-tives/CO000365.pdf">https://www.npws.ie/sites/default/files/protected-sites/conservation-objec-tives/CO000365.pdf</a>	Distribution	Kilometres	See targets below. Note that the distribution target lengths include the perimeters of lakes in each catchment	<b>Potential for Adverse Effects</b>  This species was recorded in the Sneem and Ardsheelhane Rivers, downstream of the proposed works. The upper stretches of the Sneem River form part of the SAC. There is potential for the uncontrolled release of surface water runoff from the remediation works to result in a degradation of water quality downstream, thereby potentially effecting the salmon population, which may act as a host species in the upstream freshwater pearl mussel's lifecycle.	No No projects (including those within plans) identified for in-combination impacts that would impede upstream distribution.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.
		Distribution: Caragh	Kilometres	Maintain Caragh distribution at 35.06km		No No projects (including those within plans) identified for in-combination impacts that would impede upstream distribution.		
		Distribution: Currane	Kilometres	Maintain Currane distribution at 14.90km		No No projects (including those within plans) identified for in-combination impacts that would impede upstream distribution.		
		Distribution: Gearhameen	Kilometres	Maintain Gearhameen distribution at 4.45km		No No projects (including those within plans) identified for in-combination impacts that would impede upstream distribution.		
		Population size	Number of adult mussels	Restore populations to at least: 2.8 million adult mussels in the Caragh, 100,000 in the Currane and 100,000 in the Gearhameen		No No projects (including those within plans) identified for in-combination impacts that would impede upstream population size.		
		Population structure: recruitment	Percentage per size class	Restore to at least 20% of each population no more than 65mm in length; and at least 5% of each		No No projects (including those within plans) identified for in-		



Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion
				population no more than 30mm in length		combination impacts that would impede upstream population structure.		
		Population structure: adult mortality	Percentage	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution		No No projects (including those within plans) identified for in-combination impacts that would impede upstream population structure.		
		Suitable habitat: extent	Kilometres	See targets below. Note that the suitable habitat target lengths include the perimeters of lakes in each catchment		No No projects (including those within plans) identified for in-combination impacts that would impede upstream habitat.		
		Suitable habitat: extent - Caragh	Kilometres	Restore suitable habitat in more than 33.18km in the Caragh and any additional stretches necessary for salmonid spawning		No No projects (including those within plans) identified for in-combination impacts that would impede upstream habitat.		
		Suitable habitat: extent - Currane	Kilometres	Restore suitable habitat in more than 6.86km in the Currane and any additional stretches necessary for salmonid spawning		No No projects (including those within plans) identified for in-combination impacts that would impede upstream habitat.		
		Suitable habitat: extent - Gearhameen	Kilometres	Restore suitable habitat in more than 4.45km in the Gearhameen and any additional stretches necessary for salmonid spawning		No No projects (including those within plans) identified for in-combination impacts that would impede upstream habitat.		
		Water quality: macroinvertebrate and phytobenthos (diatoms)	Ecological quality ratio (EQR)	Restore water quality - macroinvertebrates: EQR greater than 0.90 (Q4-5 or Q5); phytobenthos: EQR greater than 0.93		No No projects (including those within plans) identified for in-combination impacts that		



Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion
						would impede upstream water quality.		
		Substratum quality: filamentous algae (macroalgae); macrophytes (rooted higher plants)	Percentage	Restore substratum quality - filamentous algae: absent or trace (less than 5%); macrophytes: absent or trace (less than 5%)		No No projects (including those within plans) identified for in-combination impacts that would impede upstream substratum quality.		
		Substratum quality: sediment	Occurrence	Restore substratum quality - stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment		No No projects (including those within plans) identified for in-combination impacts that would impede upstream substratum quality.		
		Substratum quality: oxygen availability	Redox potential	Restore to no more than 20% decline from water column to 5cm depth in substrate		No No projects (including those within plans) identified for in-combination impacts that would impede upstream substratum quality.		
		Hydrological regime: flow variability	Metres per second	Restore appropriate hydrological regime		No No projects (including those within plans) identified for in-combination impacts that would impede upstream substratum quality.		
		Host fish	Number	Maintain sufficient juvenile salmonids to host glochidial larvae		Yes potential to affect this target by contributing to a cumulative reduction in juvenile salmonids exists.	Temporary due to the duration of a potential emissions event and the duration of the project.	Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Fringing habitat: area and condition	Hectares	Maintain the area and condition of fringing habitats necessary to support the population		No No projects (including those within plans) identified for in-combination impacts that would impede upstream habitat.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.



Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion
<b>Sea Lamprey</b> <i>Petromyzon marinus</i> [1095]	To maintain the favourable conservation condition of Sea lamprey in Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC  Attributes Measures and Targets Sourced from Conservation Objectives for Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC 000365  <a href="https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000365.pdf">https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000365.pdf</a>	Distribution: extent of anadromy	% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary	<b>Potential for Adverse Effects</b> Suitable lamprey habitat has been recorded in the Ardsheelhane River adjacent to the proposed development site (Appendix 3).  There is potential for the uncontrolled release of surface water runoff from the remediation works to result in a degradation of water quality and habitat heterogeneity due to sedimentation, thereby reducing the availability of juvenile habitat, as well as direct mortality and reduction of spawning habitat.	No No projects (including those within plans) identified for in-combination impacts that would impede river access.	No No projects (including those within plans) identified for in-combination impacts that would impede river access.	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.
		Population structure of juveniles	Number of age/size groups	At least three age/size groups present		Yes potential to affect this target by contributing to a cumulative reduction in number of age/size groups for sea lamprey exists.	Temporary due to the duration of a potential emissions event and the duration of the project.	Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Juvenile density in fine sediment	Juveniles/m <sup>2</sup>	Juvenile density at least 1/m <sup>2</sup>		Yes potential to affect this target by contributing to a cumulative reduction in juvenile density of sea lamprey exists.		Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Extent and distribution of spawning habitat	m <sup>2</sup> and occurrence	No decline in extent and distribution of spawning beds		Yes potential to affect this target by contributing to a cumulative reduction in extent and distribution of sea lamprey spawning habitat exists.		Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	More than 10% of sample sites positive		Yes potential to affect this target by contributing to a cumulative reduction in extent and availability of juvenile sea lamprey habitat exists.		Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.



Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion
<b>Brook Lamprey</b> <i>Lampetra planeri</i> [1096]	To maintain the favourable conservation condition of Brook lamprey in Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC  Attributes Measures and Targets Sourced from Conservation Objectives for Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC 000365  <a href="https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000365.pdf">https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000365.pdf</a>	Distribution	% of river accessible	Access to all water courses down to first order streams	<b>Potential for Adverse Effects</b> Suitable lamprey habitat has been recorded in the Ardsheelhane River adjacent to the proposed development site (Appendix 3).  There is potential for the uncontrolled release of surface water runoff from the remediation works to result in a degradation of water quality and habitat heterogeneity due to sedimentation, thereby reducing the availability of juvenile habitat, as well as direct mortality and reduction of spawning habitat.	No No projects (including those within plans) identified for in-combination impacts that would impede river access.	No No projects (including those within plans) identified for in-combination impacts that would impede river access.	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.
		Population structure of juveniles	Number of age/size groups	At least three age/size groups present		Yes potential to affect this target by contributing to a cumulative reduction in number of age/size groups for sea lamprey exists.	Temporary due to the duration of a potential emissions event and the duration of the project.	Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Juvenile density in fine sediment	Juveniles/m <sup>2</sup>	Juvenile density at least 5/m <sup>2</sup>		Yes potential to affect this target by contributing to a cumulative reduction in juvenile density of sea lamprey exists.		Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Extent and distribution of spawning habitat	m <sup>2</sup> and occurrence	No decline in extent and distribution of spawning beds		Yes potential to affect this target by contributing to a cumulative reduction in extent and distribution of sea lamprey spawning habitat exists.		Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive		Yes potential to affect this target by contributing to a cumulative reduction in extent and availability of juvenile sea lamprey habitat exists.		Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.



Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion
<b>River Lamprey <i>Lampetra fluviatilis</i> [1099]</b>	To maintain the favourable conservation condition of River lamprey in Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC  Attributes Measures and Targets Sourced from Conservation Objectives for Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC 000365  <a href="https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000365.pdf">https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000365.pdf</a>	Distribution	% of river accessible	Access to all water courses down to first order streams	<b>Potential for Adverse Effects</b> Suitable lamprey habitat has been recorded in the Ardsheelhane River adjacent to the proposed development site (Appendix 3). There is potential for the uncontrolled release of surface water runoff from the remediation works to result in a degradation of water quality and habitat heterogeneity due to sedimentation, thereby reducing the availability of juvenile habitat, as well as direct mortality and reduction of spawning habitat.	No No projects (including those within plans) identified for in-combination impacts that would impede river access.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.
		Population structure of juveniles	Number of age/size groups	At least three age/size groups of river/brook lamprey present		Yes potential to affect this target by contributing to a cumulative reduction in number of age/size groups for sea lamprey exists.		Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Juvenile density in fine sediment	Juveniles/m <sup>2</sup>	Mean catchment juvenile density of brook/river lamprey at least 5/m <sup>2</sup>		Yes potential to affect this target by contributing to a cumulative reduction in juvenile density of sea lamprey exists.		Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Extent and distribution of spawning habitat	m <sup>2</sup> and occurrence	No decline in extent and distribution of spawning beds		Yes potential to affect this target by contributing to a cumulative reduction in extent and distribution of sea lamprey spawning habitat exists.		Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive	Yes potential to affect this target by contributing to a cumulative reduction in extent and availability of juvenile sea lamprey habitat exists.	Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.		
<b>Salmon <i>Salmo salar</i> [1106]</b>	To maintain the favourable conservation condition of Atlantic Salmon in Killarney National Park, Macgillicuddy's Reeks	Distribution: extent of anadromy	% of river accessible	100% of river channels down to second order accessible from estuary.	<b>Potential for Adverse Effects.</b> Salmon have been recorded in the River Gweestin both upstream and downstream from the proposed	No No projects (including those within plans) identified for in-combination impacts that would impede river access.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.



Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion
	and Caragh River Catchment SAC  Attributes Measures and Targets Sourced from Conservation Objectives for Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC 000365  <a href="https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000365.pdf">https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000365.pdf</a>	Adult spawning fish	Number	Conservation Limit (CL) for each system consistently exceeded	development site (Appendix 3). Having regard to Section 4.1, the existing water quality in the Sneem River at Just u/s Sneem River confluence (closest monitoring point downstream of the proposed works) is Q4 which is sufficient to support salmon.  There is potential for the uncontrolled release of surface water runoff from the remediation works to result in a degradation of water quality and habitat heterogeneity due to sedimentation, thereby reducing the carrying capacity of the river for salmon.	Yes potential to affect this target by contributing to a cumulative reduction in availability of spawning habitat for adult salmon exists.	Temporary due to the duration of a potential emissions event and the duration of the project.	Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Salmon fry abundance	Number of fry/5minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling		Yes potential to affect this target by contributing to a cumulative reduction in salmon fry abundance exists.		
		Out-migrating smolt abundance	Number	No significant decline		Yes potential to affect this target by contributing to a cumulative reduction in smolt abundance exists.		
		Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes		Yes potential to affect this target by contributing to a cumulative reduction in the number and distribution of redds quality exists.		
		Water quality	EPA Q value	At least Q4 at all sites sampled by EPA.		Yes potential to affect this target by contributing to a cumulative deterioration in water quality exists.		
<b>Lesser Horseshoe Bat</b> <i>Rhinolophus hipposidero</i> [1303]	To maintain the favourable conservation condition of Bats in Kenmare River SAC  Attributes Measures and Targets Sourced from Conservation Objectives for Kenmare River SAC 002158	Population per roost	No.	Minimum number for the winter roost at Dunkerron souterrain is 138; Minimum of 100 for summer roost (Foley's cottage, Killaha).	<b>No Potential for Adverse Effects.</b> While lesser horseshoe bat have been recorded onsite, the closest qualifying roost (Dunkerron souterrain and Foley's cottage) is c.19km from the site, well outside the 2.5km foraging range for this species.	No No projects (including those within plans) identified for in-combination impacts that would reduce roost numbers.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.
		Winter roosts	Condition	No decline		No No projects (including those within plans) identified for in-combination impacts that	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.



Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion			
	<a href="https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf">https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf</a>	Summer roosts	Condition	No decline	However, lesser horseshoe bat have been recorded within the site and there are potential roosts overlapping the SAC boundary within 1km of the site. Removal of the riparian treeline and lighting during the construction stage could lead to reduced foraging habitat for lesser horseshoe bat populations in the vicinity of the proposed development site	would reduce roost conditions.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.			
		Number of auxiliary roosts	No. And condition	No decline		No projects (including those within plans) identified for in-combination impacts that would reduce roost conditions.					
		Extent of potential foraging habitat	Hectares	No significant decline		No projects (including those within plans) identified for in-combination impacts that would reduce auxiliary roost numbers or condition.	Yes potential to affect this target by contributing to a cumulative reduction in the extent of foraging habitat, namely the riparian treeline along the eastern site boundary.	Temporary due to the duration of a potential emissions event and the duration of the project.	Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.		
		Linear features: length	Metres	No significant loss, within 2.5km of qualifying roosts (Dunkerron souterrain and Foley's cottage).		No				N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.
		Light pollution	Lux	No significant increase in artificial light intensity adjacent to named roosts or along commuting routes within 2.5km of those roosts		No projects (including those within plans) identified for in-combination impacts that would increase light on named roosts.					
		<b>Otter <i>Luta lutra</i> [1106]</b>	To restore and maintain the favourable conservation condition of	Distribution		% positive survey sites	No significant decline	<b>Potential for Adverse Effects.</b>	No projects (including those within plans)	Temporary due to the duration of the project.	Yes, potential for the project to affect this target either alone or in-



Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion			
Otter in Kenmare River SAC and Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	Attributes Measures and Targets Sourced from Conservation Objectives for Kenmare River SAC 002158 and Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC 000365  <a href="https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf">https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf</a>  <a href="https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000365.pdf">https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000365.pdf</a>	Extent of terrestrial habitat	Hectares	<u>Kenmare River SAC</u> No significant decline. Area mapped and calculated as 268ha above high water mark (HWM); 40ha along river banks/ around ponds	Otter are likely to be present along the length of the rivers within the SAC. Signs of otter activity, spraint, were recorded during the walkover survey in 2021. Otters may occasionally use the site to forage or commute through. Therefore, there is potential for the construction phase of the proposed works to cause disturbance to the existing otter populations, resulting in avoidance of the area. Also, there is potential for the uncontrolled release of surface water runoff from the remediation works to result in a degradation of water quality and thereby reducing the fish biomass available to otter.	No projects (including those within plans) identified for in-combination impacts that would impede movement of the species or reduce existing mapped territory.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.			
				<u>Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC</u> No significant decline. Area mapped and calculated as 1,936.8ha along river banks/lake shoreline/ around ponds							
				<u>Kenmare River SAC</u> No significant decline. Area mapped and calculated as 2748ha					No, as the marine extent of the objective does not include the Sneem River.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.
		Extent of freshwater (river) habitat	Kilometers	<u>Kenmare River SAC</u> No significant decline. Length mapped and calculated as 18.9km		No projects (including those within plans) identified for in-combination impacts that would reduce the extent of freshwater habitat.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.			
				<u>Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC</u>					No projects (including those within plans) identified for in-combination impacts that would impede movement of the species or reduce existing mapped territory.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.



Species	Conservation Objective	Attribute	Measure	Target	Potential For Adverse Effects on Site Integrity from remediation of the historic landfill site at Sneem, Co. Kerry	Potential effect in-combination with other plans or projects	Duration of Effect in the absence of mitigation	Conclusion
				No significant decline. Length mapped and calculated as 1,246.2km		combination impacts that would reduce the extent of freshwater habitat.		combination with other plans or projects exists.
		Extent of freshwater (lake/lagoon) habitat	Hectares	<u>Kenmare River SAC</u> No significant decline. Area mapped and calculated as 25.1ha		No No as there are no lakes/lagoons within the project footprint.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.
				<u>Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC</u> No significant decline. Area mapped and calculated as 2,710.3ha		No No as there are no lakes/lagoons within the project footprint.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.
		Couching sites and holts	Numbers	No significant decline		No No projects (including those within plans) identified for in-combination impacts that would impact existing and/or potential couching/ holt locations	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.
		Fish biomass available	Kilograms	No significant decline		Yes Potential to affect this target by contributing to a cumulative deterioration in water quality exists.	Temporary due to the duration of a potential emissions event and the duration of the project.	Yes, potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Barriers to connectivity	Number	No significant increase		No No projects (including those within plans) identified for in-combination impacts that would impede the movement of the species, reducing connectivity.	N/A	No potential for the project to affect this target either alone or in-combination with other plans or projects exists.



## In-Combination Effects

Article 6(3) of the Habitats Directive requires that:

*“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”.*

It is therefore required that the potential significant effects of the proposed project are considered in combination with any other plans or projects within the zone of influence.

### 5.2.1 Projects

As part of the assessment of in combination effects a search was undertaken for all projects submitted for consent within the last 5 years within the townlands overlapping and immediately adjacent to the historic landfill site (Sneem). In considering whether the proposed remediation works, by itself or in combination with other plans and projects, has the potential to affect the conservation objectives of the designated sites with S-P-R linkage to the proposed development, the following were considered:

- Kerry County Council planning enquiry system (<https://www.kerrycoco.ie/planning/online-planning-enquiry/>);
- An Bord Pleanála (Strategic infrastructure development (SID) applications and Strategic Housing Development (SHD) applications) (<https://www.pleanala.ie/en-ie/home>);
- Department of Department of Housing, Local Government and Heritage’s EIA Portal (<https://www.gov.ie/en/publication/9f9e7-eia-portal/>).

The vast majority of the proposed and permitted developments are comprise residential and commercial related developments, new or existing, and agricultural related development. Due to the scale and/or type of these developments they will not act cumulatively with the proposed remediation works at the historic landfill site.

### Other Historic Landfills

Within Sneem Historic landfill’s 15km buffer there are 9 European sites. Of these European sites Killarney National Park Macgillycuddy’s Reeks and Caragh River Catchment cSAC (000365) is located within the 15km buffer of two other historic landfills which require remediation works; Castleisland and Rockfield historic landfill sites.

Sneem historic landfill has an indirect hydrological link with the Killarney National Park Macgillycuddy’s Reeks and Caragh River Catchment cSAC (000365); via Ardsheelhane River (ca. 8.8km instream distance) and Sneem River (ca. 5.5km instream distance). The portions of the SAC which drain into these Rivers are located upstream and will therefore not receive any potential emissions from Sneem historic landfill site during clearance and construction works. During clearance/construction works there is potential for negative effects to water quality downstream of the historic landfill site from the inputs of sediment, leachate and invasive species material.



As this SAC will not receive any potential emissions from site, apart from FPM none of its qualifying interests which are non-transitory aquatic species (there are two) or aquatic dependent flora/habitats (there are four) or will be effected. There are five qualifying species which are transitory species; Brook Lamprey (*Lampetra planeri*), Sea Lamprey (*Petromyzon marinus*), River Lamprey (*Lampetra fluvatilis*), Salmon (*Salmo salar*) and Otter (*Lutra lutra*).

There is potential that Brook Lamprey, Sea Lamprey, River Lamprey and Salmon (if present) travelling downstream of the SAC and/or migrating to or from the sea via Bantry Bay could be effected by changes to water quality during clearance/construction works at the historic landfill. It must also be noted that FPM if present upstream of the site, will be effected by changes to the salmonids population as Salmon act as a host for part in their lifecycle.

Also downstream of the SAC, the area of the historic landfill site and downstream of the site would potentially fall into the territory of the Otter population of the SAC and changes to water quality could affect otter prey availability. Potential adverse effects to the integrity of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) cannot be ruled out. A potential cumulative effect on water quality from the construction phases of the other two historic landfills cannot be ruled out.

#### 5.2.2 [Existing practices in the surrounding area](#)

The project site is predominantly located within forestry and agricultural land. Grazing is a medium level threat/pressure outside Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment SAC. The land use onsite is currently sheep grazing, which will be resumed after remediation works. Cumulative effects could occur if the remediation works (mainly site clearance/ excavations) are undertaken in parallel with off-site forestry activities (particularly harvesting) and agricultural activities (particularly manure spreading) within the same catchment, ultimately adding potential nutrients/ sediment and spreading of invasive species to the connected waterbodies and further effecting the qualifying interests of Castlemaine Harbour SAC.

#### 5.2.3 [Plans](#)

##### The National Biodiversity Action Plan

Ireland's National Biodiversity Action Plan 2017-2021 sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity' and follows on from the work of the first and second National Biodiversity Action Plans.

A total of 119 targeted actions are contained in the Plan, underpinned by seven strategic objectives. The objectives lay out a clear framework for Ireland's national approach to biodiversity, ensuring that efforts and achievements of the past are built upon, while looking ahead to what can be achieved over the next five years and beyond.



They include:

1. Mainstreaming biodiversity across the decision making process in the State;
2. Strengthening the knowledge base underpinning work on biodiversity issues;
3. Increasing public awareness and participation;
4. Ensuring conservation of biodiversity in the wider countryside;
5. Ensuring conservation of biodiversity in the marine environment;
6. Expanding and improving on the management of protected areas and protected species;
7. Enhancing the contribution to international biodiversity issues.

#### Kerry County Development Plan

The County Development Plan 2022-2028 is currently under being drafted. The current plan includes several policies for the protection of wildlife and European sites, encouraging the appropriate assessment of potential effects from future development.

- Policy KCDP 11-1: Ensure that the requirements of relevant EU and national legislation, are complied with by the Council in undertaking its functions, including the requirements of the EU Birds and Habitats Directives.

Therefore, without mitigation there is the potential for the project to adversely affect the integrity of a European site which would be contrary to the policies of the Kerry County Development plan.



## 6. MITIGATION

Mitigation by avoidance is prescribed as a first approach. Where this is not feasible, measures to prevent impacts from giving rise to adverse effects should be adopted (e.g. design of bunded storage for chemicals). Where impacts cannot be avoided, mitigation by reduction of impact is required to limit the exposure of the receptor to an acceptable level (often achieved by interrupting the pathway between the source and receptor) such that adverse effects on site integrity of the European site does not occur.

Potential project-related impacts likely to negatively affect the site integrity of Kenmare River SAC (002158) and Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC (000365) are summarised below as follows:

1. Adverse effects to the following caused by water quality degradation via surface water run-off associated with the proposed remediation works:
  - Atlantic salt meadow
  - Mediterranean salt meadow
  - Freshwater Pearl Mussel
  - Sea Lamprey
  - Brook Lamprey
  - River Lamprey
  - Atlantic salmon
  - Otter
2. Disturbance to lesser horseshoe bat by lighting and otter by noise and human presence during the construction phase of the proposed works.

Mitigation measures were devised in consideration of the following legislation, and guidelines:

- S.I. No. 293/1988 - European Communities (Quality of Salmonid Waters) Regulations, 1988;
- Water Framework Directive (2000/60/EC);
- Inland Fisheries Ireland – Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters, 2016;
- CIRIA Environmental Good Practice on Site;
- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora;
- CIRIA Control of Water Pollution from Construction Sites. Guidance for Consultants and contractors (C532);

Table 6-1 and Table 6-3 below details mitigations measures that will be implemented prior to and/or during construction.



**Table 6-1: Mitigation Against Degradation in Water Quality**

Measure	How the measure will avoid/ prevent/ reduce impacts	Confidence in the likely success of the measure	Timescale for implementation	Monitoring requirement
<p><u>General</u>            Site contractors will be briefed through toolbox talks by a <b>suitably qualified</b> ecologist appointed by the Contractor, on the biodiversity value of the surrounding landscape, with emphasis on the sensitivity of the Kenmare River SAC and the Killarney National Park, Macgillicuddy's Reeks And Caragh River Catchment SAC QIs. The briefing will also raise awareness to actions during the construction phase which could lead to deterioration in surrounding water quality.            Works will be permitted within the proposed development site only.</p>	<p>Minimise ingress of suspended solids into adjacent waterbodies.</p>	<p>Mitigation measure is as per CIRIA best practice guidelines</p>	<p>Measure will be in place from the commencement of works to the end of the construction phase.</p>	<p>A suitably qualified ecologist will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.</p>
<p><u>Silt fencing</u>            Silt fencing shall be located adjacent to all water courses and at the toe of the landfill side slopes, as agreed with the appointed EnCoW.            A silt screen shall be constructed at the toe of the reprofiled slopes to prevent silt entering adjacent watercourses.</p>	<p>Minimise ingress of suspended solids into adjacent waterbodies.</p>	<p>Mitigation measure is as per CIRIA best practice guidelines</p>	<p>Measure will be in place from the commencement of works and remain until the site has revegetated following works.</p>	<p>A suitably qualified ecologist will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.</p>
<p><u>Stockpiling Material and Earthworks</u>            Weather forecasts will be reviewed daily, and earthworks will not be undertaken during periods of heavy rainfall (&gt;10mm/hour).            Soil stockpiles will be stored away from onsite drains.</p>	<p>Minimise ingress of suspended solids into adjacent waterbodies            Minimise generation of suspended solids.</p>	<p>Mitigation measure is as per CIRIA best practice guidelines</p>	<p>Measure will be in place from the commencement of works to the end of the construction phase.</p>	<p>A suitably qualified ecologist will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.</p>



Measure	How the measure will avoid/ prevent/ reduce impacts	Confidence in the likely success of the measure	Timescale for implementation	Monitoring requirement
<p>Compact surface of stored soils during reprofiling and capping works as soon as practicably possible.</p> <p>Temporary on-site silt ponds will be provided to allow settlement of suspended solids prior to runoff exiting the works area. These are to be constructed prior to commencement of remediation works.</p> <p>Dewatering flows from excavations will be managed to prevent elevated suspended solids entering the watercourse by use of temporary dedicated settlement ponds. Discharges into the onsite drainage network will only take place after silt fencing has been installed.</p> <p>The existing treeline along the eastern site boundary/ Arsheelhane River should be retained to stabilize the river bank.</p>				
<p><u>Concrete and other pollutants</u></p> <p>Concrete batching and mixing activities will not be permitted within the proposed development site. Concrete used for the works will be brought to site by a concrete truck. Concrete washout shall not be undertaken onsite and concrete washout of chutes will only occur.</p> <p>No direct pumping of groundwater will be allowed to the existing drainage ditches or the Ardsheelhane, given there is risk of contamination with leachate. In the event that waste is exposed during excavation it will be relocated to low spots on site and covered. No exposed waste will be left at the end of each working day.</p>	<p>Reduce the risk of concrete, hydrocarbons and fuels reaching the waterways within the catchment of the proposed remediation works.</p> <p>Ensure that no sanitary waste enters the waterways within the catchment of the proposed remediation works.</p> <p>Pre cast concrete will be used where possible in all works.</p>	<p>Mitigation measure is as per CIRIA and IFI (2016) best practice guidelines</p>	<p>Measure will be in place from the commencement of works to the end of the construction phase.</p>	<p>A suitably qualified ecologist will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.</p>



Measure	How the measure will avoid/ prevent/ reduce impacts	Confidence in the likely success of the measure	Timescale for implementation	Monitoring requirement
<p>In the event that leachate is present in the trench it will be removed to a temporary leachate holding tank on site and thereafter transported to a licenced wastewater treatment plant for disposal.</p> <p>Appropriately sized plant nappies need to be used under Generators at all times Generator must be 10m back from the drain.</p> <p>Refuelling of plant during construction will only be carried out at a designated bunded refuelling station, located away from any drainage or water features. Any other diesel, fuel or hydraulic oils stored on site will be stored in bunded storage tanks – the bund area will have a volume of at least 110 % of the volume of such materials stored.</p> <p>Appropriate spill control equipment, such as oil soakage pads, will be kept within the construction area and in each item of plant to deal with any accidental spillage.</p> <p>Portaloos and / or containerised toilets and welfare units will be used to provide toilet facilities for site personnel. Sanitary waste will be removed from site by a licensed waste disposal contractor.</p>				
<p><u>Monitoring – Freshwater pearl mussel</u></p> <p>Baseline water quality conditions downstream of the works in the adjacent Arsheelhane River will be gathered preconstruction through water sampling.</p>	<p>Reduce the risk of freshwater pearl mussel being impacted by water quality degradation.</p>	<p>Mitigation measure is as per European Commission (2014) best practice guidelines</p>	<p>Measure will be in place in advance of the commencement of works and remain as required, as agreed with the appointed EnCoW.</p>	<p>A suitably qualified ecologist will be appointed to ensure the effective operation and maintenance of mitigation measures before, during and after the construction process.</p>



Measure	How the measure will avoid/ prevent/ reduce impacts	Confidence in the likely success of the measure	Timescale for implementation	Monitoring requirement
<p>The following parameters will be recorded: phosphorus, nitrogen (including ammonia), BOD<sub>5</sub> (dissolved oxygen), pH, calcium, alkalinity, temperature and turbidity (suspended solids). These will be measured to an appropriate detection limit for Freshwater Pearl Mussel.</p> <p>Regular monitoring of the above parameters will be conducted during and post construction.</p>				



**Table 6-2: Mitigation Against Spread of Invasive Species**

Measure	How the measure will avoid/ prevent/ reduce impacts	Confidence in the likely success of the measure	Timescale for implementation	Monitoring requirement
<p><u>Preconstruction</u></p> <p>Invasive species management undertaken in line with the invasive species management plan shall be put in place during remediation works as required (Appendix 6).</p> <p>An ecologist will supervise eradication and cordoning off of any invasive species present at the time of construction.</p> <p>It is noted that Montbretia was only recorded along the roadside boundary, and removal will therefore be an enhancement measure.</p> <p>A 7 m exclusion zone* around Japanese knotweed growths will be cordoned off prior to construction. *[conditional on treatment]. If treatment is successful in eradicating Japanese knotweed and 2 consecutive years with no growth of this species is recorded onsite prior to construction the 7m buffer can be discarded.</p> <p>Soil infested with Japanese knotweed including an area of 7m* surrounding growths shall be excavated to a depth of 1-3m as required. Excavated material shall be removed from site and disposed at a licenced waste facility.</p> <p>If treatment is successful in eradicating Japanese knotweed and 2 consecutive years with no growth of this species is recorded onsite prior to construction the 7m buffer can be discarded.</p>	<p>Prevent ingress of invasive plant material into adjacent waterbodies and spreading offsite.</p>	<p>Mitigation measure is as per best practice guidelines (NRA 2010)</p>	<p>Measure to be carried out prior to any site works.</p>	<p>A suitably qualified ecologist will be appointed to ensure the effective operation and maintenance of mitigation measures in advance of the construction process.</p>



Measure	How the measure will avoid/ prevent/ reduce impacts	Confidence in the likely success of the measure	Timescale for implementation	Monitoring requirement
<p>Any stockpiled Japanese knotweed material awaiting removal from site will be stored securely and covered within designated cordoned areas.</p> <p>All machinery used to carry out Japanese knotweed eradication measures will be visually checked and washed down thoroughly. Potentially contaminated runoff will be collected, treated and any potentially contaminated residual material will be interred with the main body of contaminated material (residual material should also be encapsulated).</p> <p>Silt fences downstream of the landfill will be checked for invasive species material during and after eradication measures.</p> <p>Imported subsoil and topsoil will be surveyed by an ecologist for invasive plant species.</p>				
<p><u>Postconstruction</u></p> <p>Invasive species monitoring (and treatment where required) will continue during the Operational / Post Construction Phase until two consecutive years where no invasive species are recorded onsite or immediately adjacent is achieved.</p>	<p>Prevent ingress of invasive plant material into adjacent waterbodies and spreading offsite.</p>	<p>Mitigation measure is as per best practice guidelines (NRA 2010)</p>	<p>Measure to be carried out post site works.</p>	<p>A suitably qualified ecologist will be appointed to ensure the effective operation and maintenance of mitigation measures after the construction process.</p>



**Table 6-3: Mitigation Against Disturbance to Mobile QIs**

Measure	How the measure will avoid/ prevent/ reduce impacts	Confidence in the likely success of the measure	Timescale for implementation	Monitoring requirement
<p><u>Preconstruction surveys - otter</u>            Further otter surveys will be carried out by the EnCoW , immediately prior to any site clearance, to determine the location of any otter holts or couches within 150m of the proposed development site, to ensure that no new holts /couches have been created since the previous otter survey.</p>	<p>Identify all areas with otter breeding and resting places within 150m of the works, minimising disturbance to otters.</p>	<p>Mitigation measure is as per best practice guidelines (NRA 2008)</p>	<p>Measure to be carried out immediately prior to any site clearance.</p>	<p>A suitably qualified ecologist will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.</p>
<p><u>Avoidance - otter</u>            Where breeding or resting places are confirmed, an exclusion zone should be set up. No works should be undertaken within 150m of any holts with breeding females or cubs. No wheeled or tracked vehicles should be used with 20m of an active non-breeding holt. Light work, such as digging by hand or vegetation clearance should not be undertaken within 15m of an active non-breeding holt. These exclusion zones should be in place until otter have been successfully evacuated from active holts. Where exclusion zones are not feasible, a licence to disturb otter will be required from NPWS.</p>	<p>Identify areas with otter breeding and resting places within 150m of the works, minimising disturbance to otters.</p>	<p>Mitigation measure is as per best practice guidelines (NRA 2008)</p>	<p>Measure to be carried out immediately prior to any works, and be in place until otter have been successfully evacuated from active holts.</p>	<p>A suitably qualified ecologist will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.</p>
<p><b><u>Commuting habitat preservation – lesser horseshoe bat</u></b>            The existing treeline along the eastern site boundary/ Arsheelhane River should be retained to maintain lesser horseshoe bat commuting and foraging bat.            Artificial lighting should not be used onsite overnight, as lesser horseshoe are a light sensitive species. Any lighting onsite should be directional, avoiding the eastern site boundary/ Arsheelhane River.</p>	<p>Prevent reduction in commuting habitat for lesser horseshoe bat along the Arsheelhane River</p>	<p>Mitigation measure is as per best practice guidelines (Marnell et al 2022)</p>	<p>Measure to be carried out during construction phase.</p>	<p>N/A</p>

## 7. CONCLUSION

The mitigation measures detailed in this NIS have been carefully considered to ensure no adverse effects on the integrity of the Kenmare River SAC and Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC considering the site's conservation objectives, special conservation interests and status.

For the reasons set out in detail in this NIS, in the light of the best scientific knowledge in the field, all aspects of the proposed project which, by itself, or in combination with other plans or projects, may affect the relevant European Sites have been considered.

The NIS contains information which the competent authority, may consider in making its own complete, precise and definitive findings and conclusions and upon which it is capable of determining that all reasonable scientific doubt has been removed as to the effects of the proposed project on the integrity of the relevant European sites.

In the light of the conclusions of the assessment which it shall conduct on the implications for the European sites concerned, the competent authority is enabled to ascertain that the proposed project will not adversely affect the integrity of any European site.

## 8. REFERENCES

- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Cowx, I.G. & Fraser, D. (2003). Monitoring the Atlantic Salmon. Conserving Natura 2000 Rivers Monitoring Series No. 7, English Nature, Peterborough.
- Crisp, T.J. (2000). Trout and Salmon. Ecology, Conservation and Rehabilitation. Blackwell Science, Oxford.
- Department of the Environment, Heritage and Local Government, Dublin (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities (updated 2010). National Parks and Wildlife Service.
- European Commission (2014) Guidance Standard on Monitoring Freshwater Pearl Mussel (Margaritifera Margaritifera) Populations and Their Environment. CEN/TC 230/WG 21/TG 1/N157
- Fossitt (2000) A guide to Habitats in Ireland
- FTC (2021) Stage 1 Appropriate Assessment Screening Report for Historic Landfill Site, Sneem, County Kerry. Fehily Timoney.
- Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.
- Maitland, P. S. & Campbell, R. N. (1992). Freshwater Fishes of the British Isles. Harper Collins Publishers. Somerset, UK.
- Marnell, F., Kelleher, C. & Mullen, E. (2022) Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland
- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report. Edited by Deirdre Lynn and Fionnuala O'Neill
- NPWS (2017) Conservation Objectives: Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC 000365. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.
- NPWS (2013) Conservation Objectives: Kenmare River SAC 002158. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NRA (2008) Guidelines for the treatment of otters prior to the construction of national road schemes.
- Reynolds, J.D. (1998). Conservation management of the white-clawed crayfish, *Austropotamobius pallipes* Part 1. Irish Wildlife Manuals No. 1. Dúchas, the Heritage Service, Dublin.
- Reinhardt, U.G, Binder, T. & McDonald D.G. (2009) Ability of Adult Sea Lamprey to Climb Inclined Surfaces American Fisheries Society Symposium 72:125–138, 2009

### Websites:

EPA Hydrotool  
<http://watermaps.wfdireland.ie/HydroTool/Authentication/Login.aspx?ReturnUrl=%2fHydroTool%2fDefault.aspx>

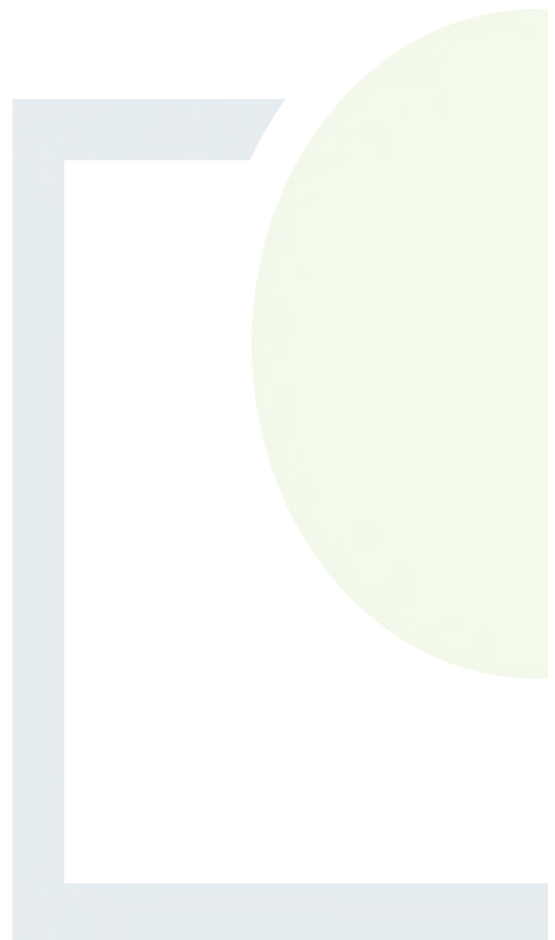


**FEHILY  
TIMONEY**

CONSULTANTS IN ENGINEERING,  
ENVIRONMENTAL SCIENCE  
& PLANNING

# **APPENDIX 1**

Appropriate Assessment  
Screening Report



# SOUTH AND WEST KERRY LANDFILLS

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## APPROPRIATE ASSESSMENT SCREENING REPORT FOR THE REMEDIATION OF HISTORIC LANDFILL SITE, SNEEM, COUNTY KERRY

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Prepared for: Kerry County Council



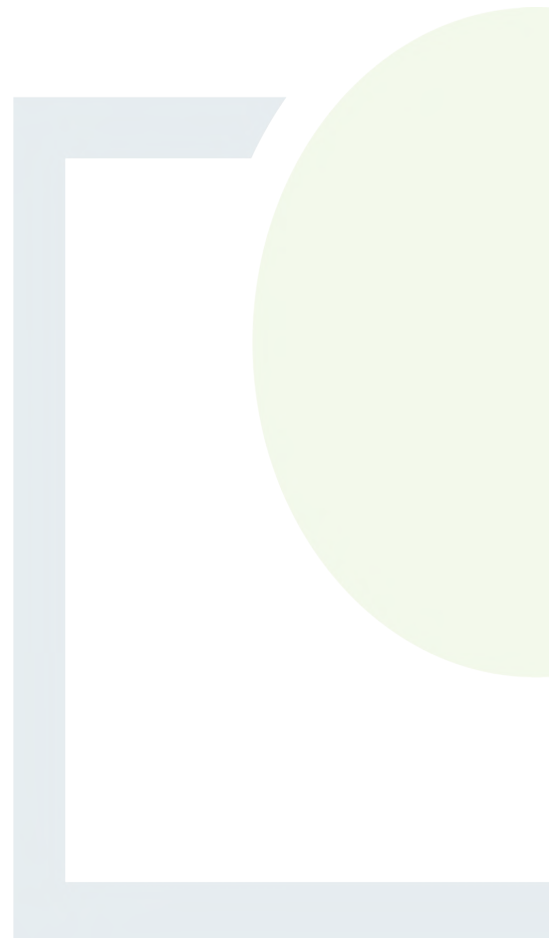
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## APPROPRIATE ASSESSMENT SCREENING REPORT FOR HISTORIC LANDFILL SITE, SNEEM, COUNTY KERRY

### REVISION CONTROL TABLE, CLIENT, KEYWORDS AND ABSTRACT User is responsible for Checking the Revision Status of This Document

Rev. No.	Description of Changes	Prepared by:	Checked by:	Approved by:	Date:
0	Issue to Client	BOD/MG	JK	BG	09.09.2020
1	Final	EOC/AM	JK	BG	12.04.2021
2	Final attached to NIS Appendix	EOC/MG/AMW	JK	BG	16.06.2022

**Client:** Kerry County Council

**Keywords:** Appropriate Assessment Screening Report, AA Screening, Article 6(3) of the Habitats Directive, European (Natura 2000) sites, Historic Landfill at Sneem, Co. Kerry, Remediation.

**Abstract:** This document comprises the Stage One: Appropriate Assessment Screening Report for the Historic Landfill at Sneem, Co. Kerry. Appropriate Assessment is required under Article 6 (3) of the Habitats Directive for any project or plan, either individually or in combination with other plans or projects, likely to have a significant effect on a European site in view of its conservation objectives.

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## 1 INTRODUCTION

Fehily Timoney and Company (FT) were commissioned by Kerry County Council to prepare a report to inform the competent authorities Screening for Appropriate Assessment, as required by Article 6 of Council Directive 92/43/EEC (Habitats Directive). The preparation of the Appropriate Assessment Screening Report (AA Screening) follows a Tier 3 Risk Assessment recommendation for remediation works to the Historic Landfill at Sneem Co. Kerry (see Figure 1-1 for location).

In compliance with the provisions of Article 6(3) of the Habitats Directive, as implemented by Part XAB of the Planning and Development Act 2000, as amended, in circumstances where a proposed plan or project is likely to have a significant effect on a European (Natura 2000) site, either individually or in combination with other plans or projects, an Appropriate Assessment (AA) must be undertaken by the competent authority, of the implications for the site in view of the site's conservation objectives.

European sites comprise both Special Protection Areas (SPAs) for birds and Special Areas of Conservation (SACs) for habitats and species. The Habitats Directive formed a basis for the designation of SACs. Similarly, SPAs are legislated for under the Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds). In general terms, European sites are considered to be of exceptional importance in terms of rare, endangered or vulnerable habitats and species within the European Community.

Article 6(3) of the Habitats Directive envisages a two-stage process, which is implemented in some detail by the provisions of sections 177U and 177V of the Planning and Development Act. Screening for appropriate assessment in accordance with section 177U is the first stage of the AA process (Stage One), in which the possibility of there being a significant effect on a European site is considered. Plans or projects that have no appreciable effect on a European site are thereby excluded, or screened out, at this stage of the process. Where screening concludes that there is the potential for significant effects, then it is necessary to carry out an AA (Stage Two) for the purposes of Article 6(3), and a Natura Impact Statement (NIS) is produced. The NIS, which forms the basis of the AA, considers the effects of a project or plan on the integrity of a European site and on its conservation objectives, and where necessary, draws up mitigation measures to avoid/minimise negative effects.

The competent authority, in carrying out an AA, is required to make an examination, analysis, evaluation, findings, conclusions and a final determination as to whether or not the proposed works would be likely to have significant effects on the relevant European site(s) in view of their conservation objectives. To evaluate the potential effect(s) of the proposed development on the European sites, all sites located within a 15 km radius of the development or those which are ecologically linked were considered. Please note that while a 15 km buffer is recommended for plans, there is no hard and fast rule for buffer size (EPA, 2009). A 15 km buffer was used as it encompasses a distance in which the qualifying features and special conservation interests of European sites may potentially be impacted with regards to the proposed development separately and in combination with other developments. However, European sites located outside of the 15 km buffer with potential links to the proposed development were also considered (e.g., hydrological connections) and none were found.



The historic landfill is not located within any European site. Nine European sites are located within 15 km of the proposed development:

- Kenmare River cSAC (Site Code 002158)
- Old Domestic Building Askive Wood SAC (Site Code 002098)
- Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC
- Drongawn Lough SAC (Site Code 002187)
- Blackwater River (Kerry) cSAC (Site Code 002173)
- Cloonee And Inchiquin Loughs, Uragh Wood cSAC (Site Code 001342)
- Cleanderry Wood cSAC (Site Code 001043)
- Glanmore Bog cSAC (Site Code 001879)
- Caha Mountains cSAC (Site Code 000093)

## 1.1 Legislative Requirements

The requirements for an AA are set out in the Habitats Directive 92/43/EEC. Articles 6(3) and 6(4) of this Directive states:

*6(3) Any plan or project not directly connected with or necessary to the management of the site (Natura 2000 sites) but likely to have 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.*

*6(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission to other imperative reasons of overriding public interest.*

The statutory agency responsible for European sites is the National Parks and Wildlife Service (NPWS) of the Department of Culture, Heritage and the Gaeltacht (DCHG). In December 2009 'Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government' was published (DoEHLG, 2009) with a minor amendment in 2010 (DoEHLG, 2010). This guidance document was prepared jointly by the NPWS and Planning Divisions of DoEHLG (now DCHG), with input from local authorities. Previously, in 2001, the European Commission issued a guidance document. This guidance document has been updated in the published European Commission (2019) "*Managing Natura 2000 sites the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*".



This document was updated by *Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. Commission Notice (2021) Brussels, 28.9.2021 C(2021) 6913 final. This Appropriate Assessment Screening Report has been prepared in accordance with the relevant Irish and European Commission Guidance.

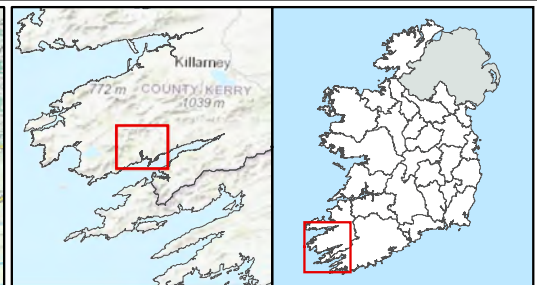
### 1.1.1 Regulatory Context

In 1997, the Habitats Directive was transposed into Irish National Law by the European Communities (Natural Habitats) Regulations, SI 94/1997 (as amended by S.I. 233/1998 & S.I. 378/2005).

The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477/2011) revoked the 1997 Regulations (and amendments) as well as the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010. The purpose of the 2011 Regulations was to address transposition failures identified in the Court of Justice of the European Union (CJEU) judgements.

Following additional amendments in 2013 (S.I. 499/2013) and 2015 (S.I. 355/2015) the regulations are now cited as the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015.

The Regulations have been prepared to address several judgments of the CJEU against Ireland, notably cases C-418/04 (*Commission v Ireland*) and C-183/05 (*Commission v Ireland*), in respect of failure to transpose elements of the Birds Directive and the Habitats Directive into Irish law.



Site Boundary



<b>TITLE:</b>	Site Location
<b>PROJECT:</b>	AA Screening for Sneem Historic Landfill, Co. Kerry
<b>FIGURE NO:</b>	1.1
<b>CLIENT:</b>	Kerry County Council
<b>SCALE:</b>	1:50000
<b>REVISION:</b>	0
<b>DATE:</b>	27/04/2020
<b>PAGE SIZE:</b>	A3





## 2 METHODOLOGY

### 2.1 Stages of Appropriate Assessment

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures to be addressed in the AA process. Firstly, a project should aim to avoid any negative effects on European sites by identifying possible effects early in the project and should design the project in order to avoid such effects.

In the preparation of this assessment therefore regard has been given to the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations 2011-2021, and with reference to the relevant guidance, in particular:

- 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 2001.
- *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin 2010.
- European Commission (2019). *Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC*. Brussels, 21.11.2018 C (2018) 7621 final. This document was updated by *Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. Commission Notice (2021) Brussels, 28.9.2021 C(2021) 6913 final.
- OPR Practice Note PN01 *Appropriate Assessment Screening for Development Management*, Office of the Planning Regulator (March 2021).

#### 2.1.1 Impact Assessment

The first step in the screening process is to develop a list of European sites potentially affected by the proposed development. Each European site is reviewed to establish whether or not the proposed development is likely to have a significant effect on the European site, as defined by its structure and function, and its conservation objectives.

The qualifying interests of each European site are identified, and the potential threats are summarised into the following categories for the screening process, and described within the screening matrix as follows:

- Direct effects refer to habitat loss or fragmentation arising from land-take requirements for development or agricultural purposes. Direct effects can be as a result of a change in land use or management, such as the removal of agricultural practices that prevent scrub encroachment.
- Indirect and secondary effects do not have a straight-line route between cause and effect, and it is potentially more challenging to ensure that all the possible indirect effects of the plan (or project) – in combination with other plans and projects - have been established. These can arise when a development alters the hydrology of a catchment area, which in turn affects the movement of groundwater to a site, and the qualifying interests that rely on the maintenance of water levels. Deterioration in water quality can occur as both an indirect or direct consequence of development, which in turn changes the aquatic environment and reduces its capacity to support certain plants and animals. The introduction of invasive species can also be defined as an indirect effect, which results in increased movement of vectors (humans, fauna, surface water), and consequently the transfer of alien species from one area to another.



- Disturbance to fauna can arise directly through the loss of habitat (e.g., bat roosts) or indirectly through noise, vibration and increased activity associated with construction and operation.

## 2.2 Desktop Study

In order to complete the Screening for Appropriate Assessment certain information on the existing environment is required. A desk study was carried out to collate available information on the site's natural environment. This comprised a review of the following publications, data and datasets:

- Kerry County Development Plan 2022-2028
- Kerry County Council Planning Enquiry System
- National Parks and Wildlife Service (NPWS) website and metadata available ([www.npws.ie](http://www.npws.ie))
- OSI Aerial photography and 1:50,000 mapping
- National Biodiversity Data Centre (NBDC) (on-line map-viewer)
- BirdWatch Ireland website
- Teagasc soil area maps (NBDC website)
- Geological Survey Ireland (GSI) area maps
- Environmental Protection Agency (EPA) (on-line map-viewer)
- River Catchment & Sub-catchment WFD datasets

## 2.3 Field Study

A walkover survey was undertaken on 15/02/2019. The objective of this visit was to gain an overview of the historic landfill location in regard to the presence of invasive plant species; and habitats or species that are protected and/or are qualifying interests of the European sites relevant to this report. Weather conditions were favourable for surveying.



### 3 BRIEF DESCRIPTION OF THE EXISTING SITE

Sneem historic landfill is located within the townland of Mullagallane approximately 800 m north of Sneem, Co. Kerry. The surrounding landscape is rural in nature, with heath/rough grassland dominating, and agricultural land, woodland and forestry also plantations present. Kenmare Bay is located to the south, which is connected to Sneem village by Sneem Harbour.

The site is at an elevation of 9 - 15 m OD. The land use classifications for the surrounding area as defined by the 2018 CORINE landcover dataset are: 243 Land principally occupied by agriculture with significant areas of natural vegetation. Within the wider landscape are: 234 Transitional woodland scrub, 412 Peat bogs, 312 Coniferous forests and 112 Discontinuous urban fabric.

The site is underlain by the Glenflesk Chloritic Sandstone Formation, which comprises green-coloured, mostly medium-grained sandstone, conglomerate and pebbly sandstone, together with green and purple siltstone. The soil types overlapping the historic landfill site are river alluvium and blanket peat.

The site walkover indicates that the main habitat types (Fossitt, 2000) present in the immediate vicinity of the proposed works site are: improved agricultural grassland (GA1), treelines/riparian woodland (WL2/WN5) and depositing lowland rivers (FW2). Improved agricultural grassland (GA1) covers the historic landfill, while a stretch of treelines/riparian woodland (WL2/WN5) runs along the riverbank. Depositng lowland rivers (FW2) is represented by the Ardsheelhane River that bounds the site to the southeast. An area of Japanese knotweed (*Fallopia japonica*); Third Schedule listed species under Regulations 49 & 50 in the European Communities Birds and Natural Habitats Regulations 2011. Note: Regulation 50 not yet enacted) is present at the western corner of the site along the field side of the field/road boundary ditch.

No botanical species protected under the Flora (Protection) Order (1999; and as amended 2015), listed in Annex II or IV of the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded during the site walkover. All flora and fauna species recorded during the walkover are considered common for similar habitats in the general area. No qualifying species of any Natura 2000 sites within 15 km of the proposed development were recorded during the site visit.

The Ardsheelhane River offers potential habitat for Otter *Lutra lutra*, and sections of the river may also contain suitable habitat for Freshwater Pearl Mussel (FPM) *Margaritifera margaritifera* due to its location within a freshwater pearl mussel sensitive area. It should be noted that FPM is not a qualifying interest of Kenmare River cSAC located downstream of the site but is a qualifying interest of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) located upstream of site.



The EPA mapviewer indicates that the:

- Site is located within the: Sneem\_SC\_010 Subcatchment within the Dunmanus-Bantry-Kenmare Catchment. The Sneem freshwater pearl mussel-sensitive area overlaps the site; this catchment falls within the category 'Catchments of Other Extant Populations'.
- A direct downstream hydrological link between Sneem historic landfill site and Kenmare River cSAC (002158) exists via the Ardsheelhane and Sneem Rivers. The Ardsheelhane River borders the historic landfill site and is also directly connected through a surface drain running along the northern and southern boundaries and discharging into the river. The Ardsheelhane joins the Sneem River c. 227m downstream of the site, which in turn enters Kenmare River cSAC c. 122m downstream of the confluence. As such the instream distance between Sneem historic landfill site and Kenmare River cSAC is c. 349m. The Arsheelhane and Sneem Rivers have a Water Framework Directive status of 'good'.
- Kenmare River cSAC extends upstream along the Sneem River north of Sneem village as such the instream distance between Sneem historic landfill site and Kenmare River cSAC is c. 349m.



## 4 TIER 2 AND 3 RISK ASSESSMENT FINDINGS

The Tier 3 Risk Assessment reviewed the findings of the Tier 1 Risk Assessment undertaken by Kerry County Council, the Tier 2 site investigation and Risk Assessment (undertaken by FT) and assessed and determined the overall risk the site may pose to the receiving environment. Based on the potential overall risk of the site on the environment, the Tier 3 Risk Assessment determined appropriate remediation measures for the site.

In 2019, a site investigation was undertaken as part of Tier 2 Risk Assessment and included the following elements:

- Site Walkover
- 1 No. Geophysical survey (2D resistivity and seismic refraction profiling)
- 9 No. Trial pit excavations
- Installation and monitoring of 2 No. groundwater boreholes
- Topographical survey
- Factual reporting

Two groundwater monitoring boreholes were installed, located northwest and southeast of the waste body (upgradient and downgradient) with sampling conducted on two occasions in July 2019 and September 2019 to assess the quantity of groundwater at the site. Landfill gases monitoring was conducted in October 2019. Surface water monitoring was conducted on two occasions in July 2019 and September 2019 at locations on the Ardsheelhane River upstream and downstream of the historic landfill.

The findings of the Tier 2 site investigations suggest that there is a shallow soil cap present on the historical landfill. The waste material is deposited in a single infill area located in the south-western area of the site and varies between 60-90m in width and is approximately 50m in length. It is estimated that the landfill contains approximately 3,000 m<sup>3</sup> of waste. Analysis of waste samples indicated that much of the waste material is predominantly C&D type waste material which meets the inert waste classification.

Groundwater sampling indicated exceedances in groundwater quality threshold values as per the EPA Interim Guideline Values (IGV)<sup>1</sup> and S.I. No. 9 of 2010<sup>2</sup> for Ammoniacal Nitrogen, Manganese, Potassium, Iron and mineral oil. The elevated manganese concentrations can partially be caused by the local bedrock hydrochemistry. However, these exceedances are relatively high and so this could also be caused by the landfill. The elevated iron concentrations and the elevated mineral oil concentrations are likely results of leachate from the waste body. The elevated ammoniacal nitrogen levels are also likely results of leachate from the waste body.

During the Tier 2 site walkover, evidence of leachate breakouts entering Ardsheelhane River were noted. Surface water sampling indicated no exceedances of the Environmental Quality Standard (EQS) for Surface Waters Regulations (2009) assessment criteria.

Tier 2 landfill gas monitoring indicated gas concentrations are within the range typical of inert waste.

<sup>1</sup> Towards Setting Guideline Values for the Protection of Groundwater in Ireland-Interim Report (EPA, 2003)

<sup>2</sup> S.I. No. 9/2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010



Based on the findings of the modelling exercises and quantitative risk assessment, the Tier 3 assessment determined that:

- Surface water assimilative capacity downstream of the site will be able to accommodate leachate breakouts (flow rates of 1 to 5 l/s containing up to 0.944 mg/l NH<sub>4</sub>). The risk of ammonia contaminating receiving surface waters is low. Remedial measures are recommended to eliminate the pathway for leachate migration to surface water thereby further reducing the risk.
- The site is underlain by a 'Locally Important Aquifer – Moderately productive in local zones.
- Over time, flushing will reduce groundwater concentrations below the threshold values and that these concentrations will also decrease further away from the source.
- Manganese levels in groundwater will remain slightly above the threshold values. However, Tier 2 analysis was unable to confirm if the elevated manganese was associated with the waste or with the hydrochemistry of the underlying bedrock.
- After 50 years, it is estimated that no pollutants of concern will, at a local level negatively impact the groundwater quality of either the underlying aquifer or the Ardsheelhane river surface water body.
- Based on the estimated quantity of waste deposited at the site, methane production is still occurring in low quantities and will continue for a number of years.



## 5 PROPOSED REMEDIATION WORKS

The existing site is covered by a shallow soil cap with an established grass cover which is allowing rainwater to reach the interred waste body and add to the production of leachate. The proposed engineered cap will isolate the waste body from rainfall inputs, leachate breakouts to surface water and ground water flows whilst allowing for the passive venting of landfill gas.

### 5.1 Overview

Proposed works for the historic landfill will include:

- Development of a temporary site compound on the proposed engineered capping development.
- Site clearance.
- Grading/profiling of existing site area.
- Installation of engineered landfill capping system.
- Landscaping.

The site is currently grazed by sheep, following proposed remediation works the site will continue to be grazed. Construction details for respective elements of the proposed cap will be subject Environmental Protection Agency approval. The site is currently grazed by cattle. Following remediation works the site will continue to be grazed.

#### 5.1.1 Construction Phase

The construction period for the proposed development has been estimated to be in the region of 4 to 6 months.

#### **Overview**

The construction phase will include:

- Development of a temporary site compound on the proposed engineered capping development.
- Site clearance.
- Grading/profiling of existing site area.
- Installation of engineered landfill capping system.
- Landscaping.



### 5.1.2 Temporary Site Compound and Office Areas

The temporary site compound shall comprise a materials storage area, site offices and a parking area. A material storage compound, a parking area and site offices in the form of portacabins and site canteen/welfare facilities (Contractor and Employers Representatives) will be provided to the north of the site outside the footprint of the landfill area. The temporary site compound shall be founded on a small area that will be levelled, compacted and overlaid with gravel surfacing overlying geogrid and geotextile. These materials will be removed from site following completion of the works. Wastewater from the welfare facilities will be stored in a temporary above ground tank prior to disposal at a licensed wastewater treatment plant. Generators will be used on-site for power supply during the temporary works. Water will be provided via water tankers.

### 5.1.3 Site Clearance

Overgrown vegetation on the southern and western boundaries of the site will be cut back and cultivated into the existing cap using a rotovator or similar prior to reprofiling of the site.

### 5.1.4 Grading/Profiling of Existing Area

The existing waste body was covered following cessation of waste filling, with an intermediate cap comprising of soil materials circa 300 mm to 500 mm thick. The existing finished surface will require re-profiling to facilitate:

- Surface and sub-surface drainage.
- Safe execution of the site remediation works.
- Long term slope stability of side slopes.
- Safe access for maintenance of the cap.

Re-profiling will principally involve the (shallow) cutting of material at the top of side slopes and at local high spots. These “cut” materials, estimated to be approximately 10 m<sup>3</sup>, will be used as “fill” in local depressions. All cut and fill works will be carried out within the site boundary. Average site slopes will be profiled to a slope of 1:3. Site slopes will not be allowed to exceed 1:2.5. It is proposed to retain where possible the existing profiles, in particular those less than or equal to 1:2.5. Thereafter imported granular “dust” material 50mm to 100mm thick will be used provide a formation for the engineered cap. The re-profiled surface will provide the foundation for the engineered landfill cap.

### 5.1.5 Installation of Engineered Landfill Cap

The engineered landfill cap “barrier” system will:

- Cover an area of approximately 2,800 m<sup>2</sup>.
- Isolate the waste body from rainfall inputs which contribute to produce leachate. This will protect underlying groundwater and adjacent surface waters.
- Minimise the potential for uncontrolled landfill gas migration to the atmosphere or adjacent lands.
- Provide a physical barrier between the finished surface and buried wastes.
- Facilitate controlled discharge of surface water runoff and sub surface drainage flows into the receiving surface waters.



The cap components are described below under the following headings:

- Vertical wells.
- Below liner landfill gas collection system.
- A linear low-density polyethylene (LLDPE) barrier to isolate the waste body from rainfall inputs and prevent uncontrolled fugitive gas emissions from the waste body.
- Over liner services.
- Over liner gas management system.
- Landfill gas compound.
- A subsurface over liner drainage system discharging to a surface drainage system.
- Surface drainage system.
- Geogrids on slopes steeper than 1:3 to support soil on side slopes.
- A subsoil layer average thickness 800mm.
- A topsoil layer average thickness 200mm.

### *Vertical Wells*

Vertical wells shall be installed within the waste body prior to reprofiling works. Well arisings will be placed in dedicated low spots on site prior to re-profiling. Well arisings will be covered at the end of each working day to minimise odour nuisance. Wells will be connected to over liner gas collection pipework to the gas management compound. Well diameter will be greater than 450 mm and will comprise a slotted HDPE pipe with a gravel surround. Well depth will typically be circa. 5.0 m.

### *Passive Below Liner Landfill Gas Collection System*

Currently any landfill gas produced vents gas to atmosphere via diffuse surface emissions. Once the LLDPE barrier is installed this preferential pathway to atmosphere will be isolated. Below the LLDPE barrier a gas collection geocomposite and pipework system will be constructed to collect and direct landfill gas to the proposed gas management compound to manage landfill gas via passive venting. The proposed gas compound will be located in the north-western end of the site and will have an area of approximately 200 m<sup>2</sup>.

The below liner gas collection geocomposite will be a cusped synthetic product or similar approved that will be rolled out above the granular “dust” material overlying the re-profiled intermediate cap which overlies the waste. The gas collection geocomposite forms a “cavity” to intercept gas emissions from the underlying body. Gas collection pipework will be slotted and laid in gravel surround below the gas collection geocomposite and it will facilitate: collection of landfill gas; and soakage, if required, of condensate or other as may collect in pipework.

Landfill gas collected in the under-liner gas system will be transferred via solid HDPE pipes and terminate in the landfill gas management compound.



### *LLDPE Barrier*

The LLDPE barrier will be a 1.0 mm thick “plastic” sheet that is impermeable to both water and gas. It prevents gas escaping into the overlying soils and stops water from rainfall entering the underlying waste body. The LLDPE sheets will be welded at joints and will terminate in a vertical cut-off trench circa 3.0 m deep along the perimeter boundary of the site.

### *Over-liner Services.*

Over liner services comprising duct and water mains will be provided within the cap to support after use activities.

### *Over-liner Gas Management System*

Over-liner HDPE solid pipework will convey gas from vertical wells to the gas management compound. Connections to wells will be via below ground valve chambers and/or above ground manifold boxed less than 1.0 m in height. All above ground structures will be fenced using stock proof fencing or similar approved.

### *Landfill Gas Compound*

The under and over liner gas pipe systems will terminate in the gas management compound and exhaust landfill gas to atmosphere. Landfill gas quality will change over time. Subject to calorific value landfill gas will be either vented to atmosphere via vent stacks or oxidised prior to venting. Oxidation will be carried out using a biological filter recessed into the cap to facilitate passive venting to atmosphere. The biological filter and vent will be located in the landfill gas compound. The compound will be circa. 10.0 m wide by 20.0 m long and contained within stock proof fencing. The vent will comprise a vertical pipe 300 mm diameter with a cowl and/or carbon filter located at a height of not less than 3.0 m above surrounding ground level. The compound will also have provision for temporary plant to accommodate: gas pumping trials, or oxidation by high temperature flaring as may be required.

### *Subsurface Drainage Over Liner Drainage System*

The over liner sub surface drainage collection geocomposite will be a cusped synthetic product or similar approved that will be rolled out above the LLDPE barrier. It will form a “cavity” to intercept rainfall inputs that may percolate into the cap. Subsurface drainage flows from the drainage geocomposite will be transferred via a supporting pipework system to the surface drainage system at the perimeter of the cap and will ultimately be discharged to one of the 2 no. surface drainage outfalls. The proposed outfalls are located in the eastern end of the site discharging into the existing watercourse.

### *Surface Drainage System*

The topsoil will have shallow grassed surface drainage swales that will direct surface water runoff to the receiving watercourses. The swales shall be constructed at grades between 1:50 and 1:100 to mitigate the risk of erosion. The swale profile will be shaped to allow mowing and trafficking by farm vehicles.



### *Geogrid on Side Slopes*

Following installation of the sub-surface drainage geocomposite, a geogrid will be installed to support placement of subsoil materials on steep side slopes (1V:2.5H side slope < 1V:3H). The geogrid is designed to prevent translational slope failures, (i.e. it will stop soil slipping off the LLDPE liner).

### *Subsoil Layer*

Suitably sourced subsoils will be imported to the site and placed atop of the sub surface drainage geocomposite and /or geogrid on side slopes. The subsoil layer will generally be 800mm deep. The purpose of the subsoil layer is to protect the synthetic geocomposite materials, under lying pipework and to support landscaping.

### *Topsoil Layer*

Suitable sourced topsoil will be placed atop the subsoil. The topsoil will have no stones greater than 50 mm diameter. Stones greater than 50 mm will be removed by a proprietary stone picker or similar prior to grass seeding (pasture). The topsoil layer will be 200 mm deep. Stones will be reused on site in site roads or as fill to sub surface drains.

#### 5.1.6 Stock Proof Fencing

Clearance of shrub on the perimeter will result in damage to exiting stock proof fencing. Following placement of the cap a replacement perimeter stock proof fence 1.3 m high will be installed on the perimeter of the site. A gate will be provided to facilitate access to the adjacent field to the north. An access gate will be provided to off the main road. Redundant fences will be transported and disposed/recovered at a licenced facility.

#### 5.1.7 Temporary Works

Temporary works will include:

- Leachate management.
- Wheel cleaning.
- Daily cover of exposed waste.
- Suspended solids management.
- Odour management.
- Traffic management.

#### 5.1.8 Landfill Gas/Leachate Environmental Monitoring Infrastructure

Three new perimeter monitoring wells will be installed external to the waste body to monitor for landfill gas migration. Arisings from boreholes will be disposed of on site. In the event that waste is found to be present it will be disposed on site below the LLDPE barrier and gas collection geocomposite. Monitoring wells will have a chamber and a cover atop the wells at the same elevation as the surrounding ground.



The wells will have monitoring ports to support monitoring of landfill gas quality and or groundwater quality as may be required by the Environmental Protection Agency (EPA).

The construction works will make provision for additional wells within the waste body and ports will be installed at wells heads or manifolds to support monitoring of gas quality and pressure. Two existing wells as are present within the waste footprint will be retained and incorporated into the cap to support future environmental monitoring as may be required by the EPA.

#### 5.1.9 Grass Cover/Landscaping for Pasture

Post capping and placement of the subsoils and topsoil layers the site will be landscaped using a proprietary grass cover mix suited for pasture. Grass cover in addition to providing fodder for stock will prevent erosion of the soils and will provide a final appearance similar to surrounding land use.



### 5.1.10 Operational Phase / Post Construction

The Operational/Post Construction works will include:

- Ongoing environmental monitoring.
- Ongoing Management of Landfill Gas.
- Ongoing maintenance of engineered cap on-site.
- Ongoing maintenance of surface and sub-surface drainage systems on-site.

### 5.1.11 Environmental Monitoring

Monitoring staff will be required to access installed infrastructure (wells, the landfill gas compound and surface water outfalls) to take samples and/or monitor gas quality during the aftercare period post construction.

### 5.1.12 Management of Landfill Gas

At present venting to atmosphere of landfill gas and oxidation of methane occurs naturally via the existing soil cap and monitoring is carried out at insitu wells on and off site. Once a LLDPE barrier is installed landfill gas will be directed via gas pipe systems to the gas compound for landfill gas management.

There will be an on-going requirement to:

- Maintain landfill gas infrastructure.
- Monitor landfill gas quality within and external to the facility at dedicated monitoring locations.
- Reinstate/replace biological filter media.

### 5.1.13 Maintenance of Cap

The grass cover will require maintenance. This may be provided either by grazing and or by mowing. Fertiliser supplements may also be required periodically during the aftercare period subject to stocking density.

### 5.1.14 Maintenance of Drainage

Surface water swales will be grazed and or mowed during the aftercare period. In the event that settlement or erosion compromises swale integrity cracks may need to be closed. This is normally carried out by running a tractor and or tracked vehicle atop the swale edge to close settlement cracks. Sub surface drainage pipes may require periodic jetting of pipes if they become compromised with roots or silt.

Groundwater monitoring shall be carried out at the two existing perimeter wells and surface water monitoring shall be carried out at the proposed surface water discharge outfalls. Monitoring will be undertaken annually in accordance with parameters listed in Table C.2 of the EPA's *Landfill Manuals - Landfill Monitoring, 2<sup>nd</sup> Edition (2003)*. Groundwater and surface water monitoring will be undertaken to monitor the performance of the engineered cap and surface water monitoring will include the monitoring of suspended solid levels at perimeter outfalls.



Gas monitoring shall be carried out at existing groundwater monitoring boreholes. Gas sampling will be undertaken for Methane, Carbon Dioxide, Oxygen, Carbon Monoxide and temperature.

**For the purposes of this AA Screening the unmitigated effects of the proposed works are only being considered. This AA Screening report does not consider measures included to reduce and or avoid potential significant effects to a European site.**



## 6 STAGE ONE – SCREENING REPORT

### 6.1 Brief Description of the European Sites within 15km of the Development

There are 9 European sites within the zone of influence (15 km) of the project (see Figure 5-1). All 9 European sites are SACs. Table 5-1 lists these European sites, including their qualifying interests, conservation objectives and known threats to these sites (according to information provided by the NPWS ([www.npws.ie](http://www.npws.ie))). The 9 No. sites are as follows:

- Kenmare River cSAC (Site Code 002158) (0.04 km South)
- Old Domestic Building Askive Wood SAC (Site Code 002098) (3 km Southeast)
- Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (Site Code 000365) (3.1 km West)
- Drongawn Lough SAC (Site Code 002187) (5.2 km Southeast)
- Blackwater River (Kerry) cSAC (Site Code 002173) (5.9 km Northeast)
- Cloonee And Inchiquin Loughs, Uragh Wood cSAC (Site Code 001342) (9.5 km Southeast)
- Cleanderry Wood cSAC (Site Code 001043) (11.7 km Southwest)
- Glanmore Bog cSAC (Site Code 001879) (11.9 km South)
- Caha Mountains cSAC (Site Code 000093) (13.9 km Southeast)

Site synopses are included in Appendix 2 of this report.

#### *No Hydrological Link*

The following have no hydrological link with Sneem historic landfill:

- Old Domestic Building Askive Wood SAC (002098)
- Drongawn Lough SAC (002187)
- Blackwater River (Kerry) cSAC (002173)
- Cloonee And Inchiquin Loughs, Uragh Wood cSAC (001342)
- Cleanderry Wood cSAC (001043)
- Glanmore Bog cSAC (001879)
- Caha Mountains cSAC (000093)

#### *Direct Hydrological Link*

The following site has a direct hydrological link to the historical landfill site:

- Kenmare River cSAC (002158)



A direct downstream hydrological link between Sneem historic landfill site and SAC exists via the Ardsheelhane and Sneem Rivers. The Ardsheelhane River bordering the historic landfill site, joins the Sneem River ca. 227m downstream of the site, which in turn enters Kenmare River cSAC c. 122m downstream of the confluence. As such the instream distance between Sneem historic landfill site and Kenmare River cSAC is c. 349m.

#### *Indirect Hydrological Link*

The following site has an indirect hydrological link to the historical landfill site:

- Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365)

An indirect hydrological link is present between Sneem historic landfill site and the SAC; via the Ardsheelhane River and Sneem River. Sections of the SAC, located on high ground, drain into both rivers. Via the Ardsheelhane River, located upstream of the site, there is an instream distance of ca. 8.8km between the historic landfill site and the SAC via the Sneem River, which joins the Ardsheelhane River downstream of the historic site (ca. 227m downstream), there is a distance of ca. 5.5km instream distance between the historic site and SAC. Whilst the SAC drains into these rivers, the SAC is located upstream and will therefore not receive any emissions from the historic landfill site.

#### *Ground Water link*

The following European site is located within the same ground water body as the historic landfill site:

- Kenmare River cSAC (002158)



**Table 6-1: European Sites within the zone of influence**

Designated Site (Site Code)	Conservation Objectives	Qualifying Interests	Threats and Pressures	Direct Distance from Historic Landfill Site (km)
Kenmare River cSAC (Site Code 002158)	To maintain (M) and restore (R) the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	<ul style="list-style-type: none"> <li>• Large shallow inlets and bays [1160] <b>(M)</b></li> <li>• Reefs [1170] <b>(M)</b></li> <li>• Perennial vegetation of stony banks [1220] <b>(M)</b></li> <li>• Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] <b>(M)</b></li> <li>• Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] <b>(M)</b></li> <li>• Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] <b>(M)</b></li> <li>• Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] <b>(M)</b></li> <li>• *Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] <b>(M)</b></li> <li>• European dry heaths [4030] <b>(M)</b></li> <li>• <i>Calaminarian</i> grasslands of the <i>Violetalia calaminariae</i> [6130] <b>(M)</b></li> <li>• Submerged or partially submerged sea caves [8330] <b>(M)</b></li> <li>• <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <b>(M)</b></li> <li>• <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] <b>(M)</b></li> <li>• <i>Lutra lutra</i> (Otter) [1355] <b>(R)</b></li> <li>• <i>Phoca vitulina</i> (Harbour Seal) [1365] <b>(M)</b></li> </ul>	<p><u>High Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• F02 Fishing and harvesting aquatic resources</li> <li>• F01 Marine and Freshwater Aquaculture</li> </ul> <p><u>Medium Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• A08 Fertilisation</li> </ul> <p><u>Medium Level (outside site)</u></p> <ul style="list-style-type: none"> <li>• E01 Urbanised areas, human habitation</li> </ul> <p><u>Low Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• A04.03 Abandonment of pastoral systems, lack of grazing</li> <li>• I01 Invasive non-native species</li> <li>• H03 Marine water pollution</li> <li>• G01.01 Nautical sports</li> <li>• G01.02 Walking, horseriding and non-motorised vehicles</li> <li>• D01.01 Paths, tracks, cycling tracks</li> <li>• J01.01 Burning down</li> <li>• H01 Pollution to surface waters (limnic, terrestrial, marine &amp; brackish)</li> <li>• A08 Fertilisation</li> </ul>	0.4 km



Designated Site (Site Code)	Conservation Objectives	Qualifying Interests	Threats and Pressures	Direct Distance from Historic Landfill Site (km)
			<ul style="list-style-type: none"> <li>A04.02 Non intensive grazing</li> <li>A04.02.01 Non intensive cattle grazing</li> </ul> <p><u>Low Level (outside site)</u></p> <ul style="list-style-type: none"> <li>H01 Pollution to surface waters (limnic, terrestrial, marine &amp; brackish)"</li> </ul>	
Old Domestic Building Askive Wood SAC (Site Code 002098)	To maintain (M) and restore (R) the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	<ul style="list-style-type: none"> <li><i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] <b>(M)</b></li> </ul>	<p><u>High Level (inside site)</u></p> <ul style="list-style-type: none"> <li>B02 Forest and Plantation management &amp; use</li> </ul> <p><u>Low Level (inside site)</u></p> <ul style="list-style-type: none"> <li>G01.02 Walking, horseriding and non-motorised vehicles</li> </ul> <p><u>Low Level (outside site)</u></p> <ul style="list-style-type: none"> <li>G02.01 Golf course</li> <li>E01.03 Dispersed habitation"</li> </ul>	3 km
Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (Site Code 000365)	To maintain (M) and restore (R) the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	<ul style="list-style-type: none"> <li>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] <b>(R)</b></li> <li>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] <b>(R)</b></li> </ul>	<p><u>High Level (inside site)</u></p> <ul style="list-style-type: none"> <li>A04 Grazing</li> <li>I01 Invasive non-native species</li> </ul> <p><u>Medium Level (inside site)</u></p> <ul style="list-style-type: none"> <li>E01.03 Dispersed habitation</li> <li>G02.06 Attraction Park</li> </ul>	3.1 km



Designated Site (Site Code)	Conservation Objectives	Qualifying Interests	Threats and Pressures	Direct Distance from Historic Landfill Site (km)
		<ul style="list-style-type: none"> <li>• Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] <b>(M)</b></li> <li>• Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] <b>(R)</b></li> <li>• European dry heaths [4030] <b>(R)</b></li> <li>• Alpine and Boreal heaths [4060] <b>(R)</b></li> <li>• <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] <b>(M)</b></li> <li>• <i>Calaminarian</i> grasslands of the <i>Violetalia calaminariae</i> [6130] <b>(M)</b></li> <li>• <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] <b>(R)</b></li> <li>• Blanket bogs (* if active bog) [7130] <b>(R)</b></li> <li>• Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] <b>(R)</b></li> <li>• Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] <b>(R)</b></li> <li>• *Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] <b>(R)</b></li> <li>• *<i>Taxus baccata</i> woods of the British Isles [91J0] <b>(R)</b></li> <li>• <i>Geomalacus maculosus</i> (Kerry Slug) [1024] <b>(M)</b></li> <li>• <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <b>(R)</b></li> </ul>	<ul style="list-style-type: none"> <li>• E03.01 Disposal of household / recreational facility waste</li> <li>• K01.01 Erosion</li> <li>• C01.03 Peat extraction</li> <li>• B Sylviculture, forestry</li> <li>• J01 Fire and fire suppression</li> </ul> <p><u>Medium Level (outside site)</u></p> <ul style="list-style-type: none"> <li>• A08 Fertilisation</li> <li>• E01 Urbanised areas, human habitatio</li> <li>• B Sylviculture, forestry</li> <li>• A04 Grazing</li> </ul> <p><u>Low Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• G01.02 Walking, horseriding and non-motorised vehicles</li> <li>• F02.03 Leisure fishing</li> <li>• A03 Mowing / cutting of grassland</li> <li>• A08 Fertilisation</li> </ul> <p><u>Low Level (outside site)</u></p> <ul style="list-style-type: none"> <li>• E01.03 Dispersed habitation</li> <li>• G02.01 Golf course</li> </ul>	



Designated Site (Site Code)	Conservation Objectives	Qualifying Interests	Threats and Pressures	Direct Distance from Historic Landfill Site (km)
		<ul style="list-style-type: none"> <li>• <i>Euphydryas aurinia</i> (Marsh Fritillary) [1065] <b>(R)</b></li> <li>• <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <b>(M)</b></li> <li>• <i>Lampetra planeri</i> (Brook Lamprey) [1096] <b>(M)</b></li> <li>• <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <b>(M)</b></li> <li>• <i>Salmo salar</i> (Salmon) [1106] <b>(M)</b></li> <li>• <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] <b>(M)</b></li> <li>• <i>Lutra lutra</i> (Otter) [1355] <b>(M)</b></li> <li>• <i>Trichomanes speciosum</i> (Killarney Fern) [1421] <b>(M)</b></li> <li>• <i>Najas flexilis</i> (Slender Naiad) [1833] <b>(M)</b></li> <li>• <i>Alosa fallax killarnensis</i> (Killarney Shad) [5046] <b>(R)</b></li> </ul>		
Drongawn Lough SAC (Site Code 002187)	To maintain (M) and restore (R) the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	<ul style="list-style-type: none"> <li>• *Coastal lagoons [1150] <b>(M)</b></li> </ul>	<u>Low Level (inside site)</u> <ul style="list-style-type: none"> <li>• A04 Grazing</li> </ul> <u>Low Level (outside site)</u> <ul style="list-style-type: none"> <li>• A04 Grazing</li> </ul>	5.2 km
Blackwater River (Kerry) cSAC (Site Code 002173)	To maintain (M) and restore (R) the favourable conservation condition of the Annex I habitat(s) and/or the Annex II	<ul style="list-style-type: none"> <li>• European dry heaths [4030] <b>(M)</b></li> <li>• <i>Geomalacus maculosus</i> (Kerry Slug) [1024] <b>(M)</b></li> <li>• <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <b>(R)</b></li> <li>• <i>Salmo salar</i> (Salmon) [1106] <b>(R)</b></li> </ul>	<u>High Level (inside site)</u> <ul style="list-style-type: none"> <li>• B Sylviculture, forestry</li> </ul> <u>High Level (outside site)</u> <ul style="list-style-type: none"> <li>• B Sylviculture, forestry</li> </ul>	5.9 km



Designated Site (Site Code)	Conservation Objectives	Qualifying Interests	Threats and Pressures	Direct Distance from Historic Landfill Site (km)
	species for which the SAC has been selected.	<ul style="list-style-type: none"> <li>• <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] (M)</li> <li>• <i>Lutra lutra</i> (Otter) [1355] (M)</li> </ul>	<p><u>Medium Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• A04 Grazing</li> <li>• A08 Fertilisation</li> <li>• C01.03.02 Mechanical removal of peat</li> <li>• D01.02 Roads, motorways</li> <li>• A02 Modification of cultivation practices</li> </ul> <p><u>Medium Level (outside site)</u></p> <ul style="list-style-type: none"> <li>• A04 Grazing</li> </ul> <p><u>Low Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• E01.03 Dispersed habitation</li> </ul>	
Cloonee And Inchiquin Loughs, Uragh Wood cSAC (Site Code 001342)	To maintain (M) and restore (R) the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	<ul style="list-style-type: none"> <li>• Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] (M)</li> <li>• Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] (M)</li> <li>• European dry heaths [4030] (M)</li> <li>• Siliceous rocky slopes with chasmophytic vegetation [8220] (M)</li> <li>• Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] (R)</li> <li>• <i>Geomalacus maculosus</i> (Kerry Slug) [1024] (M)</li> <li>• <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] (R)</li> </ul>	<p><u>Medium Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• K04.05 Damage by herbivores (including game species)</li> <li>• A04.02.02 Non intensive sheep grazing</li> <li>• B06 Grazing in forests/ woodland</li> </ul> <p><u>Low Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• J01.01 Burning down</li> <li>• F02.03 Leisure fishing</li> <li>• B02.02 Forestry clearance</li> <li>• E03.01 Disposal of household / recreational facility waste</li> </ul>	9.5 km



Designated Site (Site Code)	Conservation Objectives	Qualifying Interests	Threats and Pressures	Direct Distance from Historic Landfill Site (km)
		<ul style="list-style-type: none"> <li><i>Trichomanes speciosum</i> (Killarney Fern) [1421] (M)</li> <li><i>Najas flexilis</i> (Slender Naiad) [1833] (M)</li> </ul>	<u>Low Level (outside site)</u> <ul style="list-style-type: none"> <li>I01 Invasive non-native species</li> <li>A08 Fertilisation"</li> </ul>	
Cleanderry Wood cSAC (Site Code 001043)	To maintain (M) and restore (R) the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	<ul style="list-style-type: none"> <li>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</li> <li><i>Trichomanes speciosum</i> (Killarney Fern) [1421]</li> </ul>	<u>Low Level (inside site)</u> <ul style="list-style-type: none"> <li>J01.01 Burning down</li> <li>I01 Invasive non-native species</li> <li>A04.02.02 Non intensive sheep grazing</li> </ul>	11.7 km
Glanmore Bog cSAC (Site Code 001879)	To maintain (M) and restore (R) the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	<ul style="list-style-type: none"> <li>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] (M)</li> <li>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] (M)</li> <li>Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] (R)</li> <li>*Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] (R)</li> <li>Blanket bogs (* if active bog) [7130] (R)</li> <li><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] (R)</li> <li><i>Trichomanes speciosum</i> (Killarney Fern) [1421] (M)</li> </ul>	<u>Medium Level (inside site)</u> <ul style="list-style-type: none"> <li>H01.05 Diffuse pollution to surface waters due to agricultural and forestry activities</li> <li>J02.06.02 Surface water abstractions for public water supply</li> <li>J01.01 Burning down</li> <li>B01 Forest planting on open ground</li> </ul> <u>Medium Level (outside site)</u> <ul style="list-style-type: none"> <li>H01.05 Diffuse pollution to surface waters due to agricultural and forestry activities</li> </ul>	11.9 km

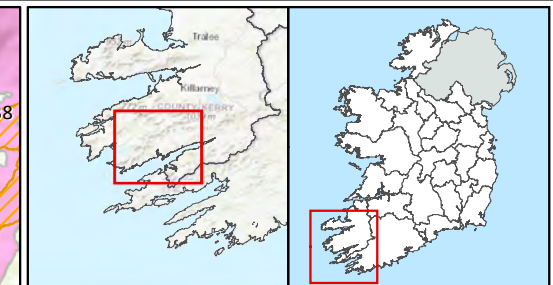
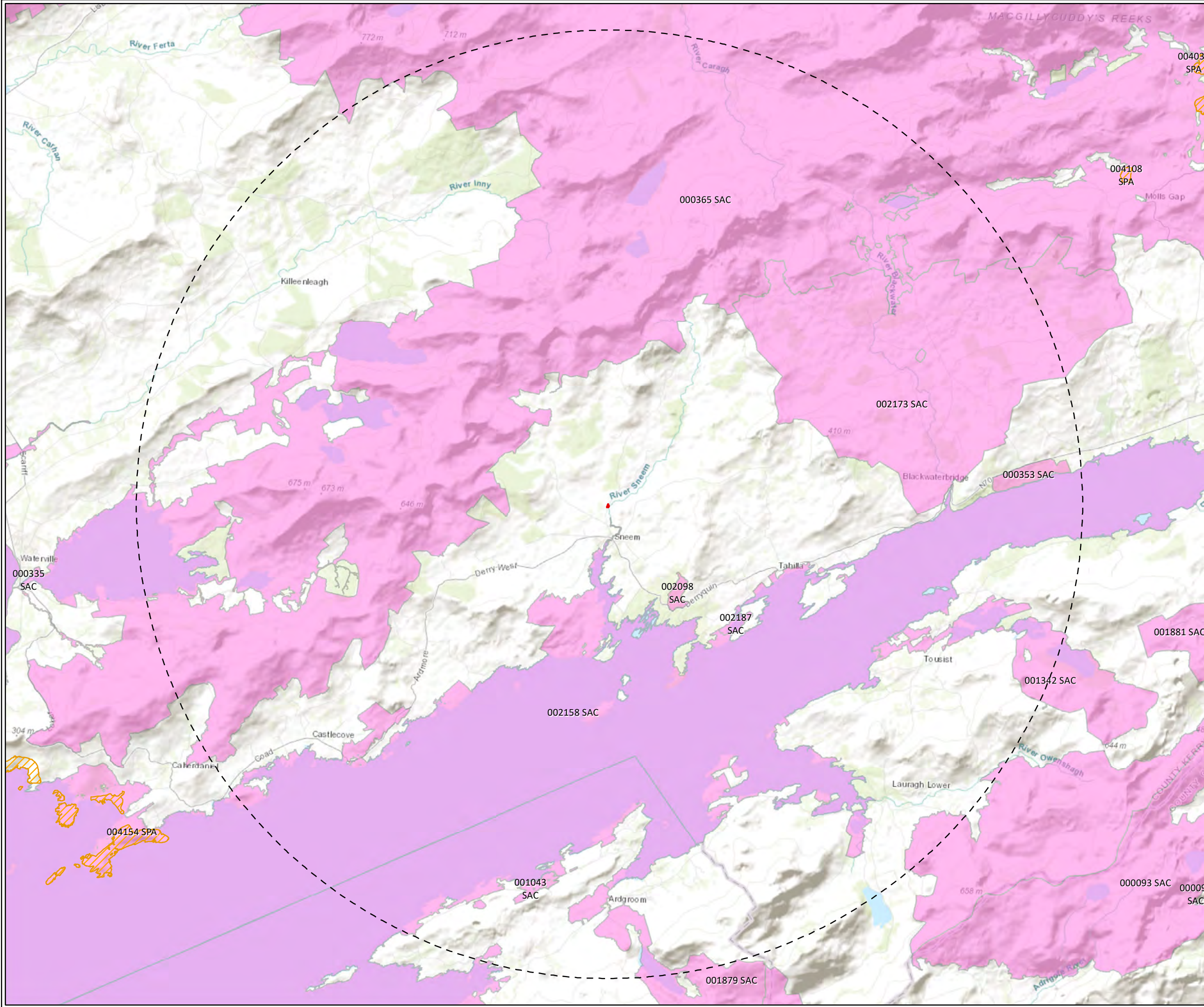


Designated Site (Site Code)	Conservation Objectives	Qualifying Interests	Threats and Pressures	Direct Distance from Historic Landfill Site (km)
			<ul style="list-style-type: none"> <li>• B01 Forest planting on open ground</li> </ul> <p><u>Low Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• J02.07 Water abstractions from groundwater</li> <li>• F02.03 Leisure fishing</li> <li>• C01.03.01 Hand cutting of peat</li> <li>• H01.08 Diffuse pollution to surface waters due to household sewage and waste waters</li> <li>• A04.02.01 Non intensive cattle grazing</li> <li>• I01 Invasive non-native species</li> <li>• A04.02.02 Non intensive sheep grazing</li> </ul>	
Caha Mountains cSAC (Site Code 000093)	To maintain (M) and restore (R) the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	<ul style="list-style-type: none"> <li>• Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] <b>(M)</b></li> <li>• Natural dystrophic lakes and ponds [3160] <b>(M)</b></li> <li>• Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] <b>(R)</b></li> <li>• European dry heaths [4030] <b>(R)</b></li> <li>• Alpine and Boreal heaths [4060] <b>(M)</b></li> <li>• Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] <b>(R)</b></li> <li>• Blanket bogs (* if active bog) [7130] <b>(R)</b></li> </ul>	<p><u>High Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• A04.02.02 Non intensive sheep grazing</li> </ul> <p><u>Medium Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• J01.01 Burning down</li> </ul> <p><u>Low Level (inside site)</u></p> <ul style="list-style-type: none"> <li>• <u>C01.03.01 Hand cutting of peat</u></li> <li>• <u>E01.03 Dispersed habitation</u></li> <li>• <u>I01 Invasive non-native species</u></li> <li>• <u>D01.01 Paths, tracks, cycling tracks</u></li> </ul>	13.9 km



Designated Site (Site Code)	Conservation Objectives	Qualifying Interests	Threats and Pressures	Direct Distance from Historic Landfill Site (km)
		<ul style="list-style-type: none"> <li>• Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) [8110] <b>(R)</b></li> <li>• Calcareous rocky slopes with chasmophytic vegetation [8210] <b>(R)</b></li> <li>• Siliceous rocky slopes with chasmophytic vegetation [8220] <b>(R)</b></li> <li>• <i>Geomalacus maculosus</i> (Kerry Slug) [1024] <b>(M)</b></li> <li>• <i>Trichomanes speciosum</i> (Killarney Fern) [1421] <b>(M)</b></li> </ul>		

\* Indicates a priority Annex I habitat.



- Site Boundary
  - 15km Distance from Site Boundary
  - Special Protection Area (SPA)
  - Special Area of Conservation (SAC)
- Site Code, Site Name, Distance (km)
- 002158, Kenmare River SAC, 0.04
  - 002098, Old Domestic Building Askive Wood SAC, 3
  - 000365, Killarney National Park Macgillycuddy's Reeks And Caragh River Catchment SAC, 3.1
  - 002187, Drongawn Lough SAC, 5.2
  - 002173, Blackwater River (Kerry) SAC, 5.9
  - 001342, Cloonee And Inchiquin Loughs Uragh Wood SAC, 9.5
  - 001043, Cleanderry Wood SAC, 11.7
  - 001879, Glanmore Bog SAC, 11.9
  - 000093, Caha Mountains SAC, 13.9

<b>TITLE:</b>	
Designated European Sites	
<b>PROJECT:</b>	
AA Screening for Sneem Historic Landfill, Co. Kerry	
<b>FIGURE NO:</b> 6.1	
<b>CLIENT:</b> Kerry County Council	
<b>SCALE:</b> 1:120000	<b>REVISION:</b> 0
<b>DATE:</b> 27/04/2020	<b>PAGE SIZE:</b> A3





## 6.2 Conservation Objectives

According to the Habitats Directive, the *conservation status of a natural habitat* will be taken as 'favourable' within its biogeographic range 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 Habitats Directive, the conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' within its biogeographic range 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 specific conservation objectives for each site are available on [www.npws.ie](http://www.npws.ie). These have been accessed for the sites listed in Table 5-1 above on the 2<sup>nd</sup> June 2022.

Generic conservation objectives only were available for:

- Cleanderry Wood cSAC (001043); published 2<sup>nd</sup> February 2018

Detailed site-specific conservation objectives were available for the following sites:

- Kenmare River cSAC (002158); published 25<sup>th</sup> April 2013 [Version 1]
- Old Domestic Building Askive Wood SAC (002098); published 18<sup>th</sup> September 2018 [Version 1]
- Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365); published 23<sup>rd</sup> October 2017 [Version 1]
- Drongawn Lough SAC (Site Code 002187); published 30<sup>th</sup> September 2016 [Version 1]
- Blackwater River (Kerry) cSAC (002173); published 10<sup>th</sup> September 2019 [Version 1]
- Cloonee And Inchiquin Loughs, Uragh Wood cSAC (001342); published 14<sup>th</sup> November 2019 [Version 1]
- Glanmore Bog cSAC (001879); published 24<sup>th</sup> July 2017 [Version 1]
- Caha Mountains cSAC (000093); published 11<sup>th</sup> August 2016 [Version 1]

Conservation objectives and supporting documents for these sites are available from the NPWS through the protected sites search portal at <https://www.npws.ie/protected-sites>.



A management plan for Killarney National Park (NPWS, 2005) is also available through the protected sites portal.

### 6.3 Potential Cumulative Effects

In considering whether the proposed development, by itself or in combination with other plans and projects, has the potential to affect the conservation objectives of the designated sites within 15km of the proposed development, the following were considered:

- Kerry County Development Plan 2022-2028,
- Kerry County Council Planning Enquiry System <https://www.kerrycoco.ie/planning/online-planning-enquiry/>,
- Permitted projects in the vicinity of the development,
- Proposed projects in the vicinity of the development.

A planning search limited to applications submitted within the townlands overlapping and surrounding the historic landfill site (Mullagallane, Ardsheelhane West, Scrahannagaur, Inchinaleega East and Moularostig) during the previous 5 years was conducted on 02<sup>nd</sup> June 2022.

No other projects of a scale or type that could act cumulatively with the proposed remediation works at the historic landfill site are proposed or consented in the townlands overlapping and surrounding the site. Permitted and consented developments in these townlands are comprised of retention applications for and/or modifications to dwelling houses within the townland of Moularostig.

#### *Other Historic Landfills*

Within Sneem Historic landfill's 15km buffer there are 9 European sites. Of these European sites Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) is located within the 15km buffer of two other historic landfills which require remediation works; Castleisland and Rockfield historic landfill sites (see Table 6-2 below for more information).

Sneem historic landfill has an indirect hydrological link with the Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365); via Ardsheelhane River (ca. 8.8km instream distance) and Sneem River (ca. 5.5km instream distance). The portions of the SAC which drain into these Rivers are located upstream and will therefore not receive any potential emissions from Sneem historic landfill site during clearance and construction works. During clearance/construction works there is potential for negative effects to water quality downstream of the historic landfill site from the inputs of sediment, leachate and Japanese Knotweed material. As this SAC will not receive any potential emissions from site, apart from FPM none of its qualifying interests which are non-transitory aquatic species (there are two) or aquatic dependent flora/habitats (there are four) or will be effected. There are five qualifying species which are transitory species: Brook Lamprey (*Lampetra planeri*), Sea Lamprey (*Petromyzon marinus*), River Lamprey (*Lampetra fluvatilis*), Salmon (*Salmo salar*) and Otter (*Lutra lutra*).

There is potential that Brook Lamprey, Sea Lamprey, River Lamprey and Salmon (if present) travelling downstream of the SAC and/or migrating to or from the sea via Bantry Bay could be effected by changes to water quality during clearance/construction works at the historic landfill.



It must also be noted that FPM if present upstream of the site, will be effected by changes to the Salmon population as Salmon act as a host for part in their lifecycle.

Also downstream of the SAC, the area of the historic landfill site and downstream of the site would potentially fall into the territory of the Otter population of the SAC and changes to water quality could affect otter prey availability. Potential significant effects to Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) cannot be ruled out. A potential cumulative effects on water quality from the construction phases of the other two historic landfills cannot be ruled out.

**Table 6-2: European sites located within 15km of Sneem Historic Landfill and two Other Historic Landfills (Requiring Remediation)**

European Sites within 15km of Sneem Historic Landfill's 15km Buffer	Kerry Historic Landfill Sites	
	Castleisland	Rockfield
	Distance between Historic Landfills and European sites (km)	
Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365)	14.2	2.9

#### 6.4 Screening Assessment Criteria

Having regard to the examples of elements of the plan or project to be considered during screening set out in the guidance document 'Assessment of plans and projects in relation to Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC', (European Commission, 2021), the likely impacts are set out relative to the project or plan under consideration in the 'Screening Matrix'.

As set out in NPWS guidance (DoEHLG, 2010), the task of establishing whether a plan or project is likely to have an effect on a European site(s) is based on an evaluation using available information and data (e.g., water quality data), supplemented as necessary by local site information and ecological surveys. This results in a determination by the competent authority as to whether there may be a significant effect on the designated site. A precautionary approach is required.



Some examples given in the NPWS guidance (DoEHLG, 2010) of effects that are likely to be significant are:

1. Any effect on an Annex I habitat,
2. A reduction in the area of a habitat of conservation interest in a European site or a reduction in the area of a European site,
3. Direct or indirect damage to the physical quality of the environment (e.g., water quality and supply, soil compaction) in the European site,
4. Serious or ongoing disturbance to species or habitats for which the European site is selected (e.g., increased noise, illumination and human activity),
5. Direct or indirect damage to the size, characteristics or reproductive ability of populations in the European site,
6. Interference with mitigation measures put in place for other plans or projects.

## 6.5 Screening Matrix

Assessment Criteria	Discussion of Potential Effects
<p><i>Describe any likely direct, indirect or secondary impacts [effects] of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of:</i></p> <ul style="list-style-type: none"> <li>▪ <i>Size and scale;</i></li> <li>▪ <i>Land-take;</i></li> <li>▪ <i>Distance from Natura 2000 site or key features of the site;</i></li> <li>▪ <i>Resource requirements;</i></li> <li>▪ <i>Emissions;</i></li> <li>▪ <i>Excavation requirements;</i></li> <li>▪ <i>Transportation requirements;</i></li> <li>▪ <i>Duration of construction, operation etc.;</i></li> <li>▪ <i>Other.</i></li> </ul>	<p><b>Size and scale</b>  <b>Potential Effects: None.</b></p> <p>Remediation works will be undertaken within a 7,000 m<sup>2</sup> single parcel of land and remediation works will cover an area of 7,000 m<sup>2</sup>. Remediation works will require the clearance of the entire site and regrading of the existing surface (3,500m<sup>3</sup>) which will include a limited amount of existing soil cap; the material will be reused in the topsoil/subsoil layer. Remediation works will involve the use of 1,400m<sup>3</sup> topsoil and 5,600m<sup>3</sup> of subsoil spread over a 7,000 m<sup>2</sup> area a barrier system which will requires vertical cut-offs on all boundaries (outside the interred waste) and limited excavation works will be required for the installation of landfill gas management elements located on the surface of the cap.</p> <p>No effects will occur on any European site due to size and scale.</p> <p><b>Land-take</b>  <b>Potential Effects: None.</b></p> <p>The historic site is not located within any European site and there will therefore be no land-take of any European site.</p> <p><b>Distance from Natura 2000 (European) sites</b>  <b>Potential effects:</b>  <i>Direct effects on otter health or indirect effects on otter prey species from sediment or elevated leachate inputs arising from remedial works. Otter is a qualifying interest of Kenmare River cSAC (002158) and Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365).</i>  <i>Direct and indirect significant effects to River Lamprey, Sea Lamprey Brook Lamprey and Salmon from changes to water Quality arising from remedial works cannot be ruled out. Indirect significant effect on Freshwater Pearl Mussel (FPM) from a reduction in the Salmon population.</i></p>



Assessment Criteria	Discussion of Potential Effects
	<p><i>These species are qualifying interests of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365).</i></p> <p><u>Kenmare River cSAC (002158)</u>          Kenmare River cSAC (002158) is located ca. 0.4km south of the site and has a direct hydrological link with the SAC. The SAC is designated for 9 marine/coastal habitats which are highly unlikely to be affected by sediment or elevated leachate inputs arising from remedial works due to the high dilution factor provided by the waters of Kenmare Bay and/or distance from the historic landfill.</p> <p>The SAC is also designated for two terrestrial habitats namely, Calaminarian grasslands of the <i>Violetalia calaminariae</i> [6130] and European dry heaths [4030] which will not be to be affected by works due to a lack of connectivity.</p> <p>The SAC is designated for four species: Whorl Snail (<i>Vertigo angustior</i>), Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>), Harbour Seal (<i>Phoca vitulina</i>) and Otter (<i>Lutra lutra</i>).</p> <p>A review of the conservation objectives mapping notes that Narrow-mouthed Whorl Snail is located c. 18 km southwest of the historic landfill (Derrynane, Kerry) and lacks a hydrological connection as such there is no potential for any effects on this qualifying interest.</p> <p>Conservation objectives mapping indicates the cSAC's two lesser horseshoe roosts and their associated potential feeding territories are just under 17 km from Sneem historic landfill site, and therefore outside the foraging range of this species in Ireland.</p> <p>Harbour Seal (<i>Phoca vitulina</i>), is unlikely to be affected by sediment or elevated leachate inputs arising from remedial works due to the high dilution factor provided by the waters of Kenmare Bay.</p> <p>Due to the close proximity and the hydrological connection (350m in-stream distance) between Kenmare River cSAC (002158) and Sneem historic landfill there is potential for significant or unknown effects on Otter due to sediment or elevated leachate inputs arising from remedial works. Otter could be negatively affected directly (reduced health), or indirectly via effects on prey species.</p> <p><u>Old Domestic Building Askive Wood SAC (002098)</u>          Old Domestic Building Askive Wood SAC (002098) (3 km Southeast) is designated for Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>), which could potentially forage within/adjacent to the historic landfill site due to its location within the upper limit of this species' foraging range in an Irish context and the presence of mature trees along the south-eastern boundary of the site (these trees are not to be felled but may fail following remedial works within the area of their root systems).</p> <p>These mature trees form part of a wooded linear corridor running along the River Ardsheelhane, which may be used as commuting/hunting grounds for bats. However, there is no clear linear corridor between the SAC and historical landfill and the site is highly likely to be outside the <i>core</i> foraging range of Lesser Horseshoe Bat population of the SAC. No effect will occur to Old Domestic Building Askive Wood SAC (002098) due to distance.</p>



Assessment Criteria	Discussion of Potential Effects
	<p><u>Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365)</u> Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) (ca. 3.1km northwest) is designated for 26 aquatic/terrestrial habitats and species.</p> <p>The site has an indirect hydrological link with the historic landfill. The SAC is located a minimum instream distance of ca. 5.5km (Sneem River) upstream of the site and will not receive any potential emissions from the construction phase. Therefore, there will be no effect on aquatic or terrestrial habitats and no effect on non-transitory aquatic species due to distance.</p> <p>However, aquatic dependent transitory species such as Brook Lamprey, River Lamprey, Sea Lamprey and Salmon (qualifying interests of the SAC) which if present are likely to travel downstream of the SAC and/or migrate from the sea, inland and vice versa, could be effected by changes to water quality at in the area of the historic landfill site and downstream of the historic landfill site. Any reduction in the Salmon population downstream of the SAC could have a significant effect on FPM upstream of the historic landfill site (if present) as FPM rely on Salmon as a host for part of their lifecycle. The historic landfill site and downstream may also form part of the territory of the Otter population of the SAC and changes to water quality downstream of the historic site could effect prey availability. Due to distance and an indirect hydrological link, a potential effect to the qualifying interests which are transitory species of the Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) from changes to water quality during the construction phase of proposed remediation works cannot be ruled out.</p> <p><u>Other European Sites</u></p> <p>All other European sites (6 of 9 SACs) are located a minimum of 5.2km (Drongawn Lough SAC (002187)) away from Sneem Historic landfill site and have no hydrological link with the site.</p> <p>Therefore, their qualifying interests which are habitats, aquatic species and non – transitory terrestrial species will not be effected due to distance. Blackwater River (Kerry) cSAC (002173) and Cloonee and Inchiquin Loughs, Uragh Wood cSAC (001342) are located ca. 5.9 km and 9.5km respectively from the historic landfill site and are also designated for Lesser Horseshoe Bat.</p> <p>Lesser Horseshoe Bat generally forage ca. 2.5km from their roosts<sup>3</sup> and as the historic landfill site is located more than double this distance there will be no effect on Lesser Horseshoe bat populations from these SACs.</p> <p>Due to distance and no hydrological link with Sneem Historic Landfill there will be no effect on Drongawn Lough SAC (002187), Blackwater River (Kerry) cSAC (002173), Cloonee and Inchiquin Loughs, Uragh Wood cSAC (001342), Cleanderry Wood cSAC (001043), Glanmore Bog cSAC (001879) and Caha Mountains cSAC (000093) due to distance.</p>

<sup>3</sup> NPWS (2018) Conservation objectives supporting document – lesser horseshoe bat (*Rhinolophus hipposideros*) Version 1. Conservation Objectives Supporting Document Series. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland.



Assessment Criteria	Discussion of Potential Effects
	<p><b>Resource requirements</b>  <b>Potential Effects:</b> <i>None.</i>            There will be no resource requirements from any European site as a result of the proposed remediation works.</p> <p><b>Emissions</b>  <b>Potential Effects:</b>  <i>Indirect effects to the habitats within Kenmare River cSAC (002158) from the spread of Japanese Knotweed during clearance/construction works. As well direct and indirect effects to Otter from changes to water quality (leachate, sediment and Japanese Knotweed inputs) during clearance/ construction works.</i></p> <p><i>Direct and indirect effects to Otter, Brook Lamprey, Sea Lamprey, River Lamprey and Salmon, as well as an indirect effect on FPM, qualifying interests of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) downstream of the SAC due to changes to water quality during clearance/construction works.</i></p> <p><u>Kenmare River cSAC (002158)</u>            There is potential for sediment and elevated leachate inputs material to the Ardsheelhane River during site clearance and construction works. This could have negative effects of unknown or significant magnitude on otter, which is a qualifying interest of Kenmare River cSAC (002158). The spread of invasive species Japanese Knotweed can also not be ruled out. Its spread could have a significant effects on habitats within the SAC which could have indirect effects on Otter with regards to water quality and prey availability.            The potential far reaching significant effects on habitats for which the SAC is designated cannot be ruled out.</p> <p><u>Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365)</u>            As stated, there is potential for sediment, leachate and Japanese Knotweed material inputs into the Ardsheelhane River during site clearance and construction works. Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) is located upstream of the site with an indirect hydrological link to the historic landfill site and will not receive inputs from the site. As the SAC will not receive inputs from the site the habitats and non-transitory species for which it is designated will not be effected.</p> <p>However, aquatic dependent transitory species such as Brook Lamprey, River Lamprey, Sea Lamprey, Salmon which if present may travel within the watercourse (move downstream) and/or migrate from the sea, inland and vice versa, could be effected by changes to water quality (at the site of inputs and downstream of the site). Any changes to the Salmon population downstream of the historic landfill site will have a knock of effect to the FPM upstream of the historic landfill site because FPM is dependent on Salmon to complete part of its lifecycle.</p> <p>The historic landfill site and downstream of the site may also form part of the territory of the Otter population of the SAC and changes to water quality could affect prey availability.</p>



Assessment Criteria	Discussion of Potential Effects
	<p>A potential effect to the transitory species which are qualifying interests of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) which are transitory species from changes to water quality during the clearance/ and construction works cannot be ruled out.</p> <p><u>Other European Sites</u>            All other European sites (7 of 9 SACs) are located a minimum of 3km (Old Domestic Building Askive Wood SAC (002098)) away from Sneem Historic landfill site and have no hydrological link with the site. Due to distance and there being no hydrological link with Sneem Historic landfill there will be no effect on Old Domestic Building Askive Wood SAC (002098), Drongawn Lough SAC (002187), Blackwater River (Kerry) cSAC (002173), Cloonee and Inchiquin Loughs, Uragh Wood cSAC (001342), Cleanderry Wood cSAC (001043), Glanmore Bog cSAC (001879) and Caha Mountains cSAC (000093) from emissions.</p> <p><b>Excavation requirements</b>  <b>Potential Effects:</b>  <i>Indirect effects to the habitats within Kenmare River cSAC (002158) from the spread of Japanese Knotweed during clearance/construction works.</i>  <i>As well direct and indirect effects to Otter from changes to water quality (leachate, sediment and Japanese Knotweed inputs) during clearance/ construction works.</i>  <i>Direct and indirect effects to Otter, Brook Lamprey, Sea Lamprey, River Lamprey and Salmon, as well as an indirect effect on FPM, qualifying interests of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) downstream of the SAC due to changes to water quality during clearance/construction works.</i>  <i>Direct and indirect effects to Otter, Brook Lamprey, Sea Lamprey, River Lamprey, Salmon and FPM, qualifying interests of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) downstream of the SAC due to changes to water quality during clearance/construction works.</i></p> <p>Emission produced during excavation works could have the potential to result in significant effects on Kenmare River cSAC (002158) and the transitory species of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC. See above section on 'Emissions' for more information.</p> <p><b>Transportation requirements</b>  <b>Potential Effects: None.</b>            The project will be accessed via an existing local road and the N71 and will not traverse any European site.</p> <p><b>Duration of Construction and Operation</b>  <b>Potential Effects: None.</b>            The duration of remedial works is anticipated to be up to 6 months. Due to this relatively short duration of construction, no effects are predicted in this regard.</p>



Assessment Criteria	Discussion of Potential Effects
	<p>Duration of operation is for the foreseeable future. When operational, the remedial works will have a positive effect on water quality and Kenmare River cSAC (002158) due to a reduction in leachate generation and ingress into the Ardsheelhane River.</p> <p><b>Cumulative Effects</b></p> <p><b>Potential Effects:</b> <i>Potential significant effects cannot be ruled out from the construction phase and there is therefore potential for cumulative effects if works at the historic landfill site were to overlap with the works of the other historic landfill sites.</i></p> <p>A planning search limited to applications submitted within the townlands overlapping and surrounding the historic landfill was conducted. No other projects of a scale or type that could act cumulatively with the proposed remediation works at the historic landfill site are proposed or permitted in the townlands overlapping and surrounding the site.</p> <p>Two other historic landfills (which require remediation works) also contain Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) within their 15km buffers. Due to an indirect hydrological connection between the historic landfill site and SAC and the SAC being designated for Otter, Brook Lamprey, Sea Lamprey, River Lamprey and Salmon; transitory species which could be effected by changes to water quality downstream of the SAC (if present). Also changes to the Salmon population have the potential to effect the FPM population (if present) that need Salmon to complete part of their lifecycle. Potential significant effects cannot be ruled out from the construction phase and there is therefore potential for cumulative effects if works at the historic landfill site were to overlap with the works of the other historic landfill sites.</p> <p>See Section 6.3 for more information.</p>
<p><i>Describe any likely changes to the site arising as a result of:</i></p> <ul style="list-style-type: none"> <li>▪ <i>Reduction of habitat area;</i></li> <li>▪ <i>Disturbance of key species;</i></li> <li>▪ <i>Habitat or species fragmentation;</i></li> <li>▪ <i>Reduction in species density;</i></li> <li>▪ <i>Changes in key indicators of conservation value;</i></li> <li>▪ <i>Climate change.</i></li> </ul>	<p>The reduction in habitat area or habitat fragmentation within Kenmare River cSAC (002158) and potential changes in water quality (future erosion of riverbanks and release in sediment) as a result of Japanese Knotweed material leaving the site during clearance and construction works cannot be ruled out.</p> <p>There is potential for the disturbance effect of otter a qualifying interest of Kenmare River cSAC (002158) from changes to water quality within the SAC.</p> <p>It should be noted that there is also potential for disturbance effects to otter a qualifying interest of Kenmare River cSAC (002158) and Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) outside of their SACs. As otter is a mobile species, the territory of the Otter population of Kenmare River cSAC (002158) may extend upstream whilst the population of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) may extend downstream. Otter is key indicator of conservation value within these SACs.</p>



Assessment Criteria	Discussion of Potential Effects
	<p>Sediment, leachate and Japanese Knotweed inputs into the Ardsheelhane River from clearance and construction works could result in changes to water quality which could disturb and reduce fish densities (Sea Lamprey, River Lamprey, Brook Lamprey and Salmon) a key species of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC, downstream of the SAC (if present in the watercourse).</p> <p>Water quality of the Kenmare River cSAC (002158) is a key indicator of health as is the Otter population as well as the Otter, Brook Lamprey, Sea Lamprey, River Lamprey and Salmon population of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365). A significant effect to these key indicators due to potential changes in water quality cannot be ruled out.</p> <p>A reduction in the Salmon population could result in the reduction of FPM upstream of the historic landfill site (if present within the water course), as Salmon act as a host for part of the FPM lifecycle.</p>
<p><i>Describe any likely impacts [effects] on the Natura 2000 site as a whole in terms of:</i></p> <ul style="list-style-type: none"> <li>▪ <i>Interference with the key relationships that define the structure of the site;</i></li> <li>▪ <i>Interference with key relationships that define the function of the site.</i></li> </ul>	<p>Potential indirect significant effects on the habitats and Otter population of Kenmare River cSAC (002158) and transitory species of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) from the spread of Japanese Knotweed material, sediment and leachate inputs. which could reduce water quality and result in a reduction or alteration of distribution in the prey items of Otter, Brook Lamprey, Sea Lamprey, River Lamprey and Salmon. The reduction in the Salmon population could interfere with the relationship between Salmon and FPM.</p> <p>FPM are dependent on Salmon for part of their lifecycle. The spread of Japanese Knotweed could also result in the reduction of habitat within Kenmare River cSAC (002158) which could have a knock-on effect on the qualifying interests of the SAC such as Otter.</p>
<p><i>Provide indicators of significance as a result of the identification of effects set out above in terms of:</i></p> <ul style="list-style-type: none"> <li>▪ <i>loss,</i></li> <li>▪ <i>fragmentation,</i></li> <li>▪ <i>disruption,</i></li> <li>▪ <i>disturbance,</i></li> <li>▪ <i>change to key elements of the site (e.g., water quality etc.).</i></li> </ul>	<p>The spread of Japanese Knotweed into Kenmare River cSAC (002158) during clearance/construction phase of proposed remedial works at Sneem historic landfill could result in the fragmentation of habitats within the SAC. Inputs (sediment, leachate and Japanese Knotweed material) during the clearance/construction phase have the potential to negatively affect water quality and significant effects with regards to the disturbance of Otter (Kenmare River cSAC (002158) and Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365)) as well as disruption and loss of Brook Lamprey, Sea Lamprey, River Lamprey and Salmon. Losses in the Salmon population could have a knock-on effect on the FPM population as Salmon acts as a host for part of the FPMs lifecycle. Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365) cannot be ruled out. Disturbance, disruption, loss or changes in key elements (water quality) could occur. The magnitude of these effects is unknown.</p>



Assessment Criteria	Discussion of Potential Effects
<p><i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts [effects] are likely to be significant or where the scale of magnitude of impacts [effects] is not known.</i></p>	<p>Site clearance works and construction works associated with the construction of the engineered landfill cap could result in sediment inputs (including Japanese knotweed material) into the Ardsheelhane River.</p> <p>Regrading and excavation works associated with construction of the engineered cap could result in (temporary) elevated leachate inputs into the Ardsheelhane River.</p> <p>The spread of Japanese Knotweed could result in significant effect from the fragmentation of the habitats of Kenmare River cSAC (002158). Inputs (sediment, leachate and Japanese Knotweed) into the Ardsheelhane River could have a significant effects to Otter which is a qualifying interest of Kenmare River cSAC (002158) due to proximal downstream connectivity with the cSAC (350m in-stream distance) or otter with territories along the Ardsheelhane River overlapping the site outside of the cSAC boundary.</p> <p>Inputs (sediment, leachate and Japanese Knotweed) into Ardsheelhane River could also result in significant effects to Otter, Sea Lamprey, Brook Lamprey, River Lamprey and Salmon, qualifying interests of Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365)), downstream of the SAC.</p> <p>The SAC is located ca. 5.5km (instream distance) upstream of site and could form part of Otter population territory and Brook Lamprey, Sea Lamprey, River Lamprey and Salmon could use downstream river system to migrate to other streams/sea.</p> <p>Changes in the Salmon population would have a knock-on effect on FPM, both qualifying interests of the Killarney National Park Macgillycuddy's Reeks and Caragh River Catchment cSAC (000365). Whilst located upstream of the historic landfill site, FPM depends on Salmon for part of its lifecycle.</p>

## 6.6 Screening Conclusion

It is concluded beyond reasonable scientific doubt that there are not likely to be significant effects from the proposed development on the following European sites identified for consideration (or any other European site beyond 15km), either alone or in combination with other plans or projects. Therefore, these European sites have been 'screened out' within the Appropriate Assessment Screening Report:

- Old Domestic Building Askive Wood SAC (Site Code 002098)
- Drongawn Lough SAC (Site Code 002187)
- Blackwater River (Kerry) cSAC (Site Code 002173)
- Cloonee And Inchiquin Loughs, Uragh Wood cSAC (Site Code 001342)
- Cleanderry Wood cSAC (Site Code 001043)
- Glanmore Bog cSAC (Site Code 001879)
- Caha Mountains cSAC (Site Code 000093)



The proposed remedial works could result in likely significant effects to the Kenmare River cSAC (Site Code 002158) due to reductions in water quality during construction and the spread of invasive species. These effects would be limited to one qualifying interest for the site, namely Otter. Therefore, Kenmare River cSAC requires further consideration in terms of potential effects on Otter within a Natura Impact Statement.

The proposed remedial works could result in likely significant effects to Killarney National Park Macgillicuddy's Reeks and Caragh River Catchment cSAC (000365) due to reductions in water quality downstream of the SAC during construction. These effects would be limited to Otter, Sea Lamprey, River Lamprey and Brook Lamprey. Changes to the Salmon population of the SAC could have knock on effects on the Freshwater Pearl Mussel (FPM) who use Salmon as a host for part of their lifecycle. Therefore, Killarney National Park Macgillicuddy's Reeks and Caragh River Catchment cSAC (000365) requires further consideration in terms of potential effects on Otter, Sea Lamprey, River Lamprey and Brook Lamprey within a Natura Impact Statement.



## 7 REFERENCES

Dietz, C. and Kiefer, A. (2016) Bats of Britain and Europe. Bloomsbury, London.

DoEHLG, 2009. Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin 2009.

European Commission (2020). Guidance document on wind energy developments and EU nature legislation. [https://ec.europa.eu/environment/nature/natura2000/management/docs/wind\\_farms\\_en.pdf](https://ec.europa.eu/environment/nature/natura2000/management/docs/wind_farms_en.pdf)

EC (2019). Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission Brussels, 21.11.2018 C (2018) 7621 final.

EC (2001). 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 2001.

EPA (2003). Landfill Manuals - Landfill Monitoring, 2<sup>nd</sup> Edition. Environmental Protection Agency, Ireland.

Kerry County Council (2015). Kerry County Development Plan 2015-2021. <http://cdp.kerrycoco.ie/wordpress/> Accessed 22/04/2020.

NPWS (2013) Conservation Objectives: Kenmare River SAC 002158. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2018) Conservation Objectives: Old Domestic Building Askive Wood SAC 002098. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2017) Conservation Objectives: Killarney National Park Macgillicuddy's Reeks and Caragh River Catchment SAC 000365. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2016) Conservation Objectives: Drongawn Lough SAC 002187. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2019) Conservation Objectives: Blackwater River (Kerry) SAC 002173. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2019) Conservation Objectives: Cloonee and Inchiquin Loughs, Uragh Wood SAC 001342. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2021) Conservation Objectives: Cleanderry Wood SAC 001043. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2017) Conservation Objectives: Glanmore Bog SAC 001879. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2016) Conservation Objectives: Caha Mountains cSAC 000093. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2016) Site Synopsis: Kenmare River SAC 002158. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Site Synopsis: Old Domestic Building Askive Wood SAC 002098. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Site Synopsis: Killarney National Park Macgillicuddy's Reeks and Caragh River Catchment SAC 000365. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.



NPWS (2014) Site Synopsis: Drongawn Lough SAC 002187. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014) Site Synopsis: Blackwater River (Kerry) SAC 002173. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2016) Site Synopsis: Cloonee and Inchiquin Loughs, Uragh Wood SAC 001342. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Site Synopsis: Cleanderry Wood SAC 001043. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2016) Site Synopsis: Glanmore Bog SAC 001879. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2016) Site Synopsis: Caha Mountains cSAC 000093. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht

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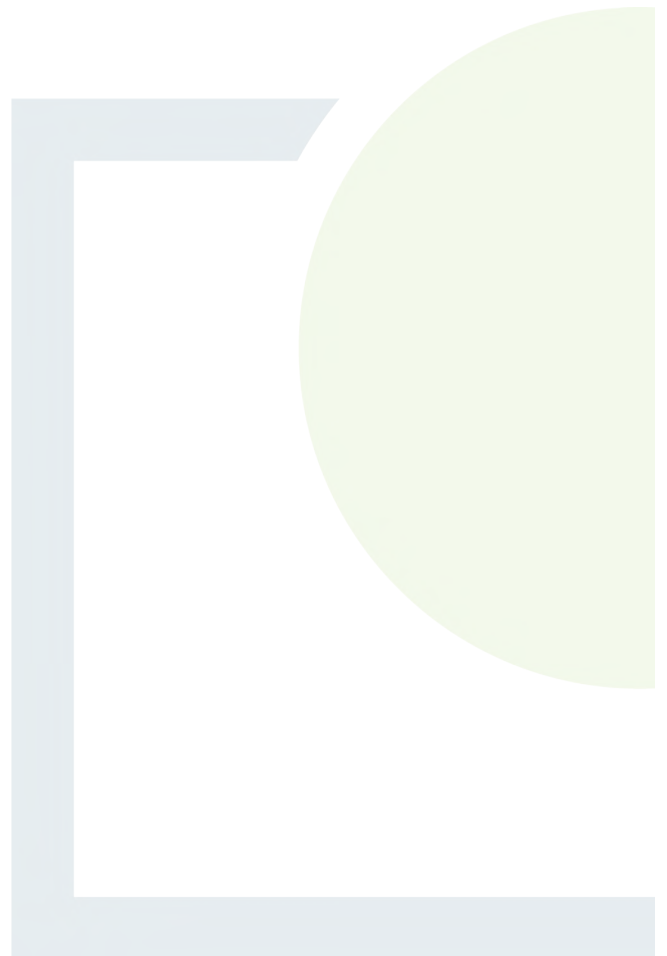


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## **APPENDIX 1**

Parameters for Monitoring of  
Groundwater, Surface Water and  
Leachate



**Table 1: Parameters for Monitoring of Groundwater, Surface Water and Leachate**

Monitoring Parameter <sup>4</sup> See Footnote	Frequency*	Surface Water	Groundwater/Leachate
Level	Quarterly <sup>+</sup>	-	✓
Flow Rate		-	-
Temperature		✓	✓
Dissolved Oxygen		✓	-
pH		✓	✓
Electrical Conductivity <sup>5</sup>		✓	✓
Total suspended solids		✓	-
Total dissolved solids		-	✓
Ammonia (as N)		✓	✓
Total oxidized nitrogen (as N)		✓	✓
Total organic carbon		-	✓
Biochemical Oxygen Demand		✓	-
Chemical Oxygen Demand		✓	-
Metals <sup>6</sup>		✓	✓
Total Alkalinity (as CaCO <sub>3</sub> )		✓	✓
Sulphate		✓	✓
Chloride		✓	✓
Molybdate Reactive Phosphorous <sup>7</sup>		✓	✓
Cyanide (Total)		✓	✓
Fluoride		✓	✓
Trace organic substances <sup>8</sup>	Annually	✓	✓
Faecal and Total Coliforms <sup>9</sup>		-	✓
Biological assessment	-	-	-

<sup>4</sup> Tables D.1 and D.2 of the EPA Landfill Monitoring manual recommend guideline minimum reporting values for parameters

<sup>5</sup> Where saline influences are suspected, a salinity measurement should also be taken

<sup>6</sup> Metals for analysis should include calcium, magnesium, sodium, potassium, iron, manganese, cadmium, chromium (total), copper, nickel, lead, zinc, arsenic, boron and mercury.

<sup>7</sup> Total Phosphorus should be measured in leachate samples where colorimetric interference is likely.

<sup>8</sup> Table D.2 of the EPA Landfill Monitoring manual recommends trace organic substances that should be included in the determination. Surface water should be analysed for the pesticide and solvents listed in the Water Quality (dangerous Substances) Regulations (S.I No. 12 of 2001)

<sup>9</sup> Required for drinking water supplies within 500m of the landfill



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## **APPENDIX 2**

European Site Synopses



**Site Name: Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC**

**Site Code: 000365**

This very large site encompasses the mountains, rivers and lakes of the Iveragh Peninsula, and the Paps Mountains which stretch eastward from Killarney towards Millstreet. The majority of the site is in Co. Kerry, with a small portion in Co. Cork. This is the most mountainous region in Ireland and includes Carrauntoohil, the highest peak in the country at 1,039 m. The underlying geology is almost entirely Old Red Sandstone, although Carboniferous limestone occurs on the eastern shores of Lough Leane, and rhyolitic lavas occur above Lough Guitane. The dramatic sandstone ridges and valleys have been shaped by glacial processes and many of the lakes are impounded by glacial moraines. Located close to the Atlantic in the south-west of Ireland, the site is subject to strong oceanic influences. Generally, Lusitanian flora and fauna is well-represented, while the high peaks and cliffs support arctic-alpine relicts.

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):

- [3110] Oligotrophic Waters containing very few minerals
- [3130] Oligotrophic to Mesotrophic Standing Waters
- [3260] Floating River Vegetation
- [4010] Wet Heath
- [4030] Dry Heath
- [4060] Alpine and Subalpine Heaths
- [5130] Juniper Scrub
- [6130] Calaminarian Grassland
- [6410] *Molinia* Meadows
- [7130] Blanket Bogs (Active)\*
- [7150] Rhynchosporion Vegetation
- [91A0] Old Oak Woodlands
- [91E0] Alluvial Forests\*
- [91J0] Yew Woodlands\*
  
- [1024] Kerry Slug (*Geomalacus maculosus*)
- [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)
- [1065] Marsh Fritillary (*Euphydryas aurinia*)
- [1095] Sea Lamprey (*Petromyzon marinus*)

- [1096] Brook Lamprey (*Lampetra planeri*)
- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1103] Twaite Shad (*Alosa fallax*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1303] Lesser Horseshoe Bat (*Rhinolophus hipposideros*)
- [1355] Otter (*Lutra lutra*)
- [1421] Killarney Fern (*Trichomanes speciosum*)
- [1833] Slender Naiad (*Najas flexilis*)

The Oak woodlands, occurring mostly around the Killarney lakes, are the habitat for which the area is perhaps best known. They form the most extensive area of native woodland remaining in Ireland and include Derrycunihy Wood, described as perhaps the most natural Sessile Oak (*Quercus petraea*) wood in the country. The woods are typically dominated by Sessile Oak, with an understorey of Holly (*Ilex aquifolium*). The Strawberry-tree (*Arbutus unedo*) is a notable component of the woods and there are scattered areas of Yew (*Taxus baccata*). The herb layer is not particularly species-rich, but the woods support perhaps the best developed Atlantic bryophyte community in Europe. Several rare species are present including *Lejeunea flava*, *Cyclodictyon laetivirens*, *Daltonia splachnoides*, *Sematophyllum demissum* and *Radula carringtonii*.

The only sizeable Yew woodland in Ireland is found on the limestone of the Muckross peninsula. Here, some of the trees are up to 200 years old. The dense shade beneath the tree results in few herbs in the ground flora, but the bryophyte layer is well-developed and almost continuous.

Wet woodland, or carr, occurring on the low-lying limestone areas within the floodplain of Lough Leane, forms one of the most extensive areas of this woodland type in Ireland. The dominant canopy species are Alder (*Alnus glutinosa*), willows (*Salix* spp.), Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*), while the field layer is dominated by Remote Sedge (*Carex remota*) and Creeping Bent (*Agrostis stolonifera*).

Adding to the diversity of the woodland component of this site are a number of mixed woodlands, including those of Ross Island which support one of the richest herb layers of the Killarney woods.

The most common habitat types within the overall site are blanket bog, heath and upland grassland. The heath and grassland generally occur on areas with shallow peat and on the mineral soils of the steep mountain sides, while the blanket bog occurs on the more gentle slopes, plateaux and other level ground. Often the habitats occur in a mosaic, with exposed rock frequently occurring.

A variety of blanket bog types are represented from lowland valley to mountain blanket bog. Some of the best include: Cumberagh River Bog Nature Reserve, a

domed bog which is perhaps the most southern intact blanket bog in the country; Ballygisheen, which contains one of the most extensive areas of intact lowland blanket bog in Co. Kerry; Coomacheo/Caherbarnagh, which combine to form the largest mountain blanket bog in the south-west; Eirk Bog Nature Reserve, a classic example of a bog intermediate between a raised and blanket bog; Mangerton Bog, an upland bog which grades into an unusual lichen heath seen at no other site; and Oolagh East, a quaking basin mire. Generally, the bogs have a characteristic flora. The Lusitanian species, Large-flowered Butterwort (*Pinguicula grandiflora*), is common. The bogs also support a number of unusual species, including mosses (*Sphagnum pulchrum*, *S. fuscum*, *S. platyphyllum*, *S. strictum*, *S. contortum* and *Calliergon stramineum*), liverworts (*Cladopodiella francisci* and *Calypogeia azurea*) and lichens (*Cladonia mediterranea*, *C. macilenta*, *C. rangiferina*, *C. arbuscula* and *Cetraria islandica*).

Rhynchosporion vegetation is confined to wet areas within the lowland blanket bogs, with one of the best areas for the habitat being to the north-east of the Ballygisheen Pass. On a portion of this bog there is an extensive area of quaking flats and pools dominated by the bog mosses *Sphagnum cuspidatum* and *S. auriculatum*. These areas have a typically species-poor flora which includes Bogbean (*Menyanthes trifoliata*), White Beak-sedge (*Rhynchospora alba*), Bog Asphodel (*Narthecium ossifragum*), Common Cottongrass (*Eriophorum angustifolium*) and Great Sundew (*Drosera anglica*). Brown Beak-sedge (*R. fusca*), a locally rare plant of wet bog pools, is occasional within the site. Although the habitat is best developed in very wet areas of intact bog, it may also occur in wet areas of regenerating cutover blanket bog.

Wet heath often occurs in association with blanket bog and features Cross-leaved Heath (*Erica tetralix*). Dry heath is more frequent in this site, and is dominated by Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and Western Gorse (*Ulex gallii*), with occasional Bilberry (*Vaccinium myrtillus*). This habitat is well-developed on the Paps Mountains. Elsewhere it is often over-grazed, with upland grassland becoming more frequent. Some of the highest ridges support alpine heath (referable to the *Lycopodium alpinum* - *Racomitrium lanuginosum* association). Widespread plant species of the alpine heath include Bog-myrtle (*Vaccinium myrtillus*), Crowberry (*Empetrum nigrum*) and Fir Clubmoss (*Huperzia selago*), while species such as Juniper (*Juniperus communis* subsp. *nana*) and Dwarf Willow (*Salix herbacea*) have a much more restricted distribution.

The site contains many lakes, but these can be broadly divided into two types: small upland corrie lakes and larger lowland lakes. Examples of the first type are Lough Murtagh and Lough Gortavehy in the Paps Mountains. They are oligotrophic and typically species-poor, with Quillwort (*Isoetes lacustris*), Water Lobelia (*Lobelia dortmanna*) and Shoreweed (*Littorella uniflora*) occurring most commonly. The lowland lakes are mostly oligotrophic, although Lough Leane, the largest freshwater body in the region, has become somewhat mesotrophic as a result of pollution from Killarney town. These lowland lakes tend to be more species-rich than those at higher altitudes, with additional species such as Awlwort (*Subularia aquatica*), Six-stamened Waterwort (*Elatine hexandra*) and Alternate Water-milfoil (*Myriophyllum*

*alterniflorum*). Good examples include Lough Caragh, Upper Lake and Muckcross Lake.

The rivers associated with these lakes are also of importance. The Caragh is relatively unpolluted from headwater to estuary, a rare phenomenon in Europe. The Flesk runs over Old Red Sandstone in its upper reaches and limestone as it nears Lough Leane. Both rivers support floating and submerged vegetation and rare invertebrates. Rocks around the smaller mountain streams often support a lush vegetation of ferns and bryophytes, most notably at Torc Waterfall.

Other habitats of note include: Juniper scrub found on islands in the Upper Lake and on dry ridges in nearby Newfoundland Bog; damp meadows, with Purple Moor-grass (*Molinia caerulea*), supporting scarce species such as Whorled Caraway (*Carum verticillatum*) and Ivy-leaved Bellflower (*Wahlenbergia hederacea*); and Calaminarian grasslands, associated with the old copper mines on Ross Island, with species such as Sea Campion (*Silene vulgaris* subsp. *maritima*) and Thrift (*Armeria maritima*).

A large number of plant and animal species of interest occur within the site. For example, two plant species listed on Annex II of the E.U. Habitats Directive occur. Slender Naiad (*Najas flexilis*) is found in some of the lakes at the site. The Killarney Fern (*Trichomanes speciosum*) is another listed and well-known rarity. An additional twenty-two Red Data Book plant species have been recorded, but only twelve of these have been seen recently. These are Pillwort (*Pilularia globulifera*), Kerry Lily (*Simethis planifolia*), Irish Lady's-tresses (*Spiranthes romanzoffiana*), Slender Cottongrass (*Eriophorum gracile*), Small Cudweed (*Logfia minima*), Betony (*Stachys officinalis*), Heath Cudweed (*Omalotheca sylvatica*), Alder Buckthorn (*Frangula alnus*), Alpine Saw-wort (*Saussurea alpina*), Hoary Whitflowgrass (*Draba incana*), Smooth Brome (*Bromus racemosus*) and Holly Fern (*Polystichum lonchitis*). The first seven of these species are legally protected under the Flora (Protection) Order, 1999, as are Slender Naiad and Killarney Fern.

Additional plant species of interest include a fern (*Dryopteris affinis* subsp. *stilluppensis*) and a Whitebeam (*Sorbus anglica*), both at their only Irish locations.

The site is very important for oceanic bryophytes, particularly the woodland species. It also contains good representative examples of the Northern Atlantic Hepatic Mat community and other oceanic montane communities. Killarney Oak woods and mountains have been nominated as a site of international importance for bryophytes.

The Killarney Woods are notable for the number of rare species of Myxomycete fungus that have been recorded, namely *Collaria arcyryonema*, *Craterium muscorum*, *Cribraria microcarpa* (only known Irish site), *C. rufa*, *C. violacea*, *Diderma chondrioderma*, *D. lucidum*, *D. ochraceum*, *Fuligo muscorum* and *Licea marginata*.

The site has six bird species which are listed on Annex I of the E.U. Birds Directive. A small flock of Greenland White-fronted Goose, which winters on the boglands within the National Park, is now the only regular flock in the south-west. The site has one of

the highest concentrations of breeding Peregrines in the country, as well as some breeding Merlin. Chough is found both in the coastal and inland areas of the site, with possibly up to 30 pairs breeding. Kingfisher is a species associated with the lakes and rivers, especially in the National Park and probably breeds. Finally, a few pairs of Common Tern breed within the site.

The woodlands provide habitat for a variety of breeding birds, most notably Garden Warbler, Blackcap, and probably a few pairs each of the rare Redstart and Wood Warbler. Lough Leane is a site for wintering wildfowl with the following average counts for the two winters 1995/96 and 1996/97: Teal (208), Mallard (350), Pochard (81), Tufted Duck (323) and Coot (169).

The site supports most of the Irish mammal species. Of particular note is the occurrence of two E.U. Habitats Directive Annex II species: Lesser Horseshoe Bat, with a total population of about 300 individuals distributed at several locations, including both nursery and hibernation sites, and Otter. Perhaps the best known mammals of the Killarney National Park are the Red Deer, which form the only remaining native herd in Ireland, comprised of around 600 animals. Sika Deer also occur. Pine Marten is another notable species.

The site is valuable for its rare fish species, five of which are listed on Annex II of the E.U. Habitats Directive: Brook Lamprey (*Lampetra planeri*), River Lamprey (*Lampetra fluviatilis*), Sea Lamprey (*Petromyzon marinus*), Atlantic Salmon (*Salmo salar*) and Killarney Shad (*Alosa fallax killarnensis*). The Killarney Shad is a unique land-locked subspecies confined to the Killarney lakes. Also of note is the glacial relict, Arctic Char (*Salvelinus alpinus*), a Red Data Book species, a unique form of which is found in Lough Coomasaharn.

There are numerous rare invertebrates within the site. These include three E.U. Habitats Directive Annex II species: Kerry Slug (*Geomalacus maculosus*), the Freshwater Pearl Mussel (*Margaritifera margaritifera*) and the Marsh Fritillary (*Euphydryas aurinia*). The Kerry Slug and Pearl Mussel populations are of particular importance in a national context. Other species of note include: three chironomids of international importance found in the River Flesk; a wood ant (*Formica lugubris*) at one of only four Irish sites; a snail (*Limnaea involuta*), in Lough Crincaum, at its only known location; two dragonflies (*Cordulea aenea* and *Somatochlora arctica*), the former at one of only two known sites in Ireland and the latter at its only known Irish location; and several other aquatic and woodland species at their only known Irish locations.

The main land use within the site is grazing by sheep. In and around the National Park deer grazing is also common. The extensive grazing has caused damage to many of the terrestrial habitats, resulting in degradation of heath and blanket bogs and prevention of woodland regeneration. In the upland habitats the erosion caused by grazing is exacerbated by the exposed nature of the terrain. Apart from grazing, the woodlands are particularly threatened by Rhododendron (*Rhododendron ponticum*) invasion: approximately two thirds of the Oak woodlands are affected,

although a Rhododendron removal programme is underway in the National Park. The Yew wood has been adversely affected by heavy grazing for many years, but it is intended to control this in the near future by erection of a deer fence. The bogs are sensitive to grazing and are also threatened by turbary, burning and afforestation. Most of the lakes are very acid-sensitive and therefore vulnerable to afforestation within the catchment areas. Lough Leane has been subject to some eutrophication, although water quality appears to have improved since phosphates were removed from the sewage in 1985.

A management plan was drawn up for the Killarney National Park in 1991. The park is managed primarily for conservation purposes although recreation is also provided for.

Overall, the site is of high ecological value because of the diversity, quality and extensiveness of many of the habitats, and impressive list of rare species of flora and fauna. In recognition of its importance the Killarney National Park has been designated a World Biosphere Reserve.



**Site Name: Cleanderry Wood SAC**

**Site Code: 001043**

Cleanderry Wood is situated along the south side of the Kenmare River inlet, 10 km north of Castletownbere in Co. Cork. The site occurs on a steep slope directly above the coastline and contains a small oak (*Quercus* sp.) woodland. The wood lies in a sheltered hollow facing north-west and is crossed by several cascading streams. There has been clearance in the past, but the trees are re-invading the abandoned old fields. The site also includes Derryvegal Lough Upper and its outlet stream.

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):

[91A0] Old Oak Woodlands [1421] Killarney Fern ( <i>Trichomanes speciosum</i> )
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In Cleanderry Wood Sessile Oak (*Quercus petraea*) and Hazel (*Corylus avellana*) are the dominant trees, with much Holly (*Ilex aquifolium*) and birch (*Betula* sp.). In general the ground vegetation is very well developed because there is little grazing pressure. Bilberry (*Vaccinium myrtillus*), Ivy (*Hedera helix*) and Honeysuckle (*Lonicera periclymenum*) are frequent, with Velvet Bent (*Agrostis canina*), Common Cow-wheat (*Melampyrum pratense*), Hard-fern (*Blechnum spicant*) and Hay-scented Buckler-fern (*Dryopteris aemula*). This latter species is considered threatened within Europe. The western position of the wood is shown by the abundance of Kidney Saxifrage (*Saxifraga hirsuta*), Irish Spurge (*Euphorbia hyberna*) and Wilson's Filmy-fern (*Hymenophyllum wilsonii*).

Most of the remainder of the site is a mosaic of heath, wet acidic grassland and rock outcrops. The heath varies from wet heath to dry heath. The wet heath has characteristic species such as Cross-leaved Heath (*Erica tetralix*), Tormentil (*Potentilla erecta*), Purple Moor-grass (*Molinia caerulea*) and some bog mosses (*Sphagnum* spp.). Heather (*Calluna vulgaris*), Western Gorse (*Ulex gallii*) and Deergrass (*Scirpus cespitosus*) are amongst the species found in the drier areas.

The site supports a population of the rare Killarney Fern (*Trichomanes speciosum*), a species which is listed both on the E.U. Habitats Directive and on the Flora (Protection) Order, 1999.

Although small, this woodland is important as it represents a stand of old oak woodland, a habitat type listed on Annex I of the E.U. Habitats Directive. Furthermore, it is unusual in that it contains no introduced species. There is a

luxuriant growth of moisture-loving species, including a number of rare vascular plants and ferns. Few other woods in the south-west occur so close to the sea.

**Site Name: Cloonee and Inchiquin Loughs, Uragh Wood SAC**

**Site Code: 001342**

Cloonee and Inchiquin Loughs, Uragh Wood SAC is located in a large U-shaped glacial valley on the northern side of the Caha Mountain range, to the west of Kenmare, Co. Kerry. It encompasses a series of four large lakes, some smaller mountain lakes, several inter-connecting rivers and streams, and the oak woodlands at Uragh Wood.

The Cloonee Lough system comprises three lowland oligotrophic lakes. The lowest of these is situated close to the Kenmare River estuary and is connected to the middle and upper lakes via the Beal-na-Shannin River. The upper Cloonee Lough is linked by the Ameen River to Inchiquin Lough. Uragh Wood, which is designated as a Nature Reserve, is situated on the south-west edge of Inchiquin Lough on craggy ground which rises steeply from 50 m to 200 m. Above the wood the land rises to nearly 500 m at Knockreagh Mountain. The site also includes two smaller lakes on the hillside, Lough Napeasta and Lough Cummeenadillure, to encompass the catchment area for the lakes below. The underlying geology of the area is Old Red Sandstone.

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):

- |  |
|--|
| <p>[3110] Oligotrophic Waters containing very few minerals<br/>[4010] Wet Heath<br/>[4030] Dry Heath<br/>[8220] Siliceous Rocky Slopes<br/>[91A0] Old Oak Woodlands<br/><br/>[1024] Kerry Slug (<i>Geomalacus maculosus</i>)<br/>[1303] Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)<br/>[1421] Killarney Fern (<i>Trichomanes speciosum</i>)<br/>[1833] Slender Naiad (<i>Najas flexilis</i>)</p> |
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The water of the lakes at this site is acidic. The submerged flora contains such species as Pipewort (*Eriocaulon aquaticum*), Quillwort (*Isoetes lacustris*), Six-stamened Waterwort (*Elatine hexandra*), Water Lobelia (*Lobelia dortmanna*) and Intermediate Bladderwort (*Utricularia intermedia*), amongst others. Common Reed (*Phragmites australis*) and Great Fen-sedge (*Cladium mariscus*) occur around the lake margins in places. Drier areas support Blue-eyed-grass (*Sisyrinchium bermudiana*). The site is

notable for the presence of the rare, aquatic plant species, Slender Naiad (*Najas flexilis*), a protected species listed on the Flora (Protection) Order, 2015, the Red Data Book, and Annex II of the E.U. Habitats Directive. Pennyroyal (*Mentha pulegium*) and Betony (*Stachys officinalis*), both rare, Red Data Book and also legally protected, plant species, have also been recorded from the site.

Uragh Wood is a fine example of an oceanic, semi-natural oak woodland. The soil is generally shallow, being a brown podsol near the lake and more of a peaty podsol on the upland edge of the wood. The wood has an open structure that is dominated by Sessile Oak (*Quercus petraea*) and Downy Birch (*Betula pubescens*). Other tree species present include Rowan (*Sorbus aucuparia*), Ash (*Fraxinus excelsior*) and Rusty Willow (*Salix cinerea* subsp. *oleifolia*). An understorey of Holly (*Ilex aquifolium*) and Hazel (*Corylus avellana*) is present, with Aspen (*Populus tremula*) also occurring in some parts. Nearer to the lakeshore, the uncommon species Strawberry Tree (*Arbutus unedo*) and Juniper (*Juniperus communis*) occur, along with occasional Yew (*Taxus baccata*). There is a heathland element to the ground flora of the wood that includes such species as Heather (*Calluna vulgaris*), Bilberry (*Vaccinium myrtillus*), Bog-myrtle (*Myrica gale*) and Purple Moor-grass (*Molinia caerulea*). In places the ground vegetation is relatively species-poor and dominated by Bracken (*Pteridium aquilinum*), Tufted Hair-grass (*Deschampsia cespitosa*) or Bramble (*Rubus fruticosus* agg.). Killarney Fern (*Trichomanes speciosum*), a rare, legally protected Red Data Book species and one that is listed on Annex II of the E.U. Habitats Directive as well as the Flora (Protection) Order, 2015, occurs in the wood. Other ferns commonly found in the wood include the Hay-scented Buckler-fern (*Dryopteris aemula*), Hard Fern (*Blechnum spicant*) and Filmy Ferns (*Hymenophyllum* spp.). The scarce Bird's-nest Orchid (*Neottia nidus-avis*) has been recorded from the wood.

This site is of international importance for its hyper-oceanic woodland bryophytes. Species present include: *Cyclodictyon laetevirens*, *Lejeunea flava*, *L. holtii*, *Hypnum uncinulatum*, *Radula holtii*, *R. voluta*, *Sematophyllum demissum* and *S. micans*. A rare lichen, *Leptogium juressianum*, is also found here, in its only known Irish site. The rare Myxomycete fungus, *Stemonitis nigrescens*, has been recorded from woodland at Cloonee Lough.

The surrounding lands are generally a mixture of exposed sandstone rock, with extensive areas of wet or dry heath communities, with deeper peat areas of blanket bog. Here, Oblong-leaved Sundew (*Drosera intermedia*), Brown Beak-sedge (*Rhynchospora fusca*) and Large-flowered Butterwort (*Pinguicula grandiflora*) are amongst the many typical peatland species found. Some of the adjacent fields also contain scarce plants such as Chamomile (*Chamaemelum nobile*), Yellow Bartsia (*Parentucellia viscosa*) and Moonwort (*Botrychium lunaria*).

Uragh Wood supports a diverse fauna and is especially rich in invertebrates. Of particular interest is the presence of the Kerry Slug (*Geomalacus maculosus*), a species listed on Annex II of the E.U. Habitats Directive. Populations of Arctic Char (*Salvelinus alpinus*), a Red Data Book fish species, occur in both Inchiquin and Cloonee Loughs. A further Annex II species, Lesser Horseshoe Bat, occurs within the

site. A summer roost of more than 100 bats was discovered in a disused cottage at Glaninchiquin in 1999, making it a site of international importance. The building is currently in good condition. The surrounding landscape, which includes a conifer plantation, oak woodland, lake and improved grassland, provides good foraging habitat for the bats. The site also supports breeding Peregrine, a species that is listed on Annex I of the E.U. Birds Directive.

Much of the woodland within the site has now been fenced to prevent grazing by sheep and feral goats. Grazing by deer within the wood has not, however, been prevented and this still continues. The lakes within the site are vulnerable to eutrophication, e.g. through fertilizer run-off from the surrounding land. The scarce plant species found in the fields within the site are vulnerable to alterations in land use practices, such as agricultural intensification/improvement. The major threat to the site, however, is afforestation; some of the area has already been planted with Sitka Spruce (*Picea sitchensis*) and larch (*Larix* spp.).

Considering its relatively small size, this site contains a great diversity of species including many rarities. The site is of particular conservation significance because it contains good examples of five habitats and four species that are listed on the E.U. Habitats Directive. The site also supports breeding Peregrine, a species that is listed on Annex I of the E.U. Birds Directive, and is internationally important for its suite of hyper-oceanic woodland bryophytes.



**Site Name: Glanmore Bog SAC**

**Site Code: 001879**

Glanmore Bog is situated 3 km north-west of Hungry Hill, Co. Cork and 8 km south-west of the village of Lauragh, Co. Kerry. The site is underlain by Old Red Sandstone and rises in altitude from sea level near Cappul Bridge to 602 m at Eskatarriff at the north of the site.

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):

- |   |
|---|
| [3110] Oligotrophic Waters containing very few minerals               |
| [3260] Floating River Vegetation                                      |
| [4010] Wet Heath  |
| [6230] Species-rich <i>Nardus</i> Grassland*                          |
| [7130] Blanket Bogs (Active)*   |
| [1029] Freshwater Pearl Mussel ( <i>Margaritifera margaritifera</i> ) |
| [1421] Killarney Fern ( <i>Trichomanes speciosum</i> )                |

One of the most important habitat areas within Glanmore Bog SAC is a small hanging valley bog situated between the meanders of a mountain stream. Its vegetation is relatively uniform in character, dominated by Common Cottongrass (*Eriophorum angustifolium*), with Heather (*Calluna vulgaris*), Black Bog-rush (*Schoenus nigricans*) and an abundance of the moss *Racomitrium lanuginosum*. The bog is somewhat flushed and there are small, localized quaking areas which support Bogbean (*Menyanthes trifoliata*), Greater Tussock-sedge (*Carex paniculata*) and Star Sedge (*Carex echinata*). *Campylopus* moss species are also abundant and the rare *C. shawii*, an endemic species to Britain and Ireland, has been recorded from the site. Other areas of blanket bog occur along the ridge near Eskatarriff and in mosaic with heath and exposed rocks on the southern side of the Glanmore River, and these bogs tend to be more Heather-dominated.

Wet heath is the dominant habitat at the site and often occurs in association with upland grassland, exposed rock, bog and dry heath. The heath is dominated by Purple Moor-grass (*Molinia caerulea*), with ericoid species, such as Heather and Cross-leaved Heath (*Erica tetralix*), being relatively scarce. Other heath species present include Heath Bedstraw (*Galium saxatile*), Tormentil (*Potentilla erecta*), Mat-grass (*Nardus stricta*), Heath Rush (*Juncus squarrosus*) and Sharp-flowered Rush (*Juncus acutiflorus*).

Glenbeg Lough is an example of an oligotrophic (nutrient-poor) lake. The vegetation of this lake includes Quillwort (*Isoetes lacustris*), Shoreweed (*Littorella uniflora*), Water Lobelia (*Lobelia dortmanna*), Floating Bur-reed (*Sparganium angustifolium*) and Six-stamened Waterwort (*Elatine hexandra*). Other species recorded include the stonewort *Nitella flexilis*, the pondweeds *Potamogeton natans* and *P. perfoliatus*, and Common Reed (*Phragmites australis*). The steep slopes surrounding the lough support a mosaic of heath, upland grassland, siliceous rocks and gully streams. Gorse (*Ulex* sp.) occurs at the base near the lake edge, while St. Patrick's-cabbage (*Saxifraga spathularis*), Hard Fern (*Blechnum spicant*) and a range of relatively rare mosses, including such species as *Radula holtii*, *R. carringtonii*, *R. voluta*, *Acrobolus wilsonii*, *Daltonia splachnoides*, *Lejeunea hibernica*, *Antitrichia curtispindula*, *Dumorteria hirsuta* and *Leptodontium recurvifolium*, occur on the slopes.

Species-rich *Nardus* Grassland, a priority habitat on Annex I of the E.U. Habitats Directive, has been reported from the site according to the Irish Semi-natural Grasslands Survey, 2008.

The two main rivers within the site, the Ownagappul and the Glanmore, have examples of floating river vegetation, a habitat that is listed on Annex I of the E.U. Habitats Directive. The Ownagappul River runs from Glenbeg Lough to the sea at Cappul Bridge. This fast flowing, acidic river has a stone/gravel bottom and supports plant species typical of such oligotrophic waters, such as Bulbous Rush (*Juncus bulbosus*), Alternate Water-milfoil (*Myriophyllum alterniflorum*), Lesser Spearwort (*Ranunculus flammula*) and the moss *Fontinalis antipyretica*. The headwater streams of the Glanmore River occur in the eastern section of the site and this river system has pondweeds (*Potamogeton* spp.) and *Ranunculus* species.

Killarney Fern (*Trichomanes speciosum*), an Annex II species under the E.U. Habitats Directive, and a legally protected species under the Flora (Protection) Order, 1999, occurs within the site.

The site includes a population of Freshwater Pearl Mussel, a species listed on Annex II of the E.U. Habitats Directive.

Chough, a species listed under Annex I of the E.U. Birds Directive, is regularly found within the site and two pairs probably breed. Other birds noted are Dipper, Stonechat, Snipe and Raven.

Land use is confined to sheep grazing on the uplands and steeper slopes. Cattle graze some of the lower slopes at Glenbeg Lough and around Ardgroom. Fishing is carried out on the lake. Outside the site some afforestation has taken place, but little occurs within the catchment of Glenbeg Lough or the Ownagappul River.

Overall, this site is of considerable conservation significance, not least because of the presence of five habitats and two species which are listed on the E.U. Habitats Directive (two habitat types with priority status).



**Site Name: Old Domestic Building, Askive Wood SAC**

**Site Code: 002098**

Old Domestic Building, Askive Wood SAC consists of a small, two-storey, stone building situated within a wood approximately 3 km south-east of Sneem, Co. Kerry. It is a breeding site of the Lesser Horseshoe Bat.

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):

[1303] Lesser Horseshoe Bat ( <i>Rhinolophus hipposideros</i> )
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At this site the bats enter the building through spaces above three windows and roost in the upper portion of the building, hanging from the roof timbers. Since the discovery of this site in 1994, repair work has been carried out on the building to make it more secure for the bats.

The building is located at the northern end of Askive Wood, which is predominantly a coniferous plantation. There are, however, some patches of mixed deciduous woodland and scrub. A small lake, Askive Lough, forms part of the site. This woodland provides suitable foraging habitat within a small radius of the day roost site - this is of paramount importance to this bat species which does not fly in or across open areas.

In July 1996, more than 150 bats were counted at this site, making it a site of international importance. There are no immediate threats facing this site.

**Site Name: Kenmare River SAC**

**Site Code: 002158**

Kenmare River SAC in Co. Kerry, is a long, narrow, south-west facing bay. It is a deep, drowned glacial valley and the bedrock is mainly Old Red Sandstone which forms reefs along the middle of the bay throughout its length. Exposure to prevailing winds and swells at the mouth diminishes towards the head of the bay. Numerous islands and inlets along the length of the bay provide further areas of additional shelter in which a variety of habitats and unusual communities occur.

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):

- [1160] Large Shallow Inlets and Bays
- [1170] Reefs
- [1220] Perennial Vegetation of Stony Banks
- [1230] Vegetated Sea Cliffs
- [1330] Atlantic Salt Meadows
- [1410] Mediterranean Salt Meadows
- [2120] Marram Dunes (White Dunes)
- [2130] Fixed Dunes (Grey Dunes)\*
- [4030] Dry Heath
- [5130] Juniper Scrub
- [6130] Calaminarian Grassland
- [8330] Sea Caves
  
- [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)
- [1303] Lesser Horseshoe Bat (*Rhinolophus hipposideros*)
- [1355] Otter (*Lutra lutra*)
- [1365] Common (Harbour) Seal (*Phoca vitulina*)

Kenmare River SAC has a wide range of marine communities from exposed coast to ultra-sheltered areas. The site contains three marine habitats listed on Annex I of the E.U. Habitats Directive, namely reefs, large shallow bay and marine caves. There is also a very high number of rare and notable marine species present and some uncommon communities. Kenmare River is the only known site in Ireland for the Northern Sea-fan (*Swiftia pallida*) and is the only known area where this species and the Southern Sea-fan (*Eunicella verrucosa*) co-occur.

In the more exposed areas within Kenmare River SAC the sublittoral sediment is composed mainly of coarse shelly sand and gravel forming small dunes frequently with sparse bivalves, including *Lutraria* sp. In sheltered areas the muddy sand has communities characterised by burrowing megafauna. Some areas have the Norwegian Prawn (*Nephrops norvegicus*) and others the burrowing sea cucumber *Neopentadactyla mixta*. Kenmare River SAC is one of only four known locations in Ireland for the burrowing anemone *Pachycerianthus multiplicatus*. Communities characterised by burrowing brittlestars including the uncommon *Ophiopsila annulosa* also occur. Red calcareous free living algae generally termed 'maerl' (also known as 'coral') occur in the sheltered bays and at one site the rare burrowing brittlestar *Amphiura securigera* occurs.

Beaches in outer parts of Kenmare River SAC are composed of coarse, mobile sand and have sand hoppers in the high shore and polychaete worms in the low shore. More sheltered coves, sometimes backed by sand dunes, have sandhoppers in the upper shore, Lugworm (*Arenicola marina*) in the mid shore and Razor Shell (*Ensis arcuatus*) and the burrowing sea-urchin *Echinocardium cordatum* in the lower shore.

Midway along the south coast of Kenmare River SAC, a series of sea caves stretch back into the cliff. They typically support encrusting sponges, ascidians and bryozoans.

At the mouth of the bay, Kenmare River SAC contains very good examples of littoral, infralittoral and circalittoral reef communities that are typically found in extremely exposed areas. The characteristic shifts that occur in community composition with depth are very strong. Likewise, the shifts that occur with exposure are well represented along the length of the bay.

Perennial vegetation of stony banks is well represented at two locations within Kenmare River SAC - Pallas Harbour and Rossdohan Island. Characteristic species recorded here include Thrift (*Armeria maritima*), Common Scurvygrass (*Cochlearia officinalis*), Rock Samphire (*Crithmum maritimum*) and Sea Campion (*Silene vulgaris* subsp. *maritima*).

Within the Derrynane Bay area on the south side of the Iveragh Peninsula there are good examples of a number of habitats listed on Annex I of the E.U. Habitats Directive including dry heath, fixed dunes, Marram dunes, sea cliffs and salt meadows (both Atlantic and Mediterranean types). Of particular note within the dry heath habitat here is the occurrence of the rare Red Data Book species, Kerry Lily (*Simethis planifolia*). This species, which is protected under the Flora (Protection) Order, 2015, is unknown as a native in Britain, and in Ireland it is restricted to the Kenmare River SAC area. Another protected plant, Betony (*Stachys officinalis*), is found on rocky knolls in the site. Several other locally uncommon plant species add to the importance of this area, for example, Chaffweed (*Anagallis minima*), Crowberry (*Empetrum nigrum*), Wild Madder (*Rubia peregrina*) and Roseroot (*Rhodiola rosea*).

Salt meadows are well distributed in sheltered areas from Derrynane Bay to Kilmakilloge Harbour. Six of these have been surveyed in detail, and five are of the fringe type on peat. The saltmarsh at Derrynane is of the bay type and is found on mud on sand, and is associated with a sand dune system. Species which have been recorded from saltmarshes at this site include Sea Rush (*Juncus maritimus*), Sea-milkwort (*Glaux maritima*), oraches (*Atriplex* spp.), Thrift, Red Fescue (*Festuca rubra*), Sea Plantain (*Plantago maritima*), Common Saltmarsh-grass (*Puccinellia maritima*) and Sea Aster (*Aster tripolium*).

Heath also occurs along the extensive coastal strips within the site, from sea level to the higher slopes. Dry heath is especially well represented, and occurs in association with wet heath, coastal grassland and exposed rock. Widespread species of the heath habitat are Heather (*Calluna vulgaris*), Western Gorse (*Ulex gallii*) and Bell Heather (*Erica cinerea*). Also present are species such as Gorse (*Ulex europaeus*), Bracken (*Pteridium aquilinum*), Bilberry (*Vaccinium myrtillus*), Sheep's-bit (*Jasione montana*), Creeping Willow (*Salix repens*), Mat-grass (*Nardus stricta*) and Purple Moor-grass (*Molinia caerulea*). In places Juniper (*Juniperus communis*), Burnet Rose (*Rosa pimpinellifolia*) and the protected Kerry Lily and Betony are components of the heath. Juniper scrub is found in at least three locations within the site: near Cappul Bridge, Ardgroom and at two stations opposite Black Rock, south-east of Cod's Head.

Sea cliffs occur in places along the length of the site and are often well vegetated, supporting plant species typical of the habitat, including Thrift, Sea Campion, Rock Sea-spurrey (*Spergularia rupicola*), Rock Samphire and Sea Spleenwort (*Asplenium marinum*).

Excellent examples of Calaminarian grassland occur in association with old mine workings about Allihies. The habitat is particularly notable for the range of rare bryophytes that it supports.

Within this site fixed dune is largely confined to Derrynane where a small area occurs on the northern shores. The most common species include Red Fescue, Common Bird's-foot-trefoil (*Lotus corniculatus*), Smooth Meadow-grass (*Poa pratensis*), Lady's Bedstraw (*Galium verum*), Bulbous Buttercup (*Ranunculus bulbosus*) and Ribwort Plantain (*Plantago lanceolata*). The moss species *Homalothecium lutescens* can be locally abundant, while *Rhytidiadelphus squarrosus* and *Hypnum cupressiforme* are also found.

A reasonably extensive area of white dune dominated by Marram (*Ammophila arenaria*) occurs at the mouth of Derrynane bay. Species such as Sea Bindweed (*Calystegia soldanella*), Ribwort Plantain, Yorkshire-fog (*Holcus lanatus*), Red Fescue, Sea-holly (*Eryngium maritimum*), Portland Spurge (*Euphorbia portlandica*), Kidney Vetch (*Anthyllis vulneraria*) and Common Ragwort (*Senecio jacobaea*) are also found here.

Kenmare River SAC holds an important population of Common Seal (maximum count of 391 in the all-Ireland survey of 2003). The seals frequent rocky islets near

Sneem, Templenoe and Castle Cove, as well as Brennel Island, Illaunsillagh, Kilmackilloge Harbour and Ballycrovane Harbour. Otter also uses the site. Both Common Seal and Otter are listed on Annex II of the E.U. Habitats Directive. Two internationally important roosts for Lesser Horseshoe Bat, another Annex II species, are included in the site: approximately 100 bats were recorded hibernating in a souterrain near Dunkerron in 2001, while over 100 bats have been counted in recent summers in a two-storey cottage near Killaha. In damp slacks amongst the sand dunes at Derrynane, the rare Narrow-Mouthed Whorl Snail (*Vertigo angustior*), also an Annex II species, has been found. The nationally endangered and protected Red Data Book species, Natterjack Toad, has also been recorded from this area and, following a re-introduction programme, has re-established itself at the site.

Common/Arctic Tern (95+ pairs in 2008) have been recorded breeding on rocky islands in Derrynane Bay and on other islands within the site including Eyerics Island, Spanish Island and Brennel Island. In 1995 two pairs of the scarce Little Tern bred, and Sandwich Tern occasionally breed.

Impacts arising from aquaculture, fishing, dumping of wastes and water pollution are the principal threats to the nature conservation interests of Kenmare River. There are several resorts for water sports and a number of popular beaches within this large coastal site and impacts associated with such recreational activities may also pose a threat. Bait digging is also a potential threat in some areas. Housing developments within the areas of dry heath present another possible threat to the integrity of the site. The seals and bats may be vulnerable to disturbance. Grazing at Derrynane is managed for the conservation of the dune habitats and the rare species they contain.

Kenmare River SAC contains an exceptional complement of marine and terrestrial habitats, many of which are listed on Annex I of the E.U. Habitats Directive, as well as four species that are listed on Annex II of this Directive. The presence of populations of rare Red Data Book species, in particular of Kerry Lily, together with the ornithological interest of the area, adds to the conservation significance of the site.



**Site Name: Blackwater River (Kerry) SAC**

**Site Code: 002173**

This large site is situated on the south-western slopes of the Macgillycuddy Reeks in Co. Kerry and overlooks the Kenmare River inlet. The underlying geology of the area is Old Red Sandstone. The site comprises most of the catchment of the Blackwater River system. Two other main rivers, the Kealduff and Derreendarragh, link into the Blackwater and these rivers are characterised by having numerous tributary streams. The rivers rise at altitudes of up to 600 m and flow quite rapidly over their journey of about 10 km to the sea. Water quality is generally good.

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):

- [4030] Dry Heath
- [1024] Kerry Slug (*Geomalacus maculosus*)
- [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1303] Lesser Horseshoe Bat (*Rhinolophus hipposideros*)
- [1355] Otter (*Lutra lutra*)

The most frequent habitats within the site are upland grassland and various types of heaths. The grassland is improved to varying extents, especially in the lower parts of the catchment. Common plant species of the less improved grassland include Mat-grass (*Nardus stricta*), Purple Moor-grass (*Molinia caerulea*) and Common Bent (*Agrostis capillaris*). On the more peaty, acidic soils, the grassland grades into dry and wet heaths. Typical plant species of the dry heath include Western Gorse (*Ulex gallii*), Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and Bilberry (*Vaccinium myrtillus*). The wetter heath areas have a well developed moss layer, with bog mosses (*Sphagnum* spp.) being frequent. Other plants of the wet heath include Cross-leaved Heath (*Erica tetralix*), Purple Moor-grass, Deergrass (*Scirpus cespitosus*), Carnation Sedge (*Carex panicea*), Heath Bedstraw (*Galium saxatile*) and Tormentil (*Potentilla erecta*). Where the peat is deeper blanket bog has developed, though much of this is now cut away. The bog vegetation is typically dominated by Heather, Purple Moor-grass and bog mosses.

Deciduous woodland occurs along the upper stretches of the Kealduff River and also along the lower part of the Blackwater River, with smaller patches elsewhere within the site. The principal tree species are Downy Birch (*Betula pubescens*), willows (*Salix* spp.), Hazel (*Corylus avellana*) and Sessile Oak (*Quercus petraea*), the latter especially

along the Blackwater. A scarce plant species which occurs along the Blackwater River is Ivy-leaved Bellflower (*Wahlenbergia hederacea*).

The rivers within the site have important populations of the Freshwater Pearl Mussel. The Pearl Mussel is a species of high conservation importance due to large declines across its range. This has been due largely to a deterioration in water quality, but also to illegal pearl fishing. The Kerry Slug, another species which is listed on Annex II of the E.U. Habitats Directive, is also found within this site where suitable habitat exists.

The rivers have good populations of Brown Trout, and provide spawning grounds for Sea Trout and Salmon. Overall, the site is considered of high importance for the conservation of the Salmon.

Otter occurs throughout the site. Another important species which occurs within the site is the Lesser Horseshoe Bat. A derelict stone building at Derreenafoyle is used as a nursery site by the bat and in July 1996, approximately 150 bats were counted in the roost site, which makes it of international importance. The site is close to woodland and scrub which provide both suitable foraging habitat and shelter for bats to commute between this site and the winter hibernation site(s).

The site is visited at times by a number of bird species of conservation importance, notably Peregrine Falcon, Merlin, Hen Harrier and Chough. All of these species are listed on Annex I of the E.U. Birds Directive.

The main land uses within the site are agriculture (mostly grazing) and forestry. Some of the upland grassland and heath areas have been over-grazed in the past, while the intensity of afforestation within the catchment threatens water quality.

This site is of high conservation value owing to the occurrence of a number of fauna species which are listed on Annex II of the E.U. Habitats Directive. The site also supports good examples of dry heath, a habitat that is listed on Annex I of this Directive.

**Site Name: Drongawn Lough SAC**

**Site Code: 002187**

Drongawn Lough is situated on the northern side of the Kenmare River inlet in Co. Kerry, approximately 6 km to the east of Sneem. It is a moderate-sized saline lake lagoon which is separated from a tidal bay by a very narrow, silled inlet. Tidal exchange is restricted by the narrow inlet. The lagoon is deep in places, with a depth of 18 m recorded. Most of the bed of the lake appears to be solid rock or stone of various sizes. In sheltered bays, the substrate consists largely of peaty silt. Salinity in October 1996 measured 28-32 ppt although values as low as 10 ppt were recorded near freshwater inflows.

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):

[1150] Coastal Lagoons*
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Algal communities within Drongawn Lough are well developed. Species include the red algae *Polyides rotundus*, *Chondrus crispus*, *Codium fragile* and *Phyllophora pseudoceranooides*, the brown alga *Fucus serratus*, and the green algae *Chaetomorpha linum* and *Cladophora* spp. *Chaetomorpha linum* is a typical green lagoonal alga. Extensive beds of Spiral Tasselweed (*Ruppia cirrhosa*) occur.

The aquatic fauna of the lagoon is rich with 69 taxa recorded in a survey in 1996. Of these, three species are listed as lagoonal specialists in Britain (*Palaemonetes varians*, *Hydrobia ventrosa* and *Cerastoderma glaucum*), and one is a proposed lagoonal specialist in Ireland (*Neomysis integer*). Three notable species of crustaceans which are known from few other sites in Ireland have been recorded: *Jaera forsmanni*, *Erichthonius difformis* and *Lembos longipes*.

The lagoon is fringed in parts by salt tolerant vegetation, with species such as Sea Rush (*Juncus maritimus*), Thrift (*Armeria maritima*), Sea Plantain (*Plantago maritima*) and Sea Arrowgrass (*Triglochin maritima*) occurring. Other parts of the shoreline are bare. A study of the beetles (Order Coleoptera) along the margins of the lagoon resulted in six species of carabid (ground beetles) and ten species of staphylinid. One species, *Stenus lustrator*, is rare in Ireland and appears to be local in Europe.

A very small brackish type lake, Drongawn Lough Lower, occurs east of the main lagoon. The remainder of the land in the site is a mix of heath, blanket bog and wet grassland. Several small areas of flush vegetation occur around the lagoon. Some of the wet grassland and heath is grazed and, in the eastern part of the site, partly

improved. Land use in the vicinity is of low intensity and there are no known significant threats to the site.

The lagoon habitat within the site is an excellent example of a deep, silled, polyhaline saline lake lagoon in almost pristine condition. The fauna is rich, with several lagoonal specialists and apparently rare species. While no very rare plants have been recorded in the lagoon, the diversity of algae and the abundance of *Ruppia cirrhosa* are notable. The site is considered to be of high conservation importance.



**Site Name: Caha Mountains SAC**

**Site Code: 000093**

The Caha Mountains consist of Old Red Sandstone and form part of the dramatic backbone of the Beara Peninsula, between Turner's Rock (on the Glengarriff-Kenmare Road) and the Healy Pass. Within the site there are a series of peaks and ridges up to 630 m high, radiating out from Caha Mountain itself. The southerly directed ridge forms a broad boggy plateau studded with small lakes - at about 420 m. The area also features glacial valleys and corries, such as the one within which Barley Lake occurs. Generally, the terrain is rocky with many of the slopes featuring rock faces interspersed with grassy shelves. Substantial cliffs are present in the north-western half of the site. The site is of high scientific interest due to the presence of a number of habitats listed on Annex I of the E.U. Habitats Directive, including one priority habitat.

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):

- [3110] Oligotrophic Waters containing very few minerals
- [3160] Dystrophic Lakes
- [4010] Wet Heath
- [4030] Dry Heath
- [4060] Alpine and Subalpine Heaths
- [6230] Species-rich *Nardus* Grassland\*
- [7130] Blanket Bogs (Active)\*
- [8110] Siliceous Scree
- [8210] Calcareous Rocky Slopes
- [8220] Siliceous Rocky Slopes
- [1024] Kerry Slug (*Geomalacus maculosus*)
- [1421] Killarney Fern (*Trichomanes speciosum*)

The best examples of blanket bog in the site occur on the Glenlough plateau and in the saddle to the east of Knockastumpa. Knockastumpa bog has been described as one of the best saddle bogs in the country, due to its level of intactness, deep peat and wetness, little evidence of erosion, diversity of habitats and diverse flora. Glenlough Bog occupies an undulating plateau sprinkled with small lakes. The terrain is rocky but there are many patches of shallow, flushed peat and occasional ombrotrophic domes on the more even slopes. There are some very wet areas ponded against ridges and on these, scraws have developed. At the east of this area

of bog some of the lakes are surrounded by a *Sphagnum* (bog moss) carpet where the shelter allows it. The bog areas support typical blanket bog vegetation, including the three Sundew species (*Drosera rotundifolia*, *D. anglica* and *D. intermedia*) and Bog Sedge (*Carex limosa*), with several noteworthy mosses (*Sphagnum austinii*, *S. molle*, *S. magellanicum* and *Campylopus shawii*).

Plant species of alpine heath, and the rocky slopes and screes, are associated with the summits and include Heather (*Calluna vulgaris*), Roseroot (*Rhodiola rosea*), Hard Fern (*Blechnum spicant*), Fir Clubmoss (*Huperzia selago*), Brittle Bladder-fern (*Cystopteris fragilis*), Bell Heather (*Erica cinerea*), Crowberry (*Empetrum nigrum*), St. Patrick's-cabbage (*Saxifraga spathularis*), Heath Bedstraw (*Galium saxatile*), Dwarf Willow (*Salix herbacea*) and Viviparous Fescue (*Festuca vivipara*). Of particular note in these habitats are the following plants, which are considered rare or restricted in their distribution: Recurved Sandwort (*Minuartia recurva*), Wilson's Filmy-fern (*Hymenophyllum wilsonii*), Green Spleenwort (*Asplenium viride*), and the moss *Cyclodictyon laetevirens*.

Wet heath is frequent at the site and occurs as a mosaic, often in association with blanket bog and upland grassland. The heath is often wet in character and has Cross-leaved Heath (*Erica tetralix*). Heather, Sedges (*Carex* spp.), Rushes (*Juncus* spp.), Milkwort (*Polygala serpyllifolia*) and Tormentil (*Potentilla erecta*) are also found.

The upland grassland is dominated by Purple Moor-grass (*Molinia caerulea*) but other grasses present include Mat Grass (*Nardus stricta*), *Festuca* spp. and *Agrostis* spp.

Lakes are frequent throughout the site and especially on the Glenlough Mountain plateau. Most of the small lakes which occur within the bog and wet heath habitats are dystrophic in character. These have peat bottoms and often peat-stained water. Plant species are few, with White-beaked Sedge (*Rhynchospora alba*), Common Cottongrass (*Eriophorum angustifolium*), Bogbean (*Menyanthes trifoliata*) and bog mosses being the main species. The larger lakes, including Barley Lake, Glenkeel Lough, Lough Shanoge and Lough Dereenadarodia are typical oligotrophic systems. Plant species found in these lakes include Shoreweed (*Littorella uniflora*), Quillwort (*Isoetes lacustris*), Bog Pondweed (*Potamogeton polygonifolius*), and Branched Bur-reed (*Sparganium erectum*).

The site contains Killarney Fern (*Trichomanes speciosum*), a species listed on Annex II of the E.U. Habitats Directive. It also supports the only known population of Recurved Sandwort within Ireland and Britain. Both of these species are listed in the Irish Red Data Book and are legally protected under the Flora (Protection) Order, 2015.

Kerry Slug (*Geomalacus maculosus*) and Otter, species listed on Annex II of the E.U. Habitats Directive, are found within the site. Other important species present within the site include the Irish Hare, Common Lizard and Frog. Brown Trout occurs within some of the lakes of the plateau. These lakes were originally stocked by Lord Bantry in the 19<sup>th</sup> century but the populations have naturally maintained themselves.

A number of bird species listed in Annex I of the E.U. Birds Directive occur: Peregrine Falcon, Hen Harrier and Chough. The Peregrine breeds within the site, while the others probably breed. All these species are listed in the Irish Red Data Book, as is another bird found within the site, the migratory Ring Ouzel.

The main land use within the site is sheep grazing, with over-grazing noticeable on many of the slopes, especially in the western edge of the site. Other land uses are generally small-scale and localised in nature. They include angling, water abstraction, drainage and peat extraction.

This large site is of outstanding scientific interest due to the diverse range of good quality habitats which occur, including blanket bog, heaths, screes, rocky slopes, lakes and grasslands over a range of altitudes. Many rare species of plant and animal occur here, a number of which are legally protected at national and European level.



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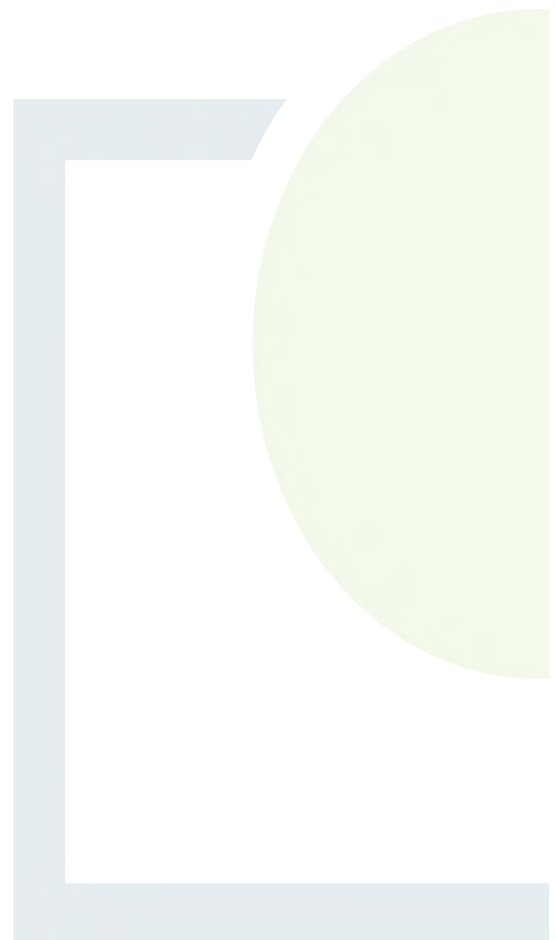


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## **APPENDIX 2**

Construction and  
Environmental Management  
Plan (CEMP)



# SOUTH AND WEST KERRY LANDFILLS

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## CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN (CEMP) FOR THE PROPOSED REMEDIATION OF THE SNEEM HISTORICAL LANDFILL

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Prepared for: Kerry County Council



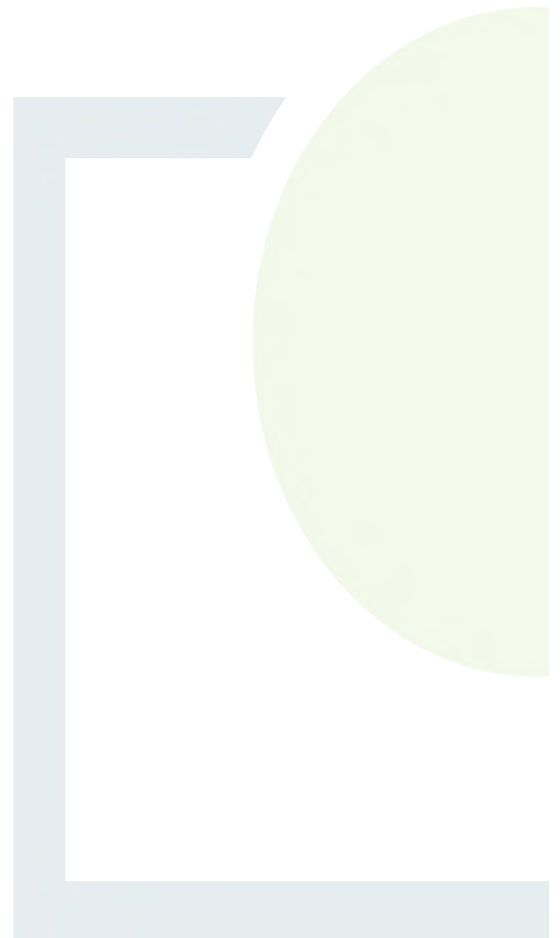
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## CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN (CEMP) FOR THE PROPOSED REMEDIATION OF THE SNEEM HISTORICAL LANDFILL

### REVISION CONTROL TABLE, CLIENT, KEYWORDS AND ABSTRACT User is responsible for Checking the Revision Status of This Document

Rev. No.	Description of Changes	Prepared by:	Checked by:	Approved by:	Date:
1	Issue information for	DM/BF/AMW	JK/CJC	BG	16/06/2022

**Client:** Kerry County Council

**Keywords:** CEMP, Construction and Environmental Management Plan, Kerry, Sneem, Section 177AE Application, Landfill, Remediation, Historical, Unauthorised, Health and Safety.

**Abstract:** This document comprises the Construction and Environmental Management Plan (CEMP) for the Remediation of the Historic Landfill at Sneem, Co. Kerry, the purpose of which is to set out the key construction and environmental management issues associated with the proposed works. This plan will be developed further at the construction stage and on the appointment of the Contractor to the project.

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## 1. INTRODUCTION

This document is the Construction and Environmental Management Plan (CEMP) for the proposed Sneem historical landfill remediation and has been prepared by Fehily Timoney and Company (FT) on behalf of Kerry County Council (KCC).

This document sets out the construction and environmental management concerns associated with the proposed works, to ensure that during construction, the environment is protected and impacts on the environment are minimised. This CEMP will be adopted by the Contractor and supplemented where necessary for construction purposes. The plan will be added to at a later stage prior to the commencement of the construction phase having regard to ultimate planning conditions imposed by An Bord Pleanála and final construction plans.

The proposed project is to remediate a historic landfill site.

For drawings referenced in this document refer to Appendix 4 in Tier 3 Assessment.

### 1.1 General Introduction and Purpose

This CEMP sets out the key environmental management issues associated with the proposed remediation works, to ensure that during the construction and operation of the development, the impacts on the environment are minimised. This CEMP will form the basis for the appointed Contractor's Construction and Environmental Management Plan.

### 1.2 The Client

Fehily Timoney & Company (FT) was commissioned by Kerry County Council to provide consultancy services in respect of the proposed Sneem historical landfill remediation.

### 1.3 The Site

Sneem historical landfill site is in an area of open land located immediately adjacent to an area of bogland. The site is privately owned and is located approximately 1km north of Sneem village in the townland of Maulagallane and bordering Scrahannagaur townland.

Available evidence suggests that the site closed, and landfilling ceased in 1996. The date of the start of landfilling activities is unknown.

Since its closure the site reverted to private ownership, with the lands presently used for agriculture. The site has been capped with soil cover with no other remediation works have been carried out.



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## 1.4 Overview of Proposed Project

The proposed development will include:

- *Invasive Species Management.*
- *Development of a temporary site compound outside of the engineered capping area footprint.*
- *Site clearance.*
- *Grading/profiling of existing site area.*
- *Installation of engineered landfill capping system.*
- *Landscaping.*
- *Ongoing environmental monitoring.*
- *Ongoing Management of Landfill Gas.*
- *Ongoing maintenance of engineered cap on-site.*
- *Ongoing maintenance of drainage systems on-site.*

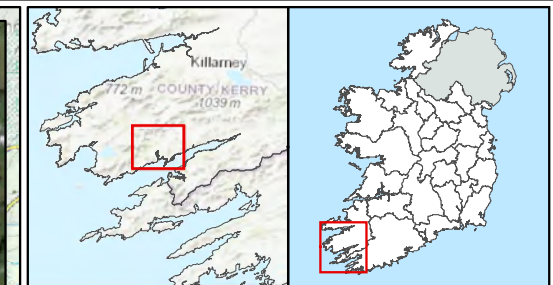


## 2. EXISTING ENVIRONMENT

The historical landfill site is in the townland of Maulagallane and bordering Scrahannagaur townland. The site is located approximately 1km north of Sneem village. located on the south-western edge of Tralee town. Sneem village is located on the 'Ring of Kerry' route on the N70 road, in south-west Kerry and the village is split by the River Sneem.

The site is immediately bounded by the Ardsheelhane River along its southern boundary. The site is bound to the north by a local road and open field to the east and west. There are no dwellings located within the site boundary or immediately adjacent to the site. The nearest dwelling is located approximately 0.6km north-northeast of the site.

The specific site location is indicated in Figure 2-2 overleaf.



 Site Boundary

<b>TITLE:</b>	Site Location
<b>PROJECT:</b>	Environmental Risk Assessment for Sneem Landfill, Co. Kerry
<b>FIGURE NO:</b>	2.1
<b>CLIENT:</b>	Kerry County Council
<b>SCALE:</b>	1:50000
<b>REVISION:</b>	0
<b>DATE:</b>	29/10/2019
<b>PAGE SIZE:</b>	A3





## 3. PROPOSED PROJECT DESCRIPTION

### 3.1 Overview of the Site

The existing site is a green field area covering an area of approximately 0.36 ha. The site is currently used for grazing cattle. The site is bounded by farmlands to the north-east, a local road to the west, woodland to the south and the River Ardsheelhane to the south-east.

The site is only accessible from the local road to the west of the site.

Overhead power lines are present along the local road to the west of the site adjacent to the main road.

The site currently:

- Has a shallow soil cap with an established grass and shrub cover.
- Is drained by drains on the northern and southern boundary of the site which discharge to the River Ardsheelhane to the south-east of the site.
- Is secured by a retaining wall and stock proof fencing on the western boundary adjacent to the main road.
- Is secured by a stockproof boundary to the north removed from the site.
- Has no boundary ditch along the river Ardsheelhane boundary.

An area of Japanese knotweed (*Fallopia japonica*) is present at the western corner of the site.

### 3.2 Construction Period

The construction period for the proposed development has been estimated to be in the region of 4 to 6 months.

### 3.3 Construction Phase

The remediation works will include:

- Invasive Species Management.
- Development of a temporary site compound outside of the engineered capping area footprint.
- Site clearance.
- Grading/profiling of existing site area.
- Installation of engineered landfill capping system.
- Landscaping.



### 3.3.1 Invasive Species Management

An Invasive Species Management and Treatment Plan will be developed to manage invasive species in advance of the construction works.

The management plan will include but not be limited to applications of herbicide using foliar sprays over growing seasons as may be required. Respective areas where invasive species are present will be isolated with fencing and will have appropriate signage. There will be controls established during the advance treatment works and during construction to prevent cross contamination by uncontrolled movement of soils. Haulage routes will also be clearly defined and policed. Vehicle wash stations and personnel wash stations will be provided and regular toolbox talks will be held during the advance works and construction works.

Refer to Drawing P1788-0100-0005 for locations of invasive species.

### 3.3.2 Temporary Site Compound and Office Areas

The temporary site compound shall comprise a materials storage area, site offices and a parking area. A material storage compound, a parking area and site offices in the form of portacabins and site canteen/welfare facilities (Contractor and Employers Representatives) will be provided to the north of the site outside the footprint of the landfill area. The temporary site compound shall be founded on a small area that will be levelled, compacted and overlaid with gravel surfacing overlying geogrid and geotextile. These materials will be removed from site following completion of the works.

Wastewater from the welfare facilities will be stored in a temporary above ground tank prior to disposal at a licensed wastewater treatment plant.

Generators will be used on-site for power supply during the temporary works. Water will be provided via water tankers.

The Contractor will be required to clean vehicle wheels as required prior to vehicles leaving the site to prevent soils contaminating the adjacent local road.

Refer to Drawing P1788-0100-0006 for location of site compound.

### 3.3.3 Site Clearance

Overgrown vegetation on the southern and western boundaries of the site will be cut back and cultivated into the existing cap using a rotovator or similar prior to reprofiling of the site.

Any vegetation and contaminated soil left following completion of the invasive species vegetation treatments will be dispatched to an authorized waste facility for disposal using bespoke method statements to prevent cross contamination during soil and or vegetation movements.

Refer to Drawing P1788-0100-0005.



### 3.3.4 Grading/Profiling of Existing Area

The existing waste body was covered following cessation of waste filling, with an intermediate cap comprising of soil materials circa 300 mm to 500 mm thick.

The existing finished surface will require re-profiling to facilitate:

- Surface and sub-surface drainage.
- Safe execution of the site remediation works.
- Long term slope stability of side slopes.
- Safe access for maintenance of the cap.

Re-profiling will principally involve the (shallow) cutting of material at the top of side slopes and at local high spots. These “cut” materials, estimated to be approximately 10 m<sup>3</sup>, will be used as “fill” in local depressions. All cut and fill works will be carried out within the site boundary.

Average site slopes will be profiled to a slope of 1:3. Site slopes will not be allowed to exceed 1:2.5. It is proposed to retain where possible the existing profiles, in particular those less than or equal to 1:2.5.

Thereafter imported granular “dust” material 50mm to 100mm thick will be used provide a formation for the engineered cap.

The re-profiled surface will provide the foundation for the engineered landfill cap.

Refer to Drawings P1788-0100-0010 & 0011 for proposed re-profiled surface details.

### 3.3.5 Installation of Engineered Landfill Cap

The engineered landfill cap “barrier” system will:

- Cover an area of approximately 3,000 m<sup>2</sup>.
- Isolate the waste body from rainfall inputs which contribute to produce leachate. This will protect underlying groundwater and adjacent surface waters.
- Minimise the potential for uncontrolled landfill gas migration to the atmosphere or adjacent lands.
- Provide a physical barrier between the finished surface and buried wastes.
- Facilitate controlled discharge of surface water runoff and sub surface drainage flows into the receiving surface waters.



The cap components are described below under the following headings:

- Vertical wells.
- Below liner landfill gas collection system.
- A LLDPE barrier to isolate the waste body from rainfall inputs and prevent uncontrolled fugitive gas emissions from the waste body.
- Over liner services.
- Over liner gas management system.
- Landfill gas compound.
- A subsurface over liner drainage system discharging to a surface drainage system.
- Surface drainage system.
- Geogrids on slopes steeper than 1:3 to support soil on side slopes.
- A subsoil layer average thickness 800 mm.
- A topsoil layer average thickness 200 mm.

#### *Vertical Wells*

Vertical wells shall be installed within the waste body prior to reprofiling works. Well arisings will be placed in dedicated low spots on site prior to re-profiling. Well arisings will be covered at the end of each working day to minimise odour nuisance. Wells will be connected to over liner gas collection pipework to the gas management compound.

Well diameter will be greater than 450 mm and will comprise a slotted HDPE pipe with a gravel surround. Well depth will typically be circa. 5.0 m.

Refer to Drawing P1788-0200-0002 for over liner landfill gas collection layout.

#### *Passive Below Liner Landfill Gas Collection System*

Currently any landfill gas produced vents gas to atmosphere via diffuse surface emissions. Once the LLDPE barrier is installed this preferential pathway to atmosphere will be isolated.

Below the LLDPE barrier a gas collection geocomposite and pipework system will be constructed to collect and direct landfill gas to the proposed gas management compound to manage landfill gas via passive venting. The proposed gas compound will be located in the north-western end of the site and will have an area of approximately 200 m<sup>2</sup>.

The below liner gas collection geocomposite will be a cusped synthetic product or similar approved that will be rolled out above the granular “dust” material overlying the re-profiled intermediate cap which overlies the waste. The gas collection geocomposite forms a “cavity” to intercept gas emissions from the underlying body. Gas collection pipework will be slotted and laid in gravel surround below the gas collection geocomposite and it will facilitate: collection of landfill gas; and soakage, if required, of condensate or other as may collect in pipework.



Landfill gas collected in the under-liner gas system will be transferred via solid HDPE pipes and terminate in the landfill gas management compound.

Refer to Drawing P1788-0200-0001 for under liner landfill gas collection layout.

#### *LLDPE Barrier*

The LLDPE barrier will be a 1.0 mm thick “plastic” sheet that is impermeable to both water and gas. It prevents gas escaping into the overlying soils and stops water from rainfall entering the underlying waste body.

The LLDPE sheets will be welded at joints and will terminate in a vertical cut-off trench circa 3.0 m deep along the perimeter boundary of the site. If waste is exposed during excavation, it will be relocated to low spots on site and covered. No exposed waste will be left at the end of each working day. In the event that leachate is present in the trench it will be removed to a temporary leachate holding tank on site and thereafter transported to a licenced wastewater treatment plant for disposal.

#### *Over-liner Services.*

Over liner services comprising duct and water mains will be provided within the cap to support afteruse activities.

#### *Over-liner Gas Management System*

Over-liner HDPE solid pipework will convey gas from vertical wells to the gas management compound.

Connections to wells will be via below ground valve chambers and/or above ground manifold boxed less than 1.0 m in height. All above ground structures will be fenced using stock proof fencing or similar approved.

#### *Landfill Gas Compound*

The under and over liner gas pipe systems will terminate in the gas management compound and exhaust landfill gas to atmosphere.

Landfill gas quality will change over time. Subject to calorific value landfill gas will be either vented to atmosphere via vent stacks or oxidised prior to venting.

Oxidation will be carried out using a biological filter recessed into the cap to facilitate passive venting to atmosphere.

The biological filter and vent will be located in the landfill gas compound. The compound will be circa. 10.0 m wide by 20.0 m long and contained within stock proof fencing.

The vent will comprise a vertical pipe 300 mm diameter with a cowl and/or carbon filter located at a height of not less than 3.0 m above surrounding ground level.



The compound will also have provision for temporary plant to accommodate gas pumping trials, or oxidation by high temperature flaring as may be required.

Refer to Drawing P1788-0200-0002 for gas compound location.

#### *Subsurface Drainage Over Liner Drainage System*

The over liner sub surface drainage collection geocomposite will be a cusped synthetic product or similar approved that will be rolled out above the LLDPE barrier. It will form a “cavity” to intercept rainfall inputs that may percolate into the cap. Subsurface drainage flows from the drainage geocomposite will be transferred via a supporting pipework system to the surface drainage system at the perimeter of the cap and will ultimately be discharged to one of the 2 no. surface drainage outfalls. The proposed outfalls are located in the eastern end of the site discharging into the existing watercourse.

Refer to Drawing P1788-1300-0001 for proposed surface and subsurface drainage.

#### *Surface Drainage System*

The topsoil will have shallow grassed surface drainage swales that will direct surface water runoff to the receiving watercourses. The swales shall be constructed at grades between 1:50 and 1:100 to mitigate the risk of erosion.

The swale profile will be shaped to allow mowing and trafficking by farm vehicles.

Refer to Drawing P1788-1300-0001 for proposed surface and subsurface drainage.

#### *Geogrid on Side Slopes*

Following installation of the sub-surface drainage geocomposite, a geogrid will be installed to support placement of subsoil materials on steep side slopes (1V:2.5H side slope < 1V:3H). The geogrid is designed to prevent translational slope failures, (i.e. it will stop soil slipping off the LLDPE liner).

Refer to Drawing P1788-0100-0009 for proposed geogrid layout.

#### *Subsoil Layer*

Suitably sourced subsoils will be imported to the site and placed atop of the sub surface drainage geocomposite and /or geogrid on side slopes. The subsoil layer will generally be 800mm deep.

The purpose of the subsoil layer is to protect the synthetic geocomposite materials, under lying pipework and to support landscaping.



### *Topsoil Layer*

Suitable sourced topsoil will be placed atop the subsoil. The topsoil will have no stones greater than 50 mm diameter. Stones greater than 50 mm will be removed by a proprietary stone picker or similar prior to grass seeding (pasture).

The topsoil layer will be 200 mm deep.

Stones will be reused on site in site roads or as fill to sub surface drains.

#### 3.3.6 Stock Proof Fencing

Clearance of shrub on the perimeter will result in damage to existing stock proof fencing. Following placement of the cap a replacement perimeter stock proof fence 1.3 m high will be installed on the perimeter of the site.

A gate will be provided to facilitate access to the adjacent field to the north.

An access gate will be provided to off the main road. Redundant fences will be transported and disposed/recovered at a licenced facility.

Refer to Drawing P1788-0100-0006 for fence location and details.

#### 3.3.7 Temporary Works

Refer to Drawing P1788-0100-0006 for temporary works locations.

##### *3.3.7.1 Leachate Management*

Storage tanks not less than 20 m<sup>3</sup> will be provided for the safe storage of any leachate arisings during the construction works. Leachate arising during construction works will be disposed at a licensed wastewater treatment plant.

##### *3.3.7.2 Wheel Cleaning*

During construction the Contractor will be required to prevent soil arisings from earthworks being deposited on the adjacent local road.

The Contractor carrying out the works will be required to provide a temporary rumble strips, wheel bath or similar approved to prevent soil being carried out onto the adjacent road. In addition, the Contractor will be required to provide backup provision by way of a road sweeper to clean up fines.

##### *3.3.7.3 Daily Cover of Exposed Waste*

In the unlikely event that waste is exposed it will be covered with soil or similar approved at the close of each working day.



#### 3.3.7.4 *Suspended Solids Management*

Suspended solids will be prevented from entering watercourses by a combination of silt fences and suspended solids management ponds of dimensions not less than 5m x 10m.

Temporary silt fences will be installed parallel and offset from watercourses, around soil stockpiles and or around the toe of steep side slopes.

Temporary settlement ponds will be installed at all construction outfalls into receiving watercourses. Suspended solids ponds will be designed to ensure emission limit values do not exceed 30 mg/l.

Refer to Drawing P1788-0100-0006 for location of proposed suspended solids management systems.

#### 3.3.7.5 *Odour Management*

Odour management is not expected to be an issue as the waste is older than 20 years and the works have been designed to reduce the risk of exposing waste.

If waste is exposed waste will be covered up at the end of each working day as described in 3.3.7.3.

#### 3.3.7.6 *Traffic Management*

The Contractor will be required to implement a traffic management plan to manage safe access and egress of construction vehicles from the site.

Refer to Drawing P1788-0100-0007 for traffic management details.

#### 3.3.8 Landfill Gas/Leachate Environmental Monitoring Infrastructure

Three new perimeter monitoring wells will be installed external to the waste body to monitor for landfill gas migration.

Arisings from boreholes will be disposed of on site. In the event that waste is found to be present it will be disposed on site below the LLDPE barrier and gas collection geocomposite.

Monitoring wells will have a chamber and a cover atop the wells at the same elevation as the surrounding ground. The wells will have monitoring ports to support monitoring of landfill gas quality and or groundwater quality as may be required by the Environmental Protection Agency (EPA).

The construction works will make provision for additional wells within the waste body and ports will be installed at wells heads or manifolds to support monitoring of gas quality and pressure.

Two existing wells as are present within the waste footprint will be retained and incorporated into the cap to support future environmental monitoring as may be required by the EPA.

Refer to Drawing P1788-0100-0005 for monitoring locations.



### 3.3.9 Grass Cover/Landscaping for Pasture

Post capping and placement of the subsoils and topsoil layers the site will be landscaped using a proprietary grass cover mix suited for pasture.

Grass cover in addition to providing fodder for stock will prevent erosion of the soils and will provide a final appearance similar to surrounding land use.

## 3.4 Operational Maintenance Post Construction Phase

The Operational/Post Construction works will include:

- *Ongoing environmental monitoring.*
- *Ongoing Management of Landfill Gas.*
- *Ongoing maintenance of engineered cap on-site.*
- *Ongoing maintenance of surface and sub-surface drainage systems on-site.*

### *Environmental Monitoring*

Monitoring staff will be required to access installed infrastructure (wells, the landfill gas compound and surface water outfalls) to take samples and/or monitor gas quality during the aftercare period post construction.

### *Management of Landfill Gas*

At present venting to atmosphere of landfill gas and oxidation of methane occurs naturally via the existing soil cap and monitoring is carried out at insitu wells on and off site. Once a LLDPE barrier is installed landfill gas will be directed via gas pipe systems to the gas compound for landfill gas management.

There will be an on-going requirement to:

- Maintain landfill gas infrastructure.
- Monitor landfill gas quality within and external to the facility at dedicated monitoring locations.
- Reinstate/replace biological filter media.

### *Maintenance of Cap*

The grass cover will require maintenance. This may be provided either by grazing and or by mowing. Fertiliser supplements may also be required periodically during the aftercare period subject to stocking density.

### *Maintenance of Drainage*

Surface water swales will be grazed and or mowed during the aftercare period.



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In the event that settlement or erosion compromises swale integrity cracks may need to be closed. This is normally carried out by running a tractor and or tracked vehicle atop the swale edge to close settlement cracks.

Sub surface drainage pipes may require periodic jetting of pipes if they become compromised with roots or silt.

### **3.5 Construction Working Hours**

The hours of construction activity will avoid unsociable hours and will be agreed with the planning authority in advance of site start. It is anticipated that this will restrict working hours at the site during the construction phase to be limited to 07:00 to 19:00 Monday to Saturday inclusive. Work on Sundays or public holidays will only be conducted in exceptional circumstances and subject to prior notification insofar as possible with the local community.



## 4. ENVIRONMENTAL MANAGEMENT PLAN

### 4.1 Introduction

This Environmental Management Plan (EMP) defines the project obligations, Environmental Management System (EMS) and environment mitigation measures relating primarily to the construction phase of the proposed works.

This EMP describes how the Contractor for the construction works will implement a site Environmental Management System (EMS) on this project to meet the specified contractual, regulatory and statutory requirements and mitigation measures. This plan will be further developed and expanded following the grant of planning permission and appointment of the Contractor for the construction works. Please note that some items in this plan can only be finalised with appropriate input from the Contractor who will carry out the construction works and once the planning conditions attached to any grant of planning are known. It will be the Contractor's contractual responsibility to implement an effective environmental management system to ensure that the Boards **environmental** requirements for the construction of this project are achieved.

All site personnel will be required to be familiar with the environmental management plan's requirements as related to their role on site. The plan describes the project, sets out the environmental procedures that will be adopted on site and outlines the key performance indicators for the site.

- The EMP is a controlled document and will be reviewed and revised as necessary.
- A copy of the EMP will be located at the Contractors site office.
- All employees, suppliers and Contractors whose work activities cause/could cause impacts on the environment will be made aware of the EMP and its contents.

### 4.2 Project Obligations

During the remediation phase of the proposed development several environmental management obligations must be implemented and achieved by Kerry County Council and the Contractor. In addition to statutory obligations, there are several specific obligations set out in the accompanying Natura Impact Statement (NIS). When development consent is granted, there is also likely to be planning conditions, with which Kerry County Council must comply. The CEMP will be reviewed and updated, if required, following any grant of permission. The Contractor and all of its sub-Contractors will be made fully aware of and be contractually required to adhere to all environmental obligations.

#### 4.2.1 NIS Obligations

The accompanying NIS, which is provided under a separate cover, identifies measures that will be put in place to mitigate the potential environmental impacts arising from the construction phase of the proposed project.



#### 4.2.2 Planning Permission Obligations

Should the remediation works be consented by An Bord Pleanála, the planning conditions will be complied with and should be read in conjunction with the project CEMP and other related reports prepared by and on behalf of Kerry County Council.

#### 4.2.3 Other Obligations

The Contractor will liaise directly with Kerry County Council and An Garda Síochána in relation to securing any necessary permits to allow the works to take place including for example (non-exhaustive list):

1. Commencement notice;
2. Special Permits in relation to oversized vehicles on public roads, if required.

Kerry County Council will continue to liaise closely with the local residents, especially near neighbours and landowners in relation to works and all reasonable steps will be taken to minimise the impact of the development.

### 4.3 Environmental Management System

The Environmental Management System (EMS) is outlined in the sections below.

#### 4.3.1 Environmental Policy

The Contractor is responsible for preparing and maintaining an Environmental Policy for the site. The policy should be appropriate to the project, commit to continuous improvement and compliance with legal requirements and provide a framework for objectives and targets. This will be communicated to all site personnel and will be available on-site notice boards.

#### 4.3.2 Training, Awareness and Competency

All site personnel will receive environmental awareness information as part of their initial site induction and briefing. The detail of the information should be tailored to the scope of their work on site. The Contractor for the construction works may decide to conduct the environmental awareness training at the same time as health and safety training (often referred to as Site Inductions).

This will ensure that personnel are familiar with the environmental aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

The CEMP will be retained in the site management office during the project. The environmental performance at the site will be on the agenda of the monthly project management meetings for the project.



Elements of the CEMP will be discussed at these meetings including objectives and targets, the effectiveness of environmental procedures, etc. Two-way communication will be encouraged by inviting all personnel to offer their comments on environmental performance at the site.

#### 4.3.3 Register of Environmental Aspects

The Contractor is responsible for preparing and maintaining a *Register of Environmental Aspects* pertaining to the site. This register will identify the environmental aspects associated with activities onsite and determine which aspects have or can have a significant impact on the environment. Risks and Opportunities associated with environmental aspects will be identified. Life-cycle impacts (i.e. upstream and downstream impacts) will be identified if present.

#### 4.3.4 Register of Legislation

The Contractor is responsible for preparing and maintaining a register of key environmental legislation pertaining to the site. This register will reference all current environmental legislation and will be inspected, reviewed and updated regularly to ensure compliance.

#### 4.3.5 Objectives and Targets

Objectives and targets are required to be set to ensure that the project can be constructed and operated in full accordance with the NIS, planning conditions and legislative requirements, with minimal impact on the environment.

Environmental objectives are the broad goals that the Contractor must set in order to improve environmental performance. Environmental targets are set performance measurements (key performance indicators or KPI's) that must be met in order to realise a given objective.

The Contractor will set objectives based on each significant environmental impact. Key objectives are likely to include the following:

- To ensure that nearby rivers and streams are not negatively impacted by construction works.
- To ensure that humans are not negatively impacted by dust generated by construction works.
- To ensure that humans are not negatively impacted by noise generated by construction works.
- To ensure that impacts to habitats and wildlife are minimised during works.
- To ensure that a waste management plan for this site will be fully implemented.
- To ensure that the visual impact during the construction work is minimised.
- To ensure that the proposed development is constructed in compliance with the EIAR.

Performance in relation to each of these objectives will be reviewed on a regular basis by means of inspections, audits, monitoring programmes, etc.



#### 4.3.6 Non-Conformance, Corrective and Preventative Action

Non-conformance notices will be issued in the following cases:

- Where site activities do not conform with the requirements of the EMS.
- Where environmental monitoring shows that there is a breach of an emission limit value or Environmental Quality Standard on-site.
- Where there is a breach of an EPA condition imposed under the EPA's CoA for the site.
- Where there is a complaint relating to site activities.

Non-conformance is the situation where essential components of the EMS are absent or dysfunctional, or where there is insufficient control of the activities and processes to the extent that the functionality of the EMS in terms of the policy, objectives and management programmes, is compromised. A non-conformance register should be controlled by the Contractor.

The EMS and all its components must conform to the EMP, objectives and targets and the requirements of the ISO 14001 management standard.

In the event of non-conformance with any of the above, the following must be undertaken:

- Investigate cause of the non-compliance.
- Develop a plan for correction of the non-compliance.
- Determine preventive measures and ensure they are effective.
- Verify the effectiveness of the correction of the non-compliance.
- Ensure that any procedures affected by the corrective action taken are revised accordingly.

Responsibility must be designated for the investigation, correction, mitigation and prevention of non-conformance.

#### Internal Audits

Periodic Internal Audits will be carried out under the EMS to ensure that all site activities conform to the requirements of the EMS. Non-conformances identified during Internal Audits will be addressed by way of the Non-conformance management process detailed above. Opportunities for Improvement identified during Internal Audits will be communicated to relevant responsible personnel.



## EMS Documentation

The Contractor is required to keep the following documentation in relation to the environmental management of the project (as a minimum):

- Construction Environmental Management Plan for the proposed development
- Register of Environmental Aspects/Impacts
- Register of Planning Conditions
- Monitoring Records
- Minutes of Meetings
- Training Records
- Audit and Review Records

All of these documents and records are to be available for inspection in the site office. The documentation shall be up to date and shall be reviewed on a regular basis with revisions controlled in accordance with the site quality plan.

### 4.3.7 Control of Documents

The Contractor will establish, implement and maintain a procedure to control CEMP documents and records so they are clearly identifiable, organised, current, easily located and revised when necessary.

## 4.4 Ecological Management Plan

FT was commissioned on behalf of Kerry County Council to undertake an Appropriate Assessment Screening and Natura Impact Statement which accompany the application for the proposed landfill remediation.

The ecology appraisal involved a field assessment and a desktop review of relevant data available for the study site and locality.

### 4.4.1 Designated Sites

Potential impacts on European sites are considered in the Natura Impact Statement accompanying the Planning Application.

### 4.4.2 Habitats

The site walkover indicates that the main habitat types (Fossitt, 2000) present in the immediate vicinity of the proposed works site are: improved agricultural grassland (GA1), treelines/riparian woodland (WL2/WN5) and depositing lowland rivers (FW2). Improved agricultural grassland covers the historic landfill, while a stretch of treelines/riparian woodland (WL2/WN5) runs along the riverbank. Depositing lowland rivers is represented by the Ardsheelhane River that bounds the site to the southeast.



No botanical species protected under the Flora (Protection) Order (1999; and as amended 2015), listed in Annex II or IV of the EU Habitats Directive (92/43/EEC), or listed in the Irish Red Data Books were recorded during the site walkover. All flora and fauna species recorded during the walkover are considered common for similar habitats in the general area. No qualifying species of any European sites within 15 km of the proposed development were recorded during the site visit.

#### 4.4.3 Invasive Species

During field surveys in August 2021, the following invasive species were recorded within the footprint of the remediation site:

- Japanese knotweed (*Fallopia japonica*)
- Montbretia (*Crocasmia x crocosmiiflora*)

#### 4.4.4 Construction/Operational Stage Mitigation Measures

##### *Mitigation Against Spread of Invasive Species*

##### Preconstruction

Invasive species management undertaken in line with the invasive species management plan shall be put in place during remediation works as required.

An ecologist will supervise eradication and cordoning off of any invasive species present at the time of construction.

It is noted that Montbretia was only recorded along the roadside boundary, and removal will therefore be an enhancement measure.

A 7 m exclusion zone\* around Japanese knotweed growths will be cordoned off prior to construction. \*[conditional on treatment]. If treatment is successful in eradicating Japanese knotweed and 2 consecutive years with no growth of this species is recorded onsite prior to construction the 7m buffer can be discarded.

Soil infested with Japanese knotweed including an area of 7m\* surrounding growths shall be excavated to a depth of 1-3m as required. Excavated material shall be removed from site and disposed at a licenced waste facility.

If treatment is successful in eradicating Japanese knotweed and 2 consecutive years with no growth of this species is recorded onsite prior to construction the 7m buffer can be discarded.

Any stockpiled Japanese knotweed material awaiting removal from site will be stored securely and covered within designated cordoned areas.

All machinery used to carry out Japanese knotweed eradication measures will be visually checked and washed down thoroughly. Potentially contaminated runoff will be collected, treated and any potentially contaminated residual material will be interred with the main body of contaminated material (residual material should also be encapsulated).



Silt fences downstream of the landfill will be checked for invasive species material during and after eradication measures.

Imported subsoil and topsoil will be surveyed by an ecologist for invasive plant species.

#### Postconstruction

Invasive species monitoring (and treatment where required) will continue during the Operational / Post Construction Phase until two consecutive years where no invasive species are recorded onsite or immediately adjacent is achieved.

#### *Mitigation Against Disturbance to Mobile QIs*

##### Preconstruction surveys – otter

Further otter surveys will be carried out by the EnCoW , immediately prior to any site clearance, to determine the location of any otter holts or couches within 150m of the proposed development site, to ensure that no new holts /couches have been created since the previous otter survey.

##### Avoidance – otter

Where breeding or resting places are confirmed, an exclusion zone should be set up. No works should be undertaken within 150m of any holts with breeding females or cubs. No wheeled or tracked vehicles should be used with 20m of an active non-breeding holt. Light work, such as digging by hand or vegetation clearance should not be undertaken within 15m of an active non-breeding holt. These exclusion zones should be in place until otter have been successfully evacuated from active holts. Where exclusion zones are not feasible, a licence to disturb otter will be required from NPWS.

##### Commuting habitat preservation – lesser horseshoe bat

The existing treeline along the eastern site boundary/ Arsheelhane River should be retained to maintain lesser horseshoe bat commuting and foraging bat.

Artificial lighting should not be used onsite overnight, as lesser horseshoe are a light sensitive species. Any lighting onsite should be directional, avoiding the eastern site boundary/ Arsheelhane River.

## **4.5 Noise, Vibration, Dust and Air Quality Management Plan**

### **4.5.1 Existing Site**

Sneem historical landfill site is in an area of open land located immediately adjacent to an area of bogland. The site is located approximately 1km north of Sneem village in the townland of Maulagallane and bordering Scrahannagaur townland.



Available evidence suggests that the site closed, and landfilling ceased in 1996. The date of the start of landfilling activities is unknown.

Since its closure the site reverted to private ownership, with the lands presently used for agriculture. The site has been capped with soil cover with no other remediation works have been carried out.

#### 4.5.2 Potential Impacts During the Construction Phase

Noise from the construction phase would arise from deliveries and/or removal of material to and from site, top-soil excavation, preparation of drainage, concrete mixing and pouring of foundations where necessary.

Dust emissions arise when particulate matter becomes airborne making it available to be carried downwind from the source. Dust emissions can lead to elevated PM<sub>10</sub> and PM<sub>2.5</sub> concentrations and may also cause dust soiling.

The amount of dust generated and emitted from a working site and the potential impact on surrounding areas varies according to:

- The type and quantity of material and working methods;
- Distance between site activities and sensitive receptors;
- Climate/local meteorology and topography.

The principal sources of potential air emissions during the construction of the proposed development include:

- Dust arising from earthworks
- Dust arising from the movement of construction vehicles over land as well as the transporting of materials to the site of the proposed development.
- Dust arising from the temporary storage of any excavated materials and wind blowing over unprotected, unconsolidated soils.
- Dust arising from uncovered truckloads, the movement of material around the site and the loading and unloading of aggregates and of materials within the site.
- Pollutants arising from temporary diesel generators.

#### 4.5.3 Construction Stage Mitigation Measures

During the construction phase there is potential for increased ambient noise levels and potential temporary impacts at dwellings north, south and southeast of the site during the preparation of drainage. If noise emissions from these activities are an issue, the scheduling of construction activity will be addressed such that durations of construction activity likely to exceed the 65 dB L<sub>Aeq,1hr</sub> noise limit do not occur simultaneously with other construction activity.

Generally, construction works will be carried out in accordance with best practice and in line with recommendations contained within BS 5228-1:2009+A1:2014.



To mitigate against the impacts of noise on the local community during construction, the following specific measures are proposed:

- A pre-construction commitment to managing noise levels will be agreed through notification and consultation with affected parties, if deemed necessary.
- Working hours at the site during the installation phase will be limited to 07:00 to 19:00 Monday to Saturday inclusive. Work on Sundays or public holidays will only be conducted in exceptional circumstances and subject to prior notification insofar as possible with the local community.
- Construction contractors will be required to comply with the requirements of the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations, 1988 as amended in 1990 and 1996 (S.I. No. 320 of 1988, S.I. No. 297 of 1990 and S.I. No. 359 of 1996), and the Safety, Health and Welfare at Work (Control of Noise at Work) Regulations, 2006 (S.I. No. 371 of 2006).

The main control measures will involve control of noise at source measures using the following methods in line with Clause 8 'Control of noise' of BS 5228-1:2009+A1:2014:

- Operators of all mobile equipment will be instructed to avoid unnecessary revving of machinery (Clause 8.2.1 General).
- Use of appropriate plant and equipment where possible with low noise level generation where possible (Clause 8.2.2 Specification and substitution).
- All construction plant to be used on site should have effective well-maintained silencers (Clause 8.2.3 Modification of existing plant and equipment).
- Noise generating equipment will be located as far as possible away from local noise sensitive areas identified (Clause 8.2.5 Use and siting of equipment); and
- Regular and effective maintenance of site machinery including a full maintenance schedule to ensure that all pieces of equipment are in good working order. With efficient use of well-maintained mobile equipment, considerably lower noise levels than those predicted can be attained (clause 8.2.6 Maintenance).

In addition, the following best practice measures are proposed:

- Training of site staff in the proper use and maintenance of tools and equipment.
- Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment.
- Machines that could be in intermittent use will be shut down between work periods or will be throttled down to a minimum.
- Plant start-up will be sequential rather than all together.
- Internal access tracks to be well maintained.
- Plant known to emit noise strongly in one direction will, when possible, be orientated so that the noise is directed away from noise-sensitive locations.

Drop heights for materials such as gravels will be minimised whenever practicable.



Mitigation measures to reduce dust nuisance and to minimise impact on air quality will be employed during the construction phase of the project. These mitigation measures will include the following:

- The Contractor or equivalent must monitor the Contractors' performance to ensure that the proposed mitigation measures are implemented, and that dust impacts and nuisance are minimised.
- The applicant, in association with the Contractor for the main civil works, will be required to produce and implement a Dust Control Plan. This plan will address all aspects of the development including excavations, access roads and temporary stockpiling. The plan will be prepared prior to any construction activities and will be established and maintained through the construction period.
- The drop height of materials will be minimised to a practicable level, to limit fugitive dust generation.
- Gravel will be used at site exit points to remove possible caked on dirt from tyres and tracks before travelling along public roads.
- The site supervisor will undertake daily visual inspections to examine dust generation.
- The working area will be kept as small as possible so as to minimise potential dust generation.
- To suppress the migration of dust from site, a water bowser will be available to spray work areas, especially during periods where excavation works coincide with dry periods of weather or existing activities.
- All loads with potential to cause dust nuisance will be covered using strong, waterproof sheets such as tarpaulin sheets and will not be overloaded. This will minimise the potential for fugitive emissions during transport.
- All other stockpiles will be kept damp and covered to prevent windblown dust emissions.
- Construction vehicles and plant will be routinely serviced to minimise the exhaust emissions during construction. Vehicles will not be left running unnecessarily and low emission fuels will be used where possible.

#### 4.6 Surface Water Management Plan

The EPA map viewer indicates that the site is located in the Sneem\_SC\_010 Subcatchment within the Dunmanus-Bantry-Kenmare Catchment. The Sneem freshwater pearl mussel-sensitive area overlaps the site; this catchment falls within the category 'Catchments of Other Extant Populations'.

A direct downstream hydrological link between Sneem historic landfill site and Kenmare River cSAC (002158) exists via the Ardsheelhane and Sneem Rivers. The Ardsheelhane River borders the historic landfill site and is also directly connected through surface drains running along the northern and southern boundaries and discharging into the river. The Ardsheelhane joins the Sneem River c. 227m downstream of the site, which in turn enters Kenmare River cSAC c. 122m downstream of the confluence. As such the instream distance between Sneem historic landfill site and Kenmare River cSAC is c. 349m.

Kenmare River SAC extends upstream along the Sneem River north of Sneem village, as such the instream distance between Sneem historic landfill site and Kenmare River SAC is c. 349m.



#### 4.6.1 Proposed Drainage

Surface runoff from the cap shall be captured in grassed waterways and discharged to the stream on the southern boundary via an appropriate outfall structure.

Surface drainage shall also accommodate subsurface drainage outfalls from the cap and interceptor drain between vertical cut-off and road on the northern boundary.

Surface drainage shall be designed to mitigate the risk of rill or gully erosion giving rise to suspended solids loading exceeding of 25 mg/l on the cap and within receiving waters.

For details in the proposed drainage system, including locations where the surface water drains discharge to see Drawing P1788-0300-0001.

#### 4.6.2 Construction Stage Impact and Mitigation

##### General

Site contractors will be briefed through toolbox talks by an ecologist appointed by the Contractor, on the biodiversity value of the surrounding landscape, with emphasis on the sensitivity of the Kenmare River SAC and the Killarney National Park, Macgillycuddy's Reeks And Caragh River Catchment SAC QIs. The briefing will also raise awareness to actions during the construction phase which could lead to deterioration in surrounding water quality.

Works will be permitted within the proposed development site only.

##### Silt fencing

Silt fencing shall be located adjacent to all water courses and at the toe of the landfill side slopes, as agreed with the appointed EnCoW.

A silt screen shall be constructed at the toe of the reprofiled slopes to prevent silt entering adjacent watercourses.

##### Stockpiling Material and Earthworks

Weather forecasts will be reviewed daily, and earthworks will not be undertaken during periods of heavy rainfall (>10mm/hour).

Soil stockpiles will be stored away from onsite drains.

Compact surface of stored soils during reprofiling and capping works as soon as practicably possible.

Temporary on-site silt ponds will be provided to allow settlement of suspended solids prior to runoff exiting the works area. These are to be constructed prior to commencement of remediation works.



Dewatering flows from excavations will be managed to prevent elevated suspended solids entering the watercourse by use of temporary dedicated settlement ponds. Discharges into the onsite drainage network will only take place after silt fencing has been installed.

The existing treeline along the eastern site boundary/ Arsheelhane River should be retained to stabilize the river bank.

#### Concrete and other pollutants

Concrete batching and mixing activities will not be permitted within the proposed development site. Concrete used for the works will be brought to site by a concrete truck. Concrete washout shall not be undertaken onsite and concrete washout of chutes will only occur.

No direct pumping of groundwater will be allowed to the existing drainage ditches or the Ardsheelhane, given there is risk of contamination with leachate. In the event that waste is exposed during excavation it will be relocated to low spots on site and covered. No exposed waste will be left at the end of each working day. In the event that leachate is present in the trench it will be removed to a temporary leachate holding tank on site and thereafter transported to a licenced wastewater treatment plant for disposal.

Appropriately sized plant nappies need to be used under Generators at all times Generator must be 10m back from the drain.

Refuelling of plant during construction will only be carried out at a designated bunded refuelling station, located away from any drainage or water features. Any other diesel, fuel or hydraulic oils stored on site will be stored in bunded storage tanks – the bund area will have a volume of at least 110 % of the volume of such materials stored.

Appropriate spill control equipment, such as oil soakage pads, will be kept within the construction area and in each item of plant to deal with any accidental spillage.

Portaloos and / or containerised toilets and welfare units will be used to provide toilet facilities for site personnel. Sanitary waste will be removed from site by a licensed waste disposal contractor.

#### Monitoring – Freshwater pearl mussel

Baseline water quality conditions downstream of the works in the adjacent Arsheelhane River will be gathered preconstruction through water sampling. The following parameters will be recorded: phosphorus, nitrogen (including ammonia), BOD5 (dissolved oxygen), pH, calcium, alkalinity, temperature and turbidity (suspended solids). These will be measured to an appropriate detection limit for Freshwater Pearl Mussel.

Regular monitoring of the above parameters will be conducted during and post construction.

### **4.7 Soil Management Plan**

It is intended to maintain an earthworks balance on site, with all excavated material re-used within the site where possible, thereby minimising the need for removal of any materials for off-site disposal. This will in turn lead to the reduction of noise and dust associated with construction traffic.



Excavation and backfilling will take place over short lengths. There will be no permanent spoil heaps at the site of the proposed development.

Excavation works will be monitored by suitably qualified and experienced geotechnical personnel.

The programming of the works will be such that earthworks are not scheduled to be carried out during severe weather conditions. Where such weather is forecast, suitable measures will be taken to secure the works. Due to the possibility of soil-borne diseases, all topsoil/peat recovered from the site will remain on that property. Topsoil will be used for landscaping berms alongside existing and new access tracks where suitable and will also be used for reinstatement and landscaping purposes.

No off-site disposal of soil will be required from the site and no spoil stockpiles will be left on site after construction is completed.

In addition to the above, storage tanks used to store fuel for the various items of machinery, will be self-contained and double-walled. Refuelling will be carried out from these tanks or from delivery vehicles at designated refuelling areas. Specific mitigation measures relating to the management of hydrocarbons spills are outlined below:

- Fuels, lubricants and hydraulic fluids for equipment used on the construction site will be carefully handled to avoid spillage.
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the site and properly disposed of.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or re-cycling.
- Appropriate spill control equipment, such as oil soakage pads, will be kept within the construction area and in each item of plant to deal with any accidental spillage.
- Drip trays and spill kits will be kept available on site, to ensure that any spills from vehicles are contained and removed off site. Any diesel or fuel oils stored at the temporary site compounds will be bunded. The bund capacity will be sufficient to contain 110% of the tank's maximum capacity.

## 4.8 Waste Management Plan

It will be the objective of Kerry County Council in conjunction with appointed Contractor to prevent, reduce, reuse and recover as much of the waste generated on site as practicable in accordance with Waste Hierarchy Principles) and to ensure the appropriate transport and disposal of residual waste off site. This is in line with the relevant National Waste Management Guidelines and the European Waste Management Hierarchy, as enshrined in the Waste Management Act 1996, as amended.

### 4.8.1 Assignment of Responsible Personnel

It will be the responsibility of the Contractor for the construction works (when appointed) to nominate a suitable site representative such as a Project Manager, Site Manager or Site Engineer as Waste Manager who will have overall responsibility for the management of waste. The waste manager will have responsibility to instruct all site personnel including sub-contractors to comply with on-site requirements.



#### 4.8.2 Waste Generated

Any waste materials generated on-site during the construction of the proposed development will be handled and managed in accordance with the requirements of the Waste Management Act 1996, as amended, and associated Regulations. All waste will be stored in segregated waste containers at the temporary construction compounds and collected by appropriately licensed waste contractors. All waste materials transferred off-site for disposal or recovery will be taken only to suitably permitted/licensed waste facilities.

#### 4.8.3 Waste Management During the Construction Phase

Any waste generated during the development construction phase will be collected, source separated and stored in dedicated receptacles at the temporary compounds during construction.

Typical categories of waste generated during the construction of this type of project:

- Municipal solid waste from the office and canteen
- Construction and demolition waste
- Waste oil/hydrocarbons
- Paper/cardboard/plastic wrapping
- Timber
- Steel

As noted above, it will be the responsibility of the Contractor for the main construction works (when appointed) to nominate a suitable site representative such as a Project Manager, Site Manager or Site Engineer as Waste Manager who will have overall responsibility for the management of waste. The waste manager will have responsibility to instruct all site personnel including sub-contractors to comply with on-site requirements.

Where waste is generated, every effort will be made to separate and segregate the different waste streams.

**Table 4-1: Principal Wastes Generated during the Construction Phase**

Waste	Source
Timber	Temporary supports and packaging waste
Miscellaneous materials	Surplus materials from installation works
Lubricating oils, diesel	Unused quantities at end of installation period
Plastics	Packaging waste
Paper/cardboard	Packaging waste
Non-hazardous Office and Canteen Waste	Temporary welfare facilities unit
Food waste	Temporary welfare facilities unit
Sanitary waste	Temporary welfare facilities unit



#### 4.8.4 Installation Stage Waste Reduction

The appointed Contractor will make all reasonable effort to minimise the creation of waste throughout the installation stage. This will be achieved through the following measures:

- The ordering of material will be optimised to ensure that only the necessary levels are delivered to site.
- All plant will be serviced before arriving on site. This will reduce the risk of breakdown and the possible generation of water oil on site.
- All operators will be instructed in measures to cut back on the amount of wastage for trimming of materials etc.
- Prefabrication of design elements will be used where suitable to eliminate waste generation on site, and.
- Where materials such as concrete are being ordered, care will be taken when calculating required quantities to reduce wastage.

#### 4.8.5 Construction Waste Re-use

Where possible, materials will be re-used onsite for other suitable purposes.

#### 4.8.6 Construction Waste Recycling

Where waste is generated, every effort will be made to recycle. In order to optimally recycle, waste source segregation of recyclable materials will be undertaken.

Suitable containers will be provided for the storage and collection of source segregated materials. These containers will be clearly labelled and signposted.

The following sourced segregated materials containers will be made available on site at a suitable location:

- Timber;
- Ferrous metals;
- Aluminium;
- Dry mixed recyclables; and
- Packaging waste.



#### 4.8.7 Construction Waste Disposal

Where waste disposal is unavoidable, waste will be disposed of in a manner not likely to cause environmental damage:

- All waste materials will be stored in suitable locations and enclosed containers where suitable to avoid pollution and generation of wind-blown debris.
- All waste will be collected by a suitably competent and permitted waste collection contractor;
- All waste will be dispatched to an appropriate authorized waste facility
- Dispatch to a waste recovery facility will be preferred over dispatch to a waste facility involved in waste disposal or energy recovery, and;
- No material be burned on site under any circumstances.

#### 4.8.8 Training

Copies of the waste management plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the Project Waste Management Plan and informed of the responsibilities that fall upon them as a consequence of its provisions.

It will be the responsibility of the Contractors' appointed Waste Manager to ensure that all personnel are made aware of their responsibilities under the plan via a toolbox talk or otherwise.

### 4.9 **Outline Traffic Management Plan**

Refer to Drawing P1788-0100-0007 for traffic management plan.

The Construction Traffic Management Plan (CTMP) shall be finalised in accordance with this Plan following the appointment of the Contractor for the construction works.

Please note that some items in this plan can only be finalised with appropriate input from the Contractor who will actually carry out and schedule the works. Furthermore, it is appropriate that the Project Supervisor Construction Stage (PSCS), when appointed, should have an active role in the preparation/review of the Construction Traffic Management Plan.

As with any construction development project, the transport of materials onto the site will give rise to increased traffic and associated impacts. However, due to the very nature of construction these impacts will be temporary.

Materials arising on-site will be reused on-site where possible to minimize traffic movements off-site.

Public perception of the construction phase will be influenced primarily from the impact of traffic movements. The degree of traffic disturbance caused by the construction phase depends on the volume of material imported/exported, the associated civil engineering requirements and the length of the construction period.

This CTMP deals with the traffic generated during the construction of the proposed development. It concentrates on the traffic arising from each element of the works which includes the site clearance works and the building construction works.



Construction traffic will require regular access to the site at varying times throughout the construction phase.

The aim of this CTMP is to put in place procedures to manage traffic effectively on site and in the immediate vicinity of the development, to ensure the continued movement of traffic on the public roads and to minimise disturbance during transportation of materials. The correct implementation of this CTMP will ensure that appropriate procedures are in place to minimise any effects on the safety and movement of the general public.

Prior to the commencement of construction, the CTMP will be reviewed by the Contractor (and any sub-contractors) and will be updated as necessary.

The site is accessed from the local road which bounds the site to the north. The surrounding routes are considered to be acceptable for the level of traffic generated during construction with some mitigation proposed. Similar traffic is currently using these roads to service farmland and agriculture practices in the area. There should be ample capacity to carry the deliveries associated with the temporary short-term construction activities of the landfill.

The construction phase for the proposed works will result in additional traffic on the roads in the vicinity of the development, in particular the local road and N70.

This additional traffic will include:

- Construction worker vehicles;
- Delivery vehicles carrying conventional construction materials e.g. aggregate;
- Delivery vehicles carrying machinery and equipment.

It should be noted however that final selection of construction plant and vehicles may vary depending on suitability, availability, Contractor's choice, etc.

Plant operators will be responsible for the upkeep and maintenance of construction plant and vehicles, ensuring good working order prior to use. Should emergency maintenance need to be carried out on site, this will be carried out at a designated area away from sensitive receptors and it will be ensured that a spill kit is nearby.

Parking for all site staff vehicles during the Construction phase will be provided adjacent to the construction compound. Parking of construction related vehicles (or queuing) will not be permitted outside the facility gate. This will be achieved using a combination of signage, suitable bollards (if required) and enforcement by site management.

HGVs entering the site shall do so via the proposed access, which will be developed to allow adequate visibility sightlines in accordance with TII Standard DN-GEO-03031: Road Link Design, 2012, and in accordance with Kerry County Development Plan.

Public roads shall be kept free of mud, dust, spillages and debris from the construction site, construction plant or haulage vehicles. Any necessary measures shall be put in place at the site entry/exit points.

The roadway on site from the public road entrance, shall be kept free of dust, spillages and debris. Regular watering of the track will take place and Kerry County Council will liaise with nearby residences to avoid undue or unnecessary truck movements during un-social hours and note and amend any disturbance or nuisance from dust or noise in line with commitments made in the CTMP.



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Operational traffic is anticipated to be less than one or two vehicles per month and will use the indicated public access road.

#### 4.9.1 Consultation and Notification

##### *Traffic Management Co-ordinator*

The Contractor will appoint a dedicated competent Traffic Management Coordinator for the duration of this project and this person will be the main point of contact for all matters relating to traffic management on the project.

##### *Induction*

Prior to the works commencing, the Traffic Management Coordinator will carry out an induction for the materials haulage contractor staff to inform them of the traffic requirements in relation to vehicle movements. Traffic consideration shall form part of the induction process for all site staff also.

##### *An Garda Síochána*

Following the appointment of the successful Contractor for the main construction works for this project, this CTMP shall be finalised. The Traffic Management Coordinator will liaise directly with An Garda Síochána in relation to the plan and any concerns/requirements they have will be incorporated into the plan. The necessary permits (including approved route permits) will be applied for and obtained from An Garda Síochána, if required.

##### *Kerry County Council*

The Contractor will liaise directly with Kerry County Council Roads Department in relation to the plan and any necessary permits (including standard permits) will be applied for and obtained from the Roads Department.



## 5. SAFETY & HEALTH MANAGEMENT PLAN

### 5.1 Introduction

This Safety and Health Management Plan (SHMP) defines the work practices, procedures and management responsibilities relating to the management of health and safety during the design, construction and operation of the proposed development and shall be read in conjunction with the Preliminary Safety & Health Plan prepared for the project by the Project Supervisor for the Design Process. The Safety and Health Management Plan shall be finalised in accordance with this plan following the appointment of the Contractor for the construction works.

This SHMP describes how the Contractor for the construction works will implement a site safety management system (SMS) on this project to meet the specified contractual, regulatory and statutory requirements, environmental mitigation measures and planning conditions. It is the Contractor's responsibility to implement an effective safety management system to ensure that the Council's safety requirements for the construction of this project are met. Any SMS will incorporate and develop upon any preliminary plans prepared for the project by the Project Supervisor for the Design Process.

All site personnel will be required to be familiar with the requirements of the safety management plan as related to their role on site. The plan describes the project organisation and sets out the health and safety procedures that will be adopted on site:

- The Safety and Health Plan is a controlled document and will be reviewed and revised as necessary.
- A copy of the Safety and Health Plan will be located on/near the site H&S notice board.
- All employees, suppliers and contractors whose work activities cause/could cause impacts on the environment will be made aware of the SHMP and its contents.

The selection criteria for the Contractor for the works will be based on the ability to construct the works in a manner that will not endanger the safety, health and welfare of any parties and competence to fulfil the role of PSCS.

All site personnel will be required to be familiar with the requirements of the Safety and Health Management Plan for the construction phase of the project as related to their role on site. The plan will describe the project organisation and sets out the health and safety procedures that will be adopted on site.

The Safety and Health Plan is a controlled document and will be reviewed and revised as necessary. A copy of the Safety and Health Plan will be located on/near the site H&S notice board. All employees, suppliers and contractors whose work activities cause/could cause impacts on the environment will be made aware of the SHMP and its contents.

Solas Safe Pass registration cards are required for all construction, delivery and security staff. Construction operatives will hold a valid Construction Skills Certificate Scheme card where required. Public safety will be addressed by restricting site access during construction. Appropriate warning signs will be posted, directing all visitors to the site office.

All personnel on site will wear adequate personal protective equipment (PPE), appropriate for their activity while on site.



In relation to working near overhead electric lines, the Contractor will comply with ESB Networks Code of Practice for Avoiding Danger from Overhead Electricity Lines, 2008. Prior to site start, hazard exclusion zones will be established by the main Contractor and overhead goalposts will be set up at designated crossing points where plant must pass directly under overhead electricity lines in accordance with ESNB requirements. A minimum 3m exclusion zone for 10kV, 20kV and 38kV overhead lines will be maintained at all times.

## 5.2 Project Obligations with Respect to Health and Safety

The construction of the proposed development will impose numerous safety management obligations on the Council, Designer and Contractor. These obligations are set out below. The Contractor for the construction works and all of its sub-contractors are to ensure that they are fully aware of and in compliance with these safety obligations.

### 5.2.1 Statutory Obligations

The Safety, Health and Welfare at Work Act 2005 and the Safety, Health and Welfare at Work (Construction) Regulations 2013 place a responsibility on Kerry County Council as the “Client”, the Designer, the Project Supervisors and the Contractor.

The Council must:

- Appoint a competent and adequately resourced Supervisor for the Construction Stage (PSCS)
- Be satisfied that the Contractor appointed has adequate training, knowledge, experience and resources for the work to be performed.
- Co-operate with the project supervisor and supply necessary information.
- Keep and make available the safety file for the completed structure.
- Provide a copy of the safety and health plan prepared by the PSDP to every person tendering for the project.

Designers must:

- Identify any hazards that their design may present during construction and subsequent maintenance.
- Eliminate the hazards or reduce the risk.
- Communicate necessary control measures, design assumptions or remaining risks to the PSDP so they can be dealt with in the safety and health plan.
- Co-operate with other designers and the PSDP or PSCP.
- Take account of any existing safety and health plan or safety file.
- Comply with directions issued by the PSDP or PSCS.



The PSDP must:

- Identify hazards arising from the design or from the technical, organisational, planning or time related aspects of the project.
- Where possible, eliminate the hazards or reduce the risks.
- Communicate necessary control measure, design assumptions or remaining risks to the PSCS so they can be dealt with in the safety and health plan.
- Ensure that the work of designers is coordinated to ensure safety.
- Organise co-operation between designers.
- Prepare a written safety and health plan for any project and deliver it to the client prior to tender.
- Prepare a safety file for the completed structure and give it to the client.

The PSCS must:

- Co-ordinate the identification of hazards, the elimination of the hazards or the reduction of risks during construction.
- Develop the Safety and Health Plan initially prepared by the PSDP before construction commences.
- Co-ordinate the implementation of the construction regulations by contractors.
- Organise cooperation between contractors and the provision of information.
- Co-ordinate the reporting of accidents to the Authority.
- Notify the Authority before construction commences.
- Provide information to the site safety representative.
- Co-ordinate the checking of stage working procedures.
- Co-ordinate measures to restrict entry on to the site.
- Co-ordinate the provision and maintenance of welfare facilities
- Co-ordinate arrangements to ensure that craft, general construction workers and security workers have a Safety Awareness card, e.g. Safe Pass and a Construction Skills card where required.
- Co-ordinate the appointment of a site safety representative where there are more than 20 persons on site.
- Appoint a safety adviser where there are more than 100 on site.
- Provide all necessary safety file information to the PSDP.
- Monitor the compliance of contractors and others and take corrective action where necessary.
- Notify the Authority and the client of non-compliance with any written directions issued.



The Contractor must:

- Co-operate with the PSCS.
- Promptly provide the PSCS with information required for the safety file,
- Comply with directions of the project supervisors.
- Report accidents to the Authority and to the PSCS where an employee cannot perform their normal work for more than 3 days.
- Comply with site rules and the safety and health plan and ensure that your employees comply.
- Identify hazards, eliminate the hazards or reduce risks during construction.
- Facilitate the site safety representative.
- Ensure that relevant workers have a safety awareness card and a construction skills card where required.
- Provide workers with site specific induction.
- Appoint a safety officer where there are more than 20 on site or 30 employed.
- Consult workers with site specific induction.
- Monitor compliance and take corrective action.

Consequently, at all stages of the project there are statutory requirements for the management of safety, health and welfare of all involved in or affected by the development. As previously outlined, this CEMP and specifically the Safety and Health Management Plan addresses key construction management issues associated with the proposed development. This plan will be developed further at the construction stage, on the appointment of the Contractor for the main construction works.

### 5.2.2 The Preliminary Safety and Health Plan

In accordance with the requirements of the Safety, Health & Welfare at Work (Construction) Regulations 2013, a Preliminary Safety & Health Plan will be required as part of the design process. This plan will be further developed by the PSCS on appointment and maintained as a live document during construction and commissioning of the proposed development.

The safety and health plan is required to include the following information:

- A general description of the project;
- Details of other work activities taking place on site;
- Works involving particular risks;
- The timescale for the project and the basis on which the time frame was established;
- Conclusions drawn by designers and the PSDP having taken into account the General Principles of Prevention and any relevant Safety and Health Plan or Safety File; and
- The location of electricity, water and sewage connections so as to facilitate early establishment of welfare facilities.



In accordance with the PSDP's procedures, the Preliminary Safety & Health Plan for the proposed development should include the following sections and subsections to ensure that the PSCS is aware of the health and safety issues at tender stage and enable them to price accordingly:

**Preamble:**

- 1 General Project Information:
  - 1.1 Title
  - 1.2 Description of Project
  - 1.3 Employer
  - 1.4 Designers/Other Consultants
  - 1.5 Project Supervisor Design Process
  - 1.6 Drawings, Specifications and Other Documents
  - 1.7 Intended Contract Commencement Date
  - 1.8 Intended Contract Completion Date
  - 1.9 Basis for Contract Duration
  - 1.10 Restrictions on Working Hours
  - 1.11 Notification of Project
  - 1.12 Termination of the PSCS Appointment
  
- 2 The Existing Environment:
  - 2.1 Site Location
  - 2.2 Relevant Adjoining Land Uses
  - 2.3 Site Restrictions
  - 2.4 Restrictions on Access
  - 2.5 Hazardous Area Classification
  - 2.6 Existing Services
  - 2.7 Ground Conditions
  - 2.8 Existing Hazards
  - 2.9 Liaison with Statutory Bodies
  
- 3 Other Work Activities:
  - 3.1 Other Contracts Which May Affect Work
  - 3.2 Occupation of Site
  - 3.3 Building Activities
  - 3.4 Other Work Activities
  - 3.5 Emergency Procedures in Place on Site



4 Particular and Residual Risks:

- 4.1 Works Which Puts Persons at Work at Risk
- 4.2 Work Which Puts Persons at Risk from Chemical or Biological Substances
- 4.3 Work with Ionising Radiation
- 4.4 Work near High Voltage Power Lines
- 4.5 Work Exposing Persons at Work to the Risk of Drowning
- 4.6 Work on Wells, Underground Earthworks and Tunnels
- 4.7 Work Carried Out by Divers at Work Having a System of Air Supply
- 4.8 Work Carried Out in a Caisson with a Compressed Air Atmosphere
- 4.9 Work Involving the Use of Explosives
- 4.10 Work Involving the Assembly or Dismantling of Heavy Prefabricated Components
- 4.11 Work Involving Hazardous Material
- 4.12 Residual Risks

5 Additional Information:

- 5.1 Existing Documents
- 5.2 Site Possession
- 5.3 Site Rules
- 5.4 Site Specific Safety Objectives
- 5.5 Phasing of Works
- 5.6 Permits/Authorisation Required
- 5.7 Maintenance
- 5.8 Continuing Liaison
- 5.9 Specific Recommendations

6 Information Required for Safety File:

- 6.1 Information Required for Safety File from PSCS

5.2.3 The Management of Health and Safety during the Construction Phase

The selection criteria for the Contractor for the works will be based on the ability to construct the works in a manner that will not endanger the safety, health and welfare of any parties and competence to fulfil the role of PSCS.

The contract will be awarded on the basis of assessment of the candidates against relevant health and safety criteria including experience of similar projects, knowledge of the construction processes involved and training of their management and staff who will be involved in carrying out the works.



#### 5.2.4 The Construction Stage Safety and Health Plan

In accordance with the requirements of the Safety, Health & Welfare at Work (Construction) Regulations 2013, the preliminary Safety & Health Plan prepared by the PSDP will be further developed by the PSCS before the commencement of the construction work and updated on a regular basis during the construction phase of the project.

The document will include the following sections and subsections to ensure the management of health and safety during the construction phase of the project:

##### 1. **Description of Project:**

- Project description and programme details
- Details of client, PSDP and PSCS, designers
- Contractor and other consultants
- Extent and location of existing records and plans
- Arrangements for communicating with Contractors, PSDP and others as appropriate.

##### 2. **Communication and Management of the Work:**

- Management structure and responsibilities
- Safety and health goals for the project and arrangements for monitoring and review of safety and health performance
- Arrangements for:
  - Regular liaison between parties on site
  - Consultation with the workforce
  - The exchange of design information between the Client, Designers, Project Supervisor for the Design Process, Project Supervisor Construction Stage and Contractors on site
  - Handling design changes during the project
  - The selection and control of contractors
  - The exchange of safety and health information between contractors
  - Security, site induction, and on-site training
  - Welfare facilities and first aid
  - The production and approval of risk assessments and method statements
  - The reporting and investigation of accidents and other incidents (including near misses)
- Site rules
- Fire and emergency procedures



### 3. Arrangements for Controlling Significant Site Risks:

- Safety risks
  - Services, including temporary electrical installations
  - Preventing falls
  - Work with or near fragile materials
  - Control of lifting operations
  - Dealing with services (water, electricity and gas)
  - The maintenance of plant and equipment
  - Poor ground conditions
  - Traffic routes and segregation of vehicles and pedestrians
  - Storage of hazardous materials
  - Dealing with existing unstable structures
  - Accommodating adjacent land use
  - Other significant safety risks
- Health risks:
  - Dealing with contaminated land
  - Manual handling
  - Use of hazardous substances
  - Reducing noise and vibration
  - Other significant health risks

The construction stage safety and health plan will be maintained on site by the PSCS and will be communicated to all relevant parties on an ongoing basis through inductions, site safety meetings and toolbox talks etc. as required.

### 5.3 Control of Documents

The Contractor will establish, implement and maintain a procedure to control project documents and records so they are clearly identifiable, organised, current, easily located and revised when necessary.



## 6. EMERGENCY RESPONSE

### 6.1 Introduction

This chapter of the CEMP presents an Emergency Response Plan for the proposed development. The Emergency Response Plan shall be finalised in accordance with this outline plan following the appointment of the Contractor for the construction works and following detailed design development.

This Emergency Response Plan contains predetermined guidelines and procedures to ensure the safety, health and welfare of everybody involved in the project and to protect the environment during the construction phase of the proposed development. This plan outlines the immediate response to an emergency or disaster situation and will be developed by the construction works Contractor and PSCS as part of their construction stage Safety and Health Plan.

An emergency is any disruptive or harmful event that endangers people, environment, property or assets. Emergencies can be small, as in a fire contained by employees using firefighting equipment or large, as in a disaster resulting from a storm.

In the context of the proposed development, examples of Emergency Response Plan emergency events are:

- Medical emergency
- Explosion
- Overheated equipment
- Chemical and fuel spill
- Fire
- Loss of power
- Vehicle incidents

Example sources of emergency or disaster events are:

- Unstable/inappropriate stockpiles on site
- Faulty or incorrect use of equipment
- Falls from height
- Smoking
- Storm/adverse weather
- Power failure
- Fuel spill
- Road failure
- Serious vehicle collisions or overturning



## 6.2 Emergency Response Plan

An emergency response plan deals with the immediate physical effects of a disaster and outlines the initial response.

### 6.2.1 Emergency Response Liaison

The Contractor/PSCS will designate an individual to serve as the Emergency Response Liaison for this project. The Emergency Response Liaison will coordinate the emergency response for the duration of any emergency at or nearby the project site.

Kerry County Council, An Garda Síochána and the HSE Ambulance Co-ordinator will be provided with the construction programme and the onsite contact information from the Emergency Response Liaison prior to construction.

The Emergency Response Liaison will be immediately reachable at all times during project construction. The Liaison will coordinate with the above agencies to establish emergency procedures for access to and within the site in the event of an emergency.

### 6.2.2 Reporting Emergencies

In the event of fire, storm, flood, serious injury or other emergency, contact:

**ALL ON SITE EMERGENCIES DIAL 112 or 999**

### 6.2.3 Designated Responder

A map depicting the location with the emergency meeting point will be furnished to Kerry County Council Fire Department and HSE ambulance co-ordinators.

Upon arrival on the scene, the senior EMS Officer will set up the incident command structure. The Emergency Response Liaison and all Contractor's personnel will cooperate with directions of the incident commander and assist as directed.

The nearest emergency services, ambulance and Accident & Emergency (A&E) facilities are:

Service:	Contact Details:	
Accident & Emergency (A&E)	University Hospital Kerry	(066) 718 4000
Ambulance Service	Dial 112 or 999	
Fire Services	Dial 112 or 999	
Garda Station	Sneem Garda Station	(064) 664 5111



Each member of the Contractor’s site team who are First-Aid and Cardiopulmonary Resuscitation (CPR) trained personnel will be identifiable with a hard hat sticker indicating their training.

#### 6.2.4 Emergency Alarm

The emergency alarm will be raised on site as soon as an emergency situation is detected, the alarm will be identified (Contractor to check those that apply):

Air Horn		Radio		Voice		Hand Signals		Siren	
-------------	--	-------	--	-------	--	-----------------	--	-------	--

#### 6.2.5 Emergency Reporting

In the event of an emergency the nearest supervisor with radio equipment/mobile phone will be notified. The degree of emergency will be reported to the Emergency Response Liaison who will contact the Emergency Services and request the appropriate emergency service.

#### 6.2.6 Medical Protocol

In the event of a major medical emergency, the emergency centre (999) will be notified, and an ambulance and emergency medical team will respond to the scene. All major medical cases require professional (ambulance) transportation. In the event of a minor medical case, the affected employee can be transported via company vehicle in the escort of a foreman or site engineer (with first aid training).

#### 6.2.7 Emergency Response

Upon notification, the Emergency Response Liaison will respond to the emergency scene and manage emergency operations:

**1. Assess hazards and make the area safe** – If you cannot enter the area without risking your safety, don’t do it, call the Emergency Services immediately and wait for them. If you think you can safely enter the area, look around the emergency scene for anything that can be dangerous or hazardous to you, the casualty, or anyone else at the scene. Bystanders can help with making the area safe. First aid kits will be available on site. Operators that have been first aid/CPR/AED trained will be listed on site and easily identifiable by a hard hat sticker.

**2. Take charge of the situation** – if you are the first-aid provider on the scene act fast. If someone is already in charge, briefly introduce yourself and see if that person needs any help. If there is any chance the casualty could have a head or spinal injury, tell them not to move.

**3. Get Consent** – always identify yourself as a first-aid provider and offer to help. Always ask for consent before touching a conscious adult casualty and always ask for consent from a parent or guardian before touching an unconscious or conscious child or infant. With an unconscious adult casualty consent is implied as it is generally accepted that most people want to live. Remember to protect yourself first by wearing gloves and eye protection.



**4. Assess Responsiveness** – is the casualty conscious or unconscious? Note their response while you are asking them for their consent. If they respond, continue with the primary survey, and if they don't respond, be aware that an unconscious casualty is or has the potential of being a breathing emergency.

**5. Call out for help** – this will attract bystanders. Help is always useful in an emergency situation. Someone can be called over the phone for medical help. Others can bring blankets if needed, get water, etc. A bystander can help with any of the following:

- Make the area safe.
- Find all the casualties.
- Find the first aid kit, or any useful medical supplies.
- Control the crowd.
- Call for medical help.
- Help give first aid, under your direction.
- Gather and protect the casualty's belongings.
- Take notes, gather information, be a witness.
- Reassure the casualty's relatives.
- Lead the ambulance attendants to the scene of the emergency.
- Notify Emergency Services as soon as you can. Either send a bystander or call yourself.

In the event of a major medical emergency, the Emergency Response Liaison, as the person-in-charge of the emergency scene, will dispatch someone to the site access point nearest the emergency scene to direct and lead arriving outside responders to the emergency scene. The designated meeting point will be agreed prior to the commencement of construction. Emergency personnel will be met at this meeting point which has been communicated by management during the 999 call. The emergency personnel escort will use the hazard lights on their vehicle so they are easily identified.

#### 6.2.8 Escape and Evacuation Procedure

Dependent upon the degree of the emergency and if safe to do so, employees will evacuate to the designated assembly area where the designated wardens shall account for all employees and determine if anyone still remains within the emergency scene.

Should a wild land fire or peat slippage occur, and the designated assembly area is compromised, other locations will be designated as secondary assembly areas.

#### 6.2.9 Prevention of Illness/Injury due to Weather/Elements

1. All employees will have access to shelter and heat in the event of inclement weather.
2. Employees will have access to at least a litre of water at all times.
3. Weather forecast will be discussed every morning with the crews. Weather conditions and forecast will be monitored regularly by management.
4. No Employee will work alone. A buddy system will be used so employees can contact a supervisor in case of an emergency.



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#### 6.2.10 Environmental Emergency Procedure

An emergency preparedness and response procedure is required to prevent environmental pollution incidents. Emergency Silt Control and Spillage Response Procedures are included in Section 4.7 of this CEMP.

Suitable spill kits and absorbent material for dealing with oil spills will be maintained on site. In the event of pollution or potential risk of pollution, the Local Authority should be informed immediately.

#### 6.2.11 Emergency Response Plan – Haul Routes

Emergency Response Procedure relating to transportation of plant, equipment and materials to the site will be developed by the Contractor during the construction phase of the development.



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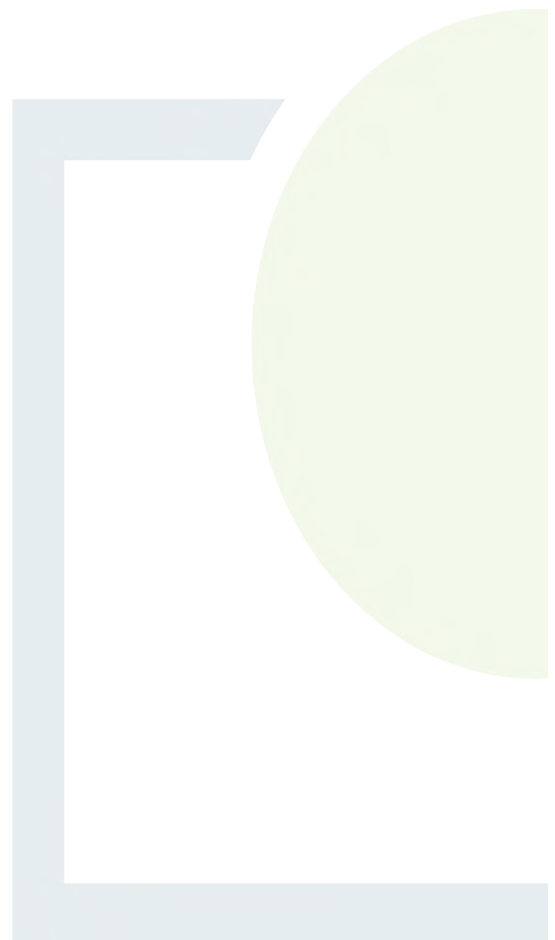


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## **APPENDIX 3**

Bat Survey Results



**Table 1: Bat Activity Transect results (09/08/2021)**

Species	Recordings	Calls
Pipistrellus pygmaeus	46	1097
Pipistrellus	52	1247
Nyctalus leisleri	2	10
Myotis daubentonii	4	50
Unidentified Pipistrelle	1	0

**Table 2: Bat Static Detector results (09/08/2021-09/09/2021)**

Date	Species (no. of calls per night)								
	MYODAU	MYOMYS	MYONAT	NYCLEI	PIP NAT	PIPIPI	PIPPYG	PLEAUR	RHIHIP
20210809	2			6		71	100	1	1
20210810				4		2	1		
20210811	1	1	1	2	1	475	159		3
20210812	12	1	1	29		146	196	7	
20210813	3	1		25		58	25	1	
20210814				9		2	1		
20210815	3	1		2	1	226	141	2	2
20210816	2	1		3		104	279	4	3
20210817	2			1		177	105	4	1
20210818								1	
20210819				5					
20210820	2			5		344	156	1	
20210821	3			6		64	94		1
20210822	6		1	12		80	154	9	4
20210823	4			19		66	166	18	1
20210824	2	1		6		46	150	2	3
20210825	2			4		27	128	5	4
20210826	4	1		3		28	123	7	3
20210827	5			3		67	176	3	4
20210828	2		1	4		33	110	2	5
20210829	2			9		29	157	9	6
20210830	2	2		7		83	176	11	4

Date	Species (no. of calls per night)								
	MYODAU	MYOMYS	MYONAT	NYCLEI	PIP NAT	PIPPIP	PIPPYG	PLEAUR	RHIHIP
20210831	2			8		56	196	3	6
20210901	3			6		34	131	5	2
20210831	2			8		56	196	3	6
20210901	4			9		58	179	7	2
20210902	2	2		3	2	41	186	8	3
20210903	1			4		59	241	3	3
20210904	5			13		51	120	7	1
20210905		2		13		52	238	14	2
20210906	2		1	10		193	168	8	4
20210907	1				1	141	201	3	6
20210908				1					
<b>Total</b>	<b>81</b>	<b>13</b>	<b>5</b>	<b>239</b>	<b>5</b>	<b>2869</b>	<b>4453</b>	<b>148</b>	<b>80</b>

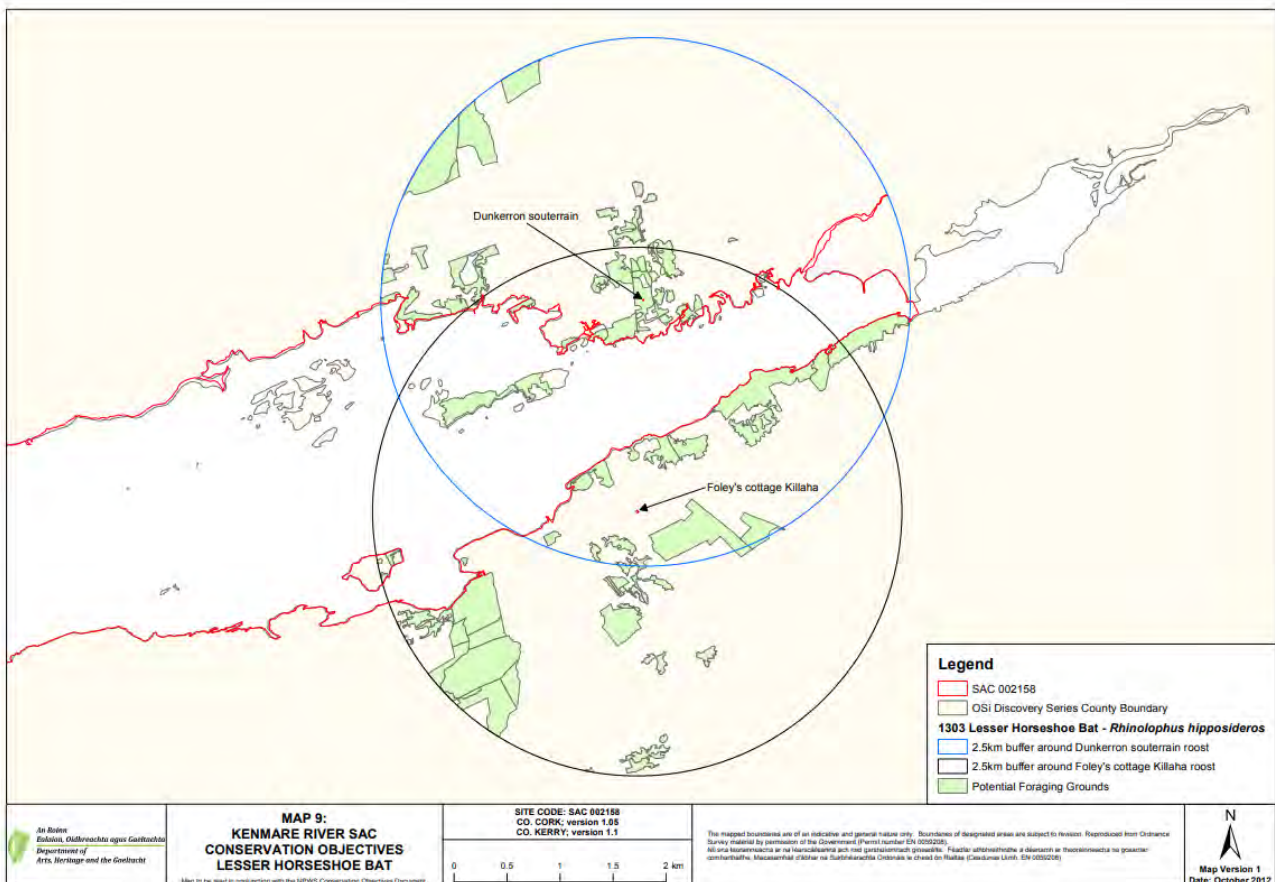


Figure 1: Qualifying bat roosts and foraging buffers in Kenmare Bay SAC. Extracted from Kenmare River SAC Conservation Objectives: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO002158.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002158.pdf)

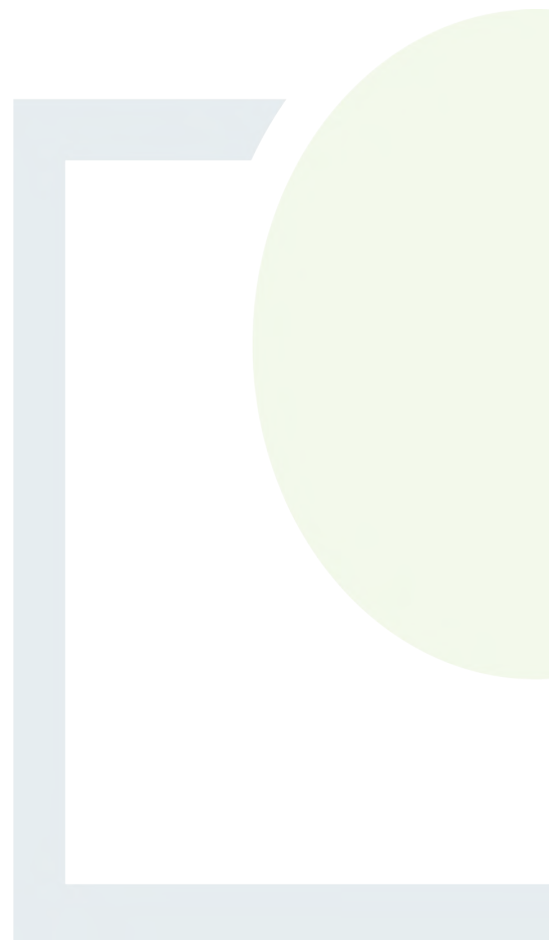


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## **APPENDIX 4**

Freshwater Pearl Mussel  
Survey Report



**Sweeney Consultancy**

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**Survey of the  
Freshwater Pearl Mussel (*Margaritifera margaritifera*)  
in Rivers Associated with Sneem Historical Landfill**



*August 2021*

*Due to the sensitive nature of data concerning the locations of freshwater pearl mussels, distribution of this report should be restricted and not released to the public.*

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## 1. INTRODUCTION

### 1.1 Background

Sweeney Consultancy was commissioned by Fehily Timoney & Company Consultants, to undertake a survey of the protected Freshwater Pearl Mussel (*Margaritifera margaritifera*) in watercourses downstream of the historical Sneem landfill site, north of the village of Sneem, Co. Kerry.

### 1.2 Subject Site and Watercourses

The subject site and downstream watercourses are shown in Figure 1. The site is in the townland of Maulagallane, on the western side of the Ardsheelhane River, a tributary of the Sneem River, which cascades over bedrock to saline waters immediately downstream of Sneem Bridge.

**Figure 1. Subject Site and Watercourses**



## **2. METHODOLOGY**

Field surveys were undertaken on 30 August, 2021. The river habitat surveyed was from Sneem Bridge (ITM 469085 566830) at the downstream end to the next road bridge upstream on the Sneem River (ITM 46887 567602) and, on the Ardsheelhane River, to the next field boundary on the right bank upstream of the historical landfill site (ITM 469119 567994).

Grid reference of photographs were recorded using a hand-held Garmin GPS 72H and photographs were taken with digital cameras (Sony DSLR-A100 and Olympus Tough TG6). The habitat quality for freshwater pearl mussels was visually, based on the criteria outlined by Hastie et al. (2000) and by Skinner et al. (2003). A licensed survey (Licence No C16/2021) were carried out in accordance with the standard methodology (Anon 2004), by viewing the riverbed with a batyhscope while wading upstream, and by snorkelling a few deeper sections.

### 3. RESULTS

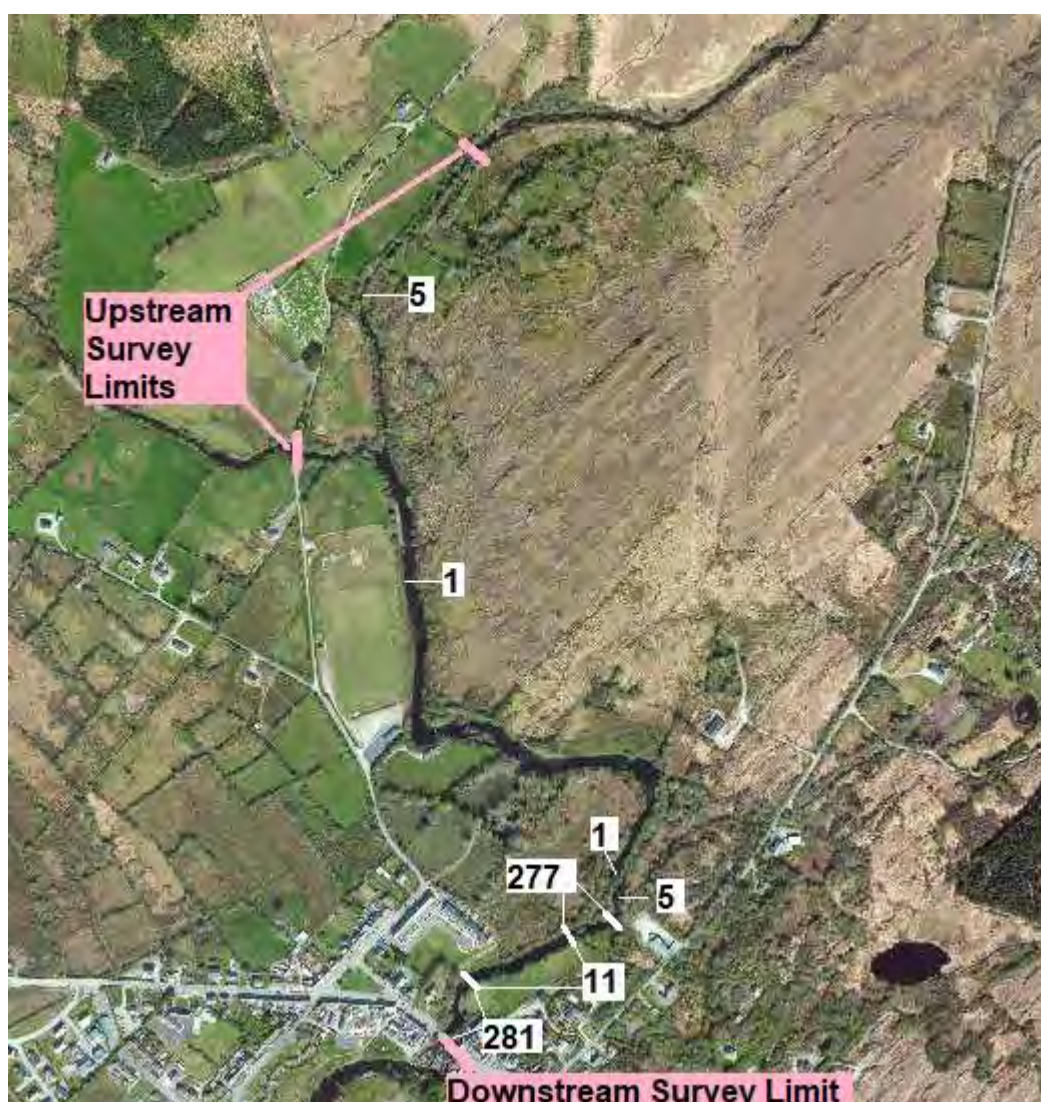
#### 3.1. Habitat Quality

Apart from short sections of high energy with mobile substrata or bedrock and deep pools, most of the aquatic habitat assessed is suitable for freshwater pearl mussels (Photo 1, , Appendix 1).

#### 3.2. Freshwater Pearl Mussel Population Location and Size

A total of 566 freshwater pearl mussels (566 in the Sneem River and 5 in the Ardsheelhane River) were recorded on 30/08/2021. Numbers of mussels counted at each location are indicated in Figure 2. All mussels observed appeared healthy and were actively filtering (Photo 2, Appendix 1).

**Figure 1. Freshwater Pearl Mussel Locations and Numbers**



Five live mussels were found in the Ardsheelhane River, just downstream of the historical landfill site at ITM 468973 567789. The nearest mussel record downstream of the confluence with the Sneem River was a single individual at ITM 469037 567432, approximately 500m downstream of the historical landfill site. The highest concentrations of mussels were towards the downstream end of the stretch surveyed, with 277 from ITM 469302 566978 to ITM 469239 566961 and 281 from ITM 469121 566896 to ITM 469090 566840.

Information on the locations of freshwater pearl mussels gathered in this survey will be given to National Parks and Wildlife Service, as required by the Licence Conditions.

## APPENDIX 1

### PHOTOGRAPHS

**Photo 1: Upstream of Sneem Br. with greatest Freshwater Pearl Mussel abundance.**



**Photo 2: Freshwater Pearl Mussels in Sneem River actively filtering.**



## APPENDIX 2

### REFERENCES

Anon (2004). *Margaritifera margaritifera*. Stage 1 and Stage 2 survey guidelines. *Irish Wildlife Manuals*, No. 12. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Hastie L.C., Boon P.J. and Young M.R. (2000). Physical microhabitat requirements of freshwater pearl mussel *Margaritifera margaritifera* (L.). *Hydrobiologia* 429 59-71

Skinner, A, Young M. & Hastie L. (2003). Ecology of the Freshwater Pearl Mussel. *Conserving Natura 2000 Rivers Ecology Series No. 2 English Nature, Peterborough.*

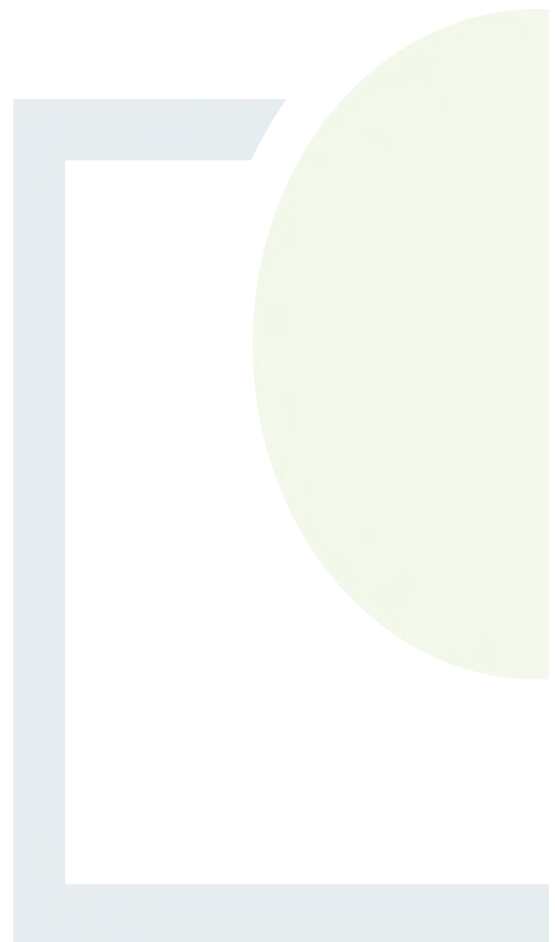


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## **APPENDIX 5**

Aquatic Survey Report



# Fisheries Survey to Inform Ecological Assessment in terms of remedial works to be carried out on a disused landfill site in Sneem, Co Kerry



*Image: Four freshwater pearl mussel and a juvenile salmon, taken in the Ardsheelane River downstream of the disused landfill site*

Prepared by: Rory Dalton, Independent Ecologist

Prepared for: Fehily Timony and Company, on behalf of Kerry County Council

21.2.2022

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## 1 INTRODUCTION

Rory Dalton was commissioned by Fehily Timony and Company, on behalf of Kerry County Council, to carry out a fisheries survey to inform their ecological assessment of remedial works to be carried out on a disused landfill site in Sneem, Co Kerry. The landfill site lies approximately 1km north of Sneem village, and is situated between a small local road and the Ardsheelane River. It is proposed to cap the disused landfill in an attempt to reduce the leaching of its contents to the local environment.

## 2 METHODS

### 2.1 Stream Walkover

A walkover of the watercourse adjacent to the site was carried out in line with relevant best practice guidelines (*e.g.* NRA 2005a, NRA 2008). Approximately 300m of the Ardsheelane River<sup>1</sup> were walked. The aim of the walkover was to assess the aquatic habitats, the riparian habitats, the physical and hydromorphological characteristics, to look for signs of species of interest, to identify issues pertaining to the aquatic environment and determine their causes and effects where possible. Notes were taken and linked to a field map. Evaluation of the aquatic/fisheries habitats present in terms of their ecological value was assessed using criteria amended after NRA 2009 and Nairn & Fossitt 2004. Aquatic habitat assessment was conducted in line with the methodology given in the Environment Agency's '*River Habitat Survey in Britain and Ireland Field Survey Guidance Manual 2003*' (EA, 2003). Habitats of use to the various life stages of salmonids are assessed based on the information provided in the

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<sup>1</sup> The Ardsheelane is the watercourse that flows adjacent to the landfill site.

book "Trout and Salmon. Ecology, Conservation and Rehabilitation." Crisp (2000). Lamprey ammocoete habitat quality as well as the suitability of adult spawning habitat is assessed based on the information provided in Maitland (2003) and Gardiner (2003).

## **2.2 Fisheries Assessment**

Two sites were selected to be electrofished, one upstream of the site, and one on the downstream of the site. Electrofishing followed the 'WFD Electric fishing in wadable reaches' (CFB, 2008) methodology. Electrofishing was carried out for a measured distance, determined on the day by the stream characteristics at each site. A minimum of three passes over each section was employed as a standard methodology to ensure capture of all fish present. Methodology for lampreys followed that outlined in Monitoring the River, Brook and Sea Lamprey, *Lampetra fluviatilis*, *L. planeri* and *Petromyzon marinus* (Harvey & Cowx, 2003). Electrofishing for lamprey utilised pulsed fishing in suitable habitat. Full depletion was employed. Fish intercepted were stored in a container of river water, anaesthetised using clove oil and measured to the nearest mm. Subsequent to this, the fish were allowed to recover in a container of well oxygenated river water. All fish were released alive; there was no damage or mortality.

## **2.3 Otter Survey**

The otter survey broadly followed the best practice survey methodology for otter as recommended by Chanin (2003) and Bailey & Rochford (2006). A standard 500m section was surveyed between the upstream electrofishing site and 100m downstream of the downstream electrofishing site. Where practical and safe, the river was surveyed from within the channel, which greatly increases the likelihood of otter sign detection. The presence of otters was ascertained during the targeted survey by seeking field signs such as footprints, spraints and slides as well as holts and couches.

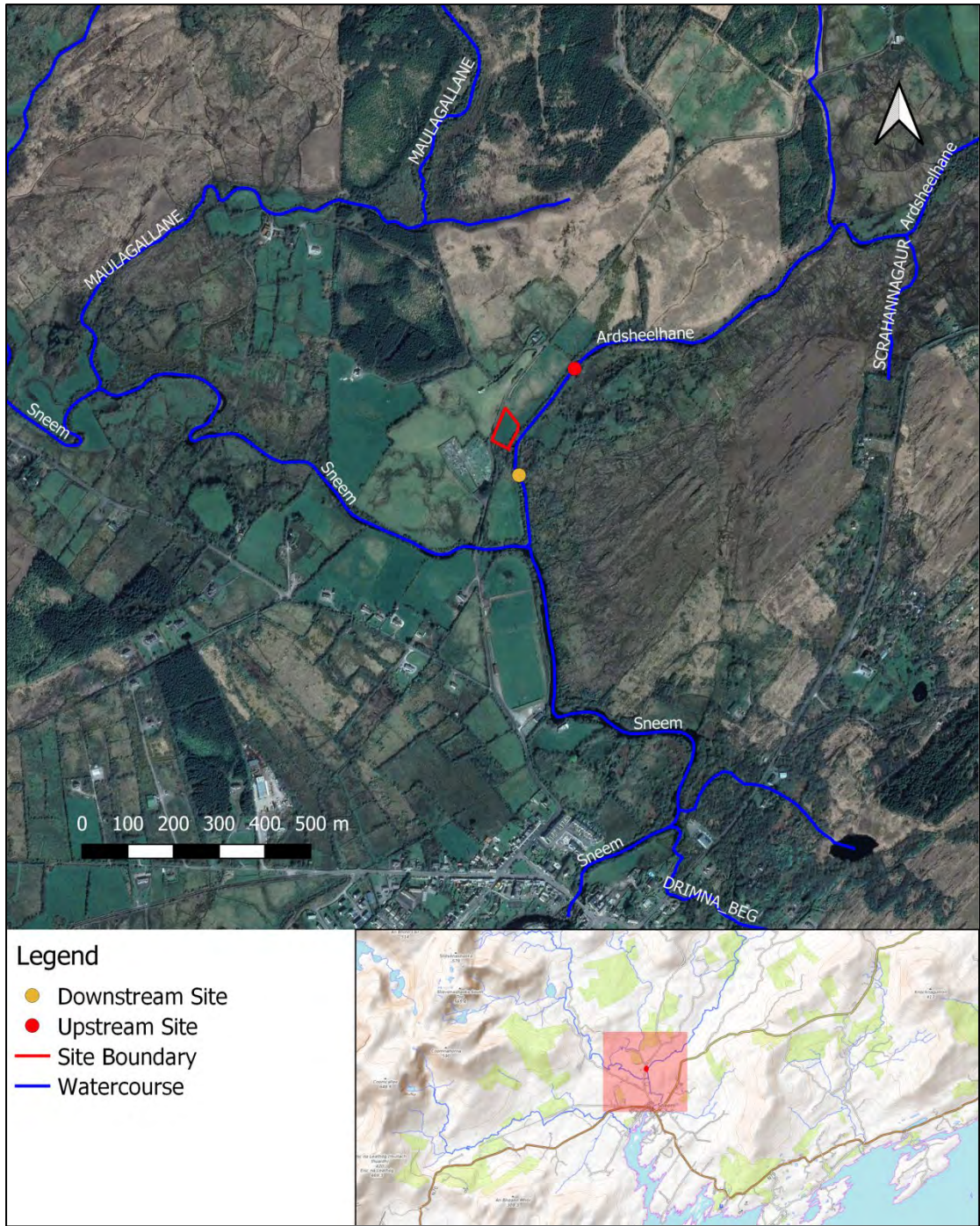


Figure 1: The sites within the context of the landfill site and the greater area

### 3 RESULTS

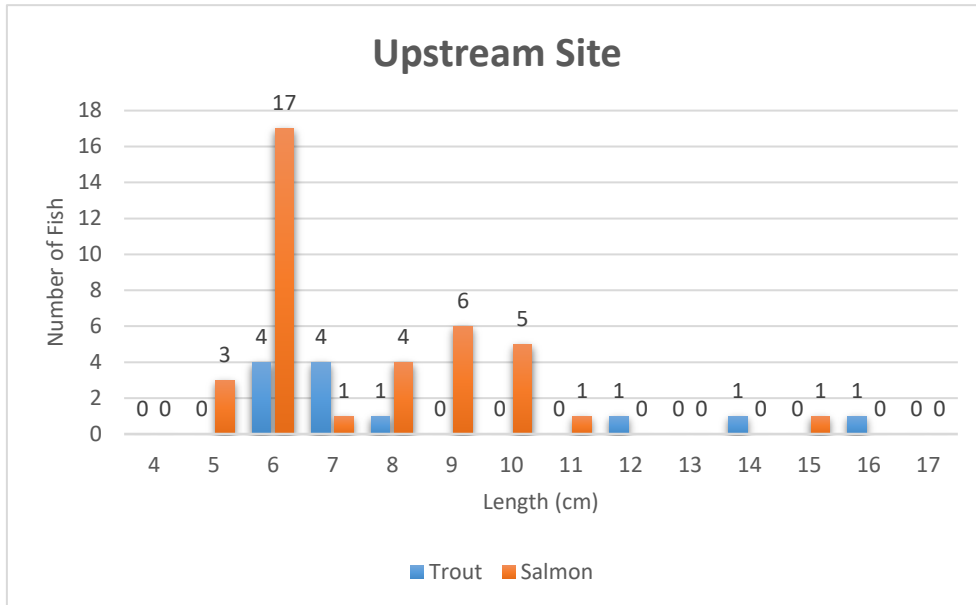
#### 3.1 Upstream Electrofishing Site

The upstream electrofishing site was selected approximately 200m upstream of the landfill site. Brown trout *Salmo trutta* and salmon *salmo salar* were captured at the site. A total of 12 trout and 38 salmon captured within 10 minutes fishing a 22m stretch of river accounting for 187m<sup>2</sup> of river which was electrofished. This equates to 0.064 trout/m<sup>2</sup>. and 0.2 salmon/m<sup>2</sup>. The average trout length was 8.2cm and the median was 6.7cm. The smallest trout was 5.2cm, and the largest was 15.9. The average salmon length was 7.1cm and the median was 6cm. The smallest salmon was 4.8cm, and the largest was 14.4.



Figure 2: A row of trout (above) and salmon (below) from the upstream site.

The age profile is shown in the frequency distribution graph below where the horizontal axis is the fish length categories in cm, and the vertical axis is the number of fish within each length category. The age distribution is nicely varied, with 3 age groups of salmon present, and at least 3 age groups of trout present.



Graph 1: A frequency distribution histogram of trout and salmon lengths from the upstream site

### 3.2 Downstream Electrofishing Site

The downstream site was selected 100m downstream of the landfill site. Brown trout *Salmo trutta*, salmon *salmo salar* and eel *Anguilla anguilla* were captured at this site.

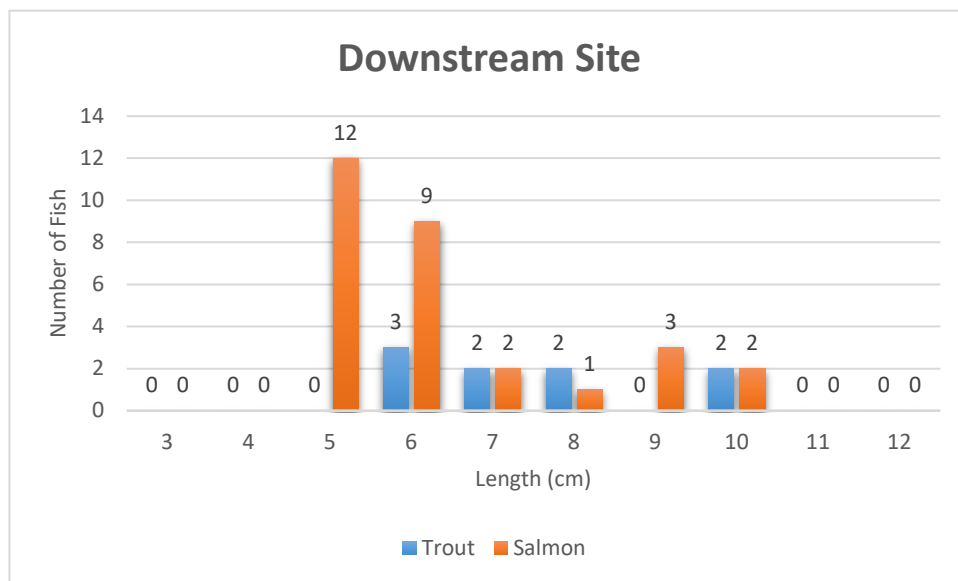


Figure 3: The eel which was captured from the downstream site.

A total of 9 trout, 29 salmon and 1 eel were captured within 10 minutes fishing a 20m stretch of river accounting for 180m<sup>2</sup> of river which was electrofished.

This equates to 0.05 trout/m<sup>2</sup>. and 0.16 salmon/m<sup>2</sup>. The average trout length was 7.24cm and the median was 7cm. The smallest trout was 5.1cm, and the largest was 10. The average salmon length was 5.85cm and the median was 5.2cm. The smallest salmon was 4.3cm, and the largest was 9.5. The eel was 25.4cm in length.

The age profile is shown in the frequency distribution graph below where the horizontal axis is the fish length categories in cm, and the vertical axis is the number of fish within each length category. The age distribution is nicely varied, with 3 age groups of salmon present, and 3 age groups of trout present.



Graph 2: A frequency distribution histogram of trout and salmon lengths from the downstream site



Figure 4: A sample of the juvenile salmon captured from the downstream site

### 3.3 Aquatic habitats and hydromorphology

Approximately 500m of the Ardsheelane River was walked within the vicinity of the landfill site in order to carry out a fisheries habitat assessment. The river has a relatively high velocity character, consisting of riffles and swift glides, interspersed with some small pools which, though relatively shallow (0.5-0.7m deep) afford terraced resting spots for migrating fish. The subsoil provides little in the way of gravel and sand, but there are plenty of cobbles and boulders which combine to make a stable river bed, with very little mobile sands and gravels. Smaller sediment has been washed out of the high velocity riffled areas resulting in some boulder dominated riffles. This river is subject to spate floods as a result of its steep catchment, these spates rise up to 3m above the low water line in places as evidenced by flood debris.

In terms of fisheries habitats, there are some good holding pools for adult salmonids as well as excellent rearing areas for juveniles. There are small pockets of suitable salmonid and lamprey spawning habitat, but no large spawning beds were present. However, there appears to be more expansive spawning habitat present from 1.5km upstream of the site almost all the way to the headwaters where there is much more mobile gravel present to create the beds, and it is likely that most of the spawning is done here. There is good eel habitat in places with plenty of submerged large stones as well as tree roots and other refuges. No optimal or some sub optimal lamprey ammocoete habitat was found within this section of the watercourse; this is likely due to the combination of low sediment input combined with the high energy nature of the river. There is a mixture of woodland and treeline on the eastern bank as well as a treeline on the western bank, both of which are providing excellent shading ensuring that algal growth and the pressures associated with it are largely avoided. It is also providing cover for aquatic and semi-aquatic fauna.

The riverbed is very clean in terms of siltation. In terms of terrestrial inputs to the watercourse, there are good riparian buffer zones between the surrounding land and the river; these riparian buffer zones are seen as very important for river function. The majority of land use within the catchment is up lightly grazed upland heaths, along with some coniferous plantations and low intensity pastures, and crucially, the riparian corridor is largely native scrub and woodland. The absence of high intensity farmland and the presence of the vegetated corridor has resulted in terrestrial nutrient input in the form of leaves and detritus rather than dissolved nutrients. Leaves will either wash out onto the floodplain during floods or else float to areas of deposition where they can be decomposed by appropriate invertebrates, lamprey and microscopic organisms and feed the ecosystem in a balanced manner. This is far better for the river than eutrophic flushes that tend to accompany the input of readily available dissolved nutrients from high intensity farmland.

It should be noted here that a population of freshwater pearl mussel *Margaritifera margaritifera* is present within the river. They were present at the downstream site, and are certainly occupying other stretches of the river. FPM surveying was not part of the remit for this survey, and as such they are mentioned here to flag their presence.

### 3.4 Summary Tables

Table 1: Fish survey findings

Site	Species	Per minute	Per m <sup>2</sup>	Largest	Smallest	Average	Median
Upstream	Trout	1.2	0.064	15.9	5.2	8.2	6.7
Upstream	Salmon	3.8	0.2	14.4	4.8	7.1	6
Downstream	Trout	0.9	0.05	10	5.1	7.24	7
Downstream	Salmon	2.9	0.16	9.5	4.3	5.85	5.2
Downstream	Eel	0.1	0.005	25.4			

Table 2: Site abiotics

Parameter	Upstream Site	Downstream Site
length fished	22	20
time (mins)	10	10
width (m)	8.5	9.0
mean depth (cm)	25	25
maximum depth (cm)	90	45
bed rock (%)		
boulder (%)	10	15
cobble (%)	55	65
gravel(%)	30	15
sand (%)	5	5
silt (%)		
riffle (%)	40	40
pool (%)	20	20
glide (%)	40	40

### 3.5 Otter Survey

The otter survey broadly followed the best practice survey methodology for otter as recommended by Chanin (2003) and Bailey & Rochford (2006). As can be seen from the otter survey transect in the map below, a 500m section was surveyed between the upstream electrofishing site and 100m downstream of the downstream electrofishing site, on both sides of the river. Non riparian areas with good cover and good cover connectivity to the river were also searched. The presence of otters was ascertained during the targeted survey by seeking field signs such as footprints, spraints and slides as well as holts and couches.

A single spraint was found on a boulder on the western bank of the river beside the remains of what appears to be a foot bridge or pully bridge which has fallen into disrepair. Again, on the western bank, under a very dense growth of rhododendron, a territorial marking site was found. This feature contained 3 spraints of varying ages. This is not considered a heavily marked sprainting site, however, it was evident that this sprainting site is used on a long

standing basis due to the effects on the vegetation, particularly the moss. This is a common indicator of regularly used sprainting sites (Chanin, 2003). No features were found that were deemed as having been used by otters to rest (holts or couches). A number of features that would be suitable were found in the form of the root balls of semi wind thrown trees with multiple access and escape points, however, there were no signs of otter occupation.



Figure 5: The particulars of the otter survey



Figure 6: The sprainting site described above

## 4 BIBLIOGRAPHY

Bailey, M. and Rochford J., 2006. Otter Survey of Ireland 2004/2005. Irish Wildlife Manuals, No. 23. Dublin: National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.

Chanin, P., 2003. Monitoring the otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring. Series No. 10. Peterborough: English Nature

Chanin, PRF (2003). Ecology of the European Otter *Lutra lutra*. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.

CFB (2008a) Methods for the Water Framework Directive. Electric Fishing in Wadeable Reaches. Central Fisheries Board.CFB (2008)

Crisp, D.T., (2000) Trout and Salmon. Ecology, Conservation and Rehabilitation. Blackwell Science: Oxford

Environment Agency's 'River Habitat Survey in Britain and Ireland Field Survey Guidance Manual 2003'

Fossitt Julie A, A Guide To Habitats In Ireland (2000)

Gardiner, R., 2003. Identifying Lamprey. A Field Key for Sea, River and Brook Lamprey. Conserving Natura 2000 Rivers Conservation Techniques Series No. 4. Peterborough: English Nature

Harvey J and Cowx I. (2003). Monitoring the river, brook and sea lamprey, *Lampetra fluviatilis*, *L. planeri* and *Petromyzon marinus*. Conserving Natura 2000 Rivers Monitoring Series No. 5, English Nature, Peterborough.

IFI (2010) IFI Biosecurity Protocol for Field Survey Work. Inland Fisheries Ireland.

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. & Cassidy, D. (2011) *Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht

Kurz, I. and Costello, M.J. 1999 An outline of the biology, distribution and conservation of lampreys in Ireland . F. Marnell (ed.), Irish Wildlife Manuals, No. 5.

Maitland, P.S. (1972) A key to the freshwater fishes of the British Isles: with notes on their distribution and ecology. Freshwater Biological Association, Scientific Publication No. 27, Cumbria.

Maitland PS (2003). Ecology of the River, Brook and Sea Lamprey. Conserving Natura 2000 Rivers Ecology Series No. 5. English Nature, Peterborough.

National Parks and Wildlife Service, 2007. Background to the conservation assessments for the sea lamprey *Petromyzon marinus*, the river lamprey *Lampetra fluviatilis* and the brook lamprey *Lampetra planeri* in Ireland. Dublin: National Parks and Wildlife Service

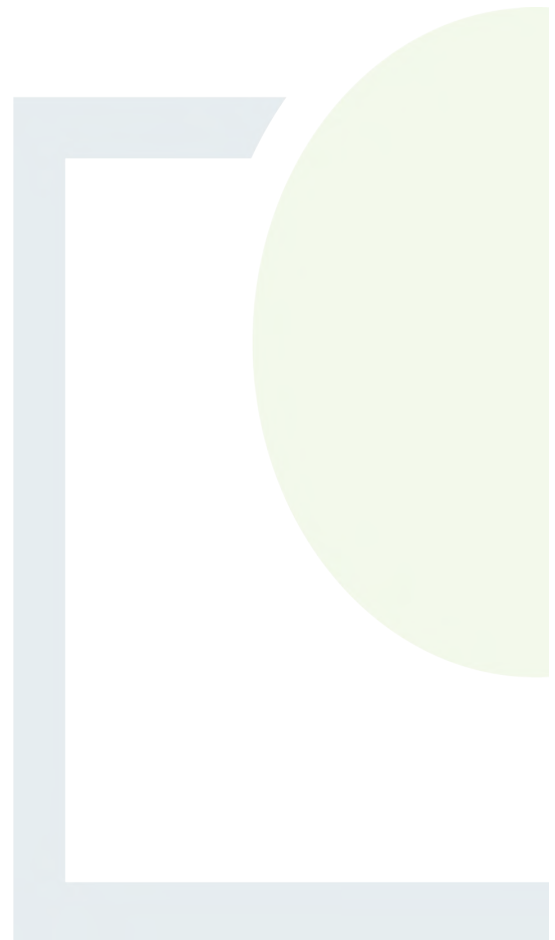


**FEHILY  
TIMONEY**

CONSULTANTS IN ENGINEERING,  
ENVIRONMENTAL SCIENCE  
& PLANNING

## **APPENDIX 6**

### Invasive Species Management Plan





CONSULTANTS IN ENGINEERING,  
ENVIRONMENTAL SCIENCE &  
PLANNING

# SOUTH AND WEST KERRY LANDFILLS

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## INVASIVE SPECIES MANAGEMENT PLAN FOR SNEEM HISTORICAL LANDFILL

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Prepared for: Kerry County Council



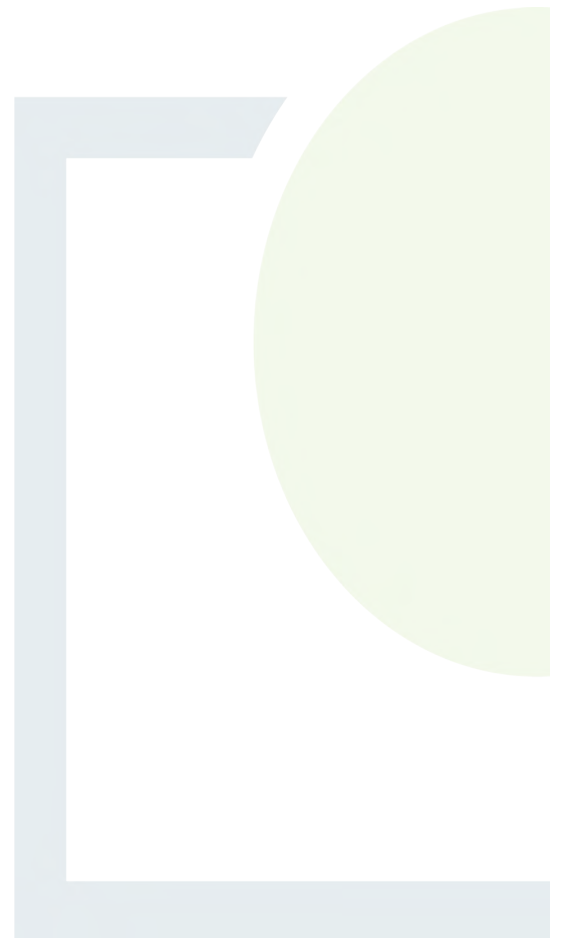
**Date:** May 2022

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## INVASIVE SPECIES MANAGEMENT PLAN

**REVISION CONTROL TABLE, CLIENT, KEYWORDS AND ABSTRACT**  
User is responsible for Checking the Revision Status of This Document

Rev. No.	Description of Changes	Prepared by:	Checked by:	Approved by:	Date:
0	Final Issue	KM/AMW	JK	BG	16/06/2022

**Client:** Kerry County Council

**Keywords:** Invasive species, Sneem Historic Landfill, Management

**Abstract:** This document provides an Invasive Species Management Plan to provide guidance and strategies for the management of invasive plant species located at the Sneem Historic Landfill.

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## 1. INTRODUCTION

Kerry County Council has commissioned Fehily Timoney & Company (FT) to prepare an Invasive Species Management Plan as part of the proposed remediation plan for Sneem Historic Landfill. Fehily Timoney & Company (FT) has prepared this Invasive Species Management Plan (ISMP) to comply with Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021 (not to cause the spread of non-native invasive plant species listed in schedule III), and to ensure non-native invasive plant species not listed in schedule III are not spread to adjacent land or Natura 2000 (European) sites. The report details a programme for the mapping and control of invasive species at the remediation site within the historical landfill site.

Two invasive species were noted during site surveys. Japanese knotweed is present in stands to the west of the site. Japanese knotweed is a high impact invasive species according to the National Biodiversity Data Centre, on a scale based on risk analysis according to Kelly et al., 2013. Montbretia is also present along the site boundary.

This document provides background information on the non-native invasive species present and mapping of their location and extent within the footprint of the remediation site. It provides sources of information including policy and guidelines to which cognisance has been paid, and the means of managing and controlling the species from site safely using prevention, containment, treatment, monitoring, follow up treatment, record keeping and appropriate disposal.

### 1.1 Legislative Context

In Ireland, the spread and propagation of species listed in the Third Schedule of S.I. No. 477/2011 European Communities (Birds and Natural Habitats) Regulations 2011 to 2021 is an offence. Under Regulation 49 (2) - 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 such plant in the third column of Part 1 of the Third Schedule, any plant which is included in Part 1 of the Third Schedule, shall be guilty of an offence. Under Regulation 50 it is an offence to transport a vector material listed in Part 3 of the Third Schedule except under licence.

In October 2017, Ireland's 3rd National Biodiversity Action Plan (NPWS, 2017), for the period 2017-2021 was launched. This Plan sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity' and follows on from the work of the first and second National Biodiversity Action Plans. Target 4.4 states that '*Harmful invasive alien species are controlled and there is reduced risk of introduction and/or spread of new species.*' This is supported by seven actions, those relevant to this management plan are:

- 4.4.3. *Continue and enhance measures for eradication, where feasible, control and containment of invasive species*
- 4.4.4. *Encourage horticultural nurseries to produce native species, varieties and landraces from appropriate native sources for public and private sector plantings. Public bodies will endeavour to plant native species in order to reduce importation of non-native species, varieties and landraces.*
- 4.4.6. *Publish legislation to address required provisions under the EU Regulation on invasive alien species (No. 1143/2014) and on responsibilities and powers regarding invasive alien species, giving IFI responsibility for aquatic invasive species.*



The Draft Kerry County Development Plan (Kerry County Council, 2022) includes Invasive Species Objectives. These objectives are as follows:

- *“Ensure invasive species are managed in compliance with the provisions of the EC (Birds and Habitats) Regulations (SI 477 of 2011), as amended, particularly Sections 49, 50 and the Third Schedule. Best practices, as produced and updated by relevant authorities, are to be adhered to in the management of invasive species particularly on sites proposed for development.”*
- *“Facilitate, in collaboration with relevant stakeholders increased awareness and the implementation of biosecurity measures to prevent the spread of invasive species, particularly along watercourses.”*
- *“Facilitate the provision of an appropriate site in the County for the disposal and management of invasive species and contaminated soil, further to best practice guidelines and the provisions of the EC (Birds and Habitats) Regulations (SI 477 of 2011), as amended.”*

## 1.2 Site Description

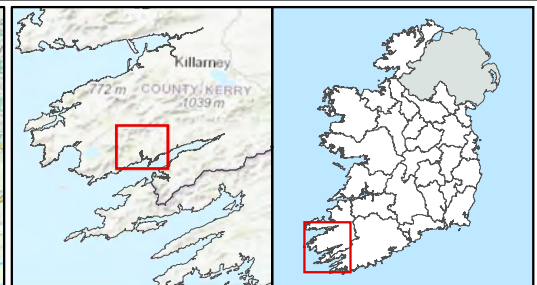
The historic landfill is located to the c. 1km north of Sneem village in the townland of Maulagallane and bordering Scrahannagaur townland.

The historic landfill body of waste occupies an area of approximately 6,700m<sup>2</sup>. The lands are presently used for agriculture. The surrounding landscape is rural in nature, with heath/rough grassland dominating, and agricultural land, woodland and forestry also plantations present. Kenmare Bay is located to the south, which is connected to Sneem village by Sneem Harbour.

The land use classifications (European Environment Agency, 2018) for the surrounding area as defined by the 2018 CORINE landcover dataset are: 243 Land principally occupied by agriculture with significant areas of natural vegetation. Within the wider landscape are: 234 Transitional woodland scrub, 412 Peat bogs, 312 Coniferous forests and 112 Discontinuous urban fabric.

The Ardsheelhane River borders the historic landfill site and is also directly connected through surface drains running along the northern and southern boundaries and discharging into the river.

The location of the site is shown in Figure 1.1.



Site Boundary



<b>TITLE:</b>	Site Location
<b>PROJECT:</b>	AA Screening for Sneem Historic Landfill, Co. Kerry
<b>FIGURE NO:</b>	1.1
<b>CLIENT:</b>	Kerry County Council
<b>SCALE:</b>	1:50000
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<b>PAGE SIZE:</b>	A3





## 2. METHODOLOGY

### 2.1 Relevant Guidance

The methodology and guidance for this management plan has been devised in consideration of the following relevant guidance:

- NRA, (2010) Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads. Revision 1, December 2010. National Roads Authority.
- Property Care Association, (2018). Practical Management of Invasive Non-Native Weeds in Britain and Ireland. Packard Publishing Ltd.
- Kelly et al., (2008). Best Practice Management Guidelines Japanese Knotweed *Fallopia japonica*. Prepared for NIEA and NPWS as part of Invasive Species Ireland.
- Tu, (2009) Assessing and Managing Species within Protected Areas. Protected Area Quick Guide Series. Editor J., Ervin, Arlington, VA. The Nature Conservancy, 40 pp.
- Stokes et al., (2004). Invasive Species in Ireland. Unpublished report to Environment and Heritage Service and National Parks and Wildlife Service. Quercus, Queens University Belfast, Belfast.
- AM-SOP-009 Information and Guidance Document on Japanese Knotweed
- RAPID, 2018. Good Practice Management- Japanese Knotweed (*Fallopia japonica*).
- INNSA, 2017. Code of Practice – Managing Japanese Knotweed

### 2.2 Desktop Study

A desktop study was carried out to identify existing records of invasive flora species at the remediation site within the Sneem Historic Landfill and habitat suitability of the adjacent area for the invasive species. This study allows the surveyor to narrow down the source of the species introduction and its likelihood of spreading. The following open sources of information were consulted:

- Invasive Species Ireland website (Invasive Species Ireland, 2022)
- Invasive Alien Species in Ireland website (Invasives.ie, 2022)
- OSI Aerial photography and 1:50000 mapping
- National Parks and Wildlife Service (NPWS) web mapping (NPWS, 2022)
- National Biodiversity Data Centre (NBDC) web mapping (National Biodiversity Data Centre, 2022)
- Environmental Protection Agency (EPA) web mapping (EPA, 2022)

### 2.3 Mapping

The habitats at the Sneem Historic Landfill were identified and classified, according to 'A Guide to Habitats in Ireland' (Fossitt, 2000) during walkover surveys undertaken by Fehily Timoney ecologists David Daly and Kate Mahony in August 2021. During these surveys, invasive non-native flora species were identified and mapped.



### 3. EXISTING ENVIRONMENT

#### 3.1 Desktop Records

Historical records of invasive species plants from the relevant national datasets were assessed through the National Biodiversity Data Centre (13/04/2022). Two records of invasive plant species were available within the 2km grid square the remediation site is located (V66Y). These species were:

- Butterfly bush (*Buddleja davidii*, a medium impact species last recorded in 2018)
- *Rhododendron ponticum*, a high impact species last recorded in 2006

**Table 3-1: Invasive flora species within the V66 Grid Square**

Common Name	Scientific Name	Impact*	Year of Last record
Butterfly bush	<i>Buddleja davidii</i>	Medium	2018
Curly waterweed	<i>Lagarosiphon major</i>	High	2009
Japanese knotweed	<i>Fallopia japonica</i>	High	2015
New Zealand pigmyweed	<i>Crassula helmsii</i>	High	2009
Parrot's feather	<i>Myriophyllum aquaticum</i>	High	2009
<i>Rhododendron</i>	<i>Rhododendron ponticum</i>	High	2019
Sycamore	<i>Acer pseudoplatanus</i>	Medium	2015
Uruguayan Hampshire-purslane	<i>Ludwigia grandiflora</i>	High	2009
Wall Cotoneaster	<i>Cotoneaster horizontalis</i>	Medium	2011

\*Impact classified according to Invasives.ie, 2022

#### 3.2 Results of Field Survey

The site walkover indicated that the main habitat types (Fossitt, 2000) present in the immediate vicinity of the proposed works site are: improved agricultural grassland (GA1), treelines/riparian woodland (WL2/WN5) and depositing lowland rivers (FW2). Improved agricultural grassland covers the historic landfill, while a stretch of treelines/riparian woodland (WL2/WN5) runs along the riverbank.

During field surveys in August 2021, the following invasive species were recorded within the footprint of the remediation site:

- Japanese knotweed (*Fallopia japonica*)
- Montbretia (*Crocsmia x crocosmiflora*)

The extent of these species is detailed in Figure 3.1.

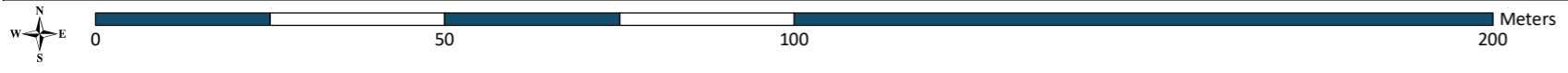


**Legend**

**Species**

- Japanese Knotweed
- Montbretia
- Site Boundary

<b>TITLE:</b>	Invasive Species Locations		
<b>PROJECT:</b>	South and West Kerry Landfills-Sneem Historic Landfill		
<b>FIGURE NO:</b>	3.1		
<b>CLIENT:</b>	Kerry County Council		
<b>SCALE:</b>	1:1000	<b>REVISION:</b>	0
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## 4. INVASIVE SPECIES ACCOUNTS

The International Union for Conservation of Nature (IUCN) in their 'IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species' 2000 report describes non-native invasive species (referred to as an invasive species) as:

*“an alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity”.*

The two invasive species below were recorded within the remediation site. The species in bold are included in the Third Schedule, the remaining are identified in Kelly et al., (2008). *Risk analysis and prioritisation for invasive and non-native species in Ireland and Northern Ireland*. A report prepared for the Northern Ireland Environment Agency and National Parks and Wildlife Service as part of Invasive Species Ireland. Accounts of these species, summaries of their ecology, distribution, growth, and management periods are included below.

- **Japanese knotweed (*Fallopia japonica*)**
- Montbretia (*Crocasmia x crocosmiiflora*)

### 4.1 Japanese knotweed (*Fallopia japonica*)

According to the Invasive Species Ireland Project who have carried out a risk assessment of Japanese Knotweed (*Fallopia japonica*), which is distributed throughout the island of Ireland, the species is “*one of the highest risk (most unwanted) non-native invasive species in Ireland*”. The species poses a risk to open and riparian areas where it spreads rapidly to form dense stands, excluding native vegetation and prohibiting regeneration. This process has been known to reduce diversity and alter semi-natural and locally important habitats for wildlife. Once stands become established, they are extremely persistent and difficult to remove. Japanese knotweed can grow through weaknesses in both tarmac and concrete. Population clusters must be completely removed, under appropriate licencing, before site works or specific projects within the site can commence (Kelly et al., 2008).

#### 4.1.1 Species Ecology

Although Japanese knotweed plants flower, all flowers in Ireland and Britain are female, precluding the possibility of sexual reproduction. The means of spread is entirely through the movement of rhizomes or rhizome fragments in soil or cut stems. Japanese knotweed has an extraordinary ability to spread vegetatively from crown, stem and rhizome (underground root) if disturbed. Even tiny amounts of cut stem, crown or rhizome can produce a new plant.

Controlling the spread of the species is therefore dependent on preventing the spread of the stem, crown or rhizome. Japanese knotweed causes numerous impacts, both ecological and economic. It is capable of outcompeting native plants and blocking commuting corridors of native mammals, and damaging buildings, tarmac and concrete. In waterways, it can block and reduce water flow, increasing the risk of flooding. In winter, when it dies back, it can leave riverbanks bare and open to erosion.

Red/purple shoots appear early in spring, which in some cases have an asparagus-like appearance but, as the canes grow, the leaves unfurl, and the plant takes its more characteristic appearance. The mature canes are like bamboo, being hollow, and have a characteristic pattern of purple speckles.



The leaves are shield-shaped with pointed tips and a flat base, arranged in a zig-zag formation. The plant can grow to over 3m in height. Flowering occurs in late summer/autumn (End July – typically August) and consists of small creamy white flowers. During the winter the leaves die back and reveal orange/brown woody erect stems. Rhizomes are bright orange inside and can extend to a depth of 3m and a width of 7m around the visible growth above ground.



Source: "Expansion of Japanese Knotweed" by U.S Fish and Wildlife Service – Northeast Region is licensed with CC PDM 1.0 (<https://www.flickr.com/photos/43322816@N08/5951588772>)

#### Plate 4-1: Characteristic Features of Japanese Knotweed

##### 4.1.2 Timeframe

Japanese Knotweed shoots typically appear between March and April. During this time energy stores from the root system are used to facilitate initial growth. The summer growth period commences in May and lasts until July, typical growth occurs during this time. Flowering begins in August and lasts until October. During this time the pale flowers can be seen.

Figure 4-1 indicates the suitable period which glyphosate herbicide is used to remove Japanese Knotweed. It is suitable to use glyphosate herbicide on knotweed between the months of May and October, with August, September and October being the preferred months of use.

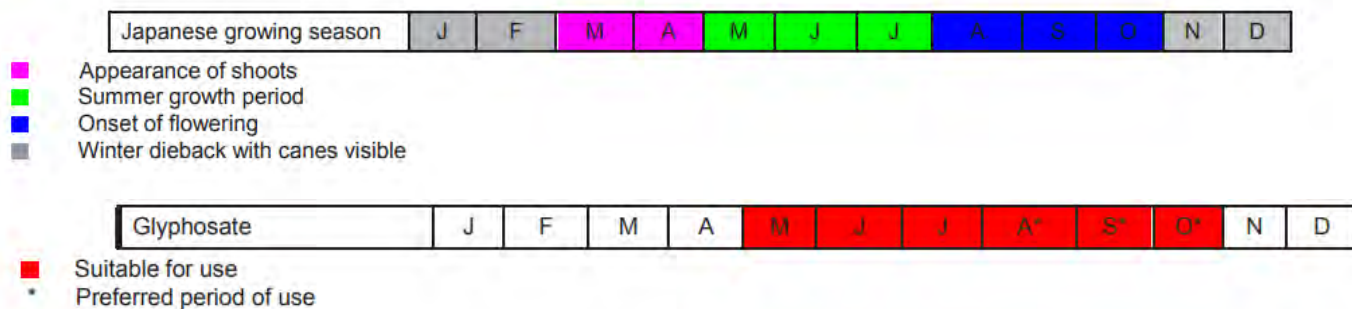


Figure 4-1: Japanese Knotweed Growth season summary (Kelly, et al., 2008).

## 4.2 Montbretia (*Crocsmia x crocosmiiflora*)

### 4.2.1 Species Ecology

Montbretia (*Crocsmia X crocosmiiflora*) is an invasive perennial that grows from underground corms. The X within its scientific name indicates it is a hybridised species. The species was developed in France for horticultural use and has since escaped and is naturalised throughout Ireland. Montbretia can survive in most open habitat types such as wet grassland, gardens and roadsides.

Due to fast growth rates, Montbretia outcompetes other species, dominating the habitats to which it is introduced. This dominance can impact native species and processes within these habitats. Dense tussocks of Montbretia can prevent the regeneration of seedlings and saplings, thus preventing natural re-generation of woodland (DAFM, 2016).

Montbretia flowers are reddish to orange in colour. They can be between 25 to 55mm long and are arranged loosely along two opposite sides of the flower stem, in a zig-zag formation (Plate 4-2). They have a hollow tubular corolla with six petals. The green leaves are 'grass-like', long, narrow, soft, and hairless. Leaves also have pointed tips and can reach 30-80cm long.

Montbretia spreads vegetatively using underground corms and rhizome fragments. The corm is bulb-like and stores energy for survival during the winter months. It is estimated that each Montbretia plant can produce 14 new corms annually. These corms are thought to break off from the parent plant, thus spreading further into the habitat. The corms, corm fragments and rhizomes can be spread unintentionally because of ground disturbance, dumping of garden waste and by attaching to machinery.



Source: "Montbretia (*Crocossia x crocosmiiflora*)" by Andres Bertens is licensed CC BY-NC-SA 2.0 (<https://www.flickr.com/photos/146065760@N04/46722665512>)

Plate 4-2: Montbretia flowers

#### 4.2.2 Timeframe

Montbretia growth begins in early spring with leaves sprouting from the ground in March. The plant flowers between July and September. The most effective time to remove Montbretia is just before full flowering occurs in summer (DAFM, 2016).



## 5. PROPOSED MEASURES FOR MANAGEMENT OF INVASIVE SPECIES

### 5.1 Recommended Measures

While it is extremely important and more efficient to contain invasive species at the point of infestation, care shall also be taken to ensure the management plan (Section 6) shall also be adhered to ensure that the species is not spread outside the works area.

Invasive Species Ireland (ISI) notes that invasive non-native species are the second greatest threat (after habitat destruction) to worldwide biodiversity. Invasive species negatively impact Ireland's native species; changing habitats and ultimately threatening ecosystems which impacts on biodiversity as well as economics as they are costly to eradicate.

Through prevention, early detection, rapid response, eradication and control measures, we can reduce the risk of their introduction, establishment, spread and impact (Invasives.ie, 2022)

#### 5.1.1 Prevention of spread within the works footprint

Prevention of the spread of invasive species will be achieved by:

- The full implementation of the invasive species management plan (Section 6) in conjunction with a competent and experienced Invasive Species Specialist Contractor.
- Supervision of control measures and treatment works by an appropriately qualified ecologist or invasive species specialist.
- Raising awareness to site workers via toolbox talks given by a suitably qualified person as part of site introduction; informing workers what to look out for and what procedure to follow if they observe an invasive species.
- Where invasive species have been physically removed and soil disturbed, this soil will be seeded or replanted (including 5cm deep mulch) with native plant species. This will prevent erosion and the easy colonisation of bare soil by invasive species in the area.
- Unwanted material originating from the site will immediately be transported off site by an appropriately licensed waste contractor and disposed of properly at a suitably licenced facility, in accordance with the (NRA, 2010) guidelines, i.e. where cut, pulled or mown non-native invasive plant material arises, its disposal will not lead to a risk of further spread of the plants. Care will be taken near watercourses as water is a fast medium for the dispersal of plant fragments and seeds. Material that contains rhizomes, flower heads or seeds will be disposed of either by composting or burial at a depth of 2m, or disposal to licensed landfill in the case of non-native invasive species. All disposals will be carried out in accordance with the Waste Management Acts.
- Signs will warn people working within the site that there is invasive species contamination.
- Ensure appropriate biosecurity measure are in place, these will include the Check Clean Dry method, along with those outlined below:
  - Remove the build-up of soil on equipment
  - Keep equipment clean
  - Do not move fouled equipment from one site to another,



- Footwear and clothing of operatives working near invasive species should be checked for seeds, fruits, knotweed rhizomes or other viable material before exiting the site
  - All vehicles exiting the site will be examined to prevent the transport of rhizomes, seeds and other plant material.
  - Soil, rhizomes and other material cleaned down in the excavation area will be buried in the burial cell.
- Follow instructions provided for containment of invasive species (Section 5.2).

## 5.2 Containment

The three most common ways a site can become infected are:

1. Importation of infected soil.
2. Contamination on vehicles and equipment.
3. Illegal dumping.

Containment of invasive species at Sneem Historic Landfill will be achieved by:

- A licensed invasive species contractor shall be engaged to remove invasives prior to remediation works.
- No contaminated soil (contamination from non-native species) or vegetation shall be removed from site unless proper biosecurity (Refer to Section 5.1.1. above) is observed and removal by an appropriately licensed waste contractor to a suitably licenced facility.
- New sightings of the invasive plant species identified within the site (refer to Section 3.2) shall be relayed to the contractor for invasive species control. These areas shall follow the same protocol as the current infected areas.
- It is possible, particularly in the first year of control, that new plants will sprout following the initial removal/treatment, either because shade suppression will be reduced or due to soil disturbance. As such, several additional visits will likely be required. Three visits, May/June, July/August and September/October should be sufficient to catch all regrowth, although, a cautionary approach is advisable.
- Plants that germinate after September/October are very unlikely to have sufficient time to complete their life cycle and produce seeds.

### 5.2.1 Japanese Knotweed (*Fallopia japonica*)

One method of treatment is proposed for Japanese knotweed on site. Additionally, the following site hygiene measures will be implemented during the proposed works:

- Japanese Knotweed root systems can extend up to 7m in a lateral direction (but usually only up to 5 m), and 2m deep from the over ground parent plant. This buffer zone and infested area will be fenced off prior to and during works where possible to avoid spreading seeds or plant fragments around or off-site.
- Erection of adequate site hygiene signage in relation to the management of non-native invasive material as appropriate and to inform contractors of the risk.



- All staff shall be made aware of nature of threat via toolbox talks as part of site inductions.
- Ensure all site users are aware of measures to be taken and alert them to the presence of the Invasive Species Management Plan.
- Site works will only be allowed within exclusion zones following the removal of Japanese knotweed and contaminated soil.
- All machinery vehicles, equipment, footwear and clothing operating within area of infestation to be thoroughly checked and cleaned in appropriately contained area prior to leaving the area to protect against further spreading of Japanese knotweed.
- Avoid if possible using machinery with tracks in infested areas.
- No stockpiling of contaminated soil will occur on-site.
- For soil imported to the site for infilling, the contractor will gain documentation from suppliers stating that it is free from invasive species.

#### *Excavation and movement off site*

Japanese Knotweed root systems can extend up to 7m in a lateral direction (but usually only up to 5 m), and 2m deep from the over ground parent plant. This Japanese knotweed stands, in addition to this buffer area, will be excavated.

Material (soil, vegetation, etc.) contaminated with Japanese Knotweed can only be transported offsite under the conditions of a relevant licence from the National Parks and Wildlife Service (NPWS). The material can only be removed to a prearranged EPA licenced waste transfer facility by the licenced haulier. Excavation for off-site disposal, great care needs to be taken to avoid excess waste and ensure the excavated Japanese Knotweed does not contaminate surplus soil that is currently free from infestation during excavations. When transporting soil infested with Japanese Knotweed, it is essential to carry out strict hygiene measures. If proper standards are not followed, this may lead to Japanese Knotweed spreading. Japanese Knotweed is a particular problem along transport corridors, where it interferes with the line of vision and can cause accidents.

Trucks which transport the material should only be filled up to a maximum of 20cm from the top. The void must be sealed with a well-secured membrane.

There must be enough membrane to seal the soil into a temporary cell for transporting. It is very important that the soil is contained to prevent any material being lost when it is moved. To contain the soil in the short-term, you can use a lower specification of membrane.

The final fate of Knotweed material transported off-site would be deep burial or incineration at an appropriately licensed facility.

#### *Additional Option (Herbicide Treatment)*

Japanese knotweed is highly invasive and physical methods undertaken together with chemical treatment can prevent re-infestation.

At least two weeks prior to excavation, Japanese knotweed can be treated with a non-persistent herbicide e.g. glyphosate.



### 5.2.2 Montbretia (*Petasites fragrans*)

One option for the treatment of Montbretia at the site has been proposed to avoid the spread of this species. It is noted that Montbretia was only recorded along the roadside boundary, and removal will therefore be an enhancement measure. The following general recommendations will be adhered to as part of the plan:

- No treatment measures of Montbretia are to be conducted without supervision and agreement by the appointed invasive species specialist.
- No material shall be taken from areas of infestation, unless for disposal. All material will be transported by an appropriately licensed waste contractor and received by an appropriately licensed facility.

#### *Physical control: Digging*

Digging by hand can be used to extract corms and additional root system from the site. This must be completed before seeds are produced, pre-July. If corms are damaged lost during excavation it is likely that new growth would form from these. Tools and PPE must be cleaned before exit from the area of infestation. Subsequent excavated materials will be buried onsite, or removed from the site, using appropriately licenced transport, to an appropriately licenced facility equipped to deal with such volumes (IWS, 2018). Any areas of disturbed soil will be seeded with native grass species and compacted to prevent sediment runoff. As such, digging must be carried out during spring/early summer to allow time for grass to establish.



## 6. MANAGEMENT PLAN

The management of any invasive species is achieved by the assessment and mapping of the invasive species, containment once found, continual monitoring and record keeping as well as the safe disposal of invasive species material. It is recommended that surveys be carried out periodically at the site to monitor the extent of invasive flora and the success of the control and management measures. These can be carried out by FT, or a contractor specialised in invasive flora treatment. Monitoring should continue during the remediation works and as part of the post remediation monitoring to make sure successful control has been achieved. All invasive species which occur within the area utilised by people and machinery during the proposed remediation works will be controlled/removed from the works area before commencement of works.

### 6.1 Containment

For the efficient use of resources namely, financial, and physical effort, it is important to prevent the further spread of invasive species. Containment will be achieved using measure outlined in Section 5 and those presented below:

- Landholder to be informed of location of the invasive species and the management plan.
- Ensure anyone treating the infestation is a suitably qualified trained professional who follows the management plan.
- The site will be re-surveyed prior to treatment/remediation works to confirm the findings of the original survey.

### 6.2 Schedule

Periodic re-surveying for all invasive species will be required, to ensure that treatment measures were effective, and to trigger further treatment if necessary. Refer to Table 6-1.

Please note that the schedule may require amendment following any given site visit.



**Table 6-1: Schedule for Management of Invasive Species**

Time	Details of measures
<p><b>Pre remediation (Isolation of Invasives)</b></p>	<ul style="list-style-type: none"> <li>• A pre-treatment survey (to reconfirm the findings of the ISMP) will be undertaken during the growing season to mark out the extent of invasive species within site prior to any works commencing.</li> <li>• Treatment/control of invasive species will be undertaken using the methods proposed in Section 5.</li> <li>• Invasive species will be excavated and disposed of offsite.</li> <li>• Any disposal of plant matter and soil off-site, should be completed through an appropriately licenced contractor and waste facility.</li> <li>• Infested/ cleared areas will be demarcated and appropriately signed to prevent access to unauthorised personnel.</li> </ul>
<p><b>During remediation</b></p>	<ul style="list-style-type: none"> <li>• Following treatment, site to be monitored for signs of regrowth/spread to new areas.</li> <li>• Toolbox talks shall be given to all personnel accessing the site, informing them of the locations of the invasive species and instructing them not to enter these areas (unless they are licensed invasive species contractors or ecologists).</li> <li>• A clean down area within the excavation area will be identified and a suitable membrane will protect the soil from further infestation. Soil and plant material gathered in the clean down area shall be disposed of offside by an appropriately licenced contractor to an appropriate waste facility.</li> <li>• Designated curtailment areas will be demarcated for the transport of Japanese knotweed and montbretia offsite.</li> <li>• Machinery to be used in the control of Japanese knotweed and montbretia will be itemised, and only those machinery will be used for excavation.</li> <li>• The build-up of soil on equipment will be removed and fouled equipment will not be moved between sites, or between the curtailment area (demarcated areas with invasive species and for transport of invasives)/clean down area and the rest of the landfill.</li> <li>• Footwear and clothing of operatives working near invasive species should be checked for rhizomes, seeds, fruits, or other viable material before exiting the site. Boot brushes will also be utilised.</li> <li>• All vehicles exiting the site will be examined to prevent the transport of seeds/rhizomes/plant material.</li> <li>• If re-growth of invasive species is discovered, further treatment/control will be completed using the treatment methods in Section 5.</li> <li>• Site to be monitored during remediation works for signs of regrowth of all invasive species.</li> </ul>
<p><b>Post remediation</b></p>	<ul style="list-style-type: none"> <li>• Following capping, site to be monitored annually for signs of regrowth of invasive species.</li> </ul>



## 6.3 Mapping, Evaluating and Record Keeping

During the pre-remediation and remediation phase the following will take place before control measures:

- Check that the area of infestation is still cordoned off and a warning/information sign is still in place
- Photographs of the area(s) of invasive species infestation
- Map the extent via recording GPS coordinates and measure the length and width of infestation (including above and below ground rhizome growth) and plot on map
- Evaluate the status/condition of the infestation
- Make sure the above steps are recorded.

At the end of each site visit the recorded data should be compared with the findings of this report. Preparation of a short report on the progress of treatment following treatment works, and any subsequent monitoring.

## 6.4 Appropriate Disposal

### 6.4.1 Storage

As described in Section 5, all cut and excavated plant matter will be stored securely in line with the relevant treatment methodology.

### 6.4.2 Disposal

#### 6.4.2.1 *Licensed Disposal*

Disposal of plant matter and soil off-site if required, will be completed through an appropriately licenced haulier and waste facility.



## 7. DISCUSSION

There is a legal obligation not to spread plants listed on the third schedule of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021; the relevant species at Sneem Historic Landfill, and therefore those of principal concern, is Japanese knotweed (*Fallopia japonica*). Additionally, of concern for the invasive species management plan is Montbretia, which is present along the site boundary. Liaison with landholders of adjacent lands may be necessary to effectively control invasive species in the area and to prevent re-infestation.

It is required that a competent and experienced invasive species management contractor is appointed to treat and control invasive species. A dedicated invasive species survey is recommended to be undertaken by the appointed contractor to re-confirm the findings of the previous survey and to identify any new areas/species of infestation.

It is recommended that infested and cleared areas, will be appropriately demarcated and signed to prevent access to unauthorised personnel. Additionally, appropriate biosecurity to prevent spread of invasive species is recommended., as stated in Section 5 for each species, and Section 5.1.1. for general biosecurity measures.



## 8. CONCLUSION

The report details a programme for the mapping and control of invasive species at the remediation site within the historic landfill site.

The plan will prevent the spread of identified non-native invasive species within and from the site and reduce the potential risk for the introduction and/or spread of new invasive species within the site pre, during and post remediation.



## 9. REFERENCES

- AM-SOP-009 Information and Guidance Document on Japanese Knotweed
- DAFM, 2016. Department of Agriculture Food and the Marine, Montbretia. <https://www.gov.ie/en/collection/ceb39-alien-invasive-plant-species/> (Accessed April 2022).
- European Communities (Birds and Natural Habitats) Regulations 2011 to 2021, Pub. L. No. S.I. No. 477 of 2011 (2011).
- European Environment Agency. (2018). *European Union, Copernicus Land Monitoring Service*. <https://land.copernicus.eu/>
- Fossitt, J. A. (2000). *A guide to habitats in Ireland*. Heritage Council/Chomhairle Oidhreachta.
- INNSA, 2017. Code of Practice – Managing Japanese Knotweed
- International Union for Conservation of Nature (IUCN). (2000). *IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species*.
- Invasive Species Ireland. (2022). *Invasive Species Ireland – Invasive Species Ireland*. <https://invasivespeciesireland.com/>
- Invasives.ie. (2022). *Invasives.ie (Invasive Alien Species in Ireland)*. <https://invasives.ie/>
- Kelly, J., Maguire, C. M., & Cosgrove, P. J. (2008). *Best Practice Management Guidelines Japanese Knotweed Fallopija japonica*.
- Kelly, J., O'Flynn, C., Maguire, C. (2013). *Risk analysis and prioritisation for invasive and non-native species in Ireland and Northern Ireland*. A report prepared for the Northern Ireland Environment Agency and National Parks and Wildlife Service as part of Invasive Species Ireland.
- Kerry County Council. (2022). *Draft Kerry County Development Plan 2022-2028*.
- National Biodiversity Data Centre. (2022). *Biodiversity Maps*. <https://maps.biodiversityireland.ie/>
- NPWS. (2017). *National Biodiversity Action Plan 2017-2021*.
- NPWS. (2022). *Maps and Data | National Parks & Wildlife Service*. <https://www.npws.ie/maps-and-data>
- NRA. (2010). *Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads. Revision 1, December 2010*.
- Property Care Association. (2018). *Practical Management of Invasive Non-Native Weeds in Britain and Ireland*. Packard Publishing Ltd.
- RAPID, 2018. Good Practice Management- Japanese Knotweed (*Fallopia japonica*). Version 1. Reducing and Preventing Invasive Alien Species Dispersal.
- Reynolds, S. C. P. (2002). *A catalogue of alien plants in Ireland*. National Botanic Gardens. <https://botanicgardens.ie/2007/04/13/a-catalogue-of-alien-plants-in-ireland-now-online/>
- Stokes, K., O'Neill, K., & McDonald, R. (2004). Invasive Species in Ireland. In *Unpublished report to Environment & Heritage Service and National Parks & Wildlife Service*. [www.quercus.ac.uk](http://www.quercus.ac.uk).
- Tu, M. (2009). *Assessing and Managing Invasive Species Within Protected Areas: A Quick Guide for Protected Area Practitioners* (J. Ervin, Ed.). The Nature Conservancy.
- UK Environment Agency. (2019). *Treatment and disposal of invasive non-native plants: RPS 178*. <https://www.gov.uk/government/publications/treatment-and-disposal-of-invasive-non-native-plants-rps-178/treatment-and-disposal-of-invasive-non-native-plants-rps-178>



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