

HISTORIC LANDFILL AT LISTOWEL, CO. KERRY

STAGE 1 APPROPRIATE ASSESSMENT SCREENING REPORT FOR THE REMEDIATION OF HISTORIC LANDFILL SITE, LISTOWEL, COUNTY KERRY

Prepared for: Kerry County Council



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STAGE 1 APPROPRIATE ASSESSMENT SCREENING REPORT FOR HISTORIC LANDFILL SITE, LISTOWEL, COUNTY KERRY

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

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1. INTRODUCTION

Fehily Timoney and Company (FT) were commissioned by Kerry County Council (KCC) to prepare a Stage 1 Appropriate Assessment Screening Report, as required by Article 6 of Council Directive 92/43/EEC (Habitats Directive). The preparation of the Appropriate Assessment Screening Report (AA Screening) follows the completion of a Tier 2 and 3 Risk Assessment (see Appendix 2) and recommendation for remediation works to the Historic Landfill at Listowel, Co. Kerry (see Figure 1-1 for location).

In compliance with the provisions of Article 6 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 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 relevant European site(s) in view of their conservation objectives. To evaluate the potential effect(s) of the proposed development on 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); no additional sites were identified.

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

- Lower River Shannon cSAC (002165)
- Moanveanlagh Bog cSAC (002351)
- Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161)
- River Shannon and River Fergus Estuaries SPA (004077)



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.

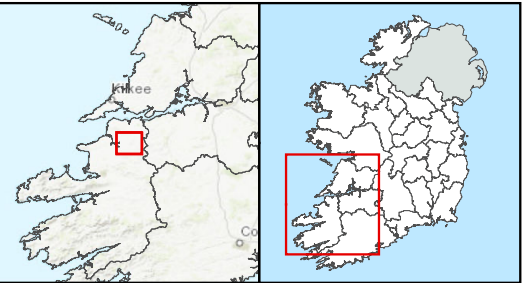
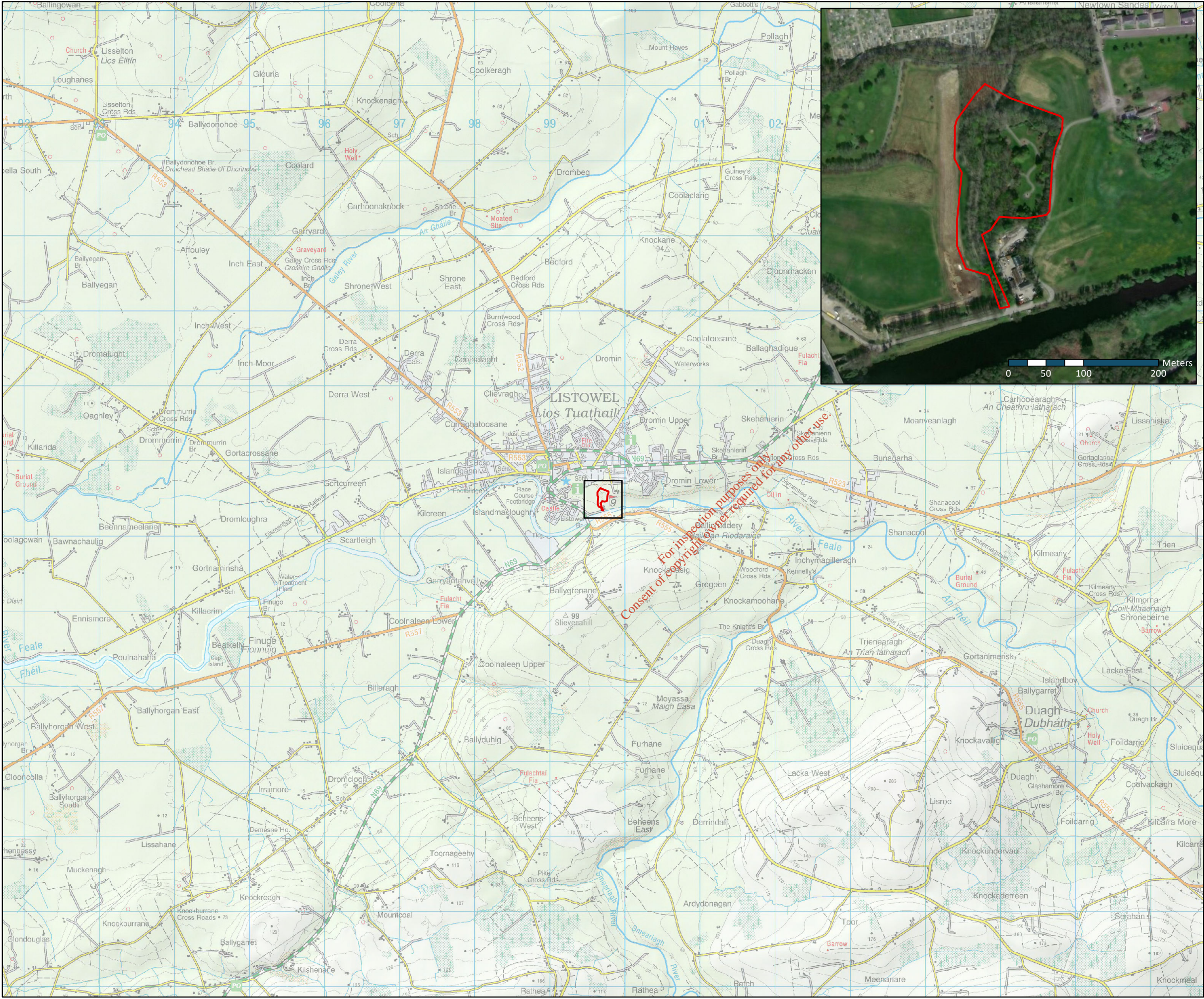
The statutory agency responsible for European sites is the National Parks and Wildlife Service (NPWS) of the Department of Culture, Heritage and the Gaeltacht (DCHG). In December 2009 'Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government' was published 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 (2018) "Managing Natura 2000 sites the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC". 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 and 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

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

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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.

There are four stages in an AA, as outlined in the European Commission Guidance document (2001). The following is a brief summary of these steps:

- Stage One - Screening: This stage examines the likely effects of a project either alone or in combination with other projects upon a European Site and considers whether it can be objectively concluded that these effects will not be significant.
- Stage Two - Appropriate Assessment: In this stage, the effect of the project on the integrity of the European site is considered with respect to the conservation objectives of the site and to its structure and function. Mitigation measures should be applied to the point where no adverse effects on the site(s) remain.
- Stage Three - Assessment of Alternative Solutions: Should the Appropriate Assessment determine that adverse effects are likely upon a European site, this stage examines alternative ways of implementing the project that, where possible, avoid these adverse effects.
- Stage Four - Assessment where no alternative solutions exist and where adverse effects remain: Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the Natura site will be necessary. European case law highlights that consideration must be given to alternatives outside the project area in carrying out the IROPI test. It is a rigorous test which projects are generally considered unlikely to pass.

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



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 integrity of the 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 2015-2021
- Draft Listowel Municipal District Local Area Plan 2015-2019
- Kerry County Council Planning Enquiry System (www.kerrycoco.ie/planning/online-planning-enquiry/)
- National Parks and Wildlife Service (NPWS) website and metadata available (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 and Sub-catchment WFD datasets
- Tier 2 Risk Assessment Report for Listowel Historic Landfill
- Tier 3 Risk Assessment Report for Listowel Historic Landfill



2.3 Field Study

A site walkover was undertaken of the site on 14th February 2019. Habitats were identified and classified according to 'A Guide to Habitats in Ireland' (Fossitt, 2000). The site walkover included a search for invasive species. Birds, mammals and other taxa observations or signs were recorded during the site walkover.

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3. BRIEF DESCRIPTION OF THE EXISTING SITE

The site of Listowel historical landfill is currently utilised as a town park, 'the Garden of Europe' – which is an award-winning area of cultural heritage. The site covers an area of approximately 1.01 ha and is located at the edge of the town of Listowel with the River Feale located approximately 8m from the southern boundary of the site. The Garden of Europe contains more than 3,000 trees and shrubs and numerous pieces of sculpture artwork. Available evidence suggests that the site closed and landfilling ceased in 1989. Previous remediation measures include installation of soil capping. No other remediation measures are known to have been carried out.

During the site walkover the following habitats were identified and categorised under Fossitt (2000): 'amenity grassland (improved)' (GA2), '(mixed) broadleaved woodland' (WD1), 'ornamental/non-native shrub' (WS3) and 'buildings and artificial surfaces' (BL3). No qualifying species of any European sites within 15 km of the proposed development were recorded during the site visit. The following invasive species were observed: Three-cornered Leek (*Allium triquetrum*), Cherry Laurel (*Prunus laurocerasus*) and Winter Heliotrope (*Petasites fragrans*). According to the National Biodiversity Ireland's online 'Catalogue of Ireland's Non-Native Species', Three-cornered Leek is a 'risk of Medium Impact' invasive, Cherry Laurel is a 'risk of High Impact' invasive and Winter Heliotrope is a 'risk of Low Impact' invasive. Three-cornered Leek is the only species that is legally regulated. Three-cornered Leek is a Third Schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011. (Note: Regulation 50 not yet enacted). Under the regulations it is an offence to spread Three-cornered Leek.

The topography of the site is generally relatively flat, with a gentle slope southward towards the River Feale. A KCC works/storage yard is located at the south eastern boundary of the site, where leachate breakouts are present and drain away via an existing storm water drain (102m from the River Feale). Agricultural land is located to the east, playing pitches to the west, forestry and residential areas to the north. The River Feale (designated as the Lower Shannon Estuary SAC) is located 8m from the nearest point of the southern boundary.

GSI online mapviewer:

- classifies the quaternary geology as comprising, tills derived from Namurian sandstones and shales, bedrock outcrop or subcrop and urban made ground, with alluvium deposits along the path of the River Feale. Bedrock beneath the site is classified as Visean limestones (north-western section of the site) and the Clare Shale Formation (south-eastern section of the site). The mapviewer also indicates that there is bedrock outcrop present within the centre of the site boundary, directly east of the site and along the banks of the River Feale. Bedrock was not encountered during site investigations.
- indicates that the Visean limestones are a 'Regionally Important Aquifer – Karstified (Diffuse) Bedrock (Rkd)' i.e. dominated by diffuse rather than conduit flow. The Clare Shale Formation is a 'Poor Aquifer – bedrock which is generally unproductive'.
- identifies the groundwater vulnerability within the site as 'Extreme' with an area of 'Rock at or near the surface'. This facilitates a relatively easy pathway for rainfall and potential leachate to enter the underlying groundwater aquifer.

The EPA mapviewer indicates that:

- the historic landfill site is located within the Tralee Bay - Feale catchment (Hydrometric Area: 23), Feale_SC_040 sub-catchment and Feale_080 sub-basin. The 6th order River Feale (EPA code: 23F01) is located approximately 8m south of the site and is designated as part of the Lower Shannon SAC.



- the River Feale flows in an east – west direction, past Listowel converging with the River Brick and Galey River before eventually discharging to the Atlantic Sea, south of Ballybunion, Co. Kerry.
- the Water Framework Directive (WFD) status (2013-2018) of the River Feale in the area of the site is 'Good' or Q4. The WFD status of the river falls to 'Moderate' or Q3-4 approximately 250m downstream and as the river becomes estuarine/tidal the status drops further to 'Poor' Q3/Q2-3 before reaching the sea.
- the site is located within two ground waterbodies; Abbeyfeale and Ballybunion. The WFD status for both waterbodies is 'Good' or Q4'. The risk projection for Ballybunion ground waterbody currently under review by the EPA whilst Abbeyfeale ground waterbody is classified as 'Not at Risk'.

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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:

The site investigation included the following elements:

- 2 No. boreholes by rotary drilling methods
- 2 No. standpipe installations
- 8 boreholes by dynamic (windowless) sampling methods (undertaken by Causeway Geotech (CGL))
- 1 No. geophysical survey (2D resistivity, EM31 ground conductivity and seismic refraction profiling undertaken by Minerex Geophysics Ltd (MGX))
- Topographical survey
- Factual reporting.

One round of groundwater and surface quality monitoring on 3rd September 2019 and landfill gas monitoring was undertaken at two boreholes. Surface water monitoring upstream and downstream of the landfill footprint. For monitoring parameters and results please see Appendix 3.

The Tier 2 investigation confirmed that mixed commercial and domestic waste was deposited within a single infill area, covering an area of approximately 8,900 m². The depth of waste was estimated using the seismic refraction and 2D-Resistivity, on average the waste depth is 11 m. This estimate includes the capping or natural fill material on top of the main waste body; however, it was noted during the geophysical survey that the low resistivities near the surface indicates that there is no significant fill over the waste material. An initial volume calculation based on geophysical survey estimates an interred waste volume of approximately 98,000 m³ at the site. Applying the estimated waste volume of 98,000 m³ and an assumed waste density of 1.4 tn/m³ this equates to 137,200 tonnes. However, information provided in the KCC Tier 1 assessment assumes a 20-year lifespan for the landfill and available records reviewed by KCC state an annual intake of 1,850 tonnes per annum and 2 years of remaining capacity in 1986. This would equate to approximately 37,000 tonnes of waste deposited at the site. It is therefore estimated the quantity of waste deposited at the site is between 37,000 and 137,200 tonnes.

Environmental monitoring detected exceedances for groundwater threshold values of several parameters for both monitoring wells (one located in site and the other adjacent to the site). The following parameters exceeded the groundwater quality 'Interim Guideline Values, from the EPA, Towards Setting Guideline Values for the Protection of Groundwater in Ireland, 2003': Ammoniacal Nitrogen as N, Alkalinity as CaCO₃, Chloride and Manganese. Elevated alkalinity (CaCO₃) could be as a result of the local bedrock hydrochemistry.

The results of the surface water monitoring were found to be below the Maximum Admissible Concentration (MAC) Regulations (1989) and the Environmental Quality Standard (EQS) for Surface Waters Regulations (2009) assessment criteria. Results show very little variation in parameter levels between upstream and downstream sampling locations.



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

- The UK EA Remedial Targets Worksheet model was used to examine the potential impacts on aquifer/groundwater quality. This model demonstrated that leachate generated at the landfill site has the potential to have a negative impact on groundwater quality downstream of the site. Ammoniacal Nitrogen, Chloride and Manganese downstream concentrations were estimated using this model and it was shown that for all parameters, groundwater concentrations were above groundwater quality thresholds (at 21.1 mg/l, 173 mg/l and 1.06 mg/l respectively) at the designated compliance point, in this case the edge of the River Feale SAC.
- Whilst leachate breakouts from the landfill were observed to enter County Council site's surface drains and potentially discharge to receiving surface waters no evidence of contamination in the River Feale was detected.
- An assimilative capacity assessment and mass balance calculations on the River Feale indicates that potential discharge of leachate breakouts may increase the concentration of nutrients such as ammoniacal nitrogen within the River, downstream of the site. However, it was demonstrated that at high leachate discharge rates (5 l/s) downstream concentrations will remain below the 'Good' status 95%-ile threshold value, but above the 'Good' mean threshold value at discharge rates >1 l/s. This assessment does assume worst-case scenario (low river flow) conditions and EPA monitoring of the River Feale downstream of the site has shown total ammonia concentrations to be within the 'good' status threshold values.
- Landfill gas will continue to be generated for several years although in minimal quantities.

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5. PROPOSED REMEDIATION WORKS

The historic landfill site contains a basic soil cap with an established park known as 'the Garden of Europe'. Proposed remediation works will intercept and remove leachate arisings currently discharging over and through the surface of the adjacent County Council yard which have the potential to contaminate surface and groundwaters. Proposed monitoring will ensure appropriate operating protocols are in place to support management of landfill gas.

5.1 Overview

Proposed works for the historic landfill are outlined in Section 5 Remedial Action Plan of the Tier 3 Risk Assessment report. The proposed works comprise of the following elements:

- 3 no. groundwater extraction wells (and associated infrastructure)
- 14 no. gas monitoring well (and associated infrastructure)
- 1 no. leachate storage/pump station
- leachate interceptor trench
- Continuous gas monitoring system
- Landfill gas, groundwater and leachate monitoring regimes
- Replacement of vegetation removed for the installation of remediation works.

Layout locations of the proposed remediation design proposals are presented on Drawing P1766-0102-001 and is appended to the Tier 3 Impact Assessment located in Appendix 2 of this report.

5.1.1 Construction Phase

For the most part, the proposed works will be unobtrusive and vegetation will be left in place. The most obtrusive works will be limited to excavation of the proposed leachate interception trench along the sites southern boundary with the KCC works/storage yard which will cover an area of 1,200m² and is located 102m from the River Feale/ Lower Shannon SAC.

The network of 14 No. shallow passive perimeter wells will allow for the passive venting of landfill gas and monitoring of landfill gas. Three centrally located deep passive venting multipurpose wells will also be used for monitoring of landfill gas within the waste body and leachate if required. All wells will include associated well heads and supporting infrastructure.

The vertical cut off interceptor trench (3m deep and 1m wide; 1200m² area) will be excavated along the southern boundary of the site within the adjacent KCC works/storage yard. The leachate interception trench will require the excavation of 300m³ of existing soil and waste body, 1200m² of lining, 300m³ backfill (rounded washed drainage stone), 100m of drainage pipe and 1 no. leachate storage/pump station. Collected leachate to be taken off site to a licensed waste water treatment facility. Control of drawdown levels and associated control systems shall be subject to detailed design. Leachate levels and quality shall be monitored as per Table C.2 of the EPA's *Landfill Manuals - Landfill Monitoring, 2nd Edition (2003)*.



To accommodate works, vegetation will be cleared at well locations and in the area of the interception trench (1200m²). Three-cornered Leek was recorded on site during a walkover of the historic landfill. Three-cornered Leek is a Third Schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011. (Note: Regulation 50 not yet enacted). Under the regulations it is an offence to spread the species. During the clearance of vegetation and excavation of soil (for the interception drain) there is potential to spread the species. To ensure compliance with the European Communities (Birds and Natural Habitats) Regulations 2011 Three-cornered Leek will be cleared from the historic landfill site prior to any clearance works/excavation.

There will be a total of 480 tonnes of soil/waste body material to be disposed of offsite at a licensed facility (this also includes deep and shallow well arisings). During the excavation of the interceptor trench, soil/waste body material will be excavated and placed directly into an awaiting dump truck for removal offsite at a licensed facility. Any leachate build-up within the excavation will be pumped to an awaiting vehicle/tanker and tankered offsite to a licensed facility under appropriate permits.

Vegetation will be removed for the installation of deep wells, shallow wells and the excavation of the interceptor trench (on boundary between historic landfill site and KCC works/storage yard). Vegetation removed for the installation of wells (both deep and shallow) will be replaced (where required) with the same form of planting removed during clearance (i.e. like for like) but will not include any invasive species. The location of the interceptor trench is at the edge of an established vegetated area (within historic landfill) and besides a hard surface yard (KCC works/storage yard). It will not be appropriate to plant directly in the area of the interception trench. Following the removal of perimeter vegetation, if the KCC works/storage yard becomes visible from the historic landfill/park then additional vegetation will be added to the remaining vegetated areas in front of the interceptor trench (within historic landfill site). If required additional planting will be comprised of non-invasive species (either native or ornamental).

5.1.2 Operational Phase/ Post Construction

There will no operational activities associated with this site other than conducting environmental mentoring. This includes no further ground excavations.

Once operational, the interceptor trench will discharge leachate arisings either to the sewer system or a leachate storage tank/pump station (max 80m³ to be excavated). Whether the interceptor trench is connected to the sewer system or leachate is stored (which may require tankering of collected leachate offsite) will be decided during the detailed design. The decision to join with the sewer system will take into account the capacity of Listowel Waste Water Treatment Plant (WWTP) and will require a permit attained by Irish Water. If stored, collected leachate is to be tankered offsite by a licensed contractor and disposed of appropriately at a licensed facility such as Listowel WWTP under a permit attained by Irish Water.

KCC to develop a gas management plan to mitigate the risk of off-site landfill gas migration and to determine need or other to vent and/or oxidise such landfill gas as may be present. Gas monitoring be carried out at existing boreholes and at all proposed perimeter wells and at any future oxidation or venting outlet monthly following installation for a period of 12 months after which time the gas management plan should be updated. Gas sampling will include Methane, Carbon Dioxide, Oxygen, Carbon Monoxide and temperature.

Groundwater samples shall be taken from the two existing groundwater monitoring boreholes, and three proposed groundwater pumping wells. The suite of tests required for groundwater monitoring shall be as per Table C.2 of the EPA's Landfill Manuals - Landfill Monitoring, 2nd Edition (2003).



It is proposed that surface water monitoring be conducted at or immediately downstream of the redundant pump station in the River Feale adjacent to the park entrance.

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.

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6. STAGE ONE – SCREENING REPORT

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

There are four European sites within the zone of influence (15 km) of the project (see Figure 6-1). Of these four European sites, two are SACs and two are SPAs. Table 6-1 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)). The four sites are as follows:

- Lower River Shannon cSAC (002165) - 8m from the historic landfill
- Moanveanlagh Bog cSAC (002351) - 3.6km from the historic landfill
- Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161) - 5km from the historic landfill
- River Shannon and River Fergus Estuaries SPA (004077) – 11.2km from the historic landfill.

Direct Hydrological Link

None of the European sites have a direct hydrological link to the historic site landfill.

Indirect Hydrological Link

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

- Lower River Shannon cSAC (002165)

The southerly section of the historic landfill is located 8m from the River Feale which forms part of the Lower River Shannon cSAC (the most concentrated and obtrusive works will be located ca. 102m away). A stormwater drain within the adjacent KCC works/storage yard may drain (ca. 102m away) may drain into the SAC via a stormwater drain. An access track which services the KCC works/storage yard may provide a surface water route for runoff from the KCC yard, there is a distance of ca.102m between the KCC yard and the SAC.

Remote Indirect Hydrological Link

The following European sites have a remote indirect hydrological link to the historic landfill site:

- Moanveanlagh Bog cSAC (002351)
- Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161)
- River Shannon and River Fergus Estuaries SPA (004077)

Moanveanlagh Bog cSAC (002351) is located adjacent to a first order stream which is a tributary of the River Feale and located upstream of the site.



A section of the Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161) is located upstream of the historic landfill and overlaps with a number of the River Feale's tributaries. This site is protected for hen harrier, a species with no links to aquatic habitats.

River Shannon and River Fergus Estuaries SPA (004077) overlaps with Lower River Shannon cSAC. The SPA is located 9.9km from the outfall of the River Feale to the north of the site.

Ground Water link

European sites located within the same ground water bodies (Abbeyfeale and/or Ballybunion) as the historic landfill site:

- Lower River Shannon cSAC (002165)
- Moanveanlagh Bog cSAC (002351)
- Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161)

Screening

Screening continues for all four European sites in Section 6.2.

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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)
Lower River Shannon cSAC (002165)	<p>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 (further details available in Appendix 4).</p> <p>Conservation Objectives available for site: 07 August 2012 [Version 1]</p>	<ul style="list-style-type: none"> Sandbanks which are slightly covered by sea water all the time [1110] (M) Estuaries [1130] (M) Mudflats and sandflats not covered by seawater at low tide [1140] (M) Coastal lagoons [1150] * (R) Large shallow inlets and bays [1160] (M) Reefs [1170] (M) Perennial vegetation of stony banks [1220] (M) Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] (M) Salicornia and other annuals colonising mud and sand [1310] (M) Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] (R) Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] (R) Water courses of plain to montane levels with the <i>Ranunculum fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] (M) Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) [6410] (M) Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] * (R) <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] (R) <i>Petromyzon marinus</i> (Sea Lamprey) [1095] (R) <i>Lampetra planeri</i> (Brook Lamprey) [1096] (M) 	<p><u>High Level (inside site)</u> not applicable</p> <p><u>High Level (outside site)</u> not applicable</p> <p><u>Medium Level (inside site)</u> A08 Fertilisation E03 Discharges A04 Grazing J02.01.01 Polderisation</p> <p><u>Medium Level (outside site)</u> A08 Fertilisation E01 Urbanised areas, human habitation H04 Air pollution, air-borne pollutants E03 Discharges K02.03 Eutrophication (natural) J02.01.02 Reclamation of land from sea, estuary or marsh</p> <p><u>Low Level (inside site)</u> I01 Invasive non-native species D01.01 Paths, tracks, cycling tracks G01.01 Nautical sports B Sylviculture, forestry F01 Marine and Freshwater Aquaculture E03.01 Disposal of household /</p>	<p>- Closest boundary to SAC is 8m away.</p> <p>- The closest works (a shallow well) to SAC is 15m away (located within a mounded planted area outside the interred waste body).</p> <p>- The largest area of works (the interceptor trench) to SAC is 102m away</p>



Designated Site (Site Code)	Conservation Objectives	Qualifying Interests	Threats and Pressures	Direct Distance from Historic Landfill Site (km)
		<ul style="list-style-type: none"> <i>Lampetra fluviatilis</i> (River Lamprey) [1099] (M) <i>Salmo salar</i> (Salmon) [1106] (R) <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] (R) <i>Lutra lutra</i> (Otter) [1355] (R) 	recreational facility waste C01.01.02 Removal of beach materials C01.03.01 Hand cutting of peat J02.12.01 Sea defence or coast protection works, tidal barrages J02.10 Management of aquatic and bank vegetation for drainage purposes <u>Low Level (outside site)</u> not applicable	
Moanveanlagh Bog cSAC (002351)	To restore (R) the favourable conservation condition of the Annex I habitat(s) which the SAC has been selected (further details available in Appendix 4). Conservation Objectives available for site: 07 Dec 2015 [Version 1]	<ul style="list-style-type: none"> Active raised bogs [7110] (R) Degraded raised bogs still capable of natural regeneration [7120] (R) Depressions on peat substrates of the <i>Rhynchospora</i> [7150] (R) 	<u>High Level (inside site)</u> J01 Fire and fire suppression C01.03 Peat extraction <u>High Level (outside site)</u> not applicable <u>Medium Level (inside site)</u> A01 Cultivation E03.01 Disposal of household / recreational facility waste J02.01 Landfill, land reclamation and drying out, general <u>Medium Level (outside site)</u> A04 Grazing A01 Cultivation <u>Low Level (inside site)</u> I01 Invasive non-native species	3.6



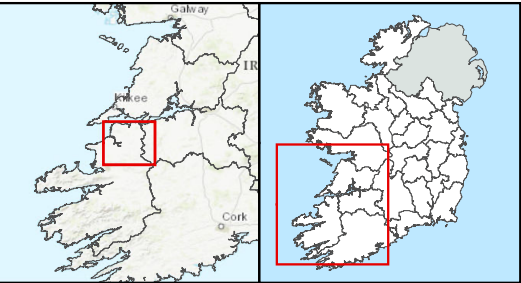
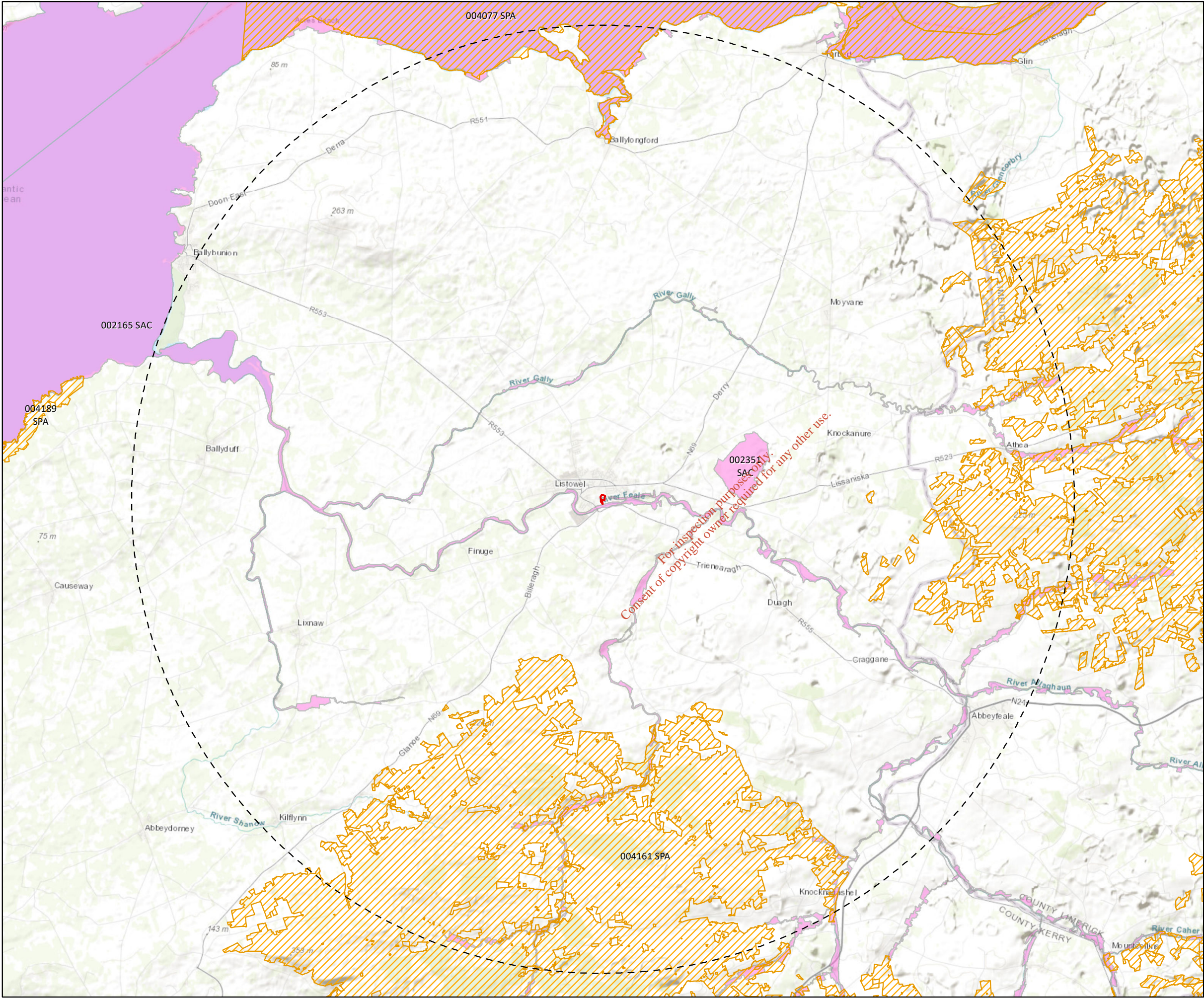
Designated Site (Site Code)	Conservation Objectives	Qualifying Interests	Threats and Pressures	Direct Distance from Historic Landfill Site (km)
			A04 Grazing <u>Low Level (outside site)</u> D01.01 Paths, tracks, cycling tracks C01.03 Peat extraction E03.01 Disposal of household / recreational facility waste J02.01 Landfill, land reclamation and drying out, general	
Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161)	To maintain or restore the favourable conservation condition of the Annex I species for which the SPA has been selected (further details available in Appendix 4). Generic Conservation Objectives available: 21/02/2018 [Version 6]	<ul style="list-style-type: none"> Hen Harrier (<i>Circus cyaneus</i>) [A082] 	<u>High Level (inside site)</u> B Sylviculture, forestry <u>High Level (outside site)</u> not applicable <u>Medium Level (inside site)</u> C01.03 Peat extraction <u>Medium Level (outside site)</u> not applicable <u>Low Level (inside site)</u> not applicable <u>Low Level (outside site)</u> A09 Irrigation E01.03 Dispersed habitation D01.02 Roads, motorways D01.01 Paths, tracks, cycling tracks	5

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Designated Site (Site Code)	Conservation Objectives	Qualifying Interests	Threats and Pressures	Direct Distance from Historic Landfill Site (km)
River Shannon and River Fergus Estuaries SPA (004077)	<p>To maintain (M) the favourable conservation condition of the Annex I species for which the SPA has been selected (further details available in Appendix 4).</p> <p>Conservation Objectives available for site: 17 September [Version 1.0]</p>	<ul style="list-style-type: none"> • Cormorant (<i>Phalacrocorax carbo</i>) [A017] (M) • Whooper Swan (<i>Cygnus cygnus</i>) [A038] (M) • Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] (M) • Shelduck (<i>Tadorna tadorna</i>) [A048] (M) • Wigeon (<i>Anas penelope</i>) [A050] (M) • Teal (<i>Anas crecca</i>) [A052] (M) • Pintail (<i>Anas acuta</i>) [A054] (M) • Shoveler (<i>Anas clypeata</i>) [A056] (M) • Scaup (<i>Aythya marila</i>) [A062] (M) • Ringed Plover (<i>Charadrius hiaticula</i>) [A137] (M) • Golden Plover (<i>Pluvialis apricaria</i>) [A140] (M) • Grey Plover (<i>Pluvialis squatarola</i>) [A141] (M) • Lapwing (<i>Vanellus vanellus</i>) [A142] (M) • Knot (<i>Calidris canutus</i>) [A143] (M) • Dunlin (<i>Calidris alpina</i>) [A149] (M) • Black-tailed Godwit (<i>Limosa limosa</i>) [A156] (M) • Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] (M) • Curlew (<i>Numenius arquata</i>) [A160] (M) • Redshank (<i>Tringa totanus</i>) [A162] (M) • Greenshank (<i>Tringa nebularia</i>) [A164] (M) • Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] (M) • Wetland and Waterbirds [A999] (M) 	<p><u>High Level (inside site)</u> A03 Mowing / cutting of grassland</p> <p><u>High Level (outside site)</u> E02 Industrial or commercial areas A08 Fertilisation E01 Urbanised areas, human habitation</p> <p><u>Medium Level (inside site)</u> G01.01 Nautical sports D03.02 F01 Marine and Freshwater Aquaculture</p> <p><u>Medium Level (outside site)</u> not applicable</p> <p><u>Low Level (inside site)</u> not applicable</p> <p><u>Low Level (outside site)</u> not applicable</p>	11.2

* 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)

004161, Stack's to Mullaghareirk Mountains
West Limerick Hills and Mount Eagle SPA, 5

004077, River Shannon and River Fergus
Estuaries SPA, 11.2

Site Code, Site Name, Distance (km)

002351, Moanveanlagh Bog SAC, 3.6

002165, Lower River Shannon SAC, 8

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



6.2 Conservation Objectives

According to the Habitat's 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 Habitat's 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. These have been accessed for the sites listed in Table 6-1 on the 20th August 2020.

Generic conservation objectives only were available for:

- Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161); published 21/02/2018 [Version 6]

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

- Lower River Shannon cSAC (002165; published 07 August 2012 [Version 1]
- Moanveanlagh Bog cSAC (002351); published 07 Dec 2015 [Version 1]
- River Shannon and River Fergus Estuaries SPA (004077); published 17 September [Version 1.0].

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>.

No management plans were available for any of the sites.



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 Council Planning Enquiry System
- Kerry County Development Plan 2015-2021
- Draft Listowel Municipal District Local Area Plan 2015-2019
- Permitted projects in the vicinity of the development
- Proposed projects in the vicinity of the development
- Other historic landfills

A planning search was conducted on 20th August 2020. The search was limited to applications made over the previous 5 years within the townland of the historic landfill site (Ballygowloge).

Of the planning application only one (Kerry Foods) is of a scale that could act cumulatively with the proposed remediation works at the historic landfill site.

Kerry Foods (Kerry Ingredients (Ireland Ltd))

Kerry Foods is located ca. 500m downstream of the historic landfill on the opposing bank of the River Feale. According to EPA online documentation related to license details for the site (<http://www.epa.ie/terminalfour/ippc/ippc-view.jsp?regno=P0393-03>), the company is an integrated dairy processing installation and has an industrial emissions licence from the EPA (P0393-03) for the treatment and processing of milk, combustion of fuels and production of waste for disposal to landfill. The license sets conditions on the facility which includes discharge to surface water. An EPA Inspectors Report for review of the licence (24th Oct 2012) stated that there was one discharge point to the River Feale and emissions were treated via a WWTP before discharge and were not effecting the water quality of the River Feale (this includes salmonids). The license has since been amended for the extension of the facility which will require further combustion of fuels. An Appropriate Assessment Screening Report (13th September 2017) for the extension concluded that the proposed development of the site and its operation would not have a significant impact on European sites due to air emissions. Following further inspection by the EPA (which includes surface water emissions) the license was amended (Inspectors Report dated 10th November 2018). As the Kerry Foods facility is not having an effect on the surface water of the river Feale, there can be no cumulative/in combination effect with the proposed remediation works at Listowel historic landfill.

Other Historic Landfills

Within Listowel historic landfill's 15km buffer there are four European sites. Of these four European sites, one or more is located within the 15km buffer of 5 other historical landfills which require remediation works (see Table 6-2 below for more information). Of the 5 historic landfills: two are located in north County Kerry (Ahascra and Ardfert) and three are located in mid County Kerry (Castlesland, Rockfield and SSTralee).



The closest historic landfill to Listowel historic landfill is Ahascra historic landfill, located ca. 8.8km northwest of Listowel historic Landfill.

Potential pathways for surface water runoff (containing suspended solids), invasive species material (Three-cornered Leek, Cherry Laurel and Winter Heliotrope) and leachate from remediation works from Listowel historic landfill are via the stormwater drain at the adjacent KCC works/storage yard (soil/waste body material and leachate) and an access track between the yard which feed into the River Feale. Pathways are located ca 102m away from the River Feale. The potential cumulative effect (if any) between Listowel historic landfill and the other historical sites on the European sites within Listowel historic landfill's 15km buffer are assessed below.

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

European sites within Listowel historic landfill's 15km buffer	North Kerry Historic Landfills		Mid Kerry Historic Landfills		
	Ahascra	Ardfert	Castleisland	Rockfield	Tralee
	Distance between Historic Landfill Sites and European Sites (km)				
Lower River Shannon cSAC (002165)	1.5	11.9	6.1		13.2
Moanveanlagh Bog cSAC (002351)	12.2				
River Shannon and River Fergus Estuaries SPA (004077)	11.2				
Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161)	9.9	9.2	2.9	12	7.2

Lower River Shannon cSAC (002165)

Potential pathways for emissions from remediation works from Listowel historic are located at a distance ca. 102m from the River Feale which is designated as part of the Lower River Shannon cSAC (002165). During excavation of the trench, soil/wastebody material and invasive (if present in the footprint of the excavated trench) will be directly loaded into an awaiting adjacent dump truck and any leachate build up in the excavated trench will be pumped into an awaiting tanker. Both leachate and soil/wastebody material will be removed offsite and taken to appropriate licensed facilities under required permits (see Section 5.1 for more information). Due to the work method of excavations the increase in the volume of leachate entering stormwater drains as runoff will be negligible, the emission of soil/wastebody leachate entering the storm water drain or access track will be negligible and the emission of invasive species is deemed to be highly unlikely. Due to distance and the nature and method of excavation works there will therefore be no effect on the nearby Lower River Shannon cSAC (002165) during remediation works. The SAC is also located within the same ground waterbody as the historic landfill. Remediation works will not increase the levels of leachate entering the underlying ground waterbody as the majority of proposed boreholes will be shallow and only three boreholes will be deep and water will not be allowed to enter them. The most obtrusive works will be comprised of the interception trench, which be covered so as not to prevent the ingress of water and further production of leachate.



Remediation works at Listowel historic landfill will have no effect on the Lower River Shannon cSAC (002165), and therefore will not result in cumulative / in combination effects with any other historical landfill sites.

Following remediation works, leachate levels will be monitored and will either be piped to Listowel WWTP via the sewer system or stored on site (underground) and tankered offsite when required. The method of leachate management and monitoring will be decided during detailed design. However, connection to the sewer system or tankering leachate off site will be undertaken under permit received by Irish Water (see Section 5.1 for more information). Leachate management following remediation works, will prevent existing leachate breakouts at the KCC works/storage yard, which enter the SAC via a stormwater drainage system. Leachate management will result in minimal potential positive effects to Lower River Shannon cSAC (002165) with regards to future water quality. Therefore, any potential cumulative/in combination effects with other historical landfills will be neutral - slightly positive for the Lower River Shannon cSAC (002165).

Other European sites

Moanveanlagh Bog cSAC (002351), Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161) and River Shannon and River Fergus Estuaries SPA (004077) are located within the same ground waterbody as the historic landfill. Remediation works will not increase the levels of leachate entering the underlying ground waterbody as the majority of proposed boreholes will be shallow and only three boreholes will be deep and water will not be allowed to enter them. The most obtrusive works will be comprised of the interception trench, which be covered so as not to prevent the ingress of water and further production of leachate.

There is a remote hydrological link between the historic landfill site and the aforementioned European sites. The closest of these European sites is Moanveanlagh Bog cSAC (002351) located 3.6km (direct distance) from Listowel historic landfill site. None of these sites receives waters from the River Feale and any leachate or soil/wastebody sediment released to the River Feale will be negligible and the release of invasive species material is highly unlikely. As there will be no effect on the River Feale during remediation works there can be no cumulative/in combination effects with other historical landfills on any European sites.

Following remediation works leachate management will have a positive effect on the water quality of the River Feale and ground waterbody. However, due to distance there will be no cumulative / in combination effects with any other historical landfill sites with regards to surface water. With regards to groundwater any potential cumulative/in combination effects with other historical landfills will be neutral - slightly positive for Moanveanlagh Bog cSAC (002351), Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161) and River Shannon and River Fergus Estuaries SPA (004077).

6.4 Screening Assessment Criteria

Throughout this section the line items in *italics* refer to suggested instructions for information to be contained in a screening assessment, and in an appropriate assessment from the guidance document '*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). The standard 'Screening Matrix' and 'Finding of No Significant Effects Report Matrix' in Annex 2 of this guidance document are also followed.



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"> ▪ <i>Size and scale;</i> ▪ <i>Land-take;</i> ▪ <i>Distance from Natura 2000 site or key features of the site;</i> ▪ <i>Resource requirements;</i> ▪ <i>Emissions;</i> ▪ <i>Excavation requirements;</i> ▪ <i>Transportation requirements;</i> ▪ <i>Duration of construction, operation etc.;</i> 	<p>Size and scale</p> <p>Potential effects: None</p> <p>Proposed infrastructure forms part of the landfill gas monitoring regime and leachate management and monitoring regime for the historic landfill site and will include the development of a Landfill Gas Management plan by KCC. For the most part proposed works will not be obtrusive and site vegetation will be left in place. Remediation works will be undertaken within a 1.01 ha of ornamental established grass, shrub and tree planting and remediation works will be distributed across the site. The most obtrusive works will be limited to excavation of the proposed leachate interception trench along the sites southern boundary with the KCC yard which will cover an area of 1200m² and is located 102m from the River Feale/ Lower Shannon SAC.</p> <p>Three deep wells will be located across the centre of the site, 14 shallow wells to be located around the perimeter of the site and an interceptor trench (1200m²) to be located along part of the site's southern boundary with an associated tank/connection to the sewer system (to be decided at detail design stage). There will be the requirement for the removal of a total of 480 tonnes of soil and interred wastebody.</p>



Assessment Criteria	Discussion of Potential Effects
<ul style="list-style-type: none"> Other. 	<p>There will be the requirement for the offsite removal of leachate arisings occurring in the interception trench excavation.</p> <p>Following remediation works, leachate collected in the interceptor trench will be collected and pumped off site via the sewer system (to Listowel WWTP under permit) or will be stored underground and tankered off site under permit to a licensed facility; this will be decided at detailed design and will depend on the connection to the sewer system and the granting of a permit from Irish Water.</p> <p>No effects will occur on any European site due to size and scale.</p> <p>Land-take</p> <p>Potential Effects: <i>None.</i></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>Distance from Natura 2000 (European) sites</p> <p>Potential Effects: <i>None.</i></p> <p>The Lower River Shannon cSAC (002165) is the closest European site and is located 8m from the historic landfill's most southern boundary. The closest element of the proposed remediation works will be a shallow well located within a mounded planted area outside the interred waste body, ca. 15m from the SAC. The largest and most concentrated area of works will be for the interceptor trench, located 102m from SAC. The three deep wells will be located ca. 139m away from the SAC at their closest point. The KCC yard as well as the existence of established tree and shrub planting will buffer noise as well as leachate and soil emissions.</p> <p>There will be no impact from proposed remediation works on any European site due to distance, types of works and the buffering of noise via site vegetation.</p> <p>Resource requirements</p> <p>Potential Effects: <i>None</i></p> <p>Prior to general vegetation clearance works, Three-cornered Leek (a legally regulated species) material and infested soil will be removed offsite to a licensed facility (see Section 5.1 for more information), as will regular vegetation. Due to the nature of works vegetation removal will be minimal.</p>



Assessment Criteria	Discussion of Potential Effects
	<p>During remediation works 480 tonnes of soil/wastebody material (which may contain invasive species) will be removed offsite and taken to appropriate licensed facilities under required permits. Leachate is also likely to be produced during the excavation of the interceptor trench. Leachate will be tankered offsite and brought to a licenced facility under permit. Leachate may be taken to Listowel WWTP which feeds into the River Feale/Lower River Shannon cSAC (002165) and this will be decided upon during detailed design and transport of leachate to any WWTP will be undertaken following the receipt of a permit from Irish Water. (see Section 5.1 for more information)</p> <p>Following remediation works, leachate levels will be monitored and will either be piped to Listowel WWTP via the sewer system or stored on site (underground) and tankered offsite when required. The method of leachate management and monitoring will be decided during detailed design. However, connection to the sewer system or tankering of leachate offsite will be undertaken under permit received by Irish Water (see Section 5.1 for more information).</p> <p>No effects will occur on any European site due to resource requirements.</p> <p>Emissions</p> <p>Potential Effects: None</p> <p>Vegetation Clearance Works</p> <p>Three-cornered Leek is located within the historic landfill site and is a Third Schedule listed species under Regulations 49 & 50 in the European Communities (Birds and Natural Habitats) Regulations 2011. (Note: Regulation 50 not yet enacted). Under the regulations it is an offence to spread the species. In order to prevent the spread of the invasive species it will be cleared from site prior to any clearance works/excavation. Clearance of the species will be done according to a tailored invasive species management plan. Clearance will include the removal of all invasive species material and infested soil offsite to a licensed facility so that the species cannot be spread within the site during vegetation clearance and remediation works. No Three-cornered Leek material will be emitted from site into a European site.</p> <p>Following the clearance of Three-cornered Leek, minimal clearance of existing vegetation will be required, the most will be located in the area of the interception trench. Due to distance (102m from trench), nature of works (unobtrusive) and nature of the site (closest element of works is a shallow well located 15km form the River Feale within established vegetation with bunded boundaries) general vegetation will not be emitted from site into a European site.</p>



Assessment Criteria	Discussion of Potential Effects
	<p><i>During Remediation Works</i></p> <p>During remediation works emissions created by the works will be comprised of leachate, soil/wastebody material which may contain limited amounts of invasive species material (if present):</p> <ul style="list-style-type: none"> Leachate arisings: <ul style="list-style-type: none"> may occur during 3 deep well and 14 shallow well installations - will be absorbed by surrounding vegetation excavation of the interception trench – will be collected on site by an awaiting vehicle and tankered offsite under licence/permit Soil/wastebody material (total of 480 tonnes): <ul style="list-style-type: none"> Installation of 3 deep well and 14 shallow well installations – will be removed offsite to a licensed facility excavation of interception trench (300m³) and leachate storage (80m³) - excavated material to be immediately placed into an awaiting dump truck and brought offsite to a licensed facility. Excavated soil may contain limited amounts of invasive species material (Three-cornered Leek, Cherry Laurel and Winter Heliotrope) – will be collected with excavated soil/wastebody material. <p>Both leachate and soil/wastebody material will be removed offsite and taken to appropriate licensed facilities under required permits (see Section 5.1 for more information).</p> <p>The most intensive remediation works will be undertaken over an area of 1200m² (the interceptor trench), other works are comprised of deep and shallow well installations within vegetated areas and will not increase the levels of leachate entering the underlying ground waterbody and River Feale (via groundwater).</p> <p><u>Lower River Shannon cSAC (002165)</u></p> <p>The Lower River Shannon cSAC (002165) is located adjacent to the ground waterbody which the historic landfill site feeds into. As discussed above, remediation works will not increase in the levels of leachate entering the underlying ground waterbody or the River Feale.</p> <p>The closest element of the proposed remediation works will be a shallow perimeter well located within a mounded planted area outside the interred waste body, ca. 15m from the SAC; 14 shallow wells will be located along the perimeter of the site within vegetation. Three deep wells will be located ca. 139m away from the River Feale/SAC at their closest point; located in the centre of the site.</p>



Assessment Criteria	Discussion of Potential Effects
	<p>Any leachate produced will be absorbed by the surrounding vegetated ground and will be localised (not leave site as runoff). Soil/wastebody arisings will be collected in a dumper truck for removal offsite to a licensed facility under permit.</p> <p>Interceptor trench excavation works along the boundary between the historic landfill site and KCC yard will produce soil/wastebody material (which may contain limited amounts of invasive species material). In the location of excavation trench works there are two pathways for emissions to reach the River Feale/SAC; a stormwater drain within the adjacent KCC yard¹ and an access track which services the KCC yard. Both pathways are located ca. 102m distance away from the River Feale/SAC.</p> <p>During the excavation of the interceptor trench, soil/wastebody material and invasive species material (if present) will be directly loaded into an awaiting adjacent dump truck and any leachate build up in the excavated trench will be pumped into an awaiting tanker. Both leachate and soil/wastebody material will be removed offsite and taken to appropriate licensed facilities under required permits. Whether or not leachate will go to Listowel WWTP will be decided prior to remediation works. Listowel WWTP discharges into the River Feale/Lower River Shannon cSAC (002165). Remediation works will not be undertaken without a permit received from Irish Water and may require commission of a licensed waste contractor. (see Section 5.1 for more information).</p> <p>During remediation works, the increase in the volume of leachate entering stormwater drains as runoff will be negligible. The emission of soil/wastebody material entering the storm water drain or access track will be negligible. The discharge of invasive species material to the SAC via stormwater drains or the access track is deemed to be highly unlikely. Due to distance, the nature of works and the tankering of leachate offsite to a licensed facility under permit from Irish Water, there will be no effect on the nearby Lower River Shannon cSAC (002165) during remediation works.</p> <p><u>Other European Sites</u></p> <p>Moanveanlagh Bog cSAC (002351), Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161) and River Shannon and River Fergus Estuaries SPA (004077) are located within the same ground waterbody as the historic landfill. As discussed above, remediation works will not increase the levels of leachate entering the underlying ground waterbody.</p> <p>There is a remote hydrological link between the historic landfill site and the aforementioned European sites.</p>

¹ The link has not been verified but assumed as such.



Assessment Criteria	Discussion of Potential Effects
	<p>The closest of these European sites is Moanveanlagh Bog cSAC (002351) located 3.6km (direct distance) from Listowel historic landfill site. None of these sites receives waters from the River Feale and any leachate or soil/wastebody sediment released to the River Feale will be negligible and the release of invasive species material is highly unlikely. As there will be no effect on the River Feale during remediation works there will be no effects on the aforementioned European sites.</p> <p><i>After Remediation Works</i></p> <p>Following remediation works emissions will be comprised of leachate:</p> <ul style="list-style-type: none"> leachate levels will be monitored and will either be piped to Listowel WWTP via the sewer system (on receipt of a permit from Irish water or, stored on site (underground) and tankered offsite when required (undertaken under permit received from Irish Water). The method of leachate management and monitoring will be decided during detailed design. <p>The interception trench will prevent the existing leachate breakouts which are occurring in the adjacent KCC yard. The leachate breakouts are currently entering the stormwater drain in the yard which is likely to discharge to the River Feale/Lower River Shannon cSAC (002165).</p> <p><u>Lower River Shannon cSAC (002165)</u></p> <p>Following remediation works, leachate levels will be monitored and will either be piped to Listowel WWTP via the sewer system or stored on site (underground) and tankered offsite when required. The method of leachate management and monitoring will be decided during detailed design. However, connection to the sewer system or tankering leachate off site will be undertaken under permit received by Irish Water.</p> <p>Leachate management will prevent the likely leachate breakouts entering the River Feale/SAC. Leachate management is likely to result in minimal positive effects to the Lower River Shannon cSAC (002165) with regards to future water quality.</p> <p><u>Other European Sites</u></p> <p>There is a remote hydrological link between the historic landfill site and Moanveanlagh Bog cSAC (002351), Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161) and River Shannon and River Fergus Estuaries SPA (004077).</p> <p>Following remediation works leachate management is likely to have a minimal positive effect on the water quality of the River Feale. However, due to distance there will be no effect on the aforementioned European sites.</p>



Assessment Criteria	Discussion of Potential Effects
	<p>Excavation requirements</p> <p>Potential Effects: <i>None</i></p> <p>There will be no excavation requirements from any European site as a result of the proposed development. Excavation works will be limited minimal vegetation clearance and to the installation of site wells and the leachate interception trench and associated infrastructure. There will be a total of 480 tonnes of excavated soil/wastebody material from site (which may contain limited amounts of invasive species material). Excavated material will be directly placed in an awaiting dumper trunk and brought offsite to a licensed facility. Excavation will result in leachate arisings in the interception trench and will be tankered offsite under a required permit. The amount of sediment and leachate entering the River Feale/Lower River Shannon cSAC (002165) via a stormwater drain or access track will be negligible. See above section on 'Emissions' for more information.</p> <p>Transportation requirements</p> <p>Potential Effects: <i>None.</i></p> <p>Site access will not traverse any European Site. Existing access to the park (main site) and the adjacent KCC yard will be used as necessary.</p> <p>Duration of Construction and Operation</p> <p>Potential Effects: <i>None.</i></p> <p>It is anticipated that remediation works will occur over a period of 2-4 week period.</p> <p>Following remediation works environmental monitoring will be carried out and the site will continue to operate as an amenity to the public.</p> <p>It is recommended that KCC monitor wells weekly for a period of 12 months under a range of atmospheric conditions. Thereafter it is recommended that a landfill gas risk assessment be carried out to assess risk and to make recommendations on remedial actions as maybe required and on-going gas monitoring protocols.</p> <p>The groundwater and leachate monitoring regime will adhere to Table C.2 of the EPA's Landfill Manuals - Landfill Monitoring, 2nd Edition (2003). If leachate collected in the interceptor trench is stored on site it will require tankering off site from time to time (under permit from Irish Water). Control of drawdown levels and associated control systems and monitoring regimes shall be subject to detailed design.</p>



Assessment Criteria	Discussion of Potential Effects
	<p>Cumulative Effects</p> <p>Potential Effects: <i>None.</i></p> <p>A planning search indicates that 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 townland overlapping the site. See Section 6.3 for more information.</p> <p><i>Kerry Foods (Kerry Ingredients (Ireland Ltd))</i></p> <p>Kerry Foods is located ca. 500m downstream of the historic landfill on the opposing bank of the River Feale. The has an industrial emissions licence from the EPA. Kerry Foods facility is not having an effect on the surface water of the river Feale, there can be no cumulative/in combination effect with the proposed remediation works at Listowel historic landfill.</p> <p><i>Other Historic Landfills</i></p> <p>Six other historic landfills which require remediation contain the same four European sites as Listowel historic landfill. See Table 6-2 for more information.</p> <p><u>Lower River Shannon cSAC (002165)</u></p> <p>The Lower River Shannon cSAC (002165) is located adjacent to the ground waterbody which the historic landfill site feeds into. Vegetation clearance, remediation works at Listowel historic landfill will have no effect on the Lower River Shannon cSAC (002165), and therefore will not result in cumulative / in combination effects with any other historical landfill sites.</p> <p>The operation of remediation works will prevent existing leachate breakouts at the KCC works/storage yard, which enter the SAC via a stormwater drainage system. Leachate management will result in minimal potential positive effects to Lower River Shannon cSAC (002165) with regards to future water quality. Therefore, any potential cumulative/in combination effects with other historical landfills will be neutral - slightly positive for the Lower River Shannon cSAC (002165).</p> <p><u>Other European sites</u></p> <p>Moanveanlagh Bog cSAC (002351), Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161) and River Shannon and River Fergus Estuaries SPA (004077) are located within the same ground waterbody as the historic landfill and there is a remote hydrological link between the historic landfill site and the aforementioned European sites.</p>



Assessment Criteria	Discussion of Potential Effects
	<p>None of these sites receives waters from the River Feale and any leachate or soil/wastebody sediment released to the River Feale during the remediation works will be negligible and the release of invasive species material is highly unlikely. Leachate entering groundwater will not be added to during remediation work. As there will be no effect on the River Feale during remediation works there can be no cumulative/in combination effects with other historical landfills on any European sites during remediation works.</p> <p>Following remediation works leachate management will have a positive effect on the water quality of the River Feale and ground waterbody. However, due to distance there will be no cumulative / in combination effects with any other historical landfill sites with regards to surface water. With regards to groundwater any potential cumulative/in combination effects with other historical landfills will be neutral - slightly positive for Moanveanlagh Bog cSAC (002351), Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161) and River Shannon and River Fergus Estuaries SPA (004077).</p> <p>For more detailed information see Section 6.3.</p>
<p><i>Describe any likely changes to the site arising as a result of:</i></p> <ul style="list-style-type: none"> ▪ <i>Reduction of habitat area;</i> ▪ <i>Disturbance of key species;</i> ▪ <i>Habitat or species fragmentation;</i> ▪ <i>Reduction in species density;</i> ▪ <i>Changes in key indicators of conservation value;</i> ▪ <i>Climate change.</i> 	<p>There will be no direct or indirect reduction in habitat area or habitat fragmentation within any European site as a result of the project due to lack of a direct hydrological link to any European site, nature of works, distance and the removal offsite of leachate (under permit).</p> <p>There will be no predicted effect via disturbance of key species or reduction of key species as a result of the proposed development due the spread out nature of works, the most intensive works (leachate interceptor trench) will occur 102m away from the Lower River Shannon cSAC (002165), existing mature shrub and tree vegetation and there being no direct hydrological links to any European site.</p> <p>There will be no predicted changes in key indicators of conservation value due to the proposed project due to distance, nature of works, distance and no direct hydrological links to any European site.</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"> ▪ <i>Interference with the key relationships that define the structure of the site;</i> ▪ <i>Interference with key relationships that define the function of the site.</i> 	<p>There are no potential effects on the key relationships that define the structure or function of any European sites considered in this Appropriate Assessment Screening due to the proposed development because of distance, removal of leachate offsite under permit, and there being no direct hydrological link.</p>



Assessment Criteria	Discussion of Potential Effects
<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"> ▪ loss, ▪ fragmentation, ▪ disruption, ▪ disturbance, ▪ change to key elements of the site (e.g. water quality etc.). 	<p>No effects will occur; therefore, an indicator of significance is not required.</p>
<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>No significant effects or effects of unknown scale or magnitude, either alone or in-combination with other projects or plans will occur.</p>

6.6 Stage One Screening Conclusion

It is concluded beyond reasonable scientific doubt that there are not likely to be significant effects from the proposed development on the four European sites identified for consideration (or any other European site), either alone or in combination with other plans or projects.

No significant effects on any of the European Sites within the zone of potential influence are predicted. Therefore, the following four European sites have been 'screened out' within the Stage 1: Appropriate Assessment Screening Report:

- Lower River Shannon cSAC (002165)
- Moanveanlagh Bog cSAC (002351)
- Stack's to Mullaghareirk Mountains West Limerick Hills and Mount Eagle SPA (004161)
- River Shannon and River Fergus Estuaries SPA (004077)

See Appendix 1 for Findings of No Significant Effects Report.



7. REFERENCES

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